START

TITLE: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

REEL NO: 2 Patents: 5,282,276-5,289,589

VOLUME: 1159 Issues: 1-4

DATE: FEBRUARY 1-22, 1994

PUBLICATION NO: 10426.00

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OFFICIAL GAZETTE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

February 1, 1994 Volume 1159 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignments to Panel for A Decision Without a Hearing as of December 30, 1993.

Chemical Discipline -	March 16, 1992
Mechanical Discipline -	June 2, 1993
Electrical Discipline -	March 24, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of December 30, 1993.

Chemical -	September 16, 1991
Mechanical -	March 23, 1993
Electrical -	March 19, 1992

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of December, 1993.

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Affirmed	95
Affirmed-in-Part	21
Reversed	47
Total Decided	163

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on January 29, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,987,608 through 4,989,264
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 27, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,938,509 through 4,639,943
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 25, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utility Patents 4,369,526 through 4,370,753
Reissue Patents based on the above-identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$465.00
By other than a small entity	$930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$935.00
By other than a small entity	$1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f))	$1,410.00
By other than a small entity	$2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable	$620.00
(2) unintentional	$1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED SEPTEMBER 12, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 32,644	06/914,769	4/12/88
(4,553,732)	(06/579,571)	(11/19/85)
Re 32,934	07/063,683	5/30/89
(4,553,739)	(06/600,147)	(11/19/85)
Re 33,133	07/123,592	12/19/89
(4,554,228)	(06/597,668)	(11/19/85)
4,302,365	06/120,290	11/24/81
4,302,442	06/217,623	11/24/81
4,553,269	06/635,083	11/19/85
4,553,271	06/397,533	11/19/85
4,553,272	06/238,374	11/19/85
4,553,275	06/606,889	11/19/85
4,553,282	06/691,744	11/19/85
4,553,283	06/705,772	11/19/85
4,553,284	06/588,911	11/19/85
4,553,287	06/506,904	11/19/85
4,553,289	06/553,248	11/19/85
4,553,293	06/538,949	11/19/85
4,553,295	06/602,433	11/19/85
4,553,296	06/502,873	11/19/85
4,553,297	06/594,798	11/19/85
4,553,307	06/571,561	11/19/85
4,553,311	06/564,266	11/19/85
4,553,313	06/452,539	11/19/85
4,553,320	06/546,349	11/19/85
4,553,328	06/533,634	11/19/85
4,553,331	06/484,932	11/19/85
4,553,334	06/576,680	11/19/85
4,553,335	06/630,982	11/19/85
4,553,338	06/648,576	11/19/85
4,553,340	06/611,143	11/19/85
4,553,343	06/626,717	11/19/85

Patent Number	Serial Number	Issue Date
4,553,344	06/598,049	11/19/85
4,553,346	06/510,633	11/19/85
4,553,348	06/585,507	11/19/85
4,553,352	06/579,032	11/19/85
4,553,358	06/648,039	11/19/85
4,553,359	06/534,482	11/19/85
4,553,366	06/468,632	11/19/85
4,553,370	06/521,804	11/19/85
4,553,371	06/580,548	11/19/85
4,553,372	06/541,234	11/19/85
4,553,373	06/418,126	11/19/85
4,553,381	06/511,031	11/19/85
4,553,386	06/601,305	11/19/85
4,553,389	06/404,697	11/19/85
4,553,390	06/662,700	11/19/85
4,553,391	06/551,901	11/19/85
4,553,393	06/527,613	11/19/85
4,553,398	06/576,865	11/19/85
4,553,402	06/486,783	11/19/85
4,553,403	06/612,490	11/19/85
4,553,404	06/622,868	11/19/85
4,553,406	06/520,158	11/19/85
4,553,409	06/630,208	11/19/85
4,553,412	06/577,816	11/19/85
4,553,414	06/617,015	11/19/85
4,553,421	06/605,057	11/19/85
4,553,425	06/576,229	11/19/85
4,553,427	06/587,011	11/19/85
4,553,429	06/578,721	11/19/85
4,553,435	06/515,240	11/19/85
4,553,439	06/510,535	11/19/85
4,553,443	06/443,069	11/19/85
4,553,444	06/542,746	11/19/85
4,553,445	06/585,452	11/19/85
4,553,447	06/556,389	11/19/85
4,553,449	06/536,326	11/19/85
4,553,450	06/468,636	11/19/85
4,553,451	06/578,931	11/19/85
4,553,456	06/637,734	11/19/85
4,553,457	06/505,166	11/19/85
4,553,460	06/540,689	11/19/85
4,553,461	06/433,651	11/19/85
4,553,463	06/511,872	11/19/85
4,553,472	06/525,462	11/19/85
4,553,475	06/487,162	11/19/85
4,553,477	06/680,009	11/19/85
4,553,482	06/611,928	11/19/85
4,553,489	06/656,448	11/19/85
4,553,495	06/531,814	11/19/85
4,553,496	06/568,786	11/19/85
4,553,497	06/441,751	11/19/85
4,553,498	06/598,561	11/19/85
4,553,499	06/604,187	11/19/85
4,553,500	06/633,673	11/19/85
4,553,502	06/697,678	11/19/85
4,553,505	06/624,369	11/19/85
4,553,506	06/503,192	11/19/85
4,553,513	06/536,531	11/19/85
4,553,516	06/582,318	11/19/85
4,553,520	06/650,006	11/19/85
4,553,521	06/558,605	11/19/85
4,553,522	06/538,214	11/19/85
4,553,525	06/603,182	11/19/85
4,553,527	06/580,663	11/19/85
4,553,536	06/469,448	11/19/85
4,553,538	06/559,422	11/19/85
4,553,540	06/523,707	11/19/85
4,553,543	06/586,473	11/19/85
4,553,548	06/524,851	11/19/85
4,553,549	06/659,094	11/19/85
4,553,550	06/256,565	11/19/85
4,553,551	06/466,919	11/19/85
4,553,552	06/581,996	11/19/85
4,553,553	06/472,455	11/19/85
4,553,555	06/578,778	11/19/85
4,553,566	06/597,802	11/19/85
4,553,567	06/709,823	11/19/85
4,553,570	06/527,848	11/19/85
4,553,574	06/534,811	11/19/85
4,553,580	06/504,131	11/19/85
4,553,583	06/610,919	11/19/85
4,553,586	06/504,493	11/19/85
4,553,587	06/523,371	11/19/85
4,553,588	06/714,135	11/19/85
4,553,591	06/599,581	11/19/85
4,553,594	06/483,149	11/19/85
4,553,595	06/616,090	11/19/85
4,553,600	06/572,047	11/19/85
4,553,603	06/685,956	11/19/85
4,553,607	06/542,534	11/19/85
4,553,608	06/580,678	11/19/85
4,553,615	06/467,672	11/19/85
4,553,617	06/510,097	11/19/85
4,553,626	06/530,831	11/19/85
4,553,630	06/692,349	11/19/85
4,553,631	06/496,066	11/19/85
4,553,632	06/597,500	11/19/85
4,553,634	06/705,784	11/19/85
4,553,638	06/630,746	11/19/85
4,553,640	06/413,820	11/19/85
4,553,643	06/549,796	11/19/85
4,553,649	06/557,563	11/19/85
4,553,652	06/525,386	11/19/85
4,553,653	06/372,340	11/19/85
4,553,659	06/377,369	11/19/85
4,553,661	06/552,739	11/19/85
4,553,663	06/609,041	11/19/85
4,553,666	06/697,606	11/19/85
4,553,670	06/558,964	11/19/85
4,553,672	06/611,154	11/19/85
4,553,676	06/573,471	11/19/85
4,553,680	06/643,474	11/19/85
4,553,681	06/231,324	11/19/85
4,553,685	06/684,742	11/19/85
4,553,689	06/437,346	11/19/85
4,553,692	06/619,350	11/19/85
4,553,693	06/618,116	11/19/85
4,553,697	06/583,403	11/19/85
4,553,700	06/590,769	11/19/85
4,553,702	06/463,938	11/19/85
4,553,703	06/582,814	11/19/85
4,553,704	06/581,109	11/19/85
4,553,706	06/623,900	11/19/85
4,553,709	06/541,289	11/19/85
4,553,710	06/523,434	11/19/85
4,553,712	06/328,672	11/19/85
4,553,715	06/646,701	11/19/85
4,553,718	06/430,346	11/19/85
4,553,725	06/523,070	11/19/85
4,553,726	06/533,474	11/19/85
4,553,728	06/613,336	11/19/85
4,553,729	06/568,937	11/19/85
4,553,731	06/648,101	11/19/85
4,553,741	06/657,678	11/19/85
4,553,746	06/524,565	11/19/85
4,553,751	06/667,800	11/19/85
4,553,754	06/348,825	11/19/85
4,553,757	06/573,792	11/19/85
4,553,768	06/553,704	11/19/85
4,553,769	06/624,932	11/19/85
4,553,772	06/476,202	11/19/85
4,553,780	06/621,422	11/19/85
4,553,783	06/473,614	11/19/85
4,553,788	06/626,301	11/19/85
4,553,797	06/341,284	11/19/85
4,553,799	06/512,905	11/19/85
4,553,809	06/654,602	11/19/85
4,553,815	06/464,433	11/19/85
4,553,817	06/481,933	11/19/85
4,553,822	06/400,955	11/19/85
4,553,824	06/604,929	11/19/85
4,553,826	06/516,947	11/19/85
4,553,829	06/544,298	11/19/85
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4,553,836	06/412,496	11/19/85
4,553,837	06/544,956	11/19/85

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Patent Number	Serial Number	Issue Date
4,553,840	06/442,113	11/19/85
4,553,842	06/492,859	11/19/85
4,553,846	06/500,241	11/19/85
4,553,851	06/558,870	11/19/85
4,553,862	06/588,467	11/19/85
4,553,863	06/666,736	11/19/85
4,553,872	06/580,416	11/19/85
4,553,878	06/471,490	11/19/85
4,553,885	06/380,120	11/19/85
4,553,886	06/641,195	11/19/85
4,553,888	06/507,037	11/19/85
4,553,893	06/702,631	11/19/85
4,553,895	06/605,213	11/19/85
4,553,903	06/627,634	11/19/85
4,553,905	06/608,514	11/19/85
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4,553,929	06/615,905	11/19/85
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4,553,941	06/662,729	11/19/85
4,553,947	06/601,006	11/19/85
4,553,962	06/570,772	11/19/85
4,553,968	06/492,145	11/19/85
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4,882,468	07/240,771	11/21/89
4,882,475	07/080,573	11/21/89
4,882,478	07/162,906	11/21/89
4,882,479	07/260,569	11/21/89
4,882,481	07/259,829	11/21/89
4,882,494	07/160,839	11/21/89
4,882,504	07/221,153	11/21/89
4,882,518	07/198,233	11/21/89
4,882,522	07/173,303	11/21/89
4,882,539	07/164,575	11/21/89
4,882,553	07/247,139	11/21/89
4,882,558	07/312,154	11/21/89
4,882,564	07/202,199	11/21/89
4,882,568	07/198,505	11/21/89
4,882,570	07/198,460	11/21/89

Patent Number	Serial Number	Issue Date
4,882,574	07/209,360	11/21/89
4,882,576	07/154,101	11/21/89
4,882,596	07/243,227	11/21/89
4,882,603	07/190,675	11/21/89
4,882,604	07/230,886	11/21/89
4,882,657	07/178,109	11/21/89
4,882,665	07/205,236	11/21/89
4,882,668	07/131,065	11/21/89
4,882,685	07/259,424	11/21/89
4,882,687	06/846,657	11/21/89
4,882,693	07/137,908	11/21/89
4,882,699	07/246,477	11/21/89
4,882,700	07/204,078	11/21/89
4,882,706	07/006,720	11/21/89
4,882,713	07/240,956	11/21/89
4,882,728	07/035,505	11/21/89
4,882,747	07/193,016	11/21/89
4,882,752	06/878,291	11/21/89
4,882,753	07/296,177	11/21/89
4,882,756	07/308,985	11/21/89
4,882,773	07/190,346	11/21/89

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,347,665	06/262,457	9/07/82	5/11/81	11/29/93
4,432,591	06/257,703	2/21/84	4/27/81	11/29/93
4,464,596	06/536,607	8/07/84	9/28/83	11/23/93
4,469,971	06/508,176	9/04/84	6/27/83	11/15/93
4,469,994	06/483,813	9/04/84	4/11/83	11/23/93
4,480,207	06/453,666	10/30/84	12/27/82	11/15/93
4,482,358	06/476,099	11/13/84	3/17/83	11/23/93
4,516,970	06/417,695	5/14/85	9/13/82	11/15/93
4,522,615	06/544,496	6/11/85	10/24/83	11/29/93
4,522,804	06/580,823	6/11/85	2/16/84	11/23/93
4,536,862	06/381,102	8/20/85	5/24/82	11/15/93
4,537,234	06/415,012	8/27/85	9/07/82	11/15/93
4,785,621	07/055,213	11/22/88	5/28/87	11/23/93
4,785,622	06/854,370	11/22/88	4/21/86	11/15/93
4,807,901	07/111,876	2/28/89	10/23/87	11/15/93
4,810,467	07/082,872	3/07/89	8/06/87	11/15/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,908,116, Re. S.N. 08/149,024, Nov. 8, 1993, Cl. 204, CAPILLARY ELECTRORETIC DEVICE EMPLOYING STRUCTURE PERMITTING ELECTRICAL CONTACT THROUGH IONIC MOVEMENT, Richard N. Zare, et al., Owner of Record: *Board of Trustees of The Leland, Stanford Junior University, Stanford, Calif.*, Attorney or Agent: James S. Hsue, Ex. Gp.: 1102

5,011,499, Re. S.N. 08/157,620, Nov. 24, 1993, Cl. 8/94.33, TANNING AGENT FORMULATION FOR MANUFACTURE OF SEMIFINISHED LEATHER PRODUCTS, Paul Rathfelder, et al., Owner of Record: *Schill & Seilacher GmbH & Co., Boeblingen, Federal Republic of Germany*, Attorney or Agent: Norman P. Soloway, Ex. Gp.: 1105

5,023,485, Re. S.N. 08/076,653, June 11, 1993, Cl. 307/465, METHOD AND CIRCUITRY FOR TESTING A PROGRAMMABLE LOGIC DEVICE, Frank J. Sweeny, Owner of Record: *Texas Instruments Inc., Dallas, Tex.*, Attorney or Agent: Darrick Chambers, Ex. Gp.: 2504

5,045,961, Re. S.N. 08/069,829, May 28, 1993, Cl. 604/96, BALLOON CATHETER AND LOCKING GUIDEWIRE SYSTEM, C. Vaughn Seifert et al., Owner of Record: *C.R. Bard, Inc., Murray Hill, N.J.*, Attorney or Agent: David B. Bernstein, Ex. Gp.: 3306

5,061,711, Re. S.N. 08/144,190, Oct. 27, 1993, Cl. 514/292, METHOD OF CURING LIVER DISEASE BY USING PYRROLO QUINOLINE QUINONE TRIESTERS AND NOVEL PYRROLO QUINOLINE QUINONE TRIESTERS, Teizi Urakami, et al., Owner of Record: *Mitsubishi Gas Chemical Company Inc., Tokyo, Japan*, Attorney or Agent: Henry T. Burke, Ex. Gp.: 1205

5,069,670, Re. S.N. 08/161,131, Dec. 2, 1993, Cl. 604/243, HYPODERMIC SYRINGE, Helmut Vetter, et al., Owner of Record: *Arzneimittel GmbH Apotheker Vetter & Company, Ravensburg, West Germany*, Attorney or Agent: Andrew M. Wilford, Ex. Gp.: 3306

5,079,943, Re. S.N. 08/100,421, Aug. 2, 1993, Cl. 73/3, METHOD OF CALIBRATING A VOLUMETRIC FLUID FLOW SENSOR, Craig S. Custer, Owner of Record: *CTE CHEM TEC Equipment Co. Inc., Deerfield Beach Fla.*, Attorney or Agent: Melvin K. Silverman, Ex. Gp.: 2605

5,080,116, Re. S.N. 08/157,443, Nov. 26, 1993, Cl. 132/204, METHOD FOR HAIR CONDITIONING AND PERMANENTS, Gerald W. Ballard, Owner of Record: *Inventor*, Attorney or Agent: Patrick P. Phillips, Ex. Gp.: 3303

5,103,197, Re. S.N. 08/139,982, Oct. 19, 1993, Cl. 333/206, CERAMIC BAND-PASS FILTER, Aimo Turunen, et al., Owner of Record: *Lk-Products Oy, Kempele, Finland*, Attorney or Agent: Robert J. Hess, Ex. Gp.: 2502

5,114,605, Re. S.N. 08/160,187, Dec. 2, 1993, Cl. 252/68, LUBRICANT OIL FOR REFRIGERATORS, Kinya Mizui, et al., Owner of Record: *Mitsui Petrochemical Industries, Ltd., Tokyo, Japan*, Attorney or Agent: Alan Holler, Ex. Gp.: 1105

5,197,749, Re. S.N. 08/153,562, Nov. 16, 1993, Cl. 279/147, KEYLESS CHUCKING DEVICE, Sidney D. Moore, et al., Owner of Record: *Inventors*, Attorney or Agent: Walter G. Maxwell, Ex. Gp.: 3202

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5,244,572, Re. S.N. 08/161,325, Dec. 2, 1993, Cl. 210/402, ROTARY DRUM FILTER WITH IMPROVED DECK STRUCTURES, Robert L. Mc Allister, Owner of Record: *La Valley Industries, Inc., Vancouver, Wash.*, Attorney or Agent: Jerome S. Marger, Ex. Gp.: 1308

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,368,560, Reexam. No. 90/003,273, Dec. 15, 1993, Cl. 307/460, ARRANGEMENT FOR REMOVING SKIN OF SLAUGHTERED ANIMALS, Ludwig Wetzel, et al,. Owner of Record: *Schmid & Wezel, Maulbronn, Germany*, Attorney or Agent: Felix J. D'Ambrosio, Jones, Tullar & Cooper, Arlington, Va., Ex. Gp.: 3203, Requester: Owner

4,758,745, Reexam. No. 90/003,274, Dec. 15, 1993, Cl. 307/460, USER PROGRAMMABLE INTEGRATED CIRCUIT INTERCONNECT ARCHITECTURE AND TEST METHOD, Abbus Elgamal, et al., Owner of Record: *Actel Corp., Sunnyvale, Calif.*, Attorney or Agent: Steven D. Hemminger, Lyon & Lyon, Los Angeles, Calif., Ex. Gp.: 2509, Requester: Owner

5,155,768, Reexam. No. 90/003,267, Dec. 3, 1993, Cl. 380/023, SECURITY SYSTEM FOR SOFTWARE, Taku Matsuhara, Owner of Record: *Sega Enterprises, Ltd., Tokyo, Japan*, Attorney or Agent: Michael E. Dergosits, Dergosits & Noah, San Francisco, Calif., Ex. Gp.: 2202, Requester: Owner

Errata

"All reference to 5,273,890 to Charles R. Steinman of New York for 'IMPROVEMENT OF PRIMER DIRECTED NUCLEIC ACID AMPLIFICATION INCLUDING THE ADDITION OF SPECIFIC TEMPLATE DNA INACTIVATING EMZYMES' appearing in the *Official Gazette* of December 28, 1993 should be deleted since no patent was granted."

"All reference to 5,275,276 to David L. Brown et al., of Connecticut for 'PACKAGE FOR SURGICAL DEVICES' appearing in the *Official Gazette* of January 4, 1994 should be deleted since no patent was granted."

"All reference to 5,276,342 to Kazuhito Tsutsumi of Japan for 'VERTICAL FIELD EFFECT TRANSISTOR WITH A TRENCH STRUCTURE' appearing in the *Official Gazette* of January 4, 1994 should be deleted since no patent was granted."

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 13, 1993
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
90,665	71/066,859	3/11/1913
301,493	71/329,928	3/07/1933
301,503	71/329,617	3/07/1933
301,512	71/331,749	3/07/1933
301,518	71/331,693	3/07/1933
301,529	71/331,180	3/07/1933
301,530	71/331,131	3/07/1933
301,546	71/323,956	3/07/1933
301,553	71/317,450	3/07/1933
301,569	71/331,594	3/07/1933
301,576	71/330,367	3/07/1933
301,594	71/330,894	3/07/1933
301,601	71/327,074	3/07/1933
301,603	71/325,310	3/07/1933
301,605	71/331,247	3/07/1933
301,608	71/331,179	3/07/1933
301,640	71/332,186	3/07/1933
301,650	71/331,505	3/07/1933
571,462	71/548,461	3/10/1953
571,464	71/551,110	3/10/1953
571,475	71/568,662	3/10/1953
571,485	71/580,781	3/10/1953
571,488	71/587,826	3/10/1953
571,489	71/587,911	3/10/1953
571,491	71/589,064	3/10/1953
571,495	71/591,735	3/10/1953
571,497	71/593,332	3/10/1953
571,498	71/595,766	3/10/1953
571,512	71/601,404	3/10/1953
571,515	71/602,721	3/10/1953
571,529	71/606,995	3/10/1953
571,540	71/612,130	3/10/1953
571,547	71/613,415	3/10/1953
571,550	71/613,640	3/10/1953
571,551	71/613,700	3/10/1953
571,556	71/614,765	3/10/1953
571,568	71/616,941	3/10/1953
571,569	71/617,182	3/10/1953
571,570	71/617,290	3/10/1953
571,571	71/617,292	3/10/1953
571,574	71/617,386	3/10/1953
571,585	71/618,859	3/10/1953
571,587	71/619,000	3/10/1953
571,590	71/619,444	3/10/1953
571,591	71/619,641	3/10/1953
571,599	71/620,115	3/10/1953
571,601	71/620,272	3/10/1953
571,613	71/620,876	3/10/1953
571,628	71/622,429	3/10/1953
571,629	71/622,723	3/10/1953
571,638	71/622,975	3/10/1953
571,639	71/622,976	3/10/1953
571,655	71/624,599	3/10/1953
571,663	71/625,150	3/10/1953
571,670	71/625,578	3/10/1953
571,674	71/626,034	3/10/1953
571,675	71/626,077	3/10/1953
571,676	71/626,078	3/10/1953
571,684	71/626,456	3/10/1953
571,686	71/626,491	3/10/1953
571,688	71/626,627	3/10/1953
571,690	71/626,692	3/10/1953
571,691	71/626,693	3/10/1953
571,693	71/626,782	3/10/1953
571,699	71/626,949	3/10/1953
571,702	71/627,100	3/10/1953
571,707	71/627,590	3/10/1953
571,709	71/627,604	3/10/1953
571,721	71/628,398	3/10/1953
571,723	71/628,502	3/10/1953
571,728	71/629,295	3/10/1953
571,736	71/629,769	3/10/1953
571,748	71/630,152	3/10/1953
571,752	71/630,380	3/10/1953
571,755	71/630,560	3/10/1953
571,759	71/631,245	3/10/1953
571,761	71/631,323	3/10/1953
571,776	71/633,585	3/10/1953
571,778	71/634,187	3/10/1953
571,780	71/634,446	3/10/1953
571,785	71/589,488	3/10/1953

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571,796	71/630,937	3/10/1953
571,799	71/536,420	3/10/1953
571,812	71/585,621	3/10/1953
571,816	71/591,616	3/10/1953
571,819	71/597,143	3/10/1953
571,830	71/610,415	3/10/1953
571,834	71/613,755	3/10/1953
571,843	71/621,457	3/10/1953
571,851	71/624,636	3/10/1953
571,852	71/625,539	3/10/1953
571,860	71/635,029	3/10/1953
954,242	72/363,550	3/06/1973
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954,251	72/396,214	3/06/1973
954,255	72/415,751	3/06/1973
954,256	72/356,126	3/06/1973
954,258	72/376,779	3/06/1973
954,259	72/383,532	3/06/1973
954,266	72/394,616	3/06/1973
954,267	72/328,561	3/06/1973
954,268	72/354,037	3/06/1973
954,271	72/391,542	3/06/1973
954,274	72/399,164	3/06/1973
954,277	72/407,545	3/06/1973
954,279	72/415,845	3/06/1973
954,281	72/416,238	3/06/1973
954,291	72/381,858	3/06/1973
954,294	72/413,496	3/06/1973
954,296	72/382,669	3/06/1973
954,297	72/411,689	3/06/1973
954,304	72/414,009	3/06/1973
954,305	72/415,087	3/06/1973
954,306	72/390,548	3/06/1973
954,308	72/413,500	3/06/1973
954,313	72/410,108	3/06/1973
954,317	72/405,895	3/06/1973
954,319	72/409,776	3/06/1973
954,321	72/410,885	3/06/1973
954,328	72/412,771	3/06/1973
954,329	72/412,854	3/06/1973
954,336	72/360,755	3/06/1973
954,338	72/370,470	3/06/1973
954,348	72/414,925	3/06/1973
954,349	72/381,121	3/06/1973
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954,356	72/390,410	3/06/1973
954,367	72/408,436	3/06/1973
954,375	72/417,788	3/06/1973
954,377	72/418,233	3/06/1973
954,379	72/419,577	3/06/1973
954,383	72/347,347	3/06/1973
954,385	72/362,499	3/06/1973
954,389	72/386,507	3/06/1973
954,392	72/392,717	3/06/1973
954,395	72/397,858	3/06/1973
954,398	72/404,155	3/06/1973
954,400	72/407,139	3/06/1973
954,402	72/351,361	3/06/1973
954,405	72/382,821	3/06/1973
954,407	72/383,254	3/06/1973
954,409	72/389,457	3/06/1973
954,412	72/401,303	3/06/1973
954,413	72/401,964	3/06/1973
954,417	72/401,007	3/06/1973
954,421	72/414,387	3/06/1973
954,423	72/416,528	3/06/1973
954,425	72/417,469	3/06/1973
954,427	72/418,131	3/06/1973
954,433	72/388,272	3/06/1973
954,437	72/409,705	3/06/1973
954,438	72/383,456	3/06/1973
954,439	72/385,055	3/06/1973
954,445	72/396,894	3/06/1973
954,446	72/396,895	3/06/1973
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954,458	72/412,968	3/06/1973
954,466	72/401,962	3/06/1973
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954,469	72/402,192	3/06/1973
954,471	72/404,657	3/06/1973
954,473	72/406,788	3/06/1973
954,478	72/411,151	3/06/1973
954,481	72/411,951	3/06/1973
954,484	72/414,207	3/06/1973
954,486	72/415,511	3/06/1973
954,490	72/377,258	3/06/1973
954,498	72/399,762	3/06/1973
954,500	72/403,305	3/06/1973
954,505	72/415,020	3/06/1973
954,506	72/415,418	3/06/1973
954,507	72/415,455	3/06/1973
954,509	72/415,619	3/06/1973
954,511	72/411,611	3/06/1973
954,513	72/376,055	3/06/1973
954,517	72/395,461	3/06/1973
954,519	72/404,769	3/06/1973
954,520	72/380,879	3/06/1973
954,526	72/381,261	3/06/1973
954,528	72/383,758	3/06/1973
954,529	72/385,186	3/06/1973
954,531	72/393,366	3/06/1973
954,534	72/396,431	3/06/1973
954,536	72/398,570	3/06/1973
954,537	72/399,119	3/06/1973
954,545	72/404,162	3/06/1973
954,546	72/405,351	3/06/1973
954,549	72/411,909	3/06/1973
954,551	72/413,223	3/06/1973
954,554	72/413,351	3/06/1973
954,558	72/414,109	3/06/1973
954,561	72/415,210	3/06/1973
954,565	72/415,892	3/06/1973
954,566	72/416,072	3/06/1973
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954,601	72/414,230	3/06/1973
954,602	72/415,065	3/06/1973
954,604	72/415,067	3/06/1973
954,605	72/415,075	3/06/1973
954,606	72/415,079	3/06/1973
954,610	72/403,813	3/06/1973
954,611	72/407,657	3/06/1973
954,612	72/414,129	3/06/1973
954,613	72/414,694	3/06/1973
954,619	72/375,816	3/06/1973
954,621	72/382,974	3/06/1973
954,624	72/391,578	3/06/1973
954,628	72/398,661	3/06/1973
954,631	72/407,263	3/06/1973
954,634	72/409,936	3/06/1973
954,635	72/410,508	3/06/1973
954,636	72/411,563	3/06/1973
954,640	72/417,945	3/06/1973
954,658	72/414,654	3/06/1973
954,659	72/415,585	3/06/1973
954,660	72/416,960	3/06/1973
954,666	72/402,721	3/06/1973
954,671	72/411,502	3/06/1973
954,674	72/351,782	3/06/1973
954,675	72/372,733	3/06/1973
954,676	72/382,303	3/06/1973
954,678	72/390,568	3/06/1973
954,681	72/410,985	3/06/1973
954,683	72/411,003	3/06/1973
954,687	72/418,982	3/06/1973
954,690	72/356,259	3/06/1973
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954,702	72/418,096	3/06/1973
954,708	72/399,766	3/06/1973
954,714	72/409,562	3/06/1973
954,715	72/391,295	3/06/1973
954,716	72/397,761	3/06/1973
954,718	72/406,791	3/06/1973
954,721	72/408,453	3/06/1973
954,722	72/373,829	3/06/1973
954,727	72/378,860	3/06/1973
954,733	72/368,280	3/06/1973
954,735	72/380,477	3/06/1973

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents.

GUIDELINES FOR INTERIM EXTENSION UNDER 35 U.S.C. § 156(d)(5) OF A PATENT TERM PRIOR TO REGULATORY APPROVAL OF A PRODUCT FOR COMMERCIAL MARKETING OR USE - PUBLIC LAW 103-179 (December 3, 1993)

This notice is intended to establish initial guidelines for patent owners who are seeking interim extensions of patent terms pursuant to newly enacted 35 U.S.C. § 156(d)(5). These guidelines will be in effect until further notice. These guidelines do not affect the rights of a patent owner or the procedures to request interim extensions under 35 U.S.C. § 156(e)(2).

Section 156(d)(5)(A) of Title 35, United States Code, provides that a patent owner seeking an interim extension of the terms of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (Commissioner) within a certain defined period of time. Section 156(d)(5) specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. § 156(d)(5)(A)(v). Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide guidelines which a patent owner or its agent should use in (1) deciding whether the requirements for the submission of an application for an interim extension of the term of a patent are satisfied, and (2) making the submission of such an application to the Patent and Trademark Office.

This notice includes guidelines as to the actual content of an application for interim extension of the term of a patent. The guidelines should be used in determining whether a patent is subject to, and meets the conditions for interim extension of its term under section 156(d)(5). The guidelines should also be used in preparing and filing an application for interim extension of the patent term. If any application for interim extension of the term of a patent is filed in accordance with 35 U.S.C. § 156(d)(5), but is not in compliance with the requirements of this notice, applicant will be notified of the deficiences in the application and will be given a period of time within which to correct the deficiences.

GUIDELINES

§ A. Patents eligible for interim extension of the patent term.

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, is eligible for an interim extension of its patent term in accordance with 35 U.S.C. § 156(d)(5).

(b) The term "product" referred to in paragraph (a) of this section means a product as defined in 35 U.S.C. 156(f).

§ B. Conditions for interim extension of patent term.

A patent may be granted an interim extension of its term if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in § A of this notice;

(b) the term of the patent has been extended under 35 U.S.C § 156(e);

(c) an application for interim extension under § 156(d) is submitted pursuant to § E of this notice;

(d) the product is currently undergoing a regulatory review as described in paragraph (1)(B)(ii), (2)(B)(ii), (3)(B)(ii), (4)(B)(ii), or (5)(B)(ii) of 35 U.S.C. § 156(g);

(e) the product has not received permission for commercial marketing or use; or, in the case of a patent claiming a method of manufacturing a product which primarily uses recombinant DNA technology in the manufacture of the product, no permission for commercial marketing or use has been granted for a product manufactured under the process claimed in the patent; and,

(f) the application is submitted during the period beginning 6 months, ending 15 days, before the expiration of the patent term; or, in the case of a subsequent interim extension, during the period beginning 60 days before, and ending 30 days before, the expiration of the preceding interim extension.

§ C. Applicant for interim extension of patent term.

Any application for interim extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of § E of this notice.

§ D. Filing date of application for interim extension of patent term.

(a) The filing date of an application for interim extension of patent term is the date on which a complete application is received in the Patent and Trademark Office, or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR § 1.8 or "Express Mail" provisions of 37 CFR § 1.10.

A complete application shall include:

(1) identification of the product then under regulatory review;

(2) identification of each Federal statute under which regulatory review is occurring;

(3) identification of the patent for which an interim extension is sought;

(4) identifiation of each claim of the patent which claims the product or a method of using or manufacturing the product then under regulatory review;

(5) sufficient information to enable the Commissioner to determine that, except for permission to market or use the product commercially, the patent would be eligible for an extension of its term under 35 U.S.C. § 156; and,

(6) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the product or a method of using or manufacturing the product then under regulatory review and the significant dates applicable to such activities.

(b) If any application submitted pursuant to this section is held to be incomplete, applicant may seek to have this holding reviewed under 37 CFR § 1.181.

§ E. Application for interim extension of patent term.

(a) An application for interim extension of a patent term must be made in writing to the Commissioner of Patents and Trademarks.

(b) A formal application for interim extension of the patent term shall include:

(1) a complete identification of the product under regulatory review as by appropriate chemical and generic name, physical structure or characteristics, and, where the requested extension is based on a method claim, the method of using or method of manufacturing the product then under regulatory review;

(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review is occurring;

(3) in the case of a human drug product, an identification of each active ingredient in the product and as to each active ingredient, a statement that it has not been previously approved for commercial marketing or use under the Federal Food, Drug and Cosmetic Act, the Public Health Service Act, or the Virus-Serum-Toxin Act, or a staement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) the use for which it was approved, and the provision of law under which it was approved;

(4) a statement that the application is being submitted within the period permitted for submission pursuant to § B of this notice, and an identification of the date of the first and last days on which the application could be submitted;

(5) a complete identification of the patent for which an interim extension is sought by the name of the inventor, the patent number, the date of issue, and the date of expiration;

(6) a copy of the patent for which an interim extension is sought, including the entire specification (with claims) and drawings;

(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(8) a statement that the patent claims the product or a method of using or manufacturing the product under regulatory review, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the product or a method of using or manufacturing the product under regulatory review;

(9) a statement beginning on a new page, of the relevant dates and information pursuant to 35 U.S.C. § 156(g) of the applicable current regulatory review period as follows:

(i) for a patent that claims a human drug, antibiotic, or human biological product, the effective date of the investigational new drug (IND) application and the IND number, and the date on which a new drug application (NDA) or a Product License Application (PLA) was initially submitted and the NDA or PLA number;

(ii) for a patent claiming a new animal drug, the date a major health or environmental effects test on the drug was initiated and any available substantiation of the date or the date of an exemption under subsection (j) of section 512 of the Federal Food, Drug and Cosmetic Act became effective for such animal drug; and the date on which a new animal drug application (NADA) was initially submitted and the NADA number;

(iii) for a patent claiming a veterinary biological product, the date the authority to prepare an experimental biological product under the Virus-Serum-Toxin Act became effective; and the date an application for license was submitted under the Virus-Serum-Toxin Act;

(iv) for a patent claiming a food or color additve, the date a major health or environment effects test on the additive was initiated and any available substantiation of that date; and the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted and the petition number;

(v) for a patent claiming a medical device, the effective date of the investigational device exemption (IDE) and the IDE number, if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; and the date on which any application for product approval or notice of completion of a product development protocol under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application;

(10) a brief description beginning on a new page of the significant activities undertaken by the applicant during the applicable regulatory review period with respect to the product under regulatory review and the significant dates applicable to such activities;

(11) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks any information which is material to the determination of entitlement to the interim extension sought;

(12) the prescribed fee for receiving and acting upon the application for extension (see § F of this notice);

(13) the name, address, and telephone number of the person to whom inquires and correspondence relating to the application for interim patent term extension are to be directed;

(14) a duplicate of the application papers, certified as such; and,

(15) an oath or declaration as set forth in paragraph (c) of this section.

(c) Any oath or declaration submitted in compliance with paragraph (b) of this section must be signed by the owner of record of the patent or its agent, specifically identify the papers and the patent for which an interim extension is sought and aver that the person signing the oath or declaration;

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(1) is the owner, an official of a corporate owner authorized to obligate the corporation, or a patent attorney or agent authorized to practice before the Patent and Trademark Office and who has general authority from the owner to act on behalf of the owner in patent matters;

(2) has reviewed and understands the contents of the application being submitted pursuant to this section;

(3) believes the patent is eligible for extension pursuant to § A of this notice;

(4) believes an interim extension is justified under 35 U.S.C. § 156(d)(5) and the guidelines of this notice; and,

(5) believes the patent for which the extension is being sought meets the conditions for interim extension of the term of a patent as set forth in § B on this notice.

(d) If any application for interim extension of patent term submitted pursuant to this section is held to be informal, applicant may seek to have that holding reviewed by filing a petition with the required fee, as necessary, pursuant to 37 C.F.R. §§ 1.181, 1.182 or 1.183, as appropriate, within such time as may be set in the notice that the application has been held to be informal, or if no time is set, within one month of the date on which the application was held informal. The time periods set forth herein are subject to the provisions of 37 C.F.R. § 1.136.

§ F. Fees for receiving and acting on application filed pursuant to 35 U.S.C § 156(d)(5).

Pursuant to 35 U.S.C. § 156(h), the Commissioner has determined that the following fees are appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for interim patent terms extension filed pursuant to 35 U.S.C. § 156(d)(5):

(a) for an initial application for "interim extension" under 35 U.S.C. § 156(d)5(A): $400.00; and,

(b) for each application requesting a "subsequent interim extension" under 35 U.S.C. § 156(d)(5)(C): $200.00.

The appropriate fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§ G. Address for filing applications pursuant to 35 U.S.C. § 156(d)(5).

All applications for interim extension of the term of a patent and any communications relating thereto should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C., 20231. When appropriate, the communication should be marked to the attention of a particular individual.

§ H. Termination of Interim Extension.

Any interim extension granted under 35 U.S.C. § 156(d)(5) terminates at the end of the 60-day period beginning on the date on which the product involved receives permission for commercial marketing or use. If within that 60-day period the patent owner or its agent files additional information required under 35 U.S.C. § 156(d)(1) not contained in the application for interim extension, the patent shall be further extended in accordance with the provisions of 35 U.S.C. § 156.

§ I. For further information contact:

Charles E. Van Horn by telephone at (703) 305-9054 or Gerald A. Dost by telephone at (703) 305-8813; or by mail marked to their attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. § 156. They will provide appropriate guidelines to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

Jan. 6, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Effect of December 1, 1993 Amendments to the Federal Rules of Civil Procedures on Trademark Trial and Appeal Board Inter Partes Proceedings

Trademark Rule 2.116(a) provides that, except as otherwise provided, and wherever applicable and appropriate, procedure and practice in Trademark Trial and Appeal Board (Board) inter partes proceedings shall be governed by the Federal Rules of Civil Procedures. Trademark Rule 2.120(a) provides, in part, that the provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference, and concurrent use registration proceedings except as otherwise provided in Trademark Rule 2.120; and that the opening of discovery is governed by the Federal Rules of Civil Procedure. Thus, where the Board has its own rule concerning a particular matter of practice or procedure, that rule governs; if there is no Board rule concerning the matter, the Federal Rules of Civil Procedure apply, where applicable and appropriate.

On December 1, 1993, certain of the rules in the Federal Rules of Civil Procedures were amended, and one new rule was added. Specifically, Rules 1, 4, 5, 11, 12, 15, 16, 26, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 50, 52, 53, 54, 58, 71A, 72, 73, 74, 75, and 76 were amended, and new Rule 4.1 was added. Included in the amendments are changes in the discovery rules to require that the parties to a civil action: (1) make a series of automatic disclosures, during the pretrial stages of the proceedings, of certain evidence; (2) file the disclosures with the court; (3) meet, early in the proceeding, to discuss, inter alia, the automatic disclosure and to develop a plan for discovery; and, (4) transmit to the court a written report outlining the discovery plan. The timing of some of these matters is tied to the timing of a scheduling conference to be held, or a scheduling order to be issued, by the court. The timing and sequence of other of the matters depends upon the direction of the court. Further, parties are prohibited from seeking any of the traditional forms of discovery until after they have met and developed their discovery plan.

The Patent and Trademark Office (Office) believes that the application of the cited provisions in inter partes proceedings before the Board would increase the complexity and cost of the proceeedings and would be unduly burdensome both to the Board and the parties. For these reasons, the Office is now of the opinion that these provisions would have a detrimental effect on, and are not appropriate for, Board proceedings. Moreover, the Office's Public Advisory Committee for Trademark Affairs has recommended that incorporation of the amendments in Board practice be deferred until the Office can evaluate the effects of the amendments on civil actions. On the other hand, some of the provisions added by the amendments are not objectionable, and others so clearly do not apply in, and/or are not appropriate for, Board proceedings that they need not be mentioned.

Accordingly, application of Rule 2.120(a) is hereby waived, in pertinent part, to the extent that the following provisions of the Federal Rules of Civil Procedure, as amended, which otherwise arguably would apply in Board proceedings, and which would, in the opinion of the Office, have a detrimental effect on those proceedings, shall not be applied therein unless and until further notice is given:

1. **Rule 16(b)** [requirement that court issue a scheduling order, after consulting with parties by scheduling conference, telephone, mail, or other suitable means]

2. **Rules 26(a)(1)-26(a)(4)** [requirements for series of automatic disclosures of evidence]

3. **Rule 26(b)(4)** [requirements for taking discovery from a person identified, in automatic disclosure, as an expert whose opinions may be presented at trial]

4. **Rule 26(d)**, first sentence [prohibition against the taking of discovery before the parties have met to discuss, inter alia, the automatic disclosures and to develop a plan for discovery]

5. **Rule 26(e)(1)** [requirement for supplementation of automatic disclosures]

6. **Rule 26(f)** [requirement that the parties meet, early in the proceeding, to discuss, inter alia, the automatic disclosure and to develop a plan for discovery]

7. **Rule 26(g)(1)** [signature requirements for automatic disclosures]

8. **Rule 30(a)(2)(C)** [requirement that a party obtain leave of court or written stipulation to take a deposition prior to the Rule 26(f) meeting of the parties]

9. **Rule 33(a)**, last sentence [requirement that a party obtain leave of court or written stipulation to serve interrogatories prior to the Rule 26(f) meeting of the parties]

10. **Rule 34(b)**, last sentence of first paragraph [requirement that a party obtain leave of court or written stipulation to serve request for production of documents and things prior to the Rule 26(f) meeting of the parties]

11. **Rule 36(a)**, last sentence of first paragraph [requirement that a party obtain leave of court or written stipulation to serve request for admission prior to the Rule 26(f) meeting of the parties]

12. **Rule 37(a)(2)(A)** [provision of motion to compel disclosure and for sanctions for failure to make automatic disclosure]

13. **Rule 37(c)(1)** [description of sanctions which may be imposed for failure to make, or supplement, automatic disclosure]

14. **Rule 37(g)** [provision of sanctions for failure to participate in good faith in the framing of a discovery plan]

Discovery in Board inter partes proceedings will continue to open as it did prior to December 1, 1993 amendments to the Federal Rules of Civil Procedure, that is, as provided in those rules as they existed on November 30, 1993. Thus, interrogatories, requests for production of documents and things, and requests for admission may be served upon the plaintiff after the proceeding commences (i.e., after the notice of opposition or petition for cancellation is filed, and after the mailing by the Board of the notice of institution in an interference or concurrent use proceeding), and upon the defendant with or after service of the complaint by the Board. Discovery depositions generally may be taken by any party after commencement of the proceeding. Board's permission to take a discovery deposition must be obtained in certain situations, including a situation in which the plaintiff seeks to take a deposition prior to the expiration of 30 days after service of the complaint by the Board upon any defendant, except where a defendant has served a notice of taking deposition or otherwise sought discovery or where the notice of deposition: (1) states that the proposed deponent is about to go out of the United States and will be unavailable for examination unless the person's deposition is taken before expiration of the 30-day period, and, (2) sets forth facts to support the statement.

Similarly, the practice embodied in Rules 33(a), 34(b), and 36(a) of the Federal Rules of Civil Procedure, as they read on November 30, 1993, that a defendant may serve responses to interrogatories, requests for production of documents and things, and requests for admission either within 30 days after service of a discovery request [35 days if service of the request for discovery is made by first-class mail, "Express Mail," or overnight courier--Trademark Rule 2.119(c)], or within 45 days after service of the complaint upon it by the Board, whichever is later, will continue to be followed in Board proceedings.

The Patent and Trademark Office will, in due course, publish a notice of proposed rule making to amend, as may be necessary, the trademark rules governing practice and procedure in inter partes proceedings before the Board.

Jan. 15, 1994

ROBERT M. ANDERSON
Acting Assistant Commissioner for Trademarks

Certificates of Corrections Week of February 1, 1994

PP. 7,856	5,039,691	5,129,496	5,160,498
PP. 8,083	5,043,723	5,129,630	5,160,629
PP. 8,212	5,045,993	5,129,895	5,160,966
PP. 8,328	5,046,922	5,130,055	5,161,019
Re. 33,107	5,053,071	5,130,520	5,161,059
Re. 34,198	5,054,037	5,132,590	5,161,247
D. 322,142	5,055,613	5,132,949	5,162,100
D. 329,054	5,057,300	5,133,451	5,162,634
D. 330,676	5,061,026	5,133,935	5,162,660
D. 332,112	5,061,574	5,134,069	5,162,912
D. 333,318	5,061,678	5,134,242	5,163,161
D. 333,975	5,064,461	5,134,441	5,163,594
D. 335,200	5,064,720	5,136,192	5,164,246
D. 335,201	5,067,667	5,136,357	5,164,295
D. 335,202	5,073,892	5,136,889	5,164,841
D. 337,850	5,074,731	5,137,540	5,165,073
D. 337,974	5,080,580	5,137,793	5,165,793
D. 333,975	5,080,864	5,137,842	5,166,859
4,384,388	5,081,259	5,138,148	5,167,077
4,558,239	5,085,499	5,138,207	5,167,228
4,657,894	5,086,071	5,138,388	5,167,724
4,769,292	5,088,484	5,138,639	5,168,274
4,780,477	5,093,079	5,139,054	5,168,538
4,785,077	5,093,317	5,140,117	5,168,638
4,786,592	5,095,812	5,140,404	5,168,640
4,828,785	5,096,001	5,140,582	5,168,896
4,846,080	5,096,980	5,142,026	5,170,404
4,864,017	5,097,028	5,142,032	5,170,418
4,866,022	5,097,344	5,142,219	5,170,558
4,879,648	5,098,938	5,142,491	5,171,668
4,880,794	5,100,913	5,143,566	5,171,814
4,886,664	5,101,199	5,144,037	5,171,839
4,889,425	5,101,484	5,144,225	5,171,979
4,896,551	5,101,492	5,144,883	5,172,134
4,903,969	5,102,195	5,145,353	5,172,172
4,925,537	5,102,242	5,146,012	5,172,173
4,930,097	5,104,859	5,146,606	5,172,209
4,937,121	5,107,593	5,147,344	5,172,336
4,943,570	5,107,933	5,148,498	5,172,558
4,950,759	5,108,753	5,149,985	5,172,619
4,957,985	5,108,958	5,150,604	5,172,666
4,960,710	5,111,637	5,151,845	5,172,835
4,962,996	5,111,650	5,151,969	5,173,211
4,963,766	5,111,693	5,152,395	5,173,240
4,969,083	5,111,970	5,154,344	5,173,327
4,977,687	5,113,433	5,154,411	5,173,779
4,980,229	5,114,509	5,154,844	5,173,998
4,981,185	5,114,581	5,156,006	5,174,174
4,988,755	5,114,705	5,156,386	5,174,561
4,989,948	5,115,284	5,156,396	5,175,083
4,990,435	5,116,405	5,156,663	5,175,185
4,993,270	5,117,053	5,156,742	5,175,247
4,999,400	5,117,260	5,157,159	5,175,292
5,000,214	5,118,232	5,157,160	5,175,825
5,007,571	5,119,557	5,157,248	5,176,232
5,010,104	5,121,083	5,157,271	5,176,272
5,011,827	5,122,361	5,157,393	5,176,375
5,011,937	5,122,532	5,157,445	5,176,589
5,012,055	5,123,336	5,158,320	5,176,655
5,015,357	5,124,027	5,158,817	5,177,349
5,015,415	5,124,180	5,158,950	5,177,579
5,015,674	5,124,450	5,159,090	5,177,659
5,021,083	5,125,577	5,159,370	5,178,388
5,032,945	5,127,346	5,159,932	5,178,516
5,039,670	5,128,803	5,160,462	5,178,778

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5,178,875	5,187,326	5,196,948	5,204,265	5,209,950	5,213,238	5,217,404	5,221,327
5,178,924	5,187,523	5,197,352	5,204,663	5,210,018	5,213,319	5,217,429	5,221,667
5,178,931	5,188,536	5,197,475	5,204,967	5,210,605	5,213,329	5,217,648	5,222,094
5,179,007	5,188,537	5,197,752	5,205,131	5,210,700	5,213,575	5,217,738	5,222,300
5,179,196	5,188,959	5,197,915	5,205,244	5,210,748	5,213,916	5,217,861	5,222,713
5,179,480	5,189,331	5,198,016	5,205,426	5,210,971	5,214,094	5,218,013	5,222,754
5,180,016	5,189,559	5,198,053	5,205,490	5,211,009	5,214,194	5,218,371	5,222,914
5,180,072	5,190,528	5,198,063	5,205,784	5,211,015	5,214,198	5,218,399	5,222,999
5,180,403	5,190,667	5,198,896	5,205,846	5,211,073	5,214,203	5,218,982	5,223,187
5,180,558	5,190,929	5,199,075	5,205,891	5,211,078	5,214,555	5,219,035	5,223,431
5,180,687	5,191,778	5,199,925	5,206,193	5,211,162	5,214,685	5,219,068	5,224,163
5,181,055	5,191,913	5,200,107	5,206,220	5,211,198	5,214,803	5,219,071	5,224,291
5,181,113	5,192,065	5,200,539	5,206,539	5,211,291	5,214,915	5,219,265	5,224,415
5,181,546	5,193,007	5,201,035	5,206,758	5,211,533	5,215,013	5,219,388	5,224,464
5,182,094	5,193,455	5,201,171	5,207,051	5,211,649	5,215,110	5,219,437	5,225,470
5,182,455	5,194,226	5,201,174	5,207,097	5,211,727	5,215,259	5,219,468	5,226,377
5,182,684	5,194,509	5,201,377	5,207,151	5,211,946	5,215,516	5,219,720	5,226,690
5,183,319	5,194,634	5,201,418	5,207,653	5,212,096	5,215,633	5,219,772	5,226,704
5,183,879	5,194,723	5,201,753	5,207,697	5,212,110	5,215,822	5,219,886	5,227,194
5,184,164	5,194,904	5,202,025	5,208,004	5,212,161	5,215,964	5,220,158	5,227,679
5,184,293	5,194,908	5,202,141	5,208,092	5,212,224	5,216,398	5,220,196	5,227,962
5,184,335	5,194,988	5,203,085	5,208,119	5,212,331	5,216,513	5,220,247	5,229,294
5,185,059	5,195,117	5,203,267	5,208,404	5,212,394	5,216,533	5,220,249	5,230,679
5,185,559	5,195,205	5,203,336	5,208,485	5,212,400	5,216,722	5,220,356	5,234,490
5,185,787	5,195,302	5,203,390	5,208,940	5,212,572	5,216,837	5,220,571	5,238,335
5,186,002	5,195,644	5,203,539	5,209,008	5,212,579	5,217,015	5,220,581	5,238,643
5,186,046	5,196,174	5,203,915	5,209,376	5,212,603	5,217,029	5,220,628	5,249,583
5,186,896	5,196,387	5,203,928	5,209,585	5,212,923	5,217,065	5,220,880	5,252,322
5,187,248	5,196,621	5,204,016	5,209,881	5,213,096	5,217,164	5,220,885	5,252,628
5,187,298	5,196,686	5,204,201	5,209,886	5,213,235	5,217,181	5,221,195	5,258,053
							5,265,668

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate were for which they are intended.

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
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BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	1/30/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	12/24/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/16/92
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MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/01/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/29/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	2/18/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Jan. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,000,520 to 4,005,493 inclusive
Plant Patents ..... 4,000 to 4,012

TRADEMARK OPERATION

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Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of January 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	12/15/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	11/18/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/23/93	10/08/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/18/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	9/15/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	10/10/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/11/93	10/18/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/21/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/20/93	11/01/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	11/24/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/19/93	11/10/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/16/93	11/11/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/13/93	11/11/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	10/02/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

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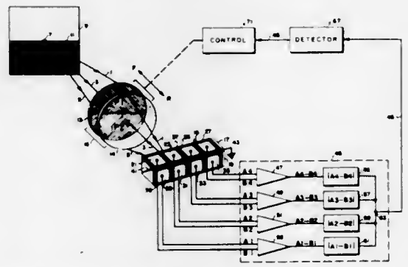
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REEXAMINATIONS

FEBRUARY 1, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,875,401 (2207th)
FOCUS DETECTING APPARATUS
Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Reexamination Request No. 90/003,000, Mar. 9, 1993.
Reexamination Certificate for Patent No. 3,875,401, issued Apr. 1, 1975, Ser. No. 377,810, Jul. 9, 1973.
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.8



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

1. A focus detecting apparatus for use in focussing an image of an object, the focus detecting apparatus comprising:

a single radiation gathering and receiving means arranged to receive radiation over a single path from the object for forming from said radiation two distinctly characterized and discretely identifiable portions of radiation and for forming first and second images from said portions;

adjusting means for varying the intensity distributions of said first and second images;

first and second sensing means, each consisting of a plurality of sensing elements arranged to sense the intensity distributions of said first and second images, respectively, and to provide difference signals representative of the differences between intensity distributions of said first and second images, which intensity distributions vary as a function of the condition of focus of said images; and

means connected to said first and second sensing means for providing an output signal indicative of the condition of focus of the images formed by said discretely identifiable portions.

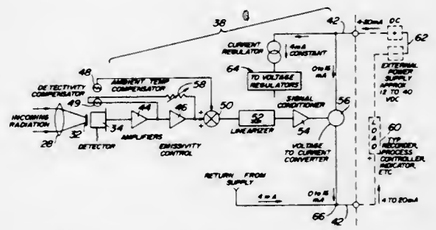
B1 4,527,896 (2208th)
INFRARED TRANSDUCER-TRANSMITTER FOR NON CONTACT TEMPERATURE MEASUREMENT
Keikhosrow Irani, Franklin Lakes, and Michael G. MacBurney, Chatham, both of N.J., assignors to Mikron Instrument Company, Inc., Wyckoff, N.J.
Reexamination Request No. 90/002,840, Sep. 22, 1992.
Reexamination Certificate for Patent No. 4,527,896, issued Jul. 9, 1985, Ser. No. 354,605, Mar. 4, 1982.
Int. Cl.[5] G01J *5/18, 5/26, 5/32*
U.S. Cl. 356—43

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2** and **8–12** is confirmed.

Claim **1** is cancelled.

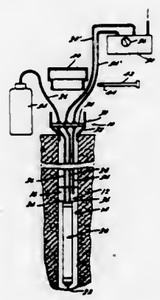
Claim **3** is determined to be patentable as amended.



Claims **4–7**, dependent on an amended claim, are determined to be patentable.

2. Apparatus in accordance with claim **1**, wherein said input current to said signal processing means is about 4 milliamperes D.C. and said output signal of said signal processing means is a current linearly proportional to the temperature of a target object and in a range of about 4 to 20 milliamperes D.C.

B1 4,585,060 (2209th)
FLUID SAMPLING APPARATUS
Frederick E. Bernardin, Ann Arbor; William D. Dickerson, Ypsilanti, and David Mioduszewski, Ann Arbor, all of Mich., assignors to Q.E.D. Environmental Systems, Inc., Ann Arbor, Mich.
Reexamination Request No. 90/001,493, Apr. 18, 1988.
Reexamination Certificate for Patent No. 4,585,060, issued Apr. 29, 1986, Ser. No. 672,495, Nov. 19, 1984.
Continuation of Ser. No. 470,305, Feb. 28, 1983, Pat. No. 4,489,779
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—64



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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Claims 1-4 were previously disclaimed.

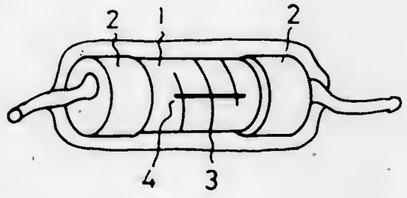
Claims 1-4 are cancelled.

[1. A groundwater sampling apparatus for withdrawing groundwater samples from a ground water monitoring well, said apparatus having dedicatable inground components to prevent the apparatus from contaminating another well, said apparatus comprising:

a gas-actuated water sampling pump for said groundwater monitoring well adapted to be submerged in the groundwater within said well for pumping a portion of said ground water therefrom, said pump being permanently to said well and having a groundwater chamber with an inlet and an outlet, said groundwater chamber being in communication with said groundwater in said well through said inlet when said pump is submerged therein; and

a wellhead assembly permanently to said well and including a wellhead body portion adapted to be secured to said well to isolate the interior of said well from the above ground surroundings, said wellhead assembly further including conduit means communicable with said pump and said wellhead assembly.]

B1 4,727,350 (2210th)
SURGE ABSORBER
Hitoshi Ohkubo, 362-28, Jyomyoji, Kamakula-shi, Kanagawa-ken, Japan
Reexamination Request No. 90/003,068, May 25, 1993.
Reexamination Certificate for Patent No. 4,727,350, issued Feb. 20, 1987, Ser. No. 17,347, Feb. 23, 1988.
Claims priority, application Japan, Apr. 28, 1986, 61-98655
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—21



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-6 are confirmed.

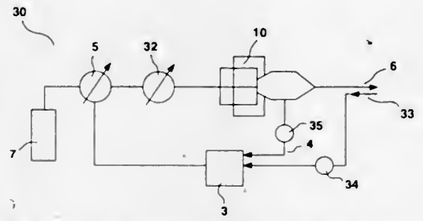
1. A surge absorber comprising a ceramic cylinder on which a thin film is disposed, the thin film disposed on the cylinder having a micro groove extending therein in a spiral manner around the cylinder and a linear groove extending therein intersecting the micro groove, said linear groove having a width that is larger than the width of said micro groove.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED FEBRUARY 1, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1282
FLUIDIC VOLUME-CYCLED RESPIRATOR
James W. Joyce, Rockville, and George Mon, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 5, 1990, Ser. No. 474,603
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.23 **6 Claims**



6. A method for accommodating the complete respiratory needs of a patient wherein said method comprises

providing a breathing gas source connected to a breathing gas inlet valve;

opening said gas inlet valve so as to allow breathing gas to be forced therethrough and subsequently through a property independent, fluidic oscillator flowmeter;

delivering said breathing gas exiting from said fluidic oscillator flowmeter directly to said patient;

monitoring the flow of said breathing gas by a transmitting means which transmits the oscillator frequency count of said breathing gas to a tidal volume controller;

closing said valve once a preset oscillator frequency count is reached;

sensing negative pressure produced by an inspiratory effort from said patient using a pressure sensor;

communicating said negative pressure to said total volume controller which instructs aid breathing gas inlet valve to open; and

repeating the breathing cycle;

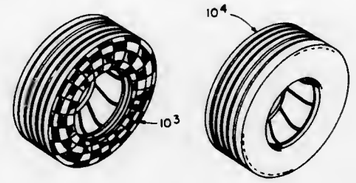
wherein said flowmeter converts the breathing gas flow rate to a frequency signal which is converted into said frequency counts by the use of said transmitting means; and wherein said tidal volume controller operates said breathing gas inlet valve causing said valve to close once said preset oscillator frequency count is reached.

H1283
WEAR-INDICATING TIRE
Andrew Porto, R.D. #11, Wainright Rd., and Carl Huben, R.D. 2, Gypsy Trail Rd., both of Carmel, N.Y. 10512
Continuation of Ser. No. 377,955, Jul. 11, 1989, abandoned. This application Nov. 13, 1990, Ser. No. 613,965
Int. Cl.[5] B60C *11/24*
U.S. Cl. 152—154.2 **8 Claims**

1. A tire for use on a land vehicle wheel comprising:

A) a sidewall section; and

B) a tread section connected to said sidewall section and which includes indicating means for indicating the state of tire tread wear, said indicating means including a plurality of different plys connected together in layers and each covering essentially the entire surface area of said tread section and each having a treat pattern which extends over the entire surface area of the tread section with an innermost layer having a pattern shape which is different visually from the pattern shapes of all other plys, each ply further including a color which is different from the color of all plys so that as said tread section wears down during use of the tire, visually different plys will be expqsed to

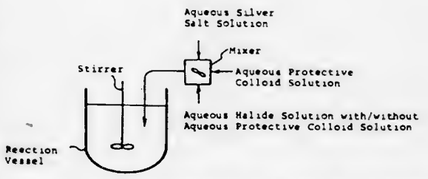


indicate the state of the tread wear, a double warning being formed by the different color and different tread pattern of the innermost layer.

H1284
COATING PROCESS
Cesar O. Castro, Houston, Tex., assignor to Shell Oil Co., Houston, Tex.
Continuation of Ser. No. 636,060, Dec. 31, 1990, abandoned. This application May 15, 1992, Ser. No. 883,514
Int. Cl.[5] B05D *1/08*
U.S. Cl. 427—447 **14 Claims**

1. A process for coating a solid object with a polymeric material comprising heating a powdered polymeric material comprising a blend of a polybutylene homopolymer or copolymer with an adhesion promoter and a nucleating agent to substantially melt the polymeric material and thereafter propelling the substantially molten polymeric material by flame spraying onto the surface of the solid object, thereby forming a coating. wherein said powdered polymeric material has a particle size from about 20 mesh to about 100 mesh; and wherein the coated solid object has and exhibits improved delamination properties.

H1285
SILVER HALIDE PHOTOGRAPHIC EMULSION AND MATERIAL
Ichizo Toya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Continuation of Ser. No. 433,250, Nov. 8, 1989, abandoned. This application Apr. 29, 1991, Ser. No. 692,786
Claims priority, application Japan, Nov. 8, 1988, 63-281851
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—569 **11 Claims**



1. A method for producing a silver halide photographic emulsion comprising:

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(a) forming silver halide grain nuclei, and after completion thereof,
(b) growing silver halide grains from said nuclei by forming a first silver halide phase having at least 3 mol percent of silver iodide and a completely uniform silver iodide distribution by adding fine silver halide particles having a silver halide content which is the same as the silver halide content of the first silver halide phase to be obtained, said growing being conducted with no addition of aqueous solutions of silver ions and halide ions.
(c) adding an iodide compound, and
(d) forming a second silver halide phase having at least five dislocation lines.

H1286
METHOD FOR TREATING PERIPHERAL ATHEROSCLEROTIC DISEASE EMPLOYING A CHOLESTEROL LOWERING DRUG, AN ACE INHIBITOR, OR A COMBINATION THEREOF

Martin Eisman, Pennington, N.J., and Mark E. McGovern, Philadelphia, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

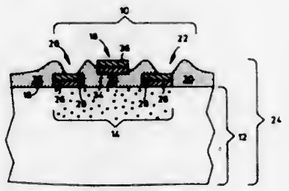
Continuation-in-part of Ser. No. 361,520, Jun. 5, 1989, abandoned. This application Oct. 18, 1990, Ser. No. 599,570
Int. Cl.[5] A62K *31/675, 31/40, 31/225*
U.S. Cl. 514—91 **11 Claims**

1. A method for treating intermittent claudication in a mammalian specie, which comprises administering to a mammalian specie in need of such treatment an effective amount of an angiotensin converting enzyme inhibitor alone or in combination with an effective amount of a cholesterol lowering drug.

H1287
ION IMPLANTED DIAMOND METAL-INSULATOR-SEMICONDUCTOR FIELD EFFECT TRANSISTOR

Carl R. Zeisse; James R. Zeidler; Charles A. Hewett, and Richard Nguyen, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1992, Ser. No. 901,615
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—410 **17 Claims**

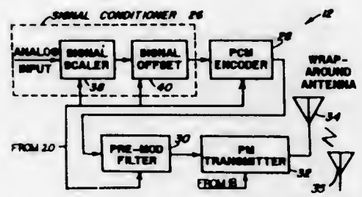


10. A field effect transistor, comprising:
a diamond substrate which has a p-type ion implanted region coterminous with a surface of said diamond substrate, wherein said ion implanted region has a hole concentration in the range of 1×10^{15} to $1\times10^{}$ holes/cm^3, and a hole mobility equal to or greater than 1 cm^2/V-sec;
spaced apart source and drain electrodes formed over said p-type ion implanted region on said surface of said diamond substrate;
an electrically insulating material formed over said p-type ion implanted region on said surface of said diamond substrate between said source and drain electrodes; and
a gate electrode formed on said surface of said insulating material.

H1288
CONTROL AND DIGITAL TELEMETRY ARRANGEMENT FOR AN AERIAL MISSILE

Kenneth P. Lusk, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1990, Ser. No. 504,452
Int. Cl.[5] H04Q *9/00*
U.S. Cl. 340—870.07 **28 Claims**

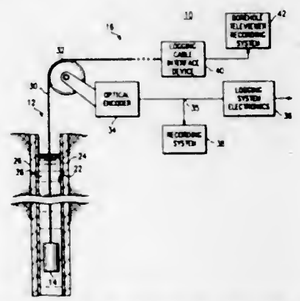


13. A digital telemetry system for an aerial missile, comprising:
(a) a signal conditioner for receiving an analog input telemetry signal representing the current status of missile functions and producing a conditioned analog output telemetry signal;
(b) a pulse code modulation (PCM) encoder connected to said signal conditioner for receiving the conditioned analog output telemetry signal therefrom and producing a digital output telemetry signal;
(c) a pre-modulation filter connected to said PCM encoder for receiving the digital output telemetry signal therefrom and producing an alternating digital output signal;
(d) a phase modulation (PM) transmitter connected to said pre-modulation filter for receiving said alternating digital output signal therefrom and producing a modulated output signal; and
(e) an antenna connected to said PM transmitter for receiving said modulated output signal therefrom and radiating said modulated output signal from the missile to a ground receiving station.

H1289
BOREHOLE TELEVIEWER SYSTEM DEPTH MONITORING AND RECORDING SYSTEM

Donald G. Kyle, Plano, Tex., assignor to Atlantic Richfield Co., Plano, Tex.

Continuation of Ser. No. 574,425, Aug. 28, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,564
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—69 **8 Claims**

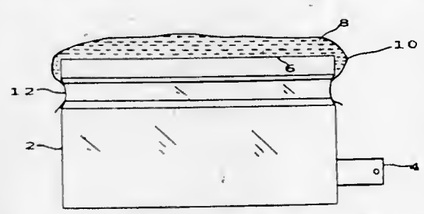


1. A depth system for measuring and recording the depth of a well logging tool comprising:
a) a depth signal interface for producing a first plurality of pulses corresponding to changes in the depth of the well logging tool;
b) a microcontroller electrically connected to said depth signal interface for transforming said first plurality of electrical pulses to a digital serial bit stream using a frequency burst technique wherein the frequency of a burst is in the audio frequency range, and for developing a digital well logging speed signal;
c) logging cable interface device electrically connected to the well logging tool for transmitting data from the well logging tool and a synchronizing pulse;
d) an analog vido recording device electrically connected to said microcontroller and said logging cable interface device for recording said digital serial bit stream a predetermined time after said synchronizing pulse on a single audio channel of the analog video recording device; and
e) a display interface in electrical communication with the microcontroller for generating a video display signal said video display including the well logging speed signal.

H1290
CONFORMABLE ACOUSTIC COUPLER

Noel R. Mann, Perkinston, Miss.; Irving F. Barditch, Baltimore City, Md., and Ronny Robbins, Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 935,698, Aug. 26, 1992, abandoned. This application Jan. 25, 1993, Ser. No. 8,234
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 **24 Claims**

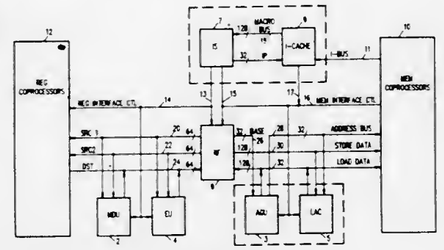


1. A conformable acoustic coupler for ultrasonically testing an article, said coupler comprising:
a) an ultrasonic transducer having an active surface, which surface is capable of transmitting an ultrasonic energy pulse therethrough, said transducer comprising ultrasonic pulse generating means capable of applying an ultrasonic energy pulse by said active surface to an article; and ultrasonic sensor means capable of receiving and measuring an ultrasonic echo from said article in response to said applied ultrasonic energy pulse; and
b) means for acoustically mating said article to the active surface of said transducer, said acoustic mating means comprising a layer of a gelatinous material on said active surface and a flexible film on said gelatinous material layer, which film substantially does not react with and substantially does not absorb said gelatinous material; wherein said acoustic mating means is capable of conforming to the shape of at least part said article.

H1291
MICROPROCESSOR IN WHICH MULTIPLE INSTRUCTIONS ARE EXECUTED IN ONE CLOCK CYCLE BY PROVIDING SEPARATE MACHINE BUS ACCESS TO A REGISTER FILE FOR DIFFERENT TYPES OF INSTRUCTIONS

Glenn J. Hinton, 6130 NW. 185th Ave., Portland, Oreg. 97229, and Frank S. Smith, 4525 W. Milky Way, Chandler, Ariz. 85226

Filed Dec. 20, 1990, Ser. No. 630,499
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—800 **10 Claims**



4. A microprocessor comprising:
a REG interface (**14**);
a MEM interface (**16**);
a memory coprocessor (**10**) connected to said MEM interface (**16**);
a register coprocessor (**12**) connected to said REG interface (**14**);
an Instruction Sequencer (**7**);
a Register File (**6**) having a first independent read port, a second independent read port, a third independent read port, a fourth independent read port, a first independent write port and a second independent write port;
said REG interface (**14**) connected to said first and second independent read ports and said first independent wire port;
said MEM interface (**16**) connected to said third and fourth independent read ports and said second independent write port;
said Instruction Sequencer (**7**) connected to said REG interface and to said MEM interface;
an Instruction Cache (**9**) connected to said instruction sequencer and to said MEM interface for providing said Instruction Sequencer with instructions every cycle;
said Cache (**9**) being multiple words wide and capable of supplying at least two words per clock to said Instruction Sequencer (**7**);
a single-cycle coprocessor (**4**) connected to said REG interface (**14**);
a multiple-cycle coprocessor (**2**) connected to said REG interface (**14**);
said Multiply-Divide Unit including means for executing multiply and divide, arithmetic operations requiring multiple cycles; and,
an Address Generation Unit (**3**) connected to said MEM interface (**16**);
said Address Generation Unit including means for executing load-effective-address instructions and address computations for loads and stores to thereby perform effective address calculations in parallel with instruction execution by said integer execution unit;
said Instruction Sequencer (**7**) including means for decoding said incoming instruction words from said Cache, and issuing up to three instructions each on one of, said REG interface (**14**), said MEM interface (**26**), and said branch logic within said Instruction Sequencer, including means for detecting dependencies between the instructions to thereby prevent collisions between instructions.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,525

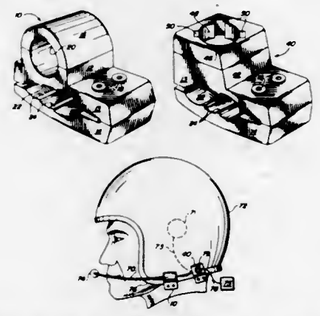
MOTORCYCLE HELMET MICROPHONE MOUNT AND PLUG MOUNT

John J. Lazzaroni, and Melinda K. Lazzaroni, both of 7322 E. Stella Rd., Tucson, Ariz. 85730

Original No. 4,788,724, dated Dec. 6, 1988, Ser. No. 66,130, Jun. 24, 1987. Continuation of Ser. No. 485,901, Jan. 25, 1990, abandoned. Application for reissue Oct. 30, 1991, Ser. No. 784,070

Int. Cl.[5] A42B *1/24*

U.S. Cl. 2—422 **17 Claims**



1. Helmet accessories for helmets of the type having an opening for viewing and receiving the head of a wearer, the helmet opening having a lower side edge with adjacent inside and outside helmet surfaces above the lower side edge, said helmet accessories placing a microphone attached at the end of a boom proximate the helmet wearer's mouth, the accessories comprising:

a microphone mount for attachment to an associated helmet, said microphone mount adapted to receive and secure an associated microphone boom for placing the microphone proximate the wearer's mouth; and

a plug mount for attachment to the associated helmet proximate said microphone mount, said plug mount adapted to receive and secure an associated electrical plug and provide for electrical connection from the electrical plug to the microphone secured by said microphone mount, to associated earphones located in the helmet, and to associated audio instruments located distal to the helmet;

both said microphone mount and said plug mount each including an attached clamp portion engaging the lower side edge of the associated helmet, said clamp portion comprising an outside elongated jaw and an inside elongated jaw, each said jaws having opposite first and second ends, each said outside jaw and inside jaw second ends forcibly engaging the outside surface and the inside surface of the helmet above the lower side edge of the helmet respectively with each said outside jaw and inside jaw first and below the side edge of the helmet, each said jaw defining an arcuate shaped concavity situated between said first and second end and a pair of gripping ridges in each of said concavity, and tightening means situated at said first end of each said jaws to force said jaws together, said tightening means comprising at least one machine bolt and nut, said machine bolt passing through said first ends of both said outside and inside jaw, said machine bolt and nut operably tightening said jaws forcibly together, said gripping ridges together with said second ends engaging and holding said clamp portion and thus said microphone mount and said plug mount to the helmet by tightening said jaws together whereby said microphone mount and plug mount secure the microphone in position and provide for electrical connections in order that the wearer may utilize the associated microphone, earphones, and audio instruments.

Re. 34,526

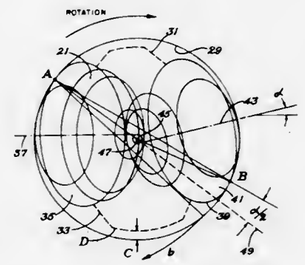
TWO CONE BIT WITH NON-OPPOSITE CONES

Rudolf C. O. Pessier, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Original No. 4,953,641, dated Sep. 4, 1990, Ser. No. 344,134, Apr. 27, 1989. Application for reissue Sep. 4, 1992, Ser. No. 940,561

Int. Cl.[5] E21B *10/08*

U.S. Cl. 175—353 **6 Claims**



1. An improved earth boring bit comprising:

a body composed of two sections;

a cantilevered bearing shaft with an axis extending inwardly and downwardly on each section;

a rotatable, generally conical cutter on each bearing shaft, said cutter having a conical gauge surface to engage and define a borehole with a wall of selected gauge diameter; *and*

the axis of one cutter being skewed *by an angle greater than zero degrees, but not greater than about 13 degrees* relative to the other to cause the conical gauge surfaces of the two cones to engage the wall of the hole at points that are other than 180 degrees apart;

[a line through said points being separated from a line from one of said points through the center of the bit by an angle not greater than about —degrees].

Re. 34,527

FEEDER WIRE STRUCTURE FOR HIGH PRESSURE FUEL INJECTION UNIT

Takeo Yoshida, and Minoru Suzuki, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Original No. 5,088,647, dated Feb. 18, 1992, Ser. No. 610,539, Nov. 8, 1990. Application for reissue May 19, 1992, Ser. No. 885,344

Claims priority, application Japan, Nov. 9, 1989, 1-293362

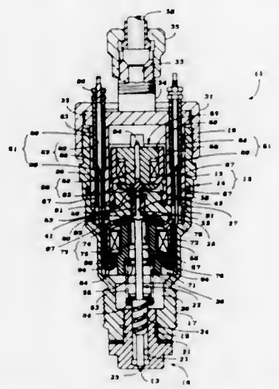
Int. Cl.[5] F02M *47/00*

U.S. Cl. 239—96 **8 Claims**

1. An accumulator type of injection nozzle comprising an outer housing assembly defining a cavity partitioned into an accumulator chamber adapted to be supplied with high pressure fuel and a coil chamber, a nozzle port leading from said accumulator chamber, an injection valve moveable between a closed position and an open position for controlling the dis-

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charge of fuel from said accumulator chamber through said nozzle port, a control chamber for receiving pressurized fuel, an actuating member supported for movement within said control chamber and associated with said injection valve for retaining said injection valve in its closed position when said control chamber is pressurized and for movement of said injection valve to its open position when pressure is relieved in said control chamber, valve means moveable between a closed position for maintaining pressure in said control chamber and



an open position for relieving pressure in said control chamber for effecting fuel discharge through said nozzle port, a first electromagnet within said accumulator chamber for controlling the lift of said injection valve, and at least one wire passage formed in said outer housing assembly and extending axially, [and] at least one feeder wire extending axially through said wire passage for energizing said first electromagnet, *and seal means associated with said wire passage for sealing said wire passage so that it is able to withstand the pressure within said accumulator chamber.*

Re. 34,528

DELTA NETWORK OF A CROSS-POINT SWITCH

Peter A. Franaszek, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,752,777, dated Jun. 21, 1988, Ser. No. 48,982, May 12, 1987. Continuation of Ser. No. 713,117, Mar. 18, 1985, abandoned. Application for reissue Jun. 21, 1990, Ser. No. 541,574

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.79 **19 Claims**

8. A method of simultaneously transmitting addressed messages from a plurality of input adapters to a pluraliyt of addressable output adapters, comprising the steps of:

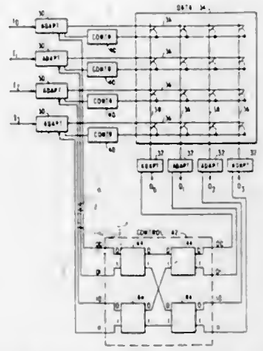
transmitting addressed messages on a first switching network in which said addressed messages may block each other, so that delivery of messages on said first switching network is not quaranteed, but in which each message that is delivered is delivered relatively quickly;

transmitting at least the addressed messoges which are blocked in said first switching network on a seprate second switching network in which said addressed messages cannot block each other, so that delivery of messages transmitted on said second switching network is guaranteed, but in which each message transmitted through said second switching network gets delivered to the addressed output adapter more slowly thon on said first switching network;

receiving each of said messages which is not blocked in said first switching network at the output adapter addressed by said message; and

receiving each of said addressed messages which has been blocked in said first switching network at the output adapter addressed by soid message after it has been transmitted instead through said second swithing network,

whereby all of said addressed messages are guaranteed to be



delivered to the output adapters addressed by said messages and the average delivery time is less than the average delivery time for messages delivered by said second swithing network which guorantees delivery.

Re. 34,529

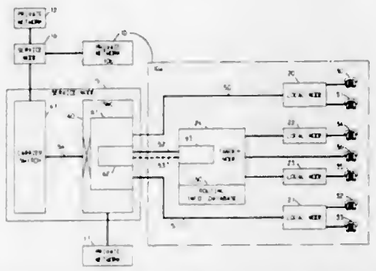
ARRANGEMENT FOR PROVIDING A CALL-CONNECTION SERVICE

Rainie M. Bicknell, Westminster, Colo.; Barbara J. Kittredge, Jackson, N.J.; Craig F. Palmer, Arvada, Colo., and Robert L. Young, Califon, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,896,350, dated Jan. 23, 1990, Ser. No. 329,918, Mar. 29, 1989. Application for reissue Jan. 23, 1992, Ser. No. 824,952

Int. Cl.[5] H04M *7/14*

U.S. Cl. 379—220 **42 Claims**



11. Apparatus for routing a call in a network of service provider's communication nodes and at least one service customer's communication nodes, the apparatus comprising:

means in a node of the service provider for responding to a request for establishment of a call path by obtaining call-routing information from a node of a service customer, and

means in the node of the service provider for interconnecting, in response to the obtained call-routing information, a) a call path extending between the node of the service provider and a first node other than said node of the service customer and b) a call path extending between the node of the service provider and a second node other than said node of the service customer to form a call path between the first and the second nodes which bypasses said node of the service customer.

Re. 34,530

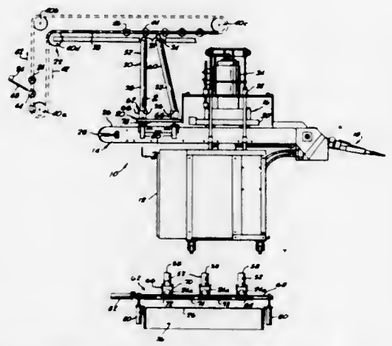
DOUGH BALL CONVEYOR LOADER APPARATUS AND METHOD

John W. Kirkpatrick, La Habra, Calif., assignor to Lawrence Equipment Inc., S. El Monte, Calif.

Original No. 4,668,524, dated May 26, 1987, Ser. No. 823,943, Jan. 29, 1986. Application for reissue Mar. 2, 1992, Ser. No. 845,336

Int. Cl.[5] A21C *9/08, 11/00*

U.S. Cl. 426—502 **22 Claims**



16. The method of processing dough comprising;

substantially simultaneously positioning each of a plurality of balls of the dough in a predefined position on a stopped conveyor belt in a pattern extending both along and across the conveyor belt and physically confining each ball of dough in its said position on the conveyor belt against movement in any horizontal direction,

mechanically pressing downwardly with a flattener surface on each ball of dough substantially simultaneously while the conveyor belt remains stopped for providing a flat on each said ball of dough facing said belt and forming each ball of dough into a flattened substantially circular shape of substantially uniform thickness,

said flat being at least sufficient to prevent each said flattened ball of dough from moving relative to said conveyor belt during movement of said conveyor belt, and

accelerating and moving said conveyor belt with said flattened balls of dough thereon and decelerating said conveyor belt to another stopped condition.

Re. 34,531

WATTHOUR METER SOCKET ADAPTER

John Bell, Livonia, and William Keopfgen, Farmington Hills, both of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Original No. 4,772,213, dated Sep. 20, 1988, Ser. No. 22,721, Mar. 6, 1987. Application for reissue Oct. 19, 1992, Ser. No. 963,060

Int. Cl.[5] H01R *9/00*

U.S. Cl. 439—135 **6 Claims**

4. [The watthour meter socket adapter of claim 3 further including:] *A watthour meter socket adapter for mounting a socket-type watthour meter having a plurality of blade type electrical terminals to a building comprising:*

a housing, the housing including;

a watthour meter receiving portion;

a plurality of biased electrical contacts mounted within the watthour meter receiving portion for removably receiving the blade type electrical terminals of a socket-type watthour meter in a snap-in connection;

a terminal portion integrally formed with the watthour meter receiving portion;

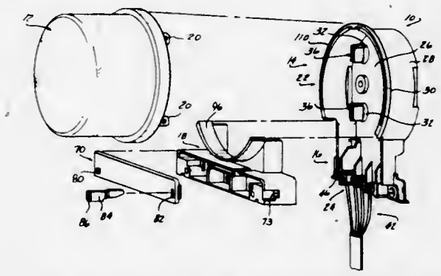
a plurality of electrical terminals mounted within the terminal portion;

a plurality of electrical conductors connected between the contacts in the watthour meter receiving portion and the terminals in the terminal portion of the housing; and

guide means formed in the terminal portion of the housing for guiding the electrical wiring conductors of the building into engagement with the terminals in the terminal portion of the housing, the guide means including:

dividers disposed between each of the individual terminals in the terminal portion and forming slots therebetween;

the terminals being slidably disposed within the slots between the dividers;



each of the dividers having an outer edge inwardly tapered towards the adjacent slot to provide a surface for guiding the building wiring conductors into engagement with the terminals in the housing; and

a cover removably disposable into engagement with the terminal portion of the housing;

the cover including;

a plurality of spaced dividers formed with complimentary shaped outer, inwardly tapering edges to cooperate in an engaged manner with the dividers on the terminal portion of the housing to form the slots for urging inward the building conductors into engagement with the terminals in the housing.

Re. 34,532

PLUG-IN ELECTRICAL OUTLET

Lionel T. V. Luu, and Daniel H. V. Luu, both of Carmel, Ind., assignors to Pacomax Industries, Inc., Indianapolis, Ind.

Original No. 4,934,962, dated Jun. 19, 1990, Ser. No. 395,991, Aug. 21, 1989. Application for reissue Jun. 2, 1992, Ser. No. 892,147

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—651 **31 Claims**

25. A multiple electrical plug receptacle adaptor unit intended for attachment to a wall-mounted electrical plug receptacle, comprising:

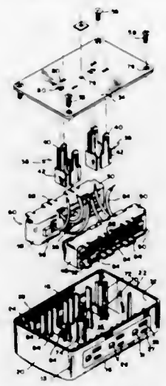
a housing including an outer surface, an inner surface, a plurality of prong-receiving apertures penetrating the housing, and a perimetral edge defining a wall-facing opening;

a back plate received within the perimetral edge of the housing so as to define a space between the back plate and the housing, the back plate having a plurality of prongs projecting therethrough, the prongs having outer ends adapted for engagement in a wall receptacle, and inner ends situated in the space between the back plate and the housing; and

at least one pod positioned within the housing adjacent the

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plurality of apertures, the pod encasing a plurality of contact strips, each strip being aligned with at least two of the plural-



ity of apertures, and flexible means electrically connecting each strip to one of the prong inner ends.

PLANT PATENTS

GRANTED FEBRUARY 1, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,566
CUDDLE UP
Cecilia L. D. Bennett, deceased, late of Chula Vista by Susan Mae O'Brien, Administrator, 489 Minot Ave., Chula Vista, both of Calif. 91910
Filed Dec. 23, 1991, Ser. No. 812,683
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of miniature rose plant, named 'Cuddle Up', of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its hybrid tea form blooms of ranging from near Mimosa Yellow to near Empire Yellow with a pink blush ranging from near Carmine Rose to near Neyron Rose that fades to tones ranging from near Orient Pink to near Shell Pink; the blooms are usually borne one to a stem but occasionally in sprays of 3 to 5 or more.

8,567
MINATURE ROSE PLANT NAMED BRIAN DONN
Cecilia L. D. Bennett, deceased, late of Chula Vista, and Susan M. O'Brien, Administrator, 489 Minot Ave., Chula Vista, both of Calif. 91910
Filed Dec. 23, 1991, Ser. No. 812,682
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant, named 'Brian Donn', of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its hybrid tea form blooms of ranging from near Maroon to near Ruby Red as buds to ranges of near Pansy Purple, near Chrysanthemum Crimson and near Indian Lake as open flowers and finally tones of near Currant Red and near Cardinal Red in most open stages; usually borne one to a stem but occasionally in sprays of 3 to 5 or more.

8,568
GRANDIFLORA ROSE PLANT NAMED 'JACANGEL'
William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed May 14, 1992, Ser. No. 883,101
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its novel two-tone lavender purple color, its excellent high centered flower form and its resistance to both powdery mildew and rust.

8,569
HYBRID TEA ROSE PLANT NAMED 'JACLIN'
William A. Warrinerm, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed May 14, 1992, Ser. No. 883,102
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its excellent non-fading bright red flower color, its high centered hybrid tea flower form, its long vase life as a garden cut flower, its vigorous, upright growth habit and its long stems.

8,570
"MARSHALL ROSE" NECTARINE TREE
Richard J. Marshall, 6321 Avenue 376, Dinuba, Calif. 93618
Filed Nov. 19, 1992, Ser. No. 979,074
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—40.1 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as illustrated and described characterized by producing cling to semi-freestone fruit which are mature for commercial harvesting and shipment approximately June 9 to July 2 in the San Joaquin Valley of central California, which have a distinctive white flesh, a dark red skin coloration and a pleasing flavor.

8,571
STANDARD CARNATION NAMED STATAS
Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands
Filed Oct. 24, 1991, Ser. No. 782,082
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—71.1 **1 Claim**

1. A new and distinctive carnation cultivar, substantially as herein shown and described, particularly characterized by its medium sized, empire rose flowers, which bloom profusely and recurrently and are borne singly on the strong, upright stems of this tall, vigorous bush.

8,572
CHRYSANTHEMUM PLANT NAMED 'MAKE TIME'
Peter Wain, Hayling Island, United Kingdom, assignor to Cleangro, Ltd., Havant, England
Filed Jun. 12, 1992, Ser. No. 898,217
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum cultivar, substantially as herein described and shown, characterized by lavender-rose ray floret color and a flat capitulum form with numerous flowers per break.

8,573
CHRYSANTHEMUM PLANT NAMED 'WAIN'S PINK LADY'
Peter Wain, Hayling Island Hants, United Kingdom, assignor to Cleangro, Ltd., Havant, England
Filed Jun. 12, 1992, Ser. No. 899,672
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct Chrysanthemum cultivar, substantially as herein described and shown, characterized by an overall pink appearance accented by a rose colored eye contrasting with a pale red purple ray color.

8,574
POINSETTIA PLANT NAMED BLITZEN
Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Feb. 24, 1993, Ser. No. 22,344
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct cultivar of poinsettia plant named Blitzen, as illustrated and described.

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8,575
ALSTROEMERIA PLANT NAMED ALEXA
Julio Amador, Bogota, Colombia, assignor to Opal Resources Ltd., Panama, Panama
Filed Nov. 20, 1992, Ser. No. 979,579
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 1 Claim

1. A new variety of Alstroemeria plant substantially as herein shown and described.

8,576
GERANIUM NAMED KLEFIFIEST
Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany
Filed Sep. 28, 1992, Ser. No. 952,943
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinctive hybrid Geranium plant substantially as herein shown and described, characterized in particular by its medium ball-shaped fresh pink flower clusters, which are long lasting.

8,577
GUZMANIA PLANT NAMED MANDARINE
Henri De Meyer, Destelbergen, Belgium, assignor to H. De Meyer, Laarne, Belgium
Filed Jun. 4, 1992, Ser. No. 893,817
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88/6 1 Claim

1. A new and distinct cultivar of Guzmania plant named Mandarine, as illustrated and described.

PATENTS

GRANTED FEB. 1, 1994

ERRATA

For CLASS	See PATENT NO.
137-596	5,282,329
607-017	5,282,465
607-122	5,282,480
607-145	5,282,481
160-178	5,282,514
222-146	5,282,516
296-2-3	5,282,637
236-034	5,282,828
081-090	5,282,830
095-288	5,282,876
106-261	5,282,887
427-162	5,282,888
134-018	5,282,889
148-276	5,282,890
203-091	5,282,929
156-289	5,282,930
423-240	5,283,041
423-322	5,283,042
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345-153	5,283,554
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345-168	5,283,558
345-168	5,283,559
345-113	5,283,560

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ERRATA – CONTINUED

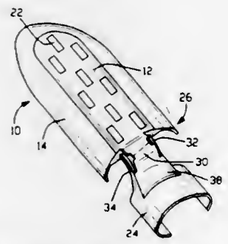
345-119	5,283,561
345-131	5,283,562
345-102	5,283,563
345-087	5,283,564
345-098	5,283,565
345-211	5,283,566
346-140	5,283,593
346-159	5,283,594
324-158	5,283,605
307-451	5,283,631
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348-017	5,283,637
348-014	5,283,638
348-006	5,283,639
348-042	5,283,640
348-092	5,283,641
348-135	5,283,642
348-143	5,283,643
348-152	5,283,644
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348-468	5,283,648
348-500	5,283,649
348-614	5,283,650
348-704	5,283,651
348-594	5,283,652
348-725	5,283,653
348-730	5,283,654
348-257	5,283,655
378-206	5,283,808
376-260	5,283,809
376-282	5,283,810
376-352	5,283,812
376-439	5,283,821
378-162	5,283,822
378-198	5,283,823

PATENTS

GRANTED FEBRUARY 1, 1994

GENERAL AND MECHANICAL

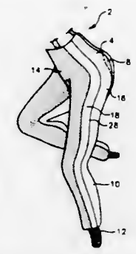
5,282,276
FINGERNAIL PROTECTOR
Marlene Preziose, P.O. Box 43, Throggs Neck Station, N.Y. 10465
Continuation of Ser. No. 691,709, Apr. 26, 1991, abandoned. This application Jul. 15, 1992, Ser. No. 914,497
Int. Cl.[5] A45D *29/00*
U.S. Cl. 2—21 **4 Claims**



1. A fingernail protector comprising:
a fingernail shield;
attachment means for temporarily securing the protector to a user's finger; and
connector means including a toggle hinge for pivotably connecting said shield to said attachment means so that said shield is disposed distally of said attachment means in a use position of said shield and so that said shield is swingable about an axis oriented substantially transversely to the user's finger, said toggle hinge including a membrane-type fold-line hinge part and a pair of arcutate resilient spring parts spaced from said fold-line hinge part on opposite sides thereof, said connector means further including spacer means for spacing said shield from said attachment means in an orthogonal direction essentially perpendicular to said axis so that said membrane-type fold-line hinge part and concomitantly said axis are spaced from a wearer's fingernail and said attachment means during use of the fingernail protector, said spacer means including a projection extending from said attachment means in said orthogonal direction, said membrane-type fold-line hinge part and said arcuate resilient spring parts being connected to said projection.

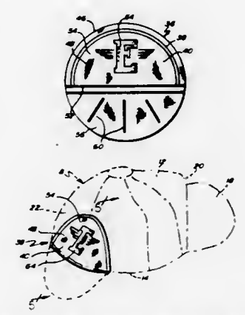
5,282,277
BODY COVER FOR OUTDOOR USE
Shoji Onozawa, 19152 SE. 151st St., Issaquah, Wash. 98027
Filed Apr. 27, 1992, Ser. No. 874,399
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—69 **17 Claims**

1. A body cover comprising:
a first material portion adapted to be placed only over the anterior portion of a human body, said first material portion comprised of a waterproof, insulating substance providing wind protection and adapted to hold liquid against the anterior portion of the human body such that the liquid retains body thermal energy; and
a second material adapted to be placed only over the posterior portion of a human body, said second material portion attached to said first material portion by a third portion to form said body cover, said second material portion comprised of a semi-porous substance allowing evaporation of



liquid on the posterior portion of the human body and radiation of body thermal energy therethrough.

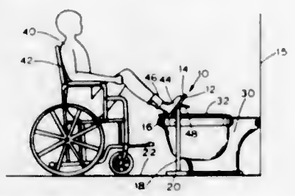
5,282,278
EMBLEM BEARING CAP
Jon S. Miner, New Brighton, Minn., assignor to International Designs, Inc., Minneapolis, Minn.
Filed Jul. 23, 1993, Ser. No. 96,546
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—195.1 **22 Claims**



1. A baseball style cap with an emblem bearing cap attachment, the cap having a crown with an inside for fitting on a human head with a lower periphery, a forward portion with a forwardly directed stiff visor extending from the lower periphery, a rearward portion and a band extending around the inside of the lower periphery of the crown, the emblem bearing cap attachment comprising:
(a) a substantial planar body having a fabric face material and a relatively stiff support material secured together defining a forward surface and a rearward surface, a primary crease extending centrally across the planar body defining a facing panel for display of indicia and a backing panel respectively above and below the crease, the primary crease facilitating a folding of the body about the rearward portion of the band to position the rearward surface of the backing panel in confronting relationship with the inside of rearward portion of the crown, to position the rearward surface of the facing panel in confronting relationship with the rearward portion of the crown and to position the crease along the lower periphery; and
(b) fastening means for securing the rearward surface of the backing panel to the inside rearward portion of the cap.

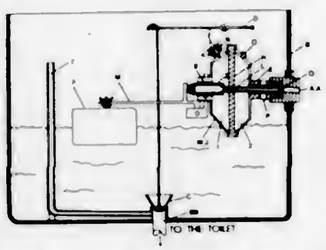
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5,282,279
CHAIR ACCESSIBLE TOILET FACILITY
Anthony Hinton, Chicago, and Norman Singer, Riverwoods, both of Ill., assignors to Hinton/Singer Limited Partnership
Filed Nov. 17, 1992, Ser. No. 977,528
Int. Cl.[5] A47K *11/12*; E03D *11/00*
U.S. Cl. 4—144.1 **17 Claims**



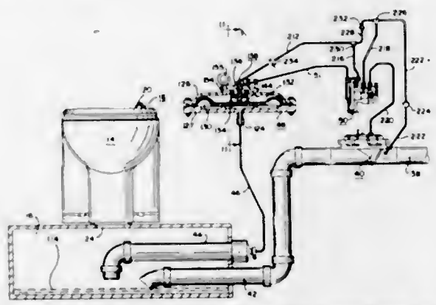
1. A toilet facility comprising:
a toilet adapted to be located above a floor and having a front portion and a back portion;
supporting means for supporting a foot of a person above the floor in proximity to the toilet, the supporting means being positioned laterally of the toilet and including an upper surface capable of accepting the foot thereon and slanting downwardly generally towards the front portion and away from the back portion of the toilet, to support the toes of the foot above the heel of the foot; and
retaining means for retaining the foot on the supporting means at a fixed location, the retaining means including a lip structure connected to and extending above at least a portion of the upper surface for engaging the back of the heel of the foot when the foot is supported on the upper surface.

5,282,280
TOILET WATER RESERVOIR INLET AND OUTLET CONTROL VALVE
Josef Wodeslavsky, #5 Peter Lynas Ct., Tenafly, N.J. 07670
Filed Jan. 26, 1993, Ser. No. 8,979
Int. Cl.[5] E03D *1/36*
U.S. Cl. 4—366 **2 Claims**



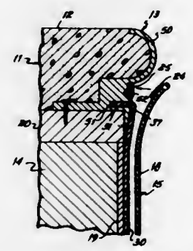
1. A water conserving refill valve for use in a reservoir connected to a pressurized liquid supply and containing liquid at a liquid level, said reservoir having a gravity operated flush valve opened by a movable flush lever, said valve comprising:
a hollow valve body adapted to be disposed within said reservoir and having a first end portion including a valve seat adapted to be connected to said pressurized supply, and a second end portion;
a diaphragm sealingly disposed across said valve body and disposed between said first and second end portions to define a first chamber at the first end portion and a second chamber at the second end portion, said valve body including a port therethrough at said first end portion to provide communication between said first chamber and said reservoir, said valve body further including a relief valve disposed therein at said second end portion to provide selective communication between said second chamber and said reservoir;
an elongate plunger having a passage therein, said plunger being sealingly connected to and extending through said diaphragm, said plunger having a first end portion engagable with said valve seat such that in a first position said first end portion can close communication between said liquid supply and said first chamber while providing communication between said liquid supply and said passage, and in a second position can open communication between said liquid supply and said first chamber while providing communication between said liquid supply and said passage, said plunger further having a second end portion sealingly extending out of said second chamber and including an opening therein providing communication between said passage and said second chamber;
a float and float lever movably mounted to said valve body and responsive to said liquid level, said float lever engaging said second end portion of said plunger to bias said plunger to said first position when said float is in a position corresponding to a high liquid level in said reservoir; and
means for connecting said relief valve to said flush lever;
whereby, after said flush valve closes, said plunger is biased to said first position by said float lever and by liquid pressure in said second chamber acting on said diaphragm and maintained in said first position by liquid pressure in said second chamber acting on said diaphragm, and said second chamber is vented by said relief valve when said flush lever is moved to open said flush valve thereby allowing liquid flow from said liquid supply, into said first chamber and out said port to refill said reservoir.

5,282,281
PORTABLE VACUUM TOILET SYSTEM
Christopher J. Clear, Columbia City; John M. Grooms, and Blake V. Ricks, both of Rochester, all of Ind., assignors to Burton Mechanical Contractors, Inc., Rochester, Ind.
Continuation-in-part of Ser. No. 829,742, Jan. 31, 1992, which is a continuation-in-part of Ser. No. 967,454, Oct. 28, 1992. This application Jan. 25, 1993, Ser. No. 8,190
Int. Cl.[5] E03D *11/10*
U.S. Cl. 4—434 **41 Claims**



1. A self-contained lavatory facility for accumulating and storing waste liquids for subsequent treatment, comprising:
(a) a portable shelter structure, containing:
(i) a source of waste liquids;
(ii) a holding sump connected to the waste liquid source for accumulating a predetermined volume of waste liquids;
(iii) a differential pressure-operated sensor means operatively in communication with said holding sump for establishing communication of a vacuum or subatmospheric pressure condition, or an atmospheric pressure condition as an output pressure condition, said sensor means having a first inactivated condition, and a second activated condition arising when the predetermined waste liquid volume is accumulated within said holding sump, whereby vacuum or subatmospheric pressure is delivered while said sensor means is in one condition, and whereby atmospheric pressure is delivered while said sensor means is in another condition;
(iv) a differential pressure-operated controller means operatively in communication with the output pressure condition delivered by said sensor means for establishing communication of one of those pressure conditions as an output pressure condition, said controller means having a first condition and a second condition, whereby vacuum or subatmospheric pressure is delivered while said controller means is in one condition, and whereby atmospheric pressure is delivered while said controller means is in another condition;
(v) a differential pressure-operated injection means operatively in communication with the output pressure condition delivered by said controller means, said injection means having an open condition to permit passage of waste liquids from said holding sump to a vacuum transport hose and thereby commence a waste liquid transport cycle therein, said injection means also having a closed condition to block passage of waste liquids therethrough and thereby terminate the transport cycle, whereby said injection means converts between the open and closed conditions based upon the pressure condition delivered by said controller means;
(b) a portable collection vessel connected to the vacuum transport hose being maintained at a vacuum or subatmospheric pressure condition, said collection vessel receiving the waste liquids during a transport cycle, and storing them for subsequent treatment, said collection vessel also operatively communicating vacuum or subatmospheric pressure to said vacuum transport hose;
(c) a source of atmospheric pressure; and
(d) a portable source of vacuum or subatmospheric pressure operatively in communication with said collection vessel.

5,282,282
SWIMMING POOL AND COVER
Billy C. Shehan; Billy C. Shehan, Jr., 298 E. Mt. Zion Rd., Independence, Ky. 41051, and Thomas R. Stubbeman, 309 Main St., Highland Heights, Ky. 41076
Division of Ser. No. 488,308, Mar. 5, 1990, Pat. No. 5,065,461. This application Sep. 10, 1991, Ser. No. 757,443
Int. Cl.[5] E04H *4/14*
U.S. Cl. 4—503 **1 Claim**



1. A swimming pool having walls and a deck disposed about upper portions of such walls, said deck having a deck edge facing inwardly toward said pool, said pool further comprising:
two separate elongated channels disposed in said deck edge, one above the other;
a swimming pool liner having a liner edge bead,
said bead disposed in a first one of said channels for supporting said liner over said pool walls,
a pool cover,
a multiple component pool cover fastener means,
one component of said fastener means operatively secured to said pool cover, and
another of said components of said fastener means being secured in a second one of said channels with a portion thereof being exposed outwardly of said second channel above and outwardly of said first channel,
said two components being releasably securable together along said outwardly exposed portion outside said second channel to secure said cover over said pool between said walls of said pool and around said deck edge; and
wherein said fastener means components comprise hook members and loop members, each mounted on a respective backing, said exposed portion of one of said components comprising one of said hook members and said loop members.

5,282,283
URINATION STATION
Irving Atkin, Winthrop, Mass., assignor to Mr. Tux, Inc., Winthrop, Mass.
Filed Jun. 30, 1992, Ser. No. 906,521
Int. Cl.[5] A47K *17/02*
U.S. Cl. 4—661 **11 Claims**



1. A urination station comprising:
a urinal mounted against a wall, said urinal having a basin with a center front edge, a splash wall extending down into the basin and side walls on both sides of the splash wall extending up from said basin; and
a pair of mats adhered to a floor each approximately an equal distance from the center front edge of said urinal, each of said mats having a top surface and a bottom surface defining therebetween a mat thickness, each mat further including a forefoot portion positioned in the direction of said urinal and a heel portion, narrower in width than the forefoot portion, positioned away from the urinal so that a user facing said urinal standing with one foot on each of said mats straddles the center front edge of said urinal wherein a user stepping partially on said mat and partially on said floor would experience a sensation alerting him of an improper body position with respect to said urinal.

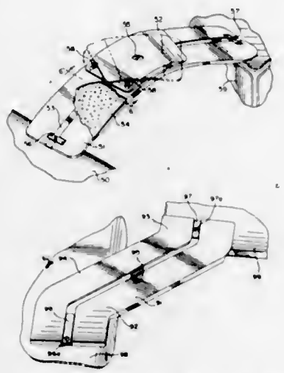
5,282,284
SLIDING TRANSFER DEVICE
Robert F. Brantman, Lake Forest, Ill., and Frank L. Brantman, Plymouth, Minn., assignors to Robert F. Brantman, Inc., Lake Forest, Ill.
Continuation-in-part of Ser. No. 642,416, Jan. 17, 1991, Pat. No. 5,067,188, which is a continuation-in-part of Ser. No. 519,290, May 4, 1990, Pat. No. 4,987,621. This application Nov. 22, 1991, Ser. No. 796,325
The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.
Int. Cl.[5] A61G *7/053, 7/10*
U.S. Cl. 5—81.1 **22 Claims**

1. A portable sliding transfer device comprising a seat that is adapted to support a human user for movement between one

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body support, such as a bed, to another body support, such as a wheelchair, said device comprising:

a) a lower support plate having a substantially flat top surface and ends adapted to be removably positioned proximate and in contact with said body supports,



b) an open-ended track attached to the top surface, said track including removable inserts at the ends, and

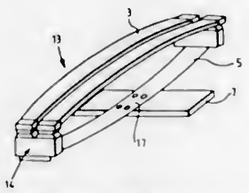
c) a removable upper seat which is attached to the lower support plate such that the upper seat is slidable over the top surface of the lower support plate.

5,282,285

BED BASE

Alain de Gelis, 13 Boulevard du Roi-Arthur, Pace, France F-35740 , and Christian de Gelis, Colliers, Muides-sur-Loire, France F-41500

Filed Feb. 27, 1992, Ser. No. 866,788
Int. Cl.[5] A47C *23/06*
U.S. Cl. 5—237 **12 Claims**



1. A slatted bed base comprising:

a longitudinally extending central member,

a plurality of individual units, each unit comprising;

at least one flexible upper slat and at least one flexible lower support member;

flexible linking means for coupling the said at least one flexible upper slat to said at least one flexible lower support member,

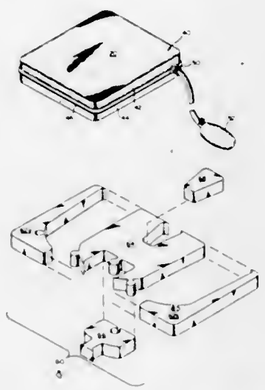
means for mounting the said at least one lower support member of each of said individual units to said central member with the said at least one upper slat, lower support member and flexible linking means of each unit being independent of those of any other said unit.

5,282,286

SEALED COMPOSITE CUSHION HAVING MULTIPLE INDENTATION FORCE DEFLECTION ZONES

Michael MacLeish, Seattle, Wash., assignor to Cascade Designs, Inc., Seattle, Wash.

Filed Nov. 16, 1992, Ser. No. 977,136
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—654 **15 Claims**



1. A cushion to support a load having a generally planar bottom surface and a generally planar upper surface, bounded by an exterior peripheral surface having a generally uniform height comprising:

a plurality of resilient elements, horizontally disposed relative to one another and generally defining the shape of said cushion wherein each said resilient element has one surface corresponding to a portion of said bottom surface and one surface corresponding to a portion of said upper surface;

a fluid impervious membrane wholly surrounding said plurality of resilient elements, thereby forming a fluid impervious envelope having an interior; and

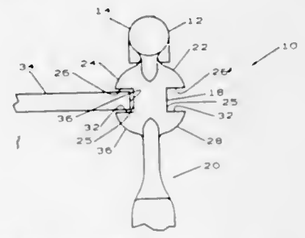
a valve associated with said membrane and located intermediate said interior of said envelope and an external environment whereby said valve regulates fluid flow between said interior of said envelope and said external environment.

5,282,287

HAMMER WITH SHEET CARRYING GRIP

Larry Aube, 8750 Kester Ave., #2, Panorama City, Calif. 91402

Filed Jan. 12, 1993, Ser. No. 3,506
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—146 **7 Claims**



1. A hand tool comprising:

a hammer having a head and a handle, and

at least two generally semispherical members formed integral with said handle and projecting from said handle in spaced relation along said handle and having flat surfaces on the facing surfaces of said members.

5,282,288

ATHLETIC SHOE WITH INTERCHANGEABLE ELEMENTS

Tony R. Henson, Piatt County, Ill., assignor to NuBreed Corporation, Monticello, Ill.

Filed Sep. 28, 1992, Ser. No. 952,278
Int. Cl.[5] A43B *10/00, 13/00, 23/00*
U.S. Cl. 12—142 P **2 Claims**



1. A method for customizing an athletic shoe for a selected wearer, said athletic shoe comprising a sole member, an upper member, a plurality of sole inserts dimensioned to be received within said sole member, and a plurality of indicators dimensioned to be received within said upper member, said method comprising the steps of:

(a) weighing said wearer;

(b) determining a weight distribution placed on the feed of said wearer;

(c) selecting said plurality of said sole inserts dependant upon said weight distribution;

(d) selecting said plurality of indicators;

(e) securing said sole inserts to said sole member by ultrasonic welding; and

(f) securing said indicators to said upper member by ultrasonic welding.

5,282,289

SCRUBBER APPARATUS FOR CLEANING A THIN DISK WORK

Fumihiko Hasegawa, Urawa; Makoto Tsukada, Tokorozawa; Hideo Kudo, Fukushima; Masayuki Yamada, Shirakawa, and Isao Uchiyama, Fukushima, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

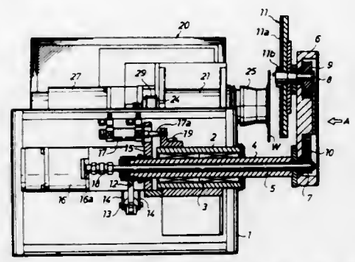
Filed Dec. 28, 1992, Ser. No. 998,076
Claims priority, application Japan, Dec. 27, 1991, 3-358060
Int. Cl.[5] B08B *11/02*
U.S. Cl. 15—21.1 **2 Claims**

1. A scrubber cleaning apparatus for cleaning a thin disk work comprising:

a work holder means capable of holding the work by vacuum suction and turning the work circumferentially, and inclusive of a work suction head for fixing a work on it and a drive means to rotate said suction head; and

a brush means including: a rotatory plate having a brushing surface on one side thereof, said brushing surface consisting of a flat ring portion and a side-of-cylinder portion, and being capable of shifting axially and in radial directions; a first drive means for rotatory said rotatory plate; a second drive means for shifting said rotatory plate axially; and a third drive means for shifting said rotatory plate in radial directions,

said side-of-cylinder portion of said brushing surface axially extending from the inner boundary of said ring portion, and



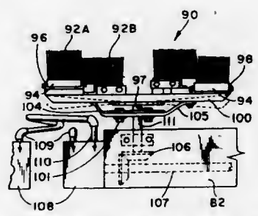
said rotatory plate being disposed such that said flat ring portion of the brushing surface of the brush means is opposed to and in parallel to the unsucked face of the work which is held on said suction head.

5,282,290

MOBILE TUNNEL SURFACE CLEANING MACHINE

Dennis K. VanFossen, Richmond, Ohio, assignor to Diamond Specialized, Inc., Steubenville, Ohio

Division of Ser. No. 845,230, Mar. 3, 1992. This application Dec. 9, 1992, Ser. No. 988,180
Int. Cl.[5] A47L *11/38*
U.S. Cl. 15—49.1 **16 Claims**



1. A brush assembly for treating a surface comprising:

a plurality of individual brushes arranged on a common circle and having their free ends facing in the direction of the surface to be cleaned,

pivotal support means for supporting certain of said brushes in extended operative positions and other of said brushes in recessed positions with reference to a surface to be treated, and

means to rotate said pivotal support means including a flexible driving means connected with a centrally arranged driven support for permitting the brush pivotal support means to deflect when subject to a surface treating operation.

5,282,291

FORCE SENSITIVE HANDLE FOR HAND OPERATED IMPLEMENT

Eric L. Spieler, Bala Cynwyd, and Richard M. Berman, Dresher, both of Pa., assignors to Bioware Inc., Bala Cynwyd, Pa.

Filed Sep. 16, 1992, Ser. No. 945,862
Int. Cl.[5] A46B *15/00*
U.S. Cl. 15—167.1 **12 Claims**

1. An improved toothbrush handle comprising:

a bifurcated handle having both gripping and brush portions which are pivotally connected;

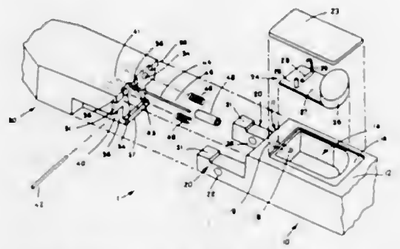
one portion having a juncture end with selectively config-

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ured hinge knuckles, a cavity and an aperture which connects the cavity to the juncture end;

a warning device disposed in the cavity;

the other portion having a juncture end with a complementary hinge knuckle located in a position to interconnect with the hinge knuckles protruding from the one portion of the handle;



a resilient means for urging the gripping and brush portions toward a rest position until a variation of force from a desired level is applied; and

a contact arm protruding through the aperture in the one portion toward the juncture end of the other portion such that the contact arm activates the warning device when said variation of force from said desired level is applied.

5,282,292

FLEXIBLE CLOSURE CARRIER

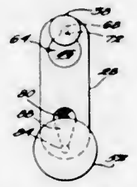
James F. Levy, 434 Barnwell St., Columbia, S.C. 29202

Continuation-in-part of Ser. No. 735,450, Jul. 25, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 909,696

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] F05D *15/00*

U.S. Cl. 16—87.2 **14 Claims**



1. An article for use with a flexible closure support, said article comprising:

a shank having a first end and a second end, said first end having a first hole with a larger portion and a smaller portion, said larger portion and said smaller portion of said first hole lying in a plane, said second end having a second hole with a larger portion and a smaller portion, said larger portion and said smaller portion of said second hole lying in a plane;

a roller assembly carried in said first hole and having

a pair of wheels, and

an axle joining said wheels,

said larger portion of said first hole communicating with said smaller portion of said first hole with first means formed in said first end between said larger portion of said first hole and said smaller portion of said first hole for resisting movement of said roller assembly from said smaller portion of said first hole to said larger portion of said first hole; and

a button assembly carried in said second hole and having

a button,

a stop, and

an axle joining said stop and said button,

said larger portion of said second hole communicating with said smaller portion of said second hole with second means formed in said second end between said larger portion of said second hole and said smaller portion of said second hole for resisting movement of said button assembly from said smaller portion of said second hole to said larger portion of said second hole.

5,282,293

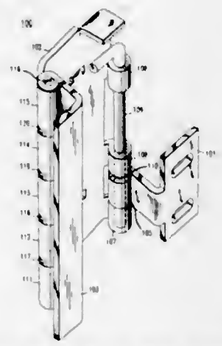
180 DEGREE CONCEALED HINGE

Albert Pedoeem, West Orange, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 1, 1992, Ser. No. 891,103

Int. Cl.[5] F05C *17/64*; **F05D** *11/06, 3/06*

U.S. Cl. 16—342 **3 Claims**



1. A 180° two pivot concealed hinge, comprising:

a frame leaf member including a first edge and a second edge, one of said edges having a plurality of knuckles thereon;

a mounting leaf member including a first edge and a second edge, each of said edges having a plurality of knuckles thereon; and

a door leaf member including a first edge and a second edge, one of said edges having a plurality of knuckles thereon,

said frame leaf member and said mounting leaf member being interconnected about a first pivot formed by the knuckles on the edge of said frame leaf member and the knuckles on one edge of said mounting leaf member, said door leaf member and said mounting leaf member being interconnected about a second pivot formed by the knuckles on the edge of said door leaf member and the knuckles on the other edge of said mounting leaf member, wherein said frame leaf member is L-shaped extending rearwardly from said mounting leaf member in a fully closed hinge position and having one leg which is adapted to be mounted to a cabinet frame and said knuckles forming a part of said first pivot being at the edge of another leg, said door leaf member is L-shaped extending rearwardly from said mounting leaf member in a fully closed hinge position and having a leg which is adapted to have a door structure attached thereto and said knuckles forming a part of said second pivot being at the edge of another leg, and said mounting leaf member has said knuckles forming part of said first pivot at a first edge and said knuckles forming a part of said second pivot at a second edge and extends between said pivots, said frame leaf member, and said door leaf member are substantially wholly positioned between said pivots when the hinge is fully closed so that said mounting leaf member being positioned in front of and covers said frame leaf, and wherein the interconnection of said frame leaf member and said mounting leaf member forming said first pivot is a loose fit and the interconnection of said door leaf member and said mounting leaf member forming said second pivot is a friction fit and are such as to allow free rotation about said first pivot to an approximately 90° position prior to any rotation about said second pivot when an opening rotational force is applied to said door leaf member, said first pivot including a first stop structure which limits the rotation to the approximately 90° position and upon further applying the opening rotational force to said door leaf member allows rotation about said second pivot to an approximately 180° position, said second pivot including a second stop structure which prevents rotation about said second pivot beyond said approximately 180° position.

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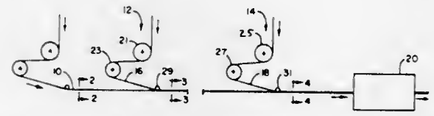
APPARATUS FOR PRODUCING LAYERED MATERIAL

Albert E. Spaller, Jr., Johnson City; Whitney B. Carter; Fred W. Horne, both of Kingsport; Richard W. Nutter, Sr., Blountville, and David W. Thompson, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,210

Int. Cl.[5] B65H *39/00*

U.S. Cl. 19—65 T **2 Claims**



1. Apparatus for producing a band of generally rectangular cross section having at least two layers of material comprising means for advancing a first band along a predetermined linear path and means for guiding a second band into layered alignment with said first band including a roll around which said second band is partially wrapped prior to contacting said first band, said second band having an initial tangential contact position with said roll along a line on the surface thereof extending generally axially with respect to said roll, said roll having roll support means for setting a roll angle of said roll and the tangential initial contact position of said second band thereby allowing said roll to tilt in a plane perpendicular to the plane in which said second band lies as it approaches said roll, whereby the lateral take-off position of the second band may be controlled by tilting said roll so as to guide it into aligned juxtaposition with said first band to form a layered, substantially rectangular tow band.

5,282,295

DEFORMABLE EAR FOR CLAMPS

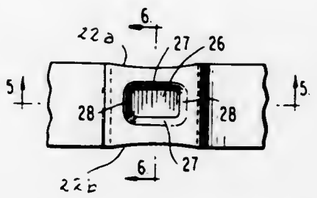
Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Horgen, Switzerland

Continuation of Ser. No. 922,408, Oct. 23, 1986, which is a continuation of Ser. No. 622,764, Jun. 20, 1984, abandoned. This application Jan. 10, 1992, Ser. No. 822,488

Int. Cl.[5] B65D *63/02*

U.S. Cl. 24—20 R **35 Claims**

1. A clamp structure which comprises clamping band means and at least one ear means for tightening the clamping band means about an object to be fastened, the ear means including two leg portions generally extending outwardly from the band means interconnected by a bridging portion which is provided with reinforcing means, characterized in that the reinforcing means is formed by depression means of generally pan-shaped, shallow configuration surrounded on all sides by remaining non-depressed parts of the bridging portion, said depression means including bottom means and longitudinally extending and transversely extending connecting portions delimiting the depression means along its longitudinal and transverse sides and connecting the bottom means along its longitudinal and transverse sides with the remaining non-depressed parts of the bridging portion, and the length and width of the connecting portions extending over such portions of the length and width of the bridging portion that the area of said depression means is, at least, about 35% of the total area of the non-reinforced



bridging portion, which is defined substantially by the sum of the areas of the depression means and of the remaining non-depressed bridging parts, and wherein the longitudinally extending connecting portions subtend an angle within the range of about 70° to about 90° with respect to the bottom means and the remaining non-depressed parts of the bridging portion.

5,282,296

STRAPPING MECHANISM

Han C. Huang, No. 12, Alley 111, Lane 437, Chen Hsing Rd., Taichung, Taiwan

Filed Nov. 5, 1992, Ser. No. 971,950

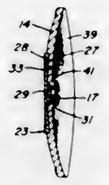
Int. Cl.[5] B25B *25/00*

U.S. Cl. 24—68 CD **1 Claim**

1. A strapping mechanism comprising a base having a stop disposed therein and having a pair of lugs oppositely provided therein, a handle having a pawl disposed therein and having a pair of ears oppositely provided therein and aligned with said lugs of said base respectively, a ratchet wheel disposed between each of said lugs and a respective ear and engageable with said stop and said pawl, each of said ratchet wheels including a hole formed in a center thereof, a rib formed in said hole so as to separate said hole into a pair of opposite semi-circular openings, and a pair of shafts engaged through said openings so as to form a rotating axle of said base and said handle, said ratchet wheel rotating in concert with said shafts, each of said shafts including a flange formed on a first end thereof for engagement with one of said ears of said handle and an aperture formed in a second end thereof, a disc including two orifices formed therein for engagement with said second ends of said shafts, and a pin element engaged through said apertures of said shafts for retaining said disc in place, each of said shafts including a hollow interior and including two edge portions formed integrally with said shafts and extended inward of said shafts so as to increase strength of said shafts.

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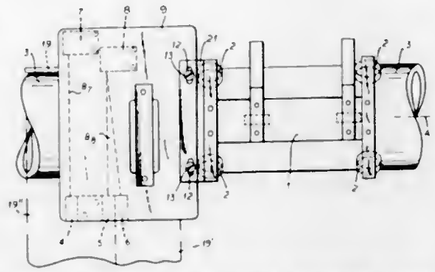
5,282,297
BELT BUCKLE
Mark J. Angus, Arlington, Tex., assignor to Midas Leathercraft Tool Company, Inc., Fort Worth, Tex.
Filed Jul. 2, 1992, Ser. No. 907,728
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—163 K 3 Claims



1. A belt buckle for selectively displaying an ornamental member comprising:
a belt buckle plate having a front face, a back face, and a perimeter, wherein the front face, the back face and the perimeter form an integral belt buckle plate, wherein the front face of the belt buckle plate is convex and the back face of the belt buckle plate is concave;
a recess formed on the front face of the belt buckle plate and having a perimeter with a border wall spaced inward from the perimeter of the belt buckle plate, wherein the recess of the belt buckle plate is convex;
an aperture extending through the belt buckle plate from the recess on the front face to the back face;
an ornamental member comprising an ornamental plate having a front face, a back face, and a threaded socket integrally joined to the back face of the ornamental plate, wherein the ornamental plate has a perimeter that has substantially the same configuration and size as the perimeter of the recess for nesting snugly within the border wall of the recess, wherein the perimeter of the ornamental plate is closely received by the border wall so that the belt buckle and the ornamental member appear to be manufactured as one part, and further wherein the back face of the ornamental member abuts the recess, and the perimeter of the ornamental member abuts the perimeter of the recess, wherein the back face of the ornamental plate is concave; and
fastening means insertable through the aperture into the threaded socket for attaching the ornamental member to the recess on the front face of the belt buckle plate, wherein the ornamental member may be easily replaced with a different ornamental member.

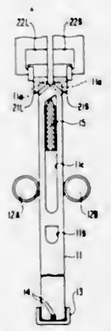
5,282,298
PILE-EDGE DETECTOR FOR PILE-FABRIC TREATMENT MACHINE
Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany
Filed May 28, 1991, Ser. No. 706,593
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 9016342[U]
Int. Cl.[5] G01V *9/04*; D06C *13/00*
U.S. Cl. 28—159 16 Claims

16. In combination with a machine wherein a pile fabric is deflected over a region of a smooth surface of a deflecting roll centered on an axis, the fabric having a pile-free portion, a pile-detecting apparatus comprising:
a support plate;
a frame carrying the plate;
a plurality of rollers mounted on the frame, riding directly on the surface of the deflecting roll offset from the region of the surface engaged by the fabric, and supporting the plate and frame directly on the surface of the roll, at least two of the rollers being angularly offset from each other;
means on the plate for generating light beams and directing the light beams tangentially of the surface; and



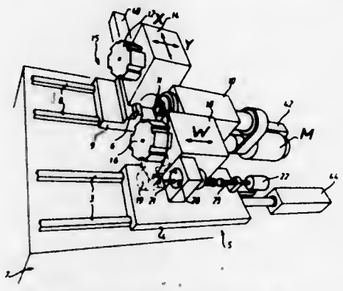
means including respective detectors on the plate for receiving the respective light beams.

5,282,299
DROPPER SEPARATING MECHANISM
Juro Tachibana, Matsuyama; Yoshihide Nishimura, Ehime, and Hiroshi Yamada, Matsuyama, all of Japan, assignors to Teijen Seiki Co., Ltd., Osaka, Japan
Filed Oct. 9, 1992, Ser. No. 958,679
Claims priority, application Japan, Oct. 24, 1991, 3-275887; Oct. 24, 1991, 3-275888; Oct. 24, 1991, 3-275889
Int. Cl.[5] D03J *1/14*
U.S. Cl. 28—207 6 Claims



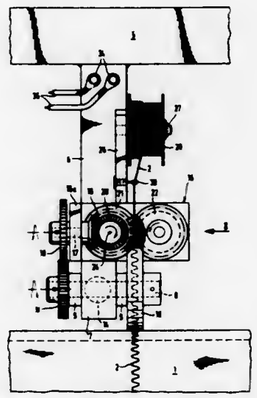
1. A dropper separating mechanism comprising:
droppers each having an asymmetrical mountain portion at an upper end thereof and alternatively superimposed in a first direction so that the asymmetrical mountain portions of two adjacent droppers do not overlap each other;
pushing means provided in a rear side of said droppers to push said droppers forward from said rear side;
a pair of movable pawls provided so that they are movable in a second direction perpendicular to said first direction;
means to oscillate said pair of movable pawls between a first position in which the mountain portion of a foremost dropper of said droppers is limited in forward movement and a second position in which said mountain portion of said foremost dropper is separated; and
a fixed pawl to limit a forward movement of a lower end of said foremost dropper.

5,282,300
BAR TURNING LATHE WITH FIXED POPPET AND RETAKING SPINDLE
Gérard Giray, and Francois Genebttel, both of Brunstatt, France, assignors to F.I.D. Machines Outils S.A., France
PCT No. PCT/FR90/00887, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/08852, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 6, 1990, Ser. No. 853,770
Claims priority, application France, Dec. 7, 1989, 89/16369
Int. Cl.[5] B23B *9/04, 13/04*
U.S. Cl. 29—27 C 5 Claims



1. A lathe with a fixed headstock comprising:
a main spindle (10), for supporting and rotating a part (11) to be machined, defining a rotational axis; means for rotating said main spindle (10);
a first primary turret (12) being movable along two orthogonal axes with one of said two orthogonal axes being parallel to said axis of said main spindle (10); means for moving said first primary turret along said two orthogonal axes;
a second primary turret (16) being movable along an axis parallel to said axis of said main spindle (10); means for moving said second primary turret parallel to said axis of said main spindle;
a first tool, for machining a said part (11) supported by said main spindle (10), being mounted on said first primary turret (16);
said second primary turret (16) defining a rotational axis and having a second tool, for machining a said part (11) supported by said main spindle, mounted thereon for rotation about said rotational axis of said second primary turret (16); rotational means for rotating said second primary turret (16) about its rotational axis;
a take-up spindle (19), for receiving and rotating a said part (11) supported by said main spindle (10), being mounted on said second primary turret (16) for rotation about said rotational axis of said second primary turret (16), said take-up spindle (19) and said second tool being located 180° apart about said rotational axis of said second primary turret (16);
an auxiliary turret being movable along an axis parallel to said axis of said main spindle (10); means for moving said auxiliary turret parallel to said axis of said main spindle (10); and at least one auxiliary tool mounted on said auxiliary turret for machining a said part received by said take-up spindle (19); and
said second primary turret being rotatable, about its rotational axis by said rotational means, between a first position in which said take-up spindle (19) is located adjacent said main spindle for receiving a said part from said main spindle, and a second position in which said take-up spindle is located adjacent said auxiliary turret for machining, with said auxiliary tool, a said part received by said take-up spindle (19);
wherein said auxiliary turret is supported by said second primary turret (16) and said auxiliary turret is axially movable, by auxiliary turret means, along an auxiliary axis (T) parallel to said axis of said main spindle.

5,282,301
DEVICE FOR LAYING A RESISTANCE WIRE IN AN UNDULATING SHAPE ON THE INTERPOSED THERMOPLASTIC FILM OF A LAMINATED GLAZING
Paul Roentgen, Roetgen/Rott; Herbert Brammertz, and Walter Schwarz, both of Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France
Filed Jan. 24, 1992, Ser. No. 824,950
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4101984
Int. Cl.[5] B32B *5/08*; B21F *1/04*
U.S. Cl. 29—33 F 8 Claims



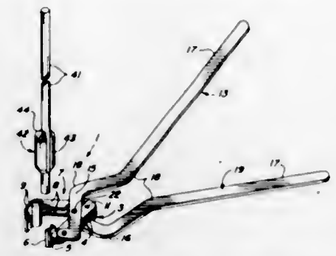
1. A device for laying and attaching a resistance wire having an undulating shape to a thermoplastic support film for the production of a laminated glazing that can be heated electrically, comprising:
a heated pressure roller mounted so as to roll over the support film to embed the resistance wire in the film;
a support for a wire bobbin;
a wire guide device; and
a pair of wire-deforming gears mounted between said wire bobbin support and said heated pressure roller, said pair of wire-deforming gears engaging one another to deform wire fed therebetween, wherein at least one of said wire-deforming gears is driven by said heated pressure roller with a predetermined speed ratio such that a peripheral speed of said wire-deforming gears is less than a peripheral speed of said pressure roller.

5,282,302
SUCKER ROD GUIDE CLAMPING DEVICES
Jimmy A. Starks, 1828 Palmetto Rd., and Billy J. Edwards, 601 Oak Ridge, both of Benton, La. 71006
Filed Nov. 16, 1992, Ser. No. 976,479
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—268 7 Claims

1. A clamping device for clamping a sucker rod guide having a longitudinal slot on a sucker rod, comprising at least one first jaw plate and at least one second jaw plate; pivotally connected arm means pivotally carried by said first and second jaw plate for selectively opening and closing said first and second jaw plate; a plate extension carried by one end of said first jaw plate for engaging the sucker rod; and seat means carried by one end of said second jaw plate for receiving the

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sucker rod guide, whereby the sucker rod is forced into the longitudinal slot of the sucker rod guide responsive to closure



of said first and second jaw plate by pressure applied to said arm means.

5,282,303

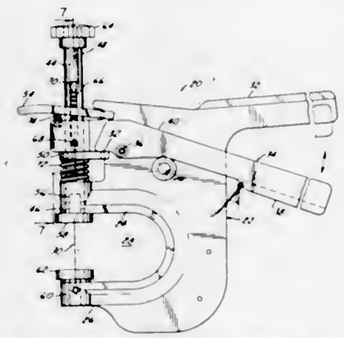
FASTENER APPLYING PRESS METHOD AND DIES THEREFOR

Frederick G. Schriever, Grosse Pointe Shores, Mich., assignor to SnapFast Industries, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 765,437, Sep. 25, 1991. This application Jul. 16, 1992, Ser. No. 915,057

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—432.1 **30 Claims**



1. A hand held press for installing fasteners in a sheet of fabric said press comprising:

a rigid frame having first and second arms forming a C-shaped recess, said arms having fixed spaced apart ends which intersect a press axis;

a handle extending from the frame;

a lever pivotally attached to the frame and having a grip portion positioned adjacent the handle enabling a user's hand to squeeze the handle and lever grip portion together;

a shaft oriented along said press axis and having first and second ends, said shaft slidably cooperating with the frame first arm and shiftable between an extended position wherein the shaft first end projects into the C-shaped recess toward the second arm and withdrawn position retracted therefrom;

an advance sear cooperating with the shaft and the lever to cause the shaft to incrementally advance each time the lever grip portion is squeezed toward the handle;

a retract sear cooperating with the shaft and the frame to enable the shaft to freely advance while preventing the shaft from retracting after each incremental advance;

means for attaching a first die element to the shaft first end in axial alignment therewith; and

means for attaching a second die element to the frame second arm in axial alignment with a first die element and the shaft.

5,282,304

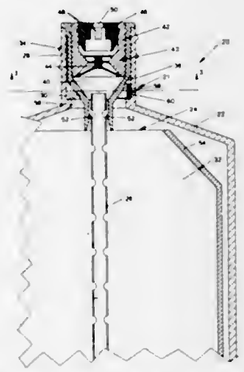
METHOD FOR ASSEMBLING A THIN-FILM BEAM SPRING VALVE

H. Norman Reiboldt, College Corner, and Ronald W. Kock, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 897,213, Jun. 11, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 85,246

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—451 **8 Claims**



1. A method for assembling a thin film beam spring of predetermined length into a bottle having an interior and exterior and a substantially cylindrical internal surface portion, said substantially cylindrical internal surface portion having a vent aperture to provide communication between said interior and exterior of said bottle, said thin film beam spring acting with said vent aperture as a vent vale which opens to permit air to enter said bottle in response to negative pressure inside said bottle, and closes to prevent air from exiting said bottle in response to positive pressure inside said bottle, said method comprising the steps of:

(a) wrapping said thin film beam spring of predetermined length around a vacuum mandrel, said vacuum mandrel having an arcuate surface and vacuum apertures in said arcuate surface, said apertures connected to a source of vacuum in order to hold said thin film beam spring against said arcuate surface of said vacuum mandrel when said vacuum source is opened to said vacuum apertures;

(b) inserting said arcuate surface of said vacuum mandrel into said substantially cylindrical internal surface portion of said bottle to a location adjacent said vent aperture such that upon release of said thin film beam spring, said beam spring expands against said substantially cylindrical internal surface portion of said bottle to cover said vent aperture; and

(c) releasing said thin film beam spring from said arcuate surface of said vacuum mandrel.

5,282,305

METHOD OF ALIGNING A STRIKER PLATE WITH A LATCH BODY OF A DOOR LATCH MECHANISM

Kenneth G. Nutt, Hornchurch, and Ronald Pinckney, Dagenham, both of Great Britain, assignors to Ford Motor Company, Dearborn, Mich.

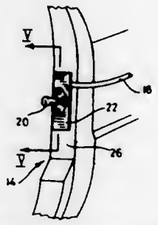
PCT No. PCT/GB91/00182, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/12399, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 6, 1991, Ser. No. 920,307

Claims priority, application United Kingdom, Feb. 8, 1990, 9002843

Int. Cl.[5] B23Q *3/18*

U.S. Cl. 29—468 **4 Claims**



1. A method for aligning first and second latch members of a latch mechanism, said method comprising:

securing said first latch member firmly to a first surface;

securing said second latch member loosely to a second surface;

bringing said first and second surfaces together such that said first and second latch members contact each other and said first latch member moves said second latch member to a corrected position, said corrected position being one in which said first and second latch members are aligned for accurate engagement when said latch mechanism is in its closed position;

fixing said second latch member to said second surface at said corrected position using temporary fixing means;

separating said first latch member from said second latch member and said first surface from said second surface;

securing said second latch member firmly to said second surface at said corrected position; and

disengaging said temporary fixing means.

5,282,306

PROCESS FOR THE PREPARATION OF A DRAW-FORMED PRINTED CAN

Imazu Katsuhiro; Akihiko Machii, both of Yokohama; Masao Ishinabe, Atsugi, and Tomomi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

PCT No. PCT/JP89/00615, § 371 Date Apr. 13, 1990, § 102(e) Date Apr. 13, 1990, PCT Pub. No. WO89/12801, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 15, 1989, Ser. No. 465,158

Claims priority, application Japan, Jun. 15, 1988, 63-145669; Jun. 30, 1988, 63-161025; Jul. 22, 1988, 63-181662

Int. Cl.[5] B21D *22/20, 31/00, 51/26*

U.S. Cl. 29—469.5 **10 Claims**

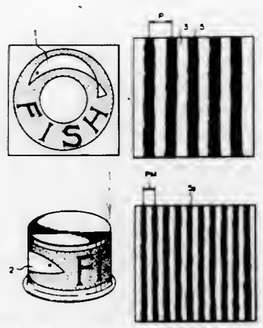
1. A process for the preparation of a draw-formed printed can having a print image at least on a side wall portion, which comprises the steps of:

developing a rectangular original image to be printed in an annular plane to form an annular image on a printing plate,

dividing at least a circumferential portion of the annular image into a plurality of regions,

half-tone separating the printing plate so that universal lines or longitudinal directions of long dots in the respective regions are printed substantially to the center of the annular plane,

printing a metal blank with the half-tone separated printing plate, and



draw-forming the printed metal blank, thereby forming a printed can.

5,282,307

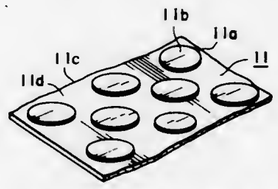
METALLIC ORNAMENTAL PLATE MANUFACTURING METHOD

Osamu Toyoda, Nagoya, and Katsumi Makino, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 798,651, Nov. 26, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 2,046

Int. Cl.[5] B21B *1/46*

U.S. Cl. 29—527.4 **7 Claims**



1. A method for manufacturing a metallic ornamental plate comprising the steps of:

press-forming a light metal plate to provide a first planar region having a first surface, and a second planar region having a second surface elevated from said first surface; and

machine-finishing said elevated second surface of said second planar region to define a distinct ornamental pattern against said first surface wherein said machine finishing step removes material form said elevated second surface.

5,282,308

THIN FILM PLANARIZATION PROCESS FOR FABRICATING MAGNETIC HEADS EMPLOYING A STITCHED POLE STRUCTURE

Mao-Min Chen; Kochan Ju, both of San Jose; Rodney E. Lee, Prunedale, and Ching Tsang, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 998,173

Int. Cl.[5] G11B *5/42*

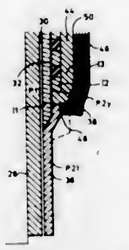
U.S. Cl. 29—603 **8 Claims**

1. A method for fabricating a thin film magnetic head, said method comprising the steps of:

(a) depositing a first layer of ferromagnetic pole material on a substrate to form a lower pole having a front pole-tip

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region and a back pole-yoke region, said front and back regions overlapping in a yoke-tip junction area;
(b) depositing a second layer of nonmagnetic insulating material over said first layer;
(c) depositing a third layer of photoresist material over said second layer;
(d) defining an upper pole-tip area by selectively removing portions of said third layer from said front pole-tip region;
(e) depositing a fourth layer of ferromagnetic pole material on said second layer in said upper pole-tip area to form an upper pole-tip;



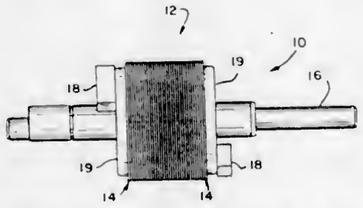
(f) hardening said photoresist material in said yoke-tip junction area of said third layer to form an upper pole stitching pedestal;
(g) depositing at least one fifth layer of conductive coil material to form one or more coils over said back pole-yoke region of said second layer;
(h) depositing at least one sixth layer of nonmagnetic insulating material over said fifth layer; and
(i) depositing a seventh layer of ferromagnetic pole material over said back pole-yoke region of said sixth layer to form an upper pole-yoke such that said upper pole-yoke joins with said upper pole-tip at said upper pole stitching pedestal.

5,282,309

APPARATUS FOR CONSTRUCTING AN UNBALANCED ROTOR

Larioux R. La Rue, Worden, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 25, 1991, Ser. No. 797,707
Int. Cl.[5] H02K *15/16*
U.S. Cl. 29—736 **29 Claims**



1. Apparatus for attaching a counterweight to each of a rotor assembly used in an electric motor, the rotor assembly having counterweights attached thereto to reduce vibrations when the motor is in use, said apparatus
support means on which the rotor assembly and counterweights are installed, the counterweights being installed in a predetermined relationship with the assembly;
index means for moving the support means from a first station at which the rotor assembly and counterweights are installed on the support means to a second station at which the counterweights are attached to the respective ends of the assembly; and,
press means movable relative to the support means, when it is at the second station, for pressing the rotor assembly and counterweights together thereby to attach the counterweights to the respective ends of the assembly, the counterweights being attached so that the resultant rotor assembly is unbalanced.

5,282,310

METHOD FOR MANUFACTURING A FIBRILLATED PULTRUDED ELECTRONIC COMPONENT

Heiko Rommelmann, Webster, and Allen J. Thompson, Akron, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1992, Ser. No. 997,424
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 **14 Claims**



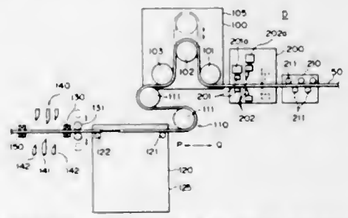
1. A method for manufacturing a fibrillated pultruded electronic component, the method comprising the steps of:
providing a rod of a pultruded composite member comprising a plurality of conductive fibers embedded in a matrix material, said rod having a first end and a second end;
spraying a liquid onto said rod at a predetermined distance from said second end of said rod;
abrading said matrix material away from between said fibers of said rod;
cutting said fibers of said rod thereby forming a disk of said pultruded composite member.

5,282,311

HARNESS PRODUCING APPARATUS AND A HARNESS PRODUCING METHOD

Yoshikazu Tamura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Feb. 22, 1993, Ser. No. 21,280
Claims priority, application Japan, Mar. 2, 1992, 4-81509
Int. Cl.[5] H01R *43/00*; H02G *1/12*
U.S. Cl. 29—825 **2 Claims**



1. An apparatus for producing a harness in which the cover of a cut-off wire is stripped at an intermediate area, comprising:
means for intermittently feeding a wire by a given legnth along its longitudinal direction;
means for stripping the cover of the wire at an intermediate area, said means being disposed upstream of said feeding means in the wire-feeding direction and provided with

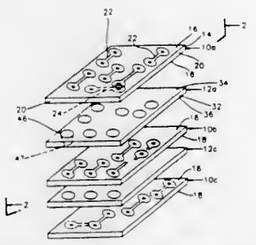
first cutters adapted to cut into at least one end of the intermediate area of the cover of the wire;
means for treating an end of the wire, said means being disposed downstream from said feeding means in the wire-feeding direction and provided with second cutters adapted to cut off the wire fed from said feeding means; and
means disposed between said intermediate stripping means and said end-treating means for adjusting the wire-travelling path between both of said means.
2. A method for producing a harness in which the cover of a cut-off wire is stripped at an intermediate area, comprising the steps of:
intermittently feeding a wire by a given length along its longitudinal direction by feeding means;
stripping the cover of the wire at an intermediate area during a pause in said first feeding step by cutting into at least one end of the intermediate area of the cover of the wire by first cutters in intermediate stripping means disposed upstream of said feeding means in the wire-feeding direction; and
cutting off the wire fed from said feeding means during a pause in said first feeding step by second cutters in end-treating means disposed downstream from said feeding means in the feeding direction;
wherein the wire-travelling path between said intermediate stripping means and said feeding means is set so that the equation $L3=nL1+L2$ is satisfied, wherein n is an integer more than zero, L1 is the length of the cut-off wire, L2 is the length from the end of the cut-off wire to one end of the intermediate area, and L3 is the distance from the cutting-into position of said first cutters to the cutting-off position of said second cutters; and
wherein said second and third steps are commenced after the first step of intermittently feeding the wire by the given length L1 has been completed.

5,282,312

MULTI-LAYER CIRCUIT CONSTRUCTION METHODS WITH CUSTOMIZATION FEATURES

Thomas H. DiStefano, Bronxville; Igor Y. Khandros, Peekskill, and Gary W. Grube, Monroe, all of N.Y., assignors to Tessera, Inc., Elmsford, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,634
Int. Cl.[5] H05K *3/36*
U.S. Cl. 29—830 **20 Claims**



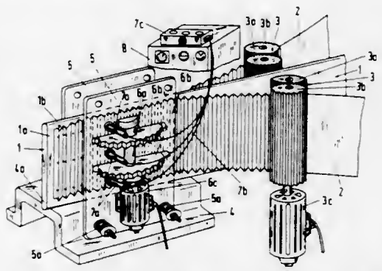
1. A method of making a multilayer circuit assembly comprising the steps of:
(a) providing a first circuit panel having a dielectric body with oppositely directed top and bottom surfaces, contacts on its top surface at locations of a first pattern terminals on its bottom surface, and through-conductors electrically connected to said terminals and extending to the top surface of the panel, and a second circuit panel having a dielectric body with a bottom surface and terminals at locations of said first pattern on the bottom surface of such panel, saidproviding step including the step of customizing said first circuit panel by selectively treating the top surface of such panel so that less than all of the through conductors of such panel are connected to contacts of such panel;
(b) stacking said circuit panels in superposed, top-surface to bottom surface relation so that the top surface of said first circuit panel faces the bottom surface of said second circuit panel at a first interface and said first patterns on said facing surfaces are in registration with one another, with said contacts of said first panel being aligned with said terminals of said second panel at at least some locations of said in-registration patterns; and
(c) nonselectively connecting all of said aligned contacts and terminals at said interface, whereby less than all of said through conductors of said customized panel are connected to terminals of said adjacent panel.

5,282,313

METHOD FOR PRODUCING HEAT EXCHANGE ELEMENTS AND HEAT EXCHANGE ELEMENTS PRODUCED THEREBY

Miroslav Podhorsky; Hans-Georg Schrey, both of Ratingen; Jörg Blum, Bochum, and Wolfgang Holten, Düsseldorf, all of Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Nov. 24, 1992, Ser. No. 981,177
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1991, 4140729
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.046 **4 Claims**



1. A method for producing heat exchange elements with a tubular base body with ribs attached to the outer surface of said tubular base body for increasing the heat exchange surface area, said method comprising the steps of:
providing said tubular base body with a cross-section having a width to height ratio of 1 to 5-12.5 so that said tubular base body has two oppositely arranged lateral surfaces corresponding to said height for receiving said ribs, said lateral surfaces substantially greater than surfaces corresponding to said width;
transporting two sheet metal strips to a corrugating device and corrugating said sheet metal strips to produce corrugated sheet metal strips that form said ribs;
conveying continuously said tubular base body together with said corrugated sheet metal strips in the longitudinal direction of said tubular base body relative to a welding device and simultaneously positioning said corrugated sheet metal strips relative to said tubular base body with a drive unit that engages the corrugations of said corrugated sheet metal strips; and
pressing each one of said corrugated sheet metal strips to a respective one of said lateral surfaces and welding said corrugated sheet metal strips with at least some contact points between said lateral surfaces and said corrugated sheet metal strip to said lateral surfaces.

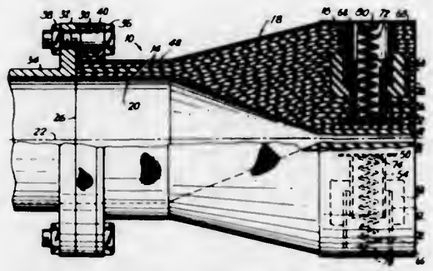
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5,282,314

METHOD OF MAKING A PRESSURE RELIEF VALUE

Spiros G. Raftis, Pittsburgh, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.

Division of Ser. No. 849,986, Mar. 12, 1992, Pat. No. 5,215,123.
This application Mar. 15, 1993, Ser. No. 31,711
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.124 **4 Claims**



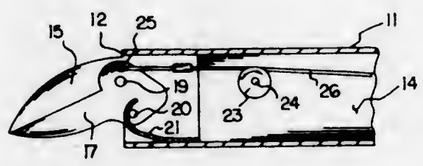
1. A method of making a valve, comprising the steps of:
(a) forming a tubular body of resilient material with an inlet portion, an outlet portion, and an internal flow-through passage extending along a longitudinal axis from the inlet portion to the outlet portion;
(b) forming at the outlet portion a pair of opposed valve lips movable toward and away from each other;
(c) embedding a pair of opposed plates within the lips;
(d) forming a pair of co-linear, radial holes in the lips from exteriorly of the outlet portion to the plates;
(e) inserting elongated springs into the holes until leading spring ends respectively engage the plates;
(f) tensioning the springs to constantly urge the lips toward each other by engaging trailing spring ends with a ring that surrounds the outlet portion.

5,282,315

CABLE CUTTER APPARATUS

Kenneth E. Martin, Rte. 5 Box 165, King, N.C. 27021

Filed Dec. 31, 1992, Ser. No. 999,274
Int. Cl.[5] B26B *13/00, 13/26*
U.S. Cl. 30—251 **2 Claims**



1. A cable cutter apparatus, comprising,
an elongate tubular housing, having a first end spaced from a second end, wherein the housing is coaxially aligned and includes a housing cavity coextensive through the housing from the first end to the second end, and
a fixed jaw fixedly mounted to the tubular housing at the first end, with the fixed jaw having a cutting edge, and a pivoted jaw pivotally mounted about an axle, the axle directed through the housing adjacent the first end, wherein the pivot jaw includes a pivot jaw cutting edge cooperative with the fixed jaw cutting edge and in contiguous communication with the fixed jaw cutting edge in a first position, and spaced from the fixed jaw cutting edge in a second position, and
actuator means mounted to the pivoted jaw and extending through the cavity for displacing the pivoted jaw from the first position to the second position, and
the pivot jaw includes a lug fixedly mounted to the pivoted jaw parallel to the axle, and an arcuate spring mounted within the cavity adjacent the first end, wherein the lug is arranged for contiguous communication with the arcuate spring biasing the pivoted jaw cutting edge in the first position, and
the actuator means includes a pivoted jaw aperture directed through the pivoted jaw in adjacency to the axle, and an actuator cable, the actuator cable having a first end mounted to the pivoted jaw aperture, and a first pulley mounted within the cavity in adjacency to the pivoted jaw, with the actuator cable directed about the first pulley, and a second pulley mounted within the cavity in adjacency to the second end, with the actuator cable wound about the second pulley, and a third pulley mounted within the cavity between the second pulley and the first pulley, and a fourth pulley positioned in adjacency to the second pulley, wherein the actuator cable is directed about the third pulley and the fourth pulley, and a fixed handle mounted to the tubular housing adjacent the second end, and a pivoted handle having a pivoted handle axle, wherein the axle is directed through the cavity adjacent the second end, with the pivoted handle axle including a pivoted handle pulley concentrically fixed about the axle, and the actuator cable directed about the pivoted handle pulley, and a link plate fixedly mounted to the pivoted handle axle projecting beyond the pivoted handle pulley, the actuator cable having an actuator cable second end, and the actuator cable second end mounted to the link plate spaced from the pivoted handle axle, whereupon pivoting of the pivot handle effects displacement of the fixed jaw from the second position to the first position, and
a container receiving shell mounted to the tubular housing in adjacency to the second end, with the shell having a first wall spaced from a second wall, and the first wall having a first wall exit port, and a puncture spike mounted coaxially of the exit port and oriented between the first wall and the second wall, and a halon gas canister mounted within the shell, having a neck opening positioned in alignment with the spike, and a plunger reciprocatably mounted through the second wall, the plunger having a plunger head positioned exteriorly of the receiving shell, and a spring interposed between the second wall and the head, whereupon projecting of the plunger towards the first wall from the second wall effects projection of the canister and puncturing of the neck opening to direct gas through the exit port.

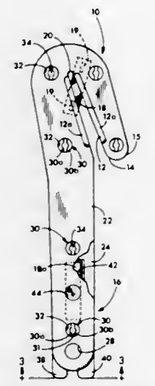
5,282,316

HAND HELD RAZOR-CONTAINING CUTTING DEVICE

Dennis C. Anderson, Northfield, Minn., assignor to National Polymers Inc., Lakeville, Minn.

Filed Jan. 4, 1993, Ser. No. 378
Int. Cl.[5] B26B *3/08*
U.S. Cl. 30—294 **3 Claims**

1. A hand held razor holding cutting device, comprising:
a cutting device body including two mating portions that are secured in registration during use so as to contact one another along a parting line,
frictional connecting means operatively associated between the portions of the device for releasably securing the portions of the device in contact with one another,
wherein the parting line extends longitudinally and centrally of the device and is located between the mating portions of the device,
the connecting means comprise studs projecting from an inside surface of one of said portions and positioned to extend into aligned openings provided within the other portion of the device,
each of said studs comprises a split cylindrical connecting stud with a centrally located slot and a cylindrical center opening aligned with a center line of the stud to provide two laterally paced apart C-shaped stud halves,
said device having a razor blade receiving means for holding



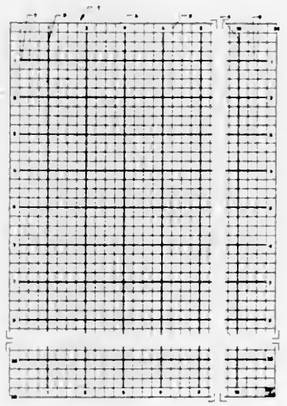
a razor blade between the portions of the device with a part of the blade exposed for cutting objects, and
a pair of adjacent cooperating disassembly tabs, one such tab being located on each portion of the device to facilitate separating the portions of the device by prying the tabs to force the tabs apart and thereby separate the portions of the device from one another for removing and replacing said razor blade.

5,282,317

TISSUE PATTERN PAPER

Doris Carter, P.O. Box 6121, Lubbock, Tex. 79493, and Georgia Brewer, 1932 70th, Lubbock, Tex. 79412

Filed May 19, 1992, Ser. No. 886,047
Int. Cl.[5] G01B *5/26;* **A41H** *1/00, 3/00*
U.S. Cl. 33—1 B **15 Claims**



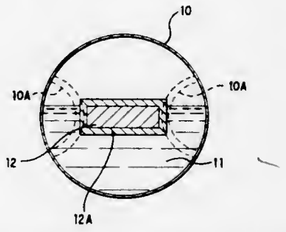
1. A method of altering and making a tissue pattern with a sheet made of tissue paper material comprising a plurality of intersecting lines running across the width and length of said sheet, said lines being spaced apart a known distance whereby when a pattern piece or design is placed on said sheet, the lines serve as an easy and ready measure, as well as serving as cutting lines, guidelines, grain lines, and center front lines, for the altering and making of the tissue pattern wherein the method for altering, comprises:
A. placing tissue pattern piece on top of said sheet; and
B. using heavy numerically numbered lines or squares formed of said intersecting lines, and any part of a said square thereof, on said sheet, measuring at least one part of said pattern piece; and
C. comparing at least one part of said pattern piece measurements with user's corresponding body part/s measurements, and if there is a difference between said part/s and said difference involves enlarging said pattern piece requiring cutting of said pattern piece, said method comprises:
using said heavy numerically numbered lines or said squares formed of said interesting lines, and any part of a said square thereof, on said sheet, locating the place on said pattern piece where enlargement and cut/s are needed; and
using one or more said lines as a cutting line/s or guideline/s, cutting said pattern piece as necessary; and
using said heavy numerically numbered lines or said squares formed of said intersecting lines, and any part of a said square thereof, on said sheet,
spreading the cut sections of said pattern piece on said sheet, the amount of enlargement needed; and taping said cut sections of said pattern piece to portion of said sheet used for said enlargement; and cutting away now enlarged said pattern piece from said sheet when all alterations on said pattern piece have been completed.

5,282,318

POSITION SENSOR

Carl Steiner, Dr. Hans-Frisch-Str. 9, D-8580 Bayreuth, Fed. Rep. of Germany

PCT No. PCT/DE91/00040, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO91/10879, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 16, 1991, Ser. No. 910,349
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1990, 9000619
Int. Cl.[5] G01C *21/08, 17/30*
U.S. Cl. 33—355 R **18 Claims**



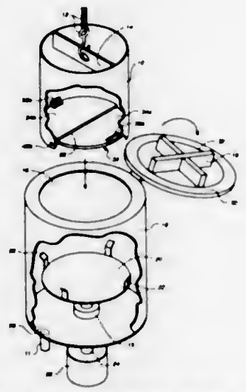
1. An apparatus for determining a position on earth by measuring the earth's magnetic field, comprising a magnetic field probe with an annular element of a material of high permeability, the annular element being disposed to float in a hermetically sealed toroid, exciting coils being distributed uniformly about the circumference of the toroid and embracing the cross section of the toroid and being offset from one another by a first angle, receiving coils distributed uniformly about the circumference of the toroid and offset from another by a second angle, the receiving coils diametrally embracing the toroid, said toroid being partially filled with a liquid, said annular element being secured against twisting.

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5,282,319
BOTTOM DUMP BASKET FOR VEGETABLE SPIN DRYER

Manny R. Casquilho; Alan B. Heinzen, both of Gilroy; Edwin W. Mabie, Capitola, and Ralph S. Schneider, Salinas, all of Calif., assignors to Heinzen Manufacturing, Inc., Gilroy, Calif.

Filed Mar. 26, 1992, Ser. No. 857,759
Int. Cl.[5] F26B *5/08*
U.S. Cl. 34—8 **19 Claims**



19. A method for separating leafy product from rinse water which includes the steps:

placing said leafy product in a basket having a vertical side with a plurality of holes and a lift bar at a top end of said basket;

securing said lift bar to a conveyor hoist and conveying said basket to a spindrying station;

placing said basket on a rotatable table;

separating said conveyor hoist from said lift bar;

rotating said table supporting said basket thereby forcing said rinse water through said plurality of holes;

draining away rinse water forced from said leafy product;

reattaching said conveyor hoist to said lift bar;

conveying said basket to an unloading station; and

opening a multisection trapdoor in a bottom of said basket thereby permitting said leafy product to fall out of said basket and allowing all trapdoor sections to hang in an open position from said vertical side of said basket.

5,282,320
BOOK DRYING PROCESS

Robert S. Wedinger; Shawn P. Cavanagh, both of Gastonia, and Kent N. Smith, Bessemer City, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 23, 1991, Ser. No. 749,094
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—12 **5 Claims**

1. In the process for deacidification of a plurality of books or other similarly sized cellulosic product the steps of which include:

a) predrying a plurality of books or other similarly sized cellulosic product;

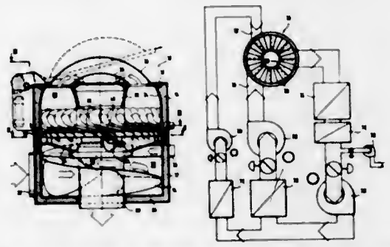
b) deacidifying the dried plurality of books or another similarly sized cellulosic product using a deacidification solvent solution; and

c) drying the deacidified plurality of books or another similarly sized cellulosic product to reduce the solvent content by use of a vacuum, wherein high frequency radiation is used along with either or both steps a) and c) to aid in drying: in which the improvement comprises, dividing the plurality of books or a similarly sized cellulosic product into two or more sections with a material having a high loss factor to reduce the variation in the high frequency electric field in a high frequency drier and promote uniform heating a plurality of books or a similarly sized cellulosic product.

5,282,321
FLUIDIZED BED APPARATUS FOR TREATING PARTICULATE MATERIALS

Herbert Hüttlin, Daimlerstrasse 7, 7853 Steinen, Fed. Rep. of Germany

PCT No. PCT/EP92/01246, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO92/21439, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 4, 1992, Ser. No. 958,351
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1991, 4118433
Int. Cl.[5] F26B *17/10*
U.S. Cl. 34—57 E **5 Claims**



1. A fluidized bed apparatus for treating particulate materials, comprising

a vessel (**10**) with an entrance space (**30, 50**) and a fluidized bed space (**60**) located above the same,

a ring of baffle plates (**36**) with intermediate spaces (**38**) in which a gas stream rising from the entrance space (**30, 50**) to the fluidized bed space (**60**) is given a twist, and

nozzles (**40**) disposed in individual intermediate spaces (**38**) between a pair of baffle plates (**36**) each for spraying fluidizable substances into the gas stream, characterized in that

a first inlet chamber (**30**) is arranged in the entrance space (**30, 50**) and only intermediate spaces (**38**) without nozzles (**40**) between baffle plates (**36**) communicate with said inlet chamber,

the intermediate spaces (**38**) in which nozzles (**40**) are disposed are connected to an annular second inlet chamber (**50**) through a substantially radial passage (**54**) which shields them from the first inlet chamber (**30**), and

the inlet chambers (**30, 50**) are adapted to be fed separately with process gas.

5,282,322
SOLAR SANITARY DRYER

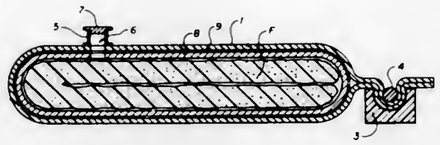
Shiro Kasuya, 4 Naka-Shinmachi, Gifu City, Japan

Filed Aug. 3, 1992, Ser. No. 924,110
Claims priority, application Japan, Aug. 5, 1991, 3-195489
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—93 **9 Claims**

1. A solar sanitary dryer to be used for drying a mattress, a mat, a comforter, or a quilt, and for exterminating tiny worms and insects existing therein, including:

a substantially transparent plastic bag having thereon a first opening for inserting said mattress, mat, comforter or quilt into said bag,

a second opening for vacuuming air out of the bag to reduce the volume of said bag and to increase heat conductivity within said bag, and

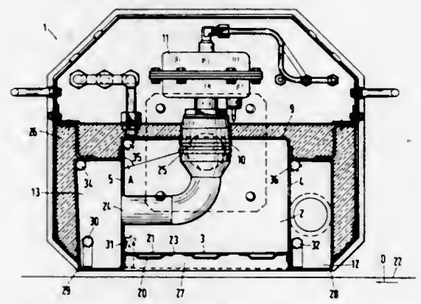


exterminating means in said dryer, said extermination means comprising heat absorbing black layer means disposed adjacent said bag for increasing the heat inside said bag to exterminate worms and insects.

5,282,323
APPARATUS FOR CONTACTING RUNNING PAPER WEBS WITH DRIED STEAM

Stefan H. Winheim, Frankfurt, Fed. Rep. of Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Fed. Rep. of Germany

Filed Jul. 23, 1992, Ser. No. 919,185
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1991, 4125062
Int. Cl.[5] F26B *13/00*
U.S. Cl. 34—155 **19 Claims**

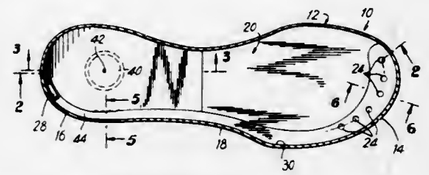


1. Apparatus for contacting with steam a running web which is advanced in a predetermined direction along a predetermined path, comprising a housing defining at least one steam confining chamber, said housing including a first wall at one side of said path and having apertures arranged to direct steam from said at least one chamber toward the web in said path, said housing further having additional walls cooperating with said first wall to enclose said at least one chamber; means for supplying steam into said at least one chamber including a valve disposed n said at least one chamber, a source of steam and means for conveying steam from said source to said valve; and steam-operated means for heating at least one wall of said housing to oppose condensation of steam in said at least one chamber, said heating means including a steam drying first section extending in a second direction substantially transversely of said predetermined direction, a second section extending in a third direction substantially transversely of said predetermined direction and substantially counter to said second direction, said at least one chamber being disposed between said sections and said heating means further comprising a third section connecting said first section with said second section.

5,282,324
VALVELESS VENTILATING ARRANGEMENT FOR A SHOE AND METHOD

Peter S. C. Cheng, 5 Ross St., Toronto, Ontario, Canada M5T 1Z8

Continuation of Ser. No. 905,687, Jun. 29, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 37,739
Int. Cl.[5] A43B *7/06*
U.S. Cl. 36—3 B **14 Claims**



1. A ventilating arrangement for a shoe, comprising:

(a) a sole having an air inlet in constantly open communication with the interior of the shoe, an air outlet in constantly open communication with the exterior of the shoe, and a constantly open passage extending along a flow path from the inlet to the outlet, said passage having a constantly open mixing chamber between the inlet and the outlet, and a predetermined flow-through cross-section;

(b) at least one throttle orifice formed in the sole and being in constantly open communication with the mixing chamber, and facing downstream of the passage into the mixing chamber, said one throttle orifice having a flow-through cross-section smaller than said predetermined cross-section of the passage; and

(c) foot-operated pumping means on the sole for forcing a low volume of primary air through said one throttle orifice into the mixing chamber at high velocity downstream of the passage to create within the mixing chamber a low pressure zone into which is accelerated a high volume of secondary air entering the inlet from the shoe interior, said secondary air being forcefully drawn by, and mixed with, the primary air in the mixing chamber to form an air stream mixture that is forcefully conveyed away from the mixing chamber and expelled from the outlet, said high volume of secondary air being many times greater than said low volume of primary air due to the primary air imparting its high velocity energy to the secondary air which induces the secondary air to flow into the mixing chamber.

5,282,325
SHOE, NOTABLY A SPORTS SHOE, WHICH INCLUDES AT LEAST ONE SPRING SET INTO THE SOLE, CASSETTE AND SPRING FOR SUCH A SHOE

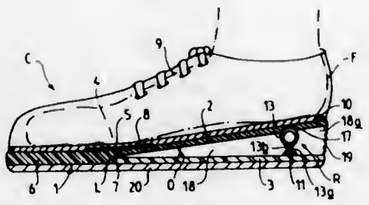
Jean Beyl, 10 boulevard Victor Hugo, 58000 Nevers, France

Filed Oct. 19, 1992, Ser. No. 962,731
Claims priority, application France, Jan. 22, 1992, 92 00644
Int. Cl.[5] A43B *13/28, 21/30*
U.S. Cl. 36—27 **14 Claims**

1. A shoe having a heel portion including a first planar plate adjacent said heel portion and a second planar plate located on a side of said first plate facing away from said heel portion, said first plate being fixed relative to said heel portion while said second plate is movable relative to said first plate and heel portion, spring means located between said plates to cushion against shocks from contact with the ground, said spring means comprising a torsion spring having at least one coil having a longitudinal axis extending generally parallel to said first and second plates, said coil having opposite ends and an arm extending radially from each said end relative to said longitudinal axis and with said arms forming an angle between said arms, said arms having ends spaced from said longitudinal axis with

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said ends of said arms slidably engaging one of said plates, said coil being in contact with the other said plate and being movable toward and away from said one plate when a load is applied, said angle between said arms being such that, when said plates move towards one another, said coil will be moved generally orthogonally relative to said one plate and the angle



between said arms will increase in proportion to the load applied and will decrease as the load is decreased, said arms extending to substantially the same length from said coil and said angle between said arms being approximately 60° when said torsion spring is at rest with the angle between each arm and a vertical axis being approximately 30°.

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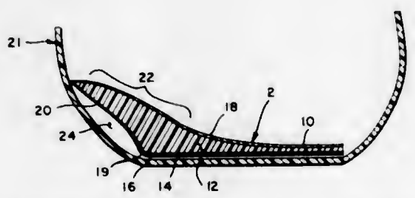
REMOVEABLE INNERSOLE FOR FOOTWEAR

Charles F. Schroer, Jr., Bartlett, and Ronald L. Bracken, Memphis, both of Tenn., assignors to Schering-Plough HealthCare Products, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 727,205, Jul. 9, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,414

Int. Cl.[5] **A43B** *13/40, 13/38*

U.S. Cl. 36—44 **12 Claims**



1. A removable, three quarter length innersole for an article of footwear, adapted to provide cushioning and/or support to a foot, comprising:

a forward toe portion having a radius edge,

a rear heel portion having a radius edge and

an intermediate arch cushion portion between said toe and heel portions, wherein said forward toe portion, said rear heel portion and said intermediate arch cushion portion are one-piece;

said innersole being resilient and being defined by:

a1) a first flat bottom surface,

a2) a second upper surface generally convex-shaped to define the contour of the intermediate arch portion of said innersole, and

a3) a third concave-shaped surface extending from said bottom surface to said upper surface to define with said upper surface a projection extending upwardly from said bottom surface and outwardly at a distance about equal to or greater than the tangent of said toe radius edge and said heel radius edge, said projection defining a space beneath said third surface;

said innersole permitting said projection to resiliently deform into the space defined by said projection upon application of a load to said innersole.

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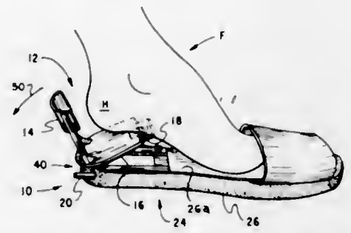
PIVOTAL HEEL FOR FOOTWEAR

Estel E. Ogle, 270 Rosehill Dr., Christiansburg, Va. 24073

Filed Feb. 16, 1993, Ser. No. 18,222

Int. Cl.[5] **A43B** *11/00*

U.S. Cl. 36—138 **11 Claims**



1. A shoe having a sole, an insole, a rear end, and a heel section mounted on said shoe and pivotal between an inclined position and an upright position, said shoe further comprising:

latching means for maintaining said heel section in said upright position,

heel section biasing means for biasing said heel section into said inclined position with respect to said sole, whereby said shoe is readily donned when not being worn, and

release means for releasing said heel section from said upright position and enabling said heel section to pivot to said inclined position in response to said heel section biasing means, thereby separating said heel section from said insole, said release means including a release member projecting externally from said shoe rear end, whereby said release means is operated by pushing said shoe rear end against a solid object, the use of a wearer's hands thus being rendered unnecessary in donning and removing said shoe.

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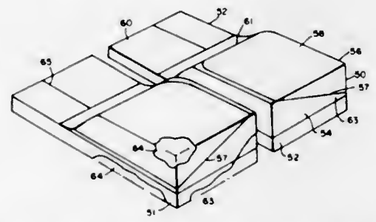
CUSTOM FOOT BEDS FOR FOOTWEAR

William E. Peterson, Lake Placid, N.Y., assignor to Peterson Technology Trust, Manchester, Mass.

Continuation-in-part of Ser. No. 677,774, Mar. 29, 1991, abandoned, which is a continuation of Ser. No. 450,220, Dec. 13, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 911,205

Int. Cl.[5] **A43B** *10/00*

U.S. Cl. 36—154 **25 Claims**



1. A composite pillow for supporting portions of the plantar surface of an individual's foot wherein the individual's foot is characterized by being divided sagittally into lateral column and medial column portions and divided frontally into rear foot and forefoot portions and by being subject to varus introduced by the application of an upward force to the plantar surface at the medial column of the forefoot portion, said pillow comprising first and second densities, each having a said foam back variable thickness in a frontal section, said complementary foam shapes being stacked to form a composite block for insertion under the rear foot portion, said composite block having, uniform thickness in frontal and sagittal sections, and said foam shapes, when compressed under an individual's rear foot portion, applying a rolling force on the rear foot portion thereby to move the foot toward a subtalar neutral position without introducing false varus to the forefoot portion.

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SOLENOID TYPE CONTROL VALVE

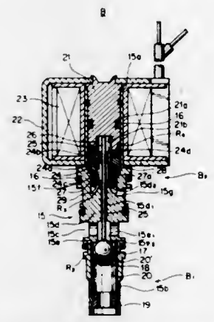
Toshihiro Teranishi, Saitama, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of Japan

Filed Mar. 25, 1993, Ser. No. 37,113

Claims priority, application Japan, Apr. 3, 1992, 4-81937

Int. Cl.[5] **F16K** *11/10, 31/06*

U.S. Cl. 137—596.17 **1 Claim**



1. A solenoid type control valve comprising:

a differential pressure valve section;

a solenoid proportional control section;

a path formed in the differential pressure valve section between a compressor's P_c pressure introducing port and a suction side;

a valve seat formed on the suction side of a valve opening in the path;

a P_c valve disc installed in the path and adapted to engage with and disengage from the valve seat;

an adjust spring to urge the P_c valve disc in a valve closing direction;

a plunger chamber formed in the solenoid proportional control section and having a P_d pressure introducing port;

a plunger movably installed in the plunger chamber;

a through-hole formed in the solenoid proportional control section;

a connecting rod passing through the through-hole, the P_c pressure introducing port and the valve opening to engage with the P_c valve disc;

a plunger spring installed in opposition to the adjust spring, the plunger spring having an elastic force greater than that of the adjust spring; and

a P_d valve disc installed in the plunger chamber in such a way that the movement of the plunger causes the P_d valve disc to close or open the through-hole;

whereby when the maximum current is applied, the connecting rod parts form the P_c valve disc that has closed the valve opening and the P_d valve disc opens the through-hole.

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ILLUMINATED SIGN WITH ICE-LIKE CHARACTERS

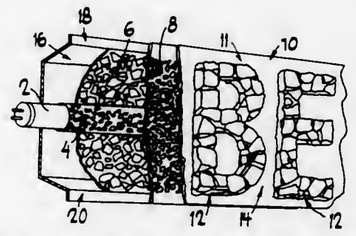
Paul Hannula, Minneapolis, Minn., assignor to Lakeside Ltd., Minneapolis, Minn.

Continuation of Ser. No. 430,735, Nov. 2, 1989, Pat. No. 5,099,593. This application Oct. 25, 1991, Ser. No. 783,108

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] **G09F** *13/04*

U.S. Cl. 40—552 **12 Claims**



1. An illuminated display including features appearing like chiseled blocks of ice, comprising:

a light source;

a first diffusion member located on at least one side of the light source to diffuse the light passing therethrough;

a second diffusion member located on the other side of the first diffusion member with respect to the light source to diffuse the light passing therethrough;

a display portion located on the other side of the second diffusion member with respect to the light source, and including raised transparent features having a chiseled ice-like configuration, each raised transparent feature being defined by a plurality of raised discrete surfaces, each discrete surface being oriented in a different plane relative to at least one other discrete surface, the discrete surfaces forming a plurality of groups of contiguous discrete surfaces, each of the groups of contiguous discrete surfaces simulating surfaces of a chiseled block of ice and forming raised transparent features appearing as a chiseled block of ice, wherein the light from the light source passes through the first diffusion member, and thereafter through the second diffusion member, and thereafter trough the raised transparent features to from an illuminated display with features which appear as if they were chiseled from blocks of ice.

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DISPLAY MODULE

Michael J. Fell, Bryn Mawr, Pa., assignor to M & M Displays, Inc., Philadelphia, Pa.

Filed Jun. 19, 1992, Ser. No. 901,561

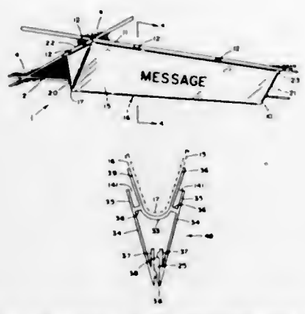
Int. Cl.[5] **G09F** *7/22*

U.S. Cl. 40—617 **1 Claim**

1. A display module for suspension between grid members of a suspended ceiling, the module comprising a light transmitting trough formed by two relatively planar panels that angle outwardly and are joined by a bottom member and two end closures, the planar panels define a trough length and the end closures define a trough width, the trough width is less than one-third of the trough length, the planar panels include upper and lower attachment means for retaining interchangeable indicia panels, the lower attachment means is further comprised of a pair of arms having upper and lower portions that are substantially parallel to a respective planar panel, the upper portion of each arm forms a channel in conjunction with the respective planar panel to retain an indicia panel and the lower portions of the arms extend inwardly toward each other and terminate in close proximity to define a channel opening; the

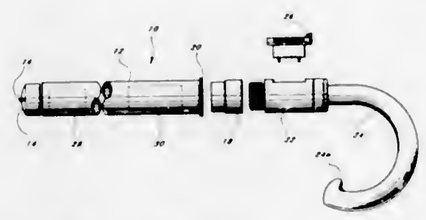
VOL 1159 ISS 1 FE 1 1994 UMI

lower portions have flanges that extend away from the channel opening and form a lower channel therebetween, non-aligned



projections on the flanges define a serpentine path within the lower channel.

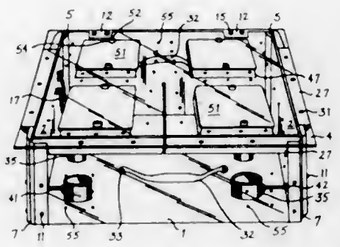
5,282,332
STUN GUN
Elizabeth Philips, 195 SW. 15th Rd., Suite 203, Miami, Fla. 33129
Continuation-in-part of Ser. No. 651,285, Feb. 1, 1991, abandoned. This application Mar. 25, 1992, Ser. No. 857,680
Int. Cl.[5] F41H *9/10*
U.S. Cl. 42—1.08 **12 Claims**



1. A stun gun comprising:
an elongated tubular body sized in length and diameter to resemble a collapsed umbrella;
an electrode protruding from one end of said elongated body;
circuit means for generating a large voltage connected to said electrode within said tubular body;
electrical power supply means connected to said circuit means within said tubular body;
means for actuating said voltage generating means connected to said power supply means; and
a curved handle, said handle removably connected to said elongated tubular body at the end opposite said electrode to allow said electrical power supply means to be inserted within said tubular body, said handle having a textured surface to provide the appearance of an umbrella handle.

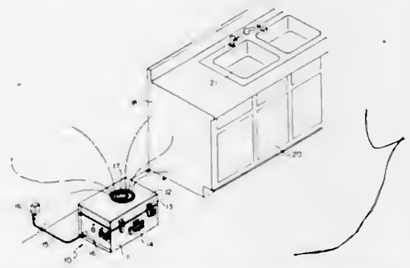
5,282,333
ICE FISHING HOLE COVER
Michael J. Klinkhamer, 2137 Geranium Ave. E., St. Paul, Minn. 55119
Filed Jun. 25, 1993, Ser. No. 81,138
Int. Cl.[5] A01K *97/01*
U.S. Cl. 43—4 **5 Claims**

1. An ice fishing hole cover comprising:
a generally rectangular box structure having a front panel, two side panels, a back panel, and a lid attached to said back panel by hinge means, said structure being open at the bottom;
a plurality of insulated heating plates affixed to the underside of said lid;
a plurality of candleholders attached to and projecting inwardly from said side panels;



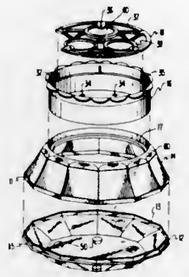
a plurality of ventilation openings formed into said lid and said front, back, and side panels;
and a slit formed into said lid, said slit being of sufficient width to enable a fishing line to be passed therethrough.

5,282,334
INSECT EXTERMINATOR
Kohichiro Kimura, and Michael Overturf, both of 642 N. Lamer St., Burbank, Calif. 91506
Filed Apr. 17, 1989, Ser. No. 338,866
Int. Cl.[5] A01M *13/00*
U.S. Cl. 43—125 **2 Claims**



1. A bug and insect exterminator emitting a dry fumigating vapor comprising:
a housing having internal partitions defining a heating chamber, a vaporizing compartment and blower chamber;
means disposed in said housing for conducting ambient air from said heating chamber to said blower chamber via said vaporizing compartment and for dispensing the ambient air external of said housing;
a heater means mounted in said heater chamber;
a fan mounted in said blower chamber;
chemical supply disposed in said vaporizing compartment in the path of the ambient air passing between said heater and blower chambers;
control means carried on said housing operably coupled to said heater means and said fan for selectively determining the time duration of operation of each;
said supply of chemical is characterized as being toxic to bugs and insects and non-toxic to humans and animals; and
said supply of chemical is a liquid disposed in said housing and includes an ultrasonic transducer mounted internally of said housing within said vaporizing compartment for vaporizing said supply of chemical.

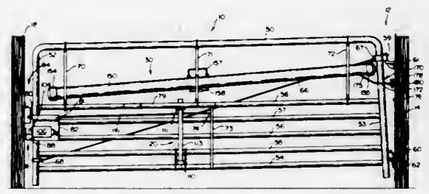
5,282,335
SELF-WATERING DISH GARDEN FOR PLANTS
Reinhold Holtkamp, Jr., P.O. Box 78565, 1501 Lischey Ave., Nashville, Tenn. 37207-8565
Filed Mar. 3, 1992, Ser. No. 845,152
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—81 **10 Claims**



1. A self-watering dish garden comprising:
a lower container section having an open top and closed side and bottom walls which define a reservoir to receive liquid, said lower container section defining the fluid capacity of the reservoir;
an upper container section formed to fit on the lower container section, the upper container section having an open bottom and side walls formed near the top thereof with a supporting flange for receiving and supporting a tray adapted to contain growing medium for plant material;
a tray having an open top and side and bottom walls which define a container adapted to receive growing medium, said tray including a top support surface engageable with said supporting flange of said upper container section for supporting said tray within said upper container section, said tray being formed with a plurality of holes in the bottom wall, the depth of said tray as defined by the side walls thereof being such that the bottom of the tray is always above the maximum liquid level in the reservoir, said side walls of said tray being formed on the inner surface thereof with a supporting flange near the top of the tray;
a partition supported on said supporting flange of said tray, said partition including an outer rim and a plurality of retaining members which define openings in said partition;
means formed on said tray and said partition for frictionally retaining said partition on said tray; and
at least one water absorbing member extending from the growing medium through a hole in the tray and into said reservoir, whereby liquid is transferred from the reservoir through said at least one absorbing member to the growing medium through capillary action.

5,282,336
VEHICLE ACTUATED FENCE GATE
Walt Tucker, 1682 Pleasant View Dr., Victor, Mont. 59875
Filed Oct. 19, 1992, Ser. No. 962,840
Int. Cl.[5] E05F *15/20*
U.S. Cl. 49—21 **5 Claims**

1. In a vehicle-actuatable fence gate comprising a gate panel having a free end and a hinge end, gate hinge mounting means for mounting the gate panel to a hinge post of the like, gate latching closure means mounted by the gate panel for latching the gate in a closed condition to latch post or the like, vehicle-actuatable unlatching means mounted by the gate panel for contact by a vehicle passing through a gate area whereby the gate latching closure means may be unlatched to enable the gate to be swung open by bumping contact from a vehicle from a closed condition to an open condition, the improvement comprising:
a) gate latching retaining means mounted by the gate panel for securing the gate to a retaining post or the like for a predetermined length of time whereby a vehicle may pass through the gate area before the gate is released and allowed to self close; said gate latching retaining means comprising an elongated pipe or the like having an elongated interior therein, longitudinally-mounted within the gate panel and pivotally-supported within the gate panel for tilting movement within the gate panel about a transverse pivot axis; means dividing the interior of said pipe into two longitudinally-adjacent chambers, one such chamber being a free-end pipe chamber adjacent the free end of the gate and the other such chamber being a hinge-end pipe chamber adjacent the hinge end of the gate; means providing for liquid transfer between the two chambers; a ballast liquid contained within said pipe;
b) gate-open retainer means mountable to a retaining post of the like and so constructed and arranged to engage a free-end of the pipe at the gate free end when the gate is opened and hold it at an elevation above a hinge-end of



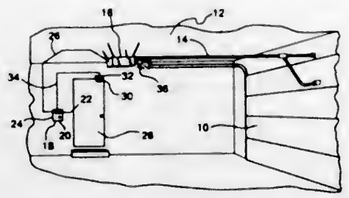
the pipe at the gate hinge end whereby said ballast liquid will transfer from one pipe chamber to the other pipe chamber, and to release the free-end pipe end after a predetermined length of time whereby the gate may swing closed on its own; and
c) pipe carrier means mountable to a hinge post or the like for supporting the hinge-end of the pipe, said pipe carrier means being so constructed and arranged to support the adjacent hinge-end pipe end at an elevation higher than the free-end pie end when the gate panel is in a closed condition whereby liquid ballast will transfer into the free-end pipe chamber, and to support the adjacent hinge-end pipe end at an elevation lower than the free-end pipe end when the gate panel is in an open condition, and to lift the adjacent pipe end from the lower elevation to the higher elevation when the gate is moved from an open condition to a closed condition whereby liquid ballast will transfer from the hinge-end pipe chamber into the free-end pipe chamber.

5,282,337
GARAGE DOOR OPERATOR WITH PEDESTRIAN LIGHT CONTROL
Dean C. Duhame, Roseville, and Daniel V. Meyvis, Bloomfield Hills, both of Mich., assignors to Stanley Home Automation, Novi, Mich.
Filed Feb. 22, 1993, Ser. No. 20,383
Int. Cl.[5] E05F *11/00*
U.S. Cl. 49—199 **7 Claims**

1. A garage door opener system including apparatus for operating a garage door and for illuminating the garage when the garage door is operated or a pedestrian door is opened, comprising:
means responsive to a push button for producing a first signal for actuating the garage door;
means responsive to opening the pedestrian door for producing a second signal;
a light circuit having a light and means for illuminating the light including time delay means for holding the light on for a period; and

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means responsive to either of the first or the second signal for activating the light circuit,



whereby the light is illuminated for the time delay period following opening of the pedestrian door or activation of the push button.

5,282,338

SEALING STRUCTURE

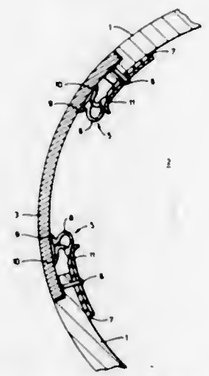
David J. Oliver, Preston, Great Britain, assignor to British Aerospace Public Limited Company, London, England

Continuation of Ser. No. 773,326, Oct. 11, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,572

Claims priority, application United Kingdom, Oct. 12, 1990, 9022286

Int. Cl.[5] **E06B** *7/16*

U.S. Cl. 49—476.1 **4 Claims**



1. A sealing structure for sealing an aircraft door having an uneven inner face comprising:

a first portion including a flange for connection to a fuselage of and aircraft;

a permanently enclosed resilient portion having first and second ends and defining a hollow region connected to the first portion at said first end thereof; and

first and second lips protruding in opposite directions from said second end of said enclosed resilient portion for abutment against said door inner face,

a rain channel defined between the second lip and a portion of the flange,

said enclosed resilient portion being operative to urge said first and second lips into sealing contact with said inner surface of said door upon closing the door,

said first and second lips being sized so as to seal said aircraft door notwithstanding its said uneven inner face.

5,282,339

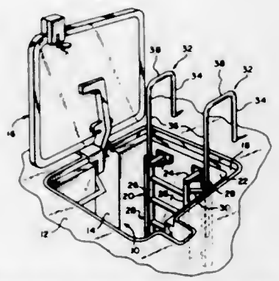
AIRCRAFT SERVICING PIT WITH RETRACTABLE LADDER

Michael Devlin, Anaheim, and Eynon Johnson, Orange, both of Calif., assignors to Dubico Inc., Costa Mesa, Calif.

Filed Apr. 27, 1992, Ser. No. 873,766

Int. Cl.[5] **E06C** *7/18;* **E02D** *29/12*

U.S. Cl. 52—20 **14 Claims**



1. In a subsurface chamber defined below a surface across which aircraft travel and having a ladder located beneath said surface and an access lid movable to a closed position flush with said surface and capable of withstanding the weight of an aircraft traveling thereacross, the improvement comprising a pair of retractable handrail assemblies each having an upright supporting leg, an upright linear guide rail longer than said supporting leg, and a transverse connecting structure joining said support leg to said guide rail, and means for mounting said guide rails for linear, reciprocal movement relative to said ladder, whereby said handrail assemblies are movable between fully retracted positions below said surface and extended positions in which said connecting structures project above said surface and said supporting legs rest upon said surface.

5,282,340

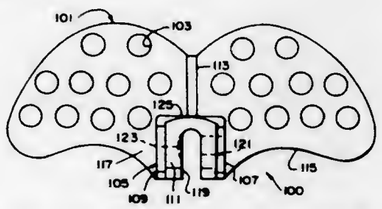
SNOW BRAKE

Roger M. Cline, Bluemont, and Lawrence W. Boehly, Vienna, both of Va., assignors to Real Tool, Inc., Bluemont, Va.

Continuation-in-part of Ser. No. 804,913, Dec. 11, 1991, abandoned. This application May 7, 1992, Ser. No. 879,269

Int. Cl.[5] **E04D** *13/10*

U.S. Cl. 52—24 **13 Claims**



1. A snow brake comprising a base with a bottom and a top, the base having a longitudinally extending body with first and second longitudinal ends, a slot extending upward from the bottom toward the top and terminating spaced from the top and extending through the first and second ends for receiving a folded seam of a metal roof in the slot, the slot dividing the base into first and second opposite sides connected at the top, one side having holes extending transversely through the side for receiving and holding anchor screws, the other side having recesses aligned with the screw-receiving holes for receiving outward bent portions of the roof seams in the recesses, a snow brake plate connected to the base and extending laterally beyond the opposite sides of the base and extending upward to beyond the top of the base and having lateral portions extending outward from the opposite sides of the base near one end of the base and near a bottom of the plate, the opposite sides of the base being relatively thick as compared to the thickness of the plate and the lateral portions of the plate being cast and constructed for providing resistance against separation of the sides when tightening anchor screws for being roof seam portions into the recesses, and for preventing bending or breaking of the snow plate.

5,282,341

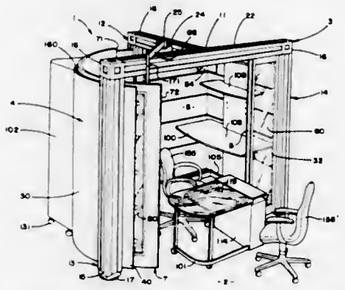
DYNAMIC WORKSPACE MODULE

Mark A. Baloga, Grand Rapids, Mich.; Paul B. Siebert, Chicago, Ill.; Marvin LaLone, Alto, Mich.; David J. Luzenske, Grandville, Mich.; Brian B. Chambers, Byron Center, Mich.; Michael E. Tingley; Gregg R. Draudt, both of Cambridge, Mass., and Steven W. Eriksson, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Jan. 10, 1992, Ser. No. 819,396

Int. Cl.[5] **A47B** *5/00*

U.S. Cl. 52—32 **90 Claims**



1. A workspace module for open plan spaces and the like, comprising:

a freestanding framework adapted to be abuttingly supported on a floor surface;

a sidewall partition supported on said framework, and opening to the floor surface to define a preset interior area thereof and an associated workspace sufficient to support a user therein, and including a side portion thereof with a portal opening shaped for unobstructed user ingress and egress therethrough;

a door partition configured to selectively close said portal opening, and being movably supported on said workspace module to permit shifting said door partition between a fully open position, and a fully closed position; said door partition having a generally arcuate top plan configuration, and being positioned adjacent said portal opening in a manner such that when said door partition is shifted from the fully open position to the fully closed position, said door partition protrudes outwardly of the side portion of said sidewall partition, and captures a portion of the floor surface disposed immediately outside of said portal opening thereby adding floor area and interior area to the preset area in said workspace to provide both improved freedom of user movement, and a sense of roominess and comfort.

5,282,342

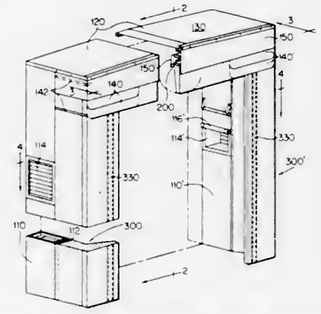
STORAGE TERMINAL SHELTER, INCLUDING HEAD PAD AND SIDE PAD ASSEMBLIES FOR TRUCK CLOSURE AT DOCKING STATIONS

Thomas R. Brockman, Kenton, and Mark Dillon, Upper Sandusky, both of Ohio, assignors to Fairborn USA Inc., Upper Sandusky, Ohio

Filed Jun. 4, 1993, Ser. No. 71,496

Int. Cl.[5] **E04H** *14/00*

U.S. Cl. 52—173 **8 Claims**



1. A warehouse terminal building shelter defining at least one truck dock and seal, each seal comprising:

a) a head pad assembly, supported by opposed and projecting blockouts **110–110'** which are fixed upright of the terminal building;

b) a head pad pivot assembly **200**, anchored forwardly, within the head pad assembly **100** and in spring-biased relation thereto;

c) covered, opposed side pad assemblies **300–300'**, each pad thereof being reinforced by tension tie straps secured to respective blockouts **110–110'** forwardly thereof and in coactive sealing disposition beneath said pivot assembly **200**, each said side pad being of L-shape configuration in cross-section, said side pads each being deformable inwardly, relative to the shelter and its head pad assembly, whereby upon deformation of said side pads by a docking truck, there is full truck width access within the truck dock.

5,282,343

BUILDING STRUCTURES; ELEMENTS AND METHOD FOR CONSTRUCTING SAME

Alejandro Stein, Tronco International 3080 Center St., Miami, Fla. 33133

Continuation of Ser. No. 612,580, Nov. 12, 1990, abandoned. This application May 24, 1993, Ser. No. 67,398

Claims priority, application Israel, Aug. 17, 1990, 095411

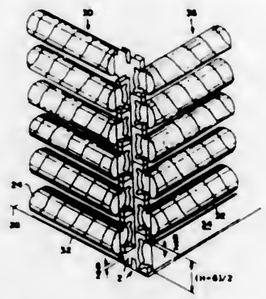
Int. Cl.[5] **E04B** *2/00*

U.S. Cl. 52—233 **4 Claims**

1. A tubular wall member assembly comprising an end connector, said end connector providing a flat, substantially circular front end portion and a rearward body portion comprising a two spaced, matchingly notched, parallel plates, a plurality of tabs extending rearwardly from the periphery of said circular front end portion towards said rearward body portion, each of said tabs including a first flat part and a second flat part, said second flat part being bent outwardly from said first flat part of said tab, a length of an open-ended hollow tubular structural member, said front end portion of said connector being inserted into an open end of said tubular member for a distance substantially corresponding to the length of said first flat part of said tabs so that said second flat part of said tabs where bent from said first flat part contacts the end of said tubular member, the spaced plates of said rearward body portion of said end

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connector being positioned outside of the open end of said tubular structural member into which the front end portion of said end connector is inserted and said spaced plates having a width larger than said open-ended tubular member into which



said front portion is inserted whereby said tubular wall member assembly including said tubular structural member and said end connector inserted into and fixed to said tubular member provides a gap when one said wall member assembly is superposed and placed super-jacent on top of another.

5,282,344

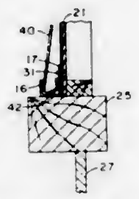
FLEXIBLE J-CHANNEL FOR MASKING SIDING

Sylvia E. Moore, Sidney, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 27, 1992, Ser. No. 873,812

Int. Cl.[5] **E04F** *19/02*; **E04G** *23/00*

U.S. Cl. 52—716.8 **18 Claims**



1. A covered building exterior comprising:

(a) an exterior wall;

(b) a vinyl, aluminum or wood siding panel affixed to said exterior wall and having a curved marginal portion; and

(c) an elongated J-channel for masking said curved marginal portion of the siding panel, said J-channel comprising:

(i) a base channel including a base wall and front and rear edge portions extending upwardly from said base wall, said base wall comprising a relatively rigid polymer composition having a durometer hardness of about 95 Shore A;

(ii) a rear wall extending upwardly from the rear edge portion of said base channel, said rear wall being affixed to said exterior wall behind said siding panel by means of a nail or screw, said rear wall being uninterrupted by slits and consisting essentially of a relatively flexible polymer composition having a durometer hardness of about 80 Shore A; and

(iii) a retainer wall extending upwardly from said front edge portion and retaining said non-linear marginal portion of the siding panel adjacent said building exterior, said retainer wall comprising a relatively flexible polymer composition having a durometer hardness of about 80 Shore A.

5,282,345

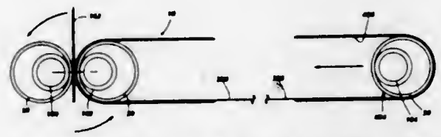
APPARATUS FOR HANDLING A SHEET OF SEPARATOR MATERIAL

John J. Darcy, Webster; Boris Haritonoff, Geneseo; Edouard E. Langlois, Rochester, and Karl V. Thomsen, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 724,307, Jul. 1, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 971,715

Int. Cl.[5] **B65B** *35/54, 63/04, 25/14, 61/22*

U.S. Cl. 53—118 **12 Claims**



1. An apparatus for wrapping a precut sheet with an endless flexible member having opposed surfaces in which the endless flexible member is positioned adjacent said apparatus and is selectively disposed in one of an unwrapped position and a wrapped position so that the precut sheet can be positioned on a portion of the endless flexible member while the endless flexible member is in the unwrapped position, comprising:

a guide path extending from a remote location, spaced from the endless flexible member in the unwrapped position, to a location disposed adjacent the endless flexible member in the unwrapped position;

means for supporting the endless flexible member with the opposed surfaces being spaced from each other;

means, movably coupled with said guide path, for receiving and holding the precut sheet, said receiving and holding means moving relative to said guide path and including a pair of arms for releasably clamping the precut sheet;

means for moving said receiving and holding means adjacent the endless flexible member in the unwrapped position so that said pair of arms and the precut sheet are superposed relative to the portion of the endless flexible member and between the opposed surfaces;,

means for releasing the precut sheet from said pair of arms so that the precut sheet is positioned on the portion of the endless flexible member and between the opposed surfaces; and

means for wrapping the endless flexible member about itself with the precut sheet interposed between the opposed surfaces of the endless flexible member.

5,282,346

UNWRAPPING APPARATUS WITH SWING ARMS AND GRIPPERS

Tadao Masuda, Tokyo; Masahiro Tsukuda, Takatsuki; Shigeru Doiura, Takatsuki; Kaoru Kawanishi, Takatsuki; Hiroshi Iwasaki, Tokyo, and Katsumi Hayakawa, Takatsuki, all of Japan, assignors to Oji Seitai Kaisha, Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,975

Claims priority, application Japan, May 14, 1992, 4-038581[U]; Jun. 24, 1992, 4-188935; Jul. 29, 1992, 4-058436[U]; Aug. 12, 1992, 4-061961[U]

Int. Cl.[5] **B65B** *13/04, 43/26, 63/04*

U.S. Cl. 53—118 **42 Claims**

1. An unwrapping apparatus for unwrapping a load comprised of a pallet, a plurality of articles palletized on the pallet and a stretchable film wrapping the articles and the pallet together; said unwrapping apparatus comprising:

first and second upright frames arranged in a spaced relationship;

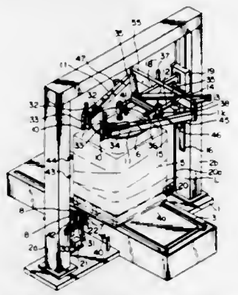
means for conveying a load to be unwrapped at a position between the first and the second upright frames;

lower gripper means arranged on or near the first upright frame for gripping a lower edge of a stretchable film of a load to be unwrapped;

a cutter unit arranged on the first upright frame for upward and downward movement along the first upright frame for vertically cutting the stretchable film;

a carriage arranged on the second upright frame for upward and downward movement along the second upright frame and having pressing means to press the top of the load to be unwrapped so as to stabilize the same while being unwrapped;

a pair of swing arms symmetrically arranged on either side of the pressing means with pivot ends on the side of the



second upright frame and free ends on the side of the first upright frame;

an upper gripper arranged on the free end of each of the swing arms for gripping an upper edge of the stretchable film of the load, whereby the stretchable film that is cut by the cutter unit and gripped by the upper grippers is spread and separated from the load during a swing motion of the swing arms; and

a pair of auxiliary film separating means operable in synchronism with the movement of the swing arms for engagement with corner portions of the stretchable film on the side of the second upright frame to separate the stretchable film from the corner portions of the load.

5,282,347

WRAPPING APPARATUS

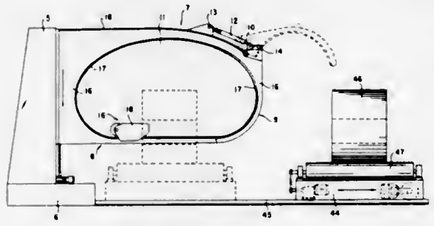
Kenneth D. Cleioe, Dromana, and John G. Venturin, both of McCrae, Australia, assignors to John Lysaght (Australia) Limited, Sydney and K.C. Metal Products Proprietary Limited, Victoria, both of Australia

Filed Sep. 9, 1992, Ser. No. 942,067

Claims priority, application Australia, Nov. 12, 1991, PK9726; Apr. 13, 1992, PL1886

Int. Cl.[5] **B65B** *11/30, 11/40, 11/28*

U.S. Cl. 53—204 **19 Claims**



1. Wrapping apparatus comprising a loop structure defining an endless track, a shuttle able to ride around said track, dispensing means on said shuttle able to hold a coil of a pliable wrapping medium and enabling medium to be drawn from the coil, and workpiece support means able to support and reorient an article to be wrapped with at least a part of the article surrounded by said track; said loop structure includes a gate portion that may be moved to an open position to create a gap in said track and then returned to a closed position to eliminate said gap, wherein an annular article may be linked with said track; said shuttle carries take-up accumulator means comprising a plurality of fixedly positioned training rollers, a plurality of yieldably positioned training rollers and loading means resiliently loading the yieldably positioned rollers away from the fixedly positioned rollers, so as to accommodate, and maintain tension in, a variable length of said wrapping medium when extending in a tortuous path about the respective training rollers.

5,282,348

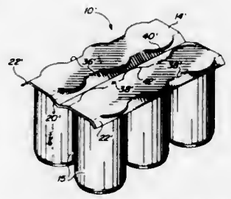
CLIP-TYPE ARTICLE CARRIER AND METHOD OF MANUFACTURE

Clayton Dampier, Marietta, and Octavio Orta, Atlanta, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Jun. 16, 1992, Ser. No. 899,192

Int. Cl.[5] **B65B** *21/06, 27/04*

U.S. Cl. 53—398 **10 Claims**



1. A method of packaging articles having an outwardly extending flange in an upper portion thereof, comprising:

securing a plurality of articles to an integral support body having a plurality of oppositely facing apertures and adjacent support surfaces so that opposite portions of the flange of each article protrude through associated oppositely facing apertures and are supported on the underside thereof by the adjacent support surface; and

attaching an outer paperboard carrier wrap to the article support body, the outer carrier wrap comprising a top panel, opposite side panels and at least one additional panel connecting the opposite side panels, the top panel overlying the article support body and being connected thereto.

5,282,349

SEALING AND PACKAGING METHOD AND APPARATUS

Martin Siegel, Englewood Cliff, N.J., assignor to Weldotron of Delaware, Inc., Wilmington, Del.

Continuation of Ser. No. 725,009, Jul. 2, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,230

Int. Cl.[5] **B65B** *9/06, 31/04, 51/32*

U.S. Cl. 53—433 **53 Claims**

34. A method for packaging an item, comprising the steps of:

dispensing film;

forming said film in a tube to allow the insertion of said item;

inserting said item into said tube;

drawing the opposite edges of said film together at the wide of said item;

preheating the edges of the film;

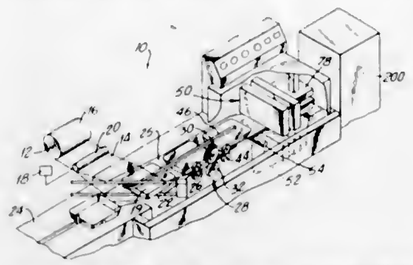
longitudinally sealing said opposite edges of said film; and

cross sealing said film at an angle to said longitudinal seal, whereby said cross seal and said longitudinal seal intersect at the corner of said package;

wherein the step of preheating includes the step of placing the film in thermal contact with a heated sealing roller

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between a first point and a second point on said heating roller, and said step of longitudinally sealing includes the



step of sealing said film at said second point on said heated roller, through the application of heat and pressure.

5,282,350

HIGH SPEED INSERTER FED FROM ROLL MATERIAL

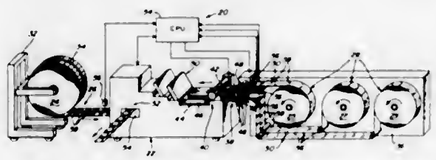
H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 774,791, Oct. 10, 1991, Pat. No. 5,138,821. This application May 20, 1992, Ser. No. 886,420

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[5] **B65B** *61/04, 5/06, 35/50*

U.S. Cl. 53—435 **51 Claims**



1. A method for inserting sheets into envelopes comprising the steps of:

providing a plurality of continuous webs each having a leading end by unwinding at least one web from a storage roll of continuous web;

driving selected of the leading ends in a selected order to a collection point;

cutting the selectively driven leading ends so as to form sheets at the collection point;

providing envelopes from a source; and

inserting the cut sheets from the collection point into respective envelopes from the source of envelopes.

5,282,351

METHOD FOR MAKING, FILLING AND SEALING SACKS

Konrad Tetenborg, Lengerich, Fed. Rep. of Germany, assignor to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,994

Int. Cl.[5] **B65B** *43/04, 41/12*

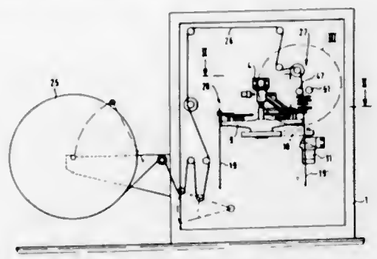
U.S. Cl. 53—459 **7 Claims**

1. A method for manufacturing, filling and sealing sacks made from a tubular film web of thermoplastic material provided with side folds and printed in format print, where a leading end of the tubular film web is provided with a transverse weld, and from the tubular film web a section constituting an open sack is cut off, and where the sack is then filled to a filling level of the sack and the open end of the sack is pulled taut and closed by a transverse weld, said method comprising:

varying tubular film web section length corresponding to the filling level of the sack,

intermittently advancing the tubular film web up to a printed mark after forming the transverse weld sealing the sack,

cutting off a section constituting the sack by means of a



separating cut without at the same time forming a transverse weld sealing a succeeding tubular section,

advancing the succeeding section of the tubular film web by a comparatively short adjustable length, and

forming a transverse weld sealing the succeeding tube section for forming a succeeding open sack.

5,282,352

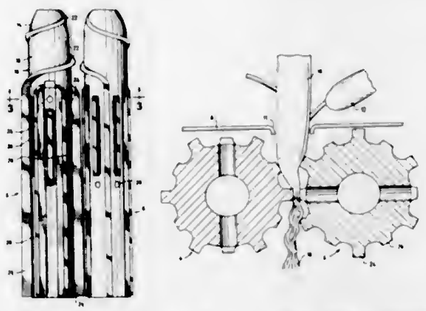
CORN HEAD ASSEMBLY

Ronald E. Schoolman, R.R. #2, Box 43, Onarga, Ill. 60955

Filed Dec. 1, 1992, Ser. No. 983,703

Int. Cl.[5] **A01D** *45/00*

U.S. Cl. 56—62 **6 Claims**



1. A corn head assembly for cooperation with a stripper plate with a slot therethrough for receiving corn stalks, a pair of rotatable rolls with axes parallel to said slot, each of said rolls having an equal plurality of axially extending radially projecting flutes for engaging a corn stalk wherein alternate ones of said flutes are primary flutes and the remainder of said flutes are secondary flutes, wherein said primary flutes project radially by a greater amount than said secondary flutes and wherein said rolls are registered so that in rotation of said rolls each primary flute of one roll opposes a secondary flute of the other roll.

5,282,353

CONTINUOUS SELF-NEUTRALIZING STRANDER

Gary E. Kellstrom, Jr., 345 Caldwell Ave., Paterson, N.J. 07501

Filed Nov. 1, 1991, Ser. No. 786,770

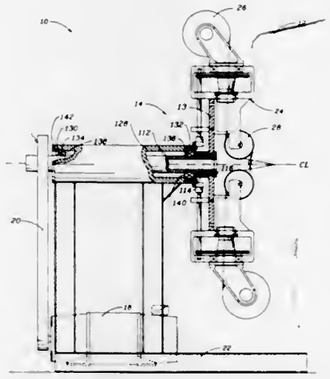
Int. Cl.[5] **D07B** *3/02, 3/06*

U.S. Cl. 57—13 **21 Claims**

1. A strander for generating a multi-strand cable, comprising:

at least one pay-off station spaced radially from a common rotational axis for rotation about the common rotational axis, each said pay-off station including a rotatable product reel support member and a product reel supported by said product reel support member for paying-off a strand, each said product reel being arranged to spin about a respective reel axis that is perpendicular to and offset from a product pay-off line that intersects the common rotational axis;

means for rotating each said pay-off station about the common rotational axis;



a driving mechanism for each said product reel support member, for rotating each said product reel support member about an axis disposed along said product pay-off line; and

at least one guide member disposed adjacent the common rotational axis, wherein a strand payed-off from each said product reel is fed in an inward direction along said product pay-off line to a respective guide member, and is then fed against said guide member to change its direction so that the strand is fed along said common rotational axis and is wound thereabout.

5,282,354

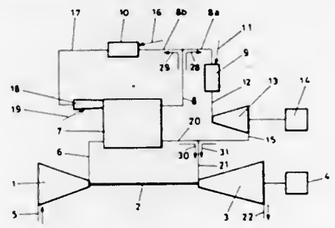
GAS TURBINE ARRANGEMENT

Jakob Keller, Dottikon, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Division of Ser. No. 755,778, Sep. 6, 1991, Pat. No. 5,220,781. This application Jan. 27, 1993, Ser. No. 9,756

Int. Cl.[5] **F02C** *03/03*

U.S. Cl. 60—39.02 **3 Claims**



1. A method for starting and operating a gas turbine arrangement of the type including at least

a high-pressure turbine,

a basic gas turbine,

an energy exchanger, the energy exchanger having at least a high-pressure port and driving gas inlet and exhaust lines,

a branching line connected to the high-pressure export and dividing into a first leg connected to a high-pressure part of the gas turbine and a second leg connected to the driving gas inlet of the energy exchanger,

means for controlling a flow from the branching line to the first and second legs,

a combustion chamber interposed between the high-pressure port and the branching line, and

a second combustion chamber connected directly upstream of the driving gas inlet of the energy exchanger, comprising the steps of:

starting the gas turbine arrangement by:

activating initially the first combustion chamber;

closing the first leg and directing driving gas from the first combustion chamber into the second leg only;

activating the second combustion chamber, and increasing the activity of the second combustion chamber until the quantity of driving gas produced downstream of the energy exchanger is sufficient to bring the basic turbine into an idling mode;

increasing initially the power output of the arrangement by further activating the second combustion chamber to increase the output of the basic turbine;

increasing further the power output of the arrangement by increasing the activity of the first combustion chamber and by opening the first leg and directing driving gas through the first leg to activate the high-pressure turbine; and

regulating the output power of the gas turbine arrangement via activation of the first combustion chamber.

5,282,355

EXHAUST GAS NO_x REMOVAL SYSTEM

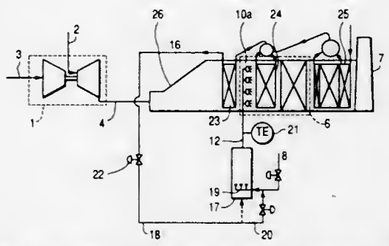
Tetsuji Yamaguchi, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 938,459

Claims priority, application Japan, Sep. 2, 1991, 3-221538

Int. Cl.[5] **F02C** *7/08*

U.S. Cl. 60—39.5 **12 Claims**

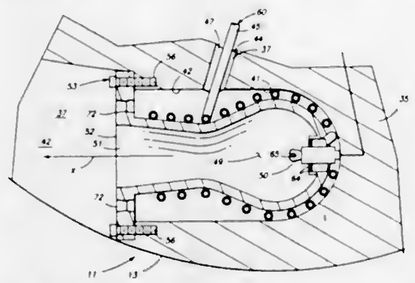


1. An exhaust gas NO_x removal system comprising: a flue through which exhaust gas containing NO_x is fed; an NO_x removal catalyst in said flue which will initiate a chemical reaction involving NO_x and ammonia or its precursor; a vaporizer connected to a source of aqueous ammonia or its precursor; a vaporizer connected to a source of aqueous ammonia or its precursor; superheated steam piping connected to a source of superheated steam and to said vaporizer, whereby superheated steam is led into the vaporizer through said piping to vaporize ammonia or its precursor in the vaporizer; at least one nozzle disposed in said flue upstream of said NO_x removal catalyst with respect to the direction in which exhaust gas is fed through the flue, each said at least one nozzle being connected to an outlet of said vaporizer, whereby vapor of aqueous ammonia formed in said vaporizer passes to said at least one nozzle and is sprayed into the flue; a thermometer operatively connected to said vaporizer so as to detect the tempera-

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ture of the vapor of aqueous ammonia passing through the outlet of said vaporizer; and a control valve operatively disposed in said superheated steam piping and operatable to regulate the amount of superheated steam passing through said piping to said vaporizer, whereby said control valve can be operated on the basis of the temperature detected by said thermometer to cause an amount of superheated steam to be introduced to said vaporizer that is sufficient to maintain the temperature of the vapor of the aqueous ammonia within a predetermined range.

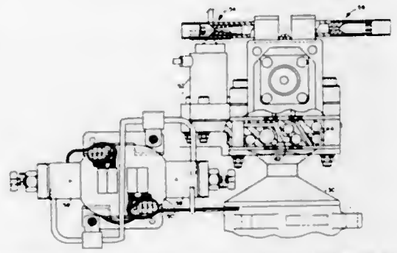
5,282,356
FLYWHEEL ENGINE
Irwin R. Abell, 7360 Hwy. 95 South, Sandpoint, Id. 83864
Filed Jan. 7, 1993, Ser. No. 2,470
Int. Cl.[5] F02C *3/14*
U.S. Cl. 60—39.35 **18 Claims**



1. A flywheel engine, comprising:
a flywheel body including a peripheral edge surface formed about a flywheel axis and including a formed internal wall surface defining a non-radial recess in the flywheel body and opening along the peripheral edge surface;
means mounting the flywheel body for rotation about the flywheel axis such that the peripheral edge surface follows a circular path about the flywheel axis;
a propulsion housing including a combustion chamber;
supply means for delivering a combustible fuel to the propulsion housing;
fuel combustion means for igniting the fuel within the combustion chamber of the propulsion housing;
wherein the propulsion housing includes a nozzle communicating with the combustion chamber and leading to an opening defining an exhaust thrust axis along which exhaust is discharged from the combustion chamber; and
bracket means for releasably mounting the propulsion housing within the flywheel body recess with the exhaust thrust axis substantially tangential to the circular path of the flywheel edge surface and wherein the flywheel body includes propulsion housing cooling means for guiding fuel around the propulsion housing to cool the housing during use.

5,282,357
HIGH-PERFORMANCE DUAL-MODE INTEGRAL PROPULSION SYSTEM
Robert L. Sackheim, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Apr. 19, 1990, Ser. No. 511,153
Int. Cl.[5] F02K *9/44*
U.S. Cl. 60—204 **3 Claims**

1. A high-performance liquid fuel bipropellant high-thrust rocket engine, comprising:
a fuel supply including a supply tank, fuel line and fuel supply valve;
an oxidant supply including a supply tank, oxidant line and oxidant supply valve;
a combustion chamber having an inlet for the fuel and oxidant connected to the fuel and oxidant lines; and
means for minimizing unwanted combustions after shut-



down of the engine by delaying closure of the fuel supply valve until after closure of the oxidant supply valve, to ensure that combustion is completed in the combustion chamber.

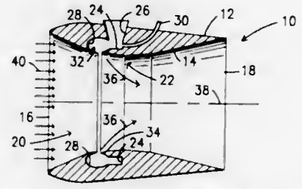
5,282,358
GAS TURBINE ENGINE DUAL INNER CENTRAL DRIVE SHAFT
Jan C. Schilling, Middletown, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed May 28, 1991, Ser. No. 705,844
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.1 **16 Claims**



1. A central drive shaft in a gas turbine engine, comprising:
(a) a rearward shaft portion composed of an elongated cylindrical middle portion and a rear end portion;
(b) a forward shaft portion composed of an elongated cylindrical middle portion and a front end portion;
(c) said middle portion of one of said forward and rearward shaft portions surrounding the other thereof in an overlapping and concentric relationship to a longitudinal axis defined by said middle portions; and
(d) interengaging elements defined at opposite ends of said middle portions of said forward and rearward shaft portions and extending generally parallel to said longitudinal axis for rigidly securing said middle portions of said rearward and forward shaft portions together for concurrent rotary motion of said rearward and forward shaft portions in both clockwise and counterclockwise directions.

5,282,359
IMPULSE JET ENGINE
Robert G. Chester, Meadowlawn Dr. North, St. Petersburg, Fla. 33702
Filed Oct. 17, 1991, Ser. No. 779,421
Int. Cl.[5] F02K *3/00, 7/08*
U.S. Cl. 60—269 **3 Claims**

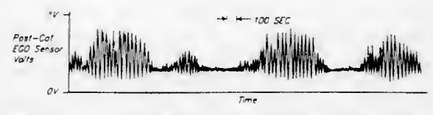
1. A jet engine, comprising:
a generally cylindrical housing having an inlet and an outlet;
said housing having a generally cylindrical outer sidewall and a generally cylindrical inner sidewall;
an airflow passageway that extends from said housing inlet to said housing outlet, said airflow passageway being unobstructed along its length;
a single constriction formed in said airflow passageway between said housing inlet and said housing outlet, said constriction being greatest at a predetermined location closer to said housing inlet than said housing outlet, and said single constriction being formed by a gradual increase in the distance between said inner and outer sidewalls from said housing inlet toward said predetermined location and a gradual decrease in said distance from said predetermined location toward said housing outlet;
an annular combustion chamber formed between said inner and outer sidewalls substantially where the distance between said inner and outer sidewalls is greatest;
an annular exhaust port also formed between said inner and outer sidewalls adjacent to said combustion chamber and in fluid communication with said combustion chamber;
said annular exhaust port oriented to discharge exhaust gases toward said housing outlet to impart thrust to said engine;
means for introducing a fuel/air mixture into said combustion chamber and for igniting said mixture;
said combustion chamber being positioned at a preselected location along the extent of said housing that is closer to said inlet than said outlet to thereby enhance the entrainment of air into said inlet and hence to enhance cooling of the exhaust gases and to slow the rate of flow of said exhaust gases through the engine;



said housing having generally cylindrical side walls that are thicker where said combustion chamber and said exhaust port are formed therein relative to the thickness thereof at said inlet and outlet;
a combustion air inlet means formed in said housing, said combustion air inlet means providing fluid communication between a source of combustion air external to said engine and said combustion chamber;
a fuel inlet means formed in said housing, said fuel inlet means providing fluid communication between a source of fuel external to said engine and said combustion chamber; and
a plenum chamber formed between said side walls, said plenum chamber having a first inlet in fluid communication with said combustion air inlet means, a second inlet in fluid communication with said fuel inlet means, and an outlet in fluid communication with said combustion chamber so that fuel and combustion air are admixed in said plenum chamber prior to combustion thereof in said combustion chamber;
whereby greater quantities of ambient air are entrained into said engine through said housing let, relative to the quantities of ambient air entrained by a conventional engine having an obstructed airflow passageway, said greater quantities of air enhancing the thrust produced by said engine.

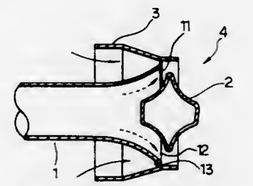
5,282,360
POST-CATALYST FEEDBACK CONTROL
Douglas R. Hamburg, Bloomfield; Thomas R. Culbertson, Redford, and Judith M. Curran, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 30, 1992, Ser. No. 968,937
Int. Cl.[5] F02M *7/12*; F02B *3/00*
U.S. Cl. 60—274 **12 Claims**

1. A method for controlling air/fuel ratio of an internal combustion engine controlled by an electronic engine control and having an exhaust gas oxygen (EGO) sensor positioned in an exhaust stream flow from the engine, said method including the step of utilizing different air/fuel ratio feedback control



strategies depending upon whether the exhaust gas oxygen sensor is saturated, rich or lean, or operating in a linear region.

5,282,361
DEVICE FOR FACILITATING EXHAUST ACTION OF AN INTERNAL COMBUSTION ENGINE
Lee D. Sung, Rm A-106, Hanshin Apt., #258 NonHyun-Dong, Kangnam-Ku, Seoul, Rep. of Korea
Filed May 26, 1992, Ser. No. 889,039
Claims priority, application Rep. of Korea, May 27, 1991, 91-8657; Jun. 26, 1991, 91-10622
Int. Cl.[5] F02B *35/00*
U.S. Cl. 60—315 **5 Claims**



1. A device for facilitating exhaust action of an internal combustion engine including:
a silencer (**100**);
an exhaust pipe (**101**, **102**, **103**); and
a guided flow depression device (**4**) comprising a diverging pipe (**1**) with a divergent side thereof and disposed at one side of said exhaust pipe (**101**), a reduced diverging exhaust passage (**12**) formed within said diverging pipe (**1**), a gas lead (**2**) tapered from the center thereof to the front and rear thereof to form the reduced diverging exhaust passage (**12**), a supporting plate (**11**) used to weld the edge of the center of said gas lead (**2**) to the end portion of said diverging pipe (**1**), an air guide (**3**) for guiding air according to the movement of a vehicle, fixed by said supporting plate (**11**) and having an opening which is larger than the outer diameter of said diverging pipe (**1**) and the rear portion of the air guide is smaller than the front portion thereof and a converging air passage (**13**) formed between said opening of said air guide (**3**) and said end portion of said diverging pipe (**1**).

5,282,362
REDUCED LEAKAGE TORQUE CONVERTER TURBINE AND IMPELLER
Craig M. Renneker, Bloomfield Township, Oakland County, and Joel M. Maguire, Dearborn, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 31, 1992, Ser. No. 937,028
Int. Cl.[5] F16D *33/00*
U.S. Cl. 60—345 **12 Claims**

1. A fluid torque converter located between a vehicle engine and a vehicle transmission, generally toroidally shaped, comprising:
a turbine, having a principally semitoroidal turbine core formed of sheet metal and a principally semitoroidal turbine shell formed of sheet metal and a complement of

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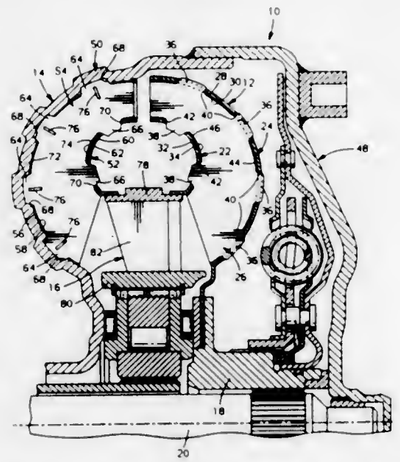
turbine blades formed of sheet metal being disposed between the turbine core and the turbine shell, the turbine blades having first edges complementary to an inner surface of the turbine shell and second edges complementary to an outer surface of the turbine core;

an impeller, having a principally semitoroidal impeller core formed of sheet metal and a principally semitoroidal impeller shell formed of sheet metal and a complement of impeller blades formed of sheet metal being disposed between the impeller core and the impeller shell, the impeller blades having first edges complementary to an inner surface of the impeller shell and second edges complementary to an outer surface of the impeller core;

a stator having a principally annular stator core and a principally annular stator shell and a complement of stator blades, the stator blades being disposed between the stator core and the stator shell; and

one of the turbine and the impeller having at least one of:

an elastomeric shell lining over the inner surface of the shell, the first edges of the blades pressing into the elastomeric shell lining, locally deforming the elastomeric shell lining, thereby sealing the first edges of the blades against the shell, and



an elastomeric core lining over the outer surface of the core, the second edges of the blades pressing into the elastomeric core lining, locally deforming the elastomeric core lining, thereby sealing the second edges of the blades against the core.

7. A method of forming either of a torque converter turbine and a torque converter impeller comprising:

stamping a shell of sheet metal;

providing a shell lining of elastomeric material on an inner surface of the shell;

stamping a core of sheet metal;

providing a core lining of elastomeric material on an outer surface of the core;

stamping blades of sheet metal;

assembling the shell, the core, and the blades with the blades disposed between the shell and the core, with first blade edges being proximate to the inner surface of the shell and second blade edges being proximate to the outer surface of the core;

pressing the shell and the core toward each other; and

fixing the blades to the shell and the blades to the core.

5,282,363

HYDRAULIC CIRCUIT FOR RUNNING A CRAWLER VEHICLE

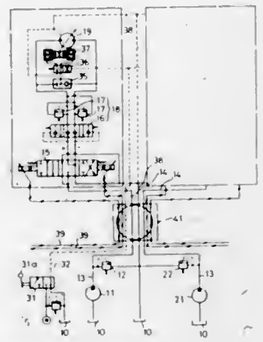
Kazunori Ogawa; Takuma Endo; Hisashi Nakashima, all of Gifu, and Yoji Asano, Aichi, all of Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Dec. 31, 1991, Ser. No. 815,023

Claims priority, application Japan, Dec. 31, 1990, 3-010002

Int. Cl.[5] F16D *31/02*; B62D *11/00*

U.S. Cl. 60—420 **17 Claims**



1. A crawler vehicle comprising:

a running frame portion, hydraulic motors for running the crawler vehicle, a hydraulic circuit for running the crawler vehicle, an upper swivel portion turnably disposed on the running frame portion, a swivel joint disposed on said swivel portion, hydraulic pumps corresponding to said hydraulic motors, high pressure fluid passages which supply said hydraulic motors with pressure fluid and which are formed in said swivel joint, and directional control valves for controlling said hydraulic running motors, wherein the control valves are disposed between said swivel joint and said running motors and communicate with said high pressure passages;

wherein said directional control valves are electro-magnetic flow directional control valves provided with electromagnetic valves; and

wherein said electro-magnetic flow directional control valves are integrally disposed with said running motors, respectively, without having any pipe arrangement therebetween.

5,282,364

DEVICE IN THE THERMOELECTRIC HEATERS/COOLERS

Pavel Cech, S-443 39 Lerum, Odenius väg 13, Sweden

PCT No. PCT/SE91/00035, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/11666, PCT Pub. Date Aug. 8, 1991

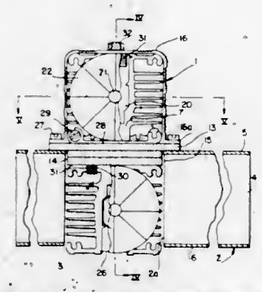
PCT Filed Jan. 18, 1991, Ser. No. 915,843

Claims priority, application Sweden, Jan. 24, 1990, 9000241

Int. Cl.[5] F25B *21/02*

U.S. Cl. 62—3.2 **20 Claims**

1. A device in thermoelectric heaters/coolers, comprising at least one thermoelectric block of the Peltier type having planar heat transfer surfaces and heat exchanging means consisting of metallic convector elements, a current of forced air provided by a fan sweeping over said heat exchanging means, at least on one side of the block, characterized in that said convector element is formed by a plurality of squarely cut, extruded profile members having planar faces extending longitudinally alongside the thermoelectric blocks, said profile members being provided with fins and channels, said fan being an axial fan having an impeller spanning the major portion of the convector element cross-sectional area, said profile members being encompassed by a longitudinal wall structure defining an elongated channel for rectilinearly conducting air flow from said fan through said fins, said convector element being provided with means to retain the fan unit in position, and oppositely directed planar faces of the heat conducting material of the thermoelectric block being positioned to have an extensive heat-transfer contact with the corresponding longitudinal



planar faces of the associated convector profile member, said planar faces of said thermoelectric block and said convector profile members planar faces extending in mutual parallel mating relationship, and said profile members being encompassed by a longitudinal wall structure defining an elongated channel means for rectilinearly conducting air flow from said fan through said fins parallel to the profile member planar faces.

5,282,365

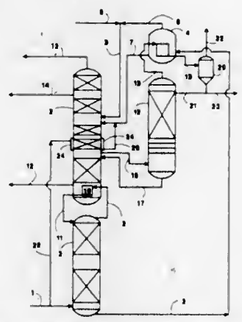
PACKED COLUMN DISTILLATION SYSTEM

Richard A. Victor; Dante P. Bonaquist, both of Grand Island, and Robert A. Beddome, Tonawanda, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Nov. 17, 1992, Ser. No. 977,463

Int. Cl.[5] F25J *3/04*

U.S. Cl. 62—22 **10 Claims**



1. A method for carrying out distillation comprising providing a distillation column having a column wall with an inner surface and an outer surface, passing vapor and liquid countercurrently in the column over mass transfer elements comprising packing and forming liquid on the inner surface of the column wall, characterized by providing external heat at the column wall by condensing fluid on the column wall in an amount sufficient to vaporize at least some of the liquid formed on the inner surface of the column wall.

5,282,366

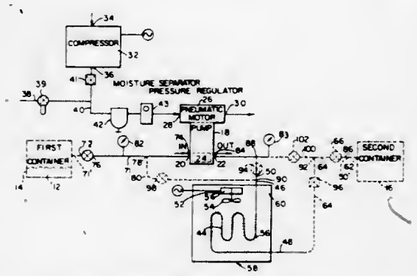
TRANSPORTABLE REFRIGERANT TRANSFER UNIT AND METHODS OF USING THE SAME

John H. Reilly, Jr., Rosemont, Pa.; Michel J. Maniez, Flemington, and George R. Loose, Bridgeton, both of N.J., assignors to National Refrigeration Products, Inc., Plymouth Meeting, Pa.

Division of Ser. No. 618,193, Nov. 26, 1990, Pat. No. 5,170,632. This application Apr. 14, 1992, Ser. No. 868,595

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—292 **5 Claims**



1. A refrigerant transfer unit comprising:

a refrigerant inlet to the unit;

a refrigerant outlet from the unit;

a refrigerant transfer device having an inlet receiving refrigerant at a first pressure and an outlet expelling refrigerant at a second pressure higher than the first pressure;

an inlet conduit from the unit inlet to the refrigerant transfer device inlet, the inlet conduit lacking any chamber capable of receiving and holding liquid refrigerant received from the unit inlet for evaporation by the transfer device;

an outlet conduit from the refrigerant transfer device outlet to the unit outlet;

a refrigerant return conduit fluidly coupling the outlet conduit with the inlet conduit;

a refrigerant by-pass conduit fluidly coupling together spaced-apart portions of the outlet conduit, the spaced-apart portions being on either side of an intermediate portion of the outlet conduit and on either side of a junction between the intermediate portion and the refrigerant return conduit, the refrigerant by-pass conduit having a length shorter than a length of the intermediate portion of the outlet conduit between ends of the by-pass conduit; and

a refrigerant treatment device fluidly coupled in the intermediate portion of the outlet conduit.

5,282,367

REFRIGERATED FOOD PREPARATION TABLE AND METHOD

Earl Moore, Blanchard; Thomas Frick, Rosebush; Wayne Smith, Mt. Pleasant, and James Lyon, Alma, all of Mich., assignors to The Delfield Company, Mt. Pleasant, Mich.

Filed Apr. 24, 1992, Ser. No. 872,813

Int. Cl.[5] A47F *3/04*

U.S. Cl. 62—256 **37 Claims**

23. A refrigerated food preparation table, comprising:

a) a housing;

b) a food container supported within said housing and having an outer surface and an opening, said opening being open to air at an ambient temperature;

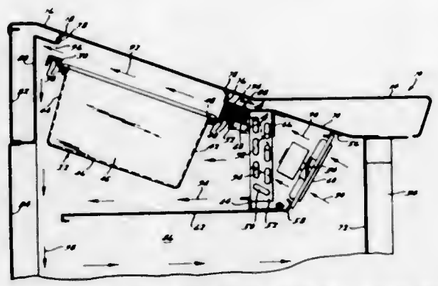
c) powered means for generating an inlet air flow;

d) a heat exchanger for cooling said air flow; and

e) direction controlling means for directing said flow through said heat exchanger to cool said flow, said direction controlling means including baffle means for causing one portion of said flow to follow a more tortuous path

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through said heat exchanger than the remainder of said flow, whereby said one portion of said air flow is cooled to a first temperature and said remainder of said flow is cooled to a second temperature, said ambient temperature being greater than said second temperature, said second temperature being greater than said first temperature, said



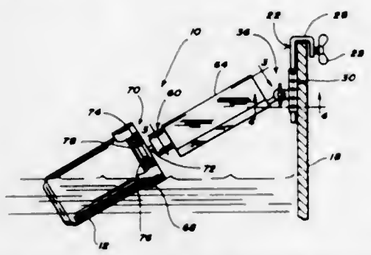
one portion of said flow flowing across said opening and said remainder of said flow flowing along said outer surface, said housing being configured so that said one portion and said remainder of said air flow combine subsequent to said flow across said opening and along said surface, and said housing being configured such that said air flow flows in a substantially cyclical path.

5,282,368

BEVERAGE COOLING DEVICE

Raymond D. Ordoukhanian, 4 Dorie, O'Fallon, Mo. 63366

Filed May 17, 1993, Ser. No. 63,942
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—372 **10 Claims**



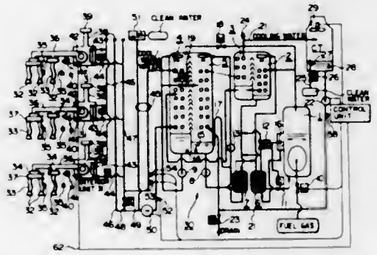
1. A beverage cooling device for supporting and rotating a beverage container in a hollow receptacle adapted to hold ice and having a base surrounded with side walls and an upwardly facing open top, said cooling device comprising:
- a vertical support for attachment to a top edge of the side walls;
- a vertically adjustable slide mounted on the vertical support with means for locking the slide in a selected position;
- a clutch coupling mounted on the slide with a fixed member and a movable member, said movable member rotatable about a horizontal axis;
- a drive mechanism attached to the movable member of the clutch coupling;
- a sleeve coupled to the drive mechanism, said sleeve adapted to frictionally grip a beverage container;
- whereby the container is rotated by the sleeve at a level in the receptacle determined by the position of the adjustable slide on the vertical support and at an angle determined by the position of the movable member of the clutch coupling so that the device can be used with receptacles having a wide range of sizes.

5,282,369

MULTIPLE TYPE ABSORPTION AIR CONDITIONING SYSTEM

Tomihisa Ohuchi, Tsukuba; Akira Nishiguchi, Ushiku; Seiichiro Sakaguchi; Daisuke Hisajima, both of Ibaraki; Michihiko Aizawa, Ushiku; Takashi Nakao, Ibaraki; Yasuo Koseki, Hitachiota, and Kyoji Kohno, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,989
Claims priority, application Japan, Mar. 29, 1991, 3-093045
Int. Cl.[5] F24F *11/00*
U.S. Cl. 62—476 **20 Claims**



1. A multiple type absorption air conditioning system comprising:
- an absorption cool/warm water unit in which a weak solution diluted by a refrigerant is heated in a regenerator to generate refrigerant steam, said refrigerant steam is cooled and condensed by a cooling means and is then evaporated in an evaporator to cool a cool/warm water during a cooling operation, or a cool/warm water is heated by said refrigerant steam in said evaporator during a heating operation, the refrigerant from said evaporator is absorbed in or mixed with a strong solution produced when said refrigerant steam is generated in an absorber to said weak solution, and said weak solution is returned to said regenerator;
- a cool/warm water system through which said cool/warm water cooled or heated by said absorption cool/warm water unit flows;
- a plurality of water air heat exchanging means for cooling or heating air by said cool/warm water from said cool/warm water system; and
- an air system for blowing said air cooled or heated by said water air heat exchanging means into individual rooms.

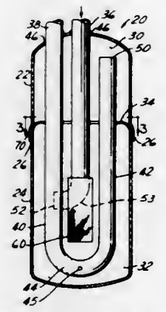
5,282,370

AIR-CONDITIONING SYSTEM ACCUMULATOR AND METHOD OF MAKING SAME

Daniel F. Kiblawi, Rochester Hills; Dean M. Christie, Royal Oak, and Todd R. Kelpin, Sterling Heights, all of Mich., assignors to Fayette Tubular Technology Corporation, Wilmington, Del.

Filed May 7, 1992, Ser. No. 879,808
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 **18 Claims**

1. An accumulator for use in an air-conditioning system wherein a partially vaporized refrigerant is circulated, said accumulator comprising:
- a housing defining an internal chamber, said housing comprising a first upper portion and a second lower portion, said second lower portion of said housing having a closed end and an open end, said open end of said second lower portion of said housing having an inwardly extending annular flange defining an opening, said inwardly extending annular flange being a baffle member to impede the flow of said partially vaporized refrigerant, such that said baffle member causes said partially vaporized refrigerant to circulate within said second lower portion of said housing such that completely vaporized refrigerant is allowed to flow past said baffle member into said first upper portion of said housing;
- an inlet tube passing through said first upper portion and into said second lower portion of said housing; and



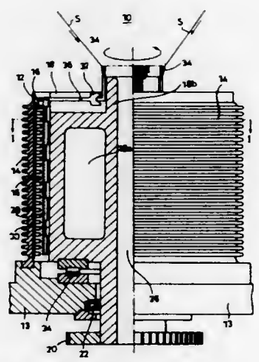
- an outlet tube passing through said housing, said outlet tube having a refrigerant inlet port terminating in said first upper portion of said housing;
- whereby said baffle member located within said internal chamber of said housing impedes the flow of incoming partially vaporized refrigerant causing it to circulate within said internal chamber until said partially vaporized refrigerant completely vaporizes such that the completely vaporized refrigerant flows past said baffle member and into said first upper portion of said internal chamber and further flows into said outlet tube.

5,282,371

CIRCULAR KNITTING MACHINE WITH MAGNETIC ACTUATED NEEDLE SELECTION

Masamitsu Otsuki, Osaka, Japan, assignor to I-TEC Hanshin Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 942,686, Sep. 9, 1992. This application Apr. 14, 1993, Ser. No. 47,603
Claims priority, application Japan, Jul. 8, 1992, 4-180765
Int. Cl.[5] D04B *9/00, 15/66*
U.S. Cl. 66—13 **5 Claims**



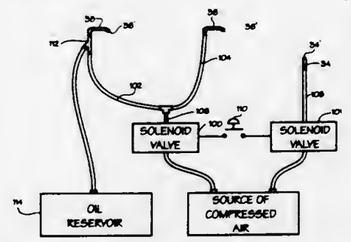
1. A circular knitting machine comprising
a stationary hollow cylinder,
a rotor disposed within said stationary hollow cylinder and mounted for rotation coaxially with respect to said stationary hollow cylinder,
- a plurality of coils disposed on the internal circumferential surface of said stationary hollow cylinder,
- a plurality of sliders disposed in vertically slidable relation on the external circumferential surface of said rotor in positions to be selectively vertically moved in response to magnetic fields produced by energization of the coils of said plurality of coils,
- needles mounted on top of the corresponding sliders,
- coil energizing means for selectively exciting the coils of said plurality of coils, and
- driving means for rotating said rotor.

5,282,372

APPARATUS AND METHOD FOR FLUSHING DEBRIS FROM THE CYLINDER SLOTS OF CIRCULAR KNITTING MACHINES

Alan Gutschmit, Troy, N.C., assignor to Alandale Industries, Inc., Troy, N.C.

Continuation-in-part of Ser. No. 792,349, Nov. 14, 1991, Pat. No. 5,195,337. This application Nov. 6, 1992, Ser. No. 972,580
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] D04B *35/32*
U.S. Cl. 66—168 **8 Claims**



1. In a circular knitting machine of the type having a rotatable structure formed with a plurality of slots for receiving reciprocating knitting elements, the improvement comprising apparatus for periodically flushing accumulated debris forcibly from said slots, said flushing apparatus including a source of pressurized flushing fluid, a flushing nozzle fixedly mounted adjacent said rotatable structure, means for selectively communicating said flushing nozzle with said fluid source to supply said pressurized fluid to said flushing nozzle, said flushing nozzle having an emission opening oriented relative to said rotatable structure to discharge said pressurized fluid directly into said slots as said rotatable structure rotates, a source of a pressurized gas, a cleaning nozzle fixedly mounted adjacent said rotatable structure, means for selectively communicating said cleaning nozzle with said gas source to supply said pressurized gas to said cleaning nozzle, said cleaning nozzle having an emission opening oriented relative to said rotatable structure to discharge said pressurized gas directly into said slots a said rotatable structure rotates.

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5,282,373

ANTITHEFT PEDAL-LOCKING DEVICE FOR VEHICLES, PARTICULARLY SUITABLE FOR VEHICLES WITH AUTOMATIC TRANSMISSION

Guglielmo Riccitelli, No. 3, Via Capo Passero, 00122 Ostia Lido - Roma, Italy

PCT No. PCT/IT89/00073, § 371 Date Apr. 1, 1991, § 102(e) Date Apr. 1, 1991, PCT Pub. No. WO90/05653, PCT Pub. Date May 31, 1990
PCT Filed Nov. 9, 1989, Ser. No. 659,282
Claims priority, application Italy, Nov. 15, 1988, 48560 A/88
Int. Cl.[5] B60R *25/00*
U.S. Cl. 70—199 12 Claims



1. An antitheft pedal locking device, comprising:
- a first supporting member extending upwardly;
- a safety lock coupled to said first supporting member;
- a shaped member projecting laterally adjacent a lower end of said first supporting member;
- a second supporting member slidably coupled to said first supporting member for movement of said first supporting member between a lower locking position an upper unlocking position, said second supporting member having a projecting member cooperating with said shaped member in said locking position of said first supporting member for locking a vehicle pedal;
- a base member for resting on a vehicle floor adjustably connected by first coupling means to a lower end of said second supporting member; and
- a third supporting member adjustably mounted on said base member by second coupling means, said third supporting member being laterally spaced from and parallel to said second supporting member and mounting an obstruction member for obstructing motion of a second vehicle pedal, said obstruction member including a single, pivotally mounted, transverse member positionable on a rear side of the second vehicle pedal.

5,282,374

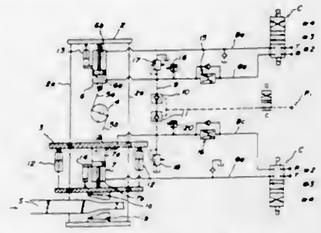
CONTINUOUS FORGING APPARATUS FOR CAST STRAND

Shinji Kojima; Hisakazu Mizota; Toshitane Matsukawa; Toshio Fujimura; Kouichi Kushida; Yoshio Yoshimoto, and Noriaki Inoue, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Japan

PCT No. PCT/JP92/00207, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO92/14567, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 26, 1992, Ser. No. 949,500
Claims priority, application Japan, Feb. 26, 1991, 3-53230; Feb. 27, 1991, 3-53637; Feb. 27, 1991, 3-53638
Int. Cl.[5] B21J *1/02, 9/12, 9/18*
U.S. Cl. 72—407 11 Claims

1. A cast strand continuous forging apparatus including a pair of anvils for continuously forging a cast strand drawn from continuous casting molds in its final solidification region by repeated reciprocative movements of the anvils toward and away from each other on both sides of the cast strand,

said apparatus comprising a main frame having one anvil fixed thereto, a subframe having the other anvil fixed thereto and movable along guide members of the main frame, a crankshaft causing the reciprocative movements of the anvils toward and away from each other, links connecting the crankshaft to the main frame and the sub-



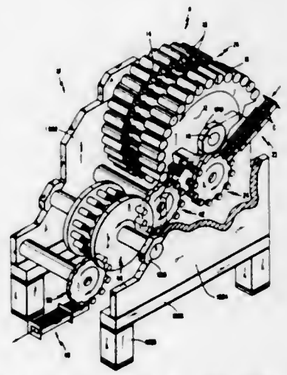
frame, respectively, positioning cylinders arranged on the main frame and the subframe, respectively, for adjusting the distance between the anvils, hydraulic oil passages having a selector valve and connecting a rod end oil chamber and a head end oil chamber of each of the positioning cylinders, and a first bypass line connecting the hydraulic oil passages connected to the head end oil chambers of the positioning cylinders.

5,282,375

SPIN FLOW NECKING APPARATUS AND METHOD OF HANDLING CANS THEREIN

Harry W. Lee, Jr.; Charles T. Payne, Jr.; Field I. Robertson, and Robert K. Thai, all of Chesterfield County, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 884,810, May 15, 1992, abandoned. This application Aug. 14, 1992, Ser. No. 929,932
Int. Cl.[5] B21D *19/12*
U.S. Cl. 72—4 24 Claims



1. Spin flow forming apparatus for reducing the diameter of an open end of a cylindrical container body, comprising:
- a tooling disc turret and a base pad turret mounted for co-rotation with a main turret shaft;
- a plurality of necking spindle assemblies mounted on the tooling disc turret at circumferentially spaced intervals from each other;

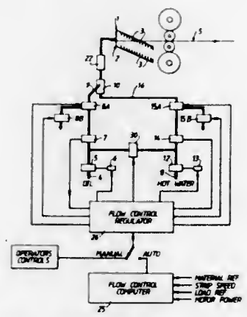
each said necking spindle assembly including a first member engageable within the open end to support the container open end on the spindle and a second member mounted adjacent the first member for positioning within the container interior inwardly adjacent the first member;
- a plurality of base pad spindle assemblies mounted on the base pad turret in respective coaxial alignment with said necking spindle assemblies, for respectively engaging a bottom wall of one said container body;
- means mounted on the tooling disc turret externally of the container body for radially inward movement into necking contact with the container side wall, whereby relative movement of said externally mounted means in cc-action with said first and second members causes radial inward deformation of the container open end to neck-in said end; and
- locking means mounted on the tooling disc turret for limiting movement of said externally mounted necking means towards said first and second members under a predetermined supply condition of container bodies to said apparatus.

5,282,376

METHOD AND APPARATUS FOR LUBRICATING METAL STRIP WITH AN OIL-WATER EMULSION

Anthony A. Steele, Nr. Sheffield, and Andrew M. Pye, Sheffield, both of England, assignors to Davy McKee (Sheffield) Limited, Sheffield, United Kingdom

PCT No. PCT/GB90/01760, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/07241, PCT Pub. Date May 30, 1991
PCT Filed Nov. 15, 1990, Ser. No. 856,911
Claims priority, application United Kingdom, Nov. 15, 1989, 8925856
Int. Cl.[5] B21B *45/02*
U.S. Cl. 72—43 10 Claims



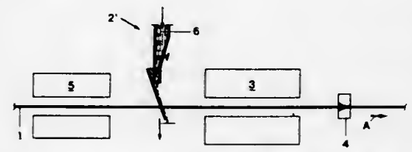
1. Apparatus for lubricating metal strip being rolled in a rolling mill stand comprising
- a mixing tube structure comprising first and second tubes each having an inlet end and an outlet end, a portion of the second tube including the outlet end thereof projecting into a portion of the first tube intermediate its inlet and outlet ends with the outlet end of the second tube facing towards the outlet end of the first tube and said portion of the first tube being of greater cross-sectional area than the second tube;
- means for supplying water to the inlet end of the first tube;
- means for supplying oil to the inlet end of the second tube;
- an emulsifier having an inlet and an outlet, the outlet end of the first tube being connected to the inlet of the emulsifier to supply an at least partial mixture of oil and water thereto;
- and spray headers located at the inlet side of the rolling mill stand and connected to the outlet of the emulsifier to supply an oil-water emulsion from the emulsifier to metal strip entering the rolling mill stand.

5,282,377

METHOD AND SYSTEM OF LUBRICATING WIRE BEING DRAWN THROUGH A DIE

Dietmar Illig, and Oliver Eierle, both of Augsburg, Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Filed Jun. 16, 1992, Ser. No. 899,448
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122224
Int. Cl.[5] B21B *45/02*
U.S. Cl. 72—43 26 Claims



21. A system for wire drawing having a drawing die (4) through which a moving wire (1) is drawn, said system comprising

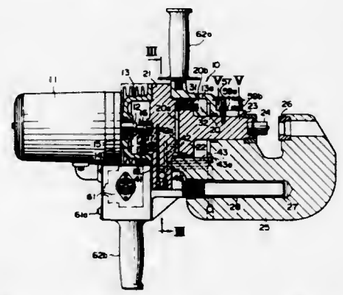
in accordance with the invention
- means for generating a curtain or sheet of drawing liquid lubricant (6, 16),
- wherein said curtain or sheet defines a major curtain or sheet plane having a thickness which is substantially smaller than the lateral extent of said curtain or sheet of lubricant, said moving wire, being passed through said sheet or curtain of lubricant in a direction which is at least generally transverse to the major plane of the curtain or sheet of lubricant,
- whereby said moving wire, will be lubricated in an interaction zone between the curtain or sheet of lubricant and the wire, which interaction zone has a length which is essentially defined by the thickness of said curtain or sheet of lubricant.

5,282,378

FLUID ACTUATED, DOUBLE ACTING MACHINE FOR PUNCHING, CUTTING, BENDING OR THE LIKE

Kiyoshi Kimura, Fujisawa, Japan, assignor to Kabushiki Kaisha Ogura, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,332
Claims priority, application Japan, Jan. 10, 1991, 4-003222
Int. Cl.[5] B26B *17/00*
U.S. Cl. 72—453.15 4 Claims

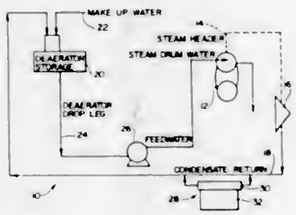


1. A fluid operated, double acting, linear actuating machine suitable for punching and other applications, comprising:
- (a) a casing having a fluid reservoir and a piston chamber defined therein;

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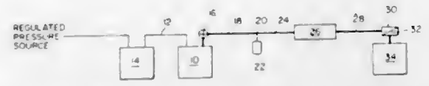
(b) a piston reciprocably mounted in the piston chamber and defining a pair of opposed fluid chambers therein;
(c) a piston rod extending from the piston and projecting out of the casing;
(d) pump means mounted to the casing for pressuring a fluid contained in the fluid reservoir;
(e) directional control valve means for alternately placing the pump means in communication with the pair of fluid chambers for extension and contraction of the piston rod;
(f) sensing means for sensing the extension and contraction of the piston rod; and
(g) control means connected to the directional control valve means and the sensing means for causing the piston rod to be contracted under fluid pressure upon extension; and
wherein the directional control valve means comprises:
(a) a directional control valve; and
(b) a solenoid connected in circuit with the control means for actuating the directional control valve.

5,282,379
VOLATILE TRACERS FOR DIAGNOSTIC USE IN STEAM GENERATING SYSTEMS
Scott R. Harder, Naperville; Claudia C. Pierce, Lisle, and Brian F. Post, Naperville, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Apr. 3, 1992, Ser. No. 862,964
Int. Cl.[5] G01N *31/22*
U.S. Cl. 73—29.01 **20 Claims**



1. A method of identifying the proportion of steam condensate water from a given steam source in a condensate water sample from a steam-using system comprising:
adding a tracer to a steam source of a steam-using system having condensate water at an addition point in known initial concentration (C_I);
sampling the condensate water of said steam-using system at a sampling point;
sensing a characteristic of said tracer in said condensate water sample that is proportional to the concentration of said tracer in said condensate water sample (C_F);
converting said sensed characteristic to said C_F value;
determining the ratio of $C_F/(C_I-C_D)$, wherein C_D is the amount of said tracer decharacterized as to said characteristic in said system between said addition point and said sampling point, in terms of concentration of said tracer,
wherein said tracer is a chemical species sufficiently selectively carried over into the steam of said steam source to provide a concentration C_F sufficient to enable said sensing of said characteristic;
wherein C_D is less than C_F; and
wherein said ratio of $C_F/(C_I-C_D)$ is an indicator of the proportion of steam condensate water from a given steam source in a condensate water sample from a steam-using system.

5,282,380
INTEGRITY TEST FOR MEMBRANES
Anthony J. DiLeo, Westford, and Michael W. Phillips, Burlington, both of Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed Jun. 30, 1992, Ser. No. 906,730
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **14 Claims**

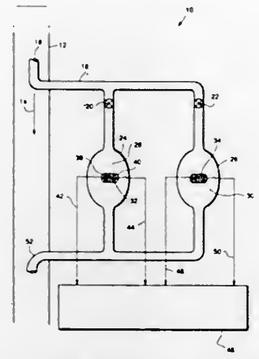


1. The process for non-destructively testing an ultrafiltration membrane to determine the particle retention capabilities of the membrane which comprises:
determining a standard relationship between the degree of retention of particles having a minimum size or larger by first set of membranes with a first factor consisting of the ratio of the flow-rate of a first intrusion liquid through said first set of membranes wet with a wetting liquid immiscible with said first intrusion liquid measured at a constant said first set of membranes measured at a constant transmembrane pressure that effects nearly complete intrusion of pores of said membrane,
wetting a sample of said membrane with said wetting fluid,
passing said first and second intrusion liquids at said pressures through said sample of said membrane to determine a second factor consisting of the ratio of flow rate of said first intrusion liquid through said membrane sample wet with said wetting liquid immiscible with said first intrusion liquid measured at said constant transmembrane pressure to the flowrate of said second intrusion liquid through said membrane sample measured at said constant transmembrane pressure that effects nearly complete intrusion of pores of said membrane sample,
comparing said second factor ratio with said standard relationship thereby to determine the degree of retention of said particles having a minimum size or larger by said sample of said membrane,
said wetting fluid and said intrusion fluid being nondestructive to said membrane, and
said transmembrane pressures and said transmembrane flow rates being nondestructive to said membrane.

5,282,381
SUPERCRITICAL FLUID CONTAMINATION MONITOR
Wilfried Krone-Schmidt, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 8, 1992, Ser. No. 942,017
Int. Cl.[5] B01D *15/00*; **B01J** *39/00*
U.S. Cl. 73—61.41 **11 Claims**

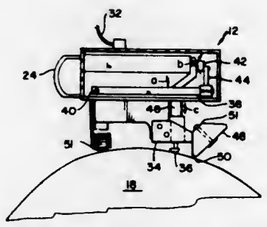
1. A system for detecting the presence of contaminants in a supercritical fluid, said system comprising:
a conduit containing supercritical fluid;
sampling means connected to said conduit for removing supercritical fluid from said conduit to provide a sample stream;
a vessel having walls defining a contaminant measurement zone;
means for introducing said sample stream from said sampling means into said measurement zone;
an absorbent module comprising an absorbent material located within said measurement zone wherein said absorbent material comprises zeolite and is capable of selectively absorbing contaminants from said sample stream, said absorbent module having an electrical property which varies depending upon the amount of contaminant which is absorbed therein; and

electrical property measurement means for measuring the electrical property through said absorbent module to



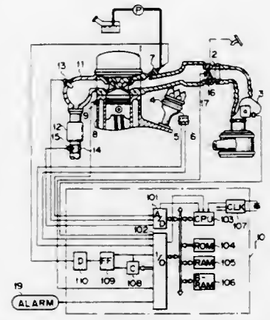
thereby provide for detection of contaminants present in said sample stream of supercritical fluid.

5,282,382
ROLL HARDNESS OBSERVATION TESTING APPARATUS AND PROCESS
Leonard F. Fiore, Foley; Gregory P. Brandi, Holdingford, and Allen R. Voit, Sauk Rapids, all of Minn., assignors to Champion International Corporation, Stamford, Conn.
Filed Sep. 16, 1991, Ser. No. 760,703
Int. Cl.[5] G01N *3/48, 3/52*
U.S. Cl. 73—82 **3 Claims**



1. A testing apparatus for determining hardness characteristics of an array of paper, said testing apparatus comprising:
a tester including a housing, impact means mounted in the housing for impacting the paper being tested, hardness measuring means coupled to the impact means for generating signals indicative of hardness based upon the impact of the paper by the impact means, traversal means mounted to the housing for permitting movement of the tester across the paper, and position sensing means mounted to the housing for generating signals identifying the position of the impact means on the paper at each impact by the impact means, wherein said traversal means comprises an array of wheels spaced from the impact means and the position sensing means;
computer means operatively connected to the hardness measuring means and the position sensing means for receiving signals therefrom and for calculating hardness at each of plural impacted positions across the paper being tested; and
output means operatively connected to the computer for providing output data indicative of the hardness of the paper being tested at each of the plural impacted positions across the paper.

5,282,383
METHOD AND APPARATUS FOR DETERMINING DETERIORATION OF THREE-WAY CATALYSTS IN DOUBLE AIR-FUEL RATIO SENSORS SYSTEM
Nobuaki Kayanuma, Gotenba, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Apr. 22, 1992, Ser. No. 872,249
Claims priority, application Japan, Apr. 23, 1991, 3-092255; Apr. 14, 1992, 4-094369
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **33 Claims**



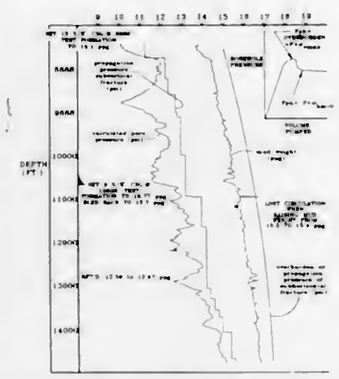
1. A method of detecting deterioration of a catalyst converter for removing pollutants in exhaust gas disposed within an exhaust gas passage of an internal combustion engine having upstream-side and downstream-side air-fuel ratio sensors disposed upstream and downstream, respectively, of said catalyst converter, comprising the steps of:
adjusting an air-fuel ratio correction factor in accordance with the output of said upstream-side air-fuel ratio sensor so that an air-fuel ratio is controlled at a predetermined target air-fuel ratio that is different from the stoichiometric air-fuel ratio, the air-fuel ratio changing from the rich state to the lean state, or vice versa; and
determining whether or not said catalyst converter has deteriorated in accordance with the output of said downstream-side air-fuel ratio sensor when the air-fuel ratio is controlled in accordance with the adjusting step.

5,282,384
METHOD FOR CALCULATING SEDIMENTARY ROCK PORE PRESSURE
Phil Holbrook, Houston, Tex., assignor to Baroid Technology, Inc., Houston, Tex.
Filed Oct. 5, 1992, Ser. No. 956,609
Int. Cl.[5] E21B *49/00*
U.S. Cl. 73—152 **23 Claims**

1. A method of calculating pore pressure in naturally compacted sedimentary rock penetrated by a borehole drilled from the earth's surface, comprising:
(a) measuring formation overburden at a specific borehole depth;
(b) determining rock solidity at multiple incremental borehole depths;
(c) determining a volumetric proportion for each of a plurality of minerals in naturally compacted sedimentary rock at each of the multiple incremental borehole depths;
(d) calculating formation overburden at each of the multiple incremental borehole depths as a function of the measured formation overburden at the specific borehole depth and the determined volumetric proportion of each of the plurality of minerals at each of the respective multiple incremental borehole depths;
(e) calculating effective stress at each of the multiple incremental borehole depths as a function of maximum effec-

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tive stress of each of the plurality of minerals in the sedimentary rock at each of the multiple incremental borehole depths and the determined rock solidity at each of the multiple incremental borehole depths; and



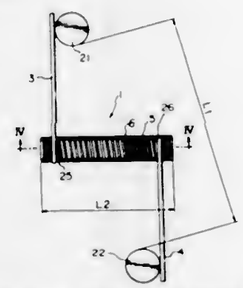
(f) calculating pore pressure at each of the multiple incremental borehole depths as a function of the calculated formation overburden and the calculated effective stress at each of the multiple incremental borehole depths.

5,282,385

HOT-WIRE TYPE FLOWMETER

Hisashi Kayano, Nagoya; Tomokazu Kondo, Kariya, and Yukio Sawada, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 29, 1991, Ser. No. 705,813
Claims priority, application Japan, May 30, 1990, 2-141027; Apr. 25, 1991, 3-095290
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.27 **15 Claims**



1. A hot-wire type flowmeter for measuring the flow rate of a fluid in a fluid passage by sensing a change in an electrical resistance of an electrical resistor supported by a supporting structure within said fluid passage, wherein said electrical resistor includes:

a pipe made of an electrically insulating material;

an electrically resistor wire wound on said pipe; and

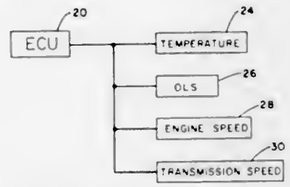
lead wires extending in opposite directions from said pipe, each lead wire having one end secured to an end portion of said pipe so as to extend to intersect said pipe with respect to a longitudinal direction of said pipe and connected to said resistor wire, and having the other end supported by said supporting structure.

5,282,386

APPARATUS AND TECHNIQUE FOR FLUID LEVEL DETERMINATION IN AUTOMATIC TRANSMISSIONS

Robert T. Niemczyk; Thomas H. Wilson, both of Indianapolis; Phillip F. McCauley, Zionsville; Ronald A. Lee, Brownsburg, and William M. Murray, Pittsboro, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 22, 1992, Ser. No. 949,165
Int. Cl.[5] B60K *41/04*; G01F *23/30*
U.S. Cl. 73—292 **3 Claims**



1. A method for determining an oil level in a transmission driven by an engine, comprising:

generating a first signal corresponding to an actual transmission oil level and density;

generating a second signal corresponding to actual transmission oil temperature;

determining said actual oil level as a function of said first and second signals;

determining a deviation of actual engine speed from a reference idle engine speed and compensating said determination of actual oil level as a function thereof;

calculating a deviation of said compensated actual oil level from a desired oil level and determining a volume error therefrom;

determining a deviation of said actual oil temperature from a typical operating reference temperature of said transmission oil; and

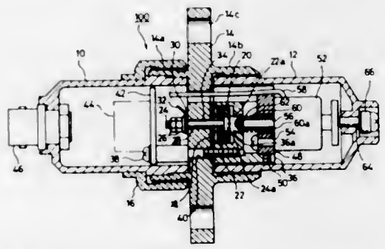
adjusting said volume error as a function of said deviation of said oil temperature.

5,282,387

SHOCK SENSOR

Otohiko Suzuki, Tokyo, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 773,704
Claims priority, application Japan, Nov. 2, 1990, 2-297849; Nov. 2, 1990, 2-297850
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R **9 Claims**



1. A shock sensor comprising:

first and second housings;

a flange for connecting the first housing and the second housing and having a through hole substantially at a center thereof;

a first electrode directly mounted on said flange on a side of said second housing;

a piezoelectric element mounted on said first electrode for generating, when pushed, a voltage having a level according to a pushing force;

an inertia member held in close contact with said piezoelectric element at a side opposite to the first electrode, said inertia member operating as a second electrode;

holding means inserted in said through hole, said first electrode, said piezoelectric element, and said inertia member for holding said piezoelectric element and said inertia member in a close contact with a predetermined pressure; and

a lead terminal held by said holding means via an insulating sheet on said flange on a side of said first housing such that it is connected to said inertia member via said holding means,

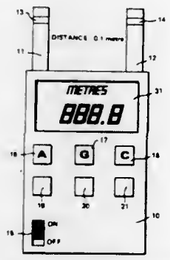
wherein said inertia member pushes said piezoelectric element with a pushing force according to a shock, if this shock is applied to said shock sensor, so that said piezoelectric element generates a voltage having a level according to the pushing force, said voltage being outputted from said lead terminal within said first housing.

5,282,388

AIR FLOW MEASURING APPARATUS

Stanislaw B. Czajkowski, Limerick, Ireland, assignor to Suparules Limited, Limerick, Ireland

Filed Nov. 25, 1991, Ser. No. 796,770
Claims priority, application Ireland, Nov. 26, 1990, 4265/90
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.28 **5 Claims**



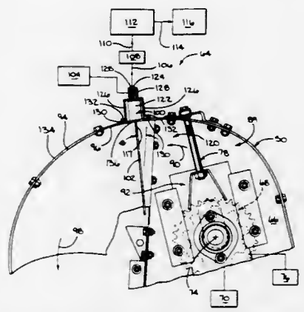
1. An apparatus for measuring the speed of an air flow, comprising a portable hand-held housing, a pair of transducer support members mounted spaced apart on the housing, a single pair of ultrasonic transducers mounted externally of the housing each on a respective one of the support members for insertion in the air flow, each transducer comprising a film of piezoelectric material mounted on the respective support member and have two at least partially overlapping electrodes respectively in intimate contact with each of the two opposite surfaces of the film, means for causing one of said transducers acting as an ultrasonic transmitter to transmit at least one burst of sound towards the other of said transducers acting as an ultrasonic detector, and means for deriving the speed of the air flow as a function of the time taken for the burst to reach the detector.

5,282,389

APPARATUS FOR MEASURING AGRICULTURAL YIELD

Stephen M. Faivre, DeKalb; David W. Larson, Maple Park, and James H. Bassett, Sycamore, all of Ill., assignors to Dawn Equipment Company, Sycamore, Ill.

Filed Sep. 16, 1992, Ser. No. 945,958
Int. Cl.[5] G01F *1/30*
U.S. Cl. 73—861.73 **43 Claims**



1. In an apparatus for processing an agricultural crop, said apparatus having means for separating waste from a crop to provide a clean yield product and elevator means for raising and discharging a clean yield product to a point of use, the improvement comprising:

means including an actuating arm for producing a signal indicative of a pressure being applied to the actuating arm; and

means for mounting the signal producing means to the apparatus so that the actuating arm intercepts clean yield product discharging from the elevator means,

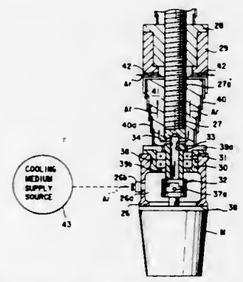
said actuating arm having a dimension which is significantly less than the dimension of the elevator means.

5,282,390

INDUSTRIAL ROBOT WITH MEANS FOR COOLING A LINEAR MOTION NUT AND SCREW SHAFT

Nobutoshi Torii, Hachioji; Akihiro Terada, and Yasuo Sasaki, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Jul. 7, 1992, Ser. No. 867,694
Claims priority, application Japan, Nov. 8, 1990, 2-300983
Int. Cl.[5] F16H *1/18*
U.S. Cl. 74—424.8 R **5 Claims**



1. A cooling means for cooling, by a flow of a cooling medium, a rotary shaft made as a solid member and provided for a linear motion mechanism for a rotation-to-linear motion conversion, arranged between a movable component and a drive motor of an industrial robot, comprising:

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a hollow bracket means for enclosing said shaft at a portion of one end thereof connected to said drive motor via a rotary bearing, said hollow bracket means defining an airtight cooling medium storage chamber therein;

a cooling medium inlet means provided on said hollow bracket means for admitting the cooling medium supplied from a cooling medium supply source therethrough into said cooling medium storage chamber;

a cover means for surrounding said rotary shaft at a threaded portion thereof extending from said portion accommodated in said hollow bracket means via a substantially annular space defined as a passage for said cooling medium around said threaded portion of said shaft; and

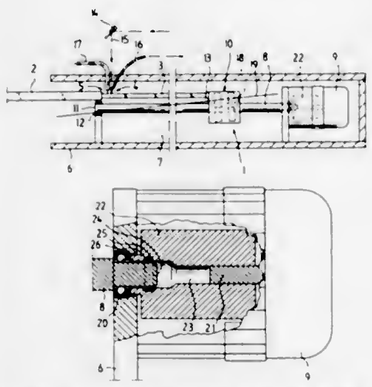
means for defining a cooling medium passage allowing said cooling medium to flow therethrough from said cooling medium storage chamber of said hollow bracket means into said annular space of said cover means.

5,282,391

COUPLING FOR A LINEAR PULLING DEVICE

Matti Rantanen, Kirkkonummi, Finland, assignor to Orion-Yhtyma Oy, Espoo, Finland

Filed Mar. 11, 1992, Ser. No. 849,468
Claims priority, application Finland, Mar. 25, 1991, 911434
Int. Cl.[5] F16H *27/02*; F16D *3/52*
U.S. Cl. 74—89.15 **5 Claims**



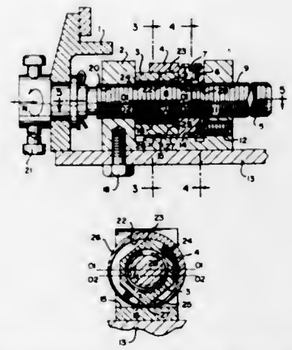
1. A pulling device for providing a smooth linear pulling movement, comprising a shaft rotatable about its central axis; a pulling nut having pulling bearings surrounding said shaft and set at a pitch angle relative to said central axis whereby the rotatable movement of the shaft is converted into linear movement of the pulling nut; a drive motor and transmission driving member aligned with said shaft central axis, the driving member having an opening therein receiving at least a portion of said shaft; and a flexible O-ring about said shaft and within said opening, said O-ring being resiliently compressed between said shaft and said driving member only sufficiently to form a narrow annular contact surface when resiliently compressed between said shaft and said driving member.

5,282,392

SYNCHRO-CLUTCHING SCREW-AND-NUT MECHANISM

Chaolai Fan; Yongjie Fan, and Mengqing Fan, all of Jilin, China, assignors to Chaolai Fan, Jilin, China

Filed Jan. 29, 1992, Ser. No. 827,273
Claims priority, application China, Jan. 31, 1991, 91201540.3; Apr. 3, 1991, 91101816.6
Int. Cl.[5] F16H *25/24*; B25B *1/02*
U.S. Cl. 74—424.8 A **52 Claims**



1. A supporting structure comprising: supporting arms having holes therein, a base plate, lift-guiding means, a screw stem slidably supported in the holes in the supporting arms, and lifting means located between the supporting arms;

a partially threaded nut comprising a nut with an oval hole with internal threads on less than half the internal perimeter of the oval hole, means for guiding the nut to move up and down, and means to effect the up-and-down movement of the nut; and

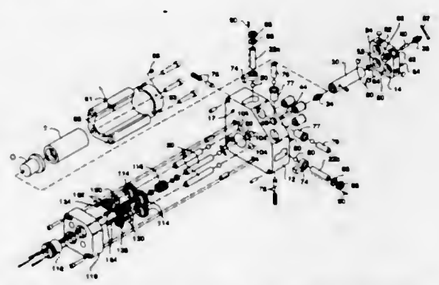
an actuating device to transmit a force to actuate the lifting means, an overload release device and a lift-limiting device.

5,282,393

PRECISION COMPONENT POSITIONER

David F. Arnone, Palo Alto, and Francis S. Luecke, San Jose, both of Calif., assignors to New Focus, Inc., Mountain View, Calif.

Filed May 8, 1992, Ser. No. 880,438
Int. Cl.[5] G05G *11/00*
U.S. Cl. 74—479 PF **9 Claims**



1. A device for mounting and positioning a precision component, said device comprising:

a single frame member defining axial and transverse directions;

a sin gel stage member suspended relative to the frame member;

means on the stage member for securing the component member;

three axial actuators grounded through the frame member and directly engaging a transverse surface of the stage member, whereby selective translation of individual axial actuators relative to the frame member can rotate the stage member about a transverse axis or translate the stage member in an axial direction; and

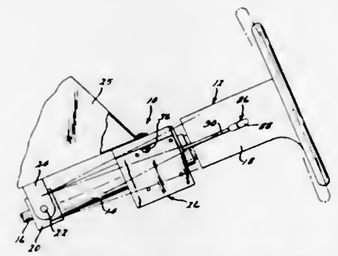
two transverse actuators grounded through the frame member and directly engaging first and second orthogonally disposed edge surfaces of the stage member, respectively, whereby selective translation of individual transverse actuators relative to the frame member can translate the stage member in a transverse direction.

5,282,394

LOW PIVOT STEERING COLUMN TILT MECHANISM

Alexander L. Dominique, Rochester Hills; Wayne L. Grubaugh, Jr., Northville; Michael F. Halacka, Bloomfield Hills; James P. Badhorn, Troy; Robert A. Welchko, St. Clair, and Kenneth G. Kamm, Temperance, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 5, 1992, Ser. No. 971,637
Int. Cl.[5] B26D *1/16*
U.S. Cl. 74—493 **13 Claims**



1. A tilt mechanism for a steering column being pivotally attached to vehicle structure, comprising:

a bracket member attached to vehicle structure;

a collar disposed within said bracket member and adapted to receive a steering column;

a collar rack secured to said collar having a plurality of first teeth;

a bracket rack secured to said bracket member having a plurality of second teeth; and

means comprising a wedge rack having a plurality of third teeth for engaging and disengaging one of said first and second teeth disposed between said bracket member and said collar for allowing tilting and selectively positioning of the steering column.

5,282,395

RECLINER HANDLE

Larry P. LaPointe, Temperance, and Karl J. Komorowski, Petersburg, both of Mich., assignors to La-Z-Boy Chair Co., Monroe, Mich.

Continuation of Ser. No. 794,454, Nov. 19, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 6,176
Int. Cl.[5] G05G *1/04*
U.S. Cl. 74—523 **4 Claims**

1. An apparatus for initiating reclining and returning movement of a portion of a recliner chair, comprising:

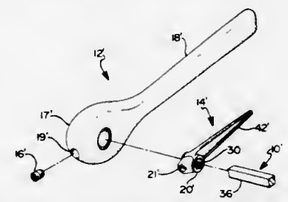
a drive rod having a plurality of planar surfaces extending parallel to each other which is not angularly twisted;

a lever handle including a generally oblong body having an enlarged end and a narrow end suitable for grasping, said enlarged end including an access bore;

an insert member having an octagonally-pointed bore provided perpendicular to the longitudinal axis of said handle and including a threaded bore extending through a portion thereof and opening into said octagonally-pointed bore, said octagonally-pointed bore having a plurality of inwardly extending corners and a plurality of outwardly extending corners and being operable to receive a free end of said drive rod in a plurality of angular orientations;

a set screw threadably insertable into said threaded bore, said set screw having a bevelled corner;

said octagonally-pointed bore being positioned within said insert member such that a centerline extending longitudinally through said insert member and said threaded bore extends through said inwardly extending corners of said



octagonally-pointed bore spaced approximately 180° from each other so that when said handle is detachably secured to said drive rod, said bevelled corner of said set screw is tightened against a flat surface of said drive rod at an acute angle, said acute angle being approximately 65°, to cause said drive rod to be wedged laterally of said set screw such that at least one corner of said drive rod is wedged into at least one of said outwardly extending corners of said octagonally-shaped bore, and said bevelled corner of said set screw is urged laterally of said drive rod to help secure said set screw in said threaded bore such that said set screw is resistant to loosening in said threaded bore; and

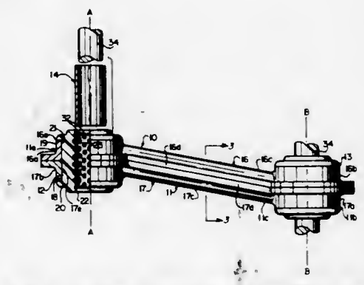
said insert member further having a tang portion, said insert member being molded within said lever handle body such that said tang portion is encapsulated within said narrow end of said lever handle body.

5,282,396

LINK ASSEMBLY

Robert M. Crandall, Capac, Mich., assignor to U.S. Farathane Corporation, Utica, Mich.

Filed Dec. 10, 1992, Ser. No. 988,779
Int. Cl.[5] G05G *1/00*; B25G *3/10*
U.S. Cl. 74—588 **18 Claims**



1. A link assembly connectable to a pair of connectable members and adapted for rotary motion and conical deflection

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relative to each of said connectable members, said link assembly comprising:

an elongated, rigid member having a pair of spaced head segments interconnected by an intermediate segment, each of said head segments having connectable member receiving opening therethrough for receiving one of said pair of connectable members therein, said rigid member further including a pair of identically configured, coextensively disposed sections mated and rigidly secured together, each of said pair of sections including a pair of spaced head portions interconnected by an intermediate portions, each of said pair of head portions having an opening therethrough registered with an opening of an adjoining head portion of the other of said pair of sections to provide the connectable member receiving opening of one of said head segments; and

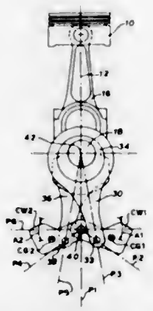
a pair of bushings, each disposed in one of the connectable member receiving openings in the head segments of said elongated rigid member, each of said pair of bushings being formed of a thermoplastic polyurethane material and having an internal cylindrical wall within which the pair of connectable member are received, said cylindrical wall having a plurality of dimples.

5,282,397

ENGINE BALANCING SYSTEM HAVING AT LEAST ONE PIVOTING COUNTERBALANCE WEIGHT

Joseph R. Harkness, Germantown; Patrick J. Bruener, Hartland, and William R. Frank, Brookfield, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 19, 1992, Ser. No. 855,059
Int. Cl.[5] F16C *3/04*
U.S. Cl. 74—603 **20 Claims**



1. In an engine having a cylinder in which a piston reciprocates along a piston axis, the piston being connected to a rotatable crankshaft that is mounted in a crankcase, an improved counterbalancing means comprising:

a first counterbalance weight having a first center of gravity located on a first side of said piston axis, said first center of gravity moving in a first arc during piston reciprocation;

a second counterbalance weight having a second center of gravity located on a second side of said piston axis, said second center of gravity moving in a second arc during piston reciprocation;

drive means interconnected with said crankshaft for moving said first and second counterbalance weights in response to rotation of said crankshaft; and

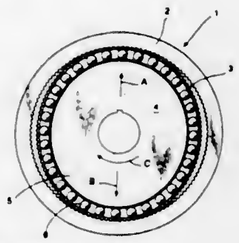
pivot means interconnected with said crankcase for pivotally connecting said first and second counterbalance weights to said crankcase.

5,282,398

WAVE GEAR DRIVE

Shoich Ishikawa, Yokohama, Japan, assignor to Harmonic Drive Systems, Inc., Kanagawa, Japan

Filed Feb. 28, 1992, Ser. No. 841,996
Claims priority, application Japan, Mar. 1, 1991, 3-35819
Int. Cl.[5] F16H *33/00, 55/06*
U.S. Cl. 74—640 **1 Claim**



1. A wave gear drive, comprising:

a rigid internal gear,

a flexible external gear located inside the internal gear, and

a wave generator located inside the external gear, said wave generator having an exterior configuration for flexing the external gear by rotation of the wave generator thereby providing relative rotation between the internal gear and the external gear,

the exterior configuration of the wave generator is formed to a shape being defined by a tangential polar coordinate equation having at least four Fourier expansion terms,

$$P = r_0 + a_1\cos(2\phi) + a_2\cos(4\phi) + a_3\cos(6\phi),$$

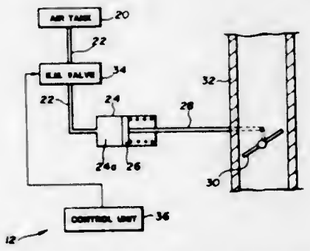
where P is the length of the perpendicular to the tangent at the point of the shape, ϕ is the angle of the tangent to the reference axis, and a_1, a_2, and a_3 are the coefficients of the Fourier expansion.

5,282,399

CONTROL SYSTEM FOR VEHICULAR POWER PLANT INCLUDING AUTOMATIC TRANSMISSION AND EXHAUST BRAKE

Eiji Sano, and Shigetsugu Matsumoto, both of Shizuoka, Japan, assignors to Jatco Corporation, Japan

Filed Mar. 17, 1992, Ser. No. 853,067
Claims priority, application Japan, Mar. 25, 1991, 3-84788; Mar. 25, 1991, 3-84789; Mar. 25, 1991, 3-84790; Mar. 25, 1991, 3-84791; Mar. 25, 1991, 3-84792
Int. Cl.[5] B60K *41/10*
U.S. Cl. 74—856 **9 Claims**



1. A control system for a vehicular power plant including an automatic transmission and an exhaust brake, said control system comprising:

means for detecting an engine brake condition and a command for making a downshift of the transmission;

means for temporarily placing the exhaust brake into an inoperative condition in response to both said detected engine brake condition and said downshift command; and

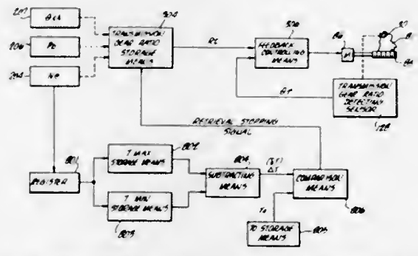
means for detecting an engine speed of the engine, and means for putting the exhaust brake into an operative condition in response to said detected engine speed which is decreasing.

5,282,400

CONTROLLING DEVICE FOR NON-STAGE TRANSMISSION FOR VEHICLE

Akio Kobayashi; Hiroshi Tanaka; Shoji Yamashita, all of Saitama; Yasumasa Fujita; Koichi Hikichi, both of Tokyo, and Chiaki Kumagai, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 388,021, Jul. 31, 1989, Pat. No. 5,025,685. This application Mar. 15, 1991, Ser. No. 670,252
Claims priority, application Japan, Jul. 29, 1988, 63-190161; Aug. 12, 1988, 63-200031; Aug. 30, 1988, 63-213793; Oct. 25, 1988, 63-269226
Int. Cl.[5] B60K *41/04*
U.S. Cl. 74—866 **12 Claims**



1. A controlling device of a non-stage transmission for a vehicle which transmits an output power of an engine at a transmission gear ratio to a driving wheel in accordance with an engine parameter or a vehicle running parameter, comprising

uneven road surface detecting means for detecting an uneven road surface, and

target transmission gear ratio controlling means for fixing a target transmission gear ratio of the non-stage transmission when an uneven road surface is detected by said uneven road surface detecting means.

5,282,401

ADAPTIVE ELECTRONIC CONTROL OF POWER-ON UPSHIFTING IN AN AUTOMATIC TRANSMISSION

Kumaraswamy V. Hebbale; Chi-Kuan Kao, both of Troy, and Dean E. McCulloch, Washington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

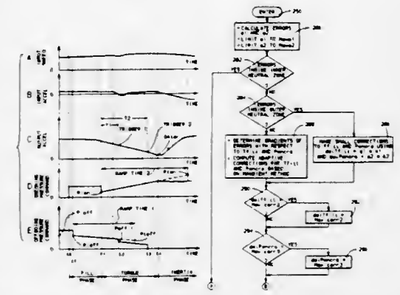
Filed Feb. 7, 1992, Ser. No. 832,834
Int. Cl.[5] B60K *41/02*
U.S. Cl. 74—866 **8 Claims**

1. In a vehicle drivetrain including a multiple speed ratio automatic shift transmission connected to transmit input torque to a drive axle, where shifting to a specified speed ratio involves a fill phase during which fluid pressure is supplied to an on-coming torque transmitting device associated with said specified speed ratio for an empirically derived fill interval as represented by a first predetermined quantity Tfill to prepare said device for engagement, and a torque phase during which an on-coming fluid pressure is supplied to said on-coming torque transmitting device in accordance with a pressure command to initiate said engagement, a method of operation comprising the steps of:

determining said pressure command as a function of an empirically derived pressure required to initiate engagement of said on-coming device once said device has been filled in preparation for engagement, the empirically derived pressure being represented by a second predetermined quantity Poncrs;

determining first and second torque phase progression intervals T1, T2 in response, respectively to an achievement of first and second specified milestones TRIGGER1, TRIGGER2 as a function of drive axle acceleration from an initial value to a target value;

comparing said first and second intervals T1, T2 with desired intervals T1des, T2des to determine first and second error signals e1, e2;



apportioning each of said first and second error signals e1, e2 among the first and second predetermined quantities Tfill, Poncrs as a function of the variation of said error signals per unit change of each of said predetermined quantities to form first and second correction signals delTfill, delPoncrs for said first and second predetermined quantities Tfill, Poncrs; and

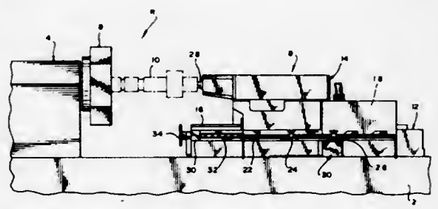
applying said first and second correction signals delTfill, delPoncrs to said first and second predetermined quantities Tfill, Poncrs, thereby to improve the shift quality in a subsequent shift to said specified speed ratio.

5,282,402

MACHINE TOOL TAILSTOCK

Raymond C. Cady, Horseheads; Terrence M. Sheehan, Elmira; James P. Peris, Horseheads, and Robert D. Allington, Wellsburg, all of N.Y., assignors to Hardinge Brothers, Inc., New York, N.Y.

Filed Apr. 14, 1992, Ser. No. 868,165
Int. Cl.[5] B23B *3/00, 21/00, 23/00*
U.S. Cl. 82—117 **6 Claims**



1. A machine tool, comprising:

a) a base;

b) a spindle operably associated with said base;

c) a work holder operably associated with said spindle for securing a workpiece to said spindle;

d) a tailstock operably secured to said base;

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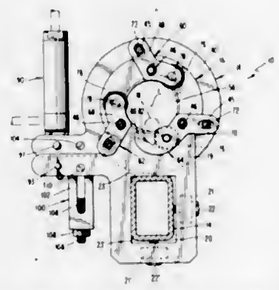
e) said tailstock including a slideway and a tailstock body slidably secured to said slideway;
f) said tailstock body being movable on said slideway between a first home position away from the workpiece and a work engaging position;
g) a switch operably associated with said tailstock body and said slideway;
h) a first trip member operably associated with an intermediate position of said tailstock body prior to said work engaging position;
i) second and third trip members operably associated with said first and second home positions of said tailstock body, respectively;
j) means operably associated with said switch and said first, second and third trip members for moving said tailstock body between one of said first and second home positions and said work engaging position such that said tailstock body moves at a first feed rate from one of said first and second home positions until said first trip member engages said switch and at a second feed rate until said tailstock body engages the workpiece at a predetermined pressure and such that said tailstock body moves at a third feed rate away from said work engaging position until said one of said second and third trip members engages said switch, said first and third feed rates being greater than said second feed rate.

5,282,403

GUIDE APPARATUS FOR AN ELONGATED WORKPIECE

Georges O. Rouleau, 14280 Westgate Dr., Redford, Mich. 48239

Filed Jul. 30, 1992, Ser. No. 921,950
Int. Cl.[5] B23B *13/00, 13/12*
U.S. Cl. 82—164 **30 Claims**



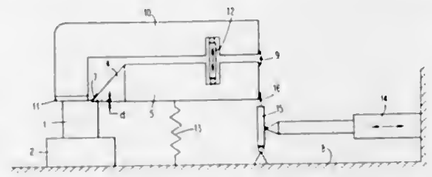
1. A guide apparatus for an elongated member, comprising:
first and second plate members, each including a through-hole, said through-holes defining a longitudinal axis and a passage for receiving the elongated member, said second plate member being rotatable relative to said first plate member about said longitudinal axis, said first plate member comprising two first plates, and said second plate member comprising two second plates, one of said first plates and one of said second plates being spaced longitudinally apart from the other of said first plates and the other of said second plates to form a space therebetween,
bearing means for supporting said second plates for rotation about said longitudinal axis, and for preventing relative radial movement between said first plates and second plates,
movable guiding means comprising:
at least three guide fingers, each being operatively connected to said first plates and second plates for swinging movement such that rotation of said second plates causes a radial inner end of each guide finger to move toward and away from said longitudinal axis, said guide fingers being disposed in said space and supported on each axial side thereof by one of said plates, and
power actuating means connected to said second plates for applying thereto a rotary force which produces rotation of said second plates relative to said first plates about said longitudinal axis for swinging said guide fingers such that said inner ends thereof are moved from a radially outer retracted position to a radially inner guiding position, said inner ends of said guide fingers, when in said guiding position, being arranged to support the elongated member, while opposing radial movement of the elongated member.

5,282,404

MICROTOME WITH MICRO-PLANE AND ELECTRIC CONTACT REFERENCE

Stephen B. Leighton, Maplewood, N.J., and Alan M. Kuzirian, Cataume, Mass., assignors to The Government of the United States of America as represented by the Secretary of the Dept. of Health & Human Services, Washington, D.C.

Filed Nov. 9, 1990, Ser. Nn. 610,880
Int. Cl.[5] G01N *1/06*
U.S. Cl. 83—13 **17 Claims**



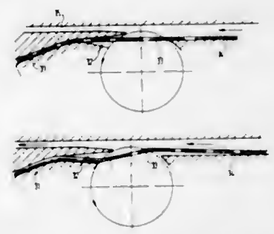
15. A method of cutting thin sections from a biological sample which comprises contacting a surface of a biological sample with a knife of a microtome to establish a reference position with respect to said surface of said sample and thereafter sectioning said sample at a predetermined thickness utilizing said microtome.

5,282,405

DRUM PUNCHING SHEARS

Siegfried David, Hilchenbach, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 870,956
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112953
Int. Cl.[5] B23D *25/12*
U.S. Cl. 83—105 **15 Claims**



1. A rotating cropping and sampling shears for rolling stock that rolls at high rolling speeds, comprising:
a shear housing;
a blade support rotatable in the shear housing and constructed as a hollow cylinder;
a first ring blade having a cutting edge, wherein said blade is

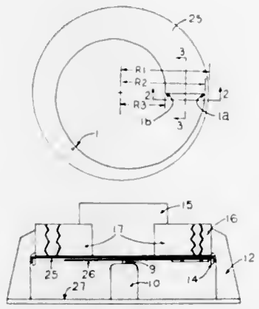
provided on the blade support so that the cutting edge rotates at a hollow-cylindrical wall of the blade support;
a blade drum provided in the housing, at an axial distance from the blade support and arranged to be rotatable in a common rotational plane with the blade support;
a second ring blade at an outer circumference of the blade drum so that a cutting edge of the second ring blade runs along an outer wall of the drum;
means for guiding the rolling stock in a space between the blade support and the blade drum; and
means for displacing one of the blade support and the blade drum.

5,282,406

SLICING MACHINE

Shiu S. Ng, 21 Eldridge St. Apt. 8, New York, N.Y. 10002

Continuation-in-part of Ser. No. 826,093, Jan. 27, 1992, abandoned. This application Mar. 4, 1993, Ser. No. 26,492
Int. Cl.[5] B26D *1/12, 7/06*
U.S. Cl. 83—167 **4 Claims**



1. A slicing machine comprising
a stationary support structure having a horizontally disposed base plate, a motor having a drive shaft affixed vertically at the center of said base plate, vertical support columns mounted onto said base plate,
a blade-plate assembly having a spiraled outer edge support plate detachably mounted onto said drive shaft, a circular blade with a spiraled inside cutting edge detachably mounted to said support plate,
and a retaining structure having a cylindrical outer wall detachably mounted onto said support columns, a cylindrical inner wall concentric with said outer wall, and four straight walls extending in the radial direction between said outer and inner walls and spaced 90° apart from each other.

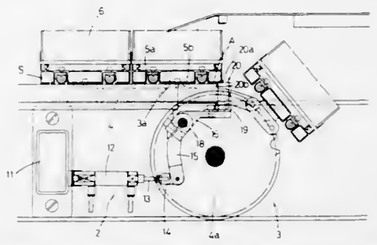
5,282,407

LEAKAGE PREVENTIVE DEVICE COMBINED WITH AUTOMATIC SHEET CUTTING APPARATUS

Reiji Arikita, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Oct. 8, 1992, Ser. No. 957,843
Claims priority, application Japan, Oct. 8, 1991, 3-260368
Int. Cl.[5] B65G *15/18;* **D06H** *7/00*
U.S. Cl. 83—422 **8 Claims**

1. A vacuum-air leakage preventive device combined with an automatic sheet cutting apparatus which comprises the following: a main body for said automatic sheet cutting apparatus, a number of brush-mounting bases for holding a cuttable sheet thereon, each of said bases is suspended in parallel with each other at predetermined intervals on a pair of endless chains installed on opposite sides of said automatic sheet cutting apparatus; a plurality of rollers are provided for each of said brush-mounting bases to shift each of said brush-mounting bases by rolling along a top surface of the main body of said automatic sheet cutting apparatus in association with rotation of said endless chains; a plurality of brushes which are respectively secured to said bases for integrally forming a surface for holding the cuttable sheet thereon, each of said bases is provided with a bottom surface and a plurality of air vents and each of said brushes is composed of a number of vertically erected rigid hairs; at least one suction unit available for pneumatically attracting the cuttable sheet on said sheet-holding surface, said at least one suction unit is installed below said brush-mounting bases; and a cutter unit which is movably



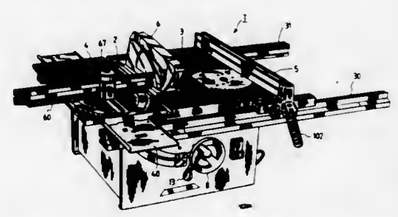
installed above said sheet-holding surface for free movement to a predetermined position in order to cut said sheet on said surface into a predetermined shape; said vacuum-air leakage preventive device comprises a plurality of movable clearance shielding means in a vicinity of an end of each of said endless chains and operative relative to said brush-mounting bases in a stopped position in order that a clearance between the top surface of the main body of said automatic sheet cutting apparatus and the bottom surface of one of said brush-mounting bases stopped at one end of said endless chains is properly closed.

5,282,408

TABLE SAW

Takeshi Shiotani; Kouichi Miyamoto; Kunio Tsugami; Mitsumasa Sato, and Tatsuya Wada, all of Tokyo, Japan, assignors to Ryobi Limited, Hiroshima, Japan

Continuation of Ser. No. 856,113, Mar. 23, 1992, abandoned, which is a division of Ser. No. 781,639, Oct. 25, 1991, Pat. No. 5,116,249, which is a continuation of Ser. No. 564,770, Aug. 9, 1990, abandoned. This application Apr. 13, 1993, Ser. No. 46,935
Claims priority, application Japan, Aug. 11, 1989, 1-209061; Aug. 28, 1989, 1-100291; Aug. 28, 1989, 1-100292; Aug. 30, 1989, 1-101646; Aug. 30, 1989, 1-101647; Dec. 8, 1989, 1-142196
Int. Cl.[5] B26D *7/06, 7/01*
U.S. Cl. 83—432 **16 Claims**



1. In a table saw having a circular saw for cutting a work and a working table for supporting the work and the circular saw, the working table comprising:
a circular saw table;
a miter table disposed adjacent a side of the circular saw table, the miter table being slidably supported by guide means, the miter table having a miter fence, two pivot

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holes at two separate positions in a widthwise direction thereof, and a slit between said two pivot holes;

a pivot block engaging rotatably in one of said two pivot holes forming a pivot point; and

a miter fence clamping means being provided for clamping the miter fence onto the miter table, the miter fence clamping means being guided along the slit, wherein at least one of the miter fence clamping means and the pivot block engage slidably with the miter fence in a longitudinal direction of the miter fence, the miter fence being positioned in one of two sets of angular positions, the first set of angular positions having the pivot point at one pivot hole and the second set of angular positions having the pivot point at the other pivot hole.

5,282,409

DEVICE FOR SECURING BLADES ON PERFORATION AND CUTTING CYLINDERS FOR GRAPHIC ARTS MACHINERY

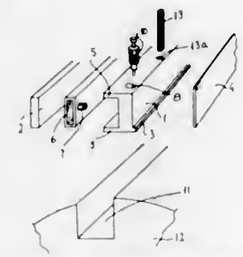
Manuel J. Rojas, C. Huelva, 19, 08191 Rubi, Barcelona, Spain

Filed Mar. 25, 1992, Ser. No. 857,328

Claims priority, application Spain, Mar. 26, 1991, 9100972; Mar. 5, 1992, 9200487

Int. Cl.[5] B26D *1/62*

U.S. Cl. 83—698 **11 Claims**



1. In perforation and cutting cylinders for graphic arts machinery, a device comprising

two separate and complementary rules (1,2) which engage together,

a blade, a pneumatic chamber (6) defined by walls disposed between and separate from said complementary rules, said pneumatic chamber being arranged longitudinally between said rules and being inflatable such that said rules separate slightly from each other and compress said blade (4) arranged between one of said rules and walls of a corresponding groove of a cylinder (12).

5,282,410

EXTERNALLY MOUNTED AIRCRAFT AMMUNITION MAGAZINE BOX STRUCTURE

Paul H. Sanderson, 2019 Cripple Creek, Lewisville, Tex. 75067

Division of Ser. No. 851,809, Mar. 16, 1992, Pat. No. 5,206,454. This application Nov. 24, 1992, Ser. No. 980,638

Int. Cl.[5] F41A *23/00*

U.S. Cl. 89—37.16 **2 Claims**

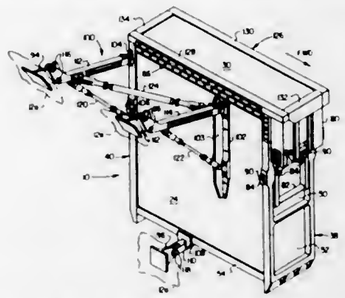
1. An ammunition magazine structure for storing an elongated ammunition belt which may be selectively fed to a machine gun externally mounted on a side of an aircraft, said ammunition magazine structure comprising:

a magazine box for receiving and storing, in a serpentined orientation, the elongated ammunition belt, said magazine box having vertically positionable opposite inboard and outboard sides, a bottom side, front and rear sides, an upper end opening, a lid pivotally secured to the top of the box to selectively cover and uncover said upper end opening, and latch means for releasably holding said lid in a closed position; and

attachment means for securing said magazine box to said side of the aircraft in a horizontally outwardly spaced relationship therewith, said attachment means including:

first and second elongated attachment members projecting generally transversely outwardly from said inboard side of said magazine box, said first and second elongated attachment members having inner ends secured to horizontally spaced portions of said inboard side of said magazine box, adjacent said upper end opening, said first and second elongated attachment members being pivotable relative to said magazine box about a horizontal axis extending in a front-to-rear direction and having outer ends,

first and second elongated, length-adjustable bracing members each being connected at its opposite ends to



said inboard side of said magazine box and one of said first and second attachment members, said first and second bracing members being sloped at a downward and outboard direction,

a third elongated, length-adjustable bracing member connected at its opposite ends to longitudinally intermediate locations of said first and second attachment members,

a third attachment member having a first end pivotally connected to a lower portion of said inboard side of said magazine box, and an outer end positioned outwardly of said magazine box, and

means for securing the outer ends of said first, second and third attachment members to said side of the aircraft.

5,282,411

HEAT-INSULATING PISTON WITH MIDDLE SECTION OF LESS DENSE BUT SAME MATERIAL

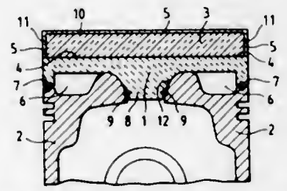
Katsunori Hirai, Yamato, and Hiroshi Matsuoka, Yamato, both of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 551,230, Jul. 11, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 853,858

Claims priority, application Japan, Aug. 10, 1989, 1-205647

Int. Cl.[5] F01B *31/08;* **F16J** *1/04*

U.S. Cl. 92—176 **10 Claims**



1. A heat insulating piston structure comprising:

a piston skirt provided with an upper end circumferential portion;

a piston head base portion of a high strength fixed to said piston skirt and formed from a ceramic material into a dense body, wherein a lower end circumferential portion of said piston base portion is fixed in a pressed state to said upper end circumferential portion of said piston skirt;

a heat insulating member of an excellent heat insulating characteristic provided on an upper surface of said piston head base portion and consisting of a member made of fired whiskers of a ceramic material united into a heat insulating body of lesser density than said piston head portion; and

a thin laminate covering and joined to an upper surface of said heat insulating portion, said thin laminate forming a surface exposed to a combustion gas and formed from a ceramic material into a dense body;

said piston head base portion, said heat insulating member and said laminate being formed out of the same kind of ceramic material, having the same coefficient of thermal expansion, and not generating a difference of thermal expansion between them;

said laminate being firmly joined to said heat insulating member;

the lower surface of said heat insulating member being firmly joined only to the upper surface of said piston head base portion;

said heat insulating member having heat insulating capability superior to that of said laminate;

whereby conduction of the heat which said laminate receives from the combustion gas is cut off by said heat insulating member and conduction of heat from said laminate to said piston head base portion is cut off by said heat insulating member so that thermal capacity of said laminate is reduced and intake efficiency is thereby improved.

5,282,412

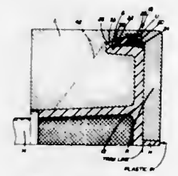
PISTON RING SUBASSEMBLY, ANGULATING PISTON ASSEMBLY AND METHOD OF MAKING SAME

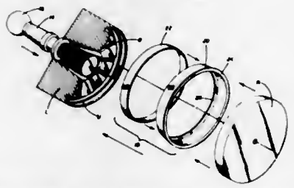
David M. Ebbing, Chittenango, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 30, 1992, Ser. No. 910,857

Int. Cl.[5] F16J *9/00*

U.S. Cl. 92—240 **13 Claims**





1. An angulating piston assembly for a vehicle air conditioning system compressor, comprising:

a composite piston including a metal rod having connecting means at a proximal end and a molded plastic head at a distal end; and

a piston ring assembly operatively received about the periphery of said plastic head, said piston ring assembly being characterized by:

an annular, substantially rigid support collar molded into said piston head;

a piston ring of low friction material received on said collar; and

means for maintaining said piston ring on said support collar.

8. A method of forming and assembling an angulating piston assembly including a composite piston, a rigid support collar in a groove and a piston ring, comprising the steps of:

mounting said piston ring on said rigid support collar;

placing said support collar and piston ring into a mold cavity;

positioning a distal end of a piston rod to extend into said mold cavity;

closing said mold cavity so as to fully capture said support collar, piston ring and distal end of said rod;

injecting molten plastic into said cavity to form a head of said composite piston on said distal end of said rod; and

separating said mold cavity and removing said angulating piston assembly.

5,282,413

INSTALLATION FOR STEEPING GRAINS

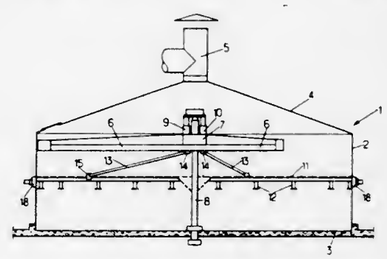
René Sauvage, Eulmont; James Roget, Pulnoy; Jean Amstutz, Remereville, and Guy Flament, Bayon, all of France, assignors to Nordon et Cie, Mamcu Cedex, France

Filed Dec. 10, 1992, Ser. No. 987,769

Claims priority, application France, Dec. 10, 1991, 91 15281

Int. Cl.[5] B01F *7/00;* **C12C** *1/00, 1/02, 1/14*

U.S. Cl. 99—278 **10 Claims**



1. An installation for performing an operation on grain comprising:

a tank having a cylindrical lateral wall and a bottom;

a perforated platform located in said tank above said bottom and movable vertically in said tank to a desired height whereby the grain which is to be subjected to the operation rests on said platform in a layer with an upper surface;

a rotary system located in said tank above said platform for leveling the upper surface of the grain, said rotary system including raking arms, blades carried by said raking arms, and a first motor means for rotating said arms and blades;

a second motor means for vertically moving said rotary system relative to said bottom; and

a removable connection means for removably connecting said perforated platform to said second motor means such that said perforated platform is movable vertically by said second motor means.

5,282,414

MATERIAL RESERVING, DISPENSING AND PLANING DEVICES FOR A STONE FRUIT BISCUIT MACHINE

Tsai-An Chen, No. 201, Sec. 3, Bar-Dar Road, Taipei, Taiwan

Filed Apr. 6, 1993, Ser. No. 43,778

Int. Cl.[5] A47J *37/00*

U.S. Cl. 99—353 **4 Claims**

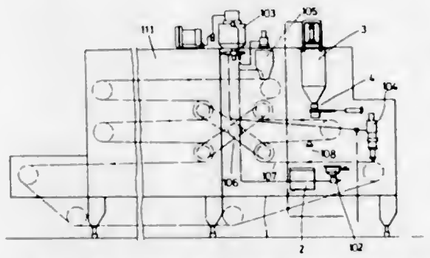
1. Material reserving, dispensing, and planing devices for a stone fruit biscuit machine comprising:

a material reserve tank mounted in a machine body, having a body, an upper cap, a control shutter and an inlet funnel, said body having a vibrating bottom plate and a material

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exit case respectively sustained by an air pressure vibrator to vibrate them to move stone fruit grains down said exit case and a hopper below said exit case into a conduit, which conveys material stone fruit to an upper end of a material volume predetermining chamber by means of a blower connected with said conduit and a changeover valve;

said material volume pre-determining chamber mounted on said machine body, having a cone-shaped cap, an adjusting plate, a funnel inside said chamber forming an upper chamber and a lower chamber to temporarily store said stone fruit coming from said conduit, a plurality of definite volume chambers under said lower chamber separated with partition boards, each said volume predetermining chamber having an open exit in its bottom to connect with an exit tube located on a blade of a planing device, a locating plate provided above said volume pre-determining chamber body for mounting a plurality of air cylinders respectively having a long shaft extending down to reach in said definite volume chamber, said long shaft being connected with position adjusting nuts on its upper portion, a spring tube, a slide cylinder and a coneshaped member on its intermediate portion, and a press head with a soft cushion at its bottom end, said shaft being lowered down to a certain down position by said air cylinder, where said stone fruit droped on said lower chamber may move down to fill in said slide cylinder, said shaft being then pulled up with said slide cylinder also moving up



together and bringing up a definite volume of stone fruit therein, said shaft being lifted up to a certain up position and stopped with the cone-shaped member already separating from said open bottom end of said slide cylinder permitting said stone fruit in said slide cylinder drop down in said exit tube, said shaft being lowered down to force said press head with the soft cushion to press down said stone fruit to be planed by the blade of a planing device, said shaft being pulled up when the last layer of the stone fruit in said exit tube still remains and repeating up-and-down movement to bring down said stone fruit into said exit tubes for planing again and again;

a blade having many fixing holes to be sandwiched between two packings and a separating plate and then assembled between an upper blade frame and a lower blade frame, said packings having a plurality of rectangular openings;

said upper blade frame and said lower blade frame for assembling said blade and said two packings and said separating plate, having the same size and shape to correspond to each other, a plurality of rectangular holes in accordance with said rectangular openings of said packings, and reinforcing ribs between each two said rectangular holes, said upper blade frame having many holes to correspond to threaded holes provided in said lower blade frame for screws to assemble said blade, said two packings and aid separating plate between both said frames, said lower blade frame having several threaded holes in the left and the right side to fix rolling wheels pivotally connected with bearings and a fixing block on the middle of a rear side to fix a gimbals to connect with said air cylinder mounted on said machine body to move said planing device back and forth;

two rails respective having lengthwise grooves for said bearings of said blade frames to fit and slide along therein, being mounted on said adjusting plate fixed on said machine body, said adjusting plate serving to adjust said blade frames in a horizontal direction;

an elongate turning cylinder having said air cylinder in both ends and a vertical air cylinder in its interior, said two air cylinders having a piston facing an end of a side tube having a gear fitted around the tube, said vertical air cylinder connected with a connecting shaft and then with a rod;

a plurality of sucking plates fixed on an outer side of said turning cylinder, having a shallow recess and many sucking holes;

a hole cleaner mounted on said rod of said vertical air cylinder of said turning cylinder, having many needles to insert in and retreat out of said sucking holes of said sucking plate for cleaning small bits of stone fruit pieces off;

a rotatable joint of an L shape having one end pivotally connected with said side tube of said turning cylinder and the other end connected with said blower via a soft tube; and,

a lift base having a slide plate fixed with a rotating air cylinder connected with a gear engaging said gear fitted around said tube, said slide plate pivotally connected with said side tube with a bearing and being lifted up or lowered down by a horizontal bar moved by an air cylinder.

5,282,415

DEVICE FOR SUPPORTING A PRESSURE ROLL

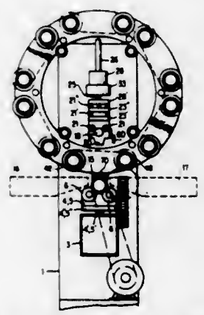
Herbert Konermann, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich and Du Pont de Nemours (Deutschland) GmbH, Bad Homburg, both of Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 735,529

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023944

Int. Cl.[5] **B30B** *3/04*

U.S. Cl. 100—160 **3 Claims**



1. A device for supporting a pressure roll in an apparatus for color proofing a multicolor print comprising a frame, first and second pressure rolls mounted in the frame and defining a gap between said pressure rolls for applying laminating pressure to an image bearing element and a superposed colored film located within said gap, at least one of said first and second pressure rolls being moveable toward and away from the other of said pressure rolls for varying the gap, transporting means for moving the film to and through said gap, drive means for rotating at least one of said pressure rolls, and support means for at least one of said pressure rolls, said support means comprising a fixed elongated element mounted on said frame, a plurality of pairs of support rollers spaced lengthwise along the

at least one of said pressure rolls, each pair of support rollers bracing the at least one of said pressure rolls therebetween, a plurality of roller carriers each roller carrier rotatably supporting two pairs of the support rollers, each said roller carrier comprising an elongated element extending parallel to an axis of rotation of the support rollers, and a plurality of bearing housings, each bearing housing mounting one of said roller carriers on said fixed elongated element.

5,282,416

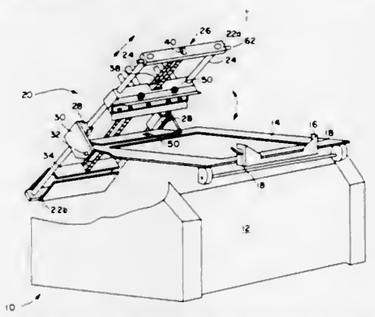
VERSATILE TILE-SLIDE SQUEEGEE DRIVE APPARATUS

Mark Curtin, Chelmsford, Mass., assignor to Transition Automation, Inc., Chelmsford, Mass.

Filed Dec. 16, 1992, Ser. No. 991,575

Int. Cl.[5] **B05C** *17/04*

U.S. Cl. 101—123 **1 Claim**



1. A solder paste apparatus having a stand and an upper frame adapted to support a board and a stencil, the board and stencil adapted for relative movement in X, Y and Θ directions, the stencil in registration with the board, the improvement which comprises:

a structure having a pair of guide rods in spaced apart parallel relationship, forward and rearward blocks joined to the rods to maintain the guide rods in fixed spaced apart relationship;

means to secure the structure to the frame for pivotal and linear motion;

a squeegee assembly mounted for travel in reciprocating motion on the rods;

means to drive the squeegee in its reciprocal path, the squeegee adapted to move in translation with reference to the surface of the stencil;

means to move the structure in a linear direction along an axis parallel to the guide rods away from the stencil; and

means to pivot the structure away from the stencil about an axis transverse to the axis along which structure travels.

5,282,417

INTAGLIO PRINTING MACHINE WITH DIRECT AND COLOR-COLLECT INKING

Albrecht J. Germann, Würzburg, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

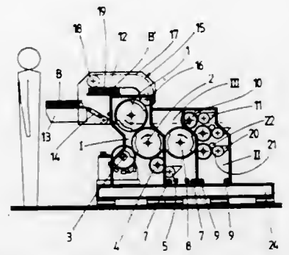
Filed Feb. 25, 1993, Ser. No. 23,216

Claims priority, application Switzerland, Mar. 26, 1992, 973/92

Int. Cl.[5] **B41F** *9/02*

U.S. Cl. 101—152 **9 Claims**

1. An intaglio printing machine having a plate cylinder (2) carrying at least one printing plate, an impression cylinder (1) cooperating with said plate cylinder (2), a wiping device (3) cooperating with the plate cylinder, a color-collect cylinder (8), stencil rollers (10) and inking units (11) inking these stencil rollers, the plate cylinder, impression cylinder and wiping device being mounted in a first machine stand (I), wherein the stencil rollers (10) and their inking units (11) are mounted in a second machine stand (II) which is adjustable in a direction oriented perpendicularly to the roller axes, wherein the color-collect cylinder (8) is mounted in a third machine stand (III) which can be removed from the space between the first and second machine stands, and adjusted into an inoperative position, and wherein the second machine stand (II) is designed, in



a first operating position in which the color-collect cylinder (8) bears on the plate cylinder (2), to ink this color-collect cylinder (8) with its stencil rollers (10) and, in a second operating position in which the third machine stand (III) is located in said inoperative position, to ink the plate cylinder (2) with its stencil rollers (10).

5,282,418

ROLLER CHANGER

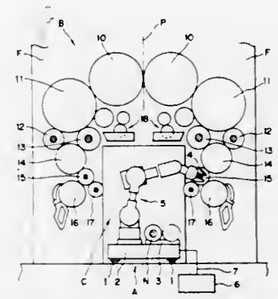
Yoshinori Uera, Kawasaki, Japan, assignor to Tokyo Kikai Seisakusbo, Ltd., Tokyo, Japan

Continuation of Ser. No. 828,691, Jan. 31, 1992, abandoned. This application Nov. 17, 1992, Ser. No. 978,168

Claims priority, application Japan, Mar. 13, 1991, 3-72026

Int. Cl.[5] **B41F** *13/20*

U.S. Cl. 101—216 **1 Claim**



1. An inking roller changer in combination with a printing machine having a space therebelow in the form of an arc along a set of roller trains in said printing machine, said inking roller changer comprising:

a movable machine table having a substantially planar upper surface; manipulator means disposed on said substantially planar upper surface of said movable table for handling rollers to be changed, each of said rollers being mounted onto a roller shaft and having roller ends thereof, wherein said manipulator means having hand portions for handling said roller shaft and for manipulating at least one of said rollers within said space therebelow said printing machine having the form of said arc along said set of roller trains in said printing machine;

a roller support means disposed integral with and on said substantially planar upper surface of said movable machine table for supporting thereon replacement rollers and

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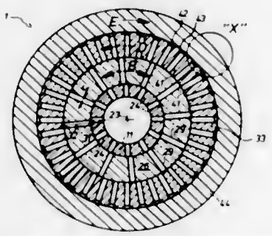
rollers to be changed, said roller support means being placed within an operation zone of said manipulator means at least when said manipulator means handle said replacement rollers and said rollers to be changed, said roller support means having portions for directly receiving and supporting thereon at least one of said replacement rollers and said rollers to be changed; and

control means, operably connected to said manipulator means and said movable machine table, for controlling at least an operation of said manipulator means while said manipulator means is completely within said space therebelow said printing machine and for controlling said movable machine table, having said manipulator means and said roller support means disposed thereon, through said space therebelow said printing machine.

5,282,419
INK ROLLER

Claus D. Barrois, Erlenbach, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. Nn. 22,531
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206403; Dec. 17, 1992, 4242605
Int. Cl.[5] B41F *31/02*
U.S. Cl. 101—367 **13 Claims**



1. An ink roller usable to supply printing ink to a forme cylinder in a rotary printing press, said ink roller comprising:

a hollow axle having an ink receiving reservoir and a plurality of radially extending, circumferentially arranged first bores;

means for supplying printing ink to said ink receiving reservoir;

an inner sleeve supported for rotation on said hollow axle and having a plurality of radially extending, circumferentially arranged second ink bores, said second ink bores being selectively alignable with said first ink bores;

an intermediate sleeve rotatably supported on said inner sleeve and having a plurality of radially extending, circumferentially arranged third ink bores, said third ink bores being selectively alignable with said second ink bores;

a porous outer sleeve rotatably supported on said intermediate sleeve;

means for oscillating said inner sleeve on said hollow axle to relatively align said first bores and said second bores;

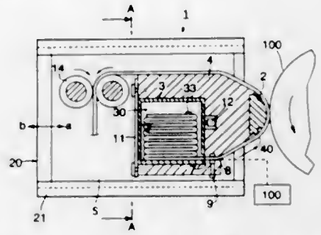
means to rotate said intermediate sleeve in a first direction and at a first rotational speed; and

means to rotate said outer sleeve in a second direction and at a second rotational speed, said first and second rotational speeds and directions being selected to provide said outer sleeve with a positive rotational speed differential with respect to said intermediate sleeve.

5,282,420
APPARATUS FOR CLEANING PRINTING MACHINE CYLINDER OR THE LIKE

Akira Hara, Tokyo, and Yasuo Sone, Sizuoka, both of Japan, assignors to Baldwin Printing Controls Limited, North Point, Hong Kong

Filed Sep. 28, 1992, Ser. No. 952,579
Int. Cl.[5] B41F *35/00*; **B41L** *41/00*
U.S. Cl. 101—425 **5 Claims**

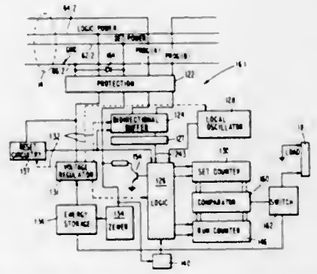


1. An apparatus for cleaning the surface of a printing machine cylinder comprising: a cleaning cloth; cleaning cloth supply means for supplying said cleaning cloth; cleaning cloth take-up means for taking up said cleaning cloth; pressurizing means for engaging said apparatus against the outer periphery of the printing machine cylinder, said cleaning cloth supply means comprising: a cloth unit assembly including a cloth cassette accommodating said cleaning cloth and said cloth unit assembly defining a space for accommodating said cloth cassette, said pressurizing means being provided at the front of said cloth unit assembly, said cloth cassette being provided with an engagement recess dependent upon a specific printing machine cylinder to be cleaned, said cloth unit assembly being provided with an engagement projection matched to said engagement recess of said cloth cassette.

5,282,421
TIMING APPARATUS

Michael J. C. Marsh, Johannesburg; Raymond C. Atkins, Pretoria, and Trevor M. Hodson, Randburg, all of South Africa, assignors to CSIR, South Africa

Division of Ser. No. 587,914, Sep. 25, 1990, Pat. No. 5,189,246.
This application Jul. 28, 1992, Ser. No. 921,147
Claims priority, application South Africa, Sep. 28, 1989, 89/7389
Int. Cl.[5] F23Q *21/00*
U.S. Cl. 102—217 **14 Claims**



1. An electrical delay device for activating an electrical load associated therewith after a predetermined time delay, the electrical delay device being adapted for serial connection to at least one other similar delay device via a bidirectional timing signal path, and being arranged to receive a timing signal, which determines the predetermined time delay in respect of said electrical delay device, from a central control unit, the electrical delay device comprising:

(a) first timing signal steering means for steering an externally sourced timing signal arriving at the electrical delay device via a first route defined by the bidirectional timing signal path; and

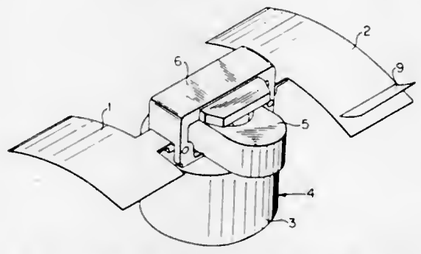
(b) second timing signal steering means for steering an externally sourced timing signal arriving at the electrical delay device via a second alternative route defined by the bidirectional timing signal path;

the first and second timing signal steering means being operable to function in a signal storage mode for allowing storage of the timing signal in the electrical delay device, and in a signal bypass mode in which another timing signal is permitted to bypass the electrical delay device.

5,282,422
SUB-COMBAT UNIT

Dan Borgström, Karlskoga; Lasse Karlsen, Lidingö, and Lars Paulsson, Kristinehamn, all of Sweden, assignors to Bofors AB, Karlskoga, Sweden

Filed Oct. 7, 1992, Ser. No. 957,487
Int. Cl.[5] F42B *10/50*
U.S. Cl. 102—384 **6 Claims**



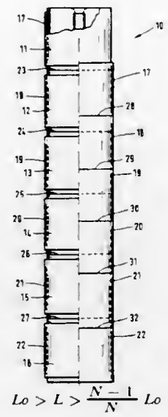
1. A sub-combat unit to be separated from a flying body, comprising a warhead, a target detector and two diametrically disposed carrier surfaces designed and arranged to impart to the sub-combat unit a rotation for scanning of the target area in a helical pattern during the fall of the sub-combat unit down towards the target area, the two carrier surfaces being pivotable between a closed position and an opened position in which the two carrier surfaces form a retarding area for controlling the fall velocity of the sub-combat unit and a flow influencing means provided at at least one of the two carrier surfaces for creating a turbulent area immediately above the carrier surface for completely relieving the carrier surfaces even for large differences in the direction of the impinging wind.

5,282,423
MODULAR PROPELLANT CHARGE

Günter Sikorski, Düsseldorf; Albert Schulze, Mönchengladbach; Eckhard Rahnenführer, Dormagen; Dieter Grabner, Willich, and Frank Achilles, Schnaittach, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 23, 1992, Ser. No. 917,383
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1991, 4124657
Int. Cl.[5] F42B *5/18*
U.S. Cl. 102—431 **6 Claims**

1. A modular propellant charge comprising: a plurality N of cylindrical axially aligned propellant charge modules having a length Lo; a plurality N of displaceable sleeves of a length L, each axially slidably disposed on the exterior surface of at least one of said propellant charge modules with the relationship



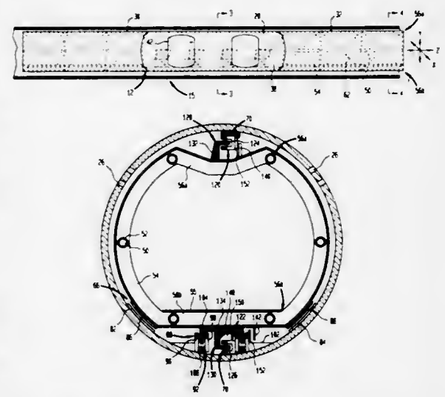
$$Lo > L > \frac{N-1}{N} Lo$$

applying for the length L; and each adjacent pair of said charge modules is connected together via a respective one of said sleeves which extends over the exterior surface of each of the modules of a said adjacent pair, with facing end surfaces of adjacent said sleeves being are in contact with one another, and with one of said sleeves extending to an end surface of said modular propellant charge.

5,282,424
HIGH SPEED TRANSPORT SYSTEM

Gerard K. O'Neill, 127 McCosh Cir., Princeton, N.J. 08540

Filed Nov. 18, 1991, Ser. No. 792,268
Int. Cl.[5] B61B *13/08*
U.S. Cl. 104—282 **7 Claims**



1. A transportation system comprising:

a vehicle guideway including means for generating first time-varying magnetic field waves, a plurality of lift magnets, and a plurality of steering magnets, said lift magnets and said steering magnets are formed of permanent magnets for generating a uniform magnetic field;

said lift magnets have a U-shape including a pair of parallel legs and a bottom perpendicular to said legs, said plurality of lift coils are positioned within said parallel legs

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whereby the interaction between said lift magnets and said lift coils is substantially independent of the location of said lift coils over said bottom,

said steering magnets have a U-shape including a pair of parallel legs and a bottom perpendicular to said legs, said plurality of steering coils are positioned within said parallel legs whereby the interaction between said steering magnets and said steering coils is independent of the location of said lift coils over said bottom, said parallel legs of said lift magnets are positioned 90° with respect to said parallel legs of said steering magnets, and at least one of said steering magnets is positioned between said lift magnets,

a vehicle transportable along said guideway in spaced relation therefrom, said vehicle includes a first and second wing and a cabin positioned between said first and second wing, at least one of said plurality of lift coils is mounted on said first and second wings respectively and at least one of said plurality of steering coils is mounted on said first and second wings,

a plurality of conductors mounted on the vehicle wherein said conductors are interactive with said first magnetic field waves for propelling said vehicle along said guideway;

a plurality of lift coils attached to said vehicle and interactive with said lift magnets for lifting said vehicle in a vertical direction above said guideway, said coils receiving electric current;

a plurality of steering coils attached to said vehicle and interactive with said steering magnets for steering said vehicle in a horizontal direction above said guideway; and

means for supplying electric current to said steering coils, at least one of said steering magnets is positioned between said lift magnets,

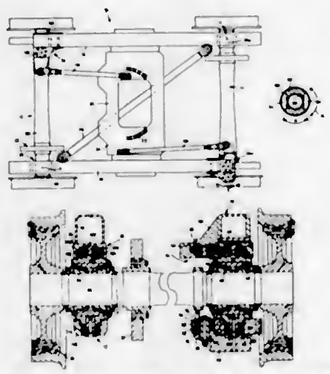
wherein at least one of said plurality of steering coils is mounted above said vehicle and at least one of said plurality of steering coils is mounted below said vehicle so that said vehicle is transportable up to a guideway bank angle of 37° with respect to the vertical axis of said guideway.

5,282,425

LOW LATERAL STIFFNESS CYLINDRICAL BUSH

Peter Timan, Sydenham, Canada, assignor to Bombardier Inc., Canada

Filed Jun. 10, 1992, Ser. No. 896,657
Int. Cl.[5] B61F *5/00*
U.S. Cl. 105—168 **16 Claims**



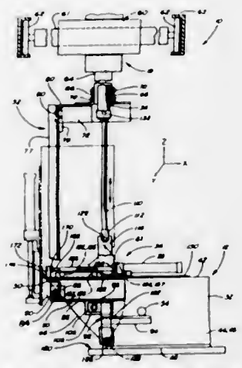
1. A steerable truck having a pair of laterally spaced sideframes supported on a pair of wheelsets spaced apart along a longitudinal axis of said truck with at least one of said wheelsets being adjustable about a vertical steering axis relative to said sideframes to effect steering of the truck, said one wheelset including an axle having a pair of spaced bearing assemblies supporting respective ones of said sideframes to permit rotation of the axle about a transverse horizontal axis, each of said bearing assemblies including upper and lower pivot means to permit relative movement between the sideframe and wheelset about respective vertical axes to accommodate steering of the one wheelset, one of said pivot means of one of said assemblies exhibiting a lower stiffness in a lateral direction normal to said longitudinal axis than in a longitudinal direction parallel to said longitudinal axis to facilitate torsional movement between the wheelset and the associated sideframe about a horizontal axis parallel to said longitudinal axis.

5,282,426

GONDOLA DUMPR WITH LIFT TINES ENGAGING PINS FOR PIVOTING THE GONDOLA

Herman M. Canner, Bloomfield Hills, Mich., assignor to Sterling-Detroit Company, Detroit, Mich.

Filed Mar. 22, 1993, Ser. No. 35,394
Int. Cl.[5] B61B *3/02*
U.S. Cl. 105—261.1 **7 Claims**



1. A device for carrying a gondola having a bottom, sides, tapered end, open top, and lift pins, pouring out a bulk of workpieces contained therein and comprising:

a frame,

a sub-frame pivotally carried by said frame at a first point,

a pair of lift forks pivotally carried by said sub-frame to pivot about a second point spaced from said first point, at least one tine carried by each of said lift forks and operable to underlie and abut a respective one of said gondola lift pins when rotated therebeneath,

a first actuator operably connected to pivotally move said lift forks and said sub-frame to first and second positions,

a cover slidably carried by said sub-frame and movable between a first position wherein the cover overlies at least a portion of the open top of the gondola carried by the sub-frame at least adjacent the tapered end of the gondola and to a second position wherein the cover in cooperation with the gondola defines an opening adjacent the tapered end of the gondola through which workpieces in the gondola pass,

a second actuator operably connected to move said cover along the top of the gondola between first and second positions,

at least one first stop carried by said sub-frame to bear on the tapered end of the gondola carried by said sub-frame, and

at least one second stop carried by said sub-frame to bear on the top of the gondola carried by said sub-frame,

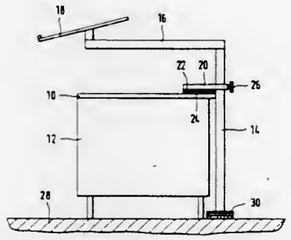
said stops and said lift forks being constructed and arranged so that when said first actuator initially moves from its first position toward its second position the tines of said forks are urged into underlying engagement with the lift pins of the gondola so that in cooperation with said stops the gondola is releasably carried in a generally horizontal position by said sub-frame and as said first actuator further moves toward its second position said sub-frame pivots to incline such gondola to such horizontal position, and said second actuator moves said cover relative to said gondola and sub-frame to provide in conjunction with the gondola the opening adjacent the tapered end of the gondola through which workpieces flow from the gondola.

5,282,427

DEVICE FOR FASTENING A VERTICAL SUPPORT COLUMN TO AN ARTICLE OF FURNITURE

Helmut Steinhilber, Sonnenbergstrasse 40, CH-6052 Hergiswil, Switzerland

Filed May 15, 1991, Ser. No. 699,630
Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016945; European Pat. Off., Oct. 5, 1990, 90119156.9
Int. Cl.[5] A47B *57/00*
U.S. Cl. 108—97 **28 Claims**



1. Apparatus for fastening a vertical column subject to a lateral force to an article of furniture having a surface at an angle to the vertical, comprising:

(a) a substantially vertical column,

(b) means for resisting lateral movement of said column comprising:

(i) a mounting plate for said column adjacent a surface of an article of furniture which is at an angle to the vertical, and

(ii) a pair of hook and loop fasteners providing substantial resistance to shearing movement when engaged, one said fastener for securing to said article of furniture and the other secured to said mounting plate,

(c) whereby lateral shearing movement and tilting movement of said column tending to tilt the mounting plate about a tilting axis at an edge thereof may be prevented.

5,282,428

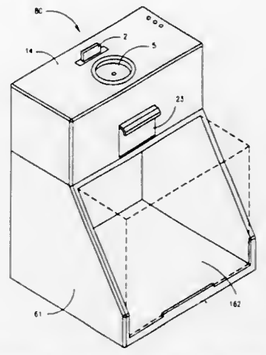
MEDICAL NEEDLE INCINERATOR AND SEALER

Peter Greville; Mark S. Shurey, and Anthony H. Lawrence, all of Limassol, Cyprus, assignors to Advanced Disposal Systems International Limited, Limassol, Cyprus

Filed Apr. 24, 1992, Ser. No. 874,296
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—250 **40 Claims**

1. An incinerator for disposing of a syringe needle comprising:

first electrical contact means for connecting a source of electricity at approximately opposed positions across the width of the syringe needle for the electricity to flow across the width between the opposed positions for welding and sealing the needle; and



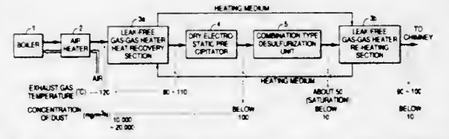
second electrical contact means for connecting a source of electricity to flow across a portion of the length of the syringe needle for incineration of said portion.

5,282,429

METHOD AND SYSTEM FOR HANDLING EXHAUST GAS IN A BOILER

Masami Kato; Tadashi Tanaka; Yasuki Nishimura, all of Nagoya; Katsutoshi Yata; Masahiko Nakao, both of Kobe; Takeshi Sakai; Tsuyoshi Ohishi, both of Tokyo, and Tsuneo Higashi, Mihara, all of Japan, assignors to Chubu Electric Power Company Inc., Aichi and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Continuation-in-part of Ser. No. 653,231, Feb. 8, 1991, abandoned. This application Jun. 11, 1992, Ser. No. 897,083
Int. Cl.[5] F23J *3/00*
U.S. Cl. 110—344 **3 Claims**



3. A method for handling exhaust gas in a coal-fired boiler, said method comprising the steps of:

cooling the exhaust gas from the coal-fired boiler to a temperature of between 80° and 110° C. by directing the exhaust gas through an air preheater of the boiler and a heat recovery section of a leak free type of gas-gas heater;

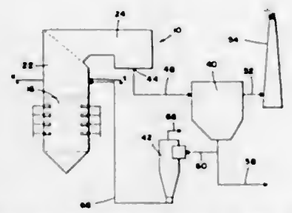
subsequently reducing the concentration of dust in the exhaust gas to 100 mg/m^3N by directing the gas through a dry electrostatic precipitator;

subsequently reducing SO_x in the exhaust gas by passing the exhaust gas through a desulfurization unit; and

subsequently heating the exhaust gas by passing the exhaust gas through a reheating section of the gas-gas heater and circulating heating medium between the reheating and heat recovery sections of the gas-gas heater.

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5,282,430
FLYASH INJECTION SYSTEM AND METHOD
George R. Nebls, Jr., 1315 N. Seventh Ave. E., Duluth, Minn. 55805
Filed Jul. 8, 1991, Ser. No. 726,927
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—345 8 Claims

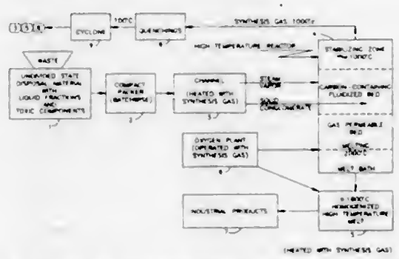


2. A method of controlling opacity of off-gases from a combustion process conducted in a non-fluidized bed boiler; said method including the steps of:

(a) combusting pulverized coal in a non-fluidized bed boiler to form a combustion off-gas stream including a fume component formed from organically associated inorganics in the pulverized coal; the fume component in the combustion off-gas stream being formed in an amount sufficient to effect a first level of opacity, in the absence of a step of fume component control as characterized in (b); and,

(b) conducting a step fume component control by injecting a substantially non-combustible, preformed, coarse particulate material into the combustion off-gas in an amount sufficient to reduce opacity to below the first level.

5,282,431
PROCESS FOR RENDERING USABLE DISPOSAL PRODUCTS
Günter H. Kiss, Le Florestan, Monaco, assignor to Thermoselect Aktiengesellschaft, Liechtenstein, Liechtenstein
Filed May 28, 1992, Ser. No. 889,784
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 4130416
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 14 Claims



1. A process for rendering usable disposal products of all types including unsorted and untreated industrial, domestic and special refuse containing random pollutants in solid and liquid form, as well as industrial product wrecks wherein the disposal products undergo a high temperature action resulting in a thermal separation and material conversion accompanied by maximum energy utilization of the solid residues obtained which are converted into a high temperature melt, the process comprising the steps of:

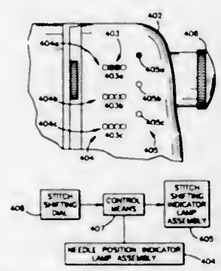
compressing batchwise the disposal products and accompanying entrained liquid fractions while maintaining its mixed and combined structure into compact packs;

introducing the compact packs into a channel heated to over 100° C., the compact packs having a cross-sectional shape corresponding to the channel for maintaining the pressure of the compressing step;

keeping the compact packs of products in sliding, frictional contact with the channel walls until the initially present liquids are evaporated and the inherent mechanical restoring forces of individual disposal product components are eliminated, and until the entrained organic constituents have at least partly assumed a binder function that maintains the disposal products in a lumpy solid conglomerate shape; and

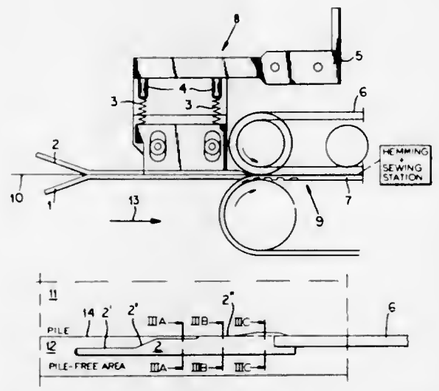
extruding the lumpy solid conglomerate shape in a structurally stable manner out of the channel in this state into a high temperature reactor kept over its entire volume at at least 1000° C.

5,282,432
NEEDLE ATTACHMENT POSITION INDICATOR DEVICE
Shuji Fujita; Shiro Satoma, and Yasushi Baba, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 866,404, Apr. 10, 1992. This application Jul. 27, 1992, Ser. No. 919,830
Claims priority, application Japan, Apr. 12, 1991, 3-079670
Int. Cl.[5] D05B *19/00, 1/10, 1/20, 1/14*
U.S. Cl. 112—121.11 7 Claims



1. A needle attachment position indicator device for use in a sewing machine of a type comprising a stitch pattern forming mechanism changeable between a first stitch pattern in which a lower looper is connected to a main shaft of the machine, and a second stitch pattern in which the lower looper and an upper looper are connected to the main shaft of the machine, an actuator member actuatable to permit selection of a kind of stitch patterns, a change-over mechanism disposed between the stitch pattern forming mechanism and the actuator mechanism for changing the stitch pattern forming mechanism into one of the stitch patterns in response to the actuation of the actuator member, and a needle holding member disposed at the lower end of a needle bar, said needle holding member including a plurality of needle holding portions for removably holding a needle, said needle holding member cooperating with the stitch pattern forming mechanism in the first or second stitch pattern to permit formation of different stitch patterns, depending upon the needle holding portion to which the needle is attached, characterized by that said needle attachment position indicator device includes an indicator means for indicating a needle holding portion corresponding to the stitch pattern selected in relation to the selective actuation of said actuator member.

5,282,433
DEVICE FOR APPLYING FABRIC WEBS OR LENGTHS OF FABRIC
Johannes Freermann, and Dieter Malcherek, both of Ochtrup, Fed. Rep. of Germany, assignors to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany
PCT No. PCT/DE91/00118, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO91/13198, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 14, 1991, Ser. No. 849,429
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1990, 9002121 [U]
Int. Cl.[5] D05B *35/10, 27/12*
U.S. Cl. 112—153 4 Claims



1. An apparatus for supplying a web of fabric formed with a pile covered area and a pile-free area to hemming and sewing stations, the pile covered and pile-free areas defining a transition area including a longitudinal pile edge therebetween, said device comprising:

a frame;

a conveying device including a pair of endless belts on the frame for conveying the web toward said hemming and sewing stations; and

an intermediate device mounted on the frame upstream of said conveying device and including:

a lower guide mounted rigidly on the frame, and

an upper guide mounted resiliently on the frame and juxtaposed with the lower guide across the web, the lower and upper guides extending toward the conveying device and terminating next to the conveying device,

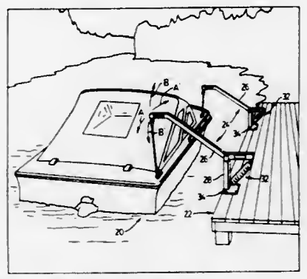
each of the guides being formed with a respective longitudinally extending stepped guide edge in the transition area of the web and being provided with:

a respective upstream segment running longitudinally parallel to and spaced from the pile edge,

a respective intermediary segment downstream of the upstream and running therefrom at an angle toward the pile edge, and

a respective downstream curved longitudinal segment downstream of the intermediary segment and having a portion aligned with the pile edge, so that the pile edge comes in contact with the guide edges of the guides immediately upstream of said conveying device.

5,282,434
BOAT MOORING DEVICE
Andrew J. Hart, Downsview; Daniel L. Bressanutti, Kleinberg, and Roderick J. Melson, Fenelon Falls, all of Canada, assignors to Bear Industries Inc., Kleinberg, Canada
Filed Dec. 18, 1992, Ser. No. 992,975
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—230 11 Claims



1. A boat mooring device comprising:

a mooring arm for extending between a mooring location and a boat;

a base for supporting the arm at said mooring location;

means coupling the arm to the base so as to permit pivotal movement of the arm with respect to the base about both an upright axis, permitting lateral swinging movement of the arm to accommodate movement of a moored boat towards and away from the mooring location, and about a generally horizontal axis permitting up and down movement of the arm for accommodating up and down movement of the boat; and,

spring means normally maintaining the arm in a rest position about both of said axes;

wherein the mooring arm has an outer end provided with means for attaching a boat to the arm, and an inner end, and wherein the arm is coupled to said base at a location intermediate said ends and closer to said inner end than to said outer end, and wherein said spring means comprises a single coil spring extending between said inner end of the arm and said base, said spring being arranged to normally maintain the arm in said rest position and to be extended by downward movement of the outer end of the arm or lateral swinging movement of the arm from said rest position, whereby the same spring resists movement of the arm about both of said axes.

5,282,435
MECHANICAL SYSTEM FOR CONTROL OF A FREE FLOATING DOCK
Harold S. Chapman, Box 298 Bragg Creek, Alberta, Canada T0L 0K0
Filed Nov. 27, 1992, Ser. No. 982,632
Int. Cl.[5] B63B *35/44*
U.S. Cl. 114—263 9 Claims

1. A device for maintaining a floating body at a consistent distance from a boundary between the liquid in which the body floats and a solid mass bordering said liquid, where the solid mass extends under the liquid from said border, comprising:

(a) a ratchet attached to the floating body on the side nearest the solid mass, said ratchet extending downwards into the liquid far enough so that if the floating body is moved towards the boundary the ratchet will contact the solid

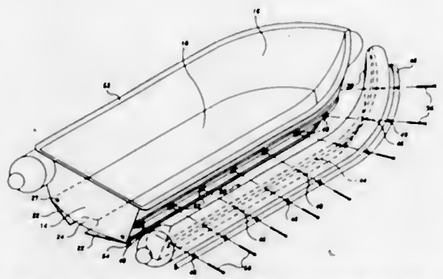
VOL 1159 ISS 1 FE 1 1994 UMI

under the liquid before any portion of the floating body contacts said solid;



(b) means of applying a continuous force onto the floating body towards the boundary.

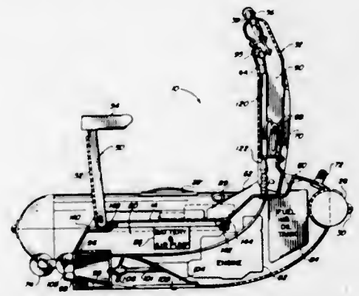
5,282,436
FOAM STABILIZED WATERCRAFT
William M. Hansen, 8201 Orchard Ave. SE., Port Orchard, Wash. 98366
Filed Jan. 15, 1992, Ser. No. 821,979
Int. Cl.[5] B63B *1/20*
U.S. Cl. 114—283 **20 Claims**



16. A high performance foam stabilized watercraft for use on a body of water, the watercraft comprising:
(a) a rigid planing hull having a transom, a bottom, and a pair of curved sides extending forwardly from the transom to form the bow of the hull;
(b) foam stabilizing means for stabilizing the watercraft, mounted on the sides of the hull and extending from the transom to the bow, the stabilizing means comprising at least one non-rigid damage tolerant foam member extending outwardly from said sides, said foam member and including a mating surface adapted to be mounted to said sides of the hull and a curved surface extending outwardly and upwardly from said sides of the hull so as to establish a lower surface of the stabilizing means, such that the lower surface of the stabilizing means are mounted to contact the surface of the water and displace an increasing volume of water in response to an increasing list of the watercraft, thereby stabilizing the watercraft by increasing its righting moment.

5,282,437
PERSONAL MARINE TRANSPORT
Luiz J. Avillez de Basto, 7381 SW. 133 Terr., Miami, Fla. 33156
Filed Aug. 21, 1992, Ser. No. 934,112
Int. Cl.[5] B63B *7/06*
U.S. Cl. 114—345 **16 Claims**

1. A personal water craft for transporting a user across the surface of a body of water comprising:
a rigid hull including a top portion, an underside portion, a rear transom, and a side wall structure extending from opposite ends of said transom about a bow and opposite sides of said hull in surrounding relation to a water-tight internal engine compartment within said hull,
inflatable buoyancy means attached to said side wall structure for providing increased stability and protection from impact to said hull, said buoyancy means including a tubular shaped, collapsible membrane having at least one air-tight internal buoyancy chamber therein structured to be inflated with air to a predetermined pressure,
propulsion means for moving the craft along the water surface and being structured and disposed to generate a propulsive thrust,

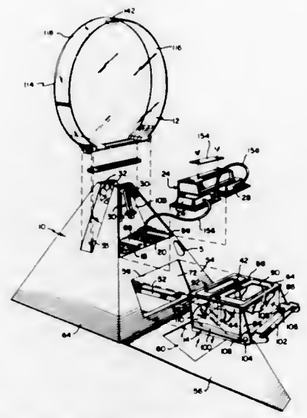


drive means within said engine compartment drivingly interconnected with said propulsion means for driven operation thereof,
inflation means for inflating said buoyancy means and including an air pump powered by said drive means and structured to provide pressurized air flow to said air chamber,
power means for supplying power to said drive means for operation thereof, and
a steering assembly attached to said hull and structured and disposed to selectively direct the propulsive thrust at a plurality of controlled, angular directions relative to the hull so as to effectively control direction of movement of the craft along the water surface.

5,282,438
AQUARIUM
Thomas McLaughlin, Chappaqua, N.Y., assignor to Technical Support Services Inc., Ossining, N.Y.
Filed Sep. 4, 1992, Ser. No. 940,978
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—248 **30 Claims**

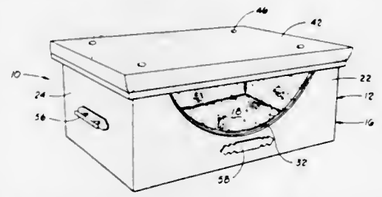
1. An aquarium, comprising:
a pedestal,
a viewing tank supported by said pedestal, and
a reservoir and movable secondary tank within said pedestal,

said secondary tank being movable into and out of liquid communication with said viewing tank so that fish can



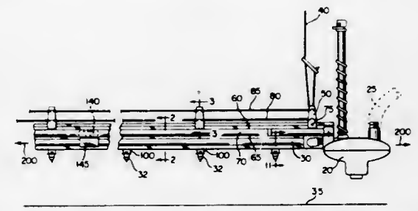
swim between the viewing tank and secondary tank, when the two are in liquid communication.

5,282,439
PET ENCLOSURE
Mary L. Oaks, 408 N. 6th, Lawton, Okla. 73507
Filed Nov. 24, 1992, Ser. No. 980,898
Int. Cl.[5] A01K *31/00*
U.S. Cl. 119—19 **4 Claims**



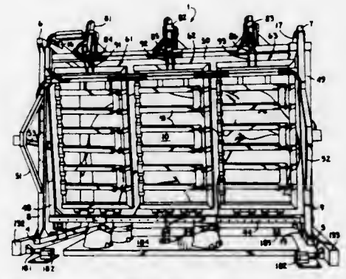
1. A pet enclosure comprising:
a body portion having a bottom wall and a vertical wall forming a chamber sized to accommodate a selected pet;
wherein the upper edge of the vertical wall defines the top of the body portion;
wherein the plane defined by the top is substantially parallel to the plane defined by the bottom wall;
wherein the vertical wall includes a front portion having an access opening for providing access to the chamber;
a panel adapted to be removably inserted in the access opening; and
a lid defining a recess for receiving alternately the top and the bottom of the body portion without substantially obstructing the access opening.

5,282,440
EXTRUDED PIPE WATERING SYSTEM
Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.
Continuation-in-part of Ser. No. 823,886, Jan. 22, 1992, Pat. No. 5,178,079. This application Jan. 7, 1993, Ser. No. 1,901
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—72 **13 Claims**



1. A poultry watering system, suspended along its longitudinal length above the floor of an enclosure for raising poultry, comprising:
a fluid conduit extending longitudinally with said poultry watering system,
said fluid conduit including at least one integrally formed flange extending generally radially outward from said fluid conduit,
said flange including therein integrally formed strengthening means for resisting bending of said fluid conduit, said strengthening means comprising a longitudinally extending tubular element,
a stabilizing member at least partially surrounded by said strengthening means, and
connection means attached to said flange for joining said flange with a means for suspending said fluid conduit above said floor.

5,282,441
LARGE ANIMAL HANDLING CHUTE
Tod Ricketts, Springfield, Mo., assignor to Animar Systems, Inc., Springfield, Mo.
Filed Nov. 30, 1992, Ser. No. 983,409
Int. Cl.[5] A61D *3/00*
U.S. Cl. 119—724 **29 Claims**



19. A large animal handling chute comprising:
(a) an adjustable confinement means for securely confining a large animal, said confinement means being rotatable about a pivot axis to a position in which the animal is lying on its side; and
(b) a floor means, said floor means being pivotally connected to said confinement means and being rotatable therewith;
(c) at least one hydraulic cylinder and telescoping piston

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connected between said floor means and said confinement means; whereby

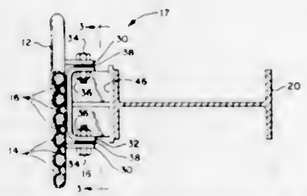
(d) said floor means can be hydraulically lowered to a position in which it forms an approximately horizontal working platform when said animal is rotated to lie on its side.

5,282,442

SPIRAL TUBE WALL FURNACE SEISMIC/WIND TUBE STOP

Ronald G. Payne, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1992, Ser. No. 997,793
Int. Cl.[5] F22B *37/24*
U.S. Cl. 122—510 **16 Claims**



1. A tube stop for cooperation with a tube and fin furnace wall and a horizontal buckstay which comprises:

first and second generally parallel generally planar spaced plates;

means for attachment of said first and second generally parallel generally planar spaced plates to the associated tube wall;

a U-shaped plate having first and second opposed generally planar generally parallel space side walls, said first and second side walls being respectively disposed in spaced relation generally parallel relationship to said first and second generally parallel generally planar spaced plates;

means for coupling said first and second walls of said U-shaped member respectively to said first and second generally parallel generally planar spaced plates; and

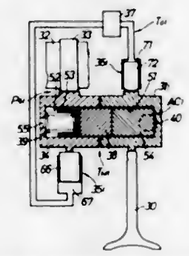
means for rigidly coupling said U-shaped plate to said to the associated horizontal buckstay.

5,282,443

VALVE OPERATING SYSTEM IN INTERNAL COMBUSTION ENGINE

Yoshihiro Fujiyoshi; Yasuhiro Urata; Hiroshi Sono, and Kouichi Fukuo, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,441
Claims priority, application Japan, Dec. 9, 1991, 3-324317
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **18 Claims**



1. A valve operating system in an internal combustion engine, comprising

an operating-force generating means for generating an operating force corresponding to the revolution of the engine,

an operating-force applying means for operating an engine valve,

a hydraulic transmitting means capable of hydraulically transmitting the operating force between the operating-force generating means and the operating-force applying means,

a mechanical transmitting means capable of rigidly transmitting the operating force between the operating-force generating means and the operating-force applying means, and

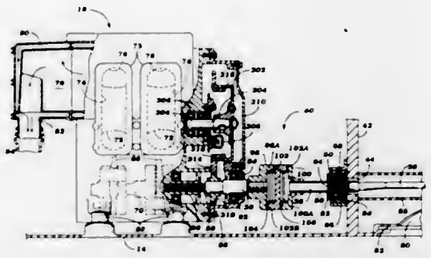
a selective switchover means capable of alternatively switching-over between the transmission of the operating force from the operating-force generating means to the operating-force applying means by the hydraulic transmitting means and the transmission of the operating force from the operating-force generating means to the operating-force applying means by the mechanical transmitting means, said selective switchover means serving to discontinue said operating-force transmission by the mechanical transmitting means during said operating-force transmission by the hydraulic transmitting means by disconnecting said mechanical transmitting means from said operating-force applying means.

5,282,444

POWER TRANSMITTING SYSTEM OF SMALL BOAT

Kazumasa Ito, and Hiroshi Tasaki, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 733,094, Jul. 19, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,973
Claims priority, application Japan, Jul. 23, 1990, 2-194493
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—192.2 **16 Claims**



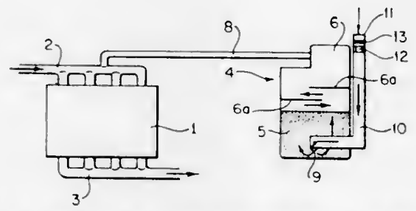
1. A balancing arrangement for an internal combustion engine comprising a crankshaft assembly; a rotatable output shaft secured to a portion of said crankshaft assembly; a rotatable flywheel in communication with said crankshaft assembly; means for imparting rotational movement to said flywheel in response to rotational movement of said crankshaft assembly, said rotational movement of said rotatable flywheel being in a direction opposite to a direction of rotation of said crankshaft assembly; said rotatable flywheel weighted so that upon rotation of said flywheel, during engine operation, said flywheel achieves a rotational momentum to offset a rotational momentum achieved by said crankshaft assembly; and further comprising an axle, upon which said flywheel is mounted, and an engine casing; wherein said axle is rotatably journaled within said engine casing at a location above said output shaft; wherein said flywheel is a magneto generator flywheel; and further comprising a first set of gear teeth, said first set of gear teeth provided around the outer periphery of said magnet generator flywheel.

5,282,445

DEVICE FOR INSERTING RARE EARTH PARTICLES INTO A COMBUSTION CHAMBER

Miltiathis Markou, P.O. Box 21557, Griechenland, Greece

PCT No. PCT/EP91/00927, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO91/19896, PCT Pub. Date Dec. 26, 1991
PCT Filed May 17, 1991, Ser. No. 834,533
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1990, 4018797
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 A **26 Claims**



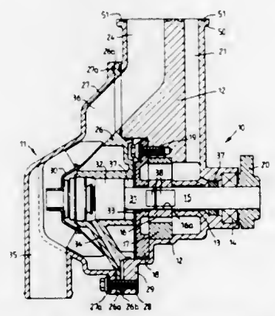
1. A device for introducing a small amount of particles comprising rare earth elements that include cerium into the combustion chamber of an internal combustion engine, the device comprising a container (4) which has therein said particles in the form of an air-permeable dry filling (5), said container having an opening (11) communicating with the atmosphere and a suction line (8) communicating with one of a vacuum duct (2) that delivers air to the engine, and the combustion chamber of the engine (1).

5,282,446

ROTARY PUMP ASSEMBLIES

Kevin J. Whitefield, Rochester, United Kingdom, assignor to Hobourn Automotive Ltd., Kent, England

Filed Nov. 18, 1992, Ser. No. 978,421
Claims priority, application United Kingdom, Nov. 18, 1991, 9124446
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 C **16 Claims**



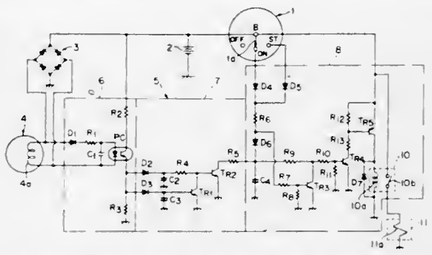
1. An assembly comprising two rotationally driven pumps for an internal combustion engine, each of said pumps comprising a housing and a pump rotor mounted for rotation in the housing, the pump rotors being drivingly coupled together, the housing of one of said pumps having flow passages connected to the two pumps respectively with portions of said flow passages extending side by side, said housing of said one pump having a joint face to which said flow passages open and being adapted to having said joint face secured against a complementary joint face of the engine.

5,282,447

DEVICE FOR STOPPING A DIESEL ENGINE

Yousuke Kubota, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,090
Claims priority, application Japan, Dec. 26, 1991, 3-107558
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 DB **6 Claims**



1. A device for stopping a diesel engine having an engine stopping actuator for stopping the diesel engine the device comprising:

an engine rotation detection section for detecting the rotation of the engine to output a rotation detection signal;

an engine stopping operation section for operating the engine stopping actuator; and

an engine stopping release section for releasing the engine stopping operation section to stop the actuator when the rotation detection signal terminates after the reception of the rotation detection signal from said engine rotation detection section ceases, wherein

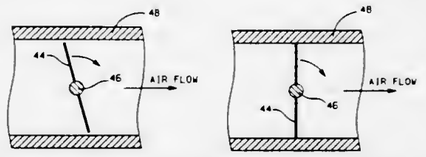
said engine stopping operation section has starting means for starting the operation of the engine stopping actuator when a key switch is brought from an ON state to an OFF state, and releasing means for releasing the operation of the engine stopping actuator when a set period elapses so as to avoid keeping the engine stopping actuator in an ON state over set period.

5,282,448

FUEL CONTROL OF A TWO-STROKE ENGINE WITH OVER-CENTER THROTTLE BODY

Paul E. Reinke, Rochester, and Steven D. Stiles, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1993, Ser. No. 24,140
Int. Cl.[5] F02D *9/08*
U.S. Cl. 123—337 **2 Claims**



1. A control system for reducing hydrocarbon emissions in the exhaust gas of a crankcase scavenged, two-stroke engine, comprising an air intake manifold for induction of air to the engine, said manifold having a throttle body with a bore through which engine air flows and a throttle plate positioned in said bore and rotatable therein to regulate the flow of air therethrough, said throttle plate rotatable from a positive position of maximum air flow and minimum bore obstruction through a center position of minimum air flow and maximum bore obstruction to a negative position corresponding to an air

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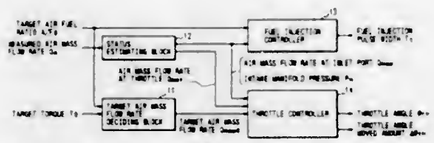
flow and bore obstruction representing a steady state condition of unloaded engine idle and operable to reduce air flow to said engine as said throttle plate is rotated from said negative, steady state position to said center position and to increase air flow to said engine as said throttle plate is rotated from said center position to said positive position, said manifold further comprising throttle plate position sensing means operable to increase fuel supplied to the engine as said throttle plate rotates from said negative position to said positive position, said control system operable to reduce air and increase fuel to said engine as said throttle plate rotates from said negative, idle position through said center position and to increase air flow and fuel flow as said throttle plate rotates from said center position to said positive position.

5,282,449

METHOD AND SYSTEM FOR ENGINE CONTROL

Shinsuke Takahashi, Yokohama; Teruji Sekozawa, Kawasaki, and Makoto Shioya, Suginami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 846,960
Claims priority, application Japan, Mar. 6, 1991, 3-039838
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—350 **28 Claims**



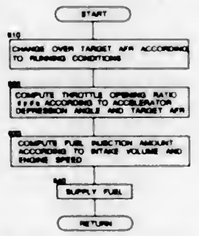
1. An engine control method, comprising the steps of:
detecting operating conditions of the engine, including air mass flow rate;
calculating a value of target torque based upon the detected operating conditions of the engine;
estimating a value of actual air flow status inside the intake manifold using an air flow model based upon at least one of said detected operating conditions of the engine related to air flow;
calculating a throttle angle which achieves the calculated value of target torque, based on the calculated value of target torque and said estimated value of actual air flow status; and
controlling the engine throttle based upon the calculated throttle angle.

5,282,450

ENGINE POWER CONTROLLER

Masaaki Uchida, and Hiroyuki Itoyama, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Oct. 14, 1992, Ser. No. 960,640
Claims priority, application Japan, Oct. 16, 1991, 3-267766
Int. Cl.[5] F02D *43/00*
U.S. Cl. 123—399 **3 Claims**



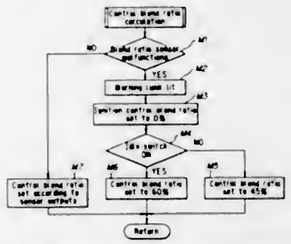
1. A power controller for an engine provided with a combustion chamber, a throttle having a variable opening area to regulate an intake air volume supplied to said combustion chamber, an accelerator which operates said throttle, and means for supplying a fuel to said combustion chamber, comprising:
means for selecting an air-fuel ratio from among a plurality of candidate air-fuel ratios;
means for computing a target throttle opening area based on an operation amount of said accelerator and the selected air-fuel ratio;
means for correcting an opening of said throttle such that an opening area thereof is equal to the computed target throttle opening area, said correcting means comprising a throttle opening ratio varying mechanism which mechanically connects said accelerator and said throttle and varies the ratio of the accelerator operation amount to the throttle opening area based on the target throttle opening area;
means for detecting an intake air volume;
means for detecting an engine speed;
means for computing a fuel amount based on the selected air-fuel ratio, detected intake air volume and detected engine speed; and
means for regulating a fuel amount supplied by said fuel supplying means in correspondence with the computed fuel amount.

5,282,451

ENGINE FUELED WITH MIXED FUEL AND OPERATION CONTROL METHOD THEREOF

Masato Yoshida, Kyoto; Muneyoshi Naoba, Okazaki; Kazumasa Iida, and Katsuhiko Miyamoto, both of Kyoto, all of Japan, assignors to Mitsuishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,939
Claims priority, application Japan, Sep. 13, 1991, 3-234992
Int. Cl.[5] F02D *43/00*
U.S. Cl. 123—406 **11 Claims**



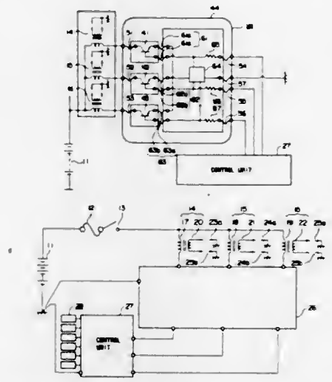
1. In an engine fueled with a mixed fuel including fuel blend ratio detection means for detecting a blend ratio of a mixture of a plurality of fuels having different properties, operation control means for controlling operation condition of the engine according to a detection signal from said fuel blend ratio detection means, and malfunction detection means for detecting a malfunction in said fuel blend ratio detection means, whereby, when a malfunction is detected by said malfunction detection means, operation condition of the engine is controlled according to a predetermined emergency blend ratio, the engine comprises blend ratio storage means for storing a plurality of emergency blend ratios.

5,282,452

ELECTRONIC DISTRIBUTOR

Noriyoshi Urushiwara, Katsuta; Noboru Sugiura, Mito, and Norio Moriyama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,764
Claims priority, application Japan, Oct. 25, 1991, 3-279179; Feb. 27, 1992, 4-040952
Int. Cl.[5] F02P *7/06*
U.S. Cl. 123—643 **23 Claims**



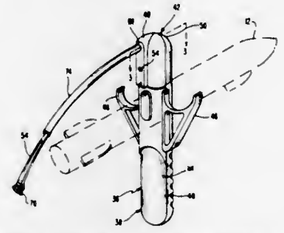
1. A distributor for an internal combustion engine which separately conducts and breaks by a plurality of switching elements, a current flowing from a battery of a plurality of ignition coils, combines the currents from the plurality of switching elements at a junction point and connects the current from the junction point to the earth, characterized in that the distributor further has current limiting means for limiting the current when any one of the plurality of switching elements has become not possible to break and this current limiting means is disposed at a position between the battery and the junction point.

5,282,453

TOY SLINGSHOT DEVICE FOR LAUNCHING A PROJECTILE

Francis Chia, 17 Kadoorie Avenue, Kowloon, Hong Kong

Filed Nov. 23, 1992, Ser. No. 980,345
Int. Cl.[5] F41B *7/00*
U.S. Cl. 124—20.1 **11 Claims**



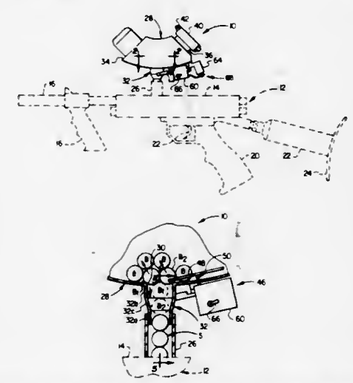
1. In a slingshot device of the type in which a projectile is launched by a launching means, the improvement in which the launching means comprises:
handle means for being grasped by a user;
elastic strap means for launching said projectile, said elastic strap means having a first end affixed to said handle means and a second end free to move relative to the handle;
releasable means for releasably coupling said free end of said elastic strap means to said projectile such that drawing said free end rearward away from said handle means to extend the elastic strap from a relaxed condition to a stretched condition and then releasing said free end to enable relatively rapid contraction of the elastic strap from the stretched condition to the relaxed condition causes said projectile to be accelerated forward and launched beyond said handle means; and
restraining means for controlling movement of said elastic strap means so as essentially to preclude forward movement of the free end of the elastic strap means beyond said handle, said restraining means surrounding at least a portion of said elastic strap means when the strap means is in the relaxed condition so that the elastic strap means retracts into the restraining means upon launching of the projectile for precluding the free end of the elastic strap means from following the projectile beyond the handle.

5,282,454

JAM-FREE BULK LOADER FOR A PAINTBALL GUN

Roderick L. Bell, and David W. Bell, both of Mesquite, Tex., assignors to CM Support, Inc., Mesquite, Tex.

Filed Oct. 20, 1992, Ser. No. 963,993
Int. Cl.[5] F41B *11/02*
U.S. Cl. 124—49 **18 Claims**



1. For use with a paintball gun having a hollow infeed portion for receiving paintballs to be fired by the gun, bulk loader apparatus for supplying paintballs to the gun, said bulk loader apparatus being positionable generally above the gun and comprising:
housing means for internally storing a quantity of paintballs, said housing means having a bottom outlet opening through which the stored paintballs may sequentially drop;
feed tube means connected to said housing means over said bottom outlet opening thereof and extending downwardly therefrom, said feed tube means being connectable to the gun infeed portion to form therewith a paintball gravity feed passage for receiving and holding a stack of paintballs dropped through said housing means bottom outlet opening and sequentially delivering the paintballs, from the lower end of the paintball stack, to the gun in response to firing thereof;
agitator means disposed in said housing means and selectively operable to clear a paintball feed jam therein by shifting a plurality of paintballs therein positioned adjacent said bottom outlet opening in a jamming orientation

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preventing operative downward exit of paintballs through said bottom outlet opening into said feed tube means; and

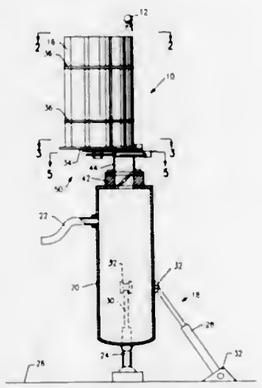
control means for sensing the absence of a paintball within said feed tube means, indicative of the paintball feed jam, and responsively operating said agitator means to clear the paintball jam.

5,282,455

LAUNCHER FOR LAUNCHING MULTIPLE FIREWORKS PROJECTILES

William G. Adamson, Pacoima, and Donald Updyke, Jr., Palmdale, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Jun. 11, 1992, Ser. No. 897,306
Int. Cl.[5] F41B *11/02*; F41A *9/18*; F41F *3/04*
U.S. Cl. 124—59 **19 Claims**



1. A launcher for holding and successively launching a plurality of projectiles for exploding into an aerial pyrotechnic display, comprising:

(a) a pressure tank containing a compressed gas;

(b) a plurality of launching tubes for holding the projectiles;

(c) a valve connected to the pressure tank and having an output port registered with a selected one of the tubes;

(d) a control apparatus for opening and closing the valve to accurately control the introduction of compressed gas from the pressure tank into the selected one of the tubes to launch a projectile into the air;

(e) a stop mechanism for preventing indexing of the tubes when the pressure tank is pressurized and for allowing indexing of the tubes when the pressure tank is depressurized; and

(f) an indexing mechanism for selectively indexing another of the tubes into registration with the output port of the valve when the pressure tank is depressurized.

5,282,456

HIGH EFFICIENCY FUEL FIRED INDUCED DRAFT CONDENSING FURNACE WITH HORIZONTAL PLASTIC VENT TERMINATION ASSEMBLY

Jim C. Smelcer, and Jack H. Weaver, both of Fort Smith, Ark., assignors to Rheem Manufacturing Company, New York, N.Y.

Filed Jun. 17, 1992, Ser. No. 899,733
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—85 B **16 Claims**

1. Apparatus for heating at least a portion of a building having an exterior wall, said apparatus comprising:

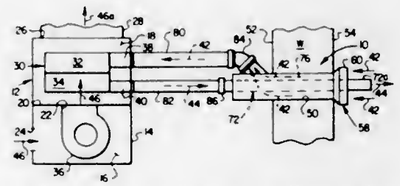
a fuel-fired induced draft furnace disposed in said building and including:

heat exchanger means for receiving an internal throughflow of hot combustion gases, said heat exchanger means having an inlet and an outlet,

fuel burner means for receiving a fuel/air mixture and flowing flames, and resulting hot combustion gases, into said inlet of said heat exchanger means, said fuel burner means having an inlet into which combustion air may be drawn, and

draft inducer fan means having an inlet connected to said heat exchanger means outlet, and further having an outlet, said draft inducer fan means being operable to draw combustion air into said fuel burner means inlet, and to draw combustion gases through said heat exchanger means and then discharge the combustion gases, said draft inducer fan means, during operation thereof, creating a pressure differential between said heat exchanger means inlet and said draft inducer fan means outlet; and

venting and intake means for simultaneously flowing outside combustion air to said fuel burner means inlet and flowing discharged combustion gases to the outside of the building, in response to operation of said fuel burner means and said draft inducer fan means, in a manner rendering said pressure differential substantially insensitive to variations in outside wind direction and velocity, said venting and intake means including:



vent pipe means operative to flow combustion gases discharged from said draft inducer means to the exterior of the building, said vent pipe means having an inner end connected to said draft inducer means outlet, and an essentially straight outer end portion axially extending horizontally outwardly through said exterior wall and having an open, uncovered outer end, spaced horizontally outwardly from the outside surface of said exterior wall, through which combustion gases may be discharged directly to atmosphere in an axially outward direction,

first inlet pipe means axially extending horizontally outwardly through said exterior wall in an outwardly concentric relationship with said outer end portion of said vent pipe means and defining therewith an annular flow space, said first inlet pipe means having an open, uncovered horizontally outwardly facing outer end, positioned between said outer end of said vent pipe means and the outside surface of said exterior wall, through which outside combustion air may directly enter in an axially inward direction and pass into said annular flow space, and

second inlet pipe means, interconnected between said first inlet pipe means and said fuel burner means inlet, for communicating said annular flow space with said fuel burner means inlet.

5,282,457

HIGH EFFICIENCY GAS FURNACE

William E. Kraemer, Sterling Heights, and Manouchehr Daneshvar, Novi, both of Mich., assignors to Combustion Concepts, Inc., Detroit, Mich.

Filed Dec. 1, 1992, Ser. No. 983,885
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 C **28 Claims**

1. A clean burning gas flame furnace for heating space within a room said furnace comprising:

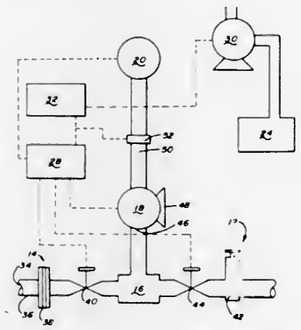
a housing defining a combustion chamber;

burner means disposed within said housing for combusting a

pressurized fuel gas and air pre-mixture for providing heat, said pressurized fuel gas and air pre-mixture being supplied to said burner means at a specified pressure greater than one PSIG;

a compressor for compressing a fuel gas and air pre-mixture to provide said pressurized fuel gas and air pre-mixture and introducing said pressurized pre-mixture to said burner means at a specified velocity;

a mixing unit having a combustion air inlet and a fuel gas inlet, said mixing unit operable to create said fuel gas and air pre-mixture, said mixing outlet being in communication with said compressor;



means for supplying combustion air to said air inlet of said mixing unit;

means for supplying fuel gas to said fuel gas inlet of said mixing unit;

a heat exchanger mated to said combustion chamber;

means for forcing air to flow through said heat exchanger and around said combustion chamber such that said heat is transferred to said forced air;

means for exhausting the high velocity products of combustion, said exhausting means being mated with said heat exchanger;

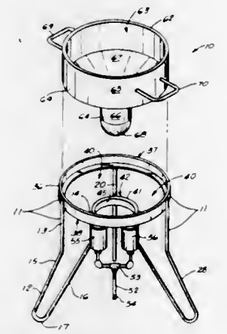
means for controlling the rate of combustion.

5,282,458

GASEOUS FUEL FIRED PORTABLE COOKING APPARATUS

Eldridge P. Trimble, P.O. Box 923, St. Martinville, La. 70582

Filed Jun. 17, 1993, Ser. No. 79,650
Int. Cl.[5] A21B *1/00*
U.S. Cl. 126—373 **11 Claims**



1. A cooking apparatus comprising:

a) a burner support having a plurality of at least three legs, each with upper and lower end portions, and a support ring attached to the upper end portion of each leg, the ring having a peripheral portion that surrounds an opening having a central vertical axis;

b) a smaller ring supported by the burner support below the larger ring, the smaller ring having a peripheral portion with upper and lower edge portions and a central opening having a central vertical axis that is substantially coincident with the central axis of the opening of the larger ring;

c) a burner element supported upon the burner support, and including a nozzle having a flame axis that is generally vertically extending for directing a flame upwardly along the flame axis;

d) a conduit supported upon the burner support, for transmitting gaseous fuel to the burner element and nozzle for supporting combustion at the nozzle;

e) an inlet connection for connecting a source of gaseous fuel under pressure to the conduit;

f) a cooking vessel, removably supported upon the burner support frame, and including a continuous sidewall that defines a space for holding liquid such as cooking oil during use;

g) the vessel including a smaller diameter lower end portion for holding solid matter that settles in the vessel, the lower end portion being vertically extending along an axis that is generally aligned with the axis of the larger and smaller rings, a larger upper end portion communicating with an open top, and a frustro-conically shaped portion extending between the upper and lower portions;

h) wherein the flame axis is positioned laterally away from and generally parallel to the axis of the larger ring, the axis of the smaller ring, and the axis of the vessel; and

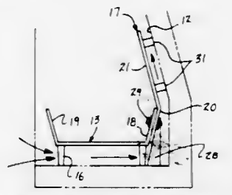
i) the burner is positioned within the confines of one half of the vessel so that a direct flame is applied to one half portion of the vessel during use and no direct flame is applied to the other half portion of the vessel during use.

5,282,459

FIREPLACE SHIELD

James E. Soule, 92 Sea Lion Dr., Mayville, N.Y. 14757

Filed Mar. 1, 1993, Ser. No. 24,089
Int. Cl.[5] F24B *1//195*
U.S. Cl. 126—552 **3 Claims**



1. A fireplace shield arrangement within a fireplace hearth, wherein the hearth includes a hearth rear wall and a hearth floor, wherein the fireplace shield comprises,

a support grate of a generally U-shaped configuration, having a grate rear wall spaced from a grate forward wall, and a grate floor portion extending between the grate forward wall and the grate rear wall, and

the fireplace shield mounted to the grate rear wall extending above the grate rear wall, and the grate including a plurality of leg members arranged to space the grate floor portion above the hearth floor, and

the shield plate includes a first plate member and a second plate member secured together, with the first plate member canted over the grate central floor portion and defining an obtuse included angle between the first plate member and the second plate member, and the first plate member including a first plate first end spaced from a first plate second end, and a first plate lowermost edge, and a first

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slot directed through the first plate in adjacency to the first end and a second slot directed through the first plate second end, and a first fastener directed through the first slot and the grate rear wall, and a second fastener directed through the second slot and the grate rear wall, and

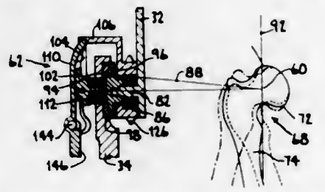
including a plurality of spaced parallel positioning flanges, and the first plate having a first plate rear wall and a first plate forward wall, with the first plate forward wall arranged in contiguous communication with the grate rear wall, and the first plate rear wall including the positioning flanges orthogonally mounted thereto, wherein the positioning flanges extend below the first plate lowermost edge to space the first plate relative to the hearth floor and the hearth rear wall.

5,282,460

THREE AXIS MECHANICAL JOINT FOR A POWER ASSIST DEVICE

Kenneth Boldt, Allentown, Pa., assignor to Joyce Ann Boldt, Allentown, Pa.

Filed Jan. 6, 1992, Ser. No. 818,646
Int. Cl.[5] A61H *1/00*; A61F *2/74*
U.S. Cl. 128—25 R **24 Claims**



1. An exoskeletal robotic device adapted to supplement relative movement between at least two substantially rigid biological skeletal members coupled at a biological joint of a wearer, the biological joint being rotatable around three mutually perpendicular axes intersecting at a center of the biological joint, the mechanical joint comprising:

first and second frame members including means for attachment to outer surfaces of the skeletal members;

a mechanical joint means for coupling the first and second frame members, the mechanical joint means defining a center of relative rotation of the first and second frame members about three mutually perpendicular axes, the center of relative rotation of the frame members being displaced from the outer surfaces of the skeletal members to correspond in position with the center of the biological joint;

the mechanical joint means including a plurality of spherical guide surfaces operably connected to a defining slidable connections between the frame members, the spherical guide surfaces each having a radius intersecting the center of the biological joint; and,

an extension shaft and journal coupling the frame members, the extension shaft defining a longitudinal axis intersecting the center of the biological joint and guiding motion of the biological joint in flexion and extension.

5,282,461

Patent Not Issued For This Number

5,282,462

MOUTHPIECE FOR REGULATOR

Masao Kudo, 11-10, Ehara-cho 1-chome, Nakano-ku, Tokyo 165, Japan

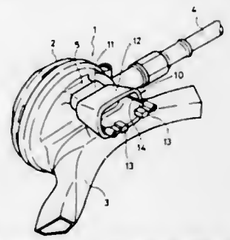
Filed Oct. 21, 1992, Ser. No. 964,183
Claims priority, application Japan, Oct. 30, 1991, 3-097377[U]
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.26 **5 Claims**

1. A mouthpiece of a regulator, which is mounted on a demand regulator unit connected to a cylinder through a hose, to supply air from said cylinder into a cavum oris of a diver, the mouthpiece comprising:

a mouthpiece tube which abuts against an outer side of the cavum oris of the diver when the mouthpiece is worn by the diver, said tube being connected with and in communication with said demand regulator unit, and

a pair of teeth grips extending from said tube toward molar teeth in the cavum oris of the diver so as to be bitten and held by the molar teeth, said teeth grips being integrally provided with:

connecting rods, respectively, which are inserted into the tube of said mouthpiece, each said connecting rod having an inserting end coupled to said tube so as to be integral with said tube, said connecting rods being slightly longer than said tube such that each of said teeth grips is extracted to the outside of said tube,



laminate biting portions, respectively, against which the molar teeth are vertically abutted, said laminate biting portions being connected at free ends of said connecting rods,

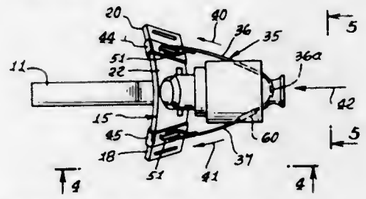
abutting portions abutted against side surfaces of the molar teeth when the molar teeth are abutted against said biting portions, said abutting portions being connected at free ends of said connecting rods.

5,282,463

ANTI-DISCONNECT APPARATUS AND METHOD, FOR BREATHING SYSTEMS

Gerald L. Hammersley, West Hills, Calif., assignor to Hammer-Plane, Inc., Simi Valley, Calif.

Filed Sep. 13, 1991, Ser. No. 759,881
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 **19 Claims**



1. The method that includes the steps

a) providing a tracheostomy tube structure, a neckplate on said tube structure and a duct disconnectible from the tube structure, the neckplate provided to have two wings,

b providing flexible bands means, and providing two clips attached to said band means,

c attaching said band means to said neckplate by releasably attaching said clips to said wings, respectively,

d extending said band means to retain said duct,

e and tightening said band means to hold said duct against inadvertent disconnection from said tracheostomy tube,

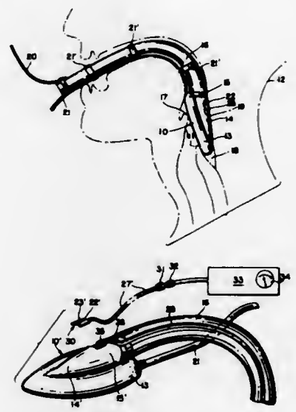
f the clips provided to have operative connection to the duct only through the band means.

5,282,464

COMBINED LARYNGEAL MASK AND REFLECTANCE OXIMETER

Archibald I. J. Brain, St. Andrews, Abney Court Drive, Bourne End, Bucks, United Kingdom

Filed Nov. 23, 1992, Ser. No. 980,581
Claims priority, application United Kingdom, Jul. 21, 1992, 9215455
Int. Cl.[5] A61M *16/00*; A62B *7/00*; F16K *31/02*; A61B *5/00*
U.S. Cl. 128—207.15 **28 Claims**



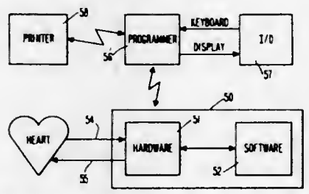
1. In combination, a laryngeal mask having a front side and a back side and means for establishing peripherally sealed engagement of said mask around the laryngeal inlet of a patient, with the front side facing into the laryngeal inlet and the back side facing the back wall of the pharynx, an elongate airway tube having a distal end which establishes a sealed passage through said mask between the back and front sides of said mask, and reflectance-oximeter probe means carried at the back side of said mask and oriented to radiate into and to sense radiation reflected from within a localized portion of the back wall of the pharynx.

5,282,465

PACEMAKER WITH WENCKEBACH OPERATION

Johannes S. van der Veen, Arnhem; Malcolm J. S. Begemann, Velp, and Gustaaf A. P. Stoop, Dieren, all of Netherlands, assignors to Vitatron Medical BV, Dieren, Netherlands

Filed Feb. 4, 1992, Ser. No. 830,651
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—17 **30 Claims**



1. A dual chamber pacemaker system, having ventricular stimulus means for generating and delivering pulses to a patient's ventricle, atrial sensing means for sensing signals from the patient's atrium, AV means for timing out an AV delay following sensing of an atrial signal, TL means for determining a tracking limit rate representing the highest atrial rate which normally will be tracked for delivery of a ventricular stimulus following a time out of said AV delay, and Wenckebach (WB) means for tracking atrial rates within a WB range above said tracking limit and for controlling a delivery of ventricular pulses synchronized to at least some of the atrial events having WB rates, said WB means further comprising:

AV extension means for controlling said AV means to calculate an extension of said AV time interval following a sensed atrial signal having a rate within said WB range, said AV extension being calculated so that said extended AV time interval results in delivery of a ventricular pulse at a V—V interval (TL_int) corresponding to said tracking limit rate; and

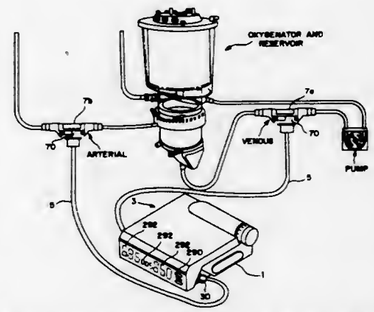
said AV extension means having first means for determining when said calculated AV extension is greater than a predetermined maximum extension, and second means for controlling said V stimulus means to generate a next ventricular stimulus at an escape interval greater than TL_int when said calculated AV extension is greater than said maximum extension.

5,282,466

SYSTEM FOR DISABLING OXIMETER IN PRESENCE OF AMBIENT LIGHT

Timothy J. Duffy, Anaheim; Ralph M. Kerns, Laguna Niguel, both of Calif.; James F. Kelley, Coon Rapids, and Eric J. Fogt, Maple Grove, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 3, 1991, Ser. No. 770,672
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **9 Claims**



1. A device for measuring a feature of a sample, including a radiation source, a detector for receiving transmitted radiation, means for carrying radiation from the source to the sample, first means for transmitting radiation from the sample to the detector, means for providing output based on the received radiation, and further comprising:

second means located adjacent the sample for transmitting radiation;

means for isolating the second transmitting means from radiation from the sample; and

means connected to receive radiation from the second transmitting means for disabling the output of the device in response to radiation received from the second transmitting means.

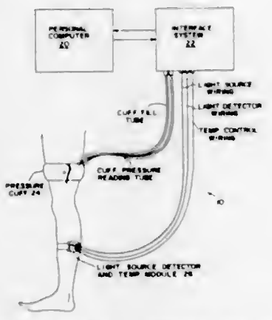
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5,282,467

NON-INVASIVE METHOD FOR DETECTING DEEP VENOUS THROMBOSIS IN THE HUMAN BODY

Claude A. Piantadosi; Benjamin J. Comfort, both of Durham, N.C., and Neil B. Hampson, Seattle, Wash., assignors to Duke University, Durham, N.C.

Filed Aug. 13, 1992, Ser. No. 930,002
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—633 **14 Claims**



1. A non-invasive method for detecting deep venous thrombosis in a human body, said method comprising the steps of:
(a) securing an inflatable cuff to a body limb of interest wherein said body limb comprises skin, tissues, oxyhemoglobin and deoxyhemoglobin;
(b) attaching a radiation source and operatively associated photodetector to the body limb proximate to said inflatable cuff;
(c) actuating said radiation source so that radiation penetrates through the skin and into the deep venous system of the body limb to enable detecting of changes in the amount of deoxyhemoglobin in said deep venous system;
(d) effecting changes in the amount of deoxyhemoglobin in the body limb by inflating said cuff during said radiation source actuation to a pressure below arterial pressure to trap blood in the venous system for a determining a time period and by deflating said cuff during said same radiation source actuation;
(e) actuating said photodetector to detect changes occurring during the trapping of the blood in the venous system after said cuff is inflated and during the emptying of the venous system after said cuff is deflated by measuring reflectance contributions including contribution from the skin, tissues, oxyhemoglobin and deoxyhemoglobin of the body limb; and
(f) detecting the presence of deep venous thrombosis by subtracting the reflectance contributions of the skin, tissues and oxyhemoglobin from the reflectance contribution of the deoxyhemoglobin and comparing the reflectance contribution of the deoxyhemoglobin to predetermined reflectance values for a normal body limb.

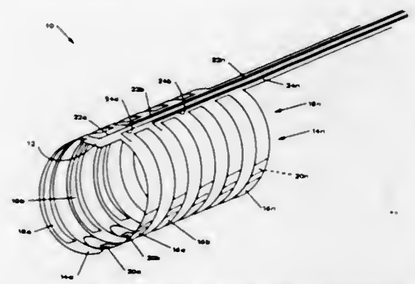
5,282,468

IMPLANTABLE NEURAL ELECTRODE

Robert J. Klepinski, St. Louis Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 536,286, Jun. 7, 1990, Pat. No. 5,095,905. This application Jan. 8, 1992, Ser. No. 818,063
The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.
Int. Cl.[5] A61B 5/04; A61N 1/05
U.S. Cl. 128—642 **10 Claims**

1. An electrode for providing electrical contact with a nerve comprising:
a. a first electrically insulative substrate having a first end and having a second end and having a length less than the circumference of a first circle having a first radius of curvature wherein said first radius of curvature is less than the radius of curvature of said nerve;
b. a second electrically insulative substrate having a first end and having a second end and having a length less than the circumference of a second circle having a second radius of curvature;
c. means coupled to said first end of said first electrically insulative substrate and said first end of said second electrically insulative substrate for releasably maintaining said first electrically insulative substrate and said second insulative substrate in position with respect to said nerve; and,
d. first means coupled to said first electrically insulative substrate for establishing electrical contact with said nerve whenever said releasably maintaining means maintains said first electrically insulative substrate and said second insulative substrate in position with respect to said nerve.

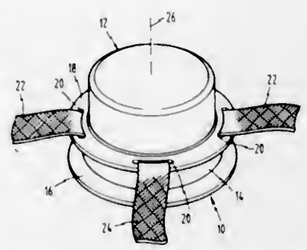


5,282,469

APPARATUS FOR MEASURING THE HEART WALL MOVEMENT OF A PERSON

Klaus Deuter, Freising, and Jochen Körner, Munich, both of Fed. Rep. of Germany, assignors to Lre Relais und Elektronik GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 976,466
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137951; Aug. 28, 1992, 4228766
Int. Cl.[5] A61B 5/042
U.S. Cl. 128—644 **24 Claims**



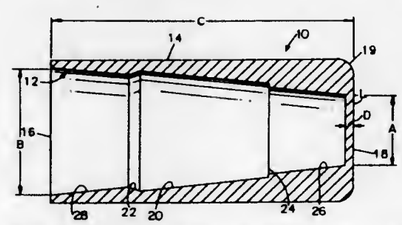
1. An apparatus for measuring the heart wall movement of a person, including a measuring head (10, 12) placeable onto the breast, said measuring head having an electrode arrangement (76, 78, 98) and a measuring circuit (84) for capacitively measuring skin movement with respect to the electrode arrangement (76, 78, 98), characterized in that the measuring head includes a holding ring (10) with a ring axis (26), the holding ring having an annular surface (28) perpendicular to the ring axis (26) adapted for engagement with a body (30, 32) and means (22, 28) for fastening the measuring head (10, 12) to the body, the electrode arrangement (76, 78, 98) being provided in an adapter (12) which is resiliently movably supported in and with respect to the holding ring (10) electrode arrangement being positioned enabling movement in the direction of the ring axis (26) as well as about two axes perpendicular to the ring axis, said two axes being perpendicular to one another, the adapter (12) having an annular contact surface (42) intended to engage the body and an electrode carrier (56) surrounded by the contact surface (42), and at least one electrode (76, 78, 98) carrying surface (74, 96), the electrode carrying surface (74, 96) being spaced perpendicularly from the contact surface (42) and being provided with a spacing element (80, 100).

5,282,470

PROTECTIVE LENS COVER FOR A TONOMETER

Ben Z. Cohen, 140 E. 80th St., New York, N.Y. 10021; Mille Stand, Croton-on-Hudson, and Laurabeth Fitzsimmons, Hastings-on-Hudson, both of N.Y., assignors to Ben Z. Cohen, New York, N.Y.

Filed Sep. 3, 1992, Ser. No. 940,021
Int. Cl.[5] A61B 3/16
U.S. Cl. 128—652 **8 Claims**



1. A protective lens cover for a tonometer lens of an applanation tonometer, comprising:
a unitarily molded structured made of clear plastic material and having an outer cylindrical surface, said structure being hollow to define an inner surface, said structure having a closed lens end and an opposed open end, the inner surface of said structure being frustoconical and including a conically grooved stepped portion disposed intermediate said open end and said closed end, said conically grooved stepped portion including an inclined portion in spaced relationship to the open end and a right angle stepped portion at a right angle to the outer cylindrical surface in the transition between said conically grooved stepped portion and the inner surface of the structure extending to said closed end, whereby said structure is radially expandable adjacent the open end thereof for achieving an interference interengagement with a tonometer lens, with the closed lens end of the structure being in abutment with the tonometer lens in order to provide a temporary sterile environment during an examination of a patient's eye.

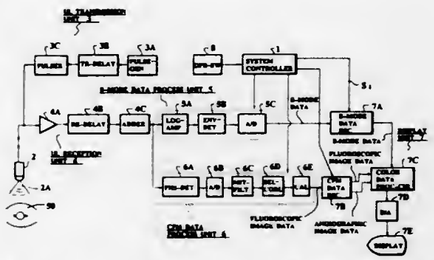
5,282,471

ULTRASONIC IMAGING SYSTEM CAPABLE OF DISPLAYING 3-DIMENSIONAL ANGIOGRAM IN REAL TIME MODE

Takeshi Sato, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 27, 1992, Ser. No. 919,954
Claims priority, application Japan, Jul. 31, 1991, 3-192195
Int. Cl.[5] A61B 8/06
U.S. Cl. 128—660.07 **25 Claims**

1. An ultrasonic imaging system comprising:
scanning means for scanning a biological body under medical examination within a three-dimensional volume by producing a plurality of successive two-dimensional scanning planes involving the biological body by utilizing ultrasonic pulses to obtain echo signals produced from echo pulses reflected from the biological body;
ultrasonic image data producing means for producing a plurality of ultrasonic scanned image data about the scanned biological body with regard to the successive scanning planes in response to said echo signals;
bloodflow-distribution image data producing means for producing a plurality of bloodflow-distribution image data about the scanned biological body with regard to the successive scanning planes in response to said echo signals;



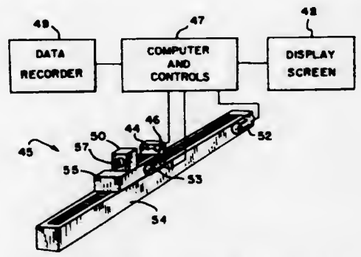
storage means for temporarily storing said plurality of bloodflow-distribution image data, while sequentially updating and superimposing said plural bloodflow-distribution image data with each other during a predetermined scanning period for each scanning plane; and
display means for displaying a three-dimensional bloodflow-distribution image superimposed on an ultrasonic scanned image by processing both of said bloodflow-distribution image data read out from said storage means, and said ultrasonic scanned image data.

5,282,472

SYSTEM AND PROCESS FOR THE DETECTION, EVALUATION AND TREATMENT OF PROSTATE AND URINARY PROBLEMS

John A. Companion, 20A Curtis La., Hampton, Va. 23669, and Bobby G. Batten, 19 Terrell Rd., Newport News, Va. 23606

Filed May 11, 1993, Ser. No. 62,617
Int. Cl.[5] A61B 8/12, 17/00
U.S. Cl. 128—662.06 **49 Claims**



1. A system for detecting, evaluating and treatment of prostate and urinary problems in a male human comprising:
a computerized base structure including a computer and physician operated controls therefor, a display screen and a data recording means;
said computerized base structure also including a fixed main movement track and a secondary movement carriage linearly movable along said main movement track;
a probe support housing supported by and movable with said secondary movement carriage, as well as, movable inde-

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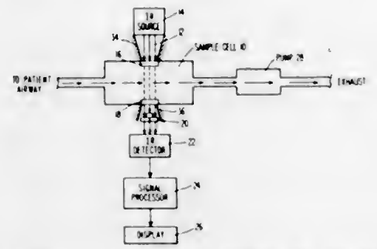
pendently, and linearly, relative to said secondary movement carriage;
computer controlled first motor means for selectively moving said secondary movement linearly along said main movement track;
computer controlled second motor means for selectively moving said support housing linearly along said secondary carriage;
an elongated tubular probe;
a locking assembly carried by said probe support housing for releasably securing said elongated tubular probe thereto and disposed in parallel relationship with said fixed main track on said computerized base structure;
said elongated tubular probe being dimensioned to be received within the urethra of a male patient and to have the capability of extending from the tip of the penis, through the prostate, and to just within the bladder of the patient; and said elongated tubular probe being selected from the group of elongated tubular probes consisting of a mapping probe and a placement and retrieval probe.

5,282,473

SIDESTREAM INFRARED GAS ANALYZER REQUIRING SMALL SAMPLE VOLUMES

James R. Braig, Oakland, Calif., and Daniel S. Goldberger, Boulder, Colo., assignors to Critikon, Inc., Tampa, Fla.

Filed Nov. 10, 1992, Ser. No. 976,145
Int. Cl.[5] A61B *5/097*
U.S. Cl. 128—664 **7 Claims**



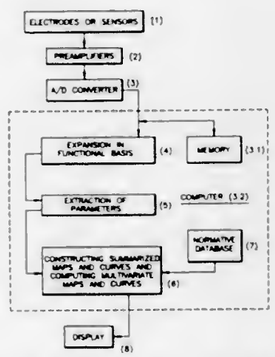
1. An infrared gas analyzer for detecting the concentration of a gaseous component of a substantially gaseous flow stream provided via an airway, comprising:
a source of infrared radiation having a first aperture;
an infrared energy detector disposed in an optical path of said infrared radiation so as to receive incident radiation from said infrared radiation source and to produce electrical signals representative of the received incident radiation, said infrared energy detector having a second aperture;
a sample cell disposed in a plane substantially perpendicular to said optical path said sample cell directing at least a portion of said substantially gaseous flow stream, in a direction substantially perpendicular to said optical path, between said infrared radiation source and said detector via a detection volume in said optical path, said sample cell comprising a gas passage for said substantially gaseous flow stream said sample cell having a cross-section which smoothly changes from a cross-section of said airway to a first aperture of said detection volume in a plane substantially parallel to said optical path so as to prevent turbulence in said substantially gaseous flow stream as it passes through said gas passage and said detection volume;
a first optical funnel in said optical path between said infrared radiation source and said detection volume which reduces a cross-section of said first aperture of said infrared radiation source to a cross section of a second aperture of said detection volume in a plane substantially perpendicular to said optical path without a measurable reduction in signal strength of said infrared radiation from said infrared radiation source as it passes through said first optical funnel and said detection volume;
a second optical funnel in said optical path between said detection volume and said infrared energy detector which increases a cross-section of said second aperture of said detection volume to a cross-section of said second aperture of said infrared energy detector without a measurable reduction in signal strength of said infrared radiation from said infrared radiation source as it passes through said second optical funnel and said second aperture of said infrared energy detector for detection by said infrared radiation detector; and
processing means for processing said electrical signals representative of the received incident radiation so as to produce an indication of the concentration of said gaseous component in said substantially gaseous flow stream.

5,282,474

METHOD AND SYSTEM FOR THE EVALUATION AND VISUAL DISPLAY OF ABNORMAL ELECTROMAGNETIC PHYSIOLOGICAL ACTIVITY OF THE BRAIN AND THE HEART

Pedro A. Valdès Sosa, La Lisa; Rolando B. Lirio, Havana; Roberto D. Pascual Marqui, Havana; Livia N. Blaquier, Havana; Lidice G. Garcia, Havana; Juan C. Jiménez Sobrino, Havana, and Jorge B. Bayard, Havana, all of Cuba, assignors to Centro de Neurociencias de Cuba, Cuba

Filed Nov. 8, 1991, Ser. No. 790,383
Claims priority, application Cuba, Nov. 9, 1990, 169/90
Int. Cl.[5] A61B *5/0205*
U.S. Cl. 128—670 **9 Claims**



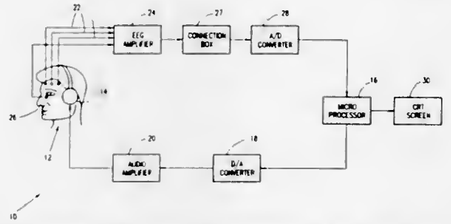
1. A method for the evaluation and visual display of abnormal electromagnetic physiological data of the brain and the heart, said method including the steps of:
a) positioning a set of electrodes and magnetic sensors and detecting electromagnetic physiological activity of a patient in the form of electromagnetic data signals selected from the group consisting of electroencephalogram (EEG), magnetoencephalogram (MEG), brain evoked response (ER), electrocardiogram (EKG), and magnetocardiogram (MKG) data signals;
b) amplifying the electromagnetic signals detected at each electrode and magnetic sensor;
c) obtaining on-line digital spatio-temporal signals, consisting of said EEG, MEG, ER, EKG, and MKG signals, by connecting analog-digital converters to each amplifier, and digitizing all data as it is gathered;
d) obtaining sets of said spatio-temporal signals for the patient, and computing coefficients of expansion of the signals in a spatio-temporal functional basis defined by a tensorial product of selected functional bases for spatial and temporal domains,;
e) computing estimates of parameters determined by statistical parametric models for probabilistic moments of said coefficients for a patient;
f) automatically constructing summarized topographic maps by a process of diagnostically useful summarization of information contained in said sets of signals or probabilistic moments corresponding to different instants or frequencies, and automatically constructing summarized curves by a process of summarization of the information contained in said sets of signals or probabilistic moments corresponding to different electrodes and magnetic sensors;
g) computing multivariate topographic maps and curves based on a comparison of said summarized topographic maps and curves with their means, standard deviations and correlations in stored normative data bases from normal subjects;
h) visually displaying said multivariate topographic maps and curves in a diagnostically useful color-coded probability scale.

5,282,475

APPARATUS AND METHOD FOR AUDIOMETRY

Doron Urbach, 51, Ein Ayalla 30825, Israel, and Shlomo Gilat, 92 Emek Hefer Street, Netanya, Israel

Filed Nov. 2, 1992, Ser. No. 970,003
Claims priority, application Israel, Nov. 3, 1991, 99946
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—731 **24 Claims**



1. Apparatus for objective determination of auditory thresholds for intelligible speech in a human subject comprising:
means for presenting a sequence of at least one intelligible speech stimuli to a human subject at a respective sequence of stimulus intensities; and
means for monitoring at least one physiological response of the human subject that varies with the human subject's understanding of each stimulus.

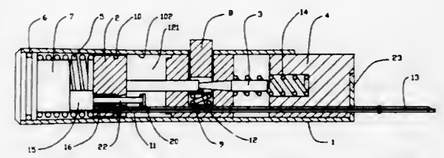
5,282,476

BIOPSY APPARATUS WITH TAPERED VACUUM CHAMBER

Richard A. Terwilliger, 1489 Casa Vallecita, Alamo, Calif. 94507

Continuation-in-part of Ser. No. 752,059, Aug. 29, 1991, which is a continuation-in-part of Ser. No. 690,628, Apr. 24, 1991, Pat. No. 5,188,118, which is a continuation-in-part of Ser. No. 610,006, Nov. 7, 1990, Pat. No. 5,183,052. This application Jan. 5, 1993, Ser. No. 476
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 **12 Claims**

1. An automatic biopsy instrument for obtaining a sample of tissue including:
a body;
a cavity defined in said body, said cavity including a tapered inner wall;
a piston mounted in said cavity;
an elongate cannula with an elongate inner bore;
means for communicating said inner bore of said cannula with the cavity of said body;
a stylet positioned in said inner bore of said cannula; and



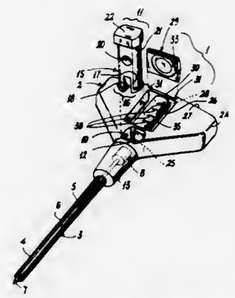
means for driving the cannula out beyond said stylet into the tissue to be sampled so as to create a vacuum in said cavity and thereby assist in retaining the sample in the cannula.

5,282,477

DEVICE FOR RELIABLY PERFORMING A BIOPSY, IN PARTICULAR A BONE-MARROW BIOPSY

Alberto Bauer, 44042 Cento (Ferrara), Corso Guercino, 56, Italy

Filed Dec. 4, 1992, Ser. No. 985,885
Claims priority, application Italy, Dec. 18, 1991, MI91 A 003394
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **12 Claims**



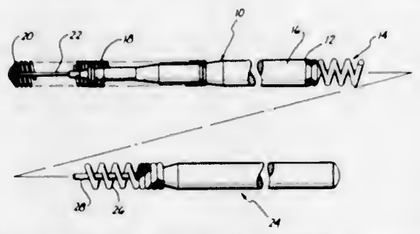
1. A device for performing a biopsy comprising: a needle having a handgrip and a cannula connected to the handgrip;
a cannula bore within the cannula;
a mandrel movable within the cannula bore, the mandrel having a capped end;
a chamber located within the handgrip and being in communication with the cannula bore, the chamber having an hermetically sealed end and a communicating end, the communicating end permitting communication between the chamber and the cannula bore; and
interception means for use with the handgrip, the interception means being capable of locking the mandrel within the cannula bore during insertion of the needle into a patient, and permitting movement of the mandrel within the cannula bore during the biopsy, whereby biopsy tissue entering the cannula bore acts on the capped end of the mandrel urging it towards and into the chamber, the extent of movement of the capped end within the chamber being measurable to indicate the quantity of tissue in the cannula bore.

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5,282,478
GUIDEWIRE EXTENSION SYSTEM WITH COIL CONNECTORS

Joseph F. Fleischhaker, Jr., Mound, Minn.; Sheryl Higgins, Silverado, Calif.; Michael C. Schiffer, Laguna Hills,, Calif., and Scott Evans, Tustin, Calif., assignors to Baxter International, Inc., Deerfield, Ill. and Lake Region Manufacturing Co., Inc., Chaska, Minn.

Filed Aug. 21, 1991, Ser. No. 748,301
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—772 25 Claims



1. An extendable guidewire system comprising:
a guidewire section designed for placement into a vascular system having proximal and distal ends, the guidewire section proximal end including a helical coil having a free end and spaced apart adjacent coil turns; and
an extension wire with opposing ends with one of such ends including a helical coil having a free end and spaced apart adjacent coil turns, the coil turns of the guidewire proximal end helical coil or the extension wire helical coil being spacially separated so as to receive the coil turns of the other helical coil when the free ends of the guidewire proximal end helical coil and extension end helical coil are rotated into each other.

5,282,479
GUIDEWIRE INTRODUCER WITH GUIDEWIRE GRASP AND RELEASE MEANS

Geary A. Havran, Tampa, Fla., assignor to BOC Health Care, Inc., New Providence, N.J.

Filed Oct. 13, 1992, Ser. No. 959,867
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—772 6 Claims



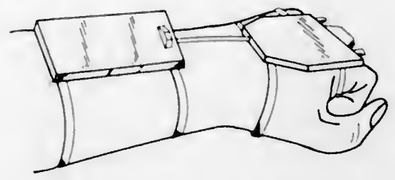
1. A combination protective tube and guidewire straightener, said guidewire straightener fitted within the inner diameter of said protective tube, said guidewire straightener having a through passageway for containing a guidewire and a cylindrical hub having an end having at least one flexible tab, said at least one flexible tab having a predetermined outer diameter normally greater than the inner diameter of said protective tube and being force fitted within the inner diameter of the protective tube to constrict said at least one flexible tab inwardly to grasp the guidewire, said protective tube having at least one opening adapted to align with said at least one flexible tab when rotated to a position to allow said at least one flexible tab to move outwardly and release the grasp on the guidewire.

5,282,480
Patent Not Issued For This Number

5,282,481
SHOCKING DEVICE FOR PERSONAL PROTECTION

Steven G. Ziemer, 311 22nd Ave. No., St. Cloud, Minn. 56303

Filed Mar. 9, 1992, Ser. No. 848,698
Int. Cl.[5] F41B 15/04
U.S. Cl. 607—145 3 Claims

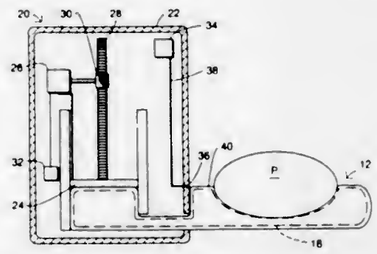


1. A shocking device for attachment to the wrist of a user comprising: a strap having means for attachment around said wrist, a body portion in connection with said strap and having a front face so as to define a plane and left and right side edges, an extended portion in connection with a guide means, said guide means perpendicular to said plane and in connection with said front face, said guide means for extending said extended portion from said front face and for guiding said extended portion against said front face, a contact means on said extended portion and a second contact means on said face, a source of electric power connected to said contact points by a conducting member so as to effect an electrical current through said conducting member when said contact points contact one another, shock probes in connection with said left and right side edges and extending from said front face in the same direction as said extended portion, said shock probe in connection with said conducting member so as to deliver an electrical current through said shock probes when said contact points contact one another.

5,282,482
PRESSURE RELIEF SUPPORT PAD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Jun. 18, 1992, Ser. No. 900,849
Int. Cl.[5] A61G 15/00; A61F 13/00
U.S. Cl. 128—845 15 Claims

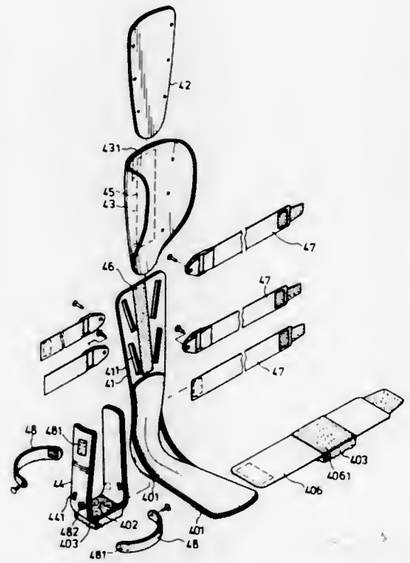


1. A device for reducing the incidence and severity of dermal conditions such as bedsores and anoxic pressure necrosis of the scalp, comprising:
a pad disposable on a horizontal support surface, said pad having a cavity at least partially filled with a fluidic substance;
pressurization means operatively connected to said pad for shifting said fluidic substance in said cavity, thereby modifying pressure distribution in said cavity; and
means operatively connected to said pad for automatically applying a medicinal composition to an upper surface of said pad.

5,282,483
MULTI-FUNCTION ADJUSTABLE IMMOBILIZING APPARATUS

Tzu-Chiang Wang, 1446 Sugar Creek Blvd., Sugar Land, Tex. 77478

Filed Jul. 10, 1992, Ser. No. 911,935
Int. Cl.[5] A61F 5/37, 5/00
U.S. Cl. 128—882 2 Claims

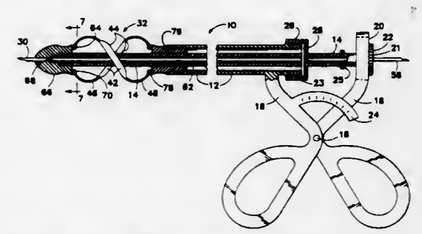


1. A multi-function reusable and adjustable immobilizing apparatus for an injured leg, comprising:
an L-shaped rigid plate substantially conforming to said injured leg for receiving and limiting lateral movement thereof, having two opposite faces and two opposite longitudinal peripheral edges;
first and second portions integrally formed at a predetermined angle, said first portion having an elongated first hook and loop fastener strip extending longitudinally along the length thereof and a plurality of pairs of elongated first slots disposed on both sides of said first hook and loop fastener strip, said second portion having an elongated second hook and loop fastener strip disposed thereon;
means for limiting lateral movement transverse to and between said edges thereby confining said injured leg to a predetermined position on one of said opposite faces, having a first flexible support member with an elongated third hook and loop fastener strip longitudinally extending thereon adjustably and detachably attaching to said elongated first hook and loop fastener strip, a second flexible support member having a fourth hook and loop fastener strip detachably connecting said second hook and loop fastener strip of said second portion and extending from said second hook and loop fastener strip past the ankle of said injured leg; and
means for securing said injured leg to said rigid plate having a mounting hole and a screw member extending into said mounting hole to adjustably engage said elongated first slot of said first portion.

5,282,484
METHOD FOR PERFORMING A PARTIAL ATHERECTOMY

Vincent A. Reger, Portland, Oreg., assignor to EndoVascular Instruments, Inc., Portland, Oreg.

Continuation of Ser. No. 616,240, Nov. 20, 1990, abandoned, which is a division of Ser. No. 395,500, Aug. 18, 1989, abandoned. This application Jul. 28, 1992, Ser. No. 922,115
Int. Cl.[5] A61B 17/32
U.S. Cl. 128—898 4 Claims

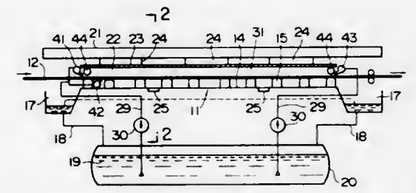


1. A method for performing partial atherectomy of an artery to enlarge the effective lumen thereof, comprising:
making an opening through a wall of the artery at a location spaced apart from an atheroma and more proximal to a patient's heart than said atheroma;
inserting a catheter atherotome having a basket knife including a plurality of blades in a closed orientation into said artery through said opening;
directing said catheter atherotome along the interior of said artery to the vicinity of said atheroma;
directing and moving said catheter atherotome further along the interior of said artery until said basket knife passes beyond said atheroma;
opening said basket knife to a first desired manually variable diametral cutting size orientation; and thereafter retracting said catheter atherotome along said artery a distance great enough to bring cutting blade edges of said basket knife into proximally disposed cutting engagement with said atheroma; and
cutting away a portion of said atheroma only when said basket knife is not being moved distally by only energy supplied for longitudinal retrogression of said catheter atherotome and said blades of said basket knife thereof.

5,282,485
JET PICKLING APPARATUS

Etsuro Hirai; Keiji Tanizaki; Tadanori Miyamoto; Shoji Nagai, all of Hiroshima; Yoshinobu Nakane, Hyogo, all of Japan; Muneki Kita, Kuala Lumpur, Malaysia; Yoshinori Matsumoto, and Kiyohiro Tani, both of Hyogo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1992, Ser. No. 821,152
Claims priority, application Japan, Jan. 16, 1991, 3-14954
Int. Cl.[5] B08B 3/02
U.S. Cl. 134—64 R 6 Claims



6. A jet pickling apparatus for pickling surfaces of a sheet with pickling fluid, comprising:
a pickling tank having a cover for closing said tank, an

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entrance end, an exit end, and a length and width, said sheet being conveyed in the lengthwise direction through said tank and said entrance and exit ends thereof;

pickling fluid supplying means for supplying said pickling fluid at said entrance and exit ends of said pickling tank;

said pickling fluid supplying means at least at said exit end comprising a nozzle mounted on said tank and a slit-shaped discharge port in said nozzle extending throughout the width of said tank at said exit end for ejecting said pickling fluid in the direction substantially opposite to the conveying direction of said sheet;

said pickling fluid supplying means at said entrance end of said tank comprises a nozzle mounted on said tank and a slit-shaped discharge port in said nozzle extending throughout the width of said tank at said entrance end for ejecting said pickling fluid in substantially the same direction as said conveying direction of said sheet; and

protector means mounted on said tank in the vicinity of said discharge ports for preventing said sheet from striking said discharge ports; wherein;

said sheet is conveyed in a substantially horizontal direction;

said nozzle at said entrance end of said tank is disposed adjacent the upper side of said sheet and ejects pickling fluid onto said upper side of said sheet;

a further nozzle is mounted on said tank at said entrance end adjacent the lower side of said sheet;

a slit-shaped discharge port is provided in said further nozzle extending throughout the width of said tank for ejecting pickling fluid substantially in the same direction as said conveying direction onto the lower side of said sheet; and

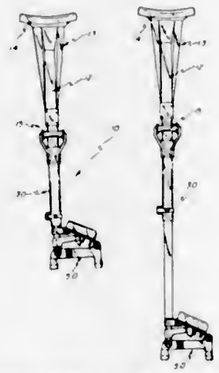
said protector means comprises a substantially cylindrical roller mounted on said tank at the upper side of said sheet in spaced relationship thereto adjacent each of said nozzles, so that said rollers are between said nozzles on said upper side of said sheet and cooperate with said nozzles to provide a liquid seal at said entrance and exit ends for sealing against outflow of said pickling fluid through said entrance and exit ends, and maintaining said tank substantially full of said pickling fluid.

5,282,486

CRUTCH WITH POWER LIFT AND FOOT AND METHOD OF USING SAME

L. Wayne Hoover, 7340 Patterson Halpin Rd., Sidney, Ohio 45365

Filed Jul. 27, 1992, Ser. No. 919,266
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—69 **6 Claims**



1. A power operated crutch for use in assisting in transition between seated and standing positions, comprising

an upper crutch body having an arm pit pad at an upper end and a handle adjacent an opposite lower end of said body, said body and said handle being arranged to one side of and fore-aft of a person using the crutch,

a telescoping two-piece leg extending downward from said upper body,

an actuator connected to said leg to extend and retract the same,

means connected to said actuator to power said actuator for causing extending and retracting motion of said telescoping leg; the improvement comprising

a foot member including a strut pivotally connected to said leg at the lower end thereof opposite from said upper body,

said strut extending generally fore-aft with respect to said body and having at least two foot pads depending therefrom and spaced apart in the fore-aft direction,

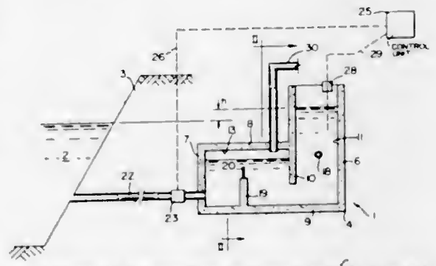
power operated means connected between said strut and said leg to control and adjust the angle of said strut with respect to said leg.

5,282,487

FLOW CONTROL SYSTEM

Peter L. Timpany, 428 Oakridge Way S.W., Calgary, Alberta, Canada T2V 1T4

Filed Oct. 19, 1992, Ser. No. 963,479
Int. Cl.[5] B67D *5/54*
U.S. Cl. 137—8 **16 Claims**



11. A method for controlling the flow of a liquid from a first zone to a second zone comprising the steps of:

providing a casing between said first and second zones defining a weir chamber and a weir submerged with respect to the liquid in said first zone; introducing liquid from said first zone into one side of said weir chamber; discharging liquid from the other side of the said weir chamber to said second zone; establishing and substantially continuously maintaining an air pocket in said weir chamber; actively introducing and venting gas under pressure into and out of said chamber for controlling the size of said air pocket for controlling the liquid level in said weir chamber and consequently substantially continuously controlling the flow of liquid over said weir means between said first and second zones; and controlling the minimum liquid level in said second zone so as to prevent blowout of gas from said weir chamber through said discharge means.

5,282,488

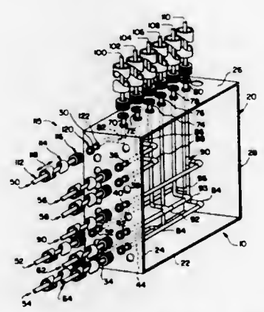
INTERCHANGEABLE FLUID PATH MODULE

Stan R. Roth; Thaddeus E. Mazur, both of Rochester, and Kenneth E. Waller, Webster, all of N.Y., assignors to Eastman Kodak Company

Filed Nov. 18, 1991, Ser. No. 793,744
Int. Cl.[5] F17D *1/00*
U.S. Cl. 137—15 **10 Claims**

7. A method of changing a selected combination of flow paths in a system for routing fluids including a plurality of inlet pipes and a plurality of outlet pipes, said method comprising the steps of:

(A) disconnecting a first interchangeable apparatus from said inlet and outlet pipes, said first apparatus having a portable frame having a plurality of inlet and outlet conduits extending therefrom and connected to said inlet and outlet pipes, respectively, said inlet and outlet conduits being connected to one another within said frame in a first specified order to form a first designated combination of value-free flow paths, said disconnecting step including the steps of disconnecting said inlet and outlet conduits from said inlet and outlet pipes and removing said first apparatus from said system; then



(B) inserting a second interchangeable apparatus in said system, said second apparatus comprising a portable frame and a plurality of inlet and outlet conduits extending therefrom and connectable to said inlet and outlet pipes, respectively, said inlet and outlet conduits being connected to one another within said frame in a second specified order to form a second designated combination of value-free flow paths different said first designated combination of value-free flow paths; and then

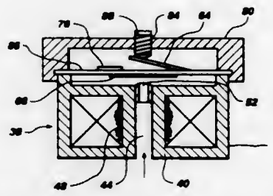
(C) connecting said inlet and outlet pipes to said inlet and outlet conduits of said second apparatus.

5,282,489

FLUID PRESSURE MODULATOR

Robert E. Gooch, Orem, Utah, assignor to Valtek, Inc., Springville, Utah

Filed May 1, 1992, Ser. No. 877,847
Int. Cl.[5] G05D *16/20*; F16K *31/06*
U.S. Cl. 137—85 **11 Claims**



1. A pressure modulator for modulating the pressure of gas flowing through a conduit, said modulator comprising

electromagnetic means responsive to an electrical current for developing a magnetic field whose strength varies with variation in the magnitude of the electrical current,

armature means made of a resilient material and including

a base support fixedly positioned relative to the electromagnetic means,

a flapper element at least a portion of which is made of a magnetically attractable material, said flapper element being cantilevered from the base into the magnetic field to move toward or away from the electromagnetic means depending upon the strength of the magnetic field, and

means for selectively biasing the flapper element toward or away from the electromagnetic means,

an orifice disposed in the direction of movement of the flapper element to direct gas theretoward, with the flow rate of gas from the orifice varying with variation in the distance of the flapper element from the orifice,

means for conveying gas from the conduit to the orifice, such that variation in the flow rate of gas to the orifice serves to vary the pressure of gas in the conduit,

wherein said flapper element comprises

a tongue having a base end joined to the base support and a free end flexibly moveable toward and away from the orifice, and

a tab formed centrally in the tongue to extend from the base support toward the free end of the tongue so that when the tab is moved toward or away from the orifice, the tongue is biased toward or away from the orifice, and

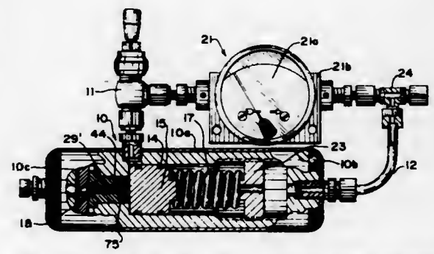
wherein said biasing means is disposed to contact and selectively move the tab toward or away from the orifice.

5,282,490

FLOW METERING INJECTION CONTROLLER

Robert E. Higgs, 10266 Basin St., Newburgh, Ind. 47630

Continuation-in-part of Ser. No. 451,806, Dec. 18, 1989, abandoned. This application Jun. 26, 1992, Ser. No. 904,559
Int. Cl.[5] F16K *31/12*
U.S. Cl. 137—486 **3 Claims**



1. A dome-loaded apparatus for regulating fluid to a preset high differential pressure with respect to a reference pressure comprising a flow path through the apparatus through which said fluid travels, said flow path including an inlet and an outlet communicating with the exterior of the apparatus, said fluid travelling downstream through said flow path from said inlet to said outlet of said apparatus, non-sharp edged seat means positioned within said flow path intermediate said inlet and said outlet, a ball positioned in said flow path upstream of an adjacent to said seat means, said ball having a surface adapted to mate with said seat means, means for biasing said ball toward said seat means to restrict downstream fluid flow through said seat means, a piston slidably mounted within said apparatus, said piston having a seat end and a reference end, the ratio of the cross-sectional area of said ball to the cross-sectional area of the seat end of said piston being 0.012 or less, a reference fluid chamber defined in part by said reference end of said piston permitting said fluid within said reference fluid chamber to engage said reference end of said piston, means biasing said piston away from said reference fluid chamber, an elongated drive member, one end of said elongated drive member engaging said seat end of said piston and another end engaging said ball, said drive member transmitting forces from said reference fluid chamber and said piston in a biasing relationship with said ball and urging said ball away from said seat means, and an annular passage in said flow path extending downstream from said seat means along said drive member and restricting said

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fluid flow through said flow path and causing a pressure drop across said annular passage resulting in a decrease of the velocity of said fluid traveling through said seat means and annular passage.

5,282,491

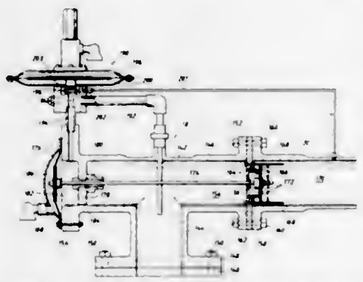
FLUID PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS

Thomas F. Higgins, Houston, and Michael D. McNeely, Katy, both of Tex., assignors to Keystone International Holdings Corp., Stafford, Tex.

Division of Ser. No. 906,559, Jun. 29, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 2,804

Int. Cl.[5] F16K *17/10*

U.S. Cl. 137—489 **10 Claims**



1. A tank for fluids having an upper vapor space over the fluid and comprising:

a vent in communication with said upper vapor space;

a valve housing mounted on said tank over said vent and defining an elongate valve chamber extending in a horizontal direction and in continuous fluid communication with said vent, said housing having a lower portion defining an inlet adjacent said vent and in fluid communication with said valve chamber;

a valve seat in said valve chamber;

a safety relief valve carried by said housing and having a main valve member mounted on said valve seat adjacent one end of said elongate valve chamber for reciprocable movement in a horizontal direction between a seated closed position on said valve seat and an unseated open position relative to said valve seat;

an operating rod secured at one end to said main valve member;

fluid responsive means operatively connected to the other end of said operating rod at the other end of said elongate valve chamber responsive to a predetermined fluid pressure in said tank and said valve chamber to permit movement of said main valve member to an open position; said fluid responsive means comprising a diaphragm connected to the other end of said rod and defining an inner diaphragm chamber on one side of the diaphragm adjacent said valve member and an outer diaphragm chamber on the other side of the diaphragm remote from said valve member; and

a pilot valve in fluid communication with said inner diaphragm chamber for normally controlling the opening and closing of said valve member.

5,282,492

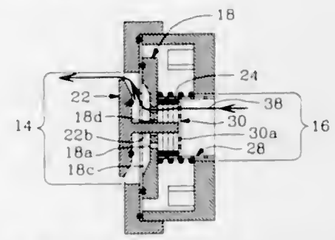
DUAL VALVE PLATE TWO-WAY PRESSURE RELIEF VALVE

Robert J. Angeli, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 23,426

Int. Cl.[5] F16K *17/196*

U.S. Cl. 137—493.4 **17 Claims**



1. A two-way relief valve comprising:

a first body portion having a first annular portion and a first cylindrical portion, said first annular portion having an annular surface, said annular surface having a first central circular opening, said first central circular opening having a first inner cylindrical surface defining a first port, said first cylindrical portion having a second inner cylindrical surface defining a second port;

a first valve plate disposed in said body portion, said first valve plate abutting said annular surface, said first valve plate further comprising flow apertures so disposed as to be in alignment with said first port;

a second valve plate disposed within said body portion, adjacent to said first valve plate surface nearest to said first port, said second valve plate extending over said first valve plate flow apertures;

a first biasing means urging said first valve plate and said annular surface of said body portion into sealing engagement, said first valve plate being moveable away from said annular surface, away from said first port, against said first biasing means, responsive to a fluid pressure at said first port which is greater than the fluid pressure at said second port by a predetermined amount for establishing a first fluid flow path from said first port, around said first valve plate, through said body portion, and to said second port;

a second biasing means urging said second valve plate and said first valve plate into sealing engagement, said second valve plate being moveable away from said first valve plate, toward said first port, against said second biasing means, responsive to a fluid pressure at said second port which is greater than the fluid pressure at the said first port by a predetermined amount for establishing a second fluid flow path from said second port, through said body portion, through said first valve plate flow apertures, around said second valve plate, and to said first port; and,

a second body portion interlocking with said first body portion, said second body portion comprising a second annular portion, said second annular portion having a second central circular opening, said second circular opening having a third inner cylindrical surface, said second annular portion further comprising flow apertures disposed radially outward of said second circular opening, said second annular portion flow apertures accommodating a portion of said first fluid flow and a portion of said second fluid flow, said second body portion further comprising a second cylindrical portion interfitting with said second cylindrical surface of said first body portion, said second cylindrical portion being disposed within said second port, said second port being restricted to said third inner cylindrical surface of said second body portion, said second cylindrical portion further comprising stop means for limiting the movement of said first valve plate towards said second port.

5,282,493

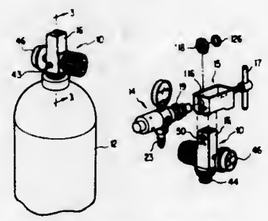
HIGH PRESSURE FLUID VALVE

Harry A. Schwartz, Falmouth, Me., and Wesley B. Skop, Newport Beach, Calif., assignors to Contemporary Products, Inc., Portland, Me.

Filed Jan. 7, 1993, Ser. No. 1,673

Int. Cl.[5] F16K *31/36*

U.S. Cl. 137—613 **16 Claims**



1. A high pressure fluid valve comprising:

(a) a valve body containing:

(i) a first bore that extends in a first direction and that has a first end that communicates with the exterior of said valve body and a second end;

(ii) a second bore that extends in a second direction that is at least approximately perpendicular to said first direction and that has a first end and a second end that communicates with the exterior of said valve body, said second bore communicating with said first bore at a first juncture located interiorly of said valve body; and

(iii) a passageway that has a first end and a second end that communicates with the exterior of said valve body, said passageway communicating with said second bore at a second juncture located interiorly of said valve body and spaced from said first juncture;

(b) a valving member that is received in said second bore and that is movable into and out of a position in which it blocks said second bore between said first juncture and said second juncture; and

(c) a first handle that is manually manipulatable from the exterior of said valve body and that is operably connected to said valving member such that movement of said first handle causes corresponding movement of said valving member;

(d) a yoke that is sized and shaped to fit over said valve body and that has a throughhole sized, shaped, and positioned to be brought into register with said second end of said passageway in said valve body; and

(e) a second handle that is manually manipulatable from the exterior of said valve body, that is operably connected to said yoke such that movement of said second handle in one direction causes said throughhole in said yoke to be brought into register with said second end of said passageway in said valve body, and that is sufficiently spaced from said first handle to permit easy manual manipulation of both said first handle and said second handle.

5,282,494

REPLACEMENT MAIN HAVING NOZZLE AND VANES

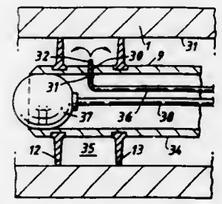
Anthony D. Elgar, Mitcham; Brian T. Sales, Dorking, and Adrian S. Parkes, Burgess Hill, all of United Kingdom, assignors to British Gas PLC, London, United Kingdom

Division of Ser. No. 786,784, Nov. 1, 1991. This application Aug. 31, 1992, Ser. No. 937,406

Claims priority, application United Kingdom, Nov. 2, 1990, 9023857

Int. Cl.[5] F16L *55/12*

U.S. Cl. 138—98 **3 Claims**



1. A replacement main for feeding into an existing fluid carrying main, the replacement main having a bore and an outer wall of smaller diameter than the inner wall of the existing main so that on feeding the replacement main into the existing main a clearance is formed between the mains, the replacement main having two annular vanes disposed around its outer wall, the vanes providing a barrier to the flow of fluid along the clearance, a nozzle for discharging a sealant into the clearance when the replacement main is located within the existing main, the nozzle being located between said vanes, and a hose extending along the bore of the replacement main, one end of the hose being releasably connected to the nozzle and the other end of the hose being adapted for connection to a sealant source whereby sealant can be supplied to the nozzle via the hose.

5,282,495

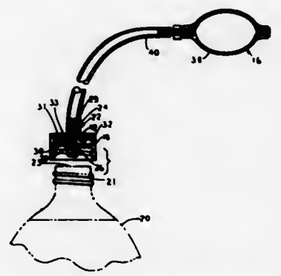
BEVERAGE CONTAINER PRESSURIZING SYSTEM

Paul M. Chamberlain, 12 Chestnut Hill Dr., Greensburg, Pa. 15601

Filed Dec. 7, 1992, Ser. No. 987,026

Int. Cl.[5] B65B *31/00*

U.S. Cl. 141—4 **8 Claims**



4. A method of introducing gas under pressure into a container adapted to receive a cap comprising a cap wall having an inside surface and an outside surface;

a tube having a first end and a second end and a shoulder intermediate said tube ends adapted to sealingly engage said inside surface;

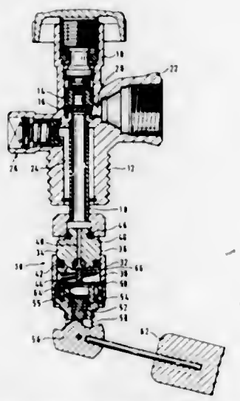
a check valve within said tube adapted to restrict flow from said first end to said second end of said tube; and

a hose having first and second ends;

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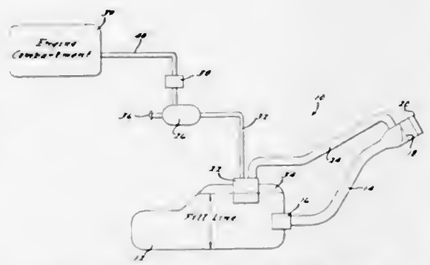
said method comprising: providing a punch;
providing a cap;
punching a hole in the outside surface of said cap with said punch;
inserting the first end of said tube through the hole and inserting said first end of said tube into the second end of said hose thereby forcing said hose into sealing engagement with said cap wall around the periphery of said hole forming a seal with said outside surface as said shoulder forms a seal with the inside surface of said cap;
placing said cap on said container; and,
connecting a pump to said first end of said hose and pumping a gas into said container.

5,282,496
TAP FOR COMPRESSED OR LIQUEFIED GASES
Leon Kerger, Helmdange, Luxembourg, assignor to Luxembourg Patent Company S.A., Luxembourg, Luxembourg
Filed Apr. 2, 1992, Ser. No. 862,496
Claims priority, application France, Dec. 23, 1991, 91 16025
Int. Cl.[5] F16K *21/02*
U.S. Cl. 141—18 **9 Claims**



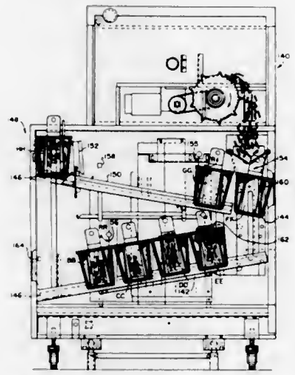
1. Tap for compressed or liquefied gases, comprising a tap chamber (**10**) designed in order to be fitted on a gas cylinder and enclosing a closure member (**14**) at the intersection of an inlet pipe (**18**) and of an outlet pipe (**20**), means for manoeuvering the closure member, and a safety valve (**26**), characterised in that the inlet pipe (**18**) communicates, on the side opposite the closure member (**14**), with a two-way valve (**30**) permitting both filling and draining of the gas cylinder, comprising a shell (**32**) with at least one lateral opening (**34, 36**) which can be sealed off by a sealing device (**40**) provided with a passage (**48**) for gas, a spring (**44**) for displacing the sealing device (**40**) to a position of obstruction of the openings (**34, 36**) and for permitting the sealing device (**40**) to move to a position of opening against the action of the spring (**44**) and through the effect of the pressure of the filling gas, a level-controlling valve (**52**) movable between open and closed positions and operable, when in said open position, to permit gas to flow between the gas cylinder and the passage (**48**), and means (**62**) for detecting the filling level in the gas cylinder and for actuating the level-controlling valve (**52**) in response to such level, said level-controlling valve, when not held in an open position by said detecting means (**62**), being openable by the pressure of the gas in the cylinder when the closure member (**14**) is open.

5,282,497
FUEL DELIVERY AND VAPOR CONTROL SYSTEM FOR CONTROLLING THE RELEASE OF FUEL VAPORS FROM A VEHICLE FUEL TANK
Allen Allison, 5437 Whitehall, W. Bloomfield, Mich. 48323
Filed Oct. 23, 1992, Ser. No. 965,233
Int. Cl.[5] B65B *31/00*; F16K *24/00*
U.S. Cl. 141—59 **30 Claims**



1. A motor vehicle fuel filling system comprising:
a fuel tank;
a remotely located vapor capture device;
a first communication path for carrying fuel vapors confined within said fuel tank to said vapor capture device;
first valve means for permitting the flow of fuel vapors through said first communication path when the level of liquid fuel stored within said fuel tank is below a predetermined maximum level, said first valve means inhibiting flow of vapors and liquid fuel through said first communication path when said fuel stored in said fuel tank equals or exceeds said maximum level;
a fill pipe coupled to said fuel tank and operable for delivering liquid fuel to said fuel tank;
a restrictor device secured to a first end of said fill pipe and having a nozzle opening sized to permit insertion of an unleaded fuel nozzle therethrough;
a second communication path for carrying fuel vapors and liquid from said fuel tank to said fill pipe for controlling actuation of a shut-off device associated with said unleaded fuel nozzle;
second valve means for permitting the flow of fuel vapors and liquid fuel through said second communication path when said fuel stored within said fuel tank is below said predetermined maximum level, and said second valve means inhibiting flow through said second communication path when said fuel equals or exceeds said maximum level;
third valve means operably installed between a second end of said fill pipe and said fuel tank for permitting liquid fuel to enter said fuel tank when said first and second valve means permit flow through said first and second communication paths, respectively, and said third valve means being operable to inhibit delivery of fuel from said fill pipe to said fuel tank in response to said first and second valve means blocking flow to said first and second communication paths, respectively; and
fourth valve means associated with said restrictor device for inhibiting the emission of fuel vapors upon withdrawal of said unleaded fuel nozzle from said nozzle opening.

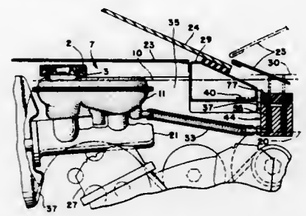
5,282,498
PROD DISPENSER, DISPENSER CONTAINER AND METHOD
Robert L. Cahlander, Red Wing; David W. Carroll, Cannon Falls, both of Minn.; Alfred C. Hollingsworth, Naperville, Ill.; Gregory A. Lawrence, Red Wing, and Brian R. Rudesill, St. Paul, both of Minn., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Continuation-in-part of Ser. No. 519,068, May 4, 1990, Pat. No. 5,191,918. This application Apr. 6, 1992, Ser. No. 864,115
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] B65B *43/42*; B67C *3/00*
U.S. Cl. 141—129 **40 Claims**



1. A dispenser for dispensing bulk food items into a container comprising:
a storage bin for receiving and holding a quantity of bulk food items;
secondary bin receiving means for receiving at least a portion of desired size from the contents from said storage bin;
conveyor means for conveying food items from said storage bin to said secondary bin means;
a container filling station located beneath said secondary bin means at which station the contents from said secondary bin are received;
container conveyance means including a first inclined ramp for conveying a container to the container filling station and a second inclined ramp for conveying a container from the container filling station; and
discharge means for dispensing items from said secondary bin means into an empty container at said filling station.

5,282,499
REMOTE RESERVOIR FILLER
Schuyler S. Shaw, Dayton, and Donald E. Schenk, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1992, Ser. No. 935,801
Int. Cl.[5] F15B *7/00*
U.S. Cl. 141—285 **5 Claims**

1. An automotive reservoir arrangement comprising:
a reservoir body having an interior capable of holding fluid to a first elevation;
a vent to expose the interior of the reservoir body to the atmosphere;
a conduit connected with the reservoir body at a level below the first elevation;
a cylinder fluidly connected with the conduit, the cylinder being fluidly connected with the conduit at a second elevation below the first elevation;
a filler tube sealably slidably inserted within the cylinder and extendible therefrom to a third elevation higher than the first elevation;



means to bias the filler tube to the third elevation;
a cap for sealing the filler tube; and
means to retain the filler tube at a fourth elevation below the first elevation.

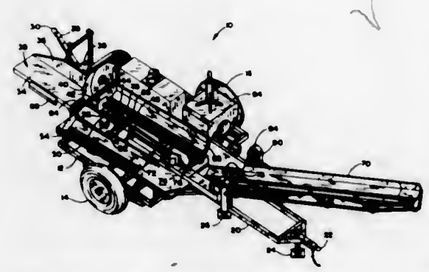
5,282,500
CONTAINER FILLING APPARATUS
Yoshiharu Tanaka; Masayuki Hayashi; Hiroyuki Takagawa; Katsuhiko Kondo, and Yukio Yamaguchi, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1991, Ser. No. 801,516
Claims priority, application Japan, Nov. 30, 1990, 2-336575; Aug. 6, 1991, 3-196670
Int. Cl.[5] B67C *3/04*
U.S. Cl. 141—301 **6 Claims**

1. A container filling apparatus, comprising:
a tank for accommodating liquid to fill a container;
a hollow housing communicating with said tank and fixedly secured to the bottom of said tank;
a vent tube extending through said housing;
a valve body supported so as to be movable relative to said housing, having a passageway therein through which liquid in said tank will flow, and fixedly secured to said vent tube;
a valve seat supported so as to be movable relative to the valve body, a liquid passageway being defined between said valve seat and the outer surface of said vent tube, and said valve seat being movable into abutment against the end portion of the vent tube to form a gating valve therewith;
a first resilient body operatively associated with said valve seat and said valve body so as to bias said valve seat and said valve body in opposite directions;

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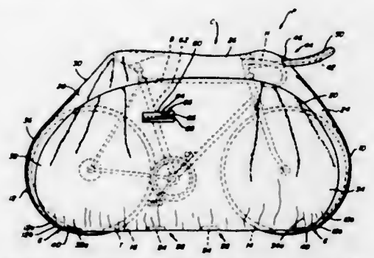
a bell-shaped member supported so as to be movable relative to said valve seat, and having a container seal member which is to establish a seal between said bell-shaped member and a container to be filled;
a third resilient body operatively associated with said valve seat and said bell-shaped member so as to bias said valve seat and said bell-shaped member in opposite directions;
an intermediate spring bracket;
a second resilient body operatively associated with said intermediate spring bracket and said valve body so as to exert a force acting therebetween in a direction that biases said valve body upwardly;
an elevator operatively connected to said valve body and which elevator elevates, lowers and downwardly biases the valve body during a filling operation of the apparatus;
a stopper member located at such a position in the apparatus as to engage said intermediate spring bracket and thereby limit movement thereof; and
driving means for vertically moving at least one of said tank and said stopper member.

5,282,501
WOOD PROCESSING APPARATUS
George E. Miller, III, 330 Stilson Canyon Rd., Chico, Calif. 95928
Filed Jan. 29, 1993, Ser. No. 11,341
Int. Cl.[5] B27L 7/00; B27C 9/00
U.S. Cl. 144—3 K 12 Claims



1. A transportable apparatus for processing firewood and the like, comprising:
(a) a frame;
(b) frame support means for supporting said frame on a surface, said frame support means coupled to said frame;
(c) saw means for cutting an article of wood to length, said saw means coupled to said frame; and
(d) loading conveyor means for moving an article of wood away from said cutting means, said loading conveyor means pivotally coupled to said frame for extension outward from said frame during operation and for folding back over said frame during transportation;
(e) feed conveyor means for carrying an article of wood from said saw means to said loading conveyor means, said feed conveyor means coupled to said frame; and
(f) divider means for directing an article of wood toward said feed conveyor means and for diverting an article of wood away from said feed conveyor means according to direction of offset of the center of gravity of said article of wood in relation to said divider means, said divider means coupled to said frame.

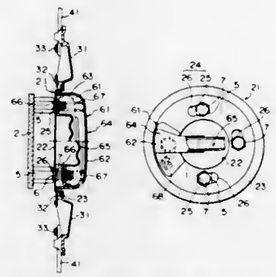
5,282,502
BICYCLE PROTECTIVE COVER
Michael C. Ballard, Houston, Tex., assignor to Proteq Partners, Ltd., Houston, Tex.
Filed Nov. 2, 1992, Ser. No. 970,124
Int. Cl.[5] B60R 9/10
U.S. Cl. 150—167 11 Claims



1. A protective cover for a bicycle provided with aero bars extending forward from its handle bars, comprising:
a center panel extending from the front wheel to the rear wheel of the bicycle and having front and rear portions adapted to fit over and around the wheels of the bicycle, wherein said front and rear portions of said center panel are substantially equal in width at an outer end segment to the width of a bicycle tire;
said center panel tapering outwardly over its extent between said front and rear portions to a center span adapted to fit over the handlebars of the bicycle;
side panel members mounted along said center panel along the extent thereof between said front and rear portions thereof;
gripping means mounted in said front and rear portions of said center panel and side panel members for fitting over and engaging the wheels of the bicycle;
said center panel having a slot formed therein;
attachment means mounted adjacent said slot for selectively closing said slot;
a protective sock fittable over the aero bars; and
means for attaching said protective sock to said attachment means.

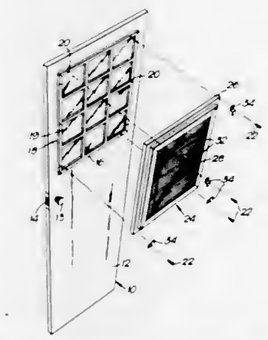
5,282,503
ANTI-SKID DEVICE FOR USE ON PNEUMATIC TIRES
Masaki Koshi, 4-40-1-601, Yoyogi, Shibuya-ku, Tokyo; Shouji Yamada, Shizuoka; Akihiko Watanabe, Shizuoka, and Kouji Nemoto, Shizuoka, all of Japan, assignors to Sumitomo Wiring System, Ltd., Mie and Masaki Koshi, Tokyo, both of Japan
Division of Ser. No. 634,734, Dec. 27, 1990, Pat. No. 5,147,479.
This application Mar. 3, 1992, Ser. No. 846,581
Claims priority, application Japan, Dec. 27, 1989, 1-336343; Dec. 27, 1989, 1-336344
Int. Cl.[5] B60C 27/00
U.S. Cl. 152—216 1 Claim

1. An anti-skid device for use on pneumatic tires of an automotive vehicle, comprising:
a mounting plate having insertion/fixation holes extending therethrough, each of said insertion/fixation holes including contiguous large-diameter and small-diameter portions;
a supporting ring rotatably provided on the outer circumferential periphery of said mounting plate;
anti-skid members provided on said supporting ring; and
a retaining mechanism capable of detachably securing said mounting plate to the wheel of a vehicle, said retaining mechanism including a first frame fixed to said mounting plate and defining a hollow space therein confronting said mounting plate, an operation frame disposed within said hollow space and movable relative to said first frame in directions toward and away from said mounting plate, said first frame and said operation frame forming a handle which can be gripped, biasing means for biasing said operation frame toward said mounting plate, and stoppers fixed to said operation frame so as to be movable therewith, each of said stoppers being of such a size as to be



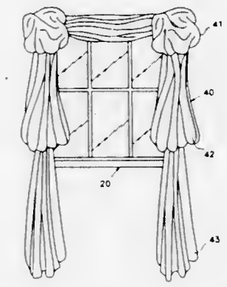
receivable within the large-diameter portion of a respective said insertion/fixation hole, said operation frame being movable against the biasing force exerted by said biasing means from a position at which the stoppers are respectively received in the large-diameter portions of respective ones of said insertion/fixation holes to a position at which the stoppers are altogether out of the insertion/fixation holes.

5,282,504
VENETIAN BLIND ASSEMBLY FOR A GLAZED DOOR
Richard N. Anderson, Whitesville; James E. Anderson, and Eugene W. Thompson, both of Owensboro, all of Ky., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.
Filed Apr. 7, 1992, Ser. No. 864,761
Int. Cl.[5] E06B 3/32
U.S. Cl. 160—107 5 Claims



1. For use on a glazed door comprising a main door body having a window opening defined therein, and a window insert affixed in said window opening, said window insert including a primary glazing, a venetian blind assembly comprising a first frame, means affixing said first frame to said door body in surrounding relation with said window opening, a second frame dimensioned to fit closely within said first frame, a secondary glazing mounted within said second frame, a venetian blind mounted within said second frame adjacent said secondary glazing, and means for securing said second frame within said first frame to position said venetial blind between said primary glazing and secondary glazing, said securing means comprising a plurality of spring clips of generally channel shape and including a resilient web portion and two parallel arms, said arms engaging respectively said first frame and said second frame to hold said first and second frames in abutting engagement with one another.

5,282,505
WINDOW TREATMENT SUPPORT DEVICE
Paul D. Gilley, and Margaret R. Gilley, both of Rte. 5, Box 142 F, Eufaula, Okla. 74432
Continuation of Ser. No. 964,159, Oct. 20, 1992, Pat. No. 5,238,044. This application Apr. 30, 1993, Ser. No. 55,976
Int. Cl.[5] A47H 13/14
U.S. Cl. 160—348 6 Claims



1. A method for creating a window treatment comprising the steps of:
a. determining the length of fabric needed to create the desired window treatment,
b. obtaining the desired length of fabric,
c. selecting a window treatment support device having a multiplicity of material receiving apertures extending the entire length of the support device and having a length substantially the same as the width of the window to be treated,
d. pulling a portion of the fabric through one of the material receiving apertures to form a gathering of material,
e. pulling a second portion of the fabric through a second one of the material receiving apertures to form a second gathering of material,
f. continuing to pull portions of the fabric through additional material receiving apertures until the desired number of gatherings of material have been formed,
g. fluffing out the gatherings of material to conceal the support device and obtain the desired decorative window treatment,
h. installing mounting elements in the wall above the window to be decorated, and
i. hanging the window support device with the formed desired decorative window treatment on the mounting elements.

5,282,506
PROCESS BASED ON CIRCULATING FLUIDIZED BED TECHNIQUE FOR COOLING GASES, AND A CIRCULATING FLUIDIZED BED COOLER USED IN THE PROCESS
Seppo Ruottu, Karhula, Finland, assignor to Tampella Power OY, Finland
Division of Ser. No. 834,362, Feb. 12, 1992, Pat. No. 5,226,475.
This application Mar. 8, 1993, Ser. No. 11,502
Claims priority, application Finland, Feb. 14, 1991, 910731
Int. Cl.[5] F28C 3/16
U.S. Cl. 165—104.18 5 Claims

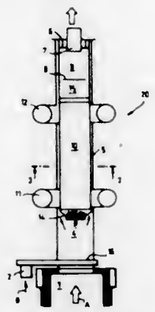
1. A circulating fluidized bed cooler for cooling gas, comprising:

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feeding means for feeding the gas to be cooled into the cooler, the feeding means including a jetting bottom having separate recycle gas nozzles for feeding recycle gas into the cooler and separate hot gas nozzles for feeding hot gas to be cooled into the cooler,

a discharge duct for venting the cooled gas, particulate circulating fluidized bed material forming a fluidized bed in the lower portion of the cooler and flowing along with the gas to the discharge duct,

at least one return duct for returning the circulating fluidized bed material to the fluidized bed,



a heat exchanger through which a cooling medium is conveyed, all return ducts for returning the circulating fluidized bed material to the fluidized bed leading through the heat exchanger so that the returned circulating fluidized bed material is cooled in the heat exchanger separately from the cooling medium, and

a closure space with an aperture being provided below the cooler, in which closure space the returned circulating fluidized bed material continually forms a plug-like layer, thus preventing the flow of gas through the return ducts into the gas exhaust duct.

5,282,507

HEAT EXCHANGE SYSTEM

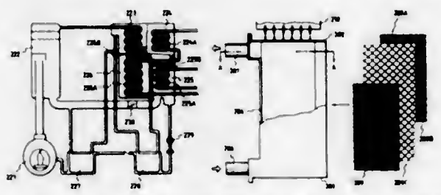
Shinji Tongu; Kazumitsu Onoda; Yasumichi Makino, and Yoshitaka Matsushima, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 911,554

Claims priority, application Japan, Jul. 8, 1991, 3-52559[U]; Jul. 10, 1991, 3-169757; Feb. 10, 1992, 4-4890[U]; Feb. 21, 1992, 4-7602[U]; Jun. 29, 1992, 4-170920

Int. Cl.[5] **F28F** *3/06;* **F25B** *15/00*

U.S. Cl. 165—165 **30 Claims**



1. A heat exchange element used in an absorption refrigerator, comprising:

a bellows-fin formed into a wave-like shape by consecutively bending a thin plate resulting in opposite open end portions;

sealing plates respectively sealingly attached to said end portions of said bellows-fin, said bellows-fin and said sealing plates defining adjacent chambers alternately disposed with respect to each other and

a net-like member provided in each gap between adjacent fins of said bellows-fin in one of said two chambers; wherein said net-like member has-three-porous layers adapted to provide different fluid flow rates, the flow rate in outer layers being slower than the flow rate in an intermediate layer sandwiched between said outer layers.

5,282,508

PROCESS TO INCREASE PETROLEUM RECOVERY FROM PETROLEUM RESERVOIRS

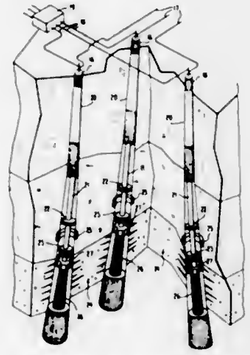
Olav Ellingsen, Floro, Norway; Carlos Roberto Carvalho de Holleben, Rio de Janeiro, Brazil; Carlos Alberto de Castro Goncalves, Rio de Janeiro, Brazil; Euclides J. Bonet, Rio de Janeiro, Brazil; Paulo José Villani de Andrade, Rio de Janeiro, Brazil, and Roberto F. Mezzomo, Rio de Janeiro, Brazil, assignors to Petroleo Brasilero S.A. - PETROBRAS, Rio de Janeiro, Brazil and Ellingsen and Associates A.S., Floro, Norway

Filed Jul. 2, 1992, Ser. No. 908,173

Claims priority, application Brazil, Jul. 2, 1991, PI 9102789

Int. Cl.[5] **E21B** *43/00*

U.S. Cl. 166—249 **13 Claims**



1. A process to increase the recovery of petroleum from a petroleum reservoir, comprising simultaneously subjecting a producing petroleum formation to electrical and vibratory stimulation, by supplying electrical current to the reservoir by means of an electrical cable installed in an annulus located between a production string and a casing utilizing part of the electrical current to operate a vibrator attached to the extremity of the production string, the electrical connection being obtained by means of connectors located at the vibrator which are hydraulically driven and attached to the uncovered extremity of the electrical cable, conducting the electrical current through said connectors to the casing which penetrates the petroleum formation at a point located above an isolation bridge, formed by cutting one part of the casing at a certain height above said formation to provide a cavity and filling the cavity with an isolating material.

5,282,509

METHOD FOR CLEANING CEMENT PLUG FROM WELLBORE LINER

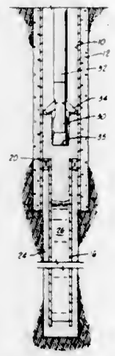
Harry W. Schurr, III, Corpus Christi, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 20, 1992, Ser. No. 933,440

Int. Cl.[5] **E21B** *29/00*

U.S. Cl. 166—311 **1 Claim**

1. In a method of cementing a liner in a wellbore in which a liner which is run into an open section of a borehole extends back up into the bottom portion of a previously installed casing string, and in which the liner having a liner hangar/packer setting tool releasably attached to the top thereof is cemented in place by pumping a cement slurry down through the liner and into the annulus between the open portion of the wellbore and the outer surface of the liner, and in which said cement slurry extends up into the annulus between the top of said liner and the bottom of said casing string, and in which said cement slurry also extends up into said casing string above the top of said liner and said liner hangar/packer setting tool, and said liner hangar/packer setting tool is detached from said liner top and removed from said cement slurry before it sets, and in which the cement in said casing string above said liner top and



any cement which flows into the top portion of said liner is, after setting, drilled out to establish flow communication from the top of said wellbore to the interior of said liner, the improvement comprising:

(a) running a drill bit having extendible cutting elements into said wellbore on a drill string to the top of the set cement in said casing;

(b) drilling set cement from said casing with said extendible cutting elements set in an extended position;

(c) upon reaching the top of said liner, remotely adjusting the cutting diameter of said extendible cutting elements to a retracted setting that will fit through said liner;

(d) drilling out cement from the top portion of said liner; and

(e) removing said drill bit from said wellbore.

5,282,510

DRILLING AND CHIPPING TOOL

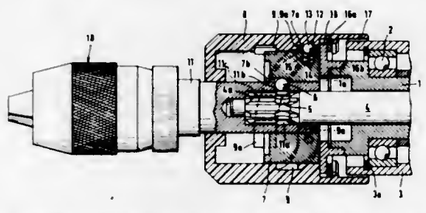
Vinko Pacher, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Continuation-in-part of Ser. No. 800,577, Nov. 27, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,715

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 4038395

Int. Cl.[5] **B25D** *16/00;* **B23B** *45/16*

U.S. Cl. 173—48 **4 Claims**



1. Manually operable drilling and chipping tool and a holder for a tool bit securable to said tool for operation of said tool only as a rotary drill, said tool comprising a tool housing, an axially extending leading end section mounted on and extending axially outwardly from said tool housing and arranged to receive said holder, said holder having an axially extending holder shank insertable into an opening formed by said leading end section, an axially extending anvil for transmitting one of drilling motion and combined drilling and chipping motion located within said housing and said leading end section, said anvil has at least one circumferentially extending recess therein, a locking element displaceable into the recess in said anvil by a shifting member, said leading end section comprises said shifting member and an actuation member laterally enclosing said shifting member and mounted on said housing, wherein the improvement comprises that said holder shank has a free end with an axially extending bore therein, said anvil has an axially extending front section insertable into said bore in said holder shank and said front section includes said recess, said actuating member and said shifting member include interengaging means for producing axial movement of said shifting member relative to said actuating member for axially displacing said anvil locked to said shifting member whereby the anvil is displaced to a position for transmitting only drilling motion to said holder, and said interengaging means of said actuating member and shifting member comprises at least one control cam located on an inside surface of the actuation member facing and engaging an outside surface of said shifting member.

5,282,511

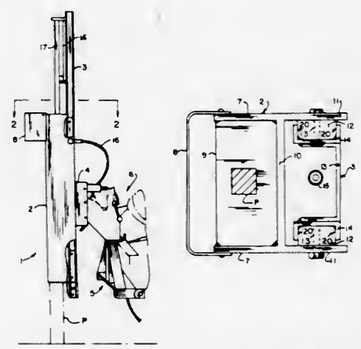
POST DRIVER WITH IMPROVED BEARING MEANS

Thomas I. Burenga, Litchfield, and Ross D. Koberlein, Brownstown, both of Ill., assignors to Worksaver, Inc., Litchfield, Ill.

Filed Aug. 10, 1992, Ser. No. 927,010

Int. Cl.[5] **B25D** *17/28*

U.S. Cl. 173—184 **3 Claims**



1. Bearing means for use in a post driver of the type having a carriage means connectable by a frame to a three-point hitch to a tractor, and incorporating a driving ram shiftably mounted to the carriage means for driving a post into the ground, the improvement comprising, said bearing means disposed between the carriage means and the driving ram to provide sustained and stable support for the ram during its repeat reciprocal shift when driving a post into the ground, at least one bearing surface formed of the carriage means, at least two bearing blocks fixed to the driving ram and each bearing block contiguously sliding upon one of said at least one bearing surface during driver operation, whereby a substantial area of each bearing block contacts one of said at least one bearing surface to reduce wear from loosening or distorting each bearing block during sustained driver usage, said carriage having a pair of channels formed at opposite sides thereof, said channels having openings therein, and said channel openings facing

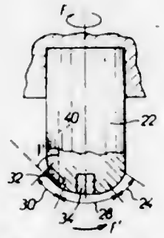
VOL 1159 ISS 1 FE 1 1994 UMI

away from each other, said driving ram also being channel shaped and having said bearing blocks fixed interiorly thereof and extending towards each other, and said bearing blocks being contiguously slidably disposed within the carriage means channels to form a bearing relationship when the driving ram reciprocates upon its carriage means during post driver application, said bearing blocks being formed of polymer, each carriage means channel integrally having a pair of flanges, said flanges spaced apart and parallel arranged, each bearing block when disposed within a carriage means channel having substantial surface area contact with the carriage means channel flanges during sustained usage of the post driver.

5,282,512
DRILLING TOOL WITH ROTATING CONICAL ROLLERS

Alain Besson, Sartrouville, and Patrick Toutain, Sevres, both of France, assignors to Total, Puteaux, France

Filed Jun. 10, 1992, Ser. No. 896,308
Claims priority, application France, Jun. 11, 1991, 91 07048
Int. Cl.[5] E21B *10/52*
U.S. Cl. 175—374 **7 Claims**



1. A drilling tool (**10**), comprising: a rotatably driven body member (**12**), and a plurality o conical rollers (**14, 16, 18**) rotatably mounted to the body member, each roller having a plurality of circular rows of outstanding teeth (**22**) each made of tungsten carbide or the like, and an outer end of each tooth defining, successively in a direction of roll on a rock formation (**26**), a rear impact zone (**24**) by which the tooth initially contacts the rock formation and which functions by impact and puncturing, a central zone (**28**) with a rounded shape in a lengthwise direction which slides on the rock formation and which functions by scraping and abrading, and a forward zone (**30**) which is the last to come into contact with the rock formation, prior to the roller tilting on a following tooth, and which functions by shearing, wherein the teeth are individually fitted with diamond-charged elements (**32**) on at least said forward zone, but not on said rear impact zone.

5,282,513
THERMALLY STABLE POLYCRYSTALLINE DIAMOND DRILL BIT

Kenneth W. Jones, Kingwood, Tex., assignor to Smith International, Inc., Houston, Tex.

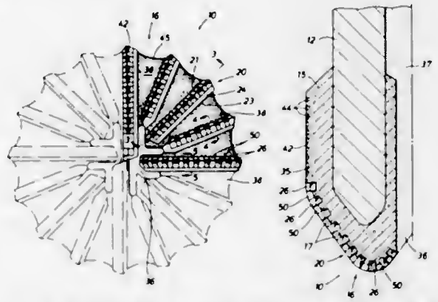
Filed Feb. 4, 1992, Ser. No. 830,827
Int. Cl.[5] E21B *10/46, 10/60*
U.S. Cl. 175—434 **15 Claims**

1. A diamond drag type drill bit for drilling in an earthen formation comprising;

a body forming a first cutting end formed from a matrix material and a second open threaded pin end, said body further forming a plenum chamber adapted to receive drilling fluid routed through a threadably attachable drill string, at least one discharge port is formed by said first cutting end, said discharge port being in fluid communication with said plenum chamber,

said first cutting end formed of said matrix material consists of a multiplicity of substantially radially disposed ridges forming a leading surface, a heel surface and a trailing surface with flow channels formed therebetween, the flow channels intersect said discharge port and radially extend outwardly toward a peripheral edge formed by said cutter end, said ridges contain, along their leading, radially extended surfaces, a multiplicity of substantially equidistantly spaced diamond cutters embedded within said matrix material and having each of their cutting edges formed by said cutters extend beyond said leading surface of said ridge forming an apical edge thereby, and

the space formed between each extended diamond cutter and a surface of said matrix material contains a filler material aligned along said apical edge that is less hard than either the diamond or the supporting matrix material forming the first cutting end of the drag bit, said filler material rapidly wears away during operation of the bit in said earthen formation allowing the diamond cutters to protrude an extent necessary to obtain optimum formation cutting rates and dispersion of drilling fluid for maximum bit penetration.



11. A process for imbedding a multiplicity of thermally stable polycrystalline diamond cutters in a leading surface of one or more radially disposed ridges formed in a matrix cutter head of a diamond drag bit, said matrix cutter head further forming one or more drilling fluid flow channels adjacent said ridges, the process comprising the steps of;

positioning strategically in a spaced relationship each of said diamond cutters in said leading surface of said ridge, a cutting edge of the cutters forming an apical edge along said radially disposed ridge, each of said cutters extending beyond a surface of said matrix cutter head thereby forming interstices between each of the protruding cutters,

filling said interstices between cutters with a filler material less hard than either the matrix material or the diamond, the filler material forming an edge coincident with said apical cutting edge of said diamond, and

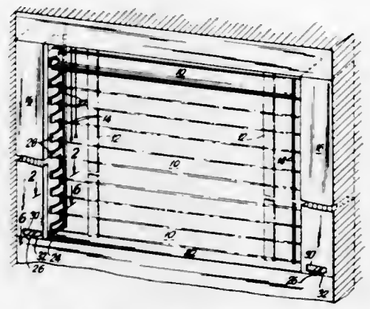
wearing away said filler material during operation of said drag bit in an earthen formation thereby allowing the diamond cutters to protrude an extent necessary to obtain optimum formation cutting rates and dispersion of drilling fluid for maximum bit penetration.

5,282,514
WINDOW GUARD FOR VENETIAN BLIND HUNG WINDOWS

Roy P. Felcetto, 254 W. 25th St., New York, N.Y. 10001

Filed May 15, 1992, Ser. No. 883,167
Int. Cl.[5] E06B *9/30, 9/26*
U.S. Cl. 160—178.1 **4 Claims**

1. A window guard for a venetian blind hung window comprising oppositely disposed sleeves, said sleeves being adapted to be affixed to opposite ends of a window frame, each sleeve containing a rotator extending substantially the length of the sleeve to form an assemblage, each sleeve and rotator being slotted along their lengths, said slots permitting the slats of a venetian blind to extend within the assemblages and move reciprocally and pivotably therein, each rotator having a series of equally spaced abutments which extend into its slot and

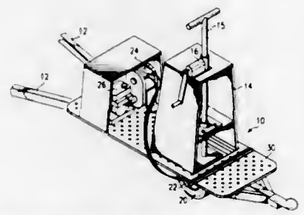


upon rotation of the rotator selectively prevents reciprocable and pivotable movement of the blind by blocking the movement of its slats.

5,282,515
DRIVING ASSEMBLY FOR ATTACHMENT TO A TRAILER

George N. Bell, 322 Harrington Dr., Duncanville, Tex. 75116

Filed Jun. 18, 1991, Ser. No. 717,040
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—11 **2 Claims**



1. A driving assembly attachable to a trailer, the trailer for use on a highway, comprising:

a) A housing attachable to the front of said trailer;

b) A column rotatably and vertically disposed through said housing;

c) A cranking assembly attached to said housing that engages said column and can vertically move said column through said housing;

d) At least one drive wheel rotatably attached to the bottom of said column and engageable with the ground;

e) A submersible driving means mounted on said trailer and operatively connected to said drive wheel to rotate said drive wheel thereby propelling said trailer, said driving means being a hydraulic motor operatively mounted to said drive wheel;

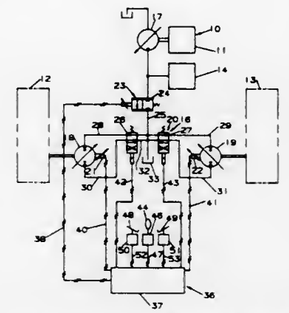
f) A platform around said housing dimensioned such that a weight can be placed on said trailer proximate said drive wheel to increase traction between said drive wheel and the ground, said driving assembly permitting use of the trailer on the highway;

the trailer having a first beam and a second beam which converge to a tongue, a hitch mounted on the tongue, the driving assembly being welded to each of said beams and said tongue.

5,282,516
REGENERATIVE STEERING SYSTEM FOR HYDROSTATIC DRIVES

Robert J. Price, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jun. 1, 1992, Ser. No. 891,107
Int. Cl.[5] B62D *11/04*
U.S. Cl. 180—6.3 **6 Claims**



1. A regenerative steering system for a hydrostatic drive having a pair of variable displacement motor/pump units individually drivingly connected to a pair of tracks disposed at opposite sides of a track-type vehicle, each of the motor/pump units having a displacement controller for changing the displacement of the motor/pump unit comprising:

means for supplying pressurized fluid at a variable flow rate in parallel to the motor/pump units for driving the motor/pump units wherein the flow rate and the displacement setting of the motor/pump units establishes a travel speed of the vehicle;

a pair of reversing valves individually disposed between the pressurized fluid supplying means and the motor/pump units and being moveable between first and second discrete operating positions with both valves being moved to their first discrete position to drive both motor/pump units and hence both tracks in a first travel direction and moved to the second position to drive both tracks in an opposite travel direction; and

steering control means for changing the displacement of one of the motor/pump units sufficiently to cause the speed of the track driven by the one motor/pump unit to decrease and for moving the reversing valve associated with the one motor/pump unit from one of its positions to its other position so that fluid is pumped from the one unit through the associated reversing valve and supplements the flow of fluid being directed to the other motor/pump unit from the fluid supplying means.

5,282,517
DRIVE WHEEL SUSPENSION SYSTEM FOR A MOTORCYCLE

Curtis L. Prince, 1256 Riverbreeze Blvd., Ormond Beach, Fla. 32176

Filed Jun. 18, 1992, Ser. No. 899,996
Int. Cl.[5] B62K *25/10*
U.S. Cl. 180—227 **18 Claims**

1. In a motorcycle having a chassis system comprised of a frame, an engine and a power transmission assembly, a front wheel, a rear wheel and a power output shaft, means for suspending the rear wheel from the chassis system comprising:

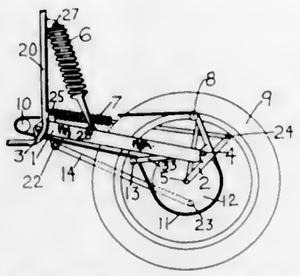
a first swing arm pivotally mounted to said chassis system and extending rearwardly;

a first resilient means operatively connecting said first swing arm to said chassis system;

a second swing arm assembly pivotally mounted to the

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rearward portion of said first swing arm and extending downward;
an upward extending member rigidly mounted to said second swing arm assembly;
a guide mechanism mounted to said upward extending member; a second resilient means operatively connecting said second swing arm assembly to said first swing arm;



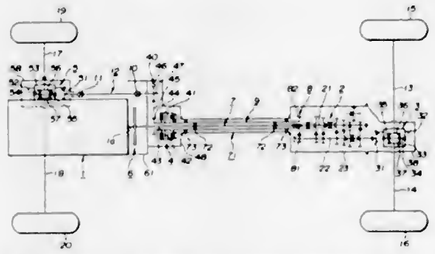
the rear wheel rotatably mounted to the said second swing arm assembly;
and means operatively connecting a single loop drive from said power output shaft to said rear wheel over said guide mechanism, wherein said rear wheel has freedom of motion in any direction relative to the chassis system, within its plane of rotation.

5,282,518

VEHICULAR FOUR WHEEL DRIVE TRAIN

Saburou Yamasaki, Isehara, and Tomoyuki Hara, Hadano, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 652,078, Feb. 8, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,347
Claims priority, application Japan, Feb. 14, 1990, 2-33302
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—233 **9 Claims**



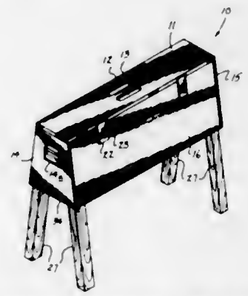
1. A four wheel vehicular drive train comprising:
(a) an engine (1);
(b) a multi-speed transmission (2) having an input shaft (21) and output shaft (22);
(c) a rear final drive (3) operatively connected to the output shaft (22) of said transmission; and
(d) a front final drive (5) operatively connected to the output shaft (22) of said transmission;
wherein said engine (1) and one of said front and rear final drives (5,3) are disposed on one of a front part and rear part of a vehicle with respect to a center of the vehicle, and wherein said transmission (2) and the other of said front and rear final drives (5,3) are disposed on the other of said front and rear parts of the vehicle;
wherein a first propeller shaft (7) is provided having a first end in drive connection with the input shaft (21) of said transmission and a second end in drive connection with a crankshaft (1a) of said engine, and a second propeller shaft (9) is provided which is arranged coaxially with said first propeller shaft, a first end of said second propeller shaft being connected to the output shaft (22) of said transmission; and
wherein a transfer (4) is arranged beside said engine (1) and is connected to a second end of said second propeller shaft (9), and a third propeller shaft (12) is connected between one of said front and rear final drives (5,3) and said transfer (4).

5,282,519

COMBINED SAWHORSE AND TOOLBOX APPARATUS

Frank J. Venturo, 611 Winding Hollow Dr., Franklin Lakes, N.J. 07417, and Victor F. Venturo, 6111 Park Ave. 1-A, West New York, N.J. 07093

Filed Mar. 15, 1993, Ser. No. 31,321
Int. Cl.[5] F16M *11/00*
U.S. Cl. 182—181 **1 Claim**



1. A combined sawhorse and toolbox apparatus, comprising,
a toolbox housing, having a top wall spaced from a floor plate, and a first end wall spaced from a second end wall, and
the toolbox housing having a lowermost continuous periphery spaced an equal distance relative to the top wall, with the floor plate oriented between the lowermost periphery and the top wall, and
a first side wall extending coextensively between the first end wall and the second end wall, and
a second side wall first plate extending from the lowermost periphery to the floor plate, and
a second side wall second plate extending from the second side wall first plate to the top wall, and
a first hinge pivotally mounting the second side wall first plate to the second side wall second plate, and
a second hinge pivotally mounting the second side wall second plate to the top wall, and
a plurality of socket housings mounted to each of said first end wall and said second end wall extending from the lowermost periphery to the floor plate, with each of the socket housings defining a leg socket, and a support leg of a plurality of support legs received within one of said leg sockets, and the first end wall spaced from the second end wall a predetermined first length, and each of the support legs having a second predetermined length less than said first predetermined length permitting reception of each of the support legs within the toolbox housing, and
the top wall includes at least one hasp plate pivotally mounted to the top wall, and the first side wall includes at least one latch plate loop, wherein the latch plate loop is arranged for reception to the hasp plate when the top wall is mounted in contiguous communication to the first end wall and the second end wall, and
the second end wall includes a plurality of caster wheel members mounted to the second end wall extending beyond the continuous periphery, and

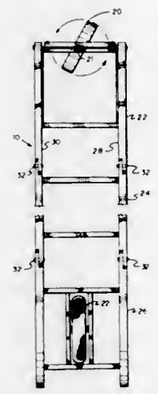
the top wall includes a plurality of handle slots oriented intermediate the first end wall and the second end wall, having a handle rib oriented between the slots for manual grasping of the toolbox housing, and
the first side wall includes a plurality of ferrous metallic loops mounted to the first side wall adjacent the continuous periphery spaced apart a predetermined spacing, and wherein each of the support legs includes a plurality of bar magnets spaced apart said predetermined spacing arranged for magnetic adherence to the ferrous metallic loops when the support legs are positioned within the ferrous metallic loops.

5,282,520

PORTABLE HUNTING STAND AND GAME CARRIER

Bret T. Walker, 8414 Rocky Path, San Antonio, Tex. 78250

Filed Mar. 6, 1992, Ser. No. 846,714
Int. Cl.[5] A01M *31/02*; **A45F** *3/26*
U.S. Cl. 182—116 **10 Claims**



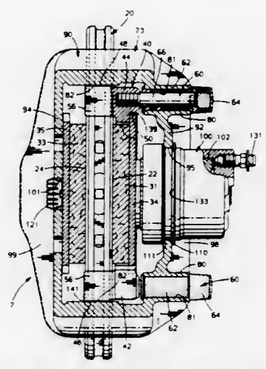
1. A portable observation and hunting stand comprising:
a ladder assembly, said ladder assembly having foldably connected elements including a lower element, an intermediate element, and an upper element, said lower, intermediate, and upper ladder element each having a right rail and left rail, said lower element and said upper element being foldably connected to said intermediate element, said foldably connected elements further having securing means for securing said stand in a folded and unfolded configuration, said securing means located on said right and said left rails, said upper element having a C-shaped portion mounted thereto for rotation in two axes, and with a nylon strap means attached thereto, said upper element further having a seat platform and a separate standing platform, said seat platform and said standing platform located intermediate said right and left rails, whereby
said stand is unfolded and leaned up against a tree and said nylon strap encircles the tree and secures said stand thereto.

5,282,521

SHELL DISC BRAKE

Scott R. Leist, Centerville; Robert W. Hyde, Dayton; Norbert J. Green, Jr., Trotwood; Robert N. Dawson, Huber Heights, and Irl S. Wallace, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1992, Ser. No. 955,811
Int. Cl.[5] F16D *65/20*
U.S. Cl. 188—73.47 **2 Claims**



1. A disc brake for an automotive vehicle wheel comprising:
rotor means for connection with the vehicle wheel having inboard and outboard side surfaces and a rotational axis;
a caliper housing having first and second side walls, the first wall having a cavity with a piston slidably mounted therein, the piston having a first shoe for frictional engagement with one of the sides of the rotor means, the housing also having a bridge spanning the sides of the rotor and extending from the first wall, the bridge having two apertures, each aperture having a contact surface, the housing having a second wall with an attached second shoe for frictional engagement with the rotor opposite the first shoe;
bracket means connected with the vehicle having first leading and second trailing reaction arms, each arm projecting through an aperture of the housing;
pin means to slidably mount the first wall of the caliper with the bracket means along an axis generally parallel with the rotational axis of the rotor;
means to extend the piston from the caliper housing to actuate the brake, bringing the shoes into engagement with the rotor and wherein actuation of the brake causes the first shoe to react on the second trailing reaction arm and the caliper housing aperture contact surface to react into the first leading reaction arm with no significant reaction forces being experienced in the pin means and wherein the entire contact area of the caliper housing with the second trailing reaction arm is closer to the second side wall of the caliper housing than where the first shoe reacts into the first reaction arm.

5,282,522

MULTI-PURPOSE SPEED CONTROL APPARATUS

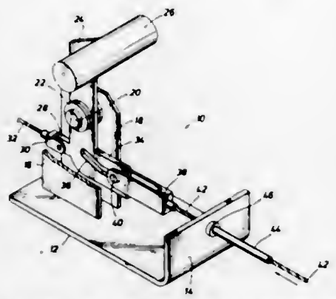
George R. Grindle, 1226 Wilma Lois, Pasadena, Tex. 77502

Filed Oct. 22, 1992, Ser. No. 964,750
Int. Cl.[5] B60K *41/20*
U.S. Cl. 192—1.52 **11 Claims**

6. An automobile attachment to enable hand operation of an automobile, the attachment comprising:
(a) control means having first and second cable means for controlling both automotive braking and acceleration

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wherein one or the other is selected by an operator and is operated to the exclusion of the other; and



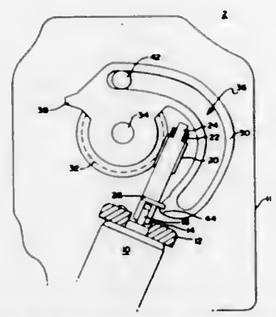
(b) lost motion means connecting to the first and second cable means for hand operation.

5,282,523

TRAVEL LIMIT STOP FOR A MOTOR DRIVEN ACTUATOR

Robert S. Mueller, Birmingham; Don J. Krzysik, Wixom, and Donald R. Haefner, Oak Park, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 27, 1992, Ser. No. 825,908
Int. Cl.[5] F02D *11/10*
U.S. Cl. 192—139 **4 Claims**



1. A motor driven actuator employing a mechanical travel limit stop comprising:

a motor having a rotating output shaft;

a worm gear connected to said output shaft;

an output mechanism having a curved slot and an axis of rotation, and having a drive gear meshingly engaging said worm gear where said worm gear rotates causing said drive to rotate said output mechanism about said axis of rotation, said output mechanism having a first mechanism stop surface at a first extreme of travel about said axis of rotation and a second mechanism stop surface at a second extreme of travel about said axis of rotation;

an output pin engaging said curved slot moving in a linear direction as said output mechanism is rotated about said axis of rotation; and

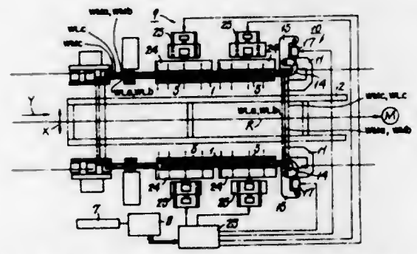
a motor stop pin radially protruding from said output shaft when at said first extreme of travel of said output mechanism said motor stop pin contacts said first mechanism stop surface, and where at said second extreme of travel of said output mechanism said motor stop pin contacts said second mechanism stop surface.

5,282,524

METHOD AND DEVICE FOR POSITIONING A BODY

Takuya Kakida; Shoiti Okada; Akira Mikami, all of Kurashiki, and Yuji Watanabe, Kojima, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,917
Claims priority, application Japan, Sep. 30, 1991, 3-079302[U]; Sep. 30, 1991, 3-079303[U]
Int. Cl.[5] B65G *47/22*
U.S. Cl. 198—345.1 **11 Claims**



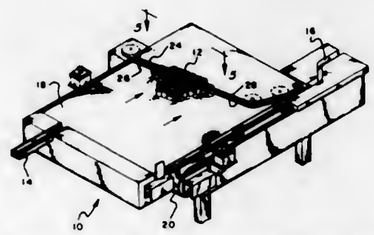
1. A method for positioning a body using a device for positioning the body which is arranged on a transporting path wherein the body transported on a first conveyer is transferred to a second conveyer at a transfer position and which comprises a longitudinal positioning member selectively held with an engaging point which is variable at one of a plurality of longitudinal predetermined positions on said transfer position, in which said body is positioned at one of said plurality of longitudinal predetermined positions on said transfer position by means of said longitudinal positioning member in contact with a tip reference portion of said body and a lateral positioning member selectively held with an engaging point which is variable at one of a plurality of lateral predetermined positions on said transfer position, in which said body is positioned at one of said plurality of lateral predetermined positions on said transfer position by means of said lateral positioning member in contact with a vertical projecting wall extending along the longitudinal direction of said body, said longitudinal positioning member is selectively moved and held at one of said plurality of longitudinal predetermined positions, depending on the type of said body, prior to arrival of said body at said transfer position, and said lateral positioning member is selectively moved and held at one of said plurality of lateral predetermined positions, depending on the type of said body, prior to arrival of said body at said transfer position.

5,282,525

PRODUCT ACCUMULATOR

William J. Covert, P.O. Box 365, Berlin, N.J. 08009

Filed Nov. 6, 1992, Ser. No. 972,539
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.1 **5 Claims**



1. A flow-thru type product accumulator wherein articles are placed on the accumulator at one end and are discharged at the other end thereof but which allows the articles to accumulate in the event of a backup at the discharge end comprising:

a product accumulator belt, a substantial portion of said belt lying in a substantially horizontal plane and having an infeed end and a discharge end remote from said infeed end, said belt being adapted to support a quantity of articles to be accumulated thereon;

means for driving said accumulator belt so that it substantially continuously moves from said infeed end toward said discharge end so as to convey articles from said infeed end toward said discharge end;

a discharge conveyer, said discharge conveyer being located adjacent the discharge end of said accumulator belt;

means for driving said discharge conveyer in substantially the same direction as said accumulator belt whereby articles on said accumulator belt can be moved onto said discharge conveyer to be conveyed downstream;

guide means located above said accumulator belt to guide articles from said accumulator belt to said discharge conveyer, said guide means being comprised of an elongated guide rail and an elongated guide belt substantially coextensive therewith but located in a different horizontal plane, said guide means being arranged substantially diagonally across said accumulator belt;

means for driving said guide belt so that articles contacting the same are moved toward said discharge conveyer;

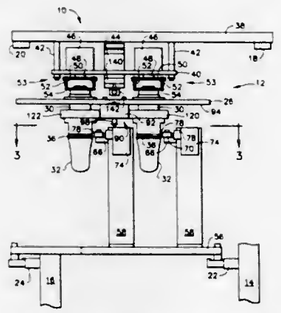
at least a substantial portion of said guide belt normally extending outwardly past said guide rail toward the infeed end of said accumulator belt so as to contact articles on said accumulator belt, said guide belt being flexible and movable rearwardly whereby when a significant number of articles are on said accumulator belt, said articles move said guide belt rearwardly so that a number of articles engage both said guide belt and said guide rail.

5,282,526

APPARATUS AND METHOD FOR ORIENTING CONTAINER PREFORMS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 28, 1992, Ser. No. 952,040
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—376 **13 Claims**



1. Apparatus for circumferentially orienting a tubular perform relative to a preform carrier, the preform having a molded neck that includes a molded-in notch, said apparatus comprising:

a. a frame;

b. a support pallet adapted for movement in a preform movement direction along the frame;

c. a preform carrier rotatably carried by the support pallet for rotation about a preform rotation axis, the preform carrier adapted to carry securely and releasably a tubular preform, the preform carrier including a driven element for releasable engagement with a cooperating, driving element supported by the frame for engagement with the driven element for imparting rotation to the preform carrier about a preform carrier rotation axis;

d. a pawl arm carried by the frame for pivotal movement about a pawl arm pivot axis extending parallel with and spaced laterally from the preform carrier rotation axis, the pawl arm including an outwardly extending tongue positioned for selective engagement with the molded-in peripheral notch of the preform for stopping rotation of the preform at a desired circumferential position, the tongue being pivotable about the pawl arm pivot axis toward and away from the preform carrier to enable the tongue to be received in the molded-in notch in the preform when the pawl arm is in a first pivotal position to thereby prevent rotational movement of the preform carrier, and to enable the tongue to be displaced radially from the molded-in notch when the pawl arm is in a second pivotal position; and

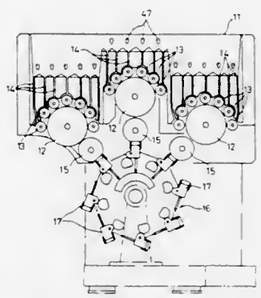
e. a detector including a plunger member engagable with the pawl arm for actuating a switch member, the detector providing an indication of whether or not the pawl arm has engaged the peripheral notch of the preform, thus indicating whether the desired orientation of the preform notch relative to the support pallet has been achieved.

5,282,527

APPARATUS FOR ARRANGING AND PILING CIGARETTES

Tadao Etani, and Koichiro Obara, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,642
Claims priority, application Japan, Dec. 25, 1991, 3-356637; Dec. 25, 1991, 3-356639; Dec. 25, 1991, 3-356640; Dec. 25, 1991, 3-356641
Int. Cl.[5] B65G *57/00*
U.S. Cl. 198—418.3 **6 Claims**



1. An apparatus for arranging, side by side, predetermined numbers of cigarettes to form a plurality of cigarette layers during each cigarette arranging process, the total number of said cigarettes in each cigarette arranging process being equal to a number of cigarettes in a cigarette package to be formed, and piling said cigarette layers one after another, said apparatus comprising:

a hopper having a bottom portion, for containing cigarettes randomly;

a plurality of substantially vertical cigarette supplying passages provided under said hopper, each of said cigarette supplying passages having an upper end communicating with said bottom portion of said hopper and a lower end;

a plurality of cigarette receiving drums, each disposed under said lower end of corresponding one of said cigarette supplying passages, each of said cigarette receiving drums being adapted to receive cigarettes one by one from said one cigarette supplying passage;

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a plurality of cigarette arranging drums, each provided with cigarette holding grooves for receiving the same number of cigarettes as a number of cigarettes in corresponding one of said cigarette layers and surrounded by the same number of said cigarette holding grooves as said number of cigarettes in said corresponding one of said cigarette layers;

a cigarette piling drum having an outer peripheral surface and provided on an outer peripheral portion thereof with a plurality of cigarette piling heads and surrounded by a plurality of said cigarette arranging drums;

a plurality of transfer drums, each disposed between corresponding one of said cigarette arranging drum and said cigarette piling drum and adapted to receive corresponding one of said cigarette layers and transfer said one cigarette layer to said cigarette piling drum; and

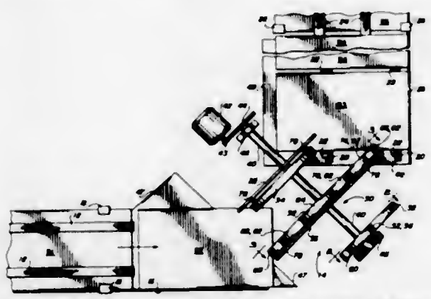
each of said cigarette arranging drums being separated from said outer peripheral surface of said cigarette piling drum by a distance equal to said diameter of each of said transfer drums.

5,282,528

BELT TRANSFER SECTION AND METHOD OF USE FOR RIGHT ANGLE BLANK FEEDER

Don Hudson, West Monroe, La., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Nov. 25, 1992, Ser. No. 981,629
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—451 **5 Claims**



1. A machine for continuously moving a stream of articles along an angled path, comprising:

first article moving means for moving a stream of equally spaced articles in a first horizontal direction at a constant speed;

second article moving means spaced from the first article moving means for moving a stream of equally spaced articles in a second horizontal direction at an angle to the first direction at said constant speed;

third article moving means between the first and second moving means for moving the articles directly from a point of exit on the first moving means to a point of entrance on the second moving means; and

the third article moving means moving the articles at a speed greater than said constant speed by an amount such that the spacing between the articles in the stream of articles moved by the second moving means is substantially the same as the spacing between articles in the stream of articles moved by the first moving means;

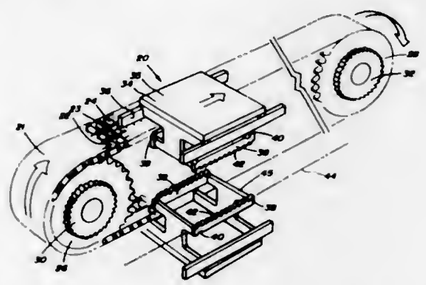
the third article moving means comprising two parallel belt assemblies including upper and lower continuously moving belts for engaging upper and lower planar surfaces, respectively, of the articles, one of the belt assemblies being outwardly spaced from the other belt assembly and being arranged to movingly engage an article on the first moving means shortly before said other belt assembly engages the article.

5,282,529

PALLET GUIDANCE STRUCTURE FOR OVER AND UNDER CONVEYOR

Kurt W. Schwamm, Bloomfield Hills, Mich., assignor to Durr Automation, Inc., Davisburg, Mich.

Filed Sep. 1, 1992, Ser. No. 938,848
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—465.3 **10 Claims**



1. A conveyor system comprising:

a first pair of spaced sprockets, with at least one of said first pair of sprockets being driven, and an endless member rotating with said first pair of sprockets and extending around said first pair of sprockets to define a conveyor path, said first pair of sprockets defining respective ends of said conveyor path;

at least one pallet movable on said endless member along an upper run between said ends, turning at a first end of said conveyor path onto a lower run, moving along said lower run to a second end then being turned back onto the upper run;

said at least one pallet being positively driven between the upper and lower runs by a second sprocket associated with each of said first pair of sprockets, the outer periphery of said second sprocket rotating at a different rate of speed than the outer periphery of said first pair of sprockets; and

said endless member being a chain, and said at least one pallet having a lower run contact surface which is supported on an inner surface of said chain as said pallet moves along said lower run, an alignment groove formed on said lower run contact surface, said alignment groove engaging a link of said chain as said pallet is being moved from the upper run to the lower run.

5,282,530

DEVICE FOR THE RECEPTION AND THE TRANSFER TO A SUCCESSIVE CONVEYOR OF SUBSTANTIALLY PARALLELEPIPED PRODUCTS OR STACKS OF PRODUCTS

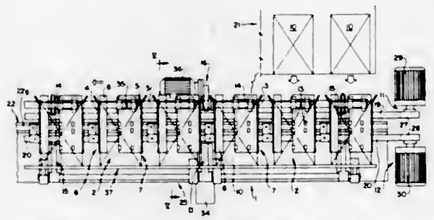
Armando Neri, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy

Filed Jun. 15, 1992, Ser. No. 898,538
Claims priority, application Italy, Jun. 14, 1991, B091A000209
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—473.1 **10 Claims**

1. A device for receiving and transferring products comprising:

at least one compartment moveable in a direction substantially perpendicular to that in which the products are received by the device, said at least one compartment having opposing vertical wall members spaced apart to define a size thereof, at least one of said vertical wall members being moveable to adjust the size of said at least one compartment;

drive means for initially moving said at least one vertical wall member to adjust the size of said at least one compartment according to a predetermined value corresponding to a size of the product to be transferred and subsequently moving the vertical wall members at a substantially equal velocity to move the compartment in the direction substantially perpendicular to that in which the products are received by the device; and



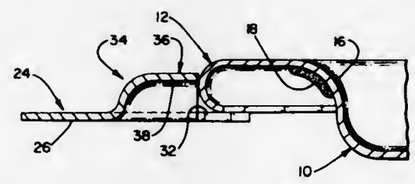
a conveyor device central control unit having means for receiving therein the predetermined value corresponding to the product size and controlling said drive means to (1) move said at least one wall member to adjust the size of the compartment according to the predetermined value so that the size of the compartment corresponds to the size of the product and (2) subsequently move said wall members at substantially equal velocity to move the compartment in the direction substantially perpendicular to that in which the products are received by the device.

5,282,531

METHOD AND APPARATUS FOR INDEXING CAN ENDS

Edgar H. Zysset, St. Cloud, Fla., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jul. 29, 1992, Ser. No. 922,163
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—803.14 **3 Claims**



1. An indexing belt for transporting a can end of the type that has an end curl portion with an outer circumferential edge; and an interior shoulder to which an adhesive may be applied, comprising:

a web portion having at least one opening defined therein that is sized so that said web portion will not contact the interior shoulder of a can end, or any adhesive on the interior shoulder, when the can end is inserted in said opening;

at least one support surface on an upper surface of said web portion adjacent to said opening for supporting the end curl portion of the can end; and

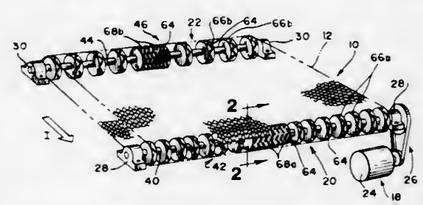
means for preventing lateral displacement of the can end relative to said web portion, said means comprising at least one flange, said flange being unitary with and formed out of the same material as said web portion, said flange further including a raised part that extends in a different plane than said web portion, said raised part of said flange being constructed and arranged to abut the outer circumferential edge of the end curl portion of the can end to prevent lateral movement of the can end, whereby the mounting structure for centering said can end with respect to said opening is inexpensively and effectively fabricated from a single piece of material.

5,282,532

MODIFIED DRIVE SYSTEM FOR ENDLESS BELT CONVEYORS WITH ROLLERS HAVING DRIVING, SUPPORTING AND ALIGNING FEATURES

James A. Thomas, Sr., Modesto, Calif., assignor to Lindberg Corporation, Rosemont, Ill.

Continuation-in-part of Ser. No. 612,072, Nov. 9, 1990, Pat. No. 5,160,020. This application Jun. 19, 1991, Ser. No. 718,351
Int. Cl.[5] B65G *23/06*
U.S. Cl. 198—834 **36 Claims**



1. A drive for an endless conveyor belt system comprising:

an endless conveyor belt having alternating first and second transverse rows of exposed, spaced segments at one surface of said belt, each of said segments having a first longitudinal side and an opposite second longitudinal side, said first row of segments disposed at a first acute angle to the length of the belt and said second row of segments disposed at a second acute angle to the length of the belt;

at least one roller defining a generally cylindrical outer peripheral surface and having a central longitudinal axis about which said roller rotates in normal use;

said roller provided with a plurality of recesses in said peripheral surface to accommodate said belt segments therein, a first set of said recesses provided with a side wall including at least one right abutment surface and a second set of said recesses provided with a side wall including at least one left abutment surface;

said right abutment surfaces disposed at an acute angle to said longitudinal axis such that said right abutment surfaces engage said first longitudinal side of said belt segments within said first set of recesses;

said left abutment surfaces disposed at an acute angle to said longitudinal axis such that said left abutment surfaces engage said second longitudinal side of said belt segments within said recesses; and

said side walls extending substantially continuously from the bottom of said recess to said outer peripheral surface and said abutment surfaces having a length sufficient to engage said belt segments received in said recesses in a supporting and centrally aligning relation when said conveyor belt is engaged on said roller.

5,282,533

SUTURE DISPLAY RACK AND PROCEDURE KIT

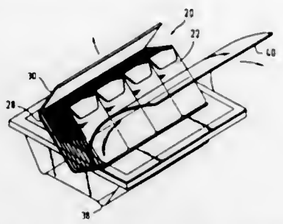
Henry A. Holzwarth, Weston, and David L. Brown, Wallingford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 17, 1990, Ser. No. 628,567
Int. Cl.[5] A61B *17/06*; B65D *69/00*
U.S. Cl. 206—63.3 **23 Claims**

1. A suture display rack and procedure kit comprising:

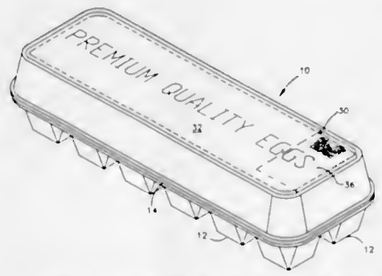
VOL 1159 ISS 1 FEB 1 1994 UMI

a substantially U-shaped structure having a floor portion and opposing side wall portions;
a fold line formed longitudinally in said floor portion parallel to said side wall portions;
means integral with said U-shaped structure for maintaining



said U-shaped structure in a folded position when opened by folding along said fold line;
a plurality of suture packages disposed within said U-shaped structure; and
enclosure means for storing said U-shaped structure in an unfolded form prior to use.

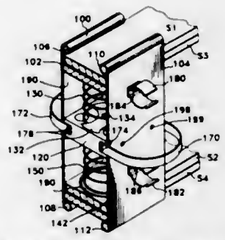
5,282,534
COMBINED PRODUCT PACKAGE AND COUPON DELIVERY SYSTEM
James F. Lapp, 1703 Park Ave., Richmond, Va. 23230
Filed Mar. 30, 1992, Ser. No. 860,073
Int. Cl.[5] B65D *71/00*
U.S. Cl. 206—232 **13 Claims**



1. A combined product and printed material delivery package comprising:
an egg carton of the clam shell type heavy individual compartments to hold a multiplicity of eggs and having an outside surface visible when the container is in its normal position;
a substantially flat shallow recess in said surface framed by a mounting area;
a label cover having an access panel integral therewith overlapping and covering said shallow recess with said label cover having an outside surface and an inside surface with said outside surface having printed material thereon and said inside surface having its periphery mounted to said mounting area; and
a thin pack of multiple printed pages contained in said recess and covered by said label cover which pages are accessible through an opening initially closed by said access panel and removable.

13. A method of simultaneously providing a consumer with eggs and discount coupons including the following steps:
providing an egg carton of the clam shell type having individual compartments to hold a multiplicity of eggs having a flat top with a shallow recess framed by a mounting area;
placing multiple discount coupons in said shallow recess;
covering said shallow recess by a label cover having printing thereon;
adhering said label cover at its periphery to said mounting area; and
providing an access panel at one end of said label cover and integral therewith which is openable to expose said coupons and permit their extraction.

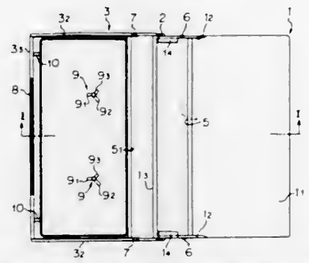
5,282,535
SKI CARRIER
Anthony Rowland, 1322 Centinela Ave., #6, Los Angeles, Calif. 90025
Filed Dec. 21, 1992, Ser. No. 993,418
Int. Cl.[5] B65D *85/20;* **A63C** *11/00*
U.S. Cl. 206—315.1 **24 Claims**



1. A carrier for skis of the type that comprise an elongate flat beam structure forming upper and lower surfaces lying, respectively, in generally parallel planes, comprising a pair of generally planar spring plates each plate having first and second ends, ski retaining means secured at said first and second ends of said plates extending in the same direction from the plane of the respective plate, and spacer means secured generally centrally to the plates mounting the spring plates in spaced parallel relationship with the respective ski retaining means extending toward each other from the respective spring plates; the plates, spacer means and retaining means being so dimensioned and configured as to permit a first ski to be retained snugly between the respective first ends of the plates and a second ski to be retained snugly between the respective second ends of the plates with the plane of surfaces of the skis lying generally perpendicularly to the planes of the plates and to permit the skis to be inserted into such retained position and removed therefrom by spreading the respective ends of the plates apart against resilient retaining forces exerted by the plates.

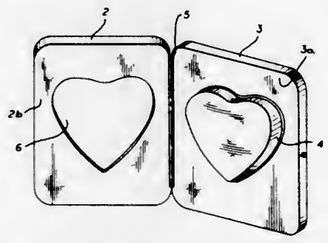
5,282,536
TAPE CASSETTE ACCOMMODATING CASE WITH PROTRUSIONS
Shinichi Sato; Takateru Satoh, and Hiroki Suzuki, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,007
Claims priority, application Japan, Dec. 19, 1991, 3-110846[U]
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—387 **2 Claims**

1. A tape cassette accommodating case for accommodating a cassette including two hub holes, each having at least one hub claw, the case comprising:
a case main body forming an accommodating portion of a tape cassette;
a lid provided at said case main body capable of opening and closing; and
a pair of hub-rotation-preventive protrusions extending substantially perpendicularly from said lid;
said pair of hub-rotation-preventative protrusions each being composed of at least three stopper pieces radially provided to be inserted into one of the hub holes, said at least three stopper pieces including first stopper piece a, second stopper piece b and third stopper piece c;
wherein a relationship between a radius r_2 of each said hub hole and a radius r_1 from the center of the hub hole to a front end of a hub claw engaged therewith, and respective



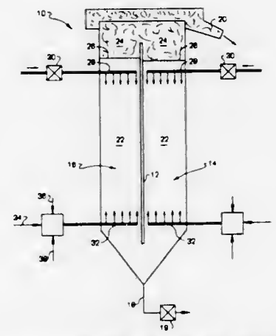
lengths of said first through third stopper pieces a, b, c have the relation: $c<a\leqq b$, $r_1\leqq a<r_2$, $r_1<b<r_2$, and $c<r_1$;
wherein angles of θ_2, θ_3 and θ_1 respectively defined between said pieces a and b, b and c, and c and a are not multiples of 60°; and
wherein $120°<\theta_2<180°$ and $\theta_1+\theta_2+\theta_3=360°$.

5,282,537
COMBINATION PHOTO FRAME, GIFT BOX AND GREETING CARD
Hammond Y. Wong, 2121 W. Mission Rd. Ste. #308, Alhambra, Calif. 91803
Filed Aug. 7, 1992, Ser. No. 926,839
Int. Cl.[5] B65D *73/00, 5/52*
U.S. Cl. 206—485 **22 Claims**



1. A combination photo frame, gift box and greeting card comprising:
two panels, comprising a first panel and a second panel;
means for swivably connecting said two panels to each other;
a gift container; and
means for removably mounting said gift container onto one of said two panels.

5,282,538
FLOTATION COLUMN
Michael H. Moys, Halfway House, South Africa, assignor to Multotec Cyclones (Proprietary) Limited, Transvaal, South Africa
Division of Ser. No. 784,853, Oct. 30, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 909,542
Claims priority, application South Africa, Oct. 31, 1990, 90/8733
Int. Cl.[5] B03D *1/02, 1/24*
U.S. Cl. 209—164 **7 Claims**



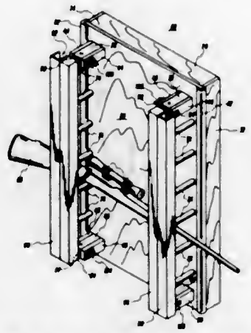
1. A method of reducing axial mixing within a flotation column having a top and a bottom and at least two separate upright passageways defined by baffle means having a top and a bottom, said column top being above the top of said baffle means top thereby defining a common zone above the baffle means, the method including the steps of:
a) feeding a feed slurry in parallel separately into each separate passageway to a location below the top of the baffle means from respective slurry feed means each located below the top of the baffle means within each passageway;
b) aerating the slurry in each passageway with air bubbles from aerating means spaced below each of said slurry feed means by directing said air bubbles upwardly through the slurry in each passageway and toward and past the respective slurry feed means to form a froth above the slurry in each passageway with the froth and slurry being separated from one another in each passageway by an interface; and
c) maintaining the positions of the interfaces above the feed means and below the top of the baffle means in each passageway.

5,282,539
GUN RACK
Ralph D. Saathoff, 2305 Trailridge Dr., Plano, Tex. 75074
Filed Feb. 23, 1993, Ser. No. 21,054
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—64 **8 Claims**

1. A gun, rack, comprising, in combination:
a frame having gun barrel support means and gun trigger guard receiving means projecting from said frame for supporting a gun in a substantially horizontal position;
mounting means for mounting said frame with a vertical mounting surface;
first securing means projecting from said frame, said first securing means including a hollow member having opposed sides with first and second holes in the respective opposed sides of said hollow member; and
second securing means engageable with first securing means, said second securing means including a first member having a lug projecting therefrom, said lug having opposed sides with third and fourth holes in the respective opposed sides of said lug, said lug being telescopically receivable

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within said hollow member, with the respective first, second, third and fourth holes in transverse axial alignment for receiving a hasp of a locking device, whereby said lug is secured in locking engagement with said hollow



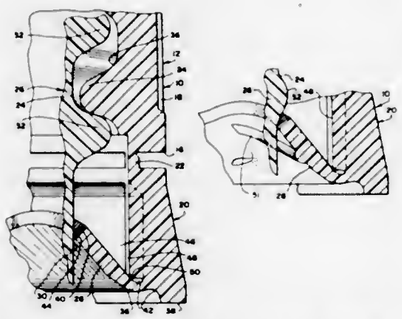
member, said second securing means further including a second member projecting laterally from said first member, said second member having a channel for receiving said hollow member when said lug is telescoped within said hollow member.

5,282,540

TAMPER BAND WITH FLEXIBLE ENGAGEMENT MEMBER

James M. Beck, Carol Stream, Ill., assignor to Creative Packaging Corp., Wheeling, Ill.

Filed Nov. 23, 1992, Ser. No. 980,623
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **8 Claims**



1. A tamper evident closure for a container opening, comprising:

a substantially cylindrical end cap closed at a first end by a top surface, open at a second opposite end and including an annular side wall having a predetermined width extending between said first and second ends;

tamper band means frangibly connected about said second opposite end of said end cap for detaching from said end cap and remaining affixed to the container upon removal of said end cap from the container;

an annular band integrally formed with a first portion of an inside surface of said tamper band means with a substantially serpentine shape for providing gripping contact between said tamper band means and a substantially cylindrical neck portion of the container, for restricting axial movement of said tamper band means with respect to said end cap and said neck portion and for preventing removal of said tamper band means from said container upon severing of said frangible connection and removal of said end cap; and

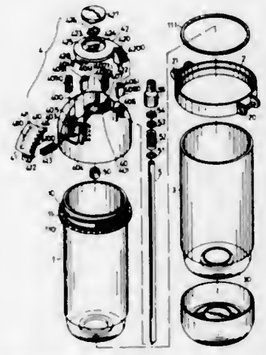
stop means integrally formed with a second portion of, and at a plurality of predetermined positions about, said inside surface of sad tamper band means for reinforcing said annular band during gripping contact with said cylindrical neck portion of the container.

5,282,541

CAP LOCKING DEVICE FOR A WATER BOTTLE

Wen-Yen Chen, 9F-4, 159, Section 3, Si-Men Road, Tainan, Taiwan

Filed May 17, 1993, Ser. No. 62,236
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—229 **4 Claims**



1. A water bottle with a locking cap comprising;

an inner bottle having a male thread on an upper end, a protective annular projection under the male thread, and a rubber annular gasket under the projection;

a pinching ring fitting tightly around the annular projection of the inner bottle, and having an inner wall with two different diameters and two pairs of projections with a small rod between each pair of projections on two opposite outer walls;

an outer bottle for containing the inner bottle, the outer bottle also being tightly held in the pinching ring;

a bottle cap having a cap body with a dome shape, a push button, and a liftable nipple pusher;

a sucking tube which extends through the bottle cap into an interior of the inner bottle, having a lower end fixed with a tubular stopper and an upper end upon which are fixed a ring, a coil spring, a washer, a C-shaped retainer and a nipple in order, the coil spring being contained between the ring on one end and the washer and C-shaped retainer on the other in a tubular post in the cap body such that the sucking tube is urged upward; and

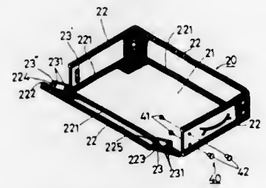
said cap body having a central diametric opening in an upper portion, the tubular post projecting upward in the diametric opening, diametric opening having opposing portions, said push button being pivotally connected in one of said opposing portions, said liftable nipple pusher pivotally connected in the other of said opposing portions, said push button having an inner projection on its lower end and a coil spring urging the inner projection and a hooking edge on its upper end, said nipple pusher having an elastic piece extending down from a lower end, and a hook at an upper end, said nipple pusher being pivotally pressed down to close the diametric opening of the cap body and compressing the elastic piece and permitting the hook to engage the hooking edge of said push button, said liftable nipple pusher being pivotally raised up by the elastic piece by pressing manually the push button and forcing the hooking edge to unhook from the hook of the nipple pusher, and said nipple with the sucking tube being raised up for a user to suck the contents of the bottle.

5,282,542

LOAD CARRIER

Yau-Kee Mo, Flat 02 10th Floor Block A, Lotto Villa, 18 Broadwood Rd., Happy Valley, Hong Kong

Filed Nov. 30, 1992, Ser. No. 982,805
Int. Cl.[5] B65D *8/14*
U.S. Cl. 220—7 **2 Claims**



1. A load carrier including:

a bottom member formed of a tough and bendable material and having a predetermined number of sides;

a surrounding wall formed of a tough and bendable material and having a predetermined number of side walls that corresponds to the number of sides of the bottom member, each of the side walls having an edge pivotably attached to a corresponding side of the bottom member and first and second ends, each of the side walls being pivotable relative to the bottom member from a first position in which the side wall and the bottom member are generally co-planar to a second position in which the side wall is generally perpendicular to the bottom member, the ends of each side wall abutting adjacent ends of adjacent side walls when the side walls are pivoted to the second position;

a predetermined number of fastening pairs corresponding to the number of side walls, each fastening pair comprising a first fastening piece fixedly mounted to a side wall proximate to one end thereof, and a second fastening piece mounted on a retaining ear formed integrally and pivotably on an adjacent side wall proximate to the one end, such that when the side wall having the first fastening piece and the adjacent side wall having the second fastening piece are pivoted to the second position and the retaining ear is pivoted, the first fastening piece and the second fastening piece are in engagement with each other, the first and second fastening pieces comprising sets of hook-and-loop fasteners; and

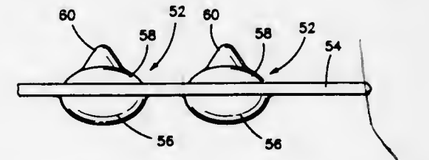
a predetermined number of sets of locking members corresponding to the number of fastening pairs, each set of locking members cooperating with a fastening pair for detachably fastening together the engaged first and second fastening pieces for retaining the side wall and the adjacent side wall perpendicularly with respect to the bottom member and abuttingly with respect to each other.

5,282,543

COVER FOR ARRAY OF REACTION TUBES

Enrico Picozza, Newtown; Timothy M. Woudenberg, Bethel; Robert Ragusa, Newtown, and Ralph Keese, Trumbull, all of Conn., assignors to The Perkin Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 871,264, Apr. 20, 1992, which is a continuation-in-part of Ser. No. 620,606, Nov. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 670,545, Mar. 14, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,559
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—255 **18 Claims**



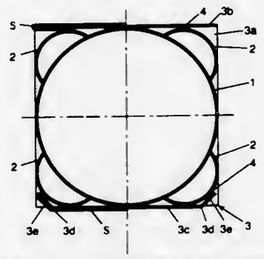
12. An array of reaction tube covers adapted to seal a plurality of reaction tubes comprising: a unitary body having a plurality of flexible plastic nodules, each adapted to seal one of a plurality of reaction tubes, each of said flexible plastic nodules being flexibly held in a predetermined planar spaced relationship from each other in rows and columns by an integral web having a plurality of apertures therethrough, each of said nodules having a downwardly convex generally hemispherical lower portion extending from said web, an upwardly convex upper portion extending from said web directly above said downwardly convex generally hemispherical lower portion, and a centrally domed nipple extending upward from said upwardly convex upper portion.

5,282,544

CONTAINER FOR BULK MATERIALS AND FLUIDS

Gerardus A. M. Boots, J. Kruyverstraat 26, 1507 WH, Zaandam, Netherlands

Filed Nov. 19, 1991, Ser. No. 794,073
Claims priority, application Netherlands, Nov. 19, 1990, 9002520
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—403 **16 Claims**



1. A combination of a container for bulk materials and fluids with a U-shaped stiffening member,

the container comprising an enveloping member and an inner flexible member, the enveloping member comprising a plurality of ear-shaped compartments connected to an outer surface of the inner member at at least four positions spaced along the outer circumference of the inner member, the arrangement being such that in a filled condition,

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the container obtains the shape of a substantially block-shaped unit with substantially flat walls,

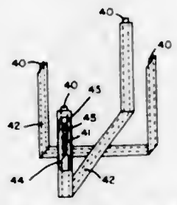
the U-shaped stiffening member being formed of a stiff material and comprising a web and two legs connected thereto, the stiffening member being arranged so that at least an upper portion of each leg abuts one of two opposite side walls of the block-shaped unit via said ear-shaped compartments, and the web abuts a wall connecting said two side walls and forming a bottom wall of the block-shaped unit in an operative position, the upper portion of the legs having a width corresponding substantially to that of the abutting side wall of the block-shaped unit so that bulging is prevented in the legs of the stiffening member.

5,282,545

STORAGE DEVICE WITH LINER FOR TYING AND REMOVAL OF BUNDLED PAPERS

Kevin C. White, 30 Idaho Ave., Staten Island, N.Y. 10309

Filed Oct. 26, 1992, Ser. No. 966,695
Int. Cl.[5] B65D *25/26, 71/02*
U.S. Cl. 220—403 **6 Claims**



1. A liner for bundling paper items, said liner adapted to be removably placed in a receptacle, said receptacle including a rectangular container having four vertical side walls and having a horizontal bottom panel therebetween, said receptacle also including a liner supporting device affixed to each side wall near the upper extreme thereof, said liner comprising:

(a) preformed predetermined lengths of flexible bundling material in combination with a means for imparting ridigity to said bundling material, said lengths crossing over each other providing four stiffened opposed lengths of said flexible bundling material configured for extending upwardly along an inside surface of said side walls, each said opposed length of said bundling material terminating at an end closure structure having means to engage a respective one of said liner support devices;

(b) an additional length of flexible bundling material connected to one of said end closure structures, said additional length of bundling material being dimensioned and configured such that said additional length of bundling material is adapted to engage all of said end closure structures while said opposed lengths of bundling material are extending along the side walls of the container, and is adapted to draw said end structures together, wherein said additional length of bundling material provides a means of securement for the bundled contents, and such that said additional length is capable of further forming a handle extending between two of said opposed lengths;

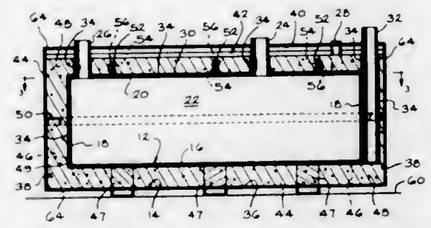
(c) one of said opposing lengths defining a magazine containing said additional length of bundling material in such a way that the additional length of bundling material may be drawn from the magazine.

5,282,546

COMPOSITE ABOVE GROUND LIQUID STORAGE VAULT

Darleen K. Bauer, Severna Park, Md., assignor to Hoover Group, Inc., Alpharetta, Ga.

Filed Jul. 15, 1993, Ser. No. 91,682
Int. Cl.[5] B65D *90/06*
U.S. Cl. 220—565 **20 Claims**



1. A composite above ground liquid storage vault comprising:

an inner tank having exterior surfaces defined by a bottom wall, side walls and a top wall cooperating to define a primary containment cavity, said cavity adapted to receive and store liquids therein, said inner tank also including at least one fitting, said fitting enabling the liquid to be disposed into or discharged from said inner tank of said vault;

a first layer covering said exterior surfaces and substantially encapsulating said inner tank, said first layer being formed of an insulative material and said fitting extending from said inner tank and through said first layer;

an upright monitor tube exteriorly positioned relative to said first material and said inner tank, said monitor tube having a pair of ends, one of said ends being located generally adjacent to said bottom wall and the other of said ends being located generally above said top wall of said inner tank;

a second layer exteriorly covering said monitor tube, said first layer and said inner tank thereby forming an encapsulated inner tank, said second layer being formed of a liquid impervious material and forming a liquid impervious barrier completely around said monitor tube, said first layer and said inner tank;

an outer tank having a bottom wall, side walls and a top wall cooperating to define a receiving cavity adapted to receive said encapsulated inner tank, said fitting extending from said inner tank through said outer tank and terminating at a location exterior of said outer tank;

spacer means located within said outer tank for supporting said encapsulated inner tank in spaced apart relation from interior surfaces of said outer tank; and

a third layer disposed within and filling said space between said outer tank and said encapsulated inner tank so as to substantially completely encase said encapsulated inner tank therein, said third layer being a structural material protecting said inner tank from rupture, further insulating said inner tank and providing said vault with a firewall.

5,282,547

SPLASHGUARD FOR CORNER-POSITIONED DISHWASHERS

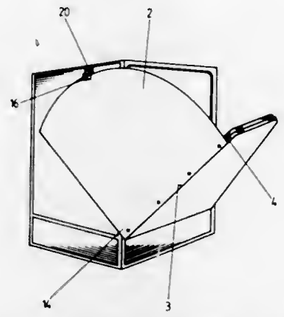
Joseph A. Murray, 116 Smoke Rise Dr., Warren, N.J. 07059

Filed Sep. 28, 1992, Ser. No. 952,587
Int. Cl.[5] B65D *53/04*
U.S. Cl. 220—731 **20 Claims**

1. A splashguard device for a dishwasher comprising an angular sector of a circular plate, wherein the angular sector has a sector angle of from about 100 to 130 degrees,

wherein a radius of the circular plate substantially equals a radial length of a dishwasher door determined from a hinge axis of the dishwasher door;

a plurality of fastening devices to permanently secure the angular sector at a radially extending edge of the angular sector to a radially extending side face of the dishwasher door;



spacer devices for spacing the angular sector at a distance of approximately ½ from the radially extending side face of the dishwasher door in a vertical plane parallel to an outer face of a dishwasher outside wall; and

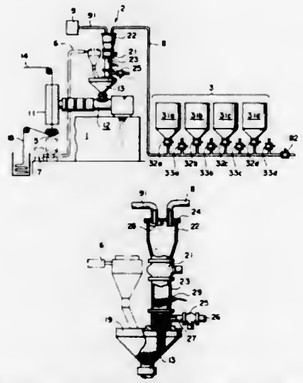
a guide attached to the dishwasher outside wall to ensure a free movement of the angular sector.

5,282,548

AUTOMATIC COLOR PELLET SELECTING AND SUPPLYING APPARATUS FOR INJECTION MOLDING MACHINE

Kiyomitsu Ishihara, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 1, 1992, Ser. No. 877,228
Claims priority, application Japan, May 2, 1991, 3-130346
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—55 **4 Claims**



1. An apparatus for automatically selecting one from color pellets of different colors and for automatically supplying the selected one color pellet to an injection molding machine, comprising:

(a) an auxiliary hopper adapted to be connected to a pellet supply portion of the injection molding machine and divided into two chambers an upstream side chamber and a downstream side chamber, by an automatic change-over valve;

(b) a negative pressure means for causing said auxiliary hopper, at the upstream side chamber, to be under negative pressure;

(c) a pellet feed pipe adapted to be connected to the upstream side chamber of said auxiliary hopper; and

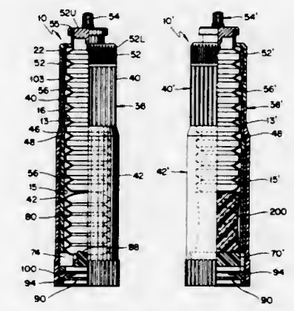
(d) a number of storage tanks for storing the respective color pellets, each of said storage tanks being adapted to be connected to said pellet feed pipe via a respective automatic change-over valve.

5,282,549

DISPENSER WITH AN ENERGY STORAGE MEMBER AND AN OVERLOAD PREVENTION MECHANISM

Michael P. Scholz, San Clemente, and Joe J. Lones, San Diego, both of Calif., assignors to Williams Dispenser Corporation, Los Angeles, Calif.

Filed Mar. 16, 1992, Ser. No. 851,804
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—95 **25 Claims**



1. A dispenser comprising a housing; a manually operable outlet valve at a longitudinal upper end of said housing; a flexible product-containing member disposed beneath said valve such that an interior of said product-containing member communicates with said valve; an elastically flexible energy-storing member disposed beneath said product-containing member; a portion of said housing being manually rotatable; and an energizing member disposed beneath said energy-storing member and operably connected with said rotatable portion of said housing to be raised in response to rotation of said rotatable portion for compressing said energy-storing member and pressurizing said product-containing member; said energy-storing member being expandable to expel product from said product-containing member when said valve is open, and being recompressible by said manually rotatable portion; said energy storing member comprising a closed-cell foam element.

5,282,550

BULK MATERIAL CONTAINER WITH A FLEXIBLE LINER

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Continuation of Ser. No. 718,248, Jun. 20, 1991, abandoned.
This application Nov. 6, 1992, Ser. No. 972,723
Int. Cl.[5] B65D *35/56*
U.S. Cl. 222—105 **7 Claims**

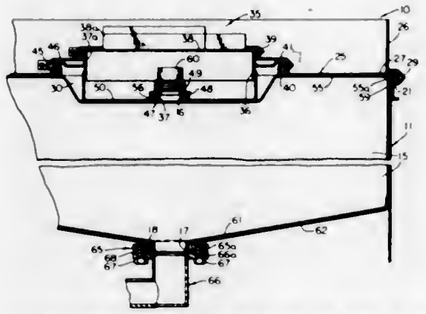
1. A bulk material container comprising:

(a) a shell with a rim flange surrounding an opening at the upper extremity of said shell;

(b) a removable top detachably secured to said shell at the upper extremity of said shell, said removable top having a rim flange overlying the rim flange of said shell and having an opening;

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(c) a single flexible liner disposed in said shell for containing bulk material, said flexible liner comprising a top wall extending above said rim flange of said shell, said top wall of said flexible liner being removably secured between said rim flange of said shell and said rim flange of said removable top; and



(d) a detachable lock ring for urging said rim flange of said removable top and said rim flange of said shell into clamping engagement with said top wall of said flexible liner,

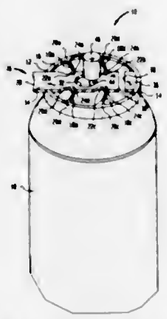
(e) said flexible liner comprising a neck through which material is discharged into said flexible liner, said neck of said flexible liner extending from said top wall of said flexible liner into the opening of said removable top.

5,282,551

SAFETY VALVE LOCKING DEVICE

Theodore J. Pierson, Kinnelon, N.J., assignor to Pierson Industries, Inc., Rockaway, N.J.

Filed Sep. 4, 1992, Ser. No. 940,624
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—153 **18 Claims**



11. A universal safety valve locking device for use with a pressurized container comprising:

a collar adapted to fit over a valve rim, said collar having a first surface defining an inner perimeter and a second surface defining an outer perimeter;

slide means operatively connected to said collar for selectively preventing and permitting depression of a valve stem to actuate a valve, said slide means having a leading end and a trailing end and an aperture therebetween defining a passageway through which the valve stem extends, and being slidable upon pressure applied or released from said trailing end between an occluding position at which an actuator head on the valve stem is misaligned with said aperture so that the valve stem cannot be depressed therethrough and a nonoccluding position at which said actuator head is aligned with said aperture so that the valve can be actuated upon depression of the valve stem; and

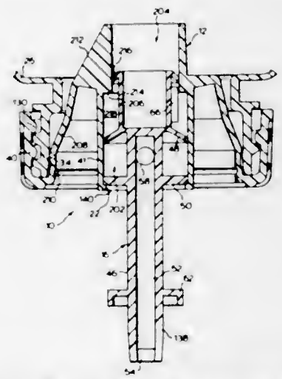
resistance means arranged within said inner perimeter of said collar for urging said slide means to said occluding position, said resistance means comprising arcuate elongate resilient members having a first end and a second end, said first end of said accurate elongate resilient members being connected to said first surface of said collar and said second end being connected to said slide means between said leading end and said trailing end thereof.

5,282,552

DISPOSABLE PLASTIC LIQUID PUMP

Heiner Ophardt, Vineland, Canada, assignor to Hygiene-Technik Inc., Ontario, Canada

Continuation-in-part of Ser. No. 702,937, May 20, 1991, Pat. No. 5,165,577. This application Nov. 23, 1992, Ser. No. 980,208
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—181 **18 Claims**



1. A pump for dispensing liquid from a reservoir comprising:

piston-chamber forming means having an inner cylindrical chamber and an outer cylindrical chamber, the inner chamber and outer chamber each having a diameter, a chamber wall, an inner end and an outer end,

the diameter of the inner chamber being less than the diameter of the outer chamber,

the inner chamber and outer chamber being coaxial with the outer end of the inner chamber opening into the inner end of the outer chamber,

the inner end of the inner chamber in fluid communication with the reservoir,

a piston forming element received in the piston-chamber forming means axially slidable inwardly and outwardly therein,

said piston forming element being generally cylindrical in cross-section with a central axially extending hollow stem having a central passageway closed at an inner end and having an outlet proximate an outer end,

an inner circular flexing disc extending radially outwardly from the stem proximate the inner end, the inner flexing disc having an elastically deformable edge portion proximate the chamber wall of the inner chamber circumferentially thereabout,

an outer circular flexing disc extending radially outwardly from the stem spaced axially outwardly from the inner flexing disc, the outer flexing disc having an elastically deformable edge portion proximate the chamber wall of the outer chamber circumferentially thereabout,

a circular sealing disc extending radially outwardly from the stem spaced axially outwardly from the outer flexing disc, the sealing disc engaging the chamber wall of the outer chamber circumferentially thereabout to form a substantially fluid impermeable seal therewith on sliding of said piston forming element inwardly and outwardly,

an inlet located on the stem between the outer flexing disc and the sealing disc in communication with the passageway,

the piston forming element slidably received in the piston-chamber forming means for reciprocal axial inward and outward movement therein with the inner flexing disc in the inner chamber and the outer flexing disc and sealing disc in the outer chamber,

the inner flexing disc substantially preventing fluid flow in the inner chamber past the inner flexing disc in an inward direction,

the outer flexing disc substantially preventing fluid flow in the outer chamber past the outer flexing disc in an inward direction,

the inner flexing disc elastically deforming away from the chamber wall of the inner chamber to permit fluid flow in the inner chamber past the inner flexing disc in an outward direction,

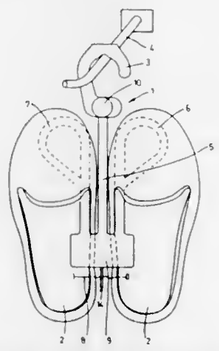
the outer flexing disc elastically deforming away from the chamber wall of the outer chamber to permit fluid flow in the outer chamber past the outer flexing disc in an outward direction.

5,282,553

SHOE HOLDER

Stéphane Ibled, Bondues, France, assignor to S.A.R.L. Industrie Distribution Service, France

Filed May 15, 1992, Ser. No. 884,598
Claims priority, application France, May 17, 1991, 91 06348
Int. Cl.[5] A47G *25/14*
U.S. Cl. 223—85 **10 Claims**



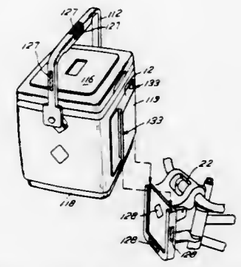
1. A shoe holder and shoe combination intended to serve as display means in stores, comprising a central rod terminated by a hook at one end for suspension, and two lateral support elements on another end, a shoe mounted on each support element, wherein the shoes are connected by a supple tie, said shoe holder comprising means for connecting, via said tie, the central rod to an assembly constituted by the shoes and the supple tie, wherein the connection means are constituted by at least one connection piece integral with and extending transverse to the central rod and comprising an opening through which the supple tie passes.

5,282,554

BICYCLE COOLER AND MOUNTING APPARATUS

Jan B. Thomas, 22 Deallyon #8, Hilton Head, S.C. 29928

Filed Jul. 31, 1992, Ser. No. 923,059
Int. Cl.[5] B62J *7/06*
U.S. Cl. 224—36 **31 Claims**



1. An insulated cooler and mounting bracket combination for detachable mounting of the cooler to a bicycle frame, comprising:

an insulated cooler having a front surface, a bottom surface, two opposing side surfaces, and a back surface;

a mounting platform secured to said back surface and spaced outwardly therefrom, said mounting platform having a configured structure oriented for defining a vertical plane;

a mounting bracket formed of a body member having (i) a flat planar front side and back side; (ii) a retention slot carried by said body member and disposed relative to said planar front side, (iii) a support structure extending from the back side of said body member and adapted to mount onto handlebars of the bicycle for stable securement of the mounting bracket to the bicycle during movement of the bicycle, said support structure spacing said flat planar front side of said body member outwardly in front of the handlebars and disposing said flat planar front side in a vertical orientation, said retention slot being vertically disposed for vertically receiving said configured structure,

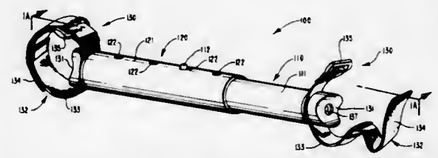
whereby said insulated cooler is disengageably mounted to said mounting bracket when said mounting bracket is fixedly secured to the bicycle without removal of said mounting bracket from the bicycle.

5,282,555

STABILIZATION ASSEMBLY FOR BICYCLE RACKS

Scott W. Muir, 2419 E. 1300 South, Salt Lake City, Utah 84108, and Dale H. Muir, 1633 Canyon Oak Cir., Bountiful, Utah 84010

Filed Jul. 31, 1992, Ser. No. 922,803
Int. Cl.[5] F16D *1/00*
U.S. Cl. 224—42.03 B **3 Claims**



1. A stabilization assembly for use in securing a plurality of bicycles on a rack, the assembly comprising:

A first bar assembly comprising:

A hollow tube, and

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A securing assembly for securing a first said bicycle to said first bar assembly, comprising:

A cradle piece fitting against the frame of said first bicycle,

A strap extending around the frame of said first bicycle, and

Means for securing said strap around the frame of said first bicycle; and

A second bar assembly comprising:

A second tube sized to slide within said hollow tube of said first bar assembly such that the length of said stabilization assembly can be adjusted, and

A securing assembly for securing a second said bicycle to said second bar assembly, comprising:

A cradle piece fitting against the frame of said second bicycle,

A strap extending around the frame of said second bicycle, and

Means for securing said strap around the frame of said second bicycle; and

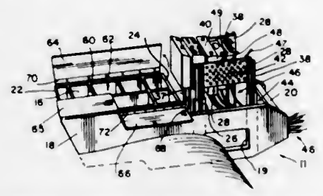
Means for selectively securing said second tube of said second bar assembly within said hollow tube of said first bar assembly.

5,282,556

VEHICLE ORGANIZING CONTAINER

Michael N. Bossert, Richmond, Ind., assignor to Organizer's, Inc., Richmond, Ind.

Filed Sep. 30, 1991, Ser. No. 769,947
Int. Cl.[5] B60R *7/08*
U.S. Cl. 224—42.42 **3 Claims**



1. A vehicle organizing container for installation in a vehicle, the container comprising

first and second side walls situated in spaced apart relationship,

a front wall and a back wall attached to extend between the first and second side walls,

an interior wall positioned between the front and back wall, the interior wall being attached to both the first and second side walls to define an electronic equipment holding cavity between the interior wall and the front wall, and an organizing receptacle between the interior wall and the back wall,

means for securing the vehicle organizing container to the vehicle, and

means for mounting electronic equipment in the electronic equipment holding cavity, the mounting means including a first slide track and a second slide track positioned to extend in spaced apart parallel relationship, the first and second slide tracks both being attached to the first side wall, a mounting plate for mounting electronics attached to extend between the first and second slide tracks, and a third and a fourth slide track positioned to extend in spaced apart parallel relationship, the third and fourth slide tracks both being attached to the second side wall, and

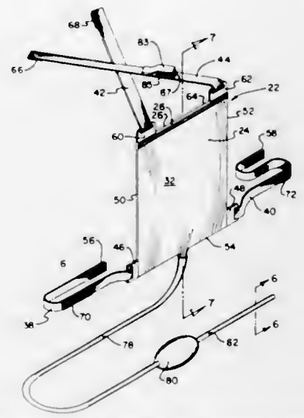
wherein the first wall is formed to include an opening between the first and second slide tracks and the second wall is formed to include a second opening between the third and fourth slide tracks cooperating with the first opening to provide an armament carrier.

5,282,557

LIQUID CARRYING HARNESS

Joe R. McCook, Rte. 2, Box 159, Hiawassee, Ga. 30546

Filed Nov. 6, 1992, Ser. No. 972,898
Int. Cl.[5] A45F *3/16*
U.S. Cl. 224—148 **1 Claim**



1. A liquid carrying harness adapted to be worn by a user comprising:

liquid containing means having a bottom, a top, and first and second opposed sides,

first strap means attached to the bottom of said containing means, said first strap means adapted to be fastened about the waist of a user,

second strap means attached to the top of said containing means, said second strap means adapted to be disposed over the shoulders of said user and removably connected to said first strap means, and

flexible tube means connected at one end to said container means whereby said user is adapted to draw liquid from said liquid containing means through another end of said flexible tube means when said harness is worn by said user with said first side of said liquid containing means confronting the user's body,

wherein said liquid containing means comprises a flexible bag having a top edge, a pair of opposed side edges and a bottom edge, said first strap means comprises a first pair of opposed strap members, each member having one end thereof attached to a respective one of the opposed side edges of said bag proximal to said bottom edge, and said second strap means comprises a second pair of strap members, each member having one end thereof attached to the top edge of said bag proximal to said opposed side edges respectively, wherein each of said first pair of strap members has a first free end, said first free ends being adapted to be fastened to each other, and wherein each of said second pair of strap members has a second free end, said second free ends being adapted to be attached to a respective one of said first strap members,

wherein said bag has a transverse opening proximal to said top edge thereof, said transverse opening extending orthogonally between said pair of second strap members, and

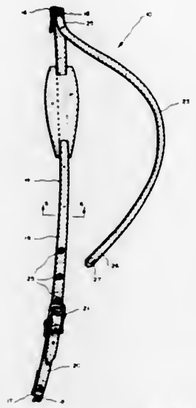
further comprising transparent pocket means affixed to said second opposed side of said bag, and a placard bearing identifying indicia insertable within said transparent pocket means so as to be clearly visible to an observer when said user is wearing said liquid carrying harness.

5,282,558

ARM FREEING GUN SLING

Martin J. Martinez, 1628 West 700 South, Ogden, Utah 84404

Filed Jun. 22, 1992, Ser. No. 901,941
Int. Cl.[5] F41C *23/02*
U.S. Cl. 224—150 **3 Claims**



1. A sling assembly for retaining an elongate firearm suspended generally vertically from the shoulder of a user, said sling assembly comprising:

a primary, flexible, non-elastic, elongate strap assembly having upper and lower ends;

means securing said upper and lower ends vertically spaced apart to the firearm, so that the primary assembly forms a shoulder engaging loop therewith;

an auxiliary, non-elastic, elongate strap assembly having upper and lower ends;

means securing the upper end of the auxiliary strap assembly to the upper end of the primary strap assembly;

pull releasable means for securing the lower end of the auxiliary strap assembly to the primary assembly, spaced from the upper end securing means a distance equal to the length of the auxiliary strap assembly;

at least one other pull releasable means for securing the lower end of the auxiliary assembly tot he primary assembly at a distance from the auxiliary strap assembly upper end securing means less than the length of the auxiliary strap assembly, to cause the auxiliary assembly to form a neck-encircling loop with the primary assembly;

said pull releasable means being spaced from and operable separately from said at least one other pull releasable means;

engaging means for independently engaging one of the pull releasable means for securing the lower end of the auxiliary strap assembly to the primary strap assembly;

the pull releasable means and the at least one other pull releasable means being secured to the primary strap assembly and the engaging means being secured to the auxiliary strap assembly.

5,282,559

HOLSTER WITH FRAME

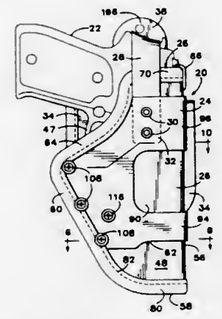
Glenn Wisser, Meridian, and Robert E. Pabst, Boise, both of Id., assignors to Michaels of Oregon Co., Portland, Oreg.

Filed Mar. 24, 1992, Ser. No. 857,639
Int. Cl.[5] F41C *33/02*
U.S. Cl. 224—243 **16 Claims**

1. A holster for securely holding a handgun, comprising:

(a) a handgun holding pocket including a plurality of overlying layers of flexible material at least one of which is resiliently compressible, said pocket having a front portion and outer and back sides, each of said sides having a respective rear margin and a respective upper margin, and said pocket having a bottom end;

(b) a frame of resiliently stiff sheet material, including an outer face and a back face interconnected by an arcuate compression band, said sheet material extending around said front portion of said pocket and surrounding said pocket in an area spaced upwardly apart from said bottom end thereof, portions of said rear and upper margins of said pocket being attached to said frame but said pocket



being free from and movable with respect to said compression band;

(c) adjustable clamping means extending through and interconnecting respective portions of said compression band adjacent said outer and back sides of said frame, for adjustably tightening said compression band around said handgun gripping area of said pocket; and

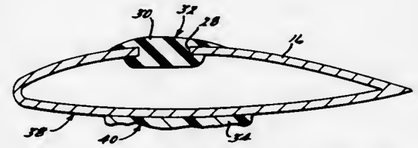
(d) a security strap and a belt loop attached to said frame, said pocket being free from direct attachment of said security strap and said belt loop thereto.

5,282,560

LUGGAGE RACK WITH WIND NOISE REDUCER

Robert J. Ozog, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 26, 1993, Ser. No. 52,937
Int. Cl.[5] B62D *25/00*
U.S. Cl. 224—316 **16 Claims**



1. A luggage rack for an automobile body comprising:

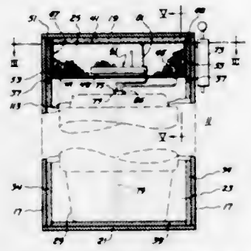
at least one transversely extending cross member,

stanchion means for supporting opposed ends of each cross member to position the at least one cross member in generally parallel, spaced relationship with respect to the automobile body, and

means defining a cross sectional shape of the at least one cross member that varies along the transverse extent of the at least one cross member.

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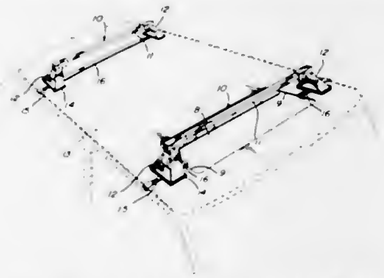
5,282,561
PORTABLE BEVERAGE DISPENSER
Herman Mihalich, 1134 Knox Ave., Monessen, Pa. 15062
Continuation of Ser. No. 76,940, Jul. 13, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 303,937
Int. Cl.[5] B67D 5/62
U.S. Cl. 222—146.6 10 Claims



1. A portable beverage dispenser capable of use as an integrated unit both in the home and for outdoor events without electrical power facilitates and not integrated with power-driven vehicular transportation means; said dispenser including a thermally insulated cabinet for receiving a container including the beverage, an opening in said cabinet providing access to the interior of said cabinet, a thermally insulated door connected to said cabinet for closing said opening, cooling means mounted integrally with said cabinet, for cooling both the beverage in the container and the beverage flowing out of the container, said cooling means including an ice chest for containing ice, said ice chest having a wall which is structured as part of said dispenser as a partition, directly interposed between the interior of said ice chest and the interior of said cabinet as at least a part of a wall of said cabinet, said partition being composed of thermally conducting material in thermal interchange with the interior of said cabinet so that there is heat interchange between the interior of said cabinet, including the interior of said container, and the interior of said ice chest, a cooling-coil means having an input and an output in said ice chest, a beverage conductor, extending through the cooled interior of said cabinet, for connecting said beverage container to said input, so as to transmit beverage through said cooling-coil means, said thermal interchange between the interior of said cabinet and the interior of said ice chest being effective to cool the beverage in said container to preclude reaction between warm beverage and the cold cooling-coil means which would produce predominantly foam when the beverage is drawn, means, connected to said output for drawing beverage from said container, and means, connected to said dispenser and to be connected to said container, for supplying gas pressure to the beverage within the container to cause the beverage to flow from said container through said cooling-coil means.

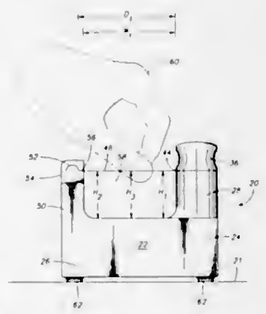
5,282,562
VEHICLE ROOF-TOP SUPPORT RACK WITH PERMANENT ATTACHMENT BASES
Stephane Legault, 4750 Geneviève, Pierrefonds, Quebec H9J 1S5, Canada
Filed Nov. 4, 1992, Ser. No. 971,474
Int. Cl.[5] B60R 9/00
U.S. Cl. 224—329 23 Claims

1. A vehicle rack for securement over a roof of a vehicle, said rack comprising a support rail having opposed supporting brackets for maintaining said rail elevated transversely over the vehicle roof, said brackets being removably connected to a respective one of a pair of connecting bases, each of said connecting bases having attachment means for attaching same to a restraining portion of a vehicle adjacent said roof thereof with said connecting bases positioned on a respective side of said roof, connecting means is connected to said connecting bases to secure said bases, tensioning means for applying a tension force between said attachment means of said pair of connecting bases and the connecting means to rigidly connect said connecting bases on said roof, one of said connecting bases is a locking base provided with latch engageable means, one of said supporting brackets being a locking bracket having a latch mechanism actuable by a lever arm for engaging said latch engageable means of said locking base to immovably secure said brackets to said connecting bases, said lever arm being pivotally secured in said locking bracket and displaceable on a fixed rotation axis; a latch element is pivotally attached at one



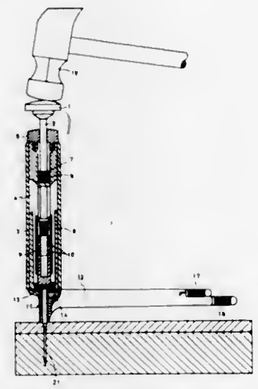
end to said lever arm on a latch pivot connection displaceable on an arc about said fixed rotation axis, means to displace said lever arm on said fixed rotation axis, said latch element having an engaging end to engage said latch engageable means, said lever arm when retracted from said locking bracket engageable means, the other of said connecting bases being provided with a bracket connecting means, said other supporting bracket having means to engage said bracket connecting means and being automatically disconnected by lifting said locking bracket from said locking base.

5,282,563
FLOSS DISPENSERS
Darcy D. Oliver, Veradale; Ross D. Thurber, Spokane, and Terrance R. Folsom, Greenacres, all of Wash., assignors to De Voe G. Quinton, Spokane, Wash.
Filed Oct. 1, 1992, Ser. No. 956,000
Int. Cl.[5] B65H 75/32; A61C 15/04
U.S. Cl. 225—47 20 Claims



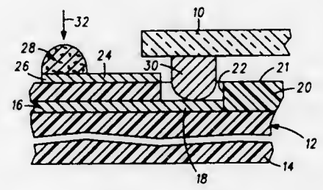
1. A floss dispenser comprising:
a base having first and second ends and an upper surface, the first base end having a recessed mount formed in the upper surface for receiving and holding a dental floss container having a spool of dental floss enclosed within a casing, the recessed mount in the upper surface of the base being sized to fittingly engage a lower end of the casing of the dental floss container when the dental floss container is inserted into the recessed mount to thereby support the dental floss container;
the dental floss container dispensing an exposed portion of floss through an opening in an upper end of the casing of the dental floss container, the opening being at a first elevation above the base;
a cutting member extending upward from the second base end and having an upper end, the cutting member including a friction element positioned at the upper end at a second elevation above the base, the friction element holding a distal end of the exposed portion of floss a spaced distance from the dental floss container held in the recessed mount so that the exposed portion of floss extends elevationally at a height above the base and across a gap region of a selected width between the dental floss container and the cutting member, the height of the exposed portion of floss relative to the base and the width of the gap region being sufficient to permit a user to grasp the exposed portion of floss extending between the dental floss container and the friction element without contacting the floss dispenser; and
the cutting member further including a blade mounted on the upper end thereof for cutting an exposed portion of floss.

5,282,564
PUNCH PLASTERER
Amaro Vigil Rio, Cervantes No. 2-6° Dcha, Oviedo, Asturias, Spain 33004
Filed Sep. 16, 1992, Ser. No. 945,493
Int. Cl.[5] B25C 1/00
U.S. Cl. 227—14 18 Claims



1. A punch plasterer for driving a fastener into a material and filling a resulting cavity with filler in response to an applied striking force, comprising:
(a) anvil means for receiving a striking force;
(b) a rod, disposed through a body and coupled to the anvil means, for transmitting the striking force, wherein the body defines a chamber;
(c) punch means, coupled to the rod and disposed within the chamber of the body, for transferring the striking force from the rod to a fastener, thereby driving the fastener into the material to create a cavity;
(d) first and second bias means, disposed within the chamber, wherein the first bias means returns the rod to its original position after the rod has been displaced in transmitting the striking force, and the second bias means imparts a secondary force on the punch means after the rod returns to its original position, thereby discharging a predetermined portion of filler into the cavity;
(e) filler storage means, coupled to the body, for storing the filler; and
(f) dispenser means, disposed within the filler storage means, for advancing a predetermined amount of the filler into the chamber for engagement by the punch means.

5,282,565
SOLDER BUMP INTERCONNECTION FORMED USING SPACED SOLDER DEPOSIT AND CONSUMABLE PATH
Cynthia M. Melton, Bolingbrook, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 29, 1992, Ser. No. 998,152
Int. Cl.[5] H05K 3/34
U.S. Cl. 228—180.22 12 Claims



1. A method for forming a solder bump interconnection for attaching an integrated circuit component to a printed circuit board, said method comprising
fabricating a printed circuit board comprising a solder-wettable terminal pad, a solder-nonwettable surface adjacent to the solder-wettable terminal pad, and a consumable path extending from the terminal pad and overlying the solder-nonwettable surface, said consumable path being formed of a solder-soluble metal,
applying a solder deposit onto the expendable runner spaced apart from the terminal pad,
superposing an integrated circuit component onto the circuit board, said integrated circuit component comprising a metal bump and being arranged relative to the printed circuit board such that the metal bump rests against the terminal pad,
heating the solder deposit to a temperature effective to melt the solder deposit and form molten solder in contact with the consumable path, whereupon the molten solder dissolves the consumable path and is drawn along the consumable path to the terminal pad, and
cooling to solidify the solder at the terminal pad, whereupon the solder bonds to the terminal pad and to the metal bump to form a solder bump interconnection.

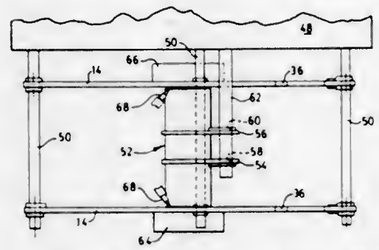
5,282,566
LIFT ARM ASSEMBLY PROCESS
Bryan G. Lammers, Washington, Ill., and Gilles Didier, Grenoble, France, assignors to Caterillar Inc., Peoria, Ill.
Filed Dec. 14, 1992, Ser. No. 990,138
Int. Cl.[5] B23K 31/00, 101/24; E02F 3/80
U.S. Cl. 228—161 9 Claims

1. A process for the manufacture of a lift arm assembly for a work vehicle, comprising the following operations:
cutting a plurality of contoured arm plates from a metal plate;
welding a plurality of boss plates to preselected surface areas of each arm plate;
clamping pairs of arm plates together with a plurality of spacers positioned between said arm plates at preselected locations;
positioning said clamped arm plates in a first holding fixture;
boring a plurality of aligned holes through the clamped arm plates and boss plates at each boss plate location;
separating and spacing the bored arm plates a preselected

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distance and positioning the arm plates in a second holding fixture in contoured alignment, said second holding fixture having a plurality of fixture pins, one of said pins passing through aligned holes in each pair of arm plates;

providing a crossmember assembly and positioning said crossmember assembly between said spaced arm plates;



clamping a heat absorbing mass to the outside surface of each arm plate at a location substantially opposite said crossmember assembly;

welding said crossmember assembly to said arm plates; and

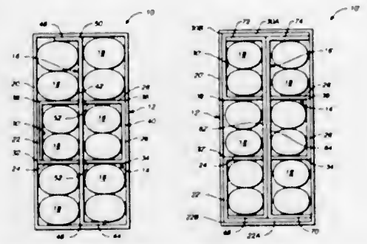
removing said lift arm assembly from said holding fixture.

5,282,567

TRANSPORT AND DISPLAY CARTON

Dane Dickson, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Nov. 3, 1992, Ser. No. 971,438
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.25 **4 Claims**



1. A transport and display carton, comprising

a first generally rectangular element forming a bottom panel for the carton,

a second elongated rectangular element integrally including five segments and four interconnecting generally right angle folds to form a rectangular box having one generally common dimension with the bottom panel and another dimension substantially smaller than a corresponding other dimension of the bottom panel, two end segments of the second element overlapping each other to form one side of the box, and

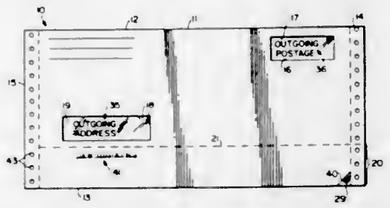
a third rectangular element having a first straight segment intersecting the box of the second element to divide it into two cells and extending substantially along the other dimension of the bottom panel with end segments integrally forming right angle folds whereby the second and third elements form six exposed cells on the bottom panel for receiving articles to be transported and displayed, the second and third elements being substantially the same height when arranged on the bottom panel with their right angle folds cooperating to provide structural rigidity for the carton, whereby waste material is minimized during formation of the carton and time necessary to assemble and fill the carton is minimized.

5,282,568

REUSEABLE MAILER MEETING POSTAL REQUIREMENTS

Jerry E. File, Mundelein Lake, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 21, 1992, Ser. No. 932,955
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—304 **7 Claims**



1. A reusable mailer type business form having an upper right hand corner, bottom left hand corner, and bottom, and useable in an initial mailing configuration addressed to an outgoing addressee, and in a reply mailing configuration addressed to a reply addressee, comprising:

a front opaque ply a first cutout in the upper right corner thereof, and a second cutout, and a removable strip at the bottom including a top perforation line, said second cutout being adjacent, and above, said top perforation line;

a rear opaque ply of substantially the same size as said front ply having a rear face and a front face, and a fold line adjacent the bottom substantially coincident with said top perforation line of said front ply, a flap portion defined between said fold line and the bottom, the flap portion having front and rear faces;

address indicia indicating the reply address for the reply addressee printed on said rear face of said flap portion of said rear ply, said address indicia upside down when viewing the rear opaque ply right-side up; and adhesive disposed on said front face of said rear ply flap portion; and

at least one insert ply of substantially the same size as said front and rear plies, said insert ply having outgoing address information thereon visible through said second cutout when said mailer is in said initial mailing configuration, and outgoing postage indicia visible through said first cutout when said mailer is in said initial mailing configuration.

5,282,569

RAILROAD CROSSING STRUCTURE

Minoru Kiyota, Osaka, Japan, assignor to Kiyota Railway Engineering Co., Ltd., Osaka, Japan

Filed Aug. 11, 1992, Ser. No. 927,970
Int. Cl.[5] E01C *9/04*
U.S. Cl. 238—8 **3 Claims**



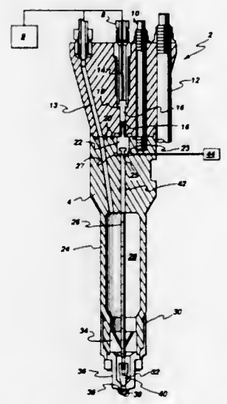
1. Railroad crossing structure comprising: a plurality of first paving plates interposed between rails of a railway track, each of said first paving plates comprising a rubber covering and a plurality of hollow steel pipes embedded in said covering and arranged to bear a predetermined load, each of said first paving plates having front and rear ends supported on the track, the ends of said paving plates also abutting one another, and each of said first paving plates having projections at opposite sides thereof engaged with recessed portions of said rails, respectively, the projections of said first paving plates having holes therein extending longitudinally in alignment with one another in a direction parallel to the rails at each of the sides of the first paving plates; pipes removably fitted to and coupling said first paving plates and extending through the aligned holes in said projections of the first paving plates at each of said sides of the paving plates, respectively; a plurality of second paving plates disposed outside of the rails, each of said second paving plates comprising a rubber covering and a plurality of hollow steel pipes embedded in said covering and arranged to bear a predetermined load, each of said second paving plates having front and rear ends supported on the track, the ends of said second paving plates also abutting one another, each of said second paving plates having a projection at one side thereof engaged with a recessed portion of one of the rails of the track, and the other side of each of said second paving plates remote from said one of the rails being supported on a road bed, the projections of said second paving plates having holes therein extending longitudinally in alignment with one another in a direction parallel to the rails at respective outer sides of each of the rails; and pipes removably fitted to and coupling said second paving plates and extending through the aligned holes in said projections of the second paving plates at each outer side of the rails, respectively.

5,282,570

ELECTRONICALLY CONTROLLED ACCUMULATOR INJECTOR

Roger N. Johnson, Hagaman, N.Y., and Bertrand D. Hsu, Erie, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed May 12, 1992, Ser. No. 881,964
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—5 **7 Claims**



4. A method for electronically controlling an accumulator injector having a fuel injector housing means, a servo valve means, a needle rod means having a needle tip, an accumulator chamber means, a nozzle means having a plenum and an orifice, a sensing means having an actuator piston, and an electronic drive means, wherein said method is comprised of the steps of:

charging a combustible fuel into said chamber means;

operating said electronic drive means at a predetermined time to cause said servo valve means to direct an oil at a predetermined pressure to an underside of said actuator piston;

lifting said needle tip;

sensing said needle tip lift by said sensing means;

flowing said combustible fuel into said nozzle plenum;

flowing said combustible fuel through said nozzle orifice;

relieving said predetermined pressure of said oil which is in contact with said underside of actuator piston;

lowering said needle tip against said nozzle and

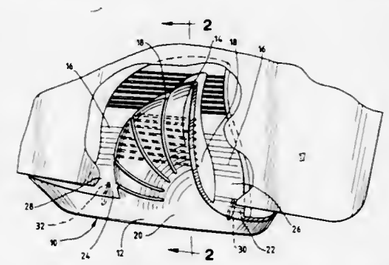
sensing said lowering of said needle tip by said sensing means.

5,282,57[illegible]

PLASTIC VISOR CLIP

Gerald G. Smith, Orland Park; Robert T. Wicks, Chicago, and Hari Matsuda, Evanston, all of Ill., assignors to Gold Eagle Co., Chicago, Ill.

Filed Jan. 11, 1993, Ser. No. 2,651
Int. Cl.[5] A61L *9/12*
U.S. Cl. 239—54 **15 Claims**



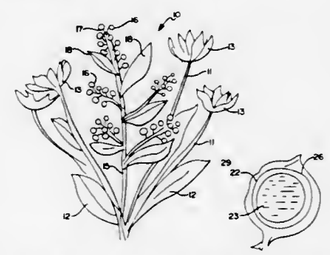
1. A plastic clip for automobile visors, said clip comprising a unitary piece of plastic material which defines a central plastic body plus a pair of plastic side projections integrally connected with said body, said side projections being positioned to grip an automobile visor between them by spring action for retention of the clip on said automobile visor, said plastic material of the side projections and body being impregnated with an aroma-creating material to provide an aroma which is continuously released from said plastic material into the air for a period of weeks when mounted on a visor.

5,282,572

FRAGRANCE EMITTING ARTIFICIAL FLOWER-TYPE ARTICLE

Edward A. Fuller, 3100 Erie Dr., Orchard Lake, Mich. 48326

Filed Aug. 10, 1992, Ser. No. 926,282
Int. Cl.[5] A61L *9/04*
U.S. Cl. 239—56 **5 Claims**



1. An artificial fragrance emitting flower article comprising:

a flower stem having an artificial plant-type formation secured thereon;

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said formation including a plurality of sealed, but breakable under manual pressure, capsules containing a scent producing substance;

with said capsules being wrapped within a liquid absorbing, paper wrapper which visually simulates a flower formation such as a bud or berry, and with the wrapper being made of a material which is wettable by, and which will absorb, the scent producing substance released from the capsule;

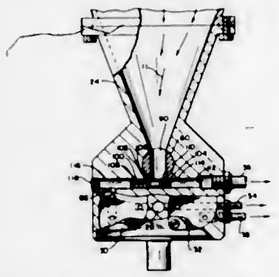
said capsules being manually breakable by a hand applied squeezing pressure so that its scent producing substance is released from the capsules to wet and to be absorbed by the wrapper material and, thereafter, evaporate from the wrapper to emit a fragrance into the surrounding area and whereby the capsules contained therein may be manually broken, one by one, at different times when desired by a user to produce a desired fragrance in the area of the article at said different times.

5,282,573

SPRAY COATING SYSTEM AND METHOD

James H. Reimer, Alvin, Tex., assignor to Plastic Flamecoat Systems, Inc., League City, Tex.

Filed Sep. 16, 1991, Ser. No. 760,866
Int. Cl.[5] B05B *1/24*
U.S. Cl. 239—85 **12 Claims**



9. A powder flame spray gun comprising:

(a) means for connecting the gun to a flow of pressurized conveying gas; and

(b) means disposed on the gun for selectively controlling the introduction of a thermoplastic powder into the flow of pressurized conveying gas at a point remote from the gun independently of the flow of pressurized conveying gas.

5,282,574

HYDRAULIC FLOW SHUTOFF DEVICE FOR A UNIT FUEL PUMP/INJECTOR

Roger D. Koch, Pekin, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 810,084, Dec. 19, 1991, abandoned. This application May 21, 1993, Ser. No. 65,697
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—90 **2 Claims**

1. A fuel injector, comprising:

a fuel chamber having first and second portions;

a fuel inlet connected to said fuel chamber;

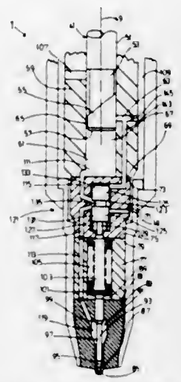
a means for pressurizing fuel in said fuel chamber to a preselected injection pressure;

an injection valve in communication with said fuel chamber and displaceable between an injection off and an injection on position;

means forming a cavity between said first and second portions of said fuel chamber;

means within said cavity for interrupting the flow of fuel between said first and second portions of said fuel chamber, said means being displaceable between flow-on and flow-off positions;

a pressure wave pathway connected between said fuel chamber and said cavity for transmitting a pressure wave from said fuel chamber to said fuel flow interrupting means to displace said fuel flow interrupting means from its flow-on position to its flow-off position; and



means for developing a hydraulic pressure wave in said fuel chamber;

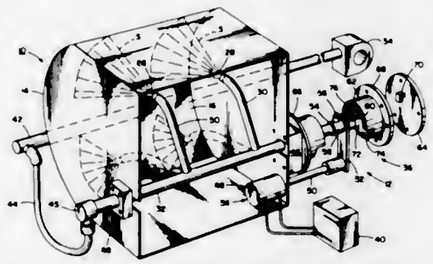
wherein said displacement of said fuel flow interrupting means from said flow-on to said flow-off position by the force of said hydraulic pressure wave does not cause a significant amount of fuel to flow into said second portion of said fuel chamber.

5,282,575

HIGH PRESSURE SCREEN SHOWER

Thomas G. Krulick, Sugarloaf, Pa.; Gregory Georgalas, Huntington, Conn.; John P. Skitka, Allentown, Pa., and Daniel R. Conoors, Trumbull, Conn., assignors to Dorr-Oliver Incorporated, Milford, Conn.

Filed Apr. 24, 1992, Ser. No. 873,453
Int. Cl.[5] B05B *3/18*
U.S. Cl. 239—255 **10 Claims**



6. A screening machine cleaning system comprising:

at least one spray nozzle;

a movement arm having the spray nozzle connected thereto;

means for supplying fluid to the spray nozzle;

means for reciprocatingly longitudinally moving the movement arm; and

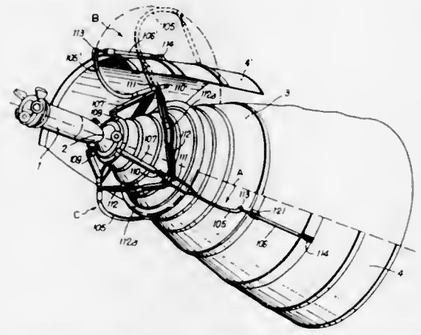
an indexing means for, at least partially, controlling axial rotation of the movement arm, the indexing means including a spindle with slots for a portion of the movement arm to move therein.

5,282,576

SELF-LOCKING AND REVERSIBLE MECHANISM FOR DEPLOYING THE DIVERGING PORTION OF A ROCKET ENGINE NOZZLE

Luc H. Chatenet, and Pierre Desclos, both of Vernon, France, assignors to Societe Europeenne De Propulsion, Suresnes, France

Filed May 28, 1992, Ser. No. 890,650
Claims priority, application France, May 30, 1991, 91 06547
Int. Cl.[5] F02K *9/97*
U.S. Cl. 239—265.33 **19 Claims**



1. A self-locking and reversible deployment mechanism for a deployable diverging portion of a nozzle extending a combustion chamber of a rocket engine, the mechanism comprising:

three identical operative assemblies mounted on a main frame fixed on one of said combustion chamber and a non-deployable portion of the nozzle, wherein, said operative assemblies are movable from a retracted state to an extended state and back to said retracted state in accordance with flight conditions, each operative assembly including:

a. a centering abutment mounted in the vicinity of the upstream edge of the deployable diverging portion of the nozzle, downstream from the main frame;

b. a link support mounted on said deployable portion downstream from said centering abutment;

c. a first link having a first zone and a second zone, said first zone being hinged to said main frame;

d. a second link having an upstream end hinged to said second zone of said first link and a downstream end hinged to said link support, said second link co-operating with said centering abutment at least in the deployed position; and

e. a linear actuator comprising a body secured and hinged to a non-deployable portion of the nozzle, moveable drive member whose free end is hinged to a third zone of said first link, and means for both retracting and extending said drive member in accordance with said flight conditions; and

wherein the first and second links of the actuator are disposed in such a manner as to ensure self-locking in the deployed position by at least reaching a dead point in which the following points are in alignment: the hinge axes on the main frame of the first zone of the first link; the upstream end of the second link articulated on the second zone of the first link; and the downstream end of the second link articulated on the link support mounted on the deployable portion of the nozzle; and

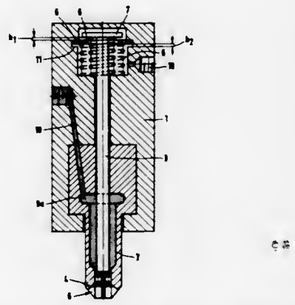
wherein the actuator is in a deactivated mode in each of the deployed and retracted final positions of the deployable portion.

5,282,577

CROSS SECTION CONTROLLED MULTI-JET INJECTION VALVE

Alfred Neitz, Wendelstein, Fed. Rep. of Germany, assignor to MAN Nutzfahrzeuge Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 30, 1991, Ser. No. 707,866
Claims priority, application Fed. Rep. of Germany, May 30, 1990, 4017391
Int. Cl.[5] B05B *1/32*; F02M *61/08*
U.S. Cl. 239—533.4 **6 Claims**



1. A cross-section controlled multi-jet injection valve for an air-distributor injection in air-compressing combustion engines, comprising:

a valve body having an axially and radially oriented first key means;

a valve needle that is axially movable within said valve body, wherein said valve needle opens said valve in a direction toward a combustion chamber, said valve needle having a sealing seat that corresponds to an injection cross-section for fuel, wherein said sealing seat is conically shaped and in the form of an axially and radially oriented key means that meshes with said key means of said valve body when the valve is closed; and

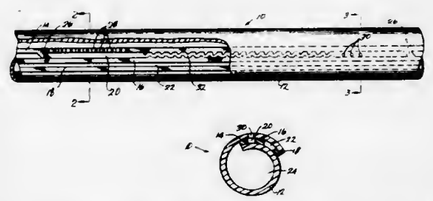
a control means for controlling the stroke of said valve needle being disposed at an end of said valve facing away from said combustion chamber.

5,282,578

SELF-PROTECTING IRRIGATION HOSE AND METHOD

Michael P. De Frank, Temecula, Calif., assignor to T-Systems International, Inc., San Diego, Calif.

Filed Feb. 8, 1993, Ser. No. 14,779
Int. Cl.[5] B05B *15/00*
U.S. Cl. 239—542 **3 Claims**



1. A method for protecting an irrigation hose comprising the steps of:

bending an elongated flat sheet of flexible water impervious material along its length to form a longitudinal seam between opposing longitudinal margins of the sheet,

sealing the longitudinal seam with first and second rib like

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adhesive beads extending longitudinally uninterrupted along the opposing margins of the sheet in spaced apart relationship to form a continuous chemical storage channel defined by the beads and the opposing margins and to form a water supply channel defined at least in part by the remainder of the sheet, the chemical storage channel being in fluid isolation from the water supply channel the material of the sheet and bead having interstices;

laying the sheet on or under the ground;

sealing the ends of the chemical storage channel so the only means of egress therefrom is through the interstices of the material of the sheet and the beads;

injecting a hose protecting chemical into the chemical storage channel; and

pressurizing the water supply channel.

5,282,579

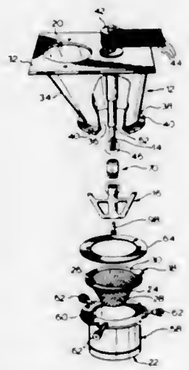
APPARATUS FOR ADJUSTING THE GAP OF A SIZE REDUCTION MACHINE

Kimberly J. Poser, 122 Edgehill Drive, Kitchener, Ontario, Canada N2G 3W6 , and Benjamin K. Murugesu, 47, Florene Ave., Kitchener, Ont., Canada N2A 2K7

Filed Jan. 25, 1993, Ser. No. 8,250

Int. Cl.[5] B02C *23/16, 25/00*

U.S. Cl. 241—69 **11 Claims**



1. A size reduction machine for use in process industries to continuously and precisely reduce the size of particles, while controlling fines, said machine comprising an impeller mounted on a rotatable shaft, a motor operably connected to said shaft for effecting rotation of said shaft, said shaft and impeller being mounted within a channel having an input and an output, a screen having a tapered apertured wall formed in a frusto-conical shape, with a wide end of said screen being open, a circular flange surrounding and extending outwardly of said wide end, said screen rigidly mounted within said channel so that any particles passing from said input to said output pass through said screen, said impeller being shaped and mounted so that a gap between an edge of said impeller and an interior of said screen remains substantially constant as said impeller rotates relative to the screen, said shaft having an impeller receiving end, said receiving end having a diameter for receiving said impeller terminating at a machined shoulder, said receiving end having an axially extending threaded bore and a bolt for releasably fastening said impeller to said shaft, wherein the improvement comprises

an extensible spacer means for positioning the impeller along said receiving end for determining said gap, said spacer means mounted on said end shaft portion between said shoulder and said impeller, said spacer means comprising a first collar having an external thread threadably engaging a second collar having an internal thread whereby an axial length of said spacer means is varied as said first collar is rotated relative to said second collar, said first collar having one end machined for sealing abutting with said shoulder and a shroud extending opposite said one end, said second collar having a base portion and a barrel portion extending therefrom, said barrel portion having said external thread, said shroud extending over said external thread to said base portion, said spacer means having a sealing means for sealing said shroud with said base portion whereby said internal thread and external thread are enclosed as said axial length is varied, substantially preventing particles from intruding into said spacer means as particles pass from the input to the output, and

said bolt engaging said threaded bore releasably fastening said spacer means between said impeller and said shoulder locking said first collar relative to said second collar.

5,282,580

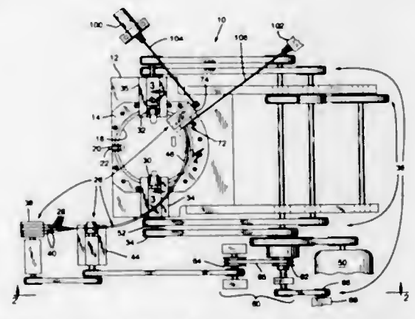
METHOD AND APPARATUS FOR WINDING RING-SHAPED ARTICLES

Bryan Kent, P.O. Box 444, Sisters, Oreg. 97759

Filed Sep. 20, 1991, Ser. No. 764,136

Int. Cl.[5] H01F *41/06*

U.S. Cl. 242—4 R **31 Claims**



1. An improved apparatus for winding a length of wire onto a toroidal core, the apparatus including:

channel means defining a generally circular radially inwardly open channel defining a core gap for accommodating the core so that wire residing in the channel passes through the core;

wire circulating means for circulating a coil of wire within the channel and through the core; and

wire supply means for introducing wire into the channel at a feed rate and for cutting the wire,

wherein the improvement comprises the combination of:

a) the wire circulating means having a first pair of circulating rollers and a second pair of circulating rollers, each circulating roller being driven at a circulation rate;

b) the first pair of circulating rollers being operable to retain a wire received therebetween with a first wire gripping force, the second pair of circulating rollers being operable to retain a wire received therebetween with a second wire gripping force less than the first wire gripping force;

c) the channel having narrowed portions adjacent the circulating roller pairs;

d) drive means operably connected to the wire supply means and the wire circulating means, the drive means for varying the ratio between the feed rate and the circulation rate;

e) the wire supply means further comprising a feed roller pair and a wire puller that draws wire from a source of wire at a first tension and introduces the wire to the feed roller pair at a second reduced wire tension;

f) the wire supply means comprising an exit port adjacent to the channel, the exit port being movable relative to the channel; and

g) the wire supply means further comprising an adjustable cutter to compensate for cutter wear.

5,282,581

YARN END LOOSENING APPARATUS HAVING ADJUSTABLE HEIGHT JET NOZZLES AND A CONTROLLABLE AIR SUPPLY FOR DIFFERENT HEIGHT YARN PACKAGES

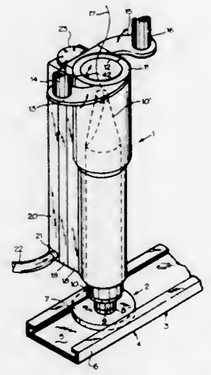
Dietmar Engelhardt; Heinz-Georg Wassenhoven, and Gregor Rüth, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 948,009

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131482

Int. Cl.[5] B65H *54/00, 67/06*

U.S. Cl. 242—35.6 E **15 Claims**



1. Yarn end loosening apparatus for performing yarn end loosening operations on yarn packages, each yarn package having a body of yarn formed on a tube and each body of yarn having an upper and lower portion, the yarn end loosening apparatus comprising:

a chamber for directing streams of air relative to a yarn package disposed within the chamber to effect loosening of a yarn end from the yarn package, the chamber having a top and bottom and an axis and being adapted to receive a yarn package therein for a yarn end loosening operation with the upper portion of the yarn package being more closely adjacent the top of the chamber than the lower portion of the yarn package; and

means for introducing air streams into the chamber to effect loosening of a yarn end of a yarn package, the air stream introducing means having at least one taller package jet nozzle for directing a stream of air into the chamber generally at the axial location of the upper portion of a first type of yarn package, at least, one shorter package jet nozzle spaced from the at least one taller package jet nozzle in the direction from the chamber top toward the chamber bottom for directing a stream of air into the chamber generally at the axial location of the upper portion of a second type of yarn package having its upper portion more closely adjacent its lower portion than the first type of yarn package, and means for selectively controlling the supply of air through the package jet nozzles such that only a selected one or more of said jet nozzles directs air into the chamber during a yarn end loosening operation.

5,282,582

YARN TRAVERSING APPARATUS

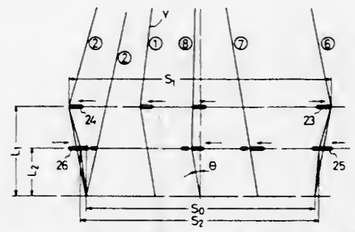
Takami Sugioka; Toshiyuki Ueno, and Yo Sakai, all of Matsuyama, Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Continuation of Ser. No. 514,189, Apr. 25, 1990, abandoned. This application Jun. 26, 1992, Ser. No. 905,195

Claims priority, application Japan, Apr. 28, 1989, 1-110133; Sep. 19, 1989, 1-242761

Int. Cl.[5] B65H *54/28*

U.S. Cl. 242—43 A **7 Claims**



2. A traversing apparatus for traversing a yarn across a predetermined traverse stroke so as to wind said yarn on a bobbin, comprising:

first traverse means for traversing said yarn;

second traverse means for traversing said yarn, disposed downstream by a predetermined distance from said first traverse means;

said yarn being alternately transferred between said first and second traverse means so as to traverse across said predetermined traverse stroke from one end thereof to another end thereof; and

said first and second traverse means simultaneously engaging with said yarn in regions adjacent to said ends of said traverse stroke in such a manner that a winding path of said yarn is deflected in opposite directions by said first and second traverse means.

5,282,583

AUTOMATIC ROLL-SHIFTING ROLL STAND

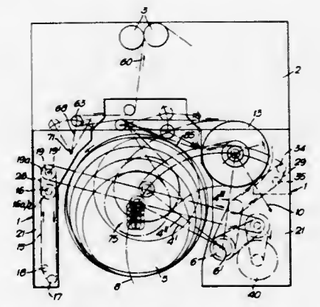
Hans Högberg, Åmål, Sweden, assignor to Amal Aktiebolag, Åmål, Sweden

Filed Oct. 26, 1992, Ser. No. 966,481

Claims priority, application Sweden, Nov. 1, 1991, 9103201

Int. Cl.[5] B65H *19/16*

U.S. Cl. 242—58 **8 Claims**



1. A roll stand for unwinding a material web to a production machine from an unwinding roll in the roll stand and for automatic shifting to a new roll, when the unwinding roll has been emptied, characterized by:

a) first brake and acceleration means for pressing against a

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periphery of the new roll in order to brake or accelerate the new roll;

b) second brake means for pressing against a periphery of the unwinding roll;

c) at least one means for receiving and supplying power from and to respectively said first brake and acceleration means and said second brake means;

d) first mechanical forcedly operated transmission means for interconnecting between said first brake and acceleration means and said second brake means in order to, before roll shifting, accelerate the new roll to the same circumferential speed as the unwinding roll;

e) second mechanical transmission means operatively positioned between said first brake and acceleration means and said second brake means, for interconnecting said first brake and acceleration means to said power receiving and supplying means when said first brake and acceleration means is pressed against the periphery of the new roll and for interconnecting said second brake means to said power receiving and supplying means when said second brake means is pressed against the periphery of the unwinding roll;

f) means for detecting tension in the material web which, while braked in the roll stand, is fed into the production machine; and

g) means for regulating the power transfer to and from said power receiving and supplying means in order to keep the tension in the material web constant based on a detection by said detection means, the material web being fed into the production machine, wherein

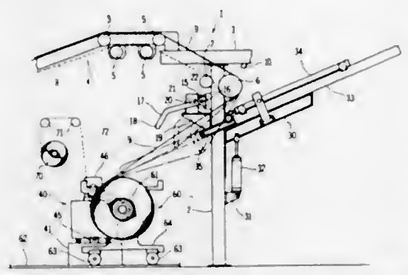
said second mechanical transmission means comprises an intermediate shaft, said intermediate shaft being interconnected to said first brake and acceleration means, to said second brake means, and correspondingly to said power receiving and supplying means when said first brake and acceleration means and said second brake means are pressing against the periphery of the new roll and the unwinding roll, respectively.

5,282,584

BELT-LIKE MATERIAL WINDING SYSTEM

Eiji Yano, Musashimurayama, Japan, assignor to Bridgestone Corporatinn, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,369
Claims priority, application Japan, Jun. 18, 1991, 3-171816
Int. Cl.[5] B65H *18/10*
U.S. Cl. 242—67.2 **2 Claims**



1. A winding system for winding up a long belt-like material onto a take-up shaft in which the belt-like material is fed in a continuous manner by a conveyance device and a front end of the belt-like material hangs down from the conveyance device to be fed to the take-up shaft from above for winding up, including:

guide means for guiding front and rear ends of said belt-like material each into a predetermined position on said take-up shaft, said guide means comprising belt conveyor means mounted for movement in a vertical direction and for reciprocating movement transverse to said vertical direction toward and away from said take-up shaft;

a dancer roller for applying a predetermined tension to said belt-like material being wound up onto said take-up shaft at a position between said take-up shaft and said conveyance device;

a winding drive shaft mounted for movement into and out of driving engagement with said take-up shaft;

rail means extending in a direction substantially orthogonal to said winding drive shaft and extending in opposite directions on both sides of the winding drive shaft;

platform cars each provided with said take-up shaft and moveable along said rail means from one side of said winding shaft to another side; and

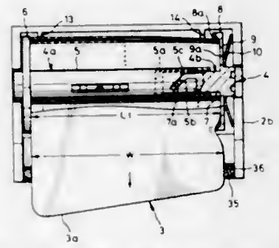
drive means for advancing and retracting said winding drive shaft in a direction orthogonal to said rail means for engagement and disengagement of said winding drive shaft with said take-up shaft on each of said platform cars upon movement of said cars sequentially along said rail means.

5,282,585

PHOTOGRAPHIC FILM CASSETTE

Tetsuya Takatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 9, 1992, Ser. No. 866,811
Claims priority, application Japan, Apr. 9, 1991, 3-103929
Int. Cl.[5] G03B *17/26*
U.S. Cl. 242—71.1 **29 Claims**



1. A photographic film cassette having a spool for winding photographic film in a roll between first and second flanges, and a cassette shell for containing said spool rotatably in a roll chamber defined therein, a leader of said film being separated by a separator claw from said roll of said film in rotation with said spool while said spool rotates in an unwinding direction, said leader thereby being caused to advance to an outside of said cassette shell through a film passage mouth defined in said cassette shell, said cassette comprising:

a circumferential lip formed on a periphery of said first flange and projecting toward said roll;

an inclined face formed on said lip so as to come into contact with a lateral edge of said film along at least an outer turn of said roll;

a first annular ridge formed in said roll chamber so as to come into contact with a cylindrical surface of said roll in order to maintain a diameter of said roll which is one of equal to and less than a diameter of an outer circumference of said inclined lip face;

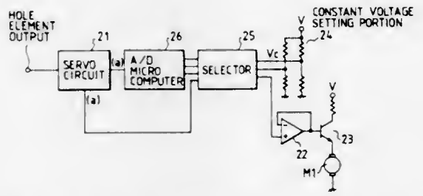
a length adjusting device coupled to said spool so as to change said spool from a lengthened state to a shortened state when said spool is rotated in said unwinding direction, and so as to change said spool from said shortened state to said lengthened state when said spool is rotated in a wind-up direction which is opposite to said unwinding direction, in said shortened state an interval L_1 between a middle face of a central portion of said first flange and an inside face of said second flange being one of equal to or less than a standard width W of said film so as to clamp lateral sides of said roll between said first and second flanges, in said lengthened state an interval L_2 between outer circumference of said lip and said inside face of said second flange is greater than said standard width W in order to define a gap between said lip and a corresponding one of said lateral sides and to release said lateral sides from being clamped by said flanges.

5,282,586

APPARATUS FOR CONTROLLING TAPE TENSION IN A MAGNETIC TAPE DEVICE BY CONTROLLING A REVERSE TORQUE MOTOR

Masahito Suzuki, and Akiyoshi Sarudate, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1992, Ser. No. 816,688
Claims priority, application Japan, Jan. 11, 1991, 3-13938
Int. Cl.[5] G11B *15/43;* **B65H** *59/38*
U.S. Cl. 242—190 **8 Claims**



1. A tension control apparatus for a tape player, the tape player including a feeding-side spindle driven by a reverse torque motor, a winding-side spindle driven by a winding motor, a voltage source and a switch for connecting the voltage source to the winding motor and the reverse torque motor in a play mode and for disconnecting the voltage source in a stop mode, the tape player including a head for reading from or writing to a tape trained between the feeding-side spindle and the winding-side spindle, the tension control apparatus comprising:

a tape tensioner movably connected to the tape player and biased against the tape, the tensioner being positioned relative to the tape player in response to a tension in the tape;

a sensor fixedly connected to the tape player for detecting the position of the tensioner and for generating a sensor signal corresponding to the position of the tensioner;

a servo circuit for receiving the sensor signal and connected to the voltage source through the switch, the servo circuit generating a load control voltage in response to the sensor signal;

a constant voltage circuit, connected to the voltage source through the switch, for generating a constant load voltage;

means, connected to the servo circuit, for generating a control signal when variations of the load control voltage are above a predetermined minimum; and

a selector circuit for receiving the load control voltage and the constant load voltage, the selector circuit being connected to the control signal generating means, the selector circuit transmitting the constant load voltage to the reverse torque motor when the control signal generating means transmits the control signal, and transmitting the load control voltage to the reverse torque motor at all other times.

5,282,587

AIRCRAFT WING COVER AND METHOD OF ATTACHMENT

Michael Rodyniuk, and Keevin Berg, both of Calgary, Canada, assignors to Air Cover Corporation, Calgary, Canada

Filed Dec. 2, 1992, Ser. No. 984,995
Int. Cl.[5] B65D *85/68*
U.S. Cl. 244—1 R **5 Claims**



1. A method for covering an aircraft wing, having a root area and upper surface, with a protective wing-shaped panel, having root and tip portions, a root edge and leading and trailing edges, said panel having pairs of associated strap members extending from its lead and trailing edges at spaced points along its length, said wing being attached at its root and extending laterally outwards from the side of an aircraft fuselage, the method comprising the steps of:

(a) preparing the panel by rolling the tip portion towards the root portion to form a single roll having a longitudinal axis and bottom portion with the root portion free;

(b) placing the roll up onto the root area of the wing's upper surface, the roll's longitudinal axis being oriented transverse to the lateral extension of the wing, the roll further being oriented such that the root portion of the panel projects from the bottom portion of the roll and faces the wing root whereby the roll may be directly unrolled along the wing;

(c) securing the root portion of the panel to the fuselage;

(d) securing the root portion of the panel to the wing by connecting a first pair of associated strap members, respectively attached to the leading and trailing edges of the panel and extending beneath the wing, and cinching the panel leading and trailing edges together using the strap members to form-fit the root portion to the wing;

(e) unrolling the panel away from the wing root and exposing a second pair of associated strap members, spaced from the first pair, and an unrolled panel portion;

(f) securing the unrolled panel portion to the wing by connecting and cinching the second pair of associated strap members to form-fit the unrolled panel portion to the wing; and

(g) repeating steps (e) and (f) of unrolling and securing the unrolled panel portions until the panel has been completely rolled out and tightened along its length to the wing.

5,282,588

GAPPED FLAP FOR A MISSILE

Henry August, Chatsworth, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 22, 1992, Ser. No. 903,249
Int. Cl.[5] F42B *10/14, 10/62*
U.S. Cl. 244—3.3 **17 Claims**

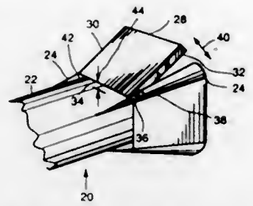
1. A missile operable over a range of flight speeds and altitudes, comprising:

a missile body; and

a flap movable to an extended position wherein the flap is angled outwardly from the missile body, the forward edge of the flap being displaced outwardly from the body of the

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missile by a distance no less than a maximum boundary layer thickness of the body of the missile experienced for



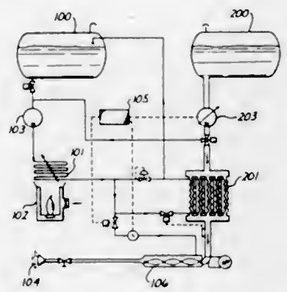
the range of flight speeds and altitudes over which the missile is operable, when the flap is extended outwardly.

5,282,589
TERRAIN CUEING
Robert G. Branigan, Springfield; William M. Decker, Roanoke; J. Brian Gillespie, Woodbridge, all of Va.; Jack L. Kimberly, Shippensburg, Pa.; Robert S. Robde, Alexandria, Va.; Richard H. Vollmerhausen, Arlington, Va., and Edwin W. Wentworth, Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 23, 1992, Ser. No. 872,376
Int. Cl.[5] **B64F** *1/20*; **B64D** *47/02*; **G01S** *13/04*; **G08G** *5/04*
U.S. Cl. 244—114 R **15 Claims**

1. In combination with a low flying, terrain following aircraft piloted by a humanoid equipped with electronic infrared viewing equipment, the improvement comprising:

at least a pair of closely spaced infrared laser type aiming lights emitting extremely narrow beams of radiation attached to substantially the same point on the outer surface of said aircraft, a first of said aiming lights arranged with its beam substantially parallel to the flight path of said aircraft and the beam from said second light being separated by an angle of less than ten degrees with the beam of said first light, whereby said beams diverge to illuminate two close but noticeably separated cue spots on said terrain at any altitude.

5,282,590
METHOD AND APPARATUS FOR HEATING AND DELIVERING DEICING FLUIDS
Eugene B. Zwick, 16841 Edgewater La., Huntington Beach, Calif. 92649
Division of Ser. No. 635,259, Dec. 28, 1990. This application Sep. 24, 1992, Ser. No. 950,208
Int. Cl.[5] **D64D** *15/00*
U.S. Cl. 244—134 C **5 Claims**



1. A method of rapidly heating fluid from an ambient storage temperature to a delivery temperature and delivering a continuous flow of said fluid at said delivery temperature comprising the steps of:

storing a quantity of said fluid in a storage tank, said tank having outlet means and a heating area within said tank adjacent said outlet means, said outlet means having a closed position wherein fluid remains stationary in said tank, and further having an open position wherein said fluid flows out of said tank through said outlet means;

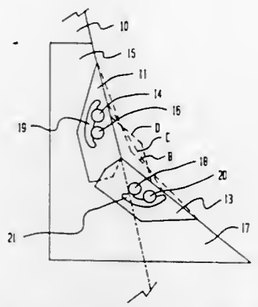
creating a predetermined dynamic temperature pattern within said fluid when said outlet means is in said closed position, said predetermined dynamic temperature pattern being defined by the fluid in a delivery area in said tank closest to said outlet means, said fluid in said delivery area being heated to said delivery temperature, the fluid in a stored area in said tank farthest from said outlet means being at said ambient storage temperature, and the fluid between said delivery area and said stored area approaching said delivery temperature according to its relative distance from said outlet means;

creating a predetermined steady state temperature pattern within said fluid when said outlet means are in said open position, said predetermined steady state temperature pattern being defined by the fluid flowing through said outlet means being at said delivery temperature, the fluid flowing through said delivery area being heated to said delivery temperature, and the fluid flowing from said stored area to said delivery area being heated to approach said delivery temperature according to its relative distance from said outlet means.

5,282,591
ACTIVE VORTEX CONTROL FOR A HIGH PERFORMANCE WING
Marvin M. Walters, Lansdale, and Steven B. Kern, Holland, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 21, 1992, Ser. No. 994,229
Int. Cl.[5] **B64C** *23/06*
U.S. Cl. 244—199 **10 Claims**

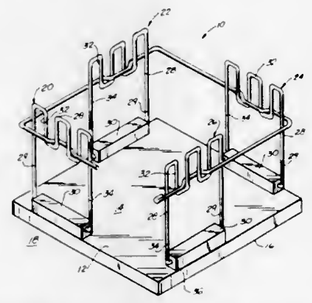
1. An active vortex control system for a high performance aircraft having a fuselage, a strake, and a main wing, comprising:

a deployable airfoil occupying the angular space between the strake and the main wing at their junction when deployed, said airfoil comprising a pair of panels which are selectively movable between stowed and deployed positions; and



said panels withdrawn completely within said strake and said wing when in the stowed position, and said panels extending forward from said strake and said wing providing a leading edge airfoil surface when in the deployed position.

5,282,592
PORTABLE AND COLLAPSIBLE VESSEL HOLDER
Mark Ma, 1415 Martens Dr., Hammond, La. 70401
Filed Nov. 20, 1992, Ser. No. 979,605
Int. Cl.[5] **A47G** *23/02*
U.S. Cl. 248—150 **3 Claims**



1. An apparatus for supporting a vessel such as a cup or the like, comprising:

a) a substantially flat base portion;

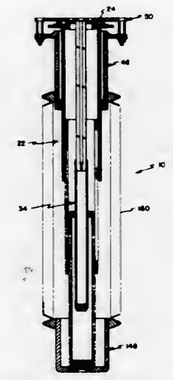
b) a plurality of wire wall members movable from a first horizontal position on the base portion, to a second upright position for defining a vessel storage space therein;

c) an upper border member slidably engagable around the four side members for defining a means to maintain the four side members in the upright position when a vessel is placed therein; and

d) means, along at least one of the side members for defining a space for accommodating a handle of a vessel placed therein,

wherein each of the side members comprises a substantially continuous wire member forming a plurality of loops on its upper region and hingably movable from a down to an up position.

5,282,593
ADJUSTABLE LEG
Duane Fast, Valley City, N. Dak., assignor to Tri W-G, Inc., Valley City, N. Dak.
Filed Jun. 5, 1992, Ser. No. 894,443
Int. Cl.[5] **F16M** *11/00*; **A47B** *9/00*
U.S. Cl. 248—188.4 **4 Claims**



1. An adjustable leg for supporting a platform above a floor, comprising:

a hollow first screw with first internal threads;

means for rotatingly supporting said first screw with respect to said platform;

means for rotating said first screw;

a hollow second screw with second internal and first external threads, said first internal and first external threads mating with one another;

a hollow third screw with second external threads, said second internal and second external threads mating with one another;

a bar fixedly attached to said platform, said bar extending into said first screw;

means rotationally fixed with respect to said third screw for non-rotatably and telescopingly receiving said bar;

wherein said bar and said bar receiving means hold said third screw from rotating and allow said third screw to non-rotatably provide support for said platform with respect to said floor.

5,282,594
LASER SIGHT MOUNTING DEVICE
Chao C. Huang, 10F, No. 185, Yung Chi Rd., Taipei, Taiwan
Filed May 20, 1993, Ser. No. 63,827
Int. Cl.[5] **A47B** *96/06*
U.S. Cl. 248—205.1 **2 Claims**

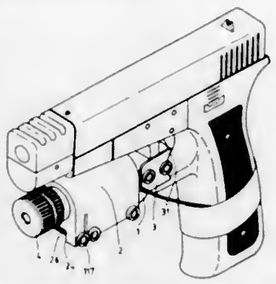
1. A laser sight mounting device comprising:

a mount for fastening to the trigger guard of a gun, said mount comprising a L-shaped frame **11**, an arched block spaced from said L-shaped frame by a gap, and a connecting frame connected between said arched block and said L-shaped frame at one side, said L-shaped frame comprising a longer horizontal wall and a shorter vertical wall extended from said longer horizontal wall at one end at right angles, said longer horizontal wall having transverse screw holes through the width, said shorter vertical wall having two vertically spaced longitudinal screw holes through the width and a transverse screw hole through the thickness, said arched block having a transverse screw hole at one side;

a laser sight holder fastened to said mount for holding a laser sight, said laser sight holder comprising a hollow cylinder having a split front end controlled by an adjusting screw

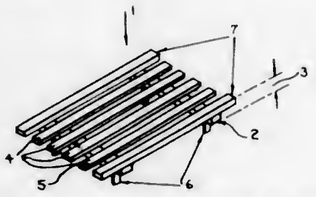
VOL 1159 ISS 1 FE 1 1994 UMI

for mounting or dismounting a laser sight, a channel along the length of said hollow cylinder, which receive said longer horizontal wall of said mount, and spaced pairs of screw holes respectively and bilaterally connected to the transverse screw holes on said longer horizontal wall of said mount by screws; and



a connecting plate connected between said arched block and said L-shaped frame to fasten said mount to the trigger guard of the gun, said connecting plate having two screw holes respectively connected to the transverse screw hole on said arched block and the transverse screw hole on said shorter vertical wall of said L-shaped frame by screws.

5,282,595
ARTICLE SUPPORT APPARATUS
Carl J. Conforti, P.O. Box 6315, Fall River, Mass. 02724
Filed Sep. 28, 1992, Ser. No. 952,343
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—214 **7 Claims**



1. Article support apparatus comprising an upper body portion having an expanded article support surface defined by a selected outer periphery and a bottom portion, rail engaging means disposed inwardly of the outer periphery and depending downwardly from the bottom portion and being adapted to closely engage at least two opposed sides of a rail member, a series of apertures formed in a row in the bottom portion, the rail engaging means comprising a pair of spaced apart, aligned elements, at least one of the elements having at an end thereof a spring arm receivable in an aperture of the row and a locking arm received in another aperture of the row upon compression of the spring arm.

5,282,596
BIRD HOUSING MOUNTING APPARATUS AND METHOD
Lloyd N. White, 5134 Heatherbloom, Houston, Tex. 77045
Continuation-in-part of Ser. No. 713,768, Jnl. 22, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,599
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—219.2 **18 Claims**

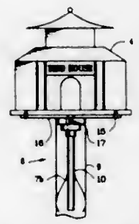
1. An apparatus for removably mounting a bird housing, comprising:

a substantially vertically oriented tubular member, said tubular member having a lower end and a distal end and having an internal wall, said lower end being fixed with respect to the earth;

a base plate having an outer dimension larger than the inside diameter of said vertically oriented tubular member, said base plate including means for securing said base plate to said bird housing;

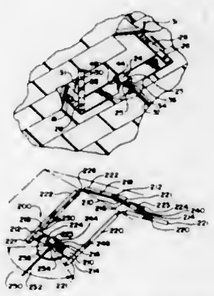
a substantially straight rod secured to said base plate, said rod extending from said base plate into said distal end of said vertically oriented tubular member, said straight rod having an upper end and a lower end;

an upper centralizer affixed to said upper end of said straight rod for securing said upper end of said straight rod within said tubular member; and



a pre-adjusted lower tension element affixed to said lower end of said straight rod for securing said straight rod within said tubular member, said tension element applying a pre-adjusted tension against said internal wall of said vertically oriented tubular member, said pre-adjusted tension being controlled to prevent movement of said straight rod with respect to said vertically oriented tubular member until a vertically upward force is applied to said straight rod which has a magnitude approximately in the range of from 2 to 15 pounds over the weight of the assembly comprising said bird housing, said base plate, said straight rod, said upper centralizing disc and said lower tension element.

5,282,597
SAFETY LINE ANCHORING DEVICE
Michael A. Babcock, 3124 Dakota Ave. South, St. Louis Park, Minn. 55416, assignor to Michael A. Babcock, St. Louis Park, Minn.
Filed Aug. 4, 1992, Ser. No. 925,567
Int. Cl.[5] E04G *3/08*
U.S. Cl. 248—237 **51 Claims**



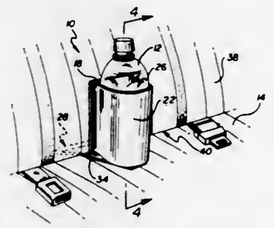
1. A safety line anchoring device for securing a safety line to a truss roof of any pitch, said anchoring device comprising:

a main bar having an upper surface and a lower surface, two opposite sides, two opposite ends and a central portion;

a plurality of fastening straps having proximal and distal ends, each of said fastening straps being attached to and extending substantially perpendicularly from the main bar, each fastening strap having a plurality of nail holes associated therewith; and

at least one safety line anchoring means permanently fixed to the main bar to which a safety line may be removably secured; whereby the lower surface of the main bar is placed on a roof and the fastening straps are fastened to the roof by nails which are driven through the nail holes to affix the safety line anchoring device to the roof.

5,282,598
CONTAINER HOLDER
Barry N. Greene, P.O. Box 10541, Beverly Hills, Calif. 90213
Filed Jul. 21, 1992, Ser. No. 917,584
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **19 Claims**



1. A container holder for holding a beverage container and for use with a seat, said seat having a seat cushion and a back rest, said container holder comprising:

an elongated member having securing means at one end thereof;

a support portion rotatably attached to said elongated member; and

a sheet of flexible material attached to said support portion, said sheet adapted (a) to be folded and moved toward said support portion into a generally compact configuration, and (b) to be unfolded to form a receptacle space capable of holding said beverage container, whereby in use, said elongated member is adapted to be removably inserted between said seat cushion and said back rest in order to position said support portion and said beverage container, when placed in said receptacle space, in a generally upward and generally perpendicular direction relative to said seat said securing means for holding said elongated member between said seat cushion and said back rest, and when not in use said elongated member and said support portion are adapted to be rotated toward each other in order to provide a generally overall compact configuration for said container holder when said sheet of flexible material is folded into said generally compact configuration.

5,282,599
PORTABLE URINAL AND RECEPTACLE FOR PORTABLE URINAL
Josephine J. Arpaia, and Paschal J. Arpaia, both of 1500 E. Whitney Rd., Fairport, N.Y. 14450
Filed Dec. 2, 1992, Ser. No. 984,520
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **1 Claim**

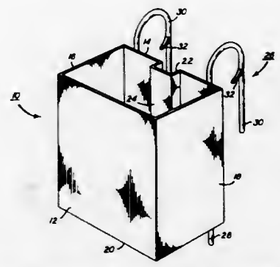
1. A receptacle for a portable urinal, said receptacle including:

a front wall, and a back wall, connected by walls;

said back wall including a central vertical exteriorly concave recess along the height of said wall;

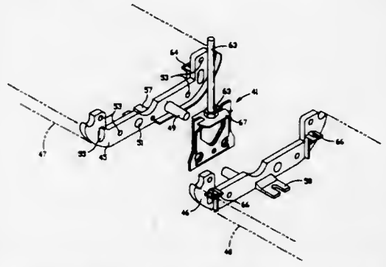
a pair of support hooks, each hook including a longer arm fixed to and extending above and below said back wall, and a shorter arm attached to said longer arm above said receptacle and being adapted to extend over and hang upon a horizontal bar of a bed rail;

said shorter arm further including a tab extending inwardly toward said longer arm to partially encircle a horizontal bar of a bed rail;



whereby said receptacle is adapted to (a) hang on a horizontal bar of a bed rail, with the lower ends of said longer arms resting against another horizontal bar of said bed rail for stability, or (b) hang on a horizontal bar of a bed rail, with said vertical recess engaged by a vertical bar of said bed rail for stability.

5,282,600
UNIVERSAL QUICK CONNECT HANGER FOR SUSPENDING A LIGHTING SYSTEM
Yoram Weiss, Oakland, and Robert A. Steinbeck, Castro Valley, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Filed Sep. 30, 1991, Ser. No. 771,008
Int. Cl.[5] F21V *21/00*
U.S. Cl. 248—343 **11 Claims**



1. A universal quick connect hanger assembly for suspending a lighting system from an overhead structure by means of suspension media comprising

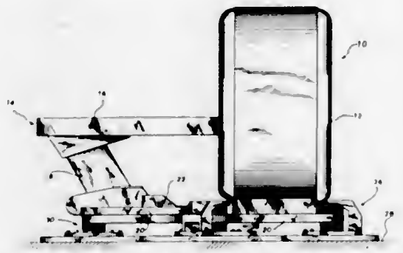
a suspension washer having a perimeter, generally radial locking slots formed in said perimeter, and a center opening formed to receive suspension media of the type used to suspend said lighting system such that said washer will be retained on the end of the suspension media, and

a hanger bracket for said suspension washer including means for anchoring said hanger bracket to an element of a lighting system to be suspended,

said hanger bracket having upwardly extending substantially parallel retainer arms spaced apart and formed to slidably engage in the locking slots of said suspension washer when said washer is placed between said retainer arms, said retainer arms having opposed inwardly projecting stops which, under the weight of a suspended lighting system, contacts and seat on said suspension washer when said washer is engaged on said retainer arms.

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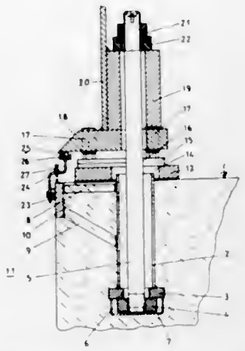
5,282,601
ISOLATION SYSTEM FOR MEDICAL IMAGING EQUIPMENT
Scott T. Mansell, Waterford, and Paitoon Nimityongskul, Mukwonago, both of Wis., assignors to General Electric Company, Milwaukee, Wis.
Filed Jun. 20, 1991, Ser. No. 717,961
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—638 **1 Claim**



1. An isolation system for a mobile medical imaging system supported on a support plate comprising:
a C-support having first and second inwardly facing surfaces for positioning the support plate therebetween;
a first and second isolator each having outwardly opposed surfaces and each for fitting respectively above and below the support plate and between the first and second inwardly facing surfaces of the C-support, each isolator having one face abutting the support plate and one face abutting the respective first and second inwardly facing surface of the C-support;
wherein the isolator comprises an elastomeric tube defining an air-tight volume incorporating a compressible fluid, the axis of the elastomeric tube being substantially normal to the inwardly facing surfaces of the C-support;
wherein the isolator may be compressed along the axis of the elastomeric tube and wherein a first end of the elastomeric tube is closed by an elastomeric diaphragm having an outwardly extending boss forming one outwardly opposing surface and spaced a first distance away from the first end of the elastomeric tube when the isolator is uncompressed and spaced a second distance less than the first distance away from the first end of the elastomeric tube when the isolator is compressed; and
including a non-compressible spacer ring fitting around the boss determining the second distance.

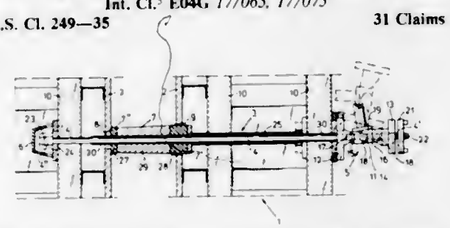
5,282,602
ARRANGEMENT FOR FASTENING A MACHINE PART TO A FOUNDATION
Hans Zimmermann, Mönchaltorf, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland
Filed Sep. 18, 1992, Ser. No. 946,590
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139387
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—680 **9 Claims**

1. An arrangement for fastening a machine part on a foundation by using vertical anchor studs, wherein, cast in the foundation there is a multiplicity of vertical anchor tubes which are connected together, at least in groups, by means of an auxiliary frame, wherein a ring or a perforated plate is provided at a lower end of each anchor tube, an inner diameter of said ring or perforated plate being greater than an outer diameter of the anchor stud and an outer diameter of said ring or perforated plate being greater than or at least equal to an outer diameter of the anchor tube, wherein a space is recessed in the foundation underneath said ring with an essentially square outline and a threaded nut with an essentially square external contour and a height smaller than a clear height of said space is laid with clearance into said space, a lower end of the anchor stud being able to be screwed into said threaded nut;



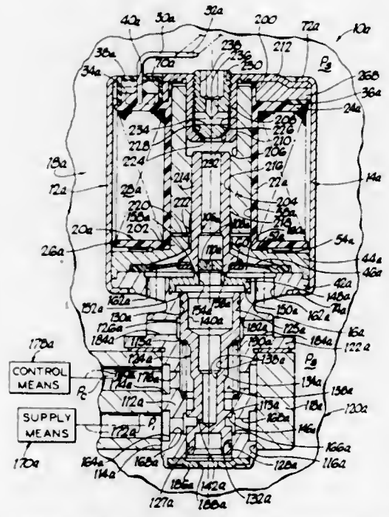
wherein the auxiliary frame comprises connecting straps extending transverse to a machine longitudinal center line, and longitudinal rails extending parallel to the machine longitudinal center line.

5,282,603
CLAMPING AND FIXING DEVICE, FORM TIE AND FORM
Leif B. Taraldsson, Box 64, S-610 70 Vagnhärad, Sweden
Filed Jun. 25, 1991, Ser. No. 719,309
Claims priority, application Sweden, Jan. 11, 1991, 9100094
Int. Cl.[5] E04G *17/065, 17/075*
U.S. Cl. 249—35 **31 Claims**



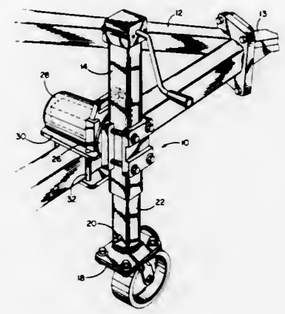
5. An apparatus for molding concrete panel in a concrete form, said form comprising two opposing form bottoms provided with two spaced-apart opposed form boards with holes therein in alignment, maintained in a desired position, and wherein concrete is cast between and against said form boards and wherein said form includes at least one form tie comprising: an elongated tension-element, with two ends, extending between, and through said aligned holes in, said opposing spaced-apart form boards; two tension-element securing elements disposed on said tension-element ends externally of the form bottoms; and a sealing element, through which the tension element projects, located between the spaced-apart form boards, said sealing element being adapted to abut and seal against said two opposing form boards adjacent said aligned holes in said two form boards; and wherein a first of said securing element (5) has a securing component adapted to be fastened on a first end of said tension element, and also includes an eccentric locking device having an expandable eccentric means (11) to create tension in said tension elements, which eccentric means, in an expanded state, wherein it is locked and provides a predetermined distance between the form boards (2) wherein tension forces in the tension element oppose compression forces on the form bottoms resulting from poured concrete into the concrete form.

5,282,604
SOLENOID OPERATED PRESSURE REGULATING VALVE
Richard A. Wade, Royal Oak, Mich., assignor to Coltec Industries Inc., New York, N.Y.
Division of Ser. No. 707,657, May 30, 1991, Pat. No. 5,184,644. This application Nov. 4, 1992, Ser. No. 971,894
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.17 **8 Claims**



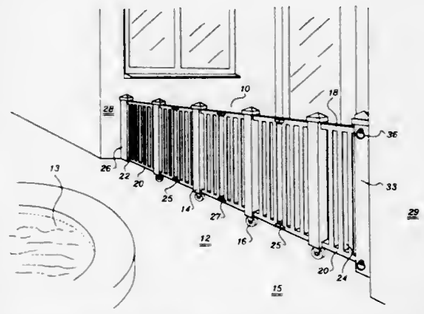
1. A solenoid operated fluid valving arrangement, comprising electrical field coil means, a relatively stationary discharge port for the flow therethrough of said fluid, a valve seat generally circumscribing said discharge port, pole piece means effective for carrying the magnetic flux generated by said electrical field coil means whenever said electrical field coil means is electrically energized, said pole piece means comprising a pole piece end face portion, armature means at least partly situated generally within said field coil means, said armature means comprising an armature end face portion, wherein said armature means is situated with respect to said pole piece means as to thereby cause said armature end face portion to be juxtaposed to and spaced from said pole piece end face portion a preselected distance, and further comprising a one-piece valve member continuously fixedly carried by said armature means so as to at times operatively engage said valve seat, wherein said one-piece valve member is press-fitted into said armature means as to thereby move in unison with said armature means, wherein said one-piece valve member is press-fitted into said armature means a distance which will cause said armature end face portion to be spaced said preselected distance from said pole piece end face portion when said one-piece valve member is operatively engaged with said valve seat, wherein said one-piece valve member comprises a longitudinally extending generally cylindrical valve body portion, wherein said press-fitted relationship between said one-piece valve member and said armature means is achieved by said longitudinally extending generally cylindrical valve body portion being press-fitted into said armature means, and wherein said longitudinally extending generally cylindrical valve body portion comprises fluid-flow passage means formed therethrough as to extend in generally the same direction as said longitudinally extending generally cylindrical valve body portion extends.

5,282,605
ROTATABLE TRAILER JACK MECHANISM
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Jan. 14, 1993, Ser. No. 4,290
Int. Cl.[5] B60S *9/02*
U.S. Cl. 254—420 **3 Claims**



1. A support for a trailer jack mountable to a trailer frame adjacent to its hitch end comprising:
outer support means attached to the trailer frame;
inner rotatable support means rotatably received and axially restrained within said outer support means;
jack means fixedly attached to said inner rotatable support means; and latching means disposed between said inner and outer support means; said latch means being movable between open and closed positions whereby the rotation of said inner support means defines a first jack upright position and a second jack tilted position, said outer support means comprise tubular means having a central bore attached to the trailer frame, said inner support means comprises rectangular sleeve means attached to said jack means and rotatable within said tubular means central bore, said latching means comprises a slidable U-shaped member movably disposed between said inner and said outer support means, and said slidable U-shaped member is captively mounted.

5,282,606
RECONFIGURABLE SAFETY FENCE
Arthur V. Praiss, 1940 N.W. 18th St., Pompano Beach, Fla. 33069
Filed Dec. 17, 1992, Ser. No. 990,953
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—26 **2 Claims**



1. A reconfigurable safety fence system for disposition rela-

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tive to a fixed structure to define a security perimeter proximal to a hazardous area, the system comprising:

a plurality of panels, each comprising a central vertical post having a swivel-mounted wheel at a lower base thereof and, essentially symmetrically about an axis defined by said central post, respective upper and lower horizontal, and left and right vertical, perimeters for each of said plurality of panels, each panel including vertical picket elements between said horizontal perimeters, each of said vertical perimeters including longitudinal hinge means for rotational movement and securement of each panel relative to an opposing vertical perimeter of that panel adjacent thereto, about a vertical axis defined by each of said hinge means, in which a first vertical perimeter of a first of said panels is secured to said fixed structure.

5,282,607

STRIPPING APPARATUS OF METAL FILM FROM METALLIZED PLASTIC FILM

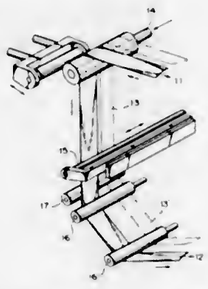
Masao Kaito, Kynto, Japan, assignor to Kaido Manufacturing Co., Ltd., Kyoto, Japan

Filed Feb. 10, 1993, Ser. No. 16,080

Claims priority, application Japan, Feb. 21, 1992, 4-020229[U]; Mar. 6, 1992, 4-024670[U]

Int. Cl.[5] C22B *7/04*

U.S. Cl. 266—205 **6 Claims**



1. An apparatus for stripping a metal film from a metallized plastic film comprising:

a voltage supplying roller for supplying one of a cathode voltage and an anode voltage;

a voltage supplying rod for supplying the other of an anode voltage and a cathode voltage, said voltage supplying rod spaced from said voltage supplying roller in a direction of movement of said metallized plastic film;

a pressing roller for urging said metallized plastic film into contact with at least one of said voltage supplying roller and said voltage supplying rod; and

means for moving said voltage supplying rod in an asial direction of said voltage supplying rod such that a clean surface of said rod can be presented and adverse effects resulting from accumulation of remnants upon said voltage supplying rod are avoided.

5,282,608

INDUCTION HEATED METAL POURING APPARATUS

William J. Duca, Boardman, Ohio; William W. Seaton, Dexter; Thomas E. Wuepper, Alger, both of Mich., and Kenneth D. McKibben, Defiance, Ohio, assignors to CMI International, Southfield, Mich.

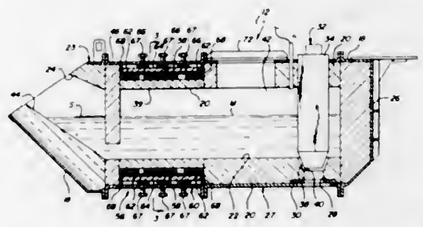
Filed Dec. 3, 1992, Ser. No. 985,018

Int. Cl.[5] B22D *41/01*

U.S. Cl. 266—237 **10 Claims**

1. A metal pouring apparatus suitable for pouring molten magnesium-treated iron metal into a mold to produce a casting, said apparatus comprising:

a metal pouring vessel (12) including a generally horizontally disposed main body chamber (22) having an inlet (24) at one end thereof for admitting molten metal into said chamber (22) and a bottom outlet (28) spaced from said inlet (24) at an opposite end thereof for discharging molten metal from said chamber (22) into the underlying mold;



valve means (32) moveable with respect to said outlet (28) for regulating the discharge of molten metal;

and induction heating means (56) surrounding said chamber (22) for electromagnetically heating the metal within said chamber (22) simultaneously with the operation of said valve means (32).

5,282,609

PNEUMATIC COUNTERBALANCE STAY

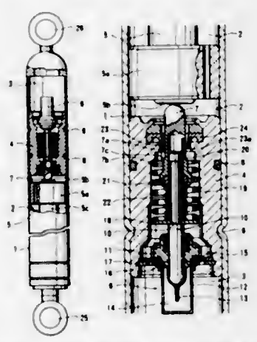
Yoshikazu Kuze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 993,591

Claims prinrity, application Japan, Dec. 24, 1991, 3-361171

Int. Cl.[5] F16F *9/00*

U.S. Cl. 267—120 **6 Claims**



1. A pneumatic counterbalance stay comprising:

a cylinder charged with gas;

a partitioning body fixed to an inner wall of the cylinder to separate the cylinder into an actuating chamber and a pressure accumulating chamber;

a thermo-actuator provided in the partitioning body,

the thermo-actuator having a heat conductive cylinder charged with wax pellets, a rubber seal bag secured to the conductive cylinder and provided in the wax pellets, and a rod axially slidable mounted in the cylinder and engaged with the seal bag and provided to be outwardly projected when ambient temperature is higher than a predetermined temperature;

a plunger valve device provided in the partitioning body and comprising a plunger valve and a valve seat;

the plunger valve being engaged with the rod of the thermo-actuator so as to be axially moved together with the rod and outwardly projected from the partitioning body;

the valve seat being secured in the partitioning body adjacent the plunger valve;

a piston rod having a piston slidable mounted in actuating chamber of the cylinder, an end of the piston rod being projected from the actuating chamber,

the piston having a projected member on a side opposite to the piston rod,

the plunger valve being arranged to be engaged with the valve seat to close the plunger valve device when projected from the partitioning body by the thermo-actuator, and disposed at such a position where the plunger valve is pushed by the projected member of the piston when the piston rod is retracted into the cylinder, so that the plunger valve is disengaged from the valve seat to open the plunger valve device.

5,282,610

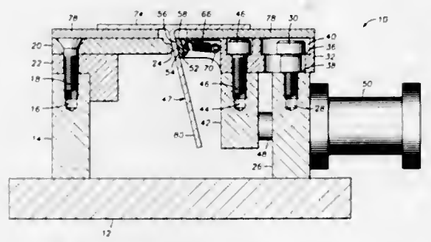
SELF-INDEXING VISE

Mark A. Turner, Arlington, and Laszlo Ferenczi, Irving, both of Tex., assignnrs to Vought Aircraft Company, Dallas, Tex.

Filed Feb. 3, 1993, Ser. No. 13,010

Int. Cl.[5] B25B *1/24*

U.S. Cl. 269—258 **7 Claims**



1. A vise, comprising:

a first jaw having a partially cylindrical bearing surface;

a second jaw capable of movement relative to said first jaw and having a partially cylindrical recess; and

a jaw insert pivotally inserted in said partially cylindrical recess and operatively coupled to a plurality of biasing members, said pivoting jaw insert having a generally flat surface and a partially cylindrical surface, said partially cylindrical surface of said jaw insert having a radius larger than the radius of said partially cylindrical recess.

5,282,611

SHEET SORTER HAVING NON-SORTING MODE WITH SUPPORT EXPANDING CAPABILITY

Noriyoshi Ueda, Yokohama, and Katsuhito Kato, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,219

Claims priority, application Japan, Jul. 6, 1991, 3-192632

Int. Cl.[5] B42C *1/12*; B65H *39/02*

U.S. Cl. 270—53 **14 Claims**

1. A sheet sorting apparatus operable in a sorting mode in which sheets are sorted and in a non-sorting mode in which the sheets are not sorted, comprising:

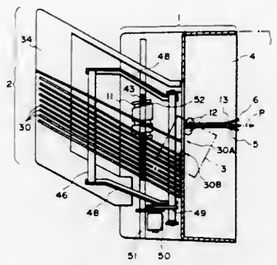
a plurality of bins for receiving and sorting the sheets;

binding means for binding the sheets accommodated in said bins;

wherein one of said plural bins functions to receive the sheets in the non-sorting mode;

means for changing a sheet accommodating space of said bin for receiving the sheets in the non-sorting mode; and

control means for operating said space changing means to expand the accommodating space when a number of



sheets received by said bin is larger than a bindable number of the sheets of said binding means.

5,282,612

PLURAL COMPARTMENT CARTRIDGE FOR FLEXIBLE BILLS

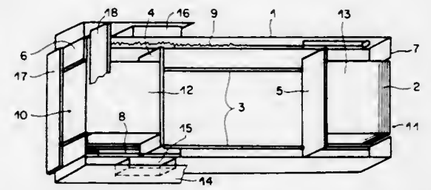
André Gerlier, Sciez, France, assignor to Landis & Gyr Betriebs AG, Zug, Switzerland

Filed Aug. 27, 1992, Ser. No. 936,118

Claims priority, application Switzerland, Sep. 4, 1991, 02592/91

Int. Cl.[5] B65H *3/44*

U.S. Cl. 271—9 **20 Claims**



1. A bill-holding cartridge for holding flexible bills in first and second stacks, comprising

a cuboid housing having first and second openings on oppositely located walls thereof, said first and second openings having retention means for retaining said bills within said housing,

means for opening and closing said first and second openings,

first and second parallel pressure plates disposed within said housing which press said first and second stacks of bills against said retention means of said first and second openings respectively with a pressure force, said first and second pressure plates being mounted independently on rails so that they are movable independently in parallel alignment between said walls on said rails along travel paths under action of said pressure force along a common axis,

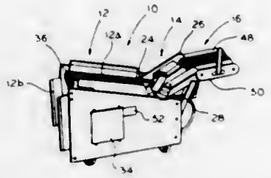
wherein the travel path of one of said first and second pressure plates on said rails is delimited by the position of the other one of said pressure plates,

wherein bills introduced past said retention means into said cartridge through one of said first and second openings constitute the stack associated with said first and second openings, and

wherein each of said first and second pressure plates is moved from its respective opening against said pressure force to adjust to the height of its respective stack.

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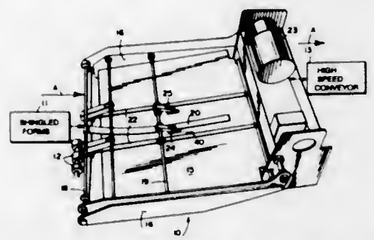
5,282,613
SIGNATURE STREAM FEEDING APPARATUS
James F. Standerfer, Sullivan, and Gilbert D. Cisney, Hidalgo, both of Ill., assignors to R. R. Donnelley & Sons Company, Lisle, Ill.
Filed Sep. 29, 1992, Ser. No. 953,991
Int. Cl.[5] B65H *29/66*
U.S. Cl. 271—202 **18 Claims**



1. A signature stream feeding apparatus, comprising:
an upstream conveyor for receiving and supporting a supply of signatures in a generally upright position on the fore edges or backbones thereof, said upstream conveyor including means for conveying said supply of signatures generally toward a packer box on a binding line, said upstream conveyor being fixed in a downwardly inclined position relative to the horizontal during operation in the direction of travel of said supply of signatures therealong;
an intermediate conveyor for receiving said signatures from said upstream conveyor, said intermediate conveyor including means for conveying said supply of signatures generally away from said upstream conveyor and generally toward said packer box on said binding line, said intermediate conveyor being fixed in an upwardly inclined position during operation and extending away from said upstream conveyor;
a downstream conveyor for receiving said signatures from said intermediate conveyor, said downstream conveyor including means for conveying said supply of signatures generally away from said intermediate conveyor and generally toward said packer box on said binding line, said downstream conveyor extending between said packer box and said intermediate conveyor; and
means associated with said conveying means of said upstream, intermediate and downstream conveyors for transforming said supply of signatures into a shingled stream at said intermediate conveyor and into a thinner shingled stream at said downstream conveyor at a point in advance of said signatures reaching said packer box on said binding line.

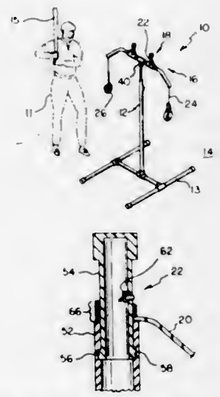
5,282,614
ROTATION OF A DOCUMENT THROUGH A FINITE ANGLE
Michael S. Kalisiak, North Tonawanda, N.Y., and John E. Traise, Palm Bay, Fla., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed May 10, 1991, Ser. No. 697,994
Int. Cl.[5] B65H *7/02*
U.S. Cl. 271—227 **20 Claims**

1. Apparatus for rotating a sheet, comprising:
a conveyance surface on which a sheet, having a first orientation, travels in a first direction;
first and second rollers for engaging a sheet travelling on said conveyance surface and spaced from each other in a second direction, generally transverse to said first direction;
first and second drive means, operatively driving said first and second rollers, respectively, independently of each other, at least one of said drive means being reversible;
sensing means for sensing the leading edge of a sheet, having said first orientation, with respect to said rollers, said sensing means located downstream of said rollers in a first direction;
control means for controlling the speed and direction of rotation of said drive means in response to said sensing means to rotate the sheet so that it has a second orientation, significantly angularly displaced from the first orientation, comprising computer means for controlling said drive means to effect rotation of the sheet by driving the first roller so that the tangential velocity thereof is in the



first direction, and by driving the second roller so that the tangential velocity thereof is in a second direction, opposite the first direction;
a nip wheel associated with each of said first and second rollers for holding a sheet in contact therewith, said nip wheels being located above said conveyance surface; and
conveyance means associated with said conveyance surface for delivering a sheet to said first and second rollers, and for transporting said sheet away from said first and second rollers, in said first direction.

5,282,615
TETHERED-BALL, HITTING PRACTICE APPARATUS
Bill D. Green, 6513 Hinkle Dr., Harrison, Tenn. 37341, and Joe B. Johnson, 4291 Highwood Dr., Chattanooga, Tenn. 37415
Filed Dec. 7, 1992, Ser. No. 986,587
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 E **6 Claims**



1. A new and improved tethered-ball, hitting practice apparatus supported on a horizontal surface, comprising:
a base member supported by the horizontal surface;
a vertical support member connected to and supported by said base member, said vertical support including means for adjusting the vertical length of said vertical support;

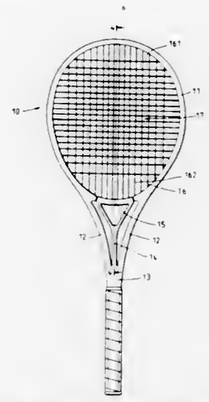
a tether-assembly-retaining member connected to and supported by said vertical support member;
a tether assembly, connected to and supported by said tether-assembly-retaining member, wherein said tether assembly includes a tether cord having first and second ends, means for adjusting tether cord length, said tether cord adjustment means permitting a portion of said tether cord including said second end thereof to hang freely from the apparatus, and means for connecting said freely hanging second end of said tether cord portion to a ball;
wherein said tether-assembly-retaining member includes means for guiding a portion of said tether cord from said tether cord adjustment means to said freely hanging tether cord portion;
wherein said means for adjusting tether cord length comprises a rotatable spindle mounted for rotation on said vertical support, said tether cord first end being connected to said rotatable spindle; and
wherein said tether-assembly-retaining member further includes a hollow body portion having an open end and an orifice in a side portion of the hollow body portion, and wherein said guiding means is comprised of the open end and the side orifice of said tether-assembly-retaining member, and wherein said tether cord extends from said rotatable spindle through said side orifice such that manual rotation of said spindle is adapted to wrap said tether cord about said spindle thereby raising and lowering said tether cord through said retaining member to selectively adjust said freely hanging second end thereof.

5,282,616
GOLF BALL MARKER
Marylou I. Stacavich-Notaro, 145 74th St., Brooklyn, N.Y. 11209
Filed Jan. 13, 1993, Ser. No. 3,645
Int. Cl.[5] A44B *17/00*; **A41D** *25/04*; **A63B** *57/00*
U.S. Cl. 273—32 A **1 Claim**



1. A golf ball marker comprising:
a) a marker component, said marker component itself comprising a disk of some suitable material having:
i) a top surface having an element of decoration; and,
ii) a bottom surface provided with a layer of one part of hook and loop binder material; and,
b) an attachment component, said attachment comprising, at least in part, a second disk having:
i) a top surface provided with the second and mating portion of said hook and loop binder material; and,
ii) attachment means in the form of a post and frictional binder cap, wherein said post is provided with a pointed end capable of piercing the fabric of a user's clothing, and said frictional binder cap is capable of engaging said post, providing suitable attachment to a said clothing.

5,282,617
GAME RACKET CAPABLE OF PROLONGING THEREON DWELLING TIME OF BALL
Arthur Hong, No. 96, Sec. 4, Pei-Ping Rd., Taichung City, Taiwan
Filed Nov. 5, 1992, Ser. No. 971,590
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 G **9 Claims**



1. A game racket capable of prolonging thereon the dwell time of a ball comprising:
a head portion formed by a curved member and having two arm portions extending towards each other and arranged in a V-shaped configuration, each of said two arm portions terminating in end portions, said end portions forming a merged area from which a unitary solid handle extends along a longitudinal axis of said racket;
means for prolonging the dwell time on said racket of a ball striking said racket, comprising an elastically deformable suspension arm fixed to said head portion solely at said merged area and extending from said merged area towards said head portion along said longitudinal axis, said suspension arm having an arcuate yoke at an end thereof distal from said merged area, said yoke being two ends located adjacent to said two arm portions of said head portion;
said yoke and said head portion forming an oval frame body of said game racket accommodating a string forming a stringed surface, said yoke being unrestrained by said arm portions of said head portion except through said stringed surface.

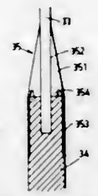
5,282,618
RACKET WITH IMPROVED SHOCK-ABSORBING MEANS
Arthur Hong, Taichung, Taiwan, assignor to Bonny Sports Corp. and Prince Manufacturing Taiwan Ltd., both of Taichung, Taiwan
Filed Jun. 25, 1992, Ser. No. 904,093
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 J **3 Claims**

1. A racket with improved shock-absorbing means comprising a head portion having a stringed surface, a shaft extending downwards from a bottom portion of said head portion, and a hand grip fastened to a bottom end of said shaft, said racket comprising,
an elastic shock-absorbing means for absorbing impacts on said head portion,
said shock-absorbing means having a tapered body with an axial hole having a constant diameter therethrough,

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said axial hole dimensioned to engage therein said bottom end of said shaft;

said shock-absorbing means further having a receiving portion with a circular cross section substantially equal to a



circular cross section of said upper end of said hand grip and extending from said shock-absorbing means to cover an upper end and side of said hand grip, and

said upper end and side of said hand grip engaged in said receiving portion and to said bottom end of said shaft.

5,282,619

PRACTICE GOLF CLUB HAVING A COLLAPSIBLE AND ADJUSTABLE LENGTH SHAFT

Anthony P. Napolitano, 83 W. Windsor Pkwy., Oceanside, N.Y. 11572, and Carl E. Troiano, 107 Shore Rd., Lindenhurst, N.Y. 11757

Filed Nov. 16, 1992, Ser. No. 977,149
Int. Cl.[5] A63B *69/36, 53/16*
U.S. Cl. 273—80 D **3 Claims**



1. A practice golf club for practicing one's golf swing of golf woods and irons comprising:

a shaft having three telescopic, cylindrical shaft sections, adjustable in an axial direction between a fully extended and a fully collapsed position, said sections including an uppermost section, a middle section and a lowermost section, the latter of which is telescopically received in said middle section and said middle section being telescopically received in said uppermost section, said uppermost section and said middle section each having a lower, externally threaded and chamfered end;

a handle attached to the uppermost section;

a club head attached to the lowermost section; and

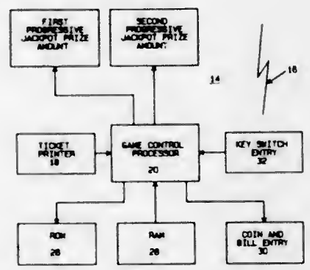
locking nut means for threadably releasably and adjustably locking said adjacent sections of said shaft in a position between and including said fully extended and collapsed positions, said locking nut means including a compression ring and locking nut slidably received on each of said middle and lowermost sections, and said locking nuts each having an internally threaded bore threadably receivable on said externally threaded end of said uppermost and middle sections with said compression ring sandwiched therebetween to effect locking of said sections together, said locking nuts each having a lower end with a radially inwardly directed shoulder and said rings being disposed between said shoulder and said ends of said middle and uppermost sections, respectively, so that when the locking nut is tightened on said uppermost and middle sections the rings are compressed and prohibit relative movement between said lowermost, middle and said uppermost sections, said locking nut shoulders being chamfered and said ends of said compression rings being chamfered for engagement with said chamfered shoulder of said locking nut and lower end of said middle and uppermost sections, respectively, wherein said sections remain in a fixed, locked position with respect to one another during a practice golf swing.

5,282,620

LOTTERY GAME AND METHOD OF PLAYING A LOTTERY GAME

Roger N. Keesee, 401 E. Ontario, Unit 3509, Chicago, Ill. 60611

Continuation-in-part of Ser. No. 795,129, Nov. 20, 1991. This application Apr. 13, 1992, Ser. No. 867,774
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—138 A **13 Claims**



1. A lottery game comprising:

means for calculating jackpot prize schedules; said jackpot prize schedules calculating means being based upon a preselected payback allocation percentage;

means for receiving a player's bet;

means responsive to said player's bet receiving means for randomly selecting a plurality of objects;

means for evaluating game results responsive to said randomly selected plurality of objects; said game results evaluating means including means responsive to an identified first winning combination of said randomly selected objects for calculating a first payout utilizing a fixed paytable and a player's bet received by said player's bet receiving means and means responsive to an identified second winning combination of said randomly selected objects for calculating a second payout utilizing said means for calculating jackpot prize schedules; said jackpot prize schedules including a first progressive jackpot prize amount and a second progressive jackpot prize amount, said first progressive jackpot prize amount and said second progressive jackpot prize amount being separately calculated and awarded, whereby a player winning one of said first or second progressive jackpot prize amounts does not affect the amount of the other of said first or second progressive jackpot prize amounts; and

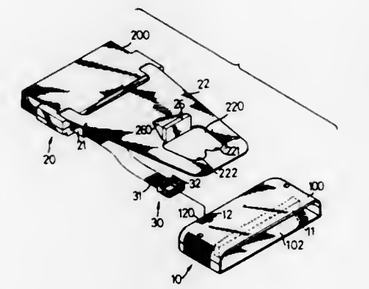
means for printing said randomly selected plurality of objects and game results on a lottery ticket responsive to said randomly selecting objects means and said game results evaluating means.

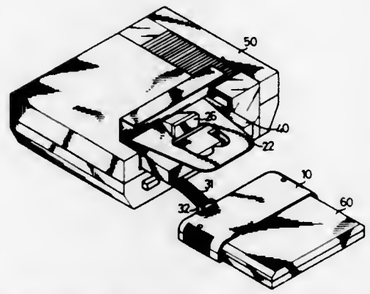
5,282,621

UNIVERSAL CONVERTER FOR NON-EXCLUSIVE CARDS OF VIDEO GAME

Ching J. Tseng, No. 13-2, Lane 778, Hua Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Nov. 24, 1992, Ser. No. 981,098
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—148 B **3 Claims**





1. A universal converter for non-exclusive cards of video game such that a general video game card (**40**) is allowed to be played in a specific main machine (**50**) for a specific code-including video game card (**60**) comprising

a first slot means (**10**) for receiving a code-including video game card (**60**), a second slot means (**20**) for receiving a general video game card (**40**), and an interconnecting means (**30**) for coupling between the first slot means (**10**) and the second slot means (**20**);

said first slot means (**10**) comprising a first card socket (**11**) for receiving said code-including video game card (**60**), a first circuit board (**13**) electrically and physically connected to said first card socket (**11**), and a first male socket (**12**) physically and electrically connected to said first circuit board (**13**);

said second slot means (**20**) comprising a second casing body (**200**), an operating plate (**22**) fixed on said second casing body (**200**), a second circuit board (**23**) fixed inside said second casing body (**200**), a second card socket (**21**) electrically and physically connected to said second circuit board (**23**) and out of said second casing body (**200**) for receiving a general video game card (**40**);

said interconnecting means (**30**) comprising a female connector (**32**), a male connector (**33**), and a flat cable (**31**) connected therebetween; said female connector (**32**) being electrically connected to said first male socket (**12**) of said first circuit board (**13**), said male connector (**33**) being electrically connected to said second circuit board (**23**), thereby transmitting said secret code signal from said code-including card (**60**) to said main machine (**50**).

5,282,622

SELF STANDING PUTTER

Roger C. Evans, 250 Palm Park Circle, No. 206, Longwood, Fla. 32779

Division of Ser. No. 727,230, Jul. 5, 1991, Pat. No. 5,125,664, which is a continuation-in-part of Ser. No. 388,708, Aug. 2, 1989, Pat. No. D 324,555, and a continuation-in-part of Ser. No. 557,497, Jul. 24, 1990, Pat. No. D 333,331. This application Jun. 29, 1992, Ser. No. 905,759
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—164.1 **22 Claims**



1. A putter useful for training a golfer and improving putting skills, comprising:

a club shaft having a proximal gripping end adapted to be held by the golfer, and a distal end;

a club head fixed to the club shaft at the distal end and defining an obtuse angle therebetween, the club head having a sufficient dimension lateral to the direction of the club shaft and the head and shaft being balanced so as to permit the head to lie flat upon a playing surface such that a player may leave the club shaft standing upright while unattended with the shaft inclined at a substantial angle from the vertical, the club head having a forward face for striking a golf ball; and

means with the club for permitting a golfer to observe the alignment of the club face or a hole with respect to a golf ball, while the club is unattended.

5,282,623

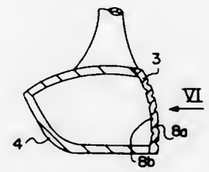
Patent Not Issued For This Number

5,282,624

GOLF CLUB HEAD

Claude Viste, Gruffy, France, assignor to Taylor Made Company, Inc., Calif.

Continuation of Ser. No. 648,842, Jan. 31, 1991, Pat. No. 5,090,702. This application Feb. 14, 1992, Ser. No. 835,303
Claims priority, application France, Jan. 31, 1990, 90 01377
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **4 Claims**



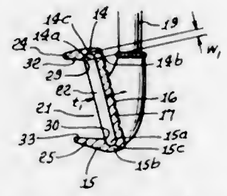
1. A golf club head comprising

(a) a metal head body constituted by hollow shell open on a front side and having an annular surface around said open front side;

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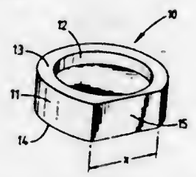
(b) a curved striking plate formed of forged steel positioned on said annular surface; and
(c) a weld joint securing said striking plate to said head body.

5,282,625
IRON GOLF CLUB HEAD WITH DUAL INTERSECTING RECESSES
Glenn H. Schmidt, and Richard C. Helmstetter, both of Carlsbad, Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Aug. 5, 1992, Ser. No. 921,857
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **25 Claims**



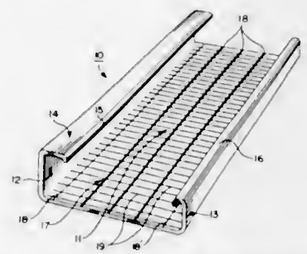
1. A golf club head having a body defining a heel, toe, top wall, bottom wall, a sole and a front wall defining an upwardly and rearwardly inclined front face, and comprising
a) said body defining a forwardly extending main recess located rearwardly of said front wall,
b) and said body also defining an undercut recess located directly rearwardly of said front wall and extending outwardly from said main recess toward at least said top wall and said bottom wall,
c) each of said top and bottom walls having a maximum vertical thickness region rearwardly of and adjacent said undercut recess, said top wall tapering rearwardly and being rearwardly elongated rearwardly of said undercut recess and rearwardly of said top wall maximum vertical thickness region to overlie said main recess, and said bottom wall tapering rearwardly and being rearwardly elongated rearwardly of said undercut recess, and rearwardly of said bottom wall maximum vertical thickness region to underlie said main recess, said top wall defining a reduced thickness web in relation to said front wall adjacent to and above said undercut recess, said web located rearwardly of the top level of said front face, and said undercut recess nearest said web extending upwardly to a level proximate said top level of said front face,
d) said undercut recess extending into said top and bottom walls proximate the top level of said front face, and proximate the bottom level of said front face, respectively.

5,282,626
GOLF PUTTING PRACTICE DEVICE
David G. Millar, 31B Lovelace Road, Surbiton, Surrey KT6 6NA, United Kingdom
Filed Oct. 22, 1992, Ser. No. 965,133
Claims priority, application United Kingdom, Oct. 25, 1991, 9122692
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—177 R **1 Claim**



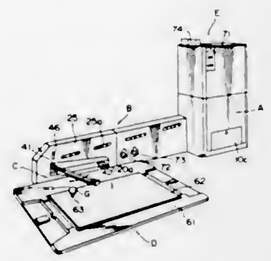
1. A golf putting practice device resembling a putting hole comprising a weight having a planar lower surface, an annular upper surface and an outer periphery consisting of a curved outer surface and a rectangularly shaped planar target surface, the weight of said device being such that while supported only on its planar lower surface, golf balls impacting said target surface will rebound therefrom.

5,282,627
PUTTING TRAINER
Jack J. Beck, 1500 Country La., Kernersville, N.C. 27284
Filed Dec. 8, 1992, Ser. No. 986,713
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **5 Claims**



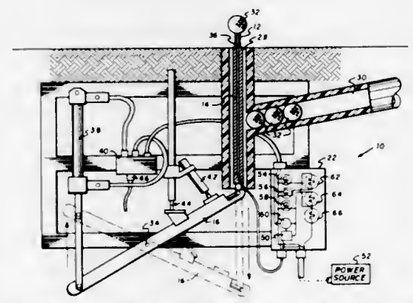
1. A putting trainer comprising: a base having planar upper and lower surfaces for positioning horizontally along the ground, a vertical front wall, a vertical rear wall, said front and said rear wall opposingly attached to said base and extending upwardly therefrom and being spaced apart a distance sufficient to permit the length of a conventional putter head to pass therebetween during a putting stroke, said front wall having a height greater than said rear wall, said front and said rear walls having inwardly projecting flanges, said flanges positioned at the top of said walls, a grid, said grid affixed to said base between said vertical walls and said grid comprising a series of perpendicular lines disposed longitudinally and laterally of said base.

5,282,628
AUTOMATIC GOLF BALL DISPENSER AND TEEING APPARATUS
Yutaka Komori, and Shuichi Matsushita, both of Tokyo, Japan, assignors to Taito Corporation, Tokyo, Japan
Division of Ser. No. 618,676, Nov. 6, 1990, Pat. No. 5,096,200.
This application Sep. 25, 1991, Ser. No. 765,914
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **12 Claims**



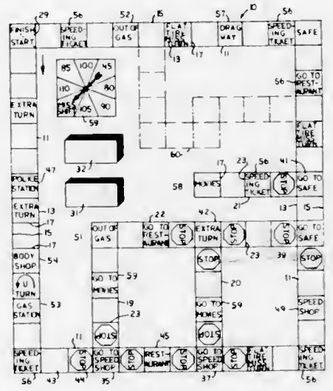
1. An automatic golf-ball supplying device comprising:
storage means for storing a plurality of golf balls;
a ball chute;
a set arm;
means for lining up golf balls from said storage means on said ball chute;
means for swinging said ball chute in a vertical direction between first and second angles;
said first angle being effective for permitting a ball to move onto said set arm;
said second angle being effective for preventing a ball from moving toward said set arm;
said set arm including a ball-receiving end and a ball-supplying end;
means for rotating said set arm between a home position and a tee position;
mixing means for mixing balls in said storage means, and
means for synchronizing said mixing means with a swing of said ball chute.

5,282,629
AUTOMATIC GOLF BALL TEEING APPARATUS
Randall S. Eckstein, Rt. 1, Box 116, Tanner, Ala. 35671
Filed Nov. 23, 1992, Ser. No. 980,219
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **14 Claims**



1. An apparatus for automatically teeing a golf ball, comprising:
a first passage;
a second passage, connected to said first passage, for supplying golf balls to said first passage;
a tee, accommodated in said first passage, for receiving and supporting a golf ball;
a tee cylinder, accommodated in said first passage and coupled to said tee, to reciprocate with said tee inside said first passage between a first position and a second position, whereby a golf ball is supplied from said second passage to said tee when said tee is located at said first position, said golf ball on said tee located at said second position being ready to be driven, said tee cylinder occluding said second passage, while reciprocating, so as to prevent said second passage from supplying a golf ball to said first passage except when said tee is located at said first position;
a pivot linkage having first and second ends, said first end of which is coupled to said tee cylinder, said pivot linkage extending in a direction approximately orthogonal to a direction in which said tee and said tee cylinder reciprocate;
ball detecting means for detecting whether or not a golf ball is placed on said tee;
pneumatic tee reciprocating means, coupled to said second end of said pivot linkage, for moving said second end of said pivot linkage and reciprocating said tee and said tee cylinder inside said first passage; and
control means, coupled to said ball detecting means and said tee reciprocating means, for controlling operations of said tee reciprocating means based on a detection result from said ball detecting means whereby when a golf ball is removed from said tee, said tee automatically moves to said first position so as to receive another golf ball from said second passage and then moves to said second position.

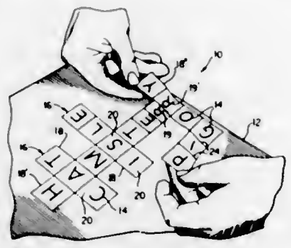
5,282,630
CAR RACE GAME APPARATUS
Amedee J. Dupuis, Jr., 2 Gale Village Rd., Newton, N.H. 03858
Filed Dec. 15, 1992, Ser. No. 991,851
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—252 **3 Claims**



1. A car race game apparatus, comprising:
a playing board having a road system marked thereon;
a plurality of simulated car tokens, movable along said road system;
said road system comprising a multiplicity of contiguous spaces;
said contiguous spaces including a START space, a FINISH space, a series of STOP spaces located at discrete points along the road system, and at least one PENALTY space;
said road system being comprised of a primary road, extending from the START space to the FINISH space, and a series of branch roads intersecting said primary road, to form alternate paths that a token can take, in order to move toward the FINISH space;
said primary roads and said branch roads having shared intersection spaces at the points where said roads intersect;
said STOP spaces being contiguous to said intersection spaces, so that each intersection space has at least one STOP space contiguous thereto;
at least one PENALTY space being located between the START space and the first STOP space;
a random number selection means, adapted to be operated by each player, in order to determine the number of spaces that a player's token is to be advanced during each player's turn;
a pack of direction cards, adapted to be individually drawn from the pack by a player only when the player's token is advanced through a STOP space, from a space that is not a STOP space;
some of said direction cards having indicia thereon directing the player to move the token to one of said PENALTY spaces on the road system;
some of said direction cards having indicia thereon directing the player to turn the respective token onto an intersecting road at the next intersection space; and
at least one of said PENALTY spaces being located between the START space and the first STOP space, so that a card-directed move of a token to a PENALTY space is necessarily a move back toward the START space, and away from the FINISH space.

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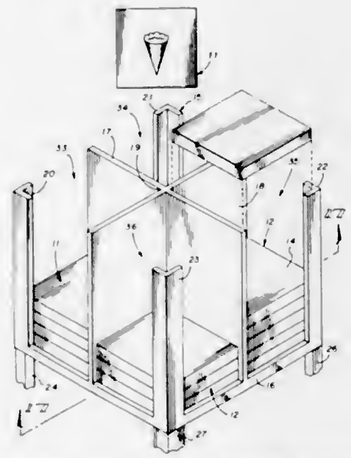
5,282,631
CROSS-WORD BOARD GAME CONSTRUCTION SYSTEM AND METHOD
Dorothee A. Baker, 4123 Ten Oaks Rd., Dayton, Md. 21036
Filed Sep. 22, 1992, Ser. No. 948,328
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—272 **18 Claims**



1. A word construction system comprising:
(a) a base surface;
(b) a plurality of zoned elements, each of said zoned elements having a plurality of delineation markings formed in spaced parallel relation thereon to define predetermined regions disposed between respective pairs of said delineation markings, wherein indicia is applied to said predetermined regions of one of said zoned elements for forming indicia interrelationships with others of said zoned elements; and,
(c) means for removably applying each of said plurality of zoned elements to said base surface, at least one of said zoned elements being removably mounted in overlying relationship with another of said zoned elements in a manner that only a first predetermined region of one of said zoned elements is aligned with a second predetermined region of another of said zoned elements, said first and second predetermined regions having substantially identical indicia formed thereon.

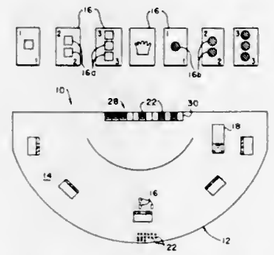
5,282,632
MEMORY BLOCK GAME APPARATUS
Lillian F. Allen, and Jason D. Allen, both of 3921 Pine St., Longview, Wash. 98632
Filed Dec. 31, 1992, Ser. No. 999,277
Int. Cl.[5] A63F *9/20*
U.S. Cl. 273—302 **1 Claim**

1. A memory block game apparatus, comprising,
a plurality of first block members, wherein the first block members include a first block top wall and a first block bottom wall, and a plurality of second block members, each of the second block members including a second block top wall and a second block bottom wall, wherein each first block top wall includes a pictorial representation, each second block top wall includes a numerical representation, and a plurality of first block top walls include identical pictorial representations and a plurality of second block top walls include identical numerical designations, and
a support member having a support platform, the support platform including a first partition wall and a second partition wall, with the first partition wall and the second partition wall orthogonally intersecting one another medially of one another, and the first partition wall and the second partition wall are fixedly mounted to the platform in an orthogonal relationship, and the first partition wall and the second partition wall intersect at a predetermined intersection, and the support member having a rectilinear configuration, and a first corner having a first L-shaped leg in facing relationship relative to the intersection, a second L-shaped leg at a second corner of the support platform in facing relationship relative to the intersection, a third L-shaped leg fixedly mounted to the support platform in facing relationship relative to the intersection, and a fourth L-shaped leg fixedly mounted to the support platform in facing relationship relative to the intersection, wherein the first L-shaped leg, the second L-shaped leg, the third L-shaped leg, and the fourth L-shaped leg are parallel relative to one another, with a first column of first block members mounted on the support platform between the first L-shaped leg and the intersection, a second column of first block members mounted on the support platform between the second L-shaped leg and the intersection, a third column of second block members mounted on the support platform between the third L-shaped leg and the intersection, and a fourth column of second block members mounted on the support platform between the fourth L-shaped leg and the intersection, wherein each of the first, second, third, and fourth columns are arranged for manual manipulation and lifting by an individual in an effort to match a plurality of said first block members and said second block members, and
the support platform includes a first platform leg aligned with the first L-shaped leg, a second platform leg aligned



with the second L-shaped leg, a third platform leg aligned with the third L-shaped leg, and a fourth platform leg aligned with the fourth L-shaped leg, wherein each of the first, second, third, and fourth L-shaped legs are mounted to a top surface of the support platform, and each of the first, second, third, and fourth platform legs are mounted to a bottom surface of the support platform, with a first aperture directed through the platform below the first column, a second aperture directed through the support platform below the second column, a third aperture directed through the support platform below the third column, a fourth aperture directed through the support platform in communication with the fourth platform, wherein access to each said aperture is availed by each said platform leg spaced above a support surface by the first, second, third, and fourth platform legs, and
a flexible bag having an entrance opening end, and a drawstring directed through the flexible bag adjacent the entrance opening and the support platform positioned within the flexible bag for access by an individual upon directing the drawstring in a surrounding and enclosing relationship to restrict visual access within the flexible bag during selection of a plurality of said block members.

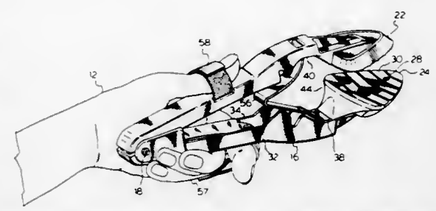
5,282,633
METHOD OF PLAYING A CARD GAME
Eugene B. Boylan, Zephyr Cove; Anthony J. Delise, State Line, and Robert F. Koerner, Gardnerville, all of Nev., assignors to BET Technology, Inc., Carson City, Nev.
Continuation-in-part of Ser. No. 764,306, Sep. 23, 1991, Pat. No. 5,141,234. This application Aug. 19, 1992, Ser. No. 932,237
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—306 **10 Claims**



1. A method of playing a bidding game whose outcome is determined by randomly received symbols comprising the steps of:
supplying of symbols having a numerical value as well as a designation as one of at least two suits;
dealing a hand of the symbols to a plurality of players;
bidding by a first player of a bid on a suit total of received symbols of a selected one of the suits in all of the hands of all of the players, where the suit total is equal to a total of added numerical values of the symbols of the selected suit;
by a succeeding player following a last bidding player, one of (a) subsequently bidding of a new bid on a suit total, which is greater than a last bid of the last player, of a selected one of the suits, or (b) calling of the last bid made by the last player;
repeating the subsequent bidding step as necessary in turns by the players until the succeeding player calls the last bid of the last bidding player;
determining of the suit total of the suit of the last bid made by the last bidding player; and
determining of a loser between the succeeding calling player and the last bidding player where the calling player loses if the suit total is equal to or greater than the last bid and the last bidding player loses if the suit total is less than the last bid.

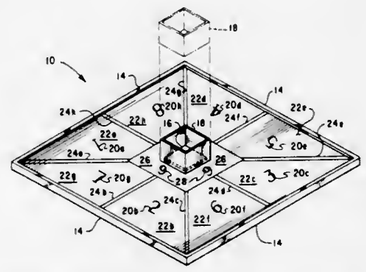
5,282,634
PINCERS FOR THROWING AND CATCHING A FLYING DISC
Marc Chamberland, R.R. #6, Cobourg, Ontario, Canada K9A 4J9
Filed Mar. 24, 1993, Ser. No. 36,365
Claims priority, application Canada, Mar. 30, 1992, 2,064,398-6
Int. Cl.[5] A63B *65/00*
U.S. Cl. 273—318 **12 Claims**

1. Pincers for throwing and catching a flying disc having a central portion and a rim which is disposed out of the plane of the central portion, said pincers comprising: lower and upper jaws which selectively close for engaging and open for disengaging said disc, said jaws being interconnected at one end and having at the opposite ends of each, a pad for gripping the central portion of said disc, said jaws further having inner walls which face one another, the inner wall of said lower jaw having a depression which opens upwardly toward the inner wall of said upper jaw, said depression being defined at one side by a ramp which extends to the pad formed on said lower jaw and at the other side by a wall which curves to a ridge, a notch being formed on the side of said ridge opposite said



depression for receipt of the rim when the disc is engaged by the pincers.

5,282,635
MARKER TOSS GAME
Randolph M. Hopkins, 1741 Ocean Dr., McKinleyville, Calif. 95521
Filed May 11, 1993, Ser. No. 59,742
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—342 **17 Claims**



1. A marker tossing game for at least one player simulating the game of bowling and including:
a generally planar game board having four sides and a square plan form, a raised peripheral border along each of said four sides, and a raised central area;
a removable cup installable over said raised central area and retained thereby upon said board;
at least one marker; and
at least one bowling line score sheet for each player, whereby;
a player tosses said marker toward said board in an attempt to bounce said marker from a portion of said board into said cup, with the resulting position of said marker providing a score which is recorded on said bowling line score sheet.

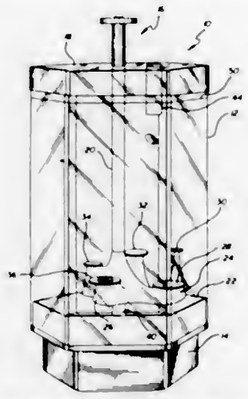
5,282,636
NOVELTY GAME
Melvin J. Wyman, Venice, Calif., and David A. Hilderbrand, Grants Pass, Oreg., assignors to Sheldon Katz and Aqua Skill Incorporated, both of Canoga Park, Calif.
Filed Aug. 17, 1992, Ser. No. 931,063
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—457 **10 Claims**

1. A coin gaming device comprising:
vessel means defined by a base and upwardly projecting walls for containing an optically transparent fluid;
cover means for covering the top of said vessel means and for defining an opening for insertion of a coin into said vessel;

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capture means including a plurality of upwardly facing pads for intercepting the downward passage of a coin inserted into said vessel as the coin transverse downward through said fluid;

means for allowing manipulation of said capture means; and



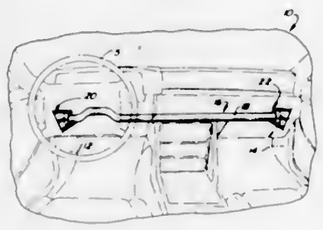
tray means having a perforated base and being rotatively affixed to said means for allowing manipulation and removable with said cover means, for catching coins at the bottom of said vessel, and for allowing for easy removal of the coins.

5,282,637

MOUNT FOR VEHICLE FRONT SUPPORT STRUCTURE

David A. McCreadie, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1991, Ser. No. 806,190
Int. Cl.[5] B62D 25/08
U.S. Cl. 296—203 2 Claims



1. A front support structure for a vehicle body, the body having left and right front vertically extending pillars, the front support structure comprising:

an elongated beam extending transversely between the pillars;

portions of each pillar extending outwardly therefrom to define a pair of converging slides; and

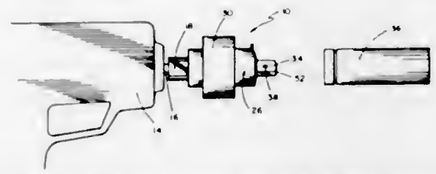
a pair of end plates, one fixedly secured on each end of said elongated beam, the end plates each having slide surfaces formed thereon to extend substantially parallel with said pillar converging slides and received in wedging engagement therein.

5,282,638

CONVERSION DEVICE FOR DRILLS

David L. Harper, 809 Carlisle Court North, Donelson, Tenn. 37214

Continuation of Ser. No. 791,023, Nov. 12, 1991, abandoned.
This application Dec. 29, 1992, Ser. No. 998,874
Int. Cl.[5] B23B 51/12
U.S. Cl. 279—144 16 Claims



1. A tool chuck, for a portable hand drill having a rotatable portion, comprising:

a cylinder member adapted for rotational engagement with the rotatable portion of said drill;

gear assembly means removably engageable with said cylinder member for attaching a tool and enabling said tool to move rotatably with said cylinder member;

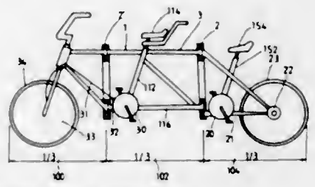
releasing means for disengaging a tool from said gear assembly means.

5,282,639

FOLDING TANDEM BICYCLE

Shou-Mao Chen, No. 7-3, Lane 2, Ta An Kang Rd., Ta Chia Chen, Taichung Hsien, Taiwan

Filed Oct. 26, 1992, Ser. No. 966,438
Int. Cl.[5] B62K 3/12, 3/14, 15/00
U.S. Cl. 280—231 4 Claims



1. A tandem bicycle comprising:

a frontal body portion having a front flywheel coupled to a handlebar by a head tube for positionally stabilizing a front wheel, a frontal portion upper tube and a frontal portion lower tube respectively coupled to said head tube, said frontal portion upper tube and said frontal portion lower tube of said frontal body portion each having a pair of frontal sockets coupled to a respective forked end section of said frontal portion upper and lower tubes;

an intermediate body portion having a first pair of upright tubes extending in a vertical direction parallel each to the other, an intermediate upper tube having a front end connected to said first pair of upright tubes and a rear end terminating in an upper tube forked end section coupled to a pair of intermediate sockets, a seat tube to support a saddle, and an intermediate portion lower tube extending parallel to said intermediate upper tube having a front end connected to said first pair of upright tubes and a rear end terminating in a lower tube forked end section having a pair of rear intermediate sockets;

a rear body portion having a second pair of upright tubes extending in said vertical direction parallel each to the other and connected to said intermediate upper and lower tubes, a rear seat tube to support a rear saddle, a rear flywheel fastened to positionally stabilize a rear wheel;

connection means for connecting the pair of frontal sockets to said first pair of upright tubes and the rear intermediate sockets to said second pair of upright tubes, said connection means including a pair of connecting devices wherein each connecting device includes a locating ring fixedly fastened internal one upright tube at either end, a sleeve fastened internal a respective upright tube spaced below said locating ring, said sleeve having a longitudinal slot formed therethrough and a locating notch extending from said longitudinal slot at a bottom section of said slot, a spring positioned internal said sleeve and a lock bolt inserted in said sleeve supported on said spring for locking a socket between said locating ring and said sleeve, and a knob member inserted through said longitudinal slot and connected to said lock bolt, said lock bolt being supported by said spring in a locking position to lock the respective socket in position or movable from said locking position to an unlocking position for permitting the respective socket to be disconnected from the respective upright tube by displacing said knob member along said longitudinal slot and inserting said knob into said locating notch;

frontal transmission means for rotationally displacing said front wheel, said frontal transmission means including a front sprocket driven by a first set of pedals to rotate said front flywheel and said front wheel through a cable, said front sprocket having a series of sprocket teeth formed within a peripheral edge thereof, said front flywheel having a series of flywheel teeth formed around and within a peripheral edge thereof, said cable having two opposite ends respectively coupled with a cylindrical end member, each of said cylindrical end members having a toothed groove formed within a respective peripheral wall for mating engagement with the sprocket teeth or said front flywheel for permitting said front flywheel and said front wheel to be rotated as said front sprocket is rotated by said first set of pedals; and,

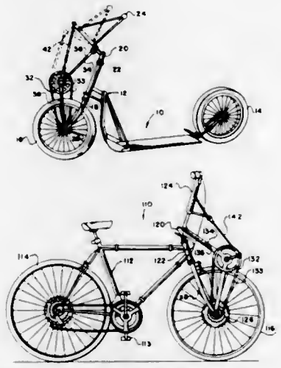
rear transmission means for rotationally displacing said rear wheel, said rear transmission means including a rear sprocket driven by a second set of pedals to rotate said rear flywheel and said rear wheel by a chain coupling.

5,282,640

EXERCISE BICYCLE

Ben Lindsey, P.O. Box 1256, Maljamar, N. Mex. 88264

Filed Nov. 15, 1989, Ser. No. 436,730
Int. Cl.[5] B62M 1/16, 1/12
U.S. Cl. 280—234 4 Claims



1. On a person powered vehicle having

a. a frame,

b. at least two wheels journaled on the frame including,

c. a front wheel,

d. an oscillating handle bar on the frame,

e. a wheel sprocket journaled to the frame,

f. a one-way free wheeling clutch on the front wheel drivingly interconnecting the wheel sprocket and front wheel so that a forward directional movement of the sprocket will drive the wheel but the wheel cannot drive the sprocket through the clutch,

g. a crank sprocket journaled on the frame having,

h. a crank pin thereon,

j. a pitman extending from the oscillating handle bar to the crank pin, and

k. a chain drivingly interconnecting the wheel sprocket and the crank sprocket;

l. an improved structure for moving the crank sprocket off dead center comprising in combination with the above:

m. a frictional unit interconnecting the front wheel to the wheel sprocket to frictionally drive the wheel sprocket from the front wheel,

n. said front wheel is co-axial with wheel sprocket,

o. said frictional unit including,

i. a synthetic resin polymer washer co-axially attached to the wheel sprocket,

ii. a rubber O-ring co-axially attached to the front wheel, and

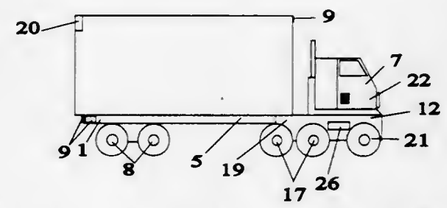
iii. tension means for pressing the synthetic resin polymer washer and rubber O-ring together.

5,282,641

TRUCK/TRAILER CONTROL SYSTEM

Richard J. McLaughlin, 4203 W. 141st St., Hawthorne, Calif. 90250

Filed Dec. 18, 1992, Ser. No. 992,788
Int. Cl.[5] B62D 13/00
U.S. Cl. 280—432 16 Claims



1. In a vehicle having a truck unit with an engine, and front truck wheels mounted for turning in unison to each side relative to straight forward alignment and a trailer unit joined to said truck unit in articulated fashion by a coupling therebetween, said trailer unit having a trailer body and at least a set of rear wheels mounted on a rear trailer wheel axle assembly the improvement comprising:

front truck wheel turning sensor means for sensing the extent of turning of said front truck wheels relative to straight forward alignment of said truck unit and for generating a front wheel turning position signal indicative thereof,

truck travel speed sensing means for sensing the velocity of said truck unit and for generating a velocity signal indicative thereof,

alignment sensing means located at said coupling between said truck unit and said trailer unit and providing a truck/-trailer angle position signal indicative of degree and direction of angular offset of alignment of said trailer body relative to said truck unit,

a trailer platform mounted beneath said trailer body for rotation relative thereto about a vertical platform axis and carrying said rear trailer wheel axle assembly, whereby said trailer platform and said rear wheel axle assembly are rotatable together relative to said trailer body about said vertical platform axis,

reversible platform drive motor means for selectively driv-

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ing said trailer platform in alternative directions about said vertical platform axis relative to straight forward alignment with respect to said trailer body,

platform position sensor means for sensing the angular orientation position of said trailer platform relative to said trailer body and for providing a platform orientation feedback signal indicative thereof,

tilt sensing means on said trailer body generating a tilt information signal indicative of lateral tilt of said trailer body,

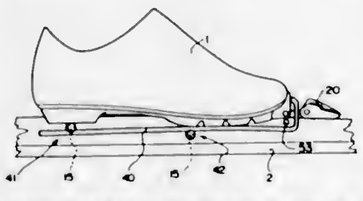
electronic trailer steering control means coupled to receive said front wheel turning position signal, said platform orientation feedback signal, said truck/trailer angle position signal, said tilt information signal, and said velocity signal and for providing a drive signal to said platform drive motor means to drive said platform to follow the turning of said front truck wheels at a delay interval dependent upon said velocity signal, the distance between said coupling and said front truck wheels, and the distance between said coupling and said vertical trailer axis.

5,282,642

APPARATUS FOR BIASING

Marc Provence, Thorens-les-Gileres, France, assignor tn Salomon S.A., Annecy Cedex, France

Filed Mar. 1, 1991, Ser. No. 662,959
Claims priority, application France, Mar. 2, 1990, 90 02824
Int. Cl.[5] A63C *9/00*
U.S. Cl. 280—615 **49 Claims**



1. A biasing apparatus for biasing a shoe on a ski, the ski shoe comprising an external sole maintained on the ski at its front end by a latching apparatus, said latching apparatus permitting lifting of the rear part of the shoe from the ski, said lifting occurring against biasing action of said biasing apparatus, said biasing action acting to bias the rear part of the shoe against the ski, wherein the biasing apparatus of the shoe on the ski is constituted by at least one beam defined by one front and one rear end, said at least one beam being linked with the ski at its rear end through a rear linkage apparatus, its front end being free and directly contacting and biased by the shoe in a bias zone, during lifting of the shoe, said at least one beam being likewise linked with the ski between its rear end and its front end by at least one intermediate support means for preventing downward movement of said at least one beam.

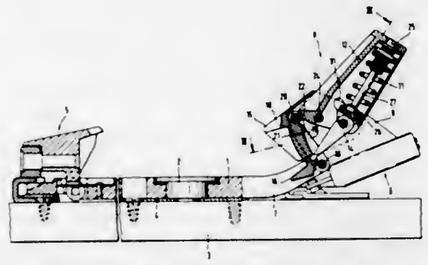
5,282,643

HEEL HOLDER ARRANGEMENT OF A SAFETY SKI BINDING

Roland Jungkind, Bärenalpstr. 3, D-8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 863,803
Int. Cl.[5] A63C *9/084*
U.S. Cl. 280—626 **26 Claims**

1. A heel holder arrangement of a safety ski binding, comprising: a housing; a sole holder on the housing about a first axis which is at least substantially parallel to the surface of the ski on which in use the heel holder arrangement is disposed between a heel locking position and a heel release position; a retaining means pivotable between first and second positions about a second axis at least substantially parallel to the surface of the ski, the retaining means being adapted in its first position to hold the sole holder in its locking position; an opening lever pivotable about a third axis at least substantially parallel to the surface of the ski for voluntarily moving the sole holder into the release position, the pivotal opening movement of the opening lever allowing the retaining means to move towards its second position for release of the sole holder; a compression spring operatively associated with the opening lever and pivotable together with the opening lever and adapted to be stressed by the pivotal opening movement thereof; a first support means on the opening lever for a first end of the compression spring; a second support means for the second end of the compression spring, the second support means being fixed with respect to the housing, the second end of the compression spring being adapted to describe a path of movement in the



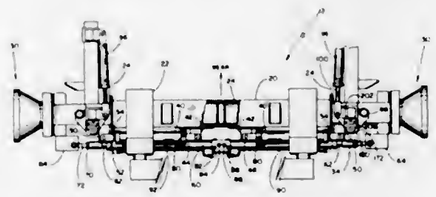
pivotal movement of the opening lever; a pressing portion on said compression spring at least adjacent said second end thereof; a brace member mounted pivotably at an axis which is parallel to the surface of the ski, the brace member having a contact surface which extends transversely to the pivot axis and which is arranged in the path of movement described by said second end of the compression spring in such a way that, in the course of the pivotal movement of the opening lever, the compression spring is stressed and said pressing portion of said compression spring passes on to said contact surface of said brace member thereby to urge the brace member against the sole holder in a direction towards the release position thereof whereby the sole holder is movable into its release position after release of said retaining means.

5,282,644

HYDRAULICALLY ADJUSTABLE TIE-ROD FOR AN AGRICULTURAL VEHICLE WITH AN ADJUSTABLE AXLE

Roger L. Larson, Waconia, Minn., assignor to Ag-Chem Equipment Company, Inc., Minnetonka, Minn.

Filed Dec. 23, 1992, Ser. No. 996,290
Int. Cl.[5] B60B *35/10*; B62D *7/20*
U.S. Cl. 280—638 **15 Claims**



1. A vehicle, comprising:

(a) a chassis;

(b) a steerable axle assembly coupled to said chassis and having a variable steering position for steering said vehicle, said steerable axle assembly being extendable in a longitudinal direction between a first and second position;

(c) tie-rod means coupled to said axle assembly for maintaining a toe-in relationship of said steerable axle assembly, said tie-rod means having means for adjusting a length of said tie-rod means in the longitudinal direction as said steerable axle assembly is extended from said first to said second position;

(d) drive means coupled to said steerable axle assembly for extending said axle assembly in the longitudinal direction between said first and second position; and

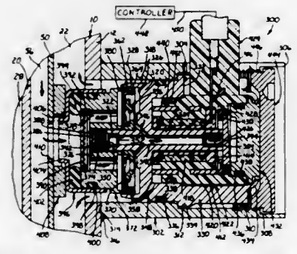
(e) locking means for selectively locking said steerable axle assembly in a fixed first steering position as said steerable axle assembly is extended.

5,282,645

ELECTRO-HYDRAULIC PRESSURE REGULATING VALVE ASSEMBLY MOUNTED IN A VALVE BOSS ON A HYDRAULIC DAMPER

Joseph G. Spakowski, Macedon; David A. Webb, Rochester, and Christopher B. Coolican, Walworth, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1992, Ser. No. 981,452
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **17 Claims**



1. An electro-hydraulic pressure regulating valve assembly comprising:

(a) a center pole having a central body from which short and long extensions project in opposite directions, a first annular wall encircling the short extension, a second annular wall encircling the long extension, and a fluid chamber formed therethrough;

(b) a valve nut, having port means, secured to the short extension;

(c) a flexible disc mounted between the valve nut and the center pole for controlling the flow of fluid through the port means, wherein the disc is in fluid communication with the fluid chamber so that pressure in the fluid chamber opposes the deflection of the disc; and

(d) a solenoid valve assembly, secured to the long extension, for controlling fluid pressure in the fluid chamber.

5,282,646

MULTI-CHAMBER AIR BAG WITH DISPLACEMENT RESPONSIVE VALVE

John W. Melvin, Ann Arbor, and Jack L. Jensen, Highland, both of Mich., assignors to Geoeral Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1993, Ser. No. 19,182
Int. Cl.[5] B60R *21/24*
U.S. Cl. 280—729 **5 Claims**

5. An occupant restraint air bag comprising:

an inflator for generating inflation gas;

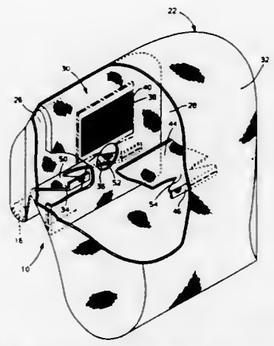
an air bag having an occupant contacting face wall for displacement toward the occupant upon inflation of the air bag, said air bag having a dividing wall dividing the air bag into a first chamber communicating with the inflator to receive inflation gas and a second chamber defined between the dividing wall and the occupant contacting face Wall,

a first opening in the dividing wall between the chambers to permit the controlled communication of inflation gas from the first chamber to the second chamber to inflate the second chamber and displace the face wall toward the occupant,

a valve opening in the dividing wall between the chambers,

a mesh screen attached to the dividing wall and extending across the valve opening,

an access opening located adjacent the mesh screen,



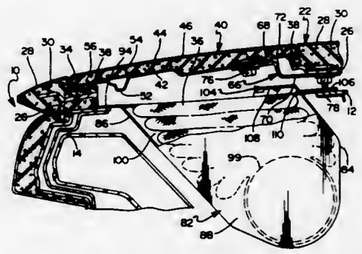
a valve flap reaching through the access opening in the dividing wall and having a first end located in the first chamber and overlying the mesh screen to block communication of the inflation gas through the valve opening from the first chamber to the second chamber and a second end attached to the occupant face wall so that the inflation of the second chamber and consequent displacement of the face wall toward the occupant pulls the valve flap away from the mesh screen and through the access opening to open the valve opening and permit communication of inflation gas through both the first and second openings.

5,282,647

DEFLECTOR FOR AIR BAG DEPLOYMENT

William J. Barnes, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1992, Ser. No. 906,143
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—732 **2 Claims**



1. In combination, a vehicle instrument panel having an opening therein, an air bag housing mounted on the vehicle and underlying the opening and having first and second walls spaced apart to define therebetween a storage cavity registering with the opening, a flange projecting from the walls out-

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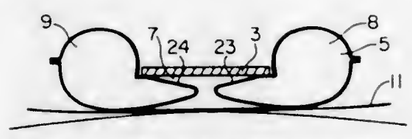
wardly away from the cavity and attached to the vehicle so that the housing is mounted with the storage cavity registering with the opening in the instrument panel, an air bag mounted on the housing and folded to store within the storage cavity between the first and second walls, a gas generator actuable to inflate the air bag and deploy the air bag through the opening, a door for closing the opening in the instrument panel to conceal the stored air bag and having a rigid substrate panel extending across the opening, said door having first and second ends respectively overlying the first and second walls of the housing, a hinge having one end attached to the first end of the door above the storage cavity and another end attached to the instrument panel so that the door is hingedly mounted for movement to an open position with respect to the opening when the actuation of the gas generator inflates the air bag, and a deflector plate having a flange portion attached to the housing flange along the first wall of the housing and a deflector portion raised above the flange portion by a step wall so that the deflector portion is parallel to the instrument panel and underlying the hinge and projecting toward the second wall to partially obstruct the deployment opening of the housing so that the path of the deploying air bag is deflected by the engagement of the air bag with the deflector plate to direct the air bag away from engagement with the hinge toward the second end of the door.

5,282,648

INFLATABLE BODY AND HEAD RESTRAINT SYSTEM

Leslie D. Peterson, Phoenix, Ariz., assignor to Simula Inc., Phoenix, Ariz.

Filed Jun. 1, 1992, Ser. No. 891,833
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **19 Claims**



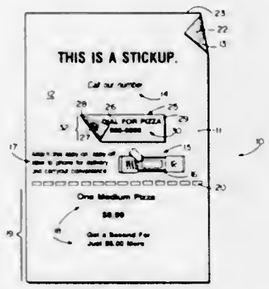
1. A vehicle occupant restraint system, comprising:
(a) at least one shoulder strap having a front surface and a back surface;
(b) one normally uninflated bladder having a vertical central portion, a vertical inner side portion and a vertical outer side portion, said bladder comprising two vertical webs extending across the bladder, said webs forming a vertical central chamber in the central portion of the bladder, a vertical inner side chamber in the inner side portion of the bladder, and a vertical outer side chamber in the outer side portion of the bladder, the vertical central portion of the bladder being attached to the back surface of each said at least one shoulder strap, wherein the vertical inner and outer side portions of said bladder extend around said at least one shoulder strap such that each side portion lies folded on the front surface of said shoulder strap;
(c) one housing positioned on the front face of each of said at least one shoulder strap, said housing comprising an airtight manifold having two ports, one port leading into said vertical inner side chamber and one port leading into said vertical outer side chamber;
(d) at least one gas generator means positioned within each of said at least one housings on the front face of each of said at least one shoulder strap for generating gas to inflate said bladder member, wherein the housing comprises no ports leading directly into the vertical central chamber, such that the vertical central chamber is fluidly connected to the gas generator only through the vertical inner side chamber and the vertical outer side chamber;
(e) an impact sensor means electrically connected to each of said gas generator means; and
(f) means for controlling the flow of gas in the bladder such that the vertical inner side chamber in the vertical inner side portion of the bladder and the vertical outer side chamber in the vertical outer side portion of the bladder inflate before the vertical central chamber in the central portion of the bladder inflates.

5,282,649

COMBINED REPOSITIONAL ADHESIVE SHEETS

Hnward D. Williams, Andover, Kans., and David J. White, Mifflinburg, Pa., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 14, 1992, Ser. No. 820,376
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—56 **18 Claims**



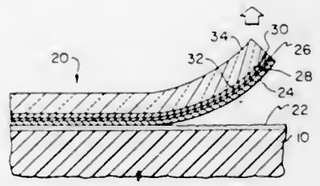
1. A business form comprising:
a first paper sheet having a face and a back;
first indicia disposed on the face of the first paper sheet;
a first pattern of repositional adhesive disposed on the back of the first paper sheet;
a second sheet having a face and a back, said second sheet much smaller than said first sheet;
second indicia disposed on the face of the second sheet;
a second pattern of repositional adhesive disposed on the back of the second sheet; and
the second sheet back readily removably attached to the face of the first sheet by the second pattern of repositional adhesive, and positioned on the first sheet so that the first indicia is visible.

5,282,650

COLOR CHANGE DEVICES ACTIVATABLE BY BENDING

Gary J. Smith, Glenburnie, and Robert A. Innes, Kingston, both of Canada, assignors to Alcan International Limited, Montreal, Canada

Division of Ser. No. 540,937, Jun. 20, 1990, Pat. No. 5,135,262. This application Apr. 30, 1992, Ser. No. 876,377
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **4 Claims**



1. A color change device, comprising:
a flexible substrate comprising a color generating metal at a first surface; and

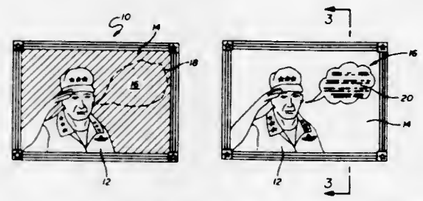
an optically thin anodic film on said color generating metal intimately contacting said first surface of said substrate and generating an interference color;
said device having at least one area of said first surface in which said anodic film is attached to said color generating metal with a strength of attachment falling within a range allowing said interference color to be changed in said at least one area by bending said device.

5,282,651

TRADING CARDS AND METHOD OF CONCEALING AND REVEALING INFORMATION THEREON

Frank Alonso, P.O. Box 3099, Pacoima, Calif. 91333

Filed Apr. 15, 1991, Ser. No. 686,240
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—117 **5 Claims**



1. Trading card having a variable printed image comprising subject-related primary and secondary indicia printed on the card surface, and means to make said secondary indicia non-visible at ambient temperatures to have said card display a first printed image and to make said secondary indicia visible at other than ambient temperatures to have said card display a second printed image, said means comprising on said trading card locally said secondary indicia comprised of a thermochromic composition in a state to make said secondary indicia non-visible, said thermochromic composition being responsive to an increased temperature therein from ambient sufficient for said secondary indicia to become visible, whereby effecting said temperature increase in said secondary indicia composition varies said card image.

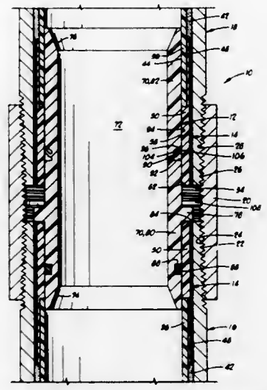
5,282,652

LINED PIPE JOINT AND SEAL

Robert M. Werner, Independence, Kans., assignor to Werner Pipe Service, Inc., Independence, Kans.

Filed Oct. 22, 1991, Ser. No. 780,481
Int. Cl.[5] F16L *9/14*
U.S. Cl. 285—55 **32 Claims**

9. A pipe section comprising:
an outer portion having an end;
a liner having a first outer surface spaced radially inwardly from said outer portion and an end spaced longitudinally inwardly from the end of said outer portion;
grout disposed between said outer portion and said liner for holding said liner in said outer portion; and
a lining end at an end of said liner and having a second outer surface of larger diameter than said first outer surface, said second outer surface comprising a shoulder abutting said grout such that longitudinal contraction of said liner relative to said pipe section is prevented, said shoulder being spaced longitudinally inwardly from said end of the outer portion said lining end extending between the end of said liner and the end of said outer portion.

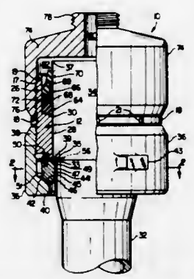


5,282,653

COUPLING APPARATUS

Karl K. LaFleur, and Donald R. Wade, both of Weatherford, Tex., assignors to LaFleur Petroleum Services, Inc., Weatherford, Tex.

Continuation-in-part of Ser. No. 629,542, Dec. 18, 1990, Pat. No. 5,152,254. This application Dec. 18, 1991, Ser. No. 809,755
Int. Cl.[5] F16L *17/03*
U.S. Cl. 285—110 **11 Claims**

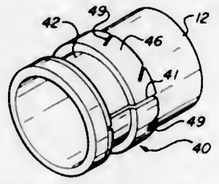


1. A sealing assembly for sealing against fluid flow through a space defined between a coaxial first member and second member, said first member having support means for supporting and retaining said sealing assembly in said space, said sealing assembly engaging said support means and comprising first sealing means, preventing means and second sealing means, said first sealing means being engaged with said first member and being spaced radially from said second member, said second sealing means being engaged with said second member, and, said preventing means being intermediate said first sealing means and said second sealing means and spaced radially from said second member, wherein said fluid deforms said first sealing means into sealing engagement with said first member at a first predetermined fluid pressure, said second sealing means extends at an acute angle to said direction of said fluid flow so that said fluid deforms said second sealing means into sealing engagement with said second member at a second predetermined fluid pressure, and said preventing means and

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the radial extent of said radial space prevent said second sealing means from deforming into said radial space.

5,282,654
PIPE COUPLING SLEEVE
Thomas R. Hendrickson, Pelkie, Mich., assignor to Quikcoup, Inc., Houghton, Mich.
Filed Apr. 26, 1993, Ser. No. 51,853
Int. Cl.[5] F16L *17/04*
U.S. Cl. 285—112 **9 Claims**



1. A pipe coupling sleeve for a coupling formed of curved segments which are joined together end-to-end to encircle the adjacent ends of axially aligned pipes for coupling the pipe ends together, with the segments being generally U-shaped in cross-section to provide radially inwardly extending legs whose free inner edges form substantially continuous keys, and with the end portions of the pipes having circumferentially extending grooves defined by walls and a base therein for receiving the keys to lock the coupling and pipe-end portions together, comprising:

said sleeve comprising a thin, narrow strip of metal bent into the shape of a circular ring of a diameter to closely surround one of the pipe end portions and having a longitudinal axis, and with the ring being split so that it may be opened or closed and manually applied around and manually removed from the periphery of the pipe-end portion;

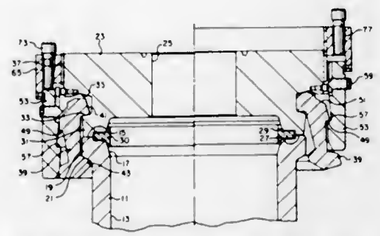
a continuous narrow channel formed in the strip adjacent one edge thereof and spaced a considerable distance from the opposite edge thereof, said channel having a base and sidewalls which correspond in size and in shape to the size and shape of the walls and base forming the groove in the pipe-end portion and being closely fitted within said pipe groove to form a metal liner for the groove portions against which the coupling key engages;

and with the strip portions located between the channel and said strip opposite edge forming a narrow band arranged in substantially complete face-to-face overlying contact with the corresponding peripheral area of the pipe portion located adjacent the pipe groove;

a number of spaced apart slits formed in the sleeve band and with the slits angled relative to said longitudinal axis of the sleeve to form sharp edge portions which are at an angle to said longitudinal axis of the sleeve band and are substantially parallel to its opposing edge portion defined by the slits for frictionally engaging with the adjacent pipe surface areas which the slits overlie;

whereby any pressures of the key against the areas of the groove walls and base which are engaged by the key are dispersed through and substantially absorbed by the wall and base areas of the sleeve channel and are transmitted to, and are dispersed in the sleeve band into the pipe area adjacent the pipe groove.

5,282,655
MECHANICALLY LOCKED WELLHEAD CONNECTOR
Dale B. Marietta, Singapore, Singapore, assignor to ABB Vetco Gray Inc., Houston, Tex.
Filed Mar. 22, 1993, Ser. No. 34,013
Int. Cl.[5] F16L *37/18*
U.S. Cl. 285—315 **17 Claims**

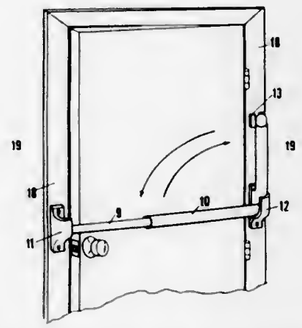


1. In an apparatus for connecting upper and lower tubular members together, comprising: upper and lower tubular members having upper and lower flanges, respectively, and rims which abut each other, the apparatus including a collet having an upper internal projection which engages the upper flange and a lower internal projection which engages the lower flange, an actuator ring in engagement with the exterior of the collet, drive means for moving the actuator ring axially from an upper position in which the lower internal projection is free to move outward, to a lower position, moving the lower internal projection inward into engagement with the lower flange, the improvement comprising:

a tapered release surface formed on the exterior of the collet; and

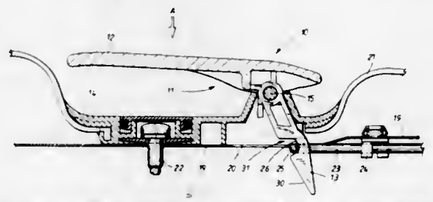
at least one threaded release pin extending through a threaded hole formed in the actuator ring for engagement with the release surface when the release pin is rotated inward, to pry the actuator ring upward from the lower position when it is desired to release the collet from the lower flange.

5,282,656
ORIGINAL DOOR BAR
John Fizer, P.O. Box 13772, Fort Wayne, Ind. 46865-3772
Filed Oct. 1, 1992, Ser. No. 955,155
Int. Cl.[5] E05C *17/30*
U.S. Cl. 292—259 R **1 Claim**



1. I claim that the original door bar is a security bar system with door-spanning telescoping tubes one end of which is headed and rests in one holder, and is capable of pivoting to a vertical position so the head may be lifted and nested, by its head structure, in a third holder located on the frame above the second holder.

5,282,657
DOOR HANDLE ASSEMBLY
Colin Clinch, Basingstoke, England; Per-Arne Axelsson, and Kristian Ostergren, both of Gothenburg, Sweden, assignors to ITW Fixfast AB, Gothenburg, Sweden
Filed Oct. 29, 1992, Ser. No. 968,146
Claims priority, application Sweden, Nov. 4, 1991, 9103223
Int. Cl.[5] E05B *3/00*
U.S. Cl. 292—336.3 **18 Claims**



1. A door handle assembly for operating a lock mechanism of a door, comprising:

a door handle housing;

a lock mechanism operating arrangement comprising an operating handle and an actuation lever fixed to said operating handle;

pivot pin means for pivotably mounting said lock mechanism operating arrangement upon said door handle housing about a pivotable axis;

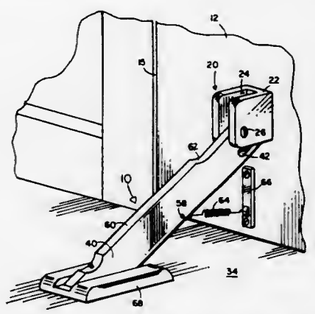
said actuation lever comprising a bifurcated member defining a pair of axially spaced shank portions disposed within first and second parallel planes disposed perpendicular to said pivotable axis and defining a gap therebetween which is disposed within a third plane interposed between and parallel to said first and second planes within which said axially spaced shank portions are disposed;

recess means defined within at least one of said pair of axially spaced shank portions of said actuation lever bifurcated member; and

a lock mechanism actuation rod having a first portion disposed within said third plane so as to be disposed within said gap defined between said pair of axially spaced shank portions, and a second axially extending portion disposed substantially perpendicular to said first portion and substantially parallel to said pivot pin means, and disposed within said recess means of said at least one of said pair of axially spaced shank portions of said actuation lever bifurcated member for operatively connecting said lock mechanism operating arrangement to a lock mechanism of said door.

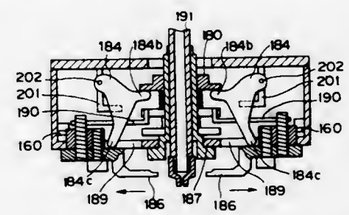
5,282,658
PIVOTALLY MOUNTED DOOR STOP DEVICE
Lewis W. Reeves, Jr., 7421 Belle River Ct., Winter Park, Fla. 32792
Filed Nov. 2, 1992, Ser. No. 970,056
Int. Cl.[5] E05C *17/44*
U.S. Cl. 292—338 **10 Claims**

1. A door stop adapted for a mounting adjacent a lower edge of a door at a location remote from the hinge, said door stop functioning to prevent an intruder from pushing the door open, said door stop comprising mounting means adapted to be secured in a fixed position adjacent the lower edge of the door, and an elongate, rigid member operatively associated with said mounting means, one end of said elongate, rigid member having an aperture, enabling it to be pivotally mounted to said mounting means, and the other end of said elongate, rigid member having a component adapted to move into contact with the floor at the behest of a user, said elongate, rigid member being selectively movable between a raised, substantially vertical storage position residing close to the door, and an active, downwardly angled position in which said other end is in firm contact with the floor, a receptacle being used in conjunction with said other end of said elongate, rigid member, said receptacle adapted to be attached to the floor in a location



near the lower edge of the door, to removably receive said other end of said elongate, rigid member, an aperture located in a central portion of said receptacle, and a slidable pin is located in said other end of said elongate rigid member, said pin being slidable into contact with said aperture when the user wishes to cause the elongate, rigid member to be in a locked relationship with said receptacle.

5,282,659
CHUCK FOR POSITIONING CHIP ELECTRONIC ELEMENTS
Kazuya Yasuraoka, and Kazuo Ujiie, both of Tokyo, Japan, assignors to Limited Company Matsumoto Giken, Tokyo, Japan
Filed Feb. 20, 1992, Ser. No. 837,883
Int. Cl.[5] H05K *3/32*
U.S. Cl. 294—2 **8 Claims**



1. A chuck for positioning an electric component on a chip comprising a head segment and a base segment;

the head segment comprising a head case accommodating an axially movable suction nozzle to hold the component on a chip by suction at the center thereof, at least four jaws that are attached to the bottom plate of the head case, symmetrically disposed around the axis of the suction nozzle and adapted to move radially with respect to said axis and parallel to the surface of the bottom plate, said jaws moving horizontally sliding over said bottom plate, links to couple together each pair of facing jaws disposed on opposite sides of said axis, elastic means to urge the jaws toward said axis, and motion converting means to radially move the jaws by the action of first driving means toward the axis of the suction nozzle and second driving means to move the suction nozzle in the direction of said axis; and

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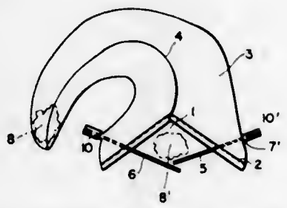
the base segment accommodating said first and second driving means.

5,282,660

SEALABLE CONTAINER FOR SANITARY COLLECTION OF MATTER, PARTICULARLY ANIMAL DROPPINGS

Martha G. Halling, 12 Riverdale Ave., Ormond Beach, Fla. 32174

Filed Oct. 29, 1992, Ser. No. 968,348
Int. Cl.[5] A01K *29/00*; E01H *1/12*
U.S. Cl. 294—1.3 **14 Claims**



1. A bag or container for the sanitary collection or storage of items comprising:

(a) a bag having a sealable opening at the top thereof,

(b) a pair of cooperating, substantially rigid scooping members mounted entirely within the bag, each having a gripping end and a scooping end, and each attached in the vicinity of their gripping end to opposite walls on the inside of the bag with their scooping ends directed downwardly to the inside bottom of the bag,

(c) means for gripping and manipulating the scooping members by gripping them at their griping end, from the outside of the bag wall,

(d) the attachment of the gripping end being in the vicinity of the mouth of the bag

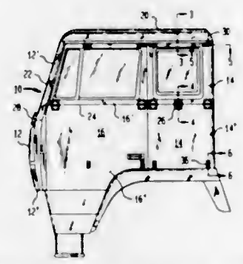
whereby said scooping members are adapted to be gripped from the outside of the bag and the scooping ends pivoted from their position of being directed downwardly to the inside of the bag bottom to a position upwardly and out of the opening of the bag, and further adapted to scoop items up by the cooperating scooping members, and the item and scooping members then pivoted back into a position of being entirely enclosed in the bag.

5,282,661

COLLAPSIBLE DRIVER'S CAB FOR A TRUCK

Alois Arnberger, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Wien, Austria

Filed Jun. 30, 1992, Ser. No. 906,533
Int. Cl.[5] B62D *33/06*
U.S. Cl. 296—27 **8 Claims**



1. A collapsible driver's cab for a truck, comprising

a box-like structure including side walls, side doors, a front wall, and a rear wall, each of which is divided horizontally into upper parts and lower parts,

hinging means for hingedly connecting said upper parts to said lower parts so that said driver's cab can assume an uncollapsed box-like configuration, and so that said driver's cab can assume a collapsed configuration wherein said upper parts of said side walls, side doors, and front wall are pivoted down to lie substantially flat in a vertical position against exterior surfaces of their respective lower parts,

a rigid removable roof detachably connected to said upper parts,

a plurality of mating centering cones and centering troughs disposed on contact faces of said upper parts and said roof, and

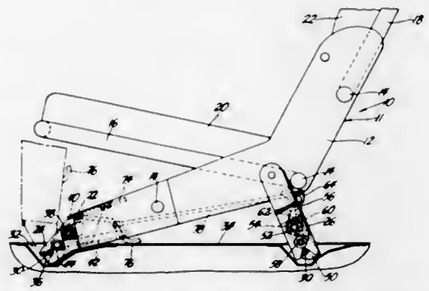
a plurality of attachment means for attaching said front wall, said side walls, said side doors, said front wall, and rear wall, and said roof together into said box-like structure.

5,282,662

REAR SEAT FOR ALL PURPOSE VEHICLE

James Bolsworth; Kenneth S. Pyszel, both of Sterling Heights, and Joseph D. Kondziola, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1992, Ser. No. 990,206
Int. Cl.[5] B60N *1/02*
U.S. Cl. 296—65.1 **13 Claims**



1. A rear seat for an all purpose vehicle or the like comprising;

a frame having a pair of front forks and a pair of rear forks for supporting the rear seat on four mounting pins that are disposed in escutcheons in a vehicle floor,

means for latching the pair of front forks on two mounting pins including front hooks that are pivotally mounted for rotation between a latched position and an unlatched position,

a handled for rotating the front hooks backs and forth between the latched position and the unlatched position, and

means for locking the front hooks in the latched position that includes at least one abutment in one of said escutcheons that prevents rotation of one front hook when it is a latched position in said one escutcheon and the rear seat is in an installed position.

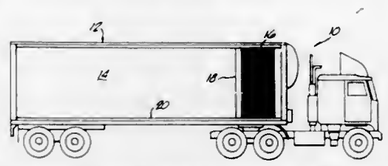
5,282,663

RETRACTING SYSTEM FOR FLEXIBLE SIDE WALLS FOR CARGO VEHICLES

Terry F. Horton, Whittier, Calif., assignor to Utility Trailer Manufacturing Company, City of Industry, Calif.

Filed Jan. 10, 1992, Ser. No. 820,300
Int. Cl.[5] B60J *5/06*
U.S. Cl. 296—155 **13 Claims**

1. A flexible side cargo vehicle having a cargo area with a floor and with at least one open side providing access to said cargo area, said open side being closable by at least one slidable door and a flexible side wall attached to the slidable door, the improvement comprising: a plurality of pulleys affixed to both said cargo vehicle and said slidable door, a first flexible connecting means having one end secured to said door and initially directed around one of said pulleys on said door and then routed around one or more of said pulleys on said cargo vehicle and said door so that the other end of said first flexible connecting means is also secured to said door and a second flexible connecting means having one end secured to said door



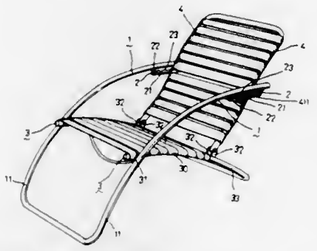
and then initially routed around a second one of said pulleys on said door and then directed around one or more of said pulleys on said cargo vehicle and said door so that the other end of said second flexible connecting means is secured to said door adjacent to said other end of said first flexible connecting means to cause controlled movement of said slidable door along the open side so that said slidable door remains perpendicular to the floor during opening and closing of the open side by the slidable door and the flexible side wall.

5,282,664

FOLDING LAWN CHAIR

Chun-Chu Tseng, No. 3, Ting-Hsi-Hsin, Lu-Man Ts'un, Chu-Chi Hsiang Chiayi Hsien, Taiwan

Continuation-in-part of Ser. No. 939,301, Sep. 2, 1992, Pat. No. 5,244,249. This application Jun. 14, 1993, Ser. No. 76,533
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—31 **1 Claim**



1. A lawn chair, comprising:

a backrest frame having a lower end portion;

a seat frame assembly including a seat frame which has a front end portion and a rear end portion, and a rear leg frame which has an upper end portion formed integrally with said rear end portion of said seat frame, said backrest frame being connected pivotally to said rear end portion of said seat frame at said lower end portion thereof;

two spaced arm supporting frames provided on two opposite sides of said backrest frame, each of said arm supporting frames having an intermediate portion which is connected pivotally to said front end portion of said seat frame, a front leg portion extending downwardly and forwardly from said intermediate portion, and an armrest portion extending upwardly and rearwardly from said intermediate portion;

two elongated positioning members connected respectively and securely to rear end portions of said arm supporting frames, each of said positioning members being formed with a longitudinal slot which has a horizontal row of upwardly extending positioning portions at an upper side thereof, an access hole, and a restricted passage which communicates said longitudinal slot with said access hole; and

two opposed positioning studs respectively secured to and extending outward from said two opposite sides of said backrest frame, each of said studs being engaged within a selected one of said positioning portions of said longitudinal slot of a corresponding said positioning member and having a neck and an enlarged head, said neck being sized so as to be slidable from said longitudinal slot through said restricted passage into said access hole, said enlarged head being sized so as to prevent removal of said stud from said longitudinal slot and so as to be extensible through said access hole when a corresponding said neck is moved to said access hole, thereby permitting said stud to separate from said positioning member, each of said positioning studs being movable so as to engage another one of said positioning portions along said longitudinal slot in order to change an angle between said backrest frame and said seat frame of said seat frame assembly;

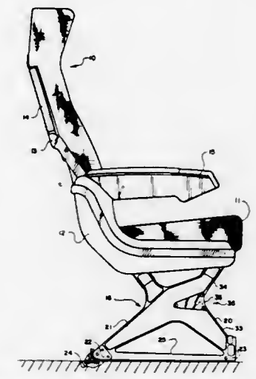
whereby, when said positioning studs are removed from said positioning members, said backrest frame can be folded over said seat frame assembly, while the arm supporting frames can be rotated relative to said seat frame assembly to align two end portions of each of said arm supporting frames with said seat frame assembly.

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PASSENGER SEAT AND PASSENGER SEAT LEG ASSEMBLY WITH ENERGY ABSORBING ZONE INCLUDING AUXILIARY CRUSH-RESISTING MEANS

Michael T. Beroth, Lewisville, N.C., assignor to Burns Aerospace Corporation

Continuation of Ser. No. 642,403, Jan. 17, 1991, Pat. No. 5,224,755. This application Feb. 17, 1993, Ser. No. 18,776
Int. Cl.[5] B60N *2/42*
U.S. Cl. 297—216.1 **1 Claim**



1. A passenger seat leg assembly with an energy absorbing zone, comprising:

(a) fore and aft located legs for being fastened to a seating track mounted on a floor;

(b) fore and aft located seat-bottom support for supporting a seat bottom assembly including a cushion;

(c) said seat legs and said seat bottom support integrally formed with each other to define a single unit seat leg assembly, said seat leg assembly being characterized in that the fore located leg and the fore located seat bottom support diverge from each other to define an intermediate concavity;

(d) said seat leg assembly including at least one integrally-formed, peripherally enclosed and laterally-extending

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through chamber formed in the seat legs in the area of the concavity to define an energy-absorbing zone providing controlled bending towards each other of the fore located seat leg and the fore located seat bottom support in the area of the chamber upon the application of bending force to the seat leg assembly; and

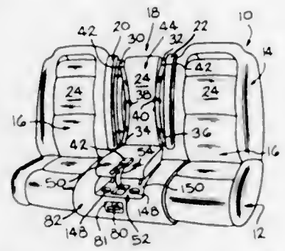
(e) an auxiliary crush-resisting member having predetermined magnitude of resistance to crushing positioned in and cooperating with said chamber to provide additional resistance to crushing.

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VEHICLE SEAT ASSEMBLY WITH INTEGRATED CHILD SEAT

Robert L. Demick, Eastpointe, and Mark S. Milner, Farmington Hills, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jan. 29, 1992, Ser. No. 827,403
Int. Cl.[5] B60N *2/30*
U.S. Cl. 297—237 **14 Claims**



1. A seat assembly for a motor vehicle having an integral child seat therein comprising:

an adult seat cushion;

an adult seat back extending upwardly at a rear of said adult seat cushion and including a seat back frame and seat back cushion, said seat back cushion forming a seat back surface;

right and left panels forming a portion of the adult seat back cushion, each panel being movably mounted to said seat back cushion, said panels being laterally spaced from one another with a portion of said seat back cushion and said seat back surface being disposed therebetween;

said panels having stowed positions in which a face surface of said panels forms a portion of said seat back surface upon which an adult seat occupant rests, said panels being movable forwardly from said seat back and laterally away from one another to use positions whereby said portion of said seat back surface between said panels forms a seat back for a child seat;

means for raising a portion of said seat cushion forward of said child seat back from a stowed position, in which said portion forms a part of said adult seat cushion, to a raised use position above said adult seat cushion in which said portion forms a child seat cushion for a child occupant above said adult seat cushion; and

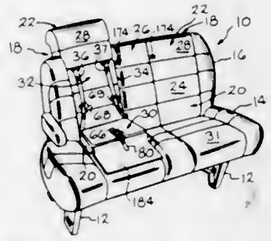
restraint means for holding a child occupant seated upon said raised child cushion.

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VEHICLE SEAT ASSEMBLY WITH INTEGRAL CHILD SEAT

Robert D. Elton, Ann Arbor; Robert L. Demick, Eastpoint; Sandra L. Smith, Waterford; Steve W. Kennel, Ann Arbor, and Kurt A. Bart, New Haven, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Dec. 20, 1991, Ser. No. 811,021
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—238 **19 Claims**



1. A seat assembly for a motor vehicle comprising:

an adult seat cushion;

an adult seat back extending upwardly at a rear of said adult seat cushion and including a seat back frame and seat back cushion;

a child seat cushion separable from said adult seat back and having a stowed position extending upwardly from said adult seat cushion and providing a portion of the adult seat back cushion, said child seat cushion being pivotally mounted at a lower end adjacent said adult seat cushion permitting said child seat cushion to be pivoted downward to a use position extending forward from said adult seat back and resting upon said adult seat cushion to form a seat cushion for a child and revealing a recessed portion in said seat back having a face surface recessed rearward from a face surface of said adult seat back cushion;

a protective flap mounted to said child seat cushion and extendable forwardly when said child seat cushion is in the use position to overlie said adult seat cushion forward of said child seat cushion to protect said adult seat cushion from wear and debris from shoes of a child seat occupant;

mounting means for pivotally mounting said child seat to said adult seat back with a floating pivot axis that rises from a first position corresponding to the stowed position of the child seat cushion to a second position corresponding to the use position of said child seat cushion;

restraint means for restraining a child occupant in said child seat, said restraint means including a buckle having a housing pivotally attached to said child seat cushion for rotation about an axis fixed to said child seat cushion;

a child headrest movably mounted to said seat back having a stowed position in which said headrest forms a portion of said seat back cushion immediately above said child seat cushion when said child seat cushion is in said stowed position and said headrest having a face surface substantially even with the face surface of the adult seat back, said headrest being mounted to said seat back for movement to a use position upward and rearward of said stowed position where said headrest face surface forms a substantial continuation of the face surface of said recessed portion;

means for retaining said headrest in said stowed and use positions;

means for manually releasing said retaining means when said headrest is in said stowed position; and

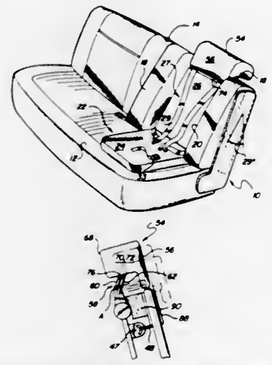
bias means to move said headrest from said stowed position toward said release position when said retaining means is manually released.

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CHILD RESTRAINT SEAT INCLUDING PIVOTAL HEADREST ASSEMBLY

Edward R. Heussner, Warren, and Jeffrey L. Goins, Sr., New Haven, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Oct. 13, 1992, Ser. No. 960,507
Int. Cl.[5] A47C *15/00*; B60N *2/30*
U.S. Cl. 297—238 **6 Claims**



1. A child restraint seat for disposition in the backrest cushion of an adult passenger seat for restraining a child in a vehicle comprising:

an adult passenger seat having a generally horizontal seat portion and a generally vertical backrest portion;

a cavity recessed in the face of the adult backrest portion for receiving said child restraint seat, said cavity having a back wall forming a child backrest generally parallel with said adult backrest portion;

said adult backrest portion comprising a first lower portion pivotal between a folded position recessed in said cavity forming a lower portion of the adult backrest and an unfolded position pivoted downwardly to a generally horizontal position against the adult seat portion forming a child seat portion and a second upper portion pivotal about an axis between a folded position recessed in said cavity forming an upper portion of the adult backrest and an unfolded position pivoted upwardly and extending at least partially above the upper portion of said adult backrest forming a child headrest;

and characterized by pivot means interconnecting said second upper portion and said adult backrest for pivoting said second upper portion in an arcuate orbital path spaced from said axis from said folded position to said unfolded position to provide an extended child seat height and headrest support said second upper portion including a front face, said front face forming a portion the adult backrest in said folded position and aligned in a parallel plane with said child backrest forming an extended portion thereof in said unfolded position.

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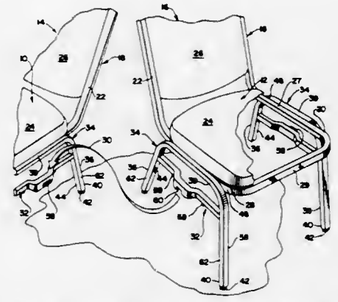
GANGING MECHANISM AND STACKING BAR ASSEMBLY FOR STACKING CHAIRS

Peter Barile, Naples, Fla., assignor to Shelby Williams Industries, Inc., Morristown, Tenn.

Filed Jun. 16, 1992, Ser. No. 899,487
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—248 **10 Claims**

1. A combination ganging and stacking bar assembly adapted to be installed between each pair of aligned front and rear legs of a pair of juxtaposed chairs for releasably locking said pair of justaposed chairs against inadvertent separation, each pair of said legs having distal free ends spaced below the seat of a chair, said bar assembly comprising:

a. an integral, preformed bar member of a length selected to be secured one each between each pair of said aligned front and rear legs spaced above said free ends of said legs and spaced below the seat of the chair when so secured, said bar member having a channel-shaped cross-section including an opening therein facing a direction opposite said chair seat;



b. an offset segment formed in each bar member proximate a midpoint of the length thereof and facing a direction outwardly away from said chair legs; and

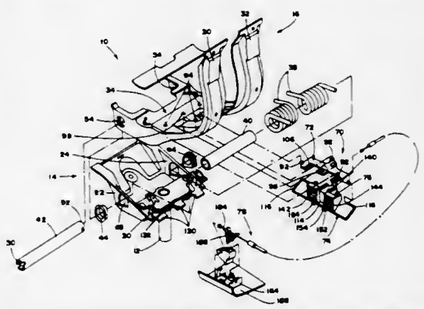
c. cooperative locking means provided in a channel wall of said offset segments of each of said bar members, said locking means adapted to be matingly engaged for releasably locking said pair of juxtaposed chairs against separation.

5,282,670

CABLE ACTUATED VARIABLE STOP MECHANISM

Gary L. Karsten, Kentwood; Gregg R. Spoolstra, Byron Center; Kurt R. Heidmann, and John C. Fuhs, both of Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 20, 1992, Ser. No. 870,950
Int. Cl.[5] A47C *1/025*
U.S. Cl. 297—370 **30 Claims**



1. A variable back stop mechanism for a chair of the type having a support which includes a stop and a back pivoted to the support for tilting movement between an upright position and a reclined position, said mechanism comprising:

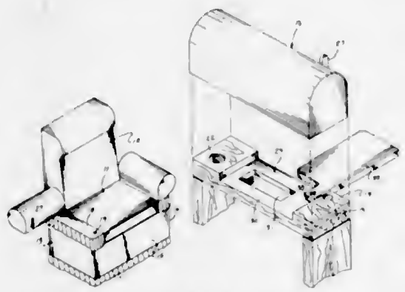
a stop lever adapted to be moveably mounted on the back;

lever mounting means for moveably mounting said lever on the back, said stop lever and lever mounting means positioned and configured so that said lever will engage the stop on the support as the back tilts;

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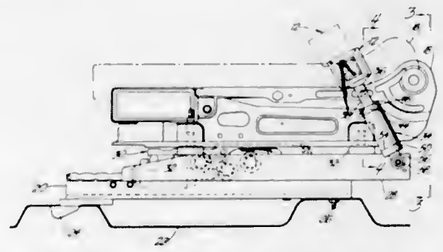
a lock;
lock mounting means for moveably mounting said lock on the back for movement between an inoperative position at which the stop lever can freely move and an operative position engaging the stop lever and selectively holding it in one of a plurality of positions at which it engages the support stop and limits tilting movement of the back; and
actuator means operatively connected to said lock for moving said lock between said operative and inoperative positions.

5,282,671
SWING ARM CHAIR APPARATUS
Sonya E. Funk, 629 Mundy St., Watertown, N.Y. 13601
Filed Sep. 3, 1992, Ser. No. 939,656
Int. Cl.[5] A47C 7/54
U.S. Cl. 297—411.31 2 Claims



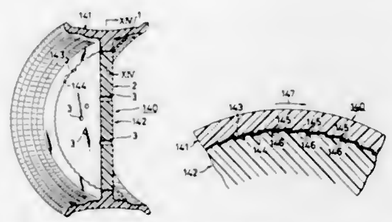
1. A swing arm chair apparatus, comprising,
a chair having a chair seat, the chair seat including a chair back support extending upwardly of the chair seat, with the chair having a chair base mounted below the chair seat, the chair base including a first side wall and a second side wall, and a front wall,
and
a first arm extending from the chair back support along the first side wall to the front wall, and a second arm extending along the second side wall from the chair back support to the front wall,
and
the front wall including a first side wall top wall oriented at an oblique angle to the first side wall mounted integrally at an upper distal end of the first side wall extending from the first side wall to the chair seat, with the first side wall top wall extending from the chair back support to the front wall,
and
a first arm bottom wall axle mounted to the first arm and directed pivotally through the first side wall top wall permitting pivoting of the first arm from a first position to a second position beyond the first side wall,
and
latch means mounted to the first arm arranged for selective latching with the first side wall top wall,
and
the latch means includes a top wall lock bore orthogonally directed through the first side wall top wall in adjacency to the front wall positioned between the first side wall and the chair seat, and the first arm having a first arm bottom wall arranged parallel to the top wall substantially coextensive therewithin, and the first arm bottom wall axle directed orthogonally through the bottom wall, and the latch means further including a cylindrical latch bolt, and a plurality of latch bolt saddles extending about the latch bolt, with the latch bolt saddles mounted to the first side wall top wall, and the latch bolt having a latch bolt axis, and the latch bolt including a latch bolt arm orthogonally oriented relative to the axis mounted medially of the latch bolt between the saddles, and the latch bolt including a latch bolt rod, the latch bolt arm pivotally mounted to the latch bolt rod at an upper distal end of the latch bolt rod, the latch bolt rod arranged for reception within the top wall lock bore when the first arm is in a first position.

5,282,672
VEHICULAR SEAT WITH OCCUPANT RESTRAINT SYSTEM
Hans J. Borlinghaus, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 20, 1992, Ser. No. 915,585
Int. Cl.[5] A62B 35/00
U.S. Cl. 297—468 2 Claims



1. An adjustable vehicular seat assembly having integral occupant restraint components, said assembly comprising: a fixed rail for attachment to a vehicle underbody; a sliding rail movably carried on said fixed rail; a seat frame operatively supported above said sliding rail for receiving and supporting a vehicular seat cushion; articulator means interconnecting said seat frame and said sliding rail for moving said seat frame upwardly and angularly relative to said sliding rail; buckle means for clasping a seat belt harness; a piston rod extending from said buckle means; a piston head disposed on said piston rod; a fluid cylinder operatively surrounding said piston head and movably sealing said piston rod; and a mounting bracket extending from said cylinder and pivotally connected to said sliding rail.

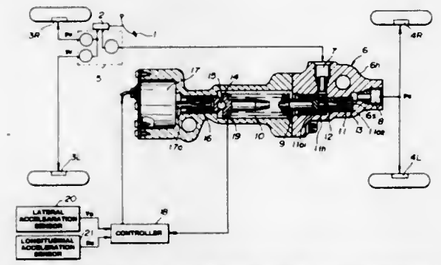
5,282,673
COMPOUND RESIN WHEEL
Haruo Koyama, Saitama; Ynuichi Nishimuro, Tokyo; Kunio Machida, Tokyo, and Yoshihide Fukahori, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 22, 1992, Ser. No. 901,781
Claims priority, application Japan, Jul. 16, 1991, 3-175373
Int. Cl.[5] B60B 23/00
U.S. Cl. 301—64.4 32 Claims



1. A compound resin wheel comprising:
at least two moldings integrated together to form at least a part of the resin wheel,

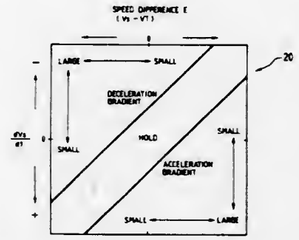
at least one of the moldings being made of a long fiber reinforced thermoplastic resin, and
the other molding being made of one of metal and fiber reinforced plastic,
the moldings having fitting portions provided with screw threads thereon for integrating the moldings by screwing and ratchet teeth on the screw threads to allow the moldings to turn in a tightening direction but prevent the moldings from turning in a loosening direction, thereby increasing the strength of the resin wheel.

5,282,674
FRONT/REAR APPORTIONING CONTROL BASED ON VEHICLE TURNING
Toshiro Matsuda, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Dec. 4, 1991, Ser. No. 802,295
Claims priority, application Japan, Dec. 21, 1990, 2-412734
Int. Cl.[5] B60T 8/26
U.S. Cl. 303—9.71 8 Claims



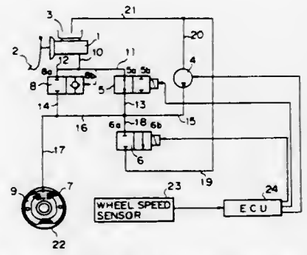
1. A control system for distributing braking forces applied to front and rear wheels in an automotive vehicle, comprising:
a fluid pressure control valve for controlling brake fluid pressure distribution between said front and rear wheels, such that rear-wheel brake fluid pressure is reduced by a predetermined ratio when compared with front-wheel brake fluid pressure in a range above a critical fluid pressure at which said brake fluid pressure distribution between said front and rear wheels is essentially varied, while said rear-wheel brake fluid pressure is equivalent to said front-wheel brake fluid pressure in a range below said critical fluid pressure;
means for monitoring whether said vehicle turns, to generate a signal representative of a turning state of said vehicle; and
means for compensating steering characteristics of said vehicle toward neutral steering during braking on turns by varying said critical fluid pressure in response to said signal representative of a turning state of said vehicle, such that said critical fluid pressure is set at a higher level than a given reference critical fluid pressure, said reference fluid pressure being set in said fluid pressure control valve in a straight-ahead driving state of said vehicle.

5,282,675
BRAKING ANTI-LOCK CONTROL FOR VEHICLE
Satomi Okubo, and Toshifumi Maehara, both of Saitama, Japan, assignors to Akebono Research and Development Centre, Ltd., Hanyu and Akebono Brake Industry Co., Ltd., Tokyo, both of Japan
Continuation of Ser. No. 591,056, Oct. 1, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,968
Claims priority, application Japan, Sep. 29, 1989, 1-252211
Int. Cl.[5] B60T 8/50
U.S. Cl. 303—108 14 Claims



12. An anti-lock control system for a vehicle comprising:
means for braking said vehicle;
means for calculating a speed value of said vehicle;
means for calculating an acceleration-deceleration value of said speed value; and
control means for controlling said braking means based on said speed value and said acceleration-deceleration value, said control means including a control map having a pressure decrease region with decrease brake hydraulic pressure gradients therein, and a pressure increase region with increase brake hydraulic pressure gradients therein, said increase brake hydraulic pressure gradients representing duty ratios of a first control signal for controlling a hold valve and said decrease brake hydraulic pressure gradients representing duty ratios of a second control signal for controlling a decay valve, said control means reading a brake hydraulic pressure gradient from said control map based on said speed value and said acceleration-deceleration value and controlling said braking means based on said read brake hydraulic pressure gradient.

5,282,676
COMBINED ANTISKID AND TRACTION CONTROL ELECTRONIC BRAKE SYSTEM
Kenji Takeda; Hiroshi Ogawa, and Mitsuo Inagaki, all of Okazaki, Japan, assignors to Nippon Soken Inc., Nishio, Japan
Filed Nov. 27, 1991, Ser. No. 798,714
Claims priority, application Japan, Nov. 29, 1990, 2-334367
Int. Cl.[5] B60T 8/32, 8/44
U.S. Cl. 303—113.2 8 Claims



1. A brake system for a wheel in a vehicle, said system

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capable of obtaining an anti-skid operation for preventing the locking of the wheel when the wheel is subjected to a brake operation as well as a traction control operation for preventing free rotation of the wheel when the vehicle is started or accelerated, said system comprising:

a brake pedal;

a reservoir tank storing a brake fluid under atmospheric pressure;

a master cylinder connected to the brake pedal generating a hydraulic pressure when the brake pedal is depressed;

a wheel cylinder arranged in the wheel of the vehicle obtaining a braking operation when the hydraulic pressure is applied thereto;

a main conduit connecting the master cylinder to the wheel cylinder;

cut-off valve means arranged in the main conduit for disconnecting the wheel cylinder from the master cylinder when said anti-skid operation or traction control operation is required;

a relief conduit connecting the main conduit, at a position between the cut-off valve and the wheel cylinder, to the reservoir tank, for returning an amount of liquid into the tank;

relief valve means arranged in the relief conduit for communicating between the wheel cylinder and the reservoir tank when a reduction of pressure in the wheel cylinder is required during said anti-skid control or said traction control;

a supply conduit connecting the main conduit, at a position between the cut-off valve means and the wheel cylinder, to the reservoir tank; and

pump means arranged in said supply conduit and operated intermittently for supplying the brake fluid from the reservoir tank to the wheel cylinder when an increase in the pressure in the wheel cylinder is required during said anti-skid control or said traction control.

5,282,677

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

Harald Luetteke, Nieder-Rosbach, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

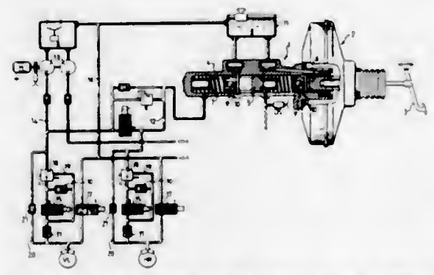
PCT No. PCT/EP91/00876, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO92/01591, PCT Pub. Date Feb. 6, 1992

PCT Filed May 10, 1991, Ser. No. 838,438

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1990, 4023708; Mar. 4, 1991, 4106790

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—116.2 **11 Claims**



1. An anti-lock hydraulic brake system with at least one wheel brake and an auxiliary pressure source, a pressure line between said auxiliary pressure source and said wheel brake, an inlet valve in said pressure line, a return line, an outlet valve, said wheel brake connected to said return line via said outlet valve, a differential pressure limiter means disposed within said pressure line between said auxiliary pressure source and said inlet valve, said differential pressure limiter means including a closure member, a valve spring acting on said closure member, a control line extending in parallel to said pressure line and connected thereto downstream of said inlet valve causing said closure member to also be acted upon by the fluid pressure in said wheel brake to cause opening of said pressure line, wherein a pressure relief valve means opening towards the wheel brake is connected in parallel to said inlet valve, said pressure relief valve means opening communication past said inlet valve whenever a predetermined high pressure develops across said inlet valve.

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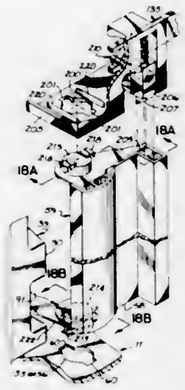
CART FOR MEDICATION

Rainer B. Teufel; Timothy A. Friar; Paul P. Kolada; Jerome M. Romick; Marc D. Taylor, all of Columbus, Ohio, and Duane Beardsley, Berrien Springs, Mich., assignors to Artromick International, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 662,750, Mar. 1, 1991. This application Feb. 28, 1992, Ser. No. 843,520

Int. Cl.[5] E05B *65/46*

U.S. Cl. 312—221 **11 Claims**



1. In a medication cart having a base, two spaced end panels mounted on said base and slidable drawers supported by said end panels, a door lock comprising:

a vertical locking bar on at least one corner on one side of said cart, said locking bar having a vertical axis,

a lock collar mounted above said panels,

said locking bar having studs at its upper and lower ends,

said lock collar and base having holes to receive said studs, thereby mounting said lock bar for pivotal movement about said vertical axis,

and means on said lock collar for locking said bar across said drawers.

5,282,679

ARTICLE OF FURNITURE

Marthinus J. W. Redelinghuys, P O Box 36, Schagen, 1207, South Africa

Filed May 21, 1992, Ser. No. 886,793

Claims priority, application South Africa, May 22, 1991, 91/3869

Int. Cl.[5] A47B *88/00*

U.S. Cl. 312—316 **6 Claims**

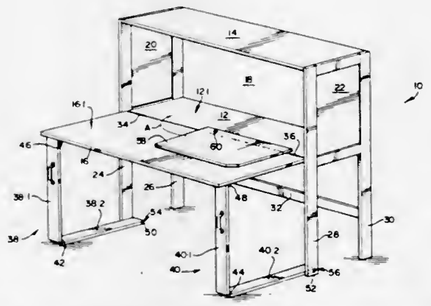
1. An article of furniture which includes

a closable cabinet of six-sided generally rectangular configuration having a pair of opposed and vertically spaced walls to constitute a bottom wall and a top wall, a pair of spaced and upright walls to constitute a front wall and a rear wall, and a pair of spaced and upright side walls, the walls defining between them an enclosed space of generally rectangular configuration;

the bottom wall constituting an operatively horizontally disposed support surface, and the front wall being hingedly mounted along its lower edge on the bottom wall to constitute a displaceable panel pivotally displaceable around an axis extending substantially parallel to the said lower edge of the front wall, from an upright closed position in which the panel closes the cabinet to an open position in which the panel is disposed in a substantially horizontal position level with the support surface to provide together with the support surface an extended work surface;

stationary support means to support the cabinet at a height such that the bottom wall thereof is located at desktop level;

a pair of laterally spaced foldable support legs to support the displaceable panel when the said panel is in the open position, each leg being comprised of at least two sections hingedly connected together to provide a hinge point for each leg in a medial position relative to opposed extreme ends of the legs;



one extreme end of each support leg being hingedly attached to a lateral edge region of the displaceable panel, and the other extreme end of each support leg being pivotally connected to the stationary support means at a point located proximate to a basal part of the article of furniture;

the attachment of the foldable support legs to the displaceable panel being so arranged that when the displaceable panel in use is brought to the upright closed position the two support legs are brought to an unfolded and substantially straight configuration with the two sections of each leg in general alignment with one another, and when the displaceable panel is brought to the substantially horizontal open position the two support legs are folded into an angular configuration to be supported on the hinge point with one section of each leg extending substantially horizontally between the article and the hinge point and the other section disposed substantially upright to support the displaceable panel; and

at least one displaceable platform being provided on the bottom wall of the cabinet, to be displaceable from an inoperative retracted position on the bottom wall within the cabinet, to an operative extended position on the extended work surface provided by the displaceable panel in its open position.

5,282,680

APPARATUS FOR CONTINUOUS POLYMERIZATION

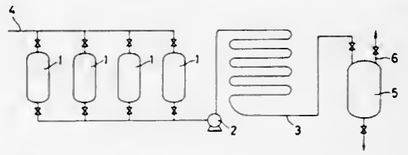
Tadashi Amano, Kamisu, Japan; Shuji Ohnishi, Lake Jackson, Tex.; Minoru Shigemitsu; Yasuhiro Takahashi, both of Kamisu, Japan, and Hajime Kitamura, Ichihara, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,604

Claims priority, application Japan, May 19, 1992, 4-151499

Int. Cl.[5] B01F *15/02*

U.S. Cl. 366—69 **3 Claims**



1. An apparatus for continuous polymerization of vinyl chloride or a vinyl chloride-based monomeric mixture, comprising at least one pre-mixer for preparing an aqueous suspension of the vinyl chloride or vinyl chloride-based monomeric mixture, and a polymer slurry tank connected to said pre-mixer through a polymerization passage,

wherein a pump comprising a conical hub and an impeller mounted thereon comprised of a single spiral blade is used for drawing out the aqueous suspension from said pre-mixer into said polymerization passage and for discharging a polymer slurry formed in said passage into said slurry tank, and said polymerization passage has a length sufficient for permitting the vinyl chloride or vinyl chloride-based monomeric mixture contained in the aqueous suspension flowing through said passage to be polymerized to a predetermined extent while passing through said passage.

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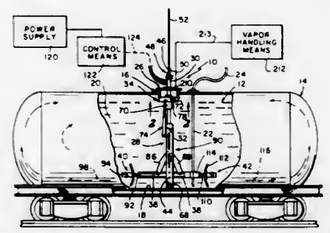
PORTABLE AGITATOR FOR FLUIDIZING BOTTOM SOLIDS IN TANKS

Ralph A. Supelak, Strongsville, Ohio, assignor to Cadence Environmental Energy, Inc., Michigan City, Ind. and Ash Grove Cement Company, Overland Park, Kans.

Filed Jul. 29, 1992, Ser. No. 921,321

Int. Cl.[5] B01F *7/00*

U.S. Cl. 366—246 **24 Claims**



1. A portable agitator for extending into an interior region of a tank through a manway tube mounted on the tank to fluidize material contained in the tank, the manway tube including an axially inner end lying adjacent to the tank and an axially outer end extending away from the tank, the agitator comprising

a frame,

means for mixing solid and liquid material contained in the interior region of the tank to produce a pumpable slurry while the frame is in the tank, the mixing means being mounted on the frame,

means for wedging only against the axially inner end of the

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manway tube to anchor the frame and position the mixing means in the interior region of the tank while the frame is in the tank, the wedging means being mounted on the frame, and

means for moving the wedging means relative to the frame.

5,282,682

MICRO FREEZE POINT ANALYSIS APPARATUS AND METHOD

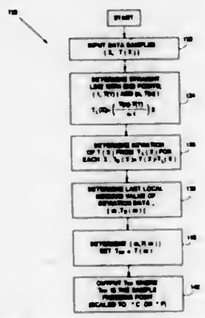
Thomas W. Orlando, and Vincent T. Randal, both of San Antonio, Tex., assignors to Alcor, Inc., San Antonio, Tex.

Continuation of Ser. No. 589,376, Sep. 27, 1990, Pat. No. 5,141,329. This application Aug. 4, 1992, Ser. No. 925,791

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] **G01N** *25/04*

U.S. Cl. 374—16 **5 Claims**



1. A method for determining the freezing point of a substance, comprising the steps of:

cooling said substance to a temperature below a predicted freezing point of said substance;

passively allowing said substance to warm to a temperature above said predicted freezing point of said substance;

obtaining a time sequential plurality of temperature measurements of said substance, each of said temperature measurements associated with one of a plurality of sequential time intervals, said sequential plurality of temperature measurements having a first and a last temperature measurement, said first temperature measurement being made a lowest temperature value in said range and said last temperature measurement being made at a highest temperature value in said range; and

determining a last local maximum negative deviation of said temperature measurements within said range from a time correspondence linear set of hypothetical sequential temperature valves extrapolated between said first temperature measurement and said last temperature measurement, said last local maximum negative deviation within said range being indicative of said freezing point of said substance.

5,282,683

FLUID-TEMPERATURE TESTING ASSEMBLY

Richard L. Brett, Roswell, Ga., assignor to Liquid Crystal Sciences, Inc., Atlanta, Ga.

Filed Dec. 4, 1992, Ser. No. 985,310

Int. Cl.[5] **G01K** *1/14, 11/12, 13/12*

U.S. Cl. 374—150 **2 Claims**

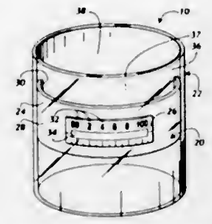
1. A method of measuring temperature within a container, said method comprising the steps of:

providing a container including, at least, a container wall bounding a container cavity and defining an access aperture that allows access to and from the container cavity;

providing a thermometer insert component that is resilient and biased toward a flat configuration;

removably engaging the thermometer insert component to the container wall within the container cavity, wherein said step of removably engaging includes, at least, the steps of,

bending the thermometer insert component,



inserting the thermometer insert component through the access aperture and into the container cavity,

releasing the thermometer insert component, and

allowing the resilient nature of the thermometer insert component to cause the thermometer insert to affix to the container wall within the container cavity; and

observing the thermometer insert component through the container wall.

5,282,684

DEVICE FOR MONITORING THE TEMPERATURE OF COOLED OR DEEP-FROZEN PRODUCTS

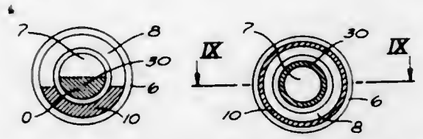
Walter Holzer, Drosteweg 19, Meersburg, Fed. Rep. of Germany 7758

Filed Aug. 6, 1987, Ser. No. 82,416

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704615; Apr. 14, 1987, 3712201

Int. Cl.[5] **G01K** *11/00*

U.S. Cl. 374—160 **1 Claim**



1. A device for monitoring the temperature of cooled or deep-frozen products, such as foodstuffs, pharmaceuticals and the like, which provides a permanent indication that a critical temperature has been exceeded, wherein the device comprises a closed body having a centrally disposed axis, said body being transparent on at least one side; separating wall means disposed within said body for separating said body into an inner circular compartment having an outer surface and an outwardly disposed annular compartment having an outer surface concentric with said circular compartment; and at least one indicator fluid disposed within each of said compartments, each of said indicator fluids being disposed about said outer surfaces of each of said compartments and having a different melting point associated therewith, said indicator fluids being maintained in a predetermined position within each said compartment until the temperature of said product exceeds the melting point of said indicator fluid where-upon said fluid changes its predetermined position; said body with said fluids therein being whirled in a centrifuge, and the fluid in each compartment being thereby deposited on said outer surfaces of each compartment while being whirled under simultaneous cooling and solidifying on said outer surface of each compartment of the indicator unit thereby to determine said predetermined position.

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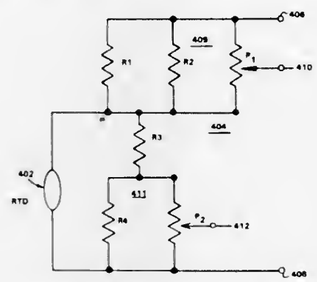
ELECTRONIC THERMOMETER WITH REDUNDANT MEASURING CIRCUITS AND ERROR DETECTION CIRCUITS

John H. Koegler, Pattersonville, N.Y., assignor to Anderson Instrument Company, Inc., Fultonville, N.Y.

Filed Jan. 10, 1992, Ser. No. 818,883

Int. Cl.[5] **G01K** *7/24*

U.S. Cl. 374—172 **4 Claims**



1. A temperature responsive circuit comprising:

a plurality of temperature measuring circuits, each measuring circuit generating separate temperature signals;

failure detection means for issuing a failure signal when the variance between said temperature signals exceeds a threshold level, and

failure detection inhibit means for inhibiting said failure detection means when at least one of said temperature measuring circuits generates a rapidly changing temperature signal, wherein the inhibit period is proportional to the rate of change of said temperature signal.

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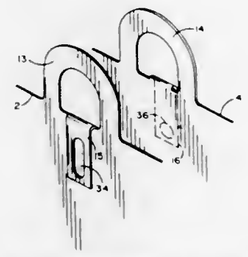
SHOPPING BAG HAVING CLOSURE MEANS

Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630

Filed Oct. 2, 1992, Ser. No. 955,841

Int. Cl.[5] **B65D** *33/08*

U.S. Cl. 383—10 **11 Claims**



1. For a bag to receive and transport articles and including a front, back, bottom, a pair of opposing sides, and a normally open mouth formed between said front, back and sides through which the articles are received by and removed from the bag, the improvement comprising a plurality of flexible strips connected to and extending from said bag by which to constrict said mouth to prevent the articles being transported in said bag from inadvertently spilling out, each of said plurality of strips having a length so that said strips can be tied together to form a closure which constricts said mouth, a width, and a series of serrations extending across the width so that each strip may be severed at a respective series of serrations and said closure removed from said bag to release the constriction of said mouth.

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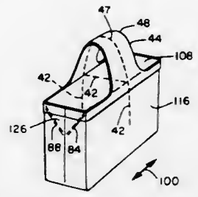
FLEXIBLE PACKAGING WITH COMPRESSION RELEASE, TOP OPENING FEATURE

Paul Y. Yee, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 28, 1992, Ser. No. 843,698

Int. Cl.[5] **B65D** *33/06*

U.S. Cl. 383—25 **21 Claims**



1. A bag for receiving and containing a substantially stacked array of selected articles, said bag comprising:

a flexible front panel which has two opposed side edge regions and a top edge region, and which has an appointed lengthwise stack direction;

a flexible back panel having two opposed side edge regions and a top edge region, said back panel connected in facing relation to said front panel along the side edge regions thereof;

a flexible top gusset connected to the top edge regions of said front panel and back panel, said top gusset constructed to provide a top wall panel having an effective width dimension between said front and back panels when said top gusset is in its extended wall condition; and

a handle web which includes a strap portion which bridges over said top gusset and connects to said front and back panels along said top edge regions thereof;

said top gusset and at least one of said front and back panels having an appointed first line of frangibility extending at least partially there-across along a direction which is transverse to said stack direction, said line of frangibility entirely spaced from each of said panel side edge regions by a distance which is not less than one-half of said effective width dimension of said top gusset, said first line of frangibility positioned to coincide with said bridging strap portion of said handle web, and said strap portion having a complementary line of frangibility which extends transversely over said top gusset in coinciding alignment with said first line of frangibility, said complementary line of frangibility providing for a complete separation of sections of said strap portion which restrict a parting movement of bag sections away from separations formed along said first line of frangibility.

5,282,688

SINTERED OIL IMPREGNATED BEARING AND ITS MANUFACTURING METHOD

Noboru Kanezaki, Niigata; Takeshi Tanaka, and Yoshiaki Hayashi, both of Kosai, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo and Asmo Co., Ltd., Kosai, both of Japan

Filed Sep. 8, 1992, Ser. No. 941,808

Int. Cl.[5] **F16C** *33/02;* **B21D** *53/10*

U.S. Cl. 384—279 **2 Claims**

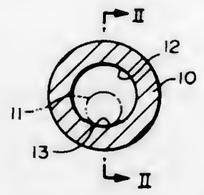
1. A sintered oil impregnated bearing comprising: a bearing main body made of a porous type sintered alloy, the bearing main body having a bearing hole formed therein for inserting a rotating shaft, wherein said rotating shaft slides on an axially lying sliding face of an inner peripheral surface of said bearing hole, and pores on said axially lying sliding face of the inner peripheral surface of said bearing hole are crushed at the time of powder compact forming of said bearing main body.

2. A method of manufacturing a sintered oil impregnated

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bearing in which a bearing hole through which a rotating shaft is inserted is formed in a bearing main body made of a porous type sintered alloy, the method comprising the steps of:

at the time of making a powder compact, forming a through-hole defining said bearing hole by means of a rod having



on a part of an external peripheral surface a roughening section which has a surface roughness higher than other parts, thereby crushing pores on an inside surface of said through-hole held in contact with the roughening section, and thereafter sintering said powder compact.

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ROLLING BEARING

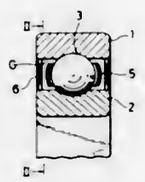
Yoichi Imamura, Kawasaki; Fusasuke Goto, Yokosuka, and Norihiro Aoki, Tokyo, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 827,036, Jan. 29, 1992. This application Apr. 29, 1992, Ser. No. 875,405

Claims priority, application Japan, Sep. 20, 1991, 3-241179

Int. Cl.[5] **F16C** *19/00*

U.S. Cl. 384—492 **1 Claim**



1. In a rolling bearing composed of an outer race, an inner race and rolling elements interposed between the outer race and the inner race, the improvement wherein a lubricant composition comprising a polyether lubricant as a base oil is filled in the bearing, the polyether lubricant having akinematic viscosity of 90–160 cSt at 40° C., and wherein the outer race and/or inner race of the rolling bearing is made of steel having an oxygen content not higher than 6 ppm and a raceway surface thereof has been hardened to a necessary hardness by heat treatment.

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FOLDABLE PULL-OUT INDEX CARD

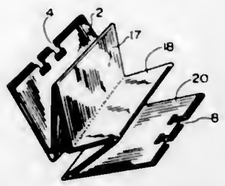
Sharolyn A. Moseley, 2513 Morrison Ave., Tampa, Fla. 33629

Filed Nov. 20, 1992, Ser. No. 979,264

Int. Cl.[5] **B42F** *13/00*

U.S. Cl. 402—79 **4 Claims**

1. A foldable pull-out index card for use with index card filing systems having at least one rail, said index card comprising: blank made of printable material having a bottom edge and an upper edge and having at least two fold lines across the width of said blank so as to form a front panel bordered by said bottom edge and a first fold line and a back panel bordered by said upper edge and a final fold line, and at least one intermediate panel bordered by said fold lines, at least one notch in said bottom edge for sliding contact with said rail and said rear



panel having at least one notch for contact with said rail, said card having printed information on at least one of said panels.

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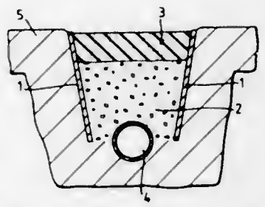
STRUCTURAL MATERIAL AND DRAIN

James McIntosh, and Graham J. Lucas, both of East Sussex, United Kingdom, assignors to Fibrescreed Limited, Uckfield, United Kingdom

Filed Feb. 3, 1992, Ser. No. 830,418

Int. Cl.[5] **E02B** *11/00*; **E01C** *5/18*

U.S. Cl. 404—3 **7 Claims**



1. A roadside drain comprising a channel, a porous pipe at the bottom of the channel, drainage material covering the pipe and partially filling the channel, and a layer of porous surfacing material near the top of the channel, covering said drainage material, said porous surfacing material comprising structural material comprising pieces of shredded rubber having maximum dimensions in the range of 5 to 50 mm bound together with a bituminous binder material, the weight of rubber being substantially greater than the weight of binder material such that the structural material has an interconnected void volume in the range of 10 to 50%.

5,282,692

ASSEMBLY OF ARTICULATED MEMBERS FOR FORMING A SURFACE

Warren H. McLeod, 566 Parker Ave., Brick, N.J. 08742

Filed Jul. 14, 1992, Ser. No. 913,439

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] **E01C** *5/20, 9/00*

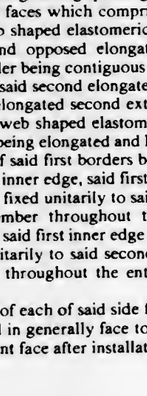
U.S. Cl. 404—35 **31 Claims**

1. An assembly of articulated members comprising:

a plurality of rigid bars, each said bar having at least two bores formed therein, said bores in said bars extending through said bars, each of said bars having an axis Ad;

flexible connecting means extending between said bars and into said bores for articulating said bars with respect to each other, said flexible connecting means including at least one rope having a diameter of D_c; and,

a plurality of spacers having axial bores with an inside bore diameter D_b and with an axis A_b, each of said spacers mounted on said connecting means between adjacent ones of said bars and having a first and a second end defined by a first and second plane P_1 and P_2, respectively, angle AN_1 extends between A_b and P_1, angle AN_2 extends between A_b and P_2, angle AN_3 extends between P_1 and A_d and angle AN_4 extends between P_2 and A_d.



wherein said connecting means extends through said bores and into said bars and through said axial bores in said spacers.

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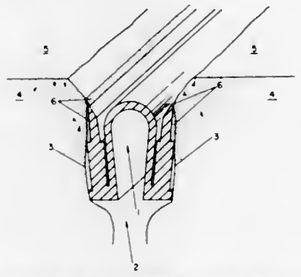
ELASTOMERIC SEALING APPARATUS FOR HIGHWAY JOINTS

Ralph D. Daily, Jr., 63 Maple Ave., Unionville, Conn. 06085

Filed Dec. 16, 1991, Ser. No. 808,631

Int. Cl.[5] **E01C** *11/02, 11/04*; **E04F** *15/14*

U.S. Cl. 404—47 **8 Claims**



1. An elongated seal apparatus for adhesive installation in a structural joint opening having spaced generally planar, generally parallel spaced faces which comprises in combination:

an elongated web shaped elastomeric body member having first and second opposed elongated borders, said first elongated border being contiguous with an elongated first external edge, said second elongated border being contiguous with an elongated second external edge;

first and second web shaped elastomeric side flaps, each of said side flaps being elongated and having a first elongated border, each of said first borders being contiguous with a first elongated inner edge, said first inner edge of said first side flap being fixed unitarily to said first external edge of said body member throughout the entire longitudinal extent thereof, said first inner edge of said second side flap being fixed unitarily to said second external edge of said body member throughout the entire longitudinal extent thereof;

an outer surface of each of said side flaps, said outer surface being disposed in generally face to face abutting relationship to said joint face after installation of said apparatus in said joint opening, each of said side flaps further comprising an inner surface, said inner surface being opposite to said outer surface;

an external surface of said body member, said external surface being contiguous with said external edges, said body member further comprising an internal surface, said internal surface being opposite to said external surface;

an angular relationship between each of said side flaps and said body member prior to insertion of said apparatus in said joint opening, the angle being measured between said inner surface and a tangential line, said line being tangential to said external surface proximate to said external edge of said body member, said angle being within a range from about 0 degrees to about 50 degrees;

an elongated second border of each of said side flaps, said second border being remote from said first border of said side flap;

said body member being further dimensioned and configured so that said first and second opposed borders of said body member are disposed more remote from each other prior to insertion of said apparatus in said joint opening than are said opposed borders after insertion of said apparatus in said joint opening, said body member thereby exhibiting springlike behaviour upon insertion of said apparatus in said joint opening which results in said body member urging said side flaps outwardly against said joint faces;

each of said side flaps and said body member being further dimensioned and configured so that said second border of said side flap is disposed generally tangential to said joint face after insertion of said apparatus in said joint opening;

a first step, said first step extending longitudinally along said outer surface of each of said side flaps, said first step being proximate to said first border of said side flap, said first step being dimensioned and configured so that said apparatus proximate to said first border of said side flap has a greater thickness than at other parts thereof.

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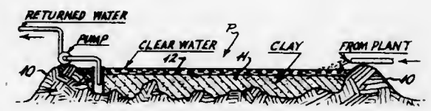
METHOD OF RECLAIMING ABANDONED SETTLING PONDS

Mihaly Kovacs; Peter Kovacs, and Endro Kovacs, all of Plant City, Fla., assignors to Kempco, Inc., Ft. Meade, Fla.

Filed Nov. 17, 1992, Ser. No. 977,612

Int. Cl.[5] **F02B** *11/00*

U.S. Cl. 405—36 **17 Claims**



1. A method of reclaiming abandoned settling ponds defined by peripheral and central areas by draining pools of water from low levels within the central areas and wherein clay is located beneath the pools of water and beneath crusted surfaces within the central area comprising the steps of:

a) forming low profile drainage ditches extending from the low levels within the central area toward the peripheral areas of the ponds by pumping the clay from beneath the low level areas; and

b) depositing the clay on remote crusted surfaces.

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APPARATUS AND METHOD FOR THERMALLY STRIPPING VOLATILE ORGANIC COMPOUNDS FROM SOIL USING A RECIRCULATING COMBUSTIBLE GAS

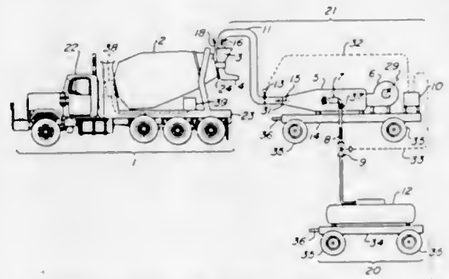
Richard A. Crosby, 7257-203 Point Lake Dr., Charlotte, N.C. 28212, and Junior L. Crosby, 7819-105 Calibre Crossing, Charlotte, N.C. 28227, assignors to Richard A. Crosby and Junior L. Crosby, Charlotte, N.C.

Division of Ser. No. 728,094, Jul. 10, 1991, Pat. No. 5,228,803, which is a continuation-in-part of Ser. No. 537,089, Jun. 12, 1990, Pat. No. 5,052,858. This application Oct. 26, 1992, Ser. No. 966,685

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] **F23G** *7/14, 5/04, 5/12, 5/20*

U.S. Cl. 405—128 **15 Claims**



1. A method for removing volatile organic compounds from soil in a batch process, comprising the steps of:
   a) loading a batch of said soil into a vessel;
   b) introducing a hot gas into said vessel and causing said hot gas to come into contact with said soil, thereby partially cooling said hot gas and volatilizing said volatile organic compounds into said gas, the rate at which said volatile organic compounds are volatilized into said gas generally decreasing an said batch of soil is processed;
   c) discharging said gas from said vessel;
   d) introducing air into said discharged gas; thereby forming an combustile gas;
   e) burning said combustible gas by introducing a supplemental fuel into said gas, thereby oxidizing at least a portion of said volatile organic compounds volatilized into said gas and reheating said gas into a predetermined temperature range, the quantity of said supplemental fuel introduced being controlled so as to maintain said gas in said predetermined temperature range despite said decrease in said rate at which said volatile organic compounds are volatilized into said gas as said batch of soil is processed;
   f) recirculating at least a first position of said reheated gas to said vessel and causing said reheated gas to come into contact with said soil, thereby partially cooling said reheated gas and volatilizing said volatile organic compounds into said reheated gas; and
   g) repeating steps (c)–(f).

8. An apparatus for removing volatile organic compounds from soil in a batch process by volatilizing said volatile organic compounds into a gas, the rate at which said volatile organic compounds are volatilized into said gas generally decreasing as said batch of soil is processed, comprising:
   a) a vessel for holding a batch of said soil;
   b) means, in flow communications with said vessel, for directing a hot gas to said vessel;
   c) means, in flow communication with said vessel, for discharging said gas from said vessel;
   d) means, in flow communication with said gas discharging means, for introducing air into said discharged gas;
   e) means, in flow communication with said air introducing means and including means for introducing a supplemental fuel into said discharged gas, for combusting said volatile organic compounds volatilized into said gas and said supplemental fuel, whereby said gas is heated into a predetermined temperature range;
   f) means for controlling the quantity of said supplemental fuel introduced into said combusting means so as to maintain said gas in said predetermined temperature range despite said decrease in said rate at which said volatile organic compounds are volatilized into said gas as said batch of soil is processed; and
   g) means, in flow communication with said vessel, for recirculating at least a portion of said combusted gas form said combusting means to said vessel.

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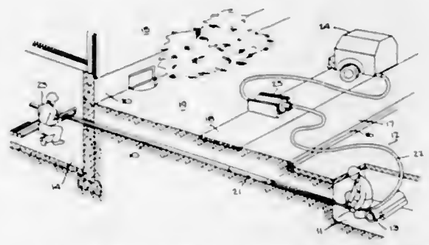
PNEUMATIC RAM PIPE REPLACEMENT

Jim Solomon, 304 S. 5th Ave., Mt. Vernon, N.Y. 10551; Robert Zinkovitz, 20 Villanova La., Dix Hills, N.Y. 11746, and Robert Mennella, 82 Sherwood Dr., Ramsey, N.J. 07446

Filed Oct. 30, 1992, Ser. No. 969,033

Int. Cl.[5] **F16L** *1/00*

U.S. Cl. 405—184 **11 Claims**



1. An adapter for coupling a pneumatic ram to the end of a length of pipe for pushing the pipe through embedding material, said adapter comprising a head portion and an integral nose portion projecting therefrom, said nose portion being sized and shaped to enter the end of said pipe, at least a portion of said nose portion that is adjacent said head portion being tapered with a diameter adjacent said head portion that is enlarged relative to the inside diameter of said pipe to expand the end of said pipe upon being urged during activation of said pneumatic ram into said pipe end, said head portion including a annular longitudinally projecting lip overhanging with a radially inner surface radially spaced from and generally parallel to the peripheral surface of said tapered portion thereby defining an annular frusto-conical channel varying from a larger diameter adjacent said head portion to a smaller diameter toward said nose portion for receiving and locking onto the end of said pipe upon said expansion of said pipe end.

5,282,697

COMPOUND ANCHOR

Daniel Maechtle, Korntal, Fed. Rep. of Germany, assignor to Maechtle GmbH, Dieselstrasse, Fed. Rep. of Germany

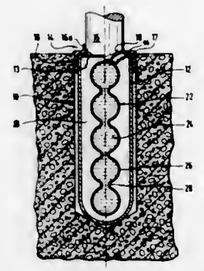
Filed Feb. 21, 1992, Ser. No. 838,882

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106311

Int. Cl.[5] **E21D** *20/02, 20/00*

U.S. Cl. 405—259.6 **12 Claims**

1. A compound anchor for securing an anchor shank in a borehole, comprising:
   a) an outer cartridge closed at its front end and adapted to be received in a borehole;
   b) said cartridge being made of a brittle material and filled with a powder component of an inorganic, hardenable binder;
   c) a brittle inner container disposed inside said cartridge and filled with water to form a liquid component of the hardenable binder;
   d) a covering element for closing said cartridge at its rear end;
   e) said cartridge and said inner container are adapted to be destroyed and turned into splinters when the anchor shank is forced through said covering element, thereby releasing the components into the borehole and mixing the splinters therewith;
   f) said covering element being an elastic sealing cap having a lid adapted to be pierced by the anchor shank and thereby provide a seal around the anchor shank;



   g) said sealing cap having an axially disposed outer rim adapted to form a seal between the borehole wall and the outside of said cartridge; and
   h) said inner container including portions delimited against each other and distributed over the length of said cartridge such that said portions are sequentially destroyed when the anchor shank is being forced in, thereby gradually releasing the included water to the powder component surrounding said inner container portions so that the powder component is uniformly mixed with water in all depth of the borehole.

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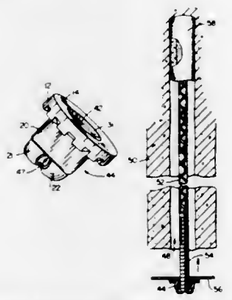
THREADED FASTENER, METHOD OF FABRICATION THEREOF AND METHOD OF SUPPORTING A MINE ROOF USING SUCH A FASTENER

Raymond L. Wright, Syracuse, and Carl A. Clark, Liverpool, both of N.Y., assignors to The Eastern Company, Naugatuck, Conn.

Filed Jun. 3, 1992, Ser. No. 893,062

Int. Cl.[5] **E21D** *20/02, 21/02*

U.S. Cl. 405—259.6 **19 Claims**



1. The method of fabricating a threaded fastener for use with an externally threaded rod of predetermined diameter, said method comprising:
   a) forming a metal casting having a planar base surface and a through bore substantially concentric about a central axis normal to said base surface, said casting having an exterior surface configuration extending axially from said base surface at least a portion of which has a terminal surface parallel to said base surface and includes a plurality of planar, wrench-engaging surfaces arranged concentrically about and parallel to said central axis, said casting further including a substantially cylindrical wall portion extending integrally from said terminal surface concentrically about said central axis, said wall portion having at least two segments separated by substantially V-shaped notches each having pairs of opposing edges extending from apexes substantially at said terminal surface to open ends separating coplanar free edges of said wall portion;
   b) drilling an axial portion of said bore extending substantially from said base surface to a predetermined axial position to substantially said predetermined diameter;
   c) forming internal threads in said axial portion for mating engagement with said rod; and
   d) deforming said wall portion by moving said free edges radially inwardly to a position wherein said wall portion assumes a substantially domed shaped, each of said pairs of opposing edges define first, substantially oval openings, and said free edges define a second, substantially oval opening having a minor axis with a length less than said predetermined diameter.

5,282,699

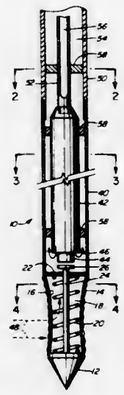
METHOD AND APPARATUS FOR DENSIFICATION OF SANDS OF SILTS

William E. Hodge, Vancouver, Canada, assignor to Phoenix Eogineering Ltd., Vancouver, Canada

Filed Oct. 7, 1992, Ser. No. 957,884

Int. Cl.[5] **E02D** *3/02*

U.S. Cl. 405—271 **20 Claims**



1. Apparatus for densifying a saturated soil region surrounding said apparatus, said apparatus having a lower section comprising:
   (a) densification means for imparting to said region cyclic displacements which act radially and substantially perpendicularly to a longitudinal axis of said apparatus;
   (b) flexible screening means for excluding sand and silt particles from said apparatus, while permitting water withdrawal from said region through said screening means, the screening means having sufficient flexibility to deflect radially to provide said cyclic displacements; and,
   (c) pumping means for continuously expelling water withdrawn from said apparatus.

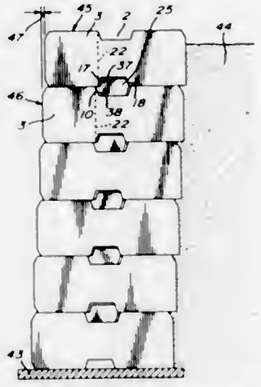
VOL 1159 ISS 1 FE 1 1994 UMI

5,282,700

BLOCK INTERLOCK OFFSETTING KEY FOR USE IN THE CONSTRUCTION OF A RETAINING WALL

Jacques Rodrique, Montreal-Nord, Canada, assignor to Transpavé Inc., Montreal-Nord, Canada

Filed Mar. 29, 1993, Ser. No. 37,845
Claims priority, application Canada, Aug. 27, 1992, 2092579
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—284 12 Claims



1. A kit for use in the construction of a mortarless retaining wall wherein a plurality of blocks are stacked in a number of successive offset courses of blocks, the kit comprising

a plurality of grooved blocks and

a plurality of block interlock offsetting keys,

each of the grooved blocks comprising a block body,

said block body having top and bottom support surfaces and a lateral front surface,

said block body comprising a pair of grooves, said pair of grooves comprising a top groove interrupting said top surface and a bottom groove interrupting said bottom surface, the top and bottom grooves each being defined by a respective groove surface, said top groove at least overlapping a part of said bottom groove, each block interlock offsetting key comprising a key body,

said key body comprising a root element connected to a head element, said key body having a lateral surface comprising an upper surface portion and an offset lower surface portion, said upper surface portion being offset relative to said lower surface portion, said root element defining said offset lower surface portion and said head element defining said upper surface portion,

each block interlock offsetting key being configured such that the head element thereof is able to engage the bottom groove of a grooved block, and

the root element thereof is able to engage the top groove of another grooved block, and

said block interlock offsetting keys and said grooved blocks being configured such that, when one grooved block is disposed on an underlying grooved block,

said upper surface portion of a respective interlock key is engageable with a portion of the groove surface of the bottom groove of said one grooved block and said offset lower surface portion of said respective interlock key is engageable with a portion of the groove surface of the top groove of said underlying block,

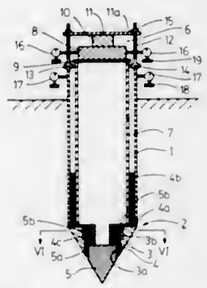
so that the front surface of said one grooved block is offset a predetermined distance with respect to the front surface of said underlying block.

5,282,701

METHOD AND APPARATUS FOR A LOADING TEST OF A PILE USING A SELF-REPULSIVE FORCE

Kyung-Han An; Myung-Whan Lee; Dae-Young Kim; Bon-Hyoung Koo, and Sung-Jin Yoon, all of Seoul, Rep. of Korea, assignors to Samsung Construction Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 618,647, Nov. 27, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 849,873
Claims priority, application Rep. of Korea, Jul. 10, 1990, 90-10418; Jul. 10, 1990, 90-10419; Sep. 19, 1990, 90-14842
Int. Cl.[5] E02D *7/30*
U.S. Cl. 405—245 16 Claims



13. An apparatus for use in a loading test of a pile using a self-repulsive force comprising:

a hollow test pile;

an end member abutted to the lower end of said test pile, said end member adapted to move with respect to said test pile, said end member comprising an outer member defining a hole and comprising a sliding core inside said hole, said sliding core adapted to slide relative to said outer member; and

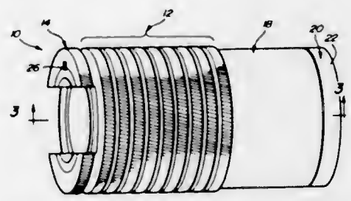
a sliding means including a load transferring element, a hydraulic jack for exerting a driving force on said load transferring element, and a reaction plate assembled with said test pile.

5,282,702

WAFER BROACHING TOOL

Brian M. Fitzgerald, Cazenovia, N.Y., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Apr. 3, 1992, Ser. No. 862,820
Int. Cl.[5] B23D *43/04*; B23F *21/26*
U.S. Cl. 407—16 8 Claims



1. A cylindrical finish broaching tool adapted to cooperate with a broach bar for finish cutting splines on the interior of a hollow annular workpiece, said cylindrical finish broaching tool comprising:

a cylindrical sleeve adapted to mount on said broach bar, said sleeve having a lead end and a trailing end, said trailing end being integrally formed to include a flange extending radially therefrom;

a plurality of toroidal cutting wafers removably mounted on said sleeve, each cutting wafer having peripherally thereon a plurality of cutting teeth disposed such that teeth on adjacent cutting wafers form a corresponding plurality of rows of teeth;

a toroidal lead wafer removably mounted on said sleeve, said lead wafer having peripherally thereon a plurality of lead teeth; and

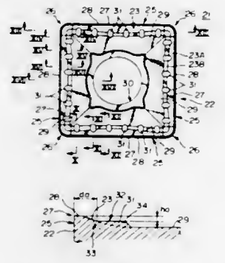
means for limiting rotational movement of each of said plurality of cutting wafers and said lead wafer with respect to said sleeve.

5,282,703

INDEXABLE CUTTER INSERT

Takeshi Itaba; Youichi Ishikawa, and Osamu Ichinoseki, all of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 859,564
Claims priority, application Japan, Mar. 29, 1991, 3-037808[U]; Mar. 29, 1991, 3-037810[U]; Mar. 29, 1991, 3-037811[U]; Mar. 29, 1991, 3-037812[U]
Int. Cl.[5] B23B *27/22*; B23C *5/20*
U.S. Cl. 407—114 9 Claims



1. An indexable cutter having an insert body formed into a polygonal plate-like shape defined by a front face, a rear face, and a side face periphery lying between the front and rear faces, when viewed from the front, said insert body comprising:

a cutting face formed on at least said front face, said cutting face downsloping toward the inner side of the front face;

at least one flank face formed on said side face periphery;

at least one cutting edge formed at the intersection of the cutting face and the flank face;

at least one chip beaker face which projects outwardly in the direction of the thickness of the insert body with respect to an extended plane stemming from the cutting face;

at least one protrusion extending from the periphery of the insert body formed the inner side of the front face, said protrusion having a ridge portion extending straight from said cutting face in a plane perpendicular to the direction of the thickness of the insert body.

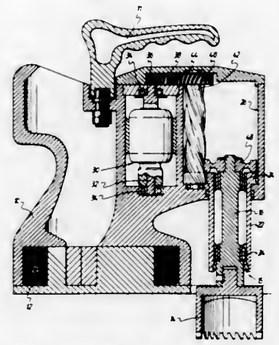
5,282,704

PORTABLE DRILLING APPARATUS

David A. Screen, 110 Highfields Lane, Chesterfield S41 8BA, England, assignor to David A. Screen and Michael D. Wooley, both of England

Filed May 22, 1992, Ser. No. 887,053
Claims priority, application United Kingdom, May 31, 1991, 9111730
Int. Cl.[5] B23B *47/04*
U.S. Cl. 408—124 11 Claims

1. Portable drilling apparatus comprising a support provided with means for securing the apparatus to a work member, and an axially displaceable drill spindle mounted in the support, a drive motor for the spindle being held in a fixed position in the support, and the spindle being held rotatably but axially fixed in an elongate member, said elongate member being slidably engaged by the support for movement with said spindle in said axial direction, a drive transmission between said motor and spindle comprising an elongate toothed transmission element rotatable about an axis parallel to the spindle and a further rotary toothed element fixed to the spindle and being drivingly engaged by the elongate transmission element, feed means for



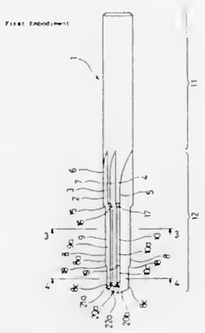
providing axial movement of the spindle comprising a screw rotatable about an axis parallel to the axis of the elongate member and having threaded engagement with a nut carried by said elongate member, and means for rotating said screw, the elongate toothed transmission element and said screw being located in a common length of the support.

5,282,705

BURNISHING DRILL

Kiyotaka Shiga; Akio Fukui; Masaki Yasuhara; Tsunehisa Yamashita, and Manabu Shimizu, all of Toyota, Japan, assignors to Fuji Seiko Corporation, Toyota, Japan

Filed Oct. 30, 1992, Ser. No. 969,077
Claims priority, application Japan, Jul. 28, 1992, 4-201034
Int. Cl.[5] B23B *51/02*
U.S. Cl. 408—211 18 Claims



1. A burnishing drill, comprising:

an elongated shank having a longitudinal axis and two axially opposite ends;

an elongated drill body having a longitudinal axis and two axially opposite ends;

said drill body being connected at a trailing said end thereof to said elongated shank at a leading said end thereof;

said drill body having a forward portion thereof with a

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generally arcuate external sidewall surface which intersects said leading end thereof;

said drill body being arranged to be rotated about said longitudinal axis thereof in a rotational direction, by rotation of said elongated shank about said longitudinal axis thereof;

a leading said end of said drill body having outer peripheral edges;

surfaces defining a pair of drilling edges on said drill body at said leading end thereof, said drilling edges being generally diametrically opposed to one another but with some lateral offset from one another in opposite directions along an imaginary line perpendicular thereto and to said longitudinal axis of said drill body and extending substantially parallel to a diameter of said drill body, at least one of said surfaces defining each of said drill edges further defining, at least in part, a first axial groove in said sidewall surface which intersects said leading end of said drill body;

each said drilling edge being substantially linear and oriented at a predetermined acute cutting angle α with respect to said longitudinal axis of said drill body, such that each said drilling edge slants axially rearward toward said shank as it extends radially outwards towards one of said outer peripheral edges of said drill body;

a pair of reaming faces at generally diametrically opposed locations on said leading end of said drill body;

said reaming faces, throughout respective radial extents thereof, being located axially rearward of all radially corresponding elements of said drilling edges, relative to said longitudinal axis of said drill body;

said reaming faces having a radially outermost portion thereof being of a greater radial distance from said longitudinal axis of said drill body than a radially outermost portion of said drilling edges;

said reaming faces each cooperating with a respective first adjacent surface to define a rotationally leading outline edge of said reaming faces, each said adjacent surface defining, at least in part, a second axial groove in said sidewall surface which intersects said leading end of said drill body;

each said leading outline edge extending at a predetermined acute angle γ_1 to said longitudinal axis of said drill body within a range of 5° to 45°;

said reaming faces each cooperating with a respective second adjacent surface to define, at least in part, a rotationally trailing outline edge of said reaming faces, each said second adjacent surface defining, at least in part, a third axial groove in said sidewall surface which intersects said leading edge of said drill body;

each said reaming face being canted so that, throughout respective axial extends thereof, points on the respective rotationally trailing outline edge are spaced further from said longitudinal axis of said drill body than respective corresponding points on the respective rotationally leading outline edge;

each said second adjacent surface cooperating with a respective third adjacent surface to define respective reaming edges, said reaming edges having a radially outermost portion thereof being at a radially greater distance from said longitudinal axis of said body than said radially outermost portion of said drilling edges;

said reaming edges being oriented at respective predetermined acute cutting angles β_1 to said longitudinal axis of said drill body within a range of 5° to 30°, such that each said reaming edge extends radially outwards as it slants rearward toward said shank;

said reaming edges having said radially outermost portion thereof being at a lesser radial distance from said longitudinal axis of said body than said radially outermost portion of said reaming faces.

5,282,706

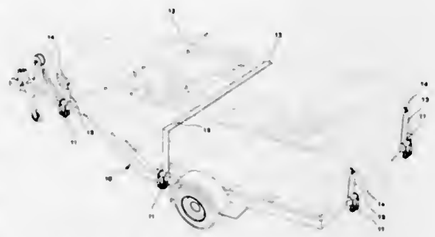
RETRACTABLE TIE-DOWN ASSEMBLY

James T. Antbony, Noblesville, and Niels Dybro, Carmel, both of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 950,909, Sep. 24, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,148

Int. Cl.[5] **B60P** *7/06;* **B66D** *1/04*

U.S. Cl. 410—100 **17 Claims**



17. A retractable tie-down assembly comprising:

a frame having a pair of spaced apart side walls;

a spool rotatably mounted to said frame and having an axle and end walls at least one of said end walls being configured as a ratchet wheel, said spool being capable of rotating in a pay out direction and a retracting direction;

webbing wrapable on said spool and having one end attached to said spool;

a first spring attached to said frame and said spool and normally urging said spool to rotate in said retracting direction whereat a portion of said webbing is wrapped thereon;

a lock movably mounted to said frame to lock said spool against rotation in said pay out direction;

a handle movably mounted to said frame for manually ratcheting said spool to rotate in said retracting direction, said handle including a pawl manually movable between an engagement position and a free position; and,

a second spring connected to said handle to bias said pawl to said free position.

5,282,707

FASTENING SYSTEM FOR LOCKING NUT WITH TORQUE INDICATING MARKS

Edward B. Palm, St. Clair Shores, Mich., assignor to Detroit Tool Industries Corporation, Madison Heights, Mich.

Filed Feb. 22, 1993, Ser. No. 22,146

Int. Cl.[5] **F16B** *31/00, 33/04, 39/30*

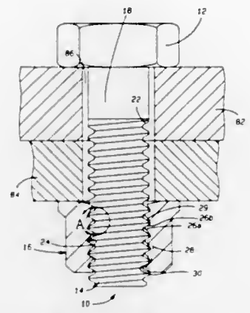
U.S. Cl. 411—3 **12 Claims**

1. A fastening system for joining a plurality of material sheets, said fastening system comprising:

a bolt, inserted through a set of aligned holes within said material sheets, with the external threadform of said bolt extending therefrom, said external threadform having bolt thread flanks therewithin;

a locking nut having a plurality of lobular flanks externally thereabout and having an internal threadform located longitudinally coincidental with said plurality of lobular flanks, said internal threadform further comprising a plurality of threads with nut thread flanks therewithin such that a typical pair of said nut thread flanks are individually disposed at a generally 60° angle from the axial center line of said locking nut, said nut thread flanks are joined by an angled wedge ramp at the root of said internal threadform, whereby the crest of said external bolt threads is wedged tightly against said wedge ramp; and

a means for fastening said locking nut upon said bolt, said fastening means visually marking said lobular flanks of said locking nut upon reaching a set torque, said fastening means avoiding substantially deforming said internal threadform of said locking nut thereof.



5,282,708

SELF-TAPPING SCREW-TYPE MASONRY ANCHOR

Louis N. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 912,478, Jul. 13, 1992, Pat. No. 5,188,496. This application Feb. 5, 1993, Ser. No. 14,461

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] **F16B** *25/00, 39/30*

U.S. Cl. 411—386 **7 Claims**

1. A self-tapping, screw-type anchor insertable in a hole having a predetermined diameter bored in a structure formed of friable material to secure an object thereto, said anchor being fabricated of a substance whose hardness is such that when it taps the wall of this hole, it is not significantly abraded and worn thereby, said anchor comprising:

(a) an enlarged head engageable by a torque-producing tool to rotate the anchor; and

(b) a shank integral with the head and extending therefrom, said shank including a root section having a leading end and a trailing end, and a helical cutting thread surrounding the root section formed by a series of convolutions having sharp crests running from the leading to the trailing end, said crests having diameters greater than that of the hole and decreasing progressively from the leading to the trailing end to create a reverse taper male thread, whereby when the tool acts to rotate the anchor to cause the male thread to tap its way into the wall of the hole, then formed on the wall of the hole is an internal female thread in whose convolutions are nested the convolutions of the male thread.

5,282,709

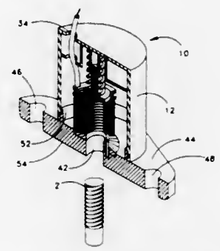
SEPARATION NUT WITH A RESTRAINING WIRE

Dale T. Chaput, Yorba Linda; Michael P. Edwards, Long Beach, and Steven D. Swain, Hawthorne, all of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed May 4, 1993, Ser. No. 55,877

Int. Cl.[5] **F16B** *37/08, 39/36*

U.S. Cl. 411—433 **42 Claims**



1. A separation nut with a restraining wire attachable to an external structure for fastening and releasing a threaded bolt, the separation nut comprising:

a. a cylindrical shaped housing having a top end, a bottom end and an interior tubular sidewall with a threaded section adjacent to the bottom end, the bottom end having an opening extending into a hollow chamber;

b. a removably attachable bottom having an exterior threaded mating surface which mates with said threaded section of said interior tubular sidewall and forms a base for said housing;

c. said removably attachable bottom having a central opening extending into said hollow chamber of said housing;

d. a ramp fitted on said removably attachable bottom around said central opening of said bottom and having a ramp surface facing into said hollow chamber;

e. a segmented threaded nut placed on said ramp surface of said ramp and located inside said chamber adjacent to said removably attachable bottom, the segmented threaded nut having a threaded bore aligned with said central opening of said removably attachable bottom for receiving said threaded bolt, the segmented threaded nut also having a cylindrical exterior surface, the segmented threaded nut split radially into a multiplicity of segments;

f. A multiplicity of anti-rotation pins each attached to said ramp and slidably engaged with a bottom dent on said segmented threaded nut for preventing said segmented threaded nut from rotating;

g. a hollow cylindrical shaped segmented spool placed over said segmented threaded nut and having an exterior surface and a cylindrical interior surface which is engaged with said cylindrical exterior surface of said segmented threaded nut, the segmented spool split radially into a multiplicity of segments;

h. a restraining wire made of a spring material, coiled and tensioned and wrapped around said exterior surface of said segmented spool for retaining said segmented threaded nut together with said threaded bolt;

i. a spring biased plunger placed above said segmented threaded nut and having a flat top side and a truncated conical shape bottom side with a ramp surface engaged with said segmented threaded nut for retaining and applying pressure to said segmented threaded nut;

j. a compression spring placed over said plunger for compressing said segmented threaded nut between said plunger and said ramp;

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k. a flexible shaft extending through said top end of said housing for connecting to an actuator; and

l. a release pin connected to said flexible shaft for inhibiting said restraining wire from releasing said segmented spool, when the release pin is in place said restraining wire is coiled and tensioned and compresses said segmented spool which in turn compresses said segmented threaded nut radially inwardly for fastening said threaded bolt, which sets said separation nut in a fastened condition, and when the release pin is displaced said restraining wire is uncoiled and expands thereby releasing said segmented spool which in turn releases said segmented threaded nut radially outwardly for releasing said threaded bolt, which sets said separation nut in a released condition;

m. whereby when said release pin is displaced, said separation nut will shift to said released condition, and when said release pin is in place, said separation nut will maintain said fastened condition.

5,282,710

COVERING DEVICE ALLOWING SIMPLIFIED FASTENING

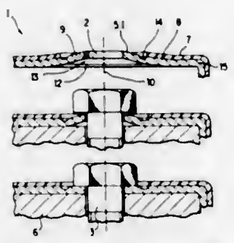
Karl-Heinz Triesethau, Brensbach, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 929,624

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1991, 4134937

Int. Cl.[5] **F16B** *33/00, 43/02*

U.S. Cl. 411—544 **6 Claims**



1. A covering device to be fastened by a fastening element to a component to be covered, wherein said covering device comprises:

a) a covering area for covering said component to be covered;

b) a cup-spring-type area surrounding a recess for receiving said fastening element; and

c) a coating, said coating being applied to a portion of an upper surface of said covering device thereby protecting said portion of said upper surface of said covering device from corrosion.

5,282,711

ASSISTIVE DINING DEVICE, SYSTEM AND METHOD

Eric A. Frische, Arlington, Tex., assignor to Association for Retarded Citizens of the U.S., Arlington, Tex.

Filed Oct. 17, 1991, Ser. No. 778,009

Int. Cl.[5] **A47G** *21/00*

U.S. Cl. 414—9 **5 Claims**

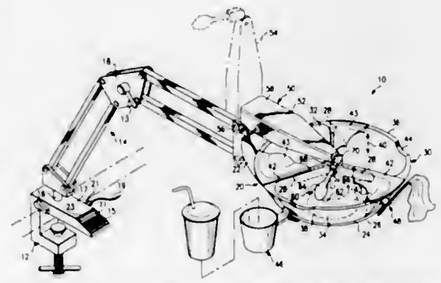
1. An assistive dining device for automatic switch-operated self-feeding comprising:

(a) a concave food receptacle having a predetermined depth below an upwardly projecting lip;

(b) a rod having an end rotatable about an axis and linearly movable along the axis, substantially parallel to and above the upward projecting food receptacle lip;

(c) a feeding utensil having food collection face and affixed to the end of the rod for rotation and linear movement therewith, which utensil is angularly disposed from the axis of the rod such that food collection face is substantially horizontal downward in a first rotary position and substantially horizontal upward in a second rotary position rotated approximately one-half of a revolution about the axis of the rod, so that the radius of the arc defined by the distal end of the utensil during rotation corresponds to the predetermined depth of the receptacle;

(d) a motor operatively associated with the rod and utensil for rotating the utensil from the first rotary position to the second to collect food from the receptacle onto the utensil and also for rotating the utensil from the second rotary position to the first position;



(e) a motor operatively associated with the rod for linearly moving the rod and utensil when in its second rotary position from a retracted linear position to an outward position past the lip of the receptacle for presenting the food on the utensil for consumption by the user and for returning the utensil to the retracted position; and

(f) a food shaping partial cover plate attached to the lip of the concave food receptacle spaced above the utensil when rotated to its second rotation position so that food collected in the utensil is shaped by the partial cover plate prior to presentation to the user for consumption.

5,282,712

ORGANIZER SYSTEM AND METHOD FOR A ROTATABLE STORAGE STRUCTURE

Robert Lichti, Sr., Lake Almanor Peninsula; Clay Bernard, II, Pt. Richmond, both of Calif.; Daniel C. Perry, San Jose, and Stanley H. Lukken, San Francisco, all of Calif., assignors to Computer Aided Systems, Inc., Hawyard, Calif.

Continuation of Ser. No. 481,575, Feb. 16, 1990, abandoned, which is a division of Ser. No. 192,019, Apr. 29, 1988, Pat. No. 4,983,091, which is a continuation-in-part of Ser. No. 31,989, Mar. 30, 1987, abandoned, Ser. No. 824,718, Jan. 31, 1986, abandoned, and Ser. No. 821,257, Jan. 22, 1986, Pat. No. 4,752,175, said Ser. No. 31,989, is a continuation-in-part of Ser. No. 732,927, May 13, 1985, abandoned. This application Nov. 14, 1991, Ser. No. 794,294

Int. Cl.[5] **B65G** *1/10*

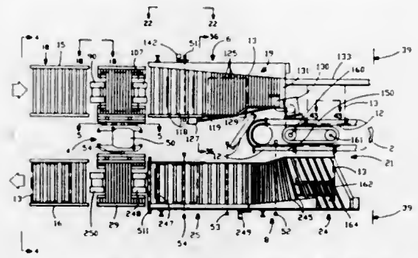
U.S. Cl. 414—331 **18 Claims**

1. A storage system for storage and retrieval of material goods, the storage system comprising:

a rotary storage carousel including a multiplicity of container support racks arranged in side-by-side fashion, means forming a continuous track having a major longitudinal extension, and means for rotating the support racks so they travel about the continuous track, the support racks including articulated attachment means for releasably securing a container thereto;

a multiplicity of said containers adapted to receive the material goods, said containers having container attachment means for cooperating with the articulated attachment means for releasably securing a container to a particular support rack; and

an inserter assembly disposed adjacent the storage carousel for inserting selected containers onto the storage carousel, the inserter assembly including a holding section means for temporarily retaining at least one container in a position clear from interference with the travel of the support racks, an approach section means for transporting containers from said holding section means to the storage carousel, loading means for latching selected containers onto an



associated selected support rack while the support rack remains in continuous motion, mans for synchronizing movement of a selected container in said approach section means with the travel of the support racks to facilitate said latching onto an associated selected support rack, and wherein the container is supported on its bottom and moved toward the carousel in a direction substantially parallel to the major longitudinal extension of the continuous track.

5,282,713

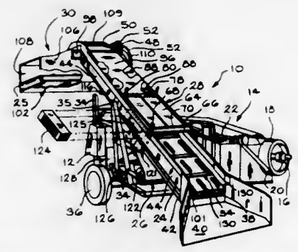
APPARATUS FOR REMOVING RECYCLABLE MATERIALS FROM BAGS

Lars Lande, 11615 N. Shore Rd., Whitmore Lake, Mich. 48189

Continuation-in-part of Ser. No. 775,003, Oct. 11, 1991, Pat. No. 5,203,665. This application Nov. 27, 1992, Ser. No. 982,709

Int. Cl.[5] **B02C** *23/02*

U.S. Cl. 414—412 **20 Claims**



1. An apparatus for removing recyclable materials from bags comprising:

a primary conveyor including a frame, said primary conveyor having first and second ends and including a primary belt being operable for rotation in a direction about said first and second ends, said primary belt including a plurality of retaining tines extending therefrom and being positioned at spaced apart intervals thereon, said retaining tines receiving said bags thereon and carrying said bags along said primary conveyor as said primary belt rotates;

means for rotating said primary belt about said first and second ends;

a cutting element mounted to said frame and being positioned relative to said primary belt so as to cuttingly engage said bags during rotation of said primary belt thereby longitudinally opening said bags; and

a receiving bin positioned adjacent to said second end, said receiving bin receiving said materials being emptied from said bags as said bags are carried about said second end, said receiving bin including a discharge opening and means for forcibly discharging said materials from said receiving bin through said discharge opening, said discharge means including a discharge conveyor having a discharge belt, said discharge belt forming a movable floor in said receiving bin and being positioned within said receiving bin at a location to receive said materials from said primary conveyor, said discharge belt being rotatable about first and second ends in a direction causing said materials to be forcibly discharged through said discharge opening.

5,282,714

CRANE, PARTICULARLY FOR MATERIAL HANDLING

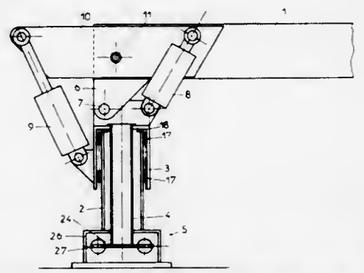
Remy Diebolt, 20, rue du 22 Novembre, 67440 Marmoutier, France

Filed Dec. 12, 1991, Ser. No. 804,715

Claims priority, application France, Dec. 14, 1990, 90 15888

Int. Cl.[5] **B66C** *13/00*

U.S. Cl. 414—680 **2 Claims**



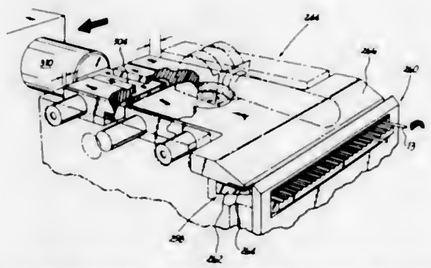
1. A crane for material handling, comprising a boom (1) and a fixed vertical column (2) supporting the boom (1), a rotatable device (3) in the form of a sleeve supported for rotation about a vertical axis by the upper end of the column, the boom (1) being articulated for vertical swinging movement on and relative to said device (3) about a horizontal axle (7), an elongated torsion-transmitting member (4) passing vertically within and rotatable relative to the column and secured at its upper end to said device (3) to rotate said device (3), and a rotation actuator (5) coacting with the lower end of said torsion-transmitting member (4) to rotate the torsion-transmitting member (4) to rotate said device (3) on and relative to the column thereby to rotate the boom (1) about said vertical axis, wherein the actuation of the boom (1) is effected by means of two jacks, namely a pushing jack (8) connected by its rod to a portion of the boom (1) forward of said axle (7) and articulatedly mounted by its cylinder on the rotatable device (3), and a pulling jack (9) connected by its rod to a rearward prolongation of the boom (1) and articulatedly mounted by its cylinder on the rotatable device, and wherein the rods of the jacks (8) and (9) are articulated to a slider (10) mounted in the boom (1) said slider comprising said portion of the boom formed of the axle and said prolongation of the boom and being adapted to be locked in service position and in rest position by means of an automatic bolt (11).

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5,282,715
NEEDLE TRANSPORTING APPARATUS

Richard Abbate, Wallingford, and Richard Parente, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,151
Int. Cl.[5] B25J *15/00*
U.S. Cl. 414—757 **16 Claims**



1. An apparatus for holding at least one elongated workpiece comprising:

a first and second jaw member each having a corresponding workpiece contacting portion;

grooves located on one of said jaws, each of said grooves being dimensioned and configured to receive at least a portion of a workpiece;

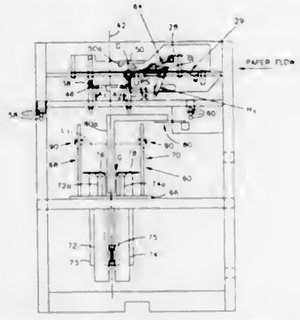
means for selectively moving said first and second jaw members between a first closed position for holding workpieces in a predetermined orientation between said jaws and a second open position; and

said first and second jaw members being laterally movable relative to each other while in said closed position whereby workpieces disposed therein are uniformly rotatable while being held by said jaw members.

5,282,716
METHOD AND APPARATUS FOR STACKING, ALIGNING AND COMPRESSING SIGNATURES

John Prim, W. Chazy, and David Hall, Plattsburgh, both of N.Y., assignors to Quipp Systems, Inc., Miami, Fla.

Division of Ser. No. 534,451, Jun. 6, 1990, Pat. No. 5,092,236. This application Jul. 22, 1991, Ser. No. 734,187
Int. Cl.[5] B65G *57/06*
U.S. Cl. 414—790.3 **31 Claims**



20. Apparatus for forming compensated signatures bundles comprising:

a platform for receiving signatures;

supports arranged on opposite sides of said platform for aligning signatures delivered to the platform;

means for selectively delivering stacks each having a plurality of signatures including means for dropping each stack into the region between said supports and upon said platform;

means for rotating said platform through one-half revolution after receiving each stack to form a compensated bundle;

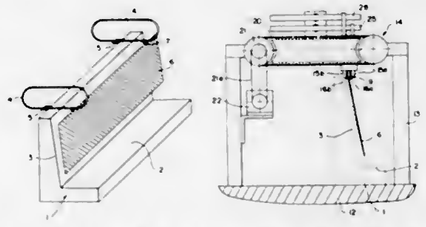
pusher means comprising a bar movable along a linear path which is arranged between said supports and is parallel to said supports;

means for moving said pusher means to eject a compensated bundle from said platform, said moving means moving said pusher means to a home position sufficiently displaced from said platform to permit said platform to rotate free from any interference with said pusher means while forming a compensated bundle, said means for moving said pusher means moving the pusher means from the home position to an eject-ready position closer to the platform than the home position and immediately adjacent one side of a bundle being formed to thereby preposition said pusher means in readiness for ejection of a bundle after a final stack has been dropped onto said platform by said means for selectively delivering.

5,282,717
APPARATUS FOR STORING AND TRANSPORTING PRINTED CIRCUIT BOARDS

Günter Löhr, Wiernsheim; Josef Mozzi, Unterreichenbach, and Gunter Herrmann, Calw, all of Fed. Rep. of Germany, assignors to Lohr & Herrmann GmbH, Neuhausen, Fed. Rep. of Germany

Filed Jul. 16, 1992, Ser. No. 914,899
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125496
Int. Cl.[5] B65B *5/10*
U.S. Cl. 414—798.2 **9 Claims**



1. An apparatus for storing and transporting printed circuit boards, the apparatus comprising:

a body having an upwardly facing supporting surface for supporting a plurality of stacked circuit boards and a second surface substantially perpendicular to the supporting surface;

two spaced apart, elongate annular members secured to the body and extending in a direction substantially parallel to the supporting surface and substantially perpendicular to the second surface;

a plurality of liners, each having two holes, wherein each of the annular members passes through a respective hole on each liner and each liner is movable along the annular members between a stand-by position in which the liner is suspended from the annular members on a first side of the second surface and an operative position in which the liner is disposed on an opposite side of the second surface and extends between two consecutive printed circuit boards supported on the supporting surface;

two belt drives associated with respective ones of the elongate annular members, the belt drives each comprising endless belts extending parallel to the associated elongate annular members, wherein the belts are operable to rotate synchronously;

two grippers, each pivoted to a respective one of the belts and adapted to rotate therewith on a path which intersects the liners when the liners are in the standby and operative positions;

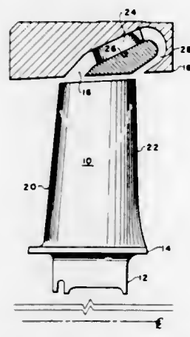
biasing means for urging the grippers into the paths to an operative gripper position to couple the belts to the liners; and

stationary actuator means for moving and keeping the grippers out of the paths in an inoperative gripper position.

5,282,718
CASE TREATMENT FOR COMPRESSOR BLADES

Steven G. Koff, Palm Beach Gardens, Fla.; Robert S. Mazzawy, South Glastonbury; John P. Nikkanen, West Hartford, both of Conn., and Nick A. Nolcheff, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 648,510, Jan. 30, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 924,611
Int. Cl.[5] F01D *1/12*
U.S. Cl. 415—57.3 **4 Claims**

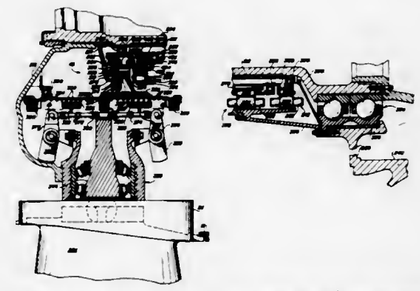


1. For a gas turbine engine having a compressor including a rotor having a plurality of axial flow compressor blades subjected to being aerodynamically stalled, an outer shroud surrounding said compressor blades defining the outer boundary for the main flow path, a passageway formed in said outer shroud having an inlet and an outlet, said inlet being disposed downstream of the leading edges of said compressor blades and an outlet being disposed in proximity to said leading edges, said passageway being dimensioned so that no more than 12% of the total flow passing through said rotor flows through said passageway, anti-swirl vanes in said passageway for removing the swirl component of the rotor relative low momentum flow being removed from said main flow, and said inlet being oriented with respect to the main flow path to selectively remove from the main flow path solely the low momentum flow relative to the rotor that has low axial velocity but high absolute tangential velocity and prevent the strong relative flow that has high axial velocity to enter said passageway said passageway being curved to direct flow toward said inlet and said outlet is oriented with respect to the main flow such that the ratio of the differential of the minimum pressure measured between said curved portion and said outlet and the pressure at said discharge end of said outlet to the value of $\frac{1}{2}\rho V^2$ is equal to or less than 1.5, where "ρ" is the density of the fluid and "V" is the velocity of the fluid.

5,282,719
QUAD MODE FAN PITCH ACTUATION SYSTEM FOR A GAS TURBINE ENGINE

Frederick B. McCarty, San Pedro, and Thomas F. Fitzgibbon, Long Beach, both of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed May 13, 1991, Ser. No. 700,385
Int. Cl.[5] B64C *11/44*
U.S. Cl. 416—1 **17 Claims**



1. Apparatus for controlling variable blade pitch of a turbine engine including a turbine shaft and a plurality of fan blades, said apparatus comprising:

a first member relatively rotatable with respect to said shaft;

a second member relatively rotatable with respect to said shaft;

differential gear means for interengaging with said first and second members and for providing a translational output in response to rotation of said first and second members relative to said shaft;

linkage means for receiving said translational output of said differential gear means and for converting and transmitting said translational output to said fan blades to affect a pitch change of said fan blades;

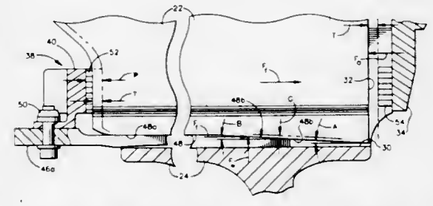
first actuator means for selectively causing rotation of said first member relative to said shaft and thereby effecting a pitch change of said fan blades in a first direction; and

second actuator means for selectively causing rotation of said second member relative to said shaft and thereby effecting a pitch change of said fan blades in a direction opposite said first direction.

5,282,720
FAN BLADE RETAINER

Stephen J. Szpunar, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 15, 1992, Ser. No. 945,049
Int. Cl.[5] F01D *5/32*
U.S. Cl. 416—220 R **9 Claims**



1. A retention assembly for a rotor blade comprising:

a rotor disk having a pair of circumferentially spaced apart

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dovetail posts defining therebetween an axially extending dovetail groove;

said rotor blade having a dovetail being complementary to said dovetail groove and disposed therein for radial retention by said posts;

a primary blade retainer fixedly joined to said disk for retaining said blade in said groove against axial movement in a first direction; and

secondary means disposed in said groove and cooperating with said dovetail for wedging said blade in said groove after a predetermined axial travel of said blade in said first direction upon failure of said primary blade retainer to restrain said predetermined travel.

5,282,721

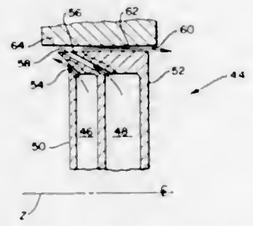
PASSIVE CLEARANCE SYSTEM FOR TURBINE BLADES

Robert J. Kildea, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 767,745, Sep. 30, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 529

Int. Cl.[5] **F01D** *5/18, 5/20*

U.S. Cl. 416—97 R **5 Claims**



1. A turbine blade for a gas turbine engine having at least one internal cooling passage internally of the turbine blade, said turbine blade being driven by engine fluid working medium and having an airfoil section including an outer wall defining a pressure surface, a suction surface, a tip and a lower end of said internal cooling passage for leading cooling air from said lower end to flow through said internal passage and discharge through a plurality of spaced holes formed in said outer wall, said turbine blade being rotatably mounted in said engine such that said tip is spaced adjacent an annular member which defines therewith a gap, the improvement comprising a projection having an outer surface extending axially from the tip of the airfoil in the same plane of the airfoil's tip surface and an inclined inner surface extending from the pressure surface to the end of said outer surface, and an angled hole disposed substantially parallel to said inclined inner surface extending through the outer wall on the pressure surface connecting said internal passage for leading spent cooling air externally of said blade in proximity to said projection at a location spaced from said tip such that the flow of spent cooling air flows along said inner surface of said projection toward said tip whereby said flow combines with said fluid working medium flowing radially adjacent said pressure surface so that the tendency of said engine fluid working medium from migrating into said gap is reduced and the performance of said turbine blade is enhanced.

5,282,722

ELECTRONIC PRESSURE CONTROL

James M. Beatty, Minnetonka, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Continuation of Ser. No. 713,814, Jun. 12, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,876

Int. Cl.[5] **F04B** *49/08*

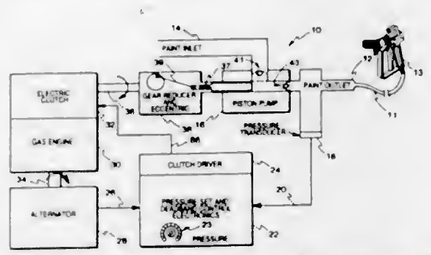
U.S. Cl. 417—15 **6 Claims**

1. Pressure control loop apparatus for controlling the operation of a drive train of portable paint spraying equipment having a piston paint pump, the pressure control loop apparatus comprising:

a) a paint pressure transducer coupled to the output of the piston paint pump having an output pressure signal representative of the output pressure of the piston paint pump;

b) a pressure reference means having a manually adjustable control for adjusting a desired pressure signal;

c) comparator means for comparing the desired pressure signal and the output pressure signal and for providing a signal to turn the drive train ON when the output pressure signal is less than the desired pressure signal; and



d) a pressure deadband control means for inserting a pressure deadband in the pressure control loop wherein the deadband extends from an upper level above which the drive train is turned OFF and a lower level below which the drive train is turned ON and wherein the pressure deadband control means further includes means for shifting the desired pressure signal from a higher level to a lower level when the drive train is turned OFF and from the lower level to the higher level when the drive train is turned ON and wherein the means for shifting the desired pressure signal comprises a voltage level shifter connected to shift a voltage supplied by the manually adjustable control as the desired pressure signal.

5,282,723

REFRIGERATION COMPRESSOR WITH ELECTRONIC CONTROL ARRANGEMENT

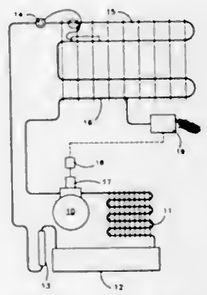
Matteo Bellomo, Moncalieri, Italy, assignor to Zanussi Elettromeccanica S.p.A., Italy

Filed Dec. 5, 1991, Ser. No. 802,557

Claims priority, application Italy, Dec. 11, 1990, 45776 A/90

Int. Cl.[5] **F04B** *49/06*

U.S. Cl. 417—45 **10 Claims**



1. A hermetic reciprocating compressor, in particular for household-type refrigerating and freezing appliances, provided with an electric drive motor (**17**) and an electronic control arrangement (**18**), wherein said motor (**17**) is a brushless-type motor and said control arrangement (**18**) is a frequency control arrangement adapted to operate said motor at any speed that is compatible with a correct operation of the compressor (**10**) so as to increase the overall efficiency of the compressor and delivery and suction bores (**24**) provided in the plate (**22**) of the valves of the compressor (**10**) have a diameter which is selected in correspondence of the highest value of the product of volumetric efficiency ($\eta 1$) and load loss efficiency ($\eta 2$) so as to improve the overall efficiency and optimize the refrigerating capacity of the compressor with a reduction in the clearance volume in the compression chamber.

5,282,724

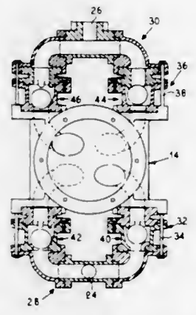
MODULAR CHECK VALVE SYSTEM

Steven M. Reynolds, Mansfield, Ohio, assignor to Warren Rump, Inc., Mansfield, Ohio

Filed May 12, 1992, Ser. No. 881,717

Int. Cl.[5] **F04B** *21/00*

U.S. Cl. 417—454 **5 Claims**



1. In a pump assembly including a pump having an inlet and an outlet and a flow section at at least one of said inlet and outlet defining a predetermined dimensional envelope, a method of installing valve assemblies to selectively modify the flow characteristics of said pump comprising the following steps:

providing a plurality of valve modules, each of said valve modules having a valve housing with a stack height and exterior dimension corresponding to said predetermined dimensional envelope of said pump flow section, each of said valve housings containing respective valve elements providing different flow characteristics; and

selecting one of said plurality of valve modules and securing it within said predetermined dimensional envelope of said pump flow section to provide a selected flow characteristic for said pump assembly given a particular flow rate and material to be moved by said pump assembly.

5,282,725

SLANT PLATE TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

Hidehiko Shimizu, Sawa, Japan, assignor to Sanden Corporation, Gunma, Japan

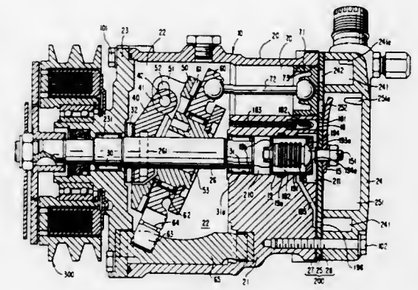
Filed Dec. 7, 1992, Ser. No. 986,567

Claims priority, application Japan, Dec. 5, 1991, 3-100385[U]

Int. Cl.[5] **F04B** *1/12*

U.S. Cl. 417—222.1 **4 Claims**

1. In a slant plate type compressor including a compressor housing enclosing a crank chamber, a suction chamber and a discharge chamber therein, said compressor housing comprising a cylinder block having a plurality of cylinders formed therethrough, a piston slidably fitted within each of said cylinders, a driving means coupled to said pistons for reciprocating said pistons within said cylinders, said driving means including a drive shaft rotatably supported in said housing, a cam rotor fixedly connected to said drive shaft, and coupling means for drivingly coupling said cam rotor to said pistons such that rotary motion of said cam rotor is converted into reciprocating motion of said pistons, said coupling means including a slant plate having a surface disposed at an adjustable inclined angle relative to a plane perpendicular to said drive shaft, the inclined angle of said slant plate adjustable to vary the capacity of the compressor, a passageway formed in said housing and linking said crank chamber and said suction chamber in fluid communication, and capacity control means coupled to said passageway for varying the capacity of the compressor by adjusting the inclined angle of said slant plate, said cam rotor



coupled to said slant plate by means of a hinged joint mechanism which permits the inclination of said slant plate to vary, the improvement comprising:

said hinged joint mechanism including abrasion reduction means for reducing abrasion between all frictional contact surfaces of said cam rotor and said slant plate, said abrasion reducing means including radially extending hard metal inserts between the frictional contact surfaces of said cam rotor and said slant plate at least one of which is made of soft metal.

5,282,726

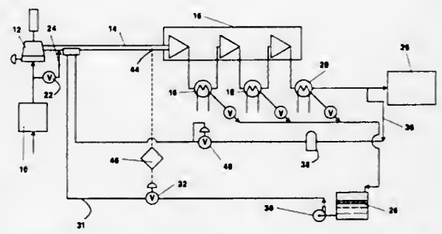
COMPRESSOR SUPERCHARGER WITH EVAPORATIVE COOLER

James R. Warren, Lakeview, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 21, 1991, Ser. No. 718,797

Int. Cl.[5] **F04B** *23/00*

U.S. Cl. 417—243 **16 Claims**



1. A system for increasing the capacity of a gas compressor comprising:

(a) a supercharger for receiving, compressing and discharging a gas flow; and

(b) an evaporative cooler comprising a section of pipe connecting said supercharger with the compressor, said pipe having a nozzle for spraying and evaporating a liquid into the gas flow for cooling of the gas flow, said nozzle having internal passages sized to atomize a liquid into droplets of mean diameter from about 4 to about 20 microns, said evaporative cooler being capable of completely evaporating the liquid sprayed into the gas flow before reaching

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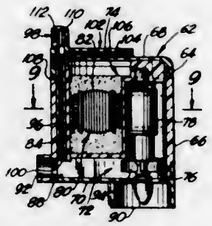
the compressor so as to increase the capacity of the compressor and minimize the electrical power used by the compressor while delivering the desired mass flow of gas.

5,282,727

AQUARIUM POWER HEAD WITH INTEGRAL MUFFLER

Allan H. Willinger, Franklin Lakes; Robert Ellis, Wyckoff, both of N.J.; Gene S. Fleischer, Spring Valley, N.Y., and Mark Agresta, Nutley, N.J., assignors to Willinger Bros., Inc., Oakland, N.J.

Division of Ser. No. 531,917, May 29, 1990, Pat. No. 5,137,433.
This application Aug. 10, 1992, Ser. No. 927,570
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—423.15 12 Claims



1. A power head for insertion in an aquarium tank, the power head comprising:
a pump for pumping water of the aquarium tank;
a water conduit; and
a housing enclosing said pump and said water conduit, said housing having an inlet port for receiving water and an outlet port for discharging water, said pump being provided at said inlet port for pumping water into said housing, said pump and said conduit being serially connected between said inlet port and said outlet port;
said housing having substantially the shape of a circular cylinder to avoid trapping fish between the housing and a wall of the aquarium tank.

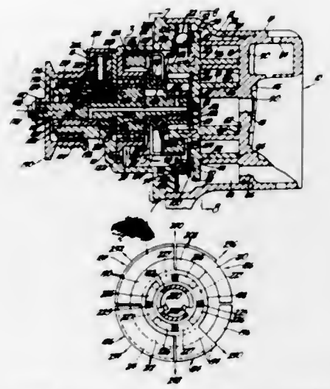
5,282,728

INERTIAL BALANCE SYSTEM FOR A DE-ORBITING SCROLL IN A SCROLL TYPE FLUID HANDLING MACHINE

James C. Swain, Columbus, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 2, 1993, Ser. No. 70,582
Int. Cl.[5] F01C *1/02, 1/063*
U.S. Cl. 418—55.5 3 Claims

1. A balance system for a scroll type fluid handling machine having a housing with a front section and a rear section; a fixed scroll with an end plate and a wrap in the rear section of the housing; an orbital scroll with an end plate and a wrap that cooperates with the fixed scroll to displace fluid; an orbital scroll drive including a crankshaft rotatably journaled in the front section of the housing and operable to drive the orbital scroll in an orbit; and a pair of balance assemblies that are rotated by the crankshaft and are shiftable relative to each



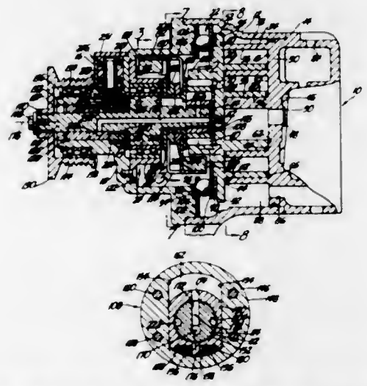
other to change the balance force exerted by the balance assemblies.

5,282,729

RADICAL ACTUATOR FOR A DE-ORBITING SCROLL IN A SCROLL TYPE FLUID HANDLING MACHINE

James C. Swain, Columbus, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 2, 1993, Ser. No. 70,603
Int. Cl.[5] F01C *1/02, 1/063*
U.S. Cl. 418—55.5 2 Claims



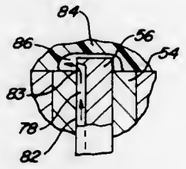
1. A scroll type fluid material handling machine having a housing with a fluid inlet and a fluid outlet; a stationary scroll with an end plate and a wrap mounted in the housing; an orbital scroll with an end plate and a wrap mounted in the housing; a drive assembly for driving the orbital scroll in a generally circular orbit including a crankshaft rotatably mounted in the housing for rotation about an axis, a drive member connected to the crankshaft outside the housing, an eccentric section on the crankshaft, a bushing assembly including a drive lug secured to the eccentric section of the crankshaft, a bushing body with a slot that encompasses the drive lug and with a surface that is journaled on the orbital scroll for pivotal movement about a bushing body axis and wherein the bushing body is movable relative to the drive lug from a position in which the axis of rotation of the crankshaft coincides with the bushing body axis to a position in which the wrap of the orbital scroll is in sealing contact with the wrap of the stationary scroll; and a balance assembly for balancing orbital motion of the orbital scroll.

5,282,730

RETRACTABLE GAS INJECTION PIN FOR AN INJECTION MOLD

Vernon A. Daniels, Brooklyn; Anthony Gill, Rochester, and William A. Nelson, New Baltimore, all of Mich., assignors to Automotive Plastic Technologies, Sterling Heights, Mich.

Filed Jun. 12, 1991, Ser. No. 714,116
Int. Cl.[5] B29C *45/16, 45/40*
U.S. Cl. 425—130 7 Claims



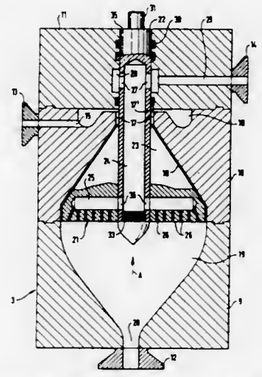
1. An injection molding apparatus comprising:
a mold body defining a cavity at an inner periphery for forming a part;
an aperture for delivering fluent plastic into said cavity, said aperture adapted to be connected to a source of fluent plastic;
a source of pressurized gas selectively communicating with said cavity through a passage in an injection pin, said injection pin being movable between an extended position where said passage communicates with said cavity to a retracted position where said passage does not communicate with said cavity, said injection pin being received within a bore defined by a cylinder inner wall, said passage having an outlet abutting said inner wall when in said retracted position to block communication between said outlet and said cavity; and
said injection pin being moved between said extended and retracted position by a force from said gas delivered to said cavity, wherein said injection pin has a first end removed from said cavity and a second end selectively extended into said cavity, said first end acted upon by said gas to move said injection pin to said extended position, a piston face defined on said injection pin at an intermediate position between said first end and said second end, said piston face being acted upon by said gas to apply a force tending to move said injection pin to said retracted position, said piston face having a smaller surface area than said first end of said injection pin such that the force from said gas being applied to said first end overcomes the force of said gas applied to said piston face and said injection pin is forced to said extended position.

5,282,731

APPARATUS FOR THE PRODUCTION OF MOLDINGS FROM THERMOTROPIC, LIQUID-CRYSTALLINE SUBSTANCES

Peter Dinter, Hallgarten, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 692,618, Apr. 29, 1991, Pat. No. 5,154,865.
This application Aug. 5, 1992, Ser. No. 924,949
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013553
Int. Cl.[5] B29C *47/14, 47/70, 47/92*
U.S. Cl. 425—133.5 23 Claims



1. An apparatus for producing multi-axially oriented films, comprising:
extruder means for generating a polymer melt stream comprising a thermotropic, liquid crystalline polymer melt comprising polymer chains;
line means for dividing said polymer melt stream into at least two part streams comprising a first part stream and a second part stream;
adapter means for orienting the chains of liquid crystal polymer of said two part streams and subsequently combining said two part streams, said adapter means connected to said extruder by said line means, said adapter means including a melt chamber through which a first part stream is fed in a polymer matrix flow direction and means for imposing predetermined directions of orientation on the chains of polymer of said first and second part streams, said imposing means comprising a rotatable distributing element through which said second part stream is fed and divided into a plurality of individual polymer strands and means for rotating said distributing element at a controllable speed, said rotatable distributing element combining said polymer strands with said polymer matrix in said melt chamber;
die means for shaping the combined part streams exiting from said adapter means into a thin multi-layer flexible film, said die means operatively connected to said adapter means; and
cooling means for receiving and cooling said film, said cooling means operatively connected to said die means.

5,282,732

MOLD PRESS ASSEMBLY

Horace Eggert, Hampton, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Apr. 8, 1992, Ser. No. 865,293
Int. Cl.[5] B29C *43/00*
U.S. Cl. 425—153 15 Claims

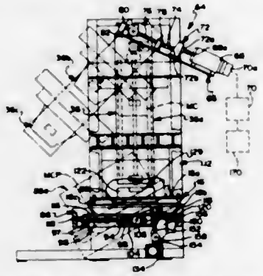
1. In a mold press having vertically moveable upper and

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lower platens each having opposite sides thereon and a press frame having opposite sides located adjacent the opposite sides of the upper and lower platens for supporting said upper and lower platens for vertical movement thereon the improvement comprising:

first and second ball screw drives located at said opposite sides of said press frame and extending vertically with respect thereto; first and second drive nuts supported on said upper platen;

a first electric drive motor and a first drive shaft connected thereto; said first drive shaft extending across the width of said press frame; journals supporting the opposite ends of



said drive shaft in said press frame; a bevel gear coupling said drive shaft to each of said first and second ball screw drives for causing rotation of said first drive shaft to drive said first and second ball screw drives with respect to said first and second drive nuts for vertically reciprocating said upper platen with respect to said press frame;

a first inner frame for supporting said upper platen, said first and second ball screw drives, said first and second drive nuts and said bevel gear; and

a pivot drive including said first drive shaft for pivoting said first inner frame with respect to said press frame for pivoting said upper platen with respect to said press frame for access to said upper platen.

5,282,733

INJECTION MOLDING MACHINE HAVING EXCHANGEABLE SUB-MOLDS

Hiroshi Noritake; Takeo Murayama; Hideo Onda; Satoru Yoshizawa, and Kazuhiko Kogo, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 812,782

Int. Cl.[5] B29C *45/10*

U.S. Cl. 425—183 **23 Claims**

1. An injection molding apparatus comprising:

a fixed-side mold having a fixed-side base plate;

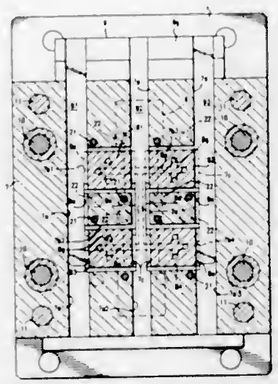
a movable-side mold having a movable-side base plate and movable between a mold-opened position and a mold-closed position;

sub-mold hollow means defining a plurality of sub-mold hollows which are formed in at least one of said fixed-side base plate and said movable-side base plate;

keyways formed in said base plate in which said sub-mold hollow means are formed;

changeable sub-molds insertable in said sub-mold hollows of said sub-mold hollow means when said movable-side mold is in said mold-opened position through a space between said fixed-side mold and said movable-side mold, said changeable sub-molds being non-rotatably disposed in said sub-mold hollows, each of said changeable sub-molds being detachable from said sub-mold hollows when said moveable side mold is in said opened position through said space between said two molds; and

comb-shaped fixing key means detachably engaged in said keyways and which fix said changeable sub-molds in said sub-mold hollows by engaging an engaging portion of said



changeable sub-molds when said comb-shaped fixing key means has been inserted into said keyways.

5,282,734

MANDREL FOR MANUFACTURING A HOLLOW COMPOSITE MATERIAL BODY

Nicole Pastureau, Eysines, and Patrice Dourthe, Rion des Landes, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Division of Ser. No. 695,346, May 3, 1991, Pat. No. 5,173,332.

This application Jul. 20, 1992, Ser. No. 914,581

Claims priority, application France, Jun. 13, 1990, 90 07319

Int. Cl.[5] B29C *41/02, 33/56*

U.S. Cl. 425—393 **8 Claims**

1. A mandrel for manufacturing a hollow composite material body, using a manufacturing method in which an arrangement of fibers is applied on said mandrel, then said arrangement of fibers is hardened and densified by operations requiring the application of high temperatures, after which said hollow body formed by said arrangement of fibers is removed from said mandrel, hardened and densified, said mandrel comprising graphite felt rigidified and machined so that its outer surface corresponds to the inner surface of said hollow body, said mandrel being formed of an homogeneous block of said graphite felt whose fibers are embedded in a pyrolysis carbon matrix, wherein at least the surface layer of said mandrel is impregnated with a rubbery binder.

5,282,735

INJECTION MOLDING NOZZLE WITH PARTIALLY UNHEATED HEATING ELEMENT

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Dec. 7, 1992, Ser. No. 986,601

Claims priority, application Canada, Nov. 19, 1992, 2083413-7

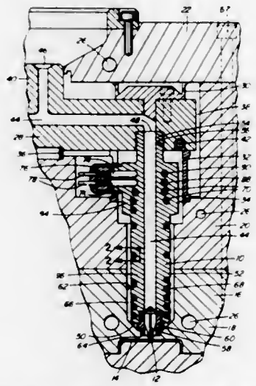
Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 **1 Claim**

1. In an elongated injection molding nozzle having a rear end, a forward end, an integral electrical heating element, and a melt passage extending therethrough from the rear end to the forward end, the electrical heating element having first and second arm portions extending in a pair of alternating spiral coils around the melt passage along the nozzle to respective first and second ends at an external terminal adjacent the rear end of the nozzle, the electrical heating element having a central wire extending through an electrically insulating material in an outer casing, the wire having a fine coiled heating

portion extending between first and second conductive portions, the first and second conductive portions being substantially larger in diameter than the heating portion and extending respectively to the first and second ends of the heating element, the improvement wherein,

the first conductive portion of the wire of the heating element is a predetermined length longer than the second conductive portion of the wire of the heating element, the



first conductive portion of the wire of the heating element extending in one of the spiral coils along a first portion of the nozzle adjacent the external terminal and the heating portion of the wire of the heating element extending in both of the pair of spiral coils along a second portion of the nozzle, whereby the heating element provides substantially less heat along the first portion of the nozzle than along the second portion of the nozzle.

5,282,736

APPARATUS FOR MANUFACTURING CONTAINERS WITH THICKENED FLANGES

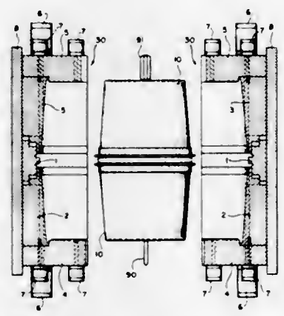
Richard L. Moore, Fairhope, Ala., assignor to The Lerio Corporation, Mobile, Ala.

Division of Ser. No. 914,543, Jul. 16, 1992, Pat. No. 5,227,114.

This application Mar. 8, 1993, Ser. No. 27,636

Int. Cl.[5] B29C *49/20*

U.S. Cl. 425—525 **10 Claims**



1. A molding apparatus for producing containers having thickened flanges from a blow-molded parison of moldable material, said molding apparatus being axially-divisible into two halves, each of said halves of said molding apparatus comprising:

(a) two movable mold halves, each of said movable mold halves comprising a mold element for forming the bottom of one of said containers and a mold element for forming the side or body section of one of said containers, said bottom and side mold elements of said movable mold halves being operatively connected with each other but also being movable relative to each other;

(b) a stationary central mold element positioned between said movable mold halves, the movable mold halves and stationary central mold elements of said two halves of said molding apparatus enclosing therewithin a mold chamber;

(c) first moving means for simultaneously moving said movable mold halves toward said stationary central mold element; and

(d) second moving means for moving said side elements of said movable mold halves away from said stationary central mold elements without moving said bottom mold elements away from said stationary central mold elements, whereby, after said thickened flanges have been molded, said side mold elements of said movable mold halves may be retracted without severing a tail of material attached to said containers, said tail being formed when said halves of said molding apparatus close around said parison of thermoplastic material.

5,282,737

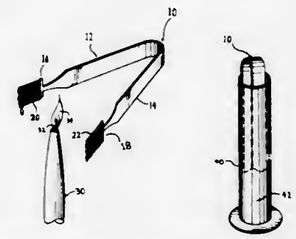
CANDLE SNUFFING APPARATUS AND METHOD

R. Charles Ray, 1515 S. "K" St., Tacoma, Wash. 98405

Filed Jun. 3, 1992, Ser. No. 894,056

Int. Cl.[5] F23Q *25/00*

U.S. Cl. 431—2 **6 Claims**



1. A method for extinguishing a candle flame, comprising the steps of:

(a) wetting substantially flat wettable snuffing surfaces affixed to the distal ends of tongs; and

(b) bringing the wetted snuffing surfaces into mutually opposing relationship with each other on either side of a candle wick and into contact with the wick.

5,282,738

LIQUID FUEL FEEDING METHOD AND LIQUID FUEL BURNING APPARATUS

Hiroo Oshima, and Takehiko Shigeoka, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1992, Ser. No. 873,476

Claims priority, application Japan, Apr. 26, 1991, 3-96640; May 23, 1991, 3-118254; Dec. 10, 1991, 3-325499; Feb. 3, 1992, 4-17364

Int. Cl.[5] F23N *5/20*; F23D *5/12*

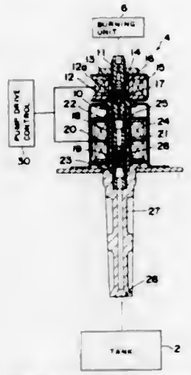
U.S. Cl. 431—3 **25 Claims**

1. In a burning apparatus provided with a fuel sucking means coupled to a valve means for sucking liquid fuel from a tank means and providing it to a burning means in response to a burning start signal and a burning stop signal, a method for providing said liquid fuel comprising the steps of:

a) sucking said liquid fuel from said tank means in response to said burning start signal;

b) discharging said sucked liquid fuel from said sucking means through said valve means toward said burning means in response to said burning start signal;

c) ceasing said sucking and discharging of said liquid fuel in response to said burning stop signal;



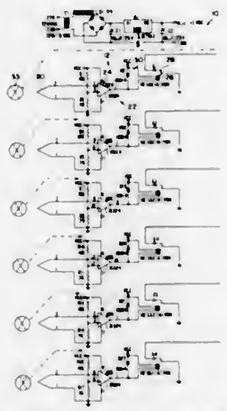
d) opening said valve means for a predetermined period of time in response to the burning stop signal such that discharged liquid fuel which has not reached said burning means can return through said valve means to one of 1) said fuel sucking means and 2) said tank means.

5,282,739

SAFETY DEVICE FOR GAS-FIRED EQUIPMENT

Moshe Chinsky, 3 Haviva Reich Str., Ramat-Gan, Israel, and Elazar Eyal (Bickels), 26 Michal Street, Tel-Aviv, Israel 61460

Filed Oct. 14, 1992, Ser. No. 960,730
Claims priority, application Israel, Oct. 30, 1991, 99903
Int. Cl.[5] F23Q *9/08*
U.S. Cl. 431—51 **9 Claims**



1. A safety device for gas-fired equipment having a main gas supply control valve and a plurality of gas-taps each associated with a flame-producing burner, said device comprising:

a plurality of switch means each switch means associated with a respective gas-tap and actuatable by the operation of said gas-tap,

a plurality of heat responsive sensors each sensor associated with the burner of a respective gas-tap and including a switching circuit operationally connected in circuit with a secondary control circuit and a timer, and

a central control unit connected in circuit for receiving control signals from the output of each of the secondary control circuits for controlling the state of said main gas supply valve,

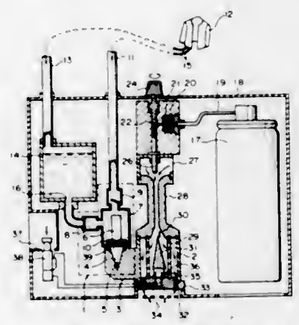
in response to the detection by a heat responsive sensor of the extinction of a flame of a burner when the gas-tap associated therewith is open said secondary control circuit connected to said sensor sends a signal to said central control unit for effecting the closing of said main gas supply valve.

5,282,740

PORTABLE HEAT CONDUCTING APPARATUS

Kenji Okayasu, 20-15, Muko-machi, Gyoda-shi, Saitama-ken, Japan

Filed May 21, 1992, Ser. No. 886,408
Claims priority, application Japan, May 22, 1991, 3-117283
Int. Cl.[5] F23D *14/28*; **A61F** *7/00*
U.S. Cl. 431—344 **19 Claims**



1. A portable heat conducting apparatus for heating an external subject, said apparatus comprising:

a feed tank for holding an operating liquid;

a heat drive pump having a discharge side and a suction side, said heat drive pump including,

a heating portion with a liquid heating recess,

a check valve in said discharge side of said heat drive pump,

a check valve in said suction side of said heat drive pump, and

said liquid heating recess receiving operating liquid from said feed tank via said check valve in said suction side of said heat drive pump, and an opening portion of said liquid heating recess facing upward with respect to gravity during normal use of said apparatus;

a gas catalyst combustion device including,

an air sucking ejector including a gas jetting nozzle, said gas jetting nozzle being connected to a gas cylinder via a gas control valve, and

a combustion chamber for receiving gas from said air sucking ejector via said gas jetting nozzle, said combustion chamber made of a heat conducting material, said combustion chamber including,

a combustion catalyst,

an igniting device, and

said liquid heating portion of said heat drive pump; and

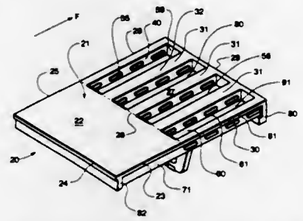
connecting means for connecting in series said feed tank, said heat drive pump, and said external subject to be heated to form an operating-liquid circulating closed-circuit.

5,282,741

GRATE PLATE

Michael R. Massaro, Reading; Bernard H. Schonbach, Allentown; George W. Bryde, Kutztown, and Thomas R. Lawall, Emmaus, all of Pa., assignors to Fuller Company, Bethlehem, Pa.

Continuation of Ser. No. 830,312, Jan. 31, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,266
Int. Cl.[5] F27D *15/02*
U.S. Cl. 432—77 **16 Claims**



1. A grate plate for transporting particulate material in a predetermined direction through a cooling apparatus that has a material inlet, a material outlet, and a plurality of rows of grate plates, with each preceding row of plates overlapping a portion of the following row of plates, said grate plate having an upper surface which is divided between an exposed area and a non-exposed area, wherein:

substantially the entire exposed area is defined by alternating rows of (a) substantially rectangular hollow air distribution plenums that, in their longitudinal direction, travel substantially the entire distance of said exposed area, which direction is parallel to the movement of material through the cooling apparatus, said air distribution plenums having a top surface with which some particulate material being transported through the cooling apparatus comes into contact, and two side walls and (b) a plurality of rectangular pockets, which, in their longitudinal direction, travel substantially the entire distance of the exposed area, said direction being parallel to the movement of particulate material through the cooling apparatus;

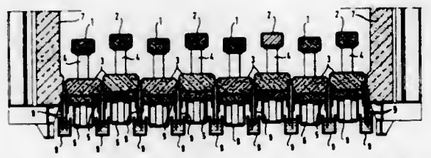
wherein said side walls of said air distribution plenum each have a plurality of air portals located thereon through which cooling air passes from the interior of the air distribution plenum through said air portal into an adjacent pocket.

5,282,742

DOUBLE WALKING BEAM FURNACE FOR THE HEAT TREATMENT OF INDIVIDUAL PARTS

Kurt Ellringmann, Bad Iburg, Fed. Rep. of Germany, assignor to Maerz Ofenbau GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 897,399
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1991, 4119708
Int. Cl.[5] F27B *9/24*
U.S. Cl. 432—122 **6 Claims**



1. A double walking beam furnace for the heat treatment of individual articles, said furnace comprising:

a transport apparatus for conveying the articles to be heated through the furnace, said transport apparatus having two groups of movable longitudinal beams which alternately transport the articles in a step-wise manner, said beams being alternately arranged in spaced relationship to one another;

a substructure arranged beneath each longitudinal beam for supporting each beam and being movable together therewith;

a fixed water trough provided between each two adjacent substructures, each water trough extending substantially over the entire length of the furnace, each water trough being constructed of a plurality of separate longitudinal channels, said longitudinal channels being substantially flangeless and welded to one another at their abutting end faces; and

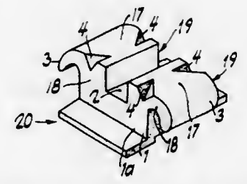
dip skirts mounted on each substructure and movable together with the substructure, said dip skirts being immersed in the water troughs.

5,282,743

ORTHODONTIC BRACKET

Fujio Miura, Tokyo, Japan, assignor to GAC International, Inc., Central Islip, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,551
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 **14 Claims**



1. An orthodontic bracket for use with an arch wire, comprising:

a bracket main member having upper, middle and lower portions, the middle portion having a slot formed therein for receiving the arch wire;

wings formed on the upper and lower portions of the bracket main member for enabling a ligature means to be tied therewith in a tied state to secure the arch wire in place in the slot, said wings including a buccal surface and mesial and distal surfaces; and

ligature engaging portions formed on the wings at the intersection of said buccal surface and one of said metal and distal surfaces for enabling the ligature means to be held in place in the tied state on the wings and avoiding pressured contact between the ligature means and the arch wire.

5,282,744

DENTAL VACUUM PUMP SYSTEM

Robert A. Meyer, P.O. Box 279, Spearfish, S. Dak. 57783

Continuation of Ser. No. 178,864, Apr. 4, 1988, abandoned, which is a continuation of Ser. No. 477,519, Mar. 21, 1983, abandoned. This application Sep. 23, 1992, Ser. No. 949,354
Int. Cl.[5] A61C *17/06*
U.S. Cl. 433—92 **18 Claims**

1. A high efficiency dental vacuum source assembly that utilizes substantially no water and provides a substantially constant source of vacuum intensity comprising:

a plurality of dental aspirator tips;

a vacuum reservoir;

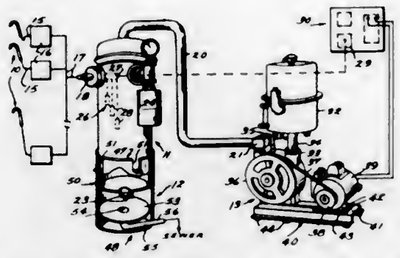
a rotary van vacuum pump;

a motor for powering said rotary vane vacuum;

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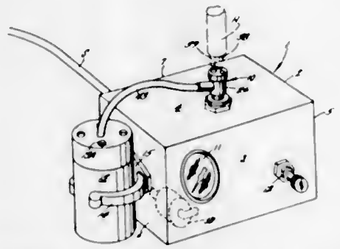
VOL 1159 ISS 1 FE 1 1994 UMI

a vacuum line interconnecting said vacuum reservoir and said rotary vane vacuum pump; and



vacuum conduit means connecting said plurality of dental aspirator tips to said vacuum reservoir.

5,282,745
DENTAL HANDPIECE PURGING DEVICE
John C. Wiltrout, and Nora M. Wiltrout, both of Chippewa Falls, Wis., assignors to Dental Components, Inc., Newberg, Oreg.
Filed Mar. 29, 1992, Ser. No. 38,854
Int. Cl.[5] A61C *1/10*
U.S. Cl. 433—114 **6 Claims**



1. A device for purging dental handpieces of the type having communicating air inlet and air outlet passageways, said device comprising,

a housing including wall members,

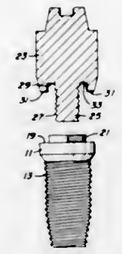
a receptacle,

a purge valve assembly carried by said housing for communication with a source of pressurized air and including a connector for engagement with one end of a handpiece, said connector defining an air outlet for pressurized air and a pressurized air inlet for respective communication with the inlet and the outlet passageways of the handpiece, a valve member controlling a pressurized air flow from said source to said outlet of said connector for purging the handpiece passageways, biasing means urging said valve member toward a closed position,

said connector in downstream communication with said receptacle via a conduit for delivery of matter purged from the handpiece.

5,282,746
METHOD OF INSTALLING A DENTAL PROSTHESIS
Grady C. Sellers, 1330 Church St., Sulphur Springs, Tex. 75482, and Jeffrey C. Neilson, Paris, Tex., assignors to Grady C. Sellers, Sulphur Springs, Tex.
Filed Nov. 4, 1992, Ser. No. 972,140
Int. Cl.[5] A61C *13/12, 13/225, 8/00*
U.S. Cl. 433—172 **6 Claims**

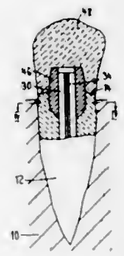
1. A method for installing a dental abutment in a dental implant which has been implanted in bone, the implant having a threaded receptacle with a rim located at an upper end of the receptacle, the abutment having a threaded shank which engages the threaded receptacle and a downward facing shoulder encircling the shank for engaging the rim, the method comprising:



coating the shoulder with a viscous, flowable, inert material having characteristics of wax; then

screwing the abutment into the implant, with the material causing the shoulder to seal against the rim to prevent trapped fluids in the receptacle from flowing outward.

5,282,747
SUPERSTRUCTURE FOR AN ARTIFICIAL TOOTH
Harald E. Nordin, Villa Amphion, CH-1822 Chernex, Switzerland
Filed Jul. 7, 1992, Ser. No. 909,607
Claims priority, application European Pat. Off., Jul. 8, 1991, 91810533.9
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—221 **13 Claims**

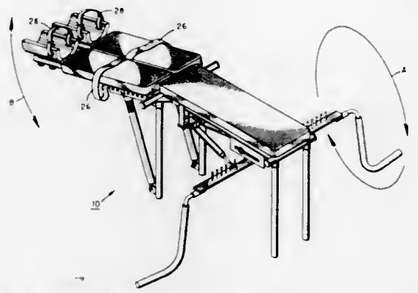


1. A superstructure for an artificial tooth, comprising:

a root post for being screwed into a root canal of a tooth stump, said root post comprising a cylindrical tap having a cutting thread, said root post being capable of guiding a sleeve-shaped rose cutter having a curved cutting surface for producing a tooth recess having a lower curved portion and which is concentric with respect to said root post; and

a sleeve-shaped crown anchor concentrically secured to said root post and having a lower curved portion which fits into and corresponds with the lower curved portion of said recess, said artificial tooth being secured on said crown anchor.

5,282,748
SWIMMING SIMULATOR
Oscar L. Little, 14 Scuppo Rd., Danbury, Conn. 06810
Filed Sep. 30, 1992, Ser. No. 954,039
Int. Cl.[5] A63B *69/10*
U.S. Cl. 434—254 **13 Claims**



1. A swimming simulator, comprising:

(a) a horizontal frame having front and rear edges with sides extending therebetween, to support a user in a horizontal plane above a surface on which the simulator is disposed, with said user's shoulders near said front edge of said frame and said user's hips near said rear edge of said frame;

(b) support means to support said frame spaced above said surface;

(c) two generally horizontal bars, having proximal and distal ends, extending outwardly from said sides of said frame, said proximal ends of said bars being rotatably attached at attachment points to said frame such that said distal ends of said horizontal bars can move arcuately in generally horizontal planes;

(d) first resistance means disposed at selected points between said proximal and said distal ends of said horizontal bars to resist said arcuate movement;

(e) hand grips attached to said distal ends of said horizontal bars by means of flexible cords, said hand grips being graspable by said user to move said horizontal bars in said arcuate movement.

5,282,749
METHOD AND APPARATUS FOR TEACHING CHILDREN HOW TO FOLD CLOTHES AND OTHER OBJECTS
Stephen R. Ketch, 1097 NW. 81st Ter., Plantation, Fla. 33322
Continuation of Ser. No. 540,179, Jun. 19, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 847,845
Int. Cl.[5] G09B *25/00*; A41D *11/00*
U.S. Cl. 434—395 **18 Claims**

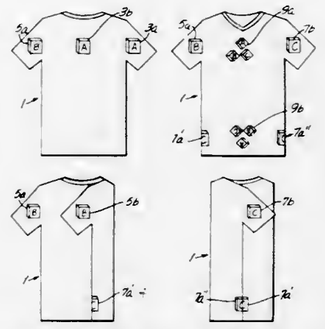
1. A shirt which comprises a front, a back, a first sleeve, a second sleeve, a neck, a bottom, and a plurality of sequentially coded decorative indicia on the outer surface of the shirt, which indicia comprise:

(a) a first pair of sequentially coded matching decorative indicia having two members, with one member of the pair being located on the back of the first sleeve and with the other member of the pair being located on the shirt's back in the center near the neck;

(b) a second pair of sequentially coded matching decorative indicia having two members, with one member of the pair being located on the back of the second sleeve, with the other member of the pair being located on the first of the first sleeve, and with the members being aligned in similar positions on the sleeves;

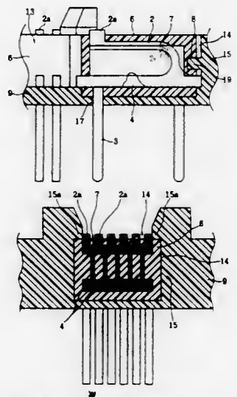
(c) a sequentially coded decorative index located on the front of the second sleeve and aligned in a similar position with the member on the first of the first sleeve; and

(d) a pair of complimentary decorative indicia located opposite each other on the shirt's front of each side near the bottom, with the complimentary indicia forming the sequentially coded decorative index of (c) when the sides of the shirt are folded so they meet;



wherein the indicia of (a) and (b) are different, wherein the index of (c) is different from the indicia of (a) and (b) but the same as the index formed when the complimentary indicia of (d) are matched, and wherein a sequence begins with the indicia of (a) and ends with the index of (c).

5,282,750
ELECTRIC CONTACTOR UNIT
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Nov. 10, 1992, Ser. No. 974,126
Claims priority, application Japan, Nov. 25, 1991, 3-336246
Int. Cl.[5] H01R *9/09, 13/405*
U.S. Cl. 439—72 **4 Claims**



1. An electric contactor unit comprising:

a plurality of side-by-side electric contactors each having at least one resilient contact portion for being contacted by a terminal of an electric part and resiliently moved, and each having a terminal portion;

insulating sheets coextensive with and interposed between adjacent ones of said electric contactors and with which said contactors are engaged; and

a hollow block of an elastic insulating material molded

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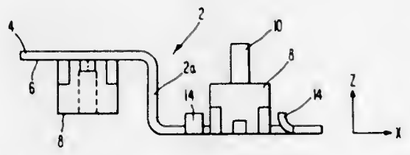
around said contactors and including said at least one resilient contact portion and said terminal portion and peripheral edges of said sheets in intimate engagement therewith for embedding said contactors and said sheets within said insulating material with said at least one contact portion and said terminal portion of each contactor exposed outwardly from said block through said insulating material, said insulating material being sufficiently elastic for permitting said at least one contact portion to be resiliently moved against the resiliency of said insulating material when a terminal of an electric part is urged against said at least one contact portion.

5,282,751

CONNECTOR APPARATUS

Nai Hock Lwee, 34196 Finnigan Ter., Fremont, Calif. 94555

Filed Jul. 31, 1992, Ser. No. 922,659
Claims priority, application Japan, Jul. 31, 1991, 3-192065
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—77 **4 Claims**



1. A connector apparatus comprising:

a mount board comprising a support plate and a flexible printed circuit bonded to the support plate, the support plate and the flexible printed circuit each having a first and a second surface thereon, each surface of the flexible printed circuit having conductive tracings thereon, the first surface of the flexible printed circuit being disposed adjacent to the first surface of the support plate,

the mount board being bent in a stepped relation to provide upper and lower step sections, an opening extending through the support plate on one of the step sections exposing the first surface of the flexible circuit and the tracings thereon; and

a receptacle connector connected to each step section of the mount board, each receptacle connector extending in mutually opposed height directions from the respective upper and the lower step sections, one of the receptacle connectors extending through the opening in the support plate and being in electrical connection with the conductive tracings on the first surface of the flexible circuit, the second receptacle connector being in electrical connection to the conductive tracings on the second surface of the flexible printed circuit.

5,282,752

COMBINATION CONNECTOR TOOL

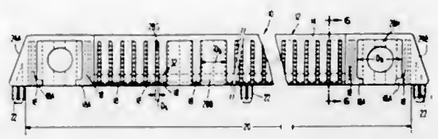
Ray C. Doutrich, Lebanon; James J. Muha, State College, and Stuart C. Stoner, Lewisberry, all of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 7, 1992, Ser. No. 926,880
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—79 **16 Claims**

1. A tool for a connector having a plurality of right angle tails extending therefrom, the tails being arranged in nested groups, the tool comprising:

a body formed of an insulating material, the body having a plurality of partitions therein, the partitions cooperating with each other to define a plurality of slots, each slot being sized to accept a group of tails, each of the tails being nonremovably received within each slot, and

a mounting member formed integrally with and extending from the body, the mounting member being adapted to secure the body to a substrate, the substrate having a tendency to bow,



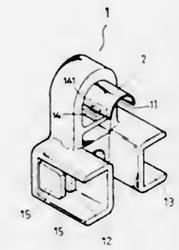
the body, when secured to the substrate, serving to stiffen the same and minimize the tendency of the substrate to bow.

5,282,753

INNER PIN BASE FOR A THREE-POLE PLUG

Tun-Li Su, No. 90, Chung Cheng Road, Lu-Chu, Kaohsung County, Taiwan

Filed Apr. 16, 1993, Ser. No. 48,469
Int. Cl.[5] H01R *13/504*
U.S. Cl. 439—106 **1 Claim**



1. An inner pin base for a three-pole plug, comprising:

a round-sectional passageway at a top portion of said inner pin base, said passageway having an upper rim which extends backward to form an upper tongue piece, and a lower rim which extends backward to form a lower tongue piece, said lower tongue piece having an upward projected portion formed on a top surface of said lower tongue piece, and said projected portion of said lower tongue piece being suitable for engaging with an oval hole formed on a round ground terminal being inserted through said passageway; and

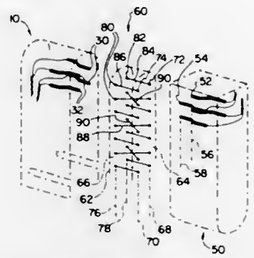
two channels separately disposed at two sides of a lower portion of said inner pin base, said channels each having an open rear end and a substantially closed front end, each said closed front end having a vertical and slender slot formed thereon such that said slender slot allows a flat positive or negative terminal to pass through, said vertical and slender slots each having two parallel stops separately extending backward from two internal sides of said vertical and slender slot, each of said parallel stops having two vertically spaced projected portions inwardly extending toward said slender slot, and said vertically spaced projected portions of said parallel stops being suitable for engaging with recesses correspondingly formed on said positive or negative terminal being inserted through said vertical and slender slot.

5,282,754

MULTI-TERMINAL ELECTRICAL CONNECTORS

Paul P. Kish, St-Lazare, and Joseph Maroun, St. Laurent, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 3, 1992, Ser. No. 940,279
Int. Cl.[5] H01R *23/02, 13/652*
U.S. Cl. 439—108 **1 Claim**



1. A multi-terminal electrical connector comprising:

a dielectric housing means;

a first row and a second row of terminals accessible at a front side of the housing means and a third row and a fourth row of terminals accessible at a rear side of the housing means with the two rows of terminals accessible at each side being laterally spaced with each terminal in one row associated with a laterally spaced terminal in the other row to provide a pair of terminals;

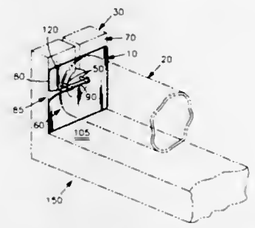
and a plurality of pairs of a electrical conductors extending through the housing means, each pair of conductors connecting an individual one of a pair of associated terminals on the front side of the housing means with an individual one of a pair of terminals on the rear side of the housing means, and the conductors of each pair in alternating conductor pairs are maintained in spaced non-crossing positions laterally of the rows of aligned terminals to connect a terminal in the first row with a terminal in the third row and a terminal in the second row with a terminal in the fourth row while the conductors of each pair in the other conductor pairs crossover each other laterally of the rows of terminals to connect a terminal of the first row with a terminal in the fourth row and a terminal in the second row with a terminal in the third row.

5,282,755

LOCKING DEVICE FOR FLUORESCENT LAMPS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vemco Corporation, San Dimas, Calif.

Filed Jan. 19, 1993, Ser. No. 5,669
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—233 **5 Claims**



1. A lamp locking device for locking a fluorescent lamp into a fluorescent lamp socket, the lamp being of the type having bi-pins extending from the lamp for engaging the lamp socket, the lamp requiring a 90 degree rotation for removal from the lamp socket, the lamp being further of the type mounted adjacent to a reference surface laying parallel to, and in proximity to the bi-pins, the locking device comprising:

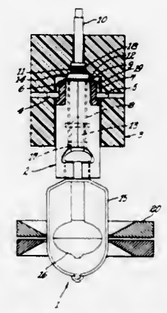
a flat wafer-like body of electrically insulating material capable of sustaining fluorescent lamp operating temperature without changing shape, the body having a straight peripheral first lateral edge and a linear slot laying parallel to the first lateral edge and spaced apart therefrom, the slot being open and accessible from a leading edge of the body, and providing slot walls defining the extent of the slot and width thereof, a separation between the slot and the first lateral edge being approximately equal to the distance between the bi-pins of the lamp and the reference surface such that with the device inserted between the lamp and the lamp socket and with the slot engaging the bi-pin, the first lateral edge lays in close proximity to the reference surface so that the lamp cannot turn in the lamp socket without the lamp locking device turning with it, as urged by the bi-pins, contact between the first lateral edge and the reference surface preventing lamp rotation and removal from the lamp socket.

5,282,756

ELECTRICAL LAMP BASE AND SOCKET ASSEMBLY

Raymond A. Heindl, Euclid, and Lawrence T. Mazza, Mayfield Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,430
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—336 **9 Claims**



1. Electrical lamp base and socket assembly for mechanically holding and supplying power to an electrical lamp having a vitreous envelope, said lamp base and socket assembly allowing mainly axial motion for the lamp and avoiding requirement of any turning motion over an angle of greater than 90 degrees during insertion of the lamp into and removal from the socket, said lamp base and socket assembly comprising:

a lamp base member made of insulating material surrounding a neck portion of the vitreous envelope and being fixed thereto;

said lamp base having at least one slot on its outer surface, without causing any increase in size of said lamp base and wherein said lamp base has a cylindrical shape and said slot is placed on a cylindrical surface of said lamp base;

at least one bore formed in said lamp base and through which at least one electrically conductive means extends from a lamp base contact towards the lamp;

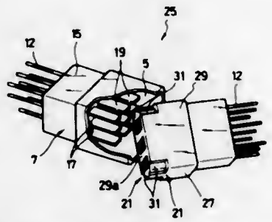
a socket made of insulating material, and having a hole formed therein for said lamp base, said socket having disposed therein, mechanical means including a spring mechanism and protruding parts for engaging said slot of said lamp base at insertion and for holding the lamp in said socket and releasing it at lamp removal; and

electrical connecting means in said socket for providing

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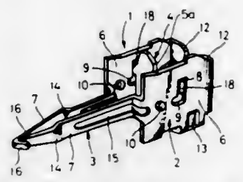
electrical connection from a power source to the lamp base contact.

5,282,757
CONNECTOR
Akira Maeda, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed May 7, 1992, Ser. No. 879,300
Claims priority, application Japan, May 16, 1991, 3-34580[U]
Int. Cl.[5] H01R *13/645*
U.S. Cl. 439—374 **6 Claims**



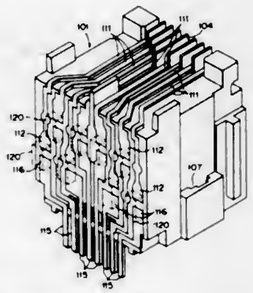
1. A connector comprising:
a male connector element having a rectangular fitting surface provided on a lateral face thereof, said fitting surface having corners which are notched at the outer periphery thereof, said notches extending from said fitting surface along the corners of the male connector element in a lengthwise direction; and
a female connector element having a fitting hood section into which said male connector element is fitted, said female connector element accommodating a plurality of terminals projecting partially through said fitting hood section so that the leading edges of said terminals are retracted from a leading edge of said fitting hood section, whereby said notched corners are shaped to prevent contact interference with said terminals when said male connector is inserted into said fitting hood section at an oblique angle thereto.

5,282,758
ELECTRICAL CONTACT
Nobuaki Onoue, Kanagawa, Japan, assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 31, 1991, Ser. No. 689,035
Claims priority, application Japan, Nov. 11, 1988, 63-147282; PCT Int'l Appl., Oct. 10, 1989, PCT/US89/04322
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—395 **5 Claims**



1. An electrical contact comprising a holding section formed of opposing side plates bent from a bottom plate, a contact section extending outwardly from said holding section for electrical connection with a circuit board, a wire-connection section between said side plates for electrical connection to an insulated electrical wire and projections at the sides of said wire-connection section disposed in projection-receiving holes in said side plates, characterized in that said side plates have thermal-insulation holes adjacent said projection-receiving holes to dissipate heat conducted along the contact section and holding section when the contact section is soldered to the circuit board to obviate the melting or softening of the insulation of the electrical wire in the wire-connection section, wherein at least one of said thermal insulation holes has at least one edge that is continuous with an edge of at least one of said projection receiving holes.

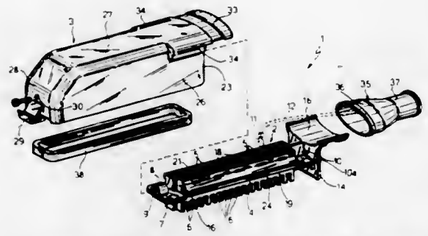
5,282,759
MODULAR JACK
Yukio Sakamoto; Iwao Fukutani, and Toshio Hori, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Filed Sep. 10, 1992, Ser. No. 942,833
Claims priority, application Japan, Sep. 13, 1991, 3-234286
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **20 Claims**



1. A modular jack comprising:
a body case having grooves on a surface thereof;
a contactor and a terminal which are press-fit into the grooves, a first end of the contactor being in operable contact with a plug opening of the modular jack, a first end of the terminal protruding from the body case for connection with a circuit board, each of said contactor and said terminal having a second end; and
a filter element for reducing noise, the filter element being directly connected electrically with the second ends of the contactor and the terminal.

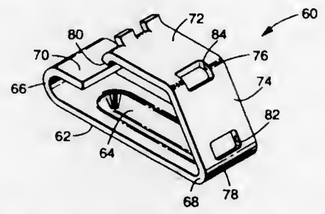
5,282,760
ELECTRIC CONNECTOR
Mario Almasso, Rivoli, Italy, assignor to Framatome Connectors Italia S.P.A., Turin, Italy
Filed Apr. 23, 1992, Ser. No. 873,293
Claims priority, application Italy, Apr. 24, 1991, TO91 U 000096
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 **4 Claims**

1. An electronic connector comprising:
an outer casing;
a terminal block housed inside said casing and having a number of through cavities arranged in at least one row parallel and adjacent to a lateral wall of said terminal block;
a number of electric terminals housed inside respective said cavities;
first retaining means for blocking said terminals inside said cavities;
second retaining means for preventing withdrawal of said terminals from said cavities, said second retaining means comprising at least one comb element integral with said lateral wall of said terminal block and connected thereto by an elastic hinge, said comb element comprising a plurality of teeth cooperable with mating portions of said terminals, a first wall hinged integrally along one side of said terminal block, and a second wall extending perpendicularly from the opposite side of said first wall and outward of said terminal block, wherein said first wall presents said teeth and engages said openings in said lateral wall;
wherein said comb element is movable between a molding



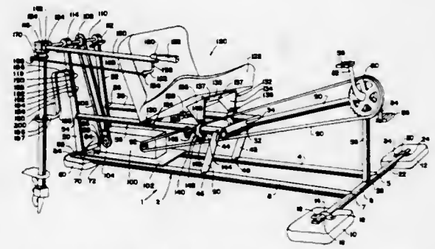
position in which said terminals can be inserted into said cavities, and a terminal retaining position in which said teeth penetrate inside respective cavities, through openings of said lateral wall, to cooperate with said respective terminals locked by said first retaining means, so that said comb element allows assembly of said terminal block inside said outer casing only in said terminal retaining position.

5,282,761
TOGGLE CLAMP CONNECTOR
Elmont E. Hollingsworth, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 19, 1992, Ser. No. 978,552
Int. Cl.[5] H01R *11/03*
U.S. Cl. 439—790 **5 Claims**



1. A toggle clamp connector formed of a single folded piece of material and adapted for electrically connecting the conductors of at least two wires, said toggle clamp connector comprising:
a frame including a base having two ends, a first upstanding wall attached to one of said ends of said base and extending substantially perpendicularly from said base, and a second upstanding wall attached to the other of said ends of said base and extending substantially perpendicularly from said base in the same direction as the extension of said first upstanding wall from said base;
a first toggle leaf having two ends;
a second toggle leaf having two ends;
a first bend in said material connecting one end of each of said first toggle leaf and said second toggle leaf to produce interconnected ends of said leaves and free ends of said leaves;
a second bend connecting said free end of said second toggle leaf to said second upstanding wall;
said first toggle leaf and said second toggle leaf having a combined length greater than the distance remaining between said upstanding walls when the conductors of the at least two wires are located within said toggle clamp connector adjacent said first upstanding wall and substantially parallel to said upstanding walls; wherein
with said interconnected toggle leaves disposed within said frame between said upstanding walls, said interconnected ends of said first toggle leaf and said second toggle leaf may be forced toward said base and beyond a position wherein said first toggle leaf and said second toggle leaf are parallel to each other so that said free end of said first toggle leaf clamps and retains the conductors in contact with each other at said first upstanding wall to produce electrical contact between the at least two conductors.

5,282,762
PROPELLER DRIVE AND STEERING MECHANISM FOR SMALL CRAFT
John Cerreto, 55 Jones St., Wrentham, Mass. 02903
Filed Aug. 8, 1991, Ser. No. 742,307
Int. Cl.[5] B63H *16/20*
U.S. Cl. 440—30 **20 Claims**



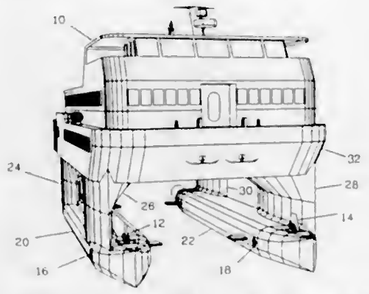
1. An apparatus which can be operated to propel and steer a small craft without being affixed to such craft comprising, in combination:
a frame, having mounted thereon:
adjustable seat means;
a first transmission means having an input and an output means; and
pedal propulsion means drivingly connected to said input means;
a propeller assembly including a rotatably mounted propeller, said propeller assembly being substantially laterally offset in relation to and outboard of said frame;
second transmission means drivingly connected to a first portion of said propeller assembly and arranged to be in connection with said output means;
steering means operably connected to a second portion of said propeller assembly and arranged to reposition said propeller about a vertical axis when desired, said steering means having no operative connection to said seat means; and
means for rotating said propeller assembly bodily about a horizontal axis without disabling the driving relationship between said pedal propulsion means and said propeller, and without requiring an operator to discontinue an activity in which he is engaged, whereby a craft which is to be propelled may continue to be powered regardless of the depth of positioning of the propeller in the body of water in which the craft may be immersed.

5,282,763
STEERABLE BOW THRUSTER FOR SWATH VESSELS
John D. Dixon, 620 Solar Isle, Fort Lauderdale, Fla. 33301
Filed Oct. 26, 1992, Ser. No. 966,557
Int. Cl.[5] B63H *11/113*
U.S. Cl. 440—42 **5 Claims**

1. A semi-submerged vessel, comprising;

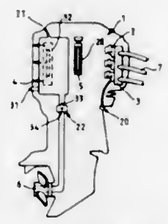
VOL 1159 ISS 1 FE 1 1994 UMI

a plurality of substantially parallel submerged pontoons each having an upper surface;
a plurality of vertical struts and a plurality of bridge decks connected to said vertical struts;
said submerged pontoons each having a propulsion means for maneuvering said vessel located substantially within



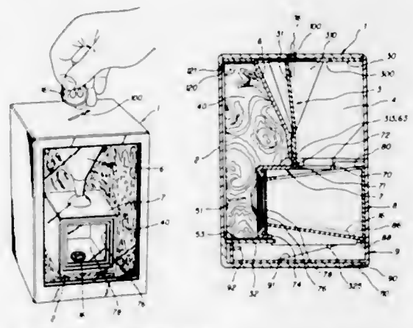
said respective pontoon and including a rotating nozzle located on said upper surface of said pontoon, each of said nozzles capable of approximately 360 degrees of rotation, whereby said propulsion means are capable of thrusting forward, aft and to either side, and uses its respective submerged pontoon as a thrust wash barrier between its nozzle and the sea bottom.

5,282,764
OUTBOARD MOTOR AND BOAT
Robert D. Glen, Oxford, England, assignor to E. P. Barrus Limited, England
Filed Jul. 12, 1991, Ser. No. 729,749
Claims priority, application United Kingdom, Jul. 12, 1990, 9015321
Int. Cl.[5] B63H *21/24*
U.S. Cl. 440—88 **20 Claims**



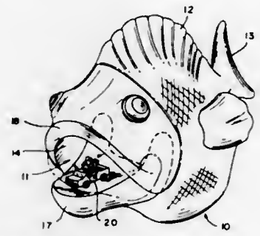
1. An outboard motor (1) comprising at least one carburetor (2) having a housing (25), an air intake (7) therethrough, a shaft (23) extending through the housing with respective opposite ends of the shaft carrying a throttle lever (36) rocker arm and a shaft spring (27), at least one starter motor (5), an electrical system, an exhaust (6) and a number of atmospheric vents (20,21) characterized by the combination of:
means including a compression cap (24) disposed on said shaft between the carburetor housing and the throttle lever rocker arm and fixed in response to said housing and an O-ring compression seal (26) disposed on said shaft between the carburetor housing and the shaft spring and fixed with respect to said shaft for creating a water-tight seal on the carburetor shaft mounting;
means (8,9,11,13; 9,14,15) for protecting the air intake (7) of the carburetor (2) against ingress of water;
means for protecting the starter motor (5);
a sealed housing (32) for the electrical system including at least one wire entering the housing and having a moisture-tight seal around the wire at the junction with the sealed housing;
a one-way valve (22) disposed in the exhaust (6); and
means for protecting the atmospheric vents (20,21) against ingress of water.

5,282,765
SAVINGS BOX
Tooru Suzuki, Tokyo, Japan, assignor to Tenyo Co., Ltd., Tokyo, Japan
Filed Sep. 11, 1992, Ser. No. 943,531
Claims priority, application Japan, Dec. 19, 1991, 3-104977[U]
Int. Cl.[5] A63H *33/00*; A63J *5/00*
U.S. Cl. 446—8 **17 Claims**



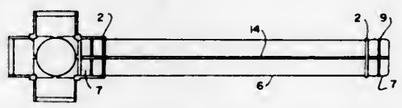
1. A savings box, comprising:
a box body consisting of an opaque enclosure having an internal space;
a partition having panels lying in two planes which intersect at a line of bending of the partition and define an arbitrary internal angle between them, said internal angle being a smaller angle than a surrounding external angle, and said partition being installed inside said box body to divide the internal space of said box body into a first space including said external angle and a second space including the smaller internal angle;
a cut formed in said partition to provide a communication between said first and second spaces in said box body;
a light-transparent window through which said first space is viewable and which is located between lines of intersection between each of a pair of opposite walls of said box body and a respective plane extending from the line of bending of said partition perpendicularly to a respective one of the panels of the partition;
a light reflecting area defined over said panels of said partition at a side thereof facing the first space;
a coin slot formed in said box body to communicate with said second space;
a light-opaque camouflaging member so secured to said partition as to cover the bending line at said side of the panels over which the light reflecting area is defined;
a light-opaque compartment provided contiguously to said camouflaging member and which covers said cut;
an opening formed in said compartment and through which the inside of said compartment is seen and said second space is seen through said cut; and
an optical means provided at said opening of said compartment to provide a reduce-in-scale view of the inside of said compartment and the second space.

5,282,766
TOY FISH WITH INNER FIGURINE
Philip B. Fleet, 3313 Wyndham Cir., No. 1218, Alexandria, Va. 22302
Filed May 27, 1992, Ser. No. 888,655
Int. Cl.[5] A63H *3/00, 23/00, 3/36*
U.S. Cl. 446—72 **1 Claim**



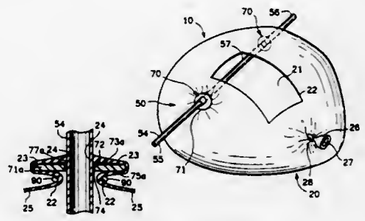
1. A floating toy fish, comprising:
a simulated fish-shaped body having a tail at one end and a mouth at an opposite end;
said body having a hollow interior forming a chamber having an opening defined by the mouth of the simulated fish which forms an opening in communication with said interior chamber;
said mouth including a jaw portion which is retractable for guided movement by means within said simulated fish-shaped body so as to be openable in order to expose an interior mouth surface;
said portion having an exterior surface configured to simulate a fish mouth and said interior surface upon which a whimsical figurine is permanently attached, whereby when said mouth is opened the whimsical figurine becomes viewable; and
an accompanying story booklet setting forth several stories, originated by manufacturer and pre-printed sheets with blank lines for encouraging the toy's owner to create and submit for publication in future booklets his or her own story on how said figurine ended up within said simulated fish.

5,282,767
CONSTRUCTION SETS WITH INJECTION MOLDED AND EXTRUDED TUBE BEAMS
John A. Gelardi, P.O. Box 714, Kennebunkport, Me. 04046
Filed Jan. 11, 1993, Ser. No. 2,950
Int. Cl.[5] A63H *33/08, 33/06*
U.S. Cl. 446—126 **15 Claims**



1. Construction apparatus comprising a combination of apertured connectors and elongated beams having central bodies and having joint ends in continuation of the bodies and separated from the bodies by flanges perpendicular to a longitudinal axis of the beams, at least one of said joint ends comprising intersecting webs with at least one disk extending through the webs, for inserting joint ends into connectors and for limiting insertion of the joints ends into the connectors by the flanges, for interconnecting the beams in end-to-end relationship in the connectors and creating three-dimensional structures.

5,282,768
BALLOON DISPLAY DEVICE AND METHOD
Alp T. Akman, 1195-A Linda Vista Dr., San Marcos, Calif. 92069
Filed Dec. 20, 1991, Ser. No. 810,907
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—220 **20 Claims**



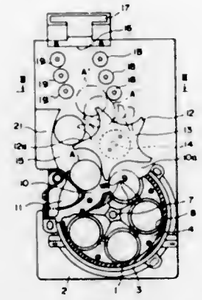
1. A balloon display device comprising:
an inflated elastic balloon including:
a wall of elastically expansible material formed into a closed shape so as to define an expansion chamber; and a rod assembly including:
a rod passing in sealed relationship through said inflated balloon; said rod including:
a first end outside of said balloon wall;
a second end outside of said balloon wall; and
a mid-section passing through said expansion chamber;
said wall of elastically expansible material elastically sealing on said rod assembly; and
rod wall passage means for passage of said rod in a sealed relationship through a balloon wall orifice including:
a disk depressed into said balloon wall including:
a first side;
a second side; and
a bore therebetween for passage therethrough of said rod; said bore having:
a first end exiting said disk first side; and
a second end exiting said disk second side; and wherein:
said balloon al includes a disk covering portion covering said disk first side including an orifice therethrough over said disk bore; said rod passing through said disk bore and through said balloon wall orifice; and
securing means for securing said balloon wall to said disk such that said balloon wall disk bore covering portion essentially is not expanded upon balloon inflation such that said wall material surrounding said wall orifice remains elastic and seals against said rod upon passage therethrough.

5,282,769
COIN SORTING DEVICE WITH AN ESCALATOR
Yorio Suzukawa, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 4, 1992, Ser. No. 970,680
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—49 **5 Claims**

1. A coin sorting device comprising:
a base plate having an upper end portion at which a coin carrier duct is substantially vertically arranged for delivering a coin in the upward direction;
scraper means for feeding the coin towards said upper end portion, said scraper means comprising a rotational body rotatably supported on said base plate and having coin feeding fingers extending radially outwardly from said rotational body, each of said coin feeding fingers being adapted for use in forcing said coin to said upper end portion by means of said rotational body, each of said fingers having a convex portion disposed towards the

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rotational direction of said rotational body, which convex portion engages said coin while said coin is being forced from said coin feeding finger to said upper end portion; and



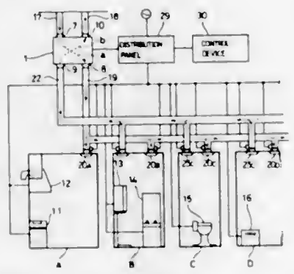
coin guiding means arranged at said upper end portion for guiding said coin forced to said upper end portion by said coin feeding fingers to said coin carrier duct.

5,282,770

VENTILATION SYSTEM

Masato Shibata, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 672,459, Mar. 20, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,825
Claims priority, application Japan, Mar. 31, 1990, 2-86008
Int. Cl.[5] F24F *11/04*
U.S. Cl. 454—239 **7 Claims**



1. A ventilation system comprising:

a) a ventilator for simultaneous suction and exhaust, the ventilator comprising an air inlet fan and an air outlet fan both enclosed in a single cabinet;

b) a plurality of ducts communicating the ventilator to each air inlet and air outlet formed at a plurality of rooms respectively;

c) a plurality of dampers provided in the ducts respectively; and

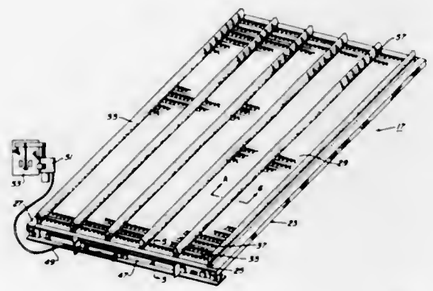
d) a control device responsive to signals indicative of operating conditions of one or more items of equipment provided in the rooms respectively for controlling an operation of the ventilator and opening and closing each damper in accordance with the operating conditions of the one or more items of equipment, the control device including storage means for storing data of an amount of ventilation set in accordance with the operating conditions of the items of equipment and calculating means for calculating an amount of ventilation based on the data stored in the storage means.

5,282,771

COMBINE SIEVE LEVELLING APPARATUS

Mark R. Underwood, Burr Oak, Kans., assignor to Probe Adventures, Inc., Burr Oak, Kans.

Filed May 29, 1992, Ser. No. 890,716
Int. Cl.[5] A01F *12/32*
U.S. Cl. 460—8 **13 Claims**





1. In a combine having a frame, a threshing drum carried rotatably by the frame for threshing grain, a sieve located below the threshing drum and driven in oscillation, and blower means for discharging air upward through the sieve to separate chaff from grain, the sieve comprising in combination:

a pair of lateral frame members mounted for oscillation relative to the frame of the combine and spaced apart from each other along a longitudinal axis of the combine;

a plurality of sections extending along the longitudinal axis between the lateral frame members, each of the sections having a rectangular frame having a pair of laterally spaced apart longitudinal section frame members connected at forward and rearward ends by lateral section frame members, respectively, each of the sections having a plurality of adjustable fingers located perpendicular to the longitudinal axis for directing chaff rearward and for allowing grain to fall through the sieve;

a pivot rod stationarily mounted to each of the sections and rotatably carried by the one of the lateral frame members;

controller means for sensing leaning of the combine transverse to the longitudinal axis and for simultaneously rotating the pivot rods in response thereto in order to maintain the sections level;

a finger pivot member stationarily mounted to each of the fingers and extending rotatably through a hole provided in one of the longitudinal section frame members of each section; and

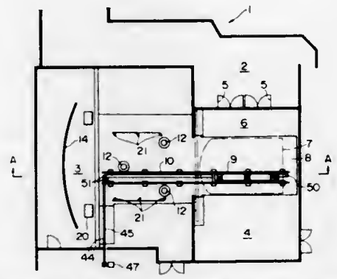
adjusting means connected to each finger pivot member of the fingers contained in the same section for simultaneously pivoting the fingers to a selected inclination relative to the longitudinal section frame members.

5,282,772

SIMULATOR FOR SHOOTING DOWN THE RAPIDS

Shozo Ninomiya, and Takashi Maeda, both of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,360
Claims priority, application Japan, Oct. 17, 1991, 3-084603[U]; Oct. 28, 1991, 3-281529
Int. Cl.[5] A63G *31/16*
U.S. Cl. 472—59 **5 Claims**



1. A simulator for shooting down the rapids comprising,

a theater zone in which a screen and wind generating device are installed in front and/or at the side thereof;

a platform for spectators;

a water channel which is disposed between said platform and said theater zone and has at least two rails installed on the bottom;

a boat which is floated in said water channel and has seats for spectators;

a carriage which moves on said rails along said water channel;

a connecting means which detachably connects said boat to said carriage;

a moving device which moves said carriage between said platform and said theater zone; and

a swaying device which lifts from a predetermined position at the bottom of said theater zone and engages with the lower portion of said boat stopped over said swaying device to sway said boat;

wherein the spectators on said boat moved from said platform to said theater zone receive wind from the wind generating device in synchronization of the picture on said screen, and said boat is swayed to let spectators feel an ambience.

5,282,773

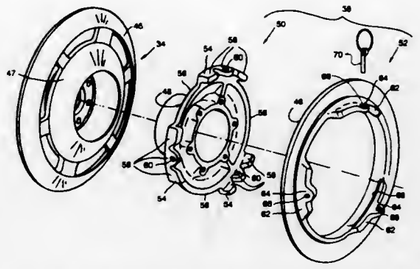
DUAL RANGE VARIABLE SPEED TRANSMISSION

Jose G. T. Gryspeerdt, Nevele, Belgium, assignor to Ford New Holland, Inc., New Holland, Pa.

Division of Ser. No. 691,196, Apr. 25, 1991, Pat. No. 5,191,755. This application Dec. 9, 1992, Ser. No. 997,251
Claims priority, application European Pat. Off., Apr. 26, 1990, 90.201.055.2
Int. Cl.[5] F16H *55/56*
U.S. Cl. 474—24 **8 Claims**

1. In a variable diameter belt-type power transfer assembly having an adjustable sheave including a pair of opposing, coaxial flanges, one of said flanges being axially movable relative to the other said flange, the improvement comprising:

both said flanges having opposed first belt engaging surfaces flaring radially outwardly with respect to each other so as to define a first, variable diameter belt receiving groove therebetween, and opposed second belt engaging surfaces flaring radially outwardly with respect to each other so as to define a second, variable diameter belt receiving groove therebetween; and



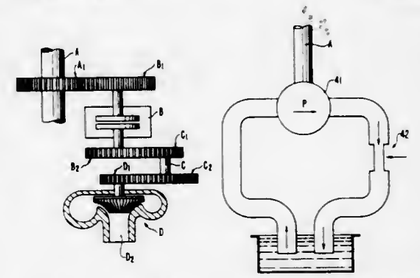
said second belt receiving groove being located radially inwardly with respect to said first belt receiving groove.

5,282,774

MOTOR VEHICLE BRAKE SYSTEM

Masaki Okada, Yokohama, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Fujisawa, Japan

Continuation of Ser. No. 578,237, Sep. 6, 1990, abandoned, which is a division of Ser. No. 440,248, Nov. 22, 1989, Pat. No. 5,031,738. This application Oct. 21, 1991, Ser. No. 780,533
Claims priority, application Japan, Nov. 25, 1988, 63-297347
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—84 **4 Claims**



1. A brake system in a motor vehicle having a pair of laterally spaced road wheels, comprising:

a differential interconnecting the road wheels, said differential including two sun gears coupled respectively to the road wheels, and a planet gear meshing with said sun gears, said planet gear having a rotatable shaft;

a differential shaft meshing with said rotatable shaft of said planet gear; and

braking means including a hydraulic pump having a vacuum side and a pressure side and being directly coupled to said differential shaft and a variable resistance connected to the pressure side of said hydraulic pump, for variably controlling the rate of flow of working oil discharged from said hydraulic pump so that a braking force is exerted on the differential shaft in proportion to the rate of discharge flow of working oil from the pressure side of the hydraulic pump.

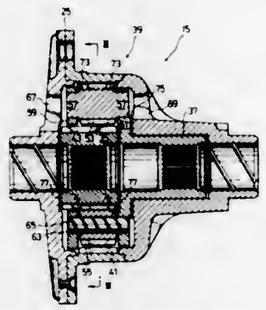
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5,282,775

PLANETARY GEAR TYPE DIFFERENTIAL APPARATUS

Masao Ternoka, Tochigi, Japan, assignor to Tochigifujisangyo Kabushiki Kaisha, Tochigi, Japan

Filed Nov. 19, 1991, Ser. No. 795,113
Claims priority, application Japan, Nov. 20, 1990, 2-312758
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] F16H *1/42*
U.S. Cl. 475—252 **13 Claims**



1. A differential apparatus of planetary gear type, for use in a vehicle having an axle, said differential apparatus comprising:
an internal gear;
a sun gear arranged adjacent to said axle, and arranged inside said internal gear in concentric relation thereto;
a plurality of pinion gear sets each having an even number of pinion gears rotated in mesh with each other, ones of said pinion gears being in mesh with said internal gear, while the remaining pinion gears are in mesh with said sun gear; and
a pinion carrier for rotatably supporting said pinion gears,
wherein a torque is input from one of said internal gear and said sun gear to the pinion gear sets and is outputted to the other of said internal gear and said sun gear, and
wherein the pinion gears are configured so that a rotating frictional force between the pinion gears on which the torque is output and said pinion carrier is smaller than that between each of the remaining pinion gears and said pinion carrier.

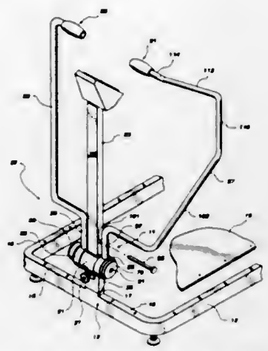
5,282,776

UPPER BODY EXERCISER

William T. Dalebout, Logan, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah

Continuation-in-part of Ser. No. 954,299, Sep. 30, 1992. This application Feb. 4, 1993, Ser. No. 13,637
Int. Cl.[5] A63B *21/015*
U.S. Cl. 482—118 **14 Claims**

1. An exercise machine comprising: a frame for positioning on a support surface;
an elongate support post extending upwardly from said frame and attached at a lower end to said frame;
support means connected to said frame for supporting a user;
a pair of handles each rotatably attached to said support post and spaced upwardly away from said lower end, said pair of handles being supported by said support post and being sized for grasping and movement by a user standing on said support means;



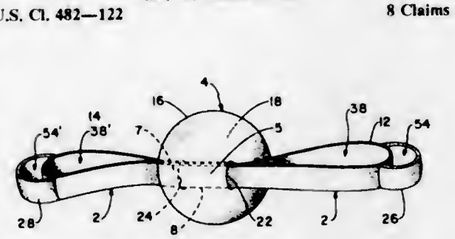
resistance means interconnected between said support post and said pair of handles to resist movement thereof by a user.

5,282,777

EXERCISE DEVICE

Marguerite J. Myers, 12623 Hametown Rd., Doylestown, Ohio 44230

Division of Ser. No. 708,760, May 29, 1991, Pat. No. 5,230,682. This application May 7, 1993, Ser. No. 59,112
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—122 **8 Claims**



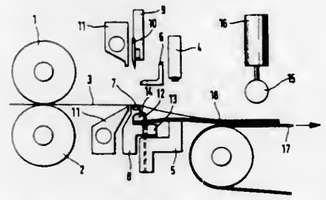
1. An exercise device comprising:
(a) a resilient flexible elastomeric ribbon-like tension means, said tension means having a first end segment, a second end segment and a middle segment, said first end and second end segments being so adapted as to form two loops by said first and second end segments with said middle segment, to permit easy insertion and removal of a user's extremities into said loops, said tension means at said first and second ends additionally having a sufficient contact area upon said user's extremities by a width of said ribbon-like tension means to minimize the potential for the first and second ends to slip off the user's extremities and injure the user by a recoil of the first and second ends; and
(b) a compressible member with an exterior surface and an interior surface, said exterior surface having a first and a second contact area, each contact area situated such that the surfaces are positioned on opposing sides of said compressible member, said compressible member additionally having a radially-disposed aperture therethrough from said first contact area to said second contact area thereby frictionally engaging the middle segment of the tension means, a user's extremities being in contact with the first and second contact area during a compression component of an exercise, and not in contact with the first and second contact area during an elongation component of the exercise, said first and second looped ends being opposite each contact area, said middle segment of the tension means emanating from the compressible member in an axis normal to the first and second contact areas, and further wherein said compressible member and tension means operate independently during elongation and compression components of exercise.

5,282,778

METHOD FOR MAKING BAGS OF SYNTHETIC MATERIAL

Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 760,462
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1990, 4029440
Int. Cl.[5] B31B *23/14, 23/64*
U.S. Cl. 493—1 **1 Claim**



1. A method for making bags of synthetic material, comprising the steps of:
advancing a tubular foil web of synthetic material in steps corresponding to the length of one bag,
cutting the tubular foil web of synthetic material by means of a transverse cutting knife, and
welding of a bottom seam by means of a continuously heated pair of welding jaws, situated adjacent said transverse cutting knife
wherein the continuously heated pair of welding jaws and the transverse cutting knife are each driven by separate motors, the motors being computer controlled so that the continuously heated pair of welding jaws grips and fixes the tubular foil web of synthetic material prior to the cutting step, the tubular foil web of synthetic material is cut by means of the transverse cutting knife before the heat of the welding jaw pair is completely transferred to the tubular foil web of synthetic material, and the time interval between the gripping of the tubular foil web of synthetic material by the welding jaw pair and the cutting by the transverse cutting knife can be varied.

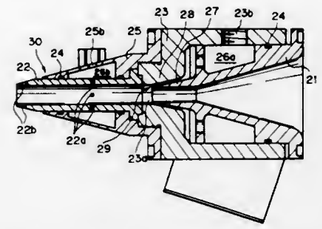
5,282,779

AIR JET FOR PRODUCING FILTER PLUG FOR CIGARETTE

Takashi Sakai, Tokyo; Takashi Gando, and Hiroshi Kitayama, both of Toyama, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 987,192
Claims priority, application Japan, Dec. 9, 1991, 3-324390
Int. Cl.[5] A24D *3/02*
U.S. Cl. 493—44 **6 Claims**

1. An air jet for producing a filter plug for cigarette comprising an imparting portion for propelling force to a tow-like fiber bundle and a beak portion, wherein said imparting portion is constructed by a trumpet having a converged tip end region, a trumpet holder coaxially and encirclingly assembled on the trumpet so that a primary air chamber is formed between the bodies of the trumpet and the trumpet holder, and an annular slit communicated with the primary air chamber is formed between the tip end regions of the trumpet and the trumpet holder, and said beak portion is constructed by an inner tube and an inner tube holder, said inner tube being disposed coaxially in front of the assembly of the trumpet and the trumpet holder, whereby a fiber path through which the tow-like fiber bundle is fed to a tongue of a filter plug machine is formed through the air jet along the axis thereof said inner tube holder being coaxially and encirclingly assembled on the inner tube to form said beak portion so that a secondary air chamber is formed between the bodies of the inner tube and the inner tube holder, and means for opening and interlacing fibers in the fiber bundle being provided in the inner tube.

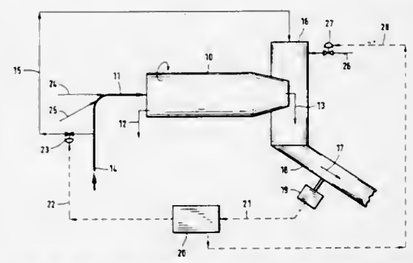


5,282,780

APPARATUS FOR SEPARATING SOLIDS/LIQUIDS MIXTURES WITH A SLURRY BYPASS

Wolfgang Epper, Bergheim, and Reinhard Kluge, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Kloekner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Feb. 14, 1992, Ser. No. 837,364
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1991, 4104482
Int. Cl.[5] B04B *13/00*
U.S. Cl. 494—1 **8 Claims**



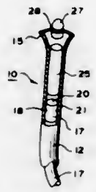
1. An apparatus for separating solids and liquid mixtures from slurries to form a concentrated sludge comprising in combination:
a worm centrifuge for separating a slurry into a sludge fraction and a liquid fraction;
a slurry inlet leading into the centrifuge supplying slurry thereto to be separated;
a liquid fraction outlet leading from the centrifuge;
a sludge outlet leading from the centrifuge;
a slurry bypass conduit leading from said slurry inlet to said sludge outlet;
and a detector for measuring a flow rate of sludge at said sludge outlet, said detector being connected by a control means to a control element in said bypass conduit, said control element regulating a quantity of slurry to be directed through said bypass conduit to said sludge outlet, so that a dry matter proportional content of the sludge at said sludge outlet is reduced for conveyance of the sludge fraction.

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5,282,781
SOURCE WIRE FOR LOCALIZED RADIATION TREATMENT OF TUMORS

Sam F. Liprie, Lake Charles, La., assignor to Omnitron International Inc., Houston, Tex.

Filed Oct. 25, 1990, Ser. No. 603,471
Int. Cl.[5] A61N *5/00*
U.S. Cl. 600—3 **41 Claims**



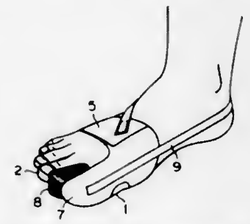
1. For use in treating malignant tumors within a patient's body by localized in vivo radiation thereof with a radioactive source, via a catheter providing a path from a point external to the body to the tumor site, the improvement comprising:
- a thin, generally cylindrical, flexible elongate metal tube having a proximal end and a distal tip,
- a backbone wire encased within the tube from the proximal end thereof to a point short of the distal tip thereof to strengthen and enhance the flexibility of the tube,
- a generally cylindrical radioactive source encased and secured within the tube adjacent to the distal tip thereof in abutting relation at one end to said backbone wire,
- a generally cylindrical plug encased within the tube at the distal tip thereof in abutting relation to the other end of said radioactive source, said distal tip of the tube being securely and tightly enclosed about the end of said plug opposite to the end thereof in abutting relation to the radioactive source, to form a closed tip portion,
- said radioactive source being secured in said tube substantially solely by the pressure exerted by said tube on its cylindrical surface and the pressure exerted on its ends by said backbone wire and said plug within said closed tip portion,
- said tube and the backbone wire, radioactive source and plug encased therein forming a composite source wire having an overall diameter adapted to permit the source wire to be moved longitudinally through the catheter, whereby said source may be advanced into the catheter to the tumor site for radiation treatment of the tumor and thereafter withdrawn through the catheter, from said point external to the body.

5,282,782
VALGUS BIG TOE RECTIFYING SUPPORTER

Iwao Kasahara, 3734-6, Totsukacho, Totsuka-ku, Yokohama-shi, Kanagawa, Japan

Filed Mar. 16, 1992, Ser. No. 852,434
Claims priority, application Japan, Mar. 20, 1991, 3-24794[U]; Feb. 19, 1992, 4-69853
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—30 **6 Claims**

1. A valgus big toe rectifying supporter comprising:
(a) a metatarsal joint securing band adapted to be disposed in a fitted disposition in which the band is wound on a foot at a metatarsal joint, said band having a forward edge and a rear edge, said forward edge extending around the foot at the forward portion of the matatarsal joint, said rear edge extending around the foot at the rear portion of the metatarsal joint, said forward edge being adapted to be spaced from the second, third, fourth and fifth toes, said band having an inside part adapted to be juxtaposed to the inside of the foot and an outside part adapted to be juxtaposed to the outside of the foot;
(b) a big toe holder extending forwardly from said forward edge at the inside part of said band, said holder having a forward section and a rear section, said rear section being integrally joined with said band at the forward edge of the inside part of said band;
(c) said forward section of said holder being formed as an enclosure which extends around the front, the sides, the top and the bottom of the big toe to completely enclose the front part of the big toe;
(d) said forward section of said holder having a top portion extending over the top of the big toe, said rear section of said holder having a top portion extending over the top of the big toe and which forms an integral continuation of said top portion of said forward section of said holder, said top portion of said rear section of said holder being narrower than said top portion of said forward section of said holder;
(e) said forward section of said holder having an inside portion extending between the big toe and the second toe;
(f) a resilient member, connecting means integrally connecting said resilient member to said inside portion of said forward section of said holder, said resilient member being



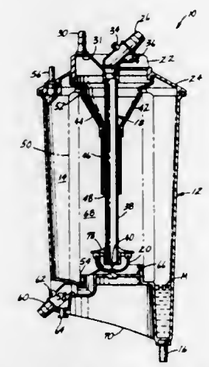
adapted to be disposed between the big toe and the second toe;
(g) said inside portion of said forward section of said holder having a rear terminating edge which is spaced from said front edge of said band and which is also adapted to be disposed forwardly of the juncture where the big toe joins the second toe to thereby define an opening which exposes the inside rear portion of the big toe;
(h) said resilient member having a length sufficient to extend the length of the big toe from the tip of the big toe to the juncture where the big toe meets the second toe;
(i) said resilient member having a forward part which is connected to said inside portion of said forward section of said holder by said connecting means, said resilient member having a rear part which is adapted to extend rearwardly substantially to the juncture where the big toe joins the second toe and which extends along side said opening and is adapted to directly engage the inside rear portion of the big toe; and
(j) a pulling strap extending from said band and which is adapted to be wound around a heel of the foot from an inside surface of the foot to an outside surface of the foot.

5,282,783
BLOOD RESERVOIR

Erin J. Lindsay, Manchester, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 17, 1991, Ser. No. 809,268
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—4 **20 Claims**

1. A blood reservoir adapted for use in an extracorporeal circulatory support circuit, the blood reservoir comprising:
a housing having top, bottom and side walls defining a chamber inside the housing for holding fluid;
an outlet adjacent the bottom of the housing for draining fluid from the bottom of the chamber, the chamber of the housing having a minimum specified operating level of fluid therein at an elevation greater than the outlet;
an inlet for supplying fluid to the chamber, the inlet and outlet defining upstream and downstream directions relative to the normal flow of blood through the reservoir, the inlet including an inlet tube extending generally downwardly into the chamber from the top of the housing and terminating at a downstream end, the downstream end of the inlet tube being positioned at a greater elevation in use

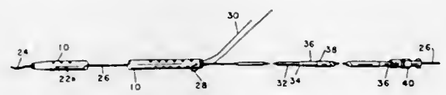


of the reservoir than the minimum specified operating level of fluid, the inlet including a tube connection on the top of the housing for connecting tubing in fluid communication with the inlet; and
a bowl shaped fluid trap in the chamber and mounted on the inlet tube, the fluid trap having a rim surrounding the inlet tube at an elevation higher than the downstream end of the inlet tube to trap fluid adjacent the downstream end of the inlet tube.

5,282,784
INJECTION STENT SYSTEM

Martin R. Willard, Minneapolis, Minn., assignor to Mentor Corporation, Minneapolis, Minn.

Filed Oct. 9, 1991, Ser. No. 774,068
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—8 **26 Claims**

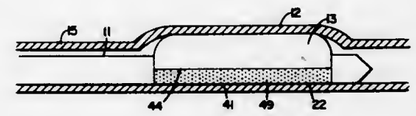


1. A stent system comprising:
a. a stent of biocompatible material having a central lumen and having a proximal end and a distal end;
b. a guide wire moveable within said central lumen of said stent;
c. means moveable over said guide wire for pushing said stent over said guide wire; and
d. means coupled to said pushing means for reinforcing said stent when said pushing means pushes said stent over said guide wire
said means coupled to said pushing means being movable within said stent for occluding said perforations at said distal end.

5,282,785
DRUG DELIVERY APPARATUS AND METHOD

James E. Shapland; Mark B. Knudson, both of Shoreview; Jin Shimada, Falcon Heights, all of Minn., and Keith R. Hildebrand, Houlton, Wis., assignors to CorTrak Medical, Inc., Roseville, Minn.

Continuation-in-part of Ser. No. 937,464, Aug. 28, 1992, which is a continuation-in-part of Ser. No. 705,731, May 24, 1991, which is a continuation-in-part of Ser. No. 637,299, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,961, Jun. 15, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 956,789
Int. Cl.[5] A61B *17/36*
U.S. Cl. 604—21 **21 Claims**

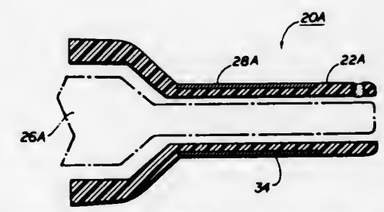


1. A drug delivery apparatus having a distal end and a proximal end for radially restricted local delivery of a drug to internal body tissue comprising:
(a) a flexible catheter for insertion into an internal target area of a body;
(b) drug delivery means connected to said catheter for radially restricted delivery of a drug to said internal body tissue, said drug delivery means comprising:
(1) a fluid delivery passageway and a drug delivery chamber proximate said distal end of said drug delivery apparatus, said drug delivery chamber having an outer wall with a selectively permeable outer membrane portion; and
(2) a non-permeable balloon affixed to and surrounding a portion of said drug delivery chamber, said balloon, when inflated, securing said drug delivery chamber at an internal body tissue target area and radially restricting local delivery of said drug by providing intimate contact between said balloon and a portion of said internal body tissue; and
(c) means for assisting the transport of said drug across said selectively permeable outer membrane.

5,282,786
INFUSION SLEEVE FOR SURGICAL ULTRASONIC APPARATUS

Alexander Ureche, Mission Viejo, Calif., assignor to Alcon Surgical, Inc., Fort Worth, Tex.

Continuation of Ser. No. 763,722, Sep. 23, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,278
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **5 Claims**



1. An infusion sleeve for use in combination with a cutting tip of a phacoemulsification handpiece, comprising:
a) a base having an enlarged bore;
b) a flexible tube having an external surface with a recess

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intersecting and connected to the base, the tube further having an open end opposite the base and a longitudinal bore in communication with the enlarged bore that receives the cutting tip; and

c) a rigid tubular member surrounding the tube and located within the recess.

5,282,787

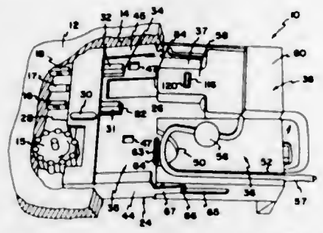
FLUID TRANSFER SYSTEM INCORPORATING DISPOSABLE CASSETTE

Theodore S. Wortrich, Long Beach, Calif., assignor to Surgin Surgical Instrumentation, Inc., Tustin, Calif.

Continuation-in-part of Ser. No. 596,219, Oct. 12, 1990, Pat. No. 5,163,900, which is a continuation-in-part of Ser. No. 324,018, Mar. 16, 1989, Pat. No. 4,963,131. This application Nov. 13, 1992, Ser. No. 975,870

Int. Cl.[5] **A61M** *1/00*

U.S. Cl. 604—30 **25 Claims**



1. A system for use in a cassette receiving surface of a console having a flow control mechanism for controlling the flow of sterile fluid to an operative site from a source and pump means for controlling the flow of non-sterile fluid from the operative site to a waste collection means, comprising:

a receiver configured to seat against the cassette receiving surface and including means for holding a cassette adapter defining an interior volume open to the side opposite the console and a slider disposed to engage a flow control mechanism extending from the console;

a cassette adapter in the form of a panel slidably fixed to the receiver and having a cassette receiving volume open to the side opposite the console, the adapter being aligned with the slider and having an adjacent open-tapped tubing pathway including backup surface means in alignment with the pump means of the console; and

a disposable cassette configured to mate within the interior volume in the cassette adapter, the cassette including external fitting means for coupling sterile fluid flows into and out of the cassette, and an external tubing section positioned to be insertable into the tubing pathway when the cassette is inserted within the adapter.

5,282,788

METHOD AND DEVICE FOR OBTAINING CONTINUED TRANSDERMAL ACCESS

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023, and Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022

Continuation-in-part of Ser. No. 841,802, Feb. 26, 1992, Pat. No. 5,232,440. This application Mar. 20, 1992, Ser. No. 853,987

Int. Cl.[5] **A61M** *31/00*

U.S. Cl. 604—49 **11 Claims**

1. A method for obtaining continued transdermal access to a patient, comprising the steps of:

providing an instrument having a sharp distal end and a needle attached to said instrument at said sharp distal end, said needle being different from said sharp distal end;

providing a tubular member having a distal end;

puncturing a skin surface at a predetermined point with said needle;

injecting an anesthetic through said needle;

removing said needle from said skin surface and from the distal end of said instrument;

subsequently to the removal of said needle from the distal end of said instrument, puncturing said skin surface at approximately said predetermined point with said sharp distal end;



inserting the distal end of said tubular member and the distal end of said instrument through said skin surface, said tubular member surrounding said instrument during said step of inserting; and

removing said instrument from the patient and from said tubular member while maintaining said tubular member in a position traversing said skin surface.

5,282,789

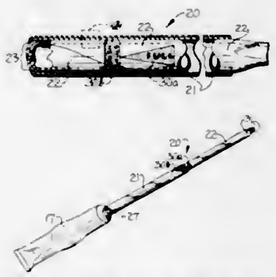
DISPOSABLE MEDICINE APPLICATOR

William A. Lundy, Statesville, N.C., assignor to Niemand Industries, Inc., Statesville, N.C.

Filed Sep. 15, 1992, Ser. No. 947,291

Int. Cl.[5] **A61M** *31/00*

U.S. Cl. 604—55 **15 Claims**



1. A disposable applicator for facilitating the injection of a desired dosage of a gel-like medicine into a body cavity after the application is filled with the desired dosage of the medicine, said disposable applicator comprising:

a barrel having a tubular shape and comprising a plurality of spirally wound paper layers, said barrel having opposing first and second open ends, the first open end of said barrel for permitting the passage of a gel-like medicine therethrough to fill said barrel and for being inserted into a body cavity to inject the medicine into the body cavity from the thus filled barrel, the first open end of said barrel having an inturned lip to facilitate insertion into the body cavity;

a plunger slidably positioned within said barrel and movable relative to said barrel between an unfilled position wherein said barrel contains no medicine and a filled position wherein said barrel contains a desired dosage of medicine, said plunger having a tubular shape and comprising a plurality of spirally wound paper layers, said plunger having opposing first and second ends, the first end of said plunger being closed to serve as the working end of the plunger for ejecting the medicine from said barrel as said plunger is moved from the filled position to the unfilled position, the second end of said plunger including inwardly crimped portions to substantially close the second end of said plunger to thereby prevent the inadvertent or accidental filling with medicine of said plunger rather than said barrel, the length of said plunger being greater than the length of said barrel and of such length that said inwardly crimped portions on said second end are always exposed irrespective of the barrel being filled with medicine or unfilled; and

indicia means on a predetermined outer surface portion of said plunger for indicating that said barrel contains the desired dosage of medicine when said plunger extends outwardly from the second end of said barrel in the filled position thereby exposing said indicia means.

5,282,790

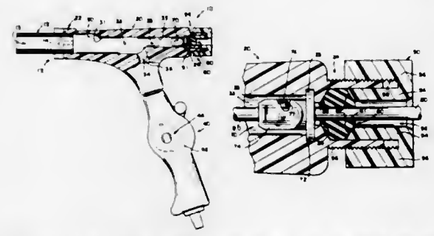
CANNULA SEALING MECHANISM

Thomas P. Clement, Bloomington, Ind., assignor to Mectra Labs, Inc., Bloomfield, Ind.

Continuation of Ser. No. 781,985, Oct. 24, 1991, Pat. No. 5,167,636. This application Oct. 21, 1992, Ser. No. 964,400

Int. Cl.[5] **A61M** *5/00*

U.S. Cl. 604—167 **12 Claims**



1. A handheld-disposable device for use in laparoscopic surgery comprising:

a conduit piece having first and second passageways in fluid communication with each other, the first passageway situated to allow the insertion of a medical device through the conduit piece and a second passageway communicating with the first passageway to allow a flow of fluid to be introduced into and withdrawn from the first passageway;

a valve controlling the flow of fluid through the second passageway into and out of the first passageway, the valve being operable by a digit of a surgeon's hand when holding the disposable device;

a cannula having a distal end and a proximal end, said proximal end being rigidly coupled to the first passageway of the conduit piece so that the medical device inserted through the first passageway of the conduit piece can be presented to the distal end of the cannula;

means for sealing the first passageway of the conduit piece, said sealing means permitting the medical device to be inserted through the first passageway of the conduit piece, the sealing means comprising a compressible annular seal;

a second valve positioned in the first passageway to provide a second sealing of the first passageway, said second valve being unaffected by compression of the annular seal; and

wherein said conduit piece, valve, cannula, and sealing means are integrated into a rigid handheld disposable device.

5,282,791

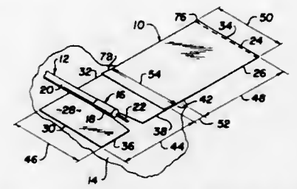
DEVICE TO SECURE A SURGICAL INSTRUMENT AND METHOD

J. M. Lipton, Dallas; J. D. Inman, and C. E. Ward, Jr., both of Ft. Worth, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 7, 1992, Ser. No. 864,660

Int. Cl.[5] **A61M** *25/02*

U.S. Cl. 604—180 **1 Claim**



1. A device to secure a surgical instrument to a patient, comprising: an elongated, rectilinear and flexible body defined by first and second surfaces facing away from one another, first, second, third and fourth sides, the first and third sides extending substantially parallel to one another and the second and fourth sides extending substantially parallel to one another, said body including a protecting portion to prevent contact of a first portion of the surgical instrument with the patient, a securing portion, a viewing portion disposed in the securing portion for observing the first portion of the surgical instrument, the viewing means being made from a transparent material defining a window circumscribed by the securing portion, and an intermediate portion extending from the second to the fourth sides between the protecting and securing portions, the protecting portion having a length extending between the first side and intermediate portion and a width extending between the second and fourth sides, the length and width being sufficient to prevent contact of the first portion of the surgical instrument with the patient, the securing portion having a length extending between the intermediate portion and the third side and being sufficient to extend across the first portion of the surgical instrument, and said body defining a passageway through the protecting portion, the passageway including a length and width sufficient to receive a second portion of the surgical instrument, the passageway defined in said body being a generally V-shaped notch, the V-shaped notch having first and second legs extending from the fourth side of the protecting portion of said body, an arcuate top connecting the first and second legs and a length extending into said body by a distance sufficient to dispose the second portion of the surgical instrument between the fourth side of said body and the top of the notch; a first quantity of pressure adhesive substance disposed on the first surface of said body to adhere the protecting portion of said body to the patient; a second quantity of pressure adhesive substance disposed on the second surface of said body to adhere the portion of the surgical instrument between the protecting and securing portions of said body when the securing portion is folded over and onto the protecting portion, the second quantity of adhesive substance being made from a transparent material to permit the first and second portions of the surgical instrument and that portion of the patient positioned beneath the passageway to be observed through the viewing portion; a first sheet of protective material to cover the first quantity of adhesive substance, the first sheet including a tab extending beyond the first quantity of adhesive substance by a distance sufficient to allow the tab to be gripped by a finger and thumb encased within a rubber glove; and a second sheet of protective material to cover the second quantity of adhesive substance, the second sheet including a tab extending beyond the second quantity of adhesive substance by a distance sufficient to allow the tab to be gripped by a finger and thumb encased within a rubber glove.

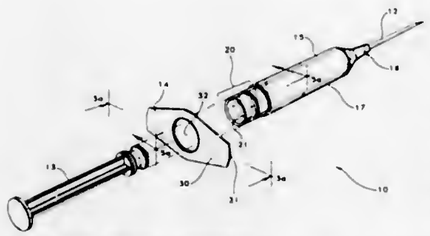
VOL 1159 ISS 1 FE 1 1994 UMI

5,282,792

SYRINGE HAVING TWO COMPONENT BARREL

Claude Imbert, La Tronche, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 21, 1992, Ser. No. 918,715
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **17 Claims**



1. A syringe assembly comprising:

a hollow cylindrically shaped barrel including an external side having an outside diameter, an internal side defining a bore and a longitudinal axis, said barrel including a distal end and a proximal end, said proximal end being open to accept a plunger assembly slidably within said bore, said barrel having a tip at said distal end having a passageway therethrough in fluid communication with said bore, said external side having a first portion with an outside diameter at said proximal end, a second portion with an outside diameter adjacent said first portion, and a third portion with an outside diameter adjacent said second portion, said second portion outside diameter being less than said first portion outside diameter, a shoulder formed at the intersection of said first portion and said second portion, said third portion outside diameter adjacent said second portion being substantially equal to said second portion outside diameter, with said third portion outside diameter increasing to said outside diameter of said barrel at the distal end of said third portion and said first portion outside diameter being less than said outside diameter of said barrel at the distal end of the third portion;

a finger flange having a first and a second side and an opening therethrough having an inside wall, said first side facing said proximal end of said barrel and said second side facing said distal end of said barrel, said flange having an annulus with an opening therethrough positioned within said flange opening, said annulus having an attached end and an unattached end, said attached end being attached at said inside wall of said flange opening and said unattached end projecting toward said first side, forming an acute angle between said annulus and said inside wall; and

said flange being held by said barrel so that said unattached of said annulus rests at said second portion nd is positioned adjacent said shoulder so that a distal force required to move said flange onto and over said first portion to said second portion and position said unattached end of said annulus adjacent said shoulder is less than a proximal removal force to move said flange proximally.

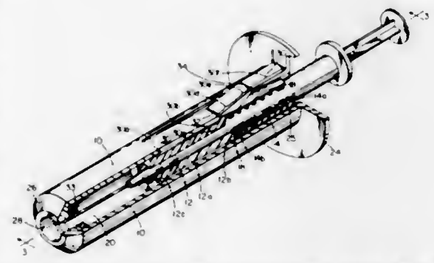
5,282,793

SYRINGE HOLDER AND APPLICATOR

Eldon E. Larson, 7500 Seabeck-Holly Rd., Bremerton, Wash. 98312

Filed Oct. 2, 1989, Ser. No. 371,520
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **6 Claims**

1. A syringe holder and applicator which comprises an outer cylindrical tube having a distal end into which a syringe may be inserted manually and having a proximal end through which a syringe needle may be extended automatically; an inner tubular syringe holder slideably fitted within said outer tube for axial movement in a cylindrical cavity provided by said outer tube, said tubular syringe holder having a distal end oriented toward the distal end of said outer tube and having a proximal end oriented toward the proximal end of said outer tube, and said tubular syringe holder being adapted to receive and hold the barrel of a syringe that has been inserted through the distal end of said outer tube into said tubular syringe holder with the syringe needle protruding through the proximal end of said of said tubular syringe holder; a coil spring member positioned within said cylindrical cavity axially of said tubular syringe holder and extending between the distal end of said outer tube and the adjacent distal end of said inner tubular syringe holder whereby positioning of said tubular syringe holder in a retracted position will result in compression of said coil spring; a trigger means integral with said outer tube, said trigger means having a first portion extending toward the distal end of said outer tube, said first portion having a locking element inclined inward to engage a portion of said tubular syringe holder to lock said tubular syringe holder in a retracted position toward the distal end of said cylindrical cavity when said tubular syringe holder is moved axially to that retracted position; said trigger means having another portion integral with and extending from said first portion toward the distal end of said outer tube and inclined outward toward the distal



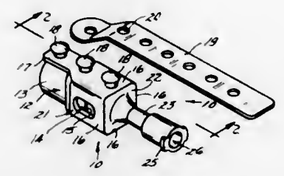
end of said outer tube, said second portion being so constructed and associated with said first portion that radially inward pressure on said second portion will result in said first portion being moved radially outward to release said locking element from a locking relationship with said tubular syringe holder to release said tubular syringe holder whereby said tubular syringe holder will be permitted to travel axially toward the proximal end of said outer tube under the force of said coil spring; and a cylindrical coil-spring retainer tube axially fitted within said outer tube, said retainer tube having a distal end positioned adjacent the distal end of said outer tube and having a proximal end oriented toward the proximal end of said outer tube, and said retainer tube extending from the distal end of said outer tube toward said tubular syringe holder, said coil spring being positioned within said retainer tube and seating against the retainer tube distal end and extending through the retainer tube proximal end into abutment with said tubular syringe holder; said trigger means comprising a strip integral with said outer tube, said trigger strip being integral at its ends with said outer tube and free to flex inward and outward with respect to said outer tube along the length of said strip, said first portion comprising the proximal half of said strip and said second portion comprising the distal half of said strip, and said strip having a hinge line thereacross between the two portions whereby said two portions may flex with respect to one another about said hinge line.

5,282,794

GUARDED NEEDLE AND RETAINING MEANS

Donald J. Propp, Dewitt, Mich., assignor to Tri-State Hospital Supply Corporation, Howell, Mich.

Filed Aug. 24, 1992, Ser. No. 933,762
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **12 Claims**



1. A universal guarded plastic flow connector structure for use with medical flow apparatus comprising:

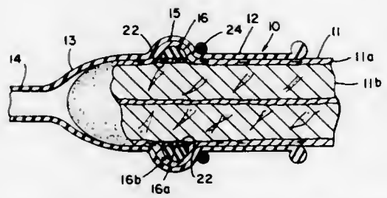
a clear plastic intermediate connector body having a generally rectilinear cross sectioned tubular frontally open shroud portion, one of the planar sides of said shroud portion including a tabular elongate and longitudinal extension beyond said open shroud portion and said one side and said tabular extension having upstanding strap retaining means, said shroud portion having a closed transverse wall at the end opposite said tubular frontal opening and said transverse wall having an axial passage therethrough, defining a cylindrical tubular integral extension of said intermediate connector and said cylindrical tubular extension having an integral coaxial luer socket connection at the end thereof; a scarf tipped cannula axially supported and radially sealed in place within said axial passage and through said transverse wall and said scarf projecting into said open ended shroud portion, said scarf extending slightly beyond said open of said rectilinear shroud.

5,282,795

PENILE RING IMPLANT AND METHOD

Roy P. Finney, Spring Hill, Fla., assignor to Joseph E. Binard, Tampa, Fla., a part interest

Filed Mar. 12, 1993, Ser. No. 30,987
Int. Cl.[5] A61F *5/44, 2/02*
U.S. Cl. 604—351 **4 Claims**



1. A method of forming a sheath retaining annular protuberance in the penis of a male which comprises:

(a) making a small incision in the skin of the penis covering the tunica albuginea of the penis;

(b) introducing and working one end of a malleable probe circumferentially about the penis between the skin and the tunica albuginea until that one end of the probe exits from the incision;

(c) attaching to that one end of the probe one end of an elongated soft, flexible rod;

(d) pulling the one end of the probe with the rod attached back through the incision around the penis and out the incision so that the main body of elongated rod is positioned between the skin and the tunica albuginea completely encircling the penis and both ends of the rod extend out of the incision;

(e) trimming at least one end of the rod, if necessary, so that the two ends of the rod when approximated form a ring having an inner surface contacting the tunica albuginea;

(f) joining the two ends of the rod to form a unitary ring which forms a sheath retaining protuberance; and

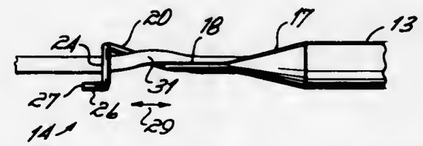
(g) then closing said incision.

5,282,796

SCOPIC PROBE

Dennis J. Knoepfler, 1383 Whitaker La., Amelia, Ohio 45102

Continuation-in-part of Ser. No. 641,010, Jan. 14, 1991, abandoned. This application Jun. 25, 1992, Ser. No. 904,386
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—1 **9 Claims**



1. In combination a dissecting probe for a scopic procedure and a laparoscopic cannula having an internal diameter, said probe extended through said cannula

said probe having a center shaft having an axis;

a wire tip extended from said shaft;

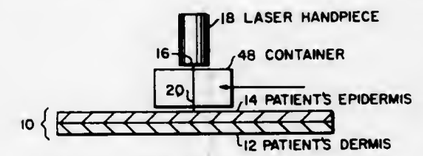
said wire tip having an arcuate portion having a plane which is not parallel to said axis wherein said first end of said arcuate portion is connected to said shaft and a second end of said arcuate portion is attached to a dissecting linear wire portion pointed away from said arcuate portion and said shaft wherein said wire tip has a diameter less than the internal diameter of said cannula.

5,282,797

METHOD FOR TREATING CUTANEOUS VASCULAR LESIONS

Cyrus Chess, 49 Blue Spruce Cir., Weston, Conn. 06883

Continuation-in-part of Ser. No. 358,890, May 30, 1989, Pat. No. 5,057,104. This application May 28, 1991, Ser. No. 706,243
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—9 **7 Claims**



1. A method of treating cutaneous vascular lesions in a target area of a patient, said method comprising the steps of:

positioning a cooling medium contained in a closed container having a pair of walls adjacent a location of an epidermis of the patient, and positioning a laser beam adjacent the container;

passing the laser beam through one of the pair of walls of the container and then through the cooling medium contained in the container;

then passing the laser beam through the other of the pair of walls of the container; and

thereafter passing the laser beam through the location of the epidermis of the patient to the target area while simulta-

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neously subjecting the location of the epidermis to the cooling medium.

5,282,798
APPARATUS FOR SUPPORTING AN ORBICULARLY TIPPED SURGICAL LASER FIBER

Johnny M. Bruse, Magnolia, Tex.; John P. Novak, Jr., San Jose; John P. Morley, Los Altos, both of Calif., and Gerald D. Abell, Spring, Tex., assignors to Heraeus Surgical, Inc., Milpitas, Calif. and Surgical laser Products, Inc., The Woodlands, Tex.

Filed Feb. 12, 1992, Ser. No. 835,196
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—17 **11 Claims**



4. An optical fiber assembly for use in contact laser surgery, comprising:

an optical fiber having a diameter and terminating in an orbicular tip having a diameter larger than the diameter of said optical fiber;

a handpiece for said optical fiber, said handpiece comprising a handle portion having a proximal end and a distal end and a longitudinal axis, and an extended portion having a proximal end and a distal end,

said handle portion having an outside diameter suitable for comfortable holding by a surgeon and further having a longitudinal axis;

the proximal end of the extended portion being connected to the distal end of the handle portion, the distal end of the extended portion extending to a point adjacent to the orbicular tip of said optical fiber so as to provide support to said tip, and the distal end of said extended portion having an inner diameter sized to fit snugly about the fiber and chamfered so as to follow the contours of the orbicular tip of the optical fiber, and having an outer diameter suitable for insertion into a surgical site and for providing support to the orbicular tip of said optical fiber.

5,282,799
BIPOLAR ELECTROSURGICAL SCALPEL WITH PAIRED LOOP ELECTRODES

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 685,045, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 645,186, Jan. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 571,783, Aug. 24, 1990, abandoned. This application Jul. 11, 1991, Ser. No. 728,337
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—48 **5 Claims**



1. An electrosurgical scalpel comprising:

(a) a tubular handle having a proximal end, a distal end and a lumen extending therebetween;

(b) a pair of bipolar electrodes each constructed of a ductile wire of uniform cross-sectional dimension throughout and extending longitudianlly outward from said distal end of said handle with a dielectric therebetween, said electrodes each generally having a closed loop shape; and

(c) a pair of wire conductors insulated from one another extending through said lumen and connected at one end individually to said pair of bipolar electrodes, the other end including connector means for facilitating connection to an electrosurgical generator.

5,282,800
SURGICAL INSTRUMENT

David L. Foshee, and Warren Taylor, both of Cary, N.C., assignors to Edward Weck, Inc., Research Triangle Park, N.C.

Filed Sep. 18, 1992, Ser. No. 947,776
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—52 **10 Claims**



3. Medical apparatus comprising:

(a) a disposable stem assembly having a proximal end and a distal end relative to a user of said apparatus, the disposable stem assembly having a working tip at its distal end;

(b) a reusable handle assembly, including:

(1) a stock having a longitudinal passageway, the stock configured to be manually held; and

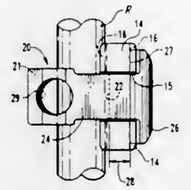
(2) a receptable hinged to the stock so that the receptacle pivots within a plane aligned with the axis of the disposable stem assembly, the receptacle being moveable to a closed position to secure and axially align the proximal end of the disposable stem assembly within the longitudinal passageway; and

(c) a manually operable linkage linking the handle assembly and the stem assembly such that manual operation of the linkage activates the working tip of the stem assembly.

5,282,801
TOP TIGHTENING CLAMP ASSEMBLY FOR A SPINAL FIXATION SYSTEM

Michael C. Sherman, Memphis, Tenn., assignor to Danek Medical, Inc., Memphis, Tenn.

Filed Feb. 17, 1993, Ser. No. 18,800
Int. Cl.[5] A61F *5/02*
U.S. Cl. 606—61 **17 Claims**



10. A top-loading clamp for clamping a vertebral fixation element to a spinal rod, comprising:

a body defining an elongated bore configured to receive a spinal rod therethrough, said elongated bore having a length along its longitudinal axis greater than the diameter of the spinal rod so that the rod can at least initially slide within said bore;

said body having a top surface and defining a first threaded bore therethrough from said top surface and intersecting said elongated bore;

a projection extending from said body generally parallel to the longitudinal axis of said elongated bore, said projection terminating in a T-bar arranged generally parallel to the longitudinal axis of the spinal rod when the rod extends through said elongated bore, said T-bar having a clamping surface directed inwardly toward said elongated bore, said clamping surface configured to engage a surface of a vertebral fixation element disposed between the spinal rod and said T-bar; and

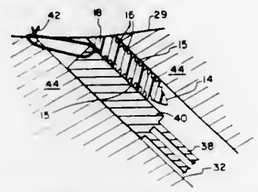
a set screw threaded for engagement through said first threaded bore, said set screw having a tip configured for bearing against the spinal rod when the rod extends through said elongated bore,

wherein the spinal rod and the vertebral fixation element can be clamped between said clamping surface of said T-bar and said tip of said set screw when said set screw is threaded through said first threaded bore into said elongated bore with said tip bearing against the spinal rod.

5,282,802
METHOD OF SECURING A TENDON GRAFT WITH AN INTERFERENCE FIXATION SCREW

Thomas H. Mahony, III, 1730 Wood Ave., Colorado Springs, Colo. 80903

Continuation-in-part of Ser. No. 476,252, Feb. 7, 1990, Pat. No. 5,062,843. This application Aug. 19, 1991, Ser. No. 746,965
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—72 **13 Claims**



1. A method of affixing in place in a ligament tunnel a tendon graft used to replace a ligament, the tendon graft comprising a section of tendon having a bone graft at each end, comprising the steps of:

(a) providing an interference fixation screw made of material that is soft compared to bone;

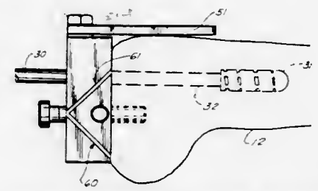
(b) securing each bone graft in the ligament tunnel by tightening one of the fixation screws between each bone graft and the bone surrounding the ligament tunnel wherein the fixation screw has a portion extending beyond an entrance to the ligament tunnel after it has been tightened; and

(c) trimming the portion of the fixation screw that extends beyond the entrance to the ligament tunnel.

5,282,803
INSTRUMENTATION FOR LONG STEM SURGERY

Jennifer J. Lackey, Memphis, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 765,379, Sep. 25, 1991, Pat. No. 5,100,408, which is a continuation of Ser. No. 666,262, Mar. 7, 1991, Pat. No. 5,053,037. This application Mar. 30, 1992, Ser. No. 859,884
Int. Cl.[5] A61B *17/00*; A61F *2/32*
U.S. Cl. 606—80 **15 Claims**



10. A cutting instrumentation system for use in preparing a patient's bone tissue at the patient's knee joint area for a knee prosthesis, and wherein the bone tissue has a proximal bone tissue surface that is generally transverse to the patient's intramedullary canal, comprising;

a) a plurality of elongated rotary reamers, each having an upper proximal end portion and a lower distal end portion having a rotary cutting element thereon, wherein each respective reamer has a rotary cutting element of a progressively larger cutting diameter;

b) an instrumentation assembly having means thereon for supporting the assembly during use upon a selected reamer at its upper end portion and in a position externally of the patient's intramedullary canal so that the instrumentation assembly is referenced upon the reamer; and

c) the instrumentation assembly with an opening that closely fits the reamer to fix the angle of the cutting block relative to the reamer, the cutting block surrounding the reamer during use and providing a surface portion including a cutting block that closely fits the patient's proximal bone tissue surface at the knee joint area;

d) the block having a cutting guide surface thereon for referencing a cutting blade so that selected bone tissue cuts can be made adjacent the knee joint area of the patient.

5,282,804
TOOL DRIVER

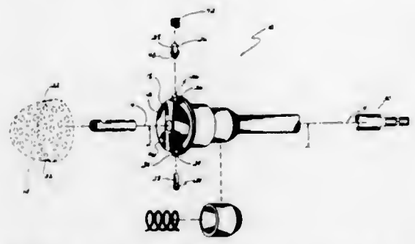
Brian D. Salyer, Warsaw, Ind., assignor to Othy, Inc., Warsaw, Ind.

Continuation-in-part of Ser. No. 696,951, May 8, 1991, Pat. No. 5,171,313. This application Mar. 27, 1992, Ser. No. 858,935
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—86 **29 Claims**

1. A tool driver comprising a shaft having a longitudinal axis and opposite ends, a boss at one of said ends, a tool collet at the

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other of said ends, a first bore in said boss extending axially thereof thereby forming a debris cavity in said boss, an actuator on said shaft, a pair of oppositely disposed pins on said actuator, said pins being axially movable in relation to said boss



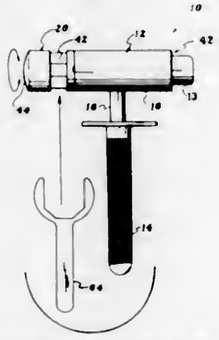
in response to movement of said actuator between an at rest position and a static position, whereby a tool can be positioned on said tool driver when said actuator is in their static position and held in operable position on said tool driver when said actuator is in said at rest position.

5,282,805

CONTROLLED FORCE MALLET

Marc E. Richelsoph, Memphis, and Kenneth W. Russell, Bartlett, both of Tenn., assignors to Dow Corning Wright Corporation, Arlington, Tenn.

Filed Dec. 27, 1991, Ser. No. 815,298
Int. Cl.[5] A61F *2/32*
U.S. Cl. 606—99 **11 Claims**



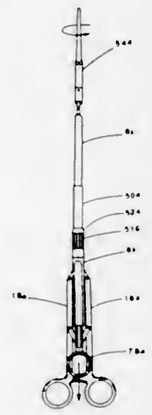
1. A surgical instrument for implanting an orthopedic prosthesis comprising:
a handle with a longitudinal axis and opposed ends;
a head assembly connected to the handle, the head assembly including a main body transversely affixed to the handle, the main body having a bore and an enclosed end;
a collar slidably disposed over the main body, the collar having a bearing surface with an aperture and an opposed open end;
a shaft having a threaded portion and a juxtaposed slotted portion, the slotted portion of the shaft slidably coupled within the bore of the main body, the threaded portion of the shaft extending through the aperture of the collar,
a ratcheting end cap including an impact surface and opposed bearing surface having a tapped hole threadedly engagable with the threaded portion of the shaft; and
means disposed within the head assembly for dampening the force transmitted by the impact surface, the dampening means including means for adjusting the dampening of the force.

5,282,806

ENDOSCOPIC SURGICAL INSTRUMENT HAVING A REMOVABLE, ROTATABLE, END EFFECTOR ASSEMBLY

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Aug. 21, 1992, Ser. No. 933,468
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—139 **13 Claims**



1. A surgical instrument comprising:
a body including a base and a tubular extension, the base defining a proximal end of the body, and the extension defining a distal end thereof;
an end-effector assembly mounted to the distal end of the tubular extension and including at least one movable end-effector element;
an end-effector element driver assembly on the base including a user manipulatable movable end-effector element actuator and means coupling the actuator with the movable end-effector element for moving the movable end-effector element relative to the body;
an end-effector assembly rotator including a user manipulatable rotary actuator on the base and means for drivingly coupling the rotary actuator and the end-effector assembly for rotation of the end-effector assembly relative to the body; and
release means for decoupling the end-effector assembly from the end-effector element driver assembly and the end-effector assembly rotator, the release means including means for axially moving the tubular extension relative to the base.

5,282,807

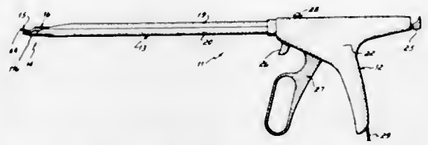
AUTOMATIC STAPLER FOR LAPAROSCOPIC PROCEDURE WITH SELECTIVE CUTTER, NONTRAUMATIC JAWS AND SUCTION IRRIGATOR

Dennis J. Knoepfler, 1383 Whitaker La., Amelia, Ohio 45102

Continuation-in-part of Ser. No. 609,363, Nov. 5, 1990, Pat. No. 5,104,394. This application Jan. 24, 1992, Ser. No. 825,151
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—143 **5 Claims**

1. A surgical stapler for use in laparoscopic surgery comprising a grip portion, a tip portion and a shaft portion extending between the grip portion and the tip portion, said tip portion including:

a staple advancing means and a pair of nontraumatic jaws adapted to close and bend staples;
said jaws each including a staple channel and a nontraumatic grasping surface adjacent said channels;
a cutter adaptor to move relative to said jaws to cut tissue held by said jaws;



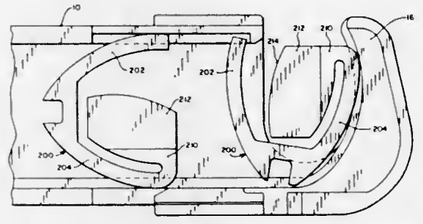
said grip portion comprising means to advance said cutter means to activate said staple advancing means and means to independently close said jaws both when a staple is in place and when no staple is in place.

5,282,808

CLOSURE PREVENTION APPARATUS FOR SURGICAL CLIP APPLIER

Tim Kovac, Los Gatos; Todd Thompson, San Jose; Terrance Kloeckl, Palo Alto, all of Calif.; Peter F. Costa, Winthrop; William A. Holmes, Marblehead, both of Mass., and Jay Daulton, San Jose, Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 958,865, Oct. 9, 1992, which is a continuation-in-part of Ser. No. 888,723, May 26, 1992, Pat. No. 5,192,288. This application Feb. 4, 1993, Ser. No. 13,609
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—143 **18 Claims**



1. Closure prevention apparatus adapted for use with a surgical clip applier having a shaft with distal and proximal ends, clip closure means at the distal end, and means in the shaft for retaining a plurality of surgical clips and advancing the clips to the clip closure means, the apparatus comprising:
a jam clip capable of being disposed in the shaft proximally of the surgical clips, whereby the jam clip is adapted to be advanced by the advancing means to the clip closure means, wherein the jam clip comprises a pair of legs connected at an apex, and means attached to a first of the legs for engaging a second of the legs to prevent closure thereof.

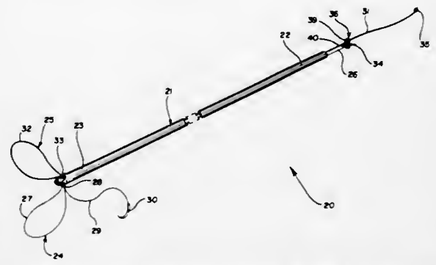
5,282,809

ENDOSCOPIC SUTURING DEVICE

Gene W. Kammerer, East Brunswick, and Royce Frederick, South Bound Brook, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 16, 1992, Ser. No. 976,788
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—148 **13 Claims**

1. A suturing device comprising:
a) a cannula;
b) a first suture, said first suture having a first slide end, a first distal loop, a first slip knot securing first said distal loop to said first slide end, a stay end extending from said first slip knot, and a needle attached to said stay end, said first slide end threaded through said cannula; and



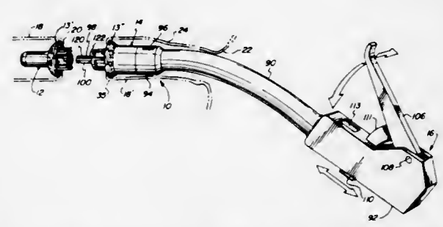
c) a second suture, said second suture having a second slide end, a second distal loop, and a second slip knot securing said second distal loop to said second slide end, said second slide end threaded through said cannula.

5,282,810

SURGICAL ANASTOMOSIS DEVICE

William J. Allen, Stratford; George Jessup, Brookfield; Lester F. Miller, Danbury, and Milton W. Brumaghim, Newtown, all of Conn., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 8, 1992, Ser. No. 865,236
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—150 **56 Claims**



1. A surgical device for inserting an anastomosis ring, having first and second separable unitary members formed to interlock, together, into upper open and lower open ends of a tubular anatomic member and for closing said first and said second unitary members together to join said upper and loer ends; said surgical device comprising:
distal adapter means configured for temporarily mounting a first unitary member so that said first unitary member can be secured within said upper open end of said anatomotic member, said distal adaptor means including a hollow distal sleeve and first alignment means for aligning the first unitary member on said distal sleeve, said first alignment means being axially movable within said distal sleeve and biased in a first direction;
proximal adaptor means configured for temporarily mounting a second unitary member so that said second unitary member can be secured within said lower open end of the anatomic member, said distal adaptor means being separable and independently manipulable from said proximal adaptor means; and
actuating means, connected to said proximal adaptor means, for engaging said distal adaptor means and for drawing it relative to said proximal adaptor means thereby to interlock said first unitary member temporarily mounted on

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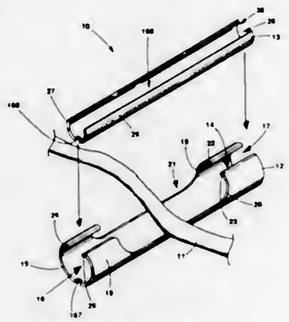
said distal means and said second unitary member temporarily mounted on said proximal adaptor means and for releasing said distal adaptor means from said first unitary member and said proximal adaptor means from said second unitary member.

5,282,811

TWO PART SURGICAL LIGATING CLIP, APPLICATOR AND METHOD OF USE

Robert Booker, Vandergrift, Pa., and Marc A. Cossette, Hartville, Ohio, assignors to Cook Pacemaker Corporation, Leechburg, Pa.

Filed Apr. 16, 1992, Ser. No. 870,482
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—157 **66 Claims**



1. A surgical ligating clip comprising:
a first piece having an outer surface, at least a partially circular cross-sectional shape, a first preformed channel including a first opening in said outer surface, and a second preformed channel communicating with said first channel and including a second opening in said outer surface communicating directly with said first opening; and
a second piece separate from said first piece and securably positionable in at least one of said first and second channels through at least one of said first and second openings.

5,282,812

CLAMP FOR USE IN VASCULAR SURGERY

Luis Suarez, Jr., 349 Bellview Blvd., Steubenville, Ohio 43952

Filed Jul. 10, 1991, Ser. No. 727,892
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—158 **19 Claims**



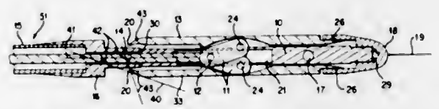
1. A surgical clamp for the temporary occlusion of a blood vessel in the course of a vascular surgical procedure comprising:
an integral member formed from a solid physiologically acceptable material including a bendable mid-section therein having a shape retaining characteristic, said member including on the sides of the bendable section, a pair of planar juxtaposed oppositely facing sections capable in a first open position of surrounding a portion of a blood vessel section and capable in a second closed position of compressing the blood vessel section with pressure sufficient to occlude blood flow through the section;
said integral member including on the interior sides of the planar facing sections a surface which is capable of cushioning vascular tissue when the member is in the second closed position; and
said integral member having on the exterior sides of each facing section, an ear on each section formed from an "L"-shaped extension of the terminal end of the clamp which, in association with the outer surface of the clamp, forms a rectangular channel capable of receiving therein a correspondingly rectangular end tip of a surgical forceps.

5,282,813

SURGICAL APPARATUS FOR REMOVAL OF DEPOSITS FROM VESSELS

Falah Redha, Linden Strasse 17, 8302 Kloten, Switzerland

Continuation-in-part of Ser. No. 499,313, Jul. 9, 1990, Pat. No. 5,152,773. This application Apr. 10, 1992, Ser. No. 867,829
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **19 Claims**



1. A medical apparatus for removing deposits from arterial and venous walls and for removing venous valves comprising:
a body having an insertion end and a withdrawal end, said body essentially circular in cross-section and partially hollow;
at least two shell-shaped parts extending from said insertion end towards said withdrawal end pivotally connected to said body proximate said insertion end and having a cutting edge proximate said withdrawal end, said shell-shaped parts having a convex surface proximate said cutting edge, said convex surface facing away from said body such that a tangential line intersection said convex surface and a central axis of said body forms an angle therebetween, said angle having a tangent which increases as said tangential line intersects said convex surface closer to said cutting edge, said angle being between about 10° and about 90° when said tangential line intersects said cutting edge;
control means for at least one of expanding and contracting said shell-shaped parts;
at least two leaf arms pivotally connected at one end to said control means, the other end of each said leaf arm being pivotally connected to one of said shell-shaped parts; and
means for withdrawing said body from a vessel.

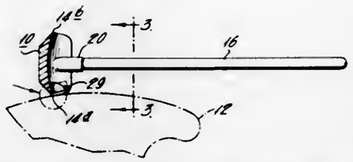
5,282,814

INSTRUMENT FOR CLEANING THE TOP OF THE HUMAN TONGUE WITH ANTISEPTIC STRIP

Rajesh Srivastava, 4921 Amanda Dr., Redding, Calif. 96002

Filed Sep. 8, 1992, Ser. No. 941,791
Int. Cl.[5] A61B *17/24*
U.S. Cl. 606—161 **2 Claims**

1. An instrument for cleaning the top surface of the human tongue, comprising:
a blade of a length to fit comfortably in the human mouth in a position extending across the top of the tongue, and having a scraping edge at least along its bottom side;
pulling arm means secured to said blade and extending forwardly therefrom, whereby said arm means can be grasped in the fingers of a user to place said blade initially near the rear of the top of the tongue and to pull it forwardly along the top of the tongue with said blade angled so that said edge scrapes the top of the tongue and cleanses it of coating materials; and



a strip of antiseptic-loaded absorbent material secured to and along at least the rearward side of said edge without extending around said edge, to deliver antiseptic material to the tongue during the scraping procedure.

5,282,815

METHOD OF AND APPARATUS FOR PERFORMING SURGICAL INCISIONS

Jamil Kabbara, 29 Avenue Franklin Roosevelt, 75008 Paris, France

Filed Jul. 2, 1992, Ser. No. 908,215
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **13 Claims**

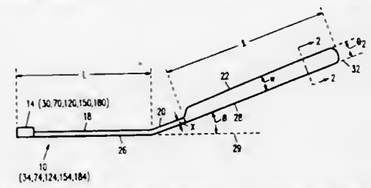
5. Apparatus for performing an incision in the wall of the eye, characterized by the following elements: (a) a suction cup which can be fixed on the wall of the eye; (b) a cutting tool the cutting edge of which is in the shape of a closed curve, in particular a circle, which surrounds tightly the rim of the suction cup, and is capable of moving along the rim of the suction cup in order to penetrate into the wall of the eye, and to incise along the closed curve; (c) means to create suction in the central zone of the suction cup in order to attach it firmly on the wall of the eye; and (d) means to move the cutting tool along the rim of the suction cup to enable it to penetrate into the wall at a depth at least equal to the thickness of this wall, and in which the cutting tool is held by the wall of a deformable ring-shaped enclosure which surrounds the wall of the suction cup and is connected to a source of pressure capable of deforming the ring-shaped enclosure and thus pushing the cutting tool towards the eye when the suction cup is attached on the eye.

5,282,816

APPARATUS FOR SUBLIGAMENTOUS ENDOSCOPIC TRANSVERSE CARPAL LIGAMENT RELEASE SURGERY

Brent W. Miller, Bradbury, and Charles T. Resnick, La Canada, both of Calif., assignors to Milres Corporation, Los Angeles, Calif.

Filed Sep. 20, 1991, Ser. No. 763,086
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—167 **14 Claims**



1. An instrument for insertion into a cannula for use in conducting an endoscopic surgical procedure on tissue comprising:
a working end for contacting the tissue;
a midsection abutting the working end, the midsection having an axis;
a handle, the handle having an axis, the axis of the handle being positioned at an angle θ with respect to the axis of the midsection, the angle θ being in a range of 10 to 30 degrees; and
connecting means positioned between the midsection and the handle for maintaining said angle θ.

5,282,817

ACTUATING HANDLE FOR MULTIPURPOSE SURGICAL INSTRUMENT

Thomas J. Hoogeboom, 7544 Oak Shore South, Portage, Mich. 49002-7850, and James E. Hoogeboom, 3120 Scioto Trace, Columbus, Ohio 43221

Filed Sep. 8, 1992, Ser. No. 941,968
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **40 Claims**



1. A surgical instrument comprising:
an elongated tubular member having first and second ends;
a moveable working member at said first end of said tubular member;
a pair of continuous longitudinal opposing actuating members, at least one of which is resiliently flexible, having first and second ends and being connected at their first ends to said tubular member at a point spaced from said first end of said tubular member, said actuating members extending beyond said second end of said tubular member, being operably connected to each other proximate their said second ends and said flexible actuating member being laterally compressible towards each other; and
a linkage rod slidably positioned in said tubular member and connected to said moveable working member and extending through said tubular member and beyond said second end thereof and being operably connected to said resiliently flexible actuating member whereby lateral compression of said flexible actuating member toward the other actuating member causes said linkage rod to move said working member.

5,282,818

Patent Not Issued For This Number

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5,282,819

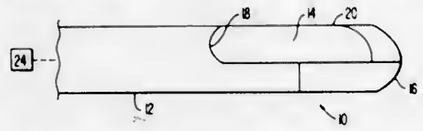
Patent Not Issued For This Number

5,282,820

LIPOSCULPTURE DEVICE AND METHOD

Wallace A. Goodstein, 436 N. Roxbury Dr., S. Penthouse, Beverly Hills, Calif. 90210

Filed Nov. 3, 1992, Ser. No. 970,809
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **19 Claims**



1. A tissue-sculpting device comprising a tube having an aperture at a distal end of the tube, which aperture extends along a side portion of the tube;

at least a portion of said aperture being defined by a sharpened knife edge fixed to said tube, for cutting tissue and directing the cut tissue into said tube; and

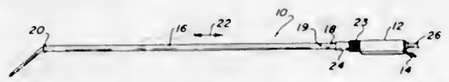
support means fixed to said tube for preventing tissue which is adjacent the tissue being cut from entering the aperture, wherein the support means comprises a bridge which extends longitudinally along said tube between a proximal portion of said aperture and a distal end portion of said aperture.

5,282,821

ADJUSTABLE SURGICAL INSTRUMENT

John R. Donahue, 530 Rosedale Dr., Pottstown, Pa. 19464

Filed Jan. 26, 1993, Ser. No. 8,913
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **10 Claims**



1. A surgical instrument that is constructed for insertion into a body for cutting, comprising:

a hollow outer member having an open distal end and an open proximal end;

a hollow intermediate member mounted within said outer hollow member, said intermediate member having at least one opening in a distal region thereof;

said hollow intermediate member having a preformed curvature in a portion of its length, said intermediate member being deformable so as to reduce the amount of curvature upon the application of a predetermined force and having memory such that said initial curvature is recovered upon removal of said force;

a hollow inner member disposed within said intermediate member for transmitting force applied to a proximal end to move a cutting implement disposed at a distal end, said cutting implement being constructed and adapted to perform a cutting function at said opening in said intermediate member;

said inner member being flexible at least in the area of said curvature in said intermediate member; and

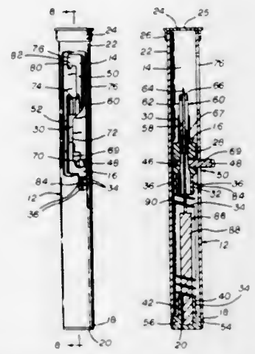
a drive for displacing said hollow outer member with respect to said hollow intermediate member along their longitudinal axes wherein the amount of said curvature of said intermediate member may be controlled.

5,282,822

LANCET EJECTOR FOR LANCET INJECTOR

Paul P. M. G. J. Macors, Liege, Belgium, and Gregory G. Acker, Springboro, Pa., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jan. 19, 1993, Ser. No. 4,885
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—182 **31 Claims**



1. In a lancet injector having a hollow housing with a slot in the housing extending generally longitudinally of the housing, a lancet holder movable within the housing and adapted to hold a lancet, a lancet capable of being held in the lancet holder, a control member connected to the lancet holder and extending through the slot to the exterior of the housing, the control member being movable to a retracted position in the slot, the control member being movable from the retracted position distally to a lancet skin piercing position, the control member being distally movable longitudinally in the slot beyond the skin piercing position to an access position wherein the lancet holder can be loaded with a lancet, an improvement comprising:

the housing further including means for allowing the control member to move proximally beyond the slot in the housing, said means for allowing comprising a separation recess extending generally proximally from the slot in the housing;

means for removing the lancet from the lancet holder when the lancet holder is moved proximally beyond the slot in the housing beyond a predetermined point, said means for removing the lancet form the lancet holder comprising:

a pin rigidly attached to and extending from the proximal end of the housing into the hollow housing along the central axis of the housing; and,

wherein the lancet holder has a central bore extending through the lancet holder along the longitudinal axis of the lancet holder, the central bore sized to allow said pin to pass through the lancet holder to contact the proximal end of a lancet when a lancet is positioned in the lancet holder;

means for retaining the control member at the proximal end of said separation recess, said means for retaining comprising a retention recess extending generally proximally from the proximal end of said separation recess, said retention recess having means for retaining the control member within said retention recess, said means for retaining comprising:

said retention recess including a narrow bore that opens into an expanded roughly circular proximal stop;

wherein the control member is modified in cross-section to include an expanded roughly circular end at the most proximal end of the control member, the cross-sectional shape of said expanded end is approximately the same as the interior shape of said proximal stop, the transverse

width of the control member distal to said expanded end is approximately the same as the inside diameter of said narrow bore; and,

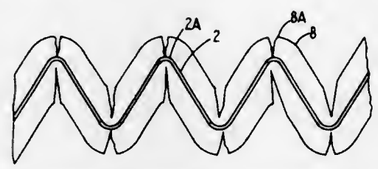
wherein at least the part of the control member that will move proximally into contact with said retention recess should be made of a resilient material.

5,282,823

INTRAVASCULAR RADIALLY EXPANDABLE STENT

Robert S. Schwartz; John Bresnahan, both of Rochester; Rebecca M. Bergman, North Oaks; Arthur J. Coury, St. Paul; Elaine Lindell, Blaine, and Vincent W. Hull, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 19, 1992, Ser. No. 853,682
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 **8 Claims**



1. In a radially expandable stent for implantation within a body lumen, the stent having a generally cylindrical body with open proximal and distal ends, the cylindrical body comprising a plurality of substantially helical metal elements joined to allow flexing of the stent along its longitudinal axis in a continuous, substantially helical wire winding, the improvement comprising:

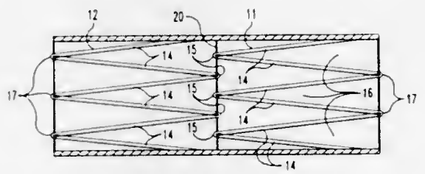
a polymeric film extending between the helical metal elements of the stent wherein the polymeric film has strain relief means between the helical metal elements and wherein the strain relief means comprises one or more cuts in the film between adjacent helical metal elements.

5,282,824

PERCUTANEOUS STENT ASSEMBLY

Cesare Gianturco, Champaign, Ill., assignor to Cook, Incorporated, Bloomington, Ind.

Continuation of Ser. No. 594,050, Oct. 9, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 899,109
Int. Cl.[5] A61M *29/00*; A61F *2/06*
U.S. Cl. 606—198 **6 Claims**



1. A percutaneous stent assembly comprising:

a flexible sleeve having an inner surface and an outer surface and being open at both ends;

at least one resiliently compressible stent, each said stent including a plurality of struts defining a series of gaps between said struts;

means for attaching said stents to said flexible sleeve such that said gaps defined by each said stent are substantially covered by said flexible sleeve;

means for rendering said percutaneous stent assembly resistant to contraction along the axis defined by said flexible sleeve when the stent assembly is radially compressed into a smaller first shape and being axially pushed into position adjacent a stenosis in a passageway of a patient;

wherein said percutaneous stent assembly defines said smaller first shape when radially compressed and resiliently defines a larger second shape when allowed to radially expand;

said flexible sleeve is made of nylon; and

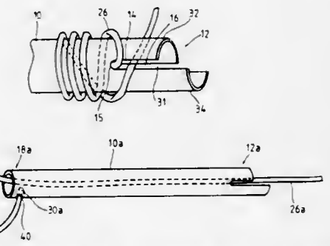
said means for attaching said stents to said flexible sleeve consists of a plurality of stitches.

5,282,825

SURGICAL LIGATURING AND ANIMAL RESTRAINING DEVICE

Kin C. Muck, and Helen M. Chan, both of 4437 Greenfield Rd., Bethlehem, Pa. 18017

Filed Jun. 2, 1993, Ser. No. 70,207
Int. Cl.[5] A61B *17/12*; A01K *29/00*
U.S. Cl. 606—203 **11 Claims**



7. A surgical ligaturing and restraining device for small animals comprising:

an elongated tubular body having a body front end and a body rear end, said body front end being truncated in a substantially flat fashion, said tubular body having a hole adjacent said body front end, said body rear end having a plurality of longitudinal extending slots, each said slot having one extremity open to said body rear end;

and flexible cable substantially thinner and longer than said body, said cable having a first cable end, and a second cable end;

attachment means for securing said first cable end to said body through said hole adjacent said body front end;

wherein in the assembled state of the device, said cable runs through the interior of said body, said first cable end is looped around to form a noose, and is attached to said body through said hole by said attachment means, said second cable end emerges substantially from said body rear end;

whereby during application, said noose is placed around an object and tightened by pulling on said cable emerging from said body rear end, said noose is held in its tightened state by passing said cable through one said slot, and is wrapped around said body several times adjacent said slots, before said cable is reinserted into at least two said slots, thereby completing the locking action.

5,282,826

DISSECTOR FOR ENDOSCOPIC AND LAPAROSCOPIC USE

Arshad Quadri, Pittsfield, Mass., assignor to Quadtello Corporation, Pittsfield, Mass.

Filed Mar. 5, 1992, Ser. No. 846,117
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—207 **10 Claims**

10. A surgical instrument comprising:

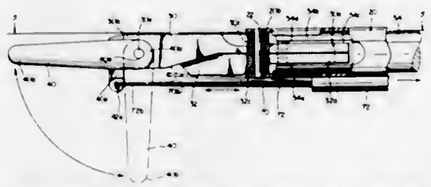
an elongated tubular hollow shaft having a proximal end, a distal end, and a shaft longitudinal axis;

first and second opposable jaws each having an proximal end

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and a distal end and being pivotable in first and second parallel planes, respectively, about a first pivot axis perpendicular to said shaft longitudinal axis between an open position and a closed position, said first pivot axis extending through said distal end of said hollow shaft;

a first dissecting tip pivotably connected to said outer end of said first jaw for rotation in a third plane perpendicular to said first plane;



a second dissecting tip pivotably connected to said outer end of said second jaw for rotation in a fourth plane perpendicular to said second plane;

activating means for moving said first and second jaws between said open and closed positions; and

adjustment means for pivoting said first and second dissecting tips in said third and fourth planes, respectively.

5,282,827

HEMOSTATIC PUNCTURE CLOSURE SYSTEM AND METHOD OF USE

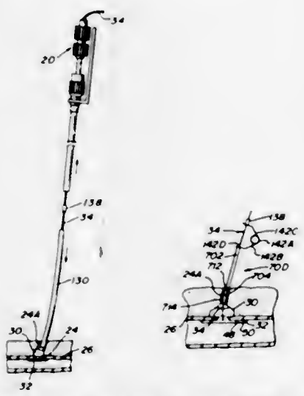
Kenneth Kensey, Chester Springs; John E. Nash, Downingtown, and Douglas Evans, Devon, all of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Continuation-in-part of Ser. No. 789,704, Nov. 8, 1991, Pat. No. 5,222,974. This application Mar. 5, 1992, Ser. No. 846,322

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—215 **41 Claims**



1. A system for sealing a percutaneous puncture in a blood vessel of a living being, said system comprising carrier means, introducer means, and closure means, said puncture comprising a tract extending through tissue overlying the vessel, said closure means comprising anchoring means, sealing means, and filament means, said filament means coupling said anchoring means and said sealing means, said introducer means comprising a tubular member having a distal free end insertable into the puncture tract and through the puncture, said carrier means being insertable through said introducer means and including means to expel said anchoring means therefrom, and said carrier means being retractable with respect to said introducer means after said anchoring means has been expelled from said carrier means, whereupon when said carrier is retracted it draws said anchoring means into engagement with said distal free end of said introducer means, said introducer means and said carrier means coupled for movement together to draw the anchoring means which is in engagement with said distal end of said introducer means into engagement with the interior tissue of the vessel generally adjacent the puncture, said filament means being operative to move said anchoring means and said sealing means relative to each other to cause said sealing means to engage tissue generally adjacent the puncture outside of the vessel.

5,282,828

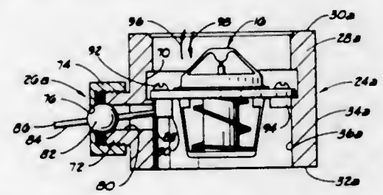
THERMOSTAT BYPASS

Alton R. Ragan, Rte. 1, Box 71, Sparks, Okla. 74869

Continuation of Ser. No. 709,520, Jun. 3, 1991, Pat. No. 5,163,613. This application Nov. 10, 1992, Ser. No. 974,400

Int. Cl.[5] **F01P** *7/16*

U.S. Cl. 236—34.5 **4 Claims**



1. An improvement in a water cooled engine having a thermostat interposed in a water flow passageway wherein the thermostat has a thermostat valve which opens and closes for regulating the temperature of the water, the improvement comprising:

bypass structure means for permitting the flow of water through the thermostat to be controlled by the thermostat valve in an operating position of the bypass structure means and for permitting the water to bypass the thermostat in a bypass position of the bypass structure means wherein the water flows through the flow passageway bypassing the thermostat, the bypass structure means adapted to support the thermostat on a portion of the engine interposed in the flow passageway for movement of the thermostat from the operating position so that the flow of water through the water flow passageway is controlled by the thermostat valve and to permit movement of the thermostat to the bypass position so that water is permitted to bypass the thermostat, the bypass structure means comprising:

a thermostat insert having an upper end and a lower end, an outer peripheral surface and a thermostat opening extending therethrough intersecting the upper end and the lower end, the thermostat being disposed in the thermostat opening; and

a shaft opening formed through the thermostat insert intersecting the thermostat opening and the outer peripheral surface of the thermostat; and

bypass position means for positioning the bypass structure means in the operating position and for positioning the bypass structure means in the bypass position so as to allow movement of the thermostat between the operating position and the bypass position, the bypass position means comprising:

a handle having opposite end with a portion of the handle being disposed in the shaft opening and one end of the handle being disposed in the thermostat opening and connected to the thermostat; and

means for pivotally connecting the thermostat to the thermostat insert so that the thermostat is moveable in an upwardly and a downwardly direction, the handle being moveable to move the thermostat in the downwardly direction to the operating position wherein the thermostat extends generally across and encompasses the thermostat opening and to move the thermostat in an upwardly direction to a bypass position wherein water flows through the thermostat opening and about the thermostat thereby bypassing the thermostat valve.

5,282,829

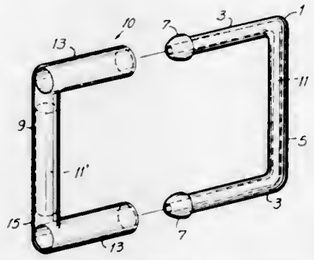
HOLLOW BODY IMPLANTS

Matthew E. Hermes, Easton, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 15, 1991, Ser. No. 745,513

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—219 **41 Claims**



1. A surgical implant possessing a core contained entirely within an interior region of the implant, the implant comprising tissue piercing means, the implant being thereby independently insertable and configured to receive and support a mechanical load in use.

5,282,830

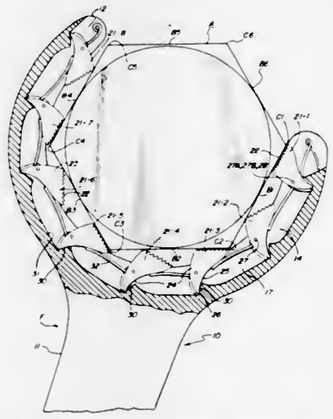
OPEN-END RATCHET WRENCH

Roy W. Reynolds, P.O. Box 13246, Los Angeles, Calif. 13246

Filed Nov. 3, 1992, Ser. No. 970,766

Int. Cl.[5] **B25B** *13/28*

U.S. Cl. 81—90.1 **25 Claims**



1. A ratcheting wrench for selectably applying tightening or loosening torque to a polygonal cross-section body comprising;

a. an elongated handle,

b. an enlarged head, at one end of said handle, said head having an opening therein,

c. a plurality of generally wedge-shaped pawls arranged around the periphery of said opening, each of said pawls being attached to said head by pivot means permitting pivotal motion of said pawls radially inward of and outward of said opening, and each of said pawls having a generally straight nut-engaging face and a convex edge wall that intersects said nut-engaging face at an obtuse angle, thereby facilitating sliding of said intersection over the surface of a polygonal cross-section body when ratcheting said wrench in a direction opposite a torquing direction, and

d. stop means limiting radial inward motion of said pawls, thereby permitting said pawls to transmit a torque applied to said handle of said wrench to a polygonal cross-section body within said opening.

5,282,831

Patent Not Issued For This Number

5,282,832

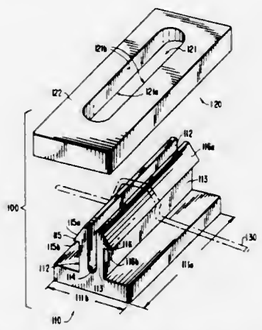
SUTURE CLIP

Kenneth E. Toso, Portchester, N.Y., and Michael S. Kolesa, Norwalk, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,060

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—232 **20 Claims**



1. A suture fastening device which comprises:

a) a first member having a lengthwise extension defined by its longest side and including a base portion,

first and second legs projecting from said base portion and extending lengthwise along the base portion,

said first and second legs parallel to each other along the lengthwise direction of the base, and being resiliently biased toward a spaced apart position from each other and movable toward each other in response to force applied thereto; and

b) a second member having a lengthwise extension defined by its longest side, said second member having an aperture for receiving said first and second legs of said first member.

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5,282,833

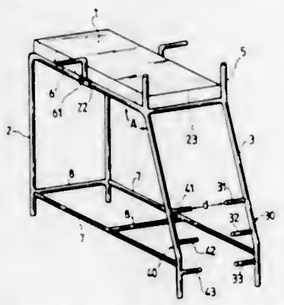
Patent Not Issued For This Number

5,282,834

TABLE FOR STRETCHING PARAVERTEBRAL MUSCLES

Denis Remy, 28, rue du General Maistre, 52100 Saint Dizier, France

PCT No. PCT/FR91/00948, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/01915, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 28, 1991, Ser. No. 916,094
Claims priority, application France, Nov. 28, 1990, 90 14988
Int. Cl.[5] A61H *1/02*; A61F *5/00*
U.S. Cl. 606—241 3 Claims



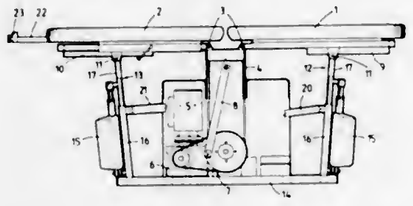
1. A table for effecting a stretching of the paravertebral muscles, having a tubular footing supporting a board (1) and formed of two vertical front legs (2) and two obliquely arranged rear legs (3) which are rigidly attached on the two sides to two horizontal tubes (22) constituting the edges of the table, characterized by the fact that its board (1) is at a height permitting a patient, lying prone, to have his or her legs in open space, and by the fact that it has vertical tubular handles (5) arranged in the extension of the rear legs (3) and two L-shaped tubular elements (6) slidably positioned relative to the longitudinal edges (22) of the board (1), on which edges they are firmly secured at their base, while their upper part extends horizontally on both sides of said board (1), which elements (6) are lockable relative to said longitudinal edges.

5,282,835

EXERCISING TABLE FOR APPLYING CYCLIC MOVEMENT WITH ADJUSTABLE SUPPORT MEMBERS

Howard S. Wright, 436 Devon Street West, New Plymouth, and Robin A. McKenzie, 8 Parata Street, Waikanae, both of New Zealand

Filed Apr. 28, 1992, Ser. No. 875,283
Claims priority, application New Zealand, Mar. 4, 1992, 241836
Int. Cl.[5] A61H *1/02*
U.S. Cl. 606—242 16 Claims



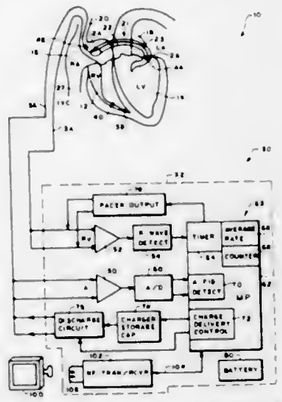
10. An exercise machine, which comprises:
a patient support platform having first and second parts adapted to support the upper and lower parts of a patient's body,
a movable member pivotally attached to adjacent parts of said first and second parts,
a reciprocatingly movable element for applying a reciprocating movement to said movable member in a direction substantially normal to a plane defined by the support platform when said first and second parts are aligned end to end,
an elongate support pivotally coupled to each of said first and second platform parts at a point which is spaced from the pivotal attachment of each platform part to the movable member.
adjustment means for adjusting the angle of each support relative to the part to which it is attached such that the point of pivotal coupling of each support to said part is adjusted relative to a pivot coupling of said part to said movable element, and
means for holding said support fixed against any substantial movement during said reciprocating movement of said movable member.

5,282,836

ATRIAL DEFIBRILLATOR AND METHOD FOR PROVIDING PRE-CARDIOVERSION PACING

Paul E. Kreyenhagen, Bellevue, and Kenneth R. Infinger, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Oct. 23, 1992, Ser. No. 965,167
Int. Cl.[5] A61N *1/39, 1/362*
U.S. Cl. 607—4 44 Claims



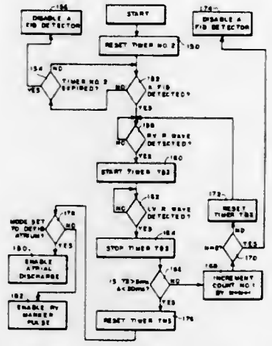
1. An implantable atrial defibrillator for providing cardioverting electrical energy to the atria of a human heart in need of cardioversion, said atrial defibrillator comprising:
first detecting means for detecting atrial activity of the heart;
atrial fibrillation detecting means responsive to said first detecting means for determining when the atria of the heart are in need of cardioversion;
stabilizing means responsive to said atrial fibrillation detecting means for stabilizing the cardiac rate of the heart when the atria of the heart are in need of cardioversion; and
cardioverting means for applying the cardioverting electrical energy to the atria of the heart after said stabilizing means has stabilized the cardiac rate for a predetermined number of cardiac cycles.

5,282,837

ATRIAL DEFIBRILLATOR AND METHOD

John M. Adams, Issaquah, and Clifton A. Alferness, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Apr. 12, 1991, Ser. No. 685,130
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 73 Claims



1. An atrial defibrillator for applying an electrical defibrillating pulse to the atria of a human heart, said atrial defibrillator being arranged to apply said electrical defibrillating pulse to the atria in synchronism with depolarization activation waves and comprising:
first means for sensing depolarization activation waves at a first area of the heart;
second means for sensing said depolarization activation waves at a second area of the heart;
means for detecting non-coincident sensing of said depolarization activation waves at said first area of the heart by said first means and at said second area of the heart by said second means;
storage means for storing electrical energy; and
delivery means coupled to said storage means and being responsive to the non-coincident sensing of a depolarization activation wave at said first and second areas of the heart for applying a predetermined amount of said stored electrical energy to the atria.

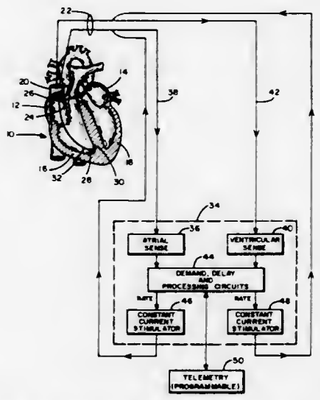
5,282,838

DUAL CHAMBER CARDIAC PACEMAKER EMPLOYING HYSTERESIS TO MAXIMIZE THE NUMBER OF NORMALLY CONDUCTED VENTRICULAR BEATS WITH AN OPTIMUM A-V DELAY FOR PACED VENTRICULAR BEATS

Robert G. Hauser, Long Lake, and Julio C. Spinelli, Shoreview, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Jun. 8, 1992, Ser. No. 894,872
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—9 15 Claims

1. In a DDD pacemaker of the type including means for sensing natural and paced atrial depolarization signals, means for sensing natural and stimulated ventricular depolarization signals, atrial stimulating means, ventricular stimulating means and programmable microcontroller means coupled to said atrial and ventricular sensing means and said atrial and ventricular stimulating means for causing said ventricular stimulating means to issue a pacing pulse after a predetermined A-V delay period if a natural ventricular depolarization signal is not sensed within said A-V delay period, the improvement comprising:
(a) means for establishing a first A-V delay value between the occurrence of one of a paced and natural atrial depolarization signal and the operation of said ventricular stimulating means when no natural ventricular depolarization signal intervenes, said first A-V delay value selected to be of a length sufficiently long to enhance the chance of detecting natural ventricular depolarization signals in said A-V delay period;
(b) means for establishing a second A-V delay value between the occurrence of one of a paced and natural atrial depolarization signal and the operation of said ventricular stimulating means when no natural ventricular depolarization signal intervenes, said second A-V delay value being



shorter than said first A-V delay value and of a length which improves the hemodynamic performance of the heart; and
(c) means for automatically shifting said A-V delay period between said first and second delay values based upon the relative rate of occurrence of said natural ventricular depolarization signals and said pacing pulses issued from said ventricular stimulating means during a time interval in which a count of the total of sensed natural ventricular depolarization signals and pacing pulses exceeds a predetermined value.

5,282,839

RATE RESPONSIVE CARDIAC PACEMAKER AND METHOD FOR PROVIDING AN OPTIMIZED PACING RATE WHICH VARIES WITH A PATIENT'S PHYSIOLOGIC DEMAND

Glenn M. Roline, Anoka; Lucy M. Nichols, Grove; David L. Thompson, Fridley, and Tommy D. Bennett, Shoreview, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 14, 1992, Ser. No. 949,414
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—19 8 Claims

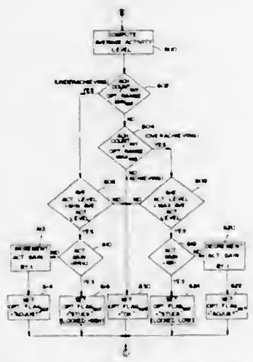
1. A rate responsive cardiac pacemaker for providing an optimized pacing rate of stimulation pulses as a function of at least one selected rate control parameter, each of said rate control parameters having a value which varies as a function of changes in a patient's physiologic demand, comprising:
(A) sensor means for sensing each of said rate control parameter values and for providing a sensor output representative thereof;
(B) control means coupled to each of said sensor means, comprising:
(1) clocking means for setting an optimization period;
(2) rate response defining means for deriving desired pacing rates for each of said sensor means, each said derived desired pacing rate being increased and decreased as a function of said sensor output corresponding thereto, to define a predetermined rate response

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function for each of said sensor means, such that for a predetermined change in sensor output for each of said sensor means a corresponding change in said desired pacing rate is provided;

(3) achievement monitoring means having a predetermined achievement criterion reflective of expected levels of exercise of said patient, for each of said sensor means, for monitoring the relationship between each of said derived desired pacing rates and said achievement criterion corresponding thereto over a predetermined optimization period, and for providing an achievement output indicative of each of said monitored relationships;

(4) average activity level monitoring means for monitoring an average activity level for said patient, said average activity level corresponding to each of said derived desired pacing rates, and having a predetermined minimum and maximum average activity level reflective of



expected levels of exercise of said patient for each of said sensor means, and for monitoring a relationship between each of said derived desired pacing rates and said average activity level corresponding thereto over a predetermined optimization period, and further for providing an average activity level output indicative of each of said monitored relationships;

(5) output means for generating stimulus pulses at optimized pacing rates as a function of each of said derived desired pacing rates; and

(6) rate response control means for adjusting each of said rate response functions as a function of each of said achievement and said average activity level output corresponding thereto, such that each of said adjusted rate response functions provides an increased or decreased change in desired pacing rate corresponding to said predetermined change in sensor output for each of said sensor means.

5,282,840

MULTIPLE FREQUENCY IMPEDANCE MEASUREMENT SYSTEM

Terrence R. Hudrlik, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

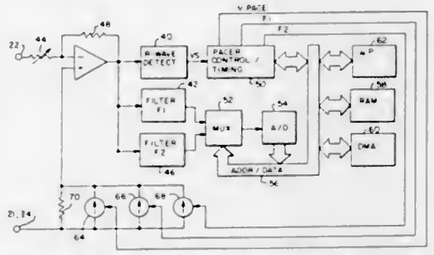
Filed Mar. 26, 1992, Ser. No. 857,896
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—28 **23 Claims**

1. A cardiac pacemaker, comprising:

pulse generator means for generating cardiac pacing pulses and for delivering said cardiac pacing pulses to a patient's heart;

timing means coupled to said pulse generator means for controlling the rate at which said pacing pulses are generated;

means for monitoring said patient's body tissue, said means for monitoring comprising a pair of electrodes adapted to be in contact with said tissue to be monitored, signal generator means for generating electrical signals at at least first and second frequencies for application to said pair of electrodes, measuring means responsive to signals at said first and second frequencies, for measuring the impedance



between said pair of electrodes at said first and second frequencies, and means for detecting changes in the relationship of said measured impedances at said first and second frequencies; and

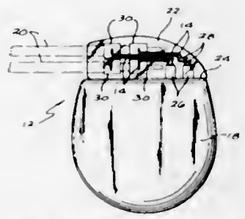
means coupled to said monitoring means and to said timing means for varying the rate at which said pacing pulses are generated in response to the detection of changes in said relationship of said impedances measured at said first and second frequencies.

5,282,841

IMPLANTABLE STIMULATION DEVICE AND METHOD OF MAKING SAME

Andrew J. Szyszkowski, Canyon Country, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Division of Ser. No. 720,078, Jun. 24, 1991, which is a division of Ser. No. 439,070, Nov. 20, 1989, Pat. No. 5,067,903. This application Oct. 14, 1992, Ser. No. 961,109
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—36 **10 Claims**



1. An implantable stimulating device for stimulating a patient's heart, comprising:

a battery;

a pulse generator, coupled to the battery, for generating stimulating pulses to the patient's heart;

a hermetically sealed housing for housing the battery and the pulse generator, the housing including a plurality of feedthrough terminal pins for connecting the pulse generator to the exterior of the housing;

a plurality of connector blocks disposed external to the housing for securing at least one stimulation lead thereto;

a plurality of conductor ribbons formed as a set in a predetermined number, shape and spacing, the conductor ribbons extending between respective ones of the connector blocks and the feedthrough terminal pins; and

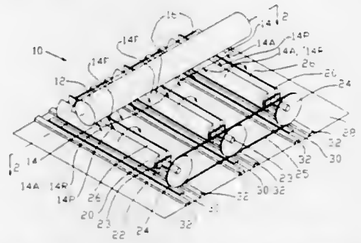
encapsulation means attached to the housing, the encapsulation means having the plurality of connector blocks and the plurality of conductor ribbons encapsulated therein, the encapsulation means further having at least one channel for receiving at least one stimulating lead therein.

5,282,842

METHOD OF INDUCING TANNING BY PULSED LIGHT AND APPARATUS TO EFFECT SAME

David G. Changaris, 1132 Rostrevor Clr., Louisville, Ky. 40205

Filed Mar. 27, 1991, Ser. No. 675,689
Int. Cl.[5] A61N *5/06*
U.S. Cl. 607—88 **41 Claims**



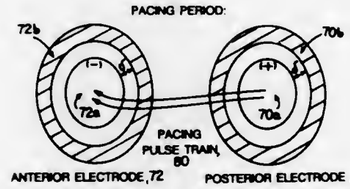
1. A method of tanning skin, said method comprising: exposing the skin to radiation energy from at least one radiation source for a plurality of pulse cycle periods, each of said plurality of pulse cycle periods having a total cycle time which includes a dark time during which the skin is exposed to negligible radiation energy, said dark time being more than one half of said total cycle time, said total cycle time for each of said plurality of pulse cycle periods having an equal time duration, each of said plurality of pulse cycle periods including at least one discrete pulse of radiation energy, wherein the at least one radiation source radiates energy selected from at least one wave length of between about 250 and 400 nanometers and wherein the skin is subjected to radiation energy for a selected number of pulse cycle periods per second.

5,282,843

ELECTRODES AND METHOD FOR TRANSCUTANEOUS CARDIAC PACING

Gary A. Freeman, Newton Center, Mass., assignor to ZMD Corporation, Wilmington, Del.

Division of Ser. No. 537,069, Jun. 12, 1990, Pat. No. 5,205,284. This application Jan. 9, 1992, Ser. No. 819,344
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—115 **1 Claim**



1. A method of transcutaneously pacing a patient's heart using two electrodes connected to a source of electrical pacing stimuli, at least one of said electrodes comprising

a first electrical terminal for making a connection to an external source of electrical current,

a second electrical terminal for making a connection to an external source of electrical current,

a first skin-contacting region electrically connected to said first terminal of the electrode, and

a second skin-contacting region electrically insulated from said first region and spaced laterally from said first region and electrically connected to said second terminal of the electrode,

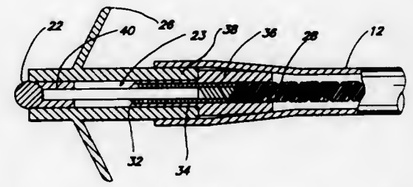
wherein said electrodes are placed on a patient to direct said electrical pacing stimuli to the patient's heart.

5,282,844

HIGH IMPEDANCE, LOW POLARIZATION, LOW THRESHOLD MINIATURE STERIOD ELUTING PACING LEAD ELECTRODES

Kenneth B. Stokes, Minneapolis, Minn., and Fred Lindemans, Lt Limbricht, Netherlands, assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 759,191, Sep. 10, 1991, abandoned, which is a continuation of Ser. No. 539,102, Jun. 15, 1990, abandoned. This application May 18, 1992, Ser. No. 887,560
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—120 **24 Claims**



1. A body implantable lead for stimulation and sensing of a desired body tissue site, comprising:

a. an electrical conductor having a proximal end and a distal end;

b. insulating sheath means for covering said conductor between said proximal and distal ends thereof;

c. electrical connector means coupled to said proximal end of said conductor for electrically connecting said lead to a pulse generator;

d. electrode means electrically coupled to said distal end of said electrical conductor for conducting electrical energy to and from said body tissue site desired to be stimulated and sensed, said electrode means having an exposed macroscopic surface area of less than 3.0 mm^2 exposed to body fluids and tissue;

e. wherein said electrode means comprises a body of a porous metallic or other conductive material with high microscopic surface area in proportion to said exposed macroscopic surface area, mounted to a distal end of a conductive pin and extending radially from said conductive pin, a proximal end of said pin being coupled to said distal end of said electrical conductor; and

f. drug dispensing means mounted around said pin, proximal to said porous body, for storing a drug to be dispensed while allowing dispensing of said drug, through said porous body, to counter undesirable interactions between said lead and said body site.

5,282,845

MULTIPLE ELECTRODE DEPLOYABLE LEAD

Mary E. Bush; Craig E. Mar, both of Fremont, and Eric S. Fain, Menlo Park, all of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Oct. 1, 1990, Ser. No. 591,389
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—128 **33 Claims**

1. An implantable defibrillator lead which comprises:

a flexible, conductive lead member having proximal and

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distal and portions; a sheath enclosing said lead member in longitudinally slidable relation, whereby a distal end portion of said lead member is enclosed in said sheath in a first sliding position, and said distal end portion projects from the distal end of said sheath in a second sliding position, said distal end portion defining a plurality of separate,



curvilinear defibrillation electrodes which straighten to fit into said sheath in the first position, and which deploy laterally outwardly in a curved arrangement from the remainder of said lead in the second position, said electrodes each comprising a coiled metal wire having an axis extending in a curvilinear direction.

5,282,846

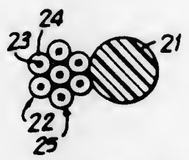
RAVEL-RESISTANT, SELF-SUPPORTING WOVEN VASCULAR GRAFT

Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

Division of Ser. No. 573,947, Aug. 28, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 875,876

Int. Cl.[5] A61F *2/06*

U.S. Cl. 623—1 **9 Claims**



1. A method of preparing a tubular ravel-resistant self-supporting woven vascular graft, comprising:

weaving a plurality of warp yarns with a filling yarn into a tube, the filling yarn including a low melting temperature fusible component having a melting temperature lower than said warp yarns to bond to adjacent yarns when heat set, the filling yarn further including a stiffening component having a melting temperature higher than said low melting temperature fusible component which is woven into the weave to render the tubular graft self-supporting; and

heat setting said graft to bond the fusible component in the filling yarn to warp yarns.

5,282,847

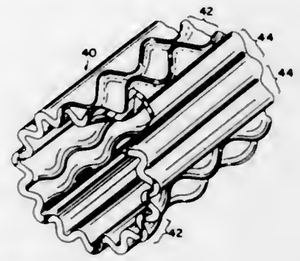
PROSTHETIC VASCULAR GRAFTS WITH A PLEATED STRUCTURE

Paul V. Trescony, Robbinsdale; Michael Wolf, Brooklyn Park; Richard L. Molacek, Maple Grove, and Elaine Lindell, Blaine, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 662,667, Feb. 28, 1991, abandoned. This application Jul. 15, 1992, Ser. No. 914,648

Int. Cl.[5] A61F *2/06*

U.S. Cl. 623—1 **6 Claims**



1. A vascular graft comprising:

(a) a tubular wall structure having a thickness;

(b) longitudinally extending pleats on the tubular wall structure, the pleats comprised of a biocompatible polymer capable of responding flexurally to changes in blood pressure by providing the tubular wall structure with a first cross sectional area when maintained at a low normal physiological blood pressure, and a second, greater cross sectional area when maintained at a high normal physiological blood pressure, while maintaining a constant interior wall perimeter for the tubular wall structure and wherein a portion of the pleats are corrugated in the longitudinal direction of the tubular wall structure and wherein two of said corrugated pleats are separated by a cluster of at least three uncorrugated pleats.

5,282,848

SELF-SUPPORTING WOVEN VASCULAR GRAFT

Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 573,932, Aug. 28, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 49,230

Int. Cl.[5] A61P *2/06*

U.S. Cl. 623—1 **42 Claims**



1. A self-supporting tubular woven synthetic vascular graft having a continuous uniform surface comprising:

a filling yarn including a non-fusible stiffening component woven together with multifilament yarn throughout the weave, the stiffening component to provide radial burst strength, dimensional stability and radial rigidity sufficient to maintain the lumen of the tubular structure open.

5,282,849

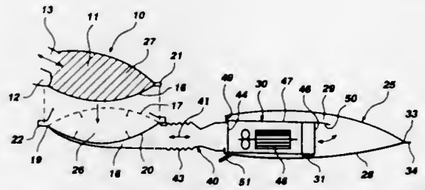
VENTRICLE ASSIST DEVICE WITH VOLUME DISPLACEMENT CHAMBER

Willem J. Kolff, Salt Lake City, Utah; Yvo M. Smulders, Amsterdam, Netherlands; Paul D. Diegel, Sandy, Utah; James W. Long, Jr., Salt Lake City, Utah; Donald B. Olsen, Salt Lake City, Utah, and John W. Holfert, Bountiful, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Dec. 19, 1991, Ser. No. 811,455

Int. Cl.[5] A61M *1/10, 1/362;* **F04B** *17/00*

U.S. Cl. 623—3 **21 Claims**



1. A ventricle assist device for placement within a living body and including a self-contained drive motor for generating pumping action with respect to a hydraulic pumping fluid which is reversibly transferred to and from a pumping chamber for effecting blood transfer, said device comprising:

a ventricle comprised of a ventricle housing and an internal pumping membrane which divides the ventricle into a blood chamber and a pumping chamber, said blood chamber including inlet and outlet means for enabling unidirectional blood flow to and from the ventricle;

a separate volume displacement chamber structured as a collapsible bag without a pumping diaphragm and having sufficient fluid volume to receive pumping fluid from the pumping chamber when the blood chamber is in diastole and the pumping chamber is at minimal volume;

interconnect means coupled between the pumping chamber and the volume displacement chamber and defining a fluid flow channel for delivery of the pumping fluid between the displacement chamber and the pumping chamber of the ventricle; and

a fluid pump and drive motor positioned at the interconnect means and being capable of reversible pumping action to transfer hydraulic fluid through the interconnect means and between the displacement chamber and the pumping chamber, said fluid pump and drive motor being positioned substantially within the volume displacement chamber such that a substantial exterior portion of the fluid pump and drive motor is contacted by the pumping fluid contained within the volume displacement chamber.

5,282,850

ARTIFICIAL HEART COMPONENTS WITH WEAR RESISTANT COATINGS OF REDUCED THROMBOGENICITY

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew Richards, Inc., Memphis, Tenn.

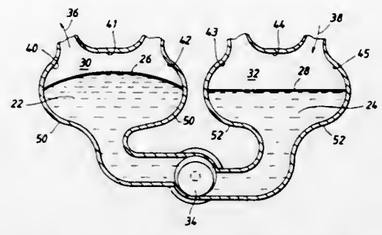
Continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Jul. 27, 1992, Ser. No. 919,932

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] A61F *2/02;* **A61M** *1/10;* **A01N** *1/02;* **A61J** *1/05*

U.S. Cl. 623—3 **12 Claims**

1. In a ventricular assist device including components with surfaces subject to mechanical wear and microfretting wear wherein improved components comprise: a substrate metal selected from zirconium and alloys of zirconium, coated with a hard, wear resistant biocompatible coating of thickness from about 1 to 5 microns, the coating being selected from the group



consisting of blue-black, black zirconium oxides and zirconium nitride, the coating being tightly adherent to the substrate metal and covering the surfaces subject to wear.

5,282,851

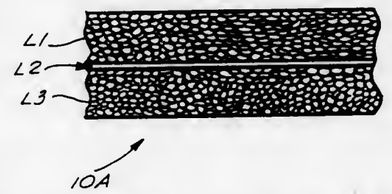
INTRAOCULAR PROSTHESES

Jean Jacob-LaBarre, 135 Arlington Dr., Metairie, La. 70001

Continuation-in-part of Ser. No. 502,458, Mar. 30, 1990, which is a continuation-in-part of Ser. No. 493,915, Mar. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,887, Aug. 9, 1989, Pat. No. 4,932,968, which is a continuation-in-part of Ser. No. 70,783, Jul. 7, 1987, Pat. No. 4,865,601. This application Feb. 18, 1992, Ser. No. 837,483

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **9 Claims**



1. An ocular prosthesis for use as an implant within the eye socket region of a patient, within the patient's eye or on the outer surface of the patient's eye, comprising:

a) a prosthesis body that is positioned during use in the eye socket region of a patient's body, said region being exposed to the external environment and to the threat of pathogen travel from outside the patient's body;

b) the prosthesis body including tissue attachment means that includes a non-resorbable, non-dissolving porous polymer material with a port size greater than 20 microns, and wherein the pores of the porous polymer material form a tissue attachment site on a first outer surface of the prosthesis that allows tissue ingrowth by surrounding ocular tissue; and

c) the prosthesis body including a solid or closed-pore polymer layer coextensive with the tissue attachment site that forms a barrier against generally transverse fluid or pathogen travel from a second outer surface which opposes said first outer surface, to the tissue attachment site.

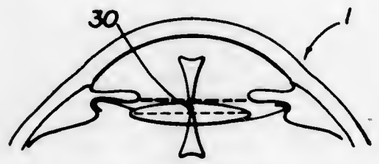
VOL 1159 ISS 1 FE 1 1994 UMI

5,282,852

METHOD OF CALCULATING THE REQUIRED POWER OF AN INTRAOCULAR LENS

Thomas G. Capetan, Corona Del Mar, and T. Scott Rowe, Mission Viejo, both of Calif., assignors to Alcon Surgical, Inc., Fort Worth, Tex.

Filed Sep. 2, 1992, Ser. No. 939,213
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 3 Claims



1. A method of calculating a required power of an intraocular lens to be implanted in an eye, comprising the steps of:
a) measuring an axial length, a preoperative anterior chamber depth and a natural lens thickness of the eye;
b) measuring and averaging a corneal radii of curvature along a first axis and along a second axis normal to the first axis;
c) calculating a lens locator constant from the axial length and the corneal radii of curvature using a quadratic surface equation;
d) determining a postoperative anterior chamber depth using the preoperative anterior chamber depth, the natural lens thickness and the lens locator constant; and
e) calculating the required power of the intraocular lens and a predicted postoperative refraction using the postoperative anterior chamber depth.

5,282,853

INTRAOCULAR LENS WITH RESILIENT HAPTICS

Charles H. Sherwood, Upland, and Shiao H. Chang, Arcadia, both of Calif., assignors to Iolab Corporation, Claremont, Calif.

Filed Sep. 29, 1992, Ser. No. 953,406
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 12 Claims



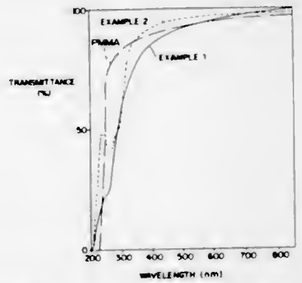
1. An improved intraocular lens having a central lens body and at least one filamentary haptic attached to and extending outwardly from the periphery of said lens body, the improvement wherein the filamentary haptic is composed of a continuous matrix material interspersed with a toughening amount of discrete particles of a multistage, sequentially-produced elastomeric polymer, wherein each of said discrete particles has an inner core layer of a glassy polymer, an intermediate layer of an elastomeric polymer, and an outer shell layer of a glassy polymer which is compatible with said continuous matrix material.

5,282,854

FLUORINE-CONTAINING BLOCK COPOLYMER AND ARTIFICIAL LENS COMPRISING THE SAME

Toshiharu Yagi; Nobuhiko Tsuda; Tauyoshi Noguchi; Kohsaku Sakaguchi; Yoshito Tanaka, and Masayoshi Tatemoto, all of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation of Ser. No. 891,915, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 595,475, Oct. 11, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 959,426
Claims priority, application Japan, Oct. 11, 1989, 1-265982
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 7 Claims



1. An artificial lens sized and configured for insertion into the human eye which comprises a fluorine-containing block copolymer comprising at least one soft segment which comprises chlorotrifluoroethylene and vinylidene fluoride and at least one hard segment which comprises a fluorine-containing crystalline polymer.

5,282,855

VAULTED INTRAOCULAR LENS HAVING CURVED SLANTED HAPTIC

Joseph A. Bragg, Milton, W. Va., assignor to Alcon Surgical, Inc., Fort Worth, Tex.

Continuation of Ser. No. 789,376, Nov. 5, 1991, Pat. No. 5,160,345, which is a continuation of Ser. No. 591,226, Oct. 1, 1992, abandoned. This application Nov. 2, 1992, Ser. No. 971,021
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 7 Claims



1. An intraocular lens comprising:
a lens body having an optical axis, two surfaces intersecting said optical axis and a periphery, at least a portion of said periphery lying in a first plane perpendicular to said optical axis;

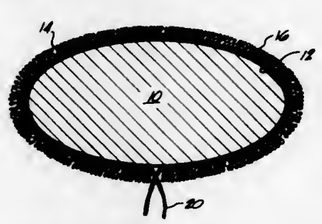
at least one filamentous haptic attached to said lens body at a point of attachment on said periphery;
said at least one haptic having a proximal segment adjacent to said attachment point, a medial segment attached to and continuous with said proximal segment and a distal segment attached to and continuous with said medial segment and having a distal end,
said at least one haptic projecting radially and circumferentially from said point of attachment along a curvilinear path in an unstressed state in a space adjacent said first plane to a maximum distance from said optical axis, said curvilinear path in said space defined such that a tangent to said curvilinear path makes an angle with said first plane which monotonically decreases as the haptic extends from said point of attachment to said distal segment, said tangent being parallel to said first plane when contacting said distal end;
said distal end lying at said maximum distance from said optical axis and constituting a tissue contacting element of said at least one haptic,
said tissue-contacting element contacting a second plane parallel to said first plane and displaced from it along said optical axis, and
at least said medial segment of said haptic traversing a path concave toward said first plane, and avoiding intersection with said second plane.

5,282,856

IMPLANTABLE PROSTHETIC DEVICE

Walter J. Ledergerber, 29502 Anna Maria, Laguna Niguel, Calif. 92677

Filed Dec. 22, 1987, Ser. No. 137,871
Int. Cl.[5] A61F 2/12
U.S. Cl. 623—8 4 Claims



1. A covering for an implant comprising,
an exterior surface which is expandable and which substantially covers the implant formed from a plurality of adjacent PTEEe tubes, said tubes having a predetermined length and having an unsevered annular end and a plurality of lengthwise slits around said tube to form a plurality of projections extending from the unsevered annular end to an opposite end, and
a stretch fabric backing to which the unsevered ends of said tubes are sewn.

5,282,857

GEL-FILLED IMPLANTS

Larry C. Perry, 3333 Country Ridge Dr., Antioch, Tenn. 37013, and G. Patrick Maxwell, 4415 Gerald Pl., Nashville, both of Tenn. 37205

Filed Apr. 13, 1992, Ser. No. 867,417
Int. Cl.[5] A61F 2/12, 2/02
U.S. Cl. 623—8 16 Claims

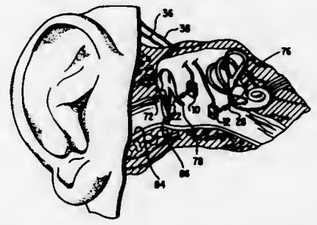
1. A sealed implantable prosthesis for implantation into soft tissue for replacing or augmenting the tissues, comprising an outer envelope forming a hollow sealed shell defining an enclosed volume, said hollow shell being filled with a gel filler with predetermined density which is a mixture of water and of a cellulose derivative selected from the group consisting of methylcellulose, ethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, hydroxyethyl, ethylcellulose, sodium caroboxymethylcellulose, and sodium carboxymethyl, hydroxyethylcellulose and which is retained in said sealed shell to maintain constant its predetermined density.

5,282,858

HERMETICALLY SEALED IMPLANTABLE TRANSDUCER

Michael E. Bisch; Shafig A. Khuhro, both of St. Louis, Mo., and Paul DiCarlo, East Falmouth, Mass., assignors to American Cyanamid Company, Me.

Filed Jun. 17, 1991, Ser. No. 716,584
Int. Cl.[5] A61F 2/18; A61N 1/00; H04R 25/00
U.S. Cl. 623—10 14 Claims



1. A hermetically sealed mechanism for an implantable hearing aid system, said mechanism comprising:
a casing defining an interior space, said casing defining an aperture therethough;
a movable member having a proximal end portion, an intermediate portion, and a distal end portion, said proximal end portion of said movable member being movably disposed within said interior space of said casing, said intermediate portion of said movable member being movably disposed through said aperture defined through said casing, and said distal end portion of said movable member being constructed to be coupled to a predetermined portion of human auditory system; and
a bellows member having a first end portion, a second end portion, and a side wall, said side wall having a plurality of corrugations formed therein to permit longitudinal movement of said first end portion of said bellows member relative to said second end portion of said bellows member, said first end portion of said bellows member being hermetically sealed to said casing about said aperture defined therethrough and said second end portion of said bellows member being hermetically sealed to said movable member at a point external of said casing, whereby said bellows member surrounds a segment of said movable member, whereby said bellows member hermetically seals said interior space of said casing and said segment of said movable member from an ambient of said casing; whereby said distal end portion of said movable member is external of said casing and said bellows member, and whereby vibrational energy imparted to one end portion of said movable member is also imparted to an opposite end portion of said movable member.

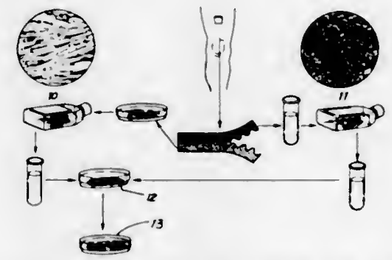
VOL 1159 ISS 1 FE 1 1994 UMI

5,282,859

COMPOSITE LIVING SKIN EQUIVALENTS

Mark Eisenberg, 6 Lord Howe Street, Dover Heights, NSW 2030, Australia

PCT No. PCT/AU91/00160, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO91/16010, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 24, 1991, Ser. No. 777,419
Claims priority, application Australia, Apr. 24, 1990, PJ9819; Jan. 22, 1991, PK4302
Int. Cl.[5] A61F *2/02, 2/10, 2/00;* C12N *5/00*
U.S. Cl. 623—11 **11 Claims**



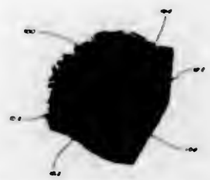
1. A composite living skin equivalent which comprises relative to a horizontal plane:
   a) a sponge first layer comprising a cross-linked collagen sponge, said first layer having upper and lower surface, said sponge containing cultured fibroblast cells therein,
   b) a second layer comprising a high purity non-porous collagen, said second layer having upper and lower surfaces, the lower surface thereof being in contact with the upper surface of said first layer, and
   c) a layer comprising cultured keratinocyte cells in contact with the upper surface of said non-porous collagen second layer.

5,282,861

OPEN CELL TANTALUM STRUCTURES FOR CANCELLOUS BONE IMPLANTS AND CELL AND TISSUE RECEPTORS

Richard B. Kaplan, Beverly Hills, Calif., assignor to Ultramet, Pacoima, Calif.

Filed Mar. 11, 1992, Ser. No. 850,118
Int. Cl.[5] A61F *2/28, 2/02, 2/54;* A01N *1/02*
U.S. Cl. 623—16 **18 Claims**



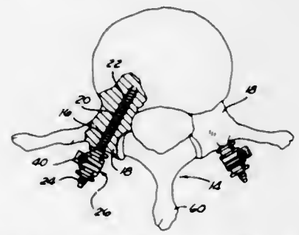
1. A cancellous bone substitute and cell and tissue reception material, including,
   a reticulated open cell substrate formed of a lightweight substantially rigid foam carbonaceous material having open spaces defined by an interconnecting network wherein said foam material has interconenected continuous channels, and
   a thin film of metallic material deposited onto the reticulated open cell substrate and covering substantially all of the interconnecting network to form a composite porous biomaterial creating a porous microstructure similar to that of natural cancellous bone.

5,282,862

SPINAL IMPLANT SYSTEM AND A METHOD FOR INSTALLING THE IMPLANT ONTO A VERTEBRAL COLUMN

Gregg S. Baker, Lake Forest, and Paul B. Hafeli, El Toro, both of Calif., assignors to Artifex Ltd., Newport Beach, Calif.

Filed Dec. 3, 1991, Ser. No. 802,009
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/44, 5/04*
U.S. Cl. 623—17 **20 Claims**



1. A spinal implant for stabilizing a vertebrae of a vertebral column, wherein the vertebral column has a curvature along at least one vertical axis and each vertebra has a pair of pedicles, comprising:
   at least two cylindrical clamps each having a first flange, and a second flange separated from said first flange by a slit, said clamps further having a first bore that extends through said first and second flanges, said first and second flanges both having cylindrical outer surfaces and a second bore essentially perpendicular to said first bore;
   a rod adapted to be inserted into and extend through said second bores;
   at least two screws, each said screw having a first threaded portion adapted to be attached to the pedicle of a vertebra and a second threaded portion adapted to extend through said first bore, each said screw further having a shoulder between said first and second threaded portions adapted to engage said cylindrical outer surface of said second flange of said clamp; and
   at least two nuts adapted to be threaded onto said second portion of said screws, each screw having one nut adapted to engage said outer cylindrical surface of said first flange of said clamp wherein said cylindrical clamps can rotate about an axis perpendicular to a longitudinal axis of said screw without interference between said cylindrical clamp and said shoulders and said nuts.

5,282,860

STENT TUBE FOR MEDICAL USE

Kiyotaka Matsuno, and Katsushi Watanabe, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,003
Claims priority, application Japan, Oct. 16, 1991, 3-266691
Int. Cl.[5] A61F *2/04*
U.S. Cl. 623—12 **9 Claims**

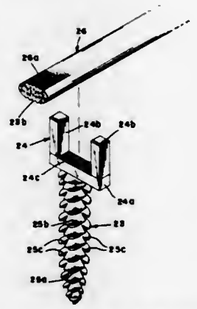
1. A stent tube for medical use which is placeable in a duct of a human being to provide a passage, said stent tube
   an outer tube formed of a resin;
   said outer tube having at least one flap formed thereon, as a raised cut area for providing a firm area of anchoring to an inner wall of a human body cavity;
   an inner tube formed of a fluorine-based resin that has a frictional resistance that inhibits deposition of a foreign matter thereon; and
   a mechanically reinforcing member positioned between the inner tube and the outer tube for mechanically protecting the inner tube from damage when the at least one flap is formed on the outer tube.

5,282,863

FLEXIBLE STABILIZATION SYSTEM FOR A VERTEBRAL COLUMN

Charles V. Burton, 148 W. Lake St., Excelsior, Minn. 55331, assignor to Charles V. Burton, Excelsior, Minn.

Continuation of Ser. No. 571,037, Aug. 21, 1990, abandoned, which is a continuation of Ser. No. 442,478, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 154,000, Feb. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 742,923, Jun. 10, 1985, Pat. No. 4,743,260. This application Jul. 24, 1992, Ser. No. 921,351
Int. Cl.[5] A61F *2/44, 5/04*
U.S. Cl. 623—17 **8 Claims**



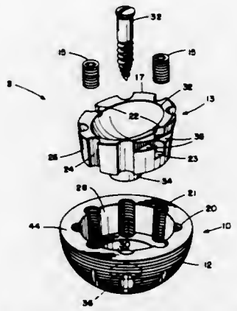
1. A spinal implant device for stabilizing a portion of a vertebral column without fusion, the vertebral column having first and second vertebrae which have posterior vertebral elements removed, the first vertebra being adjacent the second vertebra, each vertebra having a posterior vertebral element which when removed leaves first and second pedicles on each of the vertebra, the pedicles having a top surface, said device comprising:
   (a) a strong, plastic, biocompatible stabilization means having first and second ends to stabilize the vertebral column but flexible enough to provide at least limited normal movement of the vertebral column; and
   (b) anchoring means for securing said stabilization means to the pedicles, said anchoring means having means for fastening said first end of said stabilization means to said one of the top surface of the pedicles of the first posterior element and said second end of said stabilization means to said one of the top surface of the pedicles of the second posterior element, said anchoring means adapted to be driven into and secured into the top surfaces of the pedicles, wherein when secured said stabilization means stabilizes the vertebral column while still allowing for flexibility to that forces on the stabilization means are dissipated throughout, thereby reducing force concentration.

5,282,864

ACETABULAR PROSTHESIS HAVING A METAL SOCKET BEARING

Douglas G. Noiles, New Canaan, and Alfred F. DeCarlo, Jr., Stamford, both of Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Filed Feb. 19, 1992, Ser. No. 838,090
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—18 **20 Claims**



1. A prosthesis for use in forming an implantable ball and socket joint comprising:
   (a) a metal socket bearing having a cavity for receiving the ball of the ball and socket joint, said socket bearing having an external surface at least a portion of which comprises a male taper; and
   (b) a cup for fixation to bone, said cup having a cavity for receiving the metal socket bearing, said cavity having a surface at least a portion of which comprises a female taper for locking engagement with the male taper of the socket bearing,
   wherein said male and female tapers comprise a self-locking taper.

5,282,865

HUMERAL SHOULDER PROSTHESIS

Nicholas N. G. Dong, Little Falls, N.J., assignor to Osteonics Corp., Allendale, N.J.

Filed Jun. 22, 1992, Ser. No. 903,068
Int. Cl.[5] A61F *2/40*
U.S. Cl. 623—19 **12 Claims**

1. A modular humeral shoulder prosthesis for implant in a predetermined position in the natural humerus to replace the natural humeral head of a shoulder joint with a prosthetic implant, the humeral shoulder prosthesis comprising:
   a humeral head component including a humeral head member having a spherical bearing surface with a predetermined radius extending from an origin to the bearing surface, an undersurface extending in a first direction and including a central location, an elongate post integral with and projecting in a given direction from the humeral head member, the given direction making a first acute angle with the first direction, the post extending along an axis which intersects the undersurface at a further location spaced laterally away from the central location, the post being integral with the humeral head member at said further location, and a post portion on the post; and
   a humeral stem component including a platform having an upper surface, a stem integral with and depending from the platform, the stem extending along a longitudinal axis for alignment generally longitudinally along the natural humerus, the upper surface extending in a second direction making a second acute angle with the longitudinal axis, and an elongate recess in the stem, the recess extending along the stem and including at least a recess portion

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complementary to the post portion for reception of the post portion within the recess portion in an integrated coupled assembly wherein the humeral head component is affixed to the humeral stem component with the undersurface of the humeral head member confronting the upper surface of the platform when the bearing surface is in the predetermined position to replace the natural humeral head.



5,282,866

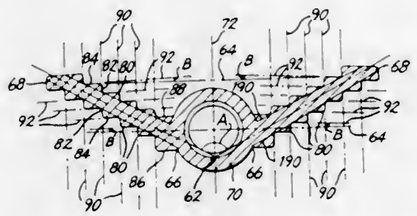
PROSTHETIC KNEE TIBIAL COMPONENT WITH AXIALLY RIBBED KEEL AND APPARATUS FOR EFFECTING IMPLANT

Robert C. Cohen, Rockaway Township, Morris County; Robert G. Averill, Ringwood, and Scott V. Cron, Rahway, all of N.J., assignors to Osteonics Corp., Allendale, N.J.

Filed Feb. 12, 1992, Ser. No. 834,675

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **13 Claims**



1. A tibial component for use in a prosthetic knee implant, the tibial component including a tibial tray having an upper surface for confronting the femur and a lower surface for engaging the proximal tibia, the tibial component comprising:

a keel projecting in an axial direction downwardly from a proximal end at the lower surface of the tibial tray to a distal end spaced away from the lower surface, the keel including a pair of flanges extending in the axial direction and establishing a generally V-shaped overall cross-sectional configuration in planes transverse to the axial direction, the V-shaped cross-sectional configuration having an apex located essentially centrally of the tribial tray along a medial-lateral direction;

the flanges each having an inner edge located adjacent the apex and an outer edge extending away from the apex in the medial-lateral direction and extending in a posterior direction from the inner edge toward the outer edge such that the flanges make an angle with one another for being directed toward relatively denser portions of the bone of the proximal tibia;

each flange having a plurality of ribs extending axially along the flange and spaced laterally from one another along the flange, each rib having an essentially planar first face oriented generally in an anterior-posterior direction and an essentially planar second face oriented generally in a direction transverse to the anterior-posterior direction.

5,282,867

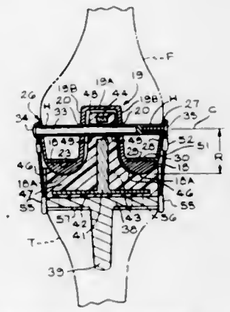
PROSTHETIC KNEE JOINT

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Filed May 29, 1992, Ser. No. 890,961

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **28 Claims**



1. A prosthetic knee joint comprising:

(a) a femoral component having a condylar portion defining a pair of spaced apart convex bearing surfaces, a housing having side walls between said bearing surfaces and pivot bar means extending from said side walls, said femoral component having a lateral collateral side and a medial collateral side;

(b) a tibial component including fixation means for affixing to a tibia, said tibial component having a pair of spaced apart concavities engaged by said convex bearing surfaces and a column between said concavities extending toward said femoral component between said side walls; and

(c) support means connected to said pivot bar means for connecting said femoral component to said tibial component, said support means permitting relative movement between said femoral component and said tibial component; said support means comprising synthetic prosthetic ligament means on at least one of said collateral sides having a first end and a second end and having means for joining said first end to said pivot bar and said second end to said tibial component.

5,282,868

PROSTHETIC ARRANGEMENT FOR A COMPLEX JOINT, ESPECIALLY KNEE JOINT

André Bahler, Kapfsteig 44, CH-8032 Zurich, Switzerland

Filed Jun. 15, 1992, Ser. No. 898,141

Claims priority, application Switzerland, Jun. 17, 1991, 01797/91; Jun. 17, 1991, 01798/91

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **23 Claims**

1. A prosthetic joint for replacement of a natural joint, especially a prosthesis for a knee joint, having

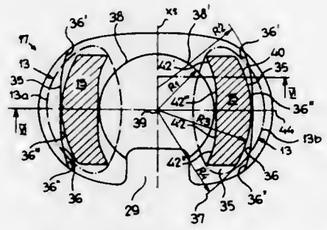
a first prosthetic part (**11**, **1611**) including a bone attachment portion (**11***a*) and a condylar portion (**19**, **1621**);

a second prosthetic part (**17**, **23**) formed with an essentially planar sliding surface (**24**) and including a bone attachment means (**27**, **1327**);

an intermediate part (**13**, **13***a*, **13***b*) located between said first and second prosthetic parts,

said intermediate part including a bearing surface (**21**) on one side thereof shaped and dimensioned for cooperation with said condylar portion (**19**, **1621**),

first curved guide means (**15**, **1235***a*, **1235***b*, **1413***a*, **1413***b*, **1615**) located on said intermediate part (**13**, **13***a*, **13***b*) at a side thereof opposite to said one side having said bearing surface (**21**);



second curved guide means (**35**, **1215***a*, **1215***b*, **1435**, **1835**) located on said second prosthetic part (**17**, **23**) at a side thereof facing said first guide means, and arranged for cooperation with said first guide means,

one of said guide means comprising a groove extending in a substantially anterior-posterior direction and the other of said guide means comprising a projecting coupling portion located in said groove,

said groove being formed with widened expanded regions, widening from a central region, both in anterior as well as posterior direction, to permit sliding movement as well as limited rotary movement of said projecting coupling portion within said groove.

5,282,869

ARTIFICIAL KNEE JOINT

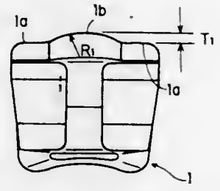
Hideyuki Miyajima, Kyoto, and Toyoji Ueo, Matsue, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 29, 1992, Ser. No. 953,752

Claims priority, application Japan, Oct. 24, 1990, 2-286596

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **6 Claims**



1. An artificial knee joint comprising:

a femoral component to be secured to a distal portion of a femur, said femoral component having a femoral sliding surface and a convex load bearing surface provided in a rear central section of the femoral component and protruding beyond the femoral sliding surface;

a tibial component to be secured to a proximal portion of a tibia, said tibial component having a tibial sliding surface for sliding engagement with said femoral sliding surface at a contact point and a concave load bearing surface provided in a rear central section of the tibial sliding surface for sliding engagement with the convex load bearing surface when said artificial knee joint is bent deeper than a predetermined flex angle from full extension of said artificial knee joint wherein said concave load bearing surface coacts with said convex load bearing surface protruding beyond the femoral proximal portion to move the contact point toward the rear edge of said tibial sliding surface as said knee joint is bent deeper than the predetermined flex angle.

5,282,870

ARTIFICIAL KNEE JOINT

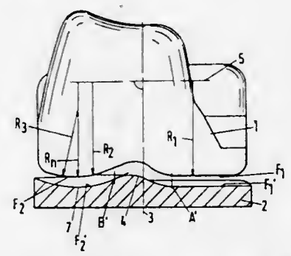
Walter Moser, Herrenschwanden, and Roland Willi, Neftenbach, both of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Nov. 13, 1992, Ser. No. 976,234

Claims priority, application Switzerland, Jan. 14, 1992, 00088/92

Int. Cl.[5] A61F *2/38, 2/30*

U.S. Cl. 623—20 **7 Claims**



1. An artificial knee joint comprising a convex femoral part which comprises smaller radii of curvature as flexure increases (**1**) and a tibial part (**2**), which performs a rolling and sliding movement, the femoral part (**1**) and the tibial part (**2**) each comprising a lateral guide surface (F_2, F_2') and a medial guide surface (F_1, F_1'), the medial guide surface (F_1') of the tibial part forming a flat guide plane, which at different flex angles abuts cylindrical guide surface (F_1) of the femoral part with line contact, the lateral guide surface (F_2') of the tibial part being trapped by a lateral condyle with different flex angles in a frontal plane through line contact along circular segments having a common radius of curvature (R_3) and forming a track (**7**) in a plane parallel to the medial guide surface (F_1'), a magnitude of the radius of curvature (R_3) being between a smallest one and a largest one of radii of curvature (R_n) of the lateral guide surface (F_2) in a sagittal plane, with (R_n) being a radius which extends in the track (**7**), and including a transition zone (**4**) extending in a transversal direction between the lateral and medial guide surfaces (F_2', F_1') of the tibial part (**2**) with a gradient from an end point (B') of the lateral guide surface to an end point (A') of the medial guide surface forming a continually changing type of eminentia therebetween.

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5,282,871

SPINNING LUBRICANT COMPOSITION FOR ACRYLIC FIBER

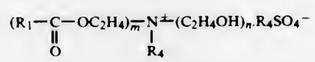
Koichi Yamane; Masayuki Abe, both of Wakayama; Masaki Itabashi, Chiba, all of Japan, and Jose S. Comas, Barcelona, Spain, assignors to KAO Corporation, Tokyo, Japan

Filed Aug. 20, 1990, Ser. No. 569,974
Claims priority, application Japan, Sep. 7, 1989, 1-232085
Int. Cl.[5] D06M *15/00*
U.S. Cl. 8—155.6 8 Claims

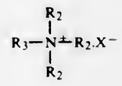
1. A spinning lubricant composition for an acrylic fiber, which comprises:

(a) at least one wax having a melting point of 30° to 130° C. selected from the group consisting of ester wax, paraffin wax, polyethylene wax and polyethylene oxide wax, and

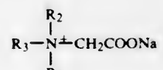
(b) at least one surfactant, being cationic or amphoteric, selected from the group consisting of surfactants having the respective formulae (1) to (5):



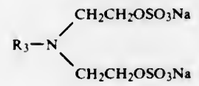
(1)



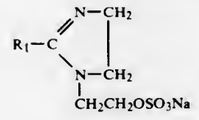
(2)



(3)



(4)



(5)

where m and n represent numbers satisfying the relations of m/n=0.5 to 2.0 and m+n=3; R_1 represents a C_7 to C_{21} straight-chain or branched alkyl or alkenyl group; R_2 represents independently a methyl group, an ethyl group, a hydroxyethyl group or a hydroxypropyl group; R_3 represents a C_8 to C_{22} straight-chain or branched alkyl or alkenyl group; R_4 represents a methyl group or an ethyl group; and X represents a halogen ion, a C_1 to C_9 carboxylic or hydroxycarboxylic acid ion, a C_1 to C_{22} alkyl phosphate ion or a C_1 to C_4 monoalkyl sulfate ion; wherein the composition contains 10 to 80 weight % of component (a) and 3 to 50 weight % of component (b), based on the total solids content.

5. A method for spinning acrylic fiber, which comprises applying the spinning lubricant composition of claim 1 or claim 2 to an acrylic fiber, and spinning said acrylic fiber with said spinning lubricant composition.

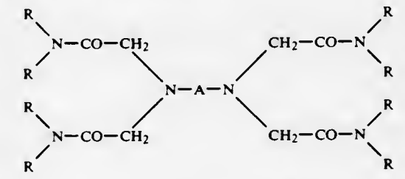
5,282,872

FUEL FOR OTTO-CYCLE ENGINES

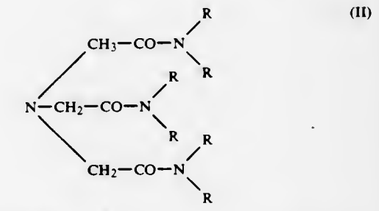
Knut Oppenlaender, Ludwigshafen; Brigitte Wegner, Speyer; Juergen Mohr, Gruenstadt; Roland Schwen, Friedelsheim; Klaus Barthold, Mannheim, and Juergen Thomas, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 638,578, Jan. 8, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,958
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1990, 4000539
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—403 7 Claims

1. A fuel for Otto-cycle engines containing, in a detergent effective concentration, an amide of an aminoalkylene polycarboxylic acid of formula I or II



(I)

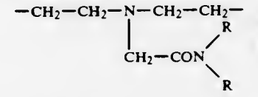


(II)

or a mixture thereof,

or a corresponding amide/ammonium salt of said polycarboxylic, acid wherein one or more, but not all of the amide groups are in the form of a dialkylammonium carboxylate group, in which

A is a straight-chain or branched-chain alkylene radical of from 2 to 6 carbon atoms or a radical of the formula



and R denotes a straight-chain C_{12}–C_{24}-alkyl radical.

5,282,873

ARTIFICIAL GROUND

Sigenobu Watari, 868-77, Imasato, Kawanakajima-machi, Nagano-shi, Nagano 381-22, Japan

Continuation of Ser. No. 653,966, Feb. 12, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,612
Claims priority, application Japan, May 18, 1990, 2-129860
Int. Cl.[5] A23K *1/00*; A01G *31/00*
U.S. Cl. 47—1.01 22 Claims

1. An artificial ground system comprising:

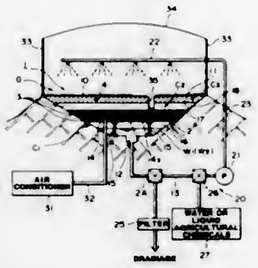
a collection layer including an inclined sheet member capable of collecting liquid agricultural chemicals or water,

a soil supporting layer including a water-permeable soil supporting member which is disposed on said collection layer, and

an artificial soil layer which includes a culture ground from

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mushrooms subsequent to mushroom cultivation containing crushed corncobs as its main ingredient in which a



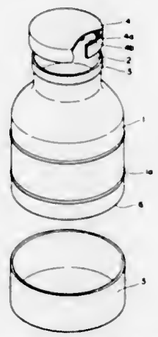
Myotrophy fungi is provided after mushrooms are cultivated and which is provided on said soil supporting layer.

5,282,874

CULTIVATION VESSEL AND CULTIVATION METHOD OF EDIBLE FUNGI

Nobuyuki Tsukagoshi, O-aza Yamazaki 331, Okabemachi, Osato-gun, Saitama, Japan

Filed Mar. 14, 1988, Ser. No. 167,529
Int. Cl.[5] A01G *1/04*
U.S. Cl. 47—1.1 **7 Claims**



1. A cultivation vessel for fungi, comprising: a vessel body having top and bottom open ends each terminating in a peripheral rim, the open bottom end adapted to receive a culture medium on which a mushroom spawn is inoculated to spread and culture the hypha, top and bottom caps detachably connectable to the respective top and bottom open ends to cover the same, each of said caps having means for spacing the inner cover surface thereof from the peripheral rim of its corresponding open end of the vessel.

5,282,875

HIGH DENSITY SOL-GEL ALUMINA-BASED ABRASIVE VITREOUS BONDED GRINDING WHEEL

William P. Wood, Golden Valley, Minn., and Soo C. Yoon, Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio and Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 853,644, Mar. 18, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 44,914
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—298 **12 Claims**

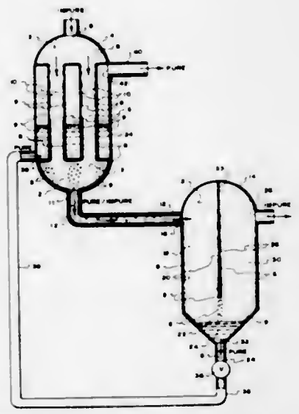
1. A vitreous bonded abrasive article having enhanced G-ratio grinding performance comprising (a) high density sol-gel alumina-based abrasive grain comprised of alpha alumina and modifier, and (b) a vitreous bond phase binding together the abrasive grains, wherein said high density sol-gel alumina-based abrasive grain comprises by weight on an oxide basis, 88 to 99 parts alumina, 0.01 to 6 parts magnesia, 0.01 to 10 parts yttria, 0.01 to 6 parts lanthanum oxide and 0.01 to 6 parts neodymium oxide, wherein the minimum combined amount of yttria, lanthanum oxide, and neodymium oxide is at least 0.1 part.

5,282,876

INVERSE FLASH STEAM PURIFIER

Gary L. Murphy, Camarillo; Robert C. Lovo, Fraser, both of Calif., and Sanjoy Banerjee, Klosters, Switzerland, assignors to The United States of America as represented by The Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1990, Ser. No. 560,395
Int. Cl.[5] B01D *47/05*
U.S. Cl. 95—288 **2 Claims**



1. A method for removing CO_2 and other non-condensible gases from steam, comprising the steps of:
a) cooling a portion of impure feed steam to form a pure liquid condensate; then
b) separating the pure liquid condensate from the impure feed steam; then
c) accumulating said pure liquid condensate; then
d) controlling the flow rate of said pure liquid condensate; then
e) reheating said pure liquid condensate to form steam free of CO_2 and other non-condensible gases.

5,282,877

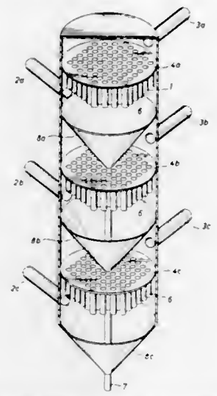
FILTRATION DEVICE

Phillip E. Unger; Petrus J. A. Tijm, and Hendrik A. Dirkse, all of The Hague, Netherlands, assignors to Shell Oil Co., Houston, Tex.

Filed May 11, 1993, Ser. No. 60,775
Claims priority, application European Pat. Off., May 18, 1992, 92201425
Int. Cl.[5] B01D *46/24*
U.S. Cl. 55—484 **5 Claims**

1. A filter apparatus for removing particulate solids from particulate-carrying fluid comprising:
(a) an elongated vessel having a plurality of particulate-carrying fluid inlet means and a plurality of separate fluid outlet means, through which particulate-carrying fluid enters the vessel and filtered fluid leaves the vessel;

(b) particulate outlet means through which particulate solids leave the vessel;
(c) a plurality of vertically spaced filter assemblies comprising tube sheets supporting a plurality of filter elements, the



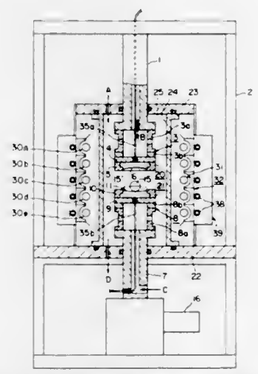
tube sheets being attached to the inner wall thereby forming compartments; and
(d) the vessel additionally containing a tiered conical particulate sluicing system to centralize and concentrate the particulates leaving the vessel.

5,282,878

APPARATUS FOR MOLDING OPTICAL GLASS ELEMENTS

Yoshizo Komiyama, Gotenba; Fumio Arai, Numazu; Yoshiyasu Toyama, Numazu; Yutaka Hasegawa, Numazu, and Tetsuya Tanioka, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 875,256
Claims priority, application Japan, Apr. 30, 1991, 3-126786
Int. Cl.[5] C03B *23/00*
U.S. Cl. 65—162 **4 Claims**



1. An apparatus for molding an optical glass element comprising:
a molding structure which includes upper and lower molds;
means for moving in a vertical direction at least one of said molds;
a plurality of infrared ray lamps which are surrounding said molding structure for heating said molding structure and a glass blank interposed between said upper and lower molds;
means for generating an output which is based on the temperature of said upper and lower molds; and
control means for controlling the temperature of said molding structure by adjusting electrical inputs to said infrared ray lamps on the basis of said output temperature of the temperature detecting means.

5,282,879

CONTINUOUS PROCESS FOR THE PREPARATION OF FERTILIZERS FROM ANIMAL WASTE

Celeste Baccarani, Ravenna, Italy, assignor to Enichem Agricoltura S.P.A., Palermo, Italy

Filed Feb. 12, 1992, Ser. No. 833,788
Claims priority, application Italy, Feb. 13, 1991, 000376 A/91
Int. Cl.[5] C05F *3/00, 9/04, 17/00*
U.S. Cl. 71—10 **4 Claims**

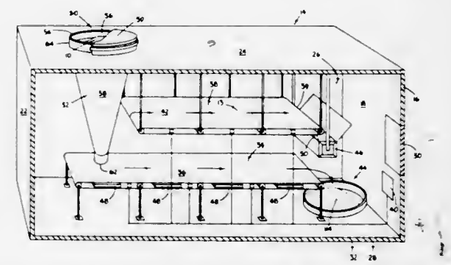
1. A continuous process for the preparation of fertilizers from animal waste, consisting of:
a) subjecting said waste to anaerobic biological fermentation, for a period sufficient to reduce the content of biodegradable organic substance to values, expressed as BOD_5, of between 300 and 2,000;
b) treating the aqueous suspension, resulting from step a), at temperatures ranging from 20° C. to 70° C., with HNO_3 up to a pH of 1-2, for periods of 30–60 minutes to obtain a ratio available P_2O_5/total P_2O_5 of between 87% and 97% in suspension;
c) adding 35% by weight H_2O_2 to a H_2O_2 concentration in the aqueous suspension of 100–100,000 ppm; and
d) treating the aqueous suspension of step c) with calcium hydroxide in such quantities as to prepare a suspension having a pH of 6.5–7 and a S.A.R. index lower than 6.

5,282,880

LOW PRESSURE PLASMA METAL EXTRACTION

Larry K. Olson, 412 S. Gilman, Litchfield, Minn. 55355

Filed Sep. 15, 1992, Ser. No. 945,096
Int. Cl.[5] C22B *21/00*
U.S. Cl. 75—10.19 **57 Claims**



1. A process for extracting metal from ore, comprising the steps of:
creating a reduced pressure environment which contains a reactionable amount of a reactive gas;
generating a plasma within the reduced pressure environment;
exposing the ore to the plasma within the reduced pressure environment such that the reactive gas chemically reacts with the metal to form salt; and
extracting the salt from the ore.

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5,282,881

SMELTING OF METALLURGICAL WASTE MATERIALS CONTAINING IRON COMPOUNDS AND TOXIC ELEMENTS

Brian R. Baldock, Skye; John M. Floyd, Upper Beaconsfield; Brian W. Lightfoot, Ermerald, and Kenneth R. Robilliard, Upwey, all of Australia, assignors to Ausmelt Pty. Ltd., Australia

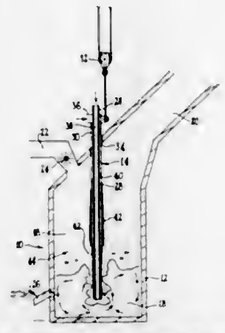
PCT No. PCT/AU90/00365, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/02824, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 24, 1989, Ser. No. 835,998

Claims priority, application Australia, Aug. 24, 1989, PJ5948

Int. Cl.[5] C21B *11/08*

U.S. Cl. 75—500 **25 Claims**



1. A process for smelting a metallurgical waste material in a furnace, said waste material containing: at least one iron compound, at least one heavy metal, and at least one toxic element, the at least one heavy metal including at least one of lead, zinc and cadmium and the at least one toxic element including at least one of arsenic, antimony and bismuth, to produce a slag product having a reduced content of the at least one toxic element and a reduced content of the at least one heavy metal, the steps of said process comprising:

a) introducing the waste material and a reductant into the furnace;

b) applying heat to the waste material and a reductant to form a melt under reducing conditions whereby volatilization of the heavy metal occurs and whereby a matte or speiss is formed in which the toxic element is stabilized;

c) introducing a fuel and an oxidizing gas into the melt by submerged injection so as to create at least one submerged oxidizing region in the melt; and,

d) circulating the melt such that the matte or speiss circulates to said at least one submerged oxidizing region and is oxidized thereby causing volatilization of the toxic element stabilized in said matter or speiss.

5,282,882

PROCESS FOR REFINING CRUDE MAGNESIUM

Paul-Henri Galvin, Le Fayet, and Jean-Pierre Bessaguet, Salanches, both of France, assignors to Pechiney Electrometallurgie, Courbevoie, France

Filed Jan. 21, 1993, Ser. No. 6,970

Claims priority, application France, Jan. 23, 1992, 92 00911

Int. Cl.[5] C22B *26/22*

U.S. Cl. 75—601 **7 Claims**

1. A process for treating liquid magnesium to remove dissolved calcium and silicon therefrom, comprising the steps of:

adding to the liquid magnesium a divided metallic sulphide selected from the group consisting of iron and molybdenum sulphides, and agitating to improve contact between the liquid magnesium and sulphide, said adding causing the precipitation of calcium sulphide and intermetallic compounds containing silicon and iron or molybdenum; and

separating the calcium sulphide and intermetallic compounds from the liquid magnesium by decanting.

5,282,883

METHOD AND APPARATUS FOR THE HIGH-TEMPERATURE TREATMENT OF FINE-GRAINED SOLIDS IN A MELTING CYCLONE

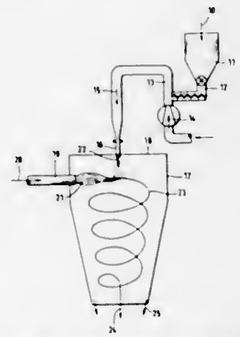
Kiranenda Chaudhuri, Troisdorf-Sieglar, and Gerhard Melcher, Cologne, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 11, 1992, Ser. No. 881,438

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115348

Int. Cl.[5] C22B *15/00*

U.S. Cl. 75—639 **18 Claims**



1. A method for the high temperature treatment of particulate metal ore solids to provide molten products comprising the steps:

insufflating particulate metal ore concentrates into a vertical melting cyclone having a vertical central axis and an outer circumferential conical wall forming a chamber with an oxygen containing gas with said gas flowing in gas currents in the cyclone chamber and melting the ore in the gas currents of the cyclone forming molten ore from the ore concentrates with molten ore separating from gases in the cyclone;

burning a fuel in the chamber by a burner directed horizontally into the cyclone forming a burning jet flame with said flame having a hottest portion of maximum temperature and said flame traveling in a path from a point of entry into the cyclone to a location within the cyclone; and

insufflating the ore vertically into the chamber at said hottest portion of the jet flame at an insufflation particle speed in the range of 3.5 m/sec. through 8 m/sec. to penetrate the burner jet flame so that said ore concentrates are melted and do not abrasively impact the wall of the cyclone in an unmelted stage.

5,282,884

PROCESS FOR THE RECOVERY OF NOBLE METALS AND TERTIARY PHOSPHINES

Joao J. de Oliveira Bandarra, Loures; Alexandre J. Ganchas de Carvalho, Lisbon, and William Heggie, Palmela, all of Portugal, assignors to Plurichemie Anstalt, Liechtenstein, Fed. Rep. of Germany

Filed Dec. 31, 1992, Ser. No. 999,319

Claims priority, application Portugal, Dec. 31, 1991, 99958; Dec. 31, 1991, 99959

Int. Cl.[5] C22B *11/04*

U.S. Cl. 75—724 **20 Claims**

1. In a process for the recovery of a noble metal form an inorganic residue or organic residue, or mixture thereof, by contacting the residue with tellurium or a reducible tellurium compound at an elevated temperature to fix the noble metal to the tellurium, and thereafter separating the resulting tellurium/rhodium precipitate from the residue, the improvement which comprises adding a solvent having a boiling point above 120° C. to the residue, removing by distillation water and solvents having boiling points below the boiling point of the added solvent, adding the tellurium or a reducible teliurium compound, and then refluxing at atmospheric pressure before separating the tellurium/noble metal precipitate.

2. Process according to claim 1, wherein the noble metal containing residue originates from a hydrogenation reaction, catalysed by a noble metal catalyst, wherein the catalyst is a homogeneous catalyst comprising a noble metal and a tertiary phosphine, or a heterogeneous noble metal catalyst.

4. Process according to claim 1 wherein the tertiary phosphine is triphenylphosphine.

5,282,885

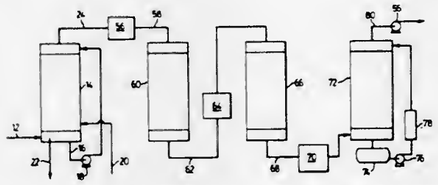
ELECTROSTATIC GAS CLEANING PROCESS AND APPARATUS

Gordon M. Cameron, Willowdale, Canada, assignor to Cecebe Technologies Inc., Willowdale, Canada

Filed Jan. 22, 1992, Ser. No. 824,127

Int. Cl.[5] B03C *3/16*

U.S. Cl. 95—66 **14 Claims**



1. A process for cleaning smelter and other furnace gases containing sulfur oxides, comprising the steps of:

(a) cooling and saturating the gas by contact with a stream containing water,

(b) electrostatically charging particles in the saturated gas thereby producing charged particles in said gas,

(c) substantially immediately after charging said particles, and without an intermediate precipitation step, passing said gas containing said charged particles through a condenser, thereby directing into said condenser at least most of said charged particles produced during said electrostatic charging step,

(d) removing water from said gas in said condenser,

(e) the passage of said gas containing said charged particles through said condenser also at the same time removing from said gas most of said charged particles produced in said electrostatic charging step,

(f) removing from said condenser a liquid stream comprising water condensed from said gas, and with said stream, also substantially removing the particles removed from said gas, so that said condenser performs the dual function of removing water from said gas and at the same time removing from said gas most of said charged particles produced in said electrostatic charging step.

9. Apparatus for cleaning smelter and other furnace gases containing sulfur oxides, comprising:

(a) means for cooling and saturating the gas by contact with a stream containing water, the cooled and saturated gas containing particles,

(b) charging means connected to said cooling and saturating means for electrostatically charging said particles in the gas therefrom to produce a stream of saturated gas containing charged particles,

(c) at least one condenser connected substantially immediately downstream of said electrostatic charging means, and without a precipitator collecting surface between said electrostatic charging means and said condenser, for said condenser to receive said stream of saturated gas with such stream containing substantially all of the charged particles produced by said charging means, for said condenser to condense water vapour from said saturated gas and at the same time to remove therefrom most of said charged particles produced by said charging means,

(d) said condenser including means for draining condensed water and collected particles therefrom, so that said condenser performs the dual function of removing water from said gas and at the same time removing from said gas most of said charged particles produced by said electrostatic charging means.

5,282,886

GAS ADSORPTION AND DESORPTION METHOD

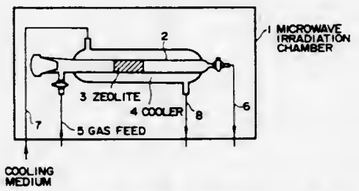
Satoru Kobayashi; Koichi Mizuno, both of Tsukuba; Satoshi Kushiyama, Tsuchiura; Reiji Aizawa, Ushiku; Yutaka Koinuma, Ibaraki, and Hideo Obuchi, Tsukuba, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Sep. 9, 1992, Ser. No. 942,391

Claims priority, application Japan, Sep. 13, 1991, 3-262878

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—131 **14 Claims**



1. A method of treating a gas containing at least two, first and second gaseous components for the separation of respective components from each other, wherein said first component has a coefficient of dielectric loss which is at least 10 times as great as that of said second component and wherein said first and second components are adsorbable by a solid adsorbent having a coefficient of dielectric loss of 0.01 or less, said method comprising a step of contacting said gas with said adsorbent while irradiating said adsorbent with an electromagnetic wave having a frequency of 1 MHz to 25 GHz so that said second component is selectively adsorbed by said adsorbent.

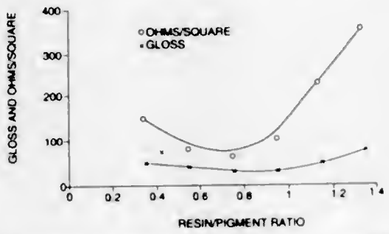
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5,282,887

CONDUCTIVE COATING COMPOSITION COMPRISING PIGMENT GRADE CARBON

Arthur S. Gay, Palos Park, and Salvador R. Lo, Oak Forest, both of Ill., assignors to W. C. Richards Company, Blue Island, Ill.

Continuation-in-part of Ser. No. 726,902, Jul. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 607,558, Oct. 31, 1990. This application Jun. 22, 1992, Ser. No. 901,787
Int. Cl.[5] C09D *5/24*
U.S. Cl. 106—261 12 Claims



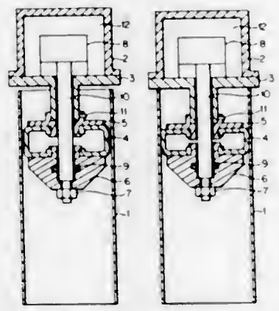
1. A conductive coating composition having a resistivity less than 200,000 ohms/square which comprises:
a) a pigment-grade carbon;
b) a resin; and
c) a solvent
wherein the pigment-grade carbon is present in a deagglomerated form.

5,282,888

HOLDING APPARATUS FOR A DIP COATING APPARATUS

Yoichi Fukawa, and Hiromitsu Uchimoto, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 758,843
Claims priority, application Japan, Sep. 17, 1990, 2-096572[U]
Int. Cl.[5] B05C *3/02*
U.S. Cl. 118—500 4 Claims



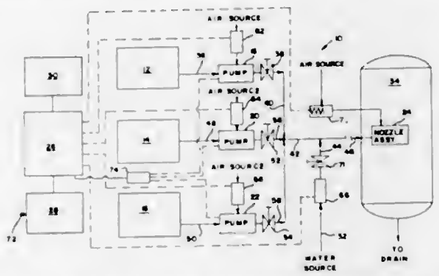
1. An apparatus for holding a hollow cylindrical body with openings at both ends during a dip coating process, the apparatus comprising:
a flange member having a central hollow cylinder insertable into the hollow cylindrical body and a base formed around and perpendicular to one end of the hollow cylinder;
a housing secured to the base of said flange member to form a fluid chamber;
a first pressing member fastened to the hollow cylinder of said flange member;
a shaft member extending through the hollow cylinder of said flange member, wherein said shaft member is hollow to allow fluid to pass through the hollow shaft member and into the fluid chamber during the dip coating process;
a second pressing member fastened to said shaft member;
a fluid-filled flexible bag member located between said first pressing member and said second pressing member; and
means of moving said shaft member to move said first pressing member relative to said second pressing member to cause said flexible bag member to expand laterally to contact the inside of said hollow cylindrical body to hold said hollow cylindrical body.

5,282,889

METHOD FOR CLEANING A PIECE OF EQUIPMENT

Robert V. Franklin, Burbank, Ill., assignor to Dober Chemical Corporation, Midlothian, Ill.

Division of Ser. No. 347,238, May 4, 1989, abandoned, which is a division of Ser. No. 853,860, Apr. 21, 1986, Pat. No. 4,915,119. This application Apr. 7, 1992, Ser. No. 864,556
Int. Cl.[5] B08B *3/02, 3/08, 9/093*
U.S. Cl. 134—18 19 Claims



1. A method for providing a chemical composition useful to treat a piece of equipment comprising:
(a) providing, at a time rate and at a controlled time, a diluent directly from a source of diluent;
(b) pumping, using a chemical composition pump, at a time rate and at a controlled time and independently of the flow of said provided diluent, said chemical composition directly from a chemical composition reservoir;
(c) contacting said piece of equipment with said provided diluent directly from said source of diluent and said pumped chemical composition directly from said chemical composition reservoir one or more times in a controlled sequence;
(d) automatically and independently controlling steps (a) and (b) using an electronic controller into which control information including times during which steps (a) and (b) are to occur is imputed through a keyboard, provided that said chemical composition pump, said chemical composition reservoir, said keyboard and said electronic controller are included in a portable system, and said source of diluent is not included in said portable system; and
(e) moving said portable system to another location and performing steps (a), (b), (c) and (d) with respect to another piece of equipment using said portable system in said another location.

5,282,890

PROCESS FOR PRODUCING BROWN COVERING LAYERS ON COPPER

Helmut Protzer; Constantin Puscasu; Stefan Hoveling, and Albert Scherger, all of Osnabrück, Fed. Rep. of Germany, assignors to KM-kabelmetal AG, Osnabrück, Fed. Rep. of Germany

Filed Oct. 28, 1991, Ser. No. 783,002
Claims priority, application Fed. Rep. of Germany, Oct 27, 1990, 4034249
Int. Cl.[5] C23C *8/10*
U.S. Cl. 148—276 6 Claims

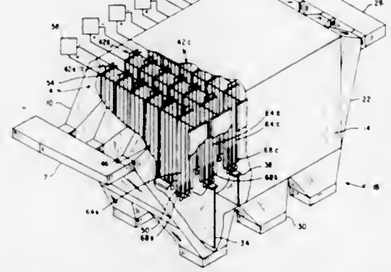
1. A process for producing brown covering layers on semi-finished products made of copper, comprising:
mechanically roughening the surface of a copper product; and
heat treating the copper product in a controlled, oxidizing atmosphere at a temperature between 150° and 650° C. for a duration of between 0.1 and 30 minutes
wherein immediately following the heat treatment, the copper semifinished product is additionally treated with an aqueous solution of a metallic salt from the group consisting of potassium chlorate, potassium permanganate and sodium hypochlorite, alone or in a mixture with copper sulphate.

5,282,891

HOT-SIDE, SINGLE-STAGE ELECTROSTATIC PRECIPITATOR HAVING REDUCED BACK CORONA DISCHARGE

Michael D. Durham, Castle Rock, Colo., assignor to ADA Technologies, Inc., Englewood, Colo.

Filed May 1, 1992, Ser. No. 877,670
Int. Cl.[5] B03C *3/41*
U.S. Cl. 96—75 24 Claims



1. An apparatus to remove particles having a temperature above the critical temperature from a gas stream comprising:
a housing;
input duct means for introducing an input gas stream into said housing;
output duct means for removing an output gas stream from said housing;
an electrostatic precipitating means, including;
a power supply having positive and negative terminals;
at least one electrode means electrically connected to said negative terminal of said power supply and positioned relative to said input gas stream in said housing to impart a charge to said particles in said input gas stream; and
at least one collection means electrically connected to said positive terminal of said power supply and positioned within said housing relative to said electrode means to accumulate said charged particles on said collection means, wherein a particle layer accumulates during operation;
said electrode means and collection means defining an upper laterally extending primary operating region having a temperature substantially throughout that is greater than a first value and at least a portion with a localized electric field strength greater than a second value, and a lower laterally extending secondary operating region having a temperature substantially throughout that is less than the first value and a localized electric field strength substantially throughout that is less than the second value;
said first and second values being predetermined wherein the maximum strength of the localized electric field produced in said accumulated particle layer is less than the minimum electrical breakdown strength of the accumulated particle layer substantially throughout the primary and secondary operating regions and the maximum current density in said collection means within said primary operating region is greater than the maximum current density in said collection means within said secondary operating region; and
a hopper means positioned below said electrostatic precipitating means for disposal of said charged particles removed from said collection plate.

5,282,892

DAMPENING-SOLUTION CONCENTRATE AND DAMPENING SOLUTION AND METHOD OF USE THEREOF IN THE OFFSET PRINTING PROCESS

Fritz Laufs, Ahnsbeck, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 908,471
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122233; Jun. 24, 1992, 4220550
Int. Cl.[5] C09K *3/18*
U.S. Cl. 106—2 9 Claims

1. A hydrotrope-free dampening-solution concentrate consisting essentially of:
a) 1-15% by weight of buffer substances;
b) 2-20% by weight of an additive, consisting of at least one of the substances: water-soluble polysaccharides, polyglycols and polyhydric alcohols;
c) 2-10% by weight of preservatives;
d) 0.01-5% by weight of non-ionic, low foam tenside, consisting of at least one of the substances selected from the group consisting of tertiary acetylene glycol, ethylene-oxide/propylene-oxide tenside, fatty-alcohol ethoxylates, fatty-acid ethoxylates and siloxane alkoxylates;
e) 1-35% by weight of a compound of the formula

$$C_4H_9—O[—CH_2—CH_2—O]_n—H,$$

where n is an integer from 1 to 10 or a mixture of these compounds;
f) 0.1-10% by weight of 2-ethyl-1,3-hexane diol; and
g) 25-90% by weight of water.

5,282,893

ETHANOL TYPE MARKING INK COMPOSITION

Motohiro Komiya, Yokohama, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1991, Ser. No. 808,421
Claims priority, application Japan, Jan. 31, 1991, 3-029011
Int. Cl.[5] C09D *11/16*
U.S. Cl. 106—19 R 4 Claims

1. An ethanol marking ink composition which comprises 0.5-70% of the condensation product of urea and aliphatic aldehyde, titanium oxide in an amount up to 70%, 0.01-30% of a coloring agent other than titanium oxide, and 56-80% of ethanol by weight based on the total composition.

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5,282,894

USE OF A LIQUID CONTAINING IR DYES AS PRINTING INK

Bernhard Albert, Maxdorf; Friedrich Closs, Ludwigshafen; Juergen Kipper, Karlsruhe; Walter Kurtz, Bad Durkheim; Karin H. Beck, Ludwigshafen, and Rudolf Griebel, Siegburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,590

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202038

Int. Cl.[5] C09D *11/00*

U.S. Cl. 106—22 D **10 Claims**

1. A method of printing a substrate, comprising printing said substrate by intaglio, letterpress or flexographic printing with a liquid printing ink comprising a solvent, binder and one or more dyes having an adsorption maximum of from 700 to 1200 nm, said dyes being:
   a. metal-free phthalocyanines,
   b. phthalocyanines complexed with two lithium atoms, or with magnesium, zinc, copper or nickel as central atoms,
   c. metal-free naphthalocyanines,
   d. naphthalocyanines complexed with two lithium atoms, or with magnesium, zinc, copper or nickel as central atoms,
   e. nickel-dithiolene complexes,
   f. aminimum compounds of aromatic amines, or
   g. methine dyes, or
   h. azulenesquaric acid dyes

5,282,895

STOP-LEAK FORMULATIONS WITH IMPROVED STORAGE STABILITY

Derek T. Phillips, Pinckney, Mich., assignor to Petro-Lube, Inc., Whitmore Lake, Mich.

Filed Dec. 23, 1991, Ser. No. 812,728

Int. Cl.[5] C09K *3/12*

U.S. Cl. 106—33 **25 Claims**

1. An essentially oil-free, shelf-stable, aqueous stop-leak formulation for use in a heat exchange system consisting essentially of a water-based heat exchange fluid, said formulation containing (1) between about 1 to about 50 parts by weight of a plant root powder, (2) between about 20 to about 80 parts by weight of a glycol which has a flash point greater than about 220° F. and which is completely miscible in the water present in the formulation, and (3) 100 parts by weight water, wherein the plant root powder remains readily dispersible after prolonged storage prior to being used in the heat exchange system.

5,282,896

PROCESS FOR PRODUCING PHTHALOCYANINE PIGMENT COMPOSITION CONTAINING HIGHLY HALOGENATED DIFFERENT-METALO-PHTHALOCYANINE

Junichi Tsuchida; Masami Shirao; Michichika Hikosaka, and Yoshiyuki Nonaka, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 524,457, May 17, 1990, abandoned. This application Aug. 16, 1991, Ser. No. 746,404

Claims priority, application Japan, May 19, 1989, 1-127699; Sep. 28, 1990, 2-262827

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—411 **8 Claims**

1. A process for producing a pigment composition which comprises the steps of:
   (a) preparing a highly halogenated copper phthalocyanine in any one of the following steps,
      a-1. a step of halogenating copper phthalocyanine in chlorosulfonic acid, titanium tetrachloride or a mixture of titanium tetrachloride with aluminum chloride,
      a-2. a step of halogenating copper phthalocyanine in the state of a solid powder, and
      a-3. a step of cyclizing and condensing either a halogenated phthalimide or halogenated phthalic acid and copper chloride, and
   (b) adding 0.3 to 30 parts by weight of at least one highly halogenated different-metalo-phthalocyanine selected from highly halogenated metalo-phthalocyanines each of which has Al, Mg, Si, Ti, V, Mn, Fe, Co, Ni, Zn, Ge or Sn as a central metal to 100 parts by weight of the highly halogenated copper phthalocyanine obtained in the step (a).

5,282,897

PROCESS FOR IMPROVING STORAGE STABILITY OF PIGMENTS

Phillipe Bugnon, Essert, Switzerland; Abul Iqbal, Arcoociel, both of; Iain F. Fraser, Kilbirnie, and Wern T. Tsai, Glasgow, both of Scotland, assignors to Cibe-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 11, 1992, Ser. No. 928,826

Claims priority, application United Kingdom, Aug. 16, 1991, 9117766

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—437 **20 Claims**

1. A process for improving the storage stability of a colored organic pigment in powder form which comprises coating pigment particles with a partially or completely hydrolysed compound of an element of Group IVA or Group IVB of the Periodic Table in its IV oxidation state, and crosslinking the coating on the pigment by treating the coating with a crosslinking agent therefor which is a boron oxyacid or a salt thereof, a phosphoric acid or a salt thereof, or an alkoxysilyl-substituted alkyl ester of acrylic or methacrylic acid, thereby inhibiting reduction of the tinting strength of the pigment on storage.

5,282,898

USE OF SURFACTANTS IN PROCESSING ABRASIVE PIGMENTS

Joseph H. Z. Wu, Somerset, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Jun. 12, 1992, Ser. No. 898,116

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—447 **15 Claims**

1. An improved pigment composition consisting essentially of particles of an abrasive pigment uniformly mixed with a a water-soluble arylalkyl sulfonate surfactant, said surfactant being present in an amount effective to reduce the Einlehner abrasion of said abrasive pigment.

5,282,899

APPARATUS FOR THE PRODUCTION OF A DISSOCIATED ATOMIC PARTICLE FLOW

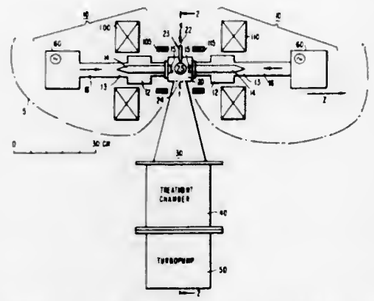
Alexander A. Balmashnov, Moscow, U.S.S.R.; Konstantin S. Golovanivsky, Grenoble, France; Erzam M. Omeljanovsky, New York, N.Y.; Andrew V. Pakhomov, Moscow, U.S.S.R., and Alexander Y. Polyakov, Pittsburgh, Pa., assignors to Ruxam, Inc., New York, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,169

Int. Cl.[5] C23C *16/50;* **H01J** *37/00;* **H01L** *21/00*

U.S. Cl. 118—723 R **51 Claims**

1. An apparatus for providing a source of dissociated and excited molecules from a working gas comprising:
   a first resonant cavity and a second resonant cavity having an operating frequency;
   a first plasma discharge chamber located in the first resonant cavity for producing a first plasma;
   a second plasma discharge chamber located in the second resonant cavity for producing a second plasma;
   a reaction chamber having a gas flow path extending between an inlet for receiving a working gas and an outlet for discharging any dissociated and excited molecules created by a working gas plasma interaction, the reaction chamber being connected between the first and second plasma discharge chambers for receiving plasma from the first and second plasma discharge chambers so that the gas flow path intersect said plasma; and



   means for providing a net magnetic field for confining plasma received from the first and second plasma discharge chambers and any charged particles created by a working gas plasma interaction in a magnetic mirror trap in the reaction chamber.

5,282,900

NONWOVEN SURFACE TREATING ARTICLES, SYSTEM INCLUDING SAME, AND METHOD OF TREATING CALCIUM CARBONATE-CONTAINING SURFACES WITH SAID SYSTEM

James A. McDonell, Woodbury, and Robert C. Kyle, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 19, 1992, Ser. No. 853,919

Int. Cl.[5] A47L *11/164, 13/16;* **B24D** *11/00, 13/14;* **B32B** *5/28*

U.S. Cl. 134—2 **19 Claims**

1. A nonwoven surface treating article suitable for treating stone surfaces comprised of calcium carbonate with crystallizing chemicals to improve the gloss thereof the article comprising an open, lofty, three-dimensional nonwoven web comprising a plurality of thermoplastic organic fibers, a binder which adheres said fibers at points of mutual contact, and abrasive particles adherently bonded to the fibers by said binder, the abrasive particles having an average particle diameter ranging from about 0.1 micrometer to about 9 micrometers.

19. A method of treating a surface comprised of calcium carbonate, said method comprising:
   (a) applying an acidic crystallization agent either to said surface or to a nonwoven surface treating article, or both the surface and the article, the acidic crystallization agent comprising a chemical capable of reacting with the calcium in the calcium in the surface to produce an insoluble calcium salt, the nonwoven surface treating article comprising an open, lofty, three-dimensional nonwoven abrasive web comprising a plurality of thermoplastic organic fibers, a binder, and abrasive particles having an average particle diameter ranging from about 0.1 micrometer to about 30 micrometers; and
   (b) contacting said nonwoven surface treating article with said surface while creating relative movement between the surface and the nonwoven surface treating article, thereby producing a durable, high gloss finish on the surface.

5,282,901

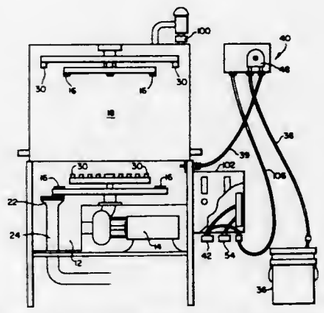
METHOD FOR DISPENSING DIFFERENT AMOUNTS OF DETERGENT IN A WAREWASH MACHINE DEPENDING ON A FILL CYCLE OR A RINSE CYCLE

Roger A. Reinhard, Greensboro, N.C., assignor to Kay Chemical Company, Greensboro, N.C.

Continuation of Ser. No. 606,926, Oct. 31, 1990, abandoned, which is a division of Ser. No. 486,426, Feb. 28, 1990, Pat. No. 5,056,542. This application Nov. 6, 1992, Ser. No. 972,728

Int. Cl.[5] B08B *7/04*

U.S. Cl. 134—18 **14 Claims**



1. A method of dispensing detergent in a warewash machine including a washtank for holding a supply of wash water and a rinse water spray system through which water is supplied in a rinse cycle and in a fill cycle, the method comprising the steps of:
   sensing through a water responsive means or a machine supplied electrical signal when water is supplied to the warewash machine;
   determining whether the water is being supplied in a fill cycle or a rinse cycle by sensing whether water is being supplied at a time subsequent to initially sensing when water is supplied to the warewash machine;
   dispensing detergent to the washtank of the warewash machine; and
   controlling the amount of detergent dispensed based upon the determination of whether the water is being supplied in a fill cycle or a rinse cycle.

5,282,902

SOLAR CELL PROVIDED WITH A LIGHT REFLECTION LAYER

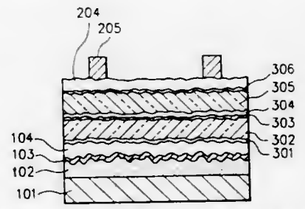
Jinsho Matsuyama, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,521

Claims priority, application Japan, May 9, 1991, 3-132264

Int. Cl.[5] H01L *31/052, 31/04*

U.S. Cl. 136—249 **14 Claims**



9. A solar cell comprising a substrate having a surface, a first conductive layer disposed on the surface of said substrate, said first conductive layer having a roughened surface provided

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with irregularities at the surface thereof, a second conductive layer disposed on the roughened surface of said first conductive layer, said second conductive layer having a roughened surface provided with irregularities, a semiconductor active layer disposed on the roughened surface of said second conductive layer and a transparent and conductive layer disposed on said semiconductor active layer, wherein said roughened surface of said first conductive layer is provided with irregularities of 0.2 μm to 2.0 μm in maximum difference of elevation, said second conductive layer is formed of a 10 nm to 150 nm thick film of a metal having a high reflectivity, said first conductive layer is thicker than said second conductive layer, and said semiconductor active layer comprises a silicon-containing non-single crystal semiconductor and is provided with one or more pin junctions.

13. A solar cell according to claim 9 which comprises two pin junction layers, one of said pin junction layers comprising a non-single crystal silicon film containing phosphorous atoms, a non-single crystal silicon germanium film, and a non-single crystal silicon film containing boron atoms laminated in this order from the side of substrate, and the other cell stacked on said one cell and comprising a non-single crystal silicon film containing phosphorous atoms, a non-single crystal silicon film, and a non-single crystal silicon film containing boron atoms laminated in this order from the side of substrate.

5,282,903

HIGH QUALITY OXIDE FILMS ON SUBSTRATES

Mark W. Ruckman, Middle Island; Myron Strongin, Center Moriches, and Yong L. Gao, Henrietta, all of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Division of Ser. No. 704,097, May 22, 1991. This application Nov. 12, 1992, Ser. No. 974,455
Int. Cl.[5] H01L *29/02*
U.S. Cl. 148—33.3 **1 Claim**

1. A dielectric semiconductor structure comprising:
a substrate with at least one surface;
a high purity oxide film resulting from
i) coating said surface of said substrate with a layer of a gas which oxidizes at room temperature in an amount sufficient to promote formation of an oxide on said surface; and
ii) reactively depositing a material on said surface in the presence of said layer of said oxidizing gas; and
an interface between said film and said surface of said substrate which is free from undesirable chemical defects and substitutional interface reactions between said surface and said oxide film whereby said semiconductor is provided with a discreet high purity oxide film.

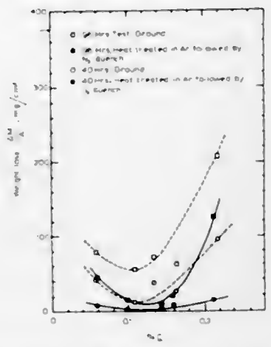
5,282,904

PERMANENT MAGNET HAVING IMPROVED CORROSION RESISTANCE AND METHOD FOR PRODUCING THE SAME

Andrew S. Kim, Pittsburgh; Floyd E. Camp, Trafford, and Edward J. Dulis, Pittsburgh, all of Pa., assignors to Crucible Materials Corporation, Syracuse, N.Y.

Division of Ser. No. 507,026, Apr. 10, 1990, Pat. No. 5,162,064. This application Oct. 27, 1992, Ser. No. 966,855
Int. Cl.[5] H01F *1/02*
U.S. Cl. 148—101 **9 Claims**

1. A method for producing a sintered permanent magnet having improved corrosion resistance, said method comprising producing a sintered permanent magnet consisting essentially of Nd_2-Fe_{14}-B with oxygen equal to or greater than 0.6 weight %, carbon 0.06 to 0.15 weight %, and nitrogen 0.15 weight % maximum by compacting, sintering, and grinding the resulting sintered compact to shape, and thereafter heating said ground, sintered permanent magnet in an argon atmosphere at a temperature within the range of 550° to 900° C. and thereafter quenching said heated sintered permanent magnet in an atmosphere selected from the group consisting of argon and nitrogen to form a protective surface layer with alpha Fe as a major phase thereof.



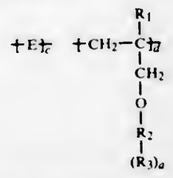
5,282,905

METHOD AND COMPOSITION FOR TREATMENT OF GALVANIZED STEEL

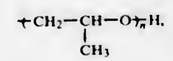
David W. Reichgott, Richboro, and Fu Chen, Newtown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 654,159, Feb. 12, 1991, Pat. No. 5,158,622. This application Jul. 1, 1992, Ser. No. 907,428
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] C23C *22/34*
U.S. Cl. 148—247 **16 Claims**

1. A method of forming a dried in place conversion coating on a galvanized steel surface comprising: reacting the galvanized steel surface with an aqueous solution of water soluble or water dispersible polymer selected from the group comprising polyacrylic acid and homopolymers thereof and copolymers having repeat units represented by the formula



wherein E is the repeat unit remaining after polymerization of an alpha, beta ethylenically unsaturated compound, R_1 is H or lower (C_1-C_4) alkyl, R_2 is $+CH_2-CH_2-O+_n$ H,



monohydroxylated C_1-C_8 alkyl, monohydroxylated C_1-C_8 alkylene, di- or polyhydroxy C_1-C_8 alkylene, n is an integer of from about 1 to about 20, a is 0 or 1, R_3 is hydrogen or an acetate form by reacting an acetylating agent with an allyl ether, the molar ratio of repeat units c:d is from about 15:1 to about 1:10; and optionally an acid selected from the group consisting of acetic acid, glycolic acid, dihydrohexafluotitanic acid, dihydrohexafluozirconic acid, fluoboric acid, and combinations thereof.

5,282,906

STEEL BAR AND METHOD FOR PRODUCING SAME

William E. Heltmann, Crown Point; Prabhat K. Rastogi, Munster, and Thomas G. Oakwood, Valparaiso, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jan. 16, 1992, Ser. No. 821,974
Int. Cl.[5] C22C *38/24*; C21D *8/00*
U.S. Cl. 148—333 **12 Claims**

1. A rolled steel bar, for use in making coil or leaf springs, wherein:
said bar has a steel composition consisting essentially of, in wt. %:

carbon	0.40–0.50
manganese	1.10–1.40
phosphorous	0.025 max.
sulfur	0.015 max.
silicon	1.15–1.50
chromium	0.45–0.75
aluminum	0.04 max.
vanadium	0.12–0.17
columbium	0.015–0.030
nitrogen	0.010–0.022
iron	essentially the balance

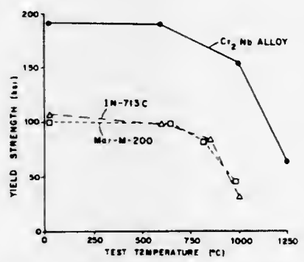
said steel bar has the capability of attaining (a) the tempered, martensitic microstructure and (b) the physical characteristics recited below, when said steel bar is austenitized, quenched at a rate which gives a martensitic microstructure at ambient temperature and then tempered at about 625°-675° F. (329°-357° C.) for about ¾-2 hours;
said tempered, martensitic microstructure consisting essentially of (i) a matrix of tempered martensite and (ii) particles of Fe_3C and of vanadium and columbium carbonitrides within said matrix;
said physical characteristics comprising a Rockwell C hardness no less than 52, and a fracture toughness substantially greater than 27 MPa·$m^{\frac{1}{2}}$.

5,282,907

TWO-PHASE CHROMIUM-NIOBIUM ALLOYS EXHIBITING IMPROVED MECHANICAL PROPERTIES AT HIGH TEMPERATURES

Chain T. Liu, Oak Ridge, Tenn., and Masao Takeyama, Tokyo, Japan, assignors to Martin Marietta Energy Systems, Inc.

Filed Jul. 16, 1992, Ser. No. 915,096
Int. Cl.[5] C22C *27/00*
U.S. Cl. 148—423 **8 Claims**



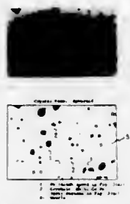
1. A chromium-niobium composition comprising a Cr_2Nb phase Cr-rich phase with an overall Nb content of about 12 at. % having about 4 at. % Re and about 2 at. % Al, whereby the composition exhibits substantially improved high temperature strength as compared to commercially available alloys for enhanced high temperature service.

5,282,908

HIGH STRENGTH α BRASS CONTAINING MN, SI, CO, FE, SN AND PB

Kunio Nakashima; Takayuki Tanaka; Wataru Yago; Kenzo Yamamoto, and Ken-ichi Ichida, all of Toyama, Japan, assignors to Chuetsu Metal Works Co., Ltd., Toyama, Japan

Filed Nov. 3, 1992, Ser. No. 970,820
Int. Cl.[5] C22C *9/00*
U.S. Cl. 148—434 **3 Claims**



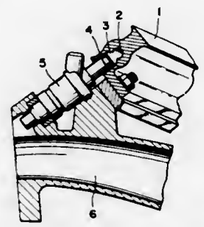
1. A Mn-Si-Co-Fe-based high-strength brass alloy consisting essentially of, on the weight basis, 15 to 25% of Zn, 1.0 to 5.0% of Mn, 0.3 to 2.0% of Si, 0.01 to 0.5% of Fe, 0.01 to 2.0% of Co, 0.2 to 1.0% of Sn, 5 to 10% of Pb and the balance being Cu and inevitable impurities wherein a substantially spheroidized intermetallic compound including Mn, Si, Co, and Fe is crystallized in the alloy and the alloy has fine grains.

5,282,909

ALUMINUM ALLOY EXTRUSION MATERIAL WITH EXCELLENT CHIP SEPARATION PROPERTY AND PRECISION OF CUT FACE ON CUTTING

Chiaki Ara; Nagahide Kawasaki; Hidenori Joka, all of Tokyo; Tadashi Ohya, and Atsushi Takai, both of Wako, all of Japan, assignors to Furukawa Aluminum Co., Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 22,914
Claims priority, application Japan, Jun. 26, 1992, 4-192873
Int. Cl.[5] C22C *21/06*
U.S. Cl. 148—439 **1 Claim**



1. An Al alloy extrusion material for the fuel-distributing pipe of automobile with excellent chip separation property and precision of cut face on cutting, consisting essentially of 0.3 to 1.0 wt. % of Si, 0.1 to 0.5 wt. % of Cu, 0.6 to 1.5 wt. % of Mg, 0.3 to 1.0 wt. % of Sn, 0.005 to 0.03 wt. % of Ti and the balance of Al and inevitable impurities and having uniformly dispersed Sn compounds with particle diameter of not more than 20 μm and density of 20 to 700 grains/mm^2 in the section perpendicular to the extrusion direction of material.

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5,282,910
PROCESS FOR HEATING A METAL ALLOY WORKPIECE

Jean-Pierre Gabathuler, Schleitheim, and Yves Krähenbühl, Lausanne, both of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

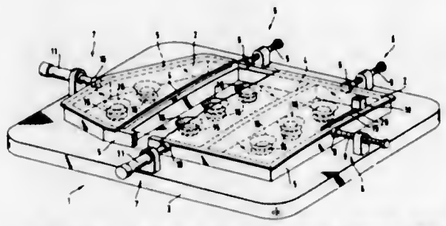
Filed May 26, 1992, Ser. No. 889,126
Claims priority, application Switzerland, Jun. 10, 1991, 1730/91
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—567 **8 Claims**

1. Process for heating a solid metal alloy workpiece to a final temperature lying between the solidus and liquidus temperature of the alloy for producing a part solid-part liquid, thixotropic state for the workpiece, which comprises: heating a workpiece in a first step by a method selected from the group consisting of heat convection, heat conduction, heat radiation and further non-inductive heat transfer, to a temperature lying 10° to 50° C. below the solidus temperature of the alloy; and subsequently heating said workpiece inductively in a second step to a final temperature, thereby producing a part solid-part liquid, thixotropic state for the workpiece without substantial grain coarsening.

5,282,911
METHOD OF MAKING CURVED INSULATING GLAZING PANES

Mieczyslaw Natorff, Koln; Carl-Christoph Happich, Aachen, and Franz-Peter Schaaf, Frechen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Courvevoie, France

Filed Feb. 11, 1992, Ser. No. 833,703
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, 4104106
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—99 **9 Claims**



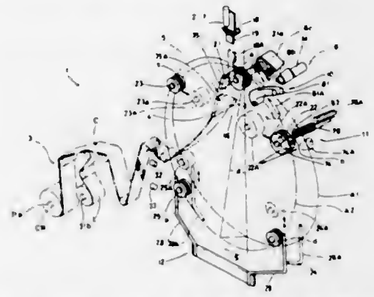
1. A method of making curved insulating glazing panes, comprising the steps of:
using a suction to elastically deform a first curved glass sheet with respect to a rigid mold plate and into a theoretical desired shape; and
bonding another curved glass sheet to the first glass sheet while the first glass sheet is elastically deformed into the theoretical desired shape by the rigid suction mold plate.

5,282,912
METHOD FOR APPLYING BEAD FLIPPER

Satoru Kokubu, Fukushima; Susumu Itou, Shirakawa; Susumu Suga, Fukushima, and Kazuo Satou, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 566,893, Aug. 14, 1990, Pat. No. 5,108,538, which is a continuation of Ser. No. 256,963, Oct. 13, 1988, abandoned. This application Jan. 7, 1992, Ser. No. 817,635
Claims priority, application Japan, Oct. 16, 1987, 62-262265
Int. Cl.[5] B29D *30/50*
U.S. Cl. 156—136 **1 Claim**

1. A belt-shaped flipper applying method comprising, in order, the steps of:
attaching a starting edge of a belt-shaped flipper onto an internal circumferential surface of an annular shaped bead core, said belt-shaped flipper being a longitudinal sheet formed by covering with rubber a plurality of parallel filler cords which are composed of organic fibers and disposed obliquely to the longitudinal direction of said sheet and being cut along said cords so as to provide a terminating edge, each of said starting edge and said terminating edge having a knife tip portion of which corner is an acute angle and an obtuse trianlge portion of which corner is an obtuse angle, said bead core having an apex mounted annularly on an outward surface of said bead core in the radial direction;



rotating said bead core to mount said flipper on said internal circumferential surface in an approximately cylindrical shape so as to form an overlapping portion with said starting edge and said terminating edge of said flipper;
joining and press-fitting mechanically at least one said knife-tip portion of one of said edges to at least one said obtuse triangle portion of the other of said edges extending beyond one of a pair of side faces of said bead core in said overlapping portion;
folding up said cylindrical flipper along each of said pair of side faces of said bead core and each of a pair of side faces of said apex by rotating said bead core; and
press-fitting so as to unify said flipper with said bead core and apex.

5,282,913
METHOD FOR PRODUCING A CONNECTING TUBE INTERCONNECTING THE SHAFT AND THE HANDLE OF A RACKET

Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan

Filed Sep. 16, 1992, Ser. No. 945,369
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—185 **1 Claim**

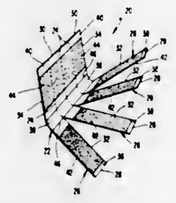


1. A method for producing a connecting tube that interconnects a shaft of a racket and a handle of the racket, said connecting tube having an external impregnated fiber wall, an internal impregnated fiber wall spaced from said external impregnated fiber wall, and a foamed layer integrally formed with and filling a space between said external and internal impregnated fiber walls, said method comprising the steps of:
preforming two foamed preforms which cooperatively form said foamed layer;
placing said two foamed preforms around said internal impregnated fiber wall;
wrapping layers of impregnated fibers around said two foamed preforms to form said external impregnated fiber wall; and
heating said internal and external impregnated fiber walls and said foamed preforms in a mold to allow said internal and external impregnated fiber walls and said foamed preforms to connect integrally.

5,282,914
METHOD OF RELEASABLY FASTENING WITH A RELEASABLE FASTENER

Max J. Spendlove, 13121 Clifton Rd., Silver Spring, Md. 20904

Division of Ser. No. 644,971, Jan. 23, 1991, Pat. No. 5,202,169. This application Sep. 14, 1992, Ser. No. 944,255
Int. Cl.[5] B31F *5/00*
U.S. Cl. 156—227 **6 Claims**



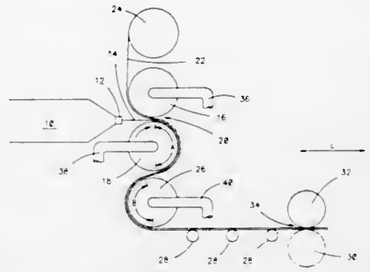
1. A method of fastening a number of pieces of paper together, comprising the steps of:
separating a fastener which includes a number of patches from a fastener strip, each of said patches including an interleaving portion which has front and back oppositely-facing sides wherein at least a portion of said front and back sides of said interleaving portion are covered with an adhesive, and a cover portion which has front and back oppositely-facing sides, wherein at least a portion of said back side of said cover portion is covered with an adhesive and said front side of said cover portion is free of adhesive;
attaching said interleaving portions of said patches to said pieces of paper such that said pieces of paper are each fastened to said fastener and are movable relative to each other; and
attaching the back side of said cover portion to a topmost one of said pieces of paper.

5,282,915
METHOD AND APPARATUS FOR PRODUCING CONTINUOUS PLASTIC-FABRIC BICOMPONENT LAMINA

Edward F. Westlake, Jr., 1012 Farm La., West Chester, Pa. 19382

Filed Nov. 6, 1991, Ser. No. 787,923
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—243 **22 Claims**

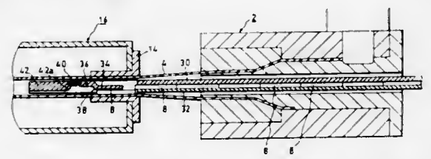
1. Apparatus for producing a solidified, continuous thermoplastic-fabric bicomponent lamina for further processing having thermoplastic on one side and fabric on the other side with the fabric embedded in the thermoplastic to define a fabric-plastic interface of said bicomponent lamina, comprising:
a. means for extruding thermoplastic as a transversely-elongated, thermoplastic web from a solidified state;
b. means for dispensing said fabric from a fabric supply;
c. means for pressing said fabric and said thermoplastic web together with a force to produce a continuous thermoplastic-fabric bicomponent lamina in an initial, deformable state;
d. first means for advancing said lamina from said pressing means at a first preselected rate;
e. second means for advancing said lamina at a second preselected rate;
f. controlled drive means on at least one of said advancing means to control one of said preselected rates independent of the other preselected rate; and
g. means for regulating heat transfer to and from said lamina while said lamina is being advanced by said advancing means to maintain said lamina in said initial deformable state.



5,282,916
METHOD AND APPARATUS FOR MAKING DRIP IRRIGATION DEVICES

Shlomo Bloom, Ramat Gan, Israel, assignor to Hydromatic Ltd., Migdal Haemek, Israel

Filed Nov. 3, 1992, Ser. No. 971,037
Claims priority, application Israel, Nov. 22, 1991, 100126
Int. Cl.[5] B29C *47/02*
U.S. Cl. 156—244.13 **17 Claims**



1. A method of making a drip irrigation device including a tube formed with a plurality of apertures and dripper units bonded to a surface of the tube in alignment with said apertures, with each unit extending for only a part of the circumference of the tube, comprising:
continuously extruding the tube from an extrusion head;
feeding a plurality of dripper units in succession to move axially with respect to the tube during the extrusion thereof;
at a first location, which is a short distance downstream of the extrusion head where the extruded tube is still tacky, arresting the axial movement of each dripper unit as it arrives to said first location and moving it transversely to bring it into light contact with said tacky surface of the extruded tube, to thereby cause the dripper unit to lightly adhere to the extruded tube and to begin to move axially with the extruded tube; and
at a second location, which is a short distance downstream of the first location, where the dripper unit has attained the same axial velocity as the extruded tube, pressing the dripper unit into firm bonding contact with said tacky inner surface of the extruded tube.

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5,282,917

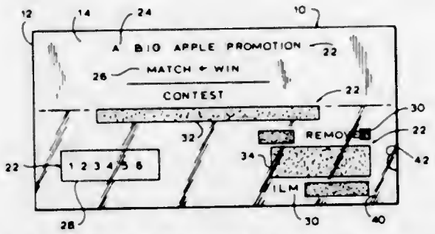
METHOD OF MAKING A PRODUCT HAVING A CONCEALED MESSAGE

James J. Danelski, New York, N.Y., assignor to Ivy Hill Corporation, New York, N.Y.

Continuation of Ser. No. 704,437, May 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 453,704, Dec. 20, 1989, Pat. No. 5,028,076, and a continuation-in-part of Ser. No. 366,172, Jun. 14, 1989, Pat. No. 4,972,953. This application Feb. 5, 1993, Ser. No. 14,004

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—277 **17 Claims**



1. A process for manufacturing a flexible sheet product having a concealed message suitable for wagering, promotional and novelty applications, comprising the steps of:

(A) providing a flexible non-metallic sheet having a pair of substantially planar opposed outer surfaces and ink visibly disposed on one of the outer surfaces in a first pattern;

(B) temporarily supporting the other of the outer surfaces on a rigid substrate while laminating a non-metallic transparent film onto at least a portion of the inked outer surface, the first pattern being visible through the film, the film being secured to the ink on the outer surface portion in selected differently adherent patterns to form a product in which removal of the film from the inked outer surface portion also removes the ink in one of the selected patterns to reveal a desired second pattern of deinked outer surface and thereby render visible the previously concealed message; and

(C) removing the substrate.

5,282,918

APPARATUS FOR SEPARATING AND DRAWING OFF A FILM LAMINATED ON A CARRIER MATERIAL

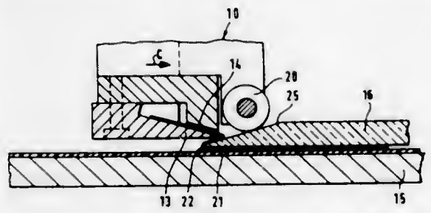
Hans Heist, Wiesbaden; Stephan J. W. Platzer, Eltville, and Martin Stork, Muehlheim/Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 12, 1992, Ser. No. 928,364

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127724

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—344 **29 Claims**



1. An apparatus for separating and drawing off a film from a laminate, said laminate including said film and a carrier material upon which said film is laminated, said apparatus comprising:

a first plate;

a second plate being disposed above said first plate;

a motor;

a spindle being operatively connected to said motor;

a separating apparatus being movable along said spindle above said first plate and including

a wedge-shaped separating knife,

a gap lying above and parallel to said separating knife, said gap being inclined at an oblique angle relative to a horizontal plane; and

a stay passing vertically through said first plate for holding an underside of said laminate firmly in place;

wherein said laminate rests on said first plate, said separating apparatus moves into engagement with a corner of said film so that said corner is detached from said carrier material and is threaded into said gap, and said stay holds the underside of said laminate firmly in place when said corner is threaded into said gap.

5,282,919

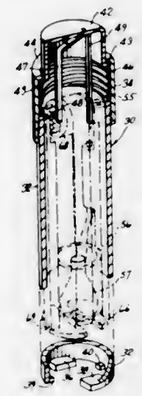
APPARATUS FOR REMOVING A MARKING FROM A SURFACE

Lamar E. Brooks, Wellesley, Mass., assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 205,878, Jun. 13, 1988, Pat. No. 4,968,371. This application Sep. 21, 1990, Ser. No. 586,432

Int. Cl.[5] B32B *31/24*

U.S. Cl. 156—379.6 **16 Claims**



1. Apparatus for removing a marking from a stratum surface comprising wall structure forming a substantially enclosed housing having a light transmissive wall disposed at one end thereof;

means disposed in said housing to arrange a portion of a pellucid film including a heat softenable polymeric material with one surface in contact with an outer surface of said housing wall and the opposite film surface in contact with a stratum surface; and

means disposed adjacent the inner surface of said wall to irradiate the marking through said wall with sufficient light energy to heat the marking and the polymeric material to transfer the melted marking to the polymeric material.

7. Apparatus for removing a marking from a stratum surface comprising a housing having a light transmissive wall comprising an outer surface for superposition with a marking carried by a stratum surface;

an elongated tape comprising a pellucid film including or carrying a heat softenable polymeric material, said film contained in said housing having a portion thereof extending over said housing outer surface;

means disposed in said housing to irradiate the marking through said wall with sufficient light energy to heat the marking and the polymeric material to transfer the melted marking to the polymeric material; and

means for feeding said elongated tape over said housing wall outer surface.

8. Apparatus for removing a marking from a stratum surface comprising wall structure forming a substantially enclosed housing having a light transmissive wall disposed at one end thereof;

a pellucid film including or carrying a heat softenable polymeric material with one surface in contact with an outer surface of said housing wall;

means to arrange a portion of said pellucid film in super-position with a marking carried by a stratum surface; and

means disposed adjacent the inner surface of said wall to irradiate the marking through said wall with sufficient light energy to heat the marking and the polymeric material to thereby transfer the melted marking to the polymeric material.

15. Apparatus for removing a marking from a stratum surface comprising:

a housing having an elongated barrel with an outer surface disposed at one end and containing means to arrange a pellucid film including or carrying a heat softenable polymeric material with one surface in superposition with a marking carried by a substrate surface; and

means to irradiate the marking with sufficient light energy to heat the marking and the polymeric material to thereby transfer the melted marking to the polymeric material, said means to irradiate the marking comprising a light source and said means to arrange said pellucid film comprising means movable from a first position to a second position to energize said light source and from said second position to said first position to feed the film over said housing outer surface.

5,282,920

PROCESS OF AND AN APPARATUS FOR SEALING THERMOPLASTIC RESIN SHEET

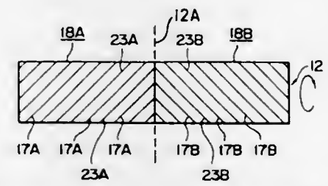
Atsushi Fujii, Himeji, and Kouzaburo Matsuzawa, Tokyo, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 575,129, Aug. 29, 1990, Pat. No. 5,173,413. This application Jul. 10, 1992, Ser. No. 911,898

Claims priority, application Japan, Aug. 31, 1989, 1-227178

Int. Cl.[5] B30B *15/06;* **B65B** *51/10*

U.S. Cl. 156—553 **12 Claims**



1. In an apparatus which includes sealing means for sealing a thermoplastic resin sheet having pockets to a mount, wherein the improvement comprises said sealing means including first and second seal members which successively seal said thermoplastic resin sheet to said mount, said first seal member having first and second notch portions each including a plurality of parallel notches, said notches of said first notch portion extending at an angle less than 180° with respect to said notches of said second notch portion, and said second seal member having third and fourth notch portions each including a plurality of parallel notches, said notches of said third notch portion extending at an angle less than 180° with respect to said notches of said fourth notch portion, said first and second seal members being oriented with respect to each other so that said notches of said third notch portion produce seal lines on said mount and resin sheet which intersect seal lines produced thereon by said notches of said first notch portion to yield a crosshatched pattern, and so that said notches of said fourth notch portion produce seal lines on said mount and resin sheet which intersect seal lines produced thereon by said notches of said second notch portion to yield a crosshatched pattern.

5,282,921

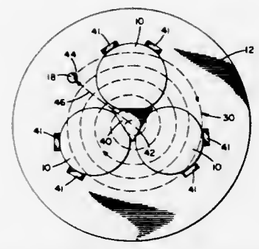
APPARATUS AND METHOD FOR OPTIMALLY SCANNING A TWO-DIMENSIONAL SURFACE OF ONE OR MORE OBJECTS

Sherman Poultney, Ridgefield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 16, 1992, Ser. No. 899,419

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—626 **15 Claims**



1. A method for optimally scanning a surface of one or more semiconductor wafers undergoing a chemical etching process, said method including the steps of:

registering said one or more semiconductor wafers to a wafer retention stage;

initializing a probe of a chemical etching instrument; and

controlling a spiral pattern movement of a spiral type scan of said surface of one or more semiconductor wafers by said chemical etching instrument probe, whereby said surface is figured to correspond to a desired thickness.

5,282,922

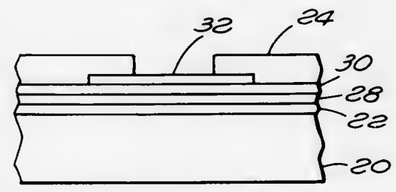
HYBRID CIRCUIT STRUCTURES AND METHODS OF FABRICATION

John J. Reche, Ventura, Calif., assignor to Polycon Corporation, Tempe, Ariz.

Continuation of Ser. No. 739,255, Aug. 1, 1991, abandoned, which is a continuation of Ser. No. 437,982, Nov. 16, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 850,382

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **15 Claims**



1. A method of patterning a polymer layer over a silicon substrate comprising the steps of;

(a) providing a layer of material resistant to fluorine ion

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bearing plasma over an entire first surface of the silicon substrate;

(b) applying a conductive layer over at least a portion of said resistant material wherein said conductive layer is entirely separated from the silicon substrate by said resistant material;

(c) applying a polymer layer to said resistant material wherein said polymer layer is entirely separated from the silicon substrate by said resistant material; and,

(d) etching a portion of said polymer layer with a fluorine ion bearing plasma, wherein said resistant material prevents said fluorine ion bearing plasma from etching the silicon substrate.

5,282,923

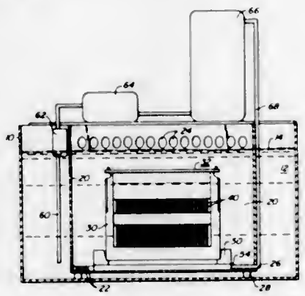
LIQUID AGITATION AND PURIFICATION SYSTEM

Stephen J. Cannizzaro, Jr., Boise, Id., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 13, 1992, Ser. No. 931,088

Int. Cl.[5] H01L *21/306*; B44C *1/22*

U.S. Cl. 156—637 **3 Claims**



1. A method for stripping or etching away exposed portions of layers on respective planar surfaces of a plurality of semiconductor wafers, comprising the steps of:

positioning said plurality of semiconductor wafers in a container of etching solution; and

generating a plurality of currents in said container of etching solution such that each current flows substantially parallel with a corresponding one of said planar surfaces of said plurality of semiconductor wafers so as to enhance the stripping or etching away of said exposed portions of layers on said respective planar surfaces of said plurality of semiconductor wafers.

5,282,924

MICROMECHANICAL SENSOR FABRICATION PROCESS

Thomas Bayer, Sindelfingen, and Johann Greschner, Pliezhausen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 735,487, Jul. 25, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,639

Claims priority, application European Pat. Off., Jul. 25, 1990, 90114219.0

Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **30 Claims**

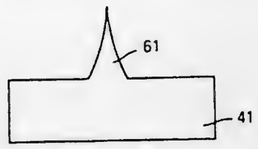
1. A process of fabricating a micromechanical sensor for AFM/STM/MFM profilometry, which sensor includes a cantilever beam and a tip at one end of the cantilever beam, the process comprising the following steps:

(a) producing a cantilever-beam-pattern mask of a desired cantilever beam pattern on a first side of a wafer, and a thinning-window mask on a second side of the wafer;

(b) producing a tip-pattern mask of a desired tip pattern in the area of the cantilever-beam-pattern mask on the first side of the wafer;

(c) etching through the thinning-window mask on the second side of said wafer to thin down the wafer to a desired thickness;

(d) transferring the cantilever beam pattern defined by the cantilever-beam-pattern mask into said wafer by etching, and removing the cantilever-beam-pattern mask;



(e) transferring the tip pattern defined by the tip-pattern mask in the area of said cantilever beam pattern into said wafer by etching to form a cantilever beam/tip blank;

(f) thermally oxidizing exposed surfaces of the cantilever beam/tip blank to a desired thickness; and (g) removing oxide produced in step (f) by etching, thereby exposing the desired cantilever beam/tip structure.

5,282,925

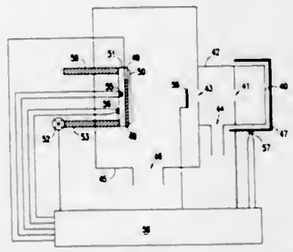
DEVICE AND METHOD FOR ACCURATE ETCHING AND REMOVAL OF THIN FILM

Shwu-Jen Jeng; Wesley C. Natzle, both of Wappingers Falls, and Chienfan Yu, Highland Mills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,380

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—646 **48 Claims**



20. A method for etching, comprising the steps of:

(a) supporting, in a vacuum chamber, a substrate having a material to be etched;

(b) admitting reactant containing gas into said chamber at a sufficient pressure so as to form a film of the reactant on the surface of said material;

(c) controlling the composition and residence time of said film on the surface of said material so as to etch an accurate amount of material on said substrate; and

(d) removing any unwanted reactant and reaction products from the chamber or surface of said substrate.

5,282,926

METHOD OF ANISOTROPICALLY ETCHING MONOCRYSTALLINE, DISK-SHAPED WAFERS

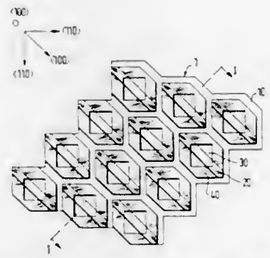
Hans-Peter Trah, Reutlingen, and Guenther Findler, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 22, 1991, Ser. No. 748,710

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 4033920; Feb. 28, 1991, 4106287

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—647 **3 Claims**



1. A method for anisotropically etching recesses in a monocrystalline, disk-shaped wafer with 100 crystal orientation, for producing structural elements therein,

comprising the steps of

applying a mask layer onto a first surface of a wafer,

structuring said mask layer to form an opening therein, and

anisotropically etching said wafer through said opening (**20**) to form said recesses (**30**),

wherein

said recesses are produced with right-angle corners;

each mask layer opening (**20**) is cross-sectionally hexagonal;

two parallel edges, of each hexagonal opening (**20**), are oriented parallel to a 100-direction of said wafer surface; and

the remaining four edges of each hexagonal opening (**20**) are oriented parallel to two mutually orthogonal 110-directions of said wafer.

5,282,927

CONCENTRATING EVAPORATOR

Mark Weidner, 2519 Nob Hill Pl. North, Seattle, Wash. 98109

Filed May 9, 1991, Ser. No. 697,851

Int. Cl.[5] B01D *1/00, 3/04*

U.S. Cl. 159—147.1 **5 Claims**



1. In a concentrating evaporator including a sample-holding vessel for holding a sample containing solvent having a vaporizing upper chamber and a concentrate-holding lower chamber and further including a hot fluid heat source externally of the sample-holding vessel for heating the exterior of the sample-holding vessel, the improvement consisting essentially of the upper chamber of the sample-holding vessel being unshielded for enabling access of heat from said external heat source to said upper chamber for vaporizing solvent form the sample therein, and means located between the heat source and the concentrate-holding lower chamber for shielding only the concentrate-holding lower chamber of the sample-holding vessel from heat from such heat source for maintaining the temperature of the interior of the concentrate-holding lower chamber below the vaporization temperature of solvent in the sample in the concentrate-holding lower chamber so as to prevent vaporization of solvent in the concentrate-holding lower chamber, and thereby terminate vaporization of solvent form the sample-holding vessel when there is no remaining sample in the upper chamber.

5. In a process for evaporating solvent from a solution sample in a sample-holding vessel having a vaporizing upper chamber and a concentrate-holding lower chamber by subjecting the exterior of said vessel to a source of hot fluid heat externally of said vessel and thereby vaporizing solvent from said solution sample in said vaporizing upper chamber of said vessel, the improvement which consists essentially of automatically terminating vaporization of said solvent from said solution sample in said vessel at a predetermined residual volume of said solution sample by shielding only said concentrate-holding lower chamber of said vessel from heat from said heat source to a degree to maintain the interior of said concentrate-holding lower chamber at a temperature below the vaporization temperature of the solvent in said solution sample in said concentrate-holding lower chamber so as to prevent vaporization of solvent in said concentrate-holding lower chamber and thereby automatically limiting the evaporation-effected reduction in volume of said solution sample in said vessel to a volume substantially equal to the volume of said concentrate-holding lower chamber of said sample-holding vessel even while still subjecting the exterior of said vessel to heat from said heat source.

5,282,928

DEINKING COMPOSITION

Hiromichi Takahashi; Yoichi Ishibashi; Yoshitaka Miyauchi; Takanobu Shiroishi, and Yoshinao Kono, all of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,962

Claims priority, application Japan, May 31, 1991, 3-129232

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] D21C *5/02*

U.S. Cl. 162—5 **7 Claims**

1. A deinking composition consisting essentially of a reaction product obtained by adding at least one alkylene oxide to a reaction product of a fat or oil, or a mixture of a fat and oil with a mono to tetradeca-hydric alcohol, said fat or oil being a mono-, di- or triglyceride or a mixture of a mono-, di- or triglyceride, said mono, di- or triglyceride being made from a mixture of higher fatty acids, having from 8 to 24 carbon atoms, having an average carbon number of from 12.7 to 22.5; containing from 9.6 to 70.6% by weight of higher fatty acids having 20 to 24 carbon atoms, and having an iodine value of 70 or less.

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5,282,929

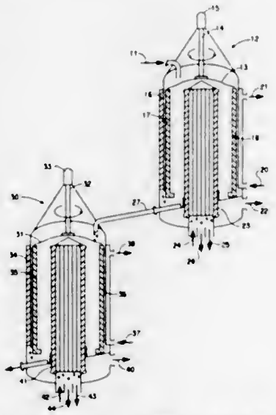
REDUCING MOLECULAR WEIGHT DISTRIBUTION OF POLYETHER GLYCOLS BY SHORT-PATH DISTILLATION

Suriyanarayan Dorai, Lockport, N.Y.; Frank L. Rawling, Jr., Newark, Del., and James A. Schultz, Swedesboro, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 847,466, Mar. 6, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 944,995

Int. Cl.[5] B01D *3/10*; C07C *41/38*

U.S. Cl. 203—91 **5 Claims**



1. A separation process consisting essentially of feeding poly(tetramethylene ether) glycol having a dispersity of 1.9 to 2.3 to at least one short-path distillation apparati each of which has at least one mechanically wiped cylindrical evaporator surface, providing a film of poly (tetramethylene ether) glycol on said evaporator surface, maintaining said evaporator surface at 140° to 190° C. and a pressure of 0.001 to 1.0 millibar, condensing evaporated material on an internal condenser mounted inside said cylindrical evaporator and recovering unevaporated poly (tetramethylene ether) glycol having a reduced molecular weight ratio of 1.9 to 2.07 and a dispersity of 1.2 to 1.8.

5,282,930

PROCESS AND APPARATUS FOR THE PREPARATION OF BALLOONS

Philip E. Lang, 40 Lyttleton Road, Greenways, London, N2 0TW, Great Britain

PCT No. PCT/GB89/00733, § 371 Date Jan. 10, 1991, § 102(e) Date Jan. 10, 1991, PCT Pub. No. WO90/00430, PCT Pub. Date Jan. 25, 1990

Continuation of Ser. No. 634,882, Jan. 10, 1991, abandoned. This PCT application Jul. 11, 1989, Ser. No. 995,931

Claims priority, application United Kingdom, Jul. 11, 1988, 8816470.2

Int. Cl.[5] B32B *31/00*

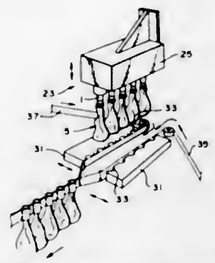
U.S. Cl. 156—289 **17 Claims**

1. A process for everting at least part of a neck of a balloon having a neck and a body, the process comprising the steps of:

inserting at least an end portion of a mandrel into said neck of said balloon;

inserting said mandrel further into said neck while pressing at least a portion of said neck against said mandrel being inserted therein, to cause a portion of said neck to roll inwardly into said balloon to form a rolled-in portion between said neck and said mandrel as said mandrel is inserted further towards said balloon body; and

moving said mandrel relative to said balloon in a reciprocal direction out from said balloon body while pressing at least a portion of said neck including said rolled-in portion



against said mandrel, to cause said rolled-in portion between said neck and said mandrel to fold over itself and be everted on the outside of said neck.

5,282,931

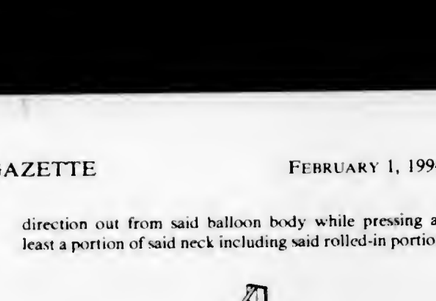
DETERMINATION AND CONTROL OF EFFECTIVE ALKALI IN KRAFT LIQUORS BY IR SPECTROSCOPY

Denys F. LeClerc, Surrey, and Robert M. Hogikyan, Burnaby, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Jul. 8, 1992, Ser. No. 910,379

Int. Cl.[5] D21C *7/12*

U.S. Cl. 162—49 **12 Claims**



1. A method for determining and controlling effective alkali of liquors in a kraft pulp manufacturing process, comprising the steps of:

withdrawing samples of a liquor from the process;

subjecting the samples to infrared spectrophotometry at a wave number of about 1882 cm^{-1} to produce peak-absorbance measurements relative to a background spectrum of water;

subjecting samples of effective alkali solutions of different known concentrations to infrared spectrophotometry at a wave number of about 1882 cm^{-1} in order to establish an effective alkali calibration curve;

correlating relationships between the peak-absorbance measurements of samples with peak absorbance for different alkali solutions in the established calibration curve to determine optimum effective alkali in the samples; and

controlling at least one process parameter to obtain optimum effective alkali of the liquor.

5,282,932

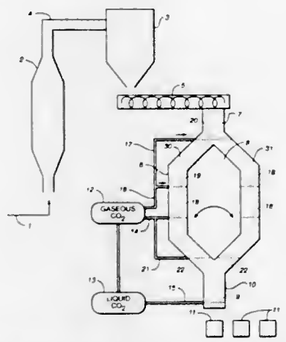
PROCESS FOR PH AND FIRE CONTROL IN PULP BALERS

John R. Ayton, Delta, Canada, assignor to Canadian Liquid Air Ltd./Air Liquide Canada LTEE

Filed Oct. 19, 1992, Ser. No. 963,561

Int. Cl.[5] D21H *11/16*

U.S. Cl. 162—100 **10 Claims**



1. A process for pH and fire control in pulp balers comprising the steps of providing a fluffed pulp having a consistency greater than 90% and a pH greater than 7, dropping said pulp by gravity in at least one duct of a baler, simultaneously injecting carbon dioxide in at least a portion of said duct in order to at least partially replace the atmosphere in said duct by an atmosphere comprising at least 88% volume of carbon dioxide, providing a physical contact between the pulp and the carbon dioxide comprising atmosphere during a period of time which is at least equal to or greater than substantially two minutes in order to generate a chemical reaction in the pulp to decrease the pH of said pulp, stacking the pulp by gravity at the bottom of the baler and then compressing the pulp in bales.

5,282,933

WET SECTION FOR A TWIN WIRE PAPERMAKING MACHINE

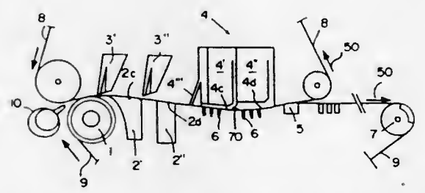
Alfred Bubik; Hans Dahl; Karl Muller; Heinz Braun; Thomas Schaible, all of Ravensburg; Helmut Storr, Berg-Vorberg, and Heinz Steckenreuter, Ravensburg, all of Fed. Rep. of Germany, assignors to Sulzer Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 19, 1991, Ser. No. 795,181

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1990, 4037017

Int. Cl.[5] D21F *1/00*

U.S. Cl. 162—301 **15 Claims**



1. A wet section of a twin wire papermaking machine, comprising:

two revolving endless wires travelling in a predetermined direction of movement and defining an upper wire and a lower wire which are guided together at one region of the upper and lower wires;

the lower wire having a web-supporting portion having a section extending in essentially horizontal direction;

at least one headbox from which emerges the fiber stock suspension in a wide jet which arrives at the one region between both of the guided together upper and lower wires where there is dewatered the fiber stock suspension and the web formed therefrom;

an open forming roll provided in the lower wire and about which there is partially trained both the upper wire and the lower wire, the at least one headbox is arranged forwardly of the forming roll so as to define a gap former;

at least one suction box provided in the lower wire immediately downstream of the forming roll, the at least one suction box provided in the lower wire has a surface contacted by the lower wire; and at least part of said surface contacted by the lower wire, as viewed in the predetermined direction of movement of the upper and lower wires, is substantially convexly curved with respect to the lower wire;

at least one top suction device provided in the upper

at least one stationary vacuum suction box provided in the upper wire downstream of the at least one top suction device with respect to the predetermined direction of movement of the upper and lower wires, wherein the at least one top suction device provided in the upper wire is arranged between the forming roll and the at lest one suction box provided in the lower wire, the at least one vacuum suction box provided in the upper wire has a surface contacted by the upper wire, as viewed in the predetermined direction of movement of the upper and lower wires, is substantially convexly curved with respect to the upper wire; and

at least one separation element provided in the lower wire downstream of the at least one vacuum suction box with respect to the predetermined direction of movement of the upper and lower wires.

5,282,934

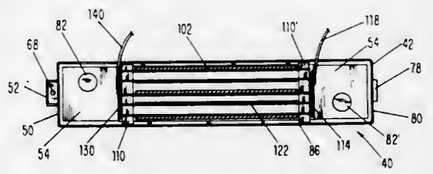
METAL RECOVERY BY BATCH ELECTROPLATING WITH DIRECTED CIRCULATION

Luther W. Cox, Albuquerque, N. Mex., assignor to Academy Corporation, Albuquerque, N. Mex.

Filed Feb. 14, 1992, Ser. No. 837,005

Int. Cl.[5] C25C *1/00, 3/20, 7/00*

U.S. Cl. 204—1.11 **73 Claims**



1. An electrolytic plating apparatus for recovering metals from an electrolytic solution, comprising:

at least one walled cell container comprising at least two sides;

electronic rectifier means;

at least two outside anode means parallelly disposed within said container;

at least one central anode means comprising two surfaces, parallelly disposed between said outside anode means;

at least two/cathode means parallelly and alternately disposed between said central anode means and said outside anode means;

at least two means for horizontally circulating by pressurized injection said electrolytic solution around said central anode means and between said central anode means and

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said cathode means, while simultaneously circulating by pressurized injection said solution parallelly between said cathode means and said outside anode means, wherein said circulating means are disposed at opposite sides of said walled cell container and proximately to an end of each said outside anode means; and

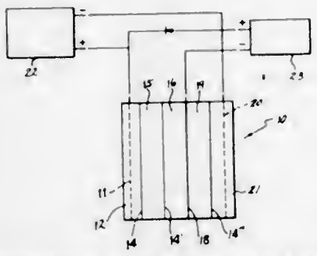
means for deflecting the horizontal circulation of said solution circuitously about said central anode means, whereby the circulation of said fluid is in opposite directions, respectively, across said surfaces.

5,282,935

ELECTRODIALYTIC PROCESS FOR PRODUCING AN ALKALI SOLUTION

David W. Cawlfield, and Jerry J. Kaczur, both of Cleveland, Tenn., assignors to Olin Corporation, Stamford, Conn.

Filed Apr. 13, 1992, Ser. No. 867,557
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—98 **7 Claims**



1. An electrodialytic process for producing an alkali solution from a salt comprising the steps of:

(a) separating at least one central ion exchange compartment from a first adjacent ion exchange compartment by a bipolar water ionizing electrode on the side of the central ion exchange compartment closer to a cathode and from a second adjacent ion exchange compartment by a first cation permselective membrane positioned on the side of said central ion exchange compartment closer to an anode;

(b) separating a second adjacent ion exchange compartment and an anode compartment by a second cation permselective membrane;

(c) separating a first adjacent ion exchange compartment and a cathode compartment by a third cation permselective membrane;

(d) feeding a sodium carbonate solution to the first adjacent ion exchange compartment and the second adjacent ion exchange compartment;

(e) feeding an anolyte solution into the anode compartment;

(f) feeding a catholyte solution to the cathode compartment;

(g) generating hydrogen ions in the anode compartment and transporting those hydrogen ions through said second cation permselective membrane to said second adjacent ion exchange compartment to produce carbon dioxide;

(h) transporting sodium ions through the first cation permselective membrane from said second adjacent ion exchange compartment to the central ion exchange compartment;

(i) reducing water in the central ion exchange compartment with the bipolar water ionizing electrode; and

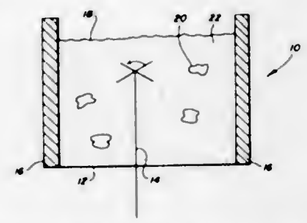
(j) combining the transported sodium ions with hydroxyl ions produced in the central ion exchange compartment to form sodium hydroxide.

5,282,936

DECOMPOSITION OF HALOGENATED AND POLYHALOGENATED ORGANIC MATERIALS BY ELECTRIFIED MICROHETEROGENEOUS CATALYSIS

Debra R. Rnlison, Arlington, Va., and Joseph Z. Stemple, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1992, Ser. No. 822,805
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—59 R **24 Claims**



14. A method for dehalogenating and decomposing at lest one organic reactant selected from the group consisting of halogenated and polyhalogenated organic compounds comprising the steps of:

(a) dispersing at least one reaction enhancer in a fluidic medium to form a preactivation mixture, said dispersal occurring in the absence of the at least one organic reactant, said at least one reaction enhancer being a faujasite-related zeolite;

(b) subjecting said preactivation mixture to a first electrifying force in the absence of the at least one organic reactant until said preactivation mixture reaches ionic equilibrium, thereby forming an activated mixture of low ionic strength;

(c) dispersing the at least one organic reactant in said activated mixture to form a reaction mixture of low ionic strength;

(d) subjecting said reaction mixture to a second electrifying force thereby forming a product by dehalogenation and decomposition of the at least one organic reactant, said subjection being carried out in such a manner that said at least one reaction enhancer enhances the dehalogenation and decomposition of the at least one organic reactant to form the product; and

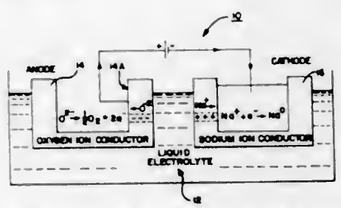
(e) collecting the product.

5,282,937

USE OF ION CONDUCTORS IN THE PYROCHEMICAL REDUCTION OF OXIDES

William E. Miller, Naperville, and Zygmunt Tomczuk, Lockport, both of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Dec. 22, 1992, Ser. No. 994,786
Int. Cl.[5] C25C *3/34*
U.S. Cl. 204—64 R **17 Claims**



1. An electrochemical process of reducing a metal oxide comprising the steps of:

providing an electrochemical cell including a first anode-cathode pair of ion conductor electrodes and an electrolyte containing a molten salt which is comprised of a reductant, a reductant oxide and NaCl and the metal oxide, both said anode and said cathode of said first anode-cathode pair having an inner surface and an outer surface and only said outer surface being in contact with said electrolyte; said cathode being a sodium ion selective cathode and said anode being an oxygen ion selective anode;

impressing a voltage across said sodium ion selective cathode and said oxygen ion selective anode whereby Na^{30} cations migrate from said electrolyte to an inner surface of said cathode to be reduced into Na° and O^{-2} anions migrate from said electrolyte to an inner surface of said anode to be oxidized to O_2 with the reduction of the metal oxide to form metal and reductant chloride;

inserting an inert electrode into the electrochemical cell; and

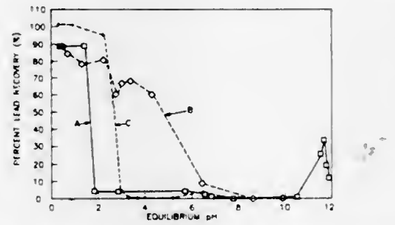
generating a voltage between said sodium ion selective cathode and said inserted inert electrode whereby said reductant is regenerated into said electrolyte.

5,282,938

PROCESS FOR RECOVERY OF TRACE METALS AND SALTS FROM WASTE COMBUSTION RESIDUES

Irene Legiec, 107 Valley Stream Dr., Newark, Del. 19702; David S. Kosson, 38 Whitby Cir., Somerset, N.J. 08873; Jean-Luc Ontiveros, 1418 Valbrook Ct. N., Bel Air, Md. 21015, and Tracey L. Clapp, 912 Woodbridge Commons Way, Iselin, N.J. 08830

Filed Feb. 13, 1992, Ser. No. 835,601
Int. Cl.[5] C25C *1/00*
U.S. Cl. 204—105 R **7 Claims**



1. A method for continuously treating air pollution control residue with an extractant salt solution to remove lead, cadmium, chromium, cobalt, calcium, copper, aluminum, nickel, zinc, metal sulfates and metal chlorides therefrom, wherein said residue is from a single source and is comprised of variable compositions, said method comprising the steps of:

a) adjusting the pH of the salt solution to a value between 1 and 12; extracting lead therewith from a sample of said residue and measuring the percentage amount of the extracted lead relative to the original amount of lead in said sample;

b) continuing to adjust the pH of the salt solution to different values in a range between 1 and 12 and extracting lead therewith from additional samples of said residue, at different pH values respectively within said range, until a maximum percentage amount of extracted lead relative to the original amount of lead in the respective sample is obtained, at a specific pH value, within said range;

c) extracting lead from another sample of the residue, with the salt solution, at the specific pH value, for a period of time sufficient to reach a maximum state of lead extraction;

d) recycling the salt solution at the specific pH value by successively extracting lead from successive additional samples for a number of times until the percentage amount of extracted lead relative to the original amount of lead in a respective sample declines from the percentage amount of extracted lead, relative to the original amount of lead, in the preceding sample;

e) continuously extracting lead from a successive number of batches of the residue equal to one less than said number of times, with the salt solution at the specific pH value, and for said period of time for each batch; and

f) continuously extracting at least one of the members of the group consisting of cadmium, chromium, cobalt, calcium, copper, aluminum, nickel, zinc, metal sulfates and metal chlorides, from a successive number of batches of the residue equal to one less than said number of times, with the salt solution at the specific pH value, and for said period of time for each batch.

5,282,939

REMOVAL OF SALTS BY ELECTRODIALYSIS

Hartwig Voss, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 729,854, Jul. 11, 1991, Pat. No. 5,089,102, which is a continuation of Ser. No. 401,872, Sep. 1, 1989, abandoned. This application Oct. 29, 1991, Ser. No. 783,868
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831848
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—131 **20 Claims**

1. A process for removing a salt of a polybasic low molecular weight acid from an aqueous solution containing an anionic organic compound, comprising the steps of:

(i) removing said salt from said solution by electrodialysis, and

(ii) acidifying and maintaining said solution to a pH which is less than the value X+1, wherein X is the pK_a of the second dissociation stage of said polybasic low molecular weight acid by adding an acidifying acid thereto, during said removing step (i), wherein the pK_a of said acidifying acid is less than the pK_a of the second dissociation stage of said polybasic low molecular weight acid, and

(iii) wherein said salt of a polybasic low molecular weight acid is a salt of an acid selected from the group consisting of sulfurous, phosphorous, phosphoric, boric, carbonic, oxalic, maleic, fumaric, citric and adipic acids.

5,282,940

METHOD FOR REDUCING OR ELIMINATING MICROORGANISMS IN SUBSTANCES BY ELECTRIC STIMULATION

Carl L. Griffis, Fayetteville; Michael F. Slavik, Springdale; Phillip V. Engler, and Yanbin Li, both of Fayetteville, all of Ark., assignors to The Board of Trustees of the University of Arkansas, Little Rock, Ark.

Continuation of Ser. No. 553,984, Jul. 17, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 917,796
Int. Cl.[5] C02F *1/00*
U.S. Cl. 204—131 **4 Claims**

1. A method for eliminating a number of live microorganisms in a batch of liquid by electric simulation, including the steps of:

a) establishing a static treatment zone within the confines of a tub, and charging a predetermined batch of liquid into the treatment zone by replacing said batch of liquid within the tub;

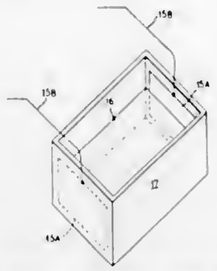
b) rendering said batch of liquid electrically conductive by adding an electrolytic solution to said batch of liquid within said tub in sufficient supply to render said batch of liquid electrically conductive;

c) generating and applying, via a platinum electrode, a dc signal having no polarity reversal in the form of a 30 volt square wave pulse to said batch of liquid;

d) continuing the passage of said dc signal through said batch of liquid for a predetermined time period to kill said number of live microorganisms; and

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e) immersing a food substance containing Salmonella Typhimurium in said batch of liquid and retaining said food



substance in said batch of liquid during step (d) to electrically kill live microorganisms in said food substance.

5,282,941

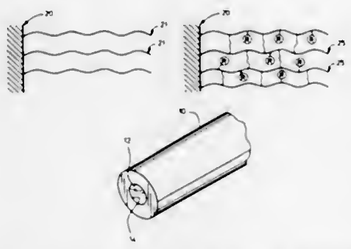
CAPILLARY GEL ELECTROPHORESIS COLUMNS AND METHOD OF PREPARING THE SAME

Donald J. Rose, Jr., Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 628,278, Dec. 14, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 914,232

Int. Cl.[5] **G01N** *27/26, 27/447*

U.S. Cl. 204—182.8 **48 Claims**



1. A micro column useful for gel capillary electrophoresis comprising:

a tube having a bore with an inner surface;

linear reagent molecules, each having a first end and a second end, wherein the first end is covalently bonded to the inner surface;

hydrophilic molecules each covalently bonded to the second end of a respective reagent molecule and forming a matrix; and

crosslinked polymeric gel filling the bore wherein at least a portion of the gel is embedded in the matrix.

5,282,942

METHODS AND APPARATUS FOR SEPARATING AND MOBILIZING SOLUTES IN A SOLUTE MIXTURE

Steven S. Herrick, Anaheim Hills, and James C. Sternberg, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 22, 1993, Ser. No. 16,592

Int. Cl.[5] **G01N** *27/26, 27/447*

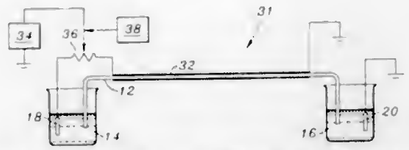
U.S. Cl. 204—183.2 **20 Claims**

1. A process for isoelectric focusing comprising the steps of:

providing a length of capillary having a flow path filled with a buffer suitable for isoelectric focusing;

introducing a mixture of solutes into the buffer;

applying an internal electric field across the buffer along the flow path of the capillary, said field causing isoelectric focusing of the solutes;



applying an external electric field to adjust, relative to the internal field, the electroosmostic flow rate of the buffer in the capillary during application of the internal field for isoelectric focusing.

5,282,943

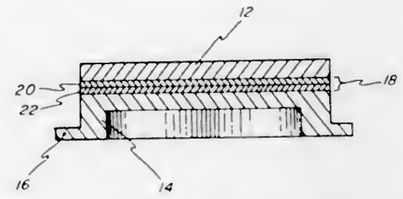
METHOD OF BONDING A TITANIUM CONTAINING SPUTTER TARGET TO A BACKING PLATE AND BONDED TARGET/BACKING PLATE ASSEMBLIES PRODUCED THEREBY

Susan M. Lannutti, and Charles E. Wickersham, Jr., both of Columbus, Ohio, assignors to Tosoh SMD, Inc., Grove City, Ohio

Filed Jun. 10, 1992, Ser. No. 896,170

Int. Cl.[5] **C23C** *14/34*

U.S. Cl. 204—192.12 **8 Claims**



1. Method of bonding a titanium containing sputtering target to a heat conductive backing plate comprising the steps of

sputtering a thin coating of aluminum on a portion of said target to form a coated target, heating said coated target at a temperature of from about 300–500° C. in an oxygen-containing atmosphere, and then soldering said target to said backing plate along said thin coating of aluminum.

5,282,944

ION SOURCE BASED ON THE CATHODIC ARC

David M. Sanders, and Steven Falabella, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1992, Ser. No. 921,779

Int. Cl.[5] **C23C** *14/32*

U.S. Cl. 204—192.38 **22 Claims**

20. A method for producing ions from a target material for coating a part, comprising the steps of:

positioning within a vacuum chamber a cylindrical cathode formed of material to be coated on a part;

positioning within the vacuum chamber an annular anode in spaced relation to the cathode;

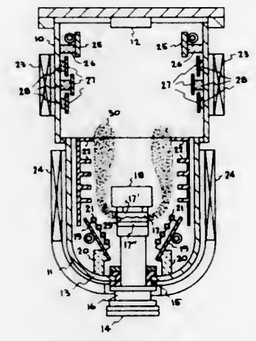
positioning within the vacuum chamber an array of insulating rings located intermediate the cathode and at least a portion of the anode;

locating a magnetic coil about the exterior of the section of the vacuum chamber containing the cathode, anode, and array of insulating rings;

providing the interior of the vacuum chamber with an annular baffle assembly positioned adjacent an interior wall thereof and adjacent the array of insulating rings;

providing electrical power to said coil, said cathode, and said anode so as to produce an arc on the surface of the cathode causing the formation of at least ions and macroparticles; and

providing means for changing the location of an arc track on the cathode;



whereby ions and macroparticles leaving the surface of the cathode move in a radially outwardly direction, wherein the ions are reflected by electrostatic fields formed within the vacuum chamber toward a point of use, and wherein the macroparticles are essentially all trapped by the array of insulating rings and the baffle assembly so as to minimize passage of macroparticles along with the ions to a point for coating a part with the material of the cathode.

5,282,945

DEVICE FOR APPLYING DOT-SHAPED COATINGS

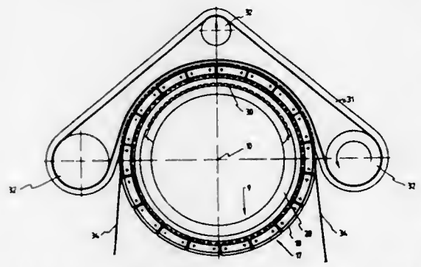
Jörg W. Riscke, Veldhoven, and Wilhelmus G. Leonardus Van Sprang, Eindhoven, both of Netherlands, assignors to Meco Equipment Engineers B.V., Hertogenbosch, Netherlands

Filed Mar. 20, 1992, Ser. No. 855,548

Claims priority, application Netherlands, Apr. 12, 1991, 9100640

Int. Cl.[5] **C25D** *17/00;* **B05B** *15/04*

U.S. Cl. 204—206 **10 Claims**



1. A device for applying dot-shaped coatings to metal or metallized bands by means of an electrolysis process or by means of currentless metal extraction, the device comprising:

a wheel-shaped guide means along which a metal or metallized band can be passed; and

an endless masking means which co-operates with the band during operation and which is provided with passages whose shape is adapted to a desired dot-shaped coating;

wherein:

said masking means comprises independent masking segments which are each provided with at least one passage and which are coupled in a manner which permits movement of the masking segments with respect to each other in a longitudinal direction of the masking means;

each masking segment comprises a pin which during operation engages a recess provided in said band, such that each masking segment is fully adjustable with respect to said band;

the masking segments comprise inner boundary planes which are located at a side of the masking segments which is remote from outer boundary planes of the masking segments which support the band during operation, the inner boundary planes cooperating with a circular supporting surface of the wheel-shaped means such that a total length, as measured in a longitudinal direction of the masking means, of the inner boundary planes of the masking segments which constitute the masking means and cooperate with the circular supporting surface of the wheel-shaped means, is larger than a length of the circular supporting surface of the wheel-shaped means.

5,282,946

PLATINUM-COBALT ALLOY SPUTTERING TARGET AND METHOD FOR MANUFACTURING SAME

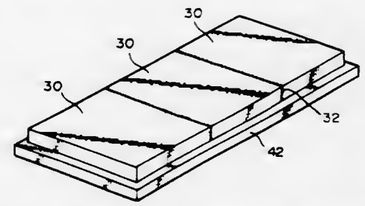
Makoto Kinoshita; Jun Tamura; Masaki Morikawa, all of Sanda; Kunio Kishida, Tokyo; Toshinori Ishii, and Akifumi Mishima, both of Sanda, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 903,748

Claims priority, application Japan, Aug. 30, 1991, 3-220566; Mar. 3, 1992, 4-45798

Int. Cl.[5] **C23C** *14/34;* **C22C** *19/07*

U.S. Cl. 204—298.13 **19 Claims**



1. A sputtering target of platinum-cobalt alloy consisting essentially of 10 to 55% by weight of platinum; 1 to 15% by weight of a first additional element selected from the group consisting of nickel and tantalum; no more than 1.5% by weight of a second additional element selected from the group consisting of boron, titanium, lanthanum, cerium, neodymium, beryllium, calcium, zirconium, and silicon; no more than 20% by weight of chromium; and the balance cobalt, wherein said alloy has an average grain size of no greater than 20 μm.

5,282,947

MAGNET ASSEMBLY FOR ENHANCED SPUTTER TARGET EROSION

Hunter B. Brugge, and Kin-Sang Lam, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 13, 1992, Ser. No. 929,249

Int. Cl.[5] **C23C** *14/35*

U.S. Cl. 204—298.2 **13 Claims**

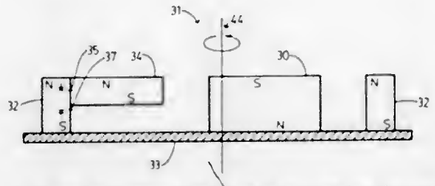
1. A magnet assembly for a sputtering chamber comprising:

a ring magnet section of a first thickness, said ring magnet section being symmetrical about a first axis and a second axis, said ring magnet section defining a center area;

a center magnet section of a second thickness, said center magnet section located within the center area, said center magnet section located asymmetrically to said first axis; and

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a side magnet section within said center area attached to said ring magnet section and located on one side of the first



axis, said side magnet having of a thickness less than said first and second thickness.

5,282,948

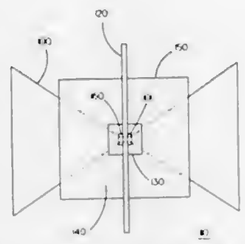
RUGGED 02 MICROSENSOR

Barrett E. Cole; Khanh Q. Nguyen, both of Bloomington, and Ulrich Bonne, Minnetonka, all of Minn., assignors to Gas Research Institute, Chicago, Ill.

Filed Apr. 2, 1992, Ser. No. 862,515

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—421 **10 Claims**



1. An oxygen sensor apparatus comprising:

(a) a silicon wafer with an etched opening and a top surface;

(b) a thin film heating means having a top surface positioned over the opening and having two heating electrodes deposited onto the silicon wafer top surface;

(c) a yttria-stabilized zirconia oxygen sensor means, including top and bottom surfaces, the bottom surface being in contact with the top surface of the thin film heating means;

(d) a counter electrode means positioned above the yttria-stabilized zirconia sensor to make electrical contact with the top surface of the yttria-stabilized zirconia sensor; and

(e) a silicon nitride positioning layer deposited on the top surface of the thin film heater partially covering the top surface of the sensor so as to hold the yttria-stabilized zirconia sensor in place.

5,282,949

IMPROVEMENTS IN OR RELATING TO GLASS PH ELECTRODES

Derek Midgley, Leatherhead, United Kingdom, assignor to National Power PLC, Wilts, United Kingdom

Filed Feb. 11, 1993, Ser. No. 965,416

Claims priority, application United Kingdom, Jan. 15, 1990, 9013411.5

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—413 **8 Claims**

1. A sensor which includes an external reference electrode and a glass pH electrode, the glass pH electrode comprising a silver-silver bromide inner electrode and an electrode filling solution for the inner electrode, characterized in that the electrode filling solution is a zwitterionic buffer solution containing bromide ions which is chosen so as to satisfy one of the following

a) when the external reference electrode is an isothermal silver-silver chloride reference electrode the solution fulfils the requirement that $\partial^{pKa}/\partial T = -0.011 \pm 0.001$;

b) when the external reference electrode is a remote silver-silver chloride reference electrode the solution fulfils the requirement that $\partial^{pKa}/\partial T = -0.015 \pm 0.001$;

c) when the external reference electrode is an isothermal calomel reference electrode the solution fulfils the requirement that $\partial^{pKa}/\partial T = -0.008 \pm 0.001$; or

d) when the external reference electrode is a remote calomel reference electrode the solution fulfils the requirement that $\partial^{pKa}/\partial T = -0.017 \pm 0.001$;

where ∂pKa is the negative logarithm of the dissociation constant of the zwitterionic buffer, T is the absolute temperature and the filling solution for the external reference electrode is 3 mol l^{-1} KCl.

5,282,950

ELECTROCHEMICAL ANALYSIS SYSTEM

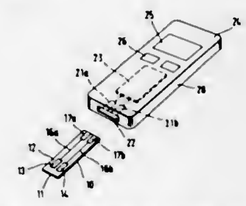
Werner Dietze, Heidelberg; Hans-Peter Haar, Wiesloch, and Wolfgang Obermeier, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,103

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123348

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—406 **15 Claims**



1. An electrochemical analysis system for the analytical determination of a constituent of a sample, said system comprising:

a disposable analysis element which includes an isolating carrier with a sample application means for applying a sample thereto for analysis, at least one sensor means with a working electrode and a reference electrode for sensing electrical properties of the sample on the sample application means, and a connection zone with element connecting contacts which are connected to the electrodes via connecting leads; and

an evaluation unit which includes an analysis element connector means with unit contacts for electrically connecting to the element connecting contacts of said analysis element, and a measuring and evaluation circuit means for measuring electrical variation characteristics of the electrical properties sensed by the at least one sensor means on said analysis element and for converting a measured value into an analytical value, the measuring and evaluation circuit means including an electrical power source with a current measuring device, a voltage measuring device, and a changeover unit connected on one side to the electrical power source with said current measuring device and said voltage measuring device and another side of said changeover unit connected to said connector means with said unit contacts, said changeover unit comprising switching means for selectively connecting said electrical power source with said current measuring device and said voltage measuring device to different pairs of unit contacts in said connector means.

5,282,951

METHOD FOR FORMING A SIEVE MATERIAL HAVING LOW INTERNAL STRESS AND SIEVE MATERIAL SO OBTAINED

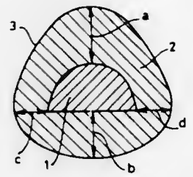
Petrus H. M. Delmee, Rosmalen, and Karst J. van Weperen, Uden, both of Netherlands, assignors to Stork Screens, B.V., at Boxmeer, Netherlands

Filed Dec. 19, 1991, Ser. No. 810,305

Claims priority, application Netherlands, Dec. 24, 1990, 9002866

Int. Cl.[5] C25D *1/08*

U.S. Cl. 205—75 **11 Claims**



1. Method for forming a sieve material comprising thickening a previously formed, electrically conducting sieve skeleton by metal deposition in an electrolysis bath until the final thickness of the sieve material has been reached, wherein the bath includes one or more chemical brightening compounds in the bath having the properties of both a first-class and a second-class brightening agent, said compound being present in the bath in such concentration and being added to the bath in such proportionality to the Ah (Ampere hour) load that the internal stress of the finished sieve material with respect to a material formed using one or more conventionally used Class II brightener is reduced wherein the brightener is a sulphur-containing organic compound having at least one unsaturated bond in the molecule and is used in an initial concentration of at least 0.25 mmol/liter of bath liquid and an addition rate of at least 1 mol/10,000 Ah load; and wherein one or more of the following conditions apply during thickening:

during at least part the time needed for thickening, bath liquid flow is brought about through the perforations of the sieve skeleton in a direction which is perpendicular to the sieve skeleton,

the thickening is carried out using a pulsating current which comprises pulse current periods (T) and current-free or reverse current periods (T'), where T and T' are set, independently of each other between 0 and 9900 msec.

5,282,952

METHOD FOR PREPARING SUBSTRATE FOR LITHOGRAPHIC PRINTING PLATES, SUBSTRATE FOR LITHOGRAPHIC PRINTING PLATES PREPARED BY THE METHOD AND PRESENSITIZED PLATE COMPRISING THE SUBSTRATE

Hirokazu Sakaki, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Aug. 15, 1991, Ser. No. 745,414

Claims priority, applicatioo Japan, Aug. 16, 1990, 2-215980; Oct. 12, 1990, 2-274795; Oct. 12, 1990, 2-274796

Int. Cl.[5] C25D *11/16*

U.S. Cl. 205—153 **11 Claims**

1. A method for preparing a presensitized plate for use in making a lithographic printing plate, which comprises the steps of, in order, forming a hydrated oxide layer on a surface of an aluminum plate by immersing the aluminum plate in an aqueous alkali solution having a pH ranging from 8 to 12, anodizing the aluminum plate having the hydrated oxide layer in a sulfuric acid electrolyte and providing a lithographically suitable light-sensitive layer on the anodized aluminum plate.

5,282,953

POLYOXYALKLENE COMPOUNDS TERMINATED WITH KETONE GROUPS FOR USE AS SURFACTANTS IN ALKANESULFONIC ACID BASED SOLDER PLATING BATHS

Michael D. Gernon, King of Prussia, Pa.; Harry H. Kroll, E. Greenwich, and Hanoch S. Elroi, Wakefield, both of R.I., assignors to Technic Incorporated, Cranston, R.I.

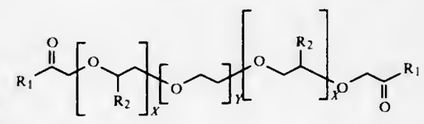
Filed Jun. 28, 1993, Ser. No. 83,660

Int. Cl.[5] C25D *3/32, 3/56*

U.S. Cl. 205—253 **25 Claims**

1. An aqueous plating solution comprised of an alkanesulfonic acid, a soluble source of metal ions selected from the group consisting of Sn(II), Sn(II) and Pb(II), Sn(II) and Sb(III), or Sn(II) and Bi(III), and at least one ketone terminated nonionic surfactant, wherein the nonionic surfactants are selected from the group consisting of the following:

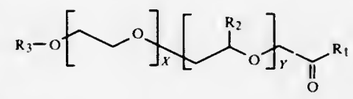
(I)



wherein;

X can vary between 0 and 80; Y can vary between 0 and 200; R_1 can be a C_1 to C_6 straight chain alkyl group; R_2 can be a C_1 to C_6 straight chain alkyl group; or,

(II)



wherein;

X can vary between 0 and 200 and Y can vary between 0 and 120; R_1 can be a C_1 to C_6 straight chain alkyl group; R_2 can be a hydrogen or a C_1 to C_6 straight chain alkyl group; R_3 is a hydrophobic residue which can be a C_1 to C_{20} straight or branched chain alkyl group, a substituted phenyl group where the substitution is a C_1 to C_{20} straight or branched chain alkyl group, a monostyrenated phenyl group, a distyrenated phenyl group, a tristyrenated phenyl group, or any other hydrophobic residue used in the preparation of nonionic surfactants.

5,282,954

ALKOXYLATED DIAMINE SURFACTANTS IN HIGH-SPEED TIN PLATING

Vincent C. Opaskar, Bainbridge Twp., Cuyahoga County, Ohio, assignor to Atotech USA, Inc., Somerset, N.J.

Filed Dec. 30, 1991, Ser. No. 815,735

Int. Cl.[5] C25D *3/32, 3/60*

U.S. Cl. 205—302 **13 Claims**

1. In the method for continuous electrodeposition of a tin coating on a basis metal in an electroplating cell from a solution containing tin methane sulfonate and free methane sulfonic acid under conditions of high current density and high strip speed, the improvement which consists of an alkoxylated diamine non-ionic surfactant.

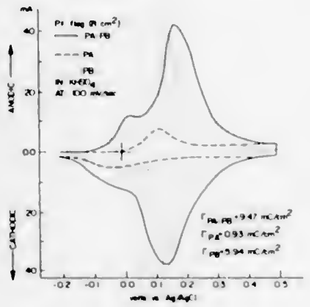
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5,282,955

ELECTRICALLY CONDUCTIVE POLYMER COMPOSITION, METHOD OF MAKING SAME AND DEVICE INCORPORATING SAME

Nicholas Leventis, and Young C. Chung, both of Somerville, Mass., assignors to Molecular Displays, Inc., Andover, Mass.

Filed Jun. 19, 1991, Ser. No. 717,892
Int. Cl.[5] C25D 9/02
U.S. Cl. 205—317 21 Claims



1. A composition comprising
(a) an electrically conductive polymer having an open internal pore structure and
(b) a compound electrochemically formed in situ within the internal pore structure of the conductive polymer and coating at least a portion of the surfaces of the internal pore structure.

5,282,956

METHOD FOR THE INHIBITION AND REMOVAL OF AMMONIUM CHLORIDE DEPOSITION IN HYDROCARBON PROCESSING UNITS

Carl E. Weaver, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 7, 1992, Ser. No. 909,858
Int. Cl.[5] C10G 9/16; C23F 14/00; C07C 307/00
U.S. Cl. 208—48 AA 3 Claims

1. A method for inhibiting the deposition of ammonium chloride on the metallic surfaces of the overhead equipment of a refinery which processes hydrocarbon liquids comprising adding to the hydrocarbon liquid an ammonium chloride deposition inhibiting amount of an amide selected from the group consisting of dimethylformamide and 1,3-dimethyl-2-thiourea.

5,282,957

METHODS FOR INHIBITING POLYMERIZATION OF HYDROCARBONS UTILIZING A HYDROXYALKYLHYDROXYLAMINE

Bruce E. Wright, The Woodlands; Carl E. Weaver, Conroe, and Dwight K. Reid, Houston, all of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 19, 1992, Ser. No. 932,126
Int. Cl.[5] C10G 9/16
U.S. Cl. 208—48 AA 10 Claims

1. A method for inhibiting the polymerization of hydrocarbon fluids containing dissolved oxygen comprising adding to said hydrocarbon an effective polymerization inhibiting amount of a hydroxyalkylhydroxylamine compound wherein the alkyl has a carbon range from about 2 to about 12.

5,282,958

USE OF MODIFIED 5-7 A PORE MOLECULAR SIEVES FOR ISOMERIZATION OF HYDROCARBONS

Donald S. Santilli, Larkspur; Mohammad M. Habib; Thomas V. Harris, both of Benicia, and Stacey I. Zones, San Francisco, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jul. 20, 1990, Ser. No. 556,560
Int. Cl.[5] C07C 5/13; C10G 11/02
U.S. Cl. 208—111 14 Claims

1. A process for dewaxing a hydrocarbon feed to produce a dewaxed lube oil, the feed including straight chain and slightly branched chain paraffins having 10 or more carbon atoms, comprising:

contacting the feed under isomerization conditions with an intermediate pore size molecular sieve having a crystallite size of no more than about 0.5μ, having pores with a minimum pore diameter of at least 4.8Å and with a maximum pore diameter of no more than 7.1Å, the catalyst 1) having sufficient acidity so that 0.5 g thereof when positioned in a ½ inch internal diameter tube reactor converts at least 50% of hexadecane at a temperature of 370° C., a pressure of 1200 psig, a hydrogen flow of 160 ml/min and a feed rate of 1 ml/hr and 2) exhibiting 40 or greater isomerization selectivity which is defined as:

$$\frac{\text{wt \% branched } C_{16} \text{ in product}}{\text{wt \% branched } C_{16} \text{ in product} + \text{wt \\% } C_{13-} \text{ in product}} \times 100,$$

when used under conditions leading to 96% conversion of hexadecane, the catalyst including at least one Group VIII metal, the contacting being carried out at a pressure from about 15 psig to about 3000 psig.

5,282,959

METHOD FOR THE EXTRACTION OF IRON FROM LIQUID HYDROCARBONS

Paul V. Roling, Spring, and Cato R. McDaniel, The Woodlands, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 16, 1992, Ser. No. 851,586
Int. Cl.[5] C10G 17/04
U.S. Cl. 208—251 R 2 Claims

1. A method of extracting iron species from a liquid hydrocarbon medium comprising adding to the medium a composition comprised of about 2 to 20 weight percent of an amino carboxylic acid having the structure:

$$G_2-N\left[CH-(CH_2)_x-CH-NG\right]_y G$$

where $G=CH_2COOH$, $x=0$ or 1, $y=0$ or 1 and R and R' may be the same or different and are H, CH_3 or $CH_2CH_2CH_2CH_2$, about 3 to 30 weight percent of methoxypropylamine and a solvent selected from the group consisting of 2-ethylhexanol, cresylic acid, ethylene glycol and hexyleneglycol, then adding water to the hydrocarbon medium to form an emulsion, separating the emulsion and removing iron-laden water from the separated emulsion wherein from about 1-10 moles of the composition is added to the hydrocarbon medium per mole of iron present in the hydrocarbon medium.

5,282,960

METHOD FOR IMPROVING THE DEMULSIBILITY OF BASE OILS

Liliana Z. Pillon, Sarnia, and Andre E. Asselin, Forest, both of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 2, 1991, Ser. No. 769,699
Int. Cl.[5] C10G 25/02, 71/00; B01D 15/04
U.S. Cl. 208—299 7 Claims

1. A method for improving the demulsibility performance of lube oil basestocks comprising contacting a lube oil base-stock feed exhibiting an oil/water interfacial tension of less than about 40 mN/m with an acidic ion exchange resin or silica adsorbent to produce a lube oil basestock having an oil/water interfacial tension of at least 41 mN/m, said contacting being conducted at a pressure ranging between 0 to 1000 psig, a temperature in the range of about −20° to 200° C. and a flow of about 0.1 to 25 v/v/hr.

5,282,961

FLOATING IMPELLER ASSEMBLY

Robert Ellis, Wyckoff; Allan H. Willinger, Franklin Lake, both of N.J.; Jonas A. Ivasauskas, W. Nyack, and Gene Fleischer, Spring Valley, both of N.Y., assignors to Willinger Bros., Inc., Oakland, N.J.

Filed Jun. 23, 1993, Ser. No. 81,671
Int. Cl.[5] A01K 63/04
U.S. Cl. 210—169 20 Claims

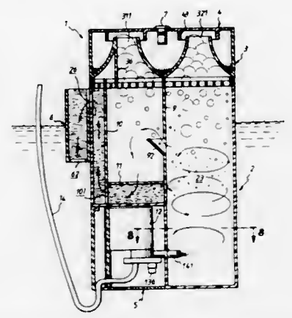
1. An aquarium filter comprising a filter housing having an intake chamber for receiving contaminated aquarium water and a filter chamber in which the contaminated aquarium water is filtered and subsequently discharged back to an aquarium, a stator unit mounted on said filter housing, a floating impeller assembly electromagnetically driven by said stator unit, said floating impeller assembly comprising a shaft, a magnetic rotor rotatably mounted on said shaft, an impeller unit rotatably mounted on said shaft, said impeller unit drawing said aquarium water into said filter, and unitary retaining and clutch means mounted on said rotor for the purpose of retaining and rotatably driving said impeller unit by means of rotation of said rotor, said unitary retaining and clutch means comprising a pair of arms extending from said rotor and including an inwardly directed portion projecting from each of said arms, a collar formed on the exterior of said impeller unit, said inwardly directed portions projecting over said collar formed on said impeller unit and thereby retaining said impeller unit and said rotor.

5,282,962

PROTEIN SKIMMER AND POWER HEAD THEREOF

Chi-Der Chen, No. 1-4, Lane 147, Hsia-Men St., Taipei, Taiwan

Filed Jul. 17, 1992, Ser. No. 915,120
Int. Cl.[5] A01K 63/04
U.S. Cl. 210—169 8 Claims



1. A protein skimmer for clearing the impurities in an aquarium, comprising:
(A) a skimmer body having an open top end and a water outlet and a water inlet located respectively at an upper and lower portion of one side of the body;
(B) an impurities collector adapted to be mounted atop the body, having an open top end and a right and a left bubble collecting cone substantially in the shape of an inverted trumpet located at the bottom of the interior of said impurities collector;
(C) a top cover for covering the upper end of the impurities collector, and a bottom edge of which includes a pair of annular flanges corresponding to the right and left bubble collecting cones; and
(D) a power head mounted to a lower exterior portion of the body for pumping water and air into the body comprising an air hose which is connected to the power head and extends to reach the ambient air, the power head drawing in water and air for swift mixing, and then delivering the bubbled water into the skimmer body through the water inlet;
(E) a pair of vertical guide slots which are provided substantially at a central portion of the body and on the internal surfaces of a pair of side walls adjacent to the water inlet;
(F) an intermediate partition plate which has a flow guide opening at a central portion thereof, the underside of the opening facing the water outlet is slantingly provided with a flow guide plate of predetermined length, a pair of positioning protrusions are provided between the flow guide opening and a lower edge of intermediate partition plate, the intermediate partition plate is adapted to be inserted into the guide slots at the center of the body so as to divide the internal space of the body into a large bubble collecting chamber and a small bubble collecting chamber;
(G) a side partition plate which has a drainage opening, and a pair of protrusions corresponding to said protrusions of the intermediate partition plate are provided on a side thereof which faces the small bubble collecting chamber, and the side partition plate is adapted to be inserted into the guide slots of the body adjacent to the water outlet;
(H) a transverse partition plate which has a drainage opening at a center thereof, which is capable of being inserted horizontally into the small bubble collecting chamber and positioned on the protrusions of the intermediate and side partition plates so as to define a first filtering chamber with a second filtering chamber being defined by said side partition plate and said one side of the skimmer body, said

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filtering chambers for filtering water passing therethrough; and

(I) a foam grid which has continuous peripheral flanges and a plurality of apertures said foam grid is adapted to be inserted into the impurities collector at the bottom thereof;

whereby the bubbled water supplied by the power head will produce continuous swirling motion within the body, all the bubbles will continuously absorb and adhere the impurities through the swirling motion, and join one another to become larger bubbles which contain impurities when reaching the water surface, the bubbles then pass through the apertures of the foam grid and overflow through the opening of the bubble collecting cones and accumulate within the impurities collector subsequently, the filtered water continues to flow through the drainage openings of the partition plates and is released through the outlet of the body.

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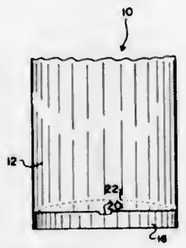
MAGNETICALLY ATTACHED MAGNET FOR OIL FILTERS

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Albert B. Currey, Rte. 1 Box 186, Eucha, Okla. 74342

Filed Oct. 13, 1992, Ser. No. 959,336

Int. Cl.[5] B01D *35/06*

U.S. Cl. 210—223 **3 Claims**



1. A fluid filter comprising:

a cylindrical housing formed of a magnetically attractable metal and having a concave end surface;

filter means disposed within said housing for removing particulate matter from a fluid;

a generally disc-shaped permanent magnet magnetically attached to the concave end surface of said housing, said magnet having a convex mating surface configured to contactingly mate with the concave end surface of said housing, wherein the convex mating surface of said magnet includes at least one slot that extends radially inwardly from a peripheral edge thereof, wherein each said slot forms an opening between the convex surface of said magnet and the concave end surface of said housing, said opening being configured to receive a tool for prying the magnet from said concave end;

whereby when said convex mating surface of said magnet is mated to the concave end surface of said housing, said metallic end is magnetized providing a magnetic force field for attracting magnetic particles to said metallic end.

5,282,964

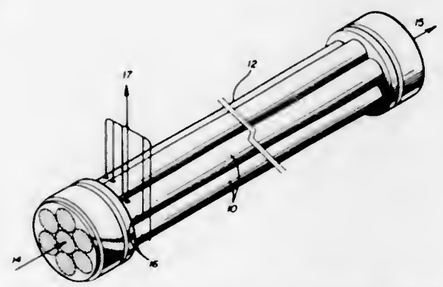
BORESIDE FEED HOLLOW FIBER MEMBRANE DEVICE

Thomas C. Young, Walnut Creek; Terrence L. Caskey, Concord; Johnny L. Trimmer, Antioch; George E. Mahley, III, Berkeley; Randall A. Yoshisato, Vallejo, and John A. Jensvold, Benicia, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 19, 1993, Ser. No. 20,219

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.8 **16 Claims**



1. A hollow fiber membrane device comprising means for providing countercurrent flow distribution on the shellside of said device relative to the feed fluid mixture within the bores of the hollow fiber membranes of said device, including:

A. at least two bundles, each bundle comprising a plurality of hollow fiber membranes capable of separating at least one fluid from a feed fluid mixture, each bundle having a first end and a second end and a radial Peclét number of less than about 30, each bundle being contained within a separate and distinct enclosure substantially impermeable to the fluids being separated and arranged together for substantially parallel flow of a feed fluid mixture through each bundle;

B. a first tubesheet comprised of a thermoset or thermoplastic polymeric material located at the first ends of the bundles, arranged such that the hollow fiber membranes are embedded in the first tubesheet and communicate through the first tubesheet and are open on the opposite face of the first tubesheet;

C. a second tubesheet comprised of a thermoset or thermoplastic polymeric material located at the second ends of the bundles opposite the first ends of the bundles, arranged such that the hollow fiber membranes are embedded in the second tubesheet and communicate through the second tubesheet and are open on the opposite face of the second tubesheet;

D. a first end capping means arranged and adapted for attaching and sealing to the first end of the bundles or enclosures at or near the first tubesheet;

E. a second end capping means arranged and adapted for attaching and sealing to the second end of the bundles or enclosures at or near the second tubesheet;

F. a means for introducing a feed fluid mixture into the bores of the hollow fiber membranes at the first tubesheet;

G. a means of withdrawing non-permeate fluid from the bores for the hollow fiber membranes at the second tubesheet; and

H. a means for withdrawing permeate fluid from the outside of the hollow fiber membranes located at the end nearest the means for introducing fluid into the bores of the hollow fiber membranes at the first tubesheet.

5,282,965

MEMBRANE FILTER FOR LIQUIDS AND FILTERING DEVICE USING THE SAME

Masakatsu Urairi, and Kenji Matsumoto, both of Osaka, Japan, assignors to Nitto Denko Corporation, Tokyo, Japan

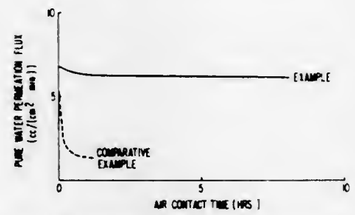
PCT No. PCT/JP91/01676, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO92/09357, PCT Pub. Date Nov. 6, 1992

PCT Filed Nov. 29, 1991, Ser. No. 877,163

Claims priority, application Japan, Nov. 29, 1990, 2-334310

Int. Cl.[5] B01D *71/30, 71/32, 71/34, 71/36*

U.S. Cl. 210—500.36 **7 Claims**



1. A membrane filter for chemicals which has been rendered hydrophilic comprising a fluorine-containing porous polymer;

wherein substantially only the surface of the membrane has been rendered hydrophilic by a low temperature plasma treatment under conditions that a product of 5 to 15 MHz high frequency output treating density and treatment time is from 0.5 to 50 W·sec/cm^2 and a total gas pressure is from 0.01 to 10 torr, and

wherein the decrease in pure water permeation flux of the membrane filter, after being subjected to wetting treatment with a liquid having a low surface tension, subsequently being subjected to substitution with pure water, and then being exposed to an atmosphere of 25° C. and 60% for 8 hours, to the pure water permeation flux of the membrane filter before the exposure, is 20% or less.

5,282,966

PACKAGE FOR PERMEATION SEPARATION DEVICE

James B. Walker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 8, 1992, Ser. No. 957,863

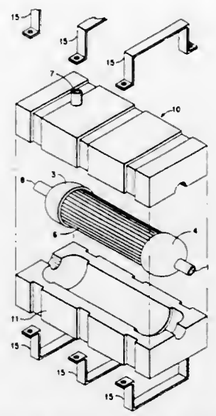
Int. Cl.[5] E01D *63/02*

U.S. Cl. 210—321.8 **8 Claims**

1. A separation device comprising

a. one or more bundles of membranes;

b. a housing designed to also function as a shipping crate, surrounding the bundle or bundles and providing an annular space for fluid around the bundle or bundles and sealed thereto in a fluid-tight relationship at each end of the bundle having a tubesheet, said housing being recloseably affixed around the bundle or bundles; and



c. the housing is fabricated primarily from expanded polystyrene, expanded polyurethane, expanded polyethylene, fiberglass, asbestos, graphite, wood, or mixtures thereof.

5,282,967

METHOD FOR FEEDING GERM-FREE PURE WATER

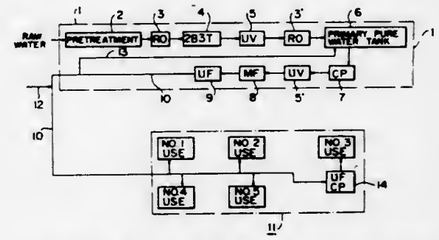
Toshio Tatsuno; Mitsuo Miyamoto, both of Osaka; Yoshiharu Ohta, and Koichi Sawada, both of Tokyo, all of Japan, assignors to Morita Kagaku Kogyo Co., Ltd. and Normura Micro Science Co., Ltd., both of Japan

Continuation of Ser. No. 487,934, Mar. 5, 1990, abandoned. This application May 28, 1992, Ser. No. 888,429

Claims priority, application Japan, Mar. 6, 1989, 1-52154; Apr. 27, 1989, 1-105885

Int. Cl.[5] B01D *61/58*

U.S. Cl. 210—638 **6 Claims**



1. A method for feeding germ-free pure water having a purity higher than that of primary pure water and lower than that of ultrapure water but containing a trace of hydrofluoric acid, which comprises feeding a primary pure water than has been obtained by purification of raw water by successive passages through a pretreatment unit, a reverse osmosis membrane unit, an ion-exchange unit, an ultraviolet-irradiating sterilizer unit and a reverse osmosis membrane unit, to a tank for a storage of the primary pure water, withdrawing the primary pure water from said tank, further purifying the primary pure water by passing it through an ion-exchange resin unit in the form of a cartridge-type polisher, an ultraviolet-irradiating sterilizer unit, a membrane-type filter and an ultrafiltration unit to obtain pure water having a purity higher than that of the primary pure water but lower than that of ultrapure water,

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passing the resulting pure water into and through a pure water feed line as connected to said ultrafiltration unit and leading to individual use point(s) of pure water, incorporating a trace amount of hydrofluoric acid alone into the flow of the pure water within the pure water feed line at one or more locations of the pure water line to provide a presence of hydrofluoric acid at a bacteriostatic and sterilizing concentration of 0.1 to 10 ppm. in the flow of the pure water and thereby enabling the pure water to be maintained under germ-free conditions during its passage through the pure water feed line, and feeding the resulting germ-free pure water containing the trace of hydrofluoric acid out of the pure water feed line at the use point(s) of pure water.

5,282,968

PROCESS FOR SEPARATING AND RECOVERING HALOCARBONS FROM MIXTURES THEREOF

Kung H. Lee, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1992, Ser. No. 923,671
Int. Cl.[5] B01D *15/00, 61/00*
U.S. Cl. 210—640 **2 Claims**

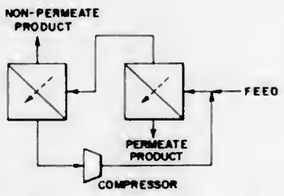
1. A process for separating components of an azeotropic or azeotrope-like mixture containing only organic compounds at least one of which compounds is a halocarbon comprising contacting said azeotropic or azeotrope-like mixture with a semipermeable membrane to form at least one exit stream having an increased concentration of at least one component of the azeotropic or azeotrope-like mixture and at least one other exit stream having an increased concentration of at least one other component of the azeotropic or azeotrope-like mixture and, thereafter, recovering at least one exit stream and distilling the recovered exit stream to separate the component of the azeotropic or azeotropic-like mixture which is present in either increased or decreased concentration from any azeotropic or azeotrope-like mixture present in the recovered exit stream wherein concentration of at least one component of the azeotropic or azeotrope-like mixture in the exit stream is controlled by varying residence time of the azeotropic or azeotrope-like mixture on the feed side of the semipermeable membrane.

5,282,969

HIGH PRESSURE FEED MEMBRANE SEPARATION PROCESS

Jianguo Xu, Fogelsville, Pa., assignor to Permea, Inc., St. Louis, Mo.

Filed Apr. 29, 1993, Ser. No. 55,070
Int. Cl.[5] B01B *53/22*
U.S. Cl. 210—640 **4 Claims**



1. A process comprising: separating one or more, more permeable components from one or more, less permeable components in a feed stream comprising recovering either or both of the permeable and non-permeable components at predetermined purities while using an optimum combination of power and membrane area by:

(a) introducing the feed stream into a first membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the feed stream is more specifically introduced into the high pressure side of the first module;

(b) withdrawing from the high pressure side of the first module a first non-permeate stream which is enriched in the less permeable component(s);

(c) introducing the first non-permeate stream into a second membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the first non-permeate stream is more specifically introduced into the high pressure side of the second module;

(d) withdrawing from the high pressure side of the second membrane separation module a second non-permeate stream which is further enriched in the less permeable component(s);

(e) withdrawing from the low pressure side of the second module a first permeate stream enriched in the more permeable component(s);

(f) compressing the first permeate stream and introducing the compressed first permeate stream into a third membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the compressed first permeate stream is more specifically introduced into the high pressure side of the third module;

(g) withdrawing from the low pressure side of the first membrane separation module a second permeate stream which is further enriched in the more permeable component(s);

(h) introducing the second permeate stream into the low pressure side of the third module;

(i) withdrawing from the high pressure side of the third module a third non-permeate stream which is recycled to the feed stream; and finally

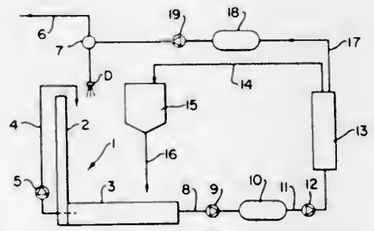
(j) withdrawing from the low pressure side of the third module a third permeate stream which is yet further enriched in the more permeable component(s).

5,282,970

METHOD FOR ENVIRONMENTALLY BENIGN PAINT SPRAYING WITH AN AIR-DRYING LACQUER DISSOLVED, EMULGATED OR DISPERSED IN WATER

Hans-Peter Wepf, Frauenfeld, Switzerland, assignor to Unicolor AG, Lachen, Switzerland

Continuation of Ser. No. 859,187, Mar. 27, 1992, abandoned.
This application Oct. 23, 1992, Ser. No. 966,909
Claims priority, application Switzerland, Apr. 9, 1991, 01052/91
Int. Cl.[5] B01D *61/16*
U.S. Cl. 210—641 **9 Claims**



1. A method for environmentally benign paint spraying utilizing an air-drying lacquer being dissolved, emulgated or dispersed in water, in a paint spraying station provided with a cubicle having a water-rinsed rear wall for collecting and washing out of overspray in cubicle waste water, said method comprising the steps of:

(a) ultrafiltration of the cubicle waste water for separating the cubicle waste water into a permeate and a lacquer-containing residue;

(b) mixing a component for adjusting the throughput in the ultrafiltration process with the cubicle waste water;

(c) delivering the permeate to the paint spraying station;

(d) enriching the lacquer-containing residue with lacquer by removing water therefrom until the lacquer content of the lacquer-containing residue is eventually equal to that of a fresh spraying composition that is utilized by the paint spraying station;

(e) mixing the enriched lacquer with the fresh spraying composition;

(f) mixing a component for preventing coalescence of the lacquer residue with the resultant mixture of step (e);

(g) mixing a component for retardation of the drying of the lacquer residue with the resultant mixture of step (f);

(h) monitoring and maintaining the conductivity of the water that feeds the fresh spraying composition that is supplied to the paint spraying station to a predetermined level to avoid coagulation of ions in the lacquer; and

(i) supplying the mixture of step (g) to the paint spraying station for reuse.

5,282,971

POSITIVELY CHARGED POLYVINYLIDENE FLUORIDE MEMBRANE

Peter J. Degen, Huntington, and Joseph Lee, South Setauket, both of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed May 11, 1993, Ser. No. 64,229
Int. Cl.[5] B01D *63/08, 71/34*
U.S. Cl. 210—645 **29 Claims**

1. A filter medium comprising a microporous polyvinylidene fluoride membrane and a polymer containing positively charged quaternary ammonium groups substantially only covalently bonded to said membrane in a concentration sufficient to provide a surface of said membrane with a positive charge such that there is minimal susceptibility to the extraction of said polymer.

14. A method of treating a composition, which method comprises filtering a composition through a filter medium comprising a microporous polyvinylidene fluoride membrane and a polymer containing positively charged quaternary ammonium groups substantially only covalently bonded to said membrane in a concentration sufficient to provide a surface of said membrane with a positive charge such that there is minimal susceptibility to the extraction of said polymer.

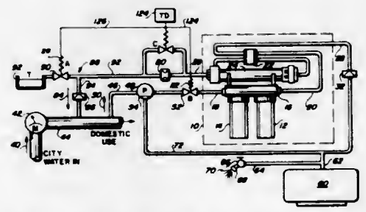
15. The method of claim 14, wherein said composition is an ophthalmic solution.

5,282,972

METHOD AND APPARATUS FOR RECYCLING R/O WASTE WATER

Milad M. Hanna, and Jerome Y. Fridman, both of Scottsdale, Ariz., assignors to Kelco Water Engineering, Inc., Yuma, Ariz.

Filed Dec. 18, 1991, Ser. No. 809,309
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—652 **23 Claims**



17. A method for conserving water during production of potable water from a source of water by a reverse osmosis unit, said method comprising the steps of:

a) conveying water from the source of water under a first pressure greater than ambient pressure;

b) increasing by operation of a pump the pressure of the water conveyed during said step of conveying to a second pressure, which second pressure is greater than the first pressure;

c) further conveying the water from the pump to the reverse osmosis unit;

d) channeling potable water from the reverse osmosis unit to a container;

e) further channeling waste water from the reverse osmosis unit;

f) maintaining the pressure of the waste water during said step of further channeling at a pressure between the first and second pressures as a function of the pressure losses in the reverse osmosis unit; and

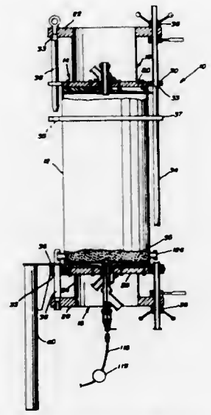
g) returning the waste water channeled during said step of further channeling to the source of water in response to the pressure differential between the first pressure of the source of water and the pressure of the returned waste water.

5,282,973

METHOD FOR CHARGING AND DISCHARGING CHROMATOGRAPHY COLUMN BED

William H. Mann, Chattanooga, Tenn., assignor to Chromaflow, Inc., Chattanooga, Tenn.

Division of Ser. No. 742,592, Aug. 8, 1991, Pat. No. 5,213,683.
This application Jan. 19, 1993, Ser. No. 5,551
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—656 **2 Claims**



1. A method for replacing the media bed in a chromatography column through which a mixture to be separated into component substances and a buffer liquid may percolate from a dispensing section to a collection section without requiring disassembly of said column, said method comprising opening a port in the collection section to communicate the interior of said column with a media outlet conduit, driving a movable probe through said port and into the column to puncture and chip hardened media, pumping fluid through said probe into said column to loosen and liquefy said media so that said media may flow through said port to said outlet conduit, and filling said column with fresh media at the dispersion section.

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5,282,974

METHOD FOR REMOVING SOLUBLE BENZENE FROM EFFLUENT WATER

Paul R. Hart, 2710 Echo St., The Woodlands, Tex. 77380

Filed May 24, 1993, Ser. No. 66,837
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—639 **8 Claims**

1. A method of removing soluble benzene from hydrocarbon process effluent water comprising contacting the water with a sufficient amount of aluminum chlorohydrate; and thereafter solvent extracting said benzene from said effluent water, said amount being sufficient for the purpose of increasing the amount of said benzene removed from the water by solvent extraction in the absence of said aluminum chlorohydrate.

5,282,975

REMOVAL OF OIL FROM WATER

Ilya Maryasin, Jerusalem; Enrico Sandbank, and Gedaliah Shelef, both of Haifa, all of Israel, assignors to Technion Research and Development Foundation Ltd., Israel, a part interest

Continuation-in-part of Ser. No. 632,171, Dec. 21, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 853,937
Claims priority, application Israel, Dec. 25, 1989, 092872
Int. Cl.[5] B01D *15/08;* **C02F** *1/28*
U.S. Cl. 210—691 **6 Claims**

1. A method for using a particular vermicular structure of expanded graphite particles for a selective absorption of petroleum products from a water media, said method comprising contacting said water media containing petroleum products with said expanded graphite particles, said expanded graphite particles possessing the following physical characteristics:

a specific density in the range of 0.003–0.1 g/ml;

a surface area in the range of 50 to 200 m^2/g and 3% to 20% of the pores of said particles being closed

said expanded graphite particles being hydrophobic and oleophilic and having the property of absorbing only petroleum products from said water media at an extent of at least 32 g petroleum products per gram of expanded graphite particles.

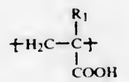
5,282,976

TERPOLYMER USEFUL AS A SCALE INHIBITOR

Dominic W.-K. Yeung, Mississauga, Canada, assignor to Rhone-Poulenc Inc., Cranbury, N.J.

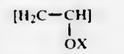
Filed Jul. 21, 1992, Ser. No. 918,714
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—697 **11 Claims**

1. A process for inhibiting the formation of inorganic scales including calcium carbonate or calcium phosphate or reducing the amount of said inorganic scales present in an aqueous system comprising the step of adding to said system an effective amount of a water soluble terpolymer consisting essentially of 50 to 90 mole percent repeating unit (I); 5 to 30 mole percent repeating unit (II); and 5 to 30 mole percent repeating unit (III):



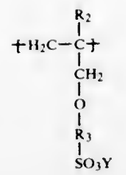
(I)

where R_1 is H or CH3;



(II)

where X is $COCH_3$ or H;



(III)

where R_2 is H or a C_1–C_3 alkyl group; R_3 is a hydroxysubstituted alkylene radical having from 1 to 6 carbon atoms; and Y is H or a water soluble metal cation.

5,282,977

SEPARATION OF HEAVY METALS FROM WASTE WATER OF THE TITANIUM DIOXIDE INDUSTRY

Dieter Schinkitz, Leverkusen, Fed. Rep. of Germany, assignor to Kronos, Inc., Hightstown, N.J.

Filed Sep. 24, 1992, Ser. No. 950,328
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132679
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—724 **4 Claims**

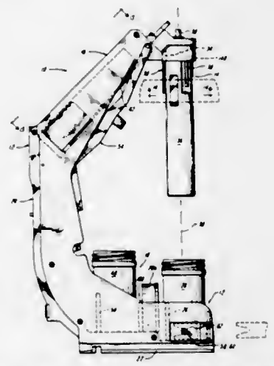
1. A process for separation of heavy metal ions selected from the group consisting of chromium, vanadium, and titanium ions from waste water accrued in the preparation of titanium dioxide and containing acidic sulfate and chloride, comprising the steps of adding natural dolomite brick powder to the waste water to pre-neutralize the waste water to a pH around 3, adjusting the pH of the waste water in the range of about 4.3 to 4.7 with a neutralizing agent selected from the group consisting of sodium and calcium hydroxide to form a precipitate of the heavy metal ions, and separating the precipitate from the waste water.

5,282,978

SPECIMEN PROCESSOR METHOD AND APPARATUS

Lewis T. Polk, Jr., Bedford, Mass.; Todd E. Bottomley, Spofford, N.H., and Phillip P. Brown, Westford, Mass., assignors to Cytyc Corporation, Marlborough, Mass.

Continuation-in-part of Ser. No. 937,247, Aug. 28, 1992, which is a continuation of Ser. No. 550,142, Jul. 9, 1990, Pat. No. 5,143,627. This application Sep. 21, 1992, Ser. No. 948,133
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—767 **16 Claims**



10. A method for processing multiple particle-suspending liquid samples in succession without contamination between different samples, said method comprising the steps of

A. mounting on holder apparatus, relative to a reference means thereon, a fluid-confining vessel having a filter element and a container of particle-suspending liquid,

B. engaging the reference means of the holder apparatus with reference means on specimen preparation apparatus to align the fluid-confining vessel and the container for interaction with the preparation apparatus,

C. operating the preparation apparatus to remove the fluid-confining vessel from support by the holder apparatus and to introduce the filter element thereof into the particle-suspending liquid sample, for the collection of particles from the liquid onto the filter element, and

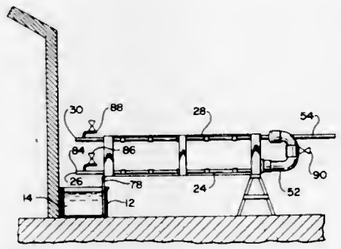
D. operating the preparation apparatus to return the fluid-confining vessel to support by the holder apparatus aligningly engaged therewith.

5,282,979

DESALINATION SYSTEM HAVING RECHARGEABLE SYPHON CONDUIT

Henry A. Wilson, 7461 W. Belvedere Rd., West Palm Beach, Fla. 33411

Filed Sep. 30, 1992, Ser. No. 954,155
Int. Cl.[5] B63J *1/00;* **B01D** *1/30*
U.S. Cl. 210—774 **11 Claims**



11. A method of desalinating salt water comprising:

pooling salt water;

pooling desalinated water;

filling a conduit having end openings with at least one of salt water and desalinated water;

temporarily sealing the filled conduit;

raising a portion of the conduit above the siphon height for salt water at atmospheric pressure;

submerging the end openings respectively in the pool of salt water and the pool of desalinated water;

unsealing said openings, whereby said conduit encloses a column of salt water extending from said salt water pool and a column of desalinated water extending from said desalinated water pool separated by a transfer volume;

creating a temperature differential between said salt water column and said desalinated water column;

transferring water from said salt water pool to said desalinated water pool without transferring salt to said desalinated water column.

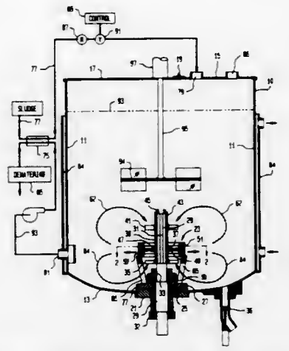
5,282,980

METHOD FOR TREATMENT OF WASTE WATER SLUDGE

S. Alan Kew, Falmouth Foreside; Robert M. Kritzer, Scarborough, and Bruce E. Soule, Yarmouth, all of Me., assignors to Kinetic Dispersion Corporation, Scarborough, Me.

Continuation-in-part of Ser. No. 837,076, Feb. 18, 1992. This application Nov. 24, 1992, Ser. No. 981,055
Int. Cl.[5] B01D *21/20*
U.S. Cl. 210—787 **45 Claims**

1. A method of treating liquid waste water sludge, comprising the steps of separating said sludge into a plurality of separate and independent stream by passing said sludge through a separation means; propelling each of said separate and independent streams of sludge through the separation means so as to create a corresponding plurality of propelled streams of sludge; and mechanically shearing solid particles contained in



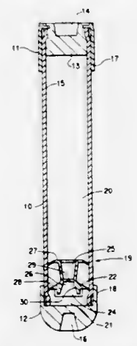
said propelled streams of sludge to such an extent that at least some of said solid particles are broken into smaller-sized fragments, whereby liquid contained in pores of said fragmented particles is released.

5,282,981

FLOW RESTRICTOR-SEPARATION DEVICE

George A. Adams, Ottawa, Canada, and Robert P. Luoma, II, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1992, Ser. No. 877,496
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—789 **12 Claims**



1. A method of partitioning a pre-selected phase of a sample of liquid having a plurality of phases of differing densities, comprising the steps of:

(a) containing said sample of liquid in a first chamber of a linear tube, said tube having a second chamber that is separated from the first chamber by a separation device, said second chamber being free of the liquid, said separation device slidably engaging the interior surface of the tube in a fluid-tight manner and having an axial orifice on the longitudinal axis of the tube that is in fluid flow communication with a flow-restriction channel, said flow-restriction channel being off-set from the longitudinal axis of the tube, said flow-restriction channel having a convoluted path with at least two axially-oriented sections with

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opposed directions of fluid flow, said axial orifice being in fluid flow communication with the first chamber and said flow-restriction channel being in fluid flow communication with the second chamber;

(b) ordering the phases of the sample concentrically by rotating the tube around its longitudinal axis;

(c) while the phases are ordered, reducing the volume of the first chamber by movement of the separation device within the tube, that phase of the liquid located axially within the first chamber flowing into the axial orifice and passing through the flow-restriction channel into the second chamber; and

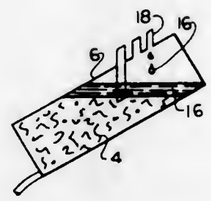
(d) deriving phase-separation information from the location of the interface between the phases and controlling the reduction of the volume of the first chamber on the basis of the phase-separation information.

5,282,982

BLOOD WASHING METHOD

John R. Wells, 4372 Keystone Ave., Culver City, Calif. 90024

Filed Jul. 12, 1991, Ser. No. 729,076
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—800 **3 Claims**



1. A method for recovering a blood mixture and preparing packed red cells therefrom, the method comprising the following steps:

Step A: transferring the blood mixture into a reservoir;

Step B: loading a reagent into the reservoir for aggregating red cells; then

Step C: blending the blood mixture with the reagent for aggregating red cells within the reservoir; then

Step D: separating the aggregated red cells from the blended blood mixture by gravity sedimentation in an accelerated fashion by orienting the reservoir into a flat shallow configuration and allowing the aggregated red cells to sediment from the blended blood mixture into a flat shallow layer of sedimented red cells; then

Step E: slowly shifting the flat shallow layer of sedimented red cells to a funnel configuration without mixing by slowly reorienting the reservoir from the flat shallow configuration to the funnel configuration; then

Step F: packing the shifted sedimented red cells within the funnel configuration by retaining the reservoir in the funnel configuration for allowing the sedimented red cells to become packed therein; then

Step G: removing the packed red cells from the blended blood mixture while continuing to retain the reservoir in the funnel configuration by pumping the packed red cells from an exit port at the bottom of the funnel configuration of the reservoir.

5,282,983

FABRIC SOFTENER COMPOSITION AND AMMONIUM SALT

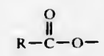
Masaaki Yamamura; Junichi Inokoshi; Kazutaka Shiratsuchi; Toru Haynse, all of Tochigi; Uichiro Nishimoto, Wakayama; Koshiro Sotoya, Wakayama; Tohru Katoh, Wakayama; Yoshifumi Nishimoto, Wakayama, and Osamu Tachizawa, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 748,599, Aug. 22, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 838,700
Claims priority, application Japan, Aug. 22, 1990, 2-221742
Int. Cl.[5] C11D *1/62*
U.S. Cl. 252—8.6 **10 Claims**

1. An aqueous fabric softener composition comprising water and an ammonium salt or water and a mixture of ammonium salts, wherein said ammonium salt is obtained by either of the following two processes (1) or (2):

(1) neutralizing the following Compound (A):

(A) a tertiary amine compound containing one



group wherein R represents an alkyl or alkenyl group containing from 11 to 21 carbon atoms; one —CONH— group; and one alkyl or alkenyl group containing from 11 to 22 carbon atoms with

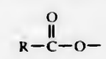
(B) an inorganic acid or an organic acid containing from 1 to 6 carbon atoms, or

(2) quaternizing said Compound (A),

and wherein said mixture of ammonium salts comprises a mixture of (i) said ammonium salt obtained by process (1) by neutralizing said Compound (A) with said Compound (B) and (ii) said ammonium salt obtained by process (2) by quanternizing said Compound (A).

5. An ammonium salt obtained by neutralizing the following Compound (A):

(A) a tertiary amine compound containing one



group wherein R represents an alkyl or alkenyl group containing from 11 to 21 carbon atom, one CONH group and one alkyl or alkenyl group containing from 11 to 22 carbon atoms with

(B) an inorganic acid or an organic acid containing from 1 to 6 carbon atoms, or

quaternizing said Compound (A).

5,282,984

GENERATING BITUMEN-IN-WATER DISPERSIONS AND EMULSIONS

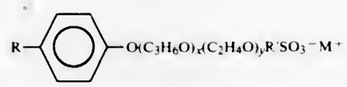
Samir S. Ashrawi, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 543,001, Jun. 25, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 827,299
Int. Cl.[5] C10G *1/04*
U.S. Cl. 252—8.554 **12 Claims**

1. A method for generating bitumen-in-water dispersions and emulsions, which comprises:

mixing an aqueous surfactant solution with a hydrocarbon consisting essentially of bitumen at an elevated temperature,

said surfactant solution comprising about 0.005% to about 5% by weight of a sulfonate surfactant represented by the formula



wherein R is an alkyl chain of about 6 to about 16 carbon atoms, x has an average value of about 2 to about 10, y has an average value of about 1 to about 10, R′ is ethylene, propylene or butylene, and M^+ is an alkali metal or ammonium ion.

5,282,985

LUBRICANT COATINGS

Jeffrey S. Zabinski, and Michael S. Donley, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 24, 1993, Ser. No. 83,130
Int. Cl.[5] C10M *125/10*
U.S. Cl. 252—12 **30 Claims**

1. A method for fabricating solid lubricant coatings capable of operating over a temperature range of at least 0° to 600° C. which comprises applying multiple alternating layers of (1) a first solid lubricant overlaid diffusion barrier and (2) a second solid lubricant overlaid with a diffusion barrier to a bearing surface, wherein said first solid lubricant has a normal operating temperature range of about −169° to +350° C. and said second solid lubricant has a normal operating temperature range of about 350° to 700° C.

5,282,986

GREASE FOR A SLIDE CONTACT

Sugako Otake; Hiroaki Takahashi, both of Aichi; Toshiaki Endo, Fujisawa, and Mitsuhiro Kakizaki, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi and Kyodo Yushi Co., Ltd., Tokyo, both of Japan

Filed Dec. 23, 1992, Ser. No. 995,882
Claims priority, application Japan, Dec. 27, 1991, 3-346169
Int. Cl.[5] C10M *107/22, 169/00*
U.S. Cl. 252—18 **10 Claims**

1. A grease for a slide contact which comprises (i) a synthetic hydrocarbon oil, (ii) 0.2–3.0 parts by weight of at least one inorganic substance whose mean particle size is 0.3 μ or less, selected from the group consisting of zinc oxide, ferric oxide, and clay minerals which produce magnesium oxide through thermal decomposition thereof at high temperature, (iii) 3–20 parts by weight of 12-hydroxy lithium stearate, and (iv) 0.1–5.0 parts by weight of phenolic and/or amine primary antioxidants, said blending amounts of the ingredients being based on 100 parts by weight of the grease.

5,282,987

CARBOXY ETHERS

Dieter Balzer, Haltern; Heinz Riemer, Bottrop, and Werner Friedrich, Herten, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 450,090, Dec. 13, 1989, Pat. No. 5,068,422. This application Aug. 5, 1991, Ser. No. 740,460
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1989, 3903663
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] C10M *129/32, 145/36*
U.S. Cl. 252—34 **13 Claims**

1. A carboxy ether of formula (II):

$$[R\text{-}O(C_3H_6O)_x(C_2H_4O)_y(C_3H_6O)_z]_2CHCOOM \quad (II)$$

wherein:

R is (i) a saturated or unsaturated, linear or branched $C_{6\text{-}20}$-alkyl group; (ii) a phenyl group substituted with a $C_{4\text{-}16}$-alkyl group or a cycloaliphatic group substituted with a $C_{4\text{-}16}$-alkyl group; (iii) a dialkylphenyl group, wherein the total number of carbon atoms in the alkyl groups is 5 to 24, a dialkylcycloaliphatic group, wherein the total number of carbon atoms in the alkyl groups is 5 to 24, or a trialkylcycloaliphatic group, wherein the total number of carbon atoms in the alkyl groups is 5 to 24; or (iv) a trialkylphenyl group, wherein the total number of carbon atoms in the alkyl groups is 7 to 28;

x is 0 to 15, y is 1 to 40, z is 0 to 15; and

M is a $C_{1\text{-}4}$ alkanolammonium cation.

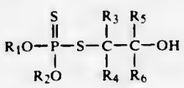
5,282,988

LUBRICANT ADDITIVES

Liehpao O. Farng, Lawrenceville; Arjun K. Goyal, Woodbury, and Andrew G. Horodysky, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 4, 1991, Ser. No. 787,461
Int. Cl.[5] C10M *137/10*
U.S. Cl. 252—46.7 **23 Claims**

1. A method of making a reaction product comprising reacting an alkoxylated diorgano phosphorodithioate of the formula:



where R_1 and R_2 are the same or different straight or branched chain hydrocarbyl radicals containing 3 to 30 carbon atoms, R_3, R_4, R_5 and R_6 are each independently a hydrogen atom or a hydrocarbyl radical having 1 to 60 carbon atoms and an organo isocyanate characterized by at least one isocyanate group having the structural formula:

$$-N=C=O$$

the isocyanate group is bonded to the organo group whereby the alkoxylated diorgano phosphorodithioate and the organo isocyanate react to form the reaction product characterized by at least one urethane group.

5,282,989

VEGETABLE OIL DERIVATIVES AS LUBRICANT ADDITIVES

Frank L. Erickson, Seattle, Wash.; Robert E. Anderson, Pasadena, Calif., and Phillip S. Landis, Alexandria, Va., assignors to International Lubricants, Inc., Seattle, Wash.

Continuation of Ser. No. 606,522, Oct. 31, 1990, abandoned, which is a division of Ser. No. 282,014, Dec. 9, 1988, Pat. No. 4,970,010, which is a continuation-in-part of Ser. No. 221,061, Jul. 19, 1988, Pat. No. 4,925,581. This application Jun. 16, 1992, Ser. No. 899,219
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[5] C10M *141/08, 141/10*
U.S. Cl. 252—48.2 **19 Claims**

1. A lubricating composition consisting essentially of a lubricant base and a lubricant additive wherein the lubricant additive comprises a mixture of at least two ingredients from different classes of ingredients wherein the classes of ingredients are selected from the group consisting of:

a first class of ingredients selected from the group consisting of a triglyceride vegetable oil, a wax ester of a triglyceride vegetable oil, and combinations thereof;

a second class of ingredients comprising a sulfurized mixture of from about 25% to about 75% of the triglyceride vegetable oil and from about 25% to about 75% of the wax ester of triglyceride vegetable oil, wherein said wax ester is derived from a $C_{18\text{-}22}$ unsaturated acid and a $C_{18\text{-}22}$

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unsaturated alcohol or from about 25% to about 75% of jojoba oil; and

a third class of ingredients is selected from the group consisting of a phosphite adduct of triglyceride vegetable oil, a phosphite adduct of the wax ester, and combinations thereof, with the proviso that at least 90% of the fatty acids of the vegetable oil are from about 16 to about 26 carbon atoms long and have at least one and no more than three double bonds.

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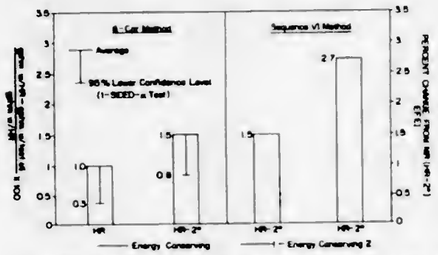
SYNERGISTIC BLEND OF AMINE/AMIDE AND ESTER/ALCOHOL FRICTION MODIFYING AGENTS FOR IMPROVED FUEL ECONOMY OF AN INTERNAL COMBUSTION ENGINE

Yasuhiko Yoneto, Fujisawa, Japan; Ricardo Bloch, Scotch Plains, N.J.; Jack Ryer, E. Brunswick, N.J.; Harold E. Bachman, Summit, N.J., and Harold Shaub, Berkeley Heights, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 840,581, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 560,839, Jul. 31, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 21,641

Int. Cl.[5] **C10M** *125/00*

U.S. Cl. 252—51.5 R **43 Claims**



1. A blend of friction modifier additives adapted for use in combination with an oil of lubricating viscosity in the crankcase of a vehicle powered by an internal combustion engine to improve the fuel economy of said engine, comprising at least one amine/amide friction modifier and at least one ester/alcohol friction modifier, said blend having a weight ratio of amine/amide:ester/alcohol of from 1:10 to about 10:1, said amine/amide friction modifier having been prepared by reacting at least one linear or branched, saturated or unsaturated aliphatic carboxylic acid having from about 7 to about 24 total carbon atoms with at least one polyamine having from about 2 to about 20 nitrogen atoms and being selected from the group consisting of aliphatic saturated amines having the formula:

$$R-N-(CH_2)_s\left[-N-(CH_2)_s\right]_t-N-R$$
$$\quad\quad R' \quad\quad\quad H \quad\quad\quad R'$$

wherein R and R' independently are selected from the group consisting of hydrogen, C_1 to C_{25} straight or branched chain alkyl radicals, C_1 to C_{12} alkoxy C_2 to C_6 alkylene radicals, and C_1 to C_{12} alkylamino C_2 to C_6 alkylene radicals, wherein each s is the same or a different number of from 2 to 6, and wherein t is a number of from 0 to 10, with the provision that when t=O, at least one of R or R' must be H such that there are at least two of either primary or secondary amino groups, (b) polyoxyalkylene polyamines having the formula:

$$NH_2\text{-alkylene-(O-alkylene)}_m\text{-}NH_2 \quad \text{(b) (i)}$$

where m has a value of about 3 to 70; or

$$R''\text{-[alkylene-(O-alkylene)}_n\text{-}NH_2]_a \quad \text{(b) (ii)}$$

where n has a value of about 1 to 40 with the provision that the sum of all the n's is from about 3 to about 70, R'' is a polyvalent saturated hydrocarbon radical of up to ten carbon atoms, and a is a number from 3 to 6, (c) polyamines having the generalized formula:

$$NH_2\text{—}Z\text{—}NH_2,$$

wherein Z is selected from the group consisting of $-CH_2CH_2CH_2-$, $-(CH_2CH_2CH_2NH)_{n1}CH_2CH_2CH_2-$, where n^1 is 1 to 6, and $-(CH_2CH_2CH_2NH)_{m1}CH_2(CH_2)_p(NH-CH_2CH_2CH_2)_{m2}$, where m^1 and M^2 are each at least 1, $M^1 + M^2$ is from 2 to 5, p is from 1 to 4, and mixtures thereof, and said ester/alcohol friction modifier having been prepared by reacting at least one linear or branched, saturated or unsaturated aliphatic carboxylic acid having from about 7 to about 24 total carbon atoms with at least one polyhydric alcohol selected from the group consisting of aliphatic polyhydric alcohols containing from 3 to 15 carbon atoms and from 2 to about 10 hydroxyl groups, amino alcohols and mixtures thereof, wherein said blend provides an Equivalent Fuel Economy Improvement (EFEI) at least 2.7.

5,282,991

FRICTION MODIFIED OLEAGINOUS CONCENTRATES OF IMPROVED STABILITY

Waddoups Malcolm, Westfield, N.J., and Jacob Emert, Brooklyn, N.Y., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 575,048, Aug. 30, 1990, Pat. No. 5,021,173, which is a continuation of Ser. No. 160,686, Feb. 26, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 688,770

Int. Cl.[5] **C10M** *141/06, 141/12*

U.S. Cl. 252—35 **43 Claims**

1. An oleaginous composition comprising lubricating oil and (A) an oil soluble ashless dispersant which comprises the oil soluble reaction product of a reaction mixture comprising:

(i) a hydrocarbyl substituted C_1 to C_{10} monounsaturated dicarboxylic acid producing material formed by reacting olefin polymer of C_2 to C_{10} monoolefin having a number average molecular weight of from about 300 to 5,000 and a C_1 to C_{10} monounsaturated acid material, said acid producing material having an average of at least about 0.8 dicarboxylic acid producing moieties per molecule of said olefin polymer present in the reaction mixture used to form said acid producing material; and

(ii) a nucleophilic reactant selected from the group consisting of amine, amino alcohol and mixtures thereof;

(B) an oil soluble friction modifier additive which comprises at least one hydroxyamide derivative of a polycarboxylic acid, and (C) an oil soluble copper antioxidant compound, said oleaginous composition being substantially free of boron.

5,282,992

LUBRICATING METAL CLEANER ADDITIVE

David W. Reichgott, Richboro, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Apr. 7, 1992, Ser. No. 864,712

Int. Cl.[5] **C10M** *133/06;* **B08B** *3/04*

U.S. Cl. 252—51.5 R **7 Claims**

1. A method of cleaning and lubricating the external surfaces of a machined metal structure prior to metal to metal contact comprising applying to said external surface a cleaning and lubricating composition comprising an aqueous alkaline cleaning solution and a fatty polyamine lubricity improving agent and drying said cleaning and lubricating composition in place.

5,282,993

LIGHT-STABLE SEMICONDUCTOR MATERIAL BASED ON AMORPHOUS GERMANIUM AND A METHOD FOR ITS PRODUCTION

Franz Karg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

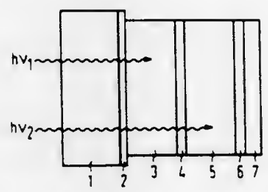
PCT No. PCT/EP91/00165, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO91/12632, PCT Pub. Date Aug. 22, 1991

PCT Filed Jan. 29, 1991, Ser. No. 861,964

Claims priority, application European Pat. Off., Feb. 7, 1990, 90102434.9

Int. Cl.[5] **H01L** *29/14, 31/028*

U.S. Cl. 252—63.2 BT **7 Claims**



1. A light-stable amorphous semiconductor material based on amorphous germanium, preferably for red-sensitive cells in photovoltaic components, consisting of 80 to 90 percent by atomic weight of $Ge_{1-x}Si_x$, where $0 \leqq x \leqq 0.7$, 5 to 20 percent by atomic weight of hydrogen, and oxygen in a concentration of 5×10^{19} cm^{-3} to 2×10^{21} cm^{-3}, the semiconductor material having a compact structure without demonstrable cavities and having a standardized photo-conductivity of more than 10^{-7} cm^2/Vs.

5,282,994

DRY POWDER MIXES COMPRISING PHASE CHANGE MATERIALS

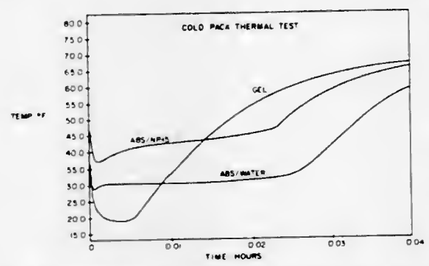
Ival O. Salyer, Dayton, Ohio, assignor to The University of Dayton, Dayton, Ohio

Continuation-in-part of Ser. No. 462,365, Jan. 9, 1990, Pat. No. 5,106,520. This application Apr. 16, 1992, Ser. No. 870,487

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] **C09K** *5/06*

U.S. Cl. 252—70 **10 Claims**



1. A composition, comprising, in combination a phase change material and finely divided silica particles, said phase change material being selected from the group consisting of quaternary ammonium halide linear alkyl hydrocarbons, fatty acids, alcohols and esters, said silica particles having particle sizes of about 0.005 to about 0.025 microns, and said phase change material having a melting point and freezing point of from about −20° to 140° C., said phase change material being present in an amount of about 50–75% by weight and said silica particles being present in an amount of about 25–50% by weight based upon the weight of said composition, said composition being in the form of a freely flowing powder mix.

5,282,995

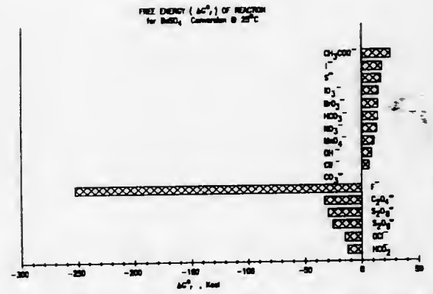
COMPOSITION FOR REMOVING AN ALKALINE EARTH METAL SULFATE SCALE

James M. Paul, DeSoto, and Richard L. Morris, Duncanville, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 332,147, Apr. 3, 1989, Pat. No. 5,093,020. This application Sep. 27, 1991, Ser. No. 766,306

Int. Cl.[5] **C02F** *5/10*

U.S. Cl. 252—80 **12 Claims**



1. A composition for dissolving an alkaline earth metal sulfate scale comprising:

a) an aqueous solution having a pH of from about 8 to about 14 which pH is obtained by adjustment with potassium hydroxide;

b) 0.1 to about 1.0M of a diethylenetriaminepentacetic acid (DTPA) chelating agent, or salts thereof; and

c) a catalyst comprising formate anions having an ionization constant of less than about 10^2 ($K_a < 10^{-2}$) thereby making a composition which can dissolve substantially more of said scale within a substantially reduced time period than is possible with said chelating agent alone.

5,282,996

DETERGENT COMPOSITIONS AND PROCESS FOR PREPARING THEM

Peter W. Appel, Rotterdam; Lucas D. M. Van Den Brekel, Berkel en Rodenrijs; Pieter A. Pel, Delft, and Petrus L. J. Swinkels, Voerendaal, all of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 27, 1992, Ser. No. 859,173

Claims priority, application European Pat. Off., Mar. 28, 1991, 91200740.8

Int. Cl.[5] **C11D** *11/04*

U.S. Cl. 252—100 **9 Claims**

1. A process for the continuous preparation of a granular detergent composition or component, said process comprising the steps of:

(i) continuously feeding 20 to 45% by weight of a liquid acid precursor of an anionic surfactant, and at least an equivalent amount of a solid water-soluble alkaline inorganic material capable of at least partially neutralizing said precursor into a high-speed mixer/densifier; and

(ii) thoroughly mixing said liquid acid precursor and said solid alkaline material in the mixer/densifier to form a powder, the mean residence time being from about 5 to 30 seconds, whereby the moisture content of said powder is from 5 to 15% by weight, and a degree of neutralization of the liquid acid precursor of at least 80% is attained.

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5,282,997

PROCESS AND COMPOSITION FOR DEINKING DRY TONER ELECTROSTATIC PRINTED WASTEPAPER

Sandra K. Richmann, Jacksonville Beach, and Mary Beth Letscher, Jacksonville, both of Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Division of Ser. No. 691,210, Apr. 25, 1991, Pat. No. 5,141,598. This application Jun. 5, 1992, Ser. No. 893,633

Int. Cl.[5] C09D *9/00, 9/04*

U.S. Cl. 252—162 **5 Claims**

1. A composition for enhancing the agglomeration of electrostatic toner particles in the deinking of electrostatic printed wastepaper, said composition comprising a combination of (a) about 10–60% of aliphatic petroleum distillates, said aliphatic petroleum distillates being saturated hydrocarbons having carbon numbers in the range of C9–C12, (b) about 10–89% of an alkylphenoxypoly(ethyleneoxy) ethanol and (c) about 1–80% of an ethoxylated polyoxypropylene glycol, the hydrophile/lipophile balance of both (b) and (c) being less than or equal to 10.0.

5,282,998

MIXTURES OF LINEAR AND CYCLIC SILOXANES OR SILOXANE OLIGOMERS AND A PROCESS FOR THEIR PREPARATION

Michael Horn, and Hans-Joachim Kötzsch, both of Rheinfelden, Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

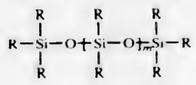
Filed Jun. 2, 1992, Ser. No. 892,254

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, 4118921; Nov. 13, 1991, 4137278

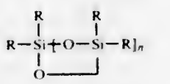
Int. Cl.[5] C07F *7/02, 7/08*

U.S. Cl. 252—182.14 **3 Claims**

1. A mixture of linear and cyclic siloxanes or siloxane oligomers of the formulas



I



II

wherein

m is an integer from 0 to 8, inclusive,

n is an integer from 2 to 8, inclusive, and

each R is independently vinyl, methoxy, ethoxy, alkyl, isoalkyl or cycloalkyl of 1 to 18 carbon atoms,

provides, however, that each silicon atom has no more than one vinyl substituent attached thereto, and the molar ratio of vinyl to alkoxy substituents is 1:1 to 1:8, and the molar ratio of vinyl to alkyl substituents if 1:1 to 1:8.

5,282,999

SORBENT FOR TREATMENT OF EFFLUENT GAS STREAM

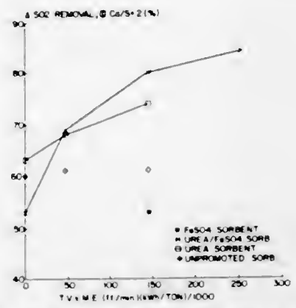
Domingo Rodriguez, Miranda; Roy Payne, Mission Viejo, and Cebers O. Gómez, Miranda, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Jun. 12, 1992, Ser. No. 898,121

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—189 **24 Claims**

1. A process for the production of a sulfur sorbent composition in a mixer having a mixer paddle and an energy supply for supplying energy to the mixer comprising hydrating under high intensity mixing conditions an alkaline earth metal oxide in an amount of about 40 to 52% by weight in an aqueous solution containing a promoting additive wherein the molar ratio of promoting additive to alkaline earth metal in said alkaline earth metal oxide is about 0.001 to 0.2, said promoting additive being selected from a group consisting of urea and mixtures of urea with a water soluble iron salt so as to produce a sulfur sorbent composition, wherein said mixer is operated under the following parameters;



a mixer paddle tip velocity of at least about 500 ft/min;

an energy input to the mixer of at least about 3.5 kW-h per ton of sorbent; and

a mixing time of less than about 15 seconds.

5,283,000

Patent Not Issued For This Number

5,283,001

PROCESS FOR PREPARING A WATER CONTINUOUS EMULSION FROM HEAVY CRUDE FRACTION

Armand A. Gregoli, Tulsa; Daniel P. Rimmer, Broken Arrow, and John A. Hamshar, Owasso, all of Okla., assignors to Canadian Occidental Petroleum Ltd., Calgary, Canada

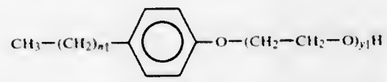
Continuation-in-part of Ser. No. 341,772, Apr. 21, 1989, Pat. No. 5,083,613, which is a continuation-in-part of Ser. No. 218,840, Jul. 14, 1988, Pat. No. 5,000,872, which is a continuation-in-part of Ser. No. 114,204, Oct. 27, 1987, Pat. No. 4,978,365, which is a continuation-in-part of Ser. No. 934,683, Nov. 24, 1986, Pat. No. 4,725,287. This application Apr. 18, 1991, Ser. No. 687,048 The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.[5] B01J *13/00;* **C10L** *1/32;* **F17D** *1/17*

U.S. Cl. 252—314 **82 Claims**

1. A process for preparing an oil-in-aqueous phase emulsion comprising:

agitating a hydrocarbon with an emulsifying composition at a temperature to form an oil-in-aqueous phase emulsion, wherein said emulsifying composition comprises an aqueous phase and a minor amount of an emulsifying agent and said temperature is above 200° F., wherein the amount of aqueous phase in said oil-in-aqueous phase emulsion is from about 15% to about 60% by weight, wherein the emulsifying agent is used in an amount sufficient to assist in the formation of said oil-in-aqueous phase emulsion, and wherein said emulsifying agent comprises at least one ethoxylated alkylphenol compound having the general formula:



wherein n_1 is an integer having a value of from about 7 to about 20, and y_1 is an integer having a value of from about 4 to about 1000; and said at least one ethoxylated alkylphenol compound has a molecular weight distribution with a dispersity of from about 1.0 to about 5.0 and with a weight average molecular weight of from about 1966 to about 9188; and wherein at least about 50% by weight of the emulsifying agent comprises said at least one ethoxylated alkylphenol compound having a molecular weight of from about 1966 to about 9188.

5,283,002

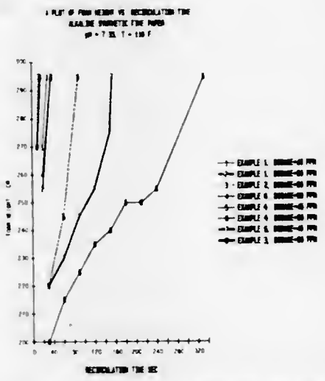
ANTIFOAM/DEFOAMER COMPOSITION AND METHOD OF USE THEREOF IN AQUEOUS SYSTEMS

Duy T. Nguyen, Jacksonville, Fla., assignor to Betz PaperChem, Inc., Jacksonville, Fla.

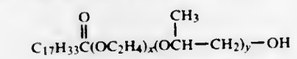
Filed Oct. 11, 1991, Ser. No. 775,673

Int. Cl.[5] B01D *19/04*

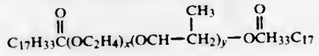
U.S. Cl. 252—321 **14 Claims**



1. A composition comprising a β-branched aldol ether alcohol, water and at least one surfactant selected from the group consisting of sorbitan ester and the ester derived from either polyoxyalkylene oleic acid having the structure:



or, polyoxyalkylene dioleic acid having the structure:



wherein x can be from 1–10 and y can be form 0 to 35 moles and the relative amounts of -branched aldol ether alcohol:surfactant:water are approximately 50–95%:5–50%:0.25–2% by weight.

5,283,003

BLOWING AGENTS FOR FOAMING POLYURETHANE HAVING NO OZONE DEPLETION POTENTIAL AND USES AND PREPARATIONS THEREOF

Wen-Pin Chen, 4070-4A Three Oaks Blvd., Troy, Mich. 48098

Filed Mar. 4, 1993, Ser. No. 26,506

Int. Cl.[5] C09K *3/00;* **C08J** *9/14*

U.S. Cl. 252—350 **19 Claims**

1. A blowing agent having low ozone depletion potential for use in a process for preparing polyurethane foam, said blowing agent comprising:

least one five-carbon member hydrocarbon

a chlorinated alkane, and

methyl formate.

5,283,004

METHOD FOR THE PREPARATION OF A SILICONE DEFOAMER COMPOSITION

Takahiro Miura, Kanagawa, Japan, assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 69,089, Jul. 2, 1987, abandoned. This application Feb. 10, 1989, Ser. No. 310,158

Claims priority, application Japan, Jul. 18, 1986, 61-167840; Feb. 24, 1987, 61-39041

Int. Cl.[5] B01D *19/04*

U.S. Cl. 252—358 **12 Claims**

1. A method for the preparation of a silicone defoamer composition, said method comprising: heating, at a temperature of from about 50° C. to 300° C., in the absence of diluents, a mixture comprising

(1) 0 to 100 weight parts polyorganosiloxane having a viscosity at 25° C. of from 20 to 100,000 centistokes and the average unit formula $R^1_aSiO_{(4-a)/2}$ wherein R^1 is a monovalent hydrocarbon or halogenated hydrocarbon group having one to ten carbon atoms, and has an average value of 1.9 to 2.2;

(2) 0 to 100 weight parts polyorganosiloxane having a viscosity at 25° C. of at least 200 centistokes and the average unit formula $R^2_b(R^3O)_cSiO_{(4-b-c)/2}$ wherein R^2 is a monovalent hydrocarbon or halogenated hydrocarbon group having one to ten carbon atoms, R^3 is the hydrogen atom or a monovalent hydrocarbon group having one to ten carbon atoms, the average value of b+c is 1.9 to 2.2, c is a value sufficient to provide at least one group —OR^3 in each molecule, and at least one group —OR^3 is present at a molecular terminal, the combined quantity of components (1) and (2) being 100 weight parts;

(3) 0.2 to 20 weight parts, per 100 weight parts of the combined quantity of components (1) and (2), of at least one compound selected from the following (i) through (iv),

(i) organosilicon compounds with the formula $R^4_dSiX_{4-d}$ wherein R^4 is a saturated or unsaturated monovalent hydrocarbon group having one to five carbon atoms, X is a hydrolyzable group, and the average value of d is no more than 1,

(ii) the partial hydrolysis condensates of compounds (i),

(iii) siloxane resins essentially composed of $(CH_3)_3SiO_{1/2}$ units and SiO_2 units in which the ratio of $(CH_3)_3SiO_{1/2}$ units to SiO_2 units is within the range of 0.4/1 to 1.2/1, and

(iv) the condensates of compounds (i) or (ii) with compounds (iii);

(4) 0.2 to 30 weight parts, per 100 weight parts of the combined quantity of components (1) and (2), of a finely divided filler;

(5) an effective amount of a reaction catalyst; and

(6) at least 0.2 weight parts, per 100 weight parts of the combined quantity of components (1) and (2), of at least one compound having in each molecule at least 1 group expressed by ≡COR^5, —$COOR^6$ or —$(OR^7)_n$— wherein R^5 and R^6 are the hydrogen atom or saturated or unsaturated monovalent hydrocarbon groups, R^7 is a divalent hydrocarbon group having two to six carbon atoms, and the average value of n is at least 1; said compound being selected from the group consisting of (i) alkylene glycols, (ii) polyhydric alcohols, (iii) carboxylic acids and their metal salts and esters, (iv) nonionic surfactants, (v) polyoxyethylene anionic surfactants, (vi) polyether-modified silicones which are copolymers of linear or resinous siloxanes with polyoxyalkylene, (vii) nonionic fluorinated surfactants and (viii) OH-containing polymeric compounds.

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5,283,005
SYNERGISTIC BIOCIDE COMBINATION FOR INDUSTRIAL FLUIDS

John D. Nelson, Jr., Naugatuck, and Jon R. Geiger, West Hartford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 8, 1992, Ser. No. 957,833
Int. Cl.[5] C10M *129/00*; C02F *1/00*
U.S. Cl. 252—380 9 Claims

1. A composition for controlling bacteria and fungi comprising an aqueous based industrial fluid medium and an antimicrobially effective amount of a combination of a pyrithione and a lipopeptide antibiotic, said lipopeptide antibiotic being selected from the group consisting of polymyxin B, polymyxin E, octapeptin, and combinations thereof, said pyrithione being selected from the group consisting of sodium pyrithione, zinc pyrithione, chitosan pyrithione, magnesium disulfide pyrithione, copper pyrithione, pyrithione acid, and combinations thereof, and said antibiotic being employed in said composition in weight ratio of pyrithione to antibiotic of between about 1:30 and about 700:1.

5. A process for providing biocidal activity to an aqueous industrial functional fluid which comprises incorporating into said fluid an antimicrobially-effective amount of a combination of a pyrithione and a lipopeptide antibiotic.

5,283,006
NEUTRALIZING AMINES WITH LOW SALT PRECIPITATION POTENTIAL

Scott E. Lehrer, Houston, and James G. Edmondson, Conroe, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 30, 1992, Ser. No. 982,803
Int. Cl.[5] C23F *11/14*
U.S. Cl. 252—392 10 Claims

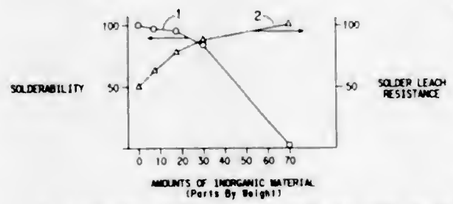
1. A method for preventing fouling cause by amine hydrochloride salts on the internal surfaces of the overhead equipment of a distillation unit in a petroleum refinery during processing of a hydrocarbon comprising adding to the distillation unit a tertiary amine selected from the group consisting of trimethylamine and triethylamine.

8. The method of claim 6 wherein the tertiary amine is added to the vaporized hydrocarbon in the distillation unit.

5,283,007
CONDUCTIVE POLYMER COMPOSITIONS

Yasuo Yamamoto, Fuchi; Akira Inaba, and Takayuki Oba, both of Yokohama, all of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1992, Ser. No. 874,879
Int. Cl.[5] H01B *1/00, 1/02, 1/06, 1/08*
U.S. Cl. 252—518 3 Claims



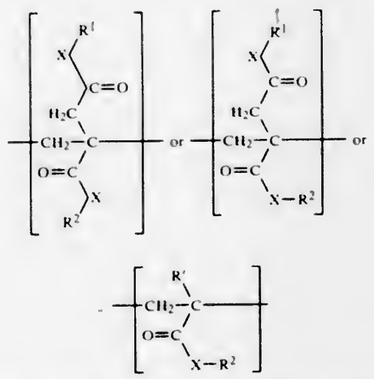
1. An electrically conductive thick film resin composition comprising finely divided particles of (1) a conductive metal dispersed in a liquid organic medium comprising, on a basis of 100 parts by weight of conductive metal, (2) 6–30 parts of acrylic polymer primary binder, (3) 2–40 parts of network resin auxiliary binder having a thermal degradation temperature of at least 300 C., and (4) 3–50 parts of finely divided particles of metal oxide-based material having a softening point of at least 290 C., selected from the group consisting of metal oxide-based glass, TiO_2, Al_2O_3, and mixtures thereof dissolved in (5) volatile organic solvent.

5,283,008
POLY(ALKYLENE OXIDE) VINYL CARBOXYLIC ESTER CONTAINING POLYMER/INORGANIC OXIDE COMPOSITES AND METHODS OF MAKING

Bradley K. Coltran; Neil T. Ferrar, both of Fairport; Christine J. T. Landry, Honeoye Falls, and S. Richard Turner, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 685,319, Apr. 15, 1991, Pat. No. 5,190,698. This application Oct. 19, 1992, Ser. No. 933,622
Int. Cl.[5] H01B *1/06*
U.S. Cl. 252—518 4 Claims

1. A multicomponent composite comprising 10 a polymer containing repeating units derived from a vinyl carboxylic ester having at least one organo terminated poly(alkylene oxide) side chain with the proviso that the poly(alkylene oxide) is present in an amount greater than 35 mole percent of the total of all backbone monomer units and alkylene oxide units in the polymer wherein said polymer can be represented by repeating units having the formula:



wherein at least one of R^1 and R^2 represents $-(R^3\text{-}O)_n-R^4$ where n is an integer from 0 to about 50 and the other R^1 and R^2, as well as R; is independently selected from the group consisting of hydrogen, methyl and ethyl; X is oxygen, nitrogen or sulfur; wherein the unit $-(R^3-O)_n-R^4$, each R^3 is randomly selected from straight or branched chain alkylene, and R^4 is selected from the group consisting of hydrogen, alkyl, alkenyl, haloalkyl, phenyl and substituted aromatic.

and 2) a metal oxide, wherein said metal oxide comprises between about 1 and about 60 percent by weight of said composite.

5,283,009
PROCESS FOR PREPARING POLYHYDROXY FATTY ACID AMIDE COMPOSITIONS

D. Thomas Speckman; Lawrence C. Grahl, and Kofi Ofosu-Asante, all of Cincinnati, Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed Mar. 10, 1992, Ser. No. 848,883
Int. Cl.[5] C11D *3/04, 3/32, 17/08*
U.S. Cl. 252—548 11 Claims

1. A process for preparing a pumpable polyhydroxy fatty acid amide composition, comprising:

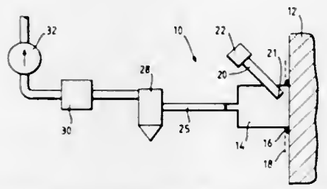
(a) heating to substantially liquid form from about 90% to about 100% by weight of a mixture comprising from about 30% to about 100%, by weight of polyhydroxy fatty acid amide, said mixture being heated to not above 17.8° above its melting point; and

(b) mixing until substantially dissolved from about 0.1% to about 10%, by weight of said compositions, of a soluble inorganic salt or C_{1-3} carboxylate salt with said heated mixture of step (a); said salt including a metal ion selected from the group consisting of potassium, magnesium, calcium, aluminum, lithium, cesium, strontium, and mixtures thereof; wherein said composition comprises from about 10% to about 60% by weight of water and said composition is in a liquid state at a melting point below the normal melting point of said polyhydroxy fatty acid amide and is pumpable at a temperature between about 70° F. (21.1° C.) and about 120° F. (48.9° C.).

5,283,010
TRITIUM REMOVAL

Stephen Waring, Wantage, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 6, 1991, Ser. No. 665,577
Claims priority, application United Kingdom, Mar. 14, 1990, 9005707
Int. Cl.[5] G21F *9/00*
U.S. Cl. 252—626 5 Claims

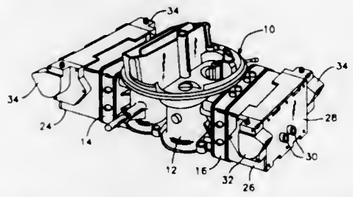


1. A method of removing tritium from a porous solid object comprising concrete, the method comprising irradiating a surface of the concrete object with microwaves of sufficient intensity to vaporize substantially all the water within about 100 mm of the surface, removing water vapor from the surface through an extraction duct incorporating a dust trap, and trapping any water vapor flowing through the duct, the irradiation intensity being such as to vaporize water and to enable it to be removed while not causing cracking or shattering of the concrete.

5,283,011
CARBURETOR WITH DOUBLED FLOAT VALVE FUEL FLOW

John W. McClintic, and Jeff J. McClintic, both of Albuquerque, N. Mex., assignors to McClintic RDM, Inc., Albuquerque, N. Mex.

Filed Jan. 15, 1993, Ser. No. 5,100
Int. Cl.[5] F02M *5/02*
U.S. Cl. 261—23.2 14 Claims



1. In a carburetor of the type including a main body defining a plurality of venturis and having

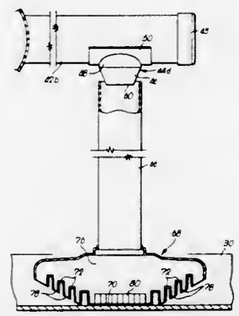
(1) at least one primary metering block removably sealingly mounted to a corresponding side of said body and including main fuel passages opening through said block with main jets controlling the flow of fuel through said passages and removable from the side of said block remote from said body and

(2) a laterally opening float bowl opening toward and sealingly secured over the side of said block remote from said body; the improvement comprising said bowl including two opposite end fuel inlet chambers each including a vertical passage having a fuel inlet line fitting communicated with an upper portion of said vertical passage for communication with a fuel delivery line outlet end, a lower fuel outlet opening directly into a lower portion of said bowl from a lower portion of said passage, a float controlled valve in an intermediate portion of said passage with each valve being under the operative control of a corresponding float within the corresponding end of said float bowl and an elongated upper fuel transfer passage in said bowl extending longitudinally thereof and including opposite ends opening into said upper portions of said vertical passages upstream from the corresponding float controlled valve.

5,283,012
SELF-BALANCING HOT WATER DISTRIBUTION SYSTEM FOR MULTI-LEVEL COOLING TOWER

Bugler, III; Thomas W., Mission, Kans., and Jack D. Bliven, Kansas City, Mo., assignors to The Marley Cooling Tower Company, Mission, Kans.

Filed Mar. 15, 1993, Ser. No. 30,850
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—23.1 20 Claims



1. In a multi-level film fill water cooling tower having upper and lower film fill packs arranged one above the other, means for inducing flow of cooling air through respective fill packs, hot water distribution structure including upper and lower hot water distributors overlying the upper and lower fill packs respectively for delivering hot water across the top of each of the packs, and essentially horizontal main hot water supply means located at an elevation generally above both of the fill packs, a self-balancing hot water distribution system for directing hot water from the main supply means to respective distributors comprising:

a first and a second flow restrictor for the upper and lower hot water distributors respectively,

each of said restrictors having a hot water delivery orifice, and a hot water receiving opening spaced from a corresponding delivery orifice,

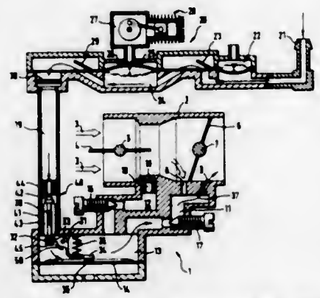
said orifices being sized to cause hot water delivered therefrom to be at a respective predetermined flow that is substantially proportional to the flow of hot water in the main supply line;

means for connecting the hot water supply means to the water receiving openings of each of the restrictors for directing hot water from the supply means to the restric-

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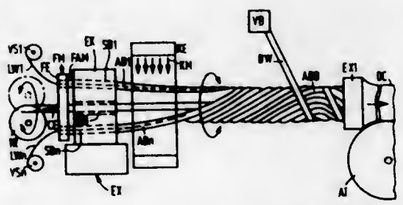
tors to cause delivery of such hot water through a respective orifice,
each of the restrictors being vented to the surrounding atmosphere to a sufficient extent to preclude creation of significant negative pressure on the hot water flowing from a corresponding restrictor,
said first restrictor being functional to deliver hot water exiting from the orifice thereof to the upper distributor;
means for delivering hot water exiting from the orifice of the second restrictor to the lower hot water distributor,
said restrictors being located such that the orifices thereof are in horizontal planes that are within about 3 feet vertically of one another.

5,283,013
MEMBRANE CARBURETOR
Reinhard Gerhardy, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed Sep. 14, 1992, Ser. No. 944,337
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130582
Int. Cl.[5] F02M *17/04*
U.S. Cl. 261—35 **8 Claims**



1. A liquid fueled membrane carburetor for an internal combustion engine such as a two-stroke engine wherein a fuel mixture is drawn in by suction, the membrane carburetor comprising:
a carburetor housing;
a venturi section formed in said housing and defining a flow direction for the combustion air and air/fuel mixture;
a choke flap mounted in said venturi section and a throttle flap mounted in said venturi section downstream of said choke flap viewed in said flow direction;
said carburetor housing further defining an interior space;
a displaceable control membrane disposed in said interior space so as to form a control chamber therein bounded by said membrane;
said venturi section having a main nozzle opening formed therein forward of said throttle flap and an idle nozzle opening formed therein rearward of said throttle flap viewed in said flow direction;
first and second channels respectively connecting said main nozzle opening and said idle nozzle opening to said control chamber and through which fuel can flow to cause changes in pressure in said control chamber thereby displacing said control membrane;
a fuel-feed channel for conducting fuel into said control chamber;
said fuel-feed channel defining a longitudinal axis;
an inlet valve for metering fuel from said fuel-feed channel into said control chamber; said valve including: a valve seat disposed in said fuel-feed channel and an elongated guide body having first and second ends; said guide body having a valve body on said first end for coacting with said valve seat and said guide body being arranged in said fuel-feed channel so as to be movable along said axis between a first position wherein said valve body is in contact engagement with said valve seat to interrupt the flow of fuel into said control chamber and a second position away from said valve seat to allow fuel to flow into said control chamber;
control lever means connected to said second end of said guide body and interconnecting said guide body and said control membrane for transmitting the displacement of said control membrane to said guide body to move said guide body into said second position and said valve body into sealing contact engagement with said valve seat;
said elongated guide body having an outer surface extending parallel to said axis and said outer surface defining a plurality of ribs likewise extending parallel to said axis for guiding said guide body in said channel with radial play relative to the wall of said fuel-feed channel as said guide body moves between said positions;
each two mutually adjacent ones of said ribs defining a passage between said first and second ends so as to permit inflowing fuel to flow past said guide body and into said control chamber when said guide body is in said second position;
said valve body being an elastic lug having a free end face defining a flat sealing surface which lies substantially at right angles to said longitudinal axis in both of said positions of said guide body;
said guide body having an outer diameter and said lug having an outer diameter less than said outer diameter of said guide body;
said valve seat defining an annular sealing surface lying approximately parallel to said flat sealing surface; and,
said outer diameter of said lug corresponding at least to the outer diameter of the smallest annular sealing surface on said valve seat necessary to permit an effective seal to be established notwithstanding said radial play.

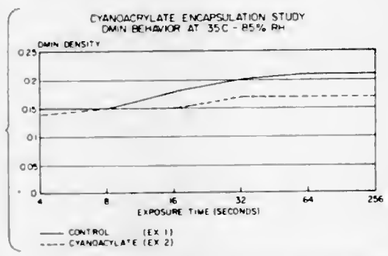
5,283,014
METHOD AND APPARATUS FOR MANUFACTURING AN OPTICAL CABLE
Ulrich Oestreich, Munich, and Reiner Schneider, Ebersdorf B.CBG, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Apr. 27, 1992, Ser. No. 874,380
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120571
Int. Cl.[5] G02B *6/44*
U.S. Cl. 264—1.5 **31 Claims**



1. In a method for manufacturing an optical cable containing at least two light waveguides, said method utilizing an extruder to extrude a protective sheath on the light waveguides being supplied to the extruder, the improvements comprising the extruder having a plurality of nozzles surrounding a center opening, supplying the waveguides eccentrically in separate paths to the extruder, guiding at least one of said waveguides through each nozzle, extruding an envelope at each nozzle onto the light waveguides to form a plurality of independent light waveguide leads leaving the extruder, cooling said plurality of light waveguide leads as they leave the extruder, supplying a central element through the center opening of the extruder and then stranding the leads around the central element to form a lead bundle immediately after cooling with the stranding being performed with a changing direction of rotation to form an SZ-stranding.

16. An apparatus for forming an optical cable having a layer of optical leads SZ-stranded onto a central element, said apparatus comprising an extruder having an extruder head comprising a number of through-bores distributed over a circumference around a center opening to serve the purpose of receiving and guiding light waveguides as an envelope is extruded onto each of the light waveguides to form light waveguide leads, cooling means immediately following said extruder for cooling the extruded envelopes, and means being provided following the cooling means for SZ-stranding the light waveguide leads onto the central element being introduced through the center opening.

5,283,015
METHOD FOR PRODUCING AMINE-FORMALDEHYDE MICROCAPSULES AND PHOTOSENSITIVE MICROCAPSULES PRODUCED THEREBY
David A. Hutchings, Centerville; Margaret T. Thomas, Kettering; William A. Hammann, IV, Miamisburg, and Rong-Chang Liang, Centerville, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Continuation of Ser. No. 463,877, Jan. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 323,734, Mar. 15, 1989, abandoned. This application Jan. 25, 1991, Ser. No. 649,203
Int. Cl.[5] B01J *13/02*; G03C *1/00*
U.S. Cl. 264—4.7 **12 Claims**



1. A process for forming microcapsules having discrete capsule walls comprising the steps of:
forming an emulsion of an oily core material phase in a continuous aqueous phase, said oily core material phase including an isocyanatoacrylate, or activated acrylate pre-wall reactant which reacts with said aqueous phase to form a pre-wall material around said oily core material phase; and
enwrapping particles of said oily core material phase in an amine-formaldehyde condensation product produced by in situ condensation of an amine and formaldehyde.

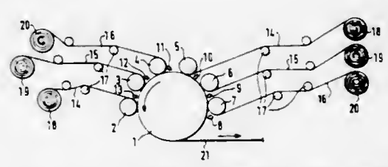
10. A process for forming microcapsulates having discrete capsule walls comprising the steps:
forming an emulsion of an oily core material phase in a continuous aqueous phase, said oily core material phase including a cyanoacrylate pre-wall reactant which reacts with said aqueous phase to form a pre-wall material around said oily core material phase; and
enwrapping particles of said oily core material phase in an amine-formaldehyde condensation product produced by in situ condensation of an amine and formaldehyde.

5,283,016
METHOD FOR PREPARING PHOTOSENSITIVE MICROCAPSULES
Paul Davis, Centerville, and Jacqueline G. Truini, Dayton, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 9, 1989, Ser. No. 321,251
Int. Cl.[5] B01J *13/18, 13/20*; G03C *1/72*
U.S. Cl. 264—4.33 **9 Claims**

1. A method for preparing photosensitive microcapsules which comprises the steps of:
emulsifying a photosensitive composition in a continuous aqueous phase;
forming a wall around the droplets of said photosensitive composition in said aqueous phase and thus producing a capsule slurry;
adjusting the pH of said capsule slurry to 7.0 or less;
adding a thiol to said capsule slurry before or after adjusting said pH, and
retaining said microcapsules in said thiol containing slurry for a period of time sufficient to enable said thiol to diffuse from said slurry into said photosensitive composition.

2. The method of claim 1 wherein said step of forming said wall includes the steps of adding melamine and formaldehyde or a prepolymer thereof to said aqueous phase.

5,283,017
DEVICE AND PROCESS FOR PRODUCING A MULTI-LAYER FILM COMPOSITE
Sabine Rohleder, Weiterstadt; Jochen Coutandin, Langenlonsheim, and Erna Kastl, Huenstetten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 5, 1992, Ser. No. 971,549
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136679
Int. Cl.[5] B29C *65/02*
U.S. Cl. 264—25 **31 Claims**



1. A device for producing a multi-layer film composite having at least two layers of film web sealed together comprising:
(a) a plurality of means for mounting a plurality of film webs, at least one of said plurality of film webs having at least one sealing layer disposed thereon;
(b) a heatable roll which has a circumferential surface where superposed film webs are sealed together and subsequently released from said heatable roll;
(c) a plurality of heatable pressure rolls capable of exerting pressure, heat or both pressure and heat which contact said heatable roll along its circumferential surface and form a gap therebetween, wherein each of said plurality of film webs is guided through said gap between each of said plurality of heatable pressure rolls and the heatable roll to seal said film webs together along the sealing layer by application of pressure to form a multi-layer film composite;
(d) a displaceable heating device disposed near said gap between each of said plurality of heatable pressure rolls and the circumferential surface of said heatable roll for fusing the sealing layers or altering the mechanical characteristics of said film webs; and
(e) at least one additional device selected from the group consisting of a cooling means for cooling said multi-layer film composite upon release from said heatable rolls, an

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embossing means for embossing said multi-layer film composite upon release from said heatable roll and a pressing means for pressing said multi-layer film composite upon release from said heatable roll.

6. A process for producing a multi-layer film composite having at least two layers of film webs, which are alternatively sealable and non-sealable comprising:

(1) feeding a plurality of film webs which are alternately sealable and non-sealable separately and at a distance from each other to a circumferential surface of a heatable roll, said sealable film webs being provided with a sealing layer on both sides, and said non-sealable film webs having no sealing layer thereon;

(2) heating each sealable film web in order to fuse the sealing layers of the film webs or affect the mechanical characteristics of the film webs;

(3) superposing onto a movable first film web said film webs on each other along said circumferential surface;

(4) sealing said superposed film webs with application of heat and pressure at a point of contact of said first film web and said circumferential surface of said heatable roll to form a multi-layer film composite which is layered to a predetermined final thickness by the continual additive sealing of film webs onto said movable first film web; and

(5) releasing said multi-layer film composite from said heatable roll.

5,283,018

PRODUCT ACCEPTANCE/REJECTION JUDGEMENT METHOD FOR AN INJECTION MOLDING MACHINE

Yoshiharu Inaba, Kawasaki; Masao Kamiguchi, and Noriaki Neko, both of Oshino, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

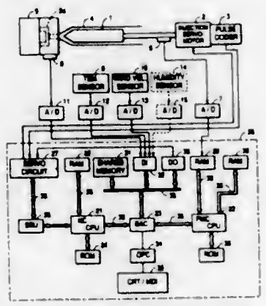
PCT No. PCT/JP91/00715, § 371 Date Feb. 3, 1992, § 102(e) Date Feb. 3, 1992, PCT Pub. No. WO91/18729, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 828,988

Claims priority, application Japan, Jun. 1, 1990, 2-141607

Int. Cl.[5] B29C *45/76*

U.S. Cl. 264—40.1 **7 Claims**



1. A product acceptance/rejection judgment method for an injection molding machine, comprising the steps of:

(a) detecting at least one operating parameter value which directly indicates an ambient property of an injection molding machine operating environment involved in determining whether a product is acceptable or not; and

(b) determining that a molding failure has occurred when the at least one operating parameter value detected in step (a) deviates from tolerance limits thereof.

5,283,019

POROUS SILICON CARBIDE CERAMICS USING FILLED POLYSILOXANES

William H. Atwell; Chandan K. Saha, and Gregg A. Zank, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 4, 1993, Ser. No. 55,892

Int. Cl.[5] C04B *35/56, 38/00*

U.S. Cl. 264—44 **19 Claims**

1. A method of preparing a porous silicon carbide body comprising:

(i) forming a mixture consisting essentially of silicon carbide powder, between about 0.1 and 50 wt % of a preceramic organopolysiloxane based on the weight of the silicon carbide powder wherein the preceramic organopolysiloxane sinters at 1800° C. to a char which contains between 0 and about 10 wt % free carbon based on the weight of the char and the silicon carbide powder, between 0 and about 3 wt. % metal-containing sintering aid based on the weight of the char and the silicon carbide powder, and, optionally, an organopolysiloxane curing agent in an amount effective to cure the organopolysiloxane, with the proviso that either the amount of free carbon derived from the preceramic organopolysiloxane or the amount of metal-containing sintering aid or both is less than about 0.1 wt. %;

(ii) forming the mixture into a shape; and

(iii) sintering the shape in an inert atmosphere at a temperature sufficient to obtain a porous silicon carbide body having a density less than 2.4 g/cm^3 and an open porosity greater than 25%.

5,283,020

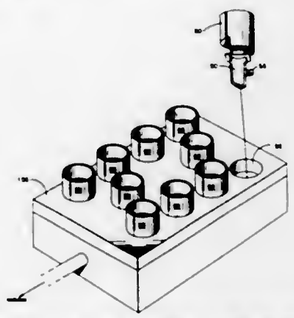
COMPONENT PROTECTION FROM CONTAMINANTS

John E. Gasper, Hebron; Mark R. Jaworowski, East Hartford, and Edward J. Iarusso, Meriden, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 28, 1989, Ser. No. 413,573

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.6 **2 Claims**



1. A method of producing a relatively smooth surface on an article containing cured material within said article, said article having at least one surface connected internal cavity, which comprises:

a. using a mold;

b. clamping said mold to the article;

c. filling said cavity with expanding polymeric material, wherein said expanding polymeric material is negative pressure infiltrated into said article;

d. curing said expanding polymeric material;

e. unclamping said mold from said article;

f. processing said article; and

g. removing said cured material from said article;

whereby the mold essentially conforms to the shape of the article, preventing excess expanding polymeric material from gathering in clumps on the surface of the article.

5,283,021

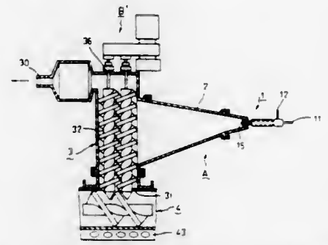
PROCESS FOR REMOVING THE SOLVENT FROM AN ELASTOMERIC POLYMER SOLUTION

Solomon W. F. Shih, Tainan City, Taiwan, assignor to Chi Mei Corporation, Taiwan

Filed Jun. 14, 1993, Ser. No. 76,572

Int. Cl.[5] B29B *13/08;* B29C *47/76*

U.S. Cl. 264—102 **7 Claims**



1. A process for removing the solvent from an elastomeric polymer solution which contains at least 8% by weight of elastomeric polymer, said elastomeric polymer solution undergoing a preprocessing step in order to remove a large part of said solvent, thereafter said elastomeric polymer solution being fed into a main extruder which has a screw mechanism provided therein so that said elastomeric polymer solution is moved forward in said main extruder in order to remove remaining said solvent via at least one vapor removal vent of said main extruder, the improvement comprising that said preprocessing step includes the steps of:

(a) introducing a heating fluid and said elastomeric polymer solution into a static mixer in order to mix completely said heating fluid and said elastomeric polymer solution and heat rapidly and homogeneously said elastomeric polymer solution to a temperature of between 60° C. and 250° C.;

(b) spraying the mixture of said heating fluid and said elastomeric polymer solution under a depressurization atmosphere in order to vaporize said heating fluid and said solvent out of said mixture and form a vaporized heating fluid, a vaporized solvent and a powdered elastomeric polymer;

(c) introducing said vaporized heating fluid, said vaporized solvent and said powdered elastomeric polymer into a fluid-solid separation chamber which has a pair of intermeshing twin extruding screws mounted therein; and

(d) extruding said powdered elastomeric polymer into said main extruder via a polymer outlet of said fluid-solid separation chamber by means of said intermeshing twin extruding screws while removing said vaporized heating fluid and said vaporized solvent via a vapor outlet of said fluid-solid separation chamber.

5,283,022

RESTRICTOR FOR TIRE MOLD VENT PASSAGE AND METHOD OF USE

Donald R. Bartley, Cuyahoga Falls, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio

Continuation of Ser. No. 415,498, Sep. 29, 1989, abandoned. This application Nov. 6, 1991, Ser. No. 794,293

Int. Cl.[5] B29C *35/04*

U.S. Cl. 264—102 **28 Claims**

1. An apparatus for molding a tire, said apparatus comprising:

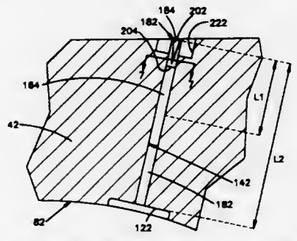
a pair of mold halves, each of said mold halves including surface means cooperable to define a cavity for receiving and shaping the tire and a recess extending from the cavity to form an indicia on the sidewall of the tire;

means for pressing the tire against said surface means;

actuatable vacuum means for evacuating fluid from the cavity and the recess and located between the tire and said surface means defining the cavity as said pressing means presses the tire against said surface means defining the cavity;

passage means for fluidly communicating the cavity and the recess with the atmosphere, said passage means including a first end portion adjacent the cavity and a second end portion adjacent the exterior of said pair of mold halves, said second end portion having a length less than half the length of said passage means in which the lengths are taken in a direction substantially parallel to the direction of fluid flow through said passage means; and

means located entirely within said second end portion of said passage means for restricting fluid at atmospheric pressure from flowing into the cavity and the recess during actuation of said vacuum means.



18. A method for molding a tire, said method comprising the steps of:

placing an uncured tire in a cavity of a mold having a recess extending from the cavity to form an indicia on the sidewall of the tire;

pressing the uncured tire against surfaces defining the cavity and the recess;

evacuating fluid in the cavity and recess from between the uncured tire and the surfaces defining the cavity and the recess during said pressing step;

venting the recess to the atmosphere through a passage having a first end portion adjacent the recess and a second end portion adjacent the exterior of the mold and which second end portion has a length less than half of the total length of the passage;

restricting the flow of fluid at atmospheric pressure through the second end portion of the passage during evacuation of fluid from the cavity and the recess before the recess is sealed off from the cavity by the tire being pressed against surfaces defining the cavity; and

curing the tire.

5,283,023

METHOD OF IMPARTING DELAYED WETTABILITY TO A NONWOVEN WEB

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 3, 1992, Ser. No. 818,030

Int. Cl.[5] D01F *1/10*

U.S. Cl. 264—103 **7 Claims**

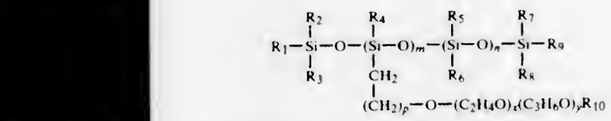
1. A method of forming a nonwoven web having delayed wettability, in that said web is not wettable by water upon its formation but becomes wettable within from about three hours to about 30 days thereafter without any post-formation treatment, which method comprises the steps of:

(A) melting a mixture which comprises a thermoplastic polyolefin, an additive, and a retardant coadditive;

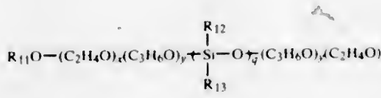
(B) forming fibers by extruding the resulting melt through a

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die at a shear rate of from about 50 to about 30,000 sec^{-1} and a throughput of no more than about 5.4 kg/cm/hour;
(C) drawing said fibers; and
(D) collecting said fibers on a moving foraminous surface as a web of entangled fibers;
in which:
(1) said additive has the general formula I,



in which:
(a) R_1-R_9 are independently selected monovalent C_1-C_3 alkyl groups;
(b) R_{10} is either hydrogen or a monovalent C_1-C_3 alkyl group;
(c) m represents an integer of from 1 to 3;
(d) n represents an integer of from 0 to about 5;
(e) p represents an integer of from 0 to about 5;
(f) x represents an integer of from 1 to about 10;
(g) y represents an integer of from 0 to about 5;
(h) the ratio of x to y is equal to or greater than 2;
(i) said additive has a molecular weight of from about 700 to about 1,300;
(j) said additive has a polydispersity of from about 1.3 to about 3.0; and
(k) said additive is present in an amount of from about 1.8 to about 3.0 percent by weight, based on the amount of thermoplastic polyolefin;
or the general formula II,

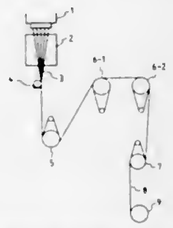


in which:
(a) R_{11} and R_{14} independently are either hydrogen or a monovalent C_1-C_3 alkyl group;
(b) R_{12} and R_{13} are independently selected monovalent C_1-C_3 alkyl groups;
(c) q represents an integer from about 1 to about 12;
(d) x represents an integer from 1 to about 10;
(e) y represents an integer from 0 to about 5; and
(f) the ratio of x to y is equal to or greater than 2;
(g) said additive has a molecular weight of from about 700 to about 1,300;
(h) said additive has a polydispersity of from about 1.3 to about 3.0; and
(i) is present in an amount of from about 1.8 to about 3.5 percent by weight, based on the amount of thermoplastic polyolefin; and
(2) said retardant coadditive is a high surface area particulate inorganic or organic material, which retardant coadditive:
(a) is insoluble in the polymer at both ambient and meltextrusion temperatures;
(b) is present in an amount of from about 0.1 to about 1 percent, based on the weight of said thermoplastic composition;
(c) has a surface area of from about 50 to about 1,000 m^2; and
(d) is capable of being at least partially coated by said additive.

5,283,024
METHOD OF PRODUCING PERBORATE
Klaus Koester, Langenfeld; Franz-Josef Carduck, Haan; Ulrich Jahnke, Monheim, all of Fed. Rep. of Germany, and Seamus French, Oatley, Australia, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
PCT No. PCT/EP89/01015, § 371 Date Dec. 9, 1991, § 102(e) Date Dec. 9, 1991, PCT Pub. No. WO90/02703, PCT Pub. Date Mar. 22, 1990
PCT Filed Aug. 30, 1989, Ser. No. 659,332
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1988, 3830545
Int. Cl.[5] C01B *15/12*
U.S. Cl. 264—118 **17 Claims**

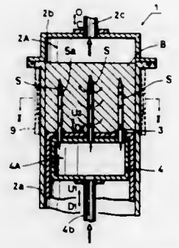
1. A method for the production of a granular sodium perborate tetrahydrate comprising: softening powdery perborate tetrahydrate by heating under pressure to form a plastically deformable mass, deforming the plastically deformable mass into thin strands by pressing, and comminuting said strands, wherein 0.3 to 5% by weight of a sodium salt or a potassium salt of a polymeric carboxylic acid are mixed into the powdery tetrahydrate before deforming, and wherein the carboxylic acid exhibits an acid value between 100 and 1000, as well as an average molecular weight between 4000 and 300,000.

5,283,025
PROCESS FOR PRODUCING MULTIFILAMENTS
Hitoshi Uda; Tetsuya Takahashi; Ryosuke Kamei, and Takeshi Sano, all of Kanagawa, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 4, 1993, Ser. No. 99
Claims priority, application Japan, Jan. 9, 1992, 4-2216; Feb. 4, 1992, 4-19108
Int. Cl.[5] D01D *5/088, 5/092, 5/096*
U.S. Cl. 264—130 **14 Claims**



1. A process for producing multifilaments having high fiber strength, comprising the steps of:
melt spinning a polyolefin at a first temperature into filaments;
cooling the spin filaments with a first chill means which is of a non-contact type and is held at a second temperature;
cooling the filaments at a third temperature with a second chill means which is of a contact type for forcibly conductively cooling the filaments; and
drawing continuously the filaments at a high draw ratio in-line with heating rolls having a predetermined surface temperature so that the filaments cooled at said third temperature are directly and continuously treated by said heating rolls.

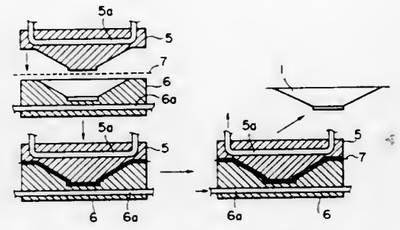
5,283,026
METHOD FOR MOLDING FIBER-REINFORCED COMPOSITE MATERIAL
Toshiaki Okumura, Nishinomiya; Takao Ekimoto, Kobe; Kourou Takatsuka, Ashiya; Ryosaku Kadowaki; Ryuichiro Kato, both of Kobe; Masahiro Tomita, Kobe; Katsumi Ogawa, Amagasaki; Kimio Inoue; Fumiaki Komatsu, both of Kobe, and Atsushi Takusagawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
PCT No. PCT/JP90/01628, § 371 Date Aug. 8, 1991, § 102(e) Date Aug. 8, 1991, PCT Pub. No. WO91/08883, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 12, 1990, Ser. No. 741,515
Claims priority, application Japan, Dec. 12, 1989, 1-322836; Dec. 12, 1989, 1-322837; Dec. 12, 1989, 1-322838; Dec. 12, 1989, 1-322839
Int. Cl.[5] B29B *13/02*
U.S. Cl. 264—234 **6 Claims**



1. A method for molding a fiber-reinforced composite material comprising a synthetic resin material and reinforcing fibers dispersed therein, wherein the method comprises the steps of forming said composite material into an agglomerated preform, preheating said preform from the interior thereof, and molding the preheated preform into a desired shape, wherein said preheating step is performed by a heating means selected from the group consisting of one or more gas nozzles which are inserted into said preform and through which a high temperature gas is blown to heat said preform, one or more rod-shaped heaters which are inserted into said preform, and one or more holes having one closed end formed in said preform into which a high temperature gas is blown to heat said preform.

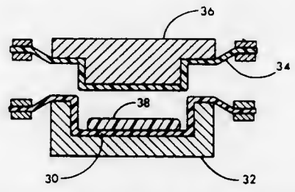
5,283,027
METHOD OF MOLDING AN ACOUSTIC DIAPHRAGM PART OF PARA AROMATIC POLYAMIDE
Yoshio Sakamoto, Tokyo; Syuhei Ohta, Tate; Yuji Yabuki, and Shigemitsu Muraoka, both of Miyazaki, all of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, both of Japan
Continuation of Ser. No. 770,221, Oct. 3, 1991, abandoned, which is a division of Ser. No. 549,175, Jul. 5, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 26,198
Claims priority, application Japan, Jul. 5, 1989, 1-178989; Aug. 28, 1989, 1-218701
Int. Cl.[5] B29C *43/04*
U.S. Cl. 264—320 **1 Claim**

1. A method of molding a film of para-orientation aromatic polyamide into an acoustic diaphragm part comprising the steps of:
(a) providing female and male dies;
(b) heating the female and male dies to a temperature of approximately half the melting point of the para-orientation aromatic polyamide;
(c) setting the film of para-orientation aromatic polyamide between the heated female and male dies;
(d) pressing the set film by the heated dies at a pressing speed of from 15 mm/sec. to 20 mm/sec. to form the acoustic diaphragm part;
(e) cooling the dies to a temperature below approximately 80° C. while maintaining said pressing; and



(f) releasing the dies to remove the formed acoustic diaphragm part from the dies.

5,283,028
PROCESS FOR PRODUCING A SELECTIVELY REINFORCED THERMOFORMED ARTICLE
Harlon W. Breezer, and William F. Price, both of Portage, Wis., assignors to Penda Corporation, Portage, Wis.
Division of Ser. No. 518,011, May 2, 1990. This application Jun. 30, 1992, Ser. No. 907,705
Int. Cl.[5] B29C *51/10, 51/12*
U.S. Cl. 264—511 **1 Claim**



1. A process for producing twin-sheet thermoformed articles having a reinforced portion comprising the steps of:
(a) heating a first sheet and a second sheet of thermoplastic material;
(b) forming the heated first and second sheets in first and second molds respectively;
(c) heating a reinforcing insert of thermoplastic to a forming temperature at which the insert is semi-solid;
(d) placing the heated reinforcing insert of thermoplastic material on the first sheet after it has been formed in the first mold at a selected location to be reinforced; and
(e) then pressing the heated second sheet within the second mold into contact with the heated first sheet and the heated reinforcing insert within the first mold to form the reinforcing insert between the sheet so that a fusion of the thermoplastic sheets and the reinforcing insert takes place to produce a continuous integral reinforced section of the article having a desired molded shape.

VOL 1159 ISS 1 FE 1 1994 UMI

5,283,029

METHOD OF MOULDING A SHEET INCLUDING THE USE OF HEATED BARRIER FLUID

John W. Ellemor, Cnr. Main Road and One Tree Hill Road, Ferny Creek, Victoria, Australia

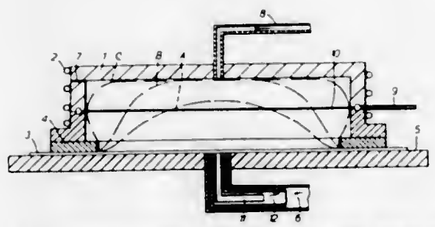
PCT No. PCT/AU85/00062, § 371 Date Mar. 14, 1986, § 102(e) Date Mar. 14, 1986, PCT Pub. No. WO85/04364, PCT Pub. Date Oct. 10, 1985

Continuation of Ser. No. 311,414, Feb. 15, 1989, abandoned, which is a continuation of Ser. No. 810,369, Mar. 14, 1986, abandoned. This PCT application Mar. 27, 1985, Ser. No. 983,603

Claims priority, application Australia, Mar. 27, 1984, PG4268/84

Int. Cl.[5] B29C *51/10, 51/34, 51/42*

U.S. Cl. 264—544 6 Claims



1. A method of moulding an article of complicated shape out of a preformed sheet with the use of a female forming element having an internal surface of complicated shape, comprising:

progressively stretching said sheet to a position approaching said internal surface of the forming element by applying pressure to the sheet from the side thereof opposite the female forming element,

introducing a heated fluid into the forming element during said stretching in the vicinity of one or more portions of said internal surface of the forming element which would otherwise be first contacted by the sheet in the absence of such a barrier, at a sufficient pressure to act as a continuously flowing thin barrier layer between the stretching sheet and said portion,

controlling the pressure and temperature of the heated barrier fluid while the sheet continues to spread over adjacent areas of the forming element still separated by the thin layer of heated barrier fluid until it is stretched into substantially the final shape of the article in close conformity with said internal surface of the forming element while remaining out of contact with said forming element, wherein the pressure and temperature control is selected so as to obtain a predetermined thickness profile in the article which would otherwise be unobtainable given the complicated shape of the internal surface of the forming element,

stopping the flow of the barrier fluid, and

continuing to apply pressure to the sheet from the side thereof opposite the female forming element whereby to stretch the sheet further to the limits provided by the internal surface of the forming element.

5,283,030

COATED CEMENTED CARBIDES AND PROCESSES FOR THE PRODUCTION OF SAME

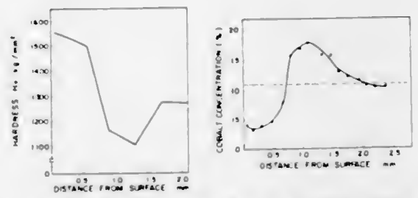
Minoru Nakano, and Toshio Nomura, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 634,549, Dec. 27, 1990, Pat. No. 5,181,953. This application Oct. 7, 1992, Ser. No. 957,100

Claims priority, application Japan, Dec. 27, 1989, 1-344521; Dec. 27, 1989, 1-344522; Dec. 28, 1989, 1-344508; Dec. 21, 1990, 2-412717

Int. Cl.[5] B22F *3/02, 3/12, 7/02;* B05D *3/02*

U.S. Cl. 419—53 3 Claims



1. A process for the production of a surface-coated cemented carbide comprising:

a) preparing a substrate for the surface-coated cemented carbide by the sequential steps of:

i) compacting or sintering at least one member from a group consisting of carbides, nitrides and carbonitrides of Group IVa, Va and VIa metals of the Periodic Table and a binder consisting of at least one member selected from iron group metals into a body having a density of 50 to 99.9% by weight, and

ii) heating or maintaining the body in a carburizing atmosphere or in a carburizing and nitriding atmosphere in a solid phase, in a solid-liquid phase or through a solid phase to a solid-liquid phase, wherein a binder phase-enriched layer is formed in a space between 0.1 mm and 2 mm below the surface of the substrate and there are pores of A-type or B-type or mixtures of A-type and B-type pores inside the binder phase-enriched layer, and

b) coating the substrate with monolayer or multilayer consisting of at least one member selected from the group consisting of carbides, nitrides, oxides and borides of Group IVa, Va and VIa metals of the Periodic Table, solid solutions thereof, and aluminum oxide.

5,283,031

PROCESS FOR PORDUCING PRECISION METAL PART BY POWDER MOLDING WHEREIN THE HYDROGEN REDUCTION LOSS IS CONTROLLED

Naoto Ogasawara, Saitama; Kenji Kurimura; Ken-ichi Yoshioka, both of Tokyo; Shigeru Saito; Takao Kasai, both of Saitama; Masami Hoshi, Tokyo, and Seiichi Nakamura, Yamanashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

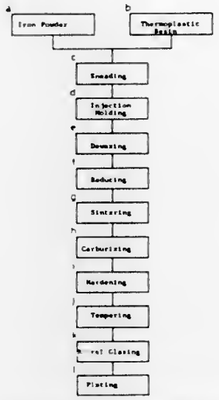
Filed Jul. 23, 1991, Ser. No. 734,509

Claims priority, application Japan, Jul. 24, 1990, 2-193837

Int. Cl.[5] B22F *3/12*

U.S. Cl. 419—58 8 Claims

1. A process for producing a precision iron or iron alloy part of a sintered body formed by powder molding, said process comprising the steps of forming a homogeneous mixture consisting essentially of an iron or iron alloy powder having an oxygen content of 0.5 to 6 wt. % and a hydrogen reduction loss of 1 to 7 wt. % by controlling the reduction of the iron or iron alloy powder, and an organic binder, forming the mixture into a molded body having a prescribed form, removing the organic binder from the molded body in an inert atmosphere, reducing said iron or iron alloy powder contained in the



molded body to remove oxygen therefrom and form a reduced molded body and sintering the reduced molded body.

5,283,032

CONTROLLED THERMAL EXPANSION ALLOY AND ARTICLE MADE THEREFROM

Edward A. Wanner, and Daniel A. DeAntonio, both of Leesport, Pa., assignors to CRS Holdings, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 571,170, Aug. 21, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,403

Int. Cl.[5] C22C *38/52*

U.S. Cl. 420—586 14 Claims

1. A precipitation strengthenable, nickel-cobalt-iron base alloy consisting essentially of, in weight percent, about

Carbon 0.2 max.
Manganese 1 max.
Silicon 0.1–0.8
Phosphorus 0.015 max.
Sulfur 0.010 max.
Chromium 2.0–10
Nickel 15–29
Molybdenum 3 **max.**
Cobalt 24–46
Titanium 0.3–2
Aluminum 1 **max.**
Niobium 3–7
Vanadium 0.5 **max.**
Zirconium 0.1 **max.**
Boron 0.02 **max.**
Copper 0.5 **max.**
Tungsten 0.5 **max.**

and the balance is essentially iron, wherein

a)

$$0.3 \leqq \frac{\%\,Ni - 1.4(\%\,Nb) - 4.8(\%\,Al) - 2.7(\%\,Ti)}{\%\,Co - 0.3(\%\,Nb) - 1.1(\%\,Al) - 0.6(\%\,Ti)} \leqq 1.3;$$

b)

$$47 \leqq \frac{[\%\,Ni + \%\,Co - 1.7(\%\,Nb) - 5.9(\%\,Al) - 3.3(\%\,Ti)] \times 100}{\%\,Ni + \%\,Co + \%\,Cr + \%\,Fe - 1.81(\%\,Nb) - 6.28(\%\,Al) - 3.52(\%\,Ti)} \leqq 53;$$

c) the combined amount of niobium, titanium, and aluminum is about 3–7 atomic percent of the alloy;

d) niobium, titanium, and aluminum are proportioned such that the ratio %Nb:%Ti = 3:1 to 8:1 and the ratio %Ti:%Al ≧ 1:1; and

e) molybdenum and chromium are proportioned such that the ratio %Mo:%Cr ≦ 1:2.

5,283,033

PROCESS FOR STERILIZING THE CONTENTS OF A SEALED DEFORMABLE PACKAGE

Robert K. Dodrill, Wheaton, Ill., assignor to Advanced Retort Systems, Inc., Addison, Ill.

Filed Nov. 29, 1991, Ser. No. 800,326

Int. Cl.[5] A61L *2/00*

U.S. Cl. 422—21 25 Claims

1. A process for cooling the contents of a sealed, deformable package, comprising the steps of:

A. providing a sealed deformable container which has been sealed at a sealing temperature, T_p, and a sealing pressure, P_p, and which contains non-gaseous contents and a headspace, wherein said non-gaseous contents comprise a volatile material which has a point of lowest temperature within it and a partial saturated volatile material vapor pressure, P_{w2}; said headspace comprises a noncondensing gas and has an average temperature, T_a; and said noncondensing gas has a partial pressure, P_a;

B. Placing said sealed deformable container in a processing vessel including means for regulating its interior pressure, P_T;

C. contacting said non-gaseous contents of said sealed deformable container with a heat-transfer medium having a temperature T_w, effective to cool said non-gaseous contents of said sealed deformable container; and

D. maintaining said interior pressure P_T, at any given time, at a value substantially equal to the sum of

(1) said partial pressure, P_a of said noncondensing gas inside said sealed deformable container at said average temperature, T_a, of said headspace of said sealed deformable container at said given time, and

(2) said partial saturated volatile material vapor pressure, P_{w2}, at said lowest temperature, T_2, inside said sealed deformable container at said given time.

5,283,034

STABILIZATION OF STERILIZED SURFACES FOR RESEARCH AND MEDICAL USE

David A. Okrongly, Saratoga; Donald Lamons, Mountain View, and Thomas B. Okarma, Palo Alto, all of Calif., assignors to Applied Immune Sciences, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 785,222, Oct. 28, 1991, which is a continuation of Ser. No. 638,030, Jan. 2, 1991, abandoned, which is a continuation of Ser. No. 374,091, Jun. 29, 1989, abandoned. This application Mar. 26, 1992, Ser. No. 858,125

Int. Cl.[5] H61L *2/00*

U.S. Cl. 422—22 44 Claims

38. A method to prepare a sterile polymeric surface comprising a biologically active agent coupled thereto, which method comprises:

a) applying to a surface comprising a biologically active agent coupled thereto at least one surface-stabilizing agent and at least one oxygen radical scavenger, whereby the activity of the biologically active agent is preserved when subjected to sterilizing amounts of irradiation;

b) drying said coupled surface to a moisture content of less than 1%; and

c) subjecting said coupled surface to sterilizing amounts of ionizing radiation.

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5,283,035

METHOD FOR RECOVERING A STERILIZING GAS

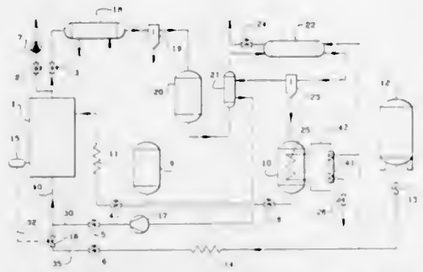
Michael Karthaus, Neuss; Peter Hermanns, Wesel, and Klaus Hermanns, Hünxe, all of Fed. Rep. of Germany, assignors to Herco-Kühltechnik Hermanns U. Co. GmbH, Wesel and Air Products GmbH, Hattingen, both of Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,821

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138321

Int. Cl.[5] **A61L** *2/16, 9/00;* **F25J** *3/00*

U.S. Cl. 422—31 **13 Claims**



1. A method for recovering a sterilizing gas such as ethylene oxide, comprising the steps of

a) sterilizing materials in a sterilizing chamber with a sterilizing gas,

b) extracting a gas containing said sterilizing gas from said sterilizing chamber to produce an extracted gas,

c) liquefying a part of the sterilizing gas contained in said extracted gas to produce a liquefied sterilizing gas,

d) separating said liquified sterilizing gas from a non-liquefied portion of said extracted gas, and

e) returning said non-liquefied portion of said extracted gas to said sterilizing chamber, and continuously replacing at least a part of said liquefied sterilizing gas with an inert gas by supplying at diminishing addition rates said inert gas to said sterilizing chamber thereby reducing the concentration of said sterilizing gas in the sterilizing chamber.

5,283,036

APPARATUS FOR COUPLED LIQUID CHROMATOGRAPHY AND NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY MEASUREMENTS

Martin Hofmann, Rheinstetten, and Manfred Spraul, Ettlingenweier, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany

Filed Feb. 5, 1992, Ser. No. 831,775

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, 4104075

Int. Cl.[5] **B01D** *15/08;* **G01N** *30/02, 24/08*

U.S. Cl. 422—70 **12 Claims**

1. An apparatus for carrying out coupled liquid chromatography and nuclear magnetic resonance spectroscopy measurements, said apparatus comprising:

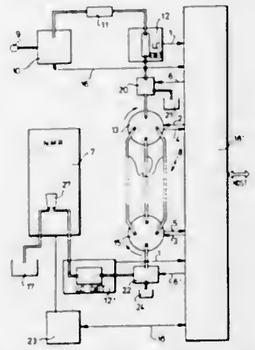
a liquid chromatograph having column means for fractionating an eluent into eluent components and first detector means, positioned downstream of said column, for detecting the eluent components and producing detector signals;

a nuclear magnetic resonance (NMR) spectrometer including measuring head means for measuring the eluent components detected by the liquid chromatograph;

an intermediate storage device means, interconnected between said liquid chromatograph and said nuclear magnetic resonance spectrometer, for intermediately storing pertinent components of the eluent complying with predetermined conditions, said storage device means having a plurality of intermediate stores each storing one component of the eluent;

first multiple way turning valve means, disposed between said first detector means and said intermediate storage device means, for selectively feeding the eluent components into the intermediate stores;

second multiple way turning valve means, disposed between said intermediate storage device means and said NMR spectrometer, for selectively feeding the eluent pertinent components into the NMR spectrometer; and



evaluating and control means having an input connected to the first detector means, a first output connected to said first multiple way turning valve, and a second output connected to said second multiple way turning valve, for supplying a first turning valve control signal to successively feed one detected eluent component into one intermediate store, and a second turning valve control signal to successively feed each pertinent stored component into the NMR spectrometer in response to receiving signals from said first detector means.

5,283,037

CHEMICAL SENSOR UTILIZING A SURFACE TRANSVERSE WAVE DEVICE

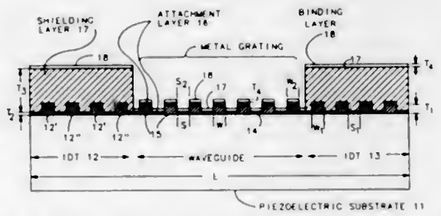
Richard L. Baer, and Curt Flory, both of Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 251,149, Sep. 29, 1988, Pat. No. 5,130,257. This application Nov. 15, 1991, Ser. No. 792,975

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] **G01N** *33/00, 27/00;* **H01L** *41/00, 41/08*

U.S. Cl. 422—82.01 **17 Claims**



1. A surface transverse wave device suitable for use as a sensor in a liquid, said device comprising:

a piezoelectric substrate having a sensing surface;

at least one transducer attached to said piezoelectric substrate for converting applied electric signals into acoustic signals in said piezoelectric substrate;

a surface trapping structure, having dielectric material, for trapping acoustic waves in the substrate at the sensing surface of said substrate; and

a chemically reactive layer that reacts with a class of solutes to be detected in said liquid.

5,283,038

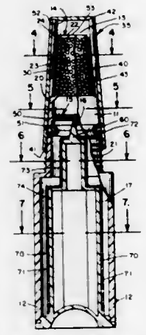
FLUID SAMPLING AND TESTING DEVICE

Eugene H. Seymour, Pacific Palisades, Calif., assignor to Saliva Diagnostic Systems, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 629,278, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 722,333, Jun. 25, 1991, abandoned. This application Oct. 11, 1991, Ser. No. 775,195

Int. Cl.[5] **G01N** *33/48;* **C12M** *1/28, 1/30*

U.S. Cl. 422—101 **5 Claims**



1. A fluid sampling and testing device comprising:

a. a container having a first portion and a second portion wherein said first portion of said container is a hollow, truncated cone having an open threaded end, a closed end, a wall with an outer surface and an inner surface with holes therethrough connecting the open threaded end and the closed end;

b. collecting means for collecting a measured amount of sample fluid, said collecting means comprising a piece of filter paper which is mechanically coupled to said hollow, truncated cone being disposed on said outer surface of the wall covering said holes;

c. removing means for removing said measured amount of sample fluid from said piece of filter paper, said removing means being coupled to said container;

d. a seal which seals said first portion of said container from said second portion thereof;

e. an opener which opens said seal so that said measured amount of sample fluid may enter said second portion of said container from said first portion thereof; and

f. a tester which tests said measured amount of sample fluid, said tester being coupled to said container in said second portion thereof.

5,283,039

MULTI-WELL FILTRATION APPARATUS

James E. Aysta, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 761,433, Sep. 18, 1991, Pat. No. 5,205,989. This application Jan. 6, 1993, Ser. No. 985

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

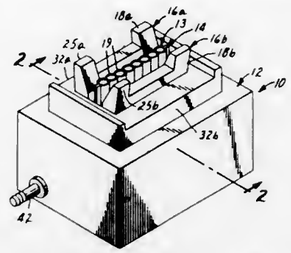
Int. Cl.[5] **B01L** *9/00*

U.S. Cl. 422—104 **15 Claims**

1. An apparatus for supporting a multi-well filtration plate, which comprises:

(a) a housing; and

(b) a means for securing a multi-well filtration plate to the housing, the securing means being attached to the housing and including at least one pivotable member and being capable of permitting the multi-well filtration plate to be



secured to the housing by pressing the multi-well filtration plate against the at least one pivotable member of the securing means.

5,283,040

DEVICE FOR THE PRODUCTION OF A REACTION MIXTURE FROM AT LEAST TWO FLOWABLE REACTION COMPONENTS

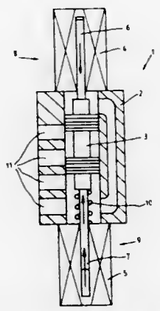
Ferdinand Althausen, Neunkirchen; Jürgen Wirth, Köln, and Reiner Raffel, Siegburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 898,632

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120321

Int. Cl.[5] **C08F** *2/00;* **G05B** *1/00;* **G05D** *16/00;* **F17D** *1/00*

U.S. Cl. 422—133 **1 Claim**



1. In a device for the production of a reaction mixture from at least two flowable reaction components, comprising storage containers and supply lines which lead via at least one servo-controlled inlet member into a mixing chamber, where the inlet member or other switch-over member is associated with at least one sliding valve, a slide having a first and second opposing sides which is activated by a moving electromagnet on the first side of the slide causing movement of said slide against the force of a restoring spring, the improvement comprising a holding electromagnet in the second opposing side of the slide, the activation of which prevents movement of said slide and which when activated, opposes the force of said moving electromagnet.

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5,283,041

CATALYTIC INCINERATION OF ORGANIC COMPOUNDS

Pascaline H. Nguyen, Morganville; Eric W. Stern, Mountainside; Michel Deeba, N. Brunswick, and Patrick L. Burk, Freebold, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Aug. 13, 1992, Ser. No. 929,734
Int. Cl.[5] B01D *53/36;* **B01J** *21/06, 23/22, 23/64*
U.S. Cl. 423—240 S **26 Claims**

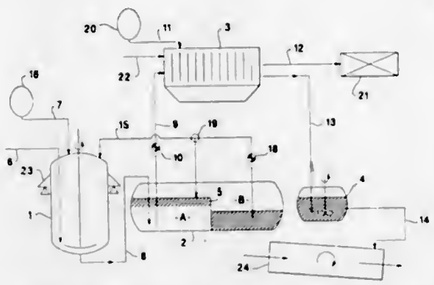
14. A process for treating a gas stream containing compounds selected from the group consisting of halogenated organic compounds, other organic compounds and mixtures thereof, comprising contacting said gas stream at a temperature of from about 175° C. up to about 550° C. with a catalyst comprising from about 40 up to about 8 weight percent of zirconium oxide and (i) vanadium oxide and (ii) at least one oxide selected from the group consisting of manganese oxide, cerium oxide and cobalt oxide in the presence of an effective amount of oxygen and water.

5,283,042

PROCESS FOR THE PURIFICATION OF WHITE PHOSPHORUS

Jean-Claude Legrand, Lyons; Philippe Bourdauducq, Chaponost, and Thierry Bulinge, Epierre, all of France, assignors to Atochem, Puteaux, France

Filed Dec. 23, 1991, Ser. No. 811,979
Claims priority, application France, Dec. 21, 1990, 90 16165
Int. Cl.[5] C01B *25/047*
U.S. Cl. 423—322 **15 Claims**



1. A process for the purification of impure white phosphorus values, comprising (a) reacting liquid, impure white phosphorus with an aqueous suspension of a purifying amount of active charcoal to provide a mixture of purification, (b) separating said mixture of purification into a settled phase consisting essentially of a spent active charcoal and phosphorus-containing phase and an aqueous phase, (c) separating said spent active charcoal and phosphorus-containing phase into purified liquid white phosphorus and spent active charcoal, and (d) recovering said purified white phosphorus.

5,283,043

DIRECT CRYSTALLIZATION OF ORGANIC-SWELLED LAYERED SILICATES AND PREPARATION OF LAYERED SILICATES CONTAINING INTERLAYER POLYMERIC CHALCOGENIDES THEREFROM

Ivy D. Johnson, Medford, and Michael E. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 16, 1992, Ser. No. 869,589
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—328.2 **19 Claims**

1. A method for preparing by direct crystallization an organic-swelled crystalline layered silicate which contains organic material between the layers, which method comprises:

a) providing a reaction mixture comprising water, a source of alkali metal, a source of silicon oxide, and an organic onium compound of the formula $R^1R^2R^3R^4M^+X^-$ wherein each R can have up to 24 carbon atoms and is selected from the group consisting of alkyl or alkenyl, provided at least one R has at least eight carbon atoms, M is an element capable of coordination with said $R^1R^2R^3$ and R^4 to form a cation and X is an anion, said mixture having a pH of at least about 9.0;

b) heating said reaction mixture to a temperature between about 90° C. to about 200° C.; and

c) maintaining said reaction mixture at a temperature of from 90° C. to 200° C. and a pH of 9 to 14 until crystals of a layered silicate material containing intercalated organic material derived from said onium compound are formed.

5,283,044

SUPER HEAT-RESISTANT SILICON CARBIDE FIBERS FROM POLY-CARBOSILANE

Kiyohito Okamura, Sakai; Hiroshi Ichikawa, Yokohama; Michio Takeda, Yamato; Tadao Seguchi, Takasaki; Noboru Kasai, Takasaki, and Masanobu Nishii, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute and Nippon Carbon Co., Ltd., both of Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,549
Int. Cl.[5] C04B *35/56*
U.S. Cl. 423—345 **2 Claims**

1. A process for producing a silicon carbide fiber having an oxygen content of less than 1.0% by weight and a heat resistance of 1800° C. or above, which consists essentially of the steps of:

a) preparing a precursor fiber by spinning a polycarbosilane having an oxygen content of less than 0.8% by weight;

b) irradiating said precursor fiber from step a) with an ionizing radiation in an oxygen-free atmosphere or in vacuum to make the precursor fiber infusible;

c) heat-treating said infusible fiber from step b) in the same atmosphere at a temperature of from 300° to 600° C. in the absence of an oxidizing atmosphere to stabilize said infusible fiber;

d) exposing said stabilized infusible fiber from step c) to air;

e) and firing said stabilized infusible fiber from step d) in an oxygen-free atmosphere or in vacuo at a temperature in the range of from 1000° to 2200° C., with the proviso that the temperature-raising rate in the firing is 100° C./hr or less at least when the temperature is in the range of 1000° to 1100° C.

5,283,045

SINTERABLE CARBON POWDER AND METHOD OF ITS PRODUCTION

Winfried Boenigk, Olfen; Hans-Dieter Behrens, Bochum; Andreas Niehoff, Haltern, and Hans Spengler, Olfen, all of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,248
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1992, 4200958
Int. Cl.[5] C01B *31/00*
U.S. Cl. 423—445 R **7 Claims**

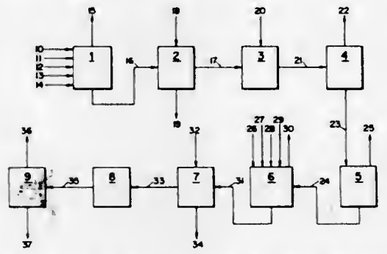
1. A sinterable carbon powder, wherein said powder contains 40 to 75% by weight quinoline-insoluble components and from more than 90 up to 99.5% by weight toluene-insoluble components, exhibits an optical anisotropy of less than 50% by volume, has a beginning of softening between 200° and 300° C., and has an oxygen content of from more than 2 up to 6% by weight.

5,283,046

METHOD FOR RE-USE OF AQUEOUS CO-PRODUCT FROM MANUFACTURE OF SODIUM DITHIONITE

Charles E. Winslow, Jr., Norfolk; Joseph L. Bush, Chesapeake, and Leonard C. Ellis, Suffolk, all of Va., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 355,506, May 23, 1989, abandoned. This application Nov. 14, 1990, Ser. No. 613,935
Int. Cl.[5] C01B *17/66*
U.S. Cl. 423—515 **3 Claims**



1. In a process for the production of sodium dithionite by reacting in a suitable reactor sulfur dioxide, sodium formate, sodium hydroxide or carbonate and a thiosulfate-reactive material in the presence of water and an organic solvent to produce sodium dithionite, separating said dithionite by filtration so as to obtain solid sodium dithionite and a reaction filtrate, distilling said reaction filtrate so as to recover said organic solvent and obtain an aqueous co-product, the improvement which comprises

A. adding an alkaline compound selected from the group consisting of sodium hydroxide and sodium carbonate to said reaction filtrate prior to distilling the same to obtain said organic solvent and said aqueous co-product;

B. rapidly evaporating water under vacuum from said aqueous co-product so as to minimize the formation of thiosulfate and obtain a concentrated co-product;

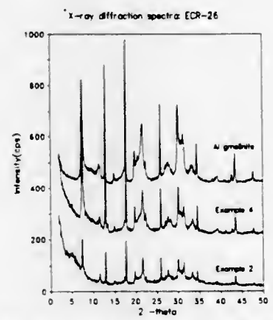
C. using said concentrated co-product as a feed material for the formation of additional sodium dithionite.

5,283,047

SYNTHESIS OF ECR-26 (C-2646)

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 25, 1992, Ser. No. 950,526
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—713 **5 Claims**



1. A synthetic transition metal aluminosilicate crystalline zeolite having the gmelinite structure and a chemical composition in the dehydrated form:

$$0.8 \text{ to } 1.3\ M_{2/n}O:\ (Al, Fe, Cr)_2O_3:\ 4 \text{ to } 8\ SiO_2$$

where n is the valence of metal M; the atoms of Al ≧ atoms of

$$(Cr + Fe),\ \frac{Cr}{Cr + Al + Fe} \geq 0.05,$$

and characterized by an X-ray diffraction pattern having the following essential lines:

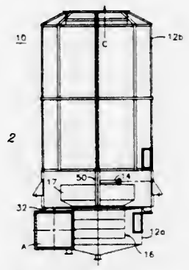
dÅ	I/Io
11.9	VS
6.8	S
5.0	VS
4.49	M
4.11	MS
3.44	MS
2.97	MS
2.85	M
2.59	M.

5,283,048

ENTRAINER/DE-ENTRAINER APPARATUS INCLUDING APPARATUS FOR SIGNIFICANTLY IMPROVING THE EFFICIENCY OF THE DE-ENTRAINER

Jack Martin, Brookfield, and Ed F. Talbot, Hamden, both of Conn., assignors to Safety Railway Service Corporation, Hamden, Conn.

Filed May 5, 1992, Ser. No. 878,566
Int. Cl.[5] B01D *50/00*
U.S. Cl. 422—168 **14 Claims**



1. Mass contactor means comprising:

an enclosure having an inlet for introducing gas into said enclosure;

entrainment means arranged within said enclosure and having a first array of vane means comprised of vanes arranged spaced apart for deflecting air flowing into said inlet through open spaces between said vanes of said first array of vane means and into a hollow interior region surrounded by said first array of vane means, said first array of vane means creating a vortical flow of gas within said hollow interior region;

wherein said first array of vane means has an open upper end, an outlet defined by said open upper end enabling said vortical gas flow to move upwardly and out of said first array of vane means;

de-entrainment means positioned above the open upper end of said entrainment means and being comprised of a second array of vane means comprised of vanes arranged

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spaced apart for deflecting the vortical gas flow entering into an inlet defined by a bottom open end of said de-entrainment means outwardly through spaces between vanes of said second array of vane means to create an upward, outward circular flow;

liquid conduit means having an outlet for providing a liquid in at least the hollow interior region of said entrainment means whereby the vortical gas flow draw the liquid into intimate contact therewith and causes the liquid to be accelerated and broken up into a cloud of droplets which approach a velocity of and move in a direction of the vortical gas flow;

guide means positioned between the outlet of said entrainment means and the inlet of said de-entrainment means to guide the vortical gas flow out of said outlet of said entrainment means and into said inlet of said de-entrainment means;

wherein an upper end of said guide means is positioned a spaced distance below said inlet of said de-entrainment means to provide a gap region therebetween whereby a vortical cloud of gas and droplets swirl upwardly through said guide means toward the inlet of said de-entrainment means;

first deflector means arranged between said inlet of said de-entrainment means and the upper end of said guide means and extending radially inward of said guide means, for deflecting larger droplets influenced by a centrifugal force exerted upon the swirling droplets toward said gap region thereby diverting the larger droplets from entry into the de-entrainment means so that predominantly smaller-sized droplets enter said de-entrainment means, resulting in greater efficiency and handling capacity of the mass contactor means and a significant reduction in an amount of droplets exiting the mass contactor means;

second deflector means arranged between said inlet of said de-entrainment means and the upper end of said guide means for deflecting droplets diverted through said gap region by said first deflector means downwardly toward a collection region.

5,283,049

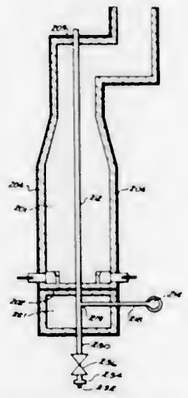
MINIMIZING COKING PROBLEMS IN TUBULAR PROCESS FURNACES

Joseph H. Fluder; Richard A. Benson, both of League City, Tex., and Julio A. Peguero, Lake Charles, La., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Jun. 18, 1992, Ser. No. 900,880

Int. Cl.[5] F28D *7/00*

U.S. Cl. 422—198 **15 Claims**



1. A furnace for pyrolysis of hydrocarbons, comprising:

(a) a furnace floor, furnace walls, and a heating chamber defined by the furnace floor and walls,

(b) a heat exchanging tube which extends vertically within the heating chamber,

(c) an inlet means on the heat exchanging tube, proximate the furnace floor, for introducing hydrocarbons to the heat exchanging tube, and

(d) deadleg fluidly connected to and extending directly beneath the heat exchanging tube and below the inlet means.

5,283,050

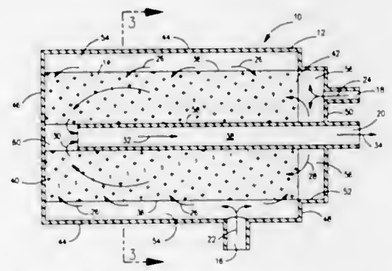
FLUID HANDLING APPARATUS

Buddy D. Gray, Giles County, Tenn., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Aug. 31, 1992, Ser. No. 937,371

Int. Cl.[5] B01J *08/02*

U.S. Cl. 422—211 **17 Claims**



1. A fluid handling apparatus, comprising:

a housing;

a rigid porous element fixedly contained within said housing;

inlets for introducing a plurality of fluids into said housing, said inlets being arranged such that the fluids diffuse into said porous element, with a resultant fluid being formed substantially within said porous element; and

an outlet for withdrawing the resultant fluid from said housing; and

wherein said inlets include at least first and second inlets, said first inlet being arranged to introduce a first fluid into said housing, and said second inlet being arranged to introduce a second fluid into said housing; and

wherein said porous element has a one-piece, unitary construction with a cylindrical wall, said cylindrical wall having a cylindrical inner surface and a cylindrical outer surface, said inner surface defining a cylindrical inner channel for conducting the resultant fluid to said outlet, and wherein a radial thickness of said cylindrical wall between said inner and outer surfaces is substantially greater than a diameter of said inner channel.

5,283,051

REACTOR VESSEL DISCHARGE

Alan Green; Martin K. Hopper, and Ian H. Mercer, all of South Humberside, England, assignors to Conoco Inc., Ponca City

PCT No. PCT/GB91/00152, § 371 Date Oct. 1, 1992, § 102(e) Date Oct. 1, 1992, PCT Pub. No. WO91/11255, PCT Pub. Date Aug. 8, 1991

PCT Filed Aug. 1, 1992, Ser. No. 917,056

Claims priority, application United Kingdom, Feb. 1, 1990, 9002257

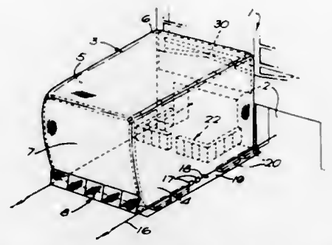
Int. Cl.[5] B01J *8/00*

U.S. Cl. 422—219 **20 Claims**

1. In an apparatus for retaining particulate matter discharged from an industrial reactor through a discharge outlet, wherein the improvement comprises:

a containment bag, said bag having one end suitable for placement adjacent to said discharge outlet;

said bag having a lower side which provides a means for engaging the ground;



a barrier wall located within said bag and arranged in front of said reactor vessel outlet;

said bag and barrier wall thereby retaining particulate matter discharged from said reactor via said outlet.

5,283,052

APPARATUS FOR REGENERATING DEPLETED DENO$_x$ CATALYSTS

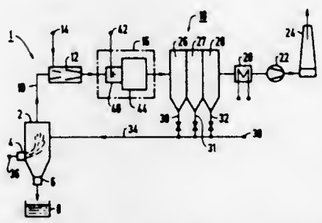
Erich Hums, Bamberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 860,057

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110337

Int. Cl.[5] B01J *23/90*

U.S. Cl. 422—223 **11 Claims**



1. An apparatus for regenerating depleted deNO$_x$ catalysts, comprising a combustion chamber having a combustion zone, a flue gas conduit communicating with said combustion zone, a deNO$_x$ catalyst having surfaces disposed in said flue gas conduit, and an injection device disposed between said combustion zone and said surfaces of said deNO$_x$ catalyst for injecting molybdenum-oxide-containing dust when said deNO$_x$ catalyst is depleted.

5,283,053

APPARATUS FOR TREATING CONTACT LENSES AND CONTACT LENS TREATING VESSEL FOR USE THEREIN

Hideaki Kamiya, Gifu; Makoto Nakagawa, Aichi; Masashi Endo, Gifu, and Masakatsu Yamauchi, Kani, all of Japan, assignors to Tomei Sangyo Kabushiki Kaisha, Nagoya, Japan

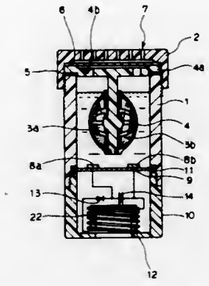
Filed Oct. 21, 1992, Ser. No. 963,981

Claims priority, application Japan, Oct. 25, 1991, 3-279838

Int. Cl.[5] A61L *2/00;* **H05B** *6/36, 6/02*

U.S. Cl. 422—300 **16 Claims**

1. An apparatus for treating contact lenses comprising a treating apparatus body for supplying electric power and a contact lens treating vessel which can be attached to or detached from the treating apparatus body, said treating apparatus body being equipped with a first magnetic field-generating coil and said contact lens treating vessel being equipped with a



second electromagnetic induction coil, wherein said first magnetic field generating coil is constructed and arranged to fit over said second electromagnetic induction coil.

5,283,054

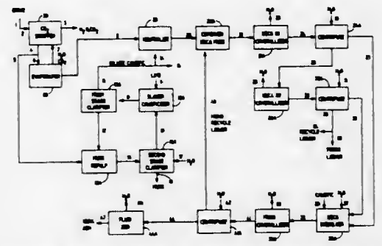
PROCESS FOR PRODUCING SODIUM SALTS FROM BRINES OF SODIUM ORES

William C. Copenhafer, Yardley, Pa.; David E. Smith, Princeton, N.J., and Gerald F. Niedringhaus, Rock Springs, Wyo., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 30, 1993, Ser. No. 40,059

Int. Cl.[5] C22B *26/10*

U.S. Cl. 423—206.2 T **35 Claims**



1. Process for providing sodium-based chemicals from a brine containing sodium carbonate and sodium bicarbonate which comprises heating the brine at a temperature of about 100° C. to about 140° C. to evaporate water, convert sodium bicarbonate to sodium carbonate and to drive off resulting carbon dioxide therefrom, reacting the resulting brine having a reduced sodium bicarbonate content with an aqueous sodium hydroxide solution in amounts to convert essentially all of the remaining sodium bicarbonate in the resulting brine to sodium carbonate, cooling the sodium hydroxide-treated brine to a temperature of about 5° C. to about 25° C., precipitating sodium carbonate decahydrate crystals, separating sodium carbonate decahydrate crystals from their mother liquor, melting separated crystals of sodium carbonate decahydrate to form a sodium carbonate solution, heating the resulting sodium carbonate solution to a temperature of above about 60° C. to below about 110° C. to evaporate water, precipitating sodium carbonate monohydrate crystals, separating the sodium carbonate monohydrate crystals from their mother liquor, calcining separated crystals of sodium carbonate monohydrate to produce soda ash and recovering the soda ash.

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5,283,055

PROCESS USING NOVEL CATALYSTS FOR THE SELECTIVE REDUCTION OF NITROGEN OXIDES

Francis Luck, Noisy/Le/Grand, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 682,693, Apr. 9, 1991, Pat. No. 5,116,801, which is a continuation of Ser. No. 368,605, Jun. 20, 1989, Pat. No. 5,037,792. This application Jan. 29, 1992, Ser. No. 827,609
Claims priority, application France, Jun. 20, 1988, 88 08220
Int. Cl.[5] B01J 8/00; G01B 21/00
U.S. Cl. 423—239.1 22 Claims

1. A process for the catalytic ammonia reduction of NO_x values in a gaseous flowstream comprised thereof, the process comprising contacting a catalyst with said flowstream, the catalyst comprising a porous alumina support having a surface coating of at least one spinel compound thereon, and a catalytically active phase deposited onto said coated support, the at least one spinel compound having the formula:

$$M^1Al_2O_4$$

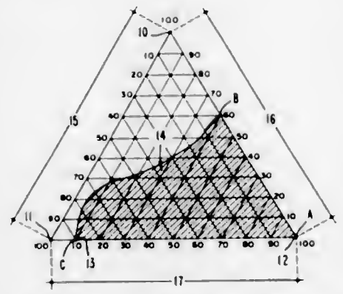
wherein M^1 comprises magnesium, zinc, nickel or cobalt, the amount of M^1, expressed as its oxide M^1O, ranging from 2% to 45% by weight of said catalyst, said catalytically active phase comprising at least one metallic oxide, said at least one metallic oxide comprising an oxide of vanadium, tungsten, molybdenum, iron or cobalt, and said catalytically active phase comprising from 0.5% to 50% by weight of said catalyst.

5,283,056

TRANSPARENT OIL-IN-WATER MICROEMULSION FLAVOR OR FRAGRANCE CONCENTRATE, PROCESS FOR PREPARING SAME, MOUTHWASH OR PERFUME COMPOSITION CONTAINING SAID TRANSPARENT MICROEMULSION CONCENTRATE, AND PROCESS FOR PREPARING SAME

Siew L. Chung, Red Bank; Chee-Tack Tan, Middletown, both of N.J.; Ivan M. Tuhill, Clare, United Kingdom, and Lewis G. Scharpf, Fair Haven, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 1, 1993, Ser. No. 84,610
Int. Cl.[5] A61K 7/16, 7/26, 7/46, 9/10
U.S. Cl. 424—49 9 Claims



1. An alcohol-free transparent mouthwash consisting of an alcohol-free mouthwash base, water and a stable transparent oil-in-water microemulsion flavor concentrate consisting of:

(i) water;

(ii) one or more hydrophobic flavor oils; and

(iii) one or more surfactants

in the absence of lower alkanols wherein the mixing ratio of water, oil and surfactant is defined according to the shaded area of FIG. 1A.

5,283,057

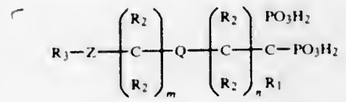
RISEDRONATE IN ORAL COMPOSITIONS

Hisashi Shinoda, Sendai, Japan, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Apr. 24, 1992, Ser. No. 874,269
Int. Cl.[5] A61K 7/16, 7/22
U.S. Cl. 424—54 11 Claims

1. In the art of periodontal therapy or orthodontic surgery wherein a tooth is subject to avelor bone resorption or displaced or moved to a new position, or is intended to stay in its original position when an adjacent tooth is moved, or displaced the improvement effective against alevolar bone resorption, comprising the step of contacting said teeth topically, in an amount effective to prevent avelor bone resorption or prevent the displaced teeth from returning to their original position, and to stay adjacent teeth from moving from their original position during orthodontic surgery, in an oral composition comprising:

(a) from about 0.002% to about 10,000% of a geminal diphosphoric acid compound, or a pharmaceutically-acceptable salt or ester thereof, having the structure:



wherein Z is a ring selected from the group consisting of pyridine and pyrazine; Q is oxygen, $—NR_4—$, or a single bond; m+n is an integer from 0 to about 5; R_1 is hydrogen, substituted of unsubstituted amino, amido, hydroxy, alkoxy, halogen, carboxylate, substituted or unsubstituted, saturated or unsaturated alkyl having from 1 to about 6 carbon atoms, substituted or unsubstituted aryl, or substituted benzyl, except that when n=0 and Q is oxygen or nitrogen, then R_1 is hydrogen, substituted or unsubstituted, saturated or unsaturated alkyl having from 1 to about 6 carbon atoms, substituted or unsubstituted aryl, or substituted of unsubstituted benzyl, R_2 is hydrogen, or substituted or unsubstituted, saturated or unsaturated alkyl having from 1 to about 4 carbon atoms, R_3 is one or more substuents selected from the group consisting of hydrogen, substituted or unsubstituted, saturated or unsaturated alkyl having from 1 to about 6 carbon atoms, substituted and unsubstituted aryl, substituted and unsubstituted benzyl, hydroxy, halogen, carbonyl, alkoxy, nitro, amido, amino, substituted amino, carboxylate, and combinations thereof; R_4 is hydrogen, substituted or unsubstituted, saturated or unsaturated alkyl having from 1 to about 4 carbon atoms, or acyl.

5,283,058

METHODS FOR INHIBITING REJECTION OF TRANSPLANTED TISSUE

Denise Faustman, Weston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 575,150, Aug. 30, 1990, abandoned. This application Mar. 19, 1991, Ser. No. 671,517
Int. Cl.[5] A61K 39/00
U.S. Cl. 424—88 20 Claims

1. A method for inhibiting rejection by a recipient animal of a human non-lymphoid tissue which is to be transplanted into a recipient animal, said method comprising modifying, eliminating, or masking an antigen of said non-lymphoid tissue which, when present on the surface of a cell of said human tissue, is capable of causing a T-lymphocyte-mediated response in the recipient animal, to inhibit antigen-mediated interaction between said cell and a T-lymphocyte of the recipient animal without causing lysis of said cell.

5,283,059

PROCESS FOR PRODUCING A STABILIZED STORE-FORMING VIABLE MICROORGANISMS PREPARATION CONTAINING *BACILLUS CEREUS*

Masaki Suzuki; Hideyuki Yamaoka; Mutsumi Aoshima, and Koji Hashimoto, all of Sbizuoka, Japan, assignors to Asahi Kasei Kogyo Kabusbiki Kaisha, Asaka, Japan

Division of Ser. No. 529,727, May 23, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,527
Claims priority, application Japan, May 24, 1989, 1-130580; Mar. 6, 1990, 2-54711
Int. Cl.[5] A61K 37/00
U.S. Cl. 424—93 K 7 Claims

1. A process for production of feed pellets containing a stabilized spore-forming microorganism composition, said process comprising drying by spray-drying or air-drying after kneading, a carbohydrate component consisting essentially of starch, and spore-forming viable microorganisms belonging to species *Bacillus toyoi* in admixture in a non-toxic aqueous medium, said starch and said microorganisms being present in said medium in a weight ratio from 0.01 to 100 parts of said starch to one part of said microorganisms; admixing said composition with animal feed to form a feed mixture, and pelleting said feed mixture with steam and pressure to form pellets of said feed mixture.

5,283,060

BACILLUS-CONTAINING PESTICIDE GRANULES

Tsuong R. Shieh, 13100 San Simeon Ave., Bakersfield, Calif. 93309

Continuation of Ser. No. 477,006, Feb. 7, 1990, abandoned, which is a continuation of Ser. No. 326,145, Mar. 20, 1989, abandoned, which is a continuation of Ser. No. 193,421, May 12, 1988, abandoned, which is a continuation of Ser. No. 837,435, Mar. 7, 1986, abandoned, which is a continuation of Ser. No. 507,697, Jun. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 427,604, Sep. 29, 1982, abandoned. This application Apr. 21, 1992, Ser. No. 871,425
Int. Cl.[5] A01N 63/00
U.S. Cl. 424—93 L 13 Claims

1. A free flowing and water floatable granular form of a biological pesticide from the genus Bacillus comprising a particle mass in which the individual particles comprise; a) a particulate core having a surface of normally solid paraffin wax, said core consisting essentially of normally solid paraffin wax or finely divided or particulate material coated with a normally solid paraffin wax; b) a coating matrix of a water-soluble proteinaceous adhesive material secured to said paraffin wax surface; and c) a biological pesticide from the genus Bacillus, encapsulated in a water dispersible matrix secured in said water-soluble proteinaceous coating matrix, said particulate core having a density which is less than the density of water and said particle releasing a pesticidally effective amount of said pesticide when placed in contact with water.

5,283,061

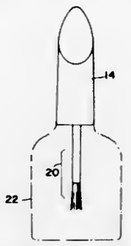
COSMETIC COLOR DISPLAY APPARATUS AND METHODS

Melvin E. Kamen, Highlands; Philip Bernstein, Glen Ridge, and Rene T. Rivero, West New York, all of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Division of Ser. No. 548,659, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 329,659, Mar. 28, 1989, abandoned. This application Mar. 12, 1992, Ser. No. 850,368
Int. Cl.[5] A45D 34/00; C08J 5/10; C08L 31/04, 33/12, 33/14, 33/20, 39/06, 91/00
U.S. Cl. 424—400 6 Claims

1. A handle for a nail enamel brush manufactured by a method comprising the steps of:

(a) combining, a weight of the total composition 5.0–50% lipstick formulation 25–47.5% of a thermoplastic copolymer hardening agent which is a copolymer of ethylene and a mono-substituted vinyl comonomer, and 25–47.5% of a hydrocarbonous based temperature control component, while heating to a temperature below that at which the lipstick pigments will thermally degrade;



(b) pouring the molten mixture of (a) into molds and allowing to cool; whereby the resulting molded handle has no payoff and is an exact color likeness of the lipstick formulation.

5,283,062

COLOR COSMETIC COMPOSITION

Marianne Elliott, Seymour, and Caridad Hechavarria, New Haven, both of Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,073
Int. Cl.[5] A61K 7/02, 7/035
U.S. Cl. 424—401 4 Claims

1. A powdered color cosmetic composition comprising:

(i) from about 0.001 to about 30% of an ultrafine powdered boron nitride having an average particle size ranging from about 1 to about 10 microns;

(ii) from about 0.001 to about 30% of a powdered nylon having average particle size ranging from about 1 to 10 microns, both being present in an effective amount to allow said composition to have a penetrometer reading between 7 and 15 and to pass a Drop Test, and said nylon to boron nitride ranging in relative amounts from 10:1 to 1:30;

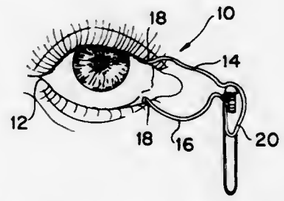
(iii) from about 0.5 to about 99% of a pharmaceutically, acceptable vehicle.

5,283,063

PUNCTUM PLUG METHOD AND APPARATUS

Jerre M. Freeman, Memphis, Tenn., assignor to Eagle Vision, Memphis, Tenn.

Filed Jan. 31, 1992, Ser. No. 830,333
Int. Cl.[5] A61F 2/14; A61M 35/00
U.S. Cl. 424—427 25 Claims



1. A punctum plug for blocking lacrimal fluid flow through a punctal aperture and into an associated canaliculus of a human eye comprising:

a generally cylindrical body member composed of a hydrogel material and having,

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a first end operable to be positioned adjacent the punctal aperture, and

a second end operable to be positioned through the punctal aperture and into an associated canaliculus;

a head member composed of a hydrogel material and integrally joined to said generally cylindrical body member positioned at said first end of said generally cylindrical body member, the diameter of said head member at the junction with said generally cylindrical body member being greater than the diameter of said generally cylindrical body member so that an annular ridge is formed between said head member and said generally cylindrical body member, said annular ridge being operable to rest on a surface surrounding the punctal aperture to prevent said punctum plug from migrating into the associated canaliculus;

a placement and retaining member composed of a hydrogel material and integrally joined to said generally cylindrical body member and positioned at said second end of said generally cylindrical body member for facilitating placement of said generally cylindrical body member through the punctal aperture of a patient and for retaining said generally cylindrical body member within the associated canaliculus;

a hydrophobic coating covering the exterior surface of said head member, said generally cylindrical body member, and said placement and retaining member, said hydrophobic coating isolating said hydrogel material from physical contact with the canalicular tissue of a patient; and

hydrating means fashioned through said hydrophobic coating for permitting placement of said punctum plug into position in a dehydrated, relatively rigid condition and then permitting, in situ, hydration of said hydrogel material of said punctum plug, said hydrating means serving to admit lacrimal fluid into said hydrogel material of said punctum plug to hydrate said punctum plug into an expanded, relatively flexible condition.

5,283,064

LARGE INTESTINAL DISSOCIATIVE HARD CAPSULES

Tsutomu Suzuki; Kenichi Hashiudo; Takayuki Matsumoto; Toshihiro Higashide, all of Toyohashi, and Takeru Fujii, Naruto, all of Japan, assignors to Aicello Chemical Co., Ltd., Toyohashi, Japan

Filed Jun. 4, 1991, Ser. No. 709,978

Claims priority, application Japan, Jun. 4, 1990, 2-145678

Int. Cl.[5] A61K *9/48*

U.S. Cl. 424—451 **5 Claims**

1. A large intestinal dissociative hard capsule for oral administration comprising a capsule consisting essentially of chitosan, the viscosity at 20° C. of a solution obtained by dissolving the chitosan in an aqueous 1% by weight acetic acid solution at a concentration of 1% by weight being not higher than 100 cps and the degree of deacetylation of the chitosan being from 60 mol % to 98 mol %, having a coated layer of a polymer soluble in a liquid having pH of at least 5 on the surface of the capsule.

5,283,065

CONTROLLED RELEASE PHARMACEUTICAL COMPOSITIONS FROM SPHERICAL GRANULES IN TABLETTED ORAL DOSAGE UNIT FORM

Daniel J. Doyon, Florida; Madurai G. Ganesan; Wendy A. Preston, both of Suffern, and Nitin V. Sbeth, Middletown, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 410,707, Sep. 21, 1989, abandoned. This application Mar. 23, 1992, Ser. No. 859,617

Int. Cl.[5] A61K *9/14, 9/44, 9/52*

U.S. Cl. 424—467 **45 Claims**

1. A controlled release pharmaceutical composition in oral dosage unit form comprising a table comprising

(A) a therapeutically effective number of active spherical granules comprising

(i) about 10 to about 80 parts by weight of at least one active medicament;

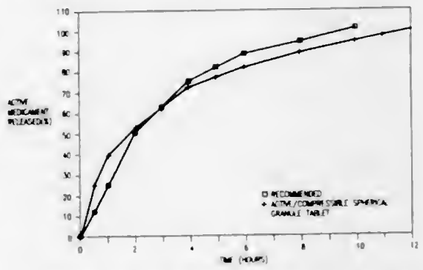
(ii) about 75 to about 10 parts by weight of microcrystalline cellulose for controlling the release rate of said at least one active medicament (A) (i); and,

(iii) 10 to about 75 parts by weight of at least one pharmaceutically acceptable excipient for further controlling the release rate of said at least one active medicament (A) (i), based upon 100 parts by weight of said active spherical granules; and

(B) a number of compressible spherical granules comprising

(i) about 25 to about 90 parts by weight of at least one mono- or di-saccharide; optionally,

(ii) 75 to about 10 parts by weight of microcrystalline



cellulose for controlling the release rate of any active medicament in said compressible spherical granules; optionally,

(iii) an effective amount of at least one active medicament which may be the same as or different than (A) Ii); optionally

(iv) 0 to about 90 parts by weight of at least one pharmaceutically acceptable excipient other than a mono- or di-saccharide which may be the same or different than either (A) (ii), (A) (iii) or (B) (ii) for further controlling the release rate of any active medicament in said compressible spherical granules; or optionally

(v) a combination of any of (B) (ii), (B) (iii) and (B) (iv), based upon 100 parts by weight of said compressible spherical granules;

wherein the average compressive yield of component (B) is less than the average compressive yield of component (A).

5,283,066

METHOD OF STIMULATING AN IMMUNE RESPONSE BY USING A HAPTEN

Jiuan J. Liu; Chun-Chieh Wang; Yuang-Ling Hwang, and Tong H. Chang, all of Taipei, Taiwan, assignors to Development Center for Biotechnology, Taipei, Taiwan

Filed Feb. 19, 1992, Ser. No. 837,747

Int. Cl.[5] A61K *9/14;* **G01N** *33/544, 33/545*

U.S. Cl. 424—484 **20 Claims**

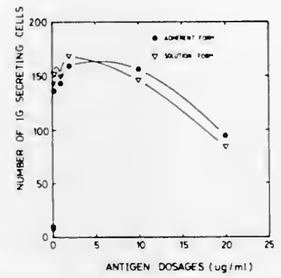
1. A method of stimulating an immune response comprising:

(a) preparing a solution of a hapten;

(b) adhering said hapten to a solid support by contacting said hapten solution with said solid support;

(c) drying said solid support to obtain a hapten-solid support complex; and

(d) contacting in vivo or in vitro said hapten-solid support complex with lymphocytes; wherein said solid phase support is selected from the group consisting of hydrophilic cellulose mixed ester, nitrocellulose, cellulose acetate, nylon, polyvinylidone (PVDF), vinylbenzyl chloro-



methyl styrene, polyacrolein, hydrophobic polytetrafluoroethylene, polystyrene and silica gel.

5,283,067

PARENTERAL SUSPENSIONS

Leo Geller, Rieben, and Peter Glanzmann, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 829,515, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 649,277, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 388,545, Aug. 1, 1989, abandoned. This application Feb. 11, 1993, Ser. No. 17,366

Claims priority, application Switzerland, Jan. 30, 1987, 350/87-4

Int. Cl.[5] A61K *9/14, 31/19*

U.S. Cl. 424—489 **2 Claims**

1. A suspension administrable to humans by intramuscular injection consisting essentially of:

(a) 1-3 ml of sterile water; and

(b) 25-150 mg of a sterile, lyophilized formulation of micronized diclofenac sodium and at least one pharmaceutically acceptable adjuvant for establishing isotonic conditions selected from the group consisting of sodium chloride, sorbitol, mannitol and glucose.

5,283,068

PROCAINE DOUBLE SALT COMPLEXES

Robert Koch, P.O. Box 565, West Jordan, Utah 84084

Division of Ser. No. 322,917, Mar. 14, 1989, Pat. No. 5,162,344, which is a continuation-in-part of Ser. No. 46,241, May 4, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,663

Int. Cl.[5] A61K *33/14, 33/06, 31/495, 31/44, 31/34, 31/24*

U.S. Cl. 424—679 **2 Claims**

1. A mixture of double salt complexes formed from the reaction between procaine hydrochloride and a stoichiometric amount of a mixture of biologically active organic acids, said organic acids consisting of nicotinic acid, folic acid, biotin, citric acid, and ascorbic acid, wherein the molar ratio of folic acid to procaine hydrochloride is between about 0.002:1 and 0.004:1, the molar ratio of nicotinic acid, ascorbic acid, and citric acid to procaine hydrochloride is each between about 0.3:1 to 0.7:1; and the molar ratio of biotin to procaine hydrochloride is between about 0.004:1 and 0.008:1.

5,283,069

PRODUCTION OF AROMA AND/OR FLAVOR MATERIALS WITH LACTIC ACID BACTERIA SUPPORTED ON AN EXPANDED, CEREAL ADSORBENT

Wietse Van Dijk, Klaaswaal; Bartholomeus J. Van Schie, Leiden, both of Netherlands, and Nigel K. H. Slater, Seven Oaks, Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Division of Ser. No. 601,129, Oct. 23, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,295

Claims priority, application United Kingdom, Oct. 23, 1989, 8923841.4

Int. Cl.[5] A21D *8/02;* **A23L** *1/221;* **C12N** *11/10, 1/20*

U.S. Cl. 426—18 **4 Claims**

1. A method for the preparation of clarified broth containing lactic acid and aroma and/or flavor materials comprising:

culturing a lactic acid producing bacteria in an aqueous dispersion of an expanded, pre-gelatinized, starch-containing cereal adsorbent obtained by extrusion of a cereal product under a pressure of less than 50 bar at a temperature of at least 150° C., said dispersion having a viscosity at 25° C. of from about 30 to about 60 mPas, when measured as a 10 wt% dispersion,

separating a concentrate substantially free from insoluble matter, from the aqueous dispersion after said culturing,

separating said concentrate by centrifugation into a cell concentrate and a clarified broth containing said lactic acid and aroma and/or flavor materials.

5,283,070

PROCESS FOR MAKING LAYERED AERATED FOOD COMPOSITION

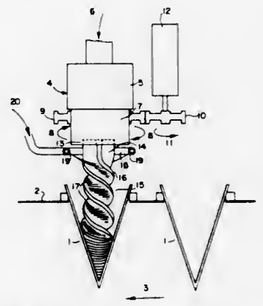
Francis-Victor Bertrand, Laversines; Alain Daouse, Noailles, and Alain Plessier, Bresles, all of France, assignors to Nestec S.A., Vevey, Switzerland

Filed Oct. 21, 1991, Ser. No. 779,885

Claims priority, application European Pat. Off., Nov. 15, 1990, 90121854

Int. Cl.[5] A23L *1/48*

U.S. Cl. 426—249 **14 Claims**



1. A process for preparing a layered food product comprising:

extruding an aerated ice composition in the form of a vertically descending helix rotating about a vertical axis and having spaced flights which define passages therebetween in the helix;

spraying a second composition selected from the group consisting of fat-based, water-based and sugar-based compositions into passages of the extruded helix; and

depositing the sprayed helix onto a substrate so that a layered food product having alternating layers of aerated ice composition and second composition is formed.

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5,283,071

PROCESS FOR PREPARING A PASTA FOOD PRODUCT

William I. Taylor, and Terri Taylor, both of Creve Coeur, Mo., assignors to Pastizza's, St. Louis, Mo.

Continuation-in-part of Ser. No. 772,222, Oct. 7, 1991, abandoned. This application Jun. 10, 1992, Ser. No. 897,609
Int. Cl.[5] A23L *1/16*; A23P *1/08*
U.S. Cl. 426—274 18 Claims

1. A method for preparation of pasta-based food product, comprising the steps of:
mixing a plurality of discrete pieces of cooked pasta with a binding composition comprising a binding agent, in a cooked pasta to binding agent weight ratio of from about 40:1 to about 10:1, to form a pasta/finding agent mixture;
forming a desired amount of the mixture into a desired shape; and
baking the desired shape in a manner to adhere together the discrete pieces of cooked pasta to form a mass, containing voids free of binding agent, yet being sufficiently rigid to be held by hand and retain in the pasta a desired texture and degree of moistness;
the binding agent being selected from the group consisting of (1) soy protein and (2) egg white compositions comprising a sufficient proportion of egg white to permit the adherence of the discrete pieces of cooked pasta by the baking step.

5,283,072

MODIFIED AND SIMULATED LIQUID POULTRY EGG PRODUCTS AND METHODS OF MAKING THE SAME

James P. Cox, and Jeanne M. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Continuation-in-part of Ser. No. 349,974, May 8, 1989, which is a continuation of Ser. No. 196,878, May 19, 1988, abandoned, which is a continuation of Ser. No. 70,597, Jul. 8, 1987, abandoned, which is a continuation of Ser. No. 748,086, Jun. 24, 1985, abandoned. This application Mar. 25, 1991, Ser. No. 674,495
Int. Cl.[5] A23B *5/10*, *5/16*
U.S. Cl. 426—312 13 Claims

1. A process for improving the keeping quality of a simulated scrambled egg composition comprised of a blend of egg white and fat comprising:
intimately treating the composition with an oxidizing gas in an amount effective for reducing the bacterial count;
heating the composition to a temperature effective for further reducing the bacterial count without substantially denaturing the composition;
degassing the composition, and
cooling the composition at a rate sufficient to stabilize the blend.

5,283,073

PROCESS FOR TREATING POULTRY CARCASSES TO CONTROL BACTERIAL CONTAMINATION AND/OR GROWTH

Fredric G. Bender, Houston, and Eugene Brotsky, Pittsburgh, both of Pa., assignors to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Continuation-in-part of Ser. No. 712,260, Jun. 7, 1991, Pat. No. 5,143,739, which is a continuation-in-part of Ser. No. 530,131, May 29, 1990, Pat. No. 5,069,922, which is a continuation of Ser. No. 308,357, Feb. 9, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 938,864
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] A23L *1/315*
U.S. Cl. 426—332 14 Claims

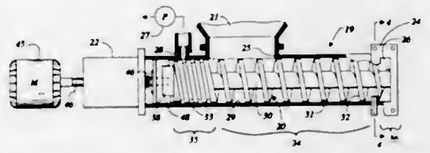
1. A process for treating poultry carcasses comprising contacting the poultry carcasses with a treatment solution containing about 4% or greater trialkali metal orthophosphate, based on the weight of the solution, with the proviso that the treatment solution does not contain alcohol, said treatment solution having a pH of at least 12.0, said contacting being conducted for a period of time effective to remove, reduce or retard bacterial contamination and/or growth and insufficient to cause organoleptic depreciation of the poultry.

5,283,074

METHOD OF MOVING DOUGH IN A DOUGH PROCESSING SYSTEM

Sterrett P. Campbell, 995 Peachtree Dunwoody Ct., Atlanta, Ga. 30328

Filed Sep. 2, 1992, Ser. No. 939,445
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—496 7 Claims



1. A method of moving baker's dough in a dough processing system toward subsequent dough processing equipment comprising the steps of:
feeding dough radially to an auger intermediate the ends of the auger;
rotating the auger to move the dough in a helical stream along the length of the auger;
delivering the dough from the helical stream in a direction transverse of the length of the auger; and
exhausting air from the dough in a direction generally opposite to the direction of movement of the helical stream of dough.

5,283,075

METHOD OF PRODUCING BREAD CONTAINING OLIGOSACCHARIDE

Yoshiko Sonoike; Yoichi Kobayashi; Hisaaki Kato, and Tatsuhiko Kan, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Division of Ser. No. 354,201, May 19, 1989, Pat. No. 5,118,521. This application Mar. 13, 1992, Ser. No. 850,818
Claims priority, application Japan, May 25, 1988, 63-125874
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] A21D *8/04*
U.S. Cl. 426—549 7 Claims

1. A method of producing bread containing an oligosaccharide, comprising:
a) adding an oligosaccharide of the formula:

$$Gal—(Gal)_n—Glc$$

wherein Gal is a galactose residue, Glc is a glucose residue and n is an integer from 1 to 4, to raw materials used for the production of bread; and
b) heating said oligosaccharide-containing raw materials for a time and at a temperature sufficient to form a mass of bread.

5,283,076

ALGIN-CONTAINING FOOD AND BEVERAGE

Iwata Kazuyuki; Kazubiro Watanabe, both of Eniwa; Yoshiyuki Kimura, Kyoto, and Hiromichi Okuda, Matsuyama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Dec. 27, 1991, Ser. No. 813,920
Claims priority, application Japan, Dec. 28, 1990, 2-416688; Aug. 1, 1991, 3-193270
Int. Cl.[5] A23L *1/05321*, *2/00*
U.S. Cl. 426—575 5 Claims

1. An algin-containing beverage providing dietary fiber when consumed, comprising an aqueous solution of an algin having a weight-average molecular weight in the range from 10,000 to 150,000 as determined by gel permeation chromatography, said align being present in an amount which results in said beverage having a viscosity sufficiently low to permit oral ingestion by drinking.

5,283,077

METHOD OF PREPARING SNACK FOOD PRODUCTS

Earl E. Ray, Las Cruces, N. Mex., assignor to New Mexico State University Technology Transfer Corp., Las Cruces, N. Mex.

Continuation of Ser. No. 918,893, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 761,401, Sep. 17, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,159
Int. Cl.[5] A23L *1/217*, *1/314*
U.S. Cl. 426—637 20 Claims

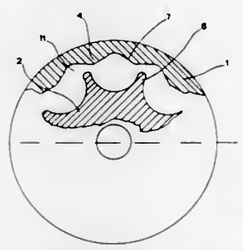
1. A method of preparing a snack food consisting essentially of the steps of:
(a) freezing fresh proteinaceous material;
(b) storing the frozen proteinaceous material at a temperature within the range of 0°-5° C.;
(c) comminuting the stored frozen proteinaceous material;
(d) blending the comminuted frozen proteinaceous material with pregelatinized farinaceous material to obtain a blend having a moisture content of less than 20% by weight;
(e) extruding the blended proteinaceous material and farinaceous material while heating the blended proteinaceous and farinaceous material above its heat of vaporization thereby causing an expansive release of water vapor; and
(f) expanding the blended proteinaceous and farinaceous material.

5,283,078

PROCESS FOR TREATING FRUITS OR VEGETABLES WITH COMPRESSION STRESSES

Primo Bertocchi, 8, Via Argonne, 43100 Parma, Italy

Filed Mar. 13, 1992, Ser. No. 851,422
Claims priority, application Italy, Mar. 22, 1991, PR91 A 000013
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—665 4 Claims



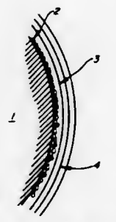
1. A process for the treatment of a product containing pulp destined for juice and puree extraction, comprising subjecting a product selected from the group consisting of fruit and vegetables to a non-juice extracting sequence of stresses in rapid succession, which stresses reduce the consistency of the product and increase the said product's tendency to peel and separate from its skin.

5,283,079

PROCESS TO MAKE MAGNETICALLY RESPONSIVE FLUORESCENT POLYMER PARTICLES

Chao-Huei J. Wang, Gurnee, and Dinesh O. Shah, Vernon Hills, both of Ill., assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 337,511, May 30, 1989, Pat. No. 5,091,206, which is a division of Ser. No. 113,294, Oct. 26, 1987, abandoned. This application Dec. 14, 1989, Ser. No. 452,099
Int. Cl.[5] A01N *1/02*
U.S. Cl. 427—2 25 Claims



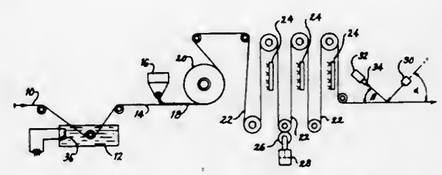
1. A process to make monodispersed fluorescent magnetic particles of uniform size distribution and magnetic content comprising:
a) evenly coating a fluorescent core polymer particle with a magnetically responsive metal oxide and polymer combination, said polymer combination being comprised of monomers able to absorb to said inner core polymer particle.

5,283,080

METHOD AND APPARATUS FOR MANUFACTURING A GRANULE-COVERED ROOFING MATERIAL BY MODIFYING A PROCESS PARAMETER IN RESPONSE TO MEASURED REFLECTED LIGHT

Glenn D. Lamb, Granville, and David R. Rodenbaugh, Baltimore, Lawrence J. Grubka, Heath; all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Jul. 10, 1992, Ser. No. 912,365
Int. Cl.[5] B05D *1/12*; B05C *19/04*
U.S. Cl. 427—8 20 Claims



1. The method of making granule-covered roofing material comprising
discharging granules onto continuously moving asphaltic material to form granule-covered asphaltic material,
pressing the granules into the asphaltic material,
directing light toward the granule-covered asphaltic material,
measuring the reflected light from the granule-covered asphaltic material, and

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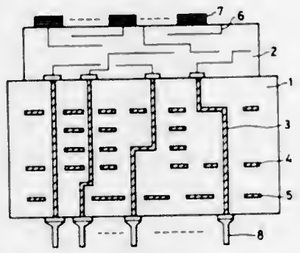
responding to the measured reflected light by modifying a process parameter to effect a change in the reflected light from the granule-covered asphaltic material.

5,283,081

PROCESS FOR MANUFACTURING A CERAMIC W'RING SUBSTRATE HAVING A LOW DIELECTRIC CONSTANT

Keiichiro Kata; Yoshinobu Kobayashi, and Yuzo Shimada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 848,855
Claims priority, application Japan, Mar. 14, 1991, 3-49644
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—96 **12 Claims**



1. A process for manufacturing a hybrid multilayer ceramic wiring substrate having a low dielectric constant comprising a conductor wiring forming step and an insulating layer forming step,

said conductor wiring forming step comprising the steps of:

applying a photoresist upon a multilayer ceramic wiring substrate in which a plurality of conductor layers are laminated via an insulation layer formed of a low temperature sinterable ceramic composition having a low dielectric constant;

exposing the photoresist to light and developing the exposed photoresist to form a mask pattern; and

selectively metal plating the mask pattern;

said insulating layer forming step comprising the steps of:

printing a photo-setting paste for an insulating layer on the multilayer ceramic wiring substrate and drying the paste;

forming a via hole pattern by light exposure and development using a mask; and

burying and sintering a conductor paste into via holes; and

a micro multilayer wiring being formed by a combination of said conductor wiring forming step and said insulating layer forming step.

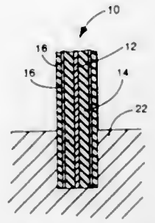
5,283,082

METHOD FOR APPLYING SOLDER TO A BRAIDED SHIELD OF A CABLE

Carl H. Hussmann, Hamburg, and Guenter Szaj, Steinbeck, both of Fed. Rep. of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1992, Ser. No. 869,814
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116165
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—118 **8 Claims**

1. A method for applying solder to a braided shield of electrical conductive material in the end portion of a coaxial cable, comprising a conductor surrounded by an insulative layer and a braided shield enclosed by a jacket, said method comprising the steps of dipping the cable end portion into a molten solder bath which is maintained at a temperature effective to restrict destruction or damage to said jacket during said dipping; and



removing said cable end portion from said solder bath with said jacket remaining intact over said end portion.

5,283,083

METALORGANIC DECOMPOSITION METHOD FOR PREPARING A METAL BORATE

Gustavo R. Paz-Pujalt, Rochester, N.Y., and Wenjiang Nie, Chalon-sur-Saone, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1992, Ser. No. 954,994
Claims priority, application France, Dec. 16, 1991, 91 15844
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—227 **8 Claims**

1. A process to form a film of a borate of one or more metals on a substrate comprising the steps of:

(a) preparing a metal-ligand compound of said metal(s),

(b) reacting this metal-ligand compound with a boron alkoxide in the presence of a volatizable film-forming solvent and a polyhydric compound, to form a metal borate precursor

(c) coating the solution of metal borate precursor on the substrate, and,

(d) thermally decomposing the precursor so that the solvent and the ligand are removed and a thin film of metal borate is formed.

5,283,084

PROCESS FOR MAKING WRINKLE-FREE COATING USING SOLVENTBORNE CLEARCOAT COMPOSITION OVER WATERBORNE BASECOAT COMPOSITION

David K. K. Lau, Royal Oak, Mich., assignor to BASF Corporation, Southfield, Mich.

Filed May 8, 1992, Ser. No. 880,964
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—407.1 **24 Claims**

1. A process for producing a wrinkle-free coating, the process comprising the steps of:

A. applying a waterborne basecoat composition to a substrate so that an uncured basecoat layer is formed thereon, the waterborne basecoat composition comprising water, an organic resin, a crosslinker, and a free amine;

B. applying a substantially transparent solventborne clearcoat composition over the uncured basecoat layer so that an uncured clearcoat layer is formed over the uncured basecoat layer, wherein the solventborne clearcoat composition comprises:

i. an acid catalyst,

ii. a monomeric melamine crosslinking resin, and

iii. a polymer which is crosslinkable with melamine;

C. simultaneously curing both the uncured basecoat layer as well as the uncured clearcoat layer, whereby the organic resin, the crosslinker, the polymer, and the crosslinking resin are crosslinked, whereby a cured coating is produced; and

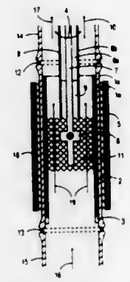
wherein the acid catalyst is present in an amount of 1.5 weight percent to 5 weight percent so that a wrinkle-free coating is produced.

5,283,085

METHOD OF MANUFACTURING A HOT-CATHODE ELEMENT

Georg Gärtner, Aachen, and Peter Janiel, Würselen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1992, Ser. No. 870,655
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1991, 4113085
Int. Cl.[5] B05D *3/04, 5/10;* C23C *16/40, 16/50*
U.S. Cl. 427—534 **9 Claims**



1. A method of manufacturing a hot-cathode element from a rare-earth oxide doped refractory metal wherein a plurality of sub-layers of the rare-earth oxide doped refractory metal are successively deposited on a substrate member (2) by means of a CVD (chemical vapor deposition) process, characterized in that during the course of said CVD process, a decarburizing treatment is carried out subsequent to deposition of each of said sub-layers and, after completion of the CVD process, and after separation from the substrate and being provided with a supporting member, the resultant hot-cathode element is carburized.

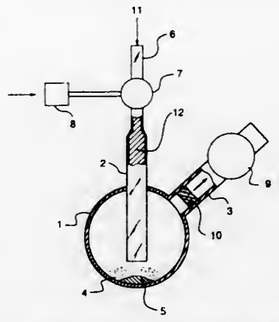
5,283,086

PLASMA TREATMENT OF POLYMER POWDERS

Jun Kodama, Aso, Japan; Renate Foerch, Oestrich-Winkel, Fed. Rep. of Germany; N. Stewart McIntyre, and George S. P. Castle, both of London, Canada, assignors to The University of Western Ontario, London; I.C.S.T., The Institute For Chemical Science and Technology, Sarnia, both of Canada and Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 995,990
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—576 **5 Claims**

5. A method of improving the triboelectric properties of polymer powder, comprising the step of positioning said polymer powder in the afterglow region of a gas plasma having a main region and an afterglow region, where said gas plasma is in a low-pressure stream of a gas selected from the group consisting of oxygen, nitrogen, and gases containing oxygen or nitrogen, and where indium as a metal foil is suspended in said gas stream adjacent said gas plasma, thereby generating indium



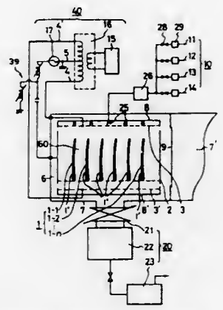
vapour, whereby low concentrations of indium are incorporated into the surface of the powder.

5,283,087

PLASMA PROCESSING METHOD AND APPARATUS

Shunpei Yamazaki; Mitsunori Tsuchiya; Atsushi Kawano; Shinji Imatou; Kazuhisa Nakashita; Toshiji Hamatani; Takashi Inushima, all of Atsugi, and Kenji Itou, Zama, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 528,478, May 25, 1990, abandoned, which is a continuation of Ser. No. 303,240, Feb. 3, 1989, Pat. No. 4,971,667. This application Apr. 6, 1992, Ser. No. 863,543
Claims priority, application Japan, Feb. 5, 1988, 63-25919; Feb. 5, 1988, 63-25920; May 13, 1988, 63-117792; Aug. 26, 1988, 63-212890; Oct. 11, 1988, 63-255489
Int. Cl.[5] B05D *3/06;* C23C *16/00;* C25F *3/00*
U.S. Cl. 427—577 **24 Claims**



1. A plasma etching method comprising:

disposing at least one substrate having a film to be etched in a reaction space;

supplying an etchant gas into said reaction space wherein said reaction space is defined between a pair of electrodes;

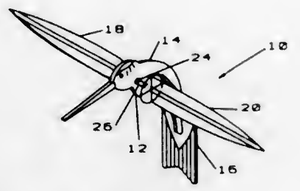
exciting said etchant gas to a plasma by applying an electric power to said pair of electrodes; and

etching at least a part of said film;

wherein a bias voltage is supplied to said substrate during etching by a power source separate from the power source to said pair of electrodes.

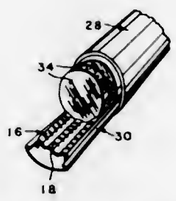
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,088
BIRD FIGURE
Dorothy H. Alcorn, 1688 Raynell Way, El Cajon, Calif. 92019
Filed Aug. 14, 1992, Ser. No. 931,576
Int. Cl.[5] A63H *3/16*
U.S. Cl. 428—16 8 Claims



1. A figurine comprising:
a body portion having an opening,
a tube extending through said opening,
a pair of wing structures each mounted on a respective side of said body portion,
a wire extending through said wing structure and through said tube to allow said wing structure to be freely rotatable with respect to said body portion,
each of said wing structures comprising a relatively star-shaped member having a central generally circular hub with at least three blades of generally alate configuration radiating from said hub and extending substantially outwardly from said hub and bent to lie substantially perpendicularly outward from said hub, said wing structures each being mounted to rotate about the longitudinal axis of said wing structure in a plane substantially perpendicular to that of said body portion.

5,283,089
NON-POROUS DIFFUSION FURNACE COMPONENTS
Carl H. Bates, Worcester, Mass., assignor to Norton Company, Worcester, Mass.
Filed Nov. 13, 1989, Ser. No. 434,757
Int. Cl.[5] F27D *5/00*; F16L *59/00*
U.S. Cl. 428—344 7 Claims

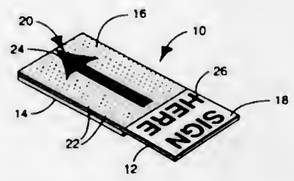


1. A ceramic composite which comprises a gas impermeable matrix and a fibrous reinforcement which contains distributed therein and thereon particles having an average particle size of about 0.1 to 3 microns, wherein the matrix, the fibrous reinforcement, and the particles are each selected from the group consisting of silicon carbide and silicon nitride.

5,283,090
PORTABLE URINE OR OSTOMY BAG
Yoshihiro Umemura, Kyoto, Japan, assignor to Unitika Ltd., Hyogo, Japan
Filed May 31, 1991, Ser. No. 708,567
Claims priority, application Japan, Jun. 1, 1990, 2-144934
Int. Cl.[5] B61F *5/44*; B32B *27/00*, *13/12*
U.S. Cl. 428—35.4 4 Claims

1. A portable urine bag or ostomy bag comprising a film substrate or sheet substrate which swells, disperses or dissolves in water on the outside and water repellent layer coated on the inside, said water repellent layer comprising a fluorine or silicone water repellent; wherein
said fluorine water repellent is selected from polytetrafluoroethylene, a poly(meth)acrylate wherein all or part of the alkyl groups in the ester groups are substituted by a fluorine atom, and products of the polymerization of a perfluorovinyl ether; and
said silicone water repellant is comprised of compounds containing a silicone resin as a major component or reactive silicone compounds which contain methylhydroxypolysiloxane as a major component and undergo crosslinking with the aid of a catalyst.

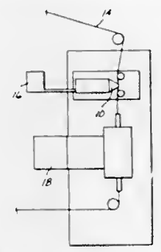
5,283,091
TAPE FLAG WITH TRANSPARENT BOUNDARY INDICATING COATING
Wayne K. Darvell, North St. Paul; Thomas J. Barnidge, Burnsville, and Karyn A. Roszak, Eagan, all of, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 7, 1991, Ser. No. 772,078
Int. Cl.[5] B42D *9/00*
U.S. Cl. 428—40 10 Claims



1. A sheet for temporarily marking a portion of a document, said sheet comprising an elongate layer of flexible polymeric material having opposite major side surfaces and first and second opposite ends, and having a coating of repositionable pressure sensitive adhesive on a second end portion of one of said side surfaces adjacent said second end while being free of adhesive on both of said side surfaces along a first nd portion thereof adjacent said first end, said first end portion being visually distinctive, and said adhesive coated second end portion being generally transparent when adhered to a substrate, wherein said second end portion has a light distinctive color or an indicia containing coating along one of said side surfaces that visually distinguishes the second end portion from a substrate when the second end portion is adhered to the substrate, said coating being sufficiently transparent to afford reading indicia on the substrate through the second end portion, wherein said light distinctive color coating or said indicia containing coating on said second end portion will reduce the placement of unwanted written information or signatures on said second end portion of said sheet.

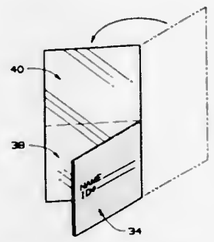
5,283,092
IMAGING MANIFOLD
Albert I. Everaerts, Oakdale; Jeffrey D. Malmer, North St. Paul, both of Minn., and Michael J. Louis, Cedar Park, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 31, 1991, Ser. No. 816,637
Int. Cl.[5] C08F *265/06*; C09J *133/00*; G03G *7/00*
U.S. Cl. 428—40 12 Claims

1. An imaging manifold comprising:
a. a transparent, polymeric sheet imageable in an imaging device;
b. an opaque backing sheet underlying and in register with said transparent sheet; and
c. a removable adhesive composition adhering said opaque backing sheet to said transparent sheet wherein said adhesive comprises:
1. from about 50 to about 90 percent by weight of one or more lower alkyl acrylates having an alkyl group comprising from 4 to 12 carbon atoms;
2. from about 10 to about 50 percent by weight of one or more higher alkyl acrylates having an alkyl group comprising from 12 to 26 carbon atoms wherein said lower



and higher alkyl acrylates do not simultaneously have 12 carbon atoms; and
3. effective amount of a photocrosslinker to substantially prevent adhesive transfer wherein said adhesive composition permits the removal of said opaque backing sheet from said transparent sheet said adhesive composition having a greater affinity for the opaque backup sheet than for the transparent sheet.

5,283,093
SELF-LAMINATING IDENTIFICATION BADGE ASSEMBLY AND METHOD OF USE
William C. All, Marietta, Ga., assignor to Panduit Corp., Tinley Park, Ill.
Filed Jan. 21, 1992, Ser. No. 823,493
Int. Cl.[5] B32B *3/04*, *3/06*
U.S. Cl. 428—41 15 Claims

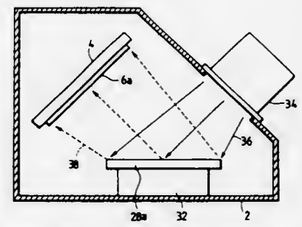


1. A self-laminating badge, comprising:
a transparent lamina;
a print field for recording written or printed information disposed on a portion of a first surface of the transparent lamina, wherein a remaining portion of the transparent lamina not covered by the print field includes a lamination portion of sufficient proportion to be folded to cover both forward and rearward surfaces of an area of the transparent lamina covered by the print field; and
a pressure sensitive adhesive lamina disposed on at least a portion of a second surface of the transparent lamina in a position to adhere the print field to the lamination portion such that when the badge is assembled, the lamination portion covers and adheres to both forward and rearward surfaces of the area of the transparent lamina covered by the print field,
wherein the print field includes adjacent forward and rearward print field sections that can be folded to form forward and rearward badge faces, wherein the lamination portion of the transparent lamina is provided in two lamination sections each of sufficient size to cover the forward or rearward badge faces and wherein the lamination sections are separated by a perforated line means in the transparent lamina for defining a fold line for accurately folding the lamination sections relative to each other.

5,283,094
OPTICAL RECORDING MEDIUM
Tomoyoshi Sasakawa, Chiba; Nobuhisa Kitagawa, Yokohama; Tadashi Koike, Kamakura, and Hiroyuki Hyakutake, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Apr. 27, 1992, Ser. No. 873,958
Claims priority, application Japan, Apr. 26, 1991, 3-96615
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 14 Claims

1. An optical recording medium of a single plate type which comprises a substrate, a recording layer overlying the substrate, a reflective layer overlying the recording layer, and a protective layer overlying the reflective layer, the recording layer being produced by coating the substrate with a nonpolar solvent-soluble substituted phthalocyanine dye in a nonpolar solvent whose solubility parameter is less than 8.5 and the nonpolar solvent content of the recording layer is 5% by weight or less wherein the recording layer is dried under the conditions of (temperature, C.)×(time, hour) being 50 or more before the reflective layer and the protective layer are formed.

5,283,095
OPTICAL RECORDING MEDIUM COMPRISING (1,1,1) ALUMINUM
Shigeo Matsumaru; Toru Watanabe, both of Saitama; Akira Kubotsu, Okayama; Shuichi Nogawa, Kyoto; Kiyoshi Ogata, Kyoto, and Daisuke Inoue, Kyoto, all of Japan, assignors to Nissin Electric Co., Ltd., Kyoto and Kuraray Co., Ltd., Okayama, both of Japan
Filed Apr. 10, 1992, Ser. No. 866,358
Claims priority, application Japan, Apr. 12, 1991, 3-108785; Jan. 16, 1992, 4-026115
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 5 Claims



1. An aluminum film coated matter comprising:
a substrate made of a synthetic resin;
an aluminum film coated on a surface of said substrate, said aluminum film containing aluminum crystals at a portion in said film at a depth of not more than 600 Å from a film surface thereof which contacts with said substrate, said aluminum crystals having a relation in which a crystal axis <111> perpendicular to a (111) plane is perpendicular or substantially perpendicular to said film surface; and
said synthetic resin constituting said substrate being an optical transparent resin.

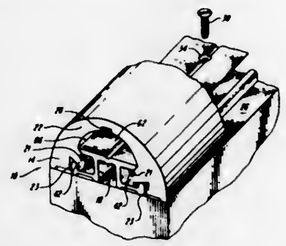
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,096

RESILIENT STRIP FOR PROTECTIVE STRIP ASSEMBLY

David A. Greenberg, Winchester; Joseph W. Manning, Peabody, both of Mass.; Charles M. Wheeler, Salem, N.H., and Sanford J. Kessler, Youngstown, Ohio, assignors to Boston Metal Products Corp., Medford, Mass.

Filed Apr. 23, 1992, Ser. No. 873,300
Int. Cl.[5] E04F 19/02; B60J 11/00
U.S. Cl. 428—67 12 Claims



1. An elongated resilient strip adapted to be secured to and partially surround a mounting member, said resilient strip comprising:

(a) a body having a pair of edge portions at least partially defining the exterior perimeter of said body;

(b) one or more longitudinally extending inserts surrounded on at least three sides by said body, the material of said inserts having greater impact resistance than the material of said body; and

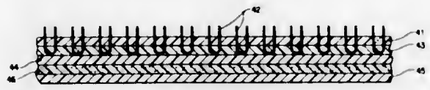
(c) a pair of oppositely disposed, inwardly extending latch members, each located between a point away from the mid-line of the body and the closest edge portion.

5,283,097

PROCESS FOR MAKING MOLDABLE, TUFTED POLYOLEFIN CARPET

Emile M. Gillyns, Sandweiler, Luxembourg; Didier R. Stochmel, Aumetz, France, and Ewald A. Ebers, Hambourgerstrasse, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 816,402, Dec. 31, 1991. This application Dec. 21, 1992, Ser. No. 995,516
Int. Cl.[5] B32B 1/00, 5/04, 5/12; D04H 11/00
U.S. Cl. 428—91 11 Claims



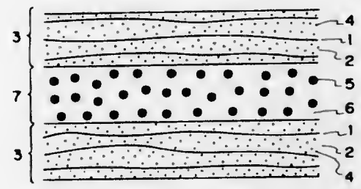
1. A needled, nonwoven polyolefin sheet useful as a primary carpet backing in moldable carpets, the sheet comprising substantially continuous filaments of a polyolefin of 5 to 30 dtex, the filaments having directionality in both a machine and a cross-machine direction, the filaments having been drawn at a draw ratio less than 2.0, the sheet having been lightly bonded to an extent to achieve sheet integrity and subsequently needled to cause sheet delamination and filament movement to occur, said needling serving to increase the elongation capacity of the sheet, said needled sheet having a unit weight of 100 to 150 g/m^2, a sheet strip tensile strength of at least 10 kg in both the machine and cross-machine directions, and an elongation of at least 40% in both the machine and cross-machine directions.

5,283,098

MEMBER FOR LIGHT SHIELDING BLADES

Takashi Matsubara, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,122
Claims priority, application Japan, Sep. 25, 1990, 2-254580; Apr. 18, 1991, 3-086448
Int. Cl.[5] B32B 5/12
U.S. Cl. 428—113 24 Claims



1. A plate member of a light-shielding blade, having:

reinforced resin surface layers comprising continuous carbon fibers arranged in one direction substantially parallel to the longitudinal direction of the light-shielding blade, and a matrix resin including this fiber, and

a reinforced resin intermediate layer comprising continous carbon fibers arranged in one direction, and a matrix resin including this fiber,

the direction of the carbon fibers of said intermediate layer and that of said surface layers being substantially orthogonal to each other, and

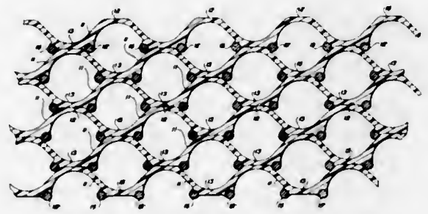
the carbon fiber of said surface layers having a tensile modulus of elasticity of 30,000 Kgf/mm^2 or more, tensile strength of 350 Kgf/mm^2 or more, and an elongation of 1.0% or more, and the carbon fiber of said intermediate layer having an elongation of greater than that of the carbon fiber of said surface layers.

5,283,099

ENHANCED STRUCTURAL CORE MATERIAL

Charles R. Smith, La Mesa, and Bruce H. Schrier, Fallbrook, both of Calif., assignors to Dynamic Technologies, Inc., Scottsdale, Ark.

Filed Sep. 24, 1991, Ser. No. 764,801
Int. Cl.[5] B32B 3/12
U.S. Cl. 428—116 6 Claims



1. A honeycomb core comprising multiple core components stacked in nested relationship, wherein:

a. each of said core components comprises an undulating web of core material having top and bottom surfaces and having a longitudinal cross section generally in the shape of a sine wave curve, with generally semicircular upper nodes alternating with generally semicircular lower nodes above and below the plane of the horizontal axis of said web, and with pairs of spaced apart rods attached along the bottom surface of said semicircular lower nodes in a direction parallel to said nodes; and

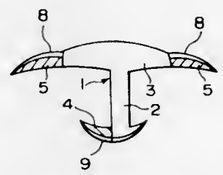
b. each of said core components is adhered to the next adjacent core component stacked above it, with the apexes of its upper nodes nested between pairs of rods attached to matching lower nodes of said adjacent core component.

5,283,100

MOLDING FOR AUTOMOBILE WINDOWS

Toshio Yui, Komae; Yoshimasa Yamamoto, Ichihara, and Naohisa Miyakawa, Nagareyama, all of Japan, assignors to Dupont-Mitsui Polychemicals Co., Ltd., Tokyo and Tokiwa Chemical Industry Co., Ltd., Chiba, both of Japan

Filed Jun. 24, 1992, Ser. No. 903,480
Int. Cl.[5] E06B 3/00, 3/62
U.S. Cl. 428—120 7 Claims



1. A molding for mounting a window glass on a window opening of an automotive body, said molding comprising:

a flexible leg portion having a first side and a second side and having an upper part and a lower part,

an upper flange portion, contiguous with said leg portion, which extends outwardly from both sides of said leg portion at said upper part of the leg portion, said upper flange portion being supportably engageable of an edge portion of a window glass,

a first upper lip portion, having an outer surface, formed as a tip of said upper flange portion on said first side of said leg portion,

a second upper lip portion, having an outer surface, formed as a tip of said upper flange portion on said second side of said leg portion, and

lower lip portion, having a lower surfaces, formed on said lower part of said leg portion and extending outwardly from both sides of said leg portion, said lower lip portions being engageable of and supportable by an automotive body adjacent to a window opening of the automotive body, wherein

at least the upper lip portions and the lower lip portions of said molding are formed by using a thermoplastic olefinic elastomer or a composition of said elastomer and an olefin-ethylene unsaturated carboxylic acid copolymer or a salt thereof having a hardness in compliance with JIS A of from 50 to 80,

said leg portion and said upper flange portion are formed by using a blend of the thermoplastic olefinic elastomer and the olefin-ethylene unsaturated carboxylic acid copolymer or a salt thereof, said blend having a hardness in compliance with JIS A of from 75 to 95,

the outer surfaces of the upper lip portions are covered with a layer which contains the olefin-ethylene unsaturated carboxylic acid copolymer or a salt thereof and having a thickness of 1 to 50 μm and a hardness in compliance with JIS A of greater than 85, and

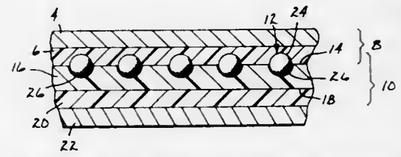
at least the lower surfaces of the lower lip portions are formed by using the olefin-ethylene unsaturated carboxylic acid copolymer or a salt thereof or a polymer composition containing them.

5,283,101

LAUNDERABLE RETROREFLECTIVE APPLIQUE WITH BINDER LAYER COMPRISING ELECTRON-BEAM CURED POLYMER

Wu-Shyong Li, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 697,264, May 8, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,905
Int. Cl.[5] G02B 5/128; B32B 25/02
U.S. Cl. 428—141 14 Claims



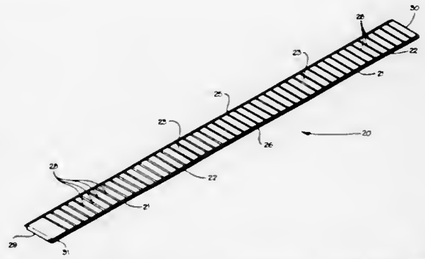
1. A retroreflective applique comprising a monolayer of retroreflective elements partially embedded in and protruding from the front surface of a binder layer wherein said binder layer comprises an electron-beam cured polymer selected from the group consisting of: chlorosulfonated polyethylenes, ethylene copolymers comprising at least about 70 weight percent of polyethylene, and EPDM polymers, said applique being applied to a garment.

5,283,102

LAMINATED WOOD FLOORING PRODUCT AND WOOD FLOOR

James C. Sweet, Statesville, and William S. Smith, Davidson, both of N.C., assignors to Premier Wood Floors, Statesville, N.C.

Filed Oct. 28, 1992, Ser. No. 967,718
Int. Cl.[5] B32B 3/00; E04F 13/08
U.S. Cl. 428—167 4 Claims



1. A wood flooring strip for assembly into a wood floor, said flooring strip comprising:

(a) a top, decorative wood layer;

(b) an intermediate wood layer bonded to the top layer; and

(c) a base wood layer bonded to the intermediate layer;

(d) said top, intermediate and base layers bonded in registration to define a three-layer laminated elongate wood flooring strip;

(e) locking means extending along the length of said flooring strip on both side edges for locking adjacent flooring strips together side-to-side to form an assembled wood floor, said locking means comprises a tongue formed on one side edge of the flooring strip and a mating groove on the other side edge of the flooring strip, each of said tongue and said groove for mating connection with complementary elements on adjacent flooring strips; and

(f) said base layer having a multiplicity of closely spaced-apart scores cut therein transverse to the length of the flooring strip along substantially the entire length of the flooring strip to relieve stress and increase flexibility in the

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wood strip for more closely adhering to irregularities of a sub-floor; and

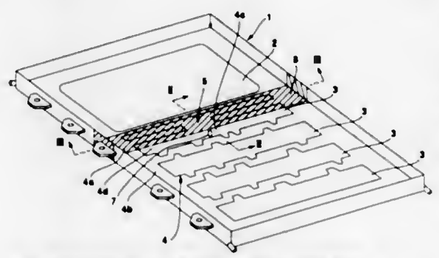
(g) said flooring strips including opposing end portions, said end portions each having a single flat area encompassing the entire end portion surface area perpendicular to the plane of the flooring strip for abutting engagement with like flat areas on adjacent flooring strips.

5,283,103

FIBER-REINFORCED PLASTIC PRODUCT

Kiyotaka Nakai, and Masahiro Narita, both of Chita, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 29, 1992, Ser. No. 953,138
Claims priority, application Japan, Sep. 30, 1991, 3-252337
Int. Cl.[5] B32B *3/00, 17/02*
U.S. Cl. 428—172 **5 Claims**



1. A fiber-reinforced plastic product comprising:

a first member which is formed by pressing from a sheet molding compound made of an unsaturated polyester resin and having a first portion and a second portion for reinforcing the first portion, and having an area adjacent to the first portion;

a second member made of a uni directional sheet molding compound made of the unsaturated polyester resin, including a bundle of glass fibers which is continuously formed so as to be arranged in the same direction, and overlayed on the first portion by the press formation; and

a concave portion formed in the area.

5,283,104

VIA PASTE COMPOSITIONS AND USE THEREOF TO FORM CONDUCTIVE VIAS IN CIRCUITIZED CERAMIC SUBSTRATES

Farid Y. Aoude, Wappingers; Emanuel I. Cooper, Riverdale; Peter R. Duncombe, Peekskill; Shaji Farooq, Hopewell Junction; Edward A. Giess, Purdys Station, all of N.Y.; Young-Ho Kim, Seoul, Rep. of Korea; Sarah H. Knickerbocker, Hopewell Junction, N.Y.; Friedel Muller-Landau, Putnam Valley, N.Y.; Mark O. Neisser, Wappingers Falls, N.Y.; Jae M. Park, Somers, N.Y.; Robert R. Shaw, Poughkeepsie, N.Y.; Robert A. Rita, Wappingers Falls, N.Y.; Thomas M. Shaw, Peekskill, N.Y.; Rao Vallabhaneni, Wappingers Falls, N.Y.; Jon A. Van Hise, Brookfield, Conn.; George F. Walker, New York, N.Y.; Jungihl Kim, Seoul, Rep. of Korea, and James M. Brownlow, deceased, late of Norwich, Vt. by Mary Brownlow-Hueesy, legal representative , assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1991, Ser. No. 672,272
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **31 Claims**

1. A circuitized ceramic structure comprising at least one layer of dielectric ceramic composition and at least one via, said at least one via being filled with a conductive via body comprising an electrically conductive skeletal network of a metal contained within a ceramic matrix, said conductive via body being a solid, non-porous mass represented by a major amount by volume of cosintered packed spheres of ceramic material having the spaces therebetween filled with a minor amount by volume of particles of said metal which are smaller in size than said spheres, to form a conductive path, the ceramic composition of said at least one dielectric layer being cosinterable with said ceramic matrix of each said via body, whereby the ceramic matrix is cosintered with and integrated with the at least one dielectric layer in the area of said via to form a hermetic seal between said solid via body and said at least one dielectric layer.

5,283,105

TRANSPARENT ELECTROSTATOGRAPHIC-TONER-IMAGE-RECEIVING ELEMENT

Fred C. Groner, Rochester, and William A. Light, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 688,011, Apr. 19, 1991, abandoned.
This application Aug. 10, 1992, Ser. No. 927,789
Int. Cl.[5] B41M *5/035*
U.S. Cl. 428—195 **9 Claims**

1. A transparent electrostatographic-toner-image-receiving element that will exhibit improved feeding reliability in electrostatographic imaging apparatus, said element comprising a substrate sheet having on each side thereof a layer comprising a polymeric binder having dispersed therein, at a concentration of at least 2 percent by weight, a mixture of particles protruding from the layer, said mixture comprising:

A. first particles comprising either amorphous silica having a volume median particle size of 2-3 micrometers or poly(methyl methacrylate-co-divinylbenzene) having a volume median particle size of 4-5 micrometers and

B. second particles comprising poly(methyl methacrylate-co-divinylbenzene) having a volume median particle size in a range of from greater than the volume median particle size of the first particles to 12 micrometers,

wherein said mixture does not contain amorphous silica particles having a volume median particle size greater than 6 micrometers.

5,283,106

NONWOVEN MATERIAL OF TWO OR MORE LAYERS, IN PARTICULAR WITH LONG-TERM FILTER PROPERTIES AND MANUFACTURE THEREOF

Kurt Seiler, Abtsteinach, and Peter Heidel, Bobingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 4, 1990, Ser. No. 621,793
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1989, 3940264
Int. Cl.[5] B32B *27/14*
U.S. Cl. 428—198 **11 Claims**

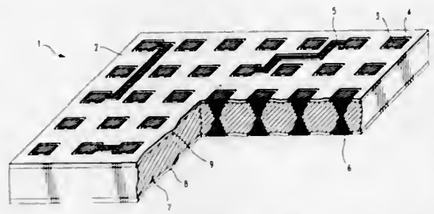
1. A multilayered filter material comprising nonwovens made of polymer fibers or filaments, said filter material including a depth filter for filtering out particles throughout its entire depth and a fine filter for filtering out particles along its surface, both filters having a homogeneous density perpendicular to their surface and being joined together by adhesive or welding in such a way that the area so joined does not exceed 75%, the fine and depth filters each comprising a filament nonwoven with the depth filter having a thickness from 2 to 20 times greater than the fine filter, the depth filter having a basis weight from 150 to 500 g/m^2 and the fine filter having a basis weight from 30 to 100 g/m^2, and wherein the fiber denier of the depth filter is between 4 and 20 dtex and the fiber denier of the fine filter is between 1 and 6 dtex whereby the linear densities of the fine filter are smaller than the linear densities of the depth filter.

5,283,107

MODULAR MULTILAYER INTERWIRING STRUCTURE

Thomas Bayer, Sindelfingen; Johann Greschner, Pliezhausen; Willy Hildenbrand, Magstadt; Bernd Marquart, Schonbuch; Roland R. Stöbr, Nufringen, and Olaf Wolter, Aidlingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1992, Ser. No. 878,098
Claims priority, application European Pat. Off., May 3, 1991, 91107214.8
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **16 Claims**



1. A multilayer wiring structure comprising:

a plurality of planar wiring units, each having top and bottom surface layers, at least one of which is made from an electrically conductive material, and each of said units being designed to be positioned in abutting relation to other units so as to permit two or more planar layers of wiring units to be formed;

a plurality of throughconnections extending through each of said wiring units so as to conduct electricity from said top surface layer to said bottom surface layer of said units;

a plurality of contact pads attached to selected throughconnections; and

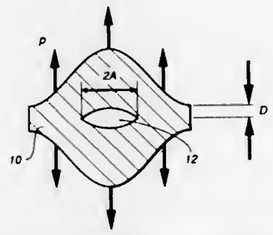
wherein said surface layers include a plurality of openings, each for receiving at least portions of a corresponding respective throughconnection and/or contact pad, selected ones of said opening being sized so a gap exists between said surface layers and throughconnections and-/or contact pads received in said selected ones of said openings such that said throughconnections and/or contact pads are electrically isolated from said surface layers.

5,283,108

PROCESS FOR PRODUCING DEFECT FREE MULTILAYER PRINTED CIRCUIT BOARDS

Glenn T. Haddick, Redwood City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 12, 1992, Ser. No. 976,132
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **10 Claims**



1. A process for preventing microcracking and/or delamination in cyanate ester multilayer printed circuit boards, comprising the steps of:

stacking a cyanate ester core and a cyanate ester prepreg material in alternating layers;

applying pressure to said stacked materials, wherein said pressure is from about 75 psi up to 150 psi; and

heating said materials while under pressure to partially cure said materials to about 85% conversion and thereby produce a laminate.

5,283,109

HIGH TEMPERATURE RESISTANT STRUCTURE

Richard B. Kaplan, Beverly Hills, Calif.; Hugh O. Pierson, Albuquerque, N. Mex.; J. Grady Sheek, Forth Worth, Tex.; Robert H. Tuffias, Los Angeles, and Brian E. Williams, Chatsworth, both of Calif., assignors to Ultramet, Pacoima, Calif.

Filed Apr. 15, 1991, Ser. No. 684,823
Int. Cl.[5] C30B *35/00*
U.S. Cl. 428—216 **12 Claims**

1. A refractory structure capable of withstanding prolonged temperatures in excess of at least about 2500 degrees Fahrenheit in an oxidizing environment comprising: a high temperature resistant carbon-carbon composite substrate comprising carbon fibers in a crystalline carbon matrix, and a high temperature oxidation resistant coating, said coating being formed in situ on the surface of said substrate and comprising very thin alternate layers of silicon carbide and a carbide formed from a Group IVB metal having a melting point in excess of about 1850 degrees centigrade, each of said layers being visible under microscopic cross-sectional examination when initially deposited and generally being less than approximately 10 microns thick, said coating having a total thickness of from approximately 5 to 30 mils.

5,283,110

HIGH TEMPERATURE COPOLYESTER MONOFILAMENTS WITH ENHANCED KNOT TENACITY FOR DRYER FABRICS

Jennifer A. Gardner, Great Falls, and Michelle A. Diaz-Kotti, Columbia, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Filed Feb. 3, 1992, Ser. No. 830,841
Int. Cl.[5] C08L *67/02;* **D03D** *1/00, 15/12*
U.S. Cl. 428—227 **16 Claims**

1. A high temperature copolyester monofilament having enhanced knot tenacity comprising:

a polymer blend, extruded in the presence of from 0 to about 5 percent by weight of a hydrolytic stabilizer, wherein said polymer blend includes

from about 99 to about 75 percent by weight of a high temperature copolyester resin consisting essentially of a copolymer comprising terephthalic acid, 1,4-dimethylolcyclohexane and isophthalic acid;

from about 1 to about 25 percent by weight of a melt extruded fluoropolymer resin, to form 100 percent by weight of said blend; and

from about 0.1 to about 10 percent by weight of a thermal stabilizer, with an appropriate reduction of at least one of the polymer components.

5,283,111

MULTI-LAYERED INSULATING COMPOSITE FABRIC

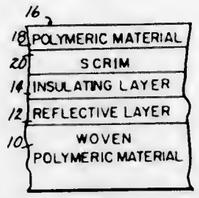
Richard A. Schlecker, 4307 Walther Ave., Baltimore, Md. 21214

Continuation of Ser. No. 604,019, Oct. 26, 1990, abandoned.
This application Jun. 17, 1992, Ser. No. 100,014
Int. Cl.[5] B32B *7/00;* **D04H** *1/00*
U.S. Cl. 428—247 **4 Claims**

1. A multi-layered insulating composite fabric for use with a livestock containment facility such as a hen house comprising, waterproof inner and outer opposite side layers, said inner side layer comprising a woven fabric formed entirely of flattened translucent plastic tapes coated with a film of material corresponding to the material of the tapes to thereby make the

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woven fabric waterproof, a reflective layer disposed adjacent to and outwardly of said inner side layer and having a metallized reflective surface of low emissivity, an insulating layer disposed adjacent to and outwardly of said reflective layer, said insulating layer comprising a non-woven batt of insulating



textile fibers having many air spaces to enhance the insulation properties thereof, said outer side layer being disposed outwardly of said insulating layer, said outer side layer comprising a waterproof synthetic polymeric resin fabric, and securing means for securing said layers of material in operative relationship to one another.

5,283,112

WATERPROOF BREATHABLE FABRIC LAMINATES AND METHOD FOR PRODUCING SAME

Sundaram Krishnan, Stoneham, Mass., assignor to Surface Coatings, Inc., Wilmington, Mass.

Division of Ser. No. 968,182, Oct. 29, 1992, Pat. No. 5,234,525, which is a continuation of Ser. No. 914,871, Jul. 16, 1992, Pat. No. 5,208,313. This application Jul. 26, 1993, Ser. No. 97,363

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—261 **11 Claims**

1. A waterproof, water vapor transmissible fabric laminate comprising a pair of fabric layers laminated together by means of a polyurethane membrane interposed between and bonded to the opposing surfaces of said fabric layers, said polyurethane membrane comprising the reaction product of:

(a) an organic polyisocyanate;

(b) a polyalkylene ether glycol wherein the number of carbon atoms of the alkylene radical thereof is 2;

(c) at least one polyalkylene ether glycol wherein the number of carbon atoms of the alkylene radical thereof is at least 3; and

(d) an isocyanate reactive hydroxyl group-containing polydimethylsiloxane having a functionality of at least 2; the mole ratio of the polyalkylene ether glycol of (a) to the at least one polyalkylene ether glycol of (b) being within the range of from 1.5:0.5 to 0.5:1.5 and the mole ratio of said isocyanate reactive polydimethylsiloxane to the total of said polyalkylene ether glycols of (b) and (c) being within the range of from 0.1:1 to 0.3:1.

5,283,113

PROCESS FOR PRODUCING CARBON FIBER FELT

Yoshiyuki Nishimura; Mikio Watanabe, and Kazuo Jonouchi, all of Ibaraki, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,879

Claims priority, application Japan, Oct. 18, 1991, 3-297570

Int. Cl.[5] D04H *1/08*

U.S. Cl. 428—280 **10 Claims**

1. A process for continuously producing a pitch-based carbon fiber felt which comprises the steps of spinning a pitch by melt-blow spinning system; accumulating the spun fibers as a pitch fiber web; continuously cross lapping the pitch fiber web; subsequently stabilizing the cross lapped web; subjecting the stabilized web to at least one treatment selected from carbonization and activation under such condition that the weight of the cross lapped web itself is negligible; and then felting the resultant web.

5,283,114

WHOLLY AROMATIC POLYESTER FIBER-REINFORCED POLYSTYRENE-POLY(PHENYLENE OXIDE) BLEND

Avraam I. Isayev, Akron, Ohio, assignor to Edison Polymer Innovation Corporation, Brecksville, Ohio

Filed Apr. 25, 1991, Ser. No. 691,349

The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.

Int. Cl.[5] B32B *5/08, 27/02, 27/04*

U.S. Cl. 428—294 **8 Claims**

1. A self-reinforced polymer composite comprising:

(a) from about 98% to about 2% by weight, based on total polymer weight, of a mixture of polystyrene and poly(-phenyleneoxide), and

(b) from about 2% to about 98% by weight, based on total polymer weight, of a melt processable wholly aromatic polyester;

said mixture of polystyrene and poly(phenyleneoxide) and said wholly aromatic polyester having a temperature range in which both are melt processable;

said wholly aromatic polyester having a viscosity lower than that of said mixture of polystyrene and poly(phenyleneoxide) under melt processing conditions;

said polymer composite having a greater tensile strength and a greater secant modulus in the fiber direction over the entire composition range than the tensile strength and the secant modulus of said mixture of polystyrene and poly(-phenyleneoxide) containing no wholly aromatic polyester;

said polymer composite comprising long continuous predominantly unidirectionally oriented reinforcing fibers of said wholly aromatic polyester which are formed in situ in a polymer matrix of said mixture of polystyrene and poly(-phenylene oxide).

5,283,115

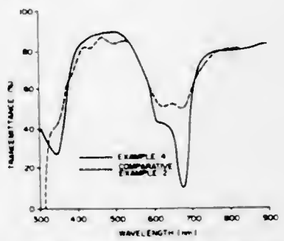
TRANSPARENT SHEET HAVING HEAT-TRANSFERRED IMAGE THEREON

Hironobu Shinohara, Machida, and Nobuyuki Sonobe, Shiki, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,150

Int. Cl.[5] B41M *5/26*

U.S. Cl. 428—195 **9 Claims**



1. A transparent sheet having an image thereon, characterized in that the transparent sheet consists of a thermoplastic resin having a norbornene skeleton and the image is composed of a toner adhered to the sheet by heat-transfer.

5,283,116

SHEET FEEDING MEMBER HAVING A FILM CONTAINING INORGANIC POWDER

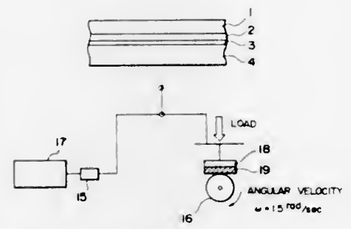
Yoshiaki Tomari, Yokosuka; Susumu Kadokura, Sagamihara; Masashi Honma, Toride; Yasunori Atarashi, Ibaraki, and Shoichi Shimura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1991, Ser. No. 685,633

Claims priority, application Japan, Apr. 17, 1990, 2-99413; Apr. 18, 1990, 2-100244; Apr. 18, 1990, 2-100245; Apr. 25, 1990, 2-107510

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—323 **8 Claims**



1. A sheet feeding member comprising:

a substrate of the sheet feeding member; and

an electro-deposition coating film containing inorganic powder provided on said substrate, said coating film being formed by electrophoresis of resin and said inorganic powder being co-deposited onto said substrate with the resin.

5,283,117

LAMINATE AND SELF-ADHESIVE TAPE

Yosuke Arai; Yuichi Oki; Eiji Maemura, all of Himeji, and Keisuke Funaki, Ichihara, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1992, Ser. No. 817,366

Claims priority, application Japan, Jan. 10, 1991, 3-012428

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—343 **12 Claims**

1. An adhesive laminate which consists essentially of (a) a biaxially oriented film of a styrenic polymer having a syndiotacticity in which the proportion of racemic diad is at least 75% optionally blended with from 1 to 70% by weight of a compatible resin or with from 2 to 50% by weight of an incompatible resin, said film having a thickness of 10 to 100 μm and (b) a rubber-based self-adhesive layer having a thickness of 5 to 80 μm.

5,283,118

METALLIZED WRAPPING FILM

Masatsugi Murakami, Moriyama; Junya Sato, Kouka; Kikuji Sasaki, Otsu, and Kazuhoshi Aoyama, Tsuchiura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 900,232

Claims priority, application Japan, Jun. 17, 1991, 3-144945; Jun. 26, 1991, 3-154695

Int. Cl.[5] B32B *7/12, 15/04*

U.S. Cl. 428—349 **10 Claims**

1. A metallized wrapping film comprising:

a plastic base film;

a heat-sealing layer formed on one surface of said base film; and

a metallic layer formed on another surface of said base film opposite to said one surface on which said heat-sealing layer is formed, said metallic layer consisting essentially of 70–99% by weight of aluminum and one or more elements selected from the elements having an atomic number of 12–30 excluding aluminum, said metallized wrapping film having an optical density of 1.0 to 3.0.

5,283,119

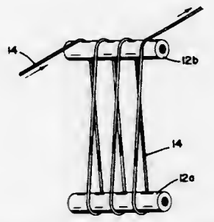
PROCESS FOR THE SURFACE TREATMENT OF POLYMERS FOR REINFORCEMENT-TO-RUBBER ADHESION

Derek Shuttleworth, Munroe Falls, Ohio; Syed K. Mowdood, Madison, Conn.; Walter H. Waddell, Fairlawn, Ohio; Jimmy L. Richards; Eilert A. Ofstead, both of Cuyahoga Falls, Ohio, and Jerry L. Brenner, Copley, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 501,564, Mar. 30, 1990, Pat. No. 5,053,246. This application Aug. 13, 1991, Ser. No. 726,436

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—375 **3 Claims**



1. A reinforcement material for an elastomer, said reinforcement material comprising a filament, tow, woven fabric, cord or fiber, said reinforcement material further comprising a polymer selected from the group consisting of carbon fiber, polyether, cellulose, polyurea, polyolefin, polyester, polyurethane, polyamide, polyvinyl alcohol, and polyphenylene sulfides, and mixtures thereof wherein a surface of said material has thereon deposited polymer species which are reactive with an elastomer in which it is used, said deposited polymer species being formed using electrical energy in the 50 Hz (ac) to 2.45 GHz range by ionization of polymerizing gases selected from the group consisting of sulfides, thiols and isocyanates containing 1–15 carbon atoms.

5,283,120

ELECTRIC CABLES WHICH CONTAIN INSULATIONS BASED ON ETHYLENE POLYMERS HAVING HIGH RESISTANCE TO THE FORMATION OF WATER TREES

Ernst Koehnlein, 4 Ungsteiner Strasse; Heinz Vogt, 30 Pranckhstrasse; Johannes Schlag, 36 Leuschnerstrasse, all of 6700 Ludwigshafen; Thomas Muehlenbernd, 3 a Siegelsmauer, 6900 Heidelberg, and Hans-Henning Hub, 37 Dr.-Illert-Strasse, 6520 Worms, all of Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,409

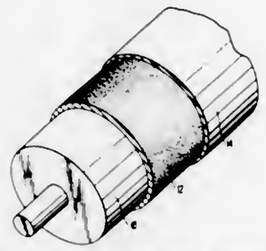
Int. Cl.[5] B32B *15/00;* **D02G** *3/00*

U.S. Cl. 428—379 **4 Claims**

1. An electric cable containing a cable insulation having high resistance to the formation or growth of water trees and having high aging resistance and consisting essentially of an ethylene polymer (I) selected from the group consisting of ethylene homopolymers or ethylene copolymers with α-olefins of 3 to 8 carbon atoms, ethylene/vinyl acetate copolymers, ethylene acrylate copolymers or mixtures thereof, and from 0.5 to 40% by weight, based on the ethylene polymer (I), of an ethylene copolymer (II) which differs from (I) and contains, in addition to predominant amounts of ethylene, a C_3–C_6-alkenecarboxylic acid or a C_4–C_6-alkenedicarboxylic acid or C_4–C_6-dicarboxylic anhydride as copolymerized units, said ethylene copolymer (II) being an ionomer in which some of the carboxylic groups or carboxylic anhydride groups have been converted into ammonium salts of tertiary amines.

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5,283,121
CORROSION AND ABRASION RESISTANT INDUSTRIAL ROLL COATING WITH NON-STICKING PROPERTIES
Barry A. Bordner, Holley Ave., Northfield, Mass. 01360
Filed Nov. 8, 1991, Ser. No. 789,369
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—381 **5 Claims**



1. A composite metallic roll having highly anti-corrosive properties comprising:
a body member having a relatively soft and corrodible metal first layer;
a textured, non-porous middle layer comprising stainless steel, nickel, nickel chromium, or a nickel chromium carbide applied to the first layer;
said textured middle layer having a surface finish of 150 to 400 R_a; and
an outer layer comprising a fluorocarbon polymer coating top coated over said middle layer to provide a non-sticking characteristic to the coating.

5,283,122
FUSED LIPOSOME AND ACID INDUCED METHOD FOR LIPOSOME FUSION
Leaf Huang, and Jerome Connor, both of Knoxville, Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.
Continuation of Ser. No. 181,268, Apr. 13, 1988, abandoned, which is a continuation of Ser. No. 602,177, Apr. 19, 1984, Pat. No. 4,798,663. This application Feb. 14, 1992, Ser. No. 836,125
The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.
Int. Cl.[5] A61K *9/127*
U.S. Cl. 428—402.2 **20 Claims**

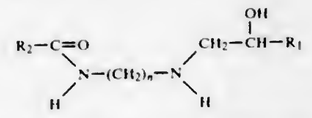
15. Fused nonagglomerated liposomes comprised of at least one lipid which has a tendency to form the inverted hexagonal phase and at least 20 mol percent of an amphipathic molecule containing one or more acidic functional groups an amphipathic molecule selected from palmitoylhomocysteine, palmitic acid and oleic acid.

5,283,123
ADSORPTION MATERIAL AND METHOD
Deborah H. Carter, 4943 Schelbert Ter., Fremont, Calif. 94555; Heikki Lommi, Metsapolku 18, 02460 Kantvik, Finland; Richard L. Antrim, 14 Robincrest Rd., Hawthorne Woods, Ill. 60047; William R. Krumm, 3169 Earlington La., Reynoldsburg, Ohio 43068, and Gary W. Stuhlfauth, 434 E. Kossuth St., Columbus, Ohio 43206
Continuation of Ser. No. 346,847, May 3, 1989, Pat. No.
Int. Cl.[5] B01D *39/04;* **B01J** *20/28;* **B32B** *23/02, 23/12*
U.S. Cl. 428—403 **21 Claims**

1. Adsorption material with improved binding capacity which comprises native cellulose fiber or a fibrous cellulose derivative capable of binding charged molecules, said native cellulose fiber or fibrous cellulose derivative being supported by a carrier such that said native cellulose fiber or fibrous cellulose derivative is substantially distributed predominantly or exclusively over the external surface of said carrier, and where said native cellulose fiber or fibrous cellulose derivatives are attached to said carrier by means of a neutral dissolved polymer, said carrier consists of particles which are spherical or substantially spherical.

5,283,124
COATING RESIN COMPOSITION
Toshio Fujibayashi, and Haruo Nagaoka, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan
Filed Mar. 1, 1991, Ser. No. 662,571
Claims priority, application Japan, Mar. 2, 1990, 2-49580; Mar. 2, 1990, 2-51947
Int. Cl.[5] C08G *59/54, 59/24;* **C08L** *63/02, 63/08*
U.S. Cl. 523—404 **27 Claims**

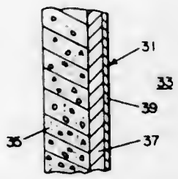
1. A resin composition for a cationically electrodepositable paint comprising
(a) the epoxy resin derivative obtained by reacting an amine compound of the formula:



(1)

wherein n is an integer of 1 to 6; R_1 denotes a hydrogen atom, a methyl group or an ethyl group; and R_2 denotes a hydrocarbon group with 4 to 36 carbon atoms which is optionally substituted by at least one hydroxyl group and optionally contains at least one polymerizable double bond in a chain, with a first epoxy resin, and
(b) a second epoxy resin containing, per molecule, on the average at least 2 epoxy functional groups each comprising an epoxy group directly bound to an alicyclic ring and/or bridged alicyclic ring as principal components.

5,283,125
DEW CONDENSATION PREVENTING STRUCTURE
Yukuo Shinozaki, Kashiwa, and Mamoru Shinozaki, Funabashi, both of Japan, assignors to Takenaka Corporation, Osaka, Japan
PCT No. PCT/JP91/00551, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO91/18154, PCT Pub. Date Nov. 28, 1991
PCT Filed Apr. 24, 1991, Ser. No. 778,180
Claims priority, application Japan, May 24, 1990, 2-135870; Oct. 8, 1990, 2-271887
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—411.1 **5 Claims**



1. A dew condensation preventing space forming structure characterized by a heat-insulating layer formed on a space-forming concrete base on the space side of the concrete base, a moisture absorbing and releasing layer which absorbs moisture when the humidity in the space is uncomfortably high and naturally releases moisture when the humidity decreases to a point at which dew condensation would normally form on the space side of the heat-insulating layer, and the heat-insulating layer being formed by applying a heat insulator prepared by mixing 3 to 50 parts by weight of synthetic resin emulsion in solid content equivalency, 1 to 20 parts by weight of organic microballoon, 0.3 to 5 parts by weight of carbon fiber and 10 to 200 parts by weight of inorganic microballoon with 100 parts by weight of cement on said space side of the concrete base by a wet process.

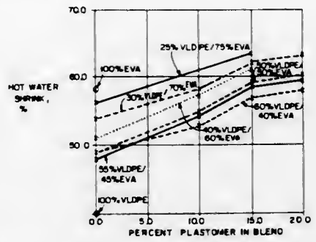
5,283,126
UTILIZATION OF FLEXIBLE COATING ON STEEL TO IMPART SUPERIOR SCRATCH AND CHIP RESISTANCE
William A. Rasmussen, Glenwood, and Michael Jackson, La-Grange, both of Ill., assignors to Bee Chemical, Lansing, Ill.
Continuation-in-part of Ser. No. 752,103, Aug. 29, 1991, Pat. No. 5,169,725. This application Jun. 29, 1992, Ser. No. 905,931
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—457 **9 Claims**

1. Coated steel comprising a steel substrate, an electrodeposited organic coating thereon and at least one layer of a cured coating composition, said coating composition prior to curing comprising between about 29 and about 87 phr of a polyester having hydroxyl functionality at between about 150 and about 1000 gm. eq. wt., between about 2 and about 60 phr of a polyacrylate having hydroxyl functionality at between about 500 and about 2500 gm. eq. wt., and between about 11 and about 50 phr of melamine formaldehyde resin, said melamine-formaldehyde resin providing a substantially stoichiometric amount of reactive sites relative to the total hydroxyl functionality of said polyester and said polyacrylate, calculating each melamine moiety as having 2.5 reactive sites, said cured coating composition showing no cracking when subjected to a 1" mandrel bend at 75° F., 0° F. and −20° F., said cured coating, if applied to a rigid E-coated substrate, having a minimum ASTM Gravelometer rating of 8A when subjected to 1, 5, and 10 parts of gravel at 77° F. and −20° F. and a maximum of 50 mgs. weight loss when subjected to 1000 cycles on a Taber abraser utilizing CS-10 wheels and 1000 gram weights.

5,283,127
SEALABLE, PEELABLE PLASTICS FILM
Uwe Blumenstein, Ludwigshafen; Dietmar Bender, Schifferstadt, and Helmut Jenne, Schriesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jul. 17, 1992, Ser. No. 914,126
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123672
Int. Cl.[5] B32B *27/30, 27/34, 27/36*
U.S. Cl. 428—476.3 **5 Claims**

1. A multilayer, sealable plastic film, comprising
A: a top layer A consisting essentially of a polymer which is dimensionally stable at elevated temperatures and has a melting point above 200° C.,
B: an adhesion promoter layer B directly bonded to the top layer A, wherein said adhesion promoter layer B consists essentially of a blend of 1) from 30 to 95% by weight based on layer B of a styrene/butadiene block copolymer which contains up to 95% by weight of styrene component and 2) from 5 to 70% by weight based on layer B of a polymer which is incompatible with polystyrene and contains polar groups,
C: a substrate layer C directly bonded to the layer B, which substrate layer consists essentially of from 5 to 100% by weight of a styrene/butadiene block copolymer and up to 95% by weight of polystyrene or high-impact polystyrene, and
E: a sealing layer E, bonded to a surface of substrate layer C opposite that bonded to the layer B and the composition of which is essentially the same as that of an adhesion promoter layer B.

5,283,128
BIAXIALLY ORIENTED HEAT SHRINKABLE FILM
Darrell L. Wilhoit, Joliet, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed Mar. 23, 1992, Ser. No. 855,826
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—516 **17 Claims**



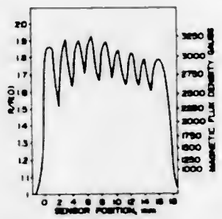
1. A biaxially oriented heat-shrinkable film comprising a three component blend of a polyethylene member selected from the group consisting of VLDPE and LLDPE or a mixture thereof, ethylene alpha-olefin plastomer copolymer of density below about 0.90 g/cm^3 and ethylene vinyl acetate as major components, wherein as between the polyethylene and ethylene vinyl acetate total the polyethylene comprises between about 35 and about 60 wt. % of the total and ethylene vinyl acetate comprises between about 40 and about 65 wt. % of the total, and wherein said ethylene alpha-olefin plastomer copolymer comprises between about 10 and about 20 wt. % of the total weight of said three component blend.

5,283,129
LIGHT WEIGHT PAPER STOCK
Frederick J. Renk, Wilton, Conn.; Carolyn K. Attenborough, New City, N.Y.; Frederick C. Oettinger, East Holden, and Michael S. Handzel, Ellsworth, both of Me., assignors to Champion International Corporation, Stamford, Conn.
Filed Oct. 21, 1992, Ser. No. 964,384
Int. Cl.[5] B32B *29/06, 29/00*
U.S. Cl. 428—537.5 **10 Claims**

1. A light weight coated paper comprising paper stock having a weight ranging from about 22 to 26 pounds per ream having a coating thereon of the dried residue of from about 4 to 8 pounds per ream of the dried residue from an aqueous coating formulation comprising:
a) a pigment composition comprising:
i) from about 60 to 80 parts by weight of delaminated clay;
ii) from about 15 to 30 parts by weight of calcined clay; and
iii) from about 5 to 15 parts by weight of a whitening pigment;
b) from about 15 to 30 parts by weight of a starch binder;
c) from about 3 to 7 parts by weight of a starch cross-linking agent per 100 parts by weight starch;
d) from about 0.5 to 1.5 parts of a lubricant per 100 parts by weight pigment;
e) water in an amount sufficient to provide a coating formulation having from about 45 to 50% by weight solids; and
f) sufficient basic buffer to raise the pH to about 8 to 8.5 said coated paper exhibiting a sheet gloss in the range of about 25 to 40% reflection; an ink gloss of about 45 to 50% reflection; a brightness of from about 68 to 72%; an opacity of at least about 88; and a L&W stiffness factor ranging from about 1 to 1.50 milli-newtons.

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5,283,130
THERMOMAGNETICALLY PATTERNED MAGNETS AND METHOD OF MAKING SAME
John R. Bradley, Centerline; Thomas A. Perry, Washington, and Thaddeus Schroeder, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 589,352, Sep. 28, 1990, Pat. No. 5,089,060. This application Nov. 6, 1991, Ser. No. 788,662
Int. Cl.[5] H01F *1/00*
U.S. Cl. 428—611 **6 Claims**



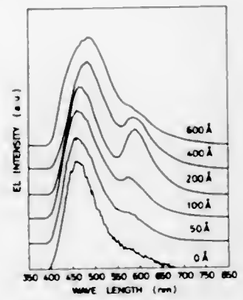
1. A patterned magnet comprising a magnetized substrate of a permanent magnet material at least one millimeter in thickness and a magnetized pattern extending to a controlled depth from the substrate surface, the patterned region within said substrate having a lower flux density than the original substrate material as detectable by a magnetic sensor; and made by the process of:
directing energy onto the magnetized substrate surface in a pattern to heat a volume of the material to lower the coercivity to the controlled depth;
imposing a magnetic field on the heated pattern wherein the field imposed on the heated pattern emanates at least partially from the magnetized base material, whereby the treated pattern generates a lower flux density than the base material; and
cooling the treated pattern in the imposed field.

5,283,131
ZINC-PLATED METALLIC MATERIAL
Kazuhiko Mori, and Shinji Nomura, both of Kanagawa, Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan
Filed Jan. 29, 1992, Ser. No. 827,400
Claims priority, application Japan, Jan. 31, 1991, 3-29017; Jan. 31, 1991, 3-29018
Int. Cl.[5] B32B *15/04*; C25D *5/10*
U.S. Cl. 428—623 **1 Claim**

1. A zinc-plated metallic material comprising a metallic material; a plating layer consisting of zinc or zinc alloy containing 70% by weight or more of zinc; a coating layer on the plating layer comprising at least one of magnesium oxide or hydrated magnesium oxide in an amount of from 10 to 500 mg per square meter of the coating layer and also at least one of chromium oxide or chromium hydrated oxide in an amount of from 10 to 500 mg of chromium per square meter of said coating layer.

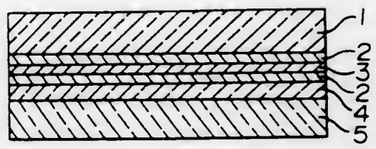
5,283,132
ORGANIC ELECTROLUMINESCENT DEVICE FOR WHITE LUMINESCENCE
Takashi Ogura, Nara; Takuo Yamashita, Okayama; Masaru Yoshida, Nara; Kazuhiro Emoto, Nagaokakyo, and Shigeo Nakajima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 11, 1992, Ser. No. 849,708
Claims priority, application Japan, Mar. 13, 1991, 3-48143
Int. Cl.[5] H05B *33/14*; H01J *1/63*; B32B *17/06*
U.S. Cl. 428—690 **4 Claims**

1. An organic electroluminescent device for white luminescence, comprising:
a pair of opposite electrodes at least one of which is transparent; and
a hole transport layer and a luminescent layer which are stacked in that order between said electrodes, said hole



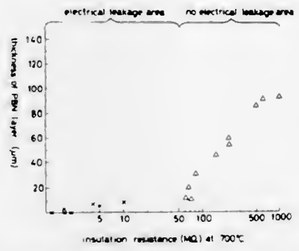
transport layer being formed from bis-di(p-tolyl-)aminophenyl-1,1-cyclohexane, said luminescent layer being formed from a material having a luminescent peak at 460–480 nm and a thickness of 100–300 Å.

5,283,133
MAGNETO-OPTICAL DISK
Kazuhiko Tsutsumi; Motohisa Taguchi, and Hiroshi Sugahara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 734,115, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 350,691, May 9, 1989, abandoned. This application Jun. 29, 1992, Ser. No. 905,237
Claims priority, application Japan, Jul. 27, 1988, 63-188806
Int. Cl.[5] G11B *5/66*
U.S. Cl. 428—694 NF **1 Claim**



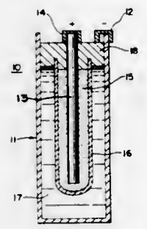
1. A magneto-optical disk comprising:
a substrate;
a first dielectric film made of aluminum germanium nitride which is capable of increasing the Kerr rotational angle, wherein the value obtained by dividing the product of the refractive index and the film index by the wavelength of a laser beam impinging upon said magneto-optical disk is approximately 0.2 and the thickness of said film is approximately 650 Å;
a magnetic film disposed on said dielectric film;
a second dielectric film having a thickness of approximately 1,000 Å made of the same aluminum germanium nitride composition as said first dielectric film; and
an adhesive film disposed on said second dielectric film.

5,283,134
SPARK PLUG INSULATOR AND A METHOD OF SINTERING
Makoto Sugimoto; Hiroyuki Tanabe, and Mamoru Musasa, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Filed Dec. 9, 1991, Ser. No. 804,786
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—698 **3 Claims**



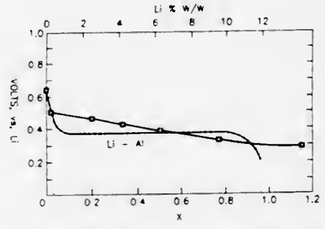
1. A spark plug insulator comprising a sintered body including aluminum nitride ceramic powder in an amount in the range 60%–98% by weight of the sintered body and a sintering additive, said sintering additive being selected from yttrium oxide (Y_2O_3), calcium oxide (CaO), barium oxide (BaO), calcium carbide (CaC_2), noedymium oxide (Nd_2O_3) and scandium oxide (Sc_2O_3); and
a layer of pyrolytic boron nitride uniformly deposited on the entire surface of the sintered body, the thickness of the pyrolytic boron nitride layer ranging from 10 μm to 100 μm, said pyrolytic boron nitride being deposited on said sintered body by placing said sintered body in a carbon furnace in which boron chloride (BCl_3) and ammonia gas (NH_3) chemically react at a reaction temperature of 1900° C. under $10^{-2} \sim 10^{-3}$ Torr so as to form a pyrolytic boron nitride, the pyrolytic boron nitride depositing on the entire surface of said sintered body to provide a pyrolytic boron nitride layer deposited at a rate of 20~30 μm per hour.

5,283,135
ELECTROCHEMICAL CELL
Laszlo I. Redey, Downers Grove; Donald R. Vissers, Naperville, and Jai Prakash, Downers Grove, all of Ill., assignors to University of Chicago, Chicago, Ill.
Continuation-in-part of Ser. No. 830,719, Feb. 4, 1992, which is a continuation-in-part of Ser. No. 774,204, Oct. 10, 1991. This application Jun. 19, 1992, Ser. No. 901,547
Int. Cl.[5] H01M *4/36, 10/39*
U.S. Cl. 429—103 **26 Claims**



1. An electrochemical cell comprising a bimodal positive electrode, a negative electrode of an alkali metal, and a compatible electrolyte including an alkali metal salt molten at the cell operating temperature, said positive electrode comprising an electrochemically active layer of at least one transition metal chloride at least partially present as a charging product, and bromide and/or iodide and sulfur containing additives in said positive electrode or electrolyte, said bromide and/or iodide additive being present in an amount not greater than about 30% by weight based on the weight of said positive electrode and the sulfur additive being present in an amount not greater than about 10% by weight of said positive electrode, the amount of additives being sufficient to provide electrode capacity in excess of 400 Ah/cm^3 by being incorporated into the transition metal chloride layer formed during charging of the cell.

5,283,136
RECHARGABLE BATTERIES
Emanuel Peled, Even Yehuda, and Aryeh Lin, Ramat Gan, both of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel Aviv, Israel
Filed Jun. 3, 1992, Ser. No. 893,026
Int. Cl.[5] H01M *4/38, 6/16*
U.S. Cl. 429—192 **10 Claims**



1. An anode for use in electrochemical cells, which is an alloy of 2 to 30% lithium and other elements, containing at least 20% aluminum and at least 5% magnesium, the composition of the alloy being such that during charge and discharge of the cell, the curve of open circuit voltage as well as the voltage under working conditions versus lithium content of the anode is of a gradually sloping nature, said alloy remaining during charge and discharge in an intermediate phase range or in the variostoichimetric range, said anode containing from zero to 5% of elements selected from the group consisting of:
Cd, Zn, Sn, Pb, Si, In, Ga, Hg and Sb,
the total of these elements not to exceed 40%; and from zero to 3% of elements selected form the group consisting of:
As, P, Si, Ge, C, Fe, Ni, Cu, CR, V, Co, Zn, Mo, Nb, and Mn,
the total of these elements not to exceed a total of 20%, the slope being larger than 3 mV per 1 per cent change of the lithium content of the anode.

5,283,137
COVER ASSEMBLY FOR RECHARGEABLE BATTERY
Larry K. W. Ching, Littleton, Colo., assignor to Optima Batteries, Inc., Denver, Colo.
Filed Apr. 29, 1991, Ser. No. 693,988
Int. Cl.[5] H01M *2/08, 2/02, 2/10*
U.S. Cl. 429—175 **35 Claims**

1. A device for covering a multi-cell rechargeable battery having top and bottom surfaces and upper terminal connections projecting from said top surface, and for use as a mounting spacer for said battery, said device comprising:
cover means sized and shaped to shield the top surface of said battery when attached thereto including a plate having upper and lower surfaces with apertures disposed therein to provide limited access to said upper terminal connections;
means for spacing said plate from said battery top surface to recess said upper terminal connections relative to the upper surface of said plate for protection against surface

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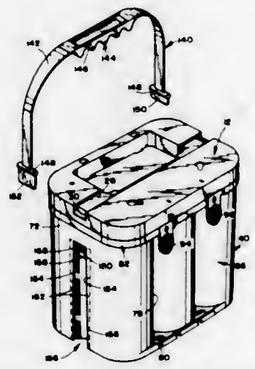
contact and electrical shorting, said spacing means being integral with said plate;

means for selectively attaching said cover means to said battery to protect said battery top surface and upper terminal connections from damage from objects placed on said plate, said attaching means being further adapted for selectively securing said cover means to the bottom surface of said battery to function as a spacer for battery mounting; and

means for permitting testing of the electrical condition of said battery without removing said cover means.

33. A cap device for use with a multi-cell rechargeable battery, which battery has a top surface, a bottom surface, upper positive and negative terminal connections which project from the top surface, comprising:

a removable cap, including a cover plate having a top surface and a bottom surface, said plate being sized and shaped to provide a substantially flat load bearing top surface which, when said cap is attached to the top of the battery, shields the top surface of the battery, including at



least the upper positive and negative terminal connections of the battery, and which top surface also provides a flat surface for use in stacking batteries during shipping and storage;

means, integral with said bottom surface of said plate, for spacing the bottom surface of said cover plate from the top surface of the battery, and for enclosing the upper terminal connections in recess relative to the upper surface of said plate for protection of the upper terminal connections against surface contact within the cap and also for protection of the upper terminal connections from exterior objects which may cause electrical shorting; and

means carried by said cap device for removably attaching said cap device to the top of a battery; whereby, when said cap device is attached to the top of the battery, it provides a substantially flat load bearing top surface which shields the top surface of the battery, including the upper positive and negative terminal connections of the battery and provides a flat surface for use in stacking batteries during shipping and storage.

5,283,138

LIGHTWEIGHT ZINC ELECTRODE

William A. Ferrando, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1993, Ser. No. 97,181
Int. Cl.[5] H01M *4/38, 4/48, 4/66*
U.S. Cl. 429—217 **12 Claims**

1. A zinc electrode comprising

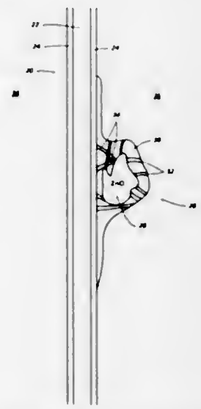
A. a sintered mat of copper metal coated graphite fibers; and

B. a zinc active material/hydrogel/inert polymer matrix composite material comprising

(1) from about 50 to about 90 weight percent of a zinc active material that is zinc, zinc oxide, zinc hydroxide, or mixtures thereof wherein the weight percentage is based on the equivalent amount of zinc oxide, and with

(2) the remainder of the zinc active material/hydrogel/inert polymer matrix composite material being a hydrogel/inert polymer matrix composite material comprising

(a) from about 10 to about 50 weight percent of the hydrogel, and with



(b) the remainder of the hydrogel/inert polymer matrix composite material being an impervious, inert matrix polymer,

wherein the zinc active material and the hydrogel are each dispersed within the inert polymer matrix;

wherein the zinc active material/hydrogel/inert polymer matrix composite material surrounds the individual copper metal coated graphite fibers of the sintered mat and the copper metal coated graphite fibers provide paths of electrical conductivity throughout the zinc active material/hydrogel/inert polymer matrix composite material.

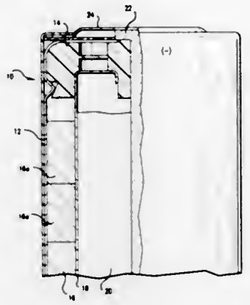
5,283,139

ALKALINE CELL

Gerald H. Newman, Weymouth, Mass.; G. Stephen Kelsey, Nashua, N.H.; Douglas C. Magnuson, Westboro, Mass.; Bhupendra K. Patel, Mansfield, Mass.; Douglas J. Woodnorth, Needham, Mass.; John S. Miller, Sudbury, Mass., and Alfred M. Kasianowicz, Pembroke, Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Apr. 12, 1993, Ser. No. 46,430
Int. Cl.[5] H01M *4/24*
U.S. Cl. 429—224 **15 Claims**

1. A primary electrochemical cell having an anode comprising zinc, a cathode comprising manganese dioxide, and an alkaline electrolyte, all operatively associated within a cylindrical casing sealed at its open end by a seal member; wherein the inner surfaces of said seal member and casing define the internal volume of said cell; wherein the ratio of the total capacity of each of the anode and cathode to the internal volume of the cell each exceeds about 0.48 ampere-hour per cm^3 of internal volume, and the density of zinc in the anode is at least 1.6 grams per cm^3 of anode volume and the density of



manganese dioxide is at least 2.8 grams per cm^3 of cathode volume.

5,283,140

HALFTONE IMAGE SCREENING ARRAY OF PARALLEL LINES WITH EFFECTIVE MAXIMUM AND MINIMUM OPTICAL DENSITY AND METHOD OF GENERATING A HALFTONE IMAGE UTILIZING THE SCREENING ARRAY

Yoel Netz, 5 Masada Street, Bat Yam, and Arnold Hoffman, 5 Hagra Street, Rehovot, both of Israel

Continuation of Ser. No. 553,425, Jul. 17, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 981,891
Claims priority, application Israel, Jul. 20, 1989, 91054
Int. Cl.[5] G03F *5/08, 7/06*
U.S. Cl. 430—6 **13 Claims**

1. A device for offset and similar printing from a continuous tone original to produce a halftone image on a photosensitive layer comprising means for screening said information via a first array of parallely extending lines of effective minimum optical density and a second array of parallely extending lines of effective maximum optical density, said arrays being interposed to form a composite array of substantially parallel, spaced-apart, alternating lines of effective maximum and minimum optical density, said lines delimiting therebetween zones of effective graduated optical density, the gradient inside each zone progressively varying from low optical density adjacent lines of said first array to high optical density adjacent lines of said second array, the spacing of lines of said first array being between 100 and 400 lines per inch and wherein the resulting thickness of each reproduced line on a resulting developed photosensitive layer, generated by screening said information via said array, continuously varies as a function of the density of each information point of the original.

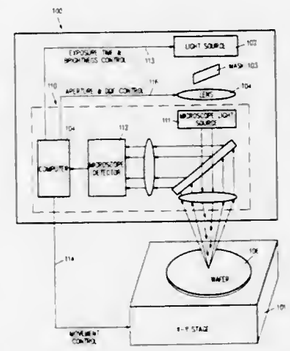
13. A method for generating a halftone image from a continuous tone original comprising outputting the information of the original onto an unexposed scanner-type film, in an electronic output simulating a screen format, the pattern of this screen being a first array of parallely extending lines of effective minimum optical density and a second array of parallely extending lines of effective maximum optical density, said arrays being interposed to form a composite array of substantially parallel, spaced-apart, alternating lines of effective maximum and minimum optical density, said lines delimiting therebetween zones of effective graduated optical density, the gradient inside each zone progressively varying from low optical density adjacent lines of said first array to high optical density adjacent lines of said second array, the spacing of lines of said first array being between about 400–600 lines per inch and developing in a lith developer containing a hydroquinone developing agent in combination with carbonate, bicarbonate and halide salt together with sodium formaldehyde sulfoxylate and formaldehyde wherein a resulting thickness of each resulting line generated on said scanner type film continuously varies as a function of each information point of the original, but does not decrease in the Dmin region beyond 5 microns width even when the generated line becomes segmented.

5,283,141

PHOTOLITHOGRAPHY CONTROL SYSTEM AND METHOD USING LATENT IMAGE MEASUREMENTS

Euisik Yoon, Sunnyvale; Robert W. Allison, Jr., San Jose, and Ronald P. Kovacs, Mountain View, all of Calif., assignors to National Semiconductor, Santa Clara, Calif.

Filed Mar. 5, 1992, Ser. No. 846,590
Int. Cl.[5] G03C *5/00;* **H01L** *21/00;* **G01R** *31/26*
U.S. Cl. 430—30 **9 Claims**



1. A method of processing semiconductor wafers comprising the steps of:

(a) loading a first wafer having a layer of photoresist into a photolithography system;

(b) exposing said photoresist in accordance with an initial set of control parameters;

(c) prior to developing said photoresist, using a phase contrast microscope to measure linewidth characteristics of at least one latent image created on said photoresist by said exposing step; and

(d) adjusting said initial set of control parameters according to said measured linewidth characteristics of said at least one latent image on said photoresist to generate a second set of control parameters.

5,283,142

IMAGE-HOLDING MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, APPARATUS UNIT, AND FACSIMILE MACHINE EMPLOYING THE SAME

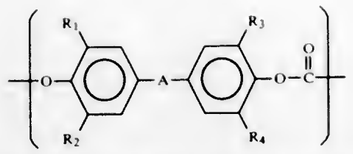
Shinya Mayama, Yamato; Naoto Fujimura, Yokohama; Kiyoshi Sakai, Hachioji; Noriko Ohtani; Katsumi Aoki, both of Yokohama; Noriyoshi Ogawa, Toyonaka, and Satoshi Kanayama, Takarazuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,718
Claims priority, application Japan, Feb. 21, 1991, 3-27152
Int. Cl.[5] G03G *5/047, 5/147, 15/22;* **H04N** *1/23*
U.S. Cl. 430—58 **19 Claims**

1. An electrophotographic image-holding member, comprising an electroconductive support and a resin layer formed on the support, the surface layer of the image-holding member containing a copolymer having the structure units represented by the formulas [I] and [II]:

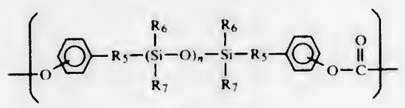
VOL 1159 ISS 1 FE 1 1994 UMI

[I]



wherein A is a linear, branched or cyclic alkylidene group of 1 to 10 carbon atoms, an aryl-substituted alkylidene group, arylene-dialkylidene group, —O—, —S—, —CO—, —SO—, or —SO_2—; and R_1, R_2, R_3, and R_4 are respectively hydrogen, halogen, or an alkyl or alkenyl group of 1 to 4 carbons;

[II]



is provided

where R_5 is an alkylene or alkylidene group of 2 to 6 carbons; R_6 and R_7 are respectively an alkyl group of 1 to 3 carbons, a phenyl or substituted phenyl group; and n is an integer of from 1 to 200, and the copolymer containing the structure unit of the formula [II] in an amount of from 0.1% to 50% by weight of the total weight of the copolymer.

8. An electrophotographic image-holding member according to claim 1, wherein the surface layer is a photosensitive layer.

9. An electrophotographic image-holding member according to claim 8, wherein the photosensitive layer comprises a charge-generating layer and a charge-transporting layer.

5,283,143

ELECTROPHOTOGRAPHIC IMAGING MEMBER CONTAINING ARYLAMINE TERPOLYMERS WITH CF_3 SUBSTITUTED MOIETIES

John F. Yanus, Webster; William W. Limburg, Penfield; Dale S. Renfer, Webster, and Damodar M. Pai, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

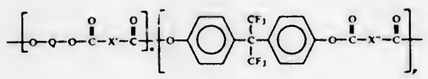
Filed Nov. 25, 1991, Ser. No. 797,753

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] **G03G** *15/02, 15/00*

U.S. Cl. 430—59 **9 Claims**

1. An electrostatographic imaging member comprising a support layer and at least one electrophotoconductive layer, said imaging member comprising a polyarylamine polymer represented by the formula:



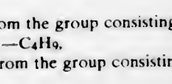
wherein:

n is between about 5 and about 5,000

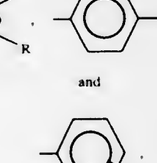
p is between about 5 and about 5,000

X' and X'' are independently selected from a group having bifunctional linkages,

Q is a divalent group derived from a hydroxy terminated arylamine reactant containing the group:



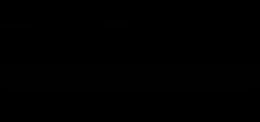
or

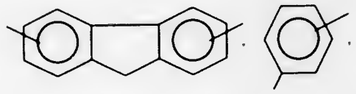


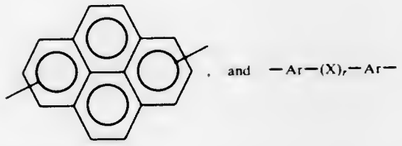
wherein:

Ar' is selected from the group consisting of:

Z is selected from the group consisting of:





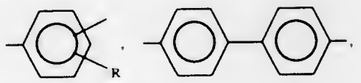


and —Ar—(X)$_r$—Ar—

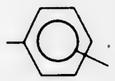
r is 0 or 1,

R is selected from the group consisting of —CH_3, —C_2H_5, —C_3H_7, and —C_4H_9,

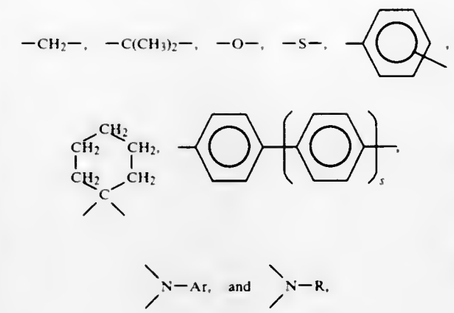
Ar is selected from the group consisting of:



and



X is selected from the group consisting of:



and the weight average molecular weight of the polyarylamine polymer is between about 10,000 and about 1,000,000.

5,283,144

PURIFIED PHOTOGENERATING PIGMENTS

Anthony T. Ward, Webster, N.Y.; George Liebermann; Ah-Mee Hor; Giuseppa Baranyi, all of Mississauga, Canada, and Donald J. Teney, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1992, Ser. No. 939,760

Int. Cl.[5] **G03G** *5/04*

U.S. Cl. 430—71 **25 Claims**

1. A photoreceptor comprising a charge generating layer, the charge generating layer comprising: 1) a photogenerating pigment purified by sublimation at a sublimation pressure not greater than 10^{-3} Torr and subsequent condensation at a condensation temperature less than about 100° C.; and 2) a film-forming binder.

5,283,145

CRYSTALS OF DICHLOROTIN PHTHALOCYANINE, METHOD OF PREPARING THE CRYSTAL, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING THE CRYSTAL

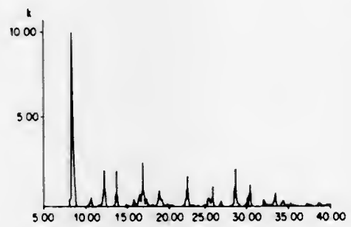
Katsumi Nukada; Akira Imai; Yasuo Sakaguchi; Katsumi Daimon; Masakazu Iijima; Toru Ishii, and Kiyokazu Mashimo, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,093

Claims priority, application Japan, May 1, 1991, 3-126489; Nov. 15, 1991, 3-326721

Int. Cl.[5] **G03G** *15/00*

U.S. Cl. 430—78 **17 Claims**



1. Dichlorotin phthalocyanine crystals having distinct diffraction peaks at 8.7°, 9.9°, 10.9°, 13.1°, 15.6°, 16.3°, 17.4°, 21.9° and 25.5° of the Bragg angle (2θ±0.2) to a CuKα characteristic X-ray.

5,283,146

PHOTOCONDUCTIVE PHTHALOCYANINE COMPOSITION

Toyoshi Ohashi; Toshiaki Ishibashi; Junko Gouda; Akira Itsubo; Toshiyuki Koyama; Masatomi Ozawa, and Katsutosi Iijima, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,309

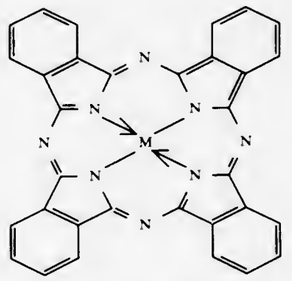
Claims priority, application Japan, Jul. 22, 1991, 3-204561; Sep. 13, 1991, 3-261277

Int. Cl.[5] **G03G** *5/00*

U.S. Cl. 430—78 **15 Claims**

1. A photoconductive phthalocyanine composition comprising (A) a photoconductive phthalocyanine composition comprising 100 parts by weight of a compound represented by formula (I):

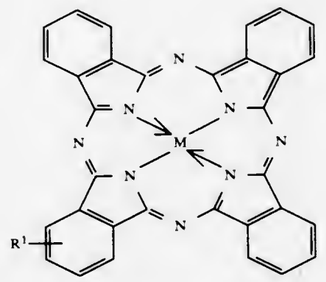
(I)



wherein M represents a hydrogen atom or an atom or compound residue capable of covalent bonding or coordinate bonding to phthalocyanine,

and from 0.001 to 5 parts by weight of a compound represented by formula (II):

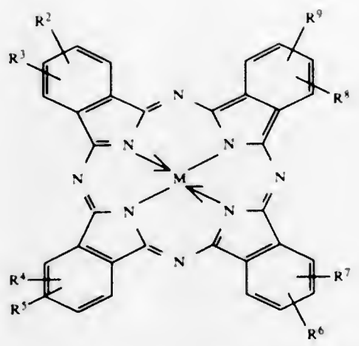
(II)



wherein M is as defined above; and R^1 represents a nitro group or a halogen atom,

and (B) from 0.01 to 10 parts by weight, per 100 parts by weight of the photoconductive phthalocyanine composition (A), of a phthalocyanine derivative represented by formula (III):

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(III)

wherein M is as defined above; and R^2, R^3, R^4, R^5, R^6, R^7, R^8, and R^9, which may be the same or different, each represents a hydrogen atom or an electron attracting group, provided that at least four of them each represents an electron attracting group.

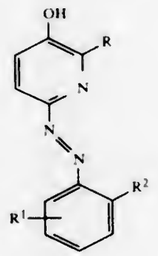
5,283,147

ELECTROSTATOGRAPHIC TONER CONTAINING MAGENTA PIGMENT

Brian H. Johnston, and Thomas H. Whitesides, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1992, Ser. No. 888,698
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—106 **21 Claims**

1. A dry, particulate electrostatographic toner composition comprising a binder polymer having mixed therewith a magenta pigment which is a coordination complex of a divalent or trivalent metal ion and a 6-arylazo-3-pyridinol compound having the structure:



wherein

R is selected from the group consisting of OH; NH_2; and an alkyl group containing from 1 to about 6 carbon atoms;

R^1 is selected from the group consisting of hydrogen; an alkyl group having 1 to about 6 carbon atoms; acyl; aryl; aralkyl; alkylsulfonyl; amino; alkoxy; halogen; morpholino; phenylsulfamoyl; sulfonamido; sulfamoyl; carboxy and sulfo; and hydrolyzable precursors thereof; and

R^2 is a complex-forming substituent selected from the group consisting of COOH; a hydrolyzable ester group of the formula $COOR^3$ wherein R^3 is an alkyl group having from 1 to about 8 carbon atoms or an aryl group having 6 to about 10 carbon atoms; and sulfamoyl having the formula SO_2NHR^4 wherein R^4 is hydrogen, alkyl having 1 to about 8 carbon atoms, aryl having 6 to about 10 carbon atoms or carbacyl having 1 to about 8 carbon atoms;

said toner having an average particle size within the range of from about 0.1 to about 100 microns.

5,283,148

LIQUID TONERS FOR USE WITH PERFLUORINATED SOLVENTS

Prabhakara S. Rao, Vadnais Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 18, 1992, Ser. No. 946,593
Int. Cl.[5] G03G *9/125*
U.S. Cl. 430—114 **14 Claims**

1. A process of forming an ge comprising the

a) providing a dielectric medium having at least one region of electrostatic charge,

b) intimately contacting the dielectric medium with a liquid toner having a highly fluorinated solvent and polymer resin-bound pigment particles, and

C) depositing said toner in a pattern corresponding to the electrostatic charge on the dielectric medium.

5,283,149

ELECTROSTATOGRAPHIC TONER INCLUDING A WAX COATED PIGMENT AND METHOD FOR THE PREPARATION THEREOF

Dinesh Tyagi, Fairport; Donna A. DiPrima, and Louis J. Sorriero, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1992, Ser. No. 890,053
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—137 **19 Claims**

1. A method for the preparation of electrostatographic toner comprising the steps of:

(a) dissolving a low melting point wax in a first solvent heated to a temperature sufficient to dissolve the wax, thereby forming a solution;

(b) mixing the solution with a pigment dispersion heated to a temperature approximating that of the solution and permitting the resultant mixture to cool slowly to ambient temperature, so resulting in the precipitation of wax upon the surface of the pigment and recovering the wax coated pigment particles;

(c) mixing the said pigment particles with a polymer material, a solvent and optionally a charge control agent to form an organic phase;

(d) dispersing the organic phase in an aqueous phase comprising a particulate stabilizer and optionally a promoter and homogenizing the resultant mixture; and

(e) evaporating the solvent and washing and drying the resultant product.

5,283,150

ELECTROSTATOGRAPHIC TONER AND METHOD FOR THE PREPARATION THEREOF

Dinesh Tyagi, Fairport, and Donna A. DiPrima, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1992, Ser. No. 890,057
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—137 **18 Claims**

1. A method for the preparation of electrostatographic toner comprising the steps of:

(a) forming a melt dispersion by mixing a pigment, a low melting point hydrophobic wax and a first polymer material at a temperature above the melting point of the wax whereby the wax melts and forms an irregular coating on the surface of the pigment;

(b) mixing the melt dispersion with a solvent and optionally a second polymer material, and optionally a charge control agent to form an organic phase,

(c) dispersing the organic phase in an aqueous phase comprising a promoter and a particulate stabilizer and homogenizing the mixture, and

(d) evaporating the solvent and washing and drying the resultant product.

5,283,151

METHOD FOR THE PREPARATION OF ELECTROSTATOGRAPHIC TONER OF CONTROLLED SHAPE BY EVAPORATIVE LIMITED COALESCENCE

Domenic Santilli, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1992, Ser. No. 890,060
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—137 **18 Claims**

1. A method for the preparation of electrostatographic toner comprising the steps of:

(a) mixing carnauba wax in a first solvent heated to a temperature sufficient to dissolve the wax and cooling the resultant solution, so resulting in the precipitation of the wax in the form of fine needle-like structures;

(b) mixing the wax needles with a polymer material, a pigment, a second solvent and optionally a charge control agent to form an organic phase;

(c) dispersing the organic phase in an aqueous phase comprising a promoter and a particulate stabilizer and homogenizing the resultant mixture; and

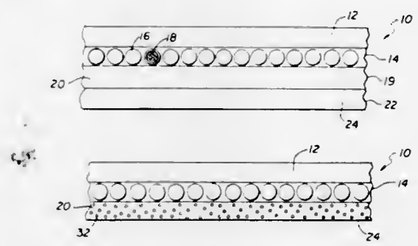
(d) evaporating the second solvent and washing and drying the resultant product.

5,283,152

SELF-CONTAINED IMAGING SHEET USEFUL FOR REPRODUCING IMAGES ON PLAIN PAPER AND METHOD THEREFOR

Lyudmila Feldman, Appleton, Wis.; David A. Gobran, Woodbury, Minn., and Carol L. Inskeep, Miamisburg, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 6, 1992, Ser. No. 831,899
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—138 **11 Claims**



1. A self-contained imaging sheet comprising in order:

(a) a support;

(b) a first layer comprising photosensitive microcapsules having an internal phase, said internal phase comprising an image-forming agent and an ethylenically unsaturated compound which undergoes photopolymerization or crosslinking in response to exposure to actinic radiation; and

(c) a second layer comprising a developer material containing at least one pressure sensitive adhesion promoter, said self-contained imaging sheet being capable of forming images on said plain paper by a process which comprises image-wise exposing said imaging sheet to actinic radiation, forming an image on said developer material, transferring the image-bearing developer layer to said plain paper, and separating said imaging sheet from said plain paper, wherein said image-bearing developer layer remains adhered to said plain paper and said microcapsule layer remains adhered to said support.

5,283,153

ENCAPSULATED TONER PROCESSES

Guerino G. Sacripante, Oakville; Grazyna E. Kmiecik-Lawrynowicz; Hock S. Tan, both of Burlington, and Raj D. Patel, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1992, Ser. No. 868,745
Int. Cl.[5] G03G *9/093*
U.S. Cl. 430—138 **22 Claims**

1. A process for the preparation of encapsulated toner compositions consisting essentially of dispersing a mixture of addition monomers, an optional preformed polymer resin, a free radical initiator, a colorant comprised of a pigment, dye or mixtures thereof, and shell forming monomer in an aqueous medium containing a cellulose polymer and a first ionic surfactant thereby forming a stable microdroplet suspension; and subsequently adding an aqueous solution of a second stabilizing surfactant selected from the group consisting of polyvinyl alcohol, polyvinyl acetate, sulfonated polynaphthalene hydroxy cellulose, polyacrylic acid, polymethacrylic acid, and mixtures thereof; followed by the formation of a soluble monomer forming shell wall by interfacial polymerization, and thereafter initiating and completing the core resin-forming free radical polymerization by heating thereby resulting in toner compositions with an average volume particle size of from about 0.5 to about 7 microns, and a particle size distribution of less than about 1.40; and wherein the concentration of the ionic surfactant is from about 0 to about 0.5 percent by weight of water.

5,283,154

RANDOM SCREEN WATERLESS PRINTING PROCESS

Richard E. Stein, Denver, Colo., assignor to National Printing and Packaging Company, Denver, Colo.

Continuation-in-part of Ser. No. 602,676, Oct. 24, 1990, abandoned. This application Apr. 1, 1992, Ser. No. 861,226
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—301 **10 Claims**

1. A method for reproducing a copy onto a substrate, comprising forming a random pattern image of said copy and converting said image into a corresponding random pattern plate; and printing said substrate with said random pattern plate using a waterless press, to produce a finished reproduction without printing the substrate with any plate having a pattern that is not random.

5,283,155

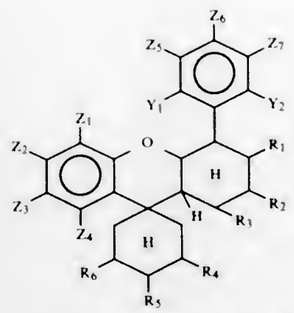
POSITIVE RESIST COMPOSITION COMPRISING AN ALKALI-SOLUBLE RESIN AND A QUINONE DIAZIDE SULFONIC ACID ESTER OF A HYDROXY FLAVAN DERIVATIVE

Yasunori Uetani; Hirotoshi Nakanishi, and Yasunori Doi, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP91/00013, § 371 Date Jun. 11, 1991, § 102(e) Date Jun. 11, 1991, PCT Pub. No. WO92/12205, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 11, 1991, Ser. No. 688,514
Int. Cl.[5] G03F *7/023, 7/32*
U.S. Cl. 430—192 **10 Claims**

1. A positive resist composition which comprises in admixture an alkali-soluble resin and, as a sensitizer, a quinone diazide sulfonic acid ester of a phenol compound of the formula:

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(I)

wherein Y_1, Y_2, Z_1, Z_2, Z_3, Z_4, Z_5, Z_6 and Z_7 are independently a hydrogen atom, a hydroxyl group, a C_1-C_4 alkyl group which may be substituted with a halogen atom, provided that at least one of Y_1 and Y_2 is a hydroxyl group, and at least two of Z_1 to Z_7 are hydroxyl groups, and R_1, R_2, R_3, R_4, R_5 and R_6 are independently a hydrogen atom, a C_1-C_{10} alkyl group, a C_1-C_4 alkenyl group, a cycloalkyl group or an aryl group.

5,283,156

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Marcel Monbaliu, Mortsel; René De Keyzer, Waasmunster; Jean-Marie Dewanckele, Deurgen; Jos Vaes, Betekom, and Ludo Van Rompuy, Destelbergen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

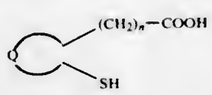
Continuation of Ser. No. 810,146, Dec. 19, 1991, abandoned, and a continuation of Ser. No. 810,150, Dec. 19, 1991, Pat. No. 5,200,294, and a continuation of Ser. No. 810,151, Dec. 19, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 986,072

Claims priority, application European Pat. Off., May 21, 1992, 92201453.5

Int. Cl.[5] G03C *8/32*; G03F *7/07*

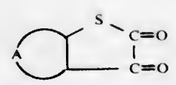
U.S. Cl. 430—204 **7 Claims**

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the steps of image-wise exposing an imaging element comprising on a support a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei and developing said imaging element in the presence of developing agent(s) and silver halide solvent(s) using an alkaline processing liquid characterized in that said development is carried out in the presence of a regulator according to one of the following formulas:



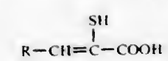
(I)

wherein Q represents the necessary atoms for forming a heterocyclic aromatic ring system including fused ring systems and that may be substituted, n represents 0 or 1 and the groups —SH and —$(CH_2)_n$—COOH are linked to neighbouring atoms



(II)

wherein A represents the necessary atoms for forming an aromatic ring including heterocyclic rings and that may be substituted



(III)

wherein R represents an aryl group that may be substituted.

5,283,157

DIFFUSION TRANSFER PRINTING PLATE

Paul Davies, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 22, 1993, Ser. No. 35,312

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—204 **11 Claims**

1. A method for making a lithographic printing plate that comprises the steps of:

(a) imagewise exposing a unitary light sensitive material which consists of a support, at least one negative working light sensitive silver halide emulsion layer comprising a hydrophilic gelatin layer and a surface physical development nucleating layer;

(b) processing said plate material in a diffusion transfer alkaline activator solution to provide a transferred oleophilic non-black silver complex and a non-transferred black image in the hydrophilic gelatin layer;

(c) said fusion transfer alkaline activator comprising at least an alkali metal hydroxide, a silver halide solvent, a silver complexing agent and a water soluble iodide present as 25 to 500 ppm. in said activator solution.

5,283,158

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akira Onodera, and Yasushi Usagawa, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

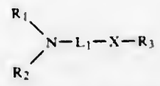
Filed Oct. 19, 1992, Ser. No. 962,888

Claims priority, application Japan, Oct. 31, 1991, 3-286619; Feb. 20, 1992, 4-33451

Int. Cl.[5] G03C *1/06*

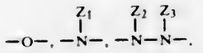
U.S. Cl. 430—264 **7 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, a hydrazine compound being contained in said silver emulsion layer or at least one other layer, wherein said material contains at least one compound represented by Formula I or Formula II,



Formula I

wherein R_1 and R_2 individually are alkyl, alkenyl, or alkynyl; R_1 and R_2 may form a ring; R_3 is hydrogen, alkyl, alkenyl, alkynyl, aryl or a heterocyclic group; L_1 is a divalent linking group; X is —[S—L_2—Y—(L_3)n]— or [—(L_3)n—Y—L_2—S—]—, wherein L_2 is alkylene or alkenylene, Y is carbonyl, sulfonyl, sulfoxy, or phosphoryl, and L_3 is



wherein Z_1, Z_2, and Z_3 individually are hydrogen, alkyl, alkenyl, alkynyl, aryl or a heterocyclic group; and n is an integer of 0 to 1;



Formula II

wherein R_4, R_5 and R_6 independently are alkyl, alkenyl or alkynyl, compounds of Formula II further comprising a thioether group and a group represented by —O—Y), wherein Y represents alkylene, alkenylene or arylene, and l is an integer of 2 or more.

5,283,159

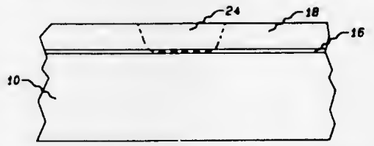
OPTICAL RECORDING MEDIUM AND METHOD FOR IMPROVED PIT GEOMETRY AND INCREASED LASER TRACKING

James R. Norton, Minneola, Kans.; David G. Loeppky; Robert B. Dobbin, both of Irvine, Calif.; Robert C. Beauchamp, Westminster, Calif., and Daniel H. Burkett, Lakewood, Calif., assignors to Del Mar Avionics, Irvine, Calif.

Continuation of Ser. No. 771,392, Oct. 3, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,259

Int. Cl.[5] G11B *7/24, 7/26*

U.S. Cl. 430—275 **28 Claims**



11. A process for recording optical disc masters comprising the steps of:

making a transparent disc substrate having at least one writing surface;

forming partially reflective means on said surface, said partially reflective means being formed from a material typically considered opaque made in such an extremely thin layer that it is substantially transparent;

applying a homogeneous, optically active lamina to said partially reflective means;

optically writing data within said active lamina by focusing a laser through said transparent substrate and said substantially transparent partially reflective means upon said optically active lamina to form series of pits, within said optically active lamina, said pits having sufficient definition to enable their reproduction by electroforming;

controlling the geometry of said pits by variance of said partially reflective layer thickness; and

applying a conductive lamina to said active lamina, thereby creating an optical disc master.

23. In an optical recording medium employing an optical disc substrate having an optical tracking path delineated on one side, thereof, said path delineated side being covered with an optically active lamina having properties capable of reacting to laser irradiation to form pits in said lamina, wherein the improvement comprises a partially reflective layer sandwiched between said disc substrate and said optically active lamina, said partially reflective layer being made form an opaque material applied in such an extremely thin layer that it is substantially transparent and operative in providing improved laser beam tracking and controlling pit geometry.

5,283,160

POLYMERIZABLE COMPOSITIONS

N. S. Allen, Bolton; R. T. Cook, Chester; C. H. McLean, Cheshire, and I. A. Weddell, Chester, all of England, assignors to Zeneca Limited, London, England

Filed Nov. 10, 1992, Ser. No. 973,992

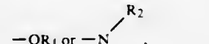
Claims priority, application United Kingdom, Nov. 11, 1991, 9123914

Int. Cl.[5] G03C *1/68*

U.S. Cl. 430—281 **12 Claims**

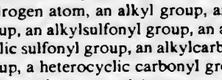
1. A photopolymerisable composition comprising a polymerisable olefinically unsaturated compound and a photoinitiator composition comprising:

(a) a photoinitiator comprising an anthraquinone compound having in the 2-position a substituent of the formula:



(1)

wherein R^1 represents an optionally substituted hydrocarbyl radical and X represents



wherein R^2 represents hydrogen or an optionally substituted hydrocarbyl radical, and

(b) a hydrogen donor capable of reducing the photoinitiator when the latter is in an excited state.

5,283,161

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR PROCESSING THE SAME

Ichizo Toya; Mikizo Kuwabara, and Hiroshi Kawamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1991, Ser. No. 757,758

Claims priority, application Japan, Sep. 12, 1990, 2-242219; Oct. 18, 1990, 2-280457

Int. Cl.[5] G03C *7/00*

U.S. Cl. 430—375 **12 Claims**

1. A method for processing an imagewise exposed silver halide photographic material comprising the step of subjecting said imagewise exposed silver halide photographic material to a developer, wherein said imagewise exposed silver halide photographic material comprises a support having on one side thereof at least one light-sensitive silver halide emulsion layer, the total amount of binder on the side of said support having thereon said at least one light-sensitive silver halide emulsion layer being not more than 3.0 g/m^2, said image wise exposed silver halide photographic material further comprising at least one layer containing at least one compound selected form the group consisting of compounds (a), (b) or (c):

(a) a compound represented by formula (I):

$$X_1-A-X_2$$

wherein X_1 and X_2 each represents

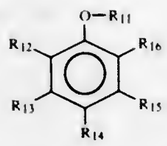
wherein R_1 represents a hydrogen atom or a group capable of being converted to a hydrogen atom on hydrolysis, and R_2 and R_3, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, an alkylsulfonyl group, an arylsulfonyl group, a heterocyclic sulfonyl group, an alkylcarbonyl group, an arylcarbonyl group, a heterocyclic carbonyl group, a sulfamoyl group, or a carbamoyl group; and A represents an arylene group; provided

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that at least one of X_1, X_2, and A has a hydrogen atom thereof substituted with a group which accelerates adsorption onto silver halide grains;

(b) a compound represented by formula (II):

(II)



wherein R_{11} represents a hydrogen atom, R_{12} represents a hydroxyl group or a sulfonamido group, R_{13} represents a hydrogen atom or a substituent, R_{14} represents a carbamoyl group, an oxycarbonyl group, an acyl group, or a sulfonyl group, R_{15} represents a hydrogen atom or a substituent, R_{16} represents a hydroxyl group or a sulfonamido group, the total number of carbon atoms contained in R_{12}, R_{13}, R_{14}, R_{15} and R_{16} is at least 6, and any two of R_{12}, R_{13}, R_{14}, R_{15}, R_{16} and OR_{11} may together form a ring; and

(c) a polymer compound formed by two or more of said compounds of formula (II) bonding to each other at any unsubstituted position of the benzene ring in formula (II);

wherein said processing is effected in a total processing time of from 15 to 45 seconds.

5,283,162

PHOTOGRAPHIC ELEMENTS CONTAINING SULFITE RELEASABLE RELEASE COMPOUNDS

Daniel L. Kapp; Wojciech Slusarek, and David T. Southby, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 890,987

Int. Cl.[5] G03C *5/54, 7/32, 5/26, 1/06*

U.S. Cl. 430—382 **10 Claims**

1. A photographic element comprising a support bearing a silver halide emulsion layer having associated therewith a release compound comprising a carrier group from which a photographically useful group is released in an imagewise manner during photographic processing, the active function of the photographically useful group being a hetero atom which is blocked by direct attachment to an aromatic ring system which is substituted with one or more electron withdrawing groups, after release from the carrier the blocking group being capable of being removed during processing as a result of reaction with sulfite ion contained in a processing bath.

10. A process of modifying the formation of an image in a photographic element of one of claims **1** to **4**, which comprises processing the element, after it has been exposed to an imagewise pattern of actinic radiation, in a processing composition containing sufficient sulfite ion to cause cleavage of the aromatic group from the photographically useful group after the aromatic group has been cleaved from the carrier and any timing group present.

5,283,163

PHOTOGRAPHIC MATERIAL AND PROCESS EMPLOYING A DEVELOPMENT INHIBITOR RELEASING COMPOUND CONTAINING A FLUORINATED CARBON ALPHA TO AN AMIDE GROUP

Gregory J. Lestina; David T. Southby; Wojciech Slusarek, all of Rochester; David A. Steele, Webster, and Teh-Hsuan Chen, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 992,682

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **12 Claims**

1. A photographic element comprising at least one photographic silver halide emulsion having associated therewith at least one DIR compound having a releasable moiety which contains a development inhibitor moiety wherein the development inhibitor moiety comprises an amide functionality containing a carbon alpha to the amide functionality which is di- or tri-fluorinated.

5,283,164

COLOR FILM WITH CLOSELY MATCHED ACUTANCE BETWEEN DIFFERENT COLOR RECORDS

David E. Fenton; John F. Sawyer, both of Fairport, and Donald H. Hunger, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,605

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—506 **14 Claims**

1. A color photographic silver halide duplicating element comprising a support bearing, in order from the support, at least one red-sensitive photographic silver halide emulsion layer comprising at least one cyan image-dye forming coupler that is capable upon exposure and processing of forming a cyan image dye that absorbs in the range of the original image; at least one green-sensitive photographic silver halide emulsion layer comprising at least one magenta image-dye forming coupler that is capable, upon exposure and processing, of forming a magenta image dye that absorbs in the range of the original image; and at least one blue-sensitive photographic silver halide emulsion layer comprising at least one yellow image-dye forming coupler that is capable upon exposure and processing of forming a yellow image dye that absorbs in the range of the original image; wherein at least said one blue sensitive photographic layer comprises a fastest blue sensitive layer

wherein:

the silver halide particles in the fastest blue sensitive layer have an equivalent spherical diameter no greater than 0.3 microns, while in the remainder of the layers the silver halide particles have an equivalent spherical diameter of no greater than 0.23 microns;

the silver level in the fastest blue sensitive layer is no greater than 30 mg/square foot; and

a sufficient red absorber is present so that the red record MTF(12) (Modulation Transfer Function at 12 cycles/mm) is at least 95% of the green record MTF(12) and the red record F50, (frequency at which the MTF equals 50%) is no more than 6 cycles/mm less than the green record F50.

5,283,165

PYRROLINONE DYES

Donald R. Diehl; Margaret J. Helber, and Louis J. Rossi, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,436

Int. Cl.[5] G03C *1/84*

U.S. Cl. 430—522 **26 Claims**

1. A photographic element containing a radiation-sensitive silver halide emulsion layer and a 3-pyrrolin-2-one dye, which dye has a 3-position electron withdrawing group, and a moiety in conjugation with the 2-position oxygen which moiety is linked to the pyrrolinone ring 5-position through a substituted or unsubstituted methine bridge, and in which dye the pyrrolinone ring nitrogen has a substituent other than hydrogen.

5,283,166

YELLOW DYE-FORMING COUPLER AND SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING THE SAME

Hidetoshi Kobayashi; Yasuhiro Yoshioka, and Yoshio Shimura, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 14, 1992, Ser. No. 883,130

Claims priority, application Japan, May 21, 1991, 3-144063

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—556 **20 Claims**

1. A silver halide color photographic light-sensitive material containing at least one acylacetamide-type yellow dye-forming coupler in which the acyl group is selected from the group consisting of a bicyclo(1.1.1)pentane-1-carbonyl group, a bicyclo(2.1.1.)hexane-1-carbonyl group, a bicyclo(2.2.1)heptane-1-carbonyl group, a bicyclo-(2.2.2)octane-1-carbonyl group, a tricyclo(3.1.1.$0^{3,6}$)-heptane-6-carbonyl group, a tricyclo(3.3.0.$0^{3,7}$)-octane-1-carbonyl group, and a tricyclo(3.3.1.$0^{3,7}$)-nonane-3-carbonyl group, provided that if the acyl group is a bicyclo(2.2.1)heptane-1-carbonyl group, one in which the 7-position is substituted is excluded.

5,283,167

DIRECT-POSITIVE PHOTOGRAPHIC MATERIALS CONTAINING A NUCLEATOR IN SOLID PARTICLE DISPERSION FORM

Krishnan Chari; Douglas E. Corbin; Glenn M. Brown, all of Rochester, and Harry A. Hoyen, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

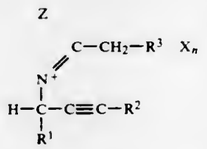
Filed Jan. 30, 1992, Ser. No. 828,431

Int. Cl.[5] G03C *1/295*

U.S. Cl. 430—598 **12 Claims**

1. A direct-positive image-forming photographic material comprising a supporting substrate bearing a light-sensitive, nonprefogged silver halide photographic emulsion capable of forming an internal latent image, said photographic material additionally comprising a solid particle dispersion of a water-insoluble nucleator of the formula (I)

(I)



wherein Z includes an atomic group which forms an azolium or azinium ring with the quaternary ammonium nucleus, R^1 is hydrogen or methyl, R^2 is hydrogen or an alkyl group having 1 to 8 carbon atoms, R^3 is hydrogen or a substituent having a Hammett sigma value electron withdrawing characteristic of greater than -0.2 and, when taken together with Z, represents the atoms necessary to complete a ring structure, X is a charge balancing counter ion and n is zero or 1, provided that one of Z and R^3 includes a group for promoting adsorption by silver halide, the solid particle dispersion comprising nucleator particles having an average size of less than about 10 μm, and the photographic material including 10^{-8} to 10^{-2} mol of the water insoluble nucleator per mol of silver halide.

5,283,168

SILVER HALIDE EMULSION SENSITIZED WITH A HEAVY METAL COMPOUND AND A THIOUREA COMPOUND

Roger W. Nelson, Fairport, and Edward G. Bourne, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,263

Int. Cl.[5] G03C *1/09*

U.S. Cl. 430—600 **16 Claims**

1. A silver halide photographic emulsion comprising silver chloride grains that have been surface sensitized with a heavy metal compound comprising

$$R_aM_bX_c\text{-}d\ H_2O$$

wherein

R = an alkali metal cation

M = Ir

X = a halide ligand

a = 1 to 4

b = 1 to 2

c = 5 or 6

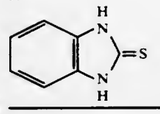
d = 0 to 2,

and a thiourea compound comprising at least one of

	R_1	R_2	R_3	R_4
1.	H	H	H	C_6H_5
2.	H	H	C_6H_5	C_6H_5
3.	H	H	H	4-CH_3—C_6H_4—
4.	CH_3	CH_3	H	4-CH_3—C_6H_4—
5.	H	H	H	4-Cl—C_6H_4—
6.	H	H	H	4-CH_3O—C_6H_4—
7.	H	H	H	3-CH_3CONH—C_6H_4—
8.	H	H	H	CH_3CO—

and

9.



and wherein said emulsion is also surface sensitized with sodium thiosulfate pentahydrate.

5,283,169

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Takahiro Goto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Dec. 6, 1991, Ser. No. 803,432

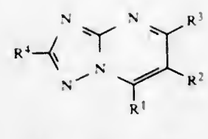
Claims priority, application Japan, Dec. 7, 1990, 2-406199; Dec. 7, 1990, 2-406216

Int. Cl.[5] G03C *1/09*

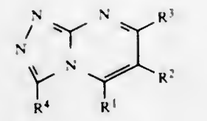
U.S. Cl. 430—603 **4 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer and another hydrophilic colloid layer wherein the emulsion layer comprises a silver halide emulsion containing a compound having a nitrosyl ligand or a thionitrosyl ligand and a transition metal selected from the group consisting of the elements belonging to Groups V to X of the Periodic Table in an amount of 1×10^{-6} mol or more per mol of silver, and at least one of the silver halide emulsion layer and the other hydrophilic colloid layer contains at least one compound represented by formula (I), (II), (III), (IV) or (V):

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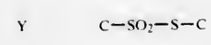


(I)

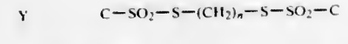


(II)

$$Z-SO_2-S-M \quad \text{(III)}$$



(IV)



(V)

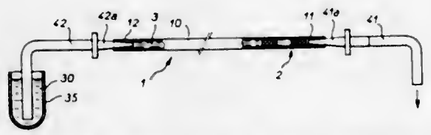
wherein each of R^1, R^2, R^3 and R^4, which may be the same or different, represents a hydrogen atom, an alkyl group, an aryl group, an amino group, a hydroxyl group, an alkoxy group, an alkylthio group, a carbamoyl group, a halogen atom, a cyano group, a carboxyl group, an alkoxycarbonyl group or a heterocyclic group, and R^1 and R^2 or R^2 and R^3 may combine together to form a five-membered or six-membered ring, provided that at least one of R^1 and R^3 represents a hydroxyl group and the total number of carbon atoms of R^1, R^2, R^3 and R^4 is at least 2; Z represents an alkyl group having 1 to 18 carbon atoms, an aryl group having 6 to 18 carbon atoms or a heterocyclic group; Y represents the atoms necessary to form an aromatic ring having 6 to 18 carbon atoms or a heterocyclic ring; M represents a metal atom or an organic cation; and n is an integer of 2 to 10.

5,283,170

PROCESS FOR FILLING TUBES FOR CRYOGENICALLY PRESERVING BIOLOGICAL SAMPLES

Robert Cassou, "Les Camus", Saint Montaine 18700 Aubigny-sur-Nere; Maurice Cassou, and Bertrand Cassou, both of 10 rue Georges Clémenceau, 61300 L'Aigle, all of France

Division of Ser. No. 607,684, Nov. 1, 1990, Pat. No. 5,190,880. This application Dec. 23, 1992, Ser. No. 996,067
Claims prinrity, application France, Sep. 14, 1989, 89 12042
Int. Cl.[5] A01N *1/02*
U.S. Cl. 435—1 **9 Claims**



6. A process for filling a tube for cryogenic preservation of biological samples, in particular viral cultures, comprising providing a sterilized tubular envelope of a biologically neutral transparent polymer material having a contained atmosphere, a predetermined length, a first end and a second end, wherein said biologically neutral transparent polymer material is an ionomer resin having an embrittlement temperature less than or equal to 77° K., a melting temperature of 85° C., and a solidification temperature of 52° C., inserting in succession in said first end a first porous elastic pad, a quantity of powder capable of gelling when in contact with an aqueous phase and a second porous elastic pad, said first porous elastic pad, said quantity of powder and said second porous elastic pad forming a sliding stopper, pushing the sliding stopper longitudinally inward of said first end to provide a first end sealing zone, injecting a biological sample comprising an aqueous phase into the second end of the sterilized tubular envelope at a point longitudinally inward of a second end sealing zone, while exhausting the contained atmosphere through the first end, continuing injecting the biological sample and exhausting the contained atomosphere until the aqueous phase passes through the first porous elastic pad and causes gelling of the quantity of powder to produce a fluidtight stopper, and sealing the sterilized tubular envelope comprising closing the first and second end sealing zones and autogenically welding the first and second end sealing zones so as to fuse the biologically neutral transparent polymer material

7. The process according to claim 6, wherein the ionomer resin has a temperature of deflection under load of 0.46 MPa is 45° C.

5,283,171

COMPOSITIONS FOR AND DETECTION OF HUMAN PAPILLOMAVIRUS BY SPECIFIC OLIGONUCLEOTIDE POLYMERASE PRIMERS USING THE POLYMERASE CHAIN REACTION

M. Michele Manos, Oakland; Deann K. Wright, San Francisco; Yi Ting, Berkeley, all of Calif.; Thomas R. Broker, Rochester, N.Y., and Steven M. Wolinsky, Glencoe, Ill., assignors to Hoffmann-La Roche Inc., Nutley, N.J. and The University of Rochester, New York

Continuation-in-part of Ser. No. 322,550, Mar. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 243,486, Sep. 9, 1988, abandoned. This application Feb. 15, 1991, Ser. No. 651,356
Int. Cl.[5] C12Q *1/68*; C07H *21/04*; G01N *33/50*
U.S. Cl. 435—5 **6 Claims**

1. A method for detecting genital human papillomavirus (HPV) in a sample and typing the HPV, if present, comprising:
(a) treating the sample with a pair of consensus HPV primers, DNA polymerase, and deoxynucleoside 5'-triphosphates under conditions such that an extension product of a consensus primer can be synthesized if HPV is present, wherein said consensus primers are a mixture of oligonucleotides that comprises at least a pair of primers sufficiently complementary to separate strands of HPV DNA to hybridize thereto so that the extension product synthesized from one member of said pair, when separated from its complementary strand, can serve as a template for synthesis of the extension product of the other member of said pair, said pairs of consensus primers selected from the group consisting of (a) FS10, JS15 and JS16; (b) FS17, JS15 and JS16; and (c) MY01, JS15 and JS16;
(b) separating the primer extension products, if present, from the templates on which the extension products were synthesized to form single-stranded molecules;
(c) treating the single-stranded molecules generated in step (b), if any, with the consensus primers of step (a) under conditions such that a primer extension product is synthesized using each of the single-stranded molecules produced in step (b) as a template;
(d) repeating steps (b) and (c) at least once;
(e) determining of amplification has occurred; and, if amplification has occurred,
(f) hybridizing a type-specific DNA probe to said amplified DNA; and
(g) determining if hybridization has occurred.

5,283,172

TYPE-C ROTAVIRUS CULTURES AND USES THEREFOR

Mark W. Welter, Ubandale; David M. Chambers, and C. Joseph Welter, both of Des Moines, all of Iowa, assignors to Ambico, Inc., Dallas Center, Iowa

Division of Ser. Nn. 540,672, Jun. 19, 1990, Pat. No. 5,147,639. This application Jun. 26, 1992, Ser. No. 904,726
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—5 **15 Claims**



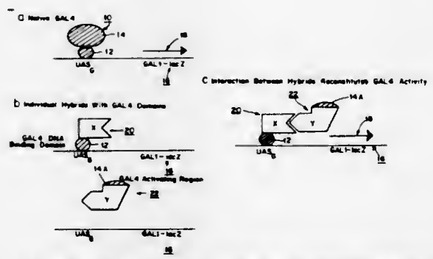
1. A method for the detection of antibodies to a Type C rotavirus in a sample which comprises incubating the sample with viral particles of a Type C rotavirus propagated by passaging a Group C rotavirus in swine testicular cells capable of supporting the growth of the virus for at least five passages, said cells being provided with a medium which supports the growth of the cells and is further characterized as having a non-cytopathic amount of proteolytic enzymes which can exert a cytopathic effect on said rotavirus whereby antibodies in said sample bind to at least some of said viral particles, and detecting the presence of antibodies bound to the viral particles.

5,283,173

SYSTEM TO DETECT PROTEIN-PROTEIN INTERACTIONS

Stanley Fields, East Setauket, and Ok-Kyu Song, Stony Brook, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jan. 24, 1990, Ser. No. 469,285
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—6 **9 Claims**



1. A method for detecting an interaction between a first test protein and a second test protein, the method comprising:
(a) providing a *Saccharomyces cerevisiae* host cell containing a detectable gene wherein the detectable gene expresses a detectable protein when the detectable gene is activated by an amino acid sequence including a transcriptional activation domain when the transcriptional activation domain is in sufficient proximity to the detectable gene;
(b) providing a first chimeric gene that is capable of being expressed in the host cell, the first chimeric gene comprising a DNA sequence that encodes a first hybrid protein, the first hybrid protein comprising:
(i) a DNA-binding domain that recognizes a binding site on the detectable gene in the host cell; and
(ii) a first test protein or fragment thereof that is to be tested for interaction with at least one second test protein or fragment thereof;
(c) providing a second chimeric gene that is capable of being expressed in the host cell, the second chimeric gene comprising a DNA sequence that encodes a second hybrid protein, the second hybrid protein comprising:
(i) the transcriptional activation domain; and
(ii) a second test protein or fragment thereof that is to be tested for interaction with the first test protein or fragment thereof;
wherein interaction between the first test protein and the second test protein in the host cell causes the transcriptional activation domain to activate transcription of the detectable gene;
(d) introducing the first chimeric gene and the second chimeric gene into the host cell;
(e) subjecting the host cell to conditions under which the first hybrid protein and the second hybrid protein are expressed in sufficient quantity for the detectable gene to be activated; and
(f) determining whether the detectable gene has been expressed to a degree greater than expression in the absence of an interaction between the first test protein and the second test protein.

5,283,174

HOMOGENOUS PROTECTION ASSAY

Lyle J. Arnold, Jr., and Norman C. Nelson, both of San Diego, Calif., assignors to Gen-Probe, Incorporated, San Diego, Calif.

Continuation of Ser. No. 294,700, Dec. 12, 1988, abandoned, and a continuation of Ser. No. 528,920, May 23, 1990, abandoned, said Ser. No. 294,700, is a continuation-in-part of Ser. No. 99,392, Sep. 21, 1987, abandoned, said Ser. No. 528,920, is a continuation of Ser. No. 99,392, Sep. 21, 1987, abandoned. This application Nov. 8, 1990, Ser. No. 613,603
Int. Cl.[5] C12Q *1/68*; G01N *33/566, 33/533*; C07H *17/00*
U.S. Cl. 435—6 **12 Claims**

1. A homogeneous assay method for determining the presence or amount of a first nucleic acid in a medium, comprising the steps of:
contacting a free second nucleic acid with said medium to form a hybridization mixture, wherein said free second nucleic acid is able to hybridize with said first nucleic acid under hybridizing conditions to form a binding pair, and wherein said second nucleic acid is chemically bonded to an N-acridinium ester which is selectively susceptible to chemical degradation by a chemical selected from the group consisting of an acid, a base, and an oxidizing agent, to form an altered N-acridinium ester dependent upon whether said second nucleic acid is free or forms part of said binding pair;
treating said hybridization mixture with said chemical such that N-acridinium ester chemically bonded to free second nucleic acid is degraded to form altered N-acridinium ester and N-acridinium ester present in a binding pair is undegraded; and
determining the amount of undegraded N-acridinium ester remaining after said treating step, without physically separating any said free second nucleic acid from any said binding pair, as a measure of the presence or amount of said first nucleic acid.

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GENUS-SPECIFIC OLIGOMERS OF *BORRELIA* AND METHODS OF USING SAME

Terry L. Weaver, Fredonia, N.Y., and Darla J. Wise, Blacksburg, Va., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Apr. 15, 1991, Ser. No. 685,722
Int. Cl.[5] C12Q *1/68*; C12P *19/34*; C07H *17/00, 5/04*
U.S. Cl. 435—6 **16 Claims**

1. A DNA oligomer consisting essentially of a DNA sequence complementary to a portion of a flagellin gene of *Borrelia burgorferi*, the portion being conserved among *Borrelia* species pathogenic in mammals, wherein the DNA sequence is selected from the group consisting of:

SEQ ID NO: 1: 5' GCATTAACGCTGCTAATC,

SEQ ID NO: 2: 5' TTGCAGGCTGCATTCCAA, and

SEQ ID NO: 3: 5' CACATATTCAGATGCAGACA.

5,283,176

REAGENTS FOR USE IN COMPETITION ASSAYS FOR PROGESTERONE

Hiroshi Sato, Saitama; Tadakazu Yamauchi, Kawaguchi; Toshio Izako, Tokyo; Masahiro Nobuhara, Koshigaya, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1990, Ser. No. 480,165
Claims priority, application Japan, Feb. 15, 1989, 1-35815
Int. Cl.[5] C12Q *1/00*
U.S. Cl. 435—7.1 **4 Claims**

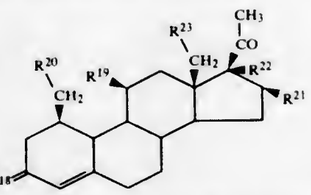
1. A reagent for use in an immunoassay for measuring progesterone, comprising:

(a) a labelled progesterone derivative comprising a first progesterone derivative and a labelling agent bound to said first progesterone derivative, and

(b) an antibody prepared by using an immunogen comprising a second progesterone derivatives and an immunoactive carrier bound to said second progesterone derivative,

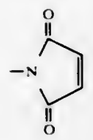
wherein said labelled progesterone derivative of (a) and said antibody of (b) are capable of undergoing reversible binding, and said first progesterone derivative of (a) and said second progesterone derivative of (b) are analogous substances that differ from each other in having different chemical structures, respectively,

wherein said first and second progesterone derivatives are individually selected from the group consisting of compounds represented by the formula V:



(V)

R^{18} is oxygen or Y^1-Z, and R^{19}, R^{20}, R^{21}, R^{22}, and R^{23} are hydrogen, wherein Y^5-Z, wherein Y^1 is a trivalent chain interventing Z and the steroid nucleus comprising at least one chain selected from the group consisting of a backbone having 1 to 10 carbon atoms, oxygen, and nitrogen, bonded to the steroid nucleus by a double bond, Y^5 is a bivalent chain intervening Z and the steroid nucleus or the methylene group bonded to the steroid nucleus comprising at least one chain selected from the group consisting of a backbone having 1 to 10 carbon atoms, a cycloalkyl group, an amid linkage, a carbonyl group, an amine linkage, oxygen, and nitrogen, bonded to the steroid nucleus or the methylene group by a single bond, and Z is a group selected from the group consisting of hydrogen, $—NH_2$, —SH, —COOH, —CHO and



5,283,177

PLACENTAL ISOFERRITINS FOR THE PROGNOSIS AND DIAGNOSIS OF IMMUNOSUPPRESSION

Chaya Moroz, Tel-Aviv, Israel, and S. Leslie Misrock, Chappaqua, N.Y., assignors to Daikin Industries Ltd., Osaka, Japan

Division of Ser. No. 689,656, Apr. 23, 1991, Pat. No. 5,120,640, which is a continuation of Ser. No. 164,947, Mar. 7, 1988, which is a continuation-in-part of Ser. No. 148,133, Jan. 22, 1988, Pat. No. 4,882,270, which is a continuation of Ser. No. 568,275, Jan. 4, 1984, which is a continuation-in-part of Ser. No. 373,715, Apr. 30, 1982. This application Mar. 18, 1992, Ser. No. 853,462
Claims priority, application Israel, May 15, 1981, 62079
Int. Cl.[5] G01N *33/577*
U.S. Cl. 435—7.1 **1 Claim**

1. A method for the prognosis and staging of acquired immunodeficiency associated with HIV infection, comprising:

(a) obtaining a serum sample and a peripheral blood lymphocyte sample from a patient;

(b) measuring (i) the concentration of placental isoferritin in the serum sample and, (ii) the number of $CD4^+$ lymphocytes in the peripheral lymphocyte blood sample; and

(c) determining the ratio of the concentration of placental isoferritin in the serum sample to the number of $CD4^+$ lymphocytes in the peripheral blood lymphocyte sample, in which, an increase in the ratio indicates progression of disease.

5,283,178

METHOD OF FORMING AGGLUTINATES IN BLOOD SAMPLES

Marsha A. Kessler, Chicago, and Patricia L. Prewitt, Ingleside, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 346,674, May 3, 1989, abandoned. This application Oct. 15, 1992, Ser. No. 964,463
Int. Cl.[5] G01N *33/08, 33/536*
U.S. Cl. 435—7.25 **58 Claims**

44. An agglutination method for determining the blood type of each of a plurality of blood specimens, wherein said method is performed on samples obtained from each of the blood specimens and wherein the samples are not subjected to centrifugal forces during said method, comprising the step of:

providing a tray having a plurality of wells therein, said wells being aligned in a plurality of rows, said plurality of rows being at least equal in number to the number of said plurality of blood specimens;

transferring a finite amount of each of the samples obtained from the plurality of blood specimens to each of the wells in one of said plurality of rows in said tray;

adding each of a plurality of blood typing reagents to each of the wells having samples therein and mixing the contents of each of the wells to form suspensions therein;

tilting said tray in a first given direction to a first inclined position at a first substantial angle with respect to a horizontal position;

incubating said tray at said first inclined position for a first finite period of time sufficient to form an agglutinate as the result of reaction between blood type antigen or antibody present tin each of the samples with each of the plurality of blood typing reagents mixed therewith, wherein said agglutinate accumulates at the lowest portion of each of the wells but non agglutinated components remain in suspension;

tilting said tray in a second given direction to a second inclined position at a second substantial panel with respect to a horizontal position;

incubating said tray at said second inclined position for a second finite period of time sufficient for said agglutinate to accumulate at the lowest portion of each of the wells but for non-agglutinated components to remain in suspension; and

determining the presence of said agglutinate in each of the wells by electro-optically measuring light transmittance through each of the wells wherein said light transmittance through a well having agglutinate present therein is higher than the light transmittance through a well without agglutinate having test components remaining in suspension.

5,283,179

LUCIFERASE ASSAY METHOD

Keith V. Wood, Madison, Wis., assignor to Promega Corporation, Madison, Wis.

Filed Sep. 10, 1990, Ser. No. 580,371
Int. Cl.[5] C12Q *1/66*
U.S. Cl. 435—8 **13 Claims**

1. In a method for detecting the presence of a beetle luciferase in a sample suspected of containing the luciferase, comprising:

(a) making with an aliquot of said sample a solution comprising, at concentrations effective for activity of the luciferase in the luciferin-luciferase reaction, luciferin, ATP and Mg^{2+}; and

(b) measuring luminescene from the solution resulting from step (a),

the improvement which comprises having in the solution resulting from step (a) a thiol reagent other than CoA at a concentration between 20 mM and 200 mM.

5,283,180

BIOLUMINESCENCE METHOD FOR THE DETERMINATION OF PESTICIDES

Eliezer Zomer, Quincy; Steven Saul, Arlington, and Stanley E. Charm, Boston, all of Mass., assignors to Charm Sciences, Inc., Malden, Mass.

Continuation-in-part of Ser. No. 556,952, Jul. 19, 1990, Pat. No. 5,200,311. This application Jan. 9, 1992, Ser. No. 818,782
Int. Cl.[5] C12Q *1/66, 1/00*
U.S. Cl. 435—8 **11 Claims**

1. A method for the determination of the concentration of organophosphate and carbamate pesticides in a test sample, which method comprises:

a) incubating a mixture of a test sample and an insect brain material;

b) adding a 6-substituted D luciferin ester to the incubated mixture, which 6-substituted D luciferin ester is inhibited in hydrolysis in the presence of the pesticide to be determined;

c) incubating the 6-substituted D luciferin ester admixture to liberate D luciferin;

d) adding a reaction mixture of adenosine triphosphate and luciferase to the D luciferin mixture to provide oxyluciferin and emitted luminescence;

e) measuring the emitted luminescence during a defined time period; and

f) determining the concentration of the pesticide in the test sample by comparison of the emitted measured luminescence with the luminescence of a control sample or standard.

5,283,181

CONJUGATED ENZYME ELECTRODE

Isamu Uchida; Tomokazu Matsue; Hsien-Chang Chang; Akinori Ueno, and Hiroshi Yamada, all of Miyagi, Japan, assignors to Unitika, Ltd., Hyogo, Japan

Filed Mar. 20, 1991, Ser. No. 672,238
Claims priority, application Japan, Sep. 17, 1990, 2-248025
Int. Cl.[5] C12Q *1/32*; C12N *1/00*
U.S. Cl. 435—26 **7 Claims**

1. A conjugated enzyme electrode for amino acid determination comprising diaphorase and an amino-acid dehydrogenase immobilized on a conductive support through crosslinking with a polyfunctional aldehyde.

5,283,182

PREPARATION OF IMMOBILIZED HYDANTOINASE STABILIZED WITH DIVALENT METAL IONS

Lawson W. Powell, Worthing, and John A. Power, Faversham, both of England, assignors to Beecham Group PLC, England

Continuation of Ser. No. 98,329, Sep. 17, 1987, abandoned. This application Feb. 28, 1990, Ser. No. 486,073
Claims priority, application United Kingdom, Sep. 17, 1986, 8622389; Sep. 27, 1986, 8623306
Int. Cl.[5] C12P *13/04*; C12N *11/08, 11/04, 9/96*
U.S. Cl. 435—106 **8 Claims**

1. A process for the production of a D(−) (unsubstituted or substituted phenyl) glycine or N-carbamoyl derivative thereof, which comprises:

1) providing a reusable, divalent metal ion-containing, immobilized enzyme preparation comprising a) cells of an organism producing an hydantoinase enzyme capable of hydrolyzing 5-(unsubstituted or substituted phenyl) hydantoin immobilized within or on a support or b) an hydantoinase enzyme capable of hydrolyzing 5-(unsubstituted or substituted phenyl) hydantoin absorbed on a positively charged polymeric support or covalently bonded to functional groups of a polymeric support and c) an amount effective to stabilize said immobilized enzyme preparation so that it is capable of reuse of a stabilizing divalent metal ion selected from the group consisting of Mn^{++}, Co^{++}, Fe^{++}, Ni^{++} and Mg^{++};

2) hydrolyzing a 5-(unsubstituted or substituted phenyl) hydantoin in the absence of air by said reusable, divalent metal ion-containing, immobilized enzyme preparation to form a reaction product comprising D(−)(unsubstituted or substituted phenyl) glycine or N-carbamoyl derivative thereof;

3) separating said reusable, divalent metal ion-containing, immobilized enzyme preparation from said reaction product;

4) hydrolyzing fresh reactant comprising a 5-(unsubstituted or substituted phenyl) hydantoin in the absence of air by said reusable, divalent metal ion-containing, immobilized enzyme preparation recovered from step 3; and

5) repeating steps 2–4 for a plurality of cycles, whereby said recovered immobilized enzyme preparation is repeatedly reused to produce D(−)(unsubstituted or substituted phenyl) glycine or N-carbamoyl derivative thereof.

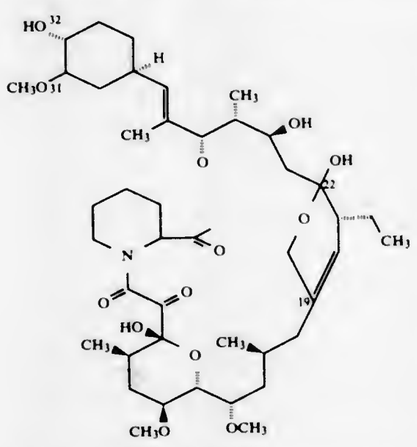
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5,283,183
CYCLIC FR-900520 MICROBIAL BIOTRANSFORMATION AGENT

George M. Garrity, Westfield, and Shieh-Shung T. Chen, Morganville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 28, 1992, Ser. No. 952,390
Int. Cl.[5] C12P *17/18, 1/04*
U.S. Cl. 435—119 4 Claims

1. A process for the production of an immunosuppressant compound having the structural formula I:



the process comprising the steps of

(a) culturing a microorganism Streptomyces sp. MA 6971, ATCC No. 55282, in the presence of FR-900520 in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under aerobic conditions until the compound is produced, and

(b) recovering the compound.

5,283,184
GENETIC ENGINEERING OF NOVEL PLANT PHENOTYPES

Richard A. Jorgensen, and Carolyn A. Napoli, both of Davis, Calif., assignors to DNA Plant Technology Corporation, Mt. Kisco, N.Y.

Continuation-in-part of Ser. No. 501,076, Mar. 29, 1990, and a continuation-in-part of Ser. No. 331,338, Mar. 30, 1989, Pat. No. 5,034,323. This application Apr. 17, 1991, Ser. No. 687,550
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] C12N *15/29, 15/82;* A01H *4/00*
U.S. Cl. 435—172.3 31 Claims

1. A method for producing a plant exhibiting at least one modified phenotypic trait by suppressing expression of an endogenous gene in the plant, said method comprising the steps of:

transforming plant cells with a polynucleotide to produce transgenote cells, the polynucleotide comprising a promoter operably linked to a DNA segment such that transcripts of the segment are produced in the sense orientation in the transgenote cells which segment transcripts have at least 65% sequence identity to transcripts of said endogenous gene and are effective to suppress expression of said endogenous gene in said plant cell;

growing plants from one or more of said transgenote cells, wherein production of mRNA encoded by the endogenous gene is reduced in one or more of the plants; and

selecting a plant exhibiting said modified phenotypic trait.

5,283,185
METHOD FOR DELIVERING NUCLEIC ACIDS INTO CELLS

Richard M. Epand, Hamilton; Remo Bottega, Ancaster,both of Canada, and Leaf Huang, Upper St. Claim, Pa., assignors to University of Tennessee Research Corporation, Knoxville, Tenn. and McMaster University, Ontario, Canada

Filed Aug. 28, 1991, Ser. No. 751,873
Int. Cl.[5] C12N *15/64*
U.S. Cl. 435—172.3 11 Claims

1. A method for facilitating the transfer of nucleic acids into mammalian cells with a stable aqueous dispersion of mixed lipids which dispersion comprises:

a cationic lipid which is a weak protein kinase C inhibitor and has a structure which includes a lipophilic group derived from cholesterol, a linker bond, selected from the group consisting of carboxy amides and carbamoyls, a spacer arm having from 1 to 20 carbon atoms in a linear branched or unbranched alkyl chain, and a cationic amino group selected from the group consisting of primary, secondary, tertiary and quaternary amino groups, and a co-lipid selected from the groups consisting of phosphatidylcholine and phosphatidylethanolamine

which method comprises mixing said aqueous dispersion of mixed lipids with the nucleic acids, thereby forming a dispersion/nucleic acids complex, and

incubating the cells to be transfected with the complex, thereby facilitating the transfer of the nucleic acids into the cells.

5,283,186
PREPARATION OF A COMPRESSED MEMBRANE CONTAINING IMMOBILIZED BIOLOGICALLY ACTING MATERIAL

David D. Cunningham, Lakemoor, and Kenneth S. Johnson, Buffalo Grove, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 31, 1991, Ser. No. 815,422
Int. Cl.[5] C12N *11/08, 11/04;* G01N *33/545, 33/544*
U.S. Cl. 435—180 14 Claims

1. A process for making a porous carrier containing an immobilized protein, which comprises:

attaching a plurality of polar functional groups to an internal surface which defines a plurality of micropores distributed throughout a porous membrane substrate so that the substrate is about 30 to about 80 volume percent porous;

covalently bonding a plurality of selective proteins to at least a portion of the functional groups; and

physically compressing the membrane substrate to produce an irreversibly compressed membrane substrate having a pore size of at least about 0.01 micron, a porosity of about 10 to about 50 volume percent, a density of about 1.25 to about 5.0 times the density of the membrane substrate before compressing and a thickness of about 0.2 to about 0.8 times the thickness of the membrane substrate before the compressing.

5,283,187
CELL CULTURE-CONTAINING TUBULAR CAPSULE PRODUCED BY CO-EXTRUSION

Patrick Aebischer, Barrington, R.I., and Lars Wahlberg, Gavle, Sweden, assignors to Brown University Research Foundation, Providence, R.I.

Continuation-in-part of Ser. No. 461,999, Jan. 8, 1990, Pat. No. 5,158,881, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538. This application Jan. 8, 1991, Ser. No. 638,759
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] C12N *11/04, 11/12, 5/00*
U.S. Cl. 435—182 20 Claims

1. A cell culturing capsule comprising a tubular, semipermeable, polymeric membrane encasing a viable cell culture, said tubular membrane being formed by

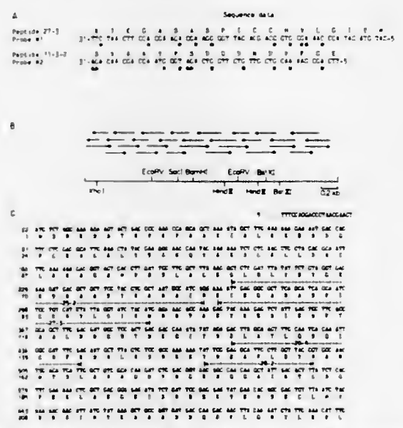
(i) co-extruding a viable cell culture and a polymeric solution through a common extrusion port having at least two concentric bores to form a tubular extrudate having a polymer outer coating which encases the cell culture, wherein the cell culture is extruded through an inner bore and the polymeric solution is extruded through an outer bore and a pressure differential is maintained between the cell culture and the polymeric solution during co-extrusion to impede solvent diffusion from the polymeric solution into the cell culture, and the polymeric solution and the cell culture are chosen so that coagulation of the polymeric solution occurs as the polymeric solution and cell culture are extruded through the extrusion port; and

(ii) sealing the tubular extrudate to form at least one isolated tubular cell compartment.

5,283,188
ISOLATION, PURIFICATION, CHARACTERIZATION, CLONING AND SEQUENCING OF Nα-ACETYLTRANSFERASE

John A. Smith, Brookline, and Fang-Jen S. Lee, Somerville, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 533,353, Jun. 5, 1990, Pat. No. 5,128,459, which is a division of Ser. No. 284,344, Dec. 14, 1988, Pat. No. 4,966,848, which is a continuation-in-part of Ser. No. 153,361, Feb. 8, 1988, abandoned. This application Apr. 3, 1992, Ser. No. 863,023
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] C12N *9/10, 15/55, 15/74, 15/79*
U.S. Cl. 435—193 28 Claims



16. A substantially purified nucleic acid molecule comprising a genetic sequence coding for Nα-acetyltransferase having the amino acid sequence shown in FIG. 12(C), wherein said genetic sequence is selected from the group consisting of RNA and DNA.

5,283,189
β-GALACTOSIDASE FROM *THERMUS SP*

Mitsunori Takase, Oomiya, and Kouki Horikoshi, Tokyo, both of Japan, assignors to Research Development Corporation of Japan, Tokyo; Rikagaku Kenkyusho, Saitama and Morinaga Milk Industry, Tokyo, all of Japan

Continuation-in-part of Ser. No. 153,296, Feb. 5, 1988, abandoned. This application Aug. 9, 1991, Ser. No. 744,110
Int. Cl.[5] C12N *9/38, 9/52, 1/20, 1/00*
U.S. Cl. 435—207 1 Claim

1. A β-galactosidase produced by a microorganism of the Thermus sp. selected from the group consisting of FERM BP-1678, BP-1679 and BP-1680 and possessing all of the following identifying physicochemical properties:

A. Action: hydrolyzes lactose into galactose and glucose,

B. Substrate specificity: hydrolyzes lactose, but not sucrose, melibiose, raffinose and maltose,

C. Optimum pH 4.5 to 6.5 and stable pH range 4.0 to 8.0 while maintained for 24 hours at 55° C.,

D. Thermostability: At pH 7.0 100% enzymatic activity remains after 1-hour of heating at 80° C. and 85% enzymatic activity remains after 1-hour of heating at 85° C.,

E. Optimum temperature range: 75° to 85° C.,

F. Effect of inorganic salts: enzymatic activity is not reduced by 1 mM each of ferric chloride, manganese chloride, calcium chloride and magnesium sulfate, but is lowered by 1 mmol of each of zinc chloride and copper sulfate by 10% and 30% respectively,

G. Inhibition by reaction products: the enzymatic activity lowered by the presence of 50 mM each of galactose and glucose is 10% or less, and

H. Molecular weight: using the gel filtration method, peaks appear at 55,000 dalton, 110,000 dalton for the dimer and 440,000 dalton for the octamer.

5,283,190
SPECIFIC MONOCLONAL ANTIBODIES AGAINST A DEFINED EPITOPE OF PROGESTERONE RECEPTOR AND METHODS FOR THEIR USE

Adbulmaged M. Traish, 841 Belont St., Belont, Mass. 02178, and Herbert H. Wotiz, 9 Cape Cod La., Milton, Mass. 02186

Continuation of Ser. No. 494,356, Mar. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 388,091, Jul. 31, 1989, abandoned. This application Sep. 19, 1991, Ser. No. 762,246
Int. Cl.[5] C07K *15/28;* C12P *21/08;* C12N *5/12*
U.S. Cl. 435—240.27 2 Claims

1. A monoclonal antibody specific for a single epitope in the native (8S) and transformed (4S) forms of human progesterone receptor, said epitope located within amino acid residues 533–547 of human progesterone receptor protein.

5,283,191
MAREKS' DISEASE VIRUS VACCINE

Robin W. Morgan, Landenberg, Pa.; Johannes A. J. Claessens, Boxmeer, Netherlands; Martha J. Willemse, Nijmegen, Netherlands, and Paulus J. A. Sondermeijer, Boxmeer, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 615,211, Nov. 16, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,015
Int. Cl.[5] C12P *21/02, 19/34;* C12N *15/00, 7/00, 5/00, 1/21, 1/16, 1/18;* C07K *3/00;* C07H *15/12*
U.S. Cl. 435—252.3 17 Claims

1. An isolated and purified nucleic acid molecule encoding a Marek's disease virus polypeptide selected from the group consisting of:

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a. MD18 having an amino acid sequence shown in SEQ ID NO:2,
b. MD20 having an amino acid sequence shown in SEQ ID NO:4 and
c. an antigenic fragment of MD18 on MD20.

5. A host cell transformed with a nucleic acid molecule according to claim 1.

5,283,192

BIOLOGICAL PROCESS FOR ENHANCED MANGANESE AND SILVER RECOVERY FROM REFRACTORY MANGANIFEROUS SILVER ORE

Patricia A. Rusin, Tucson, Ariz., assignor to Metallurgical and Biological Extraction Systems, Inc., Tucson, Ariz.

Division of Ser. No. 682,491, Apr. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,312, Feb. 22, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 987,887
Int. Cl.[5] C12N *1/20, 1/00*
U.S. Cl. 435—252.31 **1 Claim**

1. A biologically pure culture of Bacillus circulans MBX 69, having all the identifying characteristics of NRRL B-18768, or mutants thereof, having the ability to reduce manganese.

5,283,193

PROCESS FOR PRODUCING OPTICALLY ACTIVE α-SUBSTITUTED ORGANIC ACID AND MICROORGANISM AND ENZYME USED THEREFOR

Keizou Yamamoto; Kazumasa Otsubo, and Kazuhiko Oishi, all of Miyazaki, Japan, assignors to Asahi Kasei Kogyo K.K., Osaka, Japan

Continuation of Ser. No. 370,964, Jun. 26, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,879
Claims priority, application Japan, Jun. 27, 1988, 63-156911
Int. Cl.[5] C12P *7/40*
U.S. Cl. 435—280 **2 Claims**

1. A process for producing optically active α-substituted organic acid represented by formula (II), comprising the steps of:

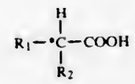
(a) treating a racemic α-substituted nitrile represented by formula (I) with a microorganism which possesses an enantioselective nitrilase or mixture of a nitrile hydratase and an enantioselective amidase capable of converting said racemic α-substituted nitrile into its respective optically active organic acid, wherein said microorganism is selected from the group consisting of the microorganism of the genera Alcaligenes, Pseudomonas, Rhodopseudomonas, Corynebacterium, Acinetobacter, Bacillus, Mycobacterium and Rhodococcus, or preparations thereof; and

(b) recovering the resulting optically active α-substituted organic acid represented by formula (II):



(I)

wherein R_1 and R_2 each represent a halogen atom, a hydroxyl group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aryloxy group or a substituted or unsubstituted heterocyclic group, wherein a substituent group is selected from the group consisting of a halogen atom, a hydroxyl group, a thiol group, a nitro group, an amino group, an aryl group, an aryloxy group, a heterocyclic group having from 3 to 15 carbon atoms and containing one or more hetero-atoms including a nitrogen atom, an oxygen atom or a sulfur atom, an alkyl group having from 1 to 8 carbon atoms, an alkoxy group having from 1 to 8 carbon atoms and an acyl group having from 1 to 10 carbon atoms, with the proviso that R_1 and R_2 are different from each other; and X represents a nitrile group,



(II)

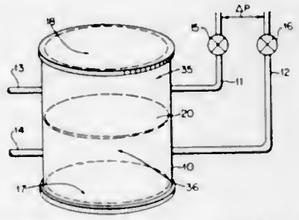
wherein R_1 and R_2 are as defined for formula (I).

5,283,194

APPARATUS AND METHODS FOR ELECTROPORATION AND ELECTROFUSION

Robert E. Schmukler, 13905 Vista Dr., Rockville, Md. 20853

Division of Ser. No. 733,854, Jul. 22, 1991, Pat. No. 5,173,158. This application Jul. 16, 1992, Ser. No. 913,612
Int. Cl.[5] C12N *13/00, 15/00, 15/02, 15/87*
U.S. Cl. 435—287 **8 Claims**



1. An apparatus for electroporation of a first type of cells comprising:
a container;
an insulating film, penetrated by pores, dividing the container into two sections;
a first type of cells in a solution in one of the sections, the diameter of the first type of cells being larger than the diameter of the pores;
means for causing the first type of cells to become trapped in different ones of the pores such that a portion of each of the trapped first type of cells extends into a different one of the pores; and
means for applying a low voltage electric field of less than 25 volts to the container to pass through the two sections and the pores to create a substantially larger voltage gradient across the trapped cells than across the remainder of the container to cause electroporation of the trapped first type of cells at the portions which extend into the pores.

5,283,195

INCUBATOR WITH POSITIONING DEVICE FOR SLIDE ELEMENTS

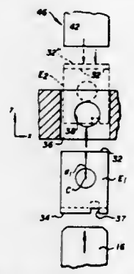
Martin F. Muszak; Gary S. Hartman, and Roger G. Leightoo, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 810,262, Dec. 19, 1991, Pat. No. 5,196,168. This application Jan. 8, 1993, Ser. No. 1,876
Int. Cl.[5] G01N *35/04*
U.S. Cl. 436—48 **4 Claims**

1. A method for automatically locating a slide test element over a viewing aperture in a support at a station in an incubator, the method comprising steps of

a) loading into said station a reference element having a spot of known density and a datum surface as a leading edge of the reference element, said datum surface being a known distance from a center of said spot, said loading step comprising inserting said reference element so as said center of said spot is beyond a center of said viewing aperture of said station,

b) scanning said spot through said aperture with a reflectometer,
c) pushing said reference element relative to said station until said spot registers a minimum or maximum reflection density at said reflectometer, thus defining a pushed corrective distance,
d) storing the corrective distance said reference element is pushed, for said station,



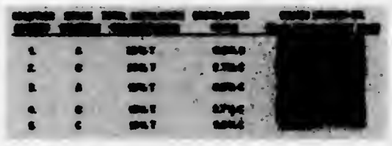
e) loading a slide test element for a patient analysis into said station wherein said a center of said slide test element is inserted beyond said center of said viewing aperture, a datum surface for said test element being a leading edge, and
f) pushing said slide test element at said datum surface by an amount of said stored corrective distance.

5,283,196

POLYACRYLAMIDE GELS WITH IMPROVED DETECTION OF PROTEIN

Denis F. Hochstrasser, Geneva, Switzerland; Carl R. Merrill, Rockville, Md., and Abraham Patchornik, Ness-Ziona, Israel, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 159,847, Feb. 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 142,978, Jan. 12, 1988, abandoned. This application Nov. 7, 1991, Ser. No. 789,456
Int. Cl.[5] G01N *30/00, 33/68*
U.S. Cl. 436—86 **8 Claims**



1. A method of detecting proteins which comprises:
providing a crosslinked acrylamide gel which crosslinked acrylamide gel is prepared by adding an amine acryloyl derivative of an amino compound having at least one secondary amine group, said derivative having at least one tertiary amide group to a solution of acrylamide and subjecting the acrylamide to crosslinking;
placing a sample containing proteins onto the crosslinked acrylamide gel;
soaking the crosslinked acrylamide gel having the sample containing proteins thereon in an appropriate solvent for causing the proteins to be separated;
permitting the solvent to carry the proteins a predetermined distance through the crosslinked acrylamide gel; and
soaking the crosslinked acrylamide gel in a silver solution to develop the crosslinked acrylamide gel and detect the proteins.

5,283,197

METHOD OF MONITORING COLLAGEN DEGRADATION

Simon P. Robins, Aberdeen, Scotland, assignor to The Rowett Research Institute, Scotland

PCT No. PCT/GB89/00715, § 371 Date Jan. 23, 1991, § 102(e) Date Jan. 23, 1991, PCT Pub. No. WO89/12824, PCT Pub. Date Dec. 28, 1989
Continuation of Ser. No. 623,792, Jan. 23, 1991, abandoned. This PCT application Jun. 26, 1989, Ser. No. 17,333
Claims priority, application United Kingdom, Jun. 25, 1988, 8815174
Int. Cl.[5] G01N *33/493;* C07K *3/02, 13/00*
U.S. Cl. 436—87 **3 Claims**

1. A method of monitoring bone collagen degradation in a human subject comprising:
obtaining a urine sample from the subject,
chromatographically separating glycosylated, peptide-free hydroxylysyl pyridinolines in the urine sample wherein said sample is not hydrolyzed and,
determining the amount of a glycosylated, peptide-free hydroxylysyl pyridinoline as an indicator of bone collagen degradation.

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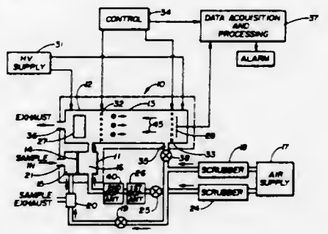
Patent Not Issued For This Number

5,283,199

CHLORINE DIOXIDE MONITOR BASED ON ION MOBILITY SPECTROMETRY WITH SELECTIVE DOPANT CHEMISTRY

Allan T. Bacon, Jr., Joppatowne, and Richard C. Getz, Baltimore, both of Md., assignors to Environmental Technologies Group, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 746,464, Aug. 16, 1991, Pat. No. 5,234,838, which is a continuation-in-part of Ser. No. 687,594, Apr. 17, 1991, Pat. No. 5,095,206, which is a continuation-in-part of Ser. No. 534,701, Jun. 1, 1990, Pat. No. 5,032,721. This application Oct. 18, 1991, Ser. No. 778,783
Int. Cl.[5] G01N *24/00;* B01D *59/44*
U.S. Cl. 436—173 **44 Claims**



18. A method for operating an ion mobility spectrometer to monitor chlorine dioxide in a test sample, the method comprising the step of:
introducing a test sample of gas into said ion mobility spectrometer for monitoring of chlorine dioxide in said test sample;
mixing an amine dopant with said test sample, whereupon said dopant reacts with chlorine when present in said test sample to form a compound having a charge affinity different from that of chlorine;
applying said doped test sample to an ionization source;
generating an ion current by ionization of said test sample at said ionization source; and
measuring said ion current at a distance from said ionization source;

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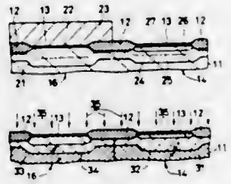
whereby a peak ion current is generated by said chlorine dioxide without interference from said chlorine.

5,283,200

METHOD OF FABRICATING COMPLEMENTRAY SEMICONDUCTOR DEVICE

Yutaka Okamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 918,683
Claims priority, application Japan, Jul. 30, 1991, 3-212728
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—29 **4 Claims**



1. A method of fabricating a complementary semiconductor device having a region of a first conductivity type and a region of a second conductivity type, comprising the steps of:

doping an impurity for forming said region of the first conductivity type and an impurity for forming a channel stopper in said region of the first conductivity type in a region in which said region of the first conductivity type is to be formed;

doping an impurity for forming said region of the second conductivity type and an impurity for forming a channel stopper in said region of the second conductivity type in a region in which said region of the second conductivity type is to be formed;

performing annealing for diffusing said doped impurities; and

doping an impurity for adjusting a threshold voltage in entire surfaces of said region of the first conductivity type and said region of the second conductivity type after the annealing is performed.

5,283,201

HIGH DENSITY POWER DEVICE FABRICATION PROCESS

Dah W. Tsang; John W. Mosier, II; Douglas A. Pike, Jr., and Theodore O. Meyer, all of Bend, Oreg., assignors to Advanced Power Technology, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 852,932, Mar. 13, 1992, which is a continuation of Ser. No. 751,441, Aug. 28, 1991, abandoned, and Ser. No. 737,560, Jul. 26, 1991, Pat. No. 5,182,234, which is a continuation of Ser. No. 467,636, Jan. 19, 1990, abandoned, which is a division of Ser. No. 194,874, May 17, 1988, Pat. No. 4,895,810. This application Aug. 7, 1992, Ser. No. 927,169
Int. Cl.[5] H01L *21/00, 21/02, 21/265*
U.S. Cl. 437—31 **20 Claims**

1. A method of making a recessed gate field effect power MOS device, the method comprising:

forming a substrate (**20**) including first and second doped layers (**24, 26**) of first and second opposite dopant polarities to define a body region adjoining an upper surface of the substrate and an underlying drain region;

forming a trenching protective layer (**30**) on the upper surface (**28**) of the substrate;

masking and patterning the trenching protective layer to define an exposed first area (**46**) and a protected second area of the upper surface of the substrate demarcated by opposite sidewalls of the trenching protective layer;

forming sidewall spacers (**44**) having inner surfaces (**48**) contacting opposite sidewalls of the trenching protective laver (**30**) and outer surfaces (**47**) spaced a predetermined spacing (**54**) from the sidewalls of the trenching protective layer;

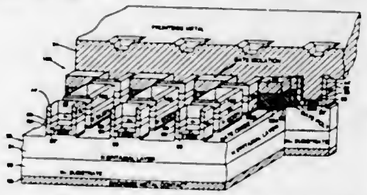
forming in the first area (**46**) of the substrate, between the outer surfaces (**47**) of the sidewall spacers (**44**) , a first trench (**50**) having sidewalls aligned relative to the outer surfaces (**47**) of the sidewall spacers and extending at least through the layer (**26**) defining the body region to a bottom wall at least a predetermined depth (**56**) from the upper surface of the substrate;

forming a gate oxide layer (**60**) on the first trench sidewalls;

filling the first trench with polysilicon (**62**) to a level (**64**) spaced between the upper surface of the substrate and a top surface of the trenching protective layer (**30**);

applying a protective layer (**68**) selectively over the polysilicon (**62**) filled into the first trench, between the sidewall spacers (**44**) and in contact with the outer surfaces (**47**) of the sidewall spacers;

removing the trenching protective layer to expose the second area of the upper surface (**28'**) of the substrate between the inner surfaces (**48**) of the sidewall spacers;



doping the second area of the upper surface (**28'**) of the substrate between the gate oxide layer (**60**) on the trench sidewalls with dopant of said second dopant polarity to form a source region (**72**) atop the body region (**26'**);

forming, in the second area of the substrate (**28'**) between the inner surfaces (**48**) of the sidewall spacers (**44**), a second trench (**80**) having sidewalls aligned relative to the inner surfaces of the sidewall spacers and extending through the layer (**72**) defining the source region to a bottom wall in the body region (**26''**) of the substrate; and

depositing a source conductive layer (**94**) in the second trench in contact with the source region and the body region;

the second trench (**80**) through the source region and body region defining vertically-oriented source and body layers (**86, 90**) stacked along the gate oxide layer (**60**) on opposite sidewalls of the second trench (**80**) and having a lateral thickness (**88**) established by the predetermined spacing of the inner and outer surfaces of the sidewall spacers.

5,283,202

IGBT DEVICE WITH PLATINUM LIFETIME CONTROL HAVING GRADIENT OR PROFILE TAILORED PLATINUM DIFFUSION REGIONS

Douglas A. Pike, Jr.; Dah W. Tsang; James M. Katana; and Dumitru Sdrulla, all of Bend, Oreg., assignors to Advanced Power Technology, Inc., Bend, Oreg.

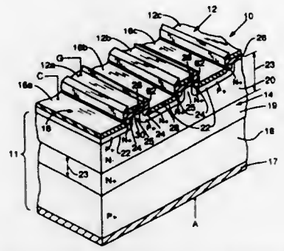
Continuation-in-part of Ser. No. 852,932, Mar. 13, 1992, which is a continuation of Ser. No. 751,441, Aug. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 737,560, Jul. 26, 1991, Pat. No. 5,182,234, which is a continuation of Ser. No. 467,636, Jan. 19, 1990, abandoned, and a continuation of Ser. No. 439,101, Nov. 16, 1989, Pat. No. 5,045,903 and a division of Ser. No. 194,874, May 17, 1988, Pat. No. 4,895,810, and a continuation-in-part of Ser. No. 842,771, Mar. 21, 1986, Pat. No. 4,748,103. This application Sep. 15, 1992, Ser. No. 945,817
Int. Cl.[5] H01L *21/00, 21/02, 21/265, 21/467*
U.S. Cl. 437—31 **8 Claims**

1. In a fabrication process for making a semiconductor power device having at least one PN junction, an improved minority carrier lifetime control process comprising:

selecting a transition metal having a deep level in silicon suitable for recombination;

determining a maximum dose of the selected transition metal that can be fully dissolved into the substrate at a temperature in a range between a eutectic temperature of the substrate and an annealing temperature of the substrate;

determining and depositing a dose of the transition metal not exceeding the maximum dose sufficient to effect lifetime control without substantially increasing leakage current of the device; and



diffusing the metal atoms throughout the substrate at a temperature within said range, including:

diffusing a first portion of the dose throughout the substrate; and

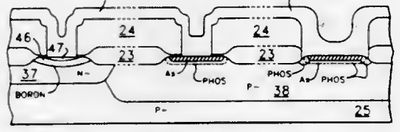
diffusing a second portion of the dose in a gradient band near a selected surface of the substrate.

5,283,203

SELF-ALIGNED CONTACT PROCESS FOR COMPLEMENTARY FIELD-EFFECT INTEGRATED CIRCUITS

Manzur Gill, Arcola, and Danny Shum, Sugarland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1992, Ser. No. 843,705
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **8 Claims**



1. A process for forming at least first and second electrical contacts to the substrate of an integrated circuit, said substrate having a conductivity of a first-type, said first contact being to a first diffused region of said substrate having a conductivity of a second-type opposite said first-type, said second contact being to a second diffused region of said substrate having a conductivity of said first-type, said process comprising:

forming field oxide on said substrate, except in at least a first area generally correspondent to first diffused region;

using said field oxide as a mask, doping said first area with a second-type dopant;

forming a layer of borophosphosilicate glass on the surface of said substrate;

etching through said borophosphosilicate glass to expose said first contact region, said first contact region offset from said first area, said etching extending through at least a part of said field oxide to expose a portion of said substrate outside of said first area; and

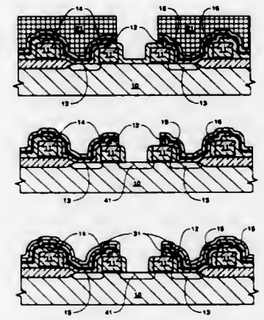
blanket implanting by self-alignment a second-type dopant in a quantity sufficiently small that said implant does not change said second diffusion region to said conductivity of said second-type and does change said part of said substrate to said conductivity of said second-type.

5,283,204

METHOD OF FORMING PASSIVATION OXIDATION FOR IMPROVING CELL LEAKAGE AND CELL AREA

Howard E. Rhodes, and Tyler A. Lowrey, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 15, 1992, Ser. No. 869,571
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—52 **26 Claims**



1. A process for isolating first and second conductive plates of a storage capacitor fabricated on a starting substrate, said process comprising the steps of:

a) providing a mask having an opening aligned over a desired buried contact location between neighboring capacitor storage node plates and a pair of parallel conductive access lines thereby exposing a portion of said capacitor's second conductive plate;

b) removing said second conductive plate's exposed portion and an underlying portion of a cell dielectric layer thereby exposing an underlying insulating layer, said removal of second conductive plate's exposed portion and said underlying portion of said cell dielectric layer thereby exposes and severs a portion of said first conductive plate resulting from a misalignment of said mask opening;

c) removing said insulative layer thereby exposing a portion of the starting substrate and forming insulative spacers on walls of said pair of parallel conductive access lines;

d) removing said mask;

e) introducing conductive impurities into said exposed starting substrate;

f) oxidizing the resulting surface prior to an annealing step, said annealing step drives said conductive impurities deeper into said exposed starting substrate, said oxidation insulates said severed portions of said first conductive plate.

5,283,205

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE ON A SUBSTRATE HAVING AN ANISOTROPIC EXPANSION/CONTRACTION CHARACTERISTIC

Naoya Sakamoto, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1992, Ser. No. 852,977
Claims priority, application Japan, Mar. 19, 1991, 3-80993
Int. Cl.[5] H01R *21/22*
U.S. Cl. 437—147 **14 Claims**

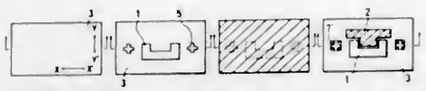
1. A method for manufacturing a semiconductor device having at least one patterned thin film on a substrate comprising the steps of:

forming a film of material on said substrate, said substrate having an anisotropy in degree of expansion and contraction;

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aligning a mask having a mask pattern with said substrate by using alignment markers provided on said substrate; and

patterning said film of material by photolithography in accordance with said mask pattern,



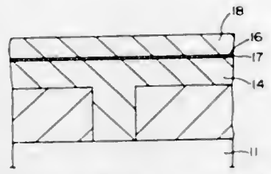
wherein said alignment markers are arranged on said substrate in a first direction in which said degree of expansion and contraction of said substrate is smaller than the degree of expansion and contraction of the substrate in a second direction different from said first direction.

5,283,206

METHOD OF REMOVING GERMANIUM PARTICLES PRECIPITATED IN AN ALUMINUM/GERMANIUM ALLOY FILM

Yukiyasu Sugano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,294
Claims priority, application Japan, Jun. 7, 1991, 3-163878
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—194 **6 Claims**



1. A method of removing germanium particles precipitated in an aluminum/germanium alloy film, comprising:

a first process of forming a metal film of a metal capable of producing a compound together with germanium over the surface of an aluminum/germanium alloy film formed over the surface of a substrate; and

a second process of subjecting the substrate carrying the aluminum/germanium alloy film and the metal film to heat treatment at 300° C. for 30 minutes so that germanium particles precipitated in the aluminum/germanium alloy film and the metal forming the metal film interact to produce a compound, thereby removing the germanium particles from the aluminum/germanium alloy film.

5,283,207

PHOTOCONDUCTIVE MATERIAL AND PHOTOSENSOR EMPLOYING THE PHOTOCONDUCTIVE MATERIAL

Koichi Haga, Matsugagoshi, and Masafumi Kumano, Sendai, both of Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Division of Ser. No. 635,210, Dec. 28, 1990, Pat. No. 5,155,567.
This application Jun. 10, 1992, Ser. No. 896,587
Claims priority, application Japan, Jan. 17, 1990, 2-7646; Sep. 5, 1990, 2-234747
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—101 **8 Claims**

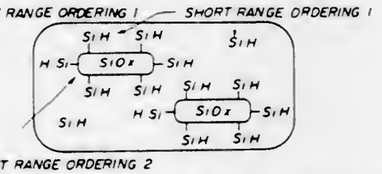
1. A method for producing a photoconducting structure, said photoconducting structure including a photoconducting region of a first network of silicon and photocarrier producing regions of a second network of silicon, such that said photocarrier producing regions, each defined by a boundary, distribute in said photoconducting region and such that said second network is connected in conformity to said first network at said boundary without forming substantial dangling bonds, said method comprising the steps of:

introducing a first gaseous source material containing silicon into a reaction vessel held at a predetermined temperature and pressure;

releasing silicon in said reaction vessel as a result of decomposition of said first gaseous source material;

introducing a second gaseous source material containing an element that increases a band gap when incorporated into amorphous silicon, into said reaction vessel, said second gaseous source material releasing molecules of said element and byproduct gaseous molecules when dissociated;

applying energy to said second gaseous source material in said reaction vessel to cause a dissociation of said second



gaseous source material such that the molecules of said element are released as a result of the dissociation;

depositing silicon and said element on a substrate to form an amorphous silicon layer that comprises isolated regions of amorphous silicon enriched with said element in a matrix of amorphous silicon;

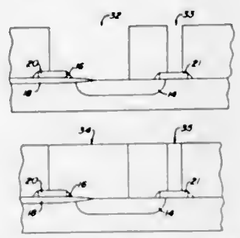
said energy being set such that said molecules of said element are selectively released to form said photoconducting structure such that said photoconducting structure includes a photoconducting region of a first network of silicon and photocarrier producing regions of a second network of silicon, such that said photocarrier producing regions, each defined by a boundary, distribute in said photoconducting region and such that said second network is connected in conformity to said first network at said boundary without forming substantial dangling bonds.

5,283,208

METHOD OF MAKING A SUBMICROMETER LOCAL STRUCTURE USING AN ORGANIC MANDREL

Michael J. Lorsung, Rochester, and Connie J. Mathison, Pine Island, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,709
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 **15 Claims**



1. A method of making a local structure from a mandrel on

a substrate at submicrometer dimensions, the method comprising the steps of:

a. providing the substrate;

b. depositing an organic layer on the substrate;

c. curing the organic layer;

d. applying a first layer of glass in order to at least partially coat the organic layer;

e. defining the location of the mandrel;

f. etching the first layer of glass by using a reactive ion etch;

g. forming the mandrel by etching in a first oxygen plasma environment after etching the first layer of glass with the reactive ion etch;

h. depositing a second layer of glass after forming the mandrel;

i. exposing the mandrel by polishing the second layer of glass;

j removing the mandrel by exposure to a second oxygen plasma environment in order to leave a cavity;

k. applying at least one layer of a local structure material in order to at least partially fill the cavity, the local structure material being of a type used to make the local structure at submicrometer dimensions and can be polished; and

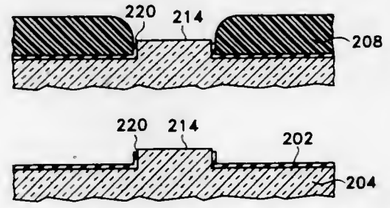
l. polishing at least one layer of the local structure material in order to define the local structure.

5,283,209

METHOD OF LOCALIZED TREATMENT ON A PROJECTION, IN PARTICULAR FOR LITHOGRAPHIC ETCHING ON A SEMICONDUCTOR SUBSTRATE

Francis Poingt, Ste Genevieve Des Bois; Jean-Louis Lievin, Paris, and Elisabeth Gaumont-Goarin, Montrouge, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 17, 1992, Ser. No. 824,259
Claims priority, application France, Jan. 17, 1991, 91 00505
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—228 **10 Claims**



1. A method of localized lithographic etching on a projection from a semiconductor substrate, comprising the steps:

depositing a protective resist over an extended area including a projecting zone on which a localized etching treatment is to be applied, said projecting zone being defined by a projecting edge surrounding a projecting area, said protective resist providing protection against said treatment.

then removing said protective resist from an enlarged removal area extending beyond said projecting zone,

then causing said protective resist to move by plastic flow from outside said enlarged removal area and towards and into contact with said projecting edge, so as to form a thick layer of protective resist adjacent a restricted treatment area free from said protective resist, said restricted treatment area being smaller than said enlarged removal area and self-aligned with said projecting area such that only said projecting area is not provided with protection against said treatment, and

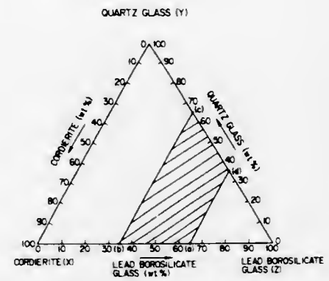
then applying said treatment both to said thick layer of protective resist and to said restricted treatment area.

5,283,210

LOW TEMPERATURE SINTERING LOW DIELECTRIC INORGANIC COMPOSITION

Keiichiro Kata, and Yuzo Shimada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,376
Claims priority, application Japan, Jul. 31, 1991, 3-213078
Int. Cl.[5] C03C *14/00, 4/16*
U.S. Cl. 501—32 **13 Claims**



3. An inorganic composition capable of being sintered at a low temperature and having a low dielectric constant and high mechanical strength which is a ternary inorganic composition comprising cordierite, quartz glass and lead borosilicate glass as a ceramic material wherein if the amounts of said cordierite, quartz glass and lead borosilicate glass are represented by X, Y and Z (% by weight) respectively, the composition of the ternary systems falls within the range encircled by the following four points (a) to (d) including lines between each neighboring two points but exclusive of a line between the points (c) and (d):

(X=35; Y=0; Z=65) (a)

(X=65; Y=0; Z=35) (b)

(X=0; Y=65; Z=35) (c)

(X=0; Y=35; Z=65) (d)

and a principal component of said lead borosilicate glass comprises 50 to 75% by weight of silicon oxide, 1 to 30% by weight of boron oxide, 1 to 30% by weight of lead oxide, 0.1 to 5% by weight of oxides of Group II elements, 0.1 to 1% by weight of titanium oxide and 0.1 to 1% by weight of zirconium oxide, provided that these components are selected so that the sum of the amounts of these components is equal to 100% by weight, if the components are expressed in terms of reduced amounts of oxides thereof.

5,283,211

THALLIUM GERMANATE, TELLURITE, AND ANTIMONITE GLASSES

Bruce G. Aitken, Erwin; Douglas W. Hall, and Mark A. Newhouse, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 813,536, Dec. 26, 1991, abandoned, which is a division of Ser. No. 618,939, Nov. 28, 1990, Pat. No. 5,093,288.
This application Sep. 21, 1992, Ser. No. 947,810
Int. Cl.[5] C03C *3/12, 3/32*
U.S. Cl. 501—41 **1 Claim**

1. A glass exhibiting high optical nonlinearity along with high transmission in the visible and infrared portions of the radiation spectrum consisting essentially, expressed in terms of cation percent on the oxide basis, of:

(c) 50–75% $SbO_{1.5}$, 5–50% $TlO_{0.5}$, and 0–20% PbO.

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5,283,212

THALLIUM GERMANATE, TELLURITE, AND ANTIMONITE GLASSES

Bruce G. Aitken; Douglas W. Hall, and Mark A. Newhouse, all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 813,536, Dec. 26, 1991, abandoned, which is a division of Ser. No. 618,939, Nov. 28, 1990, Pat. No. 5,093,288. This application Dec. 17, 1992, Ser. No. 992,458

Int. Cl.[5] C03C *3/062, 3/07*

U.S. Cl. 501—73 **3 Claims**

1. A glass exhibiting a high Verdet constant and high optical nonlinearity, along with high transmission in the visible and infrared portions of the radiation spectrum, consisting essentially, expressed in terms of cation percent on the oxide basis, of 5-74.5% TeO_2, 0.5-20% SiO_2, 4-50% $TlO_{0.5}$, and 0-71% PbO, wherein $TlO_{0.5}+PbO \geq 25\%$, $TeO_2+SiO_2 \geqq 25\%$, and $TeO_2+SiO_2+TlO_{0.5}+PbO$ constitutes at least 65% of the total composition.

5,283,213

MOULDING COMPOUNDS FOR THE PRODUCTION OF INORGANIC SINTERED MOULDINGS AND A PROCESS FOR THE PRODUCTION OF INORGANIC SINTERED MOULDINGS

Holger Ohst, Odenthal-Steinhaus; Rolf Dhein, Krefeld, and Lothar Schöafelder, Coburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,506

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 4129952

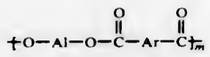
Int. Cl.[5] C04B *35/52*

U.S. Cl. 501—87 **13 Claims**

1. Molding compounds suitable for injection molding or extrusion for the production of inorganic sintered moldings, characterized in that they contain

a) 50 to 95% by weight of an inorganic powder, based on the total weight of the molding compounds; and

b) a binder system consisting of at least 20 to 80 parts by weight, based on weight of the molding compound, of one or more partially crystalline thermoplasts based on polyamides, or polyesters corresponding to the general formula



wherein m=10 to 1000 and Al stands for a linear or branched and/or a cycloaliphatic group having 2 to 36 carbon atoms and Ar may stand for an aromatic group C_6H_4 or $C_{10}H_8$ said thermoplasts having a melting temperature >180° C., and 10 to 70% by weight of phthalic acid esters or low molecular weight phenols.

5,283,214

INCREASING ALN THERMAL CONDUCTIVITY VIA PRE-DENSIFICATION TREATMENT

Arne K. Knudsen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US89/03813, § 371 Date Feb. 26, 1991, § 102(e) Date Feb. 26, 1991

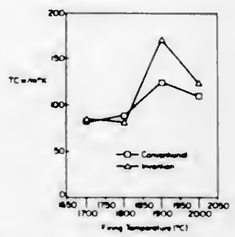
PCT Filed Sep. 1, 1989, Ser. No. 656,173

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—96 **20 Claims**

1. A method for producing a dense AlN article having a high thermal conductivity from an oxygen-containing AlN powder compact, comprising the steps of:

a) exposing the AlN powder compact to a temperature in the range of between about 1500° C. and about 1700° C. in an environment which reduces oxygen content of the powder compact to an amount which, upon densifying the AlN powder compact, provides a dense AlN article having high thermal conductivity; and thereafter



b) densifying the AlN powder compact to form the dense AlN article.

5,283,215

REFRACTORIES FOR CASTING PROCESS

Kiyoshiro Hosokawa; Hitoshi Nishiwaki; Kouichi Nishi, all of Hyogo; Seiji Hanagiri, Oita; Shiro Sukenari, Oita; Takenori Nakamichi, Oita; Naoki Tsutsui, Aichi; Tsuyoshi Matsuda, Aichi, and Kouzou Akao, Aichi, all of Japan, assignors to Ceramic Co., Ltd. Harima, Hyogo and Nippon Steel Corporation, Tokyo, both of Japan

Filed Nov. 16, 1992, Ser. No. 977,247

Claims priority, application Japan, Nov. 26, 1991, 3-335452; Nov. 26, 1991, 3-335453; Apr. 28, 1992, 4-134481; Jul. 23, 1992, 4-216559

Int. Cl.[5] C04B *35/04, 35/44*

U.S. Cl. 501—120 **5 Claims**

1. Refractory for casting process mainly composed of 0.3 to 10 wt % light burned magnesia obtained by burning magnesium hydroxide at a temperature below 1300° C., 3 to 30 wt % micro fine calcined alumina having an average granular size below 8 μm, and the remainder of either sintered alumina, fused alumina and $MgO-Al_2O_3$ spinel or sintered alumina and $MgO-Al_2O_3$ spinel or fused alumina and $MgO-Al_2O_3$ spinel.

5,283,216

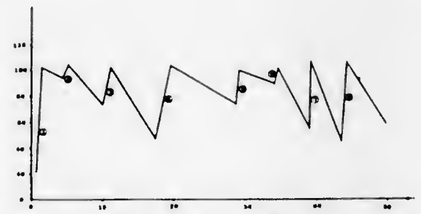
REJUVENATION OF HYDROCARBON SYNTHESIS CATALYST

Willard N. Mitchell, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 24, 1992, Ser. No. 949,934

Int. Cl.[5] B01J *20/20, 23/94, 38/10;* **C07C** *27/00*

U.S. Cl. 502—30 **10 Claims**



1. A method for rejuvenating a partially deactivated, Group VIII metal containing Fischer-Tropsch catalyst having an initial catalyst activity which comprises: suspending the catalyst in slurry liquid hydrocarbons and treating the suspended catalyst with hydrogen or a hydrogen containing gas at elevated temperatures and pressures and recovering a substantial portion of the initial catalyst activity.

5,283,217

PRODUCTION OF HIGHLY DISPERSED HYDROGENATION CATALYSTS

Michio Ikura, Kanata; Maria Stanciulescu, Orleans, and James E. Kelly, Nepean, all of Canada, assignors to Energy, Mines & Resources - Canada, Ottawa, Canada

Filed Jun. 11, 1992, Ser. No. 896,976

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—167 **18 Claims**

1. A process for producing a highly dispersed hydrogenation catalyst which comprises forming an aqueous solution of a salt of a transition metal and a commercial ionic or non-ionic surfactant, adding said solution to heated petroleum pitch or a mixture of petroleum pitch and petroleum distillate and mixing vigorously until a stable water-in-oil micro-emulsion is formed having an average droplet diameter of less than about 1500 Å, and heating said micro-emulsion in the presence of a hydrogenatable organic feedstock and hydrogen at hydrogenation conditions to produce catalyst particles having an average size of less than about 500 Å.

5,283,218

Patent Not Issued For This Number

5,283,219

ACTIVE COMPOSITE AND ITS USE AS REACTION MEDIUM

Sylvain Mauran, Espira de l'Agly; Michel Lebrun; Philippe Prades, both of Perpignan; Michel Moreau, Clichy; Bernard Spinner, Corneilla del Vercol, and Claude Drapier, Vaucresson, all of France, assignors to Societe Nationale Elf Aquitaine and Le Carbone Lorraine, both of France

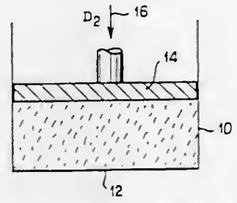
PCT No. PCT/FR91/00303, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/15292, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 11, 1991, Ser. No. 777,537

Claims priority, application France, Apr. 11, 1990, 90 04660

Int. Cl.[5] B01J *20/20, 8/02;* **C04B** *35/54;* **F25B** *17/08*

U.S. Cl. 502—417 **1 Claim**



1. In an improved active composite for use in a gas-solid reaction heat pump; said active composite comprising an active agent reactive toward said gas so that said agent and said gas are capable of interacting for the operation of said heat pump; said agent being dispersed in a graphite support media; wherein the improvement comprises:

said graphite support is expanded graphite which has been compressed to a density of 0.02 g/cm^3 to 1.5 g/cm^3;

said active composite comprises from 1% to 95% by weight of said graphite and from 99% to 5% by weight of said active agent;

said active composite has a thermal conductivity anisotrophy coefficient C_1/C_2 between 5-150 wherein C_1 represents the thermal conductivity in a first direction and C_2 represents the thermal conductivity in a second direction which is perpendicular to said first direction; and

said active composite has an open porosity which is 32% to 99.1% of the total porosity of the composite, said open porosity being a value determined by measuring the amount of water, kept under atmospheric pressure, absorbed by a block of said composite to which a pressure of 0.02 bar is applied.

5,283,220

REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL

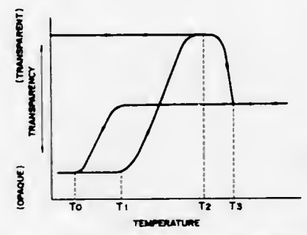
Makoto Kawaguchi, Shizuoka; Yoshihiko Hotta, Mishima; Yukio Konagaya, Shimizu; Kunichika Morohoshi; Toru Nogiwa, both of Numazu; Akira Suzuki, Mishima; Fumihito Masubuchi, Numazu; Atsushi Kutami, Numazu, and Tetsuya Amano, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,658

Claims priority, application Japan, May 27, 1991, 3-151060; Aug. 30, 1991, 3-245012; May 20, 1992, 4-154547

Int. Cl.[5] B41M *5/28*

U.S. Cl. 503—200 **8 Claims**



1. A reversible thermosensitive recording material comprising a support and a reversible thermosensitive recording layer formed thereon, which comprises:

a matrix resin selected from the group consisting of polyvinyl chloride and vinyl chloride copolymer, and

an organic low-molecular-weight material dispersed in the form of finely-divided particles in said matrix resin, with the weight percentage Y of the vinyl chloride repeat in said matrix resin and the average polymerization degree X of said matrix resin satisfying the relationship:

$$-0.68 \log X + 3.794 \leqq \log Y \leqq -0.215 \log X + 2.66.$$

5,283,221

COPYING TACK PAPER FOR THERMAL PRINTER

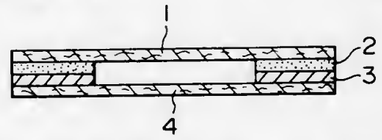
Kazuhiko Inobe, Yokohama, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 20, 1992, Ser. No. 915,305

Claims priority, application Japan, Jul. 24, 1991, 3-184404

Int. Cl.[5] B41M *5/40*

U.S. Cl. 503—204 **4 Claims**



1. A copying tack paper for a thermal printer, comprising:

an upper thermo-sensitive paper coated with an adhesive agent on a part of the rear surface thereof, and having a first printing region free of said adhesive agent; and

a lower thermo-sensitive paper coated with a release agent on the upper surface thereof at an area corresponding to the adhesive agent coated part of said upper thermo-sensi-

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tive paper, and having a second printing region free of said release agent and corresponding to said first printing region;

said upper thermo-sensitive paper being adhered to said lower thermo-sensitive paper by contact of said adhesive agent with said release agent, wherein both of said first and second printing regions can be simultaneously heat developed.

5,283,222

RECORDING MATERIAL COMPRISING NOVEL CRYSTALLINE FLUORAN AND PROCESS FOR PREPARTION OF THE SAID CRYSTALLINE FLUORAN

Masakatsu Nakatsuka; Atsuo Otsuji; Kiyoharu Hasegawa; Kazuyoshi Kikkawa, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

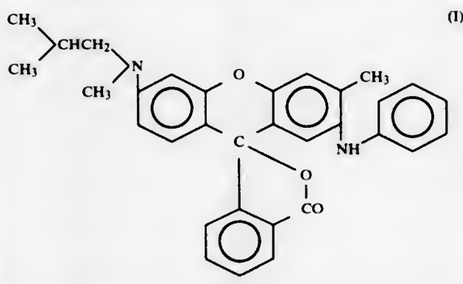
Division of Ser. No. 717,568, Jun. 19, 1991, Pat. No. 5,185,453. This application Sep. 24, 1992, Ser. No. 949,932

Claims priority, application Japan, Jun. 19, 1990, 2-158763; Oct. 15, 1990, 2-273401

Int. Cl.[5] **B41M** *5/15, 5/165*

U.S. Cl. 503—213 **7 Claims**

1. A recording material comprising the crystalline form of the fluoran compound represented by the formula (I):



(I)

which has a melting point of from 159° to 161° C. and an X-ray diffraction diagram by Cu-Kα beams which indicates a high peak at a diffraction angle 2θ of 6.9° and a relatively high peak at 19.4°.

5,283,223

DYE-DONOR BINDER FOR THERMAL DYE TRANSFER SYSTEMS

Stephen M. Neumann, and Mark P. Guittard, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,895

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **15 Claims**

6. In a process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric material with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

the improvement wherein the polymeric material has been coated from an aqueous solution and consists essentially of a hydrophilic polymer which has been set.

5,283,224

OVERCOAT LAYER FOR DYE-DONOR ELEMENT FOR LASER-INDUCED THERMAL DYE TRANSFER SYSTEM

Stephen M. Neumann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,883

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **18 Claims**

7. In a process of forming a laser-induced thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric material, said dye layer having an infrared-absorbing material associated therewith, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element by means of a laser; and

c) transferring a dye image to said dye-receiving element to form said laser-induced thermal dye transfer image,

the improvements wherein the polymeric material has been coated from an aqueous dispersion and consists essentially of a hydrophilic polymer which has been set, said dye layer also having an overcoat layer comprising spacer beads dispersed in a polymeric binder.

5,283,225

UNDERLAYER OF DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER SYSTEMS

Stephen M. Neumann, Rochester; Richard W. Wheeler, Pittsford, and Jack Hayward, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,893

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **12 Claims**

5. In a process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric material with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

the improvement wherein said polymeric material is coated from an aqueous solution and consists essentially of gelating, and said dye-donor element also has thereon at least one underlayer consisting of a swellable polymer located between said support and said dye layer.

5,283,226

PROCESS FOR PREPARING DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER SYSTEM PROCESSING

William H. Simpson, Pittsford, and Jacob J. Hastreiter, Jr., Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1993, Ser. No. 16,620

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **16 Claims**

9. In a process of forming a thermal dye transfer image comprising:

I) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye dispersed in a binder with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

II) imagewise-heating said dye-donor element; and

III) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

the improvement wherein said dye-donor element is prepared by:

a) coating a support with a dye layer comprising an image dye dispersed in a binder, said binder comprising a hydrophilic polymer coated from an aqueous solution containing a surfactant;

b) washing said dye-donor element with water to remove residual surfactant in said dye layer; and

c) drying said dye-donor element.

5,283,227

THERMOSENSITIVE RECORDING MATERIAL

Ayako Shirai, Yokohama; Yoshiyuki Takahashi, Kawasaki, and Kunitaka Toyofuku, Sakura, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,751

Claims priority, application Japan, Apr. 18, 1991, 3-86774

Int. Cl.[5] **B41M** *5/30*

U.S. Cl. 503—209 **5 Claims**

1. A thermosensitive recording material comprising:

a sheet substrate; and

a thermosensitive colored image-forming layer formed on the sheet substrate and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to develop a color, and a binder,

said color-developing agent comprising benzyl p-hydroxybenzoate, and

said thermosensitive colored image-forming layer further containing a colored image-stabilizing agent comprising at least one aziridine compound selected from the group consisting of aromatic aziridine compounds having, per one molecule thereof, an aziridine group and at least one aromatic cyclic group, and aromatic, aliphatic and cycloaliphatic aziridine compounds having, per one molecule thereof, at least two aziridine groups.

5,283,228

LEACHING INHIBITION OF CROP TREATING CHEMICALS WITH AMINO CONTAINING POLYMERS

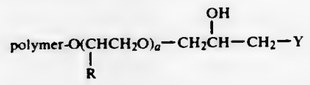
Kolazi S. Narayanan, Palisades Park, and Ratan K. Chaudhuri, Butler, both of N.J., assignors to ISP Investments, Inc., Wilmington, Del.

Filed Jul. 27, 1992, Ser. No. 919,317

Int. Cl.[5] **A01N** *25/24*

U.S. Cl. 504—113 **11 Claims**

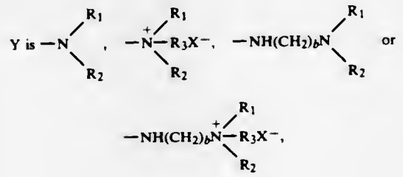
1. A leaching inhibited agrichemical composition comprising an active agrichemical and an effective leach inhibiting amount of a polymer having pendant hydroxy and amino groups and defined by the formula



wherein

the polymer moiety is selected from the group of a naturally occurring carbohydrate or hydroxylated protein polymer, a vinyl alcohol homopolymer and a vinyl alcohol/vinyl acetate copolymer;

R is hydrogen or methyl;



where

R_1, R_2 and R_3 are each selected from the group of hydrogen and C_1 to C_{20} alkyl, with the proviso that at least one of R_1 and R_2 or at least one of R_1, R_2 and R_3 is other than hydrogen;

X^- is an anion;

a has a value of from 0 to 20; and

b has a value of from 2 to 18.

5,283,229

DELIVERY SYSTEM FOR AGRICULTURAL CHEMICALS

Kolazi S. Narayanan, Palisades, and Ratan K. Chaudhuri, Butler, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Jul. 5, 1991, Ser. No. 726,101

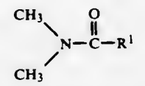
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] **A01N** *25/30*

U.S. Cl. 504—116 **47 Claims**



1. A stable emulsifiable concentrate comprising an agriculturally active chemical which is substantially insoluble in water, a surfactant and a solvent selected from the group consisting of a first component of a solvent having a sufficiently high hydrophilic property and being present in an amount effective to solubilize the agriculturally active chemical, a second component having an HLB value of from about 2 to 8, and being present in an amount, in conjunction with a surfactant, effective to disperse the agriculturally active chemical, and mixtures thereof, wherein said second component comprise from about 5 to 90 percent by weight based on the total weight of the concentrate of an amide having the formula:



wherein R^1 is an alkyl having from 5 to 18 carbon atoms.

5,283,230

5-HETEROCYCLIC 2-(2-IMIDAZOLIN-2-YL)-PYRIDINES AS HERBICIDES

John M. Finn, Mercerville, N.J., assignor to American Cyanamid Company, Wayne, N.J.

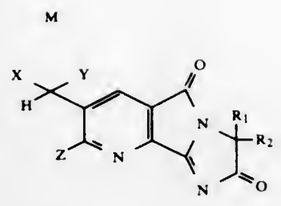
Division of Ser. No. 694,708, May 2, 1991, Pat. No. 5,225,564. This application Mar. 23, 1993, Ser. No. 36,120

Int. Cl.[5] **C07D** *471/14;* **A01N** *43/40*

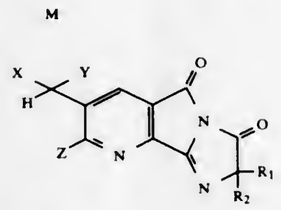
U.S. Cl. 504—130 **8 Claims**

1. A compound having the structure:

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(II)



(III)

wherein

R_1 is C_1-C_4 alkyl;

R_2 is C_1-C_4 alkyl or C_3-C_6 cycloalkyl and when R_1 and R_2 are taken together with the carbon to which they are attached they may represent C_3-C_6 cycloalkyl;

X and Y are each independently oxygen or sulfur;

R_4 is hydrogen, C_1-C_6 alkyl optionally substituted with C_1-C_4 alkoxy or 1-3 halogens, SO_2R_5, COR_5, CO_2R_5 or $CONR_5R_5$;

R_5 is hydrogen, C_1-C_6 alkyl optionally substituted with 1-3 halogens, or C_2-C_6 alkenyl;

M is C_2-C_5 alkylene optionally substituted with 1 or 2 C_1-C_4 alkyl groups, C_1-C_4 alkoxy, halogen, CO_2R_6 or oxo, and optionally interrupted by one oxygen or one sulfur,

C_2 alkenylene optionally substituted with 1 or 2 C_1-C_4 alkyl groups or CO_2R_6,

C_3 alkenylene optionally substituted with 1 or 2 C_1-C_4 alkyl groups, CO_2R_6 or oxo, methyleneamino, optionally substituted with C_1-C_4 alkyl or CO_2R_6;

provided that the ring formed by M, X and Y and the carbon to which both X and Y are attached is no more than 8 atoms and provided that when the substituents on M are either alkoxy or halogen the substituted carbon is not bound to X or Y;

R_6 is hydrogen, methyl or ethyl;

Z is hydrogen, halogen, C_1-C_6 alkoxy, or C_1-C_6 alkyl optionally substituted with C_1-C_4 alkoxy or halogen;

the N-oxides thereof;

the optical isomers thereof, when R_1 and R_2 represent different substitutents;

the acid addition salts thereof; and the tautomers thereof.

5,283,231

AQUEOUS SUSPENSION CONCENTRATE COMPOSITIONS

Leonard J. Morgan, 18 Arundel Drive, and Mark Bell, 2 Alan Grove, both of Fareham, Hampshire, England

Division of Ser. No. 45,458, May 7, 1987, Pat. No. 4,875,929, which is a continuation-in-part of Ser. No. 867,107, May 23, 1986, abandoned. This application Aug. 18, 1989, Ser. No. 395,925

Int. Cl.[5] A01N *33/00, 33/16, 33/18*

U.S. Cl. 504—148 **14 Claims**

1. A stable aqueous suspension concentrate composition consisting essentially of, on a weight to volume basis: about 5.0% to 50.0% solid pendimethalin; up to about 50.0% of at least one or more herbicide(s) selected from the group consisting of isoproturon, linuron, metoxuron, and chlortoluron; about 3.0% to 30.0% coformulants selected from the group consisting of surfactants, dispersing agents, wetting agents, suspending agents, antifreezing agents, antifoaming agents, thickening agents and preservatives; and 20.0% to 92.0% water; with the proviso that said surfactants, dispersing agents and wetting agents are selected from the group consisting of ethylene oxide/propylene oxide condensates; alkyl, aryl- and aryl, aryl-ethoxylates; lignosulfonates; cresol-formaldehyde condensates; cresol-formaldehyde sulfonates; naphthalene-formaldehyde condensates; naphthalene-formaldehyde sulfonates; polycarboxylates; and mixtures thereof.

5,283,232

METHOD FOR PRODUCING OXIDE SUPERCONDUCTING COMPOSITE WIRE

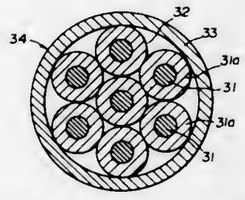
Osamu Kohno; Yoshimitsu Ikeno; Nobuyuki Sadakata; Masaru Sugimoto, and Mikio Nakagawa, all of Tokyo, Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 831,663, Feb. 6, 1992, Pat. No. 5,168,127, which is a continuation of Ser. No. 170,018, Mar. 18, 1988, abandoned. This application Aug. 20, 1992, Ser. No. 932,933

Claims priority, application Japan, Mar. 20, 1987, 62-67101; Apr. 28, 1987, 62-105569; May 21, 1987, 62-124553; May 23, 1987, 62-126691; Jul. 6, 1987, 62-168104; Oct. 16, 1987, 62-261172

Int. Cl.[5] H01B *12/10;* **H01L** *39/24*

U.S. Cl. 505—1 **11 Claims**



1. A method for producing an oxide superconducting composite wire, the wire having a superconducting member extending along the wire, an intermediate layer formed on a surface of the superconducting member to prevent oxygen atoms from passing therethrough, and an oxidizing metal support tube surrounding the outer surface of the intermediate layer such that the entire internal surface of the support tube is in contact with the outer surface of the intermediate layer, the method comprising the steps of:

(a) molding a powdered oxide superconductor material to form a wire;

(b) heat treating the wire in an oxygen atmosphere thereby forming the wire into an oxide superconducting member;

(c) forming the intermediate layer on a surface of the oxide superconducting member;

(d) bundling a plurality of the oxide superconducting members containing the intermediate layer;

(e) inserting the bundled oxide superconducting members into an oxidizing metal support tube; and

(f) drawing the product of step (e) to reduce its diameter and heat-treating it.

5,283,233

METHOD FOR PRODUCING A SUPERCONDUCTOR LAYER OF $YBA_2CU_3O_7$ ON A SAPPHIRE SUBSTRATE

Harald Schmidt; Klaudia Hradil, both of Munich, and Wolfram Wersing, Kirchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 3, 1991, Ser. No. 770,245

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034168

Int. Cl.[5] H01L *39/12;* **B05D** *3/02*

U.S. Cl. 505—1 **4 Claims**

1. A method for producing a superconductor layer of $YBa_2Cu_3O_7$ on a sapphire substrate comprising the steps of providing a sapphire substrate having a surface on a R-plane of the substrate material, heating the substrate to a temperature for epitaxial growth of a layer thereon, then epitaxially growing a yttrium-stabilized zirconium oxide layer on said surface of the



substrate; then epitaxially growing a yttrium oxide layer onto the yttrium-stabilized zirconium oxide layer; and then applying a superconductor layer of $YBa_2Cu_3O_7$ on the yttrium oxide layer by maintaining the temperature for epitaxial growth and by epitaxially growing the superconductor layer on the yttrium oxide layer.

5,283,234

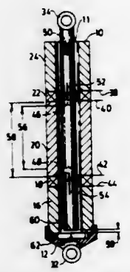
SUPERCONDUCTING SHOCK ABSORBER

Xingwu Wang, 113 N. Main St., Alfred, N.Y. 14802, and William F. Nichols, Campbell, N.Y., assignors to Xingwu Wang, Alfred, N.Y.

Continuation-in-part of Ser. No. 521,909, May 11, 1990, which is a continuation-in-part of Ser. No. 392,199, Aug. 10, 1989, Pat. No. 4,960,760. This application May 28, 1991, Ser. No. 705,929

Int. Cl.[5] F16C *39/06;* **F16F** *15/03*

U.S. Cl. 505—1 **12 Claims**



1. A contactless shock absorber assembly comprised of a chamber, means for supplying electrical current to said chamber, means for cooling said chamber, a piston disposed within said chamber, and means for damping the vibration of said piston, wherein:

(a) said chamber is formed by alternating superconductive sections comprised of superconductive material, and electromagnetic coils;

(b) the interior surfaces of said chamber define a symmetrical shape;

(c) said superconductive material has a first critical field value greater than about 10 Gauss and a second critical field value of greater than about 30 Tesla;

(d) said chamber is comprised of at least two electromagnetic coils, each of which is contiguous with at least one of said superconductive sections; and

(e) said piston is comprised of at least two nonmagnetic sections and at least two magnetic sections.

5,283,235

COMPOSITIONS CONTAINING ESTERS OF CARBOXY-CONTAINING INTERPOLYMERS AND METHODS OF USING THE SAME

James H. Bush; Richard W. Jahnke, both of Mentor, and Lawrence J. Kocurek, Willowick, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 17, 1992, Ser. No. 853,064

Int. Cl.[5] C09K *7/02*

U.S. Cl. 507—118 **37 Claims**

1. A water-in-oil emulsion composition comprising a mixture of a brine and a liquid hydrocarbon, and (A) a viscosity increasing amount of at least one ester of a carboxy-containing interpolymer or salt thereof, wherein the interpolymer is prepared by polymerizing an olefine selected from the group consisting of alpha-olefins and vinyl aromatic monomers with at least one alpha, beta-unsaturated carboxylic acylating agent, and provided that when the olefin is vinyl toluene, then the alpha, beta-unsaturated carboxylic acylating agent is an alpha, beta-unsaturated dicarboxylic acylating agent.

5,283,236

SYSTEMIC DELIVERY OF POLYPEPTIDES THROUGH THE EYE

George C. Y. Chiou, College Station, Tex., assignor to Orbon Corporation, Palo Alto, Calif.

Division of Ser. No. 412,979, Sep. 26, 1989, Pat. No. 5,182,258, which is a continuation-in-part of Ser. No. 326,200, Mar. 20, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 966,706

Int. Cl.[5] A61K *37/26, 37/64, 47/00*

U.S. Cl. 514—2 **4 Claims**

1. A pharmaceutical composition for systemic delivery by ocular administration and absorption in the nasolacrimal duct comprising:

a systemically active polypeptide in a pharmaceutically acceptable vehicle, the polypeptide being present at a concentration such that the tonicity of the composition is equivalent to the tonicity of 0.5% to 1.8% sodium chloride solution; and

a permeation-enhancing agent to enhance absorption of the polypeptide into the systemic circulation via the mucous membrane of the conjunctiva and nasolacrimal system.

5,283,237

USE IN PERFUMERY OF 2(1-VINYL-5-HEXENYL) CYCLOPENTANONE, A PROCESS FOR PREPARING SAME, AND PROCESS INTERMEDIATES

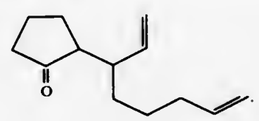
Richard M. Boden, Ocean; William J. Fylak, Loch Arbour; Joseph A. McGhie, South Orange, and Charles E. J. Beck, Summit, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 1, 1993, Ser. No. 84,603

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—8 **6 Claims**

1. A perfume composition comprising a perfume base and intimately admixed therewith an aroma augmenting, enhancing or imparting quantity of the 2(1-vinyl-5-hexenyl)cyclopentanone having the structure:



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5,283,238

METHODS OF TREATING CANCER USING MODIFIED C-REACTIVE PROTEIN

Lawrence A. Potempa, Deerfield; John J. Kresl, Evanston, and Byron E. Anderson, Morton Grove, all of Ill., assignors to Immtech International, Inc. and Northwestern University, both of Evanston, Ill.

Filed Apr. 24, 1992, Ser. No. 874,263
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—12 **14 Claims**

1. A method of treating carcinoma in a mammal comprising administering to the mammal an effective amount of modified-CRP in a pharmaceutically-acceptable carrier.

5,283,239

INHIBITOR OF HERPESVIRUS ABSORPTION

Junichi Koga, Kobe; Yasuhiro Ohashi, Noda, and Hajime Hiratani, Sennan, all of Japan, assignors to JCR Pharmaceuticals Co. Ltd., Hyogo and Noda Shokukin Kogyo Co., Ltd., Chiba, both of Japan

Continuation of Ser. No. 473,447, Feb. 1, 1990, abandoned. This application Jan. 14, 1992, Ser. No. 823,061
Claims priority, application Japan, Feb. 10, 1989, 1-32058
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—23 **12 Claims**

1. An inhibitor against the adsorption of herpes simplex to cells, consisting essentially of a fraction of LEM which is an aqueous extract of a mycelial culture of *Lentinus Edodes* and has a sugar composition composed of arabinose, xylose, glucose, mannose, galactose, fucose and rhamnose, said fraction having a molecular weight of 10,000 to 100,000 daltons and having a sugar composition composed of arabinose, xylose, glucose, mannose and galactose.

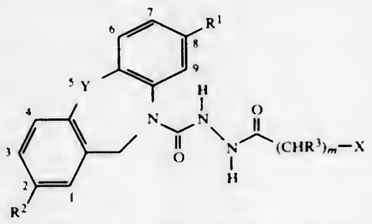
5,283,240

8-SUBSTITUTED-DIBENZ [B,F] [1,4] OXAZEPINE-10(11)-CARBOXYLIC ACID, SUBSTITUTED HYDRAZIDES FOR THE TREATMENT OF OSTEOPOROSIS

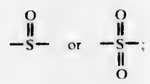
E. Ann Hallinan, Evanston; Robert K. Husa, and Karen B. Peterson, both of Vernon Hills, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 695,489, May 3, 1991, Pat. No. 5,182,272. This application Sep. 2, 1992, Ser. No. 939,261
Int. Cl.[5] A61K *31/55*
U.S. Cl. 514—80 **2 Claims**

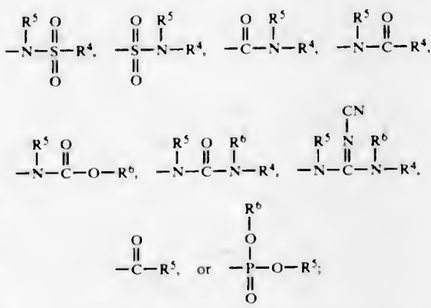
1. A method for treating osteoporosis in a mammal comprising administering to said mammal a therapeutically-effective amount of a compound having the formula:



or a pharmaceutically-acceptable salt thereof, wherein:
Y is oxygen, sulfur,



R[1] is hydrogen, halogen or —CF_3;
R[2] is hydrogen, halogen, —OH or —OCH_3;
R[3] is hydrogen, alkyl, aryl, alkyl-substituted aryl or aryl-substituted alkyl;
m is an integer of from 1 to 5;
X is



R[4] is hydrogen, alkyl, aryl, alkyl-substituted aryl, trifluoromethyl-substituted aryl or aryl-substituted alkyl;
R[5] and R[6] are each independently hydrogen, alkyl, aryl, alkyl-substituted aryl or aryl-substituted alkyl; and
"aryl" is selected from phenyl, thienyl, furanyl, pyridinyl, imidazolyl, pyrimidyl, (is)oxazolyl, thiazolyl, triazolyl, tetrazolyl or pyrrolyl.

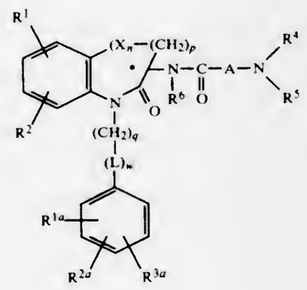
5,283,241

BENZO-FUSED LACTAMS PROMOTE RELEASE OF GROWTH HORMONE

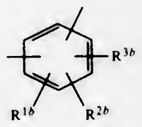
Richard J. Bochis, East Brunswick; Matthew J. Wyvratt, Mountainside, and William R. Schoen, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 28, 1992, Ser. No. 936,975
Int. Cl.[5] A61K *31/55*; C07D *209/34, 215/227, 223/16*
U.S. Cl. 514—183 **8 Claims**

1. A compound having the formula:



where
L is

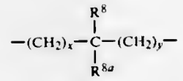


n is 0 or 1;

p is 0 to 3;
q is 0 to 4;
w is 0 or 1;
X is C=O or



m is 0 to 2;
R[1], R[2], R[1a], R[2a], R[1b], and R[2b] are independently hydrogen, halogen, C_1-C_7 alkyl, C_1-C_3 perfluoroalkyl, C_1-C_3 perfluoroalkoxy, —$S(O)_mR^{7a}$, cyano, nitro, $R^{7b}O(CH_2)_v$—, $R^{7b}COO(CH_2)_v$—, $R^{7b}OCO(CH_2)_w$, $R^4R^5N(CH_2)_v$—, $R^{7b}CON(R^4)(CH_2)_v$—, $R^4R^5NCO(CH_2)_v$—, phenyl or substituted phenyl where the substituents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, or hydroxy; R^{7a} and R^{7b} are independently hydrogen, C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl, where the substituents are phenyl or substituted phenyl; phenyl or substituted phenyl where the phenyl substituents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, or hydroxy and v is 0 to 3;
R[3a] and R[3b] are independently hydrogen, R[9], C_1-C_6 alkyl substituted with R[9], phenyl substituted with R[9], or phenoxy substituted with R[9] with the proviso that either R[3a] or R[3b] must be a substituent other than hydrogen;
R[9] is:
$R^{4b}R^{12a}NCON(R^{12b})(CH_2)_v$—,
$R^{4b}R^{12a}NCSN(R^{12b})(CH_2)_v$—,
$R^{4b}R^{12a}NN(R^{12b})CSN(R^{12c})(CH_2)_v$—,
$R^{4b}R^{12a}NN(R^{12b})CON(R^{12c})(CH_2)_v$—,
$R^{4b}R^{12a}NN(R^{12b})COO(CH_2)_v$—, $R^{4b}R^{12a}NCOO(CH_2)_v$— or $R^{13}OCON(R^{12b})(CH_2)_v$—, where v is 0 to 3;
R[12a], R[12b] and R[12c] are independently R^{5a}, OR^{5a} or COR^{5a}, R^{12a} and R^{12b}, or R^{12b} and R^{12c}, or R^{13} and R^{12b}, or R^{12a} and R^{4b} can be taken together to form —$(CH_2)_r$—B—$(CH_2)_s$— where B is CHR^1, O, $S(O)_m$ or NR^{10}, m is 0, 1 or 2, r and s are independently 0 to 3 and R^1 and R^{10} are as defined;
R^{13} is: C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl, where the substitutents are hydroxy, $NR^{10}R^{11}$, carboxy, phenyl or substituted phenyl; phenyl or substituted phenyl where the substituents on the phenyl are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;
and v is as defined above;
R^4, R^{4b}, R^5 and R^{5a} are independently hydrogen, phenyl, substituted phenyl, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_3-C_{10} alkenyl, substituted C_3-C_{10} alkenyl, C_3-C_{10} alkynyl, or substituted C_3-C_{10} alkynyl where the substituents on the phenyl, alkyl, alkenyl or alkynyl are from 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, R^1 substituted or R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, R^1 substituted or R^1, R^2 independently disubstituted phenyl, C_1-C_{20}-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl, or $—NR^{10}R^{11}$ where R^{10} and R^{11} are independently hydrogen, C_1-C_6 alkyl, phenyl C_1-C_6 alkyl, C_1-C_5-alkoxycarbonyl or C_1-C_5-alkanoyl-C_1-C_6 alkyl; or
R^4 and R^5 can be taken together to form —$(CH_2)_rB(CH_2)_s$— where B is CHR^1, O, $S(O)_m$ or N—R^{10}, r and s are independently 1 to 3, and R^1 and R^{10} are as defined above;
R^6 is hydrogen, C_1-C_{10} alkyl, phenyl or phenyl C_1-C_{10} alkyl;
A is



where x and y are independently 0–3;
R^8 and R^{8a} are independently hydrogen, C_1-C_{10} alkyl, trifluoromethyl, phenyl, substituted C_1-C_{10} alkyl where the substituents are from 1 to 3 of imidazolyl, indolyl, hydroxy, fluoro, $S(O)_mR^{7a}$, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, R^1 substituted or R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, R^1 substituted or R^1, R^2 independently disubstituted phenyl, C_1-C_5-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl, or $—NR^{10}R^{11}$ where R^{10} and R^{11} are as defined above; or
R^8 and R^{8a} can be taken together to form —$(CH_2)_t$— where t is 2 to 6; and R^8 and R^{8a} can independently be joined to one or both of R^4 and R^5 to form alkylene bridges between the terminal nitrogen and the alkyl portion of the A group wherein the bridge contains from 1 to 5 carbon atoms;
and pharmaceutically acceptable salts thereof.

7. A method for increasing levels of endogenous growth hormone in a human or an animal which comprises administering to such human or animal an effective amount of a compound of claim 1.

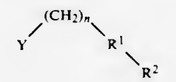
5,283,242

SUBSTITUTED BENZIMIDAZOLES AND QUINAZOLINES AS ANTIHYPERTENSIVES

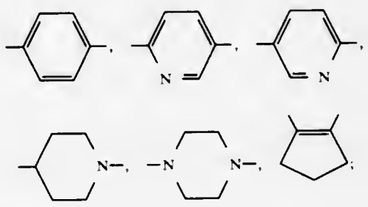
John W. Ellingboe, Princeton, N.J., assignor to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 782,845, Oct. 24, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 975,198
Int. Cl.[5] C07D *241/04, 239/94*; A61K *31/495, 31/50*
U.S. Cl. 514—186 **6 Claims**

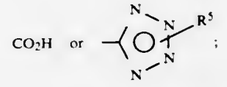
1. A compound having the formula



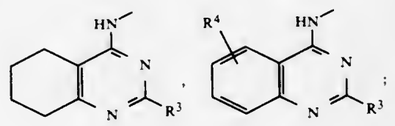
wherein
R^1 is



wherein X is

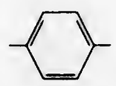


wherein R^5 is hydrogen, alkyl of 1–6 carbon atoms, benzyl, triphenylmethyl, or Sn(alkyl of 1–6 carbon atoms)$_3$;
n is 1 to 3;
Y is

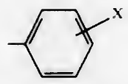


VOL 1159 ISS 1 FE 1 1994 UMI

wherein R^3 is hydrogen, perfluoro alkyl of 1-6 carbon atoms, trifluoro-methylalkyl of 1-6 carbon atoms, or alkyl of 1-6 carbon atoms; and R^4 is hydrogen or alkyl of 1-6 carbon atoms;
with the proviso that when R^1 is



then R^2 cannot be



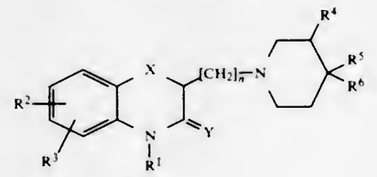
wherein X is as defined above;
and the pharmaceutically acceptable salts thereof.

5,283,243
PIPERIDINOALKYLBENZOXAZINE AND PIPERIDINOALKYLBENZOTHIAZINE COMPOUNDS, AND MEDICAMENTS CONTAINING THEM

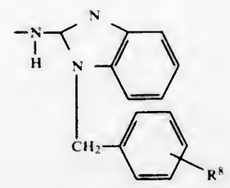
Daniel Jasserand, Lyon; Francois Floc', Limonest, and Richard White, Bourg en Bresse, all of France, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 15, 1991, Ser. No. 792,425
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037426
Int. Cl.[5] C07D *265/36, 279/16;* **A61K** *31/54, 31/535*
U.S. Cl. 514—224.5 **9 Claims**

1. A compound corresponding to the formula I



wherein
X is oxygen or sulfur,
Y is oxygen or sulfur
R^1 is hydrogen or lower alkyl,
R^2 is hydrogen, lower alkyl, halogen, lower alkoxy, hydroxy, nitro or trifluoromethyl, and
R^3 is hydrogen, lower alkyl, halogen or lower alkoxy, or
R^2 and R^3 are bonded to adjacent carbon atoms and together form an alkylenedioxy group having 1-2 carbon atoms,
n is an integer from 0 to 4,
R^4 is hydrogen, and
R^5 is hydrogen, hydroxy or cyano, or
R^4 and R^5 together form a bond,
R^6 is an A—R^7 group, wherein R^7 is a phenyl group substituted by 0 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen and trifluoromethyl, and A is a —CH_2— group, a CO group or a bond, or
R^6 is a group corresponding to the formula a



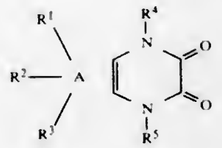
wherein R^8 is halogen,
and physiologically acceptable acid addition salts thereof.

5,283,244
FUSED PYRAZINE DERIVATIVES

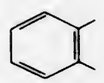
Shuichi Sakamoto, Ushiku; Junya Ohmori, Tsukuba; Hirokazu Kubota, Edosaki; Masao Sasamata, Ibaraki; Masamichi Okada, Tsukuba, and Kazuyuki Hidaka, Kashiwa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01498, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/07847, PCT Pub. Date May 14, 1992
PCT Filed Nov. 1, 1991, Ser. No. 50,225
Claims priority, application Japan, Nov. 6, 1990, 2-300879; Jan. 11, 1991, 3-069592; Mar. 29, 1991, 3-133828; Jun. 27, 1991, 3-183248
Int. Cl.[5] A61K *31/495, 31/535;* **C07D** *403/02, 413/14*
U.S. Cl. 514—249 **14 Claims**

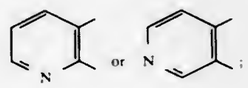
1. A pyrazine derivative represented by the general formula:



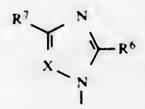
wherein ring A represents a benzene ring of the formula



or a pyridine ring of the formula



R^1 represents



(X represents a nitrogen atom, or a carbon atom substituted by R^8, R^6 represents a hydrogen atom or a lower alkyl group, R^7 and R^8 are the same or different and each represents hydrogen,

lower alkyl, nitro or phenyl, or R^7 and R^8 are combined together to represent butadienylene (—CH=CH—CH=CH—) or 1,4-butylene (—CH_2—CH_2—CH_2—CH_2—)); R^2 and R^3 are the same or different and each represents hydrogen, fluoro, cyano, lower acyl, nitro, unsubstituted or fluorine-substituted lower alkyl, morpholino, or one of said species of R^1 which may be either the same as or different from R^1; R^4 and R^5 are the same or different and each represents hydrogen, hydroxyl, C_{1-10} straight-chain or branched alkyl, C_{5-8} cycloalkyl which may be substituted by amino, a nitrogen-containing 5- or 6-membered heterocyclic group which may be substituted by lower alkyl and which may be bridged by 1 to 3 methylene group(s), phenyl, or Y-substituted C_{1-6} straight-chain or branched alkyl; Y represents hydroxyl, lower acyloxy, fluorine-substituted methyl, C_{5-8} cycloalkyl, tetrahydrofuryl, carboxyl, lower alkoxycarbonyl, or



(R^9 and R^{10} are the same or different and each represents hydrogen or lower alkyl, or alternatively R^9 and R^{10} are combined together to represent a 5- or 6-membered cyclic group which may contain oxygen), or a pyridine ring of the formula

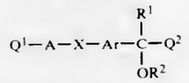
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5,283,245
HETEROCYCLIC THIAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID DERIVATIVES

Graham C. Crawley, and Martin P. Edwards, both of Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

Division of Ser. No. 463,267, Jan. 10, 1990, Pat. No. 5,209,127.
This application Nov. 18, 1991, Ser. No. 793,557
Claims priority, application European Pat. Off., Jan. 30, 1989, 894002518
Int. Cl.[5] A01N *43/58, 43/42;* **C07D** *215/16, 215/36*
U.S. Cl. 514—249 **8 Claims**

1. A thiazole of the formula I



wherein Q^1 is a 10-membered bicyclic heterocyclic moiety containing one or two nitrogen atoms selected from quinolyl, isoquinolyl, 1,2-dihydro-2-oxoquinolin-3-yl, 1,2-dihydro-2-oxoquinolin-6-yl quinazolinyl and quinoxalinyl which may optionally bear one, two or three substituents selected from halogeno, hydroxy, oxo, cyano, (1-4C)alkyl, (1-4C)alkoxy, fluoro-(1-4C)alkyl, (1-4C)alkylamino-(1-4C)alkyl and di-[(1-4C)alkyl]amino-(1-4C)alkyl;
wherein A is (1-6C)alkylene, (3-6C)alkenylene, (3-6C)alkynylene or cyclo(3-6C)alkylene;
wherein X is oxy, thio, sulphinyl, sulphonyl or imino;
wherein Ar is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, carboxy, cyano, carbamoyl, (1-4C)alkyl, (1-4C)alkoxy, (1-4C)alkylthio, (1-4C)alkylsulphinyl, (1-4C)alkylsulphonyl, (1-4C)alkylamino, di-[(1-4C)alkyl]amino, (1-4C)alkoxycarbonyl, N-[(1-4C)alkyl]carbamoyl, N,N-di-[(1-4C)alkyl]carbamoyl, (2-4C)alkanoylamino, hydroxy-(2-4C)alkoxy, (1-4C)alkoxy-(2-4C)alkoxy, amino-(2-4C)alkoxy, cyano-(1-4C)alkoxy, carbamoyl-(1-4C)alkoxy, N-[(1-4C)alkyl]carbamoyl-(1-4C)alkoxy, N,N-di-[(1-4C)alkyl]carbamoyl-(1-4C)alkoxy, (1-4C)alkylamino-(2-4C)alkoxy, di-[(1-4C)alkyl]amino-(2-4C)alkoxy, (1-4C)alkoxycarbonyl-(1-4C)alkoxy, fluoro-(1-4C)alkyl, hydroxy-(1-4C)alkyl, amino-(1-4C)alkyl, cyano-(1-4C)alkyl, (1-4C)alkoxy-(1-4C)alkyl, (1-4C)alkylamino-(1-4C)alkyl, di-[(1-4C)alkyl]amino-(1-4C)alkyl and (2-4C)alkanoylamino-(1-4C)alkyl,
wherein R^1 is (1-6C)alkyl, (2-6C)alkenyl, (2-6C)alkynyl, fluoro-(1-4C)alkyl, cyano(1-4C)alkyl, hydroxy-(1-4C)alkyl, (1-4C)alkoxy-(1-4C)alkyl and (2-4C)alkanoyloxy-(1-4C)alkyl; wherein R^2 is hydrogen, (1-6C)alkyl, (3-6C-)alkenyl, (3-6C)alkynyl, (1-4C)alkoxycarbonyl-(1-4C)alkyl, carboxy-(1-4C)alkyl, carbamoyl-(1-4C)alkyl, cyano(-1-4C)alkyl or (2-4C)alkanoyl or R^2 is benzoyl which may optionally bear a substituent selected from halogeno, (1-4C)alkyl and (1-4C)alkoxy; and
wherein Q^2 is thiazolyl which may optionally bear one or two substituents selected from halogeno, amino, nitro, cyano, carbamoyl, (1-4C)alkyl, (1-4C)alkoxy, (1-4C)alkylamino, di-[(1-4C)alkyl]amino, (1-4C)alkoxycarbonyl, N-[(1-4C)alkyl]carbamoyl, N,N-di-[(1-4C)alkyl]carbamoyl, (2-4C)alkanoylamino, fluoro-(1-4C)alkyl and hydroxy-(1-4C)alkyl;
or a pharmaceutically-acceptable salt thereof.

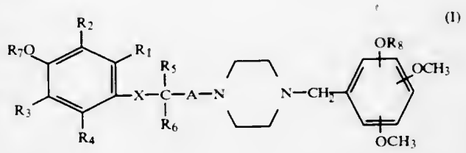
5,283,246
TRIMETAZIDINE COMPOUNDS

Gilbert Regnier; Jean-Paul Vilaine, both of Chatenay Malabry; Nicole Villeneuve, Rueil Malmaison; Jean-Pierre Bidouard, Chilly Mazarin; Jean-Pierre Iliou, Puteaux, and Albert Lenaers, Triel sur Seine, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Sep. 17, 1992, Ser. No. 946,933
Claims priority, application France, Sep. 18, 1991, 91 11469
Int. Cl.[5] A61K *31/495;* **C07D** *295/088, 295/092, 405/06*
U.S. Cl. 514—255 **15 Claims**

1. A piperazine compound selected from those of the formula I:

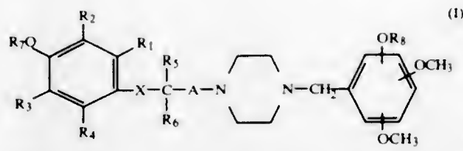
(1)



wherein:
R_1 and R_4, which are the same or different, each represents hydrogen, methyl, or methoxy;
R_2 and R_3, which are the same or different, each represents straight-chain or branched alkyl or alkoxy each having 1 to 6 carbon atoms inclusive;
R_5 and R_6, which are the same or different, each represents hydrogen or methyl;
R_7 represents hydrogen, of formula R'_7—CO— wherein R'_7 represents straight-chain or branched alkyl having 1 to 5 carbon atoms inclusive, or R'_7 represents phenyl or phenylmethyl, each of which is optionally substituted in the benzene ring by straight-chain or branched alkyl or alkoxy each having 1 to 5 carbon atoms inclusive;
R_8 represents hydrogen or straight-chain or branched alkyl having 1 to 5 carbon atoms inclusive;
X represents a single bond, oxygen, or sulphur, and
A represents a straight-chain or branched hydrocarbon chain having 2 to 6 carbon atoms inclusive and
when A contains a chiral carbon atom, its corresponding enantiomers and diastereoisomers; and
its physiologically-tolerable salts with a pharmaceutically-acceptable acid.

15. A method for treating a living animal body afflicted with a condition selected from ischaemic pathologies and peripheral vascular pathology comprising the step of administering to the said body an amount of a trimetazidine compound selected from those of the formula

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wherein:

R_1 and R_4, which are the same or different, each represents hydrogen, methyl, or methoxy;

R_2 and R_3, which are the same or different, each represents straight-chain or branched alkyl or alkoxy each having 1 to 6 carbon atoms inclusive;

R_5 and R_6, which are the same or different, each represents hydrogen or methyl;

R_7 represents hydrogen, acyl of formula R'7—CO— wherein R'7 represents straight-cain or branched alkyl having 1 to 5 carbon atoms inclusive, or R'7 represents phenyl or phenylmethyl, each of which is optionally substituted in the benzene ring by straight-cain or branched alkyl or alkoxy each having 1 to 5 carbon atoms inclusive;

R_8 represents hydrogen or straight-chain or branched alkyl having 1 to 5 carbon atoms inclusive;

X represents a single bond, oxygen, or sulphur, and

A represents a straight-chain or branched hydrocarbon chain having 2 to 6 carbon atoms inclusive which is optionally substituted by hydroxy; and when A contains a chiral carbon atom, its corresponding enantiomers and diastereoisomers; and its physiologically-tolerable salts with a pharmaceutically-acceptable acid, which is effective for alleviation of the said condition.

5,283,247

ANTICONVULSANT SUBSTITUTED QUINAZOLONES

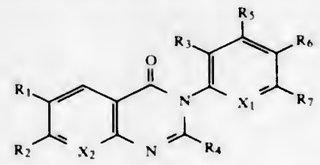
Chandradhar Dwivedi, and Gary W. Omodt, both of Brookings, S. Dak., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 651,436, Feb. 6, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 947,985

Int. Cl.[5] **A61K** *31/505;* **C07D** *471/04*

U.S. Cl. 514—259 **18 Claims**

1. An anticonvulsant composition with limited or no sedative or hypnotic effect for treating or preventing convulsions in mammals comprising, in a pharmaceutically acceptable carrier, an amount of the compound represented by the following formula or pharmaceutically acceptable salts of said compound effective for said treatment or prevention:



wherein X_1 is N or CH, X_2 is N or CH, R_1 and R_2 are H, NO_2, or NH_2 except that when one of R_1 and R_2 is NO_2 or NH_2 the other is H, R_3 and R_4 are alkyl with 1-5 C atoms, and R_5, R_6, and R_7 are H or halogen, provided that when X_1 is N, X_2 is CH.

5,283,248

AMINO SUBSTITUTED PYRIMIDO[1,6-2]BENZIMIDAZOLES

Christian Hubschwerlen, Durmenach, France; Ivan Kompis, Oberwil, Switzerland, and Jean-Luc Specklin, Kembs-Loechle, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

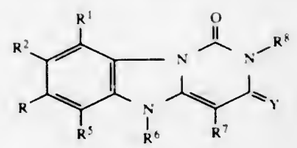
Continuation-in-part of Ser. No. 708,642, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 612,333, Nov. 13, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 904,245

Claims priority, application Switzerland, Nov. 21, 1989, 4165/89; Aug. 17, 1990, 2688/90; Aug. 30, 1990, 2817/90

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/04, 235/16;* **C07C** *275/40*

U.S. Cl. 514—267 **70 Claims**

1. A compound of the formula



I

wherein

R^1 is hydrogen, halogen or amino,

R^2 is halogen,

R is a lower alkyl-substituted 4-pyridyl group or a group R^3R^4N— in which R^3 and R^4 each are hydrogen or lower alkyl, or R^3 and R^4 together are a group of the formula $—(CH_2)_n—X—(CH_2)_m—$ or $—CH_2)_p—$ which is unsubstituted or substituted by lower alkyl, amino, lower aminoalkyl, mono- or di(lower alkyl)amino-lower alkyl, oxo or the group —COOR^a or —CONR'R",

n and m each are the number

p is the number 4, 5 or 6,

X is the group —NR'"—,

R^a is hydrogen, lower alkyl, lower alkenyl, phenyl or phenyl which is mono-, di- or trisubstituted by halogen, lower alkyl or hydroxy,

R' and R" each are hydrogen or lower alkyl,

R'" is hydrogen, hydroxy, lower alkyl or lower aminoalkanoyl,

R^5 is hydrogen, halogen, lower alkoxy or amino,

R^6 is lower alkyl, lower cycloalkyl, lower haloalkyl, phenyl or phenyl which is mono-, di- or trisubstituted by halogen, lower alkyl, hydroxy or lower alkoxy,

R^7 is hydrogen, lower alkyl or carboxy,

R^8 is hydrogen, hydroxy, lower alkoxy, amino, lower alkylamino or di-lower alkylamino and

Y is an oxygen or sulfur atom,

or a pharmaceutically acceptable salt thereof.

5,283,249

ANTICOCCIDIAL COMBINATIONS COMPRISING NICARBAZIN AND SEMDURAMICIN

Jesse E. Shively, Terre Haute, Ind., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,178

Int. Cl.[5] **A01N** *43/16, 43/54*

U.S. Cl. 514—274 **4 Claims**

1. A method for controlling coccidiosis in poultry comprising administering to said poultry a synergistically effective mixture of semduramicin and nicarbazin at the concentration of 40 to 75 ppm of said mixture in a poultry feed stuff, said mixture containing semduramicin and nicarbazin in the ratio of one part semduramicin to 2 to 3 parts nicarbazin.

5,283,250

QUINOLINYL/QUINOLINYLALKYL-N-TERMINAL AMINO HYDROXY

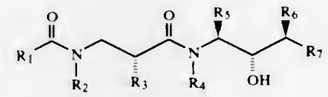
Gunnar J. Hanson, Skokie; John S. Baran, Winnetka; Dave Weissing, Lisle, and Mark Russell, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 445,257, Dec. 4, 1989, abandoned. This application Aug. 2, 1991, Ser. No. 739,355

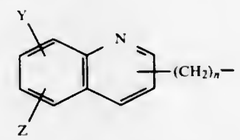
Int. Cl.[5] **A61K** *31/47;* **C07D** *215/38*

U.S. Cl. 514—311 **15 Claims**

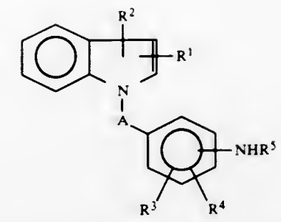
1. Compound of the formula



wherein R_1 is selected from heteroaryl and heteroaralkyl groups represented by



wherein each of Y and Z is independently selected from hydrido, lower alkyl, hydroxy, halo, alkoxy, carboxy, amino, alkylamino, dialkylamino, aryl, sulfhydryl and thioalkyl; wherein n is a number selected from zero through five, inclusive; wherein each of R_2 and R_4 is independently selected from hydrido and lower alkyl; wherein R_3 is selected from hydrido, alkyl, benzyl, cycloalkyl, cycloalkylalkyl, alkoxyalkyl and alkylthioalkyl; wherein R_5 is selected from cycloalkyl, pheyl, lower alkyl, cycloalkylalkyl and phenylalkyl; wherein R_6 is selected from hydrido, hydroxy, alkoxy, amino, alkylamino, dialkylamino, lower alkyl and cycloalkyl; wherein R_7 is selected from hydrido, alkyl, haloalkyl, cycloalkylalkyl, alkylcycloalkyl, alkylcycloalkenyl and alkoxycarbonyl; wherein R_6 and R_7 may further be taken together to form a carbocyclic ring consisting of from three to about eight ring members; and wherein any of the foregoing R_1 through R_7 substituents having a substitutable position may be substituted with one or more groups selected from alkyl, alkoxy, halo, haloalkyl, alkenyl, alkynyl and cyano; or a pharmaceutically-acceptable salt thereof.



where

R^1 is carboxyl(lower)alkyl or protected carboxy(lower)alkyl,

R^2 is hydrogen, lower alkyl or halogen,

R^3 and R^4 are each hydrogen or lower alkyl,

R^5 is ar(lower)alkyl which may have substituent(s) selected from lower alkyl and halogen, and

A is carbonyl, sulfonyl or lower alkylene, wherein lower alkyl and lower alkylene are from 1 to about 6 carbon atoms, or a pharmaceutically acceptable salt thereof.

5,283,252

THIAZOLYL-SUBSTITUTED QUINOLYLMETHOXYPHENYLACETIC ACID DERIVATIVES

Siegfried Raddatz, Cologne; Klaus-Helmut Mohrs; Michael Matzke, both of Wuppertal; Romanis Fruchtmann, Cologne; Armin Hatzelmann, Constance, and Reiner Müller-Peddinghaus, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

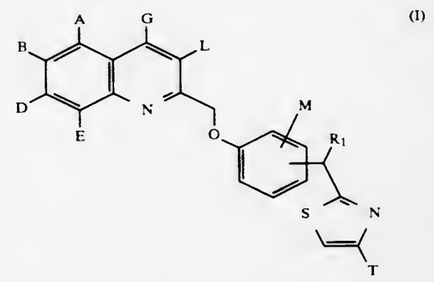
Filed Nov. 23, 1992, Ser. No. 979,755

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139751

Int. Cl.[5] **C07D** *417/10;* **A61K** *31/425*

U.S. Cl. 514—314 **9 Claims**

1. A thiazolyl-substituted quinolylmethoxyphenylacetic acid derivative of the formula



(I)

in which

A, B, D, E, G, L and M are identical or different and represent hydrogen, hydroxyl, halogen, cyano, carboxyl, nitro, trifluoromethyl or trifluoromethoxy, or represent straight-chain or branched alkyl or alkoxy having in each case up to 8 carbon atoms, or represent aryl having 6 to 10 carbon atoms, which is optionally substituted by halogen, hydroxyl, nitro or cyano,

R^1 represents straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by phenyl or cycloalkyl having 3 to 12 carbon atoms, or represents cycloalkyl having 3 to 12 carbon atoms, which is optionally substituted by straight-chain or branched alkyl having up to 8 carbon atoms, and

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5,283,251

INDOLE DERIVATIVES

Satoshi Okada; Kozo Sawada; Natsuko Kayakiri; Yuki Saitoh, all of Tsukuba; Hirokazu Tanaka, Tsuchiura, and Masashi Hashimoto, Tokyo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 920,384

Claims priority, application United Kingdom, Feb. 26, 1990, 9004301

Int. Cl.[5] **G61K** *31/405;* **C07D** *209/18, 209/26*

U.S. Cl. 514—415 **9 Claims**

1. A compound of the formula:

VOL 1159 ISS 1 FE 1 1994 UMI

T represents straight-chain or branched alkyl having up to 6 carbon atoms, or represents the group of the formula



wherein

R^2 denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, or denotes benzyl or cycloalkyl having 3 to 12 carbon atoms and

R^3 denotes a radical of the formula $—OR^4$ or $—NR^5—SO_2—R^6$, wherein

R^4 denotes hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl,

R^5 denotes hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or benzyl and

R^6 denotes aryl having 6 to 10 carbon atoms, which is optionally substituted up to twice in an identical or different manner by halogen, cyano, hydroxyl, nitro, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, or by straight-chain or branched alkyl or alkoxy having in each case up to 8 carbon atoms, or denotes straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by phenyl, which in turn can be substituted by halogen, cyano, nitro, trifluoromethyl, trifluoromethoxy, trifluoromethylthio or hydroxyl or by straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms,

or a pharmaceutically acceptable salt thereof.

5,283,253

FURYL OR THIENYL CARBONYL SUBSTITUTED TAXANES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

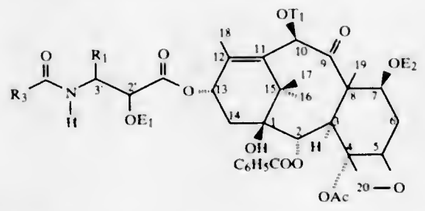
Robert A. Holton; Kasthuri Rengan, and Hossain Nadizadeh, all of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Continuation-in-part of Ser. No. 949,107, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 863,849, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,955, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,723

Int. Cl.[5] **A61K** *31/34, 31/38;* **C07D** *305/14*

U.S. Cl. 514—444 **6 Claims**

1. A taxane derivative of the formula



wherein

R_1 is phenyl or p-nitrophenyl,

R_3 is furyl or thienyl,

T_1 is hydrogen, hydroxyl protecting group, or $—COT_2$,

T_2 is H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or monocylic aryl,

Ac is acetyl, and

E_1 and E_2 are independently selected from hydrogen and hydroxyl protecting groups.

5,283,254

2-(IMIDAZOL-1-YL)-2-BENZYLETHYLDIENE-AMINOXYALKANOIC ACID DERIVATIVES

Paolo Cozzi; Maria Menichincheri, both of Milan; Arsenia Rossi, Dalmine; Corrado Ferti, Barlassina, and Patricia Salvati, Arese, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Filed Jul. 22, 1992, Ser. No. 917,245

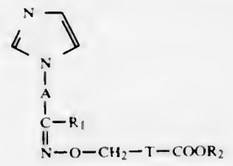
Claims priority, application United Kingdom, Jul. 30, 1991, 9116470.7

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *31/415;* **C07D** *233/60*

U.S. Cl. 514—399 **3 Claims**

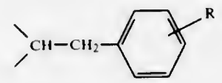
1. A compound of formula (I)



(I)

wherein

A is a divalent group of formula



in which

R is hydrogen, halogen, CF_3, C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl or cyano;

R_1 is a) phenyl unsubstituted or substituted by halogen, C_1–C_4 alkoxy, CF_3 or C_1–C_4 alkylsulfonyl; b) cyclohexyl; or c) a straight or branched C_1–C_6 alkyl group;

T is a branched or straight C_3–C_5 alkylene chain;

R_2 is hydrogen or C_1–C_4 alkyl; or the pharmaceutically acceptable salts thereof.

5,283,255

WAVELENGTH-SPECIFIC CYTOTOXIC AGENTS

Julia G. Levy; David Dolphin; Jack J. Chow, and Ethan Sternberg, all of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Division of Ser. No. 718,393, Jun. 20, 1991, Pat. No. 5,171,749, which is a continuation-in-part of Ser. No. 414,201, Sep. 28, 1989, Pat. No. 5,095,030, which is a continuation-in-part of Ser. No. 221,161, Jul. 19, 1988, Pat. No. 4,920,143, which is a continuation-in-part of Ser. No. 41,680, Apr. 23, 1987, Pat. No. 4,883,790, which is a continuation-in-part of Ser. No. 5,204, Jan. 20, 1987, abandoned. This application Sep. 11, 1992, Ser. No. 943,895

The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *31/40*

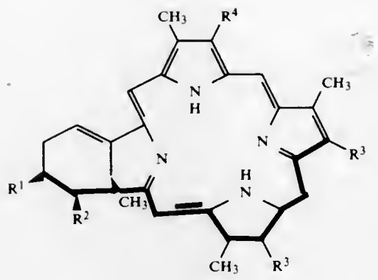
U.S. Cl. 514—410 **26 Claims**

1. A method to detect, photosensitize, destroy or impair the functioning of target biological material which comprises contacting said target with an effective amount of a hydromonobenzoporphyrin (Gp) having a light absorption maximum between 670–780 nm;

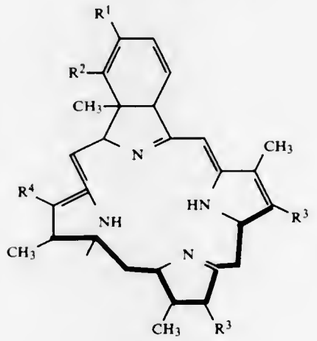
wherein the Gp is selected from the group consisting of

-continued

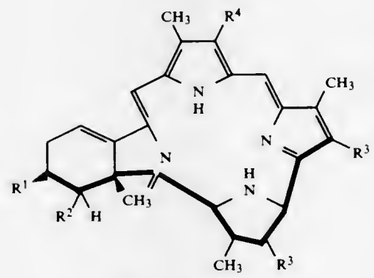
1



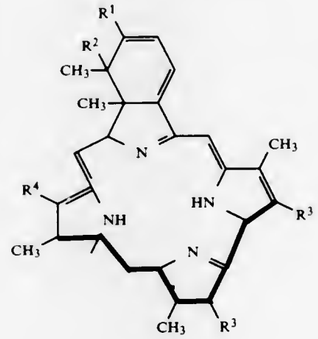
2



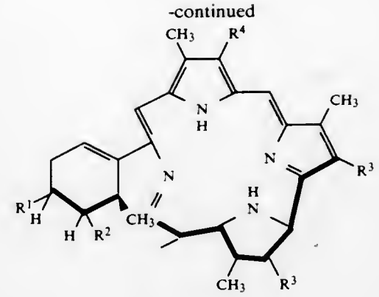
3



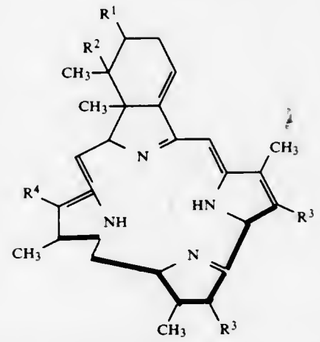
4



5



6



and mixtures thereof and the metalated and labeled forms thereof,

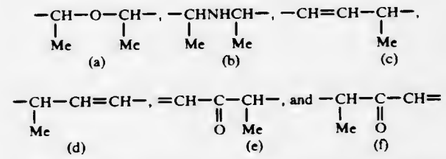
wherein each R^1 and R^2 independently selected from the group consisting of carbalkoxy (2–6C), alkyl (1–6C) sulfonyl, Aryl (6–10C) sulfonyl, aryl (6–10C); cyano; and $—CONR^5CO—$ wherein R^5 is aryl (6–10C) or alkyl (1–6C)

each R^3 is independently carboxyalkyl (2–6C) or a salt, amide, ester or acylhydrazone thereof, or is alkyl (1–6C); and

R^4 is $CHCH_2$, $CH_2OR^{4'}$, —CHO, $—COOR^4CH(OR^{4'})CH_3$, $CH(OR^{4'})CH_2OR^{4'}$, $—CH(SR^{4'})CH_3$, $—CH(NR^2)CH_3$, $—CH(CN)CH_3$, $—CH(COOR^{4'})CH_3$, $—CH((OOCR^{4'})CH_3$, —CH(halo)CH or $—CH(halo)CH_2$-(halo), wherein $R^{4'}$ is H, alkyl (1–6C) optionally substituted with a hydrophilic substituent, or

wherein R^4 is an organic noninterfering group of <12C resulting from direct or indirect derivatization of vinyl, or

wherein R^4 consists of 1–3 tetrapyrrole-type nuclei of the formula —L—P wherein —L— is selected from the group consisting of

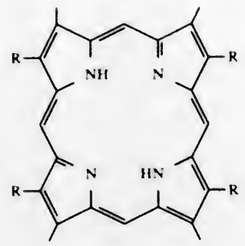


(a) (b) (c)

(d) (e) (f)

and P is selected from the group consisting of Gp which is of the formula 1–6 but lacking R^4 and conjugated through the position shown as occupied by R^4 to L, and a porphyrin of the formula:

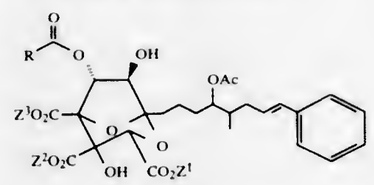
VOL 1159 ISS 1 FE 1 1994 UMI



wherein each R is independently H or lower alkyl (1–4C);
wherein two of the bonds shown as unoccupied on adjacent rings are joined to R^3 and one of the remaining bonds shown as unoccupied is joined to R^4 and the other to L;
with the proviso that if R^4 is $CHCH_2$, both R^3 cannot be carbalkoxyethyl;
and irradiating said target with light absorbed by said Gp.

5,283,256
CHOLESTEROL-LOWERING AGENTS
Claude Dufresne, East Brunswick, N.J.; Josep Guarro, Tarragona, Spain; Leeyuan Huang, Watchung, N.J.; Yu L. Kong, Edison, N.J.; Russell B. Lingham, Watchung, N.J.; Maria S. Meinz; Keith C. Silverman, both of Somerset, N.J., and Sheo B. Singh, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jul. 22, 1992, Ser. No. 918,727
Int. Cl.[5] A61K *31/335;* **C07D** *319/08*
U.S. Cl. 514—452 **18 Claims**

1. A compound of structural formula (I)



(I)

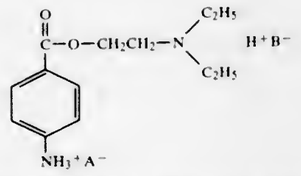
wherein R is $-(CH_2)_nCH_3$ wherein n is 6 or 8; and
Z^1, Z^2 and Z^3 are each independently
a) H;
b) C_{1-5} alkyl; or
c) C_{1-5} alkyl substituted with
i) phenyl, or
ii) phenyl substituted with methyl,
or a pharmaceutically acceptable salt of a compound of formula (I).

5,283,257
METHOD OF TREATING HYPERPROLIFERATIVE VASCULAR DISEASE
Clare R. Gregory, Davis, and Randall E. Morris, Los Altos, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Jul. 10, 1992, Ser. No. 911,681
Int. Cl.[5] A61K *31/35*
U.S. Cl. 514—458 **9 Claims**

1. A method of preventing or treating hyperproliferative vascular disease in a susceptible mammal, comprising
administering to said mammal an amount of mycophenolic acid effective to inhibit intimal thickening in said mammal.

5,283,258
PROCAINE DOUBLE SALT COMPLEXES
Robert Koch, P.O. Box 565, West Jordan, Utah 84084
Division of Ser. No. 322,917, Mar. 14, 1989, Pat. No. 5,162,344, which is a continuation-in-part of Ser. No. 46,241, May 4, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,469
Int. Cl.[5] A61K *31/34, 31/24*
U.S. Cl. 514—474 **8 Claims**

1. A double salt complex formed from the reaction between stoichiometric amounts of a procaine salt and an organic acid, said double salt complex having the formula:



where B is the anion of an acid selected from the group consisting of hydrochloric, hydrobromic, boric, nitric, and butyric acids and A is the anion of an organic acid selected from the group consisting of ascorbic acid and citric acid.

5,283,259
METHOD FOR THE PREVENTION OF ECTOPARASITE-MEDIATED PATHOGEN TRANSMISSION
Thomas N. Mather, Wakefield, R.I., assignor to The President and Fellows of Harvard College, Cambridge, Mass.
Filed Sep. 11, 1992, Ser. No. 943,515
Int. Cl.[5] A01N *53/00, 65/00*
U.S. Cl. 514—531 **10 Claims**

1. A method for preventing the transmission of a tick-borne pathogen to a mammal exposed to predation by a tick infected with said pathogen, wherein a time delay exists between attachment of said infected tick to said mammal and transmission of said pathogen from said infected tick to said mammal, the method comprising:
applying to said mammal an ectoparacide to kill said infected tick, attached to said mammal, without necessarily finding or mechanically detaching said infected tick, at a time after the exposure of said mammal to said infected tick, and within said time delay, thereby to prevent transmission of said pathogen from said infected tick to said mammal, and
repeating said applying step within said time delay after each said exposure.

5,283,260
METHOD FOR REDUCING INSULIN RESISTANCE IN MAMMALS
Robert H. Miller, Worthington; Nickki L. Parlet, Columbus; Kent L. Cipollo, Westerville, all of Ohio; Madhup K. Dhaon, Mundelein, Ill.; John A. Houblon, Vernon Hills, Ill., and Edwin O. Lundell, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Division of Ser. No. 868,891, Apr. 16, 1992, Pat. No. 5,256,697. This application Apr. 8, 1993, Ser. No. 43,720
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—563 **4 Claims**

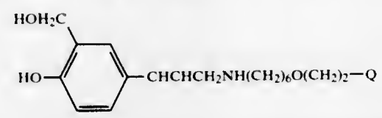
1. A method for reducing insulin resistance in mammals, as measured with a glucose tolerance test, which method comprises orally ingesting a therapeutically effective amount of a pyruvate precursor prior to administering a glucose tolerance test, said precursor being in the form of a covalently linked pyruvyl-amino acid compound, said oral ingestion of said pyruvyl-amino acid compound causing a reduction in insulin resistance as exhibited in the glucose tolerance test than is exhibited in the absence of the administration of the pyruvate precursor.

5,283,261
USE OF NIMESULIDE N THE TREATMENT OF CATARACT
Filippo Drago, Milan, Italy, assignor to LPB Istituto Farmaceutico, Milan, Italy
Filed Sep. 25, 1992, Ser. No. 951,405
Claims priority, application Italy, Sep. 20, 1991, MI91A002509
Int. Cl.[5] A61K *31/18*
U.S. Cl. 514—605 **3 Claims**

1. A method for treating cataracts in a patient in need thereof which comprises administering an effective amount of nimesulide.

5,283,262
PHENETHANOLAMINE DERIVATIVES
William L. Mitchell, London; Ian F. Skidmore, Welwyn; Lawrence H. C. Lunts, Broxbourne; Harry Finch, Letchworth; Alan Naylor, Royston, and David Hartley, Knebworth, all of England, assignors to Glaxo Group Limited, London, England
Division of Ser. No. 622,506, Dec. 5, 1990, Pat. No. 5,109,023, which is a continuation of Ser. No. 270,945, Nov. 14, 1988, Pat. No. 4,997,986. This application Dec. 23, 1991, Ser. No. 812,757
Claims priority, application United Kingdom, Nov. 13, 1987, 8726586; Sep. 9, 1988, 8821179
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—651 **3 Claims**

1. A method of treating a patient suffering from an inflammatory or allergic skin disease, which method comprises administering to said patient an effective amount to alleviate said condition of at least one compound of the formula.



or a physiologically acceptable salt or solvate thereof, wherein Q represents a 1- or 2- naphthalenyl group.

5,283,263
METHOD FOR TREATING CERTAIN PSYCHIATRIC DISORDERS AND CERTAIN PSYCHIATRIC SYMPTOMS
Michael J. Norden, 348 NW. 113th Pl., Seattle, Wash. 98177
Division of Ser. No. 610,339, Nov. 5, 1990, Pat. No. 5,114,976, which is a continuation of Ser. No. 294,461, Jan. 6, 1989, abandoned. This application Apr. 17, 1992, Ser. No. 870,360
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—651 **2 Claims**

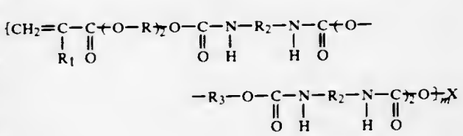
1. A method for treating psychiatric symptoms, comprising administering a therapeutically effective nontoxic dose of fluoxetine or a derivative or pharmaceutically acceptable salt thereof to a patient exhibiting psychiatric symptoms, wherein the psychiatric symptoms are selected from the group consisting of stress, worry, anger, rejection sensitivity, and lack of mental or physical energy.

5,283,264
CHEMICALLY STABLE ANTIMICROBIAL FORMULATIONS OF DIMPS
Deborah K. Donofrio, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Nov. 30, 1992, Ser. No. 982,802
Int. Cl.[5] A01N *25/22, 41/10*
U.S. Cl. 514—709 **12 Claims**

1. A method for producing a stable, antimicrobial formulation of diiodomethyl-p-tolylsulfone, which comprises mixing the diiodomethyl-p-tolylsulfone with an amount, effective for the purpose, of each of the following components: (a) N-methyl pyrrolidone and (b) water.

5,283,265
PHOTOPOLYMERIZABLE RUBBER
Tetsuya Kimura; Syuno Suto; Fujii Toshihiro; Toshihiro Fujii; Kimio Mori, all of Fukuyama, and Tsuguo Yamaoka, Funabashi, all of Japan, assignors to Hayakawa Rubber Company Limited, Japan
Continuation-in-part of Ser. No. 906,608, Sep. 10, 1986, abandoned, which is a continuation of Ser. No. 651,270, Sep. 17, 1984, abandoned. This application Apr. 18, 1988, Ser. No. 182,500
Claims priority, application Japan, Dec. 8, 1983, 58-230515
Int. Cl.[5] C08F *2/50, 26/02, 226/02, 271/00*
U.S. Cl. 522—18 **7 Claims**

1. A photopolymerizable rubber having the structural formula:

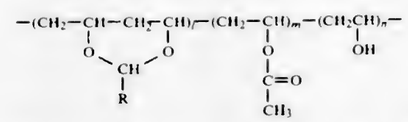


wherein
R is an alkylene group having 2–8 carbon atoms,
R_1 is hydrogen or CH_3,
R_2 is a diisocyanate residue from a diisocyanate selected from the group consisting of tolylene diisocyanate, xylene diisocyanate, naphthalene diisocyanate, hexamethylene diisocyanate, isophorone diisocyanate, 4,4'-diphenylmethane diisocyanate, lysine diisocyanate, and hydrogenated tolylene diisocyanate,
R_3 is a residue of a dihydric alcohol excluding hydroxyl groups selected from the group consistinig of ethylene glycol, diethylene glycol, triethylene glycol, a propylene glycol, a butane diol, a pentane diol, a hexane diol, and trimethylol propanemono(meth)acrylate,
X is a residue excluding hydroxyl groups of an hydroxyl-containing dienic liquid rubber having m hydroxyl groups,
l is about 1–4,
m is the valence number of hydroxyl groups of the hydroxyl-containing dienic liquid rubber and $1<m<4$, and
n is from 1 to 16.

5,283,266
MICROCAPSULE TYPE ADHESIVE
Satoshi Matsuo, Sagamihara; Ikuzo Usami, Tsukui; Makoto Kurihara, Akishima, and Kunihiko Nakashima, Machida, all of Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan
Filed Nov. 23, 1992, Ser. No. 980,484
Claims priority, application Japan, Nov. 22, 1991, 3-354207
Int. Cl.[5] C08K *9/10;* **C08G** *59/50;* **C09J** *9/00, 11/08*
U.S. Cl. 523—206 **2 Claims**

1. A microcapsule adhesive for preventing the loosening of a threaded member, comprising:
(a) a microcapsule comprising a wall material and an epoxy resin as a core material, wherein the wall material is a urea-formaldehyde resin, a melamine-formaldehyde resin, a polyurethane or a urea-urethane resin and the epoxy resin has a viscosity of no more than 100,000 mPa;
(b) a water-soluble polyacetal resin binder; and
(c) a non-volatile, water-soluble or -dispersible amine- based curing agent
wherein said water-soluble polyacetal resin is represented by the following formula:

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where l=1–15, m+n=85–95, m=3–15, and R is an alkyl group having 1 to 4 carbon atoms.

5,283,267

POLYPROPYLENE RESIN COMPOSITION

Takeyoshi Nishio; Norihisa Tamashima, both of Okazaki; Kouhei Ueno, Sakai; Tomohiko Akagawa, Sakai; Saburo Hinenoya, Sakai, and Shinji Katsui, Sakai, all of Japan, assignors to Ube Industries, Ltd., Japan

Continuation of Ser. No. 333,274, May 5, 1989, abandoned. This application Dec. 21, 1990, Ser. No. 630,771

Claims priority, application Japan, Apr. 5, 1988, 63-83701

Int. Cl.[5] **C08K** *9/00*

U.S. Cl. 523—216 **16 Claims**

1. A polypropylene resin composition comprising

(A) a crystalline ethylene-propylene block copolymer of 57–79% by weight based on the total amount of components (A), (B), (C), (D) and (E), whose ethylene content is 4–10% by weight, whose polypropylene component contains a boiling n-heptane insoluble of at least 95% by weight, whose p-xylene soluble at normal temperature has an intrinsic viscosity of at least 2 as measured in decalin at 135° C., and whose melt flow index is 3–30 g/10 min,

(B) an hydrogenated block copolymer obtained by hydrogenating a block copolymer consisting of two terminal blocks which are an aromatic vinyl compound polymer and occupy 10–40% by weight of the copolymer and an intermediate block which is a conjugated diene polymer and occupies 90–60% by weight of the copolymer, to a state that the two terminal blocks and the intermediate block are hydrogenated in proportions of 10% or less and 90% or more, respectively,

(C) an amorphous ethylene-propylene copolymer having a Mooney viscosity ML_{1+4} (100° C.) of 40–100,

the total amount of the components (B) and (C) being 515% by weight based on the total amount of the components (A) to (E) and the weight ratio of the components (B) to (C) being 80/20 to 20/80,

(D) surface-treated talc of 15–25% by weight based on the total amount of the components (A) to (E), having an average particle diameter of 0.5–2.5 μm,

(E) fibrous magnesium oxysulfate of granular form of 1–3% by weight based on the components (A) to (E), having a fiber diameter of 0.1–1.5 μm and an aspect ratio of 70–150, and

(F) 0.2–0.5 part by weight, based on 100 parts by weight of the total of the components (A) to (E), of a metal soap.

5,283,268

COMPOUNDS FOR THE TREATMENT OF INFLAMMATION AND ALLERGY

Malcolm Johnson, and Clifford J. Whelan, both of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

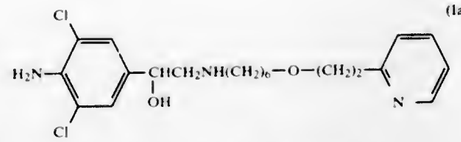
Filed Mar. 4, 1992, Ser. No. 846,011

Claims priority, application United Kingdom, Mar. 5, 1991, 9104650

Int. Cl.[5] **A61K** *31/44*

U.S. Cl. 514—357 **7 Claims**

1. A method of treatment of a mammal, including man, suffering from the effects of pulmonary inflammation associated with the late asthmatic response which comprises administering an effective amount of the compound of formula (Ia)



(Ia)

or a physiologically acceptable salt or solvate thereof.

5,283,269

EPOXY RESIN WITH AMINOMETHYLENE GROUPS

Klaus Huemke, Friedelsheim; Dirk Lawrenz, Ditzingen, and Ulrich Heimann, Muenster, all of Fed. Rep. of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

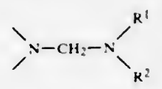
Filed Jan. 14, 1993, Ser. No. 4,602

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201054

Int. Cl.[5] **C08G** *59/14;* **C09D** *5/44*

U.S. Cl. 523—404 **5 Claims**

1. A process for preparing epoxy resins, with urethane groups, containing on average per molecule from 0.5 to 5 groups of the formula I



I

where the substituents R^1 and R^2 are C_1–C_8-alkyl groups which may also be linked together to form five- or six-membered rings, which rings may contain an oxygen atom, or R^1 and R^2 are each phenyl, which process comprises

a) reacting a hydroxylic epoxy resin via the majority of its secondary hydroxyl groups with a monofunctional isocyanate which additionally contains at least one capped isocyanate group in the molecule, and

b) further reacting the reaction product of (a) via the NH groups of the capped isocyanate or urethane groups with formaldehyde or a formaldehyde donor and with a secondary amine HNR^1R^2 in such a way that the reaction product contains from 0.5 to 5 groups of the formula I per molecule.

5,283,270

GLYCIDYL DIAMINES CONTAINING AROMATIC TRIFLUOROMETHYL GROUP AND EPOXY RESINS PREPARED THEREFROM

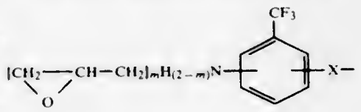
Robert A. Buchanan, Grand Island, and Robert L. Ostrozynski, E. Amherst, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 5, 1993, Ser. No. 13,863

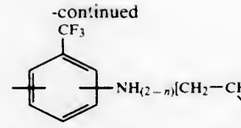
Int. Cl.[5] **C08G** *59/28, 59/30, 59/32*

U.S. Cl. 523—466 **20 Claims**

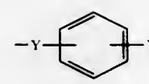
1. A glycidyl diamine having the formula



-continued



where n is 1 or 2, m is 0, 1, or 2, X is Y or



and Y is —, O, S, SO, SO_2, CO, $C(CH_3)_2$ or $C(CF_3)_2$.

5,283,271

3,5-DIPHENYL OR SUBSTITUTED 3,5-DIPHENYL-1-HYDROXY-1,2-DIHYDROIMIDAZOLE-2-THIONES

Derek H. R. Barton, College Station, and Catherine Tachdjian, Bryan, both of Tex., assignors to Olin Corporation, Cheshire, Conn.

Filed Dec. 28, 1992, Ser. No. 997,051

Int. Cl.[5] **C08K** *5/36;* **A61K** *31/415, 7/40;* **C11D** *9/50;* **C07D** *233/42;* **C09K** *15/30*

U.S. Cl. 523—122 **11 Claims**

1. A composition comprising a compound selected from the group consisting of 3,5-diphenyl- and substituted 3,5-diphenyl-1-hydroxy-1,2-dihydroimidazole-2-thiones, and combinations thereof.

6. A composition comprising an antimicrobial effective amount of a compound selected from the group consisting of 3,5-diphenyl- and substituted 3,5-diphenyl-1-hydroxy-1,2-dihydroimidazole-2-thiones, and combinations thereof, and at least one component selected from the group consisting of soaps, shampoos, skin care medicaments, cosmetics and paints.

5,283,272

PROCESS AND APPARATUS FOR PERFORMING CHEMICAL REACTIONS

Peter Flesher, and David Farrar, both of West Yorkshire, England, assignors to Allied Colloids Limited, England

Continuation of Ser. No. 733,960, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 543,969, Jun. 26, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 924,361

Claims priority, application United Kingdom, Jun. 26, 1989, 8914600

Int. Cl.[5] **C08L** *33/02, 33/18, 33/26*

U.S. Cl. 523—313 **11 Claims**

1. In a process in which a polymer that can form a viscous aqueous solution is chemically modified by reaction with a reagent and that comprises forming an aqueous mixture of the reagent and the polymer, introducing the aqueous mixture into one end of a reaction tower, holding the mixture in the tower while the reaction proceeds and removing the mixture containing the chemically modified polymer from the other end of the tower, the improvement which comprises providing the polymer in the form of a powder, reverse phase dispersion or oil-in-water emulsion and the aqueous mixture is made by combining the water, the polymer and the reagent and has a viscosity (Brookfield RVT) of 1000 cps to 5000 cps at the point of introduction to the tower, the mixture is introduced as intermittent batches into the tower, the mixture moves through the tower with intermittent plug flow, and the mixture is removed from the tower as intermittent batches.

5,283,273

STABILIZED CHLORINE-CONTAINING POLYMERS

Hans J. Sander, Lorsch; Olaf-René Hartmann, and Hermann O. Wirth, both of Bensheim, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 797,130, Nov. 22, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,345

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 3792/90

Int. Cl.[5] **C08K** *5/3435*

U.S. Cl. 524—99 **18 Claims**

1. A stabilised chlorine-containing polymer composition comprising

a) at least one chlorine-containing polymer,

b) at least one sterically hindered amine,

c) at least one organic or inorganic zinc compound,

d) at least one organic or inorganic calcium, magnesium and/or barium compound, and

e) at least one 1,3-dicarbonyl compound, but no organotin compounds, no hydrotalcite compounds and no blowing agents or foaming agents.

5,283,274

SUBSTITUTED PYRIMIDINES AND SUBSTITUTED TRIAZINES AS RUBBER-TO-METAL ADHESION PROMOTERS

Rebecca F. Seibert, Naugatuck; Edward L. Wheeler, Watertown; Franklin H. Barrows, Waterbury, and William R. True, Wolcott, all of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Jun. 19, 1992, Ser. No. 901,060

Int. Cl.[5] **C08K** *5/3492, 5/3472*

U.S. Cl. 524—100 **21 Claims**

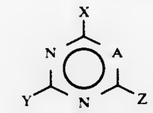
1. A reinforced elastomeric composition produced by curing a blend comprising:

a) vulcanizable rubber;

b) brass coated metal reinforcement;

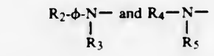
c) a vulcanizing amount of sulfur or sulfur donor; and

d) a metal adhesion promoting amount of a compound represented by Structure (I)



(I)

wherein A is N or C-H and X, Y and Z are independently selected from the group consisting of chloro,



wherein

R_2 may be hydrogen, C_1–C_{12} alkyl, chloro, or anilino;

R_3 may be hydrogen, C_1–C_4 alkyl or phenyl;

R_4 may be hydrogen, C_1–C_8 alkyl or cyclohexyl;

R_5 may be hydrogen, C_1–C_4 alkyl, or cyclohexyl; with the proviso that Z may not be chloro when both X and Y are chloro and R_2 may not be anilino when X, Y or Z is chloro.

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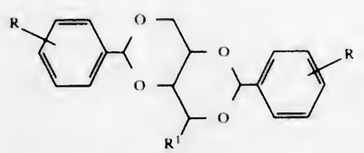
5,283,275

CLARIFIERS FOR POLYOLEFINS AND POLYOLEFIN COMPOSITIONS CONTAINING SAME

O. Elmo Millner, Durham; Richard P. Clarke, and George R. Titus, both of Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 28, 1990, Ser. No. 545,161
Int. Cl.[5] C08K 5/15; C07D 407/02
U.S. Cl. 524—108 4 Claims

1. A clarifying additive for a polyolefin of the structure



wherein R is selected from the group consisting of a methyl group and a chlorine group and R^1 is selected from the group consisting of a carboxyl group and a carboxyl derivative selected from the group consisting of ester, amide, hydrazide, hydroxylamide and amidine.

5,283,276

COATING COMPOSITIONS

Robert D. M. Best, Redcar, United Kingdom; Pierre H. Fillastre, Rouen, and Edouard M. Mathieu, Mont-Saint-Aignan, both of France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

PCT No. PCT/GB90/00978, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO91/00319, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 25, 1990, Ser. No. 778,855
Claims priority, application United Kingdom, Jun. 26, 1989, 8914674; Feb. 16, 1990, 9003536
Int. Cl.[5] C08K 5/42
U.S. Cl. 524—166 13 Claims

1. A composition comprising:
(a) an amorphous overbased sulfonate of an alkaline earth metal as a primary essential solid component, said amorphous sulfonate comprising colloidal particles having a particle size of at most 100A,
(b) a solvent or plasticizer, and
(c) a polymeric material soluble in the solvent or compatible with the plasticizer, said composition having a solids content of at least about 70% by weight.

5,283,277

EXTENDED POLYMER COMPOSITIONS TEXTILE MATERIALS MANUFACTURED THEREWITH

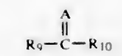
Charles L. Kissel, Anaheim, Calif., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 238,778, Aug. 31, 1988, Pat. No. 5,055,510. This application Oct. 7, 1991, Ser. No. 772,437
Int. Cl.[5] C08K 5/21
U.S. Cl. 524—211 37 Claims

1. A paint composition comprising an inorganic pigment dispersed in a combination of (A) a polymer having pendant functional groups attached to the polymer backbone having the formula:



and (B) a chalcogenide of the formula:



wherein R_1 is a divalent organic radical at least three atoms in length, X is —CO—R_4 or —CN, R_4 is hydrogen or a monovalent organic radical, A is a chalcogen, each of R_9 and R_{10} is independently selected form hydrogen, $NR_{11}R_{12}$, NR_{13} and monovalent organic radicals, at least one of R_9 and R_{10} being $NR_{11}R_{12}$ or NR_{13}, each of R_{11} and R_{12} is independently selected from hydrogen and monovalent organic radicals, and R_{13} is a divalent organic radical.

5,283,278

GAS PHASE OLEFIN POLYMERIZATION PROCESS

Erick Daire, Chateauneuf les Martigues, and John G. Speakman, Sausset les Pins, both of France, assignors to BP Chemicals Limited, London, England

Filed Apr. 8, 1991, Ser. No. 681,884
Claims priority, application France, Apr. 11, 1990, 90 04916
Int. Cl.[5] C08K 5/09
U.S. Cl. 524—399 14 Claims

1. A catalyst composition for a gas phase (co-) polymerization of alpha-olefins comprising a prepolymer of one or more C_2-C_{12} alpha-olefins consisting of particles with a mass-mean diameter ranging from 50 to 500 microns and containing: (a) at least one transition metal belonging to one of Groups IV, V or VI of the Periodic Classification of the elements in a quantity of 0.002 to 10 milligram atoms of said at least one transition metal per gram of prepolymer, (b) an antistatic agent, and (c) at least one organometallic compound of Group II or III of said Periodic Classification in an atomic ratio of the metal(s) of the organometallic compound(s) to the transition metal(s) of 0.01 to 100.

5,283,279

FLAME RETARDANT COATING COMPOSITIONS AND COATED ARTICLES

Yasuaki Hara; Morizo Nakazato, both of Annaka; Yasunori Takaichi, Hitachi; Tsuyoshi Urashima, Takahagi; Tsuyoshi Aoyama, Houya, and Seiichi Nishimura, Tokorozawa, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 17, 1991, Ser. No. 701,878
Claims priority, application Japan, May 18, 1990, 2-128680
Int. Cl.[5] C08J 5/10; C08K 3/34; C08L 83/10
U.S. Cl. 524—492 17 Claims

1. A flame retardant coating composition comprising
(A) 100 parts by weight of a polyorganosiloxane graft copolymer in emulsion form comprised of 10 to 70% by weight of the polyorganosiloxane graft copolymer composed of a polyorganosiloxane of the general formula:

$$R^1_nSiO_{(4-n)/2} \quad (1)$$

wherein R^1 is selected from the group consisting of hydrogen, an alkyl group having 1 to 6 carbon atoms, an alkenyl group having 2 to 6 carbon atoms and an aryl group having 6 to 12 carbon atoms, and n is a number equal to 0, 1 or 2 and 10 to 90% by weight of an unsaturated monomer selected from the group consisting of styrene, α-methyl styrene, acrylic acid, methacrylic acid, an acrylate, a methacrylate, butadiene and isoprene graft polymerized therewith,
(B) 0.1 to 10 parts by weight of a reaction product of an amino functional silane and/or a hydrolyzate thereof and an acid anhydride,
(C) 1 to 50 parts by weight of colloidal silica,
(D) 0.01 to 10 parts by weight of a curing catalyst, and
(E) 20 to 100 parts by weight of an inorganic filler.

5,283,280

COMPOSITION AND METHOD FOR COATING AN OBJECT OF INTEREST

Donald E. Whyte, Racine; Dennis M. Wagen, Waukesha, and Robert A. Balow, Racine, all of Wis., assignors to Tech One, Inc., Genesee Depot, Wis.

Filed Nov. 5, 1992, Ser. No. 972,165
Int. Cl.[5] C08L 75/00
U.S. Cl. 524—559 1 Claim

1. A method of coating an object of interest comprising:
forming a bath by admixing about 5 parts to about 90 parts, by volume, of a polymeric solution, emulsion or dispersion with about 0.5 parts to about 9 parts, by volume, of a compatible dispersion, and about 10 parts to about 95 parts water;
elevating the temperature of the admixture from about 80° F. to about 160° F.;
elevating the temperature of the object of interest from about 220° F. to about 1,700° F.; and
quenching the object of interest in the bath for a predetermined period of time thereby substantially uniformly coating the admixture on the surface of the object of interest.

5,283,281

POLYVINYL ALCOHOL MULTIFILAMENT YARN AND PROCESS FOR PRODUCING THE SAME

Atsushi Taniguchi, Ehime; Masaharu Mizuno, Matsuyama, and Mitsuo Suzuki, Ehime, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 829,551, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 360,695, Jun. 2, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 21,179
Claims priority, application Japan, Jun. 2, 1988, 63-136285; Aug. 3, 1988, 63-194243
Int. Cl.[5] C08F 16/06; C08G 63/48; D01F 6/14
U.S. Cl. 525—56 6 Claims

1. A multifilament yarn of polyvinyl alcohol, wherein said multifilament yarn has a tensile strength of 12.5 to 17.4 g/d and an index of hot water resistance of 60 to 88, said multifilament yarn being produced from polyvinyl alcohol having a degree of polymerization of at least 1500 and a degree of saponification of at least 99 mole %, wherein said polyvinyl alcohol was crosslinked structures formed through the hydroxyl groups of the polyvinyl alcohol.

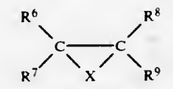
5,283,282

POLYAMIDE COMPOSITION

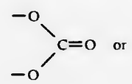
Tetsuo Hamada; Sadayuki Yakabe, and Akira Ito, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 280,046, Dec. 5, 1988, abandoned. This application Dec. 10, 1991, Ser. No. 807,781
Claims priority, application Japan, Dec. 8, 1987, 62-308664; Apr. 21, 1988, 63-96732
Int. Cl.[5] C08L 25/10, 71/12, 77/00
U.S. Cl. 525—92 7 Claims

1. A polyamide composition consisting essentially of:
(A) 100 parts by weight of a polyamide consisting essentially of:
(a-1) 50 to 100% by weight, based on the total weight of components (a-1) and (a-2), of a hexamethylene terephthalamide unit-containing polyamide, and
(a-2) 0 to 50% by weight, based on the total weigh of components (a-1) and (a-2), of an aliphatic polyamide;
(B) 0.05 to 10 parts by weight of a polycaprolactone having a number average molecular weight of not smaller than 10,000;
(C) 0 to 35 parts by weight of a copolymer component consisting essentially of:
(c-1) 60 to 100% by weight, based on the total weight of components (c-1) and (c-2), of a carboxyl-containing ethylenic copolymer having pendant chains which contain a carboxylic acid group and a carboxylic acid metal salt group, and
(c-2) 0 to 40% by weight, based on the total weight of components (c-1) and (c-2), of a carboxyl-free hydrocarbon copolymer consisting essentially of carbon and hydrogen atoms;
(D) 0 to 10 parts by weight of a monomer component consisting essentially of:
(d-1) 40 to 80% by weight, based on the total weight of components (d-1) and (d-2), of an oxide, a carbonate or a mixture thereof,
said oxide and said carbonate being represented by the formula:



wherein each of R^6, R^7, R^8 and R^9 independently represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; and X represents



an oxygen atom, and
(d-2) 20 to 60% by weight, based on the total weight of components (d-1) and (d-2), of a polyhydric alcohol compound; and
(E) 0 to 150 parts by weight of an aromatic polyether.

5,283,283

HIGH MODULUS BLEND OF POLY(α-AMINO ACID) IN RUBBERY ELASTOMER

Naoya Ogata, Tokyo, Japan, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 2, 1991, Ser. No. 739,552
Int. Cl.[5] C08L 77/02
U.S. Cl. 525—66 13 Claims

1. A high modulus rubber composition which is comprised of (a) from 93 weight percent to 97 weight percent of at least one rubbery elastomer, and (b) from 3 weight percent to 7 weight percent of at least one poly(α-amino acid) wherein said poly(α-amino acid) is in an α-helical configuration.

5,283,284

POLYPROPYLENE-POLYPHTHALAMIDE BLENDS

Gary T. Brooks, Naperville; Brian L. Joss, River Forest, and Charles L. Myers, Palatine, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed May 29, 1992, Ser. No. 889,813
Int. Cl.[5] C08L 77/10, 23/12
U.S. Cl. 525—179 10 Claims

1. A composition comprising 100 pbw crystalline polypropylene, from about 5 to about 100 pbw of polyphthalamide, from 2 to about 20 pbw of a carboxyl-modified polypropylene per hundred parts combined weight of polypropylene and polyphthalamide and a filler.

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HIGH IMPACT POLYESTER/POLYCARBONATE BLENDS

Murali K. Akkapeddi, Morristown, and Bruce VanBuskirk, Dover, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 5, 1993, Ser. No. 43,945

Int. Cl.[5] **C08L** *69/00, 67/02*

U.S. Cl. 525—67 **32 Claims**

1. A polymer blend comprising:

i. a thermoplastic polyester;

ii. a polycarbonate;

iii. an amine functionalized elastomer; and.

iv. a graft coupling agent.

5,283,286

IMPACT-RESISTANT THERMOPLASTIC RESIN COMPOSITION CONTAINING A GRAFTED BUTADIENE RUBBER

Yosuke Takahashi; Yasumasa Komatsu; Hiroshi Hagiwara, and Takayuki Katto, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1992, Ser. No. 879,999

Claims priority, application Japan, May 10, 1991, 3-133403

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] **C08L** *51/04, 35/06*

U.S. Cl. 525—75 **14 Claims**

1. A thermoplastic resin composition, comprising:

50–95 wt. % of a copolymer (A) of 10–75 wt. % of α-methyl styrene, 10–60 wt. % of methyl methacrylate, 5–35 wt. % of acrylonitrile and 0–20 wt. % of a monomer copolymerizable therewith, and 5–50 wt. % of a graft copolymer (B) comprising 50–85 wt. parts of a butadiene-based rubber polymer and 15–50 wt. parts of a vinyl monomer graft-polymerized onto the rubber polymer, the total of the rubber polymer and the vinyl monomer being 100 wt. parts; said butadiene-based rubber polymer comprising 50–98 wt. % of butadiene, 2–50 wt. % of an aromatic polycyclic vinyl monomer represented by a formula (1) below and 0–20 wt. % of a monomer copolymerizable therewith:

Formula (1)

wherein R denotes an optionally substituted biphenylyl or naphthyl group, and R_1 denotes a hydrogen atom or a methyl group.

5,283,287

PROCESS FOR PREPARING THERMOPLASTIC RESIN COMPOSITION WITH EXCELLENT HCFC RESISTANCE

Young M. Kim; Chan H. Lee, and Jeong S. Yu, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Dec. 16, 1992, Ser. No. 991,284

Claims priority, application Rep. of Korea, Jun. 3, 1992, 92-9631

Int. Cl.[5] **C08L** *55/02, 25/12;* **C08F** *279/04*

U.S. Cl. 525—86 **7 Claims**

1. A process for preparing a thermoplastic resin composition having excellent HCFC resistance which comprises:

a first step wherein 50 to 90 parts by weight of a monomer mixture of 50 to 80% by weight of a vinyl cyanide, 20 to 50% by weight of an aromatic vinyl compound and 5% by weight or less of an unsaturated carboxylic acid or esters thereof or a vinyl acetate are graft-polymerized in the presence of 10 to 50 parts by weight of a rubber latex and also in the presence of 0.001 to 2.0 parts by weight of a polymerization inhibitor to prepare a graft polymer(A) wherein the rubber latex comprises 20% by weight or less of the rubber particles having an average diameter of 0.07 to 0.15μ and 80 to 100% by weight of the rubber particles having an average diameter of 0.25 to 0.35μ;

a second step wherein 100 parts by weight of a monomer mixture of 50 to 80% by weight of a vinyl cyanide, 20 to 50% by weight of an aromatic vinyl compound and 5% by weight or less of an unsaturated carboxylic acid or esters thereof are polymerized, while adding 2.0 parts by weight or less of a polymerization inhibitor to the mixture, to prepare a SAN copolymer(B); and

a third step wherein the graft polymer(A) is mixed with the SAN copolymer(B) to form the composition wherein the rubber content in the composition falls within the range of 10 to 30% by weight of the composition.

2. A process for preparing a thermoplastic resin composition having excellent HCFC resistance, which comprises: graft-polymerizing 50 to 90 parts by weight of a monomer mixture of 50 to 80% by weight of a vinyl cyanide, 20 to 50% by weight of an aromatic vinyl compound and 5% by weight or less of an unsaturated carboxylic acid or esters thereof or a vinyl acetate in the presence of 10 to 50 parts by weight of a rubber latex and 0.001 to 2.0 parts by weight of a polymerization inhibitor to prepare a graft polymer(A) wherein the rubber latex comprises 20% by weight or less of the rubber particles having an average diameter of 0.07 to 0.15μ and 80 to 100% by weight of the rubber particles having an average diameter of 0.25 to 0.35μ; and, mixing the graft polymer(A) with a SAN copolymer(C) consisting of 25 to 40% by weight of a vinyl cyanide and 60 to 75% by weight of an aromatic vinyl compound which is prepared by mass-polymerization thereof, to form the composition, wherein the rubber content in the composition falls within the range of 10 to 30% by weight of the composition.

5,283,288

PVC COATINGS FOR ELECTRODES

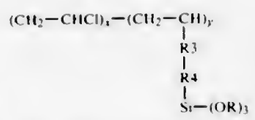
Mark W. Boden, Millbury; Vincent A. Perciaccante, Norfolk, and Stephen B. Ruiz, Boston, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jan. 7, 1992, Ser. No. 817,721

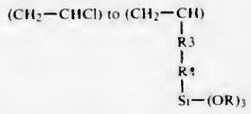
Int. Cl.[5] **C08L** *27/22*

U.S. Cl. 525—102 **24 Claims**

1. A composition consisting of a copolymer of polyvinyl-chloride and substituted alkyltrialkoxysilane of the formula



where R3 is either a residue of an amino or mercapto group, R4 is an alkylene, aromatic, or any other organic group, R is an alkyl group, where the three R substituents do not need to be the same, and where x and y represent moles of monomer incoprorated in the polymer and x / y represents the mole ratio of



in the copolymer.

5,283,289

FIBER-REINFORCED RUBBER COMPOSITION AND PRODUCTION PROCESS THEREOF AND FIBER-REINFORCED ELASTIC PRODUCT

Shinji Yamamoto, Yotsukaido; Koubei Kaijiri, Chiba; Kouichi Nagakura; Denichi Oda, both of Ichihara; Yasuo Matsumori, Ube, and Kimio Nakayama, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Ube, Japan

Division of Ser. No. 45,536, May 4, 1987, Pat. No. 5,043,388, which is a division of Ser. No. 788,524, Oct. 21, 1985, Pat. No. 4,703,086, which is a division of Ser. No. 439,176, Nov. 4, 1982, abandoned. This application Jun. 19, 1991, Ser. No. 717,572

Claims priority, application Japan, Nov. 5, 1981, 56-176428; Feb. 9, 1982, 57-18185; Sep. 2, 1982, 57-151687

The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.

Int. Cl.[5] **C08L** *77/00;* **C08F** *8/30*

U.S. Cl. 525—133 **20 Claims**

1. A process for producing a fiber-reinforced elastic product comprising the steps of:

(1) preparing a compound of a fiber-reinforced rubber composition and a vulcanizing agent wherein:

(A) said fiber-reinforced rubber composition comprises a vulcanizable rubber in which fine short fibers of polyamide are buried:

(B) said fine short fibers of polyamide having an average diameter of 0.05 to 0.8 μm;

(C) said vulcanizable rubber and said fine short fibers of polyamide are grafted to each other at an interface of said fine short fibers and said vulcanizable rubber, by a process comprising the steps of:

(a) mixing at a temperature of not less than the melting point of said polyamide but not more than 270° C.:

a vulcanizable rubber,

a polyamide, and

a resol alkylphenol formaldehyde resin precondensate, or

a novolak phenol formaldehyde resin precondensate and a compound capable of producing formaldehyde upon heating together to form a mixture.

(b) extruding said mixture at a temperature of not less than the melting point of said polyamide, but not more than 270° C. to form an extrudate; and

(c) drawing said extrudate at a temperature of less than the melting point of said fine short fibers of polyamide;

(i) the amount of said fine short fibers of polyamide in said compositions being 1 to 70 parts by weight based on 100 parts by weight of said vulcanizable rubber in the case of said resol alkylphenol formaldehyde resin precondensate and the amount of said resol alkylphenol formaldehyde precondensate being 0.2 to 2.5 parts by weight based on 100 parts by weight of said vulcanizable rubber and said fine short fibers of polyamide, when said resol alkylphenol formaldehyde precondensate is employed to join said fine short fibers of polyamide and said vulcanizable rubber or

(ii) the amount of said fine short fibers being 1 to 100 parts by weight based on 100 parts by weight of said vulcanizable rubber in the case of said novolak phenol formaldehyde resin precondensate and the amount of said novolak phenol formaldehyde precondensate being 0.2 to 5.0 parts by weight based on 100 parts by weight of said vulcanizable rubber and said fine short fibers of polyamide, when said novolak phenol formaldehyde precondensate is employed to join said fine short fibers of polyamide and said vulcanizable rubber; and

(2) vulcanizing the resultant compound.

5,283,290

COATING AGENTS OF ACRYLIC COPOLYMER AND POLYESTER WITH TERTIARY AMINO GROUPS AND EPOXY RESIN

Werner A. Jung, Aschberg, Fed. Rep. of Germany, and Udo Vorbeck, Toledo, Ohio, assignors to BASF Lacke & Farben AG, Munster, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 573,037

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806641

Int. Cl.[5] **C08L** *33/14, 63/02, 67/02*

U.S. Cl. 525—111 **34 Claims**

1. A coating agent comprised of:

A) a carboxyl- and tertiary-amino- groups containing component (A) and

B) an epoxy resin crosslinking agent (B) having on average more than one epoxy group per molecule,

such that the ratio of free carboxyl groups in component (A) to epoxy groups in component (B) ranges from 1:3 to 3:1, and wherein component (A) consists of:

(1) 10 to 90% by weight of a carboxyl- and tertiary amino-group containing polyacrylate (A1) having an acid number of 20 to 140 and an amine number of 5 to 60; and

(2) 90 to 10% by weight of a carboxyl- and tertiary amino-group containing polyester (A2) having an acid number of 10 to 160 and an amine number of 3 to 90;

and the sum of the polyacrylate (A1) and the polyester (A2) is 100% by weight.

5,283,291

HIGH MODULUS RUBBER COMPOSITION

Bruce R. Hahn, Hudson; Wen-Liang Hsu, Copley; Douglas D. Callander, Akron, and Adel F. Halasa, Bath, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 454,477, Dec. 21, 1989, Pat. No. 5,049,620. This application Jun. 19, 1991, Ser. No. 717,594

Int. Cl.[5] **C08L** *9/00, 23/16, 7/00*

U.S. Cl. 525—152 **13 Claims**

1. A process for preparing a high modulus rubber composition which consists essentially of: (1) polymerizing at least one diacid or diacid halide with at least one member selected from the group consisting of diols and diamines in a polymer cement of a polydiene rubber under conditions which result in the formation of a rubber cement having a polyester or polyamide dispersed therein; and (2) recovering the high modulus rubber composition from the rubber cement; wherein said process is conducted at a temperature which is within the range of about 20° C. to about 50° C.

5,283,292

ACRYLIC-BASED STRUCTURAL ADHESIVES

Vittorio Di Ruocco, Novara; Liliana Gila, Trino, and Fabio Garbassi, Novara, all of Italy, assignors to Ministero dell-'Universita' e della Ricerca Scientifica e Tecnologica, Rome, Italy

Filed Oct. 27, 1992, Ser. No. 967,129

Claims priority, application Italy, Oct. 29, 1991, MI91 A 002863

Int. Cl.[5] **C08L** *23/34*

U.S. Cl. 525—164 **13 Claims**

1. Acrylic-based heat-resistant bicomponent structural adhesives comprising:

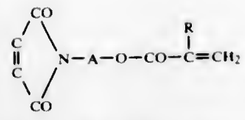
a) a first adhesive component consisting of a solution of a chlorosulphonated polyolefin alone or mixed with

1) a C_1–C_{12} alkyl sulphonyl chloride or a C_6–C_{24} aryl sulphonyl chloride, or

2) natural or synthetic elastomers soluble in an acrylic monomer,

in an acrylic monomer containing a free radical generator, a solution stabilizer, an adhesion promoter, a cross-linking agent, and an adhesive heat stabilizer of formula (I):

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(I)

where R is H or CH_3, and A is a cycloalkyl radical containing from 5 to 10 carbon atoms or an aryl radical containing from 6 to 12 carbon atoms, and with the residue in the ortho, meta or para position;

b) a second component activating the first adhesive component and consisting of a mixture of aldehyde-amine condensation products in which an organic salt of a metal of the first transition series of low oxidation state is dissolved.

5,283,293

REAGENTS FOR AUTOMATED SYNTHESIS OF PEPTIDE ANALOGS

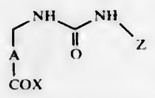
Thomas R. Webb, Encinitas, Calif., assignor to Corvas, Inc., San Diego, Calif.

Filed Dec. 14, 1990, Ser. No. 627,753

Int. Cl.[5] C08F *8/30*

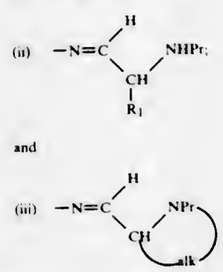
U.S. Cl. 525—332.2 **16 Claims**

1. A compound of the formula:



(a) wherein A is a hydrocarbyl group having from 2 to about 15 carbon atoms; and

(b) Z is selected from



wherein Pr is a protecting group removable under non-adverse conditions and R_1 is hydrogen; or alkyl, cycloalkyl, aryl or aralkyl, optionally substituted with 1 to 3 substituents independently selected from hydroxy, alkoxy, sulfhydryl, alkylthio, carboxy, amide, amino, alkylamino, indolyl, 3-N-formylindolyl, benzyloxy, halobenzyloxy, guanidino, nitro-guanidino or optionally substituted with alkoxy alkyl; and alk is an alkylene group of about 3 to about 12 carbon atoms optionally substituted with 1 to 3 substituents independently selected from hydroxy, alkyl, aryl or guanidino; and X is independently —NH—Sp, —O—Sp, —CH_2—Sp, where Sp is an insoluble resin support suitable for use in automated or semi-automated peptide synthesis which is insoluble in solvents conventionally used in solid phase peptide synthesis; and provided that any functional groups of R_1 or alk which are reactive under conditions of peptide synthesis are optionally protected by a protecting group which is removable under non-adverse conditions.

5,283,294

INVERSE PHASE POLYMERIZATION

Wen-Liang Hsu, Copley, and Adel F. Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 443,421, Nov. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 166,087, Mar. 9, 1988, abandoned. This application Jun. 2, 1992, Ser. No. 892,300

Int. Cl.[5] C08F *2/06, 4/70*

U.S. Cl. 525—247 **10 Claims**

1. A process for preparing a highly dispersed blend of syndiotactic-1,2-polybutadiene in a rubbery elastomer which comprises (1) polymerizing at least one diene monomer in an organic solvent under solution polymerization conditions to form a polymer cement of the rubbery elastomer in the organic solvent, (2) polymerizing 1,3-butadiene monomer in the polymer cement in the presence of a catalyst system which comprises (a) an organoaluminum compound, (b) a cobalt compound, (c) carbon disulfide, and (d) a dialkyl fumarate, which results in the formation of a rubber cement having syndiotactic 1,2-polybutadiene dispersed therein, wherein essentially all of the syndiotactic 1,2-polybutadiene is present in the form of a separate polymer, and (3) recovering the highly dispersed blend of the syndiotactic 1,2-polybutadiene in the rubbery elastomer from the organic solvent in the rubber cement.

5,283,295

POLYMER BLENDS USEFUL FOR FORMING EXTRUSION BLOW MOLDED ARTICLES

Ronald R. Light, and James W. Mercer, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1992, Ser. No. 895,069

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—439 **5 Claims**

1. A polymer blend having excellent clarity and impact strength which is suitable for use in extrusion blow molding processes comprising

a) about 50–95 wt % of a polyester having repeat units from at least 95 mol % terephthalic acid, at least 90 mol % ethylene glycol and up to 10 mol % 1,4-cyclohexanedimethanol, said polyester having a weight average molecular weight of 75,000–85,000,

b) about 40–4 wt % of recycled scrap polyester having repeat units from at least 90 mol % terephthalic acid and at least 90 mol % ethylene glycol and having a weight average molecular weight of about 40,000–55,000, and

c) about 1–10 wt % of a polymeric material containing at least 90 wt % polycarbonate and up to 10 wt % polyethylene terephthalate.

5,283,296

MODIFIED POLYMERS BASED ON GRAFT POLYESTER AND THEIR PREPARATION PROCESS

Edith Canivenc, Lyons; Jean-Francois Fiard, Paris, and Etienne Fleury, Lyons, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

PCT No. PCT/FR90/00145, § 371 Date Dec. 27, 1990, § 102(e) Date Dec. 27, 1990, PCT Pub. No. WO90/10665, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 2, 1990, Ser. No. 601,812

Claims priority, application France, Mar. 8, 1989, 89 03268

Int. Cl.[5] C08F *283/02*

U.S. Cl. 525—445 **14 Claims**

1. Modified polymers based on a graft polyester comprising:

(A) 2 to 60% by weight, relative to the modified polymer, of a backbone derived from a water-dispersible sulphonated polyester,

(B) 0.05 to 30% by weight, relative to the modified polymer, of at least one ethylenically unsaturated organopolysiloxane soluble in the vinyl monomer(s) of (C), and

(C) the balance of the 100% by weight, units derived from at least one vinyl monomer.

5,283,297

ARTIFICIAL HAIR FROM POLY AMINO ACID URETHANE FIBER

Yasuyoshi Miyachi; Nobuo Ito, and Masako Koyama, all of Kanagawa, Japan, assignors to Aderans Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 831,579

Claims priority, application Japan, Feb. 13, 1991, 3-105247

Int. Cl.[5] C08G *18/60*

U.S. Cl. 525—454 **11 Claims**

1. An artificial hair made of a polyamino acid urethane fiber comprising a copolymer of a diol-diisocyanate polyurethane and an amino acid N-carboxy anhydride, in which the copolymer is subjected an amidation reaction with an organic diamine of formula (10) and an organic amine having a mercapto group or a disulfide group of formula (11) or (12) and shaped into a fibrous form:

$$HR^1N(CH_2)_nNR^2R^3 \quad (10)$$

where n represents an integer of 1 to 4 and R^1, R^2 and R^3 each represents H or an alkyl group with 1 to 4 carbon atoms,

$$HR^1N(CH_2)_mSH \quad (11)$$

where m represents an integer of 1 to 4 and R^1 represents H or an alkyl group with 1 to 4 carbon atoms,

$$HR^1N(CH_2)_mSS(CH_2)_nNR^2R^3 \quad (12)$$

where m and n each represents an integer of 1 to 4 and R^1, R^2 and R^3 each represents H or an alkyl group with 1 to 4 carbon atoms.

5,283,298

HYDROPHILIC POLYURETHANE COMPOSITIONS

Ashok M. Sarpeshkar, Upper St. Clair; Peter H. Markusch, McMurray, both of Pa., and Charles S. Gracik, McMechen, W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Division of Ser. No. 796,100, Nov. 21, 1991, Pat. No. 5,250,620. This application Jul. 20, 1993, Ser. No. 95,114

Int. Cl.[5] C08L *39/06*

U.S. Cl. 525—458 **3 Claims**

1. A composition comprising:

1) from 5 to 95% by weight of a hydrophilic composition which can absorb more than 50% by weight of water and which has a low coefficient of friction when wetted with an aqueous liquid, and which comprises the reaction product of:

a) from 1 to 50% by weight of a polyvinylpyrrolidone,

b) from 1 to 60% by weight of an organic monoisocyanate, and

c) from 2 to, 65% by weight of an oxyalkylene group containing compound wherein no more than 30% of the oxyalkylene units are oxypropylene and which is selected from the group consisting of: polyoxyethylene diols, polyoxyethylene monohydroxy compounds, and polyoxyethylene/polyoxypropylene diols and polyoxyethylene/polyoxypropylene monohydroxy compounds,

wherein the percent by weights of components a), b) and c) total 100% and

2) from 5 to 95% by weight of a hydrophobic polyurethane which absorbs less than 5% by weight of water and which is prepared by reacting:

d) an organic di- and/or polyisocyanate, and

e) an hydroxyl group containing compound having from 2 to 4 hydroxyl groups and having a molecular weight of from 62 to 3000, at an NCO:OH equivalent ration of from 1.5:1 to 1:1.5,

and wherein the percent by weights of components 1) and 2) total 100%.

5,283,299

AQUEOUS COATING COMPOSITIONS

Valentino J. Tramontano, Fairfield, Conn.; Milton Lapkin, Beverly Farms, Mass., and Scott D. Rothenberger, Derry, N.H., assignors to ICI Americas, Inc., Wilmington, Del.

Filed May 7, 1992, Ser. No. 879,275

Claims priority, application United Kingdom, May 8, 1991, 9109860; Aug. 27, 1991, 9118370

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—529 **21 Claims**

1. Aqueous-based crosslinkable coating composition comprising an aqueous dispersion of at least the following components:

A. at least one polymer having epoxy-reactive functional groups,

B. at least one polyepoxide compound, and

C. at least one metal chelate complex epoxy-cure catalyst,

and wherein said at least one polymer of component A is selected from the group consisting of an addition polymer derived from one or more olefinically unsaturated monomers by a free-radical polymerisation process and a polyurethane polymer, and wherein the epoxy-reactive groups of said at least one polymer of component A are at least in part carboxyl groups.

5,283,300

PROCESS FOR PREPARING POLYOLEFIN FLUFF USING METALLOCENE CATALYST

Luc Haspeslagh, Dilbeek, and Eric Maziers, Seneffe, both of Belgium, assignors to Fina Research, S.A., Belgium

Filed Nov. 5, 1990, Ser. No. 609,352

Claims priority, application European Pat. Off., Oct. 30, 1989, 89870167.7

Int. Cl.[5] C08F *2/02*

U.S. Cl. 526—75 **8 Claims**

1. Process for the preparation of olefin polymers and copolymers having controlled morphology by bulk or slurry polymerization, comprising the steps of:

(i) providing a homogeneous non-supported system comprising a metallocene transition metal catalysts of general formula $(Cp)_mR_nMQ_k$ wherein each Cp is a cyclopentadienyl or a cyclopentadienyl substituted by one or more hydrocarbyl radical having from 1 to 20 carbon atoms, R is a structural bridge between two Cp rings, M is a transition metal selected from groups 4 or 5, Q is a hydride or a hydrocarbyl group having from 1 to 20 carbon atoms or an alkenyl group having from 2 to 20 carbon atoms or a halogen, m=1–3 with the proviso that if m=2 or 3 each Cp may be the same or different, n=0 or 1 with the proviso that n=0 if m=1, and k is such that the sum of m+k is equal to the oxidation state of M with the proviso that if k is greater than 1 each Q may be the same or different, and an alumoxane cocatalyst; and

(ii) prepolymerizing said homogeneous system in the present of at least one olefin for a period of from 1.5 to 3.5 minutes and at a temperature of from −10° to +35° C.;

(iii) introducing said prepolymerized system either into at least one olefin in the liquid state for bulk polymerization or into an inert liquid hydrocarbon containing at least one olefin for slurry polymerization, the polymerization being carried out at a temperature of from 55° C. to 70° C.; and

(iv) recovering polyolefin fluff.

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5,283,301

OLEFIN POLYMERIZATION WITH PARTICULATE GEL-CONTAINING CATALYST

Max P. McDaniel, Bartlesville, and Gil R. Hawley, Dewey, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 749,187, Aug. 23, 1991, Pat. No. 5,246,900.
This application Jun. 16, 1993, Ser. No. 76,973
Int. Cl.[5] C08F 4/643, 4/02
U.S. Cl. 526—124 16 Claims

1. A process for producing polyolefins comprising polymerizing or copolymerizing olefins in the presence of a particulate catalyst comprised of titanium halide supported on an aluminum and magnesium phosphate gel.

5,283,302

VINYLIDENE FLUORIDE POLYMER AND METHOD OF MAKING SAME

Hideki Wakamori; Fujio Suzuki, and Katsuo Horie, all of Iwaki, Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,487
Claims priority, application Japan, Aug. 1, 1991, 3-216265
Int. Cl.[5] C08F 14/18
U.S. Cl. 526—216 4 Claims

1. A method of manufacturing a vinylidene fluoride polymer comprising

suspension polymerizing, in an aqueous medium, in the presence of an oil-soluble polymerization initiator, vinylidene fluoride and 1-5 wt. % of a comonomer selected from the group consisting of hexafluoropropylene, tetrafluoroethylene and mixtures thereof so that the logarithmic viscosity $[\eta_1]$ of formed polymer is 1.3-1.9 dl/g at a vinylidene fluoride monomer conversion rate of 10-50%;

then, adding a chain transfer agent to said medium, and continuing said polymerization so that the logarithmic viscosity $[\eta_2]$ of the finally formed polymer is 0.3-0.7 dl/g smaller than $[\eta_1]$, and yet remains in the range of 0.9-1.3 dl/g.

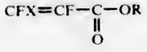
5,283,303

TRANSPLANT THERMOPLASTIC MOLDING COMPOUND MADE OF 2,3-DIFLUOROACRYLIC ACID ESTERS

Werner Grob, Charlotte, N.C.; Peter Herbrechtsmeier, Königstein/Taunus, Fed. Rep. of Germany; Rudolf Heumüller, Rodgau, Fed. Rep. of Germany; Jürgen Theis, Oberursel, Fed. Rep. of Germany, and Gerhard Wieners, Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 768,905, Dec. 12, 1991, Pat. No. 5,175,790.
This application Nov. 3, 1992, Ser. No. 941,138
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912151
Int. Cl.[5] C08F 18/20
U.S. Cl. 526—245 2 Claims

1. A transparent thermoplastic molding compound consisting of 10 to 100% by weight of units derived from one or more esters of formula I:



(I)

wherein

X is a hydrogen atom or a deuterium atom and

R is a linear, branched or cyclic C_1-C_{10} alkyl group or a C_6-C_{10} aryl group, it being possible for all or some of the hydrogen atoms in R to be replaced with fluorine, chlorine, bromine or deuterium atoms, and 90 to 0% by weight of units derived from other copolymerizable vinyl compounds.

5,283,304

FLUORINE-CONTAINING RESIN AND COATING COMPOSITION CONTAINING SAME AS MAIN COMPONENT

Akira Nakabayashi; Kaoru Ueyanagi, both of Nobeoka; Atsushi Shimizu, Tokyo, and Hiromasa Sasahara, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01074, § 371 Date Apr. 13, 1992, § 102(e) Date Apr. 13, 1992, PCT Pub. No. WO92/03485, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 12, 1991, Ser. No. 847,984
Claims priority, application Japan, Aug. 13, 1990, 2-211706
Int. Cl.[5] C08F 12/20
U.S. Cl. 526—249 22 Claims

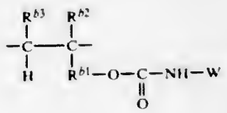
1. A fluorine-containing resin comprising:

Component A: 20 to 95 mol % of a unit of the following general formula,



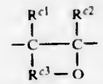
wherein each of V, X, Y and Z is, independently of the others, H, F, Cl, an alkyl group having 1 to 6 carbon atoms, or a halo-substituted alkyl group having 1 to 6 carbon atoms, and at least one of these is F, and one or both of

Component (B): 0 to 80 mol % of a unit of the following general formula,



wherein W is a monovalent organic group having a cyclic hydrocarbon group, R^{b1} is a divalent organic group, and each of R^{b2} and R^{b3} is, independently of the other, a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and

Component (C): 0 to 80 mol % of a unit of the following formula,



wherein each of R^{c1} and R^{c2} is, independently of the other, hydrogen, an aliphatic hydrocarbon group having 1 to 8 carbon atoms or an alicyclic hydrocarbon group, is a divalent group which can have any substituent, provided that the amounts of components (B) and (C) are not simultaneously zero.

5,283,305

METHOD OF MAKING CROSSLINKED PVP

Jui-Chang Chuang, Wayne; Jean S. Shih, Paramus, and Robert B. Login, Oakland, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 966,489
Int. Cl.[5] C08F 226/10, 226/06
U.S. Cl. 526—263 4 Claims

1. A crosslinkable copolymer comprising (i) 80-99% by weight of vinylpyrrolidone and (ii) 1-20% by weight of a tertiary-amine-containing polymerizable monomer.

5,283,306

HYDROPHOBIC POLYELECTROLYTES USED IN REMOVING COLOR

Manian Ramesh, Naperville; John W. Sparapany, Bolingbrook; Martha R. Finck, Countryside; Kristine S. Siefert, Crete, and Chandrashekar S. Shetty, Lisle, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 26, 1992, Ser. No. 935,550
Int. Cl.[5] C08F 26/00
U.S. Cl. 526—312 11 Claims

1. A hydrophobic polyelectrolyte copolymer solution used to remove color form paper mill wastewater, said solution consisting of:

(a) water,

(b) a diallyldimethylammonium chloride, and

(c) a hydrophobic monomer selected from the group consisting of: dimethylaminoethylacrylates having C_6 to C_{20} quaternary and dimethylaminoethylmethacrylates having C_6 to C_{20} quaternary.

5,283,307

ORGANOSILOXANE COMPOSITIONS EXHIBITING IMPROVED BONDING TO SUBSTRATES DURING CURING

Kent R. Larson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1992, Ser. No. 937,006
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—15 5 Claims

1. A curable organosiloxane composition comprising

A. a polyorganosiloxane containing at least two alkenyl radicals per molecule,

B. an organohydrogensiloxane in an amount sufficient to cure said polyorganosiloxane,

C. a platinum-containing hydrosilation catalyst in an amount sufficient to promote curing of said composition, and

D. an adhesion promoting additive selected from the group consisting of silanes represented by the general formula $R^2SiR^3_n(OR^1)_{3-n}$ and condensation products of said silanes, where R^1 and R^3 represent identical or different alkyl radicals, R^2 represents an alkenyl radical containing at least 5 carbon atoms, and n is 0 or 1.

5,283,308

NEUTRALIZATION OF POLYORGANOSILOXANES USING TRIORGANOSILANES AND CURABLE COMPOSITIONS CONTAINING SAID POLYORGANOSILOXANES

Carl J. Bilgrien, and Carol A. Hoag, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 5, 1992, Ser. No. 956,226
Int. Cl.[5] C08G 77/12
U.S. Cl. 528—15 5 Claims

1. A curable organosiloxane composition exhibiting improved heat stability when cured, said composition comprising an polyorganosiloxane containing at least two alkenyl radicals per molecule, a quantity of organohydrogensiloxane sufficient to cure said composition and a hydrosilation catalyst in an amount sufficient to promote curing of said composition, where said polyorganosiloxane is prepared by (1) equilibrating a reaction mixture containing at least one organosiloxane and a basic alkali metal compound as the equilibration catalyst, (2) neutralizing said equilibration catalyst by reaction with stoichiometric excess of a Lewis acid composition containing a liquid triorganohalosilane of the general formula R^1_3SiX, where each R^1 is individually selected from the group consisting of monovalent unsubstituted and substituted hydrocarbon radicals and X is a halogen atom, (3) removing excess Lewis acid from said reaction mixture, and (4) isolating said polyorganosiloxane, where said trihalosilane is added at a molar ratio of said triorganohalosilane to said equilibration catalyst of at least 0.5 to 1.

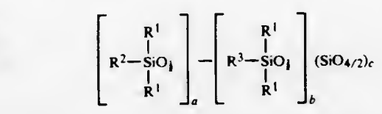
5,283,309

EPOXY-CONTAINING ORGANOPOLYSILOXANE AND METHOD FOR THE PREPARATION THEREOF

Yoshitsugu Morita, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,780
Claims priority, application Japan, Nov. 20, 1991, 3-331409
Int. Cl.[5] C08G 77/00
U.S. Cl. 528—27 6 Claims

1. A composition comprising an organopoly-siloxane containing in each molecule at least one epoxy group-containing organic group and at least one polydiorganosiloxane residue where the organopolysiloxane has a general formula



R^1 represents monovalent hydrocarbon groups exclusive of alkenyl groups; R^2 represents the hydrogen atom or monovalent hydrocarbon groups exclusive of alkenylgroups; R^3 is represents epoxy group-containing organic groups, polydiorganosiloxane residues as represented by the general formula



in which R^1 represents monovalent hydrocarbon groups exclusive of alkenyl groups, R^4 represents divalent hydrocarbon groups, and n has a value of 1 to 500, and optionally alkoxysilylalkyl groups; a is zero or a positive number; b is a positive number; c is a positive number; a/c has a value of zero to 4; b/c has a value of 0.05 to 4; and (a+b)/c has a value of 0.2 to 4.

5,283,310

PROTON CONDUCTING POLYMER, AND APPLICATION THEREOF AS ELECTROLYTE IN ELECTROCHEMICAL DEVICES

Michel Armand, St Martin d'Uriage; Christiane Poinsignon, Grenoble; Jean-Yves Sanchez, St Ismier, and Veronica de Zea Bermudez, Grenoble, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Sep. 11, 1992, Ser. No. 944,094
Claims priority, application France, Sep. 13, 1991, 91 11349; Apr. 28, 1992, 92 05247
Int. Cl.[5] C08G 77/26, 77/78
U.S. Cl. 528—30 10 Claims

1. A basic organo-mineral proton conducting polymer characterized in that it is the result of a copolymerization of at least three precursors:

a precursor A comprising a trialkoxysilane onto which is grafted a methanesulphonamide group by means of an alkyl or aryl link,

a deprotonizing precursor B comprising a trialkoxysilane onto which is grafted a basic nitrogenous group by means of a alkyl or aryl link, and

a plasticizing and solvating precursor C, product of the reaction between a primary mono-, di- or triamine D and a trialkoxysilane E having an isocyanate group grafted thereon by means of a C_1-C_4-alkyl link, said precursor C having at least one urea group.

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5,283,311
FATTY PREPOLYMERS AND FATTY-MODIFIED POLYISOCYANATES AS INTERNAL MOLD RELEASE AGENTS

Thirumurti Narayan, Grosse Ile; Anthony Tantillo, Troy, and William G. Conger, Grosse Ile, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Dec. 30, 1992, Ser. No. 998,969
Int. Cl.[5] C08G *18/10*
U.S. Cl. 528—49 **54 Claims**

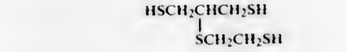
1. A mold release composition comprising a fatty prepolymer having a terminal fatty chain attached directly or indirectly to a urethane linkage, an oxazolidinone linkage, or a urea linkage; wherein, when said linkage is a urethane linkage, the fatty prepolymer is obtained by reacting an organic polyisocyanate with a terminal fatty chain-containing molecule, said molecule being an aliphatic molecule having an isocyanate-reactive functionality selected from the group consisting of a primary hydroxyl functionality and a secondary hydroxyl functionality; wherein, when said linkage is an oxazolidinone linkage, the fatty prepolymer is obtained by reacting an organic polyisocyanate with a terminal fatty chain-containing molecule having an epoxide functionality; wherein, when said linkage is a urea linkage, the fatty prepolymer is obtained by reacting an organic polyisocyanate with a terminal fatty chain-containing molecule having a primary amine functionality or a secondary amine functionality; and wherein said terminal fatty chain-containing molecule in each case has a terminal fatty chain comprising from 8 to 24 hydrogen substituted, branched or unbranched, aliphatic carbon atoms in succession or 5 to 24 perfluorinated branched or unbranched carbon atoms in succession; and wherein the terminal fatty chain-containing molecule has a molecular weight of less than 500.

5,283,312
MERCAPTO COMPOUND, ITS PREPARATION PROCESS, AND SULFUR-CONTAINING URETHANE RESINS AND LENSES USING THE SAME

Yoshinobu Kanemura; Katsuyoshi Sasagawa, both of Yokohama, and Seiichi Kobayashi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,454
Claims priority, application Japan, Aug. 8, 1991, 3-199278
Int. Cl.[5] C07C *319/06*; C08G *18/08*
U.S. Cl. 528—60 **2 Claims**

1. A mercapto compound represented by the following formula (I):



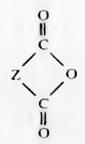
(I)

5,283,313
READILY PROCESSABLE POLYIMIDE, PREPARATION PROCESS OF POLYIMIDE, AND RESIN COMPOSITION OF POLYIMIDE

Wataru Yamashita; Shoji Tamai, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

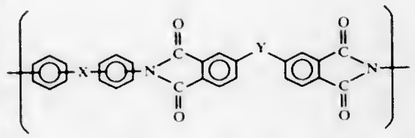
Filed Nov. 21, 1991, Ser. No. 795,748
Claims priority, application Japan, Nov. 26, 1990, 2-320611; Dec. 28, 1990, 2-409104; Mar. 12, 1991, 3-046518
Int. Cl.[5] C08G *8/02, 73/10, 69/26*
U.S. Cl. 528—125 **12 Claims**

1. A readily melt processable polyimide comprising a polymer molecule terminally blocked with a divalent radical derived from dicarboxylic acid anhydride represented by the formula (IV):



(IV)

wherein Z is a divalent radical selected from the group consisting of a monoaromatic radical which is substantially unsubstituted or substituted with a radical having no reactivity with amine or carboxylic acid anhydride and has from 5 to 15 carbon atoms, condensed polyaromatic radical or noncondensed aromatic radical connected to each other with a direct bond or a bridge member, and having a fundamental skeleton represented by recurrind structural units of formula (III):



(III)

wherein X and Y are —O— or —CO— and differ from each other.

5,283,314
PROCESS FOR THE PRODUCTION OF A BRANCHED POLYCARBONATE WITH EMULSION HAVING INTERFACIAL AREA

Shigeki Kuze; Hideo Kusuyama; Masayuki Shinohara, and Masaya Okamoto, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 803,143, Dec. 4, 1991, abandoned, which is a division of Ser. No. 549,270, Jul. 6, 1990, Pat. No. 5,104,964. This application Mar. 12, 1993, Ser. No. 29,978
Claims priority, application Japan, Aug. 3, 1989, 1-200407; Aug. 3, 1989, 1-200408; Dec. 13, 1989, 1-321552
Int. Cl.[5] C08G *64/24*
U.S. Cl. 528—204 **24 Claims**

1. A process for the production of a branched polycarbonate having

(a) an intrinsic viscosity (η) of 0.3 to 2 dl/g in methylene chloride at 20° C.;

(b) a branching parameter, $G=(\eta)/(\eta)_{lin}$, wherein $(\eta)_{lin}$ is an intrinsic viscosity of a straight-chain polycarbonate having the same weight average molecular weight as in the branched polycarbonate according to the light scattering method, of 0.05 to 0.9; and

(c) a degree of branching, $\lambda=n_w/M_w$, wherein n_w is weight average number of branching and M_w is weight average molecular weight, of 0.2×10^{-4} to 2×10^{-4},

which comprises (a) reacting at least one of a first dihydric phenol, at least one polyfunctional organic branching compound having three or more functional groups and phosgene to produce a polycarbonate oligomer, and then (b) polycondensing the polycarbonate oligomer with at least one of a second dihydric phenol and at least one monohydric phenol under stirring conditions to make the interfacial area of the resultant emulsion not less than 40 m^2/L.

5,283,315
CONTINUOUS HYDROLYTIC POLYMERIZATION OF LAUROLACTAM

Atsuo Kawakami; Toshiro Shimada; Tatsuo Tsumiyama, and Hisaya Yamaguchi, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Aug. 14, 1992, Ser. No. 929,404
Claims priority, application Japan, Aug. 22, 1991, 3-235361
Int. Cl.[5] C08G *69/16*
U.S. Cl. 528—326 **4 Claims**

1. A continuous process for the polymerization of laurolactam comprising:

a) a prepolymerization step comprising introducing a laurolactam composition comprising laurolactam and 1 to 10% by weight of water to a jacketed upper reaction zone of a vertical prepolymerization column maintained at a temperature of from 250° to 300° C., passing said laurolactam composition to an intermediate shell-tube heat exchanger in said column wherein a ring opening reaction occurs, passing said ring-opened product to a jacketed lower zone operated at a temperature 10° to 30° C. lower than the temperature of said upper part, said lower zone containing a rectifier and rectifying plate, said flow rate through said prepolymerization column being adjusted to obtain a conversion to a $\overline{Mn}$ of about 5 to 9.5K and a conversion rate of laurolactam to prepolymer of at least 99.5%;

b) an intermediate step wherein the product withdrawn from the prepolymerization step is depressurized in a jacketed vessel at a temperature of 240° to 280° C. and allowed to attain a relative viscosity of 1.6 to 1.8; and

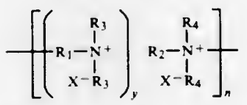
c) a post polymerization step wherein the intermediate product is introduced into a transverse polymerization reaction zone elongated in an horizontal direction and agitating and degassing the polymer in the presence of an inert gas at a temperature of 220° to 280° C. under reduced or atmospheric pressure to produce a polylaurolactam having a relative viscosity of 1.9 to 3.3 as a 1% solution in 98% sulfuric acid at 25° C.

5,283,316
POLYMERS WITH HIGH REFRACTIVE INDEX AND LOW OPTICAL DISPERSION

Ligia Dominguez; Wolfgang H. Meyer; Ullrich Simmrock, and Gerhard Wagner, all of Mainz, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft Zur Fordrung Der Wissenchaften, Cottingen, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 893,908
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912224
Int. Cl.[5] C08F *8/26, 8/30, 8/34, 8/42*
U.S. Cl. 528—397 **1 Claim**

1. Optical devices comprising hard glass polymers having a high refractive index and low optical dispersion, said polymers having the general formula:



(I)

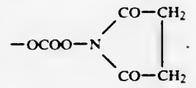
in which R_1 and R_2, which can be the same or different, are divalent organic radicals, R_3 and R_4, which can be the same or different, are monovalent organic radicals, n is a whole number greater than 2 and y is 0 or 1, and wherein R_1, R_2, R_3, R_4, and y and n together form a polymeric base structure which promotes glass formation and prevents crystallization, and X^- is a mono- or polyvalent organic or non-halogen inorganic counter ion replacing an equivalent halogen ion and suitable for adjusting the solid body properties of the polymers.

5,283,317
INTERMEDIATES FOR CONJUGATION OF POLYPEPTIDES WITH HIGH MOLECULAR WEIGHT POLYALKYLENE GLYCOLS

Mark Saifer, Berkeley; Ralph Somack, Oakland, and L. David Williams, Fremont, all of Calif., assignors to DDI Pharmaceuticals, Inc., Mountain View, Calif.

Continuation of Ser. No. 560,996, Aug. 1, 1990, Pat. No. 5,080,891, which is a continuation of Ser. No. 810,009, Aug. 3, 1987, which is a continuation of Ser. No. 380,205, Jul. 13, 1989, Pat. No. 5,006,333, which is a continuation-in-part of Ser. No. 81,009, Aug. 3, 1987, abandoned. This application Oct. 11, 1991, Ser. No. 774,841
Int. Cl.[5] C07D *207/46*; C08G *59/00*
U.S. Cl. 528—405 **1 Claim**

1. A polyalkylene glycol which is a polyethylene glycol or polyethylene-polypropylene glycol copolymer wherein all of the polyalkylene glycol has an average molecular weight as determined by HPLC using PEG as standard of about 35,000–200,000 and is unsubstituted or substituted at one terminal by a C_{1-4} alkyl group and substituted at another terminal by a group of the formula:



5,283,318
PROCESS FOR DEPOLYMERIZATION OF BUTYL RUBBERS AND HALOBUTYL RUBBERS USING HOT LIQUID WATER

Ramzi Y. Saleh, Flemington; Michael Siskin, Livingston, and George Knudsen, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 20, 1991, Ser. No. 812,175
Int. Cl.[5] C08F *6/04*
U.S. Cl. 528—481 **7 Claims**

1. A process for degrading rubber materials into lower molecular weight organic components comprising: contacting the starting materials of neutral liquid deoxygenated water and a rubber material selected from the group consisting of, halobutyl rubbers at a temperature from about 200° C. up to the critical temperature of water at autogenous pressure for a time sufficient to produce said lower molecular weight organic compounds.

5,283,319
PROCESS AND CONTROL STRATEGY FOR THE RECOVERY AND USE OF EXCESS CARBON DIOXIDE DISCHARGE FROM A HIGH PRESSURE CARBON DIOXIDE ACIDULATION PROCESS

Derk T. A. Huibers, Pennington; Richard G. Grotyohann, Belle Mead, and Andrew M. Robbins, Trenton, all of N.J., assignors to Union Camp Corporation, Princeton, N.J.

Filed Jun. 23, 1993, Ser. No. 82,339
Int. Cl.[5] C09F *1/00*
U.S. Cl. 530—209 **23 Claims**

1. A process for preparing crude tall oil from tall oil soap, comprising:

(a) contacting an aqueous tall oil soap solution comprising tall oil soap with carbon dioxide at a first pressure to form a preliminary tall oil mixture comprising crude tall oil and tall oil soap;

(b) contacting the preliminary tall oil mixture with carbon dioxide at a second pressure to form a crude tall oil mixture comprising crude tall oil and sodium bicarbonate, wherein the second pressure is higher than the first pressure;

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(c) recovering the crude tall oil and excess carbon dioxide from the crude tall oil mixture; and
(d) recycling at least a portion of the recovered carbon dioxide to contacting step (a).

5,283,320

PEPTIDES FOR HTLV-2 INFECTION DIAGNOSIS OF, THERAPY FOR, VACCINATION AGAINST, FOR D.STINGUISHING BETWEEN HTLV-1 AND HTLV-2 INFECTIONS AND ANTIBODIES DERIVED THEREFROM

Anders Vahlne, Hovas; Bo Svennerholm, Gothenburg; Lars Rymo, Hovas; Stig Jeansson, and Peter Horal, both of Gothenburg, all of Sweden, assignors to Syntello AB, Gothenburg, Sweden

Filed Nov. 13, 1989, Ser. No. 434,239
Int. Cl.[5] C07K *7/10*; A61K *37/02*
U.S. Cl. 530—325 **2 Claims**

1. A peptide of the sequence:
Ile-Thr-Ser-Glu-Pro-Thr-Gln-Pro-Pro-Pro-Thr-Ser-Pro-Pro-Leu-Val-His-Asp-Ser-Asp-Leu-Glu-His-Val-Y
wherein Y is either absent or a cysteine residue.

5,283,321

POLYPEPTIDE COMPOUND WHICH BINDS TO GLYCO-CONJUGATES AND TO ARTIFICIAL PERTUSSIS TOXIN ANTIGEN

Tamas Bartfai, Stocksund, Sweden, assignor to Trion Forskning- och Utvecklings Aktiebolag, Sollentuna, Sweden

PCT No. PCT/SE87/00619, § 371 Date Jul. 18, 1989, § 102(e) Date Jul. 18, 1989, PCT Pub. No. WO88/04665, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 21, 1987, Ser. No. 375,004
Claims priority, application Sweden, Dec. 22, 1986, 8605513; Feb. 24, 1987, 8700761
Int. Cl.[5] C07K *7/00*
U.S. Cl. 530—326 **3 Claims**

1. A polypeptide of the formula

H—X[1]—Gln—Thr—Arg—Ala—Asn—Pro—Asn—Pro—Tyr—Thr——Ser—Arg—Arg—Ser—Val—Ala—Ser—X[2]—Y

in which X^1 and X^2 each represent either no amino acid or an amino acid which facilitates coupling to a carrier, and Y represents —OH or $—NH_2$.

5,283,322

DEWATERING GLUTEN WITH NONIONIC SURFACTANTS

Roy W. Martin, LaGrange, and Robert J. Denton, Lockport, both of Ill., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 12, 1992, Ser. No. 929,648
Int. Cl.[5] A23L *1/12*
U.S. Cl. 530—374 **4 Claims**

1. A method of enhancing the dewatering of gluten which comprises adding to an aqueous gluten solution prior to dewatering, an effective dewatering amount of a nonionic surfactant.

5,283,323

METHOD OF PRODUCING IMMUNE RESPONSE

Jay A. Berzofsky, Bethesda, Md., and Hajime Kawamura, Tochigi, Japan, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 338,362, Apr. 13, 1989, abandoned, which is a continuation of Ser. No. 763,218, Aug. 7, 1985, abandoned. This application Jun. 18, 1991, Ser. No. 715,712
Int. Cl.[5] A61K *39/00*; C07K *13/00*
U.S. Cl. 530—387.1 **15 Claims**

1. An immune response stimulating composition comprising an immunogenic amount effective to stimulate enhanced in vivo antibody production to an antigen, of a conjugate of said antigen coupled to an anti-immunoglobulin antibody that binds to B-cell surface immunoglobulins.

5,283,324

PROCESS FOR PREPARING RADIATION SENSITIVE COMPOUND AND POSITIVE RESIST COMPOSITION

Jun Tomioka, Takarazuka; Koji Kuwana, Fujiidera; Hirotoshi Nakanishi, Osaka; Hiroshi Takagaki, Higashiosaka; Yasunori Doi, Takatsuki; Yasunori Uetani, Toyonaka, and Ryotaro Hanawa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 17, 1992, Ser. No. 869,968
Claims priority, application Japan, Apr. 17, 1991, 3-085147; Jul. 18, 1991, 3-178184
Int. Cl.[5] C07C *303/28*; G03F *7/022*
U.S. Cl. 534—557 **11 Claims**

1. A process for preparing a radiation sensitive compound which comprises reacting a phenol compound with a quinone diazide sulfonyl halide in a mixture of a solvent having a relative dielectric constant of not larger than 10 selected from the group consisting of dioxane, tetrahydrofuran, dichloromethane and chloroform, and a solvent having a relative dielectric constant of at least 15 selected from the group consisting of methanol, ethanol, 1-propanol, 2-propanol, 1-butanol and 2-butanol, wherein the amount of the solvent having a relative dielectric constant of at least 15 is not larger than 50% by weight based on the total weight of the solvent mixture.

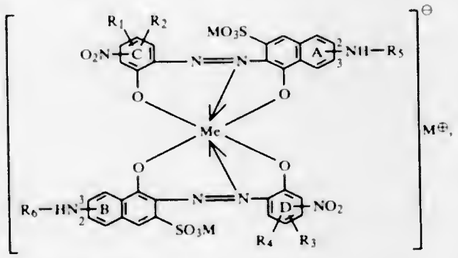
5,283,325

1:2 CHROMIUM AND COBALT COMPLEXES OF MONOAZO COMPOUNDS HAVING FURTHER UNSUBSTITUTED OR SUBSTITUTED NITRO-2-HYDROXYPHENYL DIAZO COMPONENT RADICALS AND 6- OR 7-ACYL-AMINO-1-HYDROXY-3-SULFONAPHTHALENE COUPLING COMPONENT RADICALS

Peter Bitterli, Reinach, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 570,940, Aug. 21, 1990, Pat. No. 5,123,930, which is a continuation of Ser. No. 438,144, Nov. 16, 1989, abandoned, which is a continuation of Ser. No. 259,933, Oct. 19, 1988, abandoned, which is a continuation of Ser. No. 931,752, Nov. 17, 1986, abandoned, which is a division of Ser. No. 727,560, Apr. 26, 1985, abandoned. This application Dec. 2, 1991, Ser. No. 801,555
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 3415667
Int. Cl.[5] C09B *45/14*; D06P *1/10, 3/24*; C23C *22/26*
U.S. Cl. 534—721 **21 Claims**

1. A complex of the formula



or a mixture thereof,
wherein each of R_1 and R_3 is independently hydrogen or nitro, with the proviso that when a ring has two nitro groups, they are meta to each other,

each of R_2 and R_4 is independently hydrogen or chloro,
each of R_5 and R_6 is independently $—COR_7$, $—CONHR_8$ or $—SO_2R_9$,
wherein R_7 is C_{1-6}alkyl, C_{1-6}alkoxy, phenyl(C_{1-4}-alkyl) or phenyl(C_{1-4}alkyl) the phenyl group of which is substituted by 1 or 2 substituents selected from halo, C_{1-4}-alkyl, C_{1-4}alkoxy, nitro, amino, —COOM, $—SO_3M$ and acetamido,
R_8 is hydrogen, C_{1-6}alkyl; phenyl; phenyl substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, nitro, amino, —COOM, $—SO_3M$ and acetamido; naphthyl or naphthyl monosubstituted by chloro, amino, phenylamino, acetamido, benzamido or $—SO_3M$, and
R_9 is C_{1-6}alkyl, phenyl or phenyl substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, nitro, amino, —COOM, $—SO_3M$ and acetamido, and
Me is chromium or cobalt,
wherein each M and $M^{\oplus}$ is independently hydrogen or a non-chromophoric cation, with the proviso that the $—NHR_5$ group is in the 2- or 3-position of Ring A and the $—NHR_6$ group is in the 2- or 3-position of Ring B.

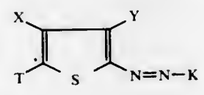
5,283,326

DYES CONTAINING THIOPHENE RADICALS

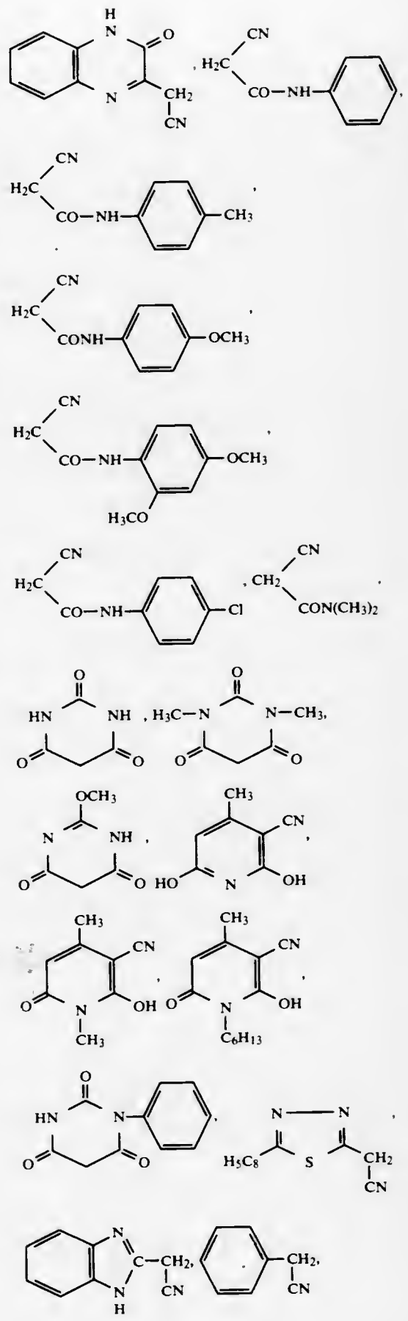
Guenter Hansen; Ernst Schefczik, both of Ludwigshafen; Karl-Heinz Etzbach, Frankenthal; Helmut Reichelt, Niederkirchen, and Hermann Loeffler, Speyer, all of Fed. Rep. of Germany, assignors to Sandoz AG, Basel, Switzerland

Continuation of Ser. No. 532,663, Jun. 4, 1990, abandoned, which is a division of Ser. No. 205,359, Jul. 27, 1988, abandoned, which is a division of Ser. No. 860,573, May 7, 1986, abandoned. This application May 13, 1992, Ser. No. 884,472
Claims priority, application Fed. Rep. of Germany, May 14, 1985, 3517365; Sep. 20, 1985, 3533546; Oct. 2, 1985, 3535133
Int. Cl.[5] C09B *29/033, 29/06, 29/36*; D06P *1/18*
U.S. Cl. 534—766 **14 Claims**

1. A compound of the formula:

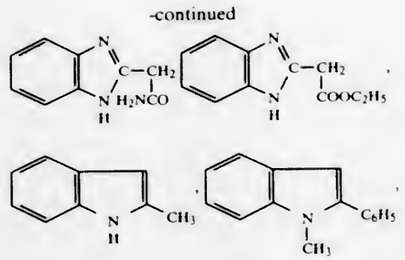


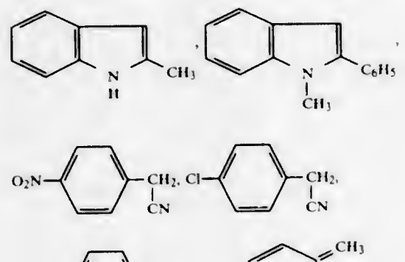
wherein:
X is SO_2E; —OH; —SH; C_{1-6}-alkoxy; benzyloxy; phenyloxy; methyl-substituted phenyloxy; chloro-substituted phenyloxy; —S—(C_{1-6}-alkyl); benzylmercapto; —S—C_2H_4OH; $—S—CH_2COOCH_3$; $—S—CH_2COOC_2H_5$; phenylmercapto; or methyl-substituted phenylmercapto;
E is C_{1-8}-alkyl; alkenyl; cycloalkyl; C_{7-10}-aralkyl; aryl; chlorine; hydroxyl; amino; C_{1-4}-alkoxy; benzyloxy; $C_6H_5—CH_2CH_2—O—$; phenyloxy; chlorosubstituted phenyloxy; methyl-substituted phenyloxy; C_{1-4}alkyl-substituted amino; C_{1-4}-dialkyl-substituted amino; NHC_6H_5; $NHC_6H_4CH_3$; NHC_6H_4Cl; or $N(CH_3)C_6H_4$;
Y is cyano;
T is hydrogen; C_1–C_4-alkyl; Cl; Br; NO; NO_2; SO_3H; CHO; CN; CH_3CO; C_2H_5CO; C_6H_5CO; CH_3SO_2; $C_2H_5SO_2$; or $C_6H_5SO_2$; or —CH=B; R^1 is hydrogen, alkyl, aralkyl or aryl;
B is C (CN) (Z) where Z is cyano; nitro; alkanoyl; aroyl; alkylsulfonyl; arylsulfonyl; carboxyl; a carboxylic ester group; unsubstituted carbamyl; substituted carbamyl; or a compound of one of the formulae:

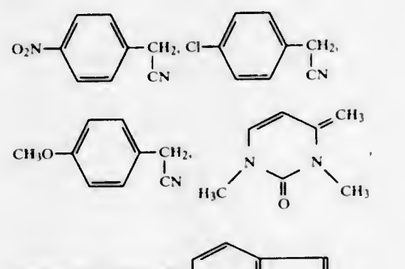


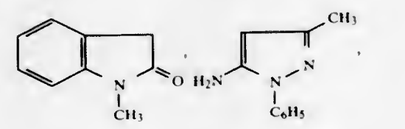
VOL 1159 ISS 1 FE 1 1994 UMI

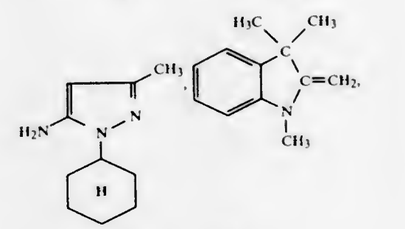
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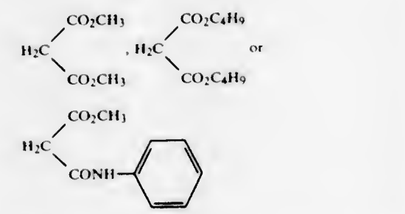


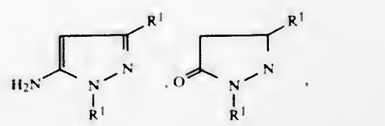


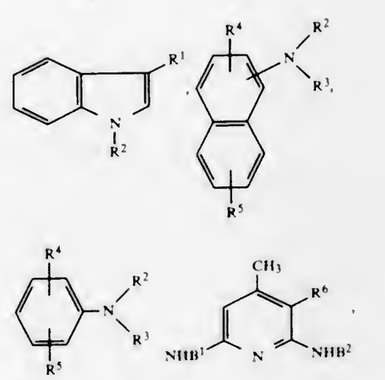


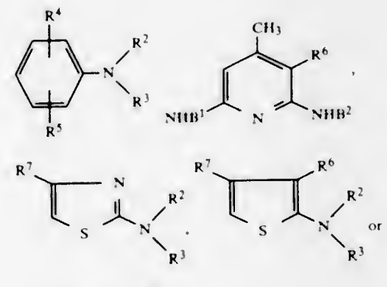


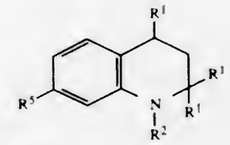












wherein:

B^1 is hydrogen or B^2;

B^2 is C_1–C_6-alkyl, or C_1–C_6-alkyl substituted by chlorine, bromine, hydroxyl, C_1–C_8-alkoxy, phenoxy, phenyl, cyano, carboxyl, C_1–C_8-alkanoyloxy, C_1–C_8-alkoxy-C_1–C_4-alkoxy, benzoyloxy, o-, m- or p-methylbenzoyloxy, o-, m- or p-chlorobenzoyloxy, C_1–C_8-alkoxyalkanoyloxy, phenoxyalkanoyloxy, C_1–C_8-alkoxycarbonyloxy, C_1–C_8-alkoxyalkoxycarbonyloxy, benzyloxycarbonyloxy, phenethoxycarbonyloxy, phenoxyethoxycarbonyloxy, C_1–C_8-alkylaminocarbonyloxy, cyclohexylaminocarbonyloxy, phenylaminocarbonyloxy, C_1–C_8-alkoxycarbonyl, C_1–C_8-alkoxyalkoxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, phenoxy-C_1–C_4-alkoxy, or phenylethoxycarbonyl, or phenyl, or cyclohexyl;

R^2 is hydrogen or R^3;

R^3 is C_1–C_6-alkyl, C_1–C_6-alkyl substituted by chlorine, bromine, hydroxyl, C_1–C_8-alkoxy, phenoxy, cyano, carboxyl, C_1–C_8-alkanoyloxy, C_1–C_8-alkoxy-C_1–C_4-alkoxy, benzoyloxy, o-, m-and p-methylbenzoyloxy, o-, m- and p-chlorobenzoyloxy, C_1–C_8-alkoxyalkanoyloxy, phenoxyalkanoyloxy, C_1–C_8-alkoxycarbonyloxy, C_1–C_8-alkoxyalkoxycarbonyloxy, benzyloxycarbonyloxy, phenylethoxycarbonyloxy, phenoxyethoxycarbonyloxy, C_1–C_8-alkylaminocarbonyloxy, cyclohexylaminocarbonyloxy, phenylaminocarbonyloxy, C_1–C_8-alkoxycarbonyl, C_1–C_8-alkoxyalkoxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, phenoxy-C_1–C_4-alkoxy or phenylethoxycarbonyl, phenyl, benzyl, phenethyl, or cyclohexyl;

R^4 and R^5, independently of one another, are hydrogen, methyl, ethyl, propyl, bromine, chlorine, methoxy, ethoxy, phenoxy, benzyloxy, or C_1–C_4-alkoxycarbonylamino, benzoylamino, C_1–C_6-alkanoylamino, or C_1–C_6-alkanoylamino substituted by chlorine, bromine, cyano, methoxy, ethoxy or phenoxy, C_1–C_4-alkylsulfonylamino, or -dialkylaminosulfonylamino;

R^6 is cyano; carbamyl; nitro; acetyl; or carbonalkoxy; and

R^7 is C_1–C_{10}-alkyl; C_1–C_{10}-alkoxy; phenoxy; benzyloxy; phenyl; chlorine; bromine; nitro; C_1–C_4-alkoxycarbonyl; C_1–C_4-mono- or dialkylamino; C_1–C_4-alkoxyethoxy; C_1–C_4-alkyl- or phenylmercapto; C_1–C_5-alkanoylamino; monosubstituted or polysubstituted phenyl; C_1–C_4-alkyl; C_1–C_4-alkoxycarbonylmethyl, cyanomethyl; or benzyl.

5,283,327

TRI-O-ACETYL-2-ALKYNYLADENOSINES

Toyofumi Yamaguchi, Hachioji; Toichi Abiru, Sawara; Akira Matsuda; Tohru Ueda, both of Sapporo, and Kentaro Kogi, Fukushima, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba and Toa Eiyo Ltd., Tokyo, both of Japan

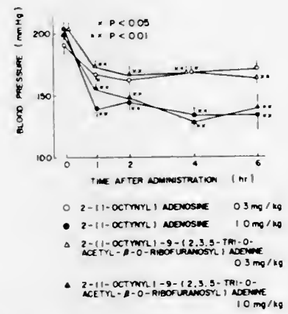
PCT No. PCT/JP90/00807, § 371 Date Apr. 17, 1991, § 102(e) Date Apr. 17, 1991, PCT Pub. No. WO90/15812, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 20, 1990, Ser. No. 655,354

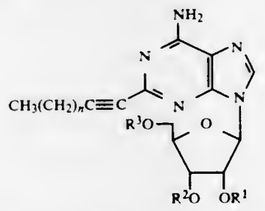
Claims priority, application Japan, Jun. 20, 1989, 1-157517; Jan. 13, 1990, 2-4727

Int. Cl.[5] **C07H** *19/167*

U.S. Cl. 536—27.22 **2 Claims**



1. A 2-alkynyladenosine derivative represented by the following formula:



wherein R^1, R^2 and R^3 represent an acetyl group, and n denotes an integer of 1 to 15 and pharmaceutically acceptable salts thereof.

5,283,328

1-TRIACONTANOL DERIVATIVES

Antal Kovacs; Andras Liptak; Pal Nanasi; Zoltan Szurmai; Istvan Csernus; Katalin Marossy; Katalin Kovacs-Hadadi; Zsuzsa Emri-Harsi, and Ildiko Gombos-Nemeti, all of Debrecen, Hungary, assignors to Biogal Gyogyszergyar Rt., Debrecen, Hungary

PCT No. PCT/HU90/00082, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO91/09044, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 18, 1990, Ser. No. 768,234

Claims priority, application Hungary, Dec. 18, 1989, 6646/89

Int. Cl.[5] **C07H** *15/04*

U.S. Cl. 536—120 **3 Claims**

1. A compound of the Formula (I)

$$\{CH_3—(CH_2)_{29}—O—\}_m—R \quad (I)$$

wherein

m is 1 or 2, and

if m is 1, then

R is 1-lactosyl, 1-genciobiosyl, 1-laminaribiosyl, 1-cellobiosyl, 1-maltosyl, 1-maltotriosyl, 1-maltotetraosyl, 1-maltopentaosyl, 1-maltohexaosyl, 1-maltoheptaosyl or 1-maltooctaosyl or an acetylated derivative thereof; and

if m is 2, then

R is 1,8-di-(beta-D-glucopyranos-6-yloxy-1-yl)-3,6-dioxaoctane, 1,5-di-(beta-D-glucopyranos-6-yloxy-1-yl)-3-oxapentane, 1,2-di-beta-D-glucopyranos-6-yloxy-1-yl)-ethane, 1,8-di-(2,3,4-tri-O-acetyl-beta-D-glucopyranos-6-yloxy-1-yl)-3,6-dioxaoctane, 1,5-di-(2,3,4-tri-O-acetyl-beta-D-glucopyranos-6-yloxy-1-yl)-3-oxapentane, or 1,2-di-(2,3,4-tri-O-acetyl-beta-D-glucopyranos-6-yloxy-1-yl)-ethane.

5,283,329

AMINO PROTECTING GROUP

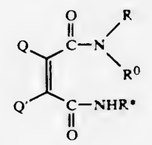
Leland O. Weigel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 918,196, Jul. 22, 1992, Pat. No. 5,239,069, which is a division of Ser. No. 750,214, Aug. 19, 1991, Pat. No. 5,169,945, which is a continuation of Ser. No. 523,455, May 14, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 25,301

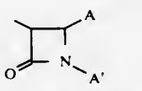
Int. Cl.[5] **C07D** *498/053, 205/095, 205/085;* **C07B** *571/00*

U.S. Cl. 540—301 **2 Claims**

1. A compound of the formula



wherein R^* is a group of the formula

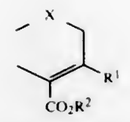


wherein R and R^0 are individually C_1–C_6 alkyl groups or together form a ring consisting of the nitrogen atom to which they are attached and two to seven carbon atoms, said ring optionally substituted by one or more C_1–C_6 alkyl and/or C_1–C_6 substituted alkyl groups;

Q and Q′ are individually hydrogen, C_1–C_6 alkyl, or when taken together form a divalent radical of the formula —CH=CH—CH=CH—;

A and A′ together form a group of the formula

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wherein R^2 is hydrogen or a carboxy-protecting group; X is oxygen;

R^1 is hydrogen, hydroxy, halo, C_1–C_6 alkoxy, C_1–C_6 alkyl, C_1–C_6 substituted alkyl, C_1–C_6 alkylthio, C_1–C_6 substituted alkylthio, C_7–C_{12} phenylalkyl, C_7–C_{12} substituted phenylalkyl, phenyl or substituted phenyl; a group of the formula

$$-COR^3$$

wherein R^3 is hydrogen, C_1–C_6 alkyl, C_1–C_6 substituted alkyl, C_7–C_{12} phenylalkyl, C_7–C_{12} substituted phenylalkyl, phenyl, substituted phenyl, amino, (monosubstituted)-amino, or (disubstituted)-amino; a group of the formula

$$-COOR^4$$

wherein R^4 is hydrogen or a carboxy-protecting group.

5,283,330
1,2-BENZO-8-(D,L ALANYL)-3-PHENOXAZONE NITRATE

Kantilal G. Bhansali, 7622 Braesdale La., Houston, Tex. 77071

Filed Sep. 11, 1992, Ser. No. 944,170
Int. Cl.[5] C07D *265/34*
U.S. Cl. 544—99 **2 Claims**

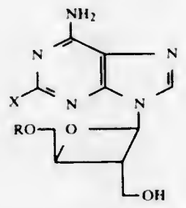
1. 1,2-benzo-8-(D,L alanyl)-3-phenoxazone nitrate.

5,283,331
2-HALOGENO-OXETANOCIN A AND PHOSPHORIC ESTER THEREOF

Seiichi Saito, Kashiwa; Akira Masuda, Yono; Masayuki Kitagawa, Urawa; Nobuyoshi Shimada, Tokyo; Jun-ichi Seki, Takasaki; Hiroo Hoshino, Maebashi, and Yukihiro Nishiyama, Aichi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1991, Ser. No. 804,773
Claims priority, application Japan, Dec. 20, 1990, 2-411947; Mar. 1, 1991, 3-057754
Int. Cl.[5] C07D *473/40*; A61K *31/52*; C07F *9/09, 7/18*
U.S. Cl. 544—229 **2 Claims**

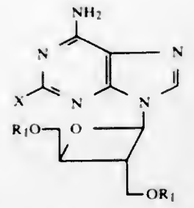
1. A 2-halogeno-oxetanocin A derivative represented by the following formula (1) or a salt thereof:



(1)

wherein X represents a fluorine atom or a chlorine atom and R represents a hydrogen atom or a phosphoric acid residue.

2. A 2-halogeno-oxetanocin A derivative represented by the following formula:



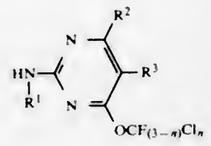
wherein X represents a fluorine atom or a chlorine atom and each R_1 independently represents a hydrogen atom, an acyl group or a tri(C_1–C_{10} hydrocarbon)-silyl group, provided that a case that both the symbols R_1 simultaneously represent a hydrogen atom is excepted.

5,283,332
2-AMINO(FLUOROALKOXY)PYRIMIDINES AND THE PREPARATION THEREOF

Gerhard Hamprecht, 28 Rote-Turm-Strasse, 6940 Weinheim, Fed. Rep. of Germany

Filed Mar. 4, 1991, Ser. No. 663,975
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] C07D *239/42, 239/47*
U.S. Cl. 544—320 **7 Claims**

1. A substituted 2-amino(fluoroalkoxy)pyrimidine of the formula I



I

where

R^1 is hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl or C_3–C_4-alkynyl,

R^2 is hydrogen, halogen, C_1–C_4-haloalkyl, trifluoromethoxy or chlorodifluoromethoxy,

R^3 is hydrogen, halogen or C_1–C_4-haloalkyl and

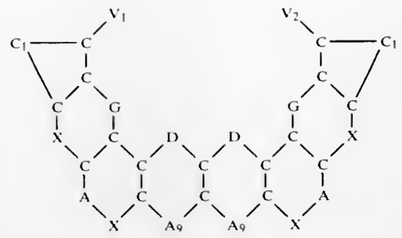
n is 1.

5,283,333
CYCLIC COMPOUNDS FOR FORMING COMPLEXES WITH UREA, GUANIDINE AND AMIDINE DERIVATIVES

Thomas W. Bell, Stony Book, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 360,383, Jun. 2, 1989, Pat. No. 5,030,728, which is a continuation-in-part of Ser. No. 215,211, Jul. 5, 1988, abandoned. This application May 28, 1991, Ser. No. 705,733
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[5] C07D *471/00, 491/00*
U.S. Cl. 546—27 **36 Claims**

1. A molecule capable of forming stable complexes with a guest analyte molecule urea, thiourea, guanidine, guanidine monosubstituted on one nitrogen atom, guanidine disubstituted on one nitrogen atom, creatinine, arginine, amidine compounds or an addition salt of the guest analyte molecule comprising the structure:



wherein

C represents carbon atoms;

D independently represents nitrogen or oxygen atoms;

X independently represents (A)m;

A and G independently represent carbon, sulfur, nitrogen or oxygen atoms;

m=0–5;

s=1–7;

p and q independently represent 0–2;

V_1 and V_2 independently represent hydrogen, D or DαAr except that V_1 and V_2 are not both hydrogen and are not simultaneously hydrogen and D;

αAr is selected from the group consisting of OCH_2Ar, CH_2OAr, $(CH_2)_nAr$ wherein n=1–5, NCH_2Ar, $OCOAr$, CH_2COAr_2, $NCOAr$, $SCOAr$, OCH_2OAr, CH_2NAr, CO_2Ar, $COCH_2Ar$, $CONAr$, $COSAr$; and

wherein Ar is a monosubstituted aromatic group selected from the group consisting of benzene, naphthalene, phenanthrene, anthracene, pyrene, benzpyrene, naphthacene, pyridine, quinoline, isoquinoline, acridine, phenanthroline, pyrrole, indole, carbazole, imidazole, benzimidazole, furan, thiophene, purine, pyrimidine, 2-pyridone, 4-pyridone, 9-acridone, 2-quinolone, 4-quinolone, pyridazene, benzofuran, quinazoline, phenanthridine, anthrone, fluorene, picrylamines, azulenes, nitrophenols, quinones, azo dyes, merocyanine dyes, coumarins, fluorescein, Lucifer Yellow, 8-hydroxyquinoline, dansyl derivatives, porphyrins and phthalocyanines.

5,283,334
SIDE-CHAIN FUNCTIONAL CHEMILUMINESCENT LABELS AND THEIR CONJUGATES, AND ASSAYS THEREFROM

Frank McCapra, Seaford, Great Britain, assignor to London Diagnostics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 140,040, Dec. 31, 1987, abandoned, and Ser. No. 291,843, Dec. 29, 1988, abandoned, and Ser. No. 418,956, Oct. 10, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 859,676
Int. Cl.[5] C07D *219/04*
U.S. Cl. 546—104 **42 Claims**

1. A chemiluminescent compound possessing an aryl ester, thioester or amide of a carboxylic acid substituted heterocyclic ring or ring system that is susceptible to chemical attack to dissociate the heterocyclic ring to a transient compound: wherein the heterocyclic ring is ring carbon-bonded to the carbonyl of the ester, thioester or amide moiety and possesses a heteroatom in an oxidation state that allows chemiluminescence by dissociating a compound at the carbon bonded to the carbonyl that decays to produce chemiluminescence; the heterocyclic ring or ring system contains bonded to it through an organic moiety, a functional group that is functionally reactive with an active hydrogen containing compound; the aryl ring is a ring or ring system that is ring carbon-bonded to the oxygen, sulfur or nitrogen of the ester, thioester or amide, as the case may be, and contains substituents on a six-member ring that act to sterically and electronically hinder hydrolysis of the ester, thioester or amide linkage; optionally there is an electron donating substituent in a peri position on the heterocyclic ring system; the substituents on the aryl ring comprise at least one ortho electron donating substitution that with the peri substitution comprises at least two substituents adjacent to the ester, thioester or amide linkage that are electron donors; at least one meta or para substituent directly attached to the aryl ring that possesses a σ_p value greater than 0 and less than 1.

5,283,335
HERBICIDAL 2-(2-IMIDAZOLIN-2-YL)-BENZO-(6-MEMBERED)-HETEROCYCLES

Robert F. Doehner, Jr., East Windsor, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 576,643, Aug. 31, 1990, abandoned. This application Mar. 10, 1992, Ser. No. 849,997
Int. Cl.[5] C07D *401/04*
U.S. Cl. 546—167 **1 Claim**

1. The compound 8-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)-7-quinolinecarboxylic acid.

5,283,336
METHOD FOR PREPARATION OF 7-HYDROXY-1,2,3,4-TETRAHYDROQUINOLINE FROM 1,2,3,4-TETRAHYDROQUINOLINE

George Field, Danville, and Peter R. Hammond, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 8, 1992, Ser. No. 941,813
Int. Cl.[5] C07D *215/20*
U.S. Cl. 546—179 **3 Claims**

1. A method of making 7-hydroxyl-1,2,3,4-tetrahydroquinoline which comprises the steps of:

a) nitrating 1,2,3,4-tetrahydroquinoline in the presence of sulfuric acid and nitric acid to obtain 7-nitro-1,2,3,4-tetrahydroquinoline;

b) isolating 7-nitro-1,2,3,4-tetrahydroquinoline;

c) reducing 7-nitro-1,2,3,4-tetrahydroquinoline in the presence of Raney nickel and hydrazine to obtain 7-amino-1,2,3,4-tetrahydroquinoline;

d) isolating 7-amino-1,2,3,4-tetrahydroquinoline; and

e) hydrolyzing 7-amino-1,2,3,4-tetrahydroquinoline with a strong aqueous acid selected from the group consisting of phosphoric, sulfuric, methanesulfonic, trifluoromethanesulfonic hydrobromic acids and mixtures thereof and at a temperature from about 140° C. to 180° C. and a pressure of less than about 55 psi to obtain 7-hydroxy-1,2,3,4-tetrahydroquinoline.

5,283,337
PROCESS FOR THE PREPARATION OF PERHALOALKYLTHIOETHERS

Claude Wakselman, Paris; Marc Tordeux, Sceaux; Bernard Langlois, Lyon; Jean-Louis Clavel, Ecully, and Roland Nantermet, Lyon, all of France, assignors to Rhone-Poulenc Agrochimie, Lyon, France

Division of Ser. No. 448,983, Dec. 12, 1989, Pat. No. 5,082,945. This application Nov. 8, 1991, Ser. No. 789,332
Claims priority, application France, Dec. 13, 1988, 8816710; Oct. 9, 1989, 8913371
Int. Cl.[5] C07D *401/12, 231/14*
U.S. Cl. 546—279 **22 Claims**

1. A process for the preparation of perhaloalkylthioethers which comprises bringing into contact, optionally in a solvent:

(1) a reducing agent consisting of an alkali metal dithionite, or consisting of an alkali or alkaline-earth metal or metal hydroxymethanesulphinate, or consisting of a formate anion and sulphur dioxide,

(2) a disulphide, and

(3) a compound of the formula

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XCFYT (II)

wherein Y and T are independently of each other a halogen atom selected from the group consisting of fluorine, chlorine and bromine, or a C_1–C_{11} perhaloalkyl chain, and X is a halogen atom selected from the group consisting of chlorine, bromine and iodine.

5,283,338

PROCESS FOR THE PREPARATION OF 2-CHLOROPYRIDINES

Günther Cramm; Hans Lindel, both of Leverkusen, and Guido Steffan, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

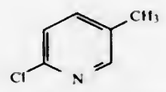
Filed Apr. 1, 1992, Ser. No. 861,039

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 4111215

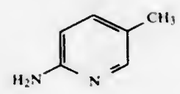
Int. Cl.[5] **C07D** *213/26, 213/61*

U.S. Cl. 546—345 **1 Claim**

1. A process for the preparation of 2-chloro-5-methyl-pyridine of the formula



which comprises reacting 2-amino-5-methyl-pyridine of the formula



with nitrosyl chloride in a hydrogen chloride saturated aqueous solution at a temperature between 0° C. and 20° C. with simultaneous introduction of gaseous hydrogen chloride.

5,283,339

IMMOBILIZED METAL AQUEOUS TWO-PHASE EXTRACTION AND PRECIPITATION

Frances H. Arnold, and Gerald E. Wuenschell, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 598,051, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 275,586, Nov. 23, 1988, abandoned. This application Aug. 5, 1992, Ser. No. 925,906

Int. Cl.[5] **C07F** *1/08, 3/00, 15/00*

U.S. Cl. 548—104 **9 Claims**

1. A compound of the formula:

A—CH(R)CH_2[OCH(R)CH_2]$_n$—B

wherein R is H or CH_3, A is a chelating group and B is a chelating group, OCH_3 or OH, said compound being metallated with a metal ion selected from the group consisting of Cu^{2+}, Zn^{2+}, Ni^{2+}, Fe^{3+}, Fe^{2+}, Co^{2+}, Ca^{2+}, Cd^{2+} and Hg^{2+} and wherein n is chosen so that the compound has a molecular weight prior to metallation between about 1500 to about 20,000.

6. A compound of the formula:

A—CH_2CH_2[OCH$_2$CH$_2$]$_n$—B

wherein A is a chelating group and B is a chelating group, OCH_3 or OH, said compound being metallated with a metal ion selected from the group consisting of Cu^{2+}, Zn^{2+}, Ni^{2+}, Fe^{3+}, Fe^{2+}, Co^{2+}, Ca^{2+}, Cd^{2+} and Hg^{2+} and wherein n is chosen so that the compound has a molecular weight prior to metallation of between about 1500 to 20,000.

5,283,340

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING WASH-OUT NAPHTHOLIC COUPLER

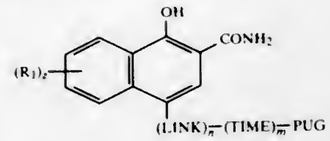
William J. Begley, Webster; Teh-hsuan Chen, Fairport; Hans G. Ling, Rochester; John W. Harder, Rochester, and Arlyce T. Bowne, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 748,499, Aug. 22, 1992, Pat. No. 5,151,343, which is a continuation-in-part of Ser. No. 733,554, Jul. 22, 1991, Pat. No. 5,234,800. This application Jun. 4, 1992, Ser. No. 893,285

Int. Cl.[5] **C07D** *271/10, 257/04*

U.S. Cl. 548—144 **4 Claims**

1. A photographic naphtholic coupler comprising a ballast-free naphtholic coupler moiety containing a —$CONH_2$ group in the 2-position and in the 4-position a ballast coupling-off group that comprises a releasable inhibitor group, the coupler represented by the structure:



wherein

R_1 is a ballast-free substituent;

z is 0, 1, 2 or 3;

TIME is a timing group capable of being released from the LINK moiety upon photographic processing of a photographic element containing the coupler;

n and m individually are 0, 1, or 2;

LINK is a linking group capable of being released from the naphtholic coupler upon oxidative coupling of the naphtholic coupler;

PUG is a releasable development inhibitor group; and at least one of n and m is 1 or 2.

5,283,341

N-ALKYLATION OF HETEROCYCLIC, AROMATIC AMINES

Norio Tanaka; Masataka Hatanaka, both of Funabashi, and Yoshihisa Watanabe, Jyoyo, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

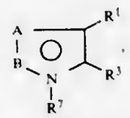
Filed May 8, 1992, Ser. No. 880,587

Claims priority, application Japan, May 9, 1991, 3-104388; Mar. 27, 1992, 4-070802

Int. Cl.[5] **B01J** *23/46;* **C07D** *233/54, 249/22, 403/02*

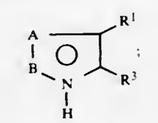
U.S. Cl. 548—262.2 **8 Claims**

1. A process for producing an aromatic heterocyclic tertiary amine of the formula (III):



(III)

wherein A is a nitrogen atom or C-R^5, B is a nitrogen atom or C-R^6, and each of R^1, R^3, R^5 and R^6 which may be the same or different, is a hydrogen atom, an acyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a trialkylsilyl group, a C_{1-6} alkoxycarbonyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkylcarbonyloxy group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkoxy group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxy carbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} dialkylamino group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkylthio group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkylsulfenyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkylsulfonyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkylsulfonyloxy group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{1-6} alkyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{2-6} alkenyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{2-6} alkynyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a phenyl group, a phenoxy group or a phenylthio group), a phenyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxy carbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a trialkylsilyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{2-6} alkenyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a trialkylsilyl group, a phenyl group, a phenoxy group or a phenylthio group), a C_{2-6} alkynyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, an nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a ruthenium trialkylsilyl group, a phenyl group, a phenoxy group or a phenylthio group), or a phenyl group which may be substituted (the substituent being a hydroxyl group, a halogen atom, a cyano group, a nitro group, a carboxyl group, a formyl group, a lower alkoxy group, a lower alkylthio group, a lower alkoxy carbonyl group, an acyl group, a benzoyl group, a di-lower alkylamino group, a lower alkylsulfenyl group, a lower alkylsulfonyl group, a trialkylsilyl group, a phenyl group, a phenoxy group or a phenylthio group), which process comprises reacting a heterocyclic secondary amine of the formula (I):



(I)

wherein A, B, R^1, R^3 and are as defined above, with an alkylating agent of the formula (II):

R^7—X (II)

wherein R^7 is as defined above, and X is a hydroxyl group, a halogen atom, a OSO_3R^7 group, a OSO_2R^7 group, a OCO_2R^7 group, a $OCOR^7$ group, a $OP(O)(OR^7)$ group, a $OP(O)O(R^7)_2$ group or an amino group, in the presence of a catalyst of Group VIII of the Periodic Table.

5,283,342

BIOTINYLATED SMALL MOLECULES

Linda M. Gustavson, Seattle, Wash.; Ananthachari Srinivasan, St. Charles, Mo.; Alan R. Fritzberg, Edmonds, Wash.; John M. Reno, Brier, Wash., and Donald B. Axworthy, Brier, Wash., assignors to NeoRx Corporation, Seattle, Wash.

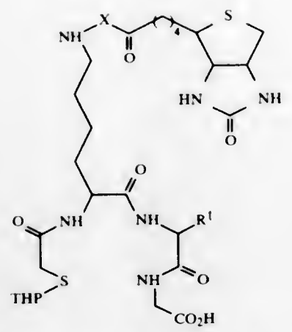
Filed Jun. 9, 1992, Ser. No. 895,588

Int. Cl.[5] **A61K** *43/00, 49/02;* **C07D** *235/00, 495/04*

U.S. Cl. 548—304.1 **4 Claims**

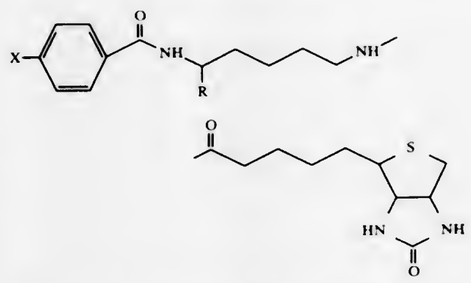
1. A compound having a biotin portion and a chelate portion and having the following formula:

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wherein X is a spacer group which facilities steric availability of the biotin portion and R^1 is H or CH_2CO_2H.

3. A compound of the following formula:



wherein X is a radiohalogen and R is COOH or H.

5,283,343

2-ARYL SUBSTITUTED N-ACETYLTRYPTAMINES AND PROCESS OF PREPARING SUCH

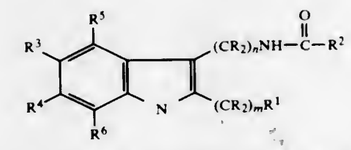
Margarita L. Dubocovich, Evanston, Ill.; Vithal J. Rajadhyaksha, Mission Viejo, Calif.; James V. Peck, Richmond, Va., and Atef A. Helmy, Anaheim, Calif., assignors to Whitby Research, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 524,584, May 16, 1990, Pat. No. 5,093,352, which is a continuation-in-part of Ser. No. 274,631, Nov. 14, 1988, abandoned, which is a continuation of Ser. No. 86,377, Aug. 17, 1987, abandoned. This application Jun. 18, 1991, Ser. No. 718,342

Int. Cl.[5] **C07D** *209/16*

U.S. Cl. 548—496 **22 Claims**

1. A compound represented by the following formula:



wherein each R is independently selected from the group consisting of hydrogen, halogen and C_1 and C_4 alkyl radicals; R^1 is hydrocarbyl aryl radical having from 6 to 14 carbon atoms optionally substituted by one or more hydroxy, nitro, axido, sulfonamideo or hydrocarbyl groups; R^2 is selected from the group consisting of hydrogen, C_1 to C_4 alkyl radicals, C_1 to C_4 alkoxy and phenoxy radicals; R^3 is halogen; R^4 is selected from the group consisting of hydrogen, halogen, hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy and phenoxy radicals; R^5 is selected from the group consisting of hydrogen and halogen, R^6 is selected from the group consisting of hydrogen, hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy and phenoxy; m is an integer of from 1 to 3; n is an integer of from 1 to 3.

5,283,344

COUPLING METHOD USING SELECTIVE AMINATION OF MALEIMIDE

Chi-Deu Chang, Green Oaks, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

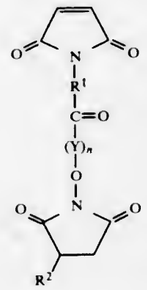
Filed Mar. 10, 1993, Ser. No. 29,265

Int. Cl.[5] **C07D** *207/40*

U.S. Cl. 548—546 **8 Claims**

1. A method of coupling compounds comprising the steps of:

a) forming a maleimide derivative by reacting a maleimide containing compound having the formula:



wherein

R^1 is selected from the group consisting of C_1–C_6 alkyl, benzyl, C_5–C_6 cycloalkyl and combinations thereof;

Y is the residue of a substituted or unsubstituted amino acid;

n is from zero to ten; and

R^2 is selected from the group consisting of H, KSO_3, $LiSO_3$ and $NaSO_3$;

with an amine functional compound capable of displacing the N-hydroxysuccinimide group at a pH of between about 6.0 and 8.0; and

b) reacting the derivitized maleimide of step (a) with a second amine functional compound at a pH greater than or equal to 8.5.

5,283,345

1β,7,8-TRIHYDROXY VITAMIN D_2, 1◦,7,8-TRIHYDROXY VITAMIN D_3 AND THEIR DERIVATIVES AND METHOD OF MANUFACTURING THESE CHEMICALS

Yuji Tahara, Sapporo, Japan, assignor to Hoxan Corporation, Sapporo, Japan

Division of Ser. No. 571,535, Aug. 29, 1990, abandoned. This application May 6, 1992, Ser. No. 879,735

Claims priority, application Japan, Mar. 9, 1988, 63-55342

Int. Cl.[5] **C07D** *317/20;* **C07C** *35/21*

U.S. Cl. 549—214 **1 Claim**

1. A method of manufacturing 1β,7,8-trihydroxy vitamin D_2, 1β,7,8-trihydroxy vitamin D_3 or a derivative thereof that is expressed by the formula

and sufficient selenium oxide to introduce an oxygen functional group at the C(1) position of said derivative by allylic oxidation, and

B) recovering said 1β,7,8-trihydroxy vitamin D_2, 1β,7,8-trihydroxy vitamin D_3 or derivative thereof.

5,283,346

DIOXOLANES

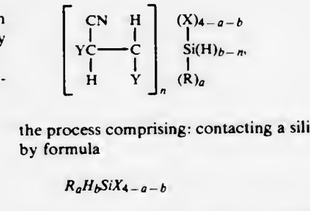
Richard Barner, Witterswil; Josepf Hübscher, Nunningen, and Beat Wirz, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 492,166, Mar. 13, 1992, Pat. No. 5,232,852. This application Dec. 14, 1992, Ser. No. 990,231

Int. Cl.[5] **C07D** *317/72, 317/18*

U.S. Cl. 549—341 **16 Claims**

1. The compound of the formula



where R1 and R2 are each independently methyl or ethyl or taken together form pentamethylene; R3′ is alkanoyl containing from 2 to 9 carbon atoms.

5,283,347

DYE AND ITS SOLUTION

Kazuhito Kusaka, Okayama; Sachio Wakayama, Tokyo; Yoshihiro Sekino, Kanagawa; Kazuyoshi Kawazu, and Akio Kobayashi, both of Okayama, all of Japan, assignors to Kabushikikaisha Kibun, Tokyo, Japan

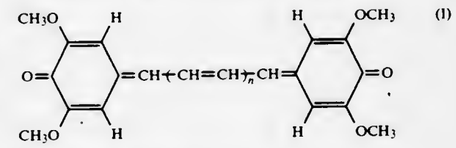
Filed Sep. 4, 1991, Ser. No. 754,466

Claims priority, application Japan, Sep. 4, 1990, 2-233879; Aug. 21, 1991, 3-209508

Int. Cl.[5] **C07C** *50/06*

U.S. Cl. 552—304 **5 Claims**

1. A compound having a structural formula (I).



where n is 1 in essentially pure form.

5,283,348

PROCESS FOR PREPARATION OF BETA-CYANOALKYLSILANES

Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 9, 1993, Ser. No. 87,562

Int. Cl.[5] **C07F** *7/10*

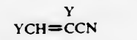
U.S. Cl. 556—415 **26 Claims**

1. A process for preparation of beta-cyanoalkylsilanes described by formula

the process comprising: contacting a silicon hydride described by formula

$$R_aH_bSiX_{4-a-b}$$

with an α,β-unsaturated olefinic nitrile described by formula



in the presence of a catalyst comprising an aminoorganosilane described by formula

$$R_dSiR^1NR^2_2$$

and a copper source; at a temperature within a range of about 50° C. to 200° C.; where each R is independently selected from

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a group consisting of monovalent hydrocarbon radicals comprising one to 20 carbon atoms, substituted monovalent hydrocarbon radicals comprising one to 20 carbon atoms, alkoxy radicals comprising one to 20 carbon atoms, and aryloxy radicals; R^1 is selected from a group consisting of bivalent hydrocarbon radicals comprising one to 20 carbon atoms, and substituted bivalent hydrocarbon radicals comprising one to 20 carbon atoms; each R^2 is independently selected from a group consisting of hydrogen, monovalent hydrocarbon radicals comprising one to 20 carbon atoms, substituted monovalent hydrocarbon radicals comprising one to 20 carbon atoms, aminoalkyl radicals were each alkyl comprises one to 20 carbon atoms, alkylaminoalkyl radicals where each alkyl comprises one to 20 carbon atoms, alkylaminodialkyl radicals where each alkyl comprises one to 20 carbon atoms, dialkylaminoalkyl radicals where each alkyl comprises one to 20 carbon atoms, and polyaminoalkyl radicals where each alkyl comprises one to 20 carbon atoms; X is a halogen; each Y is independently selected from a group consisting of hydrogen and alkyl radicals comprising one to eight carbon atoms; n=1, 2, or 3; a=0, 1, or 2; b=1, 2, or 3; a+b=1, 2, or 3; and d=0, 1, 2, or 3.

5,283,349

2,6,7-TRISUBSTITUTED-3-METHYLENEBICYCLO(3.3.0)-OCTANES, AND PROCESS FOR PRODUCTION THEREOF

Toshio Tanaka; Kiyoshi Bannai, both of Hino, and Seizi Kurozumi, Kokubunji, all of Japan, assignors to Teijin Limited, Osaka, Japan

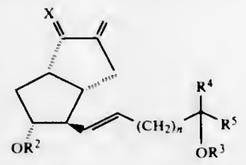
Filed Sep. 11, 1986, Ser. No. 905,976

Claims priority, application Japan, Sep. 13, 1985, 60-201716; Oct. 14, 1985, 60-226973; Oct. 14, 1985, 60-226974

Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—436 **21 Claims**

1. A 2,6,7-trisubstituted-3-methylenebicyclo-(3.3.0)octane which is a compound represented by the following formula (I)



(I)

wherein R^2 and R^3 are identical or different and each represents a hydrogen atom, a tri(C_1-C_7)-hydrocarbonsilyl group or a group forming an acetal linkage together with the oxygen atom to which it is bonded; R^4 represents a hydrogen atom, a methyl group or a vinyl group; R^5 represents (a) an unsubstituted linear or branched C_3-C_8 alkyl group which may be interrupted by an oxygen atom, (b) a substituted linear or branched C_1-C_5 alkyl group in which the substituent is a C_1-C_6 alkoxy group or a phenyl, phenoxy or C_3-C_{10} cycloalkyl group which may be substituted by a halogen atom, a protected hydroxyl group or a C_1-C_4 alkyl group, (c) a phenyl group which may be substituted by a halogen atom, a protected hydroxyl group or a C_1-C_4 alkyl group, or (e) a C_3-C_{10} cycloalkyl group which may be substituted by a halogen atom, a protected hydroxyl group or a C_1-C_4 alkyl group; n is 0 or 1; and X= represents an oxo group (O=) or a group of the formula



in which R^1 represents a hydrogen atom, a tri-(C_1-C_7)hydrocarbonsilyl group, a group forming an acetal linkage together with the oxygen atom to which it is bonded, a C_2-C_{10} acyl group, a (C_1-C_{10})-hydrocarbonsulfonyl group, or a di(C_1-C_{10}) hydrocarbonphosphoryl group, or an enantiomer thereof, or a mixture of these.

5,283,350

ARYL ESTERS OF PHOSPHONOUS HALIDES AND A PROCESS FOR THE PREPARATION THEREOF

Manfred Böhshar, Kelkheim/Taunus, and Hans-Jerg Kleiner, Kronberg/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellshaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01123, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/00304, PCT Pub. Date Jan. 9, 1992

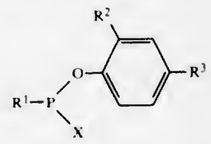
PCT Filed Jun. 19, 1991, Ser. No. 966,041

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1990, 4021194

Int. Cl.[5] C07F *9/42*

U.S. Cl. 558—197 **2 Claims**

1. An aryl ester of a phosphonous halide of the formula I



(I)

in which

R^1 is naphthyl or a naphthyl radical bearing 1 to 5 substituents, where the substituents are identical or different and are a non-aromatic hydrocarbon radical, an alkoxy radical or alkylthio radical each having 1 to 8 carbon atoms, aryl or aryloxy each having 6 to 10 carbon atoms or halogen having an atomic number from 9 to 35,

R^2 is a non-aromatic hydrocarbon radical having 1 to 18 carbon atoms, aryl, arylmethyl, arylethyl or arylisopropyl, where each aryl contains 6 to 10 carbon atoms,

R^3 is hydrogen or one of the groups mentioned under R^2 and X is chlorine or bromine.

5,283,351

PROCESS FOR PRODUCING AN ORGANIC CARBONATE FROM AN ORGANIC HYDROXY COMPOUND AND CARBON MONOXIDE IN THE PRESENCE OF A PALLADIUM CATALYST

Hiroaki Kezuka, Tochigi, and Fumio Okuda, Sodegaura, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,930

Claims priority, application Japan, Apr. 11, 1991, 3-079036

Int. Cl.[5] C07C *69/96, 68/00, 69/88*

U.S. Cl. 558—260 **11 Claims**

1. A process for producing an organic carbonate which comprises reacting an organic hydroxy compound and carbon monoxide in the absence of oxygen and in the presence of a catalyst consisting essentially of (a) palladium or a palladium compound, (b) one or more compounds selected from the group consisting of a quinone and an aromatic diol formed by reduction of a quinone, and (c) an onium halide compound.

5,283,352

PHARMACOLOGICALLY ACTIVE COMPOUNDS, METHODS FOR THE PREPARATION THEREOF AND COMPOSITIONS CONTAINING THE SAME

Reijo J. Bäckström, Helsinki; Kalevi E. Heinola, Järvenpää; Erkki J. Honkanen, Vantaa; Seppo K. Kaakkola, Helsinki; Pekka J. Kairisalo, Helsinki; Inge-Britt Y. Linden, Helsinki; Pekka I. Männistö, Helsinki; Erkki A. O. Nissinen, Espoo; Pentti Pohto, Helsinki; Aino K. Pippuri, Espoo, and Jarmo J. Pystynen, Espoo, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

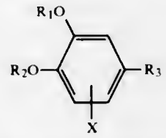
Continuation of Ser. No. 792,655, Nov. 15, 1991, abandoned, which is a division of Ser. No. 587,791, Sep. 25, 1990, Pat. No. 5,112,861, which is a division of Ser. No. 126,911, Nov. 27, 1987, Pat. No. 4,963,590. This application Dec. 7, 1992, Ser. No. 987,245

Claims priority, application Finland, Nov. 28, 1986, 864875; United Kingdom, May 27, 1987, 8712437

Int. Cl.[5] C07C *255/33, 255/34, 205/22, 49/213*

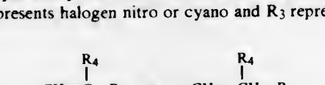
U.S. Cl. 558—401 **3 Claims**

1. A compound according to formula I



I

wherein R_1 and R_2 independently represent hydrogen, carbamoyl which is substituted by an alkyl of 1 to 4 carbon atoms, alkylcarbonyl of 2 to 5 carbon atoms or phenyl carbonyl, X represents halogen nitro or cyano and R_3 represents



wherein R_4 represents cyano or alkylcarbonyl of 2 to 5 carbon atoms and R_5 represents cyano, alkylcarbonyl of 2 to 5 carbon atoms, or alkoxycarbonyl of 2 to 9 carbon atoms, or pharmaceutically acceptable salts thereof.

5,283,353

PREPARATION OF 1-AMINO-1-DEOXYOLIGOSACCHARIDES AND DERIVATIVES THEREOF

James R. Rasmussen, Boston, Mass.; John M. Risley, Lafayette, and Robert L. Van Etten, West Lafayette, both of Ind., assignors to Genzyme Corporation, Cambridge, Mass. and Purdue Research Foundation, West Lafayette, Ind.

Division of Ser. No. 940,574, Dec. 11, 1986, abandoned. This application Jun. 5, 1990, Ser. No. 533,284

Int. Cl.[5] C07H *1/00*

U.S. Cl. 536—17.2 **2 Claims**

1. A 1-amino-1-deoxyoligosaccharide obtained by the enzymatic cleavage of an Asn-linked oligosaccharide from a glycoprotein with an amidohydrolase enzyme, the amino group of said 1-amino-1-deoxyoligosaccharide being derivatized by reaction with an electrophilic reagent selected from the group consisting of dansyl chloride, dabsyl chloride and fluorescein isothiocyanate.

5,283,354

NUCLEIC ACIDS ENCODING HEMATOPOIETIC STEM CELLS RECEPTORS FLK-1

Ihor R. Lemischka, Princeton, N.J., assignor to The Trustees of Prioceton University, Princeton, N.J.

Division of Ser. No. 813,593, Dec. 24, 1991, Pat. No. 5,185,438, which is a continuation-in-part of Ser. No. 793,065, Nov. 15, 1991, which is a continuation-in-part of Ser. No. 728,913, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,666, Apr. 2, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,507

Int. Cl.[5] C07H *21/00*

U.S. Cl. 536—23.5 **3 Claims**

1. A recombinant nucleic acid molecule that is flk-1 having the sequence shown in FIG. 2 (SEQIDNO:3).

5,283,355

BENZOQUINONE COMPOUNDS

William J. E. Norris, New Mill, England, assignor to Imperial Chemical Industries PLC, London, England

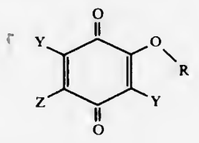
Filed Oct. 22, 1991, Ser. No. 780,470

Claims priority, application United Kingdom, Oct. 25, 1990, 9023290.1; Oct. 25, 1990, 9023291.9

Int. Cl.[5] C07C *50/02, 225/28;* **C07D** *205/02, 237/02*

U.S. Cl. 552—306 **6 Claims**

1. A compound of the Formula (5):



(5)

wherein:

Y is H, alkyl, substituted alkyl, alkoxy, Cl or Br;

R is a group of formula (3)



(3)

R^1 and R^2 are each independently alkyl, or R^1 and R^2 together with the carbon atom to which they are attached form an optionally substituted 4, 5 or 6 membered alicyclic or heterocyclic ring;

R^3 is H;

Z is Cl, Br or A—NH—; and

A is H, optionally substituted alkyl, optionally substituted aralkyl or optionally substituted aryl.

5,283,356

PROCESS FOR MANUFACTURING ALKYLENE CARBONATES USING METAL PHTHALOCYANINE CATALYSTS

Edward T. Marquis, Austin, and John R. Sanderson, Leander, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,760

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—260 **18 Claims**

1. A process for the manufacture of alkylene carbonates, comprising reacting (a) alkylene oxide having the formula:

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in which R is hydrogen and R^1 is selected from the group consisting of hydrogen, aryl groups having from 6 to 20 carbon atoms, alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 5 to 20 carbon atoms, and alkenyl groups containing from 2 to 20 carbon atoms with (b) carbon dioxide, in the presence of a catalytically effective amount of a metal phthalocyanine.

5,283,357

SEPARATION METHOD OF ALPHA-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

Toshio Katoh, Kawasaki; Chojiro Higuchi, Kamakura; Takeshi Oura, Zushi; Masanobu Ajioka, Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 322,384, Mar. 13, 1989, abandoned.
This application Apr. 23, 1991, Ser. No. 688,709
Claims priority, application Japan, Mar. 14, 1988, 63-058210; Jun. 1, 1988, 63-135060; Jun. 13, 1988, 63-143673; Jun. 27, 1988, 63-156866
Int. Cl.[5] C07C *227/34, 227/38*
U.S. Cl. 560—41 **24 Claims**

1. A method for the separation of α-L-aspartyl-L-phenylalanine methyl ester (α-APM) from a solution thereof in an organic solvent comprising an organic carboxylic acid, which comprises the steps of precipitating the α-APM from the solution by converting the α-APM with sulfuric acid or an organic sulfonic acid to an acid addition salt thereof, and separating the precipitated α-APM acid addition salt from the solvent.

5,283,358

PROCESS FOR OBTAINING ARYL ESTERS BY O-DEALKYLATION AND APPLICATIONS

Roy A. Olofson, State College, Pa.; Ann P. Lawson, Lancashire, Del., and Heather L. Rayle, Los Angeles, Calif., assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 10, 1992, Ser. No. 988,870
Claims priority, application France, Dec. 13, 1991, 91 15548
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—106 **19 Claims**

1. A process for obtaining an aryl ester by O-dealkylation of an alkyl aryl ether, in which an alkyl aryl ether is reacted with an acyl halide in the presence of a catalyst chosen from a hexaalkylguanidiunium salt and a tetraalkylphosphonium salt.

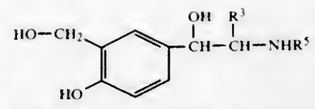
5,283,359

PROCESS FOR PREPARING ALBUTEROL, ACETAL, HEMI-ACETAL, AND HYDRATES OF ARYLGLYOXAL INTERMEDIATES THEREOF

Chou-Hong Tann, Berkeley Heights; T. K. Thiruvengadam, Edison; John Chiu, Parsippany; Michael Green, Paterson; Timothy L. McAllister, Fords; Cesar Colon, Rahway, and Juoning Lee, Springfield, all of N.J., assignors to Schering Corp., Kenilworth, N.J.

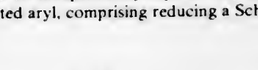
PCT No. PCT/US91/06248, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/04314, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 6, 1991, Ser. No. 30,185
Int. Cl.[5] C07C *69/76;* **C07F** *5/02*
U.S. Cl. 560—53 **14 Claims**

5. A process for preparing the arylethanolamine of the formula:



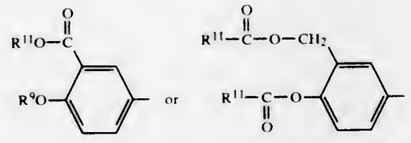
(XIV)

wherein R^3 and R^5 independently represent hydrogen, alkyl, aryl or substituted aryl, comprising reducing a Schiff's base of the formula:



(XI)

wherein R^3 and R^5 are as defined above and Ar' is



wherein R^9 represents hydrogen or acyl, and R^{11} represents hydrogen or alkyl, with a borane-thioether reagent to form a boron-arylethanolamine complex, and cleaving the boron-arylethanolamine complex to give the desired arylethanolamine (XIV).

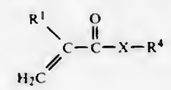
5,283,360

SELECTIVE EPOXIDATION OF UNSATURATED (METH)ACRYLATES, NEW FUNCTIONAL (METH)ACRYLATES, AND POLYMERS THEREOF

Paul Caubere, Nancy; Yves Fort, Vandoeuvre les Nancy, and Agnès Ortar, Jarny, all of France, assignors to Atochem, Paris la Defense, France

Filed Jul. 8, 1991, Ser. No. 725,318
Claims priority, application France, Jul. 6, 1990, 90 08607
Int. Cl.[5] C07C *69/52*
U.S. Cl. 560—220 **13 Claims**

1. A process for opening the epoxide function of a (meth-acrylic epoxide of formula V:



(V)

wherein:

X is oxygen, sulfur, a —NH radical, $—NR^3$ in which R^3 is an alkyl group of 1 to 12 carbon atoms, or oxyalkylene $—O—(CH_2)_n$ in which n is an integer ranging from 3 to 16 inclusive,

R^1 is a hydrogen or alkyl of 1 to 5 carbon atoms, and

R^4 is a hydrocarbon chain comprising 2 to 20 carbon atoms, which is straight-chain or branched alkyl, monocyclic or polycyclic cycloalkyl, heterocycloalkyl, or alkylaryl, said hydrocarbon chain also comprising an oxirane group, said process comprising reacting said (meth)acrylic epoxide with at least one reactive compound selected from the group consisting of a strong inorganic acid, a boron trifluoride etherate complex, and acid salt in the presence of the corresponding acid, a halide of a trialkylsilane or trialkoxysilane, or a ketone in the presence of a cationic resin.

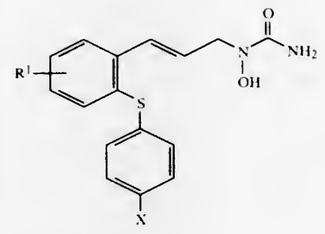
5,283,361

N-HYDROXY-N-[3-[2-(HALOPHENYLTHIO)PHENYL]-PROP-2-ENYL]UREAS AS LIPOXYGENASE INHIBITORS

Gary A. Hite, Indianapolis; Edward D. Mihelich, Carmel; David W. Snyder, Indianapolis, and Tulio Suarez, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 690,204, Apr. 23, 1991, abandoned.
This application Apr. 8, 1992, Ser. No. 865,005
Int. Cl.[5] C07C *275/02, 275/24;* **A61K** *31/17, 31/185*
U.S. Cl. 562—623 **25 Claims**

1. An N-hydroxy-N-[3-[2-(halophenylthio)phenyl]prop-2-enyl]urea of the Formula



I

where

R^1 is hydrogen or halo;

X is fluoro or chloro; and pharmaceutically acceptable salts thereof.

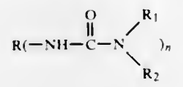
5,283,362

PROCESS FOR THE PREPARATION OF PURE N,N'-ASYMMETRICALLY SUBSTITUTED PHENYLUREAS

Kurt A. Hackl, and Heinz Falk, both of Linz, Austria, assignors to Chemie Linz Gesellschaft m.b.H., Linz, Austria

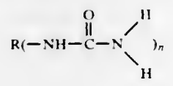
Filed Jul. 31, 1992, Ser. No. 922,767
Claims priority, application Austria, Aug. 16, 1991, 1616/91
Int. Cl.[5] C07C *273/18, 275/26, 275/28*
U.S. Cl. 564—48 **10 Claims**

1. Process for the preparation of pure N,N'-asymmetrically substituted phenylureas of the formula



(I)

in which R represents a phenyl or phenylene group which is unsubstituted or substituted by groups which are inert under the reaction conditions and R_1 and R_2 are either identical and each represent an alkyl group or are different, R_1 representing a hydrogen atom or an alkyl group which can be unsubstituted or substituted by groups which are inert under the reaction conditions and R_2 representing an alkyl or phenyl group, either of which can be unsubstituted or substituted by groups which are inert under the reaction conditions, or R_1 and R_2, together with the nitrogen atom, represent an aliphatic heterocyclic ring and n is the number 1 or 2, said process comprising reacting a phenylurea of the formula



(II)

in which R and n have the abovementioned meaning, is reacted with an amine of the formula



(III)

in which R_1 and R_2 have the abovementioned meaning, at temperatures from 100° to 200° C. in a diluent which is inert under the reaction conditions, interrupting the reaction before by-products are formed, removing the N,N'-asymmetrically substituted phenylurea of the formula 1 from the reaction mixture and, if appropriate, returning the unreacted starting compounds of the formulae II and III to the process.

5,283,363

PROCESS FOR THE PREPARATION OF (HETERO)ARYLALK(EN/IN)YLAMINES AND (HETERO)ARYLALKINYLAMINES

Dietmar Kuhnt, Leverkusen; Thomas Himmler, Cologne, and Heinz Ziemann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 821,202
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102289
Int. Cl.[5] C07C *211/08;* **C07D** *251/14, 211/00*
U.S. Cl. 564—336 **7 Claims**

1. A process for the preparation of (hetero) arylalk-(en/in)-ylamines of the general formula (I)



(I)

in which

A represents ethane-1, 2-diyl (ethylene, dimethylene, $—CH_2—CH_2—$) or represents ethene-1,2-diyl (ethenylene, vinylene, —CH=CH—) or represents ethine-1,2-diyl (ethinylene, —C≡C—),

Ar represents in each case optionally substituted aryl or heteroaryl, and

R^1 and R^2 are identical or different and individually represent hydrogen or alkyl or together represent alkanediyl (alkylene),

characterised in that

(a) in the event that, in formula (I), A represents ethine-1,2-diyl and Ar, R^1 and R^2 have the abovementioned meaning, halogeno(hetero)aryl compounds of the general formula (II)

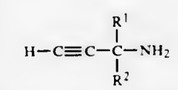
(II)

in which

Ar has the abovementioned meaning and

X represents halogen,

are reacted with aminoalkinyl compounds of the general formula (III)



(III)

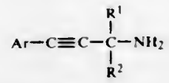
in which

R^1 and R^2 have the abovementioned meaning, in the presence of a catalyst, in the presence of an acid acceptor, if appropriate in the presence of further reaction auxiliaries and if appropriate in the presence of a diluent, at temperatures between 0° C. and 200° C., and, if appropriate,

(b) in the event that, in formula (I), A represents ethane-1,2-diyl or ethene-1,2-diyl and Ar, R^1 and R^2 have the above-

VOL 1159 ISS 1 FE 1 1994 UMI

mentioned meaning, the compounds obtained by the process step described under (a), of the general formula (Ia)



(Ia)

in which

Ar, R^1 and R^2have the abovementioned meaning, are reacted with a hydrogenating agent, if appropriate in the presence of a catalyst and if appropriate in the presence of a diluent, at temperatures between 0° C. and 150° C.

5,283,364

HYDROLYSIS PROCESS FOR POLYAMINES

Werner Rasshofer, Cologne; Klaus König, Odenthal; Hans-Joachim Meiners, and Gerhard Grögler, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 479,810, Feb. 14, 1990, abandoned, which is a continuatioo of Ser. No. 233,302, Aug. 17, 1988, abandoned, which is a continuation of Ser. No. 916,923, Oct. 9, 1986, abandoned. This application Jan. 15, 1993, Ser. No. 4,808

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1985, 3537116; Apr. 19, 1986, 3613249

Int. Cl.[5] C07C *85/00*

U.S. Cl. 564—393 **11 Claims**

1. A one-step process for the production of polyamines containing primary amino groups in which

(a) an organic isocyanate having an isocyanate content of from 0.5 to 40 wt. % is hydrolyzed with

(b) from 1.25 to 12 mols of water for each equivalent of isocyanate groups in (a) in the presence of

(c) at least 10% by weight of a water-soluble carboxylic acid amide based on 100% by weight of (a) and

(d) a not-incorporable catalyst consisting of 0.0001 to 0.099% by weight, based on 100 % by weight of (a), or an alkali metal hydroxide;

in which the weight ratio of (c) to (b) is from 10 to 150, a homogeneous phase is maintained during hydrolysis, and the hydrolysis is carried out at a temperature of from 20° to 210° C.

5,283,365

PROCESS FOR PREPARING HIGH-PURITY ANILINE

Teruyuki Nagata; Katsuji Watanabe; Yoshitsugu Kono; Akihiro Tamaki, and Takashi Kobayashi, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 642,336, Jan. 17, 1991, abandoned. This application Jun. 10, 1992, Ser. No. 896,696

Claims priority, application Japan, May 15, 1990, 3-123007

Int. Cl.[5] C07C *209/36*

U.S. Cl. 564—423 **3 Claims**

1. In a process for the preparation of aniline by hydrogenating nitrobenzene in an aniline solvent in the presence of a catalyst of palladium or palladium-platinum which is deposited on a lipophilic carbon having an oil absorbency of at least 100; and in the presence as a promoter, of a compound selected from the group consisting of an alkali metal hydroxide, alkali metal carbonate, alkali metal bicarbonate, zinc acetate and zinc nitrate; at a temperature of from 150 to 250° C. at anitrobenzene concentration in the reaction solution of 0.5% by weight or less, the improvement comprising conducting the hydrogenation continuously and substantially in the absence of water by continuously distilling off aniline and water formed in said reaction as vapor from the reaction product and maintaining the concentration of nitrobenzene in the reaction solution at 0.01% by weight or less, thereby increasing the rate of reaction, and inhibiting the occurrence of side reactions and the formation of byproducts resulting from the low nitrobenzene concentration by employing as the promoter, a zinc compound and an alkali metal carbonate or a zinc compound and an alkali metal bicarbonate.

5,283,366

METHOD OF PREPARING 3-AMINOMETHYL-3,5,5-TRIMETHYL CYCLOHEXYL AMINE

Klaus Huthmacher, Gelnhausen, and Hermann Schmitt, Rodenbach, both of Fed. Rep. of Germany, assignors to Degussa AG, Fed. Rep. of Germany

Continuation of Ser. No. 841,010, Feb. 25, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 22,852

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1991, 4106882

Int. Cl.[5] C07C *209/22, 209/48*

U.S. Cl. 564—446 **9 Claims**

1. In a method of preparing 3-aminomethyl-3,5,5-trimethylcyclohexyl amine by reductive amination of 1,3,3-trimethyl-5-oxo-cyclohexane carbonitrile (IPN) with ammonia and hydrogen at a pressure of 5 to 20 MPa and a temperature of 50° to 150° C. using a nickel or cobalt Raney catalyst and in the presence of an organic solvent; the improvement which comprises carrying out the reaction in the presence of a co-catalyst selected from the group consisting of salts of nickel and cobalt in an amount of 0.05 to 0.5 mole per mole of Raney catalyst.

5,283,367

SUBSTITUTED 1,4-DIAMINO-2-BUTENE STABILIZERS

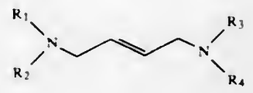
Joseph E. Babiarz, Amawalk, N.Y.; Glen T. Cunkle, Stamford, Conn., and Werner Rutsch, Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 400,649, Aug. 30, 1989, abandoned. This application May 16, 1991, Ser. No. 701,268

Int. Cl.[5] C07C *211/22*

U.S. Cl. 564—509 **5 Claims**

1. A compound of formula I



(I)

wherein

R_1, R_2, R_3 and independently a linear or branched alkyl of 8 to 30 carbon atoms; alkyl of 1 to 20 carbon atoms substituted with cycloakyl of 5 to 12 carbon atoms; or R_1, R_2, R_3 and R_4 are independently cycloalkyl of 5 to 12 carbon atoms; or alkenyl of 3 to 20 carbon.

5,283,368

PROCESS FOR PRODUCING ALKOXYLATED THIO-COMPOUNDS

James E. Shaw, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 19, 1993, Ser. No. 6,278

Int. Cl.[5] C07C *319/14*

U.S. Cl. 568—45 **19 Claims**

1. A process for producing an alkoxylated thio-compound comprising contacting an alkylene oxide with a sulfur-containing compound in the presence of a catalyst under conditions sufficient to synthesize said alkoxylated thio-compound wherein said catalyst comprises a base and an alkoxylated alcohol; and said sulfur-containing compound has the formula of R—SH wherein R is selected from the group consisting of hydrogen, a C_1–C_{10} hydrocarbyl radical, and mixtures thereof.

5,283,369

SELECTIVE SYNTHESIS OF MERCAPTANS AND CATALYST THEREFOR

Roger T. Clark, and James A. Elkins, Jr., both of Chester, Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Mar. 24, 1992, Ser. No. 856,232

Int. Cl.[5] C07C *319/08*

U.S. Cl. 568—71 **8 Claims**

1. A process for the manufacture of aliphatic mercaptans by the reaction of an aliphatic alcohol or ether having 1 to 20 carbon atoms with hydrogen sulfide at an elevated temperature ranging from about 225° to about 475° C. and in the presence of a catalyst prepared by converting at least the surface of (a) a natural aluminum oxide containing material, (b) a synthetic aluminum oxide or hydroxide, (c) an aluminum salt or (d) an aluminum alcoholate to an amorphous alumina gel, drying said gel, heating the dried gel at a temperature between about 25° and less than 200° C. and for a duration sufficient to convert said gel into a crystalline α- and/or β-alumina trihydrate, and treating said trihydrate with a sulfiding agent at a temperature ranging from ambient up to 475° C., a pressure ranging from atmospheric up to 500 psig and for a time sufficient to produce a sulfided product.

5,283,370

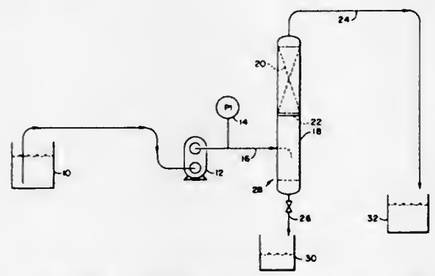
PROCESS FOR THE PARTIAL DEHYDRATION OF A CRUDE WATER-WET ORGANIC STREAM OF THE MONOHYDROPEROXIDE OF P-DIISOPROPYLBENZENE

J. Ronald Hilderbrand, 507 Red Oak La., Kingsport, Tenn. 37663, and Stephan B. Meydell, III, 3013 West Parkridge Ave., Appleton, Wis. 54914

Filed Dec. 31, 1992, Ser. No. 998,980

Int. Cl.[5] C07C *409/00*

U.S. Cl. 568—576 **17 Claims**



1. A process for the partial dehydration and partial purification of a crude water-wet organic stream of the monohydroperoxide of p-diisopropylbenzene containing at least 2 wt % water comprising:

(a) contacting said stream containing said monohydroperoxide with a non reactive inorganic salt to remove at least a portion of the water into a concentrated brine of said inorganic salt to form a product that contains less than the 10° C. saturation amount of water; and

(b) separating said concentrated brine and said product,

wherein the product has also been filtered to remove dispersed solid particles to form a clear product.

5,283,371

INTERMEDIATES USEFUL IN THE PRODUCTION OF PESTICIDES

Michael Elliott, Berkeley, Calif.; Norman F. Janes, Luton, and Bhupinder P. S. Khambay, Harrow Weald, both of England, assignors to National Research Development Corporation, England

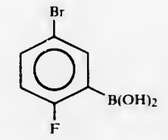
Division of Ser. No. 428,193, Oct. 27, 1989, Pat. No. 5,068,403, which is a continuation of Ser. No. 25,230, Mar. 12, 1987, abandoned. This application Jun. 26, 1991, Ser. No. 721,149

Claims priority, application United Kingdom, Mar. 13, 1986, 8606292; Apr. 18, 1986, 8609590

Int. Cl.[5] C07C *43/225*

U.S. Cl. 568—639 **1 Claim**

1. A process for the production of 5-bromo-2-fluorodiphenyl ether, comprising oxidizing a boronic acid of formula III



III

to 5-bromo-2-fluorophenol, forming the alkali metal phenoxide of said 5-bromo-2-fluorophenol and reacting the alkali metal phenoxide with a halobenzene under Ullmann conditions.

5,283,372

PREPARATION OF PURIFIED OPTICAL ISOMERS OF DESFLURANE

Leonid A. Rozov, Fair Lawn; Chialang Huang, Edison; Donald F. Halpern, Fanwood, and Gerald G. Vernice, Nutley, all of N.J., assignors to Anaquest, Inc., Liberty Corner, N.J.

Division of Ser. No. 959,204, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 802,115, Dec. 4, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 48,091

Int. Cl.[5] C07C *41/22*

U.S. Cl. 568—683 **3 Claims**

1. A method of producing a highly purified optical isomer of 2-(difluoromethoxy-1,1,1,2-tetrafluoroethane comprising reacting the opposite optical isomer of isoflurane in at least 95% optical purity with bromine trifluoride at a temperature between about 0° and −20° in the presence of bromine as a solvent.

5,283,373

ETHERIFICATION WITH SKELETAL OLEFIN ISOMERIZATION

Charles P. Luebke, Mount Prospect; Bipin V. Vora, Darien; David A. Wegerer, Lisle, and Joseph E. Zimmermann, Arlington Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 883,636, May 15, 1992, Pat. No. 5,210,327. This application Dec. 28, 1992, Ser. No. 997,461

Int. Cl.[5] C07C *41/06, 5/22*

U.S. Cl. 568—697 **19 Claims**

1. A process for the production of ether from a feedstream including normal alkene, isoalkene, normal alkane and isoalkane isomers, said process comprising:

(a) mixing an etherification input stream comprising isoalkenes, normal alkenes and normal alkanes with a C_1–C_5 monohydroxy alcohol to produce a first combined feed and contacting said first combined feed with an etherification catalyst in a first etherification zone at etherification conditions to react isoalkenes with said alcohol and produce a first etherification effluent stream comprising ether and normal alkane and normal alkene isomers;

(b) mixing said first etherification zone effluent and at least a portion of an isomerization zone effluent stream produce a second combined etherification feed and contacting said second combined etherification feed with an etherification

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catalyst at etherification conditions in a second etherification zone to produce a second etherification zone effluent comprising ether, normal alkane, normal alkene and isoalkane isomers and separating at least a portion of said second etherification zone effluent in a distillation zone into a high boiling fraction comprising said ether, a low boiling fraction comprising said isoalkane, and an intermediate boiling fraction having an average boiling point between said low boiling and said high boiling fraction, said intermediate fraction comprising normal alkene and normal alkane isomers of said isoalkane;

(c) passing an isomerization zone feedstream comprising at least a portion of said intermediate boiling stream to an isomerization reaction zone for the skeletal isomerization of normal alkenes and contacting said intermediate boiling stream with an isomerization catalyst at isomerization conditions;

(d) withdrawing an isomerization zone effluent stream comprising isoalkenes from said isomerization zone and passing at least a portion of said isomerization zone effluent directly to said second etherification zone to provide at least a portion of said second combined etherification zone feedstream; and,

(e) passing at least a portion of said feedstream including normal alkene, isoalkene, normal alkane and isoalkane isomers into said first etherification zone.

5,283,374

SELECTED PHENOLIC DERIVATIVES OF 4-(4-HYDROXYPHENYL)-CYCLOHEXANONE AND THEIR USE AS SENSITIVITY ENHANCERS FOR RADIATION SENSITIVE MIXTURES

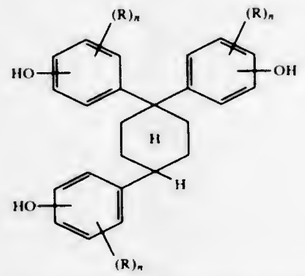
Alfred T. Jeffries, III, Providence, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Filed Apr. 5, 1993, Ser. No. 45,024

Int. Cl.[5] C07C *39/17*

U.S. Cl. 568—721 **9 Claims**

1. A polyhydric phenolic compound of formula (I):



(I)

wherein each R is individually selected from the group consisting of hydrogen and a lower alkyl group having 1-4 carbon atoms and each n is 0, 1, or 2.

5,283,375

PROCESS FOR HIGH PURITY TETRABROMOBISPHENOL-A

Bonnie G. McKinnie; Gary L. Sharp, and Robert E. Williams, all of Magnolia, Ark., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 861,544, Apr. 1, 1992, Pat. No. 5,208,389. This application Dec. 15, 1992, Ser. No. 990,414

Int. Cl.[5] C07C *39/38, 39/367*

U.S. Cl. 568—726 **27 Claims**

1. A process for preparing a flame retardant product predominant in tetrabromobisphenol-A comprising:

a) dissolving bisphenol-A in a methanol solvent containing up to about 5 weight percent water, wherein the ratio of methanol to bisphenol-A ranges from about 25 to about 43 moles of methanol per mole of bisphenol-A based on the total amount of methanol used and the total amount of bisphenol-A to be brominated;

b) adding to the solution in (a) from about 3.9 to about 4.2 moles of bromine per mole of bisphenol-A to be brominated while maintaining a reaction temperature in the range of from about 0° to about 40° C.; and

c) after the bromination is substantially complete, precipitating the tetrabromobisphenol-A thus formed.

5,283,376

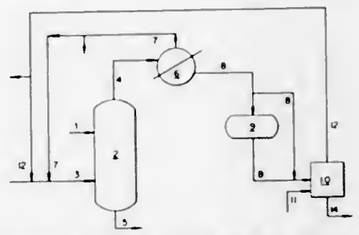
METHOD OF PHENOL EXTRACTION FROM PHENOL TAR

Arkady S. Dyckman; Boris I. Gorovitz; Anatoly M. Somov; Svetlana A. Taranenko; Sergey A. Polyakov, all of St. Petersburg; Alexandr S. Malinovsky, Novokuibyshevsk; Yury I. Petrov, Novokuibyshevsk; Anatoly D. Sorokin, Novokuibyshevsk, and Leonty M. Krasnov, Novokuibysbevsk, all of Russian Federation, assignors to General Electric Co., Pittsfield, Mass.

Filed Apr. 23, 1993, Ser. No. 54,663

Int. Cl.[5] C07C *37/70, 37/72*

U.S. Cl. 568—760 **10 Claims**



1. A method of extracting phenol from the phenol tar byproduct of a process for producing phenol from cumene which comprises

a) preparing an amine water solution,

b) contacting the phenol tar with the amine water solution to form aminophenate in the water solution,

c) heating the water solution of amino phenate to decompose the aminophenate into amine and phenol.

5,283,377

METHOD FOR PRODUCING OCTADIENOLS

Keiichi Sato, Tokyo; Iwao Nakajima, Yokohama, and Yoko Misu, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

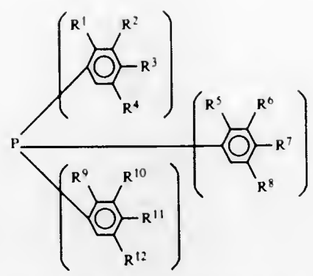
Filed Oct. 1, 1992, Ser. No. 955,054

Claims priority, application Japan, Oct. 2, 1991, 3-255341

Int. Cl.[5] C07C *29/04*

U.S. Cl. 568—896 **18 Claims**

1. A method for producing octadienols, which comprises reacting 1,3-butadiene with water in the presence of a palladium compound, a phosphine compound and carbon dioxide, wherein a compound of the formula (I):



(I)

wherein each of R^1, R^5 and R^9 which may be the same or different, is a hydrocarbon group, and each of R^2, R^3, R^4, R^6 R^7, R^8, R^{10}, R^{11} and R^{12} which may be the same or different, is hydrogen or an electron donative substituent selected from the group consisting of an alkyl group, an alkylamino group, an amino group, an alkoxy group and a hydroxyl group, provided that at least one of them is an electron donative substituent, is used as the phosphine compound.

5,283,378

PROCESS FOR THE DECHLORINATION AND/OR DEBROMINATION OF FLUORINE-AND CHLORINE-AND/OR BROMINE-CONTAINING AROMATIC COMPOUNDS

Dietmar Bielefeldt, Ratingen, and Albrecht Marhold, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

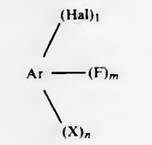
Continuation of Ser. No. 772,824, Oct. 8, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,209

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4033097

Int. Cl.[5] C07C *25/13, 25/18, 17/24, 17/34*

U.S. Cl. 570—143 **5 Claims**

1. Process for the selective dechlorination and/or debromination of a fluorine- and chlorine- and/or bromine-containing aromatic compound of the formula



in which

Ar represents an aromatic radical having 6 to 10 C atoms,

Hal, independently of one another, represents chlorine or bromine,

X represents C_1- to C_4-alkyl, fluorinated C_1- to C_4-alkyl, C_1- to C_4-alkoxy, CHO, CH_2OH, CN, COO-C_1- to C_4-alkyl, NH_2, CH_2NH_2 or NO_2,

l represents 1, 2, 3 or 4

m represents 1, 2, 3 or 4 and

n represents zero or 1,

where l+m+n corresponds to at least 2 and at most the number of possible valencies on Ar, with hydrogen in the presence of a supported catalyst containing palladium, wherein said catalyst is present in stationary phase and the fluorine- and chlorine- and/or bromine-containing compound and hydrogen are passed over said catalyst in gaseous phase.

5,283,379

METHOD FOR PRODUCING TRIFLUOROETHYLENE

Takao Saiki; Makoto Sumida; Satohiro Nakano, all of Shinnanyo, and Kengo Murakami, Hofu, all of Japan, assignors to F. Tech, Inc., Tokyo, Japan

Continuation of Ser. No. 737,656, Jul. 30, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,009

Claims priority, application Japan, Aug. 13, 1990, 2-214113

Int. Cl.[5] C07C *17/34*

U.S. Cl. 570—156 **6 Claims**

1. A method for producing trifluoroethylene by reaction of 1,1,2-trichloro-1,2,2-trifluoroethane with hydrogen in the presence of a catalyst comprising form 0.1 to 5% by weight of palladium and from 0.01 to 10% by weight of at least one member selected from the group consisting of gold, tellurium, antimony, bismuth, and arsenic supported on a carrier.

5,283,380

PROCESS FOR PREPARING AN ACTIVE TELOGEN

Bernard Boutevin, Montpellier, France, and Gerald A. Gornowicz, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1993, Ser. No. 76,527

Claims priority, application France, Jun. 15, 1992, 92 07185

Int. Cl.[5] C07C *19/08*

U.S. Cl. 570—161 **8 Claims**

1. A method of making CF_3CFClI comprising:

reacting a mixture comprising iodine, iodine pentafluoride and at least a stoichiometric amount of chlorotrifluoroethylene in the presence of a catalytic amount of $AlBr_3$ at a temperature above 25° C. for a time sufficient to form the CF_3CFClI.

5,283,381

PROCESS FOR PREPARING FLUORINE-CONTAINING ETHANE DERIVATIVES

Johannes Eicher, Garbsen; Karl-Heinz Fazniewscy, Lehrte, and Werner Rudolph, Hannover, all of Fed. Rep. of Germany, assignors to Solvay Fluor und Derivate GmbH, Hannover, Fed. Rep. of Germany

Division of Ser. No. 940,207, Sep. 8, 1992, Pat. No. 5,227,546. This application Apr. 26, 1993, Ser. No. 51,898

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130696

Int. Cl.[5] C07C *17/00*

U.S. Cl. 570—165 **1 Claim**

1. A composition of matter for use as a reaction mixture in a fluorination reaction comprising a tantalum halide fluorosulfonate compound or a niobium halide fluorosulfonate compound corresponding to the formula IV

$$MX_n(FSO_3)_{5-n} \quad \text{(IV)}$$

and at least one compound selected from the group consisting of alkenes corresponding to the formula II

$$F_kH_mCl_{2-k-m}C{=}CX^1X^2 \quad \text{(II)}$$

wherein X^1 and X^2 can be identical or different and denote hydrogen, fluorine, chlorine or bromine, k has the aforementioned meaning and m denotes 0, 1 or 2; halogen-containing alkanes corresponding to the formula III

$$F_kH_nCl_{3-(k+n)}C{-}CY^1Y^2Y^3 \quad \text{(III)}$$

wherein k and n have the above meaning, Y^1 and Y^2 can be identical or different and denote hydrogen, fluorine, chlorine or bromine and Y^3 denotes chlorine or bromine; and hydrogen fluoride.

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5,283,382

FLUORINATION PROCESS

Mario J. Nappa, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 810,525, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 532,617, Jun. 4, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,550
Int. Cl.[5] C07C *17/08*
U.S. Cl. 570—168 12 Claims

1. A process for preparing fluorinated alkanes which comprises contacting, at a temperature of 0° C. to 185° C. under substantially anhydrous conditions, a starting material selected from halogenated alkanes and halogenated alkenes of the following formulas

$$R_1R_2C{=}CR_3R_4 \text{ and } R_5R_6R_7R_8C$$

wherein

R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are H, F, Cl, Br, or C_xZ_{2x+1}, wherein Z is H, F, Cl or Br

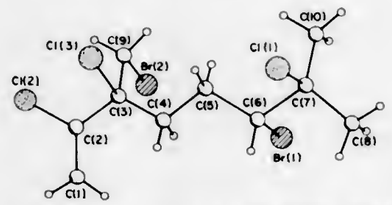
x is an integer from 1–10, and wherein at least one of R_1–R_4 and R_5–R_8 is Br or Cl or a bromine or chlorine-substituted group, with HF, $HOSO_2Cl$ and $SOCl_2$, in the presence of at least one catalyst selected from Nb_2O_5 and Ta_2O_5, to produce reaction products, the mole ratio of HF to Ta or Nb being from 1 to 150, the mole ratio of $HOSO_2Cl$ to Ta or Nb being from 1 to 30, and the mole ratio of $SOCl_2$ to Ta or Nb being from 0.5 to 20; and the mole ratio of the starting material to Ta or Nb being less than 100; and removing the reaction products from contact with the catalyst and isolating a fluorinated alkane having at least one more fluorine atom than the starting material.

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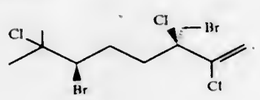
ANTITUMOR COMPOUND, COMPOSITIONS AND METHOD OF USE

Michael R. Boyd, Ijamsville; John H. Cardellina, II, Walkersville; Richard W. Fuller, Tracy's Landing; Kenneth M. Snader, Germantown, all of Md., and Jon Clardy, Ithaca, N.Y., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 18, 1992, Ser. No. 835,637
Int. Cl.[5] C07C *21/02, 21/14;* A01N *29/02;* A61K *31/035*
U.S. Cl. 570—189 22 Claims



1. A new antitumor compound, in substantially pure form, having the structure:

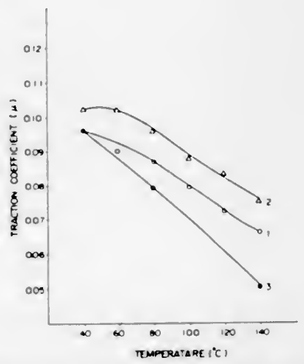


5,283,384

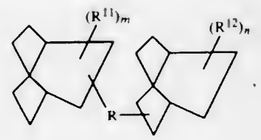
TRACTION DRIVE FLUID, PROCESS FOR PRODUCING THE SAME AND BICYCLO OCTANE COMPOUND

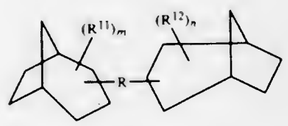
Kazuaki Abe; Toshiyuki Tsubouchi, both of Sodegaura, and Hitoshi Hata, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

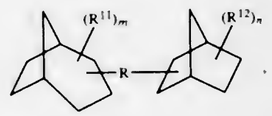
Filed Mar. 2, 1992, Ser. No. 844,474
Claims priority, application Japan, Apr. 8, 1991, 3-75145
Int. Cl.[5] C07C *13/44, 13/605*
U.S. Cl. 585—22 7 Claims

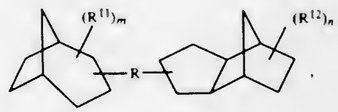


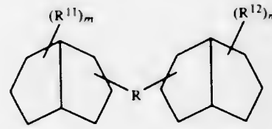
1. A traction drive fluid composition comprising an effective traction improving amount of a hydrocarbon having a bicyclo octane skeleton selected from the group consisting of

(IV)


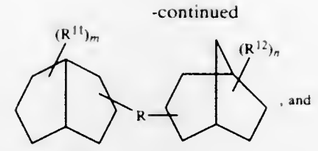
(V)


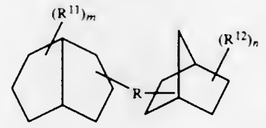
(VI)


(VII)


(VIII)


-continued

(IX)

, and

(X)


wherein R^{11} and R^{12} each represent a hydrogen atom, a methyl group or an ethyl group, and m and n each represent an integer of 1 to 4; and R represents a single bond or an alkylene group having 1 to 2 carbon atoms which is unsubstituted or substituted with an alkyl group having 1 to 2 carbon atoms.

5,283,385

UPGRADING OF NORMAL PENTANE TO CYCLOPENTANE

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 418,377, Oct. 6, 1989, Pat. No. 5,192,728, which is a division of Ser. No. 211,198, Jun. 24, 1988, Pat. No. 4,990,710. This application May 4, 1992, Ser. No. 878,267
Int. Cl.[5] C07C *5/00*
U.S. Cl. 585—317 25 Claims

1. A process for converting n-pentane to cyclopentane comprising contacting n-pentane with a catalyst bed in which the catalyst comprises a Group VIA or Group VIII metal and a non-acidic microporous support material

wherein the amount of Group VIA or Group VIII metal in the catalyst ranges from 0.05 to 10 weight percent

at a temperature ranging from 300°–700° C. to form a product effluent, and passing the product effluent over a second catalyst bed maintained under a second set of conditions in which the temperature is less than 300° C.; wherein the second catalyst bed comprises a second catalyst which second catalyst comprises a Group VIA or Group VIII metal and a non-acidic microporous material

wherein the amount of Group VIA or Group VIII metal in the catalyst ranges from 0.05 to 10 weight percent and recovering a second product which comprises cyclopentane.

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5,283,386

MUSICAL-TONE SIGNAL GENERATING APPARATUS AND MUSICAL-TONE CONTROLLING APPARATUS INCLUDING DELAY MEANS AND AUTOMATIC RESET MEANS

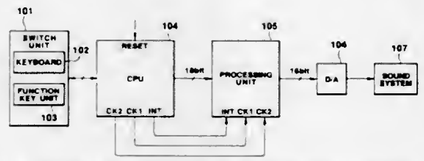
Takashi Akutsu, Akishima; Teruo Jinbo; Hitoshi Kato, both of Fussa, and Naoaki Itoh, Higashimurayama, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 934,101

Claims priority, application Japan, Aug. 30, 1991, 3-220704; Aug. 30, 1991, 3-220705; Aug. 30, 1991, 3-220706; Apr. 8, 1992, 4-87282

Int. Cl.[5] G10H *1/057, 7/02*

U.S. Cl. 84—603 **17 Claims**



3. A musical-tone signal generating apparatus comprising:

processor means for executing a sound-source processing program to successively produce musical-tone sample data;

processing circuit means for executing a musical-tone controlling process, by means of hardware, on the musical-tone sample data produced by said processor means; and

reset means for compulsorily resetting said processing circuit means when power to the apparatus is turned on.

5,283,387

MUSICAL SOUND GENERATOR WITH SINGLE SIGNAL PROCESSING MEANS

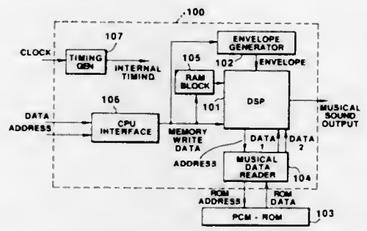
Kikuji Tanaka, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,785

Claims priority, application Japan, Nov. 20, 1990, 2-315245; Nov. 20, 1990, 2-315245; Nov. 20, 1990, 2-315246

Int. Cl.[5] G10H *1/12, 7/10*

U.S. Cl. 84—608 **51 Claims**



1. A musical sound generator comprising:

coefficient memory means for storing a plurality of coefficients to determine a characteristic of a musical sound;

a source of a synchronous timing signal; and

a single signal processor including

first operating means for performing, in a single cycle of said synchronous timing signal, a waveform data generating process which generates musical sound waveform data having a pitch frequency determined on the basis of a coefficient received for each cycle of said synchronous timing signal from said coefficient memory means,

sound operating means for performing, in said single cycle of said synchronous timing signal, a filtering process which filters musical sound waveform data produced by the waveform data generating process performed in a cycle of said synchronous timing signal preceding a cycle in which the waveform data generating process is performed, and

third operating means for performing, in said single cycle of said synchronous timing signal, an amplitude control process which controls the filtered musical sound waveform data so as to change the amplitude of a musical sound generated on the basis of the waveform data, and for outputting the resulting musical sound, and

wherein the waveform data generating process is carried out overlapped in time with at least one of the filtering process and the amplitude control process.

5,283,388

AUTO-PLAY MUSICAL INSTRUMENT WITH AN OCTAVE SHIFTER FOR EDITING PHRASE TONES

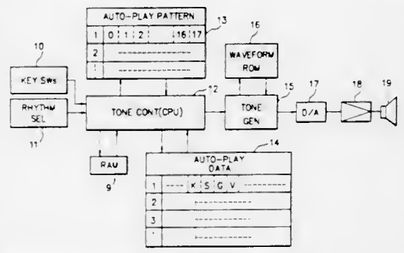
Yoshihisa Shimada, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Aug. 21, 1992, Ser. No. 933,203

Claims priority, application Japan, Aug. 23, 1991, 3-237143; Aug. 23, 1991, 3-237144

Int. Cl.[5] G10H *1/00, 7/00*

U.S. Cl. 84—609 **6 Claims**



1. An auto-play apparatus comprising:

memory means for storing a plurality of phrase tone data each including a plurality of note data;

edit means for designating and reading out one o the plurality of phrase tone data from said memory means, and executing an edit operation on the note data of the designated readout phrase tone data;

said edit means including,

pitch shift means for collectively increasing/decreasing a pitch of the readout note data by one octave, and

edited phrase tone data memory means for storing the pitch shifted note data; and

tone generator means for forming tone generation signals corresponding to the pitch shifted note data read out from said edited phrase tone data memory means.

5,283,389

DEVICE FOR AND METHOD OF DETECTING AND SUPPLYING CHORD AND SOLO SOUNDING INSTRUCTIONS IN AN ELECTRONIC MUSICAL INSTRUMENT

Toshinori Matsuda, Iwata, Japan, assignor to Kawai Musical Inst. Mgf. Co., Ltd., Sizuoka, Japan

Filed Apr. 17, 1992, Ser. No. 870,087

Claims priority, application Japan, Apr. 19, 1991, 3-088515

Int. Cl.[5] G10H *7/00, 1/38*

U.S. Cl. 84—637 **20 Claims**

1. A device for supplying sounding instructions in an electronic musical instrument comprising:

a plurality of sounding instruction means for generating on and off instructions for sounding a musical tone;

on determining means for determining on instructions of said plurality of sounding instruction means;

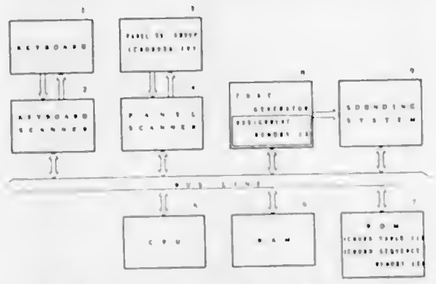
off determining means for determining an off instruction of said plurality of sounding instruction means;

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first output means for detecting and outputting solo tone data corresponding to the instructions generated by said plurality of sounding instruction means, according to a result of an on determination by said on determining means;

output terminating means for terminating the output of said solo tone data by said first output means, according to a result of an off determination by said off determining means;

second output means for detecting and outputting chord tone data corresponding to the instructions generated by said plurality of sounding instruction means, independent



of said solo tone data according to said result of the on determination by said on determining means;

switching means for switching said second output means, independent of said first output means between an operative and an inoperative state;

storing means for storing state data indicating the operative state or the inoperative state switched by said switching means; and

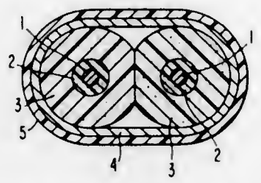
switching control means for controlling the switching of said second output means between the operative or inoperative state according to the state data stored in said storing means, independent of said first output means.

5,283,390

TWISTED PAIR DATA BUS CABLE

Paul E. Hubis, Newark, Del., and Kim E. Ritchie, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jul. 7, 1992, Ser. No. 909,895
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 **2 Claims**



1. A continuous electrical cable consisting of a pair of insulated conductors twisted about one another, which has sections of the cable surrounded by metallic shielding, and which has sections of the cable not surrounded by metallic shielding, in which the sections surrounded by metallic shielding have a thicker insulation cross-section than the sections not surrounded by metallic shielding, the thickness of the thicker insulation being such that the impedance of the sections surrounded by metallic shielding is substantially the same as the sections not surrounded by metallic shielding.

2. A process for preparing a continuous electrical cable consisting of a pair of insulated conductors twisted about one another, which has sections of the cable surrounded by metallic shielding, and which has sections of the cable not surrounded by metallic shielding, in which the sections surrounded by metallic shielding have a thicker insulation cross-section than the sections not surrounded by metallic shielding, the thickness of the thicker insulation being such that the impedance of the sections surrounded by metallic shielding is substantially the same as the sections not surrounded by metallic shielding, which comprises, in sequence:

(a) applying insulation to conductor wire;

(b) applying additional insulation to certain sections of the insulated conductor wire;

(c) twisting a first and second such insulated conductor wires around each other, such that the sections of additional insulation of the first insulated conductor wire are twisted with corresponding sections of additional of the second insulated conductor wire;

(d) applying metallic shielding over said first and second twisted insulated conductors at said certain sections of additional insulation; and

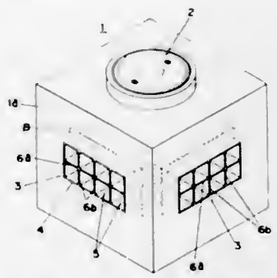
(e) applying protective jacketing over said metallic shielding.

5,283,391

ADAPTER FOR WIRING

Shotaro Ozeki, Fukuoka, Japan, assignor to Saito Denki Sangyo Co., Ltd., Fukuoka, Japan

Filed Jun. 17, 1991, Ser. No. 716,536
Claims priority, application Japan, Jun. 18, 1990, 2-160475
Int. Cl.[5] H02G *3/22*
U.S. Cl. 174—48 **15 Claims**



1. An adapter for accommodating the passage of a wiring conduit, affixable within a wall, comprising:

a box;

a back plate attached to a back surface of said box;

partitioning walls that divide an interior of said box into a plurality of areas and which are attached to the back plate and the box;

said back plate having at least one hole therein for allowing the passage of the conduit;

said hole being within an inside perimeter of said box;

at least one area, or said plurality of areas, being for the acceptance and containment of sealing material for sealing around the conduit; and

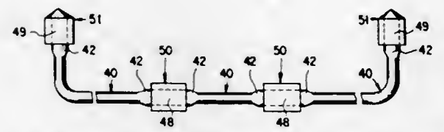
wherein said partitioning walls consist of partitioning wall portions in the horizontal direction and partitioning wall portions in the vertical direction.

5,283,392

ELECTRIC POWER CABLE LINE AND A METHOD OF FABRICATING THE SAME

Hiroto Ooshima, Saitama; Michio Takaoka, Chiba, and Hisao Sakaguchi, Tokyo, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,409
Claims priority, application Japan, Apr. 25, 1991, 3-122677
Int. Cl.[5] H02G *15/064, 15/103, 1/14*
U.S. Cl. 174—84 R **9 Claims**



1. A finished electric power cable line comprising a multiplicity of cables joined to one another, each of the multiplicity of cables having a cable conductor, an inner semiconductive layer over said cable conductor, an insulating layer over said inner semiconductive layer, and an outer semiconductive layer over said insulating layer, said insulating layer of each of said multiplicity of cables being greater in thickness at first and second end portions thereof which correspond respectively to first and second end portions of the finished cable, than at other remaining portions thereof which are intermediate said first and second end portions thereof.

7. A method of fabricating finished cables which are joined to one another to form an electric power cable line, the method comprising the steps of:

applying an inner semiconductive layer on a cable conductor;

covering said inner semiconductive layer with an insulating layer so that a thickness of the insulating layer at particular portions of the cable conductor, which will become first and second end portions of a finished power cable line, is greater than a thickness of other intermediate portions of the cable conductor between said first and second end portions of the finished power cable line;

applying an outer semiconductive layer on said insulating layer;

applying a shield layer on said outer semiconductive layer; and

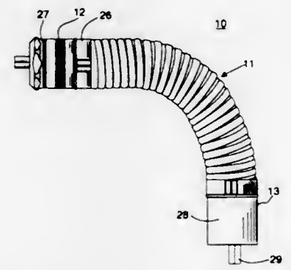
covering said shield layer with a sheath.

5,283,393

ARMORED FLEXIBLE ELECTRICAL CONDUIT WITH FITTINGS

Frank Guginsky, Commack, N.Y., assignor to Berger Industries, Inc., Maspeth, N.Y.

Filed Jun. 4, 1992, Ser. No. 893,794
Int. Cl.[5] H01B *7/18*
U.S. Cl. 174—102 R **4 Claims**



1. An angularly adjustable electrical conduit fitting device comprising an extendible and contractible flexible conduit bendable at least to 90 degrees about a curve having an inside radius not exceeding 12 inches and an electrical fitting secured to and communicating with each end of said conduit, at least one of said fittings being an electrical conduit connector, said conduit being articulate and including a plurality of successive relatively longitudinally slidable segments interlocked against longitudinal separation, each of said segments including a cylindrical body portion having an upper section terminating at its top in an inwardly directed peripheral flange joined to a depending cylindrical upper hook free leg and a lower section coaxial with and of lesser diameter than said upper section and terminating at its bottom in an outwardly directed peripheral flange joined to an upwardly projecting cylindrical lower hook free leg, said depending upper hook free leg having an inner face slidable engaging the outside face of the lower section of the next successive upper segment and said upwardly projecting lower hook free leg having an outside face slidably engaging the inside face of the upper section of the next successive lower segment, one of said hook legs of each of said segments having formed in the face thereof confronting the opposing face of said cylindrical body a peripheral groove, and further including a packing located in said groove and engaging said opposing face.

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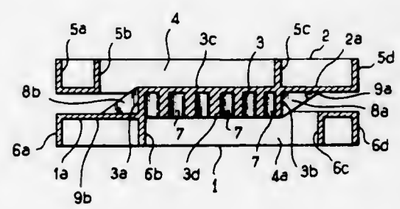
Patent Not Issued For This Number

5,283,395

WEIGHING APPARATUS WITH TEST BODY BEARING STRAIN GAUGES

Bernard Pitaud, Annecy, France, assignor to SEB S.A., Selongey, France

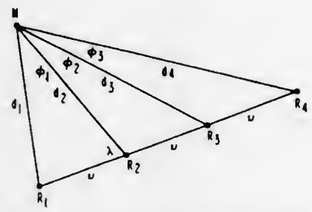
Filed Jun. 19, 1992, Ser. No. 901,235
Claims priority, application France, Jun. 19, 1991, 91 07520
Int. Cl.[5] G01G *3/08, 3/14;* **G01L** *1/22*
U.S. Cl. 177—229 **13 Claims**



1. A weighing apparatus comprising a base (1) and a receiving platform (2) for the load to be weighed parallel to said base, a test body (3) the opposite ends (3*a*, 3*b*) of which are integral with the base (1) and with the platform (2) respectively, one (3*c*) of the faces of the test body (3) being flat and comprising strain gauges associated with an electric circuit, the test body (3) being made of an elastic material so that it can bend under the effect of the load applied to the platform (2), wherein the test body (3), molded in one single piece with the base (1) and the platform (2), comprises at least one recess opening opposite the face (3c) bearing the strain gauges.

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5,283,396
CALIBRATION OF A ROTATIONALLY SCANNING POSITION-TRACKING DEVICE
Marc D. Donner, New York, and Ephraim Feig, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 963,932, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 571,466, Aug. 22, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 41,528
Int. Cl.[5] G08C *21/00*; G02B *5/08*
U.S. Cl. 178—18 **7 Claims**



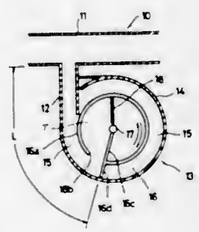
2. A calibration method for a beam scanned coordinate-data input device having a rotating mirror for scanning, comprising:
placing at least four reference objects along an essentially straight line which can be sensed by said beam scanned coordinate-data input device, a distance between any two adjacent reference objects being predetermined;
sensing each of said four reference objects with said scanned coordinate-data input device;
determining three time intervals, μ_1, μ_2, and μ_3, each of said time intervals corresponding to the time between said sensing of adjacent reference objects;
determining an effective rotational velocity α of said rotating mirror in said scanned coordinate-data input device from said three time intervals;
trigonometrically determining the effective positional coordinates of a center of rotation for said rotating mirror with respect to said reference objects from α, said three time intervals, and said distances between said four reference objects.

5,283,397
DIAPHRAGM FOR ELECTRODYNAMIC TRANSDUCER
Dino Pavlovic, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte Gesellschaft m.b.H., Vienna, Austria
Filed Sep. 25, 1992, Ser. No. 951,583
Claims priority, application Austria, Sep. 25, 1991, 1932/91
Int. Cl.[5] G10K *13/00*
U.S. Cl. 181—163 **6 Claims**



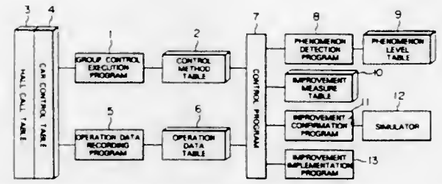
1. In a diaphragm for electrodynamic transducers, the diaphragm having a center and an edge, the diaphragm including a spherically-shaped portion in the center thereof and toroidally-shaped portion adjacent the spherically-shaped portion extending to the edge of the diaphragm, a moving coil connected to the spherically shaped portion of the diaphragm, the improvement comprising an outwardly diverging, truncated cone-shaped collar mounted on the spherically-shaped portion, the truncated cone-shaped collar having a circular rim, the circular rim being mechanically fixedly connected to the spherically-shaped portion, wherein the moving coil and the circular rim each have a diameter, wherein the diameter of the circular rim of the collar is smaller than the diameter of the moving coil.

5,283,398
RESONATOR TYPE SILENCER
Hirokazu Kotera, and Shiro Ohki, both of Tokyo, Japan, assignors to Tsuchiya Mfg. Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 632,702, Dec. 24, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 925,332
Claims priority, application Japan, Dec. 26, 1989, 1-150140[U]
Int. Cl.[5] E04F *17/04*
U.S. Cl. 181—224 **9 Claims**



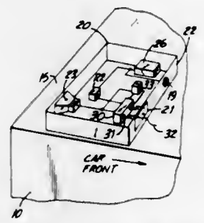
1. A Helmholz and side branch resonator type silencer for an internal combustion engine, comprising:
a hollow neck section in communication with a duct in which gas in connection with combustion in the engine flows;
a housing including a generally annular casing disposed between a pair of sidewalls, said housing fixedly connected to said neck section;
a generally cylindrical rotatable member disposed within and located generally coaxial with said casing to form an annular space between it and an inner peripheral surface of said casing, said cylindrical rotatable member being rotatable around an axial shaft disposed at a central portion of said housing;
a stationary partition wall disposed in said housing and inside said cylindrical rotatable member, said stationary partition wall being fixed to said sidewalls, and extending radially;
a movable partition wall disposed in said housing and extending from said axial shaft to said cylindrical movable member, said movable partition wall being movable with said cylindrical movable member and defining, in cooperation with said stationary partition wall, a tuning chamber inside said cylindrical movable member;
a movable blocking wall disposed in said housing to block said annular space so as to define a peripheral passage in communication with said neck section, said movable blocking wall extending from said cylindrical movable member to the inner peripheral surface of said casing and movable with said cylindrical movable member;
means defining a communicating opening in said cylindrical rotatable member so that said tuning chamber is communicated through said communicating opening with said peripheral passage; and
means for rotating said cylindrical rotatable member in accordance with an engine operating condition so as to change a length of said peripheral passage communicating with said neck section and a volume of tuning chamber, and
wherein said housing substantially prevents flow of gas from exiting said tuning chamber.

5,283,399
GROUP CONTROL OF ELEVATOR SYSTEM IMPROVEMENT MEASURES
Atsuya Fujino, Hitachi; Hiromi Inaba, Katsuta; Toshimitsu Tobita, Hitachi; Kenzi Yoneda, and Hiroaki Yamani, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 5, 1991, Ser. No. 788,320
Claims priority, application Japan, Nov. 5, 1990, 2-297323
Int. Cl.[5] B66B *1/20, 3/00*
U.S. Cl. 187—124 **16 Claims**



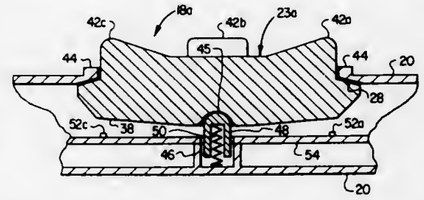
1. A group-controlled elevator system, comprising:
means for controlling an operation of a plurality of elevators as a group by control data,
means for storing a plurality of improvement measures corresponding to plural inconvenience phenomena including a long waiting time for the operations of elevators,
means for detecting said inconvenience phenomena from actual data of said elevators obtained by actual elevator operation,
means for selecting one improvement measure from said improvement measures in accordance with the detected inconvenience phenomena,
means for confirming whether the detected inconvenience phenomena are improved so as to be less inconvenient by the selected improvement measure, and
means for correcting the control data used for the control of said operation of said elevators on the basis of the selected improvement measure, when improvement of the inconvenience phenomena by the selected improvement measure is confirmed.

5,283,400
ELEVATOR SHAFTWAY INTRUSION DEVICE
Richard J. Leone; Robert F. Cummins, both of Yonkers; Joseph Vitiello, Riverdale, and Thomas Brochhagan, No. Bellmore, all of N.Y., assignors to TOC Holding Company of New York, Inc., Bronx, N.Y.
Continuation-in-part of Ser. No. 462,593, Jan. 9, 1990, Pat. No. 5,025,895. This application Jun. 24, 1991, Ser. No. 719,418
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] G08B *21/00*
U.S. Cl. 187—140 **36 Claims**



1. A detection system for detecting intrusion into an elevator shaft having an elevator cab therein and a plurality of elevator shaft access ways in at least one wall of said shaft comprising:
an intrusion detector mounted at a location within the shaft above the elevator cab for monitoring an energy field in a zone of detection including at least a portion of the elevator shaft proximate the top of said cab and for providing a detection signal representing a disturbance in said energy field caused by an intruder in the shaft, entering said zone of detection.

5,283,401
MULTIPLE SWITCH ASSEMBLY INCLUDING LOCKABLE AND/OR VERTICALLY MOVABLE SWITCH ACTUATOR
Charles J. Schmucker, 2217 Mediterranean, Arlington, Tex. 76011
Filed Jul. 30, 1992, Ser. No. 923,104
Int. Cl.[5] H01H *25/00*
U.S. Cl. 200—6 A **16 Claims**



1. A manual control device for selectively actuating one or more switches in a multiswitch system, said device comprising a housing, a plurality of switches disposed in said housing and being actuatable upon engagement, a switch actuator mounted in said housing and defining a plurality of contact surfaces for respectively engaging and actuating said switches, and means for providing limited movement of said actuator in said housing upon manual actuation of said actuator in a manner to permit selective engagement and actuation of single ones of said switches by said contact surfaces to provide corresponding outputs while permitting simultaneous engagement and actuation of selective pairs of said switches to provide different outputs, said means for providing limited movement permitting initial vertical movement of said switch actuator relative to said housing and subsequent tilting movement of said actuator relative to said housing to permit said engagement, said latter tilting movement being less than would be required in the absence of said vertical movement.

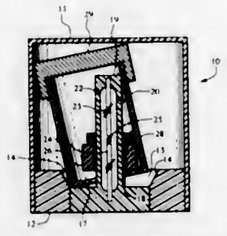
5,283,402
ACCELERATION SENSOR WITH MAGNETIC OPERATED REED SWITCH
Terence W. Green, Norfolk, England, assignor to Hamlin Incorporated, Lake Mills, Wis.
Filed Dec. 24, 1992, Ser. No. 997,761
Claims priority, application United Kingdom, Jan. 17, 1992, 9200952
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **21 Claims**

1. A switch assembly responsive to an acceleration comprising:
a support;
a reed switch mounted in the support and having two blades;
a magnetic source movable between a first position which causes the blades of the reed switch to adopt one configuration and a second position which causes the blades to adopt a further configuration, wherein the support includes a hollow housing having a base, the reed switch extending upwardly of the base secured to a sub-frame within the housing, and the magnetic source being movable along the sub-frame;
an acceleration sensing weight movable under an acceleration in a direction generally perpendicular to the direction

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of movement of said magnetic source so that the weight moves in response to a shock or to tilting; and

means for interconnecting the acceleration sensing weight and said magnetic source whereby movement of the weight relative to the support causes movement of the magnetic source between its two positions to actuate the reed switch, wherein the means for interconnecting comprises a hollow cup having a base, and further having an aperture formed in the base, the cup being disposed within the housing with its base of the cup, and the aperture surrounding the sub-frame, and wherein the weight is disposed about the upper end of the cup whereby lateral movement of the weight causes tilting of the cup which in turn raises the magnetic source up the sub-frame on the base of the cup to actuate the reed switch.



5,283,403

ELECTRIC SWITCH, IN PARTICULAR STEERING COLUMN SWITCH FOR MOTOR VEHICLES

Otto Machalitzky, Bietigheim-Bissingen, and Xaver Vogel, Munningen, both of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Fed. Rep. of Germany

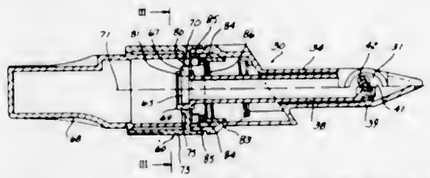
PCT No. PCT/EP91/01155, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO92/00205, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 22, 1991, Ser. No. 838,285

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020844

Int. Cl.[5] H01H *9/00, 3/02, 19/00*

U.S. Cl. 200—61.54 **60 Claims**



1. An electric switch, especially a steering column switch for motor vehicles, comprising a switch housing and, an operating lever which is mounted to be swivelled about an axis in the switch housing and which includes a control grip rotatable about an axis of rotation extending in the longitudinal direction of the operating lever and which is movable between at least two operating positions for switching on and off the sidelight and the main beam of a motor vehicle, and a switching rod which is aligned at least substantially in the longitudinal direction of the operating lever and rotatable via the control grip substantially about its longitudinal axis and by which at least one electric contact accommodated within the switch housing is movable, wherein a twisting motion of the control grip about a particular angle of rotation, the switching rod may be turned from one operating position to an adjacent operating position about an angle of rotation differing from the angle of rotation of the control grip.

5,283,404

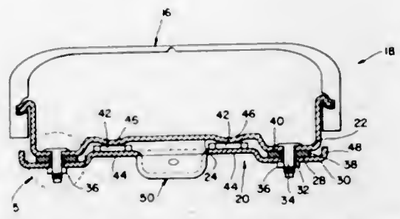
MINIMUM FLOAT, SERVICEABLE CENTER BLOW HORN SWITCH IN DRIVER SIDE AIR BAG MODULE

Ronald A. Prescaro, Jr., Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed May 27, 1992, Ser. No. 889,558

Int. Cl.[5] H01H *9/00*

U.S. Cl. 200—61.54 **5 Claims**



1. In combination with a vehicle steering wheel including a center portion and a rim portion, and an inflatable restraint module, a horn blowing switch arrangement comprising:

a first support plate having a top portion and a bottom portion, a first aperture generally in the central region of said first support plate provided for receiving an air bag inflator, a plurality of first protrusions radially outward of said first aperture extending from said bottom portion of said first support plate, a plurality of second apertures radially outward of said first aperture of said first support plate and attachment means radially outward of said second apertures;

a cover attached to said attachment means of said first support plate;

at least one second support having a top portion and a bottom portion, a plurality of third apertures in corresponding relation to said second apertures of said first support plate, and a plurality of first contact points in corresponding relation to said protrusions of said first support;

a plurality of switch means disposed one each of said first contact points of said second support plate and engaged by said first protrusions of said first support plate;

a plurality of switch means disposed one each of said first contact points of said second support plate and engaged by said first protrusions of said first support plate;

a plurality of resilient separator means having a fourth aperture generally in the central region thereof wherein each of said resilient separators are placed such that each of said fourth apertures are in corresponding relation to each of said second aperture and each of said third apertures between said first support plate and said second support plate;

a fastener means passed through said second aperture, said fourth aperture and said third aperture to join said first support, said resilient separator means, and said second support plate; and

wherein the switch means are activated by force exerted on said cover compressing said resilient separator means thereby moving said protrusions of said first support plate in the direction of said first contact points of said second support plate thereby compressing said switch means.

5,283,405

ENCLOSED ELECTRICAL CONTACT ASSEMBLY FOR DYNAMOELECTRIC MACHINES

Duane R. Nolte, and Gary L. Schurter, both of Wausau, Wis., assignors to Marathon Electric Mfg. Corp., Wausau, Wis.

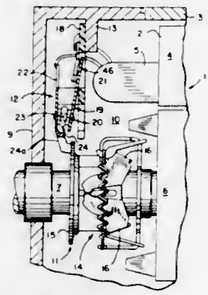
Filed May 18, 1992, Ser. No. 885,126

Int. Cl.[5] H01H *35/10*

U.S. Cl. 200—80 R **8 Claims**

1. In a dynamoelectric machine having a circuit adapted to be selectively connected and disconnected in response to the rotational speed of the machine, a switch assembly comprising, a first mounting member, a first contact unit secured to said

first mounting member and having an outer contact face, a second mounting member, a second contact unit secured to said second mounting member and having an outer contact face, said mounting members being located with said contact units in opposed aligned relationship to each other with said contact faces in opposed aligned relation to each other, at least one of said mounting members being movable to provide for placing said contact units in an open position with a gap therebetween and in a closed position with said contact units engaged, each said contact unit having an outer cylindrical wall, a single piece enclosure member having first and second end hub portions and an intermediate convoluted portion, said end hub portions having circular openings having a diameter significantly less than the diameter of said cylindrical walls, said



first and second hub portions being secured in telescoped relation over said outer cylindrical walls of said first and second contact units respectively with a firm interference fit to essentially prevent movement of said enclosure member on said contact units and establishing a continuous enclosure about said contact units within said enclosure member and thereby preventing entry of foreign matter into the gap between said contact faces from the exterior of the enclosure member, wherein each of said contact units includes a substantially cylindrical base member and an outer contact button extending radially outwardly of said base member to form a radial lip, said hub portion being telescoped onto said base member and located outwardly of said contact button whereby said boot is positively secured to said contact unit.

5,283,406

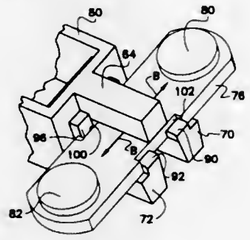
SWITCH WITH MOVEABLE CARRIER AND MOVEABLE CONTACTS ATTACHED THERETO

David E. Olsen, Freeport, Ill., assignor to Honeywell Inc, Minneapolis, Minn.

Filed Nov. 23, 1992, Ser. No. 953,602

Int. Cl.[5] H01H *1/20*

U.S. Cl. 200—243 **15 Claims**



1. A switch, comprising:

a housing;

a contact carrier disposed within said housing, said housing being shaped to receive said contact carrier in reciprocating association therein;

a first pair of stationary electrical contacts rigidly supported within said housing; and

a moveable contact, said moveable contact being pressed between a first extension of said carrier and a second extension of said contact carrier, the position of said moveable contact being variable in relation to said contact carrier in response to flexing of said first and second extensions of said contact carrier, said moveable contact being moveable into bridging contact between said first pair of stationary electrical contacts in response to movement of said contact carrier in a first direction within said housing, said first extension comprising a flexible finger extending from said contact carrier, said second extension comprising two flexible fingers disposed in a common plane, said two flexible fingers extending from said contact carrier.

5,283,407

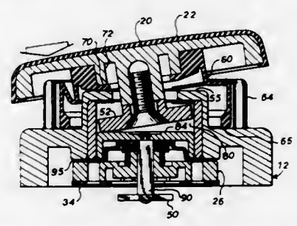
ARTICULATED PUSHBUTTON ELECTRICAL SWITCHING APPARATUS

Randy P. Pohl, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Mar. 3, 1992, Ser. No. 845,071

Int. Cl.[5] H01H *21/24*

U.S. Cl. 200—332 **6 Claims**



1. A pushbutton apparatus for use in actuating an electrical contact block disposed within an electrical connector box including a front, comprising:

(1) a cover plate adapted for being secured onto the front of said electrical connector box;

(2) a palm-operable button assembly including a planar pushbutton positioned in front of and extending over said cover plate which is constructed and arranged for axial actuation and a tipping plate positioned behind said cover plate which is attached to said pushbutton by way of a shaft passing through an oversize aperture in said cover plate which allows for said pushbutton to be operated from axially off-center directions anywhere on said pushbutton;

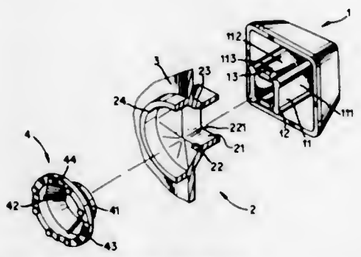
(3) an activator assembly including a planar adapter plate secured to the back of said cover plate on one side and said contact block on its other side and a push rod passing through a bore in said adapter plate, said push rod including a pressure plate located in contact with said tipping plate of said pushbutton assembly and said contact block so that when said pushbutton is depressed, said push rod is unidirectionally displaced and in turn actuates said contact block;

(4) a flexible boot captured between said pushbutton and said cover plate for shielding said aperture from exposure to debris and urging said pushbutton outward from said cover plate; and

(5) a castellated ridge surrounding said boot for protecting said pushbutton from mechanical interference.

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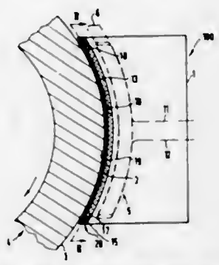
5,283,408
STRUCTURE OF KEY SWITCH
S. H. Chen, Tao Yuan Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Aug. 4, 1992, Ser. No. 924,710
Int. Cl.[5] H01H *13/50*
U.S. Cl. 200—345 **2 Claims**



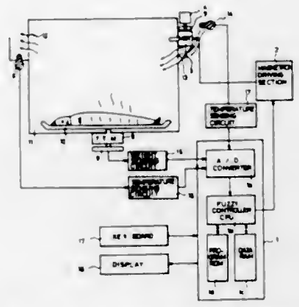
1. A keyboard key switch comprising:
a rectangular key cap having an integral, downwardly directed, hollow, rectangular plunger on an inside thereof, said rectangular plunger having four segmented circular rails extending along four respective corners thereof, two fixed, flat wall side walls form two opposite sides of said plunger, and another two opposite sides thereof having two spring plates thereon, each of said spring plates being biased outwardly and terminating in an outwardly opening hook;
a key base adapted to be fastened on a frame of a keyboard, said key base having a rectangular guide slot on a top thereof, said rectangular plunger being received in said slot, a conical horn gate extending downwardly and outwardly from said rectangular guide slot, two hooked slots being formed at opposite locations within said rectangular guide slot in said conical horn gate for releasably receiving the hook on the respective spring plates, and a bottom ring extending downwardly from said conical horn gate, said rectangular guide slot having circular grooves along four corners thereof on an inside into which the four circular segment rails of said rectangular plunger ride; and
a compressible rubber tone received in the conical horn gate inside said key base, having a top portion abutting a bottom portion of said rectangular plunger, a conductor located on an inside thereof adapted to contact a contact on a printed circuit board of said keyboard when said key cap is depressed, and a plurality of air vents being formed through a bottom portion thereof.

5,283,409
COIL BODY FOR THE INDUCTIVE HEATING OF ROLLERS
Bernhard Brendel, Grefrath; Werner Borkenhagen, Krefeld; Bernard Funger, Krefeld, and Stefan Krebs, Krefeld, all of Fed. Rep. of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & CO KG, Krefeld, Fed. Rep. of Germany
Filed Apr. 13, 1992, Ser. No. 847,084
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1989, 3934208
Int. Cl.[5] H05B *6/42*
U.S. Cl. 219—619 **6 Claims**

1. A coil body for inductively heating the surface of a rotating roller made of electrically conductive material, the roller and body being used for the pressure and temperature treatment of webs of paper and similar materials, said coil body comprising:
a plastic carrier comprising a partially cylindrical concave front surface;
a coil embedded in the plastic carrier behind the front surface;
a flat cooling chamber in front of the front surface, said flat cooling chamber covering substantially the front surface, the cooling chamber conducting heat from the front surface, the cooling chamber having connections for conveying a fluid cooling medium into and out of said cooling chamber, said flat cooling chamber being surrounded by a ridge of uniform height which is closed except for the connections for conveying said fluid cooling medium, said cooling chamber being covered by a thin-walled plastic cover sealed to the ridge and coaxial with the front surface.



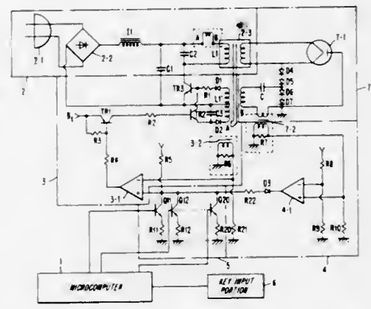
5,283,410
METHOD AND APPARATUS FOR AUTOMATIC COOKING IN A MICROWAVE OVEN
Ji W. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 18, 1991, Ser. No. 809,162
Claims priority, application Rep. of Korea, Dec. 18, 1990, 20961/1990
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—704 **12 Claims**



1. An apparatus for automatic cooking in a microwave oven, comprising:
means for sensing an outflow air temperature of a heating chamber;
means for sensing an inflow air temperature of the heating chamber;
outflow air temperature and inflow air temperature sensing circuits for converting the temperatures sensed by said outflow and inflow air temperature sensing means into outflow air and inflow air signals, respectively;
wherein said outflow and inflow air temperature sensing means output a voltage in proportion to a variation of their resistance in response to a temperature change;
weight sensing means for sensing a weight of food positioned within the heating chamber and converting the sensed weight into a weight signal including,
a weight sensing section for sensing the weight of food positioned within the heating chamber, and
a weight sensing circuit for converting the sensed weight by the weight sensing section into the weight signal, said weight sensing circuit including,
a transformer for receiving an alternating current source and inducing an alternating current to a first and a second secondary windings,
inducing means for changing a voltage induced at the first and second secondary windings by moving between a primary winding and the secondary windings of the transformer in response to an output signal from the weight sensing section,
first and second rectifying means for rectifying the voltages induced at the first and second secondary windings, respectively, and
a voltage detection section for detecting an output voltage difference on the first rectifying means and the second rectifying means in response to a movement of the inducing means and outputting the weight signal;
mode determining means for determining whether said apparatus is in an initial operation mode or a consecutive operation mode based on the outflow air signal and the inflow air signal and for generating a mode control signal;
means for driving a magnetron for a predetermined initial heating time in response to the mode control signal; and
additional heating time determining means for determining an additional heating time based on the outflow air signal, the weight signal and the mode control signal, and for generating an additional heating signal, said additional heating time determining means including,
memory means for storing the outflow air signal, the weight signal, and the mode control signal,
a program ROM for executing a predesignated program, and
control means for retrieving the outflow air signal, the weight signal, and the mode control signal from said memory means, and executing a fuzzy operation in response to the predesignated program to calculate the additional cooking time;
said magnetron driving means including,
a switching section for controlling an input of the alternating current source by being turned on or off by a control signal from the control means,
a transformer for boosting the alternating current source to a high voltage in response to the switching section, and
a high voltage rectifying section for rectifying a high voltage outputted from the transformer and supplying the rectified high voltage as a driving voltage for the magnetron;
wherein said magnetron driving means drives the magnetron for a predetermined additional heating time in response to the additional heating signal.

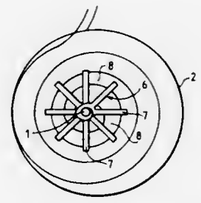
5,283,411
DRIVING CIRCUIT FOR A MICROWAVE OVEN
Ann Sung-Wan, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 12, 1992, Ser. No. 881,868
Claims priority, application Rep. of Korea, May 14, 1991, 91-7800
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—719 **7 Claims**

1. A driving circuit comprising:
a power supply portion including a transformer having a primary coil and a secondary coil for outputting power;
a generating portion, electrically connected to receive power output from said secondary coil of said transformer, for generating an ultrahigh frequency;
a first comparing portion, electrically connected to said primary coil of said transformer, for comparing a voltage proportional to a current in said primary coil of said transformer to a first threshold voltage and for generating an output to control said output of said secondary coil of said transformer;
a second comparing portion, electrically connected to an output of said generating portion, for comparing said output of said generating portion to a second threshold value, wherein said first threshold voltage includes an output of said second comparing portion, which is an input of said first comparing portion; and



a switching portion, electrically connected to said second comparing portion, capable of selectively setting said first threshold voltage to control said output of said secondary coil of said transformer, wherein said switching portion increases the output of said secondary coil of said transformer at an initial operating stage of said generating portion, and decreases the output of said secondary coil of said transformer in accordance with a program stored in said switching portion.

5,283,412
TEMPERATURE-MEASURING DEVICE FOR AN INDUCTION-TYPE COOKING APPLIANCE AND APPLIANCE HAVING SUCH A DEVICE
Didier Gouardo, Saran; Serge Boyer, and Pierre Pitot, both of Orleans, all of France, assignors to Compagnie Europeenne Pour l'Equipment Menager - Cepem, St. Jean de Ruelle, France
Filed Jul. 13, 1990, Ser. No. 552,097
Claims priority, application France, Aug. 4, 1989, 89 10527
Int. Cl.[5] H05B *5/04*
U.S. Cl. 219—627 **8 Claims**



1. A device for measuring temperature of one of a vessel and a product contained in said vessel wherein said vessel is heated by an induction cooking appliance, said device comprising:
a detector thermally connected to a heat conductor wherein said heat conductor has a geometrical configuration and a material composition which include a plurality of spaced apart extension extending away from said detector for providing a minimized heating in said heat conductor due to said induction cooking appliance and wherein said extensions allow for measurement of the temperature of

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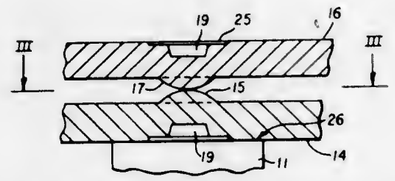
said one of said vessel and said product independent of a size of said vessel or a configuration of a bottom surface of said vessel.

5,283,413

ASSEMBLY PROCESS BY WELDING OF TWO SOLID COPPER PIECES AND ASSEMBLY PERFORMED USING SUCH A PROCESS

Jean-Paul Favre-Tissot, Brignoud, France, assignor to Merlin Gerin, France

Filed May 14, 1992, Ser. No. 883,210
Claims priority, application France, May 21, 1991, 91 06306
Int. Cl.[5] B23K *11/18*
U.S. Cl. 219—93 **7 Claims**



1. A process for welding first and second solid copper pieces together without a filler metal, said first piece having front and rear opposite major surfaces, comprising the steps of:
providing a first projection to extend from said rear surface of said first piece and a first cavity opposite said first projection, said first cavity extending into said front surface of said first piece, said first cavity having a smaller cross-sectional width than that of said first projection;
providing a first annular groove in said front surface of said first piece to surround said first cavity, said first annular groove having a depth less than that of said first cavity;
providing a second projection to extend from a surface of said second piece;
arranging said first and second pieces such that said first and second projections are in contact with each other;
applying a first electrode to said first piece upon said front surface, said first electrode having a contact surface larger than said annular groove such that said contact surface extends beyond said annular groove and contacts a portion of said front surface surrounding said annular groove;
applying a second electrode to said second piece, said first and second electrodes being copper-based;
passing an electrical current between said first and second electrodes through said first and second pieces and said first and second projections to heat said first and second projections; and
applying a compression force to the first and second pieces to press said first and second pieces toward each other.

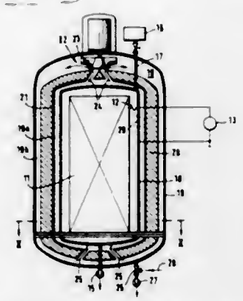
5,283,414

PLASMA TREATMENT APPARATUS

Siegfried Straemke, Fichtenhain 6, D-5135 Selfkant 4, Fed. Rep. of Germany

Filed Mar. 7, 1991, Ser. No. 665,697
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1990, 4007123
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 **8 Claims**

1. A plasma treatment apparatus comprising:
a substantially vacuum-tight first container having an interior and configured for connection to a vacuum pump and configured for receiving a workpiece,
a substantially vacuum-tight second container surrounding the first container, whereby an intermediate space is formed between the first and second containers,
an electrode configured to be fastened to the workpiece,
a counterelectrode,
a gas source for introducing treatment gas into the first container, and
means for evacuating the intermediate space between the first and second containers to thereby provide a thermal



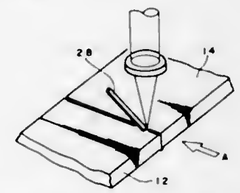
vacuum isolation between the first and second containers, and
means for changing the thermal vacuum isolation to thereby maintain the interior of the first container at a desired temperature.

5,283,415

MANUFACTURING METHOD OF A VEHICLE PANEL

Eiji Nishi; Kimikazu Ikemoto, both of Toyota; Fumiaki Natsumi, Okazaki; Takao Iwai, Toyota; Toshiyuki Takasago, Toyota, and Toshiro Shiraki, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 24, 1992, Ser. No. 950,168
Claims priority, application Japan, Sep. 25, 1991, 3-271798
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **10 Claims**



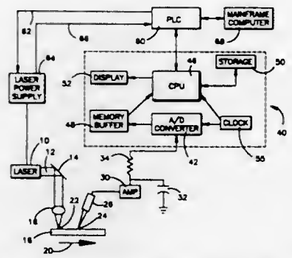
1. A manufacturing method of a vehicle panel comprising the following steps of:
preparing a plurality of sheared steel sheet materials, each steel sheet material having a burr at an edge of an end surface and a sagging at an opposite edge of an end surface;
holding the steel sheet materials so that the end surfaces of the steel sheet materials are abutted against each other with the burrs of the abutted steel sheet materials directed in the same direction;
irradiating a laser beam from a side of the saggings of the abutted steel sheet materials onto an abutment portion of the abutted steel sheet materials, moving the laser beam along the abutment portion and supplying a filler to the abutment portion, to form a weld bead which joins the abutted sheet materials together into a press material;
setting the press material in a stamping apparatus in a direction such that a surface of the press material opposite to a laser beam irradiation-side surface, corresponds to an outside surface when stamped and then mounted to a vehicle; and
stamping the press material into a vehicle panel.

5,283,416

LASER PROCESS MONITORING AND EVALUATION

Bryan W. Shirk, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jun. 26, 1992, Ser. No. 904,976
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **17 Claims**



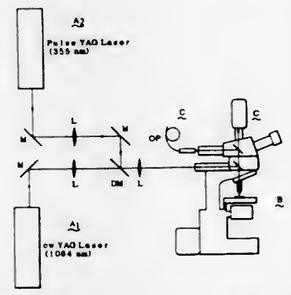
1. An apparatus for monitoring a laser process which delivers energy from a laser source to a workpiece along a process path while producing plasma at a beam delivery point along said path, comprising:
infrared radiation detecting means for receiving infrared radiation from a point behind and in close proximity to said beam delivery point and providing a temperature signal having a value which varies with changes in the intensity of the received infrared radiation over a predetermined test interval;
means for providing a plurality of temperature limits with each temperature limit having a different value;
means for comparing said temperature signal with each of said temperature limits and providing a violation indication each time said temperature signal violates one of said limits;
means for counting the number of said violation indications for each limit during said predetermined test interval;
means for evaluating the weld process as a function of the number of violation indications for all of said limits during said test interval; and
means for providing an output indication of said evaluation.

5,283,417

LASER MICROPROCESSING AND THE DEVICE THEREFOR

Hiroaki Misawa, Osaka; Keiji Sasaki, Kyoto; Masanori Koshioka, Kyoto; Noboru Kitamura, Kyoto, and Hiroshi Masuhara, Osaka, all of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,615
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.85 **7 Claims**



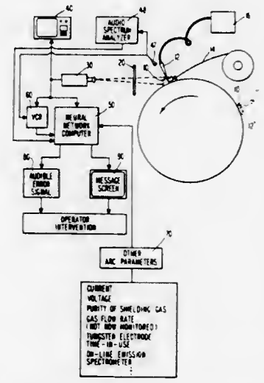
1. A process for laser microprocessing of particles which comprises irradiating said particles with a trapping laser beam so as to transfer momentum from the laser beam to the particles to trap them at a specific locus and then irradiating said particles with a pulse laser to process said particles.

5,283,418

AUTOMATED ROTOR WELDING PROCESSES USING NEURAL NETWORKS

James C. Bellows, Maitland, and Serge P. Barton, Oviedo, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1992, Ser. No. 842,811
Int. Cl.[5] B23K *9/095*
U.S. Cl. 219—130.01 **25 Claims**



1. A method of controlling arc welding apparatus comprising the steps of:
recording one or more arc images formed during normal and abnormal conditions respectively during a welding operation;
training a neural network computer to recognize arc images indicative of normal and abnormal conditions;
observing an arc during an occurring welding operation, and generating arc data;
determining if said arc data represents a normal or abnormal condition using the neural network computer; and
generating a control signal if the occurring welding operation is in an abnormal condition.

5,283,419

ARC WELDING MACHINE AND METHOD

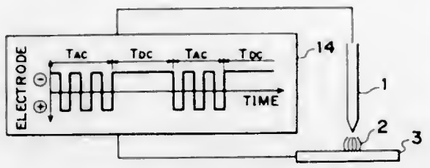
Seigo Hagiwara; Hidetoshi Ooyama, both of Kawanishi, and Akihiko Kitajima, Sanda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1992, Ser. No. 890,573
Claims priority, application Japan, May 31, 1991, 3-128995; Jun. 10, 1991, 3-137640
Int. Cl.[5] B23K *9/09*
U.S. Cl. 219—137 PS **3 Claims**

1. An arc welding method comprising the steps of:
producing an alternating current;
periodically converting said alternating current to a direct current; and
alternately applying said alternating current and said direct current to an object to be welded;
wherein the frequency of alternation of said alternating

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current and said direct current is rendered to be 0.5–10 Hz and wherein the ratio of periods during which said alternating current flows through said object is rendered to be 30–80%.

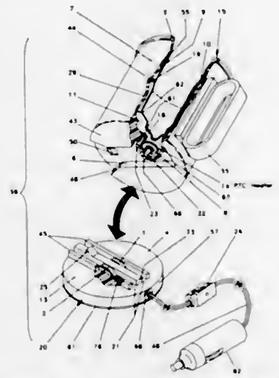


5,283,420

ELECTRICALLY HEATED BEVERAGE CONTAINER

Bartolino P. Montalto, 35 Burns St., New Bedford, Mass. 02740

Filed May 6, 1991, Ser. No. 660,690
Int. Cl.[5] H05B *1/02, 3/14;* **A47J** *36/24*
U.S. Cl. 219—432 **1 Claim**



1. An electrically heated container and holding stand for receiving and thermally maintaining a hot beverage consisting of the following: a cup-shaped container comprising,

a self limiting, positive temperature coefficient generally disc shaped ceramic heater,

a thin, thermally and electrically conductive insert which includes a bottom section, an upwardly extending wall section, and an open top section,

said ceramic heater being mounted in electrical contact with the external side of the bottom portion of the said insert by means of soldering,

electrical contact pins electrically affixed to the said external side of the bottom portion of the insert and to the bottom surface of said ceramic heater,

an electrically nonconductive sleeve encapsulating the said insert, ceramic heater, and a portion of the electrical contacts,

the sleeve being comprised of a thick outer shell having a thick bottom portion and a film-like inner shell which conforms to the shape of the said insert,

the film-like inner shell permitting good heat transferring ability from the thin metal insert to a liquid beverage adapted to be received in the container,

the film-like inner shell allowing a gradual and even heating of the beverage as not to burn the liquid,

the thick outer shell providing good insulating characteristics as well as protecting the consumer from scalding themselves,

the bottom portion of the thick outer shell including an angled groove that leads to a linear groove for guiding and positively restraining the container on a mating holding stand,

the nonencapsulated portions of the contact pins protruding into the linear groove and without extending below the plane of the bottom portion of the thick outer shell,

said linear groove being provided with a recess adapted to accept an upwardly extending tab on a holding stand and a mechanical stop, the recess and stop adapted to prevent the container from accidentally moving while mounted on the stand and insuring proper positioning of the contact pins relative to the stand,

a holding stand for receiving said electrically heated container, comprising a base which includes a bottom portion and a wall portion that extends upwardly from the said bottom portion,

an upper face joined to the wall portion as to support said heated container when it is placed onto it,

parallel spaced apart linear guides extending upwardly from said upper face adapted to be received in said linear groove of said container for orienting the container, a divider section between said guides and defining a pair of linear grooves therebetween, said linear grooves each housing a spring contact adapted to electrically engage one of the contact pins of the container seated on the base,

a hole extending from the bottom of each groove through to the interior of base for fastening said spring contacts and current conducting wires by means of a rivet,

the current conducting wires attached to the spring contacts passing through a hole in the upwardly extending wall portion of the base and being controlled by an in-line switch that leads to a conventional power source connector,

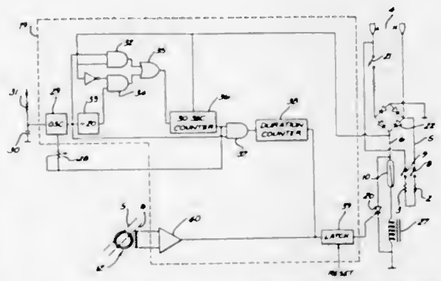
the grooves themselves being narrowly spaced to guard against any foreign object coming in direct touch with the electrical spring contacts, and an upwardly extending angular tab on said divider section adapted to engage the recess in said linear container groove for positively restraining the container against movement when mounted on the holding stand.

5,283,421

ELECTRIC APPLIANCE WITH SAFETY SWITCHING ARRANGEMENT

David A. Richards, Peakhurst, Australia, assignor to PNE Appliance Controls Pte. Ltd., Singapore, Singapore

Filed Nov. 3, 1992, Ser. No. 970,999
Int. Cl.[5] A05B *1/02*
U.S. Cl. 219—519 **14 Claims**



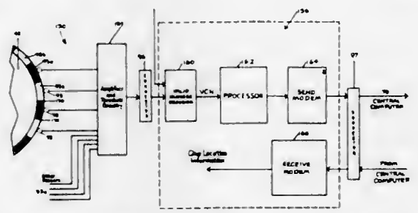
1. An electric appliance having heating means, a member movable between a first position and a second position, relay means for energizing said heating means, positioning means for positioning said member in said first position, sensing means for sensing when said member is in said first position, fault detecting means for detecting a fault in the appliance, and control means coupled to said sensing means, said fault detecting means, said relay means and said positioning means for controlling said relay means to energise said heating means only when said sensing means senses that said member is in said first position and said fault detecting means does not detect any faults, and, when said fault detecting means detects a fault, for controlling said relay means to de-energise said heating means and, independently, for controlling said positioning means to move said member from said first position to said second position.

5,283,422

INFORMATION TRANSFER AND USE, PARTICULARLY WITH RESPECT TO COUNTERFEIT DETECTION

Leonard Storch, and Ernst van Haagen, both of New York, N.Y., assignors to CIAS, Inc., New York, N.Y.

Continuation of Ser. No. 768,106, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 292,569, Dec. 30, 1988, abandoned, which is a continuation of Ser. No. 853,745, Apr. 18, 1986, Pat. No. 4,814,589. This application Aug. 10, 1992, Ser. No. 927,798
Int. Cl.[5] G06K *7/10;* **G06F** *15/44*
U.S. Cl. 235—375 **16 Claims**



1. A counterfeit detection system for identifying a counterfeit object from a set of similar authentic objects, each object in said set having unique authorized information associated therewith comprised of machine-readable code elements coded according to a detectable series, the system comprising:

means at a first facility for storing said authorized information;

means at a plurality of facilities other than said first facility for machine-reading code elements from a similar object and providing information related to the machine-read code elements;

means coupled to receive said information related to said code elements machine-read from said object for at least temporarily storing that information; and

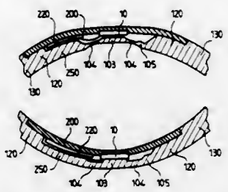
means at said first facility for detecting counterfeits coupled to said storing means and to said means for temporarily storing, said detecting means including a computer programmed to detect a counterfeit from information in said storing means at said first facility and from information received by said means for temporarily storing when information related to code elements machine read from a similar object is different from said authorized information.

5,283,423

CONTACTLESS MICROCIRCUIT CARD

Jacques Venambre, Ifs Plaine, and Henri Molko, La Queue les Yvelines, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,368
Claims priority, application France, Mar. 15, 1991, 91 03197
Int. Cl.[5] G06K *7/08, 19/07*
U.S. Cl. 235—492 **7 Claims**



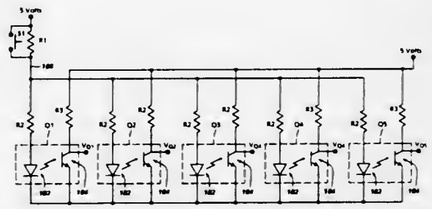
1. A microcircuit card comprising a card support which has a cavity in which a cover foil is fixed, which foil has a circuit support and at least one circuit arranged on a lower surface of the circuit support facing towards the interior of the cavity, the circuit being provided opposite a first portion of a bottom of the cavity, characterized in that the circuit support comprises on its lower surface at least one energy transfer element arranged opposite a second portion of the bottom of the cavity remote from said first portion.

5,283,424

OPTICAL PAPER SENSOR HAVING ALTERABLE SENSITIVITY AND ILLUMINATION INTENSITY

Thomas Acquaviva, Penfield, and Ronald R. Wierszewski, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 19, 1992, Ser. No. 962,552
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **23 Claims**



1. An optical sheet sensing apparatus having a selectable sensitivity which is alterable during use thereof, comprising:

a light source for emitting light;

a detector, disposed in a light receiving relationship with the light source, for producing a first output signal level in response to light having an illumination intensity at least equal to a threshold intensity, and a second output signal level in response to light having an illumination intensity less than the threshold intensity; and

means, associated with said light source, for selectively altering the illumination intensity of the emitted light during the use of the optical sheet sensing apparatus between a first intensity greater than the detector threshold intensity and a second intensity greater than the detector threshold intensity and less than the first intensity, thereby altering the sensitivity of the sheet sensing apparatus as a function of the selected illumination intensity.

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5,283,425
LIGHT EMITTING ELEMENT ARRAY SUBSTRATE WITH REFLECTING MEANS

Masaya Imamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 29, 1993, Ser. No. 10,761
Claims priority, application Japan, Feb. 6, 1992, 4-20983
Int. Cl.[5] H01J 40/14; H01L 27/14
U.S. Cl. 250—208.1 15 Claims

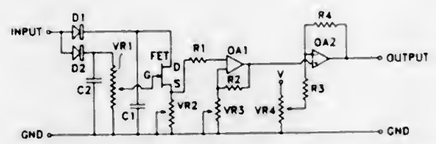


1. A light emitting element array substrate comprising a plurality of light emitting elements arranged on the substrate in a line and light reflecting means provided on a portion of said substrate around light emitting elements where the quantity of irradiation is less than that at an other portion of the substrate, said light reflecting means positioned to re-reflect the light which is emitted from said light emitting elements and then reflected by surrounding parts, so that said re-reflected light complements the quantity of light where the irradiation is less than the other portions and levels the entire irradiation from the light emitting element array substrate.

5,283,426
METHODS AND APPARATUS FOR OBTAINING NONLINEAR RESPONSES FROM PHOTODETECTOR ARRAYS

James O. Bowlby, Jr., San Jose, and Gregory E. Johnston, Redondo Beach, both of Calif., assignors to X-Ray Scanner Corporation, Torrance, Calif.

Filed May 17, 1993, Ser. No. 63,452
Int. Cl.[5] H01J 40/14; H04N 3/14
U.S. Cl. 250—208.1 16 Claims



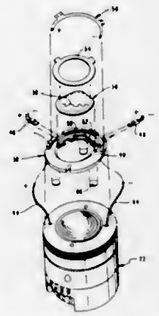
5. A method for obtaining a nonlinear response from a photodetector cell comprising a charge-collecting region, a charge-transport region, a sink region, an integration control electrode, and a transfer electrode, said charge-collecting region being used to store charge generated by light incident on said cell during each of a plurality of exposures, said imaging system generating a start signal at the beginning of each exposure, said sink region being used as a means for disposing of excess charge in said charge-collecting region, said charge-transport region being used to receive and temporarily store charge collected in said charge-collecting region, the transfer of charge from said charge-collecting region to said sink region being controlled during an exposure by a charge collection control voltage applied to said integration control electrode, the magnitude of said charge collection control voltage at a particular time establishing the amount of charge that can be stored in said charge-collecting region at said particular time, the transfer of charge from said charge-collecting region to said charge-transport region being controlled by a transfer voltage applied to said transfer electrode, the transfer of charge being accomplished by a change in said transfer voltage from a first value to a second value, said method comprising the step:

providing a charge collection control voltage in thee form of a plurality of voltage pulses during each exposure.

5,283,427
NIGHT SIGHT FOR A MISSILE LAUNCHER COMPRISING AN IMAGE INTENSIFIER TUBE, A RETICLE, AND AN OBJECTIVE LENS

Earle N. Phillips, Roanoke, and Mark A. Bryant, Cloverdale, both of Va., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 647,544, Jan. 29, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,351
Int. Cl.[5] H01J 31/50
U.S. Cl. 250—214 VT 17 Claims

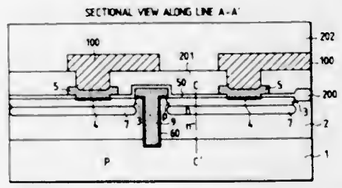


1. A night sight for a missile launcher comprising:
(a) an objective lens having a field view of at least 22 degrees;
(b) a light intensifier tube positioned with respect to said objective lens to receive as input the output image of said objective lens;
(c) an eyepiece for viewing the output of said light intensifier tube;
(d) a reticle for enabling a missile from said missile launcher to be directed at a lead angle, relative a selected moving target of up to at least 22 degrees so as to meet said selected moving target along the shortest trajectory, and
(e) illumination means electrically coupled to said light intensifier tube, for selectively illuminating said reticle.

5,283,428
PHOTOELECTRIC CONVERTING DEVICE AND INFORMATION PROCESSING APPARATUS EMPLOYING THE SAME

Masakazu Morishita, Hiratsuka; Seiji Hashimoto, Yokohama; Shigetoshi Sugawa, Atsugi, and Hayao Ohzu, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,334
Claims priority, application Japan, Nov. 27, 1990, 2-326235; Nov. 29, 1990, 2-332681
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—214.1 8 Claims

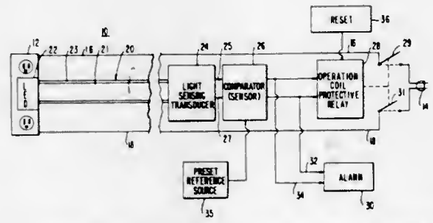


1. A photoelectric converting device provided with a control electrode area of a semiconductor of a first conductive type and at least two main electrode areas of a semiconductor of a second conductive type different from said first conductive type, and capable of accumulating photo-generated carriers in said control electrode area;
wherein said control electrode area become substantially depleted at the resetting operation.

5,283,429
FIBER OPTICAL MONITORING SYSTEM FOR ELETRICAL CONDUCTORS AND THE LIKE

Steve Campolo, Valley Stream, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,275
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.14 13 Claims



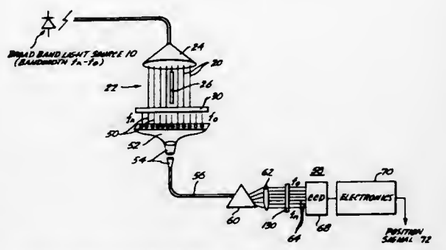
1. A fiber optical monitoring system for electrical cables, conductors and the like comprising:
an electrical apparatus comprising a plurality of electrical conductors;
an optical fiber whose light transmission characteristics are affected by changes in temperature about the fiber or by the direct application of stress to such fiber situated in such close proximity to said plurality of electrical conductors that the amount of light passing through said optical fiber is affected by temperature changes of said plurality of conductors;
a light source at a first end of said optical fiber;
means for detecting light and producing an electrical output signal proportional to the level of detected light, said means for detecting light being located at a second end of said optical fiber opposite said first end; and
means responsive to said electrical output signal to open circuit said plurality of conductors when said electrical output signal reaches a present level.

5,283,430
OPTICAL FREQUENCY ENCODING FOR NORMAL SHOCK AND POSITION SENSING HAVING A BROADBAND LIGHT SOURCE AND A COLOR GRADIENT FILTER

Christopher M. Carlin, and Israel Frisch, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 16, 1992, Ser. No. 992,286
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.23 2 Claims

1. A method for normal shock sensing comprising:
collimating light from a broadband light source into the inlet region of an aircraft engine;
providing wavelength intensity modulation in response to normal shock;
coupling the modulated signal into a single optical fiber as a sum total of all the wavelength components; and,

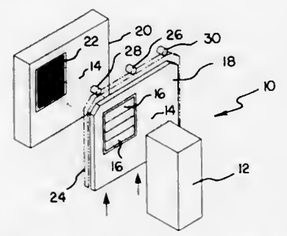


then demodulating the signal to provide normal shock information.

5,283,431
OPTICAL KEY SECURITY ACCESS SYSTEM

Raymond J. Rhine, 7302 N. Heathcliff Ave., Tuscon, Ariz. 85741

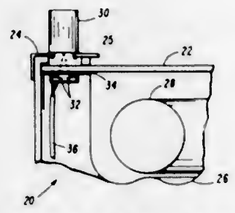
Filed Feb. 4, 1992, Ser. No. 830,926
Int. Cl.[5] G06K 7/10; G03H 1/26
U.S. Cl. 250—229 5 Claims



1. A new and improved optical key security access system comprising:
photo-sensitive means for receiving and detecting at least one light beam, said photo-sensitive means comprising a two-dimensional imaging array;
illumination means for sending at least one light beam to said imaging array; and
key means positionable between said illumination means and said imaging array, said key means including an integral material through which said at least one light beam passes, said integral material serving to reorient said at least one light beam whereby said integral material causes said light beam to impinge upon a preselected portion of said imaging array, said integral material comprising optically transmissive gradient refractive index material for reorienting said at least one light beam to impinge upon a preselected portion of said imaging array, and signal processing means responsive to the output of said imaging array to compare a signal representing said preselected portion of said imaging array with a predetermined encoded signal.

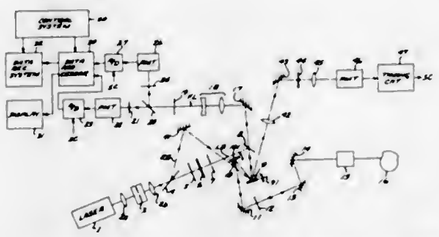
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5,283,432
OPTICAL CONTROL KNOB ASSEMBLY INCORPORATED ON A FLAT PANEL DISPLAY APPARATUS
Robert C. McKillip, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 18, 1992, Ser. No. 947,228
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—229 8 Claims



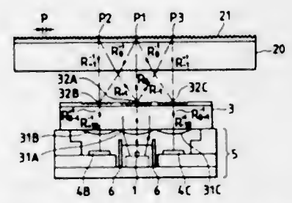
1. A control apparatus for a device having a viewed flat panel display integrally encompassing the flat panel display comprising:
means, located on the viewed surface of the flat panel display, for converting inputs into optical signals; and
means, located on the back side of the flat panel display, for monitoring, interpreting and coupling the optical signals to control circuitry of the device.

5,283,433
SCANNING CONFOCAL MICROSCOPE PROVIDING A CONTINUOUS DISPLAY
Roger Y. Tsien, La Jolla, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Oct. 5, 1992, Ser. No. 958,038
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—234 20 Claims



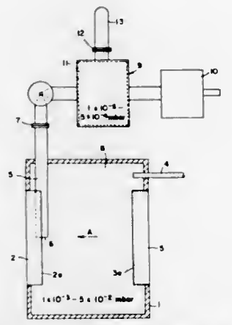
1. A confocal microscope for scanning a sample doped with a predetermined fluorescent indicator, comprising:
a scanner for repeatedly scanning a laser beam in two dimensions across the sample, whereupon the sample fluoresces in first and second predetermined wavelengths;
first and second detectors for detecting light emitted by the sample in the first and second wavelengths and for generating a succession of frames of image data representing a sequence of related pairs of simultaneous two-dimensional images of the sample, in the first and second wavelengths;
first and second frame memories for temporarily storing individual frames of image data for the respective first and second wavelengths;
a permanent data storage device;
transfer means for transferring image data derived from the data generated by the first and second detectors to the permanent data storage device in an alternating fashion;
ratio means for repeatedly computing and temporarily storing the ratio of image data for the respective first and second wavelengths, to produce a sequence of image data ratios; and
video means for receiving the sequence of image data ratios produced by the ratio means and providing a signal suitable for coupling to a video display, to provide a repeatedly updated display of the scanned sample that is substantially unaffected by any variations in the intensity of the scanning laser beam or in the local concentration in the sample of the fluorescent indicator.

5,283,434
DISPLACEMENT DETECTING DEVICE WITH INTEGRAL OPTICS
Koh Ishizuka, Ohmiya; Tetsuharu Nishimura, Kawasaki, and Yasushi Kaneda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,418
Claims priority, application Japan, Dec. 20, 1991, 3-338596
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—237 G 14 Claims



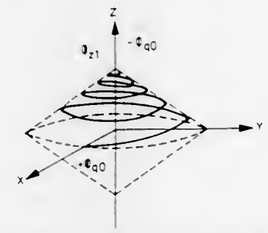
1. A displacement detecting device for detecting information relating to a displacement of an object, comprising:
a light source;
a transparent member;
a light beam transforming optical element for transforming converge-diverge condition of a light beam from said light source;
an optical splitting element for splitting the light beam transformed by said light beam transforming optical element, whereby at least two light beams split by said optical splitting element are irradiated onto said object,
said light beam transforming optical element and said optical splitting element being integrally provided on said transparent member, and being mounted on different faces thereof, and the light beam from said light source passing through said transparent member from said light beam transforming optical element to said optical splitting element; and
a detection system for performing detection by mixing and interfering said at least two light beams which come from said object, said detection system including at least a light-receiving element for detecting the light beam, whereby the information relating to the displacement of a said object is measured on the basis of detection signal of said light-receiving element.

5,283,435
APPARATUS FOR DETERMINING THE CONCENTRATION OF A GAS IN A VACUUM CHAMBER
Christoph Danbe, Tsubuka, Japan; Alfred Belz, Erlensee, and Uwe Kopacz, Hainburg, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany
Filed May 12, 1992, Ser. No. 881,618
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138927
Int. Cl.[5] H01L 21/203
U.S. Cl. 250—289 3 Claims
1. An apparatus for determining the concentration of a gas in a first chamber, in the vicinity of one or more cathodes each having a central region, said cathodes situated within said first chamber, comprising:
a gas inlet into said first chamber;
a second chamber for accommodating a measuring device;
a connecting line between said two chambers having a first end located within said first chamber and a second end located within said second chamber, a length and a cross-section;



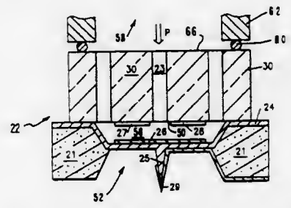
pumping means connected to said second chamber for producing a pressure gradient between said first chamber and said second chamber, wherein said first end of said connecting line between said two chambers terminates internally to said first chamber adjacent one of said central regions of said cathode surfaces, and said length, and said cross section of said connecting line being so selected that the pressure gradient between the interior of said first vacuum chamber and said second chamber is precisely that required for a measurement.

5,283,436
GENERATION OF AN EXACT THREE-DIMENSIONAL QUADRUPOLE ELECTRIC FIELD AND SUPERPOSITION OF A HOMOGENEOUS ELECTRIC FIELD IN TRAPPING-EXCITING MASS SPECTROMETER (TEMS)
Yang Wang, Bremen, Fed. Rep. of Germany, assignor to Bruker-Franzen Analytik GmbH, Fed. Rep. of Germany
PCT No. PCT/EP90/00030, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO91/11016, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 8, 1990, Ser. No. 867,673
Int. Cl.[5] B01D 59/44; H01J 49/00
U.S. Cl. 250—292 28 Claims



16. Electrode structure for generating a three-dimensional rotationally symmetric electric field having at least quadrupole moments, said electric structure comprising a boundary surface having parts thereof facing the electric field, said parts comprising an electrically resistive material, the structure further comprising means for applying a second resultant electric potential to said electrode structure for generating a second, homogeneous electric field in symmetry axis direction superimposed to said three-dimensional rotationally symmetric at least quadrupole moment electric field without interaction.

5,283,437
PNEUMATICALLY AND ELECTROSTATICALLY DRIVEN SCANNING TUNNELING MICROSCOPE
Johann Greschner, Pliezhausen; Martin Nonnenmacher, Schonaich, and Olaf Wolter, Aidlingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 811,635, Dec. 23, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 20,008
Claims priority, application European Pat. Off., Dec. 21, 1990, 90125214.8
Int. Cl.[5] H01J 37/26
U.S. Cl. 250—306 20 Claims

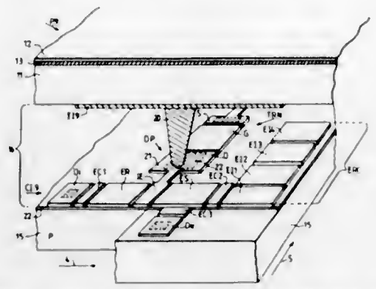


1. A scanning tunneling microscope comprising at least one electron-emitting tip maintained at an essentially constant distance along a Z-axis from a sample surface, an XY-drive for scanning said tip in a matrix fashion across said sample surface, means for controlling said tunnel current to maintain said distance essentially constant, characterized in that said XY-drive consists of at least four electrodes spaced from a counter-electrode;
said four electrodes being upper electrodes arranged on a member, or lower electrodes arranged on substrate;
said counter-electrode being connected to a membrane; and
said electron-emitting tip being capable of moving along the Z-axis normal to the sample surface forming an integral part of said membrane.

5,283,438
MONOLITHIC INFRARED DETECTOR WITH PYROELECTRIC MATERIAL
Pierre Dautriche, Claix, France, assignor to Thompson Composants Militaires et Spatiaux, Courbevoie, France
Filed Dec. 11, 1991, Ser. No. 804,747
Claims priority, application France, Dec. 11, 1990, 90 15476
Int. Cl.[5] H01L 27/14
U.S. Cl. 250—338.3 14 Claims
1. An infrared monolithic type detector, comprising:
a layer of pyroelectric material;
a semiconductive substrate wherein the pyroelectric layer comprises a plurality of pyroelectric zones, each pyroelectric zone including a lower electrode located between the pyroelectric layer and the semiconductive substrate; and
switching means, for establishing an electric current between each of said lower electrodes and the semiconductive substrate,
wherein said semiconductive substrate comprises a CCD multiplexer having one input electrode for each of said

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pyroelectric zones, each one of said input electrodes being connected to said lower electrode, a polarization diode



and a transistor, each input electrode being used to form a potential barrier in said semiconductive substrate.

5,283,439

VERY ROBUST SCINTILLATOR DEVICE AND PROCESS OF MANUFACTURING IT

Claude Bouissou, and Claude Baron, both of Saint-Pierre-Les-Nemours, France, assignors to Quartz Et Silice, Courbevoie, France

Filed Jan. 19, 1993, Ser. No. 5,988

Claims priority, application France, Jan. 17, 1992, 92 00439

Int. Cl.[5] G01T *1/202*

U.S. Cl. 250—368 **15 Claims**



1. Scintillator device for detection of ionizing radiation, comprising:

a case having two ends;

a transparent window at one of the ends of the case;

a radiation detector fitted in the case and comprising an alkaline or alkaline-earth halogenide crystal;

an optical connection between a plane face of said detector and said window;

a diffusing white reflective material comprising a sintered powder and covering the other walls of said crystal; and

a spring at the other of the ends of said case and pressing said crystal against said optical connection.

5,283,440

ELECTRON BEAM WRITING SYSTEM USED IN A CELL PROJECTION METHOD

Yasunari Sohda, Hachioji; Hideo Todokoro, Tokyo; Norio Saitou, Iruma; Haruo Yoda; Hiroyuki Itoh, both of Katsuta; Hiroyuki Shinada, Chofu; Yoshinori Nakayama, Sayama, and Shinji Okazaki, Urawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,527

Claims priority, application Japan, Oct. 5, 1990, 2-266206; Nov. 21, 1990, 2-313988; Feb. 1, 1991, 3-011916; Feb. 27, 1991, 3-031228

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.2 **10 Claims**

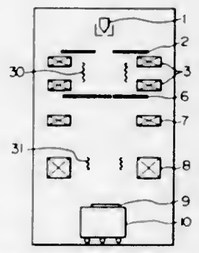
1. An electron beam writing system used in a cell projection method, comprising:

means forming an electron beam;

an aperture having at least one graphic for defining a shape of the electron beam;

means for shaping the electron beam in a first predetermined amount of time, including means for passing the electron beam through a selected graphic of the aperture and for projecting the electron beam onto a writing plane; and

deflector means for defining a writing position of the shaped electron beam on the writing plane in a predetermined second amount of time, wherein said second amount of time is at least as long as said first amount of time; and



wherein said means for shaping the electron beam includes: a deflector as said means for passing the electron beam through a graphic of the aperture; means for redeflecting the shaped electron beam for correcting an original position of the selected graphic; means for correcting astigmatism of the shaped electron beam; and means for focusing the shaped electron beam for reducing a Coulomb effect by a correction factor depending on the selected graphic position on the aperture above an objective lens in the predetermined second amount of time.

5,283,441

LOW-POWER CURRENT MIRROR HAVING FEEDBACK WITH OPTICAL ISOLATION

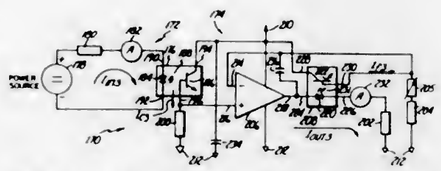
Liboslav Fabian, New Brighton, Minn., assignor to Empi, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 851,052, Mar. 13, 1992, Pat. No. 5,189,307. This application Nov. 16, 1992, Ser. No. 977,129

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] G02B *27/00;* **H03K** *3/42;* **A61N** *1/30*

U.S. Cl. 250—551 **21 Claims**



10. An isolated source for providing an output signal as a function of an input signal, the source comprising:

input terminals configured for receiving an input signal;

a first optical isolator connected to the input terminals and having a first phototransistor with a base for deriving an isolated control signal on the base as a function of the input signal;

an amplifier connected to the first optical isolator for supplying the output signal as a function of the isolated control signal and an isolated feedback signal; and

a second optical isolator connected to the amplifier and having a second phototransistor with a base for deriving the isolated feedback signal on the base as a function of the output signal.

5,283,442

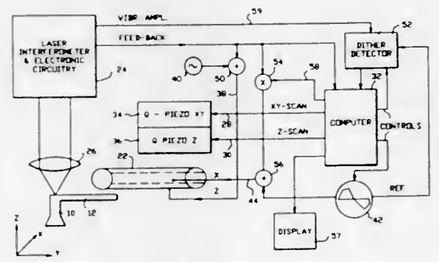
SURFACE PROFILING USING SCANNING FORCE MICROSCOPY

Yves Martin, Ossining, N.Y.; Jordan Poler, Carrboro, N.C., and Hemantha K. Wickramasinghe, Chappaque, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 830,804, Feb. 4, 1992, abandoned. This application May 3, 1993, Ser. No. 56,808

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **42 Claims**



1. A method of controlling the position of a tip of a scanning force microscope for profiling a surface of a feature located in a workpiece comprising the steps of:

sensing the distance of the surface relative to the tip;

determining a local slope of the surface; and

controlling the position of the tip responsive to said determining the local slope of the surface for causing the tip to follow the profile of the surface.

5,283,443

METHOD FOR INSPECTING GARMENTS FOR HOLES HAVING A CONTRASTING BACKGROUND

Leonard Norton-Wayne, and Siavash Abbasszadeh, both of Leicester, Great Britain, assignors to De Montfort University, Leicester, United Kingdom

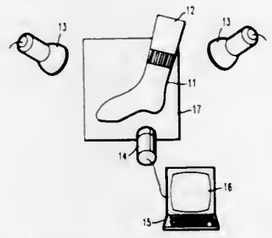
PCT No. PCT/GB91/00536, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO92/08967, PCT Pub. Date May 29, 1992

PCT Filed Apr. 5, 1991, Ser. No. 937,872

Claims priority, application United Kingdom, Apr. 17, 1990, 9008632

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—572 **11 Claims**



1. A method for inspecting garments for holes comprising:

front-lighting the garment against a contrasting background and forming a pixel image thereof,

isolating garment pixels from background pixels by automatically selecting an optimum binarization threshold grey level,

binarizing the image at that level,

determining the garment boundary,

testing for consistency of grey level within the garment boundary on the binarized image along rows and columns of pixels within the garment boundary and noting inconsistent pixels, and

identifying as holes only pixels which have been noted as inconsistent in both horizontal and vertical tests.

5,283,444

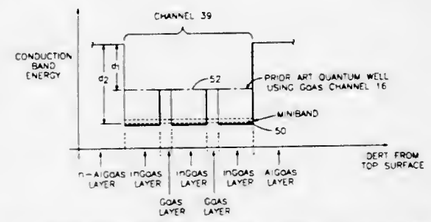
INCREASED WELL DEPTH HACT USING A STRAINED LAYER SUPERLATTICE

Robert N. Sacks; Thomas W. Grudkowski, both of Glastonbury; Donald E. Cullen, Manchester, and William J. Tanski, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 24, 1992, Ser. No. 918,830

Int. Cl.[5] H01L *29/161, 29/205*

U.S. Cl. 257—18 **6 Claims**



1. A heterojunction acoustic charge transport device having a surface acoustic wave (SAW) propagating therein and having charge packets being carried by the SAW, comprising:

a piezoelectric substrate;

a pair of charge confinement layers of semiconductor material disposed near said substrate, having a confinement conduction band energy, for confining said charge packets therebetween;

a charge transport layer comprising a strained layer superlattice of at least two different semiconductor material disposed between and contiguous with said pair of charge confinement layers to provide increased well-depth thereby decreasing charge leakage out of said charge transport channel and increasing charge capacity of said charge transport channel; and

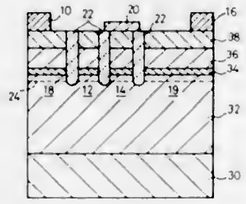
said strained layer superlattice comprising:

a plurality of deep-well semiconductor layers not lattice matched to said charge confinement layers and having a deep-well conduction band energy lower than said confinement conduction band energy; and

a plurality of strain relief semiconductor layers, disposed contiguous with and in alternation with said plurality of deep-well semiconductor layers, substantially lattice matched to said charge confinement layers, each strain relief layer being thick enough to provide strain relief, thereby preventing the formation of crystal dislocations caused by said deep-well semiconductor layers not being lattice matched to said charge confinement layers.

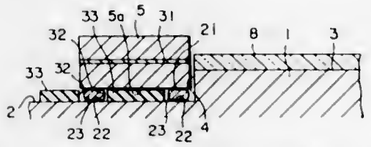
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5,283,445
QUANTUM SEMICONDUCTOR DEVICE EMPLOYING QUANTUM BOXES FOR ENABLING COMPACT SIZE AND HIGH-SPEED OPERATION
Miyoshi Saito, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Nov. 24, 1992, Ser. No. 981,152
Claims priority, application Japan, Nov. 29, 1991, 3-316850; Jun. 19, 1992, 4-161442
Int. Cl.[5] H01L *29/06, 29/80, 27/26*
U.S. Cl. 257—24 **9 Claims**



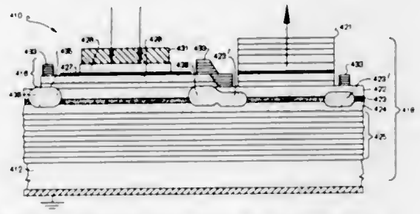
1. A quantum semiconductor device comprising:
a semiconductor substrate;
a carrier emitter having a quantum box structure formed in said semiconductor substrate;
a plurality of carrier collectors each having a quantum box structure formed in said semiconductor subject, so that carriers tunnel from said carrier emitter to said carrier collectors wherein said carrier collectors are formed by quantum boxes of different sizes; and
control means for controlling the sizes of said carrier collectors by an external voltage, said control means has an external voltage applying means for applying the same external voltage to said carrier collectors, and said carrier emitter separately provides carriers, by resonant tunneling, to said carrier collectors in response to said external voltage.

5,283,446
COMPACT OPTICAL SEMICONDUCTOR MODULE CAPABLE OF BEING READILY ASSEMBLED WITH A HIGH PRECISION
Yasuhisa Tanisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 24, 1992, Ser. No. 933,812
Claims priority, application Japan, Aug. 30, 1991, 3-245207
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—433 **11 Claims**



1. An optical semiconductor module, comprising:
a substrate;
an optical semiconductor chip which has a chip surface and which is mounted on said substrate;
a plurality of first electrodes deposited on said chip surface;
a plurality of second electrodes deposited on said substrate and electrically connected to said first electrodes;
a plurality of shrunk bumps each of which has a first height, said shrunk bumps being electrically connected between said first and said second electrodes; and
a side wall having a second height and substantially surrounding said shrunk bumps, said second height being substantially equal to said first height.

5,283,447
INTEGRATION OF TRANSISTORS WITH VERTICAL CAVITY SURFACE EMITTING LASERS
Gregory R. Olbright, and Jack L. Jewell, both of Boulder, Colo., assignors to Bandgap Technology Corporation, Broomfield, Colo.
Filed Jan. 21, 1992, Ser. No. 823,496
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—85 **62 Claims**

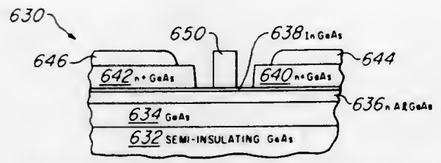


1. An optoelectronic integrated circuit comprising:
a substrate;
a bipolar transistor formed on said substrate, said transistor comprising first, second and third layers of semiconductor material formed one on top of the other on said substrate, said second layer being a base layer and the other two layers being an emitter layer and a collector layer;
a multi-layer surface emitting structure formed on the layers of said bipolar transistor, said surface emitting structure emitting optical radiation in a direction substantially perpendicular to the layers of said structure, said multi-layer surface emitting structure comprising:
a first mirror formed on the bipolar transistor,
a first spacer formed on the first mirror;
an active layer comprising at least one quantum well layer formed on said first spacer,
a second spacer formed on said active layer, and
a second mirror formed on said second spacer, wherein the first and second mirrors each comprise a plurality of layers formed one on top of the other and at least the upper layers of the second mirror are smaller in lateral dimension than the underlying layers, whereby a portion of a surface of the uppermost underlying layer is not covered by the upper layers;
electrical contacts to said surface emitting structure and to said substrate for applying a voltage across said surface emitting structure; and
an electrical contact to said base layer of the bipolar transistor.

5,283,448
MESFET WITH INDIUM GALLIUM ARSENIDE ETCH STOP
Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 443,295, Nov. 29, 1989, abandoned. This application Jan. 31, 1991, Ser. No. 649,378
Int. Cl.[5] H01L *29/812, 29/73*
U.S. Cl. 257—194 **17 Claims**

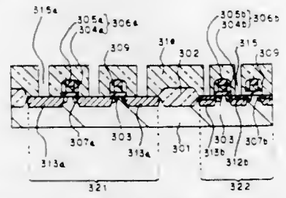
1. A field effect transistor, comprising:
a channel region overlying a semiconductor substrate and defined in a channel layer of a first semiconductor material;
a gate overlying said channel region;

an etch stop layer adjacent said gate and overlying said channel region, said etch stop layer comprising a second semiconductor material different than said first semiconductor material, wherein said etch stop layer is substantially undoped and abuts said gate and is separated from



said channel region by a material with a bandgap wider than a bandgap of said etch stop layer and a bandgap of said channel region material;
a source overlying said etch stop layer; and
a drain overlying said etch stop layer.

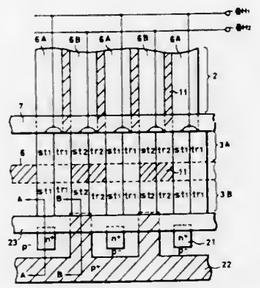
5,283,449
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING TWO TYPES OF MOSFETS HAVING SOURCE/DRAIN REGION DIFFERENT IN SHEET RESISTANCE FROM EACH OTHER
Hideyuki Ooka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 8, 1991, Ser. No. 742,380
Claims priority, application Japan, Aug. 9, 1990, 2-211109; Aug. 29, 1990, 2-228688
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—204 **6 Claims**



4. A semiconductor integrated circuit device, comprising: a buffer circuit including a first MOSFET to interface with an external device and an internal circuit operatively coupled to said buffer circuit and including a second MOSFET, each of said first and second MOSFETs having a gate electrode and source and drain regions, said second MOSFET further having a silicide film formed on the surface of at least one of said source and drain regions thereof, wherein said first MOSFET has no silicide film in contact with said source and drain regions thereof to increase the resistance of said source and drain regions of said first MOSFET to be greater than the resistance of said at least one of said source and drain regions of said second MOSFET having formed thereon said silicide film.

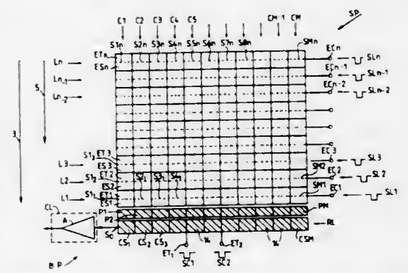
5,283,450
FIT-CCD IMAGE SENSING DEVICE
Kouichi Harada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 13, 1992, Ser. No. 867,517
Claims priority, application Japan, Apr. 15, 1991, 3-082597
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—223 **7 Claims**

1. A solid state image sensing device comprising:
(a) an image sensing section composed of a photo-sensing section for photoelectric-converting an incident light into a signal charge and a vertical shift register for transferring said signal charge in the vertical direction;
(b) a horizontal shift register of a two-phase drive system having a first transfer unit and a first storage unit to which said signal charge of said image sensing section is transferred through a gate and which is supplied with a drive pulse of a first phase and a second transfer unit and a second storage unit to which a drive pulse of a second phase is supplied;



(c) a smear drain region disposed on a side of said horizontal shift register opposite to said image sensing section and associated with said first storage unit;
(d) a smear gate disposed between said smear drain region and said first storage unit; and
(e) a channel stop region associated with said second storage unit and disposed in abutment with said second storage unit and on a side of said smear drain region opposite to said horizontal shift register.

5,283,451
OPTICAL SENSOR EXHIBITING A REDUCED SMEARING EFFECT
Yvon Cazaux, Grenoble, France, assignor to Thomson Composants Militaires et Spatiaux, Courbevoie, France
Filed Mar. 24, 1992, Ser. No. 856,706
Int. Cl.[5] H01L *29/796*
U.S. Cl. 257—229 **6 Claims**



1. A photosensitive device, comprising, on a semiconductor substrate:
a photosensitive surface;
a readout register of the charge transfer type bearing said photosensitive surface, said readout register being located in a zone protected from light and said photosensitive surface being divided into a plurality of photosensitive surface elements each of said photosensitive elements producing charges when exposed to light;
a plurality of surface elements forming at least one row, each of said plurality of surface elements having at least one storage electrode and one transfer electrode placed in

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series so as to provide a column and to make it possible to transfer charges along the column toward a readout register under the control of row signals applied to said at least one storage electrode and said at least one transfer electrode, said charges being transferred in said readout register in a space corresponding to each column;

said photosensitive device further comprising:

means to form an intermediate zone protected from light and located between said photosensitive surface and said zone protected from light;

at least one intermediate transfer stage comprising at least one of said at least one storage electrode and at least one said at least one transfer electrode, said transfer stage being placed in an intermediate zone between each said column and each corresponding said space of said readout register in order ensure the transfer of charges between each column and the out register when acted on by intermediate transfer signals applied to said at least one storage electrode and said at least one transfer electrodes of said intermediate transfer stage; and

transfer pulse applying means for applying transfer pulses to the electrodes of said at least one intermediate transfer stage in a controlled mode independent of a mode used to apply row signals to the electrodes of said photosensitive surface, wherein a first row signal is applied to one of said storage electrodes and one of said transfer electrode of a first row and a second row signal is applied to another one of said storage electrodes and another one of said transfer electrodes of a second row adjacent to said first row, and wherein a time between said first row and said second row signal is longer than a time separating a first one and a second one of said transfer pulses.

5,283,452

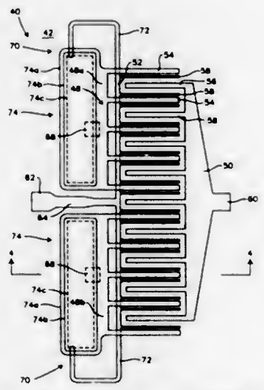
DISTRIBUTED CELL MONOLITHIC MIRCOWAVE INTEGRATED CIRCUIT (MMIC) FIELD-EFFECT TRANSISTOR (FET) AMPLIFIER

Yi-Chi Shih, Torrance; David C. Wang, Rancho Palos Verdes; Huy M. Le, Monterey Park; Vincent Hwang, Long Beach, and Tom Y. Chi, San Gabriel, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 14, 1992, Ser. No. 837,448

Int. Cl.[5] H01L *29/812*

U.S. Cl. 257—277 **13 Claims**



1. A distributed field-effect transistor (FET) amplifier, comprising:

a substrate;

a plurality of parallel, elongated source and drain regions formed in the substrate in transverse alternating relation;

a plurality of elongated channel regions formed in the substrate between and parallel to the adjacent source and drain regions respectively;

an elongated source foot extending substantially perpendicular to the source regions on a first longitudinally spaced side of the source, drain and gate regions;

an elongated drain foot extending substantially perpendicular to the drain regions on a second longitudinally spaced side of the source, drain and gate regions which is opposite to said first side;

an elongated gate foot extending substantially perpendicular to the gate regions on said first side between the source foot and the source, drain and gate regions;

a plurality of parallel, elongated source pads extending from the source foot into electrical connection with the source regions respectively, the source pads crossing the gate foot in electrical isolation therefrom;

a plurality of parallel, elongated drain pads extending from the drain foot into electrical connection with the drain regions respectively;

a plurality of parallel, elongated gate fingers extending from the gate foot into electrical connection with the gate regions respectively; and

fixed tuning circuit means connected between the gate foot and the source foot, including:

an inductive stub having a first end connected to the gate foot and a second end; and

a capacitor having a first plate which is integral with the source foot and a second plate connected to the second end of the inductive stub.

5,283,453

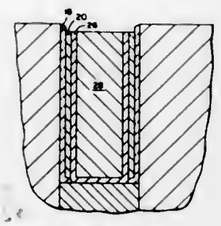
TRENCH SIDEWALL STRUCTURE

Thekkemadathil Rajeevakumar, Scarsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1992, Ser. No. 956,125

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—304 **11 Claims**



1. A trench structure comprising:

a) a storage node of polysilicon; and

b) a trench sidewall surrounding said storage node, said trench sidewall having a structure which comprises:

i. a diffusion barrier layer adjacent said storage node;

ii. a doped polysilicon layer adjacent said diffusion barrier layer; and

iii. an oxide collar layer adjacent said doped polysilicon layer.

5,283,454

SEMICONDUCTOR DEVICE INCLUDING VERY LOW SHEET RESISTIVITY BURIED LAYER

Bertrand Cambou, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 11, 1992, Ser. No. 943,642

Int. Cl.[5] H01L *29/10*

U.S. Cl. 257—328 **2 Claims**

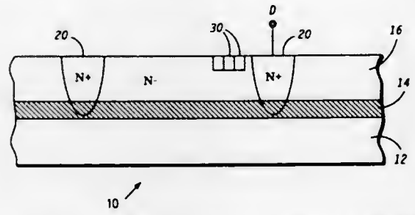
1. A semiconductor device with a very low sheet resistivity buried layer comprising:

a substrate;

a semiconductor device formed in the substrate and having a plurality of electrodes;

a very low sheet resistivity buried layer positioned in the substrate below the semiconductor device and in connection with one of the plurality of electrodes of the semiconductor device, the buried layer including a refractory metal; and

a conductive area formed in the substrate and connected to the buried layer so as to provide an external connection to the buried layer adjacent the surface of the substrate.



5,283,455

THIN FILM FIELD EFFECT ELEMENT HAVING AN LDD STRUCTURE

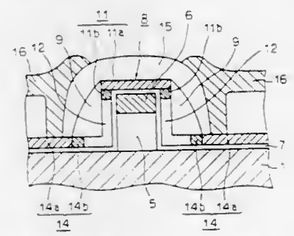
Yasuo Inoue; Tadashi Nishimura, and Motoi Ashida, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,582

Claims priority, application Japan, Aug. 9, 1991, 3-199717

Int. Cl.[5] H01L *29/76, 29/94, 27/01, 31/062*

U.S. Cl. 257—329 **5 Claims**



1. A thin film field effect element, comprising:

a gate electrode formed on a surface of an insulating base layer

a gate insulating layer formed on said surface of the insulating base layer and surfaces of said gate electrode;

a semiconductor layer formed on surfaces of said gate insulating layer;

a channel region formed in said semiconductor layer on a side surface of said gate electrode;

impurity regions of low concentration formed in said semiconductor layer adjacent to said channel region; and

impurity regions of high concentration formed in said semiconductor layer adjacent to said impurity regions of low concentration.

5,283,456

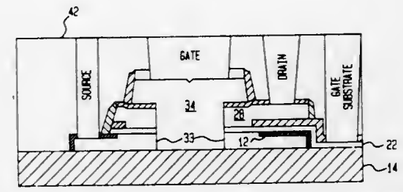
VERTICAL GATE TRANSISTOR WITH LOW TEMPERATURE EPITAXIAL CHANNEL

Chang-Ming Hsieh; Louis L. C. Hsu, both of Fishkill, and Seiki Ogura, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1992, Ser. No. 900,038

Int. Cl.[5] H01L *27/01, 29/76, 27/12*

U.S. Cl. 257—347 **6 Claims**



1. A vertical gate, field effect transistor formed on a silicon-on-oxide substrate, said substrate comprised of an oxide base and a silicon layer formed on said oxide base, said vertical gate, field effect transistor comprising in combination:

a source region formed in said silicon layer with an opening formed therein defining a source region edge;

a first oxide layer formed on said source region;

a channel substrate layer formed by a low temperature epitaxial process overlying said first oxide layer on said source region with an opening formed therein defining a channel substrate layer edge that is aligned with said source region edge with said first oxide layer separating a portion of said source region from said channel substrate layer;

a second oxide layer formed on said channel substrate layer;

a drain layer overlying said second oxide layer with an opening formed therein defining a drain layer edge that is aligned with said source region edge and said channel substrate layer edge with said second oxide layer separating a portion of said channel substrate layer from said drain layer;

a gate dielectric layer formed over said source region edge, said channel substrate layer edge, and said drain layer edge; and

a conductive gate structure in contact with said gate dielectric layer and extending perpendicularly with respect to said source region, said channel substrate layer, and said drain layer.

5,283,457

SEMICONDUCTOR ON INSULATOR TRANSISTOR

Mishel Matloubian, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 416,189, Oct. 2, 1989, abandoned. This application Mar. 5, 1991, Ser. No. 665,925

Int. Cl.[5] H01L *27/02, 27/01, 27/13*

U.S. Cl. 257—351 **10 Claims**

1. A transistor structure comprising:

a semiconductor layer having a first conductivity type;

a first drain region formed in said semiconductor layer, said first drain region having a second conductivity type;

a first source region formed in said semiconductive layer, said first source region having said second conductivity type, said first source region being separated from said first drain region by a first channel region;

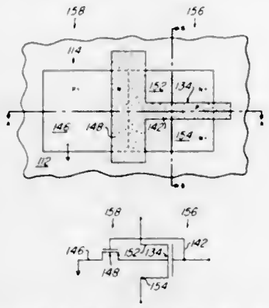
a second channel region having said second conductivity type formed in said semiconductive layer abutting said first channel region and disposed perpendicularly to said first channel region;

a second drain region formed in said semiconductive layer, said second drain region having said first conductivity

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type, said second drain region being separated from said first channel region by said second channel region; and

a T-shaped gate formed on the surface of said semiconductive layer over said first and second channel regions such that a first potential applied to said gate causes said first



channel region to be conductive and said second channel region to be non conductive and such that a second potential applied to said gate causes said second channel region to be substantially conductive and to couple said first channel region to a reference potential.

5,283,458

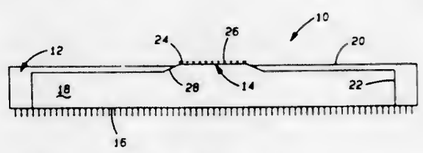
TEMPERATURE STABLE SEMICONDUCTOR BULK ACOUSTIC RESONATOR

Robert B. Stokes, Torrance; Kel-fung Lau, Harbor City, and James Chung-Kel Lau, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 30, 1992, Ser. No. 859,768

Int. Cl.[5] H01L *29/66*

U.S. Cl. 257—416 **13 Claims**



1. A semiconductor bulk acoustic resonating device comprising:

a semiconductor substrate;

a piezoelectric device positioned on the substrate, said piezoelectric device including at least one electrode operable to receive an electrical signal such that when the electrode receives the electrical signal, the piezoelectric device converts the electrical energy into acoustical energy; and

a heating device, said heating device being positioned adjacent to the piezoelectric device and being operable to heat the piezoelectric device.

5,283,459

SEMICONDUCTOR SENSOR INCLUDING AN APERTURE HAVING A FUNNEL SHAPED SECTION INTERSECTING A SECOND SECTION

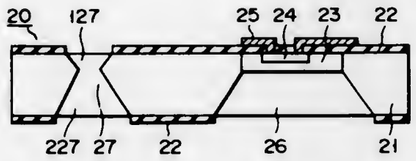
Hirokazu Hirano, Oomiya, and Bunshiro Yamaki, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 612,849, Nov. 14, 1990, abandoned. This application Dec. 20, 1991, Ser. No. 812,848

Claims priority, application Japan, Nov. 15, 1989, 1-296728

Int. Cl.[5] H01L *29/66, 29/96, 29/84*

U.S. Cl. 257—419 **8 Claims**



1. A semiconductor sensor comprising:

a semiconductor substrate of a first conductivity type having upper and lower surfaces;

a semiconductor diaphragm defined by a cavity formed in said semiconductor substrate;

a penetrating aperture provided in said semiconductor substrate to surround desired sides of said diaphragm; and

said aperture including a first section having a first depth and a second section having a second depth deeper than said first depth,

wherein said first section includes a first opening portion having a first diameter in the upper surface and said second section includes a second opening portion having in the lower surface a second diameter larger than said first diameter, and said first section communicates with said second section through a common opening portion having a third diameter smaller than said first diameter.

5,283,460

OPTICAL SEMICONDUCTOR DEVICE

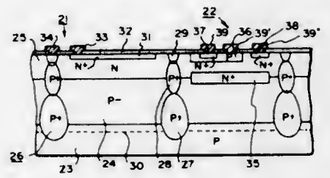
Kelzi Mita, Oizumimachi, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 12, 1992, Ser. No. 834,611

Claims priority, application Japan, Feb. 27, 1991, 3-032929

Int. Cl.[5] H01L *27/14, 29/72, 27/02, 29/90*

U.S. Cl. 257—432 **18 Claims**



1. An optical semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a first epitaxial layer epitaxially grown of intrinsic material on a surface of said semiconductor substrate;

a second epitaxial layer of a second conductivity type epitaxially grown on a surface of said first epitaxial layer;

a separating area of said first conductivity type dividing said first and second epitaxial layers into at least first and second island areas;

said separating area including a lower separating area, a middle separating area and an upper separating area, all congruent and joined together;

said lower separating area being diffused upward from a surface of said substrate;

said upper separating area being diffused downward from a surface of said second epitaxial layer;

said middle separating area being centered in an interface between said first and second epitaxial layers, being diffused downward to connect to said lower separating area, and being diffused upward to connect to said upper separating area;

a diffusion area of said second conductivity in a surface of said second epitaxial layer in said first island area;

a first electrode of a photo diode contacting said diffusion area;

a second electrode of said photo diode contacting said separating area;

a buried layer of said second conductivity at an interface between said first and second epitaxial layers in said second island area; and

a base area of said first conductivity type on an upper surface of said second epitaxial layer in said second island area; and

an emitter area of said second conductivity type in an upper surface of said base area.

5,283,461

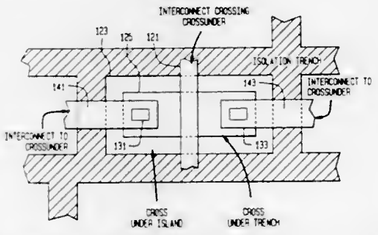
TRENCH CONDUCTOR AND CROSSUNDER ARCHITECTURE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 738,532, Jul. 31, 1991, Pat. No. 5,196,373, which is a division of Ser. No. 563,276, Aug. 6, 1990, Pat. No. 5,057,895. This application Jul. 17, 1992, Ser. No. 916,198

Int. Cl.[5] H01L *29/06, 23/48*

U.S. Cl. 257—508 **6 Claims**



1. A semiconductor structure comprising:

a trench pattern formed in a semiconductor layer that is electrically isolated from an underlying substrate, said trench pattern subdividing said semiconductor layer into a plurality of spaced-apart, electrically isolated islands;

an auxiliary trench region formed in a selected portion of said semiconductor layer spaced apart from said trench pattern;

dielectric material formed on top surfaces of said semiconductor layer, and upon sidewalls of said trench pattern and said auxiliary trench region;

electrically conductive material formed in said trench pattern and said auxiliary trench region;

a first conductive layer overlying dielectric material atop the surface of said auxiliary trench region between first and second locations of electrically conductive material in said auxiliary trench region; and

respective electrical connections between second and third conductive layers overlying said dielectric material and said first and second locations of electrically conductive material in said auxiliary trench region.

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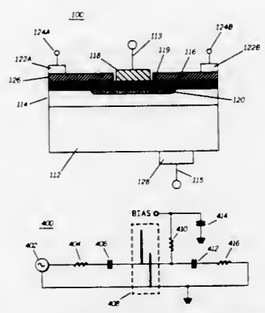
INTEGRATED DISTRIBUTED INDUCTIVE-CAPACITIVE NETWORK

Robert E. Stengel, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,431

Int. Cl.[5] H01L *29/93*

U.S. Cl. 257—595 **4 Claims**



1. An integrated-distributed-inductive-capacitive network, comprising:

a Zirconium Titinate integrated capacitor including:

a semiconductor having a substrate and a layer of semiconductive material of a higher resistivity than the substrate;

a depletion layer formed in the high resistivity layer;

an insulating layer formed on the high resistivity layer, said insulating layer being a metal oxide having a dielectric constant greater than the dielectric constant of the semiconductor;

an electrode formed on the dielectric layer;

a conductive layer formed on the high dielectric semiconductor integrated capacitor; and

a plurality of electrical contact terminals coupled to the conductive layer.

5,283,463

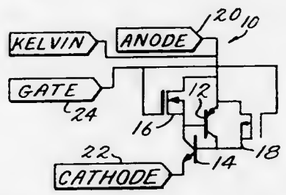
HIGH POWER SELF COMMUTATING SEMICONDUCTOR SWITCH

Ngon B. Nguyen, Jessup; Franklin B. Jones, Catonsville; Charles S. Kerfoot, Pasadena, and Gene A. DiGennaro, Dundalk, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1992, Ser. No. 846,108

Int. Cl.[5] H01L *23/02, 23/12, 23/16*

U.S. Cl. 257—692 **13 Claims**



1. A package for surface mounting a high power electronic switch in the form of a semiconductor chip having metalized planar cathode and anode terminals and a gate terminal, the switch being operative in response to an enabling signal on the gate terminal to carry a current between the cathode and the anode comprising:

a refractory annular ring having planar open end faces and

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interconnecting side walls having an intermediate stepped portion;

first and second thermally and electrically conductive planar substrates being respectively bonded to the opposite end faces of the annular ring and being maintained in spaced relation thereby forming an enclosed space; and

at least one conductive strap within the space being supported by the stepped portion of the side wall and extending to the first substrate, thereby forming an electrical and thermal path between the first substrate and strap;

wherein, the second substrate receives one of the planar terminals of the chip and the strap is electrically coupled to the other planar terminal to form a high current path between the first and second substrates via the strap, and allow the first and second substrates to dissipate thermal energy when the switch is operative.

5,283,464

ELECTRICALLY INSULATED HEAT PIPE TYPE COOLING APPARATUS FOR SEMICONDUCTOR

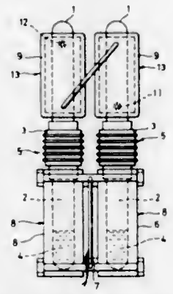
Takashi Murase, Yokohama, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 798,998, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 533,866, Jun. 6, 1990, abandoned. This application May 20, 1993, Ser. No. 64,348

Claims priority, application Japan, Jun. 8, 1989, 1-145769

Int. Cl.[5] **H01L** *23/02, 25/04*

U.S. Cl. 257—714 **21 Claims**



1. An electrically insulated heat pipe type cooling apparatus for a semiconductor comprising:

a plurality of heat pipe, each heat pipe being divided into a heat adsorption section and a heat dissipation section with an intermediate portion therebetween, the intermediate portion of each heat pipe being provided with an electrically insulated cylinder, at least the heat adsorption section having an open interior without any obstructions therein, the interior of the adsorption section being generally linear with a single central axis, the single central axis of the open interior of the adsorption section being aligned with a central axis of the heat dissipation section and a central axis of the intermediate portion of the heat pipe;

a block for mounting a semiconductor thereon, the block being provided at the heat absorption section of at least one of the heat pipes;

a single block, water-cooled jacket structure provided at the heat dissipation section of the plurality of heat pipes such that the water-cooled jacket surrounds a plurality of dissipation sections, said water-cooled structure having a single water inlet and a single water outlet for flow of cooling water through the jacket structure to simultaneously cool the plurality of dissipation sections; and

flow control means within the water-cooled jacket for controlling flow of cooling water through the jacket, the flow control means comprising at least one baffle plate provided in an interior of the water-cooled jacket, the at least one baffle plate controlling the flow of water from the single inlet to the single outlet of the water-cooled jacket.

5,283,465

SUPERCONDUCTING LEAD ON INTEGRATED CIRCUIT

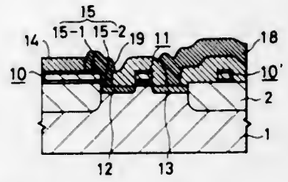
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 230,992, Aug. 11, 1988, abandoned. This application Aug. 22, 1991, Ser. No. 751,573

Claims priority, application Japan, Aug. 13, 1987, 62-202142; Aug. 13, 1987, 62-202143; Aug. 13, 1987, 62-202144; Aug. 13, 1987, 62-202145

Int. Cl.[5] **H01L** *39/00, 23/48;* **H01B** *12/00*

U.S. Cl. 257—663 **4 Claims**



1. An electronic device comprising:

a semiconductor substrate;

a semiconductor device formed within said semiconductor substrate;

a superconductor lead formed on said substrate; and

a connection for connecting said semiconductor device and said superconductor lead,

wherein said connection is characterized by a double buffer layer consisting of first and second conductive layers, said first layer being in contact with said semiconductor device and comprising an element from a group including Si and Al, said second layer being in contact with said superconducting lead and comprising an element from a group including Cu, Ag and Au.

5,283,466

LEAD FRAME FOR SEMICONDUCTOR DEVICE OF THE RESIN ENCAPSULATION TYPE

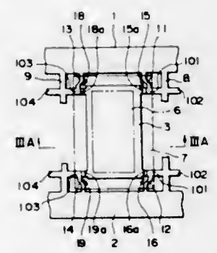
Kazunori Hayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,080

Claims priority, application Japan, Sep. 27, 1990, 2-258618

Int. Cl.[5] **H01L** *23/48*

U.S. Cl. 257—667 **14 Claims**



1. A lead frame of a depression type for a semiconductor device of a resin encapsulation type, including package suspension leads for interconnecting an outer frame and a resin encapsulation region, and island suspension leads at least having a depressed portion for positioning of an island in a surface parallel to a surface of said outer frame, wherein said lead frame comprises:

a pair of outer frames which are provided parallel to each other and at a constant distance;

said island having a required shape and laid out between said outer frames, and having a semiconductor chip mounted thereon and which is to be resin encapsulated along with a carrier chip in said resin encapsulation region;

a pair of dam bars which bridge said pair of outer frames and which are separated by a constant distance from said island on each of two sides of said island;

wherein a plural number of said package suspension leads protrude from said outer frames into said resin encapsulation region and support a package when there is resin encapsulation;

wherein said island suspension leads respectively have one end connected to said pair of dam bars, and another end connected to said island, and wherein each said another end is connected to a side portion of said island which does not oppose said outer frames, and wherein at least some of said island suspension leads further include yet another end extending and connected to said outer frames in the direction of a side of said island so that island suspension leads are obtained, and wherein said island suspension leads are configured so as to position said depressed portion accurately within said resin encapsulation region; and

a lead connecting portion which is configured from inner leads which are connected to said dam bars and which have one end positioned within said resin encapsulation region, and from outer leads where another end portion of said inner leads extends to outside said resin encapsulation portion.

5,283,467

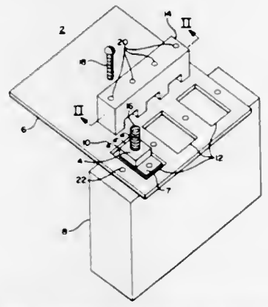
HEAT SINK MOUNTING SYSTEM FOR SEMICONDUCTOR DEVICES

Frederick G. Goeschel, Mt. Clemens; Mark L. Lanting, Portage, and Arden M. McConnell, Dearborn, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 5, 1992, Ser. No. 894,678

Int. Cl.[5] **H01L** *23/02*

U.S. Cl. 257—718 **8 Claims**



1. A heat sink mounting system for a semiconductor device comprising:

heat sink means having a plurality of fins emanating from a main section of said heat sink where said main section contacts a semiconductor device;

coil spring for applying a loading force to said semiconductor device forcing said semiconductor device against said main body of said heat sink, said coil spring having a first and a second end where said first end contacts said semiconductor device;

a circuit board having an opening allowing said semiconductor device to pass therethrough;

a retaining block attached to said main body of said heat sink using a plurality of threaded fasteners where said circuit board is clamped between said retaining block and said heat sink, said retaining block having a pocket for capturing said second end of said coil spring and having two legs extending on opposed sides of said pocket and contacting said circuit board, said legs each having a hole therein for passage of one of said threaded fasteners.

5,283,468

ELECTRIC CIRCUIT APPARATUS

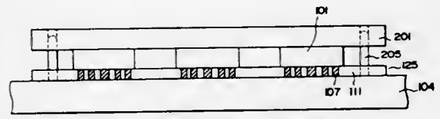
Hiroshi Kondo, Yokohama; Yoshimi Terayama, Odawara; Takashi Sakaki, Tokyo; Sbunichi Haga; Tetsuo Yoshizawa, both of Yokohama; Yasuteru Ichida, Tokyo, and Masaki Konishi, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 803,904, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 358,641, May 30, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 43,629

Claims priority, application Japan, May 30, 1988, 133136; May 30, 1988, 133137; May 31, 1988, 133391; May 31, 1988, 133392; May 31, 1988, 133393; May 31, 1988, 133394

Int. Cl.[5] **H01L** *23/16, 39/02, 23/48*

U.S. Cl. 257—774 **8 Claims**



1. An electric circuit apparatus, comprising:

an electrically connecting member including a holding body made of an electrically insulating material and a plurality of electrically conductive members embedded in said holding body, wherein first end portions of said electrically conductive members contain a first set of atoms and extend through one side of said holding body and second end portions of said electrically conductive members extend through the other side of said holding body;

a holding member for holding a plurality of first electric circuit components containing a second set of atoms and being connected to said first end portions of said electrically conductive members;

a base member for supporting at least one second electric circuit component connected to said second end portions of said electrically conductive members; and

positioning means for positioning said electrically conductive member to said holding member and the second electric circuit, wherein

the first electric circuit components and said first end portions are connected by contacting together the first and second sets of atoms, and said holding member and said base member are positioned with said electrically connecting member by inserting positioning projections provided at one of said holding member or said base member into holes provided at the other member, and by penetrating said positioning projections through a plurality of holes on said electrically connecting member.

5,283,469

IMPACT START ASSIST FOR AN ELECTRIC MOTOR

Franklin L. Forbes, LaOtto, Ind., and Donald W. Jones, Burnt Hills, N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jul. 29, 1992, Ser. No. 922,170

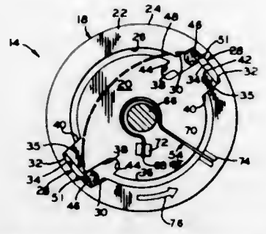
Int. Cl.[5] **H02K** *7/10*

U.S. Cl. 290—1 C **26 Claims**

17. An electric motor comprising a stator and a two-component rotor, said two-component rotor comprising a first component for driving a load and a second component which rotates when current is applied to the stator and which is

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rotatable relative to the first component through at least a portion of a revolution, means for providing a substantially



instantaneous transfer of angular momentum from the second component to the first component, and means for rotatably locking the first component to the second component.

5,283,470

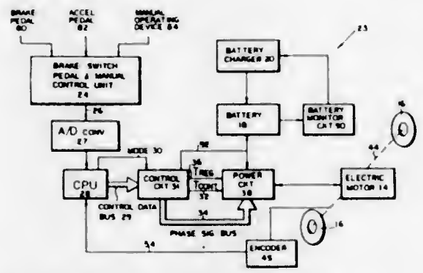
HYBRID DRIVE SYSTEM WITH REGENERATION FOR MOTOR VEHICLES AND THE LIKE WITH A BRUSHLESS MOTOR

John W. B. Hadley, Huntington, and Qianyi Jiang, Jackson Heights, both of N.Y., assignors to Lauzun Corporation, Lloyd Harbor, N.Y.

Continuation-in-part of Ser. No. 818,449, Dec. 30, 1991, which is a continuation of Ser. No. 651,712, Feb. 6, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 917,828

Int. Cl.[5] B60L *11/00;* **H02P** *9/00*

U.S. Cl. 290—45 **15 Claims**



1. A motor vehicle drive system comprising:

vehicle wheels;

a motor coupled directly to said vehicle wheels;

a battery for providing driving current to said motor;

speed sensing means for sensing the speed of said motor and generating a speed signal; and

control means for operating said motor in an actuating mode during which said motor applies primary motive power to said wheels and in a regenerative mode in which said motor acts as a generator to convert the kinetic energy of the vehicle into electrical energy by generating a regenerative current, said control means receiving said speed signal and including switching means for shorting said motor for a first period during which said regenerative current is built up, said control means changing said first period in response to said speed signal to control a peak value of said regenerative current, said switching means discharging said regenerative current for a second period through said battery.

5,283,471

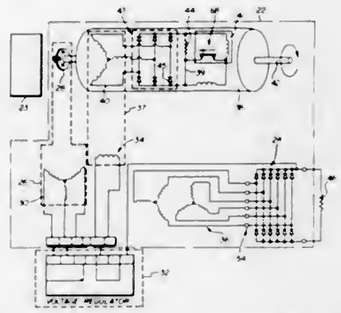
DC GENERATOR AND BACK-UP ENGINE STARTING APPARATUS

Bernard A. Raad, Burbank, Calif., assignor to Eemco/Datron, Inc., Los Angeles, Calif.

Filed Aug. 31, 1992, Ser. No. 938,429

Int. Cl.[5] F02N *11/04, 11/00*

U.S. Cl. 290—46 **4 Claims**



1. A brushless dynamoelectric apparatus in combination with a 270 volt DC system, said brushless dynamoelectric apparatus being operable as both a synchronous alternating current generator for generating electricity and as an induction motor for starting an operatively associated primary engine, said brushless dynamoelectric apparatus comprising:

a main generator having a main generator field and a main generator armature, said main generator armature being wound with two groups of wye-connected three phases for reducing direct current distortion;

an exciter generator having a exciter armature and an exciter generator field;

a rectifier assembly coupled to said exciter armature;

means for selectively coupling said rectifier assembly to said main generator field during a generating mode and uncoupling said rectifier assembly from said main generator field during a start-up mode of the operatively associated primary engine for protecting said rectifier assembly from high voltages and voltage spikes;

a power and current limited auxiliary power unit-driven generator operatively associated with a secondary engine, said auxiliary power unit-driven generator suppresses high in-rush currents, said auxiliary power unit-driven generator having an alternating current output selectively coupled to said main generator for supplying alternating current to said main generator during a start-up mode;

a first alternating current terminal block coupled to said auxiliary power unit-driven generator;

a second alternating current terminal block coupled to said main generator;

a first direct current terminal block coupled to said auxiliary power unit generator;

a second direct current terminal block coupled to said main generator;

said first direct current terminal block being coupled to said second direct current terminal block;

a start contactor coupled between said auxiliary power unit-driven generator and said main generator, said start contactor being coupled between said first alternating current terminal block and said second alternating current terminal block, said start contactor selectively coupling said auxiliary power unit-driven generator to said main generator during a start-up mode of the operatively associated primary engine and uncoupling said auxiliary power unit generator from said main generator during a generating mode.

5,283,472

CONTROL SYSTEM FOR VEHICLE SAFETY DEVICE

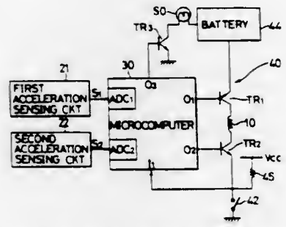
Kunihiro Takeuchi; Hideki Ishizuka, and Hideyuki Kaneko, all of Saitama, Japan, assignors to Airbag Systems Company Ltd., Tomioka, Japan

Filed Feb. 6, 1991, Ser. No. 651,626

Claims priority, application Japan, Feb. 23, 1990, 2-41134

Int. Cl.[5] B60R *21/32*

U.S. Cl. 307—10.1 **5 Claims**



1. A control system for a vehicle safety device comprising:

(a) a drive circuit for said vehicle safety device, said drive circuit including main switching means and a safety switch which is turned on by an inertia force produced at the time of a collision of the vehicle, and said vehicle safety device being activated when said main switching means and said safety switch are both turned on;

(b) acceleration sensing means for detecting deceleration of the vehicle, said acceleration sensing means outputting a voltage signal corresponding to the deceleration;

(c) analog-to-digital converting means for converting the voltage signal from said acceleration sensing means to a digital deceleration signal; and

(d) a microcomputer comprising (i) integrating means for integrating the deceleration signal from said analog-to-digital converting means to obtain an integral value; (ii) first ON-instruction signal outputting means for judging whether or not the integral value is beyond a threshold level and for outputting a first ON-instruction signal to said main switching means when said first ON-instruction signal outputting means judges that the integral value is beyond a threshold level; (iii) malfunction judgement means for judging whether or not said acceleration sensing means is subjected to a malfunction (iv) switch state judgment means for judging whether said safety switch is in the ON state or the OFF state; and (v) second ON-instruction signal outputting means for outputting a second ON-instruction signal to said main switching means when said malfunction judgment means judges that said acceleration sensing means is subjected to a malfunction and at the same time when said switch state judgment means judges that said safety switch is in the ON state.

5,283,473

MEMORY DRIVE POSITIONING APPARATUS FOR SEAT OR STEERING WHEEL SHAFT

Takahisa Furuse, and Mitsuo Yokoyama, both of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Oct. 25, 1991, Ser. No. 783,105

Claims priority, application Japan, Oct. 26, 1990, 2-290547

Int. Cl.[5] G05B *19/42*

U.S. Cl. 307—10.6 **6 Claims**

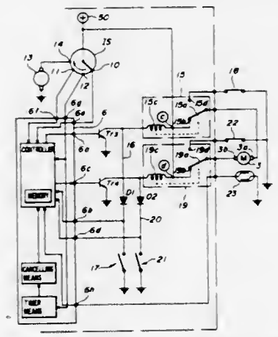
1. A memory drive positioning apparatus for controlling the attitude of a device mounted on a vehicle having an engine and a starter motor for starting the engine, the apparatus comprising:

actuating means for actuating the vehicle mounted device;

driving means connected to said actuating means for energizing said actuating means;

key switch means changeable between at least four states including an OFF state, a first ON state to detect a key in said key switch means, a second ON state to actuate said actuating means and a third ON state to energize the starter motor for starting the engine; and

controlling means connected to said actuating means through said driving means and said key switch means for controlling said actuating means and having memory means for memorizing predetermined position data and means for automatically driving said actuating means to move the vehicle mounted device to a position in accordance with the memorized position data in the memory means when said key switch means is in the second ON state, whereby said controlling means temporarily stops



energizing said actuating means while said key switch means is switched from the second ON state to the third ON state and said controlling means restarts to energize said actuating means when said key switch means is returned to the second ON state from the third ON state;

wherein said controlling means further comprises:

timer means for clocking a time duration after said key switch means is switched from the second ON state to the third ON state, and

cancelling means connected with said timer means for cancelling the restart of said actuating means when said time duration of said timer means reaches a predetermined time duration.

5,283,474

CIRCUIT FOR DRIVING A LOAD BY USING SELECTIVELY ONE OF TWO DIFFERENT D.C. POWER SOURCES

Kunio Oi, Toyonaka; Makoto Kawaguchi, Yawata, and Takashi Satoi, Tondabayashi, all of Japan, assignors to IDEC Izumi Corporation, Osaka, Japan

Filed Jun. 25, 1991, Ser. No. 720,668

Claims priority, application Japan, Jun. 27, 1990, 2-169625; Jun. 27, 1990, 2-169626; Aug. 31, 1990, 2-91739

Int. Cl.[5] H02J *3/02*

U.S. Cl. 307—116 **8 Claims**

1. A circuit for driving a load in response to an externally applied input signal, said circuit being formed on an integrated circuit substrate and comprising:

first terminal means for connection to an external first DC power source;

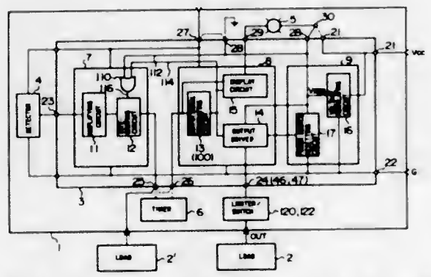
second terminal means for connection to an external second DC power source of constant DC voltage;

a power source circuit unit for receiving a DC power from said first DC power source connected to said first terminal means and for generating and supplying to said load driving circuit a DC power of controlled DC voltage;

a detection circuit unit responsive to an input signal externally applied thereto and generating a first output signal;

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an output circuit unit including a comparator for comparing the first output signal with a predetermined reference signal, when the first DC power source is connected to said first terminal means, and generating a second output signal when said first output signal is higher than the reference signal, said comparator, when the second DC power is connected to said second terminal means, generating a delayed second output signal at a predetermined time delay after connection of said constant voltage DC power to said second terminal means, said output circuit unit also including an output driving circuit for generating a third output signal in response to the second output signal;



an OR circuit connected to said detection circuit unit for allowing said detection circuit unit to generate the first output signal in the presence of any one of the controlled DC voltage generated from said power source circuit unit and said second output signal generated from said comparator circuit; and

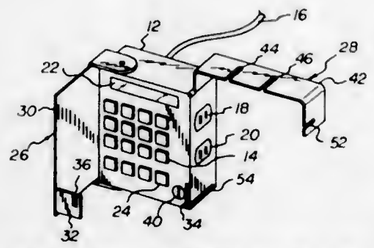
output terminal means for driving the load based on the third output signal from said output driving circuit, when the first DC power source is connected to said first terminal means, and based on the first output signal from said detection circuit unit when said second DC power source is connected to said second terminal means.

5,283,475

TELEVISION VIEWING CONTROL UNIT

Jeffrey C. Berger, 2509 37th St., Des Moines, Iowa 50310

Filed Dec. 16, 1991, Ser. No. 808,378
Int. Cl.[5] G07F *15/12*; H01H *43/00, 47/00, 7/00*
U.S. Cl. 307—141.4 **1 Claim**



1. A new and improved television viewing control unit comprising:

housing means;

timer means mounted in said housing means;

power supply means operable controlled by said timer means; and

programming means for operably controlling said timer means,

wherein said programming means includes a key pad for operably inputting electrical instructions into said timer means,

and further including first and second security means for preventing access to said key pad,

wherein said first security means comprises a door pivotally attached to said housing means, said door being pivotally positionable over said key pad,

further including locking means for locking said door when positioned over said key pad, and

wherein said second security means comprises means for selectively securing electrical power supply cords to said housing means, and

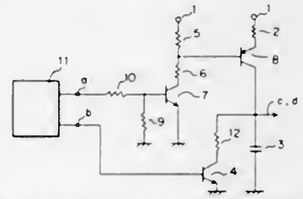
wherein said second security means comprises a second door pivotally attached to said housing means, said second door being pivotally positionable over electrical receptacles formed in said housing means to prevent access thereto, said second security means adapted to be locked in place by said locking means.

5,283,476

WAVEFORM GENERATOR

Toshitsugu Wakabayashi, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,561
Claims priority, application Japan, Aug. 28, 1991, 3-240342
Int. Cl.[5] H03K *4/12*
U.S. Cl. 307—227 **6 Claims**



1. A waveform generator comprising a capacitor on which a generated voltage waveform is held, a charging circuit for charging said capacitor in response to a charging control signal, a discharging circuit for discharging said capacitor is response to a discharging control signal, and a microcomputer which controls said charging and discharging circuits independently in an on-off fashion by generating the charging control signal and the discharging control signal each having at least one of an adjustable pulse width and an adjustable number of pulses per preset time period for controlling shape of the generated voltage waveform.

5,283,477

COMMON DRIVER CIRCUIT

Takeshi Shibata, Tochigi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 574,468, Aug. 28, 1990, abandoned. This application Mar. 13, 1992, Ser. No. 851,257
Claims priority, application Japan, Aug. 31, 1989, 1-102406[U]; Aug. 14, 1990, 2-215496
Int. Cl.[5] H03L *1/00*; H03K *3/01*
U.S. Cl. 307—264 **4 Claims**

1. A common driver circuit for driving a load comprising

a voltage follower circuit for supplying an output signal for driving said load;

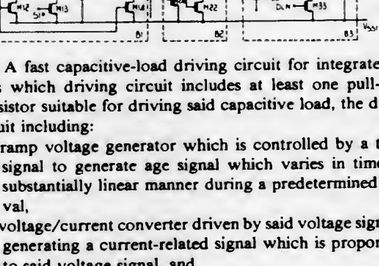
buffer amplifier means for driving said voltage follower circuit;

adjustable bias setting means for providing an adjustable amplitude of a direct current bias level at said buffer amplifier means;

feedback means for controlling the direct current bias level at said buffer amplifier means, said feedback means including

a low pass filter connected to the output signal of said voltage follower circuit for detecting a direct current bias level at said output signal;

means for providing a reference bias level; and



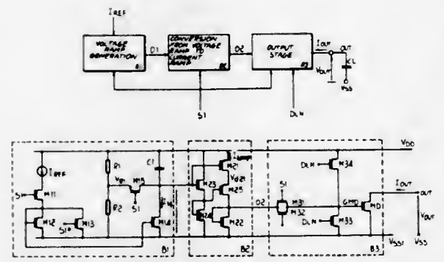
bias setting control means responsive to the detected direct current bias level from said low pass filter and to the reference bias level for varying the adjustable direct current bias set at said buffer amplifier means so as to control the direct current bias level at said output signal.

5,283,478

FAST CAPACITIVE-LOAD DRIVING CIRCUIT PARTICULARLY MEMORIES

Franco Maloberti, Pavia; Salvatore Portaluri, Lecce, and Guido Torelli, Pavia, all of Italy, assignors to SGS-Thomson Microelectronics, S.R.L., Agrate Brianza, Italy

Filed Dec. 20, 1991, Ser. No. 811,323
Claims priority, application Italy, Dec. 28, 1990, 22569 A/90
Int. Cl.[5] H03K *3/01, 5/12*
U.S. Cl. 307—270 **24 Claims**



1. A fast capacitive-load driving circuit for integrated circuits which driving circuit includes at least one pull-down transistor suitable for driving said capacitive load, the driving circuit including:

a ramp voltage generator which is controlled by a timing signal to generate age signal which varies in time in a substantially linear manner during a predetermined interval,

a voltage/current converter driven by said voltage signal for generating a current-related signal which is proportional to said voltage signal, and

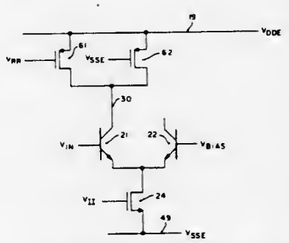
a current mirror driven by said current-related signal and coupled to said pull-down output transistor for producing a mirrored current in said pull-down output transistor wherein there is a predetermined mirroring ratio.

5,283,479

BICMOS LOGIC GATE HAVING PLURAL LINEARLY OPERATED LOAD FETS

Geert Rosseel, Fremont; Bill Herndon, Sunnyvale, and James A. Matthews, Milpitas, all of Calif., assignors to MicroUnity Systems Engineering, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 693,815, Apr. 30, 1991, Pat. No. 5,124,580. This application Feb. 27, 1992, Ser. No. 842,922
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—446 **34 Claims**



1. An improved BiCMOS logic circuit which includes an emitter-coupled pair of bipolar transistors for differentially comparing an input signal with a first reference potential, each of said bipolar transistors being coupled to a resistive load network, wherein the improvement comprises:

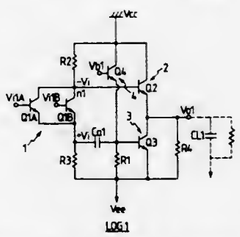
a plurality of metal-oxide-semiconductor (MOS) transistors coupled in parallel between a first operating potential and the collector of each bipolar transistor, at least one of said MOS transistors providing a fixed resistance and at least one other of said MOS transistors being linearly-operated and having its gate coupled to a variable control voltage to provide a variable resistance thereof, the parallel combination of said MOS transistors improving the linearity of said circuit.

5,283,480

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH A PLURALITY OF LOGIC CIRCUITS HAVING ACTIVE PULL-DOWN FUNCTIONS

Mitsuo Usami; Noboru Shiozawa, both of Ohme; Toshio Yamada; Hiromasa Katoh, both of Hamura; Kazuyoshi Satoh, Tokorozawa; Tohru Kobayashi, Iruma; Tatsuya Kimura; Masato Hamamoto, both of Ohme; Atsushi Shimizu, Ohme, and Kaoru Koyu, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 330,461, Mar. 30, 1989, Pat. No. 4,999,520. This application Jul. 25, 1990, Ser. No. 557,109
Claims priority, application Japan, Apr. 2, 1988, 63-81645; Apr. 12, 1988, 63-89622; Oct. 28, 1988, 63-274170; Jul. 25, 1989, 1-192005
Int. Cl.[5] H03K *19/013*
U.S. Cl. 307—456 **17 Claims**



1. A semiconductor integrated circuit device comprising:

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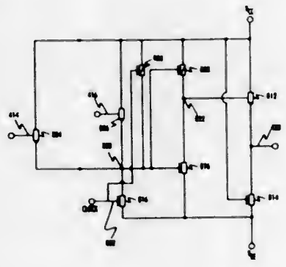
first and second input terminals;
first and second voltage supply terminals;
an output terminal;
a first input NPN bipolar transistor having a base coupled to the first input terminal, a collector and an emitter;
a second input NPN bipolar transistor having a base coupled to the second input terminal, a collector coupled to the collector of the first input NPN bipolar transistor and an emitter coupled to the emitter of the first input NPN bipolar transistor;
a first load element coupled between the first voltage supply terminal and the collector of the first input NPN bipolar transistor;
a second load element coupled between the emitter of the first input NPN bipolar transistor and the second voltage supply terminal;
a first output NPN bipolar transistor having a base coupled to the collector of the first input NPN bipolar transistor, and having a collector-emitter path coupled between the first voltage supply terminal and the output terminal;
a second output NPN bipolar transistor having a collector-emitter path coupled between the output terminal and the second voltage supply terminal, and having a base; and
a capacitor element having a first electrode coupled to the emitter to the first input NPN bipolar transistor and a second electrode coupled to the base of the second output NPN bipolar transistor,
wherein said semiconductor integrated circuit further comprises bias means for supplying a bias signal to the base of said second output NPN bipolar transistor, and
wherein said bias means comprises a bias bipolar transistor having an emitter coupled to the base of said second output NPN bipolar transistor, a base for receiving a predetermined signal and a collector coupled to said first voltage supply terminal, and a resistor coupled between the base of said second output NPN bipolar transistor and the second voltage supply terminal.

5,283,481

BIPOLAR ELEMENT BIFET ARRAY DECODER

Vilnis Klimanis, and Frank A. Montegari, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1990, Ser. No. 633,771
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] H03K *19/20, 19/082, 19/092, 19/08;* **G06F** *9/22;* **G11C** *11/409*
U.S. Cl. 307—449 **29 Claims**



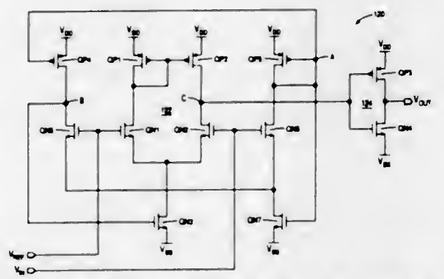
1. A decoder implemented using bifet technology to exhibit high performance, high density, and low power dissipation, said decoder having multiple input lines for conducting signals at ECL-compatible voltage levels and an output line for conducting signals at CMOS-compatible voltage levels, for enabling said output line in response to a predetermined combination of ECL-compatible voltage level signals on said input lines, said decoder comprising:
gate means for generating an OR output according to said input line signals;
an inverter coupled to said gate means for inverting and amplifying said OR output to produce an inverted output at CMOS voltage levels;
a word line driver coupled to an output of said inverter for isolating and driving said output line according to said inverted output; and
power saving means coupled to said gate means and said inverter for minimizing power dissipation in said decoder.

5,283,482

CMOS CIRCUIT FOR RECEIVING ECL SIGNALS

Dao-Long Chen, Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 6, 1992, Ser. No. 909,266
Int. Cl.[5] H03K *19/0175*
U.S. Cl. 307—475 **20 Claims**



1. A CMOS circuit for receiving ECL signals comprising:
differential amplifier means for generating a differential output signal representative of the difference between a reference voltage input signal and an ECL input signal, said differential amplifier means including a current source transistor;
inverter means coupled to said differential amplifier means for generating a CMOS output signal corresponding to said ECL input signal in response to said differential output signal; and
bias means receiving said reference voltage input signal and said ECL input signal as inputs for dynamically biasing said current source transistor of said differential amplifier means in response to said reference voltage input signal and said ECL input signal.

5,283,483

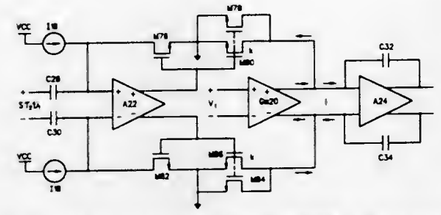
SLIMMER CIRCUIT TECHNIQUE

Carlos A. Laber, Los Altos, and Paul R. Gray, Orinda, both of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Jan. 27, 1993, Ser. No. 9,886
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—520 **11 Claims**

1. A slimmer circuit for narrowing data pulses comprising:
a. means for receiving a voltage signal having a characteristic;
b. a circuit for forming a bandpass response signal for the voltage signal;
c. a circuit for forming a lowpass response signal for the voltage signal;
d. means for forming a second derivative of the bandpass response signal for forming a second derivative signal;

e. means for amplifying the second derivative signal for forming an amplified signal; and



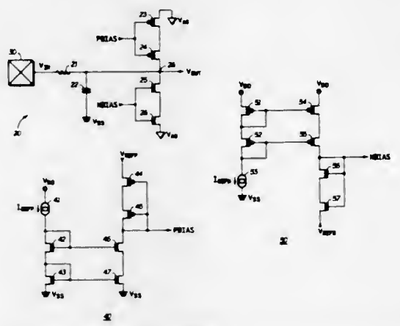
f. means for subtracting the amplified signal from the low-pass response signal for forming a difference signal.

5,283,484

VOLTAGE LIMITER AND SINGLE-ENDED TO DIFFERENTIAL CONVERTER USING SAME

Geoffrey E. Brehmer, and James R. Carbery, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 13, 1992, Ser. No. 959,578
Int. Cl.[5] G06G *7/12;* **H03K** *4/08*
U.S. Cl. 307—555 **17 Claims**



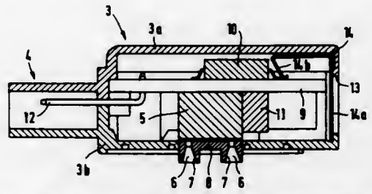
1. A voltage limiter comprising:
a resistor having a first terminal for receiving an input signal, and a second terminal for providing an output signal on a node;
a capacitor having a first terminal couled to said node, and a second terminal coupled to a first power supply voltage terminal;
a first transistor having a first current electrode coupled to a second power supply voltage terminal, a control electrode for receiving a first bias voltage, and a second current electrode coupled to said node; and
a second transistor having a first current electrode coupled to said node, a control electrode for receiving a second bias voltage, and a second current electrode coupled to said second power supply voltage terminal.

5,283,485

SMALL-SIZE MOTOR AND A PROCESS FOR MANUFACTURE AND USE THEREOF

Peter Thoma, Hollern; Walter Kuffner, München, both of Fed. Rep. of Germany, and Urs Portmann, Villars-sur-Glanes, Switzerland, assignors to Bayerische Motoren Werke AG, Munich, Fed. Rep. of Germany and Saia AG, Murten, Switzerland

Filed Nov. 27, 1991, Ser. No. 798,086
Claims priority, application European Pat. Off., Nov. 27, 1990, 90122599.5
Int. Cl.[5] H02K *5/10, 37/00*
U.S. Cl. 310—49 **8 Claims**



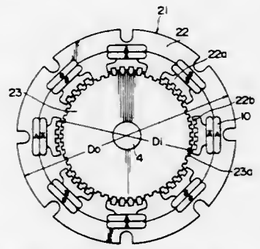
1. A small-size motor comprising one of a step motor and a servomotor, and an electronic control system assigned directly to the motor, wherein a plastic housing for housing the electronic control system is one of glued or fused with a coil form of the motor, and a plug-type connection exists between the electronic system and winding connections of the motor.

5,283,486

STEPPING MOTOR

Masaru Kobori, Kashiwa, Japan, assignor to Oriental Motor Kabushiki Kaisha, Tokyo, Japan

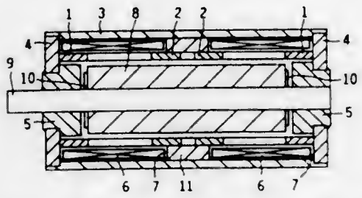
Filed Jul. 17, 1992, Ser. No. 914,461
Claims priority, application Japan, Dec. 13, 1991, 3-352478
Int. Cl.[5] H02K *37/02*
U.S. Cl. 310—49 R **2 Claims**



1. A hybrid type two-phase stepping motor comprising a rotor with a plurality of teeth provided at equal pitches on a peripheral surface thereof and a stator having a plurality of salient poles provided facing the peripheral surface of said rotor through an air gap, the ratio of an inside diameter to an outer diameter of said stator being between 0.62 and 0.64 to generate maximum torque from said rotor.

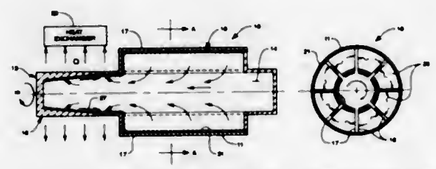
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,487
STEPPING MOTOR
Shigeru Oki, and Koji Okada, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Filed Sep. 14, 1992, Ser. No. 944,483
Claims priority, application Japan, Sep. 12, 1991, 3-233171
Int. Cl.[5] H02K 37/00
U.S. Cl. 310—49 R 17 Claims



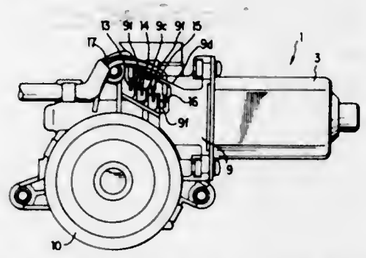
1. A stator yoke for use in a stepping motor, comprising:
a cylindrical ring composed of a magnetic material;
a plurality of tooth poles arranged along one annular edge of the cylindrical ring at a constant pitch to define a slit between adjacent tooth poles, each tooth pole having a desired length between a tooth root and a tooth top and a given widthwise curvature identical to that of the cylindrical ring; and
a plurality of locating protrusions arranged along another annular edge of the cylindrical ring in a same number as that of the tooth poles, each locating protrusion having a length shorter than that of each of the tooth poles and a width set identical to a spacing from an adjacent locating protrusion to define therebetween a locating indentation arranged alternately to the locating protrusion, each locating protrusion being staggered from each corresponding tooth pole by a given angular interval determined by 360°/2×tooth pole number of one phase×phase number, the locating protrusions and the tooth poles being integrally formed with the cylindrical ring.

5,283,488
ROTOR COOLING STRUCTURE
Rengasamy Ponnappan, Dayton, and Jerry E. Beam, Beavercreek, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 22, 1993, Ser. No. 20,930
Int. Cl.[5] H02k 9/00
U.S. Cl. 310—55 9 Claims



1. A rotor structure for an electrical generator, motor or the like, comprising:
(a) a rotatable, generally cylindrically shaped heat pipe defining an internal vapor chamber having an evaporator end and a condenser end;
(b) means defining a plurality of radial fins regularly spaced on an outer surface of said heat pipe, each of said fins defining an internal chamber communicating with and extending radially from said vapor chamber;
(c) a vaporizable liquid disposed within said heat pipe; and
(d) heat removal means disposed in heat exchange relationship with said condenser end of said heat pipe.

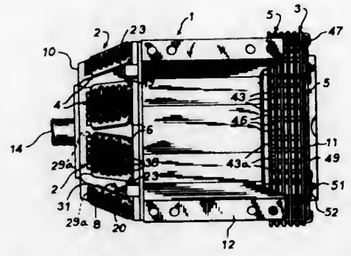
5,283,489
STRUCTURE FOR TERMINAL SECTION OF MOTOR
Takao Ochiai, Ashikaga; Masaki Mita; Eita Kobayashi, both of Kiryu, and Takao Umezawa, Gunma, all of Japan, assignors to Mitsuba Electric Manufacturing Co. Ltd., Gunma, Japan
Filed Jul. 2, 1992, Ser. No. 908,168
Claims priority, application Japan, Jul. 4, 1991, 3-60043[U]; Jul. 4, 1991, 3-60044[U]; Jul. 4, 1991, 3-60045[U]; Jul. 4, 1991, 3-190848
Int. Cl.[5] H02K 11/00
U.S. Cl. 310—71 9 Claims



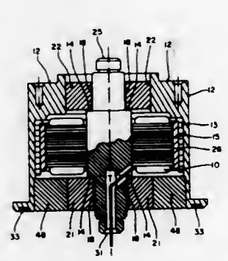
1. A structure for a terminal section of a motor including a shaft, an end case and a yoke having an opening, the structure comprising:
a plurality of terminals juxtaposed with each other and having a shape extending in an axial direction of said shaft of said motor, said plurality of terminals being inserted into said end case covering said opening of said yoke of said motor, each of said plurality of terminals having a distal end;
lead connecting portions provided at the distal ends of said terminals and exposed outside of said end case; and
a plurality of leads individually connected to said lead connecting portions of said terminals,
wherein:
said lead connecting portions of said terminals are exposed outside of said end case in a stepped manner wherein said lead connecting portions are arranged such that they are shifted from each other both in a direction around and in a direction along said motor shaft, and
said leads are connected to said exposed lead connecting portions from directions substantially perpendicular to said motor shaft.

5,283,490
VENTILATING APPARATUS FOR DYNAMOELECTRIC MACHINE WITH ANIMAL RESTRICTED VENTILATING OPENINGS
Duane R. Nolte, and David L. Konkol, both of Wausau, Wis., assignors to Marathon Electric Mfg. Corp., Wausau, Wis.
Filed Jan. 11, 1993, Ser. No. 2,137
Int. Cl.[5] H02K 5/00
U.S. Cl. 310—89 13 Claims

7. An air-cooled induction motor including a motor housing having an exterior wall with a stator and rotor located within said housing and having axially spaced ventilating openings in said exterior wall and having a stator and a rotor mounted with said housing providing a standard induction motor for use in selected applications, said housing having standard bracket components forming a functional element of said motor, the improvement in a conversion assembly for reducing the size of said ventilating openings, comprising separate rodent guard units adapted to be releasably secured abutting the exterior wall of said housing in overlying relationship to said ventilating openings, said standard bracket components being coupled directly to said rodent guard units and supporting said rodent guard units in overlying relationship to said ventilating openings, said rodent guard units having a plurality of openings therethrough, each of said openings having a predetermined maximum dimension, said openings being arranged in a predetermined pattern, said openings being sized and said pattern being arranged to substantially prevent entrance of rodents into said openings, said openings being sized and said pattern being arranged to permit sufficient ventilating air flow through said openings for cooling said motor, said openings being sized and said pattern being arranged to permit said rodent guard units to be releasably secured to said standard bracket components of said motor in overlying relationship to said ventilating openings without the use of any additional dedicated guard mounting components and thereby reducing the size of the ventilating openings for substantially preventing entrance of rodents.

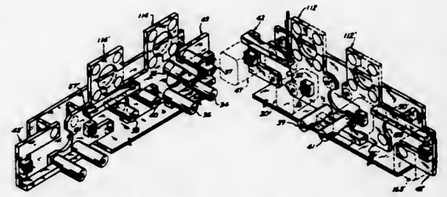


5,283,491
AIR-BEARING MOTOR ASSEMBLY FOR MAGNETIC RECORDING SYSTEMS
Mohammed A. Jabbar, and Ali A. Talukder, both of Singapore, Singapore, assignors to Maxtor Corporation, San Jose, Calif.
Filed Jan. 11, 1993, Ser. No. 2,741
Int. Cl.[5] H02K 5/16; F16C 17/00
U.S. Cl. 310—90 25 Claims



1. A motor assembly for use in a magnetic disk drive system comprising:
a cylindrical shaft;
a stator secured to said shaft, said stator having an electromagnetic coil disposed upon the longitudinal axis of said shaft;
a rotatable hub housing said shaft and said stator;
a magnetic means attached to said hub disposed radially about said stator for interfacing electromagnetically with said coil to rotate said hub relative to said shaft;
first and second cylindrical sleeve members affixed to said hub and disposed about respective first and second ends of said shaft, with said stator being disposed between said first and second cylindrical sleeve members;
said sleeve members each having an inner air-bearing surface with a radial dimension which is slightly larger than the radial dimension of said shaft such that a gap exists between said shaft and each of said sleeve members,
wherein the rotational movement of said hub relative to said shaft causes a pressurized air film to develop within said gaps.

5,283,492
MULTIPLE MAGNETIC POLE DC MOTORS
Elmer B. Mason, 901 Vickie Dr., Del City, Okla. 73115
Continuation-in-part of Ser. No. 870,861, Apr. 20, 1992,. This application Jan. 13, 1993, Ser. No. 4,153
Int. Cl.[5] H02K 16/02
U.S. Cl. 310—114 3 Claims



1. A DC motor assembly, comprising:
a plurality of pairs of magnetizable metallic members respectively disposed in opposing parallel spaced-apart planes;
magnetic field generating means including magnetic members transversely disposed between and connected with said pairs of metallic members for forming a like plurality of pairs of opposing polarity magnetic pole plates in which adjacent pole plates in the respective plane of the spaced-apart planes are of opposite polarity,
said magnetic members having opposing end surfaces abutting central confronting surfaces of opposing pole plates and having opposing planar side surfaces normal to the respective planes of said pole plates;
an armature having a predetermined winding span operatively disposed transversely between said pole plates;
opposing pairs of rod members extending transversely between and connected, for magnetic flux concentrating and conducting relation, at their respective ends with opposing pole plates of like polarity and in interdigitated relation about the periphery of said armature for forming opposite pairs of like polarity magnetic pole pieces of opposite polarity of one pair of pole pieces with respect to the polarity of the opposite pair of pole pieces with each pole piece of the respective pairs of pole pieces adjacent and in diametric opposition with respect to the armature and the other pole piece of the respective pair of pole pieces,
each pole piece of the respective pair of pole pieces having a coextensive concave recess facing the perimeter of the armature and formed on a radius complemental with the radius of the armature for forming a fine air gap between a peripheral portion of the armature and the surface defining the adjacent concave recess in the respective said pole piece of said pairs of pole pieces,
the width of the respective recess of each pole piece of the pairs of pole pieces being substantially one-half the winding span of the armature;
housing means including bearings for operatively supporting said armature between said plurality of pole plates;
a source of DC potential; and,
circuit means including a switch means and wiring connecting the DC potential to ground through said armature for utilizing like polarity magnetic flux influence from opposing pole plates in the respective pole piece of said pairs of pole pieces and in diametric opposition on the armature.

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5,283,493

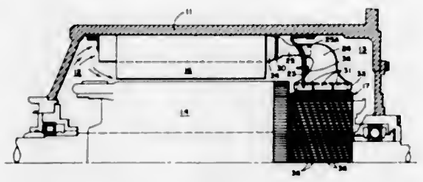
COLD AIR COOLING OF BRUSHES FOR MOTORIZED WHEELS

Paul R. Hokanson, and George C. Veith, both of Girard, Pa., assignors to General Electric Company, Erie, Pa.

Filed Oct. 27, 1992, Ser. No. 966,778

Int. Cl.[5] H02K *9/28*

U.S. Cl. 310—227 **13 Claims**



1. A brush cooling system for a direct current electric motor, the motor including a plurality of stator windings coupled to a motor housing and a rotor disposed for rotation within the stator windings, one end of the rotor including a commutator and the motor including brushes operatively associated with the commutator for coupling electric power to the rotor, the motor housing having an air inlet at one end thereof for admitting cooling air to the motor, the brushes being located at an end of the motor distal from the air inlet, the system comprising:

at least one air duct extending from an air inlet end of a motor through a space defined by adjacent stator windings of the motor and terminating at about an end of the windings opposite the air inlet end;

a convergent nozzle releasably connected to the terminating end of said air duct, said nozzle extending from said air duct to an area generally adjacent a motor brush for directing cooling air from said duct onto the brush; and

the stator windings comprising a plurality of field coils, adjacent ones of the field coils being separated by an air space, said air duct extending through selected ones of the air spaces between said field coils, and a baffle inserted in each air space not including an air duct for substantially blocking air flow through said each air space.

5,283,494

APPARATUS FOR FEEDING FUEL TO A MOTOR VEHICLE ENGINE FROM A FUEL TANK

Kurt Frank, Schorndorf-Haubersbronn; Hartmuth Kraemer, Ditzingen; Werner Scholten, Stuttgart, and Ernst Zolda, Korntal-Münchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

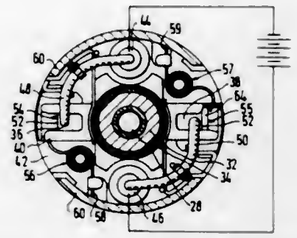
Filed Jul. 22, 1992, Ser. No. 918,268

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125282

Int. Cl.[5] H02K *11/00, 13/00;* **H01R** *39/50;* **F04B** *35/02*

U.S. Cl. 310—239 **4 Claims**

1. In an apparatus for feeding fuel to a motor vehicle engine from a fuel tank, comprising a housing part, a pump portion and a direct current drive motor located in the housing part, the direct current drive motor being provided with a commutator device and having a positive side and a negative side, the commutator device including commutator brushes, at least one of the commutator brushes being located on the positive side and at least one of the commutator brushes being located on the negative side; brush contact springs made from electrically conductive material, at least one of the brush contact springs being located on the positive side and at least one of the brush contact springs being located on the negative side, and a collector having a sliding surface, the commutator brushes being pressed on the sliding surface of the collector during operation of the drive motor by the brush contact springs, the improvement comprising means for applying a negative potential to both the at least one brush contact spring on the positive side and the at least one brush contact spring on the negative side and means for electrically insulating the at least one brush



contact spring on the positive side from the at least one commutator brush on the negative side so as to improve the reliability of operation of the drive motor.

5,283,495

ROTARY ACTUATOR FOR DETERMINING A FLOW CROSS SECTION OF A BY-PASS LINE AROUND A VALVE

Friedrich Wendel, Weissach; Johannes Meiwes, Markgroeningen, and Dieter Dick, Muehlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

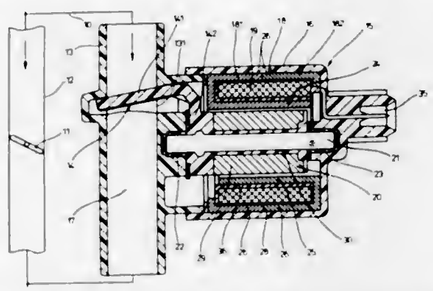
PCT No. PCT/DE91/00898, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO92/10663, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 16, 1991, Ser. No. 917,063

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 4038761

Int. Cl.[5] H02K *1/06;* **F16K** *31/04*

U.S. Cl. 310—257 **27 Claims**



1. A rotary actuator for setting a rotation angle of control elements, especially of a throttle device which determines a flow cross-section in a line through which a flow passes, for internal-combustion engines, having an electric actuating motor, which has a stator, with two stator poles and a stator winding, and a two-pole permanent-magnet rotor, and is constructed such that, when no current flows in the stator winding, a torque acts on the permanent-magnet rotor which rotates said permanent-magnet rotor back to an initial position, and having a rotationally fixed coupling of the throttle device related to the permanent-magnet rotor in such a manner that, in the initial rotor position, said throttle device releases a predetermined minimum opening cross-section in the line through which flow passes, the stator poles (24, 25), which are in each case connected on opposite end sides to an annular jacket (26) for a magnetic return path, which jacket surrounds the claw

poles (24, 25) with a radial distance, in that the stator winding (19) is located as an annular coil in an annular space which is bounded by the annular jacket (26) and the claw poles (24, 25), and each claw pole (24, 25) is shaped such that a radial air gap width between the claw pole (24, 25) and the permanent-magnet rotor (20) is greater in a central claw pole region (242, 252) than in two claw pole edge regions (241, 243, 251, 253), seen in a circumferential direction, and a width, seen in the circumferential direction, of one of the claw pole edge regions (241, 251) having a reduced air gap width is greater than that of the other claw pole edge region (243, 253).

5,283,496

THICKNESS SHEAR CRYSTAL RESONATOR AND MANUFACTURING METHOD THEREFOR

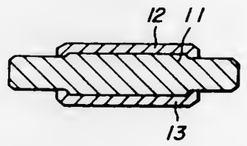
Hitoaki Hayashi, Tokyo, and Isao Mntai, Kamiina, both of Japan, assignors to Asahi Dempa Co., Ltd., Tokyo, Japan

Division of Ser. No. 590,059, Sep. 28, 1990, abandoned, which is a continuation of Ser. No. 321,166, Mar. 9, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 813,048

Claims priority, application Japan, Jul. 20, 1988, 63-178950

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—312 **2 Claims**



1. A method of manufacturing a thickness shear crystal resonator comprising the following steps of:

immersing a lot of thickness shear crystal plates cut to desired shape which are laminated, into a resist liquid to form a mask against a chemical etching and pulling it therefrom;

removing the resist liquid adhered on peripheral portions of said each crystal plates;

drying the resist liquid to form a laminated body of crystal plates which are connected to each other at central portions thereof by layers of said resist liquid;

immersing said laminated body of crystal plates into an etching liquid to conduct an etching treatment on only the peripheral portions of each crystal plates to the extent that free crystal surfaces thereof are substantially exposed on said peripheral portions;

decomposing the laminated body into separate crystal plates; and

providing electrodes on both surfaces of said crystal plate.

5,283,497

ELECTROTILTABLE MATERIAL (TILTER)

Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 10, 1992, Ser. No. 833,228

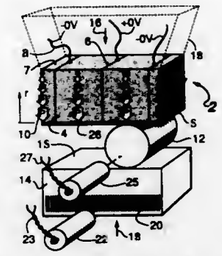
Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—328 **39 Claims**

1. A tilter comprising:

a unidirectional-gradient electroshearable material having a tilting surface and a supported surface;

film electrodes attached to the unidirectional-gradient electroshearable material said electrodes are parallel to the unidirectional-gradient in the electroshearable material, and apply an activation signal which has an electric field perpendicular to said film electrodes, whereby the electroshearable material responds to the activation signal by shearing in a graded manner from maximum shear at the tilting surface to minimum shear at the supported surface, thereby forcibly tilting said tilting surface about an axis



perpendicular to the unidirectional-gradient direction while the supported surface remains stationary.

5,283,498

HIGH-POWER RADIATOR

Christoph von Arx, Olten, and Stefan Stutz, Fislisbach, both of Switzerland, assignors to Heraeus Noblelight GmbH, Kleinostheim, Fed. Rep. of Germany

Filed Oct. 3, 1991, Ser. No. 770,408

Claims priority, application European Pat. Off., Oct. 22, 1990, 90120261

The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.

Int. Cl.[5] H01J *17/04*

U.S. Cl. 313—17 **17 Claims**

1. A high power ultraviolet radiator comprising:

a housing at least partially transparent to ultraviolet light and filled with a filling gas which emits ultraviolet radiation under discharge conditions in a discharge chamber bounded by the housing;

plural dielectric tubes disposed in the housing and spaced apart from one another; and

plural internal electrodes disposed in respective of said plural dielectric tubes and adapted to be connected in pairs to at least one high-voltage source so that upon application of a voltage from said at least one high-voltage source to said pairs of internal electrodes a dark electric discharge develops in the discharge chamber of the housing.

5,283,499

IGNITER AND CABLE CONNECTOR ASSEMBLY

LeRoy B. Adam, Redding, Calif.; Steven J. Cannady, Greenville, S.C.; Darin W. Carr, Easley, S.C.; William B. Meeks, III, Greenville, S.C.; Michael A. Runge, Simpsonville, S.C.; Jan R. Schueren, Central, S.C., and Stephen W. Straub, Easley, S.C., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 491,314, Mar. 9, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 849,962

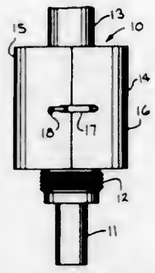
Int. Cl.[5] H01T *13/04*

U.S. Cl. 313—135 **36 Claims**

1. An igniter and cable connector assembly for use with an engine comprising, in combination, an adapter having an axial

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opening for receiving an end of an igniter, means for securing said adapter to an engine with said axial adapter opening aligned with an igniter opening in the engine, an igniter having a first end for extending through said adapter opening and having a second end retained by said adapter, a high voltage terminal mounted on said second igniter end and connected



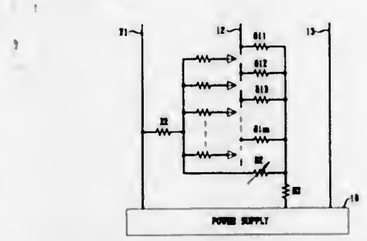
through a center electrode to a spark gap at said first end, an annular seal surrounding said igniter. terminal, a high voltage cable connector, a terminal on said cable connector, and means for securing said cable connector to said adapter with said connector terminal extending through the center of said seal and pressing against said igniter terminal, said securing means compressing said seal between said igniter and said connector.

5,283,500

FLAT PANEL FIELD EMISSION DISPLAY APPARATUS

Gregory P. Kochanski, Dunellen, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 28, 1992, Ser. No. 889,735
Int. Cl.[5] H01J 7/44
U.S. Cl. 315—58 **23 Claims**



1. An article comprising field emission cathodoluminescent display means comprising

a) a multiplicity of cathode electrode means comprising

i) a plurality of micropoint emitter means, and

ii) impedance means for limiting a current associated with said micropoint emitter means;

b) a multiplicity of gate electrode means, arranged such that said cathode and gate electrode means form a matrix structure having columns and rows and a multiplicity of intersection regions, with a multiplicity of said micropoint emitter means being located in a given intersection region, said micropoint emitter means facing towards said gate electrode means, with substantially each of said micropoint emitter means in the given intersection region being associated an aperture through said gate electrode means;

c) anode means comprising material capable of cathodoluminescence, said anode means positioned such that electrons that are emitted from the micropoint emitter means in the given intersection region can impinge on the anode means; and

d) means for applying a first voltage V_1 between a predetermined cathode electrode means and a predetermined gate electrode means, and means for applying a second voltage V_2 between the predetermined cathode electrode means and the anode means; characterized in that

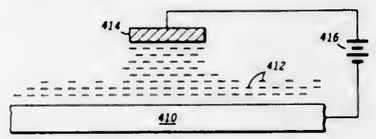
e) said impedance means comprise first impedance means that carry substantially all of the current associated with substantially all the micropoint emitter means in one or more intersection regions including the given intersection region, but including fewer than all of the intersection regions in a column or row.

5,283,501

ELECTRON DEVICE EMPLOYING A LOW/NEGATIVE ELECTRON AFFINITY ELECTRON SOURCE

Xiaodong T. Zhu, Chandler; James E. Jaskie, Scottsdale, both of Ariz., and Robert C. Kane, Woodstock, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1991, Ser. No. 732,298
Int. Cl.[5] H05B 41/00
U.S. Cl. 315—169.3 **34 Claims**



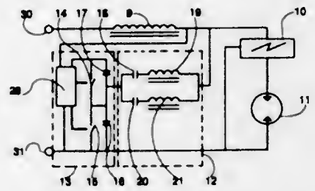
1. An electron device with an electron source comprising a single crystal diamond material which exhibits an inherent affinity to retain electrons disposed at/near a surface of the single crystal diamond material which is less than approximately 1.0 electron volt, the surface being substantially a preferred crystallographic orientation or plane of the single crystal diamond material.

5,283,502

METHOD AND CIRCUIT FOR SQUARE WAVE CURRENT GENERATION BY HARMONIC INJECTION

Andrew D. Piasuowski, 535 Chaline, St. Lazare, Quebec, Canada J0P 1V0, and Vladimir Glavac, 25 19th Avenue, Pincourt, Quebec J7V 5A4, Canada

Filed May 19, 1992, Ser. No. 887,985
Int. Cl.[5] H05B 37/00
U.S. Cl. 315—244 **4 Claims**



1. An improved ballast circuit for supplying a substantially square wave lamp current waveform derived from an alternating voltage source to feed an arc discharge lamp, said ballast circuit comprising a conventional ballast connected between said alternating voltage source and said arc discharge lamp, one or more harmonic resonators connected across said arc discharge lamp, an automatic switching circuit connected in series with said one or more harmonic resonators, sensing means to sense the phase of said alternating voltage source and for actuating said switching circuit to activate said one or more resonators to oscillate at their natural frequency to combine with the current component of the fundamental of said alternating voltage source so as to produce said substantially square wave lamp current waveform whereby said arc discharge lamp can emit light which is substantially undisturbed.

5,283,503

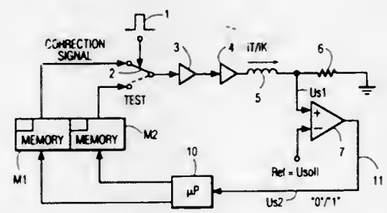
Patent Not Issued For This Number

5,283,504

GRID CORRECTION CIRCUIT FOR TV SETS

Jaques Chauvin, Mönchweiler; Rainer Schweer, Niedereschach; Günter Glelm, Villingen, and Friedrich Heizmann, Obereschach, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 920,360
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1989, 3943421
Int. Cl.[5] H01J 29/56
U.S. Cl. 315—370 **5 Claims**



1. A correction circuit for a television receiver comprising:

first memory means for storing correction values for correcting the deflection current of said television receiver;

second memory means for providing a test signal;

correction coil means for correcting the deflection of said television receiver;

switch means for periodically selectively connecting said first memory means to said correction coil means whereby a correction current flows through said correction coil, and for periodically connecting said second memory means to said correction coil means whereby a test current flows through correction coil means;

impedance means responsive to said correction coil means for producing a correction voltage and a test voltage in response to said correction current and said test current respectively;

comparator means for receiving said test voltage and comparating said test voltage to a reference voltage and providing an output voltage having a first level when said test voltage is below said reference voltage and a second level when said test voltage is above said reference voltage; and

processor means for receiving said output voltage and changing said correction voltage to incrementally recprocate above and below said reference voltage by a preslected increment to maintain said correction voltage at substantially the same level as said reference voltage over a long time period.

5,283,505

AUTO SCAN HORIZONTAL DEFLECTION APPARATUS

Takahiro Bando, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,506
Claims priority, application Japan, Apr. 24, 1991, 3-119165
Int. Cl.[5] H01J 29/70; G09G 1/04; H04N 5/63
U.S. Cl. 315—411 **6 Claims**

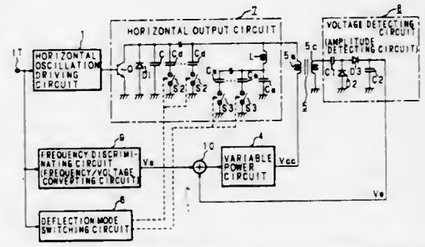
1. An auto scan horizontal deflection apparatus, comprising:

a variable power circuit which outputs a voltage controlled by a control signal as a power source voltage;

a horizontal output circuit which has a choke transformer, is supplied with power source voltage from said variable power circuit through a primary winding of said choke transformer, and is driven by an externally-applied horizontal synchronizing signal;

an amplitude detecting circuit which detects an amplitude of a flyback pulse induced at a detecting winding arranged at a secondary side of said choke transformer;

a frequency discriminating circuit which discriminates a frequency of said horizontal synchronizing signal; and



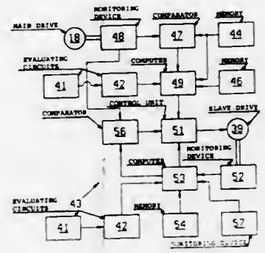
a control signal generating circuit which generates the control signal for said variable power circuit on the basis of outputs of said amplitude detecting circuit and said frequency discriminating circuit.

5,283,506

METHOD OF AND APPARATUS FOR REGULATING THE OPERATION OF A DRIVING SYSTEM FOR A PACKING MACHINE

Gottfried Hoffmann, Schwarzenbek, and Robert Knickrehm, Rethwischdorf, both of Fed. Rep. of Germany, assignors to Köber AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 893,125
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1991, 4118263
Int. Cl.[5] H02P 7/00
U.S. Cl. 318—77 **27 Claims**



1. A method of controlling the operation of a driving system wherein at least one slave drive is normally operated at a predetermined speed by and in a predetermined relation to and is electrically connected with a rotary main drive; comprising the steps of monitoring the angular position of the main drive; disconnecting the at least one slave drive from the driving system, including braking and thereupon arresting the at least one slave drive in predetermined angular positions of the main drive while the main drive continues to rotate; accelerating the arrested at least one slave drive to said predetermined speed; and reconnecting the thus accelerated at least one slave drive with the driving system.

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5,283,507

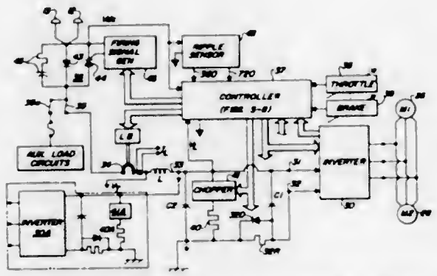
REGENERATIVE BRAKING PROTECTION FOR AN ELECTRICALLY-PROPELLED TRACTION VEHICLE

Thomas D. Stitt, and Ajith K. Kumar, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 666,832, Mar. 8, 1991, Pat. No. 5,245,294, which is a continuation-in-part of Ser. No. 630,698, Dec. 20, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,322

Int. Cl.[5] H02P *3/14;* **B61C** *17/12*

U.S. Cl. 318—376 **15 Claims**



1. A regenerative braking protective system for an electrical propulsion system on board a traction vehicle, the system comprising:

a controllable electric power converter having a set of load terminals adapted to be connected to a normally energized wayside source of unipolarity voltage, the converter having alternative motoring and electrical braking modes of operation, the wayside source comprising a plurality of bare electrical conductors respectively extending along different sections of the right-of-way traveled by the vehicle, with proximate ends of the conductors in adjacent sections being separated from each other by relatively short, insulating gaps, the vehicle being equipped with at least one current collector in sliding contact with the wayside conductors as the vehicle moves along the right-of-way, the current collector and the converter's d-c terminals being interconnected by controllable electric switch means having alternative conducting the non-conducting states;

voltage ripple detecting means, coupled to the vehicle's current collector, for providing an enable signal if the current collector is in contact with the wayside conductor energized by voltage having an a-c ripple component of at least one predetermined frequency and at least a predetermined threshold amplitude, such predetermined frequency being characteristic of the wayside voltage source;

means, operative when the converter is operating in its electrical braking mode, for changing the controllable switch means from conducting to non-conducting stages in response to the current collector traversing each wayside conductor gap as the vehicle moves from one section of the right-of-way to the next section; and

means, operatively associated with the voltage ripple detecting means, for limiting the peak amplitude of the ripple component coupled thereto.

5,283,508

POSITIONAL CONTROL APPARATUS

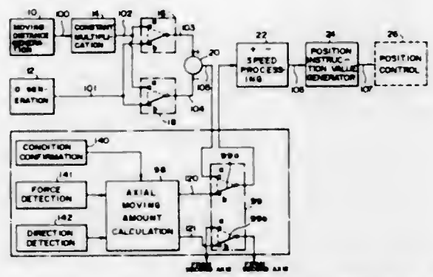
Toshiteru Komatsu, Aichi, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed May 26, 1992, Ser. No. 889,127

Claims priority, application Japan, May 27, 1991, 3-121390

Int. Cl.[5] G05B *19/18*

U.S. Cl. 318—569 **8 Claims**



1. A positional control apparatus having a movable part the position of which is moved by either one control axis or a composition of either two orthogonal control axes or three control axes to be controlled by an NC device, comprising:

a handle movably attached to said movable part by a holding part;

condition confirmation means for detecting whether or not an operator grips said handle;

force detecting means for detecting the strength of force given to said handle when the operator gripping said handle moves said handle in any direction;

direction detecting means for detecting the direction of the force given to said handle when the operator gripping said handle moves said handle in any direction; and

axial moving amount calculation means for calculating the moving amount of each control axis in consideration of the strength and the direction of the force detected by said force and direction detecting means as a strength and a direction of an acceleration given to said movable part when said condition confirmation means discriminates that the operator grips said handle.

5,283,509

TRACING CONTROL SYSTEM

Hitoshi Matsuura, Hachioji, and Hitoshi Aramaki, Hino, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP90/00478, § 371 Date Dec. 3, 1990, § 102(e) Date Dec. 3, 1990, PCT Pub. No. WO90/11869, PCT Pub. Date Oct. 18, 1990

Continuation of Ser. No. 613,890, Dec. 3, 1990, abandoned. This PCT application Apr. 7, 1990, Ser. No. 873,618

Claims priority, application Japan, Apr. 12, 1989, 1-92752

Int. Cl.[5] B23Q *35/12;* **G05B** *19/33*

U.S. Cl. 318—577 **2 Claims**

1. A tracing control system for machining a workpiece using a cutter head to machine a desired contour corresponding to a surface of a model which is being traced, comprising:

a bus;

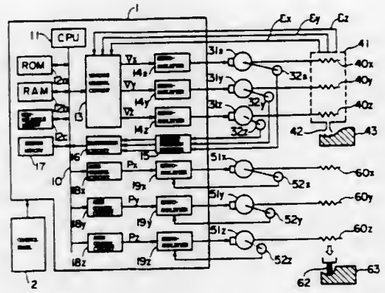
a tracing control circuit controlling a plurality of tracing axes to trace the surface of the model;

present position means for receiving positions of said plurality of tracing axes at periodic intervals and for providing the positions as positional data;

digitizing circuit means, connected to said tracing control circuit through said bus, receiving the positional data, comparing the positional data to a predetermined tolerable data when the positional data exceeds the predetermined tolerable value, and then generating NC data linearly approximating the surface of the model by processing the positional data,

said digitizing circuit means includes processing the positional data according to at least one process of correcting an error of a path due to displacement of the stylus which traces the surface of the model, a process of scaling said positional data at a predetermined magnification ratio, a process of converting a unit of the positional data, and a process of rotating coordinates of the positional data and includes interpolating the positional data when the receiving of the positional data is interrupted to prevent the cutter head from biting into the workpiece without substantially affecting machining speed; and

numerical control circuits, connected to said digitizing circuit means through said bus, positionally controlling machining axes corresponding to the tracing axes based on the NC data.



5,283,510

METHOD FOR DRIVING THREE PHASE STEPPING MOTOR

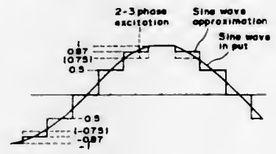
Satoshi Tamaki; Yasuhiro Kondo, both of Hirakata, and Yasufumi Ikkai, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 29, 1992, Ser. No. 891,442

Claims priority, application Japan, Jun. 3, 1991, 3-130933

Int. Cl.[5] H02P *5/162*

U.S. Cl. 318—696 **2 Claims**



(Coil current waveform in each input)

1. A method for two-three phase driving of a three-phase stepping motor having a Y-connection with three respective coils and terminals comprising the steps of:

a) energizing the respective coils, to provide a two-phase excitation, by an input driving current having values at the respective coils defined by a set of normalized values which are ±0.87 and 0;

b) energizing the respective coils, to provide a three-phase excitation, by an input driving current having values at the respective coils defined by a set of normalized values which are ±1 and ±0.5,

c) repeating, alternately, steps a) and b) to provide two-three phase excitation driving of said three-phase stepping motor, wherein the normalized values during two-phase excitation are achieved by varying the input driving current between the two-phase excitation of step a) and the three-phase excitation of step b),

whereby the input driving current values for the respective coils approximate a sine wave having the normalized values of ±1, ±0.87, ±0.5 and 0 in order to minimize vibration.

5,283,511

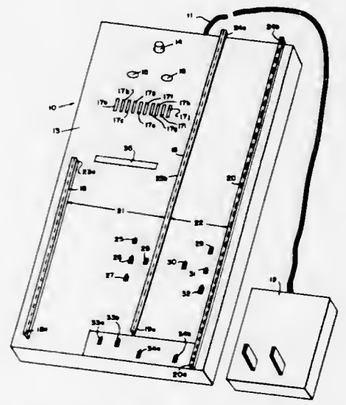
RECHARGEABLE BATTERY MANAGER

Thomas Keener, 875 Waimanu St., Suite 632, Honolulu, Hi. 96813, and W. Joe Watson, 3005 Broken Bow Rd., Edmond, Okla. 73013

Filed Jun. 8, 1992, Ser. No. 895,331

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—2 **16 Claims**



1. A battery conditioner comprising:

a. a plurality of differing mechanical devices representing a plurality of batteries of differing characteristics, said mechanical devices including programming means tailored to the characteristics of each of said batteries for automatically programming said battery conditioner to supply to said batteries individually programmed levels of charge representing for said batteries essentially optimum levels of such charge;

b. attaching means for attaching said mechanical devices to said batteries thereby to match each one of said batteries with the one of said mechanical devices which includes programming means tailored to the characteristics of said each one of said batteries;

c. a housing for individually receiving said mechanical devices, said housing including electrical circuits for discharging and recharging said batteries;

d. sensing means associated with said housing for sensing the presence of one of said mechanical devices and for making electrical connection to terminals of one of said batteries attached to said one of said mechanical devices; and

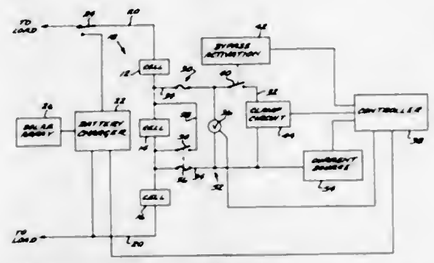
e. control means including said sensing means for discharging the connected one of said batteries for which said electrical connection is made to a voltage level tailored to voltage characteristics of said connected one of said batteries and then automatically recharging said connected one of said batteries to a predetermined programmed level according to said programming means.

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5,283,512
CHARGE BALANCING OF BATTERIES DURING CHARGING

Steven J. Stadnick, Lakewood, and Robert K. Tsenaka, Granada Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 13, 1992, Ser. No. 867,578
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—18 **6 Claims**

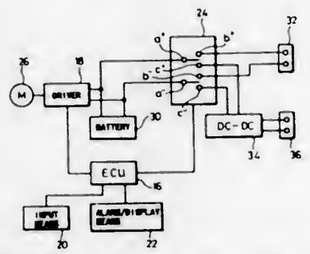


1. A battery system, comprising:
a plurality of storage cells connected together to form a battery;
means for imposing a charging current on at least some of the storage cells;
means for automatically selecting the storage cells to which the charging current is to be applied, wherein the means for selecting operates responsive to the state of charge of at least one of the storage cells; and
means for permanently electrically isolating one of said storage cells from the battery, the means for permanently isolating including a permanent bypass switch and a fusible element that maintains the switch in the bypass position when activated.

5,283,513
BATTERY CHARGING DEVICE FOR ELECTRIC VEHICLES

Shigeo Fujita; Hideki Toyota, and Takahiro Iwata, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,797
Claims priority, application Japan, May 8, 1991, 3-102826
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—56 **13 Claims**

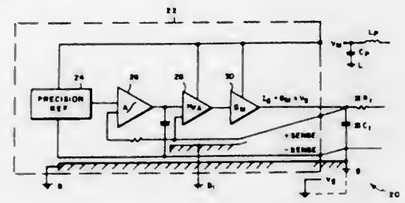


1. A battery charging device for electric vehicles comprising:
a high-voltage battery for storing electric energy to drive the electric vehicle;
a first connector for connecting the battery to a high-voltage power source outside the electric vehicle to charge the battery;
a second connector for connecting the battery to a low-voltage power source outside the electric vehicle to charge the battery;
switching means for making a selection between the first and second connectors and for connecting the battery with a selected power source; and
a DC-DC converter for converting the low-voltage supplied through the second connector to a voltage corresponding to the high-voltage.

5,283,514
FAST RESPONSE CURRENT REGULATOR FOR DC POWER SUPPLY

C. Michael Hayward, Harvard, and Xiou-Wei Dai, Worcester, both of Mass., assignors to Hybricon Corporation, Ayer, Mass.

Filed Sep. 8, 1992, Ser. No. 941,391
Int. Cl.[5] G05F *1/575*
U.S. Cl. 323—280 **8 Claims**



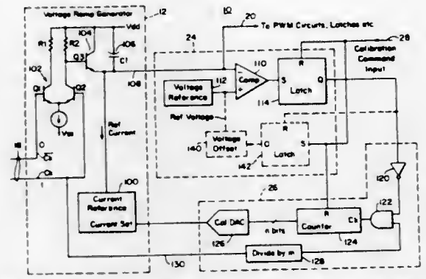
1. In a backplane system employing BTL transceivers in data lines for selectively coupling each said line to a bus through a load comprising respective termination resistance means connected through load capacitors each of relatively low capacitance to a main capacitance of relatively high capacitance chargeable by a power source to establish a logic high level, a current regulator comprising, in combination,
a precision, stable, primary reference voltage source;
a relatively low frequency, low DC drift integrating amplifier means having its input connected to the output of said voltage source;
a wide-band DC-to-VHF amplifier means with relatively stable gain,.and having its input connected to the output of said integrating amplifier means; and
a wide band transconductance amplifier having its input connected to the output of said wide-band amplifier means, said transconductance amplifier having a relatively high output impedance and a transconductance ratio Gm;
said main capacitance being connected to the output of said transconductance amplifier and being substantially isolated from the input of said transconductance amplifier at frequencies that should be rejected for RFI/EMI radiation purposes.

5,283,515
AUTOMATIC CALIBRATION SYSTEM FOR A RAMP VOLTAGE GENERATOR

Edward P. Jordan, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 29, 1992, Ser. No. 890,950
Int. Cl.[5] H03K *4/08*
U.S. Cl. 323—288 **6 Claims**

1. An automatic calibration system providing an automatic calibration process for a ramp voltage generator comprising:
a ramp voltage generator circuit responsive to a clock signal for providing a ramp voltage during a ramp voltage period;
comparator means, responsive to the ramp voltage, for indicating whether the ramp voltage has reached a predetermined reference voltage level in said ramp voltage period; said comparator means including means for driving the ramp voltage to a second reference voltage level beyond said predetermined reference voltage level; and

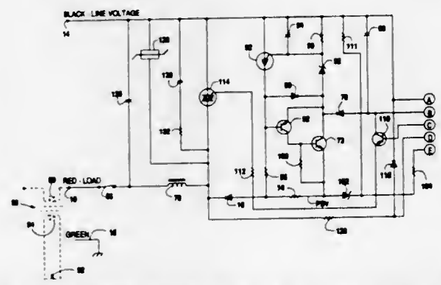


a ramp rate control circuit, responsive to said comparator means, for adjusting the ramp voltage generator circuit to drive the ramp voltage to converge with said predetermined reference voltage level in said ramp voltage period.

5,283,516
LOW VOLTAGE DIMMER WITH NO LOAD PROTECTION

Warren G. Loboff, San Antonio, Tex., assignor to Pass & Seymour Legrand, San Antonio, Tex.

Filed Feb. 24, 1993, Ser. No. 21,753
Int. Cl.[5] G05F *1/40*
U.S. Cl. 323—322 **13 Claims**

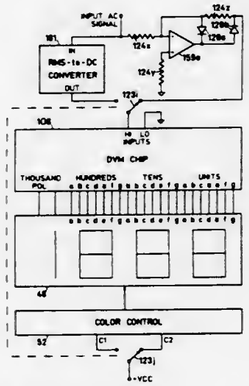


1. A low voltage dimmer circuit for delivering power to a load through a low voltage transformer having a primary side and a secondary side, said low voltage light dimmer circuit connecting between an AC power line and said load, said low voltage dimmer circuit comprising:
triac connected between said AC power line and said load to permit current flow therethrough during any half cycle of AC power upon receiving a gate signal;
charging means connected across said triac to charge to a predetermined voltage within a given period of time after zero crossing of said AC power if said load is connected across said secondary side of said low voltage transformer, said charge to said predetermined voltage taking longer than said given period of time if no said load is connected across said secondary side of said low voltage transformer;
computer means receiving said AC power to determine the time of said zero crossing and expiration of said given period of time, said computer means supplying said gate signal to said triac;
during operation of said low voltage light dimmer circuit said gate signal being sent for selected said half cycle to trigger said triac into conduction if said predetermined voltage is reached within said given period of time.

5,283,517
VARIABLE COLOR DIGITAL MULTIMETER

Karel Havel, 15 Kensington Road, Apt. #704, Bramalea, Ontario, Canada L6T 3W2

Division of Ser. No. 628,328, Dec. 14, 1990, Pat. No. 5,122,733, which is a division of Ser. No. 197,322, May 23, 1988, abandoned, which is a division of Ser. No. 819,111, Jan. 15, 1986, Pat. No. 4,794,383. This application Apr. 9, 1992, Ser. No. 865,460
Int. Cl.[5] G01R *15/08, 15/10*
U.S. Cl. 324—115 **2 Claims**



1. A measuring device comprising:
means for measuring a signal and for developing output data indicative of a measured value of the signal, said means for measuring including an RMS converter, for measuring an RMS value of the signal, and a mean average value converter, for measuring a mean average value of the signal;
a first switch having a first position and a second position, for selecting, when said first switch is in its first position, said RMS converter, and for selecting, when said first switch is in its second position, said mean average value converter;
means for selectively exhibiting in a first color and in a second color, said means for exhibiting being responsive to said output data for providing a digital indication of the measured value of the signal, said means for exhibiting having a color control input for controlling color of said digital indication, in accordance with a first color control signal and a second color control signal;
a second switch having a first position and a second position, said second switch being aligned with said first switch, for coupling said first color control signal to said control input when said second switch is in its first position, for illuminating said digital indication in said first color, and for coupling said second color control signal to said color control input when said second switch is in its second position, for illuminating said digital indication in said second color.

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5,283,518

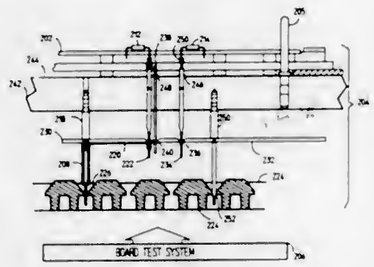
METHOD FOR THE CONTROL OF GROUND BOUNCE BELOW AN INTERNAL GROUND PLANE IN A SHORT-WIRE BOARD TEST FIXTURE

Philip N. King, Fort Collins, and T. Risselle Richert, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 761,540, Sep. 18, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 43,621

Int. Cl.[5] G01R *1/073, 31/02*

U.S. Cl. 324—158 P **2 Claims**



1. A method for positioning test signal pins in a short-wire board test fixture for interfacing a circuit board to a test board system during a test to efficiently control ground bounce, wherein said test signal pins connect a ground plane in the board test fixture to a pin card interfaced to the board test system, an the pin card includes a first column of at least four test signal pins and at least two first ground pins and a second column including at least fifteen second ground pins, the method comprising the steps of:

selecting a predetermined number of active second ground pins, wherein no more than fifteen of said second ground pins are inactive and no more than two consecutive second ground pins are inactive;

connecting said predetermined number of active second ground pins to the circuit board;

selecting all critical test signals to be located within three pins of an exclusive first ground pin, wherein said critical test signals are susceptible to causing ground bounce; and

connecting all critical test signals to pins located within three pins of said exclusive first ground pin.

5,283,519

OPERATION OF INDUCTIVE DISTANCE SENSOR BY SCALING OUTPUT SIGNAL BY VECTORIALLY OBTAINED FACTOR

Hans N. Patzig, Bad Homburg, Fed. Rep. of Germany, assignor to VDO Luftfahrtgeräte Werk GmbH, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 828,449, Jan. 30, 1992, abandoned. This application Apr. 22, 1992, Ser. No. 872,723

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 4102655; Jan. 30, 1991, 4102657

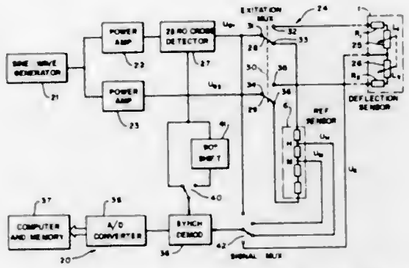
Int. Cl.[5] G01B *7/14*

U.S. Cl. 324—207.19 **13 Claims**

1. A method of operating an inductive distance sensor for measurement of a load, the sensor comprising a vane, a first coil and a second coil which is connected electrically in series with the first coil and is spaced apart from the first coil, said vane being movable between said first and said second coils to change its relative distance from the coils and thus the magnitudes of their inductances L_1 and L_2, a position of said vane between the coils being under the influence of a measurement variable, the method comprising the steps of:

applying a first sinusoidal voltage U_{e1} to said first coil and a second sinusoidal voltage U_{e2} to said second coil, said sinusoidal voltages being of equal amplitude and opposite phase;

tapping off from a terminal connected between the coils an output signal having a voltage U_S with respect to zero potential;



determining U_{eR} and U_{eL} of $(U_e = U_{e1} + U_{e2})$ with respect to magnitude and phase;

measuring a vectorial part U_{sL} of U_S which is in phase with U_{eL}; and

multiplying the value of U_{sL} by a ratio U_e/U_{eL} for obtaining a measurement of the load.

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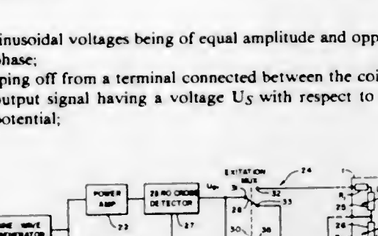
METHOD OF DETERMINING THICKNESS OF MAGNETIC PIPE BY MEASURING THE TIME IT TAKES THE PIPE TO REACH MAGNETIC SATURATION

Philip W. Martin, and Phllip R. Martin, botb of P.O. Box 1635, Whittier, Calif. 90609

Filed Apr. 4, 1991, Ser. No. 680,558

Int. Cl.[5] G01B *7/10;* **G01N** *27/82;* **G01R** *33/12;* **G01V** *3/26*

U.S. Cl. 324—220 **4 Claims**



1. The method of determining the thickness of a magnetic pipe comprising the steps of:

inserting into said pipe a wound coil which has its radius aligned with the radius of said pipe and said coil being closely magnetically coupled to said pipe;

applying a voltage to said coil at an initial time;

monitoring the current through the coil caused by said voltage;

measuring the time from the initial application of said voltage that it takes for the current to reach a value at which the pipe is substantially magnetically saturated; and

determining the thickness of said pipe from the measured time.

5,283,521

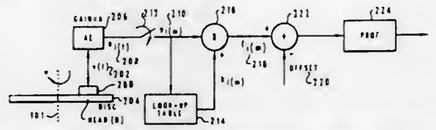
METHOD AND SYSTEM FOR ADAPTIVE DIGITAL LINEARIZATION OF AN OUTPUT SIGNAL FROM A MAGNETORESISTIVE HEAD

Hal J. Ottesen, and Gordon J. Smith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1992, Ser. No. 888,573

Int. Cl.[5] G01R *33/12;* **G01N** *27/82*

U.S. Cl. 324—225 **13 Claims**



1. A system for linearizing a digital output signal originating from a magnetoresistive sensor having a nonlinear response to an input flux, said system comprising:

means for detecting said digital output signal originating from said magnetoresistive sensor in response to said input flux;

means for correlating one of a plurality of linearization factors located in a storage means to said digital output signal in response to detecting said digital output signal, wherein said plurality of linearization factors is determined by:

means for subjecting said magnetoresistive sensor to a varying magnetic field input;

means for detecting said digital output signal originating from said magnetoresistive sensor in response to said varying magnetic field, wherein said digital output signal is a function of said varying magnetic field input; and

means for calculating each of said plurality linearization factors from said digital output signal by

$$K\left(\frac{H(m)}{H_0}\right) = \frac{f\left(\frac{H(m)}{H_0}\right)}{e\left(\frac{H(m)}{H_0}\right)}$$

where $K(H(m)/H_o)$ is a linearization factor, $f(H(m)/H_o)$ is a line through a point, $\bar{e}(H(m)/H_o)$ is a sampled averaged output from said magnetoresistive sensor, H(m) is a sampled magnetic field intensity and H_o is a normalizing magnetic field of said magnetoresistive sensor; and

means for modifying said digital output signal utilizing said one of plurality of linearization factors to produce a linear digital output signal.

5,283,522

METHOD FOR MEASURING WEAK LOCAL MAGNETIC SIGNALS IN THE PRESENCE OF MAGNETIC NOISE FIELDS

Nelson R. Corby, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 14, 1992, Ser. No. 944,597

Int. Cl.[5] G01R *33/02*

U.S. Cl. 324—244 **2 Claims**

1. A method for measuring a local magnetic signal in the presence of a magnetic noise field, comprising the steps of

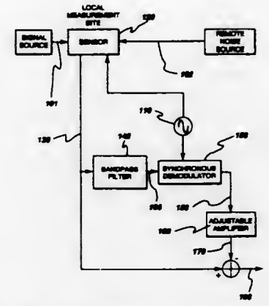
sensing said local magnetic signal and a noise component from said magnetic noise field;

modulating said noise component at a first frequency;

producing a first signal from said local magnetic signal and said modulated noise component;

bandpass filtering said first signal at said first frequency to produce a second signal;

demodulating and amplifying said second signal to produce a third signal; and



subtracting said third signal from said first signal to produce said local magnetic signal.

5,283,523

SQUID MEASUREMENT APPARATUS WITH A FLUX TRANSFORMER HAVING SHIELDING WITH A DISCONTINUITY

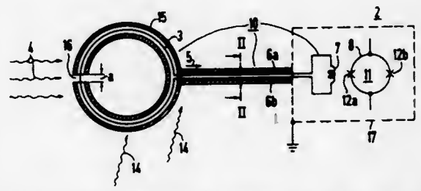
Dieter Uhl, Uttenreuth, and Heinrich Seifert, Bubenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 10, 1992, Ser. No. 847,287

Claims priority, application European Pat. Off., Mar. 11, 1991, 91103700.0

Int. Cl.[5] G01R *33/035*

U.S. Cl. 324—248 **21 Claims**



1. A SQUID measurement apparatus for detecting weak magnetic field signals that change over time, said apparatus comprising: at least one measurement channel that has a SQUID and a superconductive flux transformer disposed in front of the SQUID, the transformer including at least one detection loop for receiving the weak magnetic field signals and at least one connection conductor coupled to said detection loop; means for electromagnetically shielding at least said at least one connection conductor and said at least one detection loop of said flux transformer, said shielding means including at least one superconductive shielding element extending in a direction essentially parallel to said at least one connection conductor and essentially to said at least one detection loop, said shielding element having a discontinuity at a separation point in a region of said detection loop and being connected to ground potential.

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5,283,524

AC MAGNETIC SUSCEPTOMETER WITH ODD HARMONIC MEASUREMENT FOR ANALYZING SUPERCONDUCTIVE MAGNETIC MATERIALS

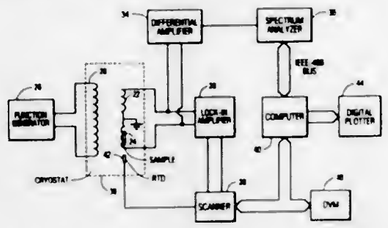
Avner A. Shaulov, Jerusalem, Israel; Rameshwar N. Bhargava, Ossining, and Donald R. Dorman, Tarrytown, both of N.Y., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 416,286, Oct. 2, 1989, abandoned. This application Nov. 19, 1991, Ser. No. 795,296

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] **G01R** *33/12, 33/16;* **G01N** *27/72;* **H01L** *39/00*

U.S. Cl. 324—239 **4 Claims**



1. A apparatus for measurement of lower critical field of a sample of cooled superconductive material, comprising:

means for applying a magnetic bias field to the sample of material;

means for superimposing a sinusoidally varying field on said bias field;

means for altering the strength of the bias field;

means for measuring the amplitude of the odd numbered harmonic component of the inducted magnetic field in the sample;

means for graphically displaying the amplitude of the odd numbered harmonic component as a function of bias field strength, said amplitude generally appearing constant at lower field strengths, which represents background noise, and a sloped line rising at a certain amplitude; and

means for determining the lower critical field by interpolating the sloped line of the amplitude of the odd numbered harmonic component with the background noise level.

5,283,526

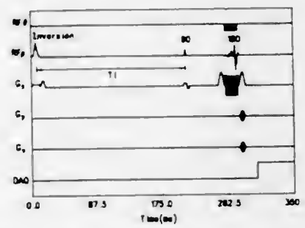
METHOD FOR PERFORMING SINGLE AND MULTIPLE SLICE MAGNETIC RESONANCE SPECTROSCOPIC IMAGING

Daniel M. Spielman, San Jose, and John M. Pauly, Menlo Park, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 1, 1992, Ser. No. 908,098

Int. Cl.[5] **G01R** *33/20*

U.S. Cl. 324—309 **11 Claims**



1. A method of selectively imaging a two dimensional slice through an object with suppression of short T_1 species water components comprising the steps of:

(a) placing said object in a magnetic field (B_0) along one axis (z) thereby aligning nuclear spins in the slice along said axis;

(b) applying an 180° RF inversion pulse to invert nuclear spins in said slice by 180°;

(c) applying a 90° RF pulse to nuclear spins in said slice after a time period after step (b) which is correlated to the spin-lattice relaxation time (T_1) of said short T_1 species such that the nuclear spins of said short T_1 species have relaxed to a magnetic null;

(d) applying a 180° RF pulse to nuclear spins in said slice which is spectrally and spatially selective of selected nuclear spins in said slice and suppresses nuclear spins of water in said slice;

(e) detecting spin echo signals from said selected nuclear spins; and

(f) generating a two dimensional image using the detected spin echo signals.

5,283,525

METHOD AND DEVICE FOR THE VOLUME-SELECTIVE EXTRACTION OF A MAGNETIC RESONANCE SPECTRUM BY HARTMANN-HAHN TRANSFER

Rudolf M. J. N. Lamerichs; Reurt P. Van Stapele, and Jan A. Den Hollander, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

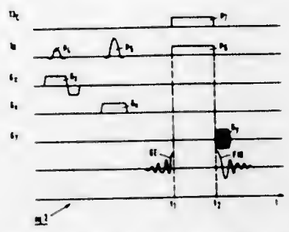
Filed Apr. 22, 1992, Ser. No. 871,947

Claims priority, application European Pat. Off., May 23, 1991, 91201228.3

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—307 **18 Claims**

1. A magnetic resonance method for the volume-selective extraction of spectral information from an object under examination containing a first type of nucleus and a second type of nucleus which is coupled to the first type of nucleus, said object being arranged in a steady uniform magnetic field, said method comprising: performing heteronuclear Hartmann-Hahn magnetization transfer, and extracting spectral information of at least one of the first and second types of nucleus from transferred magnetization of the other of the first and second types of nucleus, at least one of said performing the Hartmann-Hahn transfer and said extracting spectral information being



substantially only with respect to a selected volume of the object.

5,283,527

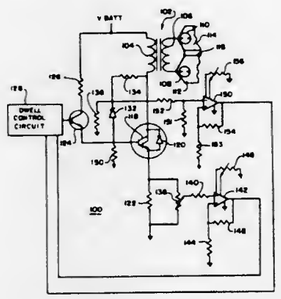
METHODS AND APPARATUS FOR DETECTING SHORT CIRCUITED SECONDARY COIL WINDING VIA MONITORING PRIMARY COIL WINDING

Charles J. DeBiasi, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 28, 1991, Ser. No. 723,475

Int. Cl.[5] **F02P** *17/00;* **G01R** *31/06*

U.S. Cl. 324—391 **16 Claims**



1. A method of detecting a low impedance short circuit in a secondary winding circuit of an ignition coil of an internal combustion engine having a distributorless ignition system, the ignition coil including a secondary winding and an associated primary winding, said method comprising the steps of:

driving said primary winding to generate spark discharge energy in said secondary winding circuit which is connected to spark producing devices in first and second cylinders of the internal combustion engine to form said secondary winding circuit, said first and second cylinders making up a cylinder pair of the internal combustion engine;

monitoring said primary winding for signals representative of spark discharge in said secondary winding circuit; and

analyzing spark discharge signals on said primary winding to detect a low impedance short circuit in said secondary winding circuit.

5,283,528

CIRCUIT ARRANGEMENT FOR MEASURING THE RATIO OF THE CAPACITANCE VALUES OF TWO CAPACITORS

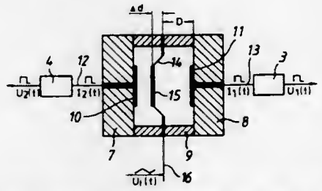
Josephus M. van Seeters, Berneck, Switzerland, assignor to Leica Heerbrugg AG, Heerbrugg, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 845,938

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107366

Int. Cl.[5] **G01R** *11/52, 27/26*

U.S. Cl. 324—679 **11 Claims**



1. An apparatus for measuring the ratio of two capacitance values C_1 and C_2, of two capacitors having very small capacitances, the capacitors to be compared having one of their electrodes interconnected, comprising:

(a) means for producing a signal voltage $U_i(t)$ over at least two signal periods, which can be differentiated and has defined slopes, and supplying the signal voltage $U_i(t)$, to the interconnected electrode of each of the capacitors, the two capacitors being arranged in parallel paths with respect the signal voltage;

(b) current amplifiers connected to the two electrodes of the capacitors not connected to each other, the current amplifiers producing amplified output signals $U_1(t)$, $U_2(t)$;

(c) an A/D convertor means receiving the amplified output signals $U_1(t)$, $U_2(t)$ of the two capacitors, for determining during a first signal period, two digital amplitude values Us_1, Us_2 of the output signals of one capacitor at an interval of half a signal period (T/2) and, subsequently thereto and likewise at an interval of half a signal period, determining, during a second signal period, two digital amplitude values Us_3, Us_4 of the output signals of the other capacitor; and

(d) means for determining from the digital amplitude values the capacitance ratio in accordance with

$$\frac{C_1}{C_2} = \frac{(Us_1 - Us_2)}{(Us_3 - Us_4)}.$$

5,283,529

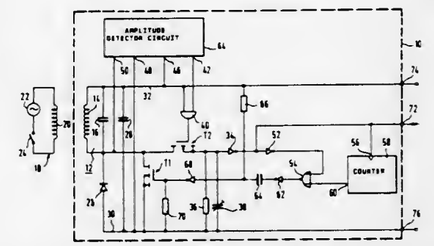
OSCILLATION MAINTENANCE CIRCUIT

Herbert Meier, Muhlbachbogen, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 491,009

Int. Cl.[5] **H03K** *3/33, 3/353*

U.S. Cl. 328—223 **5 Claims**



1. A circuit arrangement for generating pulses for maintaining an oscillation amplitude of a resonance circuit for a predetermined time after termination of an outside excitation of the resonance circuit by means of HF carrier oscillation signals comprising:

said resonance circuit for receiving said HF carrier oscillation signal and providing an output signal and a resonant oscillation signal;

an energy storage element connected to said resonance circuit, chargeable by said output signal to a supply voltage value, for supplying energy to other circuits;

an amplitude detector circuit connected to said energy storage element and said resonance circuit for generating a trigger signal when the amplitude of said resonant oscillation signal drops below said supply voltage value;

a first switching element for supplying said resonant oscillational signal of said resonant circuit to a delay circuit, in response to said trigger signal;

said delay circuit for furnishing switching pulses, having a predetermined phase position with respect to said resonant oscillation signal of said resonant circuit and a predetermined duration, to a second switching element;

said second switching element for energizing said resonance circuit via said energy storage element for the duration of said switching pulses.

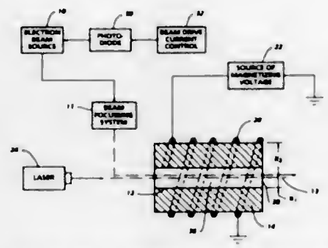
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,530

ELECTRON ACCELERATION SYSTEM

Han S. Uhm, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1991, Ser. No. 758,978
Int. Cl.[5] H05H *1/04*
U.S. Cl. 328—233 8 Claims



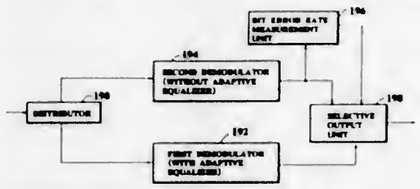
1. In a method of accelerating travel of electrons through a body of material within which a magnetic field is stored, by inducing therein an electric field in response to change in strength of said magnetic field to thereby establish an accelerating gradient along a linear path through said body of material, the improvement residing in the steps of: generating a beam of electrons of a substantially constant driving current; projecting said beam of electrons through said body of material along said linear path to increase in strength the magnetic field stored within the body of material toward a saturation level; abruptly decreasing said constant driving current of the beam to cause decay in the strength of the magnetic field from said saturation level during said travel of the electrons along said linear path; ionizing gas within the body of material along said linear path to form a plasma channel; and focussing the beam to dimensionally confine said travel of the electrons to said plasma channel.

5,283,531

DEMODULATION APPARATUS INCORPORATING ADAPTIVE EQUALIZER FOR DIGITAL COMMUNICATION

Mutsumu Serizawa; Minoru Namekata, both of Tokyo; Koji Ogura, and Katsumi Sakakibara, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 905,413, Jun. 29, 1992, Pat. No. 5,214,391, which is a division of Ser. No. 625,292, Dec. 6, 1990, Pat. No. 5,159,282. This application May 24, 1993, Ser. No. 64,922
Claims priority, application Japan, Dec. 6, 1989, 1-317065; Jul. 16, 1990, 2-185434
Int. Cl.[5] H03D *3/00;* H04B *1/12*
U.S. Cl. 329—316 6 Claims



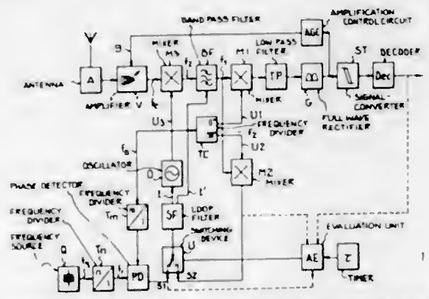
1. A demodulation apparatus, comprising:
- a distributor for distributing an input signal to first and second passages;
- a first demodulator including an equalizer capable of compensating a transmission path distortion, connected with the first passage, for demodulating the input signal;
- a second demodulator, connected with the second passage, for demodulating the input signal;
- means for measuring a bit error rate of an output of the second demodulator;
- means for delaying an input of the first demodulator by a time taken by the second demodulator to demodulate the input signal and by the measuring means to measure the bit error rate;
- means for delaying an output of the second demodulator by a time taken by the first demodulator to demodulate the input signal; and
- means for selectively outputting one of the outputs of the first and second demodulators according to the measured bit error rate.

5,283,532

RECEIVER HAVING A LOCAL OSCILLATOR FIRST SYNCHRONIZED TO A REFERENCE FREQUENCY AND THEN TO A RECEIVED SIGNAL

Johann Burkhart, Pfaffenhofen; Johann Traub, Lauingen, and Rolf Böhme, Bad Friedrichshall, all of Fed. Rep. of Germany, assignors to Temic Telefunken Microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,710
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, 4118995; Aug. 6, 1991, 4125995
Int. Cl.[5] H03D *1/22;* H03L *7/087;* H04B *1/26*
U.S. Cl. 329—360 19 Claims



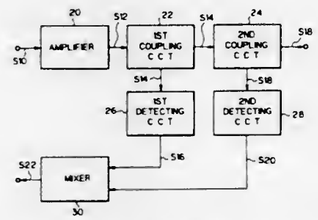
1. A receiver array for reception and for demodulation of a useful signal with a given carrier frequency, in particular of the radio signal from a time signal transmitter, comprising:
- a signal path structured in accordance with the reception principle of synchronous demodulation;
- a controllable oscillator array for generating first and second heterodyne signals, with said first heterodyne signal being fed to a first mixer in said signal path for synchronous demodulation of the useful signal, and with said second heterodyne signal being phase-shifted by $\pi/2$ relative to said first heterodyne signal;
- a first control circuit having a stable reference source and a phase detector of a wide reception range for detecting a phase difference between the output signal of said reference source and said first heterodyne signal and generating a first control signal for said oscillator array corresponding to the difference;
- a second control circuit for generating a second control signal for said oscillator array for phase synchronization of said first heterodyne signal with the useful signal, said second control circuit comprising a second mixer which is supplied with said useful signal and said second heterodyne signal, and which produces said second control signal at its output; and;
- a switching means for applying said first control signal to the control signal input of said oscillator array during a presynchronization phase, and for applying said second control signal to the control signal input of said oscillator array during a subsequent demodulation phase.

5,283,533

AMPLIFIER SIGNAL LEVEL DETECTOR FOR A MOBILE COMMUNICATION SYSTEM

Tsuguo Hori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,682
Claims priority, application Japan, Aug. 20, 1991, 3-208066
Int. Cl.[5] G01R *19/00;* H03G *3/20*
U.S. Cl. 330—2 2 Claims



1. A detector connected to an amplifier which amplifies an input signal whose level changes for generating a detected signal associated with an output signal of said amplifier, said detector comprising:
- a first coupling circuit for picking up the output signal of the amplifier in a predetermined coupling amount;
- a second coupling circuit for picking up an output signal of said first coupling circuit in a predetermine coupling amount;
- a first detecting circuit for picking up an output signal of said first coupling circuit to produce a detected voltage which has linearity against changes in a relatively low range among changes in the level of the input signal to the amplifier;
- a second detecting circuit for detecting the output signal of said second coupling circuit to produce a detected voltage which has linearity against changes in a relatively high range among changes in the level of the input signal to the amplifier; and
- a mixer for mixing the detected voltages produced by said first and second detecting circuits in a predetermined ratio to generate the detected signal.

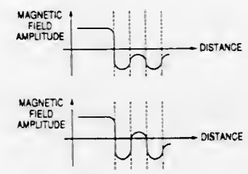
5,283,534

HIGH FREQUENCY AMPLIFYING APPARATUS WITH A COLLECTOR WHICH HAS A PERIODIC AMPLITUDE VARIABLE LONGITUDINAL MAGNETIC FIELD THEREIN

Heinz P. Bohlen, Chelmsford, and Roy Heppinstall, Witham, both of United Kingdom, assignors to EEV Limited, Essex, United Kingdom

Filed Mar. 7, 1991, Ser. No. 665,548
Claims priority, applicatioo United Kingdom, Mar. 8, 1990, 9005245
Int. Cl.[5] H01J *23/027, 23/10;* H03F *3/56*
U.S. Cl. 330—45 8 Claims

1. A high frequency amplifying apparatus, comprising:
- means for producing an electron beam and for directing the electron beam along a path in a longitudinal direction of the apparatus;
- means operatively arranged for modulating the electron beam with a high frequency signal;
- a resonant cavity through which the modulated electron beam is directed, whereby the modulated electron beam interacts with said resonant cavity to generate an amplified high frequency signal;
- means operatively arranged with said resonant cavity for extracting the amplified high frequency signal from the modulated electron beam in said resonant cavity;
- a collector disposed adjacent said resonant cavity for receiving the electron beam after the amplified high frequency signal has been extracted; and



- means for producing, within a region extending from said resonant cavity to said collector, a magnetic field substantially in the longitudinal direction of the apparatus, said magnetic field having solely one polarity along the path of the electron beam and an amplitude that varies periodically with distance in the direction of the path of the electron beam.

5,283,535

DIFFERENTIAL AMPLIFIER ARRANGEMENT

Joannes M. J. Sevenhans, Brasschaat, and Mark G. S. J. Van Paemel, Zoersel, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 1, 1992, Ser. No. 937,313
Claims priority, application European Pat. Off., Sep. 25, 1991, 91202503.8
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 10 Claims

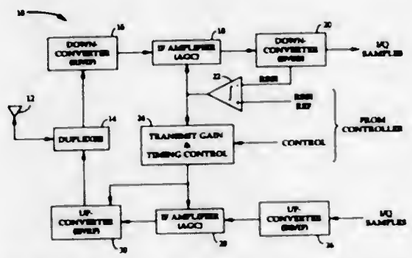
1. A differential amplifier arrangement comprising:
- a differential amplifier pair configured as first and second amplifier branches with first and second input terminals respectively, said amplifier branches including first and second input transistors respectively, the first and second amplifier branches being connected at a junction point to a common branch which includes a current source connected to said first and second input transistors; and
- a control circuit for regulating the current of said current source to linearize an input/output characteristic of said differential amplifier pair;
- wherein said control circuit comprises a negative feedback circuit including a comparator, a first input of the comparator being connected to a reference voltage terminal to which an external reference voltage is applied, a second input of the comparator being connected to said junction point, and an output of said comparator connected for controlling said current source;
- wherein said comparator is an operational amplifier, said second terminal of said comparator being a non-inverting input of said operational amplifier and said first terminal of said comparator being an inverting input of said operational amplifier, said junction point and said reference voltage terminal being connected to said non-inverting and inverting inputs respectively.

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5,283,536
HIGH DYNAMIC RANGE CLOSED LOOP AUTOMATIC GAIN CONTROL CIRCUIT

Charles E. Wheatley, III, Del Mar, and Derek N. Punch, San Diego, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 871,529, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 620,092, Nov. 30, 1990, Pat. No. 5,107,225. This application Apr. 16, 1993, Ser. No. 48,559
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—279 **15 Claims**



1. A linear closed loop automatic gain control (AGC) circuit comprising:

amplifier means for receiving an input signal which is susceptible to variations in signal power, receiving a control signal, amplifying said input signal at a gain level in dB as a linear function of said control signal and providing a corresponding amplifier means output signal wherein said amplifier means comprises:

input amplification means for, receiving said input signal and said control signal, amplifying said input signal at an input gain level in dB as a linear function of said control signal and providing a corresponding input amplification means output signal;

filter means for receiving and filtering said input amplification means output signal; and

output amplification means for, receiving said filtered input amplification means output signal and said control signal, amplifying said filtered input amplification means output signal at an output gain level in dB as a linear function of said control signal and providing a corresponding output amplifier means output signal;

measurement means coupled to said amplifier means for measuring logarithmic signal power of said amplifier means output signal and providing a corresponding linear measurement signal; and

integration means for receiving said measurement signal and a reference signal, integrating a difference between said measurement signal and said reference signal, and providing as a result of said integration said control signal.

5,283,537
CURRENT MIRROR CIRCUIT

Hiroyuki Nakamura, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 918,008
Claims priority, application Japan, Jul. 31, 1991, 3-192076
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—288 **1 Claim**

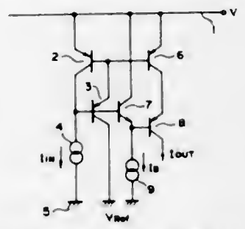
1. A current mirror circuit comprising:

first and second transistors of a first conductivity type whose emitters are connected to a power source and whose bases are commonly connected;

a third transistor of the first conductivity type whose collector is connected to a reference potential and whose emitter is connected to the bases of said first and second transistors and whose base is connected to a collector of the first transistor;

a fourth transistor of the first conductivity type whose emitter is connected to a collector of the second transistor; and

control means for controlling a base of said fourth transistor, wherein said control means comprises a fifth transistor of

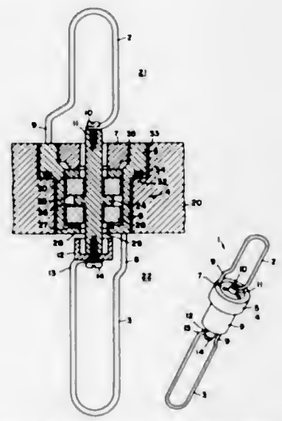


a second conductivity type and a constant current source, a base of said fifth transistor is connected to the collector of said first transistor, a collector of said fifth transistor is connected to said power source and an emitter of said fifth transistor is connected to the base of said fourth transistor, and said constant current source is provided between the emitter of said fifth transistor and said reference potential.

5,283,538
APPARATUS FOR COUPLING MICROWAVE POWER OUT OF A FIRST SPACE INTO A SECOND SPACE

Michael Geisler, Wiichtersbach; Michael Jung, Kahl, and Bernhard Kessler, Hanau-Wolfgang, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 795,935, Nov. 15, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,921
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037090
Int. Cl.[5] H01P *5/00*
U.S. Cl. 333—24 R **22 Claims**



1. An antenna device for coupling microwave power out of a microwave chamber into a plasma chamber, a gas-tight dividing wall having a thickness being provided between the microwave chamber and the plasma chamber, through which the antenna device is guided, which reaches both into the microwave chamber and into the plasma chamber, comprising:

a) a primary antenna having a first terminal and a second terminal, said primary antenna being completely located in said microwave chamber;

b) a secondary antenna having a first terminal and a second terminal, said secondary antenna being completely located in said plasma chamber;

c) an antenna lead-through having a middle electrode and an outer electrode, said outer electrode being completely surrounded over its outer surface by said dividing wall and said middle electrode having substantially a length equal to the thickness of said dividing wall;

d) an electrically conductive connection between the first terminal of the primary antenna situated in the microwave chamber and a portion of the outer electrode which is directed at the microwave chamber;

e) an electrically conductive connection between the second terminal of the primary antenna situated in the microwave chamber and a portion of the middle electrode which is directed at the microwave chamber;

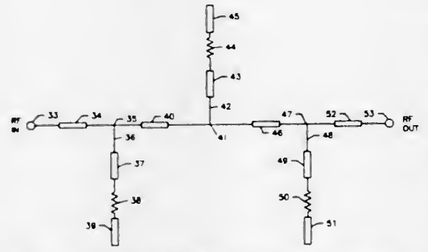
f) an electrically conductive connection between the first terminal of the secondary antenna situated in the plasma chamber and a portion of the outer electrode which is directed at the plasma chamber; and

g) an electrically conductive connection between the second terminal of the secondary antenna situated in the plasma chamber and a portion of the middle electrode which is directed at the plasma chamber.

5,283,539
MONOLITHIC COMPATIBLE, ABSORPTIVE, AMPLITUDE SHAPING NETWORK

Virender K. Sadhir; David A. Willems, both of Roanoke, Va., and Kenneth S. Karsten, Bethlehem, Pa., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 9, 1992, Ser. No. 942,728
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—28 R **20 Claims**



1. An equalizer circuit for RF frequencies, comprising:

a main microstrip transmission line having an RF input port and an RF output port;

a first stub tuner being adapted to resonate at a first resonant frequency and including a first microstrip transmission line coupled to said main transmission line and extending transversely therefrom;

first resistive means coupled to said first stub tuner and adapted to de-Q said first stub tuner;

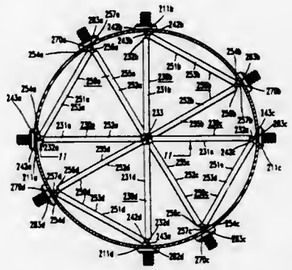
a second stub tuner being adapted to resonate at a second resonant frequency different from said first resonant frequency and including a second transmission line coupled to said main transmission line and extending transversely therefrom; and

second resistive means coupled to said first stub tuner and adapted to de-Q said second stub tuner.

5,283,540
COMPACT SIGNAL ISOLATING MICROWAVE SPLITTERS/COMBINERS

Robert E. Myer, Denville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 27, 1992, Ser. No. 919,444
Int. Cl.[5] H01P *5/12*
U.S. Cl. 333—127 **5 Claims**



1. A microwave assemblage comprising: a metallic housing having a vertical axis and an inverted pan shape and comprising, web means centered on said axis and extending in both horizontal dimensions away from said axis to provide a top closure for said housing, said web means having therein a vertical bore coaxial with said axis, flange means downstanding from said web means and extending in horizontally spaced relation from said axis angularly around it to bound at the side an interior space in said housing under said web means, said flange means having formed therein a plurality of horizontally extending through apertures angularly spaced around said axis, and cover means disposed at the lower end of said flange means and providing a bottom closure for said housing, said assemblage further comprising, a primary coaxial signal transfer connector having an outer conductor disposed outside of and mounted on said web means, and having an inner conductor passing down through said bore into said space, a plurality of secondary coaxial signal transfer connectors each corresponding to a respective one of said apertures and each comprising an outer conductor on said flange means outside the respective aperture and an inner conductor passing through that aperture into said space, a plurality of first equal-length coaxial line sections respectively corresponding to said plurality of second connectors and disposed in said space and each extending horizontally therein between said axis and the one of said apertures corresponding to the second connector associated with the first section, said first sections each comprising a tubular outer conductor and an inner conductor coupled in said space at opposite ends thereof, towards and away from said axis, to respectively, (a) a junction of such inner conductor with the inner conductor of said primary connector, and (b) the inner conductor of the secondary connector respectively corresponding to that first line section, and a plurality of second coaxial line sections respectively corresponding to said first line sections and each in the shape of an "L" to have two arms and a bend therebetween, and each such section at the free ends of said arms having opposite section ends which are towards and away from said axis and are respectively adjacent to the corresponding opposite ends of the inner conductor of the first line section corresponding to such second section, said second coaxial line sections comprising respective tubular outer conductor means and respective inner conductor means of which the latter are, at the ends of such second line sections towards said axis, all coupled together to a common, floating junction and, at the ends of such second sections away from said axis, each coupled to the said junction of the inner conductor of the corresponding first coaxial line section with the inner conductor of the corresponding secondary signal transfer connector, said second coaxial line sections being all disposed

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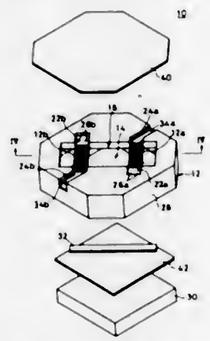
in said interior space to be tilted away from the vertical in the same angular direction around said vertical axis so that each of said second coaxial line sections projects angularly away from the corresponding first coaxial line section towards the first coaxial line section next adjacent in such angular direction, said second coaxial line sections being all of greater length that said first coaxial line sections.

5,283,541

MAGNETOSTATIC WAVE DEVICE HAVING A MULTI-PORTION HOLDER

Takekazu Okada; Satoru Shimura, both of Nagaokakyo; Yasuhide Kamado, Osaka, and Fumio Kanaya, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Mar. 25, 1992, Ser. No. 857,197
Claims priority, application Japan, Mar. 29, 1991, 3-92703
Int. Cl.[5] H03H *7/00*; H05K *5/02*
U.S. Cl. 333—156 11 Claims



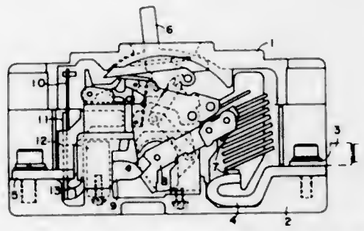
1. A magnetostatic wave device comprising:
a ferromagnetic element,
an input transducer and an output transducer respectively provided in conjunction with said ferromagnetic element,
said ferromagnetic element supporting a magnetostatic wave propagation from said input transducer to said output transducer in response to an electrical input signal applied to said input transducer,
a magnet for applying a magnetic field that remains constant with time, to said ferromagnetic element, and,
a holder comprised of synthetic resin, said holder including:
a ferromagnetic element housing portion for housing therein said ferromagnetic element,
a magnet housing portion for housing therein said magnet in a predetermined position with respect to said ferromagnetic element, and
transducer housing portions for housing therein said transducers in predetermined positions with respect to said ferromagnetic element,
one of said ferromagnetic element housing portion and said transducer housing portions being positioned between said magnet housing portion and the other of said ferromagnetic element housing portion and said transducer housing portions.

5,283,542

LOW-SHRINKAGE UNSATURATED WET TYPE POLYESTER RESIN (B.M.C.) FORMULATION COMPOSITION HAVING HIGH THERMAL CONDUCTIVITY AND MOLDED CIRCUIT BREAKER AND PARTS FORMED THEREFROM

Haruyuki Ochiai; Sadatoshi Murakami, and Setsuo Hosogai, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,553
Claims priority, application Japan, Sep. 11, 1991, 3-231288; Nov. 28, 1991, 3-314431; Jun. 3, 1992, 4-141565
Int. Cl.[5] H01H *83/00*
U.S. Cl. 335—6 8 Claims



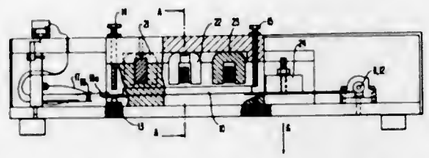
1. A composition of matter, comprising low-shrinkage, wet-type unsaturated polyester (B.M.C) having high thermal conductivity, glass fibers, and a particulated aluminum nitride filler having high thermal conductivity.

5,283,543

MULTI-PHASE CURRENT MONITORING DEVICE

Bernhard Hoffmann, Starnberg, Fed. Rep. of Germany, assignor to Magnet-Bahn GmbH, Starnberg, Fed. Rep. of Germany

Filed May 9, 1991, Ser. No. 697,418
Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014820
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—8 6 Claims



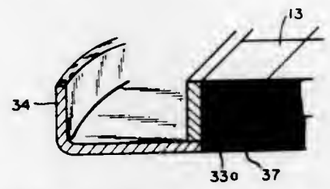
1. An overcurrent relay device for monitoring current in a multi-phase current system including separate conductors each carrying a respective one of the current phases between a multi-phase current source and a load, comprising:
a system switch coupled to the multi-phase current source and having a displaceable contact for producing a signal to switch off the multi-phase current;
a plurality of electromagnets each including a magnetic core having a core pole and being associated with a respective one of the conductors for generating a magnetic attraction force in the vicinity of said core pole, said core poles all facing in the same direction;
an armature rotatably mounted adjacent to said core poles and defining gaps between said armature and the respective core poles so that the magnitude of a magnetic attraction moment on said armature generated by each electromagnet is the same for a given magnitude of the multi-phase current, said armature being disposed for moving the displaceable contact of the system switch for producing the signal to switch off the multi-phase current when the magnitude of the multi-phase current exceeds a predetermined trip value; and
mounting means mounting said armature for rotation about a point for presenting a restoring moment on said armature which is generated substantially only by the force of gravity, for returning said armature to a predetermined position defining the gaps, wherein the restoring moment presented by said mounting means corresponds to the sum of the magnetic attraction moments on said armature generated by the respective current phases when the magnitude of the multi-phase current equals the predetermined trip value.

5,283,544

MAGNETIC FIELD GENERATING DEVICE USED FOR MRI

Hideya Sakurai, Osaka, and Masaaki Aoki, Amagasaki, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Sep. 27, 1991, Ser. No. 766,520
Claims priority, application Japan, Sep. 29, 1990, 2-261417; Sep. 29, 1990, 2-261418
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—297 17 Claims



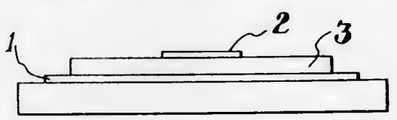
1. A magnetic field generating device for MR1 which comprises a pair of magnetic pole pieces mounted opposite one another so as to form a gap therebetween, said magnetic pole pieces being capable of generating a magnetic field in said gap, each magnetic pole piece including a plurality of magnetic pole members arranged to confront said gap, each magnetic pole member comprising a plurality of non-oriented silicon steel sheets laminated and connected together.

5,283,545

VARIABLE RESISTORS

Udo C. Pernisz, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 694,721, May 2, 1991. This application Jul. 20, 1992, Ser. No. 915,572
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—308 30 Claims



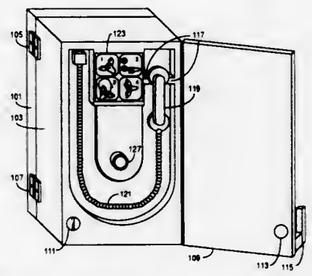
1. A variable resistor comprising:
at least 2 electrodes in direct contact with an oxide material comprising silica derived from a precursor comprising hydrogen silsesquioxane.

5,283,546

VANDAL-RESISTANT CALL BOX

Shlomo Scop, Netanya, Israel; Jack K. Galbraith, Lombard, Ill.; Efi Rushinek, Ramat Gan, and Martin Ferester, Hulon, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 13, 1991, Ser. No. 699,108
Int. Cl.[5] G08B *25/00*
U.S. Cl. 340—287 14 Claims



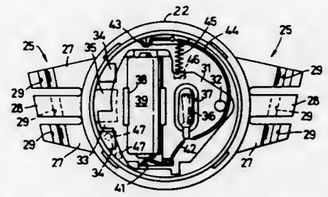
1. A call box, comprised of:
means for holding a handset in a first position within the call box and alternatively in a position upside-down to said first position;
means, concealed within the call box, for determining position of said handset within the call box;
means for requesting telephonic service to said handset;
means, coupled to said requesting means and said determining means, for providing a telephonic connection when said telephonic service is requested while said handset is removed from said first position within the call box;
means for preventing said handset from being replaced in said position upside-down to said first position, wherein said means for preventing comprise:
an armored cord attached to said handset and to said call box and
a u-shaped recess within said call box in which said armored cord tracks a u-shape and in which said handset rests on supports such that an exterior door of said call box closes only when said handset rests in said first position; and
means for protecting said means for holding, said means for determining, said means for requesting, said means for providing, and said means for preventing.

5,283,547

SAFETY DEVICE FOR CYCLES

David P. Leon, Cotswold, 4 Holmemoor Drive, Sonning-on-Thames, Reading, Berkshire RG40TE, England

Filed Jul. 10, 1991, Ser. No. 727,908
Claims priority, application United Kingdom, Jul. 11, 1990, 9015296.8; Apr. 27, 1991, 9109165.2
Int. Cl.[5] B62J *3/00*
U.S. Cl. 340—432 18 Claims



1. A safety device for a cycle, comprising a housing with at least a translucent window provided therein, an electrical

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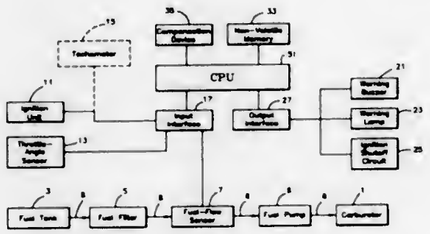
power supply mounted within the housing, an electrical lamp connected to the power supply via switch means, one contact of which is movable in response to rotary motion of the housing into engagement with a fixed contact, the lamp being energized when the moving contact is in engagement with the fixed contact, and means provided on the housing for attaching the device to a cycle wheel, the housing comprising a body portion having pivotally mounted therein a plate fitted with a lamp compartment housing the lamp and a battery compartment housing the power supply in the form of a battery, one terminal of the battery being in permanent engagement with one terminal of the lamp and the other terminal of the battery being engageable with a contact on the body connected to the other terminal of the lamp, when the plate is pivoted in use of the device.

5,283,548

FUEL-FLOW ALARM

Isao Kanno, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jan. 6, 1993, Ser. No. 1,526
Claims priority, application Japan, Jan. 13, 1992, 4-023209
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—439 **20 Claims**



1. An engine fuel-flow alarm system comprising:
an engine;
means for supplying fuel to said engine, said fuel supplying means including a conduit;
means for sensing the rate of fuel flowing within the conduit and outputting a rate signal corresponding to the sensed fuel flow rate;
means for sensing an operational parameter of the engine and outputting an operational signal corresponding with the sensed operational parameter;
control means for receiving said rate and operational signals and activating an alarm if the sensed fuel flow rate is outside of a permissible range, said control means including a setting means for ascertaining a permissible flow rate range defined by upper and lower fuel flow limit values in dependence upon said operational signal, comparator means for comparing said rate signal with said upper and lower fuel flow limit values and warning means for signalling when said rate signal is outside said permissible flow rate range.

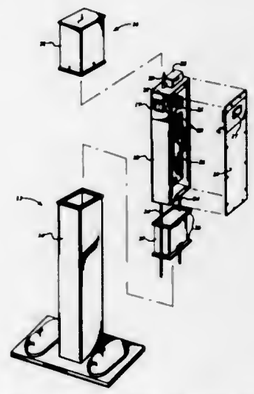
5,283,549

INFRARED SENTRY WITH VOICED RADIO DISPATCHED ALARMS

Joseph H. Mehaffey, and J. Sutton Mehaffey, both of Atlanta, Ga., assignors to Intellitech Industries, Inc., Kennesaw, Ga.

Filed May 31, 1991, Ser. No. 708,899
Int. Cl.[5] G08B *19/00*
U.S. Cl. 340—521 **6 Claims**

1. An infrared electronic security sentry for monitoring a designated area, detecting the presence of unauthorized intruders within the monitored area, and alerting at least one individual upon detection of an intruder, said security sentry comprising:
a housing adapted to be positioned at a predetermined location within an area to be monitored;
at least one passive infrared sensor on said housing with said infrared sensor being positioned and oriented to detect the presence of an intruder within the monitored area and being adapted to produce a signal in response to such detection;
a radio transmitter in said housing for transmitting radio dispatched messages to be received at a remote location by a radio receiver;
storage means within said housing for storing a set of independently retrievable spoken words;
microprocessor means coupled to said sensor, said radio transmitter, and said storage means, said microprocessor means being programmed to detect a signal produced by said infrared sensor and upon said detection to retrieve from said storage means a corresponding subset of spoken words, arrange the words of the retrieved subset in a



predetermined order to create a spoken message indicative of a sensed intrusion, activate said radio transmitter, and broadcast the spoken message formed by the arranged subset of spoken words over said radio transmitter;
a source of electrical power within said housing with said source being coupled to supply power for operation of said sentry; and
a motion sensor within said housing for detecting movement of said sentry and producing a signal corresponding to such detection, said microprocessor means being coupled and programmed to receive signals from said motion sensor and upon receipt of such signals, to retrieve said storage means a corresponding subset of spoken words, arrange the retrieved subset of spoken words to form a message indicative of sentry movement, and broadcast the message thus formed over said radio transmitter,
whereby remotely located security guards or others equipped with a radio receiver are informed verbally by the sentry of the detection of an unauthorized intruder within the monitored area.

5,283,550

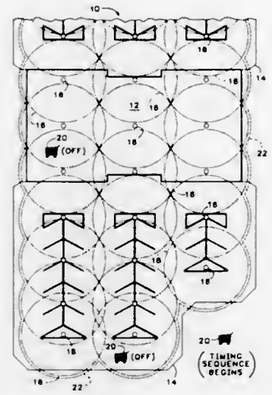
SHOPPING CART RECEIVER ALARM SYSTEM

Daniel C. MacIntyre, Beaverton, Oreg., assignor to Wild's - Wild Things, Inc., Scappoose, Oreg.

Filed Jun. 4, 1992, Ser. No. 893,494
Int. Cl.[5] G08B *1/08, 13/14*
U.S. Cl. 340—539 **25 Claims**

1. A shopping cart receiver alarm system comprising:
(a) a transmitter for transmitting an RF signal;

(b) a shopping cart having a handle; and
(c) a receiver assembly housed within the handle of the shopping cart, the receiver assembly comprising:
(i) a power supply for distributing power to the receiver assembly;
(ii) an RF receiver having an input for receiving the RF signal and an output for providing an output signal indicating a loss of RF signal strength;



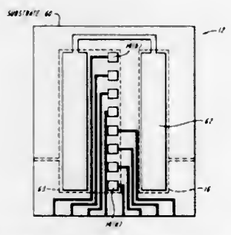
(iii) timing means responsive to the output signal for providing an alarm signal, the alarm signal having sequential first and second states according to a predetermined timing sequence; and
(iv) an audible alarm responsive to a first state of the alarm signal and unresponsive to a second state of the alarm signal.

5,283,551

INTRUSION ALARM SYSTEM

John K. Guscott, Hickory, N.C., assignor to Aritech Corporation, Hickory, N.C.

Filed Dec. 31, 1991, Ser. No. 815,490
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—567 **6 Claims**



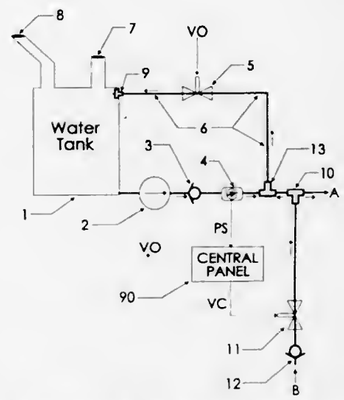
1. An intrusion alarm system comprising:
a stationary linear array of infrared sensors disposed in a first plate and producing output signals in response to detection of infrared emissions from an intruder, said detection occurring when said intruder travels in a direction of motion having a component in a predetermined direction with respect to said array;
said linear array of infrared sensors oriented substantially orthogonal with respect to said predetermined direction of said component, said predetermined direction of said component being in a second plane spaced from and parallel to said first plane; and
a data processing system in communication with said array of infrared sensors;
said data processing system receiving data corresponding to said output signals from said linear array of infrared sensors, and generating pixel data to provide a two dimensional thermographic image of said intruder in response to said received data.

5,283,552

WATER PLUMBING INSTRUMENTATION AND CONTROL SYSTEM FOR RECREATIONAL VEHICLES AND MARINE VESSELS

David Sol, 26500 W. Agoura Rd., Ste. 383, Calabasas, Calif. 91302

Filed Jan. 14, 1993, Ser. No. 4,298
Int. Cl.[5] G01M *3/28*
U.S. Cl. 340—605 **15 Claims**



1. An instrumentation and control system for the water plumbing system of a recreational vehicle, marine vessel or other mobile self-contained environment, the system comprising, in combination:
a means for generating an electrical signal responsive to the pressure in said plumbing system;
a means for displaying said pressure signal;
a means for detecting a leak in said plumbing system;
a means for indicating the detection of said leak;
a means for disabling the on board demand water pump of said recreational vehicle when said leak is detected.

5,283,553

SWITCH WITH PRE-ALARM MEANS

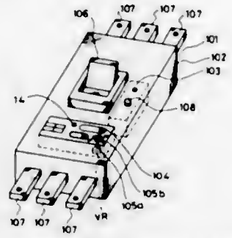
Kazubiro Ishii, and Kenzi Kimura, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 375,984, Jul. 6, 1989, abandoned. This application May 29, 1992, Ser. No. 892,730
Claims priority, application Japan, Jul. 7, 1988, 63-167686
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—664 **2 Claims**

1. A switch providing a pre-alarm function and current measurement function, comprising:
pre-alarm means for generating a signal when a current above a predetermined level flows through a breaker of said switch previous to tripping of said breaker;
operation indicator means having two states, responsive to said pre-alarm means, for indicating existence of said signal;
level adjusting means for adjusting said predetermined level within a range below a rated value of current such that,

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when said adjusting means adjusts said predetermined level to traverse the present level of current flowing in said breaker, said indication of said operation indicator means changes state; and



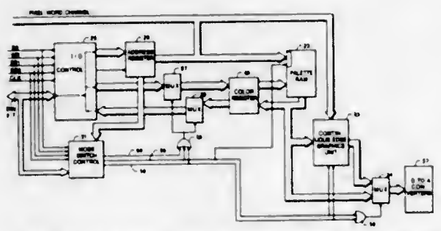
a scale positioned adjacent said level adjusting means for indicating said predetermined level as a percentage of a rated value of current.

5,283,554

MODE SWITCHING SYSTEM FOR A PIXEL BASED DISPLAY UNIT

Steven D. Edelson, Wayland, and Lawrence Bodony, Waban, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 21, 1990, Ser. No. 482,068
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—153 **15 Claims**



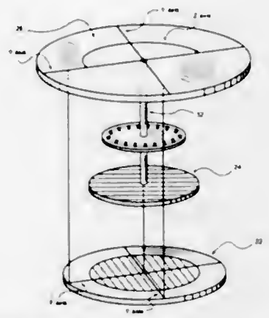
1. In a pixel display system comprising a palette random access memory having a multiplicity of memory locations, each capable of storing a value representing a color to be displayed, means to apply address words over a first channel in sequence to said palette random access memory to read out said values from said memory locations selected by said address words, means to generate a pixel based display in accordance with the values read out from said random access memory, and control means connected to receive multibit commands in time sequence over a second channel and responsive to a first time sequence of said commands to control the storing of new color values in said random access memory, one of said commands of said first time sequence including the address at which the new color is to be stored and other commands of said first time sequence identifying color components of said new color to be stored at the address, the improvement comprising mode switching means connected to receive said multibit commands and operating to switch the mode of operation of said pixel display system in response to a predetermined second time sequence of said commands, said predetermined second time sequence of commands being different than said first sequence of commands.

5,283,555

DIMENSIONAL CONTINUOUS MOTION CONTROLLER

Peter Ward, Kingston, N.Y., and David Ward, Apex, N.C., assignors to PanDigital Corp., Kingston, N.Y.

Continuation of Ser. No. 503,999, Apr. 4, 1990, abandoned. This application Feb. 21, 1992, Ser. No. 842,778
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **12 Claims**



1. A dimensional continuous motion controller device including structure comprising:

a stationary flat horizontal support member lying in a first horizontal plane and having an active circular area with a center point which defines a zero point of intersecting orthogonal X and Y axes lying in the first plane;

a first flat horizontal plate disposed above and spaced from the member and lying in a second horizontal plane, the first plate being movable along either or both X and Y axes lying in the second plane which are vertically aligned with the corresponding X and Y axes of the member, the first plate having an active circular area with a center;

a second flat horizontal plate disposed above and spaced from the first plate and lying in a third horizontal plane, the second plate being freely movable in a horizontal plane along either or both X and Y axes lying in the third plane which are vertically aligned with the corresponding X and Y axes of the member, the second plate having an active circular area with a center and being rotatable about a vertical axis, the Z axis, which extends through the centers of the first and second plates, the second plate having a home position at which the center of the second plate is vertically aligned with the center point and at which the angle of rotation is at 0 degrees; and

a vertical spindle defining the Z axis and interconnecting the centers of the first and second plates, the second plate being rotatable about the spindle, the first plate being non-rotatable about the spindle, so that movement of the second plate along either or both X and Y axes in the third plane produces corresponding movement of the first plate in the second plane but rotation of the second plate about the Z axis produces no rotation of the first plate.

5,283,556

TABLET INTEGRATED WITH DISPLAY

Masahiro Ise, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1989, Ser. No. 452,243
Claims priority, application Japan, Dec. 19, 1988, 63-320150; Dec. 24, 1988, 63-326738; Dec. 24, 1988, 63-326739; Dec. 24, 1988, 63-326740; Jun. 26, 1989, 1-163221
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—174 **4 Claims**

1. A tablet integrated with a display comprising:

a matrix panel for display, having row and column electrodes;

a detecting conductor which can be coupled capacitively with the row and column electrodes when touched on the matrix panel;

a row electrode driver for applying a row scanning pulse successively to every row electrode of the matrix panel;

a column electrode driver for applying a column scanning pulse successively to every column electrode of the matrix panel and applying a voltage corresponding to display data for a predetermined amount of time;

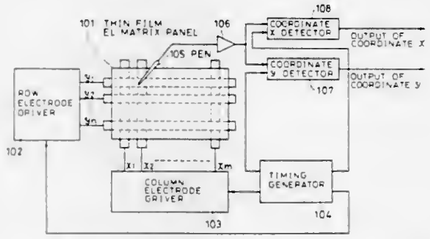
a timing generator for transferring the display data to the column electrode driver and applying timing signals for determining timings of the row and column scanning pulses to the row electrode driver and the column electrode driver;

a row coordinate detecting circuit electrically connected to the detecting conductor, for detecting a row coordinate; and

a column coordinate detecting circuit electrically connected to the detecting conductor, for detecting a column coordinate; wherein,

during a display mode, the row electrode driver applies the row scanning pulse successively to every row electrode of the matrix panel from one to another, and the column electrode driver applies a voltage, in accordance with the display data, simultaneously to the column electrode of the matrix panel each time the row scanning pulse is applied successively to the row electrode of the matrix panel;

during a row detection mode, the row electrode driver



applies the row scanning pulse successively to the row electrode of the matrix panel, and the row coordinate detecting circuit receives the row scanning pulse detected through electrostatic capacitive coupling caused by the detecting conductor touching an arbitrary position on the matrix panel, so as to present the row coordinate of the position which the detecting conductor touches; and

during a column detection mode, the column electrode driver applies the column scanning pulse successively to the column electrode of the matrix panel, and the column coordinate detecting circuit receives the column scanning pulse detected through electrostatic capacitive coupling caused by the detecting conductor touching an arbitrary position on the matrix panel, so as to present the column coordinate of the position which the detecting conductor touches;

said tablet integrated with a display further comprising means for effecting said display mode, row detection mode, and column detection mode during alternate periods of time in a time sharing manner;

said row electrode driver including:

a first shift register having output terminals corresponding in number to the row electrodes of the matrix panel, a first switch circuit having changeover switches which correspond in number to the row electrodes and change over in response to a signal outputted from each of the output terminals of the first shift register, and a first gate circuit applying a row scanning pulse of a specified voltage to each of the row electrodes in response to a signal outputted from the first switch circuit;

said column electrode driver including:

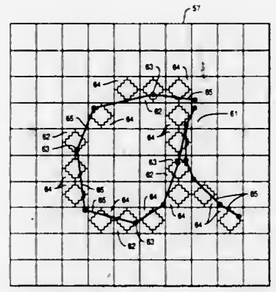
a second shift register having output terminals corresponding in number to the column electrodes of the matrix panel, a latch circuit having output terminals corresponding in number to the column electrodes, for latching a signal outputted from each of the output terminals of the second shift register, a second switch circuit having changeover switches which correspond in number to the column electrodes and change over in response to a signal outputted from the latch circuit, and a second gate circuit for applying voltage corresponding to the display data and the column scanning pulse to each of the column electrodes in response to a signal outputted from the second switch circuit, with timesharing.

5,283,557

METHOD FOR CONVERTING HIGH RESOLUTION DATA INTO LOWER RESOLUTION DATA

Kazem Memarzadeh, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 5, 1991, Ser. No. 725,171
Int. Cl.[5] G09G *3/02, 1/10*
U.S. Cl. 345—132 **20 Claims**



10. A method for converting high resolution data into lower resolution data in the form of selected pixels in a display, comprising the following steps:

(a) producing digitized high resolution data;

(b) converting said digitized high resolution data to positional data for location of data points in a lower resolution display which comprises a matrix of pixel areas;

(c) providing a geometric shape within each pixel area to divide each pixel area into a passive area outside the geometric shape and an active area within the geometric shape;

(d) determining whether each data point is located in an active or passive area within its associated pixel;

(e) selecting for activation those pixel areas having data points within active areas;

(f) tracing a line across pixel areas of the matrix between adjacent data points; and

(g) further selecting for activation those pixel areas in which lines extend across active areas.

5,283,558

LOW-COST DEVICES FOR TOUCH CONTROL

James K. Chan, 2342 Colt Rd., Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 422,151, Oct. 16, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 826,363
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—168 **3 Claims**

1. A touch pad or a touch screen comprising:

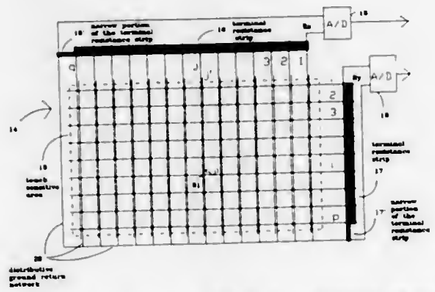
a. a first sheet of insulating material with one surface coated

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with a first plurality of parallel position sensing conductive strips which are connected at one end with a resistive coating strip having a first terminal resistance value except the last position sensing conductor;

b. a second sheet of insulating material with one surface coated with a second plurality of parallel position sensing conductive strips which are connected at one end with a resistive coating strip having a second terminal resistance value except the last position sensing conductor;

c. a ground return network of a plurality of parallel conductive strips coated on the same position sensing conductor surface of either the said first sheet or the said second sheet of the insulating material, each strip of said network interleaved with said plurality of position sensing conductive strips such that each conductive strip of said ground return network is in close proximity to an associated position sensing conductive strip;



d. means for orienting said first sheet of insulating material and said second sheet of insulating material such that the conductive strips of the two sheets are facing each other in orthogonal orientation and such that by pressing a selected point on the oriented sheets, a selected one of said plurality of conductive strips on one sheet come into contact with the interleaved conductive strips of the other sheet, thereby changing the terminal resistance values of said resistive coating strips proportionally to the touched position;

e. means for connecting said resistive coating strips to analog-to-digital converters to determine the x- and y-digital coordinates of the point of contact; and

f. means of having the resistance between the last position sensing conductor and the ground return three to five times larger than the resistance between all the other position sensing conductors of said first and second sheet.

5,283,559

AUTOMATIC CALIBRATION OF A CAPACITIVE TOUCH SCREEN USED WITH A FIXED ELEMENT FLAT SCREEN DISPLAY PANEL

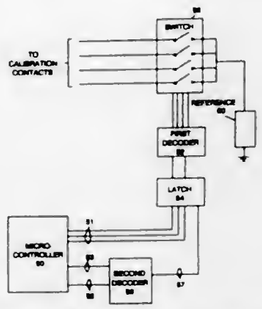
Paul W. Kalendra, and William J. Piazza, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 21, 1992, Ser. No. 947,688
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—168 **19 Claims**

7. An automatic calibrating touch sensitive input device having a fixed element display, a touch sensitive panel overlaid thereon, comprising:

means for controlling the translation of the location of a touch situs on said touch sensitive panel with a corresponding target situs on said fixed element display to generate a set of target coordinates, said controller means including a correction factor;

at least one calibration contact on said touch sensitive panel, each said calibration contact having a corresponding set of known coordinates on said fixed element display, and means for selecting any said calibration contact to simulate a touch applied to the front of said touch sensitive panel, said selection means further generating said correction factor to correct any variance between the location of any said calibration contact and said corresponding set of known coordinates.

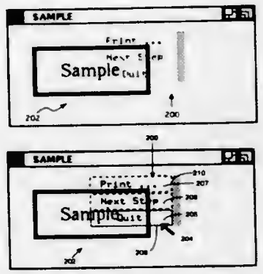


5,283,560

COMPUTER SYSTEM AND METHOD FOR DISPLAYING IMAGES WITH SUPERIMPOSED PARTIALLY TRANSPARENT MENUS

Joel F. Bartlett, Los Altos, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 25, 1991, Ser. No. 720,881
Int. Cl.[5] G09G *5/14*
U.S. Cl. 345—113 **25 Claims**



1. A computer display control system, comprising:

a central processing unit (CPU);

a program memory, coupled to said CPU, that stores software programs executed by said CPU; and

a monitor, coupled to said CPU, that displays images under the control of said software programs stored in said program memory;

said software programs stored in said program memory including an image generating program that generates and displays a first set of images on said monitor, and a menu generating program that displays a control menu on said monitor;

said menu generating program including means for generating a control menu, stippling said control menu so as to make said control menu partially transparent, and superimposing said control menu over said first set of images displayed on said monitor;

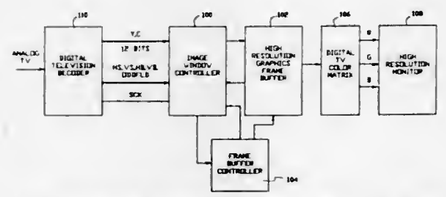
wherein said first set of images, over which said control menu is superimposed, remains visible on said monitor below said control menu.

5,283,561

COLOR TELEVISION WINDOW FOR A VIDEO DISPLAY UNIT

Leon Lumelsky, Stamford, Conn.; Daniel H. McCabe, Chapel Hill, N.C., and Alan W. Peevers, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 880,148, May 7, 1992, abandoned, which is a continuation of Ser. No. 812,863, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 722,369, Jun. 25, 1991, abandoned, which is a continuation of Ser. No. 314,998, Feb. 24, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 999,182
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—721 **5 Claims**



1. A digital television/graphics display interface for receiving digitally-encoded luminance samples and chrominance samples representing a live color television signal from a digital television decoder at a predetermined first number of television lines per frame and a second number of luminance samples per television line and storing selected ones of the luminance samples and the chrominance samples in predetermined memory locations in a frame buffer for display in a window image in a graphics display, the window image having a third number of rows of pixels and a fourth number of pixels per row, the third number of rows of pixels in the window image being different from the first number of television lines per frame and the fourth number of pixels per row being different from the second number of luminance samples per television line, the interface comprising:

(a) a luminance first-in-first-out device connected to a luminance sample output of the digital television decoder for storing selected ones of the luminance samples from the digital television decoder and to a luminance-sample input of the frame buffer of the graphics display;

(b) a chrominance first-in-first-out device connected to a chrominance sample output of the digital television decoder for receiving chrominance samples from the digital television decoder and to a chrominance-sample input of the frame buffer of the graphics display;

(c) horizontal window control means connected to control input means of the luminance first-in-first-out device and to control input means of the chrominance first-in-first-out device for controllably enabling the storage of individual ones of the luminance samples in the luminance first-in-first-out device and for controllably enabling the reading of individual ones of the luminance samples from the luminance first-in-first-out device and for controllably enabling the storing of individual ones of the chrominance samples into the chrominance first-in-first-out device and for controllably enabling the reading of individual ones of the chrominance samples from the chrominance first-in-first-out device, the horizontal window control means including a horizontal image-contraction control-pattern memory for storing a binary horizontal image-contraction control pattern, the number of bits in the horizontal image-contraction control pattern being at least as great as the second number of luminance samples in a television line, the horizontal window controller being adapted to enable or disable the storing of individual ones of corresponding luminance and chrominance sample in the luminance and chrominance first-in-first-out devices, respectively, in accordance with the state of corresponding individual bits in the horizontal image-contraction control pattern stored in the horizontal image-contraction control-pattern memory;

(d) vertical window control means for controllably enabling the storage of sample from individual ones of the television lines, the vertical window control means including a vertical image-contraction control-pattern memory for storing a binary vertical image-contraction control pattern, the number of bits in the vertical image-contraction control pattern being at least as great as the first number of television lines, the vertical window control means being adapted to enable or disable the storing of samples from individual ones of the television lines in accordance with the state of corresponding individual bits in the vertical image-contraction control pattern stored in the vertical image-contraction control-pattern memory; and

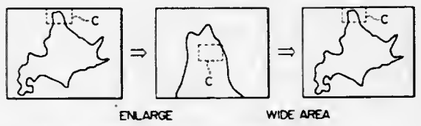
(e) computation means connected to the horizontal window control means and to the vertical window control means for generating a horizontal image-contraction control pattern for storage in the horizontal image-contraction control-pattern memory of the horizontal window control means, and a vertical image-contraction control pattern for storage in the vertical image-contraction control-pattern memory of the vertical window control means, the computation means being adapted to calculate the horizontal and vertical image-contraction control patterns independently of one another by stepwise altering a cross-multiplication error term towards zero, an initial error term being varied from pattern to pattern to introduce a variation in the patterns.

5,283,562

MAP DISPLAY APPARATUS

Kenji Kaneko; Akira Hayama; Toshiyuki Kimura; Junichi Nishida; Fumio Endo; Hitoshi Sato, and Kiyoshi Furukawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 645,884, Jan. 25, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,257
Claims priority, application Japan, Apr. 17, 1990, 2-100622
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—131 **2 Claims**



1. A map display apparatus comprising:

reading means for reading a map data group corresponding to a predetermined wide are, said wide area map data group including in addition to data for generating a wide area map, position information indicative of the absolute position of each one of a plurality of divisional maps on said wide area map, and a plurality of divisional map data groups corresponding to a plurality of divisional areas which are obtained by dividing the wide area map into divisional areas, each of said plurality of divisional data groups including in addition to data for generating an enlarged map, position information corresponding to that stored in said wide area map data group indicative of an absolute position of the divisional area on said wide area map;

display means for displaying an image according to a display information signal;

means for obtaining one of said plurality of divisional map data groups from said reading means for providing said one divisional map data group as the display information signal, thereby allowing display of an enlarged map corre-

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sponding to the divisional area represented by said one division map data group;

holding means for extracting and holding said position information included in the divisional map data group indicative of the absolute position of the enlarged map which is being displayed on said wide area map in response to a wide area display command which is generated during the display of the enlarged map;

means for obtaining the wide area map data group from the reading means in response to the wide area display command, for supply as the display information signal to the display means, thereby allowing display of said wide area map; and

means for supplying from said holding means, as a further display information signal, a position display signal to display the absolute position of the enlarged map which was being displayed when said wide area display command was given on the display of the wide area map, based upon the position information held in the holding means.

5,283,563

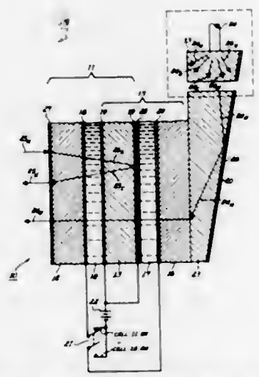
BACKLIGHTING OF NEMATIC CURVILINEAR ALIGNED PHASE LIQUID CRYSTAL DISPLAY PANELS

Gary R. Allen, Chesterland; John M. Davenport, Lyndhurst; William W. Finch, University Heights; Richard L. Hansler, Pepper Pike, and Stuart C. Miller, Beachwood, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1990, Ser. No. 496,395

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—102 **11 Claims**



1. A backlighted liquid crystal display comprising:

a first liquid crystal cell and a second liquid crystal cell disposed in a substantially aligned position relative to one another, said first liquid crystal cell having a first transparent substrate coincident with a front surface of said liquid crystal display and sealed with a second transparent substrate to form a first chamber containing a first liquid crystal, and said second liquid crystal cell being integral with said second transparent substrate and containing an encapsulated second liquid crystal, said first and second liquid crystal cells each including electrodes deposited on said first and second transparent substrates and connected to a source of voltage for applying a voltage across selected portions of said first and second liquid crystals;

switching means connecting said electrodes to said source of voltage so that when a voltage is applied across a selected portion of said first liquid crystal causing the selected portion to become transparent, voltage is prevented from being applied across a corresponding portion of said second liquid crystal so that the corresponding portion is diffusely reflecting, said switching means further preventing voltage from being applied across nonselected portions of said first liquid crystal and applying a voltage across corresponding nonselected portions of said second liquid crystal, said switching means control of said nonselected portions associated with said first liquid crystal making the nonselected portions of said second liquid crystal clear; and

an edge lighted clear wedge in optical contact with said second liquid crystal cell, light propagated within said wedge being internally reflected except where said second liquid crystal is diffusely reflecting, whereby incident light which is transmitted through said first liquid crystal cell and reflected by said second liquid crystal is augmented by light from said edge lighted plastic wedge.

5,283,564

LIQUID CRYSTAL APPARATUS WITH TEMPERATURE-DEPENDENT PULSE MANIPULATION

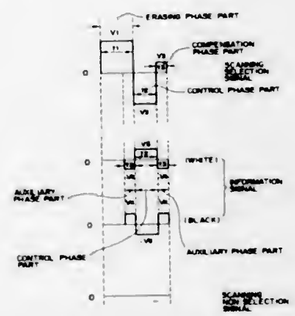
Kazunori Katakura; Yoshio Hotta, both of Atsugi; Akira Tsuboyama, Sagamihara; Osamu Taniguchi, Chigasaki; Mitsuo Iwayama, Odawara, and Tadashi Mihara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,498

Claims priority, application Japan, Dec. 26, 1990, 2-414049; Dec. 19, 1991, 3-336946

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—87 **4 Claims**



1. A liquid crystal apparatus comprising:

a. matrix electrodes including scanning electrodes and information electrodes;

b. information signal application means for applying, as an information signal, bipolar pulses to a liquid crystal through said information electrodes, said bipolar pulses having a control phase part determined by a pulse having one polarity or a pulse having the other polarity, and an auxiliary phase part determined by a pulse having a polarity opposite to the polarity of the pulse of the control phase part;

c. scanning signal application means for applying a scanning selection signal to the liquid crystal through said scanning electrodes, said scanning selection signal having an erasing phase part determined by a pulse having one polarity, a control phase part determined by a pulse having the other polarity, and synchronized with the control phase part of the information signal, and a compensation phase part synchronized with the auxiliary phase part of the information signal, and determined by a pulse having a polarity opposite to the pulse having the other polarity of the control phase part of the scanning selection signal; and

d. means for changing a ratio of a pulse peak value ($|V_3|$) of the compensation phase part of the scanning selection signal to a pulse peak value ($|V_4|$) of the auxiliary phase part of the information signal according to a change in temperature.

5,283,565

MULTIMODE INPUT CIRCUIT RECEIVING TWO SIGNALS HAVING AMPLITUDE VARIATIONS DIFFERENT FROM EACH OTHER

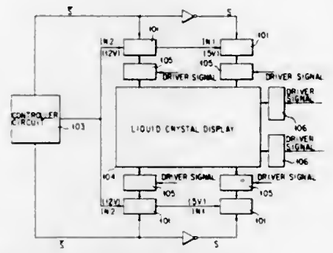
Satoshi Suzuki, Yokohama, and Isao Abe, Kawasaki both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 2, 1992, Ser. No. 939,708

Claims priority, application Japan, Sep. 3, 1991, 3-222886

Int. Cl.[5] G09G *3/36*; H03K *3/01*

U.S. Cl. 345—98 **7 Claims**



1. A multimode input circuit comprising:

an input terminal;

first outputting means, including a buffer circuit, for receiving a first signal having a first amplitude variation via the input terminal and outputting the first signal of a preset potential;

second outputting means for receiving a second signal having a second amplitude variation different from the first amplitude variation via the input terminal and outputting third signal of a preset potential, the second outputting means including a power source supplying terminal for supplying the same potential as the maximum potential of the second signal, a first FET having a source connected to the power source supplying terminal, a gate supplied with a selection signal for specifying one of the input signals to be selected by the multimode input circuit and a drain, and a second FET formed to make a complementary structure together with the first FET and having a drain connected to the drain of the first FET, a gate connected to the input terminal and a source connected to a circuit ground; and

selecting means for receiving the first and third signals from the first and second outputting means and a selection signal from the exterior and selecting and outputting one of the first and third signals according to the state of the selection signal.

5,283,566

PLANE DISPLAY

Akio Mimura, Katsuta; Kikuo Ono, Hitachi; Takashi Suzuki, Hitachi; Masao Yoshimura, Hitachi; Nobutake Konishi, Hitachiota, and Jun-ichi Ohwada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 333,177, Apr. 4, 1989, abandoned. This application Apr. 15, 1992, Ser. No. 869,085

Claims priority, application Japan, Apr. 6, 1988, 63-82955

Int. Cl.[5] G09G *3/36*

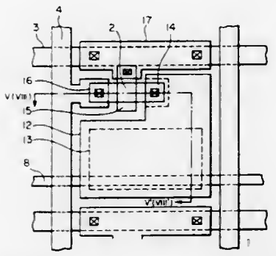
U.S. Cl. 345—211 **18 Claims**

1. A plane display comprising:

a plurality of pixel capacitors disposed in rows and columns within a display region of said plane display, each pixel capacitor including first and second electrodes and a non-linear optical material disposed therebetween, the first electrode of each pixel capacitor having a transparent part;

a plurality of thin film transistors connected to said first electrodes of said plurality of pixel capacitors, respectively, for selectively energizing said pixel capacitors;

a plurality of storage capacitors disposed in rows and columns within the display region and respectively provided in association with said plurality of pixel capacitors and each including a third electrode having a transparent part facing to the transparent part of the first electrode of the associated pixel capacitor with an insulating film therebetween so as to provide a storage capacitance in cooperation with the transparent part of said first electrode facing thereto; and



means for applying a given electrical potential to each of the third electrodes of said plurality of storage capacitors and including an auxiliary conductive layer through display portions of selected pixels within the display region and made of a metallic material which is electrically connected and physically in direct connection with the transparent parts of the third electrodes of the storage capacitors associated with the pixel capacitors of said selected pixels.

5,283,567

PRIZE HOLDING CONTAINER ASSEMBLIES

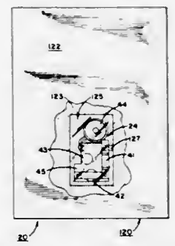
James P. Howes, 33 Cedar Rd., Wilton, Conn. 06897

Continuation-in-part of Ser. No. 493,500, Mar. 14, 1990, which is a continuation-in-part of Ser. No. 250,755, Sep. 28, 1988, Pat. No. 4,911,320, and a continuation-in-part of Ser. No. 491,947, Mar. 12, 1990, Pat. No. 5,056,659. This application Oct. 29, 1991, Ser. No. 785,312

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] G09G *5/00*

U.S. Cl. 340—815.69 **11 Claims**



1. A container assembly for use in promoting the sale of products by providing a prize award which is secretly retained in the container assembly and is undiscoverable by the consumer prior to opening the container assembly preventing advance detection of the prize award even when the prize bearing container is randomly distributed with non-prize bearing containers, said container assembly comprising:

A. an outer surface defining shell

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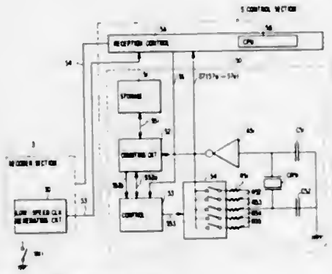
a. identical in appearance to the product bearing shell normally employed for the product, and
b. defining an internal retaining zone;
B. means positioned in the retaining zone for providing the container assembly with the sound, weight and feel of the product normally contained therein;
C. housing means mounted in the retaining zone; and
D. a message delivery system
a. mounted in the housing means, and
b. constructed for providing a prize related audible message to the consumer upon activation;
whereby a prize awarding container assembly for promoting the sale of products is achieved which is capable of providing the consumer with a prize related audible message and which can be randomly distributed with non-prize bearing, product-holding containers without fear of being detected by the consumer prior to opening thereof.

5,283,568

RADIO PAGER WITH HIGH SPEED CLOCK OF CONTROLLED RISE TIME

Takayuki Asai, Tokyo, and Akira Muramatsu, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 805,627
Claims priority, application Japan, Dec. 12, 1990, 2-409861
Int. Cl.[5] H04Q *7/02*; H04B *1/16*
U.S. Cl. 340—825.44 **15 Claims**



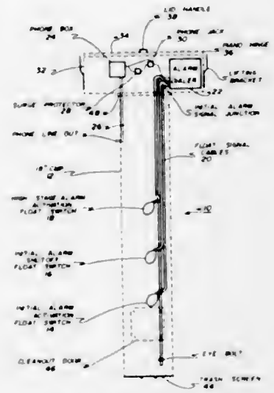
1. A radio pager comprising:
a radio frequency (RF) section for demodulating an RF signal coming in through an antenna to produce a digital paging signal;
a decoding section for decoding said digital paging signal, to produce an address signal;
a ROM for storing an address assigned to said radio pager;
control means for performing selective reception control by comparing said address signal decoded by said decoding section and said address stored in said ROM and for producing an alerting signal when said address signal and said address are coincident;
a battery accommodated in a battery holder disposed in said radio pager for supplying a power source voltage;
a low-speed clock generating circuit for generating a low-speed clock, said low-speed clock being supplied to said decoding section and said control means as an operation clock; and
a high-speed clock generating circuit for generating a high-speed clock, said high-speed clock being supplied to said control means as an operation clock instead of said low-speed clock during a predetermined operation, wherein
said high-speed clock generating circuit comprises:
a plurality of circuit elements each associated with a rising time of said high-speed clock; and
selecting means for selecting one of said plurality of circuit elements which minimizes said rising time.

5,283,569

FLOAT ACTUATED FLOOD WARNING SYSTEM WITH REMOTE TELEPHONE REPORTING

Mark E. Nelson, Omaha, Nebr., assignor to U.S. Army Corps of Engineers, Fort Belvoir, Va.

Continuation of Ser. No. 450,969, Dec. 15, 1989, abandoned. This application Jun. 30, 1992, Ser. No. 913,768
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—623 **4 Claims**



1. A flood warning apparatus comprising:
a. water level detecting means for detecting rising and receding flood waters including, a first, second and third water level detecting means for detecting the water level at, respective, first, second and third elevations, wherein
(1) said second water level detecting means, when actuated, enables said third level water detecting means and disables said first water level detecting means, and
(2) said second water level detecting means, when not actuated, disables said third level water detecting means and enables said first water level detecting means; and
b. message means, responsive to said water level detecting means, for providing flood warning messages to a remote location, including, in order as the water rises, crests and then falls, a first low stage flood warning message when the water level rises to said first elevation, a high stage flood warning message when the water level rises to said third elevation, and a second low stage flood warning message when the water level falls to said second elevation located between said third and said first elevation, said second low stage flood warning message indicating that the flood has crested, whereby both a low and high stage flood warning alarm is provided as well as an indication that the water level of the flood has crested.

5,283,570

MULTIPLE FORMAT SIGNALLING PROTOCOL FOR A SELECTIVE CALL RECEIVER

Joan S. DeLuca, and Michael J. DeLuca, both of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 450,494, Dec. 14, 1989, abandoned. This application Feb. 22, 1991, Ser. No. 658,451
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[5] G08B *5/22*
U.S. Cl. 340—825.40 **29 Claims**

1. A selective call receiver comprising:
receiver means for receiving a signal, the signal comprising:
an address identifying the selective call receiver;
an information packet associated with the address comprising a first information format and a second information format; and
a control character; and



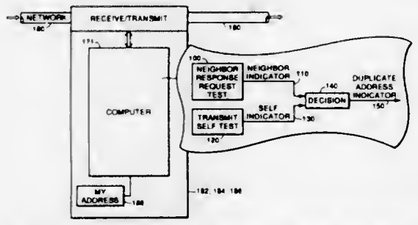
presentation means for presenting the first information format in a first output mode in response to the address and the second information format in a second output mode in response to the control character.

5,283,571

TESTING A COMMUNICATIONS NETWORK FOR DUPLICATE STATION ADDRESSES

Henry Yang, Andover; Jerry Hutchison, Littleton; William R. Hawe, Pepperell, all of Mass., and G. Paul Koning, Brookline, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 555,861, Jul. 19, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,221
Int. Cl.[5] H04Q *9/00*
U.S. Cl. 340—825.52 **8 Claims**



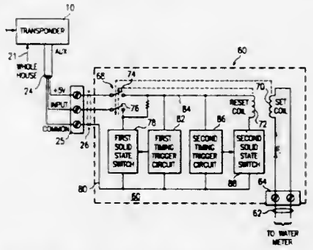
4. An apparatus to detect a station having duplicate addresses, said stations of the type connected in a computer communications network, comprising:
means for a first station to transmit a test frame to itself by placing an address of said first station in a destination address field of said test frame;
means, responsive to said first station receiving said test frame, for said first station to set a self indicator to a pass condition;
means, responsive to said first station not receiving said test frame within a first predetermined timeout time interval, for said first station to set said self indicator to a timeout condition;
means for said first station to transmit an inquiry frame, said inquiry frame having a multicast destination address, said inquiry frame having a received indicator field having a "received" condition and "not received" condition, and said received indicator set to said "not received" condition upon transmission by said first station;
means for a second station to receive said inquiry frame and to repeat said inquiry frame on said network;
means for said second station to check said received field, and in the event that said received field is set to "not received", to set said received field to "received" and to transmit a response frame, said response frame having a destination address field and an address of said first station placed in said destination address field, and in the event that said received field indicates a "received" condition, to only repeat said inquiry frame, so that only the downstream neighbor station of said first station transmits a response frame;
match flag means in said response frame to indicate a match between said destination address field of said response frame with an address in a station that detects said response frame as said response frame travels from station to station on said ring, said match flag means set to a "reset" condition when said response frame is created by said second station;
means in a station detecting said response frame, in response to an event that said destination address in said response frame corresponds to an address in a list of addresses in said station detecting said response frame or to a station address in said station detecting said response frame, for setting said match flag means to a "set" condition, and for leaving said match flag means in said "reset" condition in the event that there is no match between said destination address of said response frame and said addresses in said station detecting said response frame;
means in said first station for receiving said response frame, and for testing said match flag means, and in response to said match flag means indicating "set", for setting a neighbor indicator to fail, thereby showing that another station had a match with said address of said first station;
means in said first station, in response to said match flag means being set to said "reset" condition indicating that no duplicate address was detected, for setting said neighbor indicator to pass;
means in said first station, in response to not receiving said response frame within a second predetermined timeout time interval, for setting said neighbor indicator to a condition indicating timeout;
means in said first station for testing both said self indicator and for testing said neighbor indicator, and in response to said testing of said self indicator and said testing of said neighbor indicator for setting a duplicate address indicator in one of three states, a first state of said three states indicating that there is no duplicate address detected, a second state of said three states indicating that a duplicate address was detected, and said third state of said three states indicating an unknown condition.

5,283,572

UTILITY METER INTERFACE CIRCUIT

Joseph H. McClelland, Mars, Pa., and Eric A. Berns, El Paso, Tex., assignors to Communications Instruments, Inc., Chicago, Ill.

Filed Aug. 17, 1990, Ser. No. 569,178
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—870.02 **22 Claims**



3. An interface for coupling utility usage signals to a remotely transponder, comprising:
said interface being connected to the transponder for receiving DC power from the transponder to power circuits of the interface;
a magnetic latching relay for storing an indication of at least one utility usage signal in a nonvolatile manner, said magnetic latching relay being capable of loading therein said indication of said utility usage signal in the absence of said DC power;
a transfer circuit responsive to said DC power from the transponder for transferring usage information from said magnetic latching relay to the transponder; and

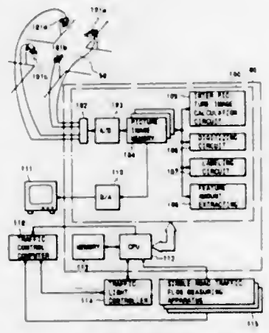
VOL 1159 ISS 1 FE 1 1994 UMI

a reset circuit for resetting said magnetic latching relay after said signal transferral.

5,283,573
TRAFFIC FLOW MEASURING METHOD AND APPARATUS

Masao Takatou, Katsuta; Kazunori Takahashi, Hitachi; Nobuhiro Hamada, Hitachiota; Tadaaki Kitamura, Hitachi; Kuniyuki Kikuchi, Hitachiota; Hiroshi Takenaga, Tokai, and Yasuo Morooka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1991, Ser. No. 692,718
Claims priority, application Japan, Apr. 27, 1990, 2-110075; Jan. 18, 1991, 3-4241
Int. Cl.[5] G08G *1/017*
U.S. Cl. 340—937 **38 Claims**



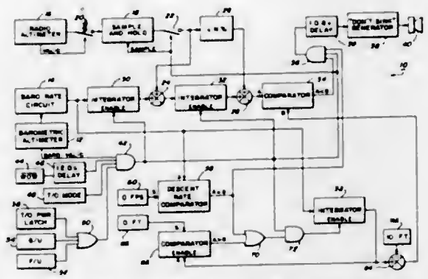
1. A traffic flow measuring apparatus comprising:
image input means for taking images of scenes near a crossing;
image processing means for executing various image processings for said images taken in said image input means, extracting possible vehicles and providing characteristic quantities of said possible vehicles; and
measuring means for determining position data of vehicles based on said characteristic quantities obtained from said image processing means, for tracking said vehicles by use of said position data and for calculating the number of vehicles moving in at least one direction in which vehicles run;
wherein said measuring means includes vehicle identification means for identifying vehicles on the basis of a moving range data table of moving range data of vehicles for each time zone associated with the phase of the signal lights of a traffic signal controller, a table of points in the moving direction of each vehicle and priority of said moving range, and vehicle moving direction determination means for determining the moving direction of a vehicle on the basis of said points in the moving direction.

5,283,574
ALTITUDE LOSS AFTER TAKE-OFF WARNING SYSTEM UTILIZING TIME AND ALTITUDE

Michael M. Grove, Kirkland, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation of Ser. No. 704,366, Feb. 22, 1985, abandoned. This application Jul. 31, 1987, Ser. No. 81,562
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—970 **12 Claims**

1. A warning system for providing a warning of a hazardous flight condition to the pilot of an aircraft during a takeoff or a go-around after a missed approach phase of flight, comprising:
means for providing a signal representative of the loss of altitude, other than radar altitude, from an altitude peak reached during flight;
means for providing a time-altitude signal that is a function of the altitude, other than radar altitude, of the aircraft and the length of time that the aircraft has been flying; and

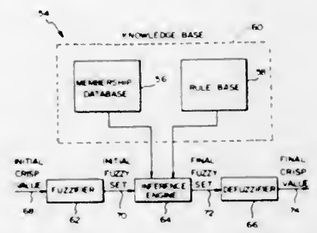


means responsive to the altitude loss representative signal and said time-altitude signal for generating an altitude loss warning as a function of the value of said time-altitude signal and the altitude loss representative signal.

5,283,575
SYSTEM AND METHOD FOR LOCATING A TRAVELLING VEHICLE

Wei-Wen Kao, Freemont, and Liang-Jong Huang, Berkeley, both of Calif., assignors to Zexel Corporation and Daihatsu-Nissay, both of Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,287
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—990 **4 Claims**

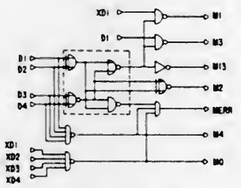


1. A vehicle navigation system, which comprises:
means for sensing a plurality of successive positions of said vehicle to create a sensed representation of a vehicle travel path;
means for storing a map of roads in a vicinity of said vehicle;
means for defining an actual vehicle travel path in said map;
means for matching said sensed representation of a vehicle travel path with said actual vehicle travel path; and
said means for matching including a plurality of fuzzy logic elements;
said fuzzy logic elements including:
a fuzzifier receiving said plurality of successive positions, and effective to produce an initial fuzzy set;
an inference engine receiving said initial fuzzy set, said map, and a set of inference rules and membership functions for producing a plurality of final fuzzy sets;
a defuzzifier effective for producing a set of crisp values from said final fuzzy sets; and
said crisp values being effective to determine a map-matched vehicle position.

5,283,576
DISPARITY DETECTION CIRCUIT FOR A 2-BIT TO 4-BIT CODED SIGNAL DECODER

Takashi Umegaki, Osaka, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 30, 1992, Ser. No. 876,570
Claims priority, application Japan, May 20, 1991, 3-114780
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—58 **5 Claims**

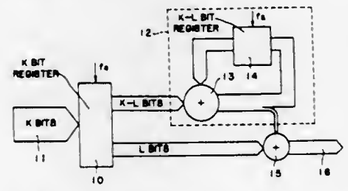


1. A disparity detection circuit used in a signal decoder which decodes a 4-bit signal into an original 3-bit signal, the 4-bit signal being coded from the original 3-bit signal according to a coding rule which stipulates that an original 3-bit signal should be coded into a 4-bit signal with 1 additional bit added and with pre-determined disparity carrying, said disparity detection circuit comprising:
disparity determination means for determining whether the 4-bit signal conforms to the coding rule; and
disparity detection means, connected in series to said disparity determination means, for detecting the disparity of the 4-bit signal which is determined by said disparity determination means as conforming to the coding rule.

5,283,577
WORD WIDTH REDUCTION SYSTEM FOR VIDEOSIGNAL PROCESSING AND TRANSMISSION

Antonius J. R. M. Coenen, Oudenbos, Netherlands, assignor to Technische Universiteit Delft, Delft, Netherlands

PCT No. PCT/NL90/00137, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/04611, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 20, 1990, Ser. No. 838,739
Claims priority, application Netherlands, Sep. 21, 1989, 8902368; Nov. 7, 1989, 8902751
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—95 **13 Claims**

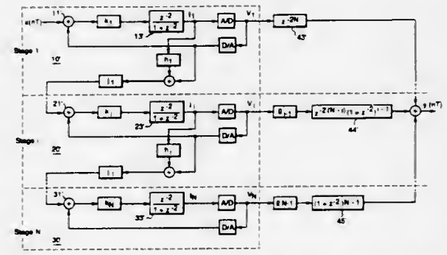


1. Circuit for converting a PCM input signal with uniform noise spectrum, comprising a series of digital words each of K-bits appearing with a predetermined repetition frequency, into a PCM output signal with a non-uniform noise spectrum comprising a series of digital words each of L-bits, L being smaller than K, which system comprises at least a first 1-bit coder embodied to provide a shaped noise profile and to convert the K-L least significant bits of each word from the input signal into a series of 1-bit words, and a first accumulator for combining said 1-bit words with the L most significant bits resulting into the desired PCM output signal, wherein the frequency with which said K-L least significant bits of the words of the input signal are converted by said 1-bit coder is equal to said earlier mentioned repetition frequency.

5,283,578
MULTISTAGE BANDPASS DELTA SIGMA MODULATORS AND ANALOG-TO-DIGITAL CONVERTERS

David B. Ribner, and David H. K. Hoe, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,806
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 **15 Claims**



1. An improved oversampling delta-sigma analog-to-digital converter system for high-frequency, narrow-band signals, said system having a plurality of delta-sigma modulator stages for providing respective digital output signals responsive to respective analog input signals, each of said modulator stages including an analog-to-digital converter and having a digital-to-analog converter in a feedback loop, said improved oversampling converter system comprising:
a first resonator in each respective modulator stage situated to provide analog signals to said analog-to-digital converter in said stage and having a z transform transfer function

$$\frac{z^{-2}}{1+z^{-2}}$$

so as to enable said modulator stage; and
means for combining the digital output signals of said plurality of delta-sigma modulator stages to suppress, in a resulting combined highly stable signal, quantization noise arising in at least one of said stages.

5,283,579
DIGITAL TO ANALOG CONVERTER HAVING HIGH MULTIPLYING BANDWIDTH

Ali Tasdighi, San Jose; Roger A. Levinson, San Francisco; Quoi V. Huynh, San Jose, and John M. Caruso, Fremont, all of Calif., assignors to Micro Power Systems, Inc., Santa Clara, Calif.

Filed Mar. 6, 1992, Ser. No. 847,458
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—145 **18 Claims**

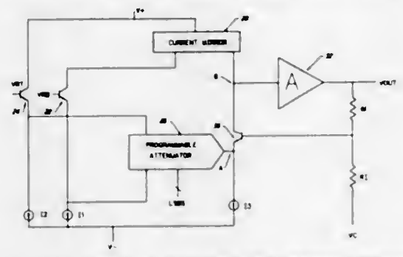
1. A digital to analog converter (DAC) for converting a digital number having M most significant bits (MSB) and N least significant bits (LSB) to an analog value comprising
a first volume divider including a first plurality of resistors connected between a first reference voltage (Vrp) and a second reference voltage (Vrn),
first switch means responsive to said most significant bits for selecting two voltages, Vrt and Vrb, from said first voltage divider,
a second voltage divider including a second plurality of

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resistors comprising at least one binary weighted resistive digital to analog converter,

first connector means including at least two transistor followers coupling said two voltages, Vrt and Vrb, across said second voltage divider, and

second switch means responsive to said least significant bits for selecting an output voltage from said second divider wherein a first of said transistor followers receives Vrb as



a control voltage, a second of said transistor followers receives Vrt as a control voltage, said first and said second of said transistor followers being connected to a first voltage potential (+V) and through first and second current sources, respectively, to a second voltage potential (ground), and an output transistor follower is connected through a third current source to said second voltage potential (ground) and through a fourth current source to said first voltage potential (+V), and means connecting said second voltage divider to said output transistor follower.

5,283,580

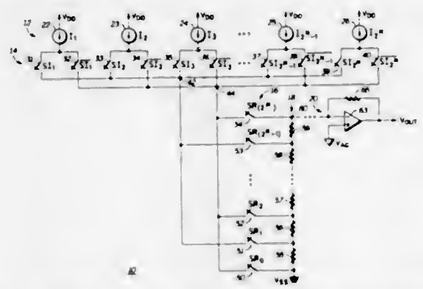
CURRENT/RESISTOR DIGITAL-TO-ANALOG CONVERTER HAVING ENHANCED INTEGRAL LINEARITY AND METHOD OF OPERATION

Todd L. Brooks; Mathew A. Rybicki, and H. Spence Jackson, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1992, Ser. No. 951,958

Int. Cl.[5] H03M *1/68*

U.S. Cl. 341—145 **12 Claims**



4. A digital-to-analog converter for converting a digital input signal having (N+M) bits, where N and M are integers, to an equivalent analog signal, comprising:

first conversion logic circuitry for converting the N bits to a first plurality of control signals, the N bits being the least significant bits of the digital signal;

a plurality of current sources, each current source providing a predetermined current and having a first terminal coupled to a first reference voltage terminal;

a first plurality of switches, each switch having a first terminal coupled to a predetermined one of the current sources and having a second terminal coupled to one of a first node or a second node in response to the first plurality of control signals;

second conversion logic circuitry for converting the M bits to a second plurality of control, the M bits being the most significant bits of the digital signal;

a plurality of series-connected resistors connected between a second reference voltage terminal and a third node and defining a plurality of intermediate nodes therebetween inclusive of said second reference voltage terminal and said third node; and

a second plurality of switches, each switch having a first terminal coupled to only one of the first or the second node and having a second terminal coupled to the series-connected resistors, two switches of the second plurality of switches respectively selectively connecting the first node and the second node to respective differing ones of said intermediate nodes in response to the second plurality of control signals to develop the equivalent analog signal at the third node.

5,283,581

ANALOG VOLTAGE SUBTRACTING CIRCUIT AND AN A/D CONVERTER HAVING THE SUBTRACTING CIRCUIT

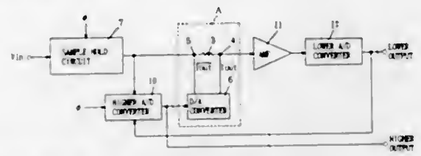
Takahiro Miki, and Toshio Kumamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 952,413

Claims priority, application Japan, Oct. 1, 1991, 3-253917

Int. Cl.[5] H03M *1/14*

U.S. Cl. 341—156 **17 Claims**



1. A subtracting circuit comprising:

a) an output terminal for outputting a result of subtraction,

b) analog voltage generating means for generating an analog voltage, said analog voltage generating means having

i) impedance converting means for converting an analog input signal of a high impedance to an analog output signal of a lower impedance, and

ii) offset voltage removing means for removing an offset voltage of said impedance converting means;

c) load means having one end connected to said analog voltage generating means and the other end connected to the output terminal; and

d) complementary current output means for applying a first current to generate a desired voltage drop at said other end of said load means and applying a second current complementary to said first current to said one end of said load means.

5,283,582

CIRCUITRY AND METHOD FOR CURRENT INPUT ANALOG TO DIGITAL CONVERSION

William R. Krenik, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1991, Ser. No. 811,489

Int. Cl.[5] H03M *1/34*

U.S. Cl. 341—158 **35 Claims**

1. Circuitry for current input analog to digital conversion, comprising:

an input path for conducting a current input;

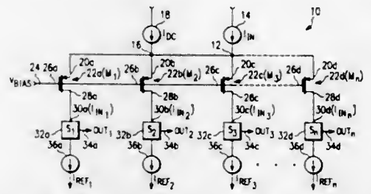
direction circuitry coupled to said input path and operable to direct said current input through a plurality of current paths;

reference current circuitry for conducting at least one reference current; and

comparison circuitry coupled between said direction circuitry and said reference current circuitry for comparing a current through each said current path against an associated reference current and outputting a respective output signal indicative thereof, such that said respective output signals are indicative of a magnitude of said current input;

each said associated reference current is formed by a corresponding scaled current mirror; and

said associated reference currents are unequal in response to different amplification ratios of said corresponding scaled current mirrors.



5,283,583

HIGH-SPEED A/D CONVERSION USING A SERIES OF ONE-BIT CONVERSION STAGES

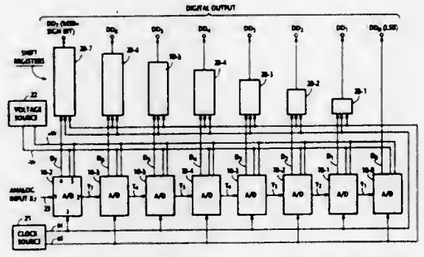
Masaki Ichihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,020

Claims priority, application Japan, Jun. 19, 1991, 3-174640

Int. Cl.[5] H03M *1/44*

U.S. Cl. 341—162 **4 Claims**



1. An analog-to-digital converter for converting an analog signal into an N-bit digital signal, said analog-to-digital converter comprising:

a clock source for generating a timing signal;

(N-1) one-bit analog-to-digital (A/D) conversion stages connected in series to an analog input terminal to which said analog signal is applied, each of said (N-1) A/D conversion stages comprising:

a sample-and-hold circuit for sampling and holding said analog signal applied thereto in response to said timing signal;

a comparator for comparing a sampled signal with a specified voltage level and for producing a logic signal at one of two discrete levels depending on whether the sampled signal is higher or lower than the specified voltage level;

selector means for selecting one of two reference voltages of equal magnitude and opposite polarity in accordance with the discrete level of said logic signal;

adder means for producing an analog output signal which is a sum of the sampled signal and a selected reference voltage;

a multiplier for doubling the magnitude of said analog output signal from said adder means and applying the doubled signal to a succeeding A/D conversion stage;

a last one-bit A/D conversion stage, connected to an output stage of said (N-1) A/D conversion stages, comprising a last-stage sample-and-hold circuit for sampling a signal output from said output stage in response to said timing signal, and a last-stage comparator for comparing a signal sampled by the last-stage sample-and-hold circuit with said specified voltage level and producing a logic signal at one of two discrete levels depending on whether the signal sampled is higher or lower than the specified voltage level; and

(N-1) shift registers associated respectively with said (N-1) one-bit A/D conversion stages for receiving and delaying logic signals supplied from each said comparator of said associated one-bit A/D conversion stages so that the delayed logic signals appear simultaneously with the logic signal from the last-stage comparator at a plurality of digital output terminals.

5,283,584

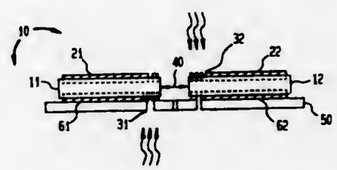
HIGH POWER PHOTON TRIGGERED ULTRA-WIDEBAND RF RADIATOR WITH OPPOSITE APERTURES

Anderson H. Kim, Toms River; Maurice Weiner, Ocean, both of N.J.; Louis J. Jasper, Jr., Fulton, Md., and Robert J. Youmans, Brick, N.J., assignors to The United States of America as represented by the Secrtary of the Army, Washington, D.C.

Filed May 6, 1993, Ser. No. 61,614

Int. Cl.[5] H01J *40/14*

U.S. Cl. 342—21 **1 Claim**



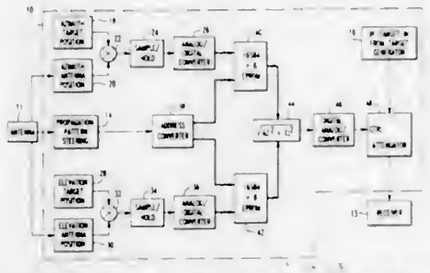
1. An ultra-wideband high power RF radiator, comprising:

an electrical energy storage device coupled to a source of electrical voltage, said storage device comprised of two dielectric mediums each having an upper and lower surface, said lower surface of each said medium having a metalized electrode resting on a dielectric plate, said upper surfaces of each said medium having a metalized electrode positioned thereon such that said upper and lower surface electrodes essentially form a parallel capacitor for energy storage, said upper surface electrodes separated by a predetermined gap distance that maximizes energy storage voltage and radiation bandwidth; and

a photoconductive switch electrically connected to each said dielectric medium but on opposite sides of said dielectric medium surfaces with respect to each other, said switches activated by shining light energy through a predetermined aperture located on the respective surface of each said medium, said activated switch causing said energy storage mediums to discharge a time varying electromagnetic wave comprising a high power, narrow pulse of at least nanosecond pulsewidth dimension.

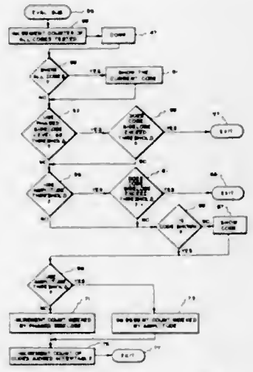
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,585
METHOD AND SYSTEM FOR AZIMUTH/ELEVATION TARGET SIMULATION
James B. Kneale, Elkridge, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 18, 1992, Ser. No. 946,711
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—169 **8 Claims**



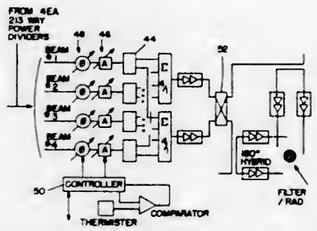
1. A system for simulating a target signal for input into a receiver of a radar system having an antenna and a receiver for receiving input from the antenna, both the antenna and the receiver being on a radar platform, the radar system also having an antenna propagation pattern which is steered in selected directions, comprising:
(a) a target generator for producing a radio frequency signal representing the target;
(b) a means for providing an analog signal representing an azimuth position of the target with respect to the radar platform;
(c) a means for providing an analog signal representing an azimuth position of the antenna with respect to the radar platform;
(d) a means for summing the analog target azimuth position signal with the analog antenna azimuth position signal to provide a summed analog target azimuth position signal with respect to the radar platform;
(e) a first sample/hold and a first analog to digital converter for converting samples of the summed analog azimuth position signals from analog signals to digital code;
(f) a means for providing an analog signal representing an elevation position of the target with respect to the radar platform;
(g) a means for providing an analog signal representing an elevation position of the antenna with respect to the radar platform;
(h) a means for summing the analog target elevation position signal with the analog antenna elevation position signal to provide a summed analog target elevation position signal with respect to the radar platform;
(i) a second sample/hold and a second analog to digital converter for converting samples of the summed analog elevation position signals from analog signals to digital code;
(j) a means for providing data representing the direction in which the antenna propagation pattern is electronically steered;
(k) a means for converting the antenna propagation pattern electronic steering direction data to digital code;
(l) a first memory unit that accepts as input the summed azimuth position digital code and the propagation pattern direction digital code and which outputs a stored azimuth attenuation digital code;
(m) a second memory unit that accepts as input the summed elevation position digital code and the propagation pattern direction digital code and which outputs a stored elevation attenuation digital code;
(n) a means for combining the azimuth attenuation digital code and the elevation attenuation digital code so as to yield a combined attenuation digital code;
(o) a digital to analog converter for converting the combined attenuation digital code to a combined attenuation analog signal; and
(p) a means for attenuating the target generator signal, wherein the amount of attenuation is dependent upon the combined attenuation analog signal.

5,283,586
METHOD OF PHASED MAGNITUDE CORRELATION USING BINARY SEQUENCES
Michael Pender, 1648 Orinda Ct., Thousand Oaks, Calif. 91362, and Donald Tom, 2510G Las Posas Rd., #132, Camarillo, Calif. 93010
Filed Feb. 26, 1993, Ser. No. 23,440
Int. Cl.[5] G01S *7/292*
U.S. Cl. 342—189 **9 Claims**



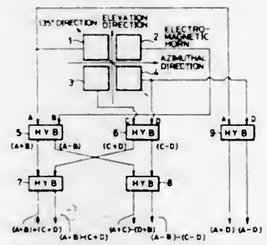
1. An optimization method for sidelobe suppression in a pulse compression radar system utilizing binary coded waveforms in which a plurality of subpulses are transmitted in a carrier pulse signal and a reflection of said subpulses from a target are received by said radar system, said method comprising:
selecting a binary code of length N for correlation, said binary code having a length of at least three, the selected binary code of length N being the subpulses in said carrier signal;
selecting first and second arbitrary coefficients, said first arbitrary coefficient being an out of phase correlation element having a negative numerical value of at least minus one and said second arbitrary coefficient being an in phase correlation element having a positive numerical value;
utilizing said first and second arbitrary coefficients for correlating the reflection of said transmitted signal with a reference signal representative of said transmitted signal to provide a correlated waveform;
said correlated waveform having a plurality of sidelobes and a mainlobe; and
providing a visual image of the correlation of the reflection of said transmitted signal with said reference signal, said visual image showing the sidelobes and main lobe of said correlated waveform;
at least some of said sidelobes having a negative amplitude, the remainder of said sidelobes having a positive amplitude and said mainlobe having a positive amplitude, the amplitude of each of said sidelobes being dependent upon the numerical values of said first and second arbitrary coefficients.

5,283,587
ACTIVE TRANSMIT PHASED ARRAY ANTENNA
Edward Hirshfield, Cupertino; Edgar W. Matthews, Jr., Mountain View, and Howard H. Luh, Sunnyvale, all of Calif., assignors to Space Systems/Loral, Palo Alto, Calif.
Filed Nov. 30, 1992, Ser. No. 983,123
Int. Cl.[5] H01Q *3/22, 3/24, 3/26*
U.S. Cl. 342—372 **8 Claims**



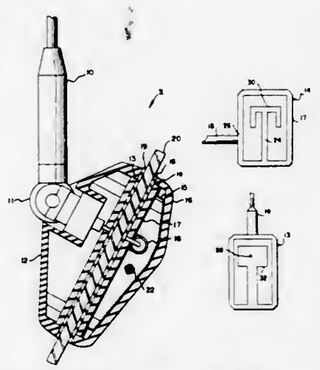
1. A phased array transmitting antenna system for generating multiple independent simultaneous microwave signal beams comprising:
a plurality of antenna radiating elements disposed on an array on a substrate, each one of said elements including amplifier means and hybrid coupler disposed in a cavity on said substrate for providing orthogonal microwave energy signals having selected phases, filter means responsive to the microwave output signals of said cavity for passing signals within a selected frequency band;
a radiating horn responsive to said microwave signals passed by said filter means for transmitting said microwave signals as a beam having a direction and shape; and
wherein each of said plurality of said antenna radiating elements transmit one of multiple, simultaneous microwave beams having the same power value and different phase values which determine the shape and transmitted direction of said beams.

5,283,588
MONOPULSE TRACKING APPARATUS
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan
Filed Dec. 11, 1992, Ser. No. 990,398
Claims priority, application Japan, Dec. 17, 1991, 3-352869
Int. Cl.[5] G01S *5/02, 13/00*
U.S. Cl. 342—427 **3 Claims**



1. A monopulse tracking apparatus, comprising:
first to fourth electromagnetic horns disposed symmetrically to each other in an azimuthal angle direction and elevation angle direction in a 2×2 matrix state;
a means for creating an elevation angle error signal composed of the difference signal of the sum signal of the first and second electromagnetic horns disposed in the azimuthal angle direction and the sum signal of the third and fourth electromagnetic horns disposed in the azimuthal angle direction in the same way;
a means for creating an azimuthal angle error signal composed of the difference signal of the sum signal of the first and third electromagnetic horns disposed in the elevation angle direction and the sum signal of the second and fourth electromagnetic horns disposed in the elevation angle direction in the same way; and
a means for creating an error signal in a 135° direction composed of the difference signal of the first and fourth electromagnetic horns disposed in the counterclockwise direction of 135° with respect to the azimuthal angle direction.

5,283,589
WINDOW MOUNTABLE UHF MOBILE ANTENNA SYSTEM
Peter D. Blevins, Freehold, N.J., assignor to Richard Hirschmann of America, Inc., Riverdale, N.J.
Filed Feb. 5, 1992, Ser. No. 831,577
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—715 **17 Claims**



1. A UHF band antenna system for mobile vehicular communications using radio frequency signals, comprising:
an exterior antenna part having a first UHF band resonant coupling circuit;
a locally referenced, isolating interior counterpoise part having a second UHF band resonant coupling circuit, wherein said second UHF band resonant circuit is a cavity backed monopole and wherein both exterior and interior parts are configured to attach to respective exterior and interior surfaces, of a vehicle window such that said first and second resonant coupling circuits electromagnetically communicate ultra high frequency band signals between said exterior and interior parts and wherein said interior and exterior parts are inductively coupled.

5,283,590
ANTENNA BEAM SHAPING BY MEANS OF PHYSICAL ROTATION OF CIRCULARLY POLARIZED RADIATORS
Gary G. Wong, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Apr. 6, 1992, Ser. No. 864,250
Int. Cl.[5] H01Q *19/06*
U.S. Cl. 343—754 **10 Claims**

1. A circularly polarized beam shaping antenna for shaping a beam of radiation to create a predetermined radiation pattern to radiate a fixed area such as a state, or country or continent, said circularly polarized beam shaping antenna comprising:

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a circularly polarized feed horn for generating the beam of radiation;

a plurality of circularly polarized radiator elements attached to a conductive ground plane, wherein each circularly polarized radiator element is further attached to a short circuit termination through a semi-rigid coaxial cable and a balun, said circularly polarized radiator elements being positioned to receive the beam of radiation from the circularly polarized feed horn, said semi-rigid coaxial cables operable to transfer electrical signals received from each circularly polarized radiator element to the short circuit terminations, said short circuit terminations operable to



reflect the electrical signals, wherein each circularly polarized radiator elements is operable to individually radiate a beam of radiation to form a combined radiation beam; and

a plurality of slip joints for independently rotating the circularly polarized radiator elements to set the phase of each circularly polarized radiator element relative to the conductive ground plane, said slip joints independently altering the phase of each circularly polarized radiator element to a set phase such that the circularly polarized radiator elements shape the combined radiator beam to create the predetermined radiation pattern to radiate the fixed area.

5,283,591

FIXED-REFLECTOR ANTENNA FOR PLURAL TELECOMMUNICATION BEAMS

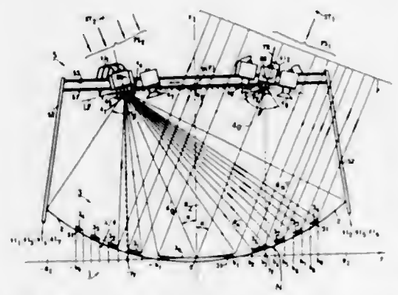
Jean-Jacques Delmas, Meudon, France, assignor to TeleDiffusion de France, Paris, France

Filed Dec. 9, 1992, Ser. No. 988,312

Claims priority, application France, Dec. 11, 1991, 91 15376

Int. Cl.[5] H01Q *19/10, 15/14*

U.S. Cl. 343—755 **18 Claims**



1. An antenna for receiving plural telecommunication beams, comprising:

(a) a fixed reflector (2);

(b) a diffraction grating (3) including a plurality of generally annular concentrically arranged diffraction members (3_1-3_4), at least a portion of said grating being adjacent and generally parallel with said reflector, said grating and said reflector having concave reflecting surfaces at least portions of which are substantially symmetrical about an axis of symmetry (O_2), said grating defining first (F_1) and second (F_2) foci which are symmetrical relative to said axis of symmetry, said diffraction grating being operable to reflect and converge on said first and second foci first (FS_1) and second (FS_2) ones of said telecommunication beams that are directed toward said grating in directions parallel with the straight lines (d_o, d_o') that extend from the center (O) of said symmetrical surface through said first and second foci, respectively; and

(c) at least one microwave head (4_1, 4_2) arranged generally along a generally curved focal line (LF) that:

(1) is centered relative to said axis of symmetry;

(2) has a radius of curvature that is greater than the distance (d_o, d_o')between said symmetrical surface center and either of said first and second foci; and

(3) passes through said first and second foci.

5,283,592

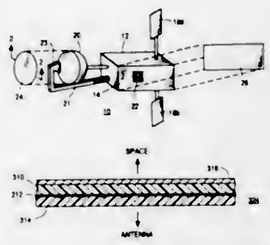
ANTENNA SUNSHIELD MEMBRANE

Alexander Bogorad, Plainsboro; Charles K. Bowman, Jr., East Windsor; Martin G. Meder, Hightstown, all of N.J., and Frank A. Dottore, Strafford, Pa., assignors to General Electric Co., East Windsor, N.J.

Filed Dec. 5, 1990, Ser. No. 623,148

Int. Cl.[5] H01Q *1/4, 1/28*

U.S. Cl. 343—872 **4 Claims**



1. A thermal membrane for an antenna, comprising:

a sheet of transparent dielectric film located between said antenna and space, to thereby define inner and outer surfaces of said sheet of dielectric film facing said antenna and space, respectively;

a layer of transparent, electrically conductive material affixed to said outer surface of said sheet of dielectric film;

a layer of white paint supported by said inner surface of said dielectric film;

a polyester fiber reinforcing mesh affixed to said inner surface of said sheet of dielectric film.

5,283,593

INK RESERVOIR FOR INK PRINTER MEANS HAVING A MEANS TO PREVENT UNAUTHORIZED REFILLING

Wolfgang Wehl, Munich, Fed. Rep. of Germany, assignor to Mannesmann AG, Fed. Rep. of Germany

PCT No. PCT/DE88/00463, § 371 Date Jan. 24, 1991, § 102(e) Date Jan. 24, 1991, PCT Pub. No. WO90/00976, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 25, 1988, Ser. No. 646,617

Int. Cl.[5] B41T *2/17;* **B65D** *47/02;* **H01H** *9/00, 35/34*

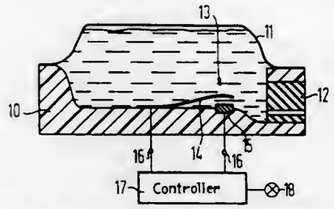
U.S. Cl. 346—140 R **9 Claims**

1. A replaceable ink reservoir for an ink printer having an ink supply system, sad ink reservoir including a floor region and an elastic wall that collapses toward the floor region as ink is withdrawn, comprising:

a connecting region of the ink reservoir capable of being connected to the ink supply system; and

means for preventing re-use of the ink reservoir after the ink reservoir is used and refilled, said means for preventing reuse includes:

a contact element arranged inside the ink reservoir in the floor region thereof, said contact element interacting with the elastic wall of the ink reservoir such that the



collapsing elastic wall of the ink reservoir moves said contact element into a contacting position to actuate said contact element when a minimum volume of ink in the ink reservoir is reached, said contact element including means for retaining the contacting position after reaching the minimum volume of the ink supply system regardless of a refilling of the ink reservoir; and

a control arrangement allocated to the ink printer to acquire the contacting position of said contact element.

5,283,594

COLOR IMAGE RECORDING APPARATUS FOR RECORDING A COLOR IMAGE ON A RECORDING MEDIUM WITH COLOR PARTICLES WITH A VIBRATING PRINT HEAD

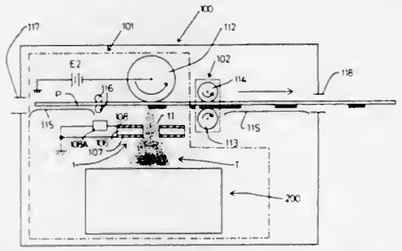
Naoto Iwao, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 17, 1991, Ser. No. 808,587

Claims priority, application Japan, Dec. 18, 1990, 2-403150

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—159 **12 Claims**



1. A color image recording apparatus for recording a color image on a recording medium with charged particles having predetermined colors comprising:

feeding means for feeding the recording medium;

control electrode means for controlling the flow of charged particles to the recording medium, the control electrode means having at least one row of apertures through which the charged particles pass based on an image signal, said control electrode means including an insulative layer, a reference electrode on one surface of said insulative layer and at least one segment control electrode on a surface of said insulative layer opposite to the reference electrode, to which the image signal is applied, each of said apertures passing through said at least one segment control electrode, said insulative layer and said reference electrode;

a plurality of carrying units for providing the charged particles, said carrying units being positionable at a position confronting the recording medium through said control electrode means so that the charged particles provided by the carrying units are carried to the recording medium through the apertures;

moving means for moving said carrying units to the position confronting the recording medium through said control electrode means;

vibrating means for vibrating said control electrode means; and

controlling means for controlling said vibrating means so that a magnitude of the vibration of said control electrode means may be changed, wherein the magnitude of the vibration of said control electrode means is changed between a recording mode, when particles flow through the control electrode means based on said image signal, and a no-recording mode, when particles do not flow through the control electrode means.

5,283,595

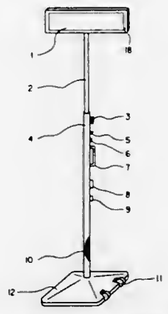
VISUAL PAGING SYSTEM

Yuri Krukovsky, 43 St. Mark's Place, #6D, New York City, N.Y. 10003

Filed Jan. 17, 1992, Ser. No. 822,606

Int. Cl.[5] G09G *5/14*

U.S. Cl. 345—2 **14 Claims**



1. A visual paging system which enables an individual user to display personal messages at different locations of a mass meeting area to individual persons at those different locations comprising a processor at a central location programmable to provide a source to different message data signals and a plurality of independent portable, electronic, personal message display devices between the central location and locations in the meeting area and each comprising:

electronic display means for visual presentation of a programmed personal message;

stand means including a hollow base and a supporting hollow post upstanding therefrom for mounting said electronic display means at an elevated position at a location in a mass meeting area remote from the central location whereby a personal message displayed on the electronic display means can be readily spotted by a person in a crowd;

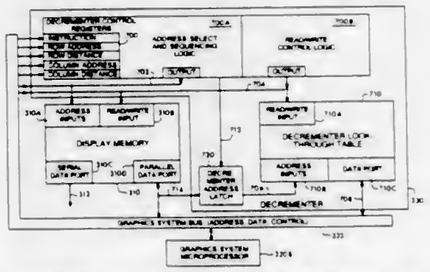
a pluggable connector mounted on one of the stand and display means for releasably connecting the display device to the processor for receiving a selected input message data signal from the source at the central location;

data converting means connected between the pluggable connector and the electronic display means for converting the input data signal for operating the electronic display means;

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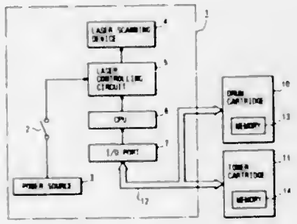
independent power supply means in the hollow base for energizing the electronic display means;
electrical cable means extending inside the hollow post and interconnecting the independent power supply means and the display means; and,
switching means for operation of the display means.

5,283,596
DIGITALLY SYNTHESIZED GRAY SCALE FOR RASTER SCAN OSCILLOSCOPE COLOR DISPLAY OF OVERLAPPING MULTICHANNEL WAVEFORMS
David W. Long, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation-in-part of Ser. No. 650,833, Feb. 5, 1991, Pat. No. 5,254,983. This application May 29, 1992, Ser. No. 891,489
Int. Cl.[5] G09G *1/14*
U.S. Cl. 345—134 **9 Claims**



1. An improvement to a digitizing oscilloscope, said digitizing oscilloscope having a plurality of input channels, a display, a display memory, and a display control, said display control drawing a current waveform and a plurality of prior waveforms on said display from each of said plurality of input channels in a different color, each of said plurality of input channels having a different color assigned to it, all of said waveforms being formed by a plurality of pixels on said display, said improvement comprising:
means in said display memory for providing for each input channel a separate gray scale binary field of at least two bits for each of said plurality of pixels in each of said current and plurality of prior waveforms,
means receptive of each said gray scale binary field from said providing means for converting the binary value in each said gray scale binary field to a corresponding gray scale analog value, said display receptive of each said gray scale analog value from said converting means for illuminating the corresponding pixel in said different color to the degree of brightness determined by the corresponding gray scale binary value so as to display said current waveform at full brightness in said different color and all of said plurality of prior waveforms in said different color for each input channel, said converting means further generating a unique overlap color when waveforms of colors from two or more channels overlap on the same pixel, said unique overlap color being dissimilar from the aforesaid colors,
means connected to said display memory and to said display control for decrementing prior to each said display, in a predetermined cycle of time, the binary value in all of the gray scale binary fields of said current waveform and each of said prior waveforms for each input channel by a predetermined binary value, said decremented gray scale binary fields replacing, in each said predetermined cycle of time, all of said gray scale binary fields in said providing means, said display displaying each of said prior waveforms with the same degree of brightness in said different color and with each earlier prior waveform having a lower degree of brightness in said different color so as to display the direction of said current waveform with respect to said prior waveforms,
means connected to said display control and responsive to a manual input for providing said predetermined cycle of time.

5,283,597
LASER BEAM PRINTER WITH AUTOMATIC LASER BEAM CONTROL
Shinji Yoshida, and Makoto Ohneda, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed May 15, 1992, Ser. No. 883,963
Claims priority, application Japan, May 17, 1991, 3-141198
Int. Cl.[5] G03G *15/00*
U.S. Cl. 346—108 **4 Claims**

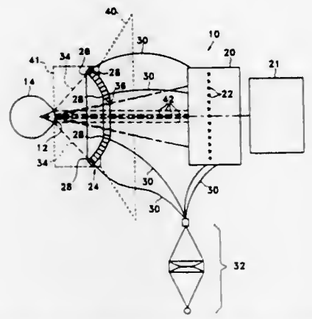


1. A laser beam printer comprising:
a laser beam source;
a consumable unit with a memory stored with data;
detecting means for repeatedly detecting whether or not said consumable unit is attached to said laser beam printer by performing a comparison of said data of said consumable unit with a predetermined data stored at said detecting means;
control means for controlling said laser beam printer in accordance with a signal generated by said detecting means in response to said comparison;
wherein said control means is operable in response to said signal to turn off said laser beam source if said consumable unit is not attached to said laser beam printer.

5,283,598
ILLUMINATION OF THE CORNEA FOR PROFILOMETRY
Charles F. McMillan, Livermore; William D. Fountain, Fremont, and Carl F. Knopp, San Mateo, all of Calif., assignors to Phoenix Laser Systems, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 656,722, Feb. 19, 1991, Pat. No. 5,170,193, which is a continuation-in-part of Ser. No. 456,109, Dec. 22, 1989, Pat. No. 5,054,907. This application Feb. 27, 1992, Ser. No. 842,879
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 **11 Claims**

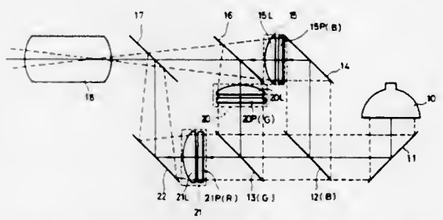
1. An ophthalmic diagnostic instrument for determining the shape of the cornea of a patient's eye, comprising:
an objective lens as an optical element of the instrument, on an optical axis of the instrument and generally at the front of the instrument,
means for forming a pattern of discrete separated point light sources and forming a real image of the pattern of point light sources at a position located between the interior of the objective lens and the patient's eye, the real image including point light sources in positions which are very close to or directly on the optical axis,
a plurality of external light source points, optically peripheral to and outside the real image points and physically external to the objective lens,

support means for stably supporting the external light source points, fixed relative to the objective lens,
the two types of light points, that is the real image of point light sources and the external light source points, being generally registered optically in a composite pattern and together forming an ordered geometric array for providing paraxial reflections off the cornea over a wide area of the cornea, including near the center of the cornea,



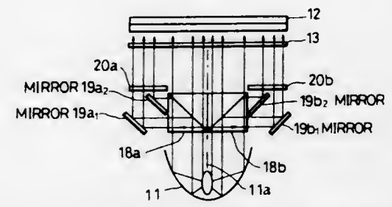
means for collecting preferentially rays reflected paraxially off the cornea from the composite pattern, and
means for analyzing the pattern, which may be distorted, generated by these returned, collected rays and for comparing it to an undistorted reference pattern, including means for analyzing the relative location of rays from the two patterns, and including means for deriving mathematically a close approximation of a corneal surface shape that would give rise to such a collected pattern.

5,283,599
APPARATUS FOR COMBINING AND PROJECTING IMAGES
Yasuyuki Tejima; Takashi Iizuka, both of Tokyo; Yasunori Arai, Saitama, and Nobutaka Minefuji, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 909,567
Claims priority, application Japan, Jul. 8, 1991, 3-263364; Aug. 1, 1991, 3-216134; Aug. 13, 1991, 3-288234
Int. Cl.[5] G03B *21/14, 3/00*
U.S. Cl. 353—30 **14 Claims**



1. An image combining and projecting apparatus comprising a plurality of light transmission type image panels through which light beams are transmitted, condenser lenses corresponding to the light transmission type image panels, a beam combining means which combines beams transmitted through said image panels, and a projection lens through which beams are projected after being combined by said beam combining means, wherein the condenser lenses are provided on the light outgoing side of the corresponding image panels, said apparatus further comprising a slidable condenser lens adjusting means for adjusting the positions of the condenser lenses in a direction perpendicular to the axes thereof.

5,283,600
LCD PROJECTOR
Masao Imai, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Feb. 22, 1993, Ser. No. 20,563
Claims priority, application Japan, Feb. 21, 1992, 4-033821
Int. Cl.[5] G02F *1/13*
U.S. Cl. 353—34 **18 Claims**



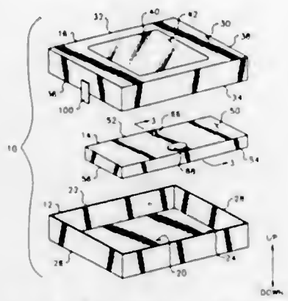
1. An LCD projector for projecting an image displayed on an LCD of the electrooptic-effect type on a projection screen, including a polarization beam-splitting optical system disposed in the optical path of a parallel projection beam between a light source and said LCD, wherein said LCD refers to a liquid crystal display, said polarization beam-splitting optical system comprising
a plurality of optical subsystems and at least one means for optical rotation, each of said optical subsystems having reflector means and polarization beam splitter means provided with polarization beam-splitting plane means, said polarization beam-splitting plane means transmitting a p-polarized component and reflecting an s-polarized component of an incident beam, and said reflector means being disposed outside said optical path of said projection beam and arranged so as to deflect the optical path of said s-polarized component reflected on said polarization beam-splitting plane means to a prescribed region of the incidence surface of said LCD,
said plurality of optical subsystems being arranged so that said polarization beam-splitting plane means included therein are disposed in said optical path of said projection beam and oriented with respect to said projection beam so as to define planes of incidence parallel to each other, and
said means for optical rotation being disposed between said plurality of optical subsystems and said LCD and optically rotating at least one of said s-polarized component and said p-polarized component to make parallel the directions of polarization of the two components emerging from said plurality of optical subsystem.

5,283,601
PROJECTOR AND PROCESS FOR CREATING A NIGHT-SKY ILLUSION
J. Denny Lowe, Bellevue, Wash., assignor to Stellar Ventures, Inc., Kirkland, Wash.
Filed Mar. 2, 1992, Ser. No. 844,155
Int. Cl.[5] G03B *21/00*; G09B *27/00*
U.S. Cl. 353—62 **5 Claims**

5. A projector for creating a night sky illusion on a planar surface comprising:
a base having a side and a pair of opposing ends each adjoining the side;
a shelf mounted on the base adjoining the side and opposing ends;
a light source mounted in a predetermined location on the shelf, the light source including a high intensity light bulb, a battery, a removable insulator for disconnecting the bulb and the battery;

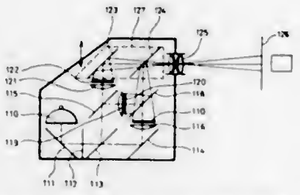
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a top adapted to be slidably mounted on the base and including an opening and a planar transparency mounted in the opening permitting translation of the transparency with respect to the base so as to focus the projector; and



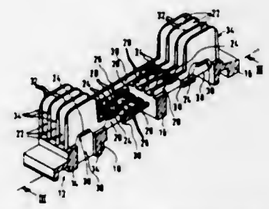
adhesive means for fixing the top in a selected focal position with respect to the base.

5,283,602
OPTICAL SYSTEM FOR PROJECTOR
Soon H. Kwon, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea
Filed Dec. 27, 1991, Ser. No. 815,115
Claims priority, application Rep. of Korea, Dec. 29, 1990, 21875/1990; Sep. 27, 1991, 16928/1991
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—69 **1 Claim**



1. An optical system of a projector comprising:
a light source for emitting a light;
light separating means for separating said light emitted from said light source into red, green and blue color lights;
light condensing means for condensing said color lights from said light separating means;
color signal treating means for treating the condensed color lights from said light condensing means in accordance with red, green and blue color signals;
light composing means for composing the color lights from said color signal treating means; and
image projecting means for projecting the color lights from said light composing means on a screen in order to cause a color image to reemerge on said screen,
wherein said light composing means comprises:
a first light composing part comprising a mirror being capable of filtering said color light; and
a second light composing part comprising a total reflection mirror and a light filtering mirror being capable of functioning as a light filter,
wherein said total reflection mirror and said filtering mirror of the second light composing part are arranged as inclined at an angle of inclination, which angle is determined in accordance with a relative position between said light separating means and said image projecting means,
wherein said second light composing part is capable of moving parallel to the optical path of the light source and the light condensing means in correspondence to a projection angle of said image projecting means with respect to said screen.

5,283,603
SLIDE MAGAZINE
Hermann Kronbauer, Aschheim, and Christian Rehm, Munich, both of Fed. Rep. of Germany, assignors to reflecta GmbH foto film projektion, Schwabach, Fed. Rep. of Germany
Filed Aug. 10, 1992, Ser. No. 926,303
Claims priority, application European Pat. Off., Aug. 22, 1991, 91114041.6
Int. Cl.[5] G03B *23/14*
U.S. Cl. 353—114 **7 Claims**

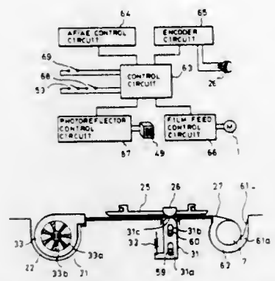


1. In a slide magazine for slide frames having a peripheral edge having peripherally extending grooves and a notch at the peripheral edge, the slide magazine comprising: a base portion; transverse ribs disposed on the base portion and spaced from each other to form compartments for accommodating respective slide frames, each transverse rib having at least one projection which projects laterally therefrom and is adapted to engage into a groove of the respective slide frame; spaced-apart resilient fingers arranged on the base portion, each finger being associated with a respective compartment and having an upwardly projecting retaining nose for engagement into a notch of the respective slide frame; and retaining ribs disposed on the base portion and projecting upwardly therefrom in alignment with the transverse ribs for holding the respective slide frames in a spill-resistant manner in the slide magazine; the improvement that the slide magazine is provided with transverse ribs arranged on said base portion in a transverse direction and separate from each other, and between which are disposed corresponding retaining noses of respective compartments; the retaining noses being aligned with each other in a longitudinal direction of the slide magazine and defining an axis of symmetry along which the transverse ribs are arranged, each transverse rib being disposed in a transverse direction to said axis of symmetry, said upwardly projecting retaining ribs being arranged on said transverse ribs to either side of said axis and providing common outside edges with said transverse ribs, said outside edges having a knife-edge configuration.

5,283,604
CAMERA WHICH READS INFORMATION FROM A STABILIZED FILM CARTRIDGE
Chikara Aoshima, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 4, 1991, Ser. No. 802,411
Claims priority, application Japan, Dec. 14, 1990, 2-410522; Dec. 14, 1990, 2-410523; Dec. 14, 1990, 2-410524
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—21 **38 Claims**

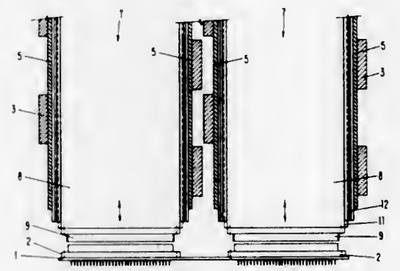
1. A camera using a film cartridge containing a film with a leader portion and having an information recording member movable with the rotation of a film feed spool, said camera comprising:
(a) information reading means for reading information from the information recording member during rotation thereof;

(b) film feed means for feeding the film;
(c) a film take-up spool for receiving the film fed by said film feeding means; and
(d) control means for controlling said information reading



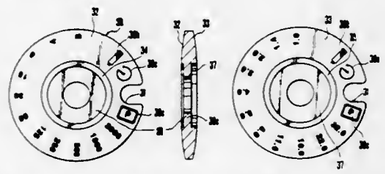
means to begin reading the information substantially at a predetermined time after the film reading is initiated,
wherein the predetermined time is a time at which the film leader portion becomes wrapped around said film take-up spool.

5,283,605
DEVICE FOR TESTING CONTACTING AND/OR WIRING OF SOCKETS ON A CIRCUIT BOARD
Helmut Lang-Dahlke, Burkheimer Str. 9, D-7800 Freiburg, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 888,049
Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116457
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 F **18 Claims**



1. A device for testing contacting and/or wiring of sockets arranged in an array on a circuit board, said device comprising:
a housing with oppositely arranged inner side walls;
parallel first guiding elements connected to said inner side walls and spaced at a certain grid distance from one another;
at least one testing adapter connected to said housing for testing one of the sockets, said testing adapter comprising a flat casing with a forward end and opposite longitudinal narrow sides, and a testing head connected to said forward end of said casing, said casing having second guiding elements connected to said longitudinal narrow sides, with said first and said second guiding elements being slidably connected such that said testing head is movable toward and attachable to the socket for establishing electrical contact;
an evaluation circuit connected to said testing adapter;
at least one intermediate member inserted between said first and said second guiding elements, said intermediate member having a third guiding element and a fourth guiding element, said third and said fourth, guiding elements being oppositely oriented relative to one another, with said third guiding element engaging one of said first guiding elements and said fourth guiding element engaging one of said second guiding elements.

5,283,606
INFORMATION INPUT DEVICE FOR A CAMERA AND CAMERA EQUIPPED THEREWITH
Tatsuo Konno; Toshio Matsumoto; Yoshihiko Aihara, and Kenji Ito, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 634,330, Dec. 26, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,227
Claims priority, application Japan, Dec. 28, 1989, 01-341257; Dec. 28, 1989, 1-341258; Dec. 28, 1989, 1-341259; Dec. 29, 1989, 1-341254; Jan. 29, 1990, 2-018617
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—289.1 **44 Claims**



36. A camera having an information setting device, comprising:
(a) an information member having first camera information displayed on one face thereof and second camera information displayed on a second face thereof;
(b) a holding member capable of holding said information member with either of said faces in viewable disposition; and
(c) detecting means for identifying three states of relationship or lack of relationship between said information member and said holding member including a first state wherein said holding member does not hold said information member, a second state wherein said holding member holds said information member with said one face in said viewable disposition, and a third state wherein said holding member holds said information member with said second face in said viewable disposition.

5,283,607
AUTOMATIC LENS CONTROL SYSTEM
Noboru Suzuki; Shigeo Toji, both of Tokyo, and Masahiro Kawasaki, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 652,038, Feb. 4, 1991, Pat. No. 5,159,377, which is a continuation of Ser. No. 410,880, Sep. 22, 1989, Pat. No. 5,093,680. This application May 11, 1992, Ser. No. 881,785
Claims priority, application Japan, Sep. 22, 1988, 63-237570; Sep. 22, 1988, 63-237571; Sep. 22, 1988, 63-237572; Sep. 22, 1988, 63-237573; Sep. 22, 1988, 63-237574; Sep. 22, 1988, 63-237575
The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **3 Claims**

1. An image magnification control device for a camera comprising:
distance detection means for detecting a distance "X_0" between a rear focal point of a photographic lens and an in-focus position from a delivery-amount of a focusing lens;
defocus information detection means for detecting a defocus

VOL 1159 ISS 1 FE 1 1994 UMI

information "dx" of the photographic lens by using a light having passed through the photographic lens;

focal length detection means for detecting a focal length "f_0" of the photographic lens;

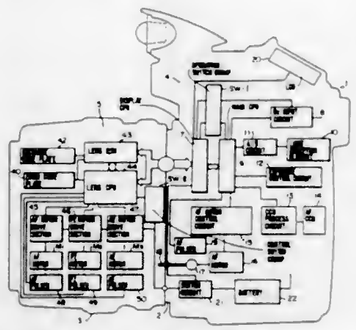


image magnification setting means for setting an image magnification "m_0" for taking a photograph;

computation means for computing a control focal length "f_1" in accordance with an equation:

$$f_1 = \frac{f_0^2 * m_0}{x_0 + dx}$$

using said x_0, d_x, f_0 and m_0; and

focal length control means for changing the focal length of the photographic lens so as to meet said control focal length, said focal length control means comprising motor drive means for driving and varying the focal length of the photographic lens.

5,283,608

CAMERA CAPABLE OF OUTPUTTING BRIGHTNESS AND MEASURED DISTANCE INFORMATION

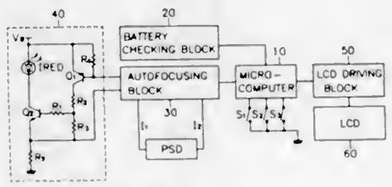
Bonjeong Goo, and Taekyeong Yoon, both of Kyeongsangnam-do, Rep. of Korea, assignors to Samsung Aerospace Industries, Inc., Kyeongsangnam-do, Rep. of Korea

Filed Jun. 2, 1992, Ser. No. 892,040

Claims priority, application Rep. of Korea, Feb. 7, 1992, 92-01813[U]; Feb. 7, 1992, 92-01814[U]

Int. Cl.[5] G03B *13/36, 17/18*

U.S. Cl. 354—403 **7 Claims**



1. A camera comprising

a liquid crystal display device;

a battery checking block to check the voltage remaining in a dry battery power supply;

a microcomputer connected with said display and said battery checking block, said microcomputer having a lens cover switch for indicating removal of a lens cover from the camera, a second switch for selectively activating said liquid crystal display device to display information, and a release switch for selectively activating said microcomputer to deliver a control signal to said battery checking block to activate said block,

an autofocusing means connected to said microcomputer for receiving an activating signal therefrom, said autofocusing means including an infrared-emitting means for emitting an infrared rays toward an object, a light receiving element for receiving infrared light reflected from the object and for outputting a current being in proportion to the intensity of reflected infrared rays received, and an autofocusing block for receiving the current from said light receiving element to focus a lens of the camera on the object in dependence on said current and to emit a distance indicating signal to said microcomputer corresponding to said current and containing information indicative of the distance between the object and the lens; and

an LCD driving means connected to and between said display device and said microcomputer for receiving said distance information from said microcomputer to display a value corresponding to said information as a measure of the distance between the object and the lens.

5,283,609

Patent Not Issued For This Number

5,283,610

CAMERA SYSTEM HAVING COMMUNICATION FUNCTION BETWEEN CAMERA MAIN BODY AND FLASH DEVICE

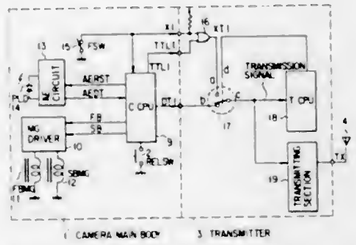
Toyoji Sasaki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,032

Claims priority, application Japan, Mar. 23, 1992, 4-65306; Oct. 5, 1992, 4-266348

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—416 **27 Claims**



1. A camera system comprising:

a camera main body;

a flash device;

transmission means, arranged in said camera main body, for transmitting a signal including at least one of a data communication signal and an emission control signal to said flash device;

a single communication path through which the signal is transmitted from said camera main body to said flash device;

reception means, arranged in said flash device, for receiving the signal transmitted from said transmission means through said single communication path;

emission driving means, arranged in said flash device, for driving said flash device to emit flashlight;

communication control means arranged in said reception means and having a communication control function;

first switching means, arranged in said transmission means, for selectively transmitting one of the data communication signal and the emission control signal of the signals output from said camera main body;

second switching means, arranged in said reception means, for selectively outputting the signal, transmitted from said transmission means to one of said communication control means and said emission driving means;

first control means, arranged in said transmission means, for normally setting said first switching means to a data communication signal side, and switching said first switching means to an emission control signal side when said communication path is used as a path for emission control on said flash device; and

second control means, arranged in said reception means, for normally setting said second switching means to a communication control means side, and switching said second switching means to an emission driving means side when data representing that said communication path is used as the path for emission control on said flash device is transmitted from said transmission means.

5,283,611

IMAGE FORMATION DEVICE WITH WRINKLE FREE TRANSPORT OF FILM TYPE PHOTOSENSITIVE MEMBER

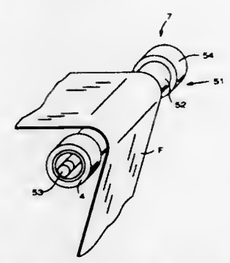
Atushi Kobayashi; Nobumasa Abe, and Takashi Suzuki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,488

Claims priority, application Japan, Nov. 1, 1990, 2-296010; Feb. 19, 1991, 3-024930; Feb. 19, 1991, 3-024932; Mar. 11, 1991, 3-044705; Mar. 11, 1991, 3-044706; Aug. 28, 1991, 3-217157

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 **15 Claims**



1. An image formation device for use in transporting a film type photosensitive member, having a front and a rear surface, from a supply source along a transport path sequentially through exposure, heat developing, and pressure transfer sections, so as to first form a latent image on the front surface, heat develop the latent image, and then transfers it to a transfer member within the pressure transfer section; comprising:

a heating member in the heat developing section mounted to come into contact with the photosensitive member on a rear surface opposite said image and heat the photosensitive member, said heating member having a curved surface that comes into direct contact with the photosensitive member and regulates stretching and shrinkage of the photosensitive member through application of frictional force generated between it and the photosensitive member, and imparting a change in a relative transport direction greater than ninety degrees for said photosensitive member during passage over said curved surface.

5,283,612

ARRANGEMENT FOR THE MECHANICAL COUPLING OF PHYSICAL UNITS OF AN ELECTROPHOTOGRAPHIC PRINTER OR COPIER

Gerhard Lödermann, Munich, and Josef Windele, Puchheim, both of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Fed. Rep. of Germany

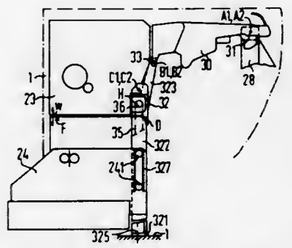
PCT No. PCT/EP90/02075, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/09349, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 3, 1990, Ser. No. 859,488

Claims priority, application European Pat. Off., Dec. 13, 1989, 89123034.4

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **16 Claims**



1. An electrophotographic printer or copier, comprising:

a basic unit including a printing assembly,

a machine frame on which said basic unit is mounted so that a major axis of said basic unit is substantially parallel to a transport path of a recording carrier to be printed and substantially perpendicular to a transport direction of the recording carrier;

physical units having major axes substantially parallel to said major axis of said basic unit;

a support structure separate from said machine frame and having paired receptacles in which respective ones of said physical units are mounted, said support structure including:

a base part resting on said machine frame,

two upright side parts on respective sides of the transport path arranged in an upright position in a common plane oriented parallel to said major axis of said basic unit and rigidly connected to said base part;

a pair of cross members spaced apart from one another and substantially parallel to one another, said cross members being substantially perpendicular to said major axis of said basic unit and being connected pivotally at distal ends to said basic unit by respective points and to a respective one of said upright side parts; and

adjustment means for orienting said support structure substantially vertically relative to said machine frame.

5,283,613

MONITORING SYSTEM WITH DUAL MEMORY FOR ELECTROPHOTOGRAPHIC PRINTING MACHINES USING REPLACEABLE CARTRIDGES

Christian G. Midgley, Sr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 19, 1993, Ser. No. 19,486

Int. Cl.[5] G03G *21/00*

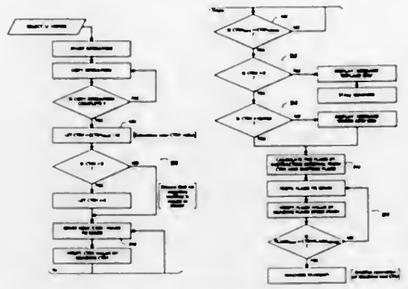
U.S. Cl. 355—203 **16 Claims**

1. A replaceable unit relating to an output of a predetermined number of prints in an electrophotographic printer, comprising:

a first memory, permanently associated with the replaceable unit, adapted to retain counting data relating to a cumulative output relating to the replaceable unit; and

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a second memory, permanently associated with the replaceable unit, having a plurality of flags associated therewith, each flag being statable in one of a first state and a second



state, each flag being alterable from the first state to the second state but not alterable from the second state to the first state.

5,283,614

OPTICAL SYSTEM MOVING FRAME UNIT FOR USE IN AN EXPOSURE DEVICE OF AN OPTICAL SYSTEM MOVEMENT TYPE

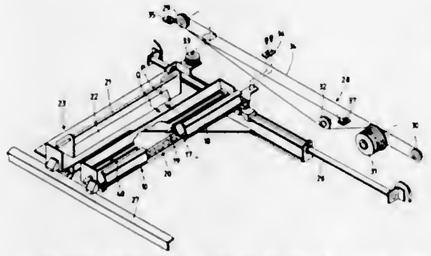
Kenzou Ookubo, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 786,177, Oct. 31, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,206

Claims priority, application Japan, Oct. 31, 1990, 2-296620

Int. Cl.[5] **G03G** *15/28*

U.S. Cl. 355—233 **22 Claims**



1. A moving frame unit for use in an optical system movement type exposure device comprising:

a rectangular shaped frame portion having a top, bottom and a proximal and distal side;

reinforcing rib portions located between the top and bottom of the frame portion which are arranged as in a trussed structure to reinforce the proximal and distal sides of the rectangular frame portion; and

a thin planar member portion located between the top and bottom of the rectangular shaped frame portion and which is provided in spaces defined by the frame and the reinforcing ribs in such a manner as to merge with the proximal and distal sides and the reinforcing ribs, wherein the thin planar member portion has a thickness substantially less than the frame portion and the reinforcing rib portions.

5,283,615

IMAGE FORMING APPARATUS HAVING A PLURALITY OF DEVELOPING DEVICES

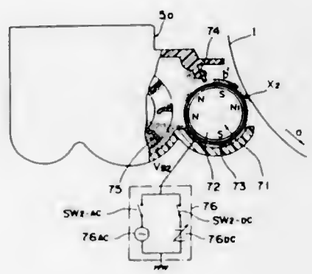
Tomoaki Yokoyama, Toyokawa; Tateki Oka, Toyohashi, and Kunio Toda, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

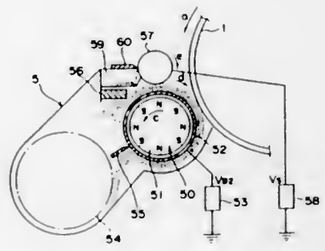
Filed Oct. 11, 1990, Ser. No. 595,570

Claims priority, application Japan, Oct. 13, 1989, 1-266652; Oct. 13, 1989, 1-266658; Nov. 30, 1989, 1-311512

Int. Cl.[5] **G03G** *15/06*

U.S. Cl. 355—245 **34 Claims**





1. An image forming apparatus accommodating a photosensitive member rotatably mounted therein, said apparatus comprising:

a first developing means accommodating a first developer for developing at a first developing region a first electrostatic latent image formed on the photosensitive member;

a second developing means located downstream from said first developing means in a direction of rotation of said photosensitive member and provided with a developing roller having a magnetic force, said second developing means accommodating a second developer for developing at a second developing region a second electrostatic latent image, said second developer being different in color from said first developer and having a magnetism greater than said first developer, said second developer being transported to said second electrostatic latent image formed on said photosensitive member along a periphery of said developing roller so that said second electrostatic latent image is developed; and

a collecting means provided in said second developing means at a position upstream from the second developing region with respect to the direction of the photosensitive member rotation and having a collecting member confronting said developing roller,

whereby said first developer mixed in said second developer transported along the periphery of said developing roller is moved toward and collected by said collecting member under the influence of an electric field formed between said collecting member and developing roller.

5,283,616

DEVELOPING DEVICE HAVING BEARING FOR SUPPORTING A DEVELOPING ROLLER

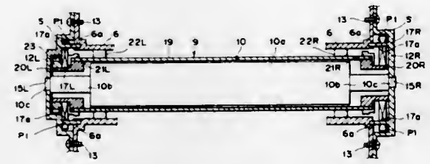
Atsushi Numagami, Hadano, and Kazuo Shishido, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,880

Claims priority, application Japan, Dec. 19, 1991, 3-354791

Int. Cl.[5] **G03G** *15/08*

U.S. Cl. 355—245 **8 Claims**



1. A developing device, comprising:

a container for containing developer therein;

a developing roller for feeding out the developer from said container and for supplying the developer to an electrostatic latent image;

a bearing member for rotatably supporting said developing roller;

a holder member for holding said bearing member;

a positioning member for positioning said holder member and said bearing member with respect to said container, wherein said positioning member comprises a pin-shaped member formed integrally with said holder member, and said bearing member and said container have engagement portions by which said pin-shaped member is engaged; and

a securing member for securing said holder member to said container.

5,283,617

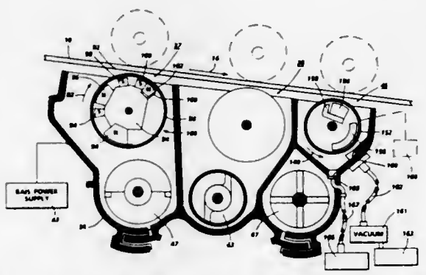
DEVELOPMENT APPARATUS EMPLOYING MAGNETIC FIELD SHAPERS

Lawrence R. Benedict, Rushville; Gary A. Denton, Webster; Francisco Zirilli, Walworth, and Jorge A. Alvarez, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 814,171, Dec. 30, 1991, which is a continuation-in-part of Ser. No. 757,100, Sep. 10, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 942,866

Int. Cl.[5] **G03G** *15/09*

U.S. Cl. 355—253 **14 Claims**



1. An apparatus for developing a latent image recorded on a moving photoconductive surface to form a developed image on the photoconductive surface for transfer to a sheet at a transfer station comprising:

magnetic means, generating a magnetic field, for attracting and moving magnetic carrier beads having toner particles adhering triboelectrically thereto to a development zone proximate to the photoconductive surface so that the latent image attracts toner particles from the carrier beads thereto;

magnetic pick off means, positioned adjacent the photoconductive surface intermediate the transfer station and the development zone for removing magnetic carrier beads adhering to the photoconductive surface; and

vacuum means for removing magnetic carrier beads adhering to said magnetic pick off means.

5,283,618

CLEANERLESS DEVELOPING METHOD USING MONO-COMPONENT TONER

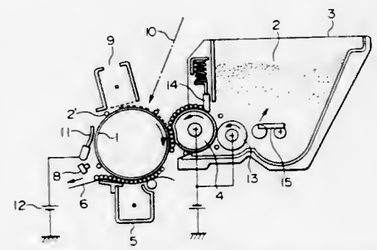
Masahiro Hosoya, Okegawa; Mitsunaga Saito, Ichikawa; Isutomu Uehara, Yokosuka, and Yukihiro Osugi, Tagata, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 23, 1992, Ser. No. 902,748

Claims priority, application Japan, Jun. 25, 1991, 3-153197

Int. Cl.[5] **G03G** *15/06, 21/00*

U.S. Cl. 355—269 **24 Claims**



1. A cleanerless developing method using a mono-component toner, comprising:

a step of forming a latent image on the surface of a latent image retaining member;

a simultaneous developing and cleaning step of causing a thin layer of the mono-component toner formed on the surface of a toner carrying member of a developing device to be brought into contact with or opposed to the surface of said latent image retaining member having said latent image formed thereon thereby converting said latent image into a toner image and, at the same time, causing residual toner remaining on the surface of said latent image retaining member after the transfer of said toner to be attracted into and recovered in said developing device;

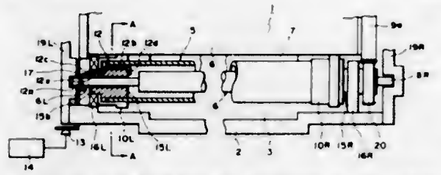
an image transfer step of effecting transfer of said toner image onto the surface of an image carrying member; and

a uniformizing step of uniformizing the distribution of said residual toner remaining on the surface of said latent image retaining member after said transfer of image;

wherein the relation, $|q_z| \leqq 40$ mC/kg, is satisfied q_z standing for the magnitude of charging of the residual toner during said uniformizing step.

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5,283,619
DEVELOPING APPARATUS AND PROCESS CARTRIDGE HAVING SAME
Yoshiya Nomura, Tokyo; Hirosobu Isobe, Yokohama; Kazuo Shishido, Kawasaki, and Kouji Miura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1992, Ser. No. 988,905
Claims priority, application Japan, Dec. 20, 1991, 3-355902
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—261 **24 Claims**

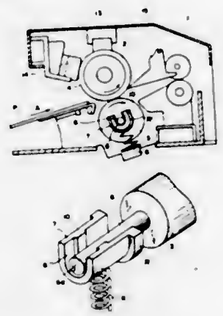


1. A developing apparatus for developing an electrostatic latent image, comprising:
a fixed electrode for receiving a developing bias voltage;
a rotatable and electrically conductive sleeve for carrying a developer to a developing zone, to supply the developer to the electrostatic latent image;
a flange fixed to an end of said sleeve, said flange including an electrode supporting portion; and
an elastic electrode fixedly supported on said flange, said elastic electrode including a first portion engaged with the electrode supporting portion, a second portion press-contacted to said sleeve, and a third portion elastically and slidably press-contacted to said fixed electrode.

5,283,620

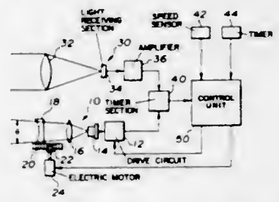
Patent Not Issued For This Number

5,283,621
FIXING APPARATUS AND METHOD OF SUPPORTING A ROLLER SHAFT OF THE FIXING APPARATUS
Hiroshi Hashizume, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 29, 1991, Ser. No. 751,770
Claims priority, application Japan, Aug. 31, 1990, 2-227995
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—290 **10 Claims**



1. A fixing apparatus comprising:
a heat roller rotatable upon receiving a torque;
a pressing roller rotatable in contact with the heat roller;
a roller shaft having an outer peripheral surface and supporting the pressing roller;
heating means for heating the heat roller;
a pair of plain bearings for rotatably supporting the roller shaft, each of the plain bearings having an inner surface surrounding said roller shaft, said inner surface including non-contact portions and a shaft contact portion projecting from said non-contact portions of said inner surface, said shaft contact portion being formed integral with said plain bearing and contacting the outer peripheral surface of said roller shaft, the shaft contact portion of each plain bearing having a length in the axial direction less than the total length in the axial direction of said non-contact portions of the inner surface of the plain bearing; and
urging means for supporting the plain bearings and urging the plain bearings toward said heat roller.

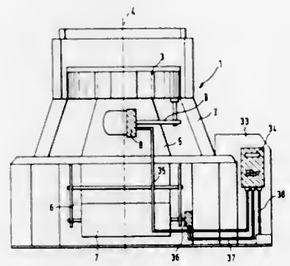
5,283,622
DISTANCE MEASURING APPARATUS
Hiroshi Ueno, Yokohama; Haruhiko Iizuka, Yokosuka, and Junichi Kasai, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 3, 1992, Ser. No. 892,893
Claims priority, application Japan, Jun. 3, 1991, 3-131282
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—4 **7 Claims**



1. A distance measuring apparatus installed on a car for measuring the distance of the car from the one in front, comprising:
a laser generator for emitting a laser beam;
means for detecting the laser beam reflected from the car in front;
means for calculating the distance between the cars when the photosensor receives the reflected laser beam; and
a control unit coupled to the calculator for controlling an adjustable range of the emitted laser beam according to the calculated distance.

5,283,623
METHOD AND SYSTEM FOR THE DETECTION OF FAULTS IN A LENGTH OF TEXTILE
Karl-Heinz Muhlberg, Dornstetten, and Friedrich Weber, Altensteig, both of Fed. Rep. of Germany, assignors to Memminger-IRO GmbH, Dornstetten, Fed. Rep. of Germany
Filed Aug. 31, 1992, Ser. No. 937,590
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129126
Int. Cl.[5] G01N *21/00, 21/84*
U.S. Cl. 356—238 **20 Claims**

1. A method for the detection of faults in a length of textile fabric, especially in a tubular knitted fabric produced on a circular knitting machine or circular warp knitting machine, comprising
electro-optically scanning, in strip form, a length of fabric in at least one zone, said zone being in strip form, by a sensing means;
deriving electrical sensing signals characterizing the condition of the length of fabric at a number of sensing points lying within said strip form zone;
maintaining a predetermined speed between the length of fabric and the sensing means in the direction transverse to the strip form zone during sensing, whereby the zones being scanned in the length of fabric are scanned a number of times;
said method comprising further, in accordance with the invention,
analyzing the signals in such a way that a distinction is made between different forms or different sizes of types of faults, and providing separate output signals in which the type of fault is separately identified,
said analyzing step including
collecting the sensing signals characterizing the individual sensing points into at least two group-specific fault signals;
processing and analyzing the fault signals separately by amplitude, term or duration of signals, and determining non-repeating or repeating occurrence of fault signals of the separate groups;
measuring and establishing by this analysis and by the fault analysis an identification of the type of signal wherein
a) a spot type fault is identified if
(i) in the case of at least one fault signal varying in amplitude from a prescribed first amplitude threshold value,

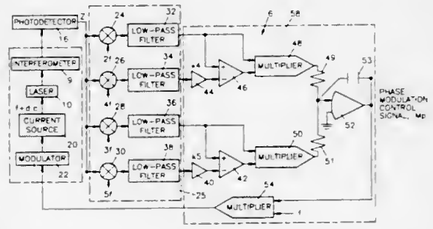


(ii) the signal term exceeds a predetermined first time threshold value by at least a prescribed first period of time, and
(iii) without a number of fault signals occurring together within a measuring period;
b) a long type fault if
(i) in at least two fault signals varying in amplitude from a prescribed second amplitude threshold value,
(ii) the signal term exceeds a predetermined second time threshold value by at least a period of time which is shorter than said first time period, and
(iii) at least two fault signals occur together within a measuring period; and
c) unless the signals had all the characteristics of (a) above or all of the characteristics of (b) above are sensed, identifying the signals as not representing a fault; and
providing separate output signals controlling an output means in which the types of faults are separately identified with respect to (a) or (b).

5,283,624
MULTI-ELEMENT SIMULTANEOUS ANALYSIS ATOMIC ABSORPTION SPECTROSCOPY PHOTOMETER AND MULTI-ELEMENT SIMULTANEOUS ANALYTIC METHOD
Masamichi Tsukada, Ibaraki, and Konosuke Oishi, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 15, 1990, Ser. No. 597,324
Claims priority, application Japan, Oct. 18, 1989, 1-268947
Int. Cl.[5] G01J *3/42, 3/28*
U.S. Cl. 356—319 **32 Claims**

1. A control system for a filtration plant for purifying water from a reception port, and feeding the water, comprising means for sampling the fed water, a sample atomizing unit for evaporating the sampled water, and a plurality of separate optical systems using said atomizing unit in common, a plurality of photodetectors for detecting light beams having passed through said atomizing unit in the corresponding optical systems, and means for stopping feeding of the water when one of said photodetectors detects a quantity of a particular element exceeding a prescribed value.

5,283,625
INTERFEROMETER PHASE MODULATION CONTROLLER APPARATUS USING RATIOS OF TWO PAIRS OF HARMONIC SIGNALS
James S. Bunn, Jr., Malibu, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Aug. 19, 1991, Ser. No. 751,358
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **21 Claims**



1. In combination:
an interferometer, including two optical fibers, a laser delivering optical signals into said fibers, and an optical detector optical signals from said fibers;
means for modulating the frequency of said laser at a frequency, "f";
four demodulators, demodulating at the harmonic frequencies 2f, 3f, 4f, 5f, respectively, connected to receive signals from said optical detector;
four low-pass filters connected, respectively, to the output terminals of said demodulators;
a first multiplying amplifier connected to receive a signal at one of the even numbered harmonics and to multiply such signal by a first predetermined weight;
a second amplifier connected to receive a signal at one of the odd numbered harmonics and to multiply such signal by a second predetermined weight;
means for subtracting said weighted even numbered harmonic signal from the non-weighted other even numbered signal to produce a first difference signal;
means for subtracting said weighted odd numbered harmonic signal from the non-weighted other odd numbered signal to produce a second difference signal;
first multiplying means for multiplying said non-weighted even numbered signal by said first difference signal;

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second multiplying means for multiplying said non-weighted odd numbered signal by said second difference signal;

an integrator having scaling input resistors connected to scale the output of said first multiplying means and to scale the output of said second multiplying means, and to integrate the sum of said scaled signals;

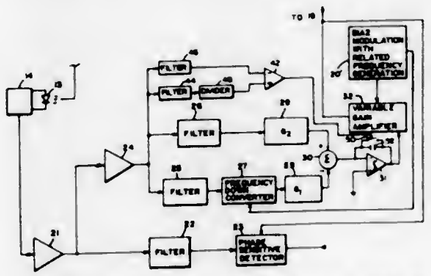
a third multiplier for multiplying said integrated signal by a signal at the frequency "f", connected to control the amplitude of modulation by said modulator.

5,283,626

FIBER OPTIC GYROSCOPE BIAS MODULATION AMPLITUDE DETERMINATION WITH RESET MEANS

James B. Cox, Glendale; Ronald R. Johnson; Salar Navidi, both of Phoenix, and Ernest S. Richards, Glendale, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 17, 1992, Ser. No. 869,947
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **11 Claims**



1. A bias modulation amplitude monitoring means for a rotation sensor capable of sensing rotation thereof about an axis of a coiled optical fiber to provide a rotation sensor output signal indicative of such rotation through having a pair of electromagnetic waves propagating in said coiled optical fiber in opposite directions and along other optical path portions to reach and leave said coiled optical fiber as they travel along an optical path to both impinge on a photodetector means with a phase difference relationship therebetween providing a basis for a resulting photodetector means output signal at an output thereof, and with a bias optical phase modulator positioned in a said optical path portion capable of phase modulating any such electromagnetic waves passing therethrough in propagating along said optical path so as to provide a varying phase difference between such electromagnetic waves of a selectable frequency and a selectable amplitude but with said amplitude subject to variation, said bias modulation amplitude monitoring means comprising:

a first photodetector output signal component determination means having an output and having an input which is electrically connected to said photodetector means output, said first photodetector output signal component determination means being capable of providing at its output an indication of that magnitude occurring in a first component of said photodetector means output signal selected therefrom by its frequency content;

a second photodetector output signal component determination means having an output and having an input which is electrically connected to said photodetector means output, said second photodetector output signal component determination means being capable of providing an indication of that magnitude occurring in a second component of said photodetector means output signal selected therefrom by its frequency content;

a photodetector output signal component relationship determination means having a pair of inputs each of which is electrically connected to one of said first and second photodetector output signal component determination means outputs, said photodetector output signal component relationship determination means being capable of adjusting said photodetector means output signal such that said rotation sensor output signal has a selected value in a range of values for a selected rate of rotation of said rotation sensor about said axis, and of correcting deviations therefrom due to said phase modulation amplitude variation, based on relative values of magnitudes of said photodetector means first and second output signal components; and

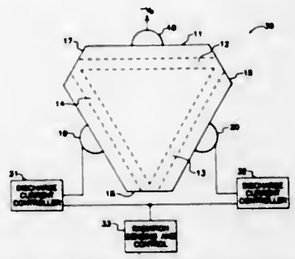
a reset means having an input which is electrically connected to a selected one of said first and second photodetector output signal component determination means, and said photodetector output signal component relationship determination means, and having an output which is electrically connected to said photodetector output signal component relationship determination means, said reset means being capable of forcing said photodetector output signal component relationship determination means to adjust said photodetector means output signal such that said varying phase difference amplitude is reduced to a value below a first predetermined value if, immediately prior to said reduction, a selected second, larger, predetermined value was exceeded by said varying phase difference amplitude.

5,283,627

SYSTEM FOR INHIBITING QUENCHING OF LASER BEAMS IN RESPONSE TO RADIATION EVENTS

Andrew J. Karpinski, Jr., Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 697,815, May 9, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,232
Int. Cl.[5] G01C *19/66*
U.S. Cl. 356—350 **20 Claims**



1. A system for inhibiting quenching of a laser beam following a nuclear radiation event, said laser beam propagating along a laser path of a laser, said system comprising:

current control means connected to said laser for controlling discharge current conducting along said laser path; and

radiation sensing means connected to said current control means including

(i) nuclear radiation sensing means for sensing a nuclear radiation event and

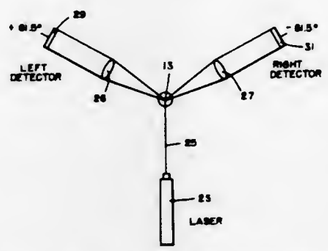
(ii) current control altering means for affecting said current control means for a predetermined amount of time following said nuclear radiation event and causing said discharge current to be maintained for said predetermined amount of time above a value, below which quenching of said laser beam will occur.

5,283,628

METHOD FOR MEASURING DIAMETERS OF NON-CIRCULAR FIBERS

Jerald B. Dotson, Los Angeles, Calif.; Jerry D. Nease, Wilmington, N.C., and Bruce W. Reding, Elmira, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,491
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—355 **24 Claims**



1. A method for measuring the diameter of a transparent filament comprising the steps of:

(a) directing a beam of radiation at said filament so as to produce an interference pattern;

(b) detecting said interference pattern at a first location;

(c) generating a first signal representative of the filament's diameter from the detected interference pattern at the first location;

(d) detecting said interference pattern at a second location;

(e) generating a second signal representative of the filament's diameter from the detected interference pattern at the second location; and

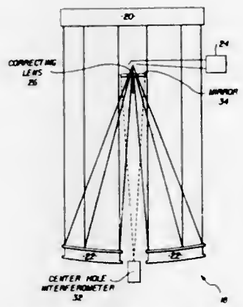
(f) averaging said first and second signals to produce a third signal representative of the fibers diameter, said first and second locations being chosen so that the third signal is substantially insensitive to ellipticity of the filament.

5,283,629

METHOD FOR ASSESSING A VERTEX RADIUS OF CURVATURE

Thomas W. Dey, Springwater, and Jennifer A. LeBaron, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,632
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—359 **4 Claims**



1. A method for determining a vertex radius of curvature for an optical surface, comprising:

1) subjecting the optical surface to a classical collimation testing procedure, so that the optical surface simulates a paraboloid;

and

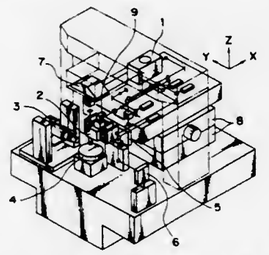
2) subjecting the optical surface to a vertex focusing interferometric testing procedure so that a vertex radius of curvature of the optical surface can be determined.

5,283,630

ERROR CORRECTING METHOD FOR MEASURING OBJECT SURFACE USING THREE-DIMENSION MEASURING APPARATUS

Keiichi Yoshizumi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 4, 1992, Ser. No. 831,576
Claims priority, application Japan, Feb. 4, 1991, 3-13303
Int. Cl.[5] G01B *11/04*
U.S. Cl. 356—376 **12 Claims**



1. A method of measuring the surface of an object using a three-dimension measuring apparatus having an probe, said method comprising:

a first step of calculating measurement errors respectively corresponding to inclinations of said surface of said object to be measured based on prestored measured data of a reference spherical surface;

a second step of placing said object at an object measuring location of said three-dimension measuring apparatus;

a third step of positioning said probe at a plurality of points located on a said surface of said object and obtaining corresponding respective probe measured values;

a fourth step of determining respective measured inclinations at said plurality of points located on said surface of said object based on said probe measured values;

a fifth step of subtracting respective measurement errors calculated in said first step from said respective probe measured values obtained in said third step to obtain corrected measurement values representative of said surface of said object, wherein each subtracted measurement error corresponds to an inclination determination in said fourth step of a corresponding probe measured value.

5,283,631

PROGRAMMABLE CAPACITANCE DELAY ELEMENT HAVING INVERTERS CONTROLLED BY ADJUSTABLE VOLTAGE TO OFFSET TEMPERATURE AND VOLTAGE SUPPLY VARIATIONS

Christopher Koerner, Longmont; Alberto Gutierrez, Jr., Fort Collins, and Edward G. Pumphrey, Colorado Springs, all of Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Nov. 1, 1991, Ser. No. 786,633
Int. Cl.[5] H03K *5/13, 19/20*
U.S. Cl. 307—451 **10 Claims**

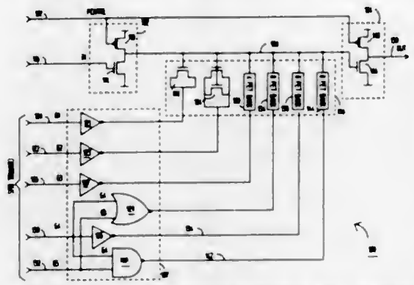
1. A pseudo-NMOS inverter comprising:

(a) a first field effect transistor (FET) having first gate, source, and drain electrodes;

(b) an second FET having second gate, source, and drain electrodes, said second gate electrode forming an input to the inverter, and said second drain electrode being con-

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nected to said first drain electrode to thereby form an output node of the inverter;
(c) means for connecting a voltage supply to said first source and said second source electrodes; and
(d) means for applying an adjustable control voltage to said



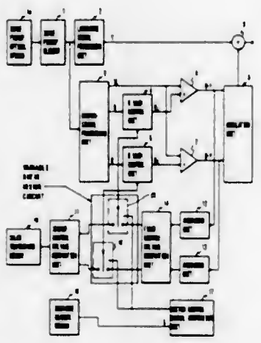
first gate electrode to thereby determine the conductivity of said first FET, said adjustable control voltage substantially offsets temperature and voltage supply variations, wherein changing said adjustable voltage regulates the amount of current flowing from the voltage supply to said output node.

5,283,632

IMAGE PICKUP APPARATUS

Masao Suzuki, Tokyo, and Yasuyuki Yamazaki, Saitama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 681,560, Apr. 5, 1991. This application Oct. 20, 1992, Ser. No. 963,936
Claims priority, application Japan, Apr. 9, 1990, 2-92261; Apr. 9, 1990, 2-92262; Apr. 9, 1990, 2-92263; Apr. 9, 1990, 2-92264
Int. Cl.[5] H04N *9/64, 9/04*
U.S. Cl. 348—223 **17 Claims**



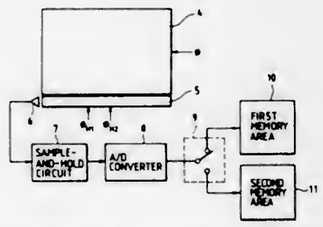
1. An image pickup apparatus, comprising:
first white balance adjusting means for generating a control signal for white balance adjustment by using a signal output from an image pickup element;
second white balance adjusting means for generating a control signal for white balance adjustment by using a signal output from a color measure sensor arranged independently of said image pickup element;
detecting means for detecting distance information of an optical system; and
synthesizing means for synthesizing the control signals from said first and second white balance adjusting means in accordance with distance information of said optical system detected by said detecting means.

5,283,633

SOLID STATE IMAGE PICKUP DEVICE IN WHICH PICTURE ELEMENTS OF GREEN ARE GENERATED IN VERTICAL CHARGE TRANSFER PATHS

Masatoshi Tabei, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 8, 1990, Ser. No. 610,641
Claims priority, application Japan, Nov. 10, 1989, 1-291309
Int. Cl.[5] H04N *9/07*
U.S. Cl. 348—281 **6 Claims**



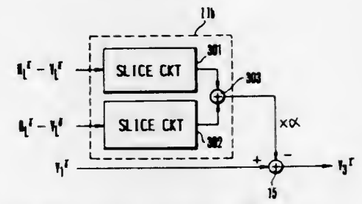
1. In a solid-state image pickup device comprising:
a plurality of optoelectric transducing elements vertically and horizontally arranged into a matrix array,
groups of said optoelectric transducing elements, arrayed in a set of first rows, serving as picture elements having a red spectral characteristic,
groups of said optoelectric transducing elements, arrayed in a set of second rows, serving as picture elements having a blue spectral characteristic,
whereby said second rows alternate with said first rows, and
vertical charge transfer paths and groups of picture elements, arrayed in columns, being alternately arranged, the improvement wherein
segmental portions of each of said vertical charge transfer paths, which portions positionally correspond to respective ones of said picture elements, include portions where charge transfer electrodes are layered and portions where no transfer electrodes are layered,
an impurity is distributed in predetermined portions of each of said vertical charge transfer paths under said charge transfer electrodes and under said portions with no charge transfer electrodes in the charge transfer direction,
thereby to set up potential levels of different depths, that are caused by applying a signal of a predetermined voltage to said charge transfer electrodes when an image is being sensed,
deepest portions of said potential levels are used as picture elements of green, and
signal charge is transferred by applying a drive signal recurring at predetermined periods to said charge transfer electrodes.

5,283,634

LUMINANCE SIGNAL CORRECTING METHOD

Yasuyuki Yamazaki, and Tsutomu Takayama, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 533,935, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 206,581, Jun. 14, 1988, abandoned. This application Dec. 23, 1991, Ser. No. 814,238
Claims priority, application Japan, Jun. 18, 1987, 62-150262; Aug. 6, 1987, 62-195283
Int. Cl.[5] H04N *9/77, 9/78*
U.S. Cl. 348—234 **21 Claims**



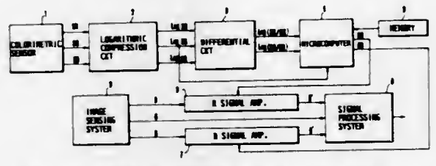
1. An apparatus for correcting a luminance signal of a single-plate type color camera which uses a solid-state image sensor in reading out signals for three colors and separates and takes out from these signals a gamma-corrected luminance signal and gamma-corrected color difference signals, comprising correcting means for correcting said gamma-corrected luminance signal with a correction signal which is obtained from said gamma-corrected color difference signals, wherein said correction signal is formed by selecting one of said gamma-corrected color difference signals which has a largest value among said gamma-corrected color difference signals.

5,283,635

WHITE BALANCE ADJUSTING DEVICE WITH PLURAL THRESHOLDS FOR RANGE CONTROL

Masao Suzuki, and Kunio Ninomiya, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,102, May 31, 1989, abandoned. This application Jun. 4, 1991, Ser. No. 711,265
Claims priority, application Japan, Jun. 3, 1988, 63-136783; Jul. 19, 1988, 63-178101
Int. Cl.[5] H04N *9/73*
U.S. Cl. 358—516 **11 Claims**



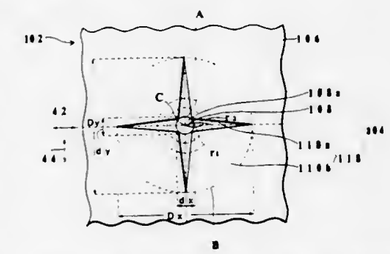
1. A white balance adjustment device comprising:
a) image sensing means for converting light of an object into an electrical signal;
b) amplifying means for amplifying the electrical signal output from said image sensing means;
c) control voltage limiting means for limiting ranges of a control voltage to be output to said amplifying means, said limiting means including at least first and second limiting ranges;
d) light quantity detecting means for detecting a quantity of ambient light; and
e) control means for changing said limiting ranges from said first range to said second range when said light quantity increases beyond a first level and for changing said limiting range from said second range to said first range when said light quantity decreases below a second level different from said first level.

5,283,636

IMAGE READER AND IMAGE READING METHOD

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

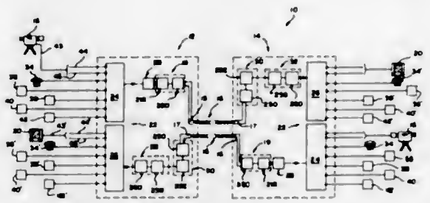
Filed Jul. 25, 1991, Ser. No. 735,726
Claims priority, application Japan, Jul. 25, 1990, 2-196592
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 **16 Claims**



1. A method of reading an original image by scanning said original image at a first scanning pitch in a primary scanning direction and a second scanning pitch in a secondary scanning direction, said secondary scanning direction being substantially orthogonal to said primary scanning direction, comprising the steps of:
(a) directing a light onto said original image from a light source;
(b) detecting a quantity of light from said original image transmitted through a main-aperture board, said main-aperture board having a first transmission part and a second transmission part which is adjacent to said first transmission part, said first transmission part being effective to transmit light corresponding to a small area of said original image, said second transmission part being effective to transmit some of the light corresponding to the rest of said small area with the quantity of said transmitted light decreasing according to increased distance from said first transmission part, said second transmission part shaped such that a size thereof in said primary scanning direction is longer than said first scanning pitch and a size thereof in said secondary scanning direction is longer than said second scanning pitch;
(c) generating a sharp signal on the basis of the quantity of light detected by step (b);
(d) detecting the quantity of light transmitted through a sub-aperture board, said sub-aperture board having a transmission part which is larger than said first transmission part of said main-aperture board;
(e) generating an unsharp signal on the basis of the quantity of light detected by step(d);
(f) modifying said sharp signal to enhance an outline of shapes in said original image, on the basis of said unsharp signal; and
(g) generating said modified sharp signal as an image signal.

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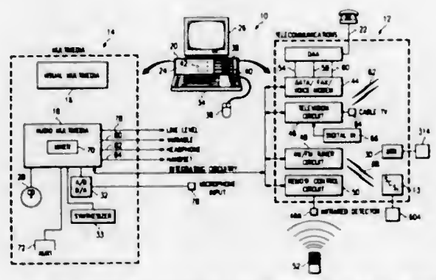
5,283,637
TELECOMMUNICATION SYSTEM FOR TRANSMITTING FULL MOTION VIDEO
Boysie M. Goolcharan, Downey, Calif., assignor to Christine Holland Trustee/Goolcharan Trust, Canoga Park, Calif.
Filed Aug. 20, 1990, Ser. No. 570,297
Int. Cl.[5] H04N *7/14;* **H04M** *11/00*
U.S. Cl. 348—17 **19 Claims**



18. In a telecommunication circuit including a twisted pair link comprised of an unloaded twisted pair of wires of a known length and having first and second ends, the improvement comprising:

video signal provision means for providing a broadband video signal having a band width of at least 4.5 megahertz, line driver means interposed between said video signal provision means and said first end of said twisted pair link to amplify said broadband video signal intact and to impress a known impedance thereon, whereby said twisted pair link exhibits said known impedance, unity gain amplification means coupled to said second end of said twisted pair link to reproduce said broadband video signal intact with a compensating impedance proportional and opposite to said known impedance impressed thereon, and a video receiver coupled to receive said broadband video signal with said compensating impedance impressed thereon.

5,283,638
MULTIMEDIA COMPUTING AND TELECOMMUNICATIONS WORKSTATION
Daniel K. Eagberg, Cedar Park; Albert F. Nurick, and Brittain D. Fraley, both of Austin, all of Tex., assignors to Compuadd Corporation, Austin, Tex.
Filed Apr. 25, 1991, Ser. No. 691,391
Int. Cl.[5] H04N *7/14;* **H04M** *11/00*
U.S. Cl. 348—14 **1 Claim**



1. A multimedia computing and telecommunications workstation for processing and integrating multimedia and telecommunications information, comprising:

a computer, said computer comprising a computer chassis and a monitor, said computer further comprising a central processing unit within said chassis;

telecommunications circuitry associated with said computer and within said chassis for processing telecommunications data and communicating said telecommunications data to said central processing unit, said telecommunications circuitry comprising:

a telephone circuit for communicating over a telephone line a plurality of telephone input signals, said telephone circuit comprising a data/fax/voice modem circuit for communicating data, fax, and voice telephone signals over said telephone line;

a radio frequency tuner circuit for receiving a plurality of radio frequency signals, said radio frequency tuner circuit in communication with said telephone circuit for transmitting received radio frequency signals over said telephone line;

a television circuit for receiving a plurality of television signals and displaying said television signals on said monitor and transmitting said television signals to said telephone circuit for transmission over said telephone line, said television circuit further associated with said radio frequency tuner circuit through interfacing circuitry for integrating said radio frequency and television signals;

audio multimedia circuitry associated with said computer and within said chassis for processing audio multimedia data and communicating said audio multimedia data to said central processing unit, said audio multimedia circuitry comprising:

an analog mixing circuit for mixing a plurality of analog audio signals; and

an analog-to-digital/digital-to-analog converter in association with said analog mixing circuit for generating a plurality of analog output signals and directing said analog output signals to said analog mixing circuit, said analog-to-digital/digital-to-analog converter further associated with said analog mixing circuit for receiving a plurality of analog audio signals to generate a plurality of digital output signals for transmitting said outputs over said telephone line or to a chassis-mounted speaker; and

said interfacing circuitry associated among said computer, said telecommunications circuitry, and said audio multimedia circuitry within said chassis for integrating said telecommunications data and said audio multimedia data to produce audio multimedia telecommunications data for processing and storage within said computer and communicating said audio multimedia telecommunications data external to said chassis, said interfacing circuitry comprising circuitry for generating a graphical user interface at said monitor for control of said telecommunications circuitry and said audio multimedia circuitry whereby a user may easily access and control said audio multimedia telecommunications data.

5,283,639
MULTIPLE MEDIA DELIVERY NETWORK METHOD AND APPARATUS
Arthur G. Esch, 26 Paw Paw Hollow La., Leonardtown, Md. 20650, and Edward A. Singer, 13 E. Spring St., Alexandria, Va. 22301
Continuation-in-part of Ser. No. 431,359, Oct. 23, 1989, Pat. No. 5,099,319. This application Sep. 10, 1991, Ser. No. 756,848
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] H04N *7/10, 5/222*
U.S. Cl. 348—6 **60 Claims**

1. A system having a central site and a remote site for customizing a video signal comprising:

a communications channel;

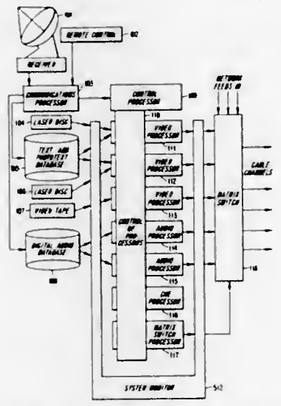
studio-processor means located at said central site for generating a plurality of content data signals;

scheduling-processor means located at said central site, coupled to said studio-processor means and responsive to each of the plurality of content data signals for generating a schedule data signal and a control data signal;

network-processor means located at said central site for generating a communications signal by formatting the plurality of content data signals, a control data signal and the schedule data signal with the video signal;

means located at said central site for transmitting the communications signal over said communications channel;

communications-processor means located at said remote site for receiving the communications signal and, using the control data signal, selecting a first content data signal



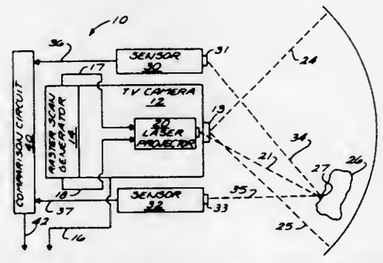
targeted for said remote site from the plurality of content data signals;

first means located at said remote site coupled to said communications-processor means for storing the video signal;

second means located at said remote site coupled to said communications-processor means for storing the first content data signal; and

video-processor means located at said remote site, coupled to said first storing means, and responsive to the schedule data signal for mixing the first content data signal with the video signal.

5,283,640
THREE DIMENSIONAL TELEVISION CAMERA SYSTEM BASED ON A SPATIAL DEPTH SIGNAL AND RECEIVER SYSTEM THEREFOR
Homer B. Tilton, 8401 E. Desert Steppes Dr., Tucson, Ariz. 85710
Filed Jan. 31, 1992, Ser. No. 830,238
Int. Cl.[5] H04N *13/00, 13/02, 13/04*
U.S. Cl. 348—42 **20 Claims**



1. A three-dimensional television camera system comprising:

a TV camera for viewing a scene, said TV camera viewing the scene in accordance with its internally generated vertical and horizontal raster scan voltage signals to output a TV video signal; and

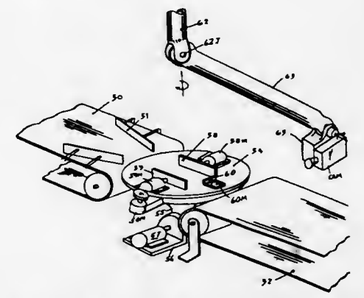
means generating a video depth signal, said means operably connected to said TV camera to receive said TV camera internally generated vertical and horizontal raster scan voltage signals, said means including:

a laser projector proximate said TV camera;

a left and right sensor, spaced apart, situated on opposite sides of said laser projector, each said sensor having an output; and

a comparison circuit operably connected to said left and right sensor, said comparison circuit receiving said output from each said sensor and outputting said video depth signal whereby said three-dimensional television camera system outputs said video depth signal and a TV camera video signal for processing by a TV receiver system for three dimensional television viewing.

5,283,641
APPARATUS AND METHODS FOR AUTOMATED ANALYSIS
Jerome H. Lemelson, Ste. 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436
Continuation of Ser. No. 826,617, Jan. 28, 1992, which is a continuation of Ser. No. 426,080, Oct. 24, 1989, Pat. No. 5,119,190, which is a division of Ser. No. 906,969, Sep. 15, 1986, Pat. No. 4,984,073, which is a continuation of Ser. No. 723,183, Apr. 15, 1985, Pat. No. 4,660,086, which is a continuation of Ser. No. 394,946, Jul. 2, 1982, Pat. No. 4,511,918, which is a division of Ser. No. 13,608, Feb. 16, 1979, Pat. No. 4,338,626, which is a division of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, abandoned, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, and a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Jun. 16, 1993, Ser. No. 78,681
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—92 **20 Claims**



1. A method for automatically inspecting three-dimensional objects comprising:

(a) radiation scanning at least a portion of a three-dimensional object a first time with a scanning device to generate first image signals;

(b) computer-processing said first image signals and generating and electronically storing in an electronic storage device first electrical code signals that define variations in the first image signals;

(c) radiation scanning a portion of the same object a second time to generate second image signals;

(d) computer-processing the second image signals and generating and electronically storing in an electronic storage

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device second electrical code signals that define variations in the second image signals;

(e) storing a plurality of command control signals in an electronic storage device and selectively addressing, reproducing, and using said command control signals to automatically control the scanning and processing acts; and

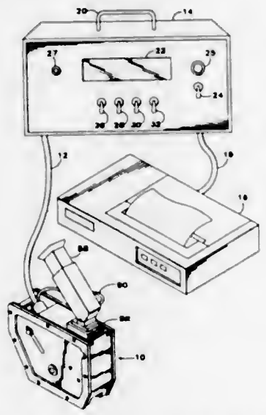
(f) reproducing and computer-processing the stored first and second electrical code signals to generate and store on an electronic storage device image information about the inspected object.

5,283,642

SCRATCH MEASUREMENT APPARATUS AND METHOD

Dennis P. Sarr, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 16, 1992, Ser. No. 852,027
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—135 **41 Claims**



1. Apparatus for measuring depth profiles of a surface comprising:

a measurement probe, said measurement probe including a line of light source for projecting a line of light on the surface, magnification means for magnifying the image of said line of light on said surface, and vision means for viewing said magnified image;

signal processing means, said signal processing means including means for digitizing the image perceived by said viewing means and means for calculating depth parameters of said surface from said digitized image; and

means for reported information about said surface comprising said depth parameters.

5,283,643

FLIGHT INFORMATION RECORDING METHOD AND DEVICE FOR AIRCRAFT

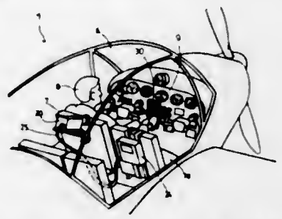
Yoshizo Fujimoto, 4-10, Nakamachi, 3-chome, Kiryu-shi, Gunma-ken 376, Japan

PCT No. PCT/JP91/01471, § 371 Date Jun. 23, 1992, § 102(e) Date Jun. 23, 1992, PCT Pub. No. WO92/07757, PCT Pub. Date May 14, 1992
PCT Filed Oct. 29, 1991, Ser. No. 862,571
Claims priority, application Japan, Oct. 30, 1990, 2-292827
Int. Cl.[5] B64D *47/08*; H04N *7/18*
U.S. Cl. 348—143 **11 Claims**

1. Flight information recording method using a flight information recording device comprising a central display unit **30**, a first television camera **20**, a second television camera **21**, and a video recorder **24**, said method comprising:

indicating displacements of connecting rods **55** between control devices **40**, **41**, **40*a***, **42** and control surfaces **10** manipulated by a pilot **8**, and time data of the related information on said central display unit **30**;

capturing a view of instrumental panel **9** including a displayed data on said central display unit **30** together with general pointer gauges and/or instruments by said first television camera **20** installed in a cockpit **6** as a first piece of image information **26**;



capturing the actual state of a main wing **2** and that of a tail stabilizer **3**, a vertical stabilizer **4**, rudder **14** and elevations **13** which were reflected via mirrors **22**, **23** installed on the middle of the upper fuselage to said second television camera **21** installed on a vertical stabilizer **4** facing the nose of the fuselage as a second piece of image information **27**;

and synchronizing and combining said first and second image information as complex image information **28**, and recording said complex image information on magnetic tape by said video recorder **24**.

5,283,644

CRIME PREVENTION MONITOR SYSTEM

Yoshinori Maeno, Kashiwa, Japan, assignor to Ibaraki Security Systems Co., Ltd., Japan

Filed Jul. 9, 1992, Ser. No. 910,958
Claims priority, application Japan, Dec. 11, 1991, 3-327825
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—152 **16 Claims**



1. A crime prevention monitor system comprising:

a terminal apparatus for generating monitor data on a monitor region to be monitored on the basis of a picture signal indicative of an intruder photographed by a monitor camera installed stalled in the monitor region and for sending the generated monitor data onto a predetermined first transmission line;

a concentrator for performing a concentrating operation over the monitor data received through the first transmission line to generally manage the monitor data of one or a plurality of the monitor regions on a remote control basis and, when the presence of an illegal intruder is recognized at any one of the monitor regions in carrying out the concentrating operation, for generating emergent report data informing the presence of the illegal intruder and transmitting the emergent report data onto a predetermined second transmission line; and

a report receiver provided in a restraint organization such as a police station, for receiving the emergent report data sent through the second transmission line,

said terminal apparatus including:

sensor means provided in said monitor region for detecting presence or absence of the intruder entering into the monitor region;

monitor controller means for starting said monitor camera on the basis of the presence of the intruder detected by said sensor means and for sequentially receiving the picture signal photographed by said monitor camera therefrom;

image processing means for converting the received picture signal into image data;

identification data setting means for previously setting identification data for the monitor region;

timer means for outputting time data; and

first report controller means, in response to the direction of the presence of the intruder by said sensor means, for acquiring the time data of the timer means, calling said concentrator through said first transmission line, forming said monitor data on the basis of said converted image data, the identification data of the monitor region and the acquired time data, and sending the formed monitor data to the called concentrator,

said concentrator including:

image demodulator means for separating said image data from the received monitor data and demodulating the image data;

identification data extractor means for extracting the identification data of the monitor region from the received monitor data;

an image database for previously registering therein image data of authorized persons with respect to the respective monitor regions;

image collector means for collating said demodulated image data with all the image data of the authorized persons of one of the monitor regions specified said extracted identification data among the image data registered in said image database and for outputting a matching signal indicative of a coincidence when the demodulated image data coincides with the image data of any of the authorized persons and outputting a non-matching signal indicative of a non-coincidence when the demodulated image data fails to coincide with the image data of any of the authorized persons;

second report controller means, when the image collator means outputs said non-matching signal, for calling said report receiver through said second transmission line, forming together with said time data said emergent report data informing the presence of the illegal intruder into the monitor region specified by the identification data extracted from said monitor data, and sending the formed emergent report data to the called report receiver, and wherein

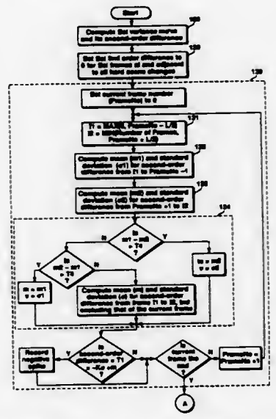
the image data previously registered in said image database correspond to face pictures of the authorized persons, and said image collator means includes means for extracting a plurality of still images from said demodulated image data, means for further extracting face parts from the plurality of extracted still images, means for generating a face picture model from the extracted face part images, and means for overlapping the corresponding images of the image data registered in said image database on said face picture model and for judging said coincidence or non-coincidence of the basis of extracted contours and features of the overlapped images.

5,283,645

METHOD AND APPARATUS FOR DETECTING DISSOLVE REGIONS IN DIGITAL VIDEO SEQUENCES

Adnan M. Alattar, Plainsboro, N.J., assignor to Intel Corporation, Hillsboro, Oreg.

Filed Feb. 14, 1992, Ser. No. 836,992
Int. Cl.[5] H04N *7/12*
U.S. Cl. 348—384 **35 Claims**



1. A method for compressing a dissolve region within s sequence of digital motion video frames comprising the steps of:

(a) selecting a plurality of frames from said sequence for processing;

(b) calculating a dissolve measure based on statistical data derived from said selected frames;

(c) detecting dissolve region boundaries within said sequence by determining where the absolute value of said dissolve measure exceeds a first predetermined threshold; and

(d) compressing at least one of said selected frames in accordance with the result of step (c).

5,283,646

QUANTIZER CONTROL METHOD AND APPARATUS

John E. Bruder, Arlington, Mass., assignor to PictureTel Corporation, Peabody, Mass.

Filed Apr. 9, 1992, Ser. No. 866,027
Int. Cl.[5] H04N *1/41*
U.S. Cl. 348—415 **14 Claims**

1. A method for selecting an initial quantizer step size for use in encoding an image frame, each frame having a plurality of sectors, and each sector being divided into a plurality of blocks, the method comprising the steps of

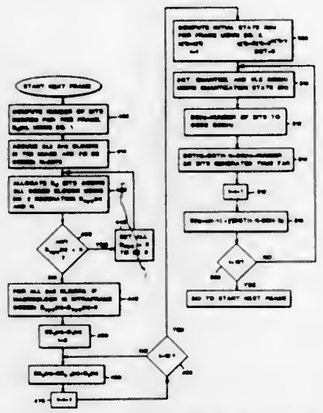
selecting a quantizer step size equal to the quantizer step size of a previously encoded frame,

adjusting said selected step size by a weighted function of the difference between the actual number of bits used to encode a previous frame and a desired number of bits for coding the present frame, the weighting function being a preselected first constant divided by the number of blocks expected to be encoded, and

adjusting said now modified selected quantizer step size a second weighted function of the logarithm of the ratio of the geometric mean of the total energy of the number of

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blocks actually to be encoded for this frame multiplied by the number of blocks expected to be encoded, and the



total energy of the number of blocks actually encoded for the previous frame multiplied by the number of blocks expected to be encoded in the previous frame.

5,283,647

COMPATIBLE DIGITAL PROCESSING UNIT FOR TELETEXT AND CONTROL METHOD THEREOF

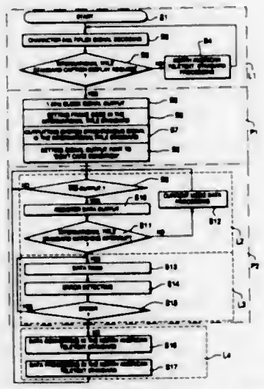
Moon H. Seo, Seoul, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 736,762

Claims priority, application Rep. of Korea, Jan. 28, 1991, 91-1403

Int. Cl.[5] H04N *7/04*

U.S. Cl. 348—468 **26 Claims**



1. A compatible digital processing unit of teletext in which character multiplexed signals are overlapped and transmitted during a horizontal returning period of video signals and the transmitted character multiplexed signals are processed as a title on a screen, the compatible digital processing unit comprising:

signal detection means for extracting a first character multiplexed signal of said character multiplexed signals during the horizontal returning period;

signal generation means connected to an output stage of said signal detection means, for generating a system synchronous signal corresponding to a data format of said first character multiplexed signal after detecting said data format from one of the overlapped character multiplexed signals during the horizontal returning period; and

signal processing means connected to an output stage of said signal generation means, for processing and storing said transmitted character multiplexed signals in dependence upon the system synchronous signal.

5,283,648

TELETEXT RECEIVER FOR AUTOMATICALLY CONTROLLING DISPLAYING TIME INTERVAL

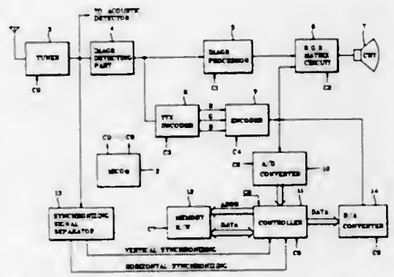
Tae H. Jeong, Kwangmyoung, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed May 29, 1992, Ser. No. 889,977

Claims priority, application Rep. of Korea, May 31, 1991, 9092

Int. Cl.[5] H04N *7/087*

U.S. Cl. 348—468 **2 Claims**



1. A teletext receiver comprising:

means for automatically controlling the displaying time interval per frame of teletext data, said means comprising:

a teletext decoder for generating chrominance signals of teletext signals from a received broadcasting signal;

an encoder for displaying teletext video signals on a CRT screen by processing said chrominance signals;

an analog-to-digital converter for converting input teletext data from said encoder into digital signals;

a memory;

a controller for sequentially storing said digital signals in said memory and for controlling the read out of said teletext data from said memory;

a digital-to-analog converter for converting teletext data read out of said memory into an analog signal for display on said CRT screen; and

a microcomputer for controlling said teletext decoder, said encoder, said analog-to-digital converter, said memory and said controller so that a user can control a display time of teletext data on a per page basis.

5,283,649

METHOD AND APPARATUS FOR CONVERTING SYNCHRONIZING SIGNAL FOR TELEVISION CAMERAS

David Elderbaum, and Yoshio Kaneta, both of Tokyo, Japan, assignors to Elbex Video Ltd., Tokyo, Japan

Continuation of Ser. No. 806,014, Dec. 9, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,355

The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.

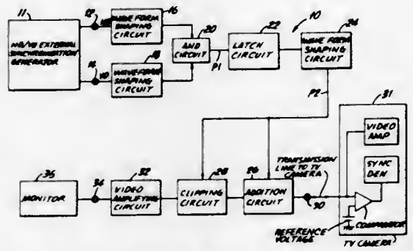
Int. Cl.[5] H04N *5/04*

U.S. Cl. 348—500 **12 Claims**

1. A method for converting a vertical drive signal composed of field pulses for synchronizing a television camera into a new synchronizing pulse, comprising the steps of:

receiving said vertical drive signal from means for generating said vertical drive signal;

generating, on the basis of said received vertical drive signal, for every two field pulses, a single frame synchronizing pulse having a level higher than the white level or lower



than the black level of a composite video signal generated by said television camera; and

injecting said frame synchronizing pulse into a video transmission line connected to said television camera for synchronizing said television camera on the basis of the injected frame synchronizing pulse.

5,283,650

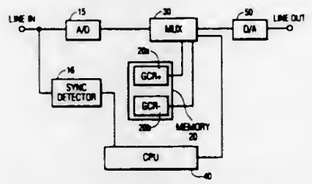
SYSTEM FOR GHOST CANCELLATION COMPRISING AN IMPROVED GCR SIGNAL SEQUENCE

David Koo, Briarcliff Manor; Craig B. Greenberg, Mohegan Lake, both of N.Y., and Takashi Sato, Tokyo, Japan, assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 676,927, Mar. 8, 1991, Pat. No. 5,161,017, and a continuation-in-part of Ser. No. 831,600, Feb. 5, 1992, Pat. No. 5,179,444, which is a continuation of Ser. No. 698,521, May 10, 1991, Pat. No. 5,121,211. This application Sep. 4, 1992, Ser. No. 941,356

Int. Cl.[5] H04N *7/08, 5/14, 5/208, 5/213*

U.S. Cl. 348—614 **4 Claims**



1. A method for substantially eliminating ghosts occuring during the transmission of a television signal whereby a reference signal is transmitted over a transmission path as part of a selected line of each of a sequence of fields of said television signal, and whereby said selected lines of said sequence are received by a decoder and used to provide a received reference signal value which is used by said decoder to characterize the transmission path, the method comprising the steps of:

a) providing a sequence of encoded television lines as an input to said transmission path by inserting said reference signal on the selected line of each of a first group of said sequence of fields at a first polarity, and inserting said reference signal on the selected line of each of a second group of said sequence of fields at a second polarity opposite to that of said first polarity;

b) receiving each of said encoded television lines; and

c) accumulating on a field by field basis said received encoded television lines so as to obtain a sum value by adding each respective received television line having said first polarity and subtracting each respective received television line having said second polarity, so as to cancel the effects of pair-wise constant line signals present in pairs of said received television lines and so as to provide said received reference signal value from said sum value.

5,283,651

METHOD FOR MAGNIFYING AND REDUCING AN IMAGE

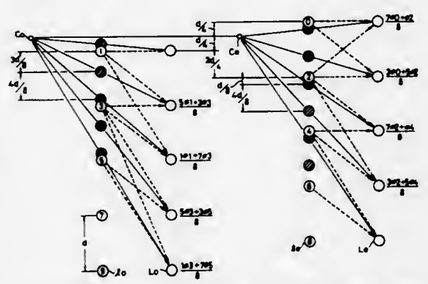
Shigeki Ishizuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 1, 1991, Ser. No. 739,236

Claims priority, application Japan, Aug. 10, 1990, 2-212592

Int. Cl.[5] H04N *3/223*

U.S. Cl. 348—704 **3 Claims**



1. A video signal processing method for use in magnifying and reducing an image by interpolating at a plurality of positions between successive scanning lines within a field when an interlaced original video signal consisting of odd and even fields is magnified or reduced by a factor of m/n (m,n are natural numbers), said video signal processing method comprising the step of:

offsetting the origin of an odd field prior to magnifying or reducing processing at a predetermined distance from an adjacent scanning line in said odd field, and offsetting the origin of an even field prior to magnifying or reducing processing at said predetermined distance from an adjacent scanning line in aid even field.

5,283,652

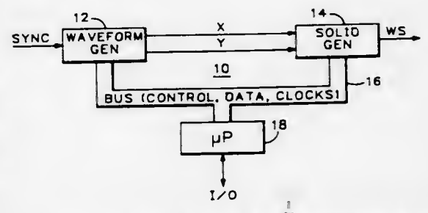
PATTERN GENERATION USING WIPE SOLID GENERATOR

Jon A. Fairhurst, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Oct. 30, 1992, Ser. No. 968,658

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—594 **5 Claims**



1. A method of pattern generation on a screen using a wipe solid generator and recursive memory comprising the step of:

generating parameters from operator inputs that define a wipe solid to be produced by the wipe solid generator;

measuring an extent of the wipe solid to produce a maximum and a minimum value;

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extending the measured minimum and maximum values as a function of a desired border size and softness;

selecting a lever-arm scaling function as a function of changes in the operator inputs;

executing the selected lever-arm scaling function to produce parameters for storage in the recursive memory, the selected lever-arm scaling function using prior values of the parameters stored in the recursive memory; and

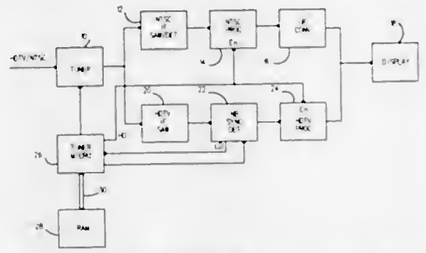
determining clip levels from the parameters stored in the recursive memory so that movement of the lever-arm to a limit results in the wipe solid just including the entire screen.

5,283,653

DUAL HDTV/NTSC RECEIVER USING SEQUENTIALLY SYNTHESIZED HDTV AND NTSC CO-CHANNEL CARRIER FREQUENCIES

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed May 22, 1992, Ser. No. 887,624
Int. Cl.[5] H04N *5/46*
U.S. Cl. 348—725 **8 Claims**



4. A method of comprising a dual HDTV/NTSC television receiver, the HDTV signals being inherently of lower power then the NTSC signals, comprising:

initially processing a received television signal with a synthesized carrier corresponding to a desired one of said HDTV signals;

developing an indicating signal denoting the presence or absence of said one HDTV signal;

enabling further processing of said one HDTV signal responsive to said indicating signal denoting the presence of said one HDTV signal; and

synthesizing a carrier corresponding to an NTSC co-channel signal of said one HDTV signal and enabling processing of said co-channel NTSC signal responsive to said indicating signal denoting the absence of said one HDTV signal.

5,283,654

TV-RADIO CONVERTER USING A SAME POWER SUPPLY

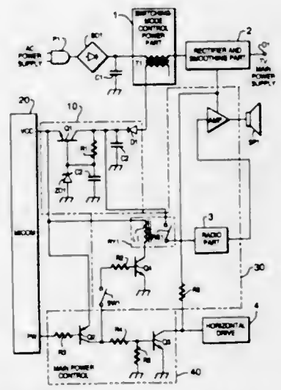
Byung-Seong Cho, Suwon, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 378,772, Jul. 12, 1989, abandoned. This application Apr. 2, 1991, Ser. No. 680,008
Int. Cl.[5] H04N *5/60, 5/63*
U.S. Cl. 348—730 **23 Claims**

1. A TV/radio selector of a remote controller type using a common power supply including a main power circuit enabling electrical power to be applied to other stages through switching-mode power components and rectifying components, the selector comprising:

a constant voltage stage coupled to an output terminal of the switching-mode power components and rectifying components, wherein a voltage generated by said constant voltage stage is provided to drive a microcomputer and said constant voltage stage can provide a voltage to another stage;

main power control means, for enabling the microcomputer to control application of said electrical power to horizontal driver components of a television through active components by controlling application of the output of said voltage to the main power control means, thereby con-



trolling distribution of said electrical power to the television and a radio; and

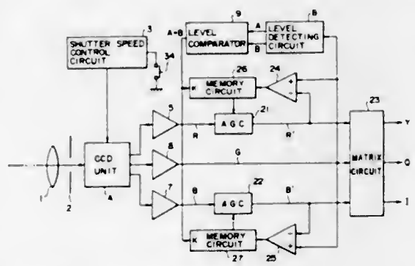
means for driving the radio, wherein said electrical power can be applied to the radio using an output of said main power control means and said voltage from said constant voltage stage in dependence upon control of said active components by the microcomputer.

5,283,655

VIDEO CAMERA APPARATUS HAVING SOLID STATE IMAGER

Makoto Usami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 944,952
Claims priority, application Japan, Sep. 30, 1991, 03-250709
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—257 **9 Claims**



1. A video camera apparatus comprising:

variable mode solid state imaging means for generating video signals and having an effective accumulating period, said video signals having voltage levels which are a function of the accumulating period,

black level balance adjusting means for automatically adjusting black levels of said video signals;

incident light control means for controlling the amount of light incident to said solid state imaging means;

electronic shutter control means for varying the mode of said solid state imaging means between at least a first mode and a second mode, the effective accumulating period of said solid state imaging means in said first mode being of different temporal duration than the effective accumulating period in said second mode;

comparator means for comparing the voltage level of the video signal obtained in said first mode with that obtained in said second mode; and

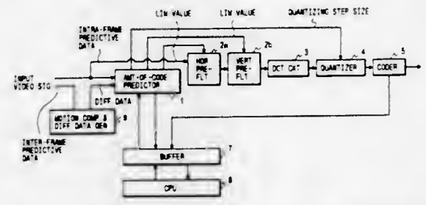
processing means for controlling said electronic shutter control means and said comparator means, and for activating said black level balance adjusting means when the voltage levels of said video signals obtained in said first and said second modes are substantially the same.

5,283,656

DATA COMPRESSION APPARATUS FOR VIDEO SIGNAL AND METHOD OF DATA COMPRESSION FOR VIDEO SIGNAL

Takayuki Sugahara, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 7, 1991, Ser. No. 772,295
Claims priority, application Japan, Oct. 8, 1990, 2-270017
Int. Cl.[5] H04N *1/41, 1/415, 7/12*
U.S. Cl. 358—261.1 **9 Claims**



1. A data compression apparatus for video data having: dividing means for dividing said video data into unit blocks, converting means for orthogonally converting said video data at each of unit blocks, quantizing means for quantizing said orthogonally converted video data, and coding means for run-length-coding said quantized video data, comprising:

(a) first detection means for detecting sums of absolute values of said video data in horizontal and vertical directions within given filter passbands, respectively;

(b) second detection means for detecting a difference between said sums of absolute values; and

(c) control means for controlling the amount of coded data produced by said run-length-coding in accordance with a difference between said sums of absolute values.

5,283,657

RECORDING DEVICE FOR RECORDING A HALF-TONE IMAGE USING A PLURALITY OF RECORDING ELEMENTS FOR THE SAME COLOR

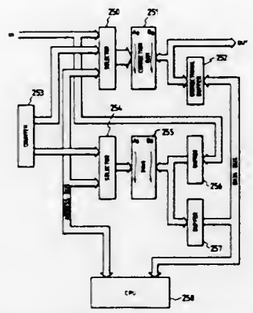
Hiroyuki Ichikawa, Tokyo, and Nobuyuki Watanabe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 271,299, Nov. 15, 1988, Pat. No. 5,038,208. This application May 20, 1991, Ser. No. 703,152
Claims priority, application Japan, Nov. 16, 1987, 62-289190; Jul. 28, 1988, 63-189713
Int. Cl.[5] H04N *1/21, 1/387*
U.S. Cl. 358—296 **13 Claims**

1. An image recording device comprising:

a plurality of recording elements for forming an image in accordance with an input half-tone image signal, wherein said plurality of recording elements record in a same color; and

a plurality of γ-converting means for γ-converting the input image signal, wherein said plurality of γ-converting means



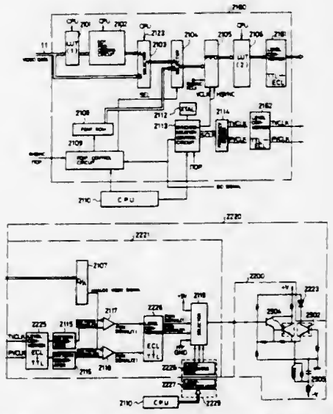
are provided correspondingly to said plurality of recording elements which record in the same color.

5,283,658

IMAGE FORMING APPARATUS WITH TTL TO ECL CONVERSION BETWEEN READING AND PRINTING CIRCUITS

Kimiyoshi Hayashi, Soka, and Masanori Sakai, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/00594, § 371 Date Dec. 4, 1990, § 102(e) Date Dec. 4, 1990, PCT Pub. No. WO90/13965, PCT Pub. Date Nov. 15, 1990
Continuation of Ser. No. 613,866, Dec. 4, 1990, abandoned. This PCT application May 10, 1989, Ser. No. 980,440
Claims priority, application Japan, May 10, 1989, 1-118469
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—296 **19 Claims**



1. An image forming apparatus for forming an image using a pulse-width modulation signal, comprising:

a reference clock signal generating circuit means for generating the reference clock signal;

a sync signal generating circuit means for generating a sync signal on the basis of the reference clock signal;

a pulse-width modulation circuit means for forming the pulse-width modulated signal in accordance with digital image data;

a recording element which is pulse-width modulated using the sync signal from said sync signal generating circuit

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means and an output from said pulse-width modulation circuit means;

a drive circuit for driving said recording element using an output from said pulse-width modulation circuit means; and

a single circuit board on which said pulse-width modulation circuit means, said recording element and said drive circuit means are integrally mounted;

wherein said reference clock signal generating circuit means and said sync signal generating circuit means are mounted separately from said single circuit board and wherein each of said reference clock signal generating circuit means and said sync signal generating circuit means transmits a signal by a level difference between a signal line and a ground level, and said pulse-width modulation circuit means transmits a signal differentially.

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APPARATUS AND METHOD OF HIGH VISION SIGNAL RECORDING USING EXPANSION TECHNIQUES AND DIGITAL DROP-OUT COMPENSATION

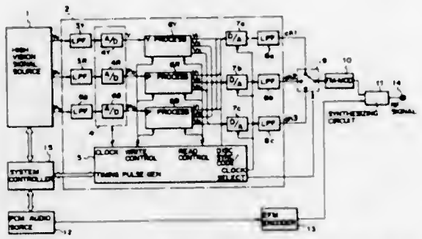
Toru Akiyama; Yoshiyuki Okuda; Akihiro Tozaki, and Motooki Sugihara, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,530

Claims priority, application Japan, Jun. 1, 1990, 2-143589

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—310 **4 Claims**



1. An apparatus for recording a high vision signal which is constructed of a multitude of horizontal scanning lines per frame, comprising:

means for line sequentially processing two kinds of color difference signals in said high vision signal on an H[—] line unit basis and forming two groups of line sequential color difference signals each of which is constructed by one of said two kinds of color difference signals;

time base expanding means for time base expanding a luminance signal in said high vision signal and said two groups of line sequential color difference signals and for obtaining an expanded luminance signal and two groups of line sequential expanded color difference signals;

means for combining three H lines of one of said two groups of line sequential expanded color difference signals consisting of six H lines corresponding to a group of expanded luminance signals consisting of six continuous H lines of the expanded luminance signal with the former half three H lines of the group of expanded luminance signals every line, forming the former half three expanded H lines, and for combining three H lines of the other one of the two groups of line sequential expanded color difference signals with the latter half three H lines of the group of expanded luminance signals every line, forming the latter half three expanded H lines;

means for setting resultant three pairs of former half and latter half expanded H lines into three channel signals; and

means for independently recording said three channel signals to spatially different positions on a recording medium.

5,283,660

VIDEO SIGNAL PROCESSING APPARATUS HAVING TIMEBASE CORRECTOR AND MEANS FOR REPLACING RESIDUAL ERROR DATA WITH SPECIFIC DATA

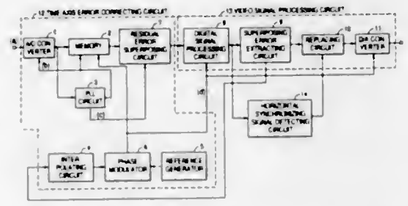
Takashi Inoue, Osaka; Hiromu Kitaora, Osakasayama; Nobuyuki Ogawa, Takatsuki; Tokikazu Matsumoto, and Fumiaki Koga, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 2, 1992, Ser. No. 892,122

Claims priority, application Japan, Jun. 4, 1991, 3-132569

Int. Cl.[5] H04N *5/95, 9/89*

U.S. Cl. 358—320 **4 Claims**



1. A video signal processing apparatus comprising:

a time base corrector for correcting a time base error of an input video signal to obtain a time base corrected video signal, including a residual error superposing means for superposing the time base corrected video signal in a portion of a horizontal synchronizing period with a residual error data indicative of a residual error which cannot be corrected by the time base corrector; and

a video signal processing circuit for processing the time base corrected video signal from the time base corrector, including a specific data generating means for generating a specific data, and a replacing means for replacing the residual error data superposed on the time base corrected video signal by the specific data.

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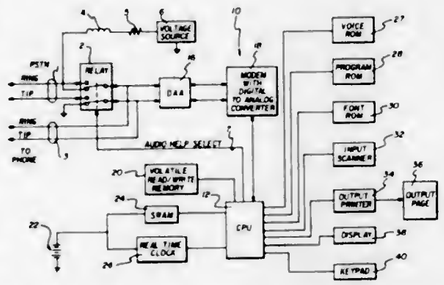
METHOD AND APPARATUS FOR ASSISTING IN THE INSTALLATION OF A FACSIMILE MACHINE

Kevin J. Klees, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1991, Ser. No. 685,778

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—406 **12 Claims**



1. A facsimile apparatus capable of providing information to assist an installer, said facsimile apparatus comprising:

a) printing means for printing image and text information including installation instructions;

b) clock means for providing elapsed time information indicating a length of time since the facsimile apparatus was last turned off;

c) memory means for storing the installation instruction in the form of images and text;

d) comparing means for comparing the elapsed time information received from said clock means with a previously stored time period, and for generating a first signal when the elapsed time is grater than said previously stored time period indicating that the facsimile apparatus may require installing;

e) addressing means for addressing said memory means to access said installation instruction responsive to said first signal received from said comparing means;

f) directing means for directing the installation instructions addressed by said addressing means to said printing means for printing a hard copy of the installation instructions for use by the installer; and

g) said clock means, memory means, comparing means, addressing means, and directing means all being within a signal facsimile apparatus.

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IMAGE READING APPARATUS CONTROLLABLE BY EXTERNAL APPARATUS

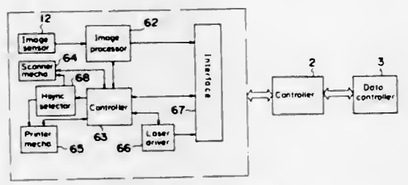
Akio Nakajima, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,860

Claims priority, application Japan, Apr. 10, 1991, 3-077619; Apr. 10, 1991, 3-077620; Apr. 10, 1991, 3-077621; Apr. 10, 1991, 3-077622

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—409 **19 Claims**



1. An image reading apparatus comprising:

signal generating means for generating a clock signal having a predetermined frequency, and generating a horizontal synchronizing signal in synchronous with said clock signal;

image reading means for reading a document image by scanning said document image in a main scan direction every horizontal scanning line in synchronous with said clock signal, and converting said read document image into an image signal;

moving means for moving said image reading means and said document image relatively to each other in a subscan direction perpendicular to said main scan direction by one horizontal scanning line in synchronous with said clock signal;

signal outputting means for outputting said horizontal synchronizing signal and said image signal to an external apparatus;

receiving means for receiving a stop request signal from said external apparatus; and

control means for controlling said moving means and said signal outputting means to stop the operations of said moving means and said signal outputting means, in response to said stop request signal received by said receiving means.

5,283,663

DATA COMMUNICATION METHOD BETWEEN CIRCUITS

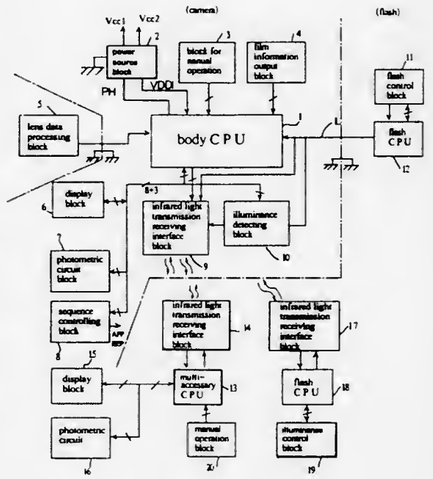
Masahiro Kawasaki, Tokyo; Teruhiko Naruo, Kyoto; Yutaka Ohsawa, and Isamu Hashimoto, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 568,516

Claims priority, application Japan, Aug. 17, 1989, 1-212008; Sep. 18, 1989, 1-241459

Int. Cl.[5] H04N *1/41*

U.S. Cl. 358—426 **18 Claims**



1. A method for performing data communication between a pair of circuits, in which a first circuit of the pair of circuits is located in a first device and a second circuit of the pair of circuits is located in a second device that is selectively attachable to the first device, the data communication being established by serially transmitting information which comprises pulse signals, the method comprising serially transmitting the pulse signals, and performing the steps of:

(a) determining a reference time in response to an occurrence of a first level change in a pulse signal outputted from one of the pair of circuits to the other, the determining step being performed by at least one of the first and second devices;

(b) judging whether a bit of a data is a "1" or a "0" in accordance with a time period extending from the reference time to a subsequent level change in the pulse signal following the reference time, the judging step being performed by one of the first and second devices that receives the outputted pulse signal;

(c) determining a new reference time in response to the occurrence of the subsequent level change in the pulse signal relative to a next bit of data in the pulse signal, the new reference time determining step being performed by at least one of the first and second devices; and

(d) returning to step (b) and repeating steps (b), (c) and (d), whereby data of a predetermined number of bits are continuously transmitted in the pulse signal.

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5,283,664

APPARATUS FOR CONVERTING AND PROCESSING INPUT BI-LEVEL IMAGE DATA AND FAITHFULLY RENDERING TONES, COLORS, AND EDGES

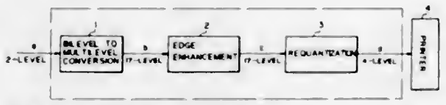
Tetsuo Fujisawa, Urawa; Yukio Sakano, Tokyo, and Toshiya Hikita, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 773,728

Claims priority, application Japan, Oct. 11, 1990, 2-272860; Oct. 11, 1990, 2-272861; Apr. 24, 1991, 3-94083

Int. Cl.[5] G06K *9/00*

U.S. Cl. 358—429 **9 Claims**



1. An image recorder comprising:

bilevel-to-multilevel converting means for converting input bilevel image data to M-level data (M being equal to or greater than 3), said bilevel-to-multilevel converting means comprising a filter having weighting coefficients;

requantizing means for converting multilevel data to N-level data (N being equal to or greater than 2 and smaller than M); and

recording means capable of recordig a single pixel in any one of N levels;

input image data being converted to M-level data by said bilevel-to-multilevel converting means, then converted to N-level data by said requantizing means, and then recorded by said recording means.

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FACSIMILE APPARATUS

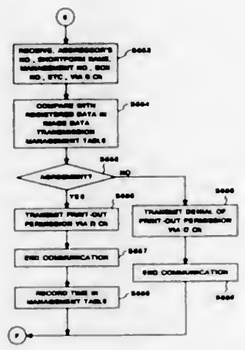
Yukihiko Ogata, Tokyo, Japan, assignor to Canoo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 554,725

Claims priority, application Japan, Jul. 20, 1989, 1-186111; Jul. 25, 1989, 1-190624

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—434 **11 Claims**



1. A facsimile apparatus comprising:

memory means for storing transmission management information corresponding to image data to be transmitted;

transmitting means for transmitting as confidential information, to an apparatus on a receiving side, the image data as well as additional transmission information corresponding to the image data;

receiving means for receiving an output permission request transmitted by the apparatus on the receiving side after the transmission by said transmitting means;

comparing means for comparing the output permission request received by said receiving means and the transmission management information stored in said memory means; and

output permission transmitting means for transmitting an output permission signal, which permits output of the image data, to the apparatus on the receiving side based on results of comparison performed by said comparing means.

5,283,666

AREA DESIGNATING APPARATUS

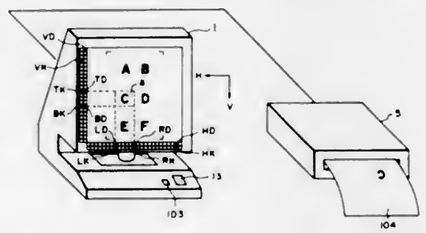
Kazuo Otani, Kodaira, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,983

Claims priority, application Japan, Sep. 12, 1990, 2-243452

Int. Cl.[5] H04N *1/387*

U.S. Cl. 358—453 **24 Claims**



1. An area designating apparatus which determines the length of a desired area of an image in one of two directions by designating two points, comprising:

designating means for designating a desired position;

detecting means for detecting the position designated by said designating means; and

controlling means for storing in a memory the last position detected by said detecting means and the position detected by said detecting means immediately before detecting the last detected position as coordinate values of the desired area in one of the two directions, wherein when one position is newly detected by said detecting means, said controlling means stores in said memory the last detected position and the newly detected position instead of the last detected position and the position detected immediately before the last detected position as the coordinate values of the desired area.

5,283,667

ELECTRONIC FILING APPARATUS PROVIDED WITH A MULTIPLE PROCESSING FUNCTION WHEN IMAGE DATA IS DISPLAYED

Yoko Kojima, Yokohama, and Keiichi Suzuki, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Dec. 12, 1990, Ser. No. 625,661

Claims priority, application Japan, Dec. 18, 1989, 1-328086; Dec. 20, 1989, 1-330168; Sep. 12, 1990, 2-241532

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—462 **18 Claims**

1. An electronic filing apparatus provided with a multiple processing function, the apparatus comprising:

an image input means for reading images of characters and line and dither images;

an image input memory means for storing image data read by said image input means;

a data compression means to compress image data stored in said image memory means in accordance with a particular type among a set of possible image data types, the data compression means including:

1) first compression means for performing a first compression process on the image data; and

2) second compression means for performing on the image data, a second compression process distinct from the first compression process;

a first storage means to store image data and external information in a disk apparatus;

a first decimation means for performing simple decimation processing of image data stored in said image memory means, and generating data for display in accordance with the particular type among the set of possible image data types;

a second decimation means for OR decimating image data stored in said image memory means, and generating data for display in accordance with the particular type among the set of possible image data types;

a decoding means for decoding image data that has been compressed by said data compression means;

an image data processing means for performing compression and editing for said generation and display of image data;

an image data display means for displaying on a screen said image data that has been edited by said image data processing means;

a data comparison means for comparing (1) a size of said

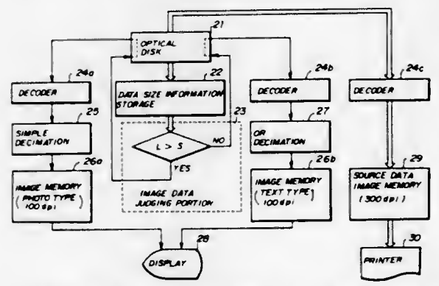


image data to be compressed by said data compression means with (2) a reference value that has been set beforehand;

a second storage means for storing said image data that has been processed by said first decimation means or said second decimation means; and

a central processing unit to control each of said means;

wherein when image data for displaying on a screen of said display means is created and stored:

1) the image data is input by said image input means and said input image data is stored in said image input memory means, compressed by said data compression means and stored in said first storage means; and, simultaneously,

2) the image data that has been compressed by said data compression means is compared with a reference value, and:

i) multiple processing of said source image data is performed by said first decimation means when a size of said compressed image data exceeds said reference value, and processed data is stored in said second storage means, and

ii) multiple processing is performed by said second decimation means when the size of said compressed image data is equal to or less than said reference value, and processed data is stored in said second storage means.

5,283,668

IMAGE READING APPARATUS WITH IMAGE SENSOR HAVING SELECTIVELY READABLE SEGMENTS

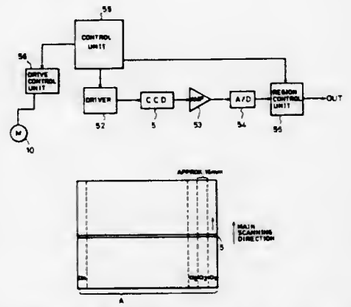
Akira Hiramatsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1991, Ser. No. 739,492

Claims priority, application Japan, Aug. 28, 1990, 2-224354; Sep. 18, 1990, 2-246158

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—474 **5 Claims**



1. An image reading apparatus of the type which reads an original image by dividing it into a plurality of stripe-like areas each having a fixed width, comprising:

reading means for reading an original a plurality of times each reading operation using a reading width which corresponds to an integral multiple of the fixed width, and for outputting image signals for each reading operation; and

selection means for sequentially selecting, in synchronism with the image reading performed a plurality of times, designated image signals from among the image signals output from said reading means during each reading operation, the designated image signals corresponding to an area of said reading means having the fixed width and the designated image signals representing a different area of said reading means for each reading operation.

5,283,669

READING APPARATUS USING TWO READOUT CIRCUITS CONNECTED IN REVERSE ORDER

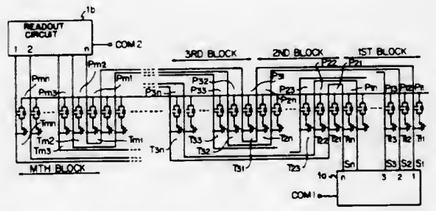
Kazuhiro Sakai, and Mamoru Nobue, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 727,906

Claims priority, application Japan, Aug. 6, 1990, 2-208742

Int. Cl.[5] H04N *1/024*

U.S. Cl. 358—482 **4 Claims**



1. A reading apparatus comprising:

a photo-detecting element array constituted by a plurality of photo-detecting element blocks each constituted by a plurality of photo-detecting elements being arranged in an order;

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switching elements, each coupled to one of a plurality of photo-detecting elements and each having an output line, for transferring charges generated in the corresponding photo-detecting elements;

wiring connecting said output lines of one of each said blocks to the output lines of an adjacent block, wherein the output lines of one of each said blocks are connected to the output lines of the adjacent block that are in a mirror-image order;

two read-out circuits, simultaneously driven by a drive circuit, for reading out the charges generated by said photo-detecting elements, one of said read-out circuits being connected to a one end of said wirings for reading out the charges in the order of arrangement in the one photo-detecting element block, and the other read-out circuit being connected to an opposite end of said wirings for reading out the charges in the reverse order of arrangement in the adjacent photo-detecting element block; and

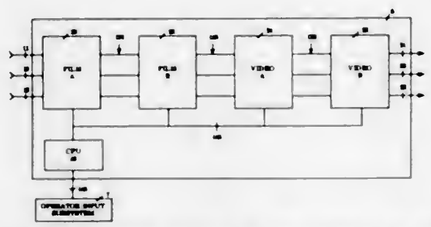
selecting circuit for selecting one of outputs of said two read-out circuits block by block of the photo-detecting elements.

5,283,670

HARDWARE IMPLEMENTATION OF AN HDTV COLOR CORRECTOR

Patrice Capitant, Los Altos; Gary M. Bennett, San Jose; Dave Collier, Gilroy; O. F. Morgan, and David Rossmere, both of San Jose, all of Calif., assignors to Sony Electronics Inc., Park Ridge, N.J.

Filed Mar. 19, 1992, Ser. No. 854,367
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—530 **14 Claims**



1. A digitized image corrector for transforming a first digitized representation of an image into a second digitized representation of said image in accordance with a first transformation function defined by a first set of transform data, a second transformation function defined by a second set of transform data, a third transformation function defined by a third set of transform data, and a fourth transformation function defined by a fourth set of transform data, comprising:

first correction circuit for receiving said first set of transform data from a user and transforming said first digitized representation in accordance with said first transformation function, said first correction circuit having a first input means for receiving a first digitized signal, a second digitized signal, and a third digitized signal comprising said first digitized representation, said first correction circuit generating a first transformed signal, a second transformed signal, and a third transformed signal according to said first transformation function, said first correction circuit having a first output means for transmitting said first transformed signal, said second transformed signal, and said third transformed signal;

first bypass means for selectively bypassing said first correction circuit such that said first output means is coupled to transmit said first digitized signal, said second digitized signal, and said third digitized signal;

second correction circuit for receiving said second set of transform data from said user and transforming said first transformed signal, said second transformed signal, and said third transformed signal in accordance with said second transformation function, said second correction circuit having a second input means for receiving said first transformed signal, said second transformed signal, and said third transformed signal from said first output means, said second correction circuit generating a fourth transformed signal, a fifth transformed signal, and a sixth transformed signal according to said second transformation function, said second correction circuit having a second output means for transmitting said fourth transformed signal, said fifth transformed signal, and said sixth transformed signal;

second bypass means for selectively bypassing said second correction circuit such that said second output means is coupled to transmit said first transformed signal, said second transformed signal, and said third transformed signal;

third correction circuit for receiving said third set of transform data from said user and transforming said fourth transformed signal, said fifth transformed signal, and said sixth transformed signal in accordance with said third transformation function, said third correction circuit having a third input means for receiving said fourth transformed signal, said fifth transformed signal, and said sixth transformed signal from said second output means, said third correction circuit generating a seventh transformed signal, an eight transformed signal, and a ninth transformed signal according to said third transformation function, said third correction circuit having a third output means for transmitting said seventh transformed signal, said eight transformed signal, and said ninth transformed signal;

third bypass means for selectively bypassing said third correction circuit such that said third output means is coupled to transmit said fourth transformed signal, said fifth transformed signal, and said sixth transformed signal;

fourth correction circuit for receiving said fourth set of transform data from said user and transforming said seventh transformed signal, said eight transformed signal, and said ninth transformed signal in accordance with said fourth transformation function, said fourth correction circuit having a fourth input means for receiving said seventh transformed signal, said eight transformed signal, and said ninth transformed signal from said third output means, said fourth correction circuit generating a tenth transformed signal, an eleventh transformed signal, and a twelfth transformed signal according to said fourth transformation function, said fourth correction circuit having a fourth output means for transmitting said tenth transformed signal, said eleventh transformed signal, and said twelfth transformed signal comprising said second digitized representation;

fourth bypass means for selectively bypassing said fourth correction circuit such that said fourth output means is coupled to transmit said seventh transformed signal, said eight transformed signal, and said ninth transformed signal;

image storage means for storing said second digitized representation of said image for subsequent display, wherein said first correction circuit comprises;

first function means for performing three transformations on said second digitized signal, said first function means coupled to receive said second digitized signal, said first function means generating a first signal, a second signal and a third signal;

second function means for performing three transformations on said first digitized signal, said second function means coupled to receive said first digitized signal, said second function means generating a fourth signal, a fifth signal and a sixth signal;

third function means for performing three transformations on said third digitized signal, said third function means coupled to receive said third digitized signal, said third function means generating a seventh signal, an eight signal and a ninth signal;

first adder means for generating a first term signal equal to the arithmetic sum of said first signal, said fourth signal, and said seventh signal, said first adder means coupled to receive said first signal, said fourth signal, and said seventh signal;

second adder means for generating a second term signal equal to the arithmetic sum of said second signal, said fifth signal, and said eight signal, said second adder means coupled to receive said second signal, said fifth signal, and said eight signal;

third adder means for generating a third term signal equal to the arithmetic sum of said third signal, said sixth signal, and said ninth signal, said third adder means coupled to receive said third signal, said sixth signal, and said ninth signal;

fourth function means for transforming said first term signal, said fourth function means coupled to receive said first term signal, said fourth function means generating said first transformed signal;

fifth function means for transforming said second term signal, said fifth function means coupled to receive said second term signal, said fifth function means generating said second transformed signal;

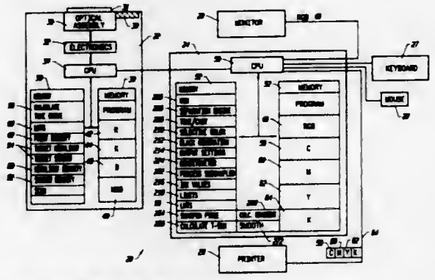
sixth function means for transforming said third term signal, said sixth function means coupled to receive said third term signal, said sixth function means generating said third transformed signal.

5,283,671

METHOD AND APPARATUS FOR CONVERTING RGB DIGITAL DATA TO OPTIMIZED CMYK DIGITAL DATA

John R. Stewart, 1/80 Woodland St., Balgowlah Heights; Andrew Cunningham, 66 Whale Beach Rd., Avalone; David Alexander, 19 NeDean Ave, Normanhurst, all of Australia; Bradley A. Silen, 8 Buckeye Way, Kentfield, Calif. 94904, and Charlie Fenton, 141 Winfield St., San Francisco, both of Calif. 94110

Filed Feb. 20, 1991, Ser. No. 658,188
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—532 **15 Claims**



1. A printing apparatus comprising:

an optical assembly for receiving an image from film;

a filter assembly coupled to said optical assembly for generating red, green, and blue analog image signals corresponding to said image of said film;

an electronic processor for receiving said red, green and blue analog image signals and producing corresponding red, green, and blue digital image signals;

interface means for receiving and storing user defined values, said interface means receiving and storing a printing density value, a target highlight dot percentage value, a target shadow dot percentage value, highlight density information, and shadow density information;

means, coupled to said interface means, for calculating tone curve data from said printing density value, said target highlight dot percentage value, said target shadow dot percentage value, said density information, and said shadow density information;

means, could to said electronic processor, for tonally compressing said red, green, and blue digital image signals in accordance with said tone curve data to yield red, green, and blue tonally compressed digital image signals; and

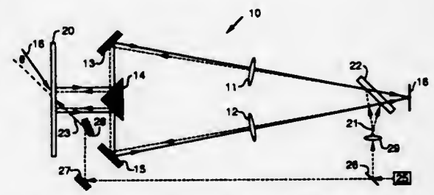
means for converting said red, green, and blue tonally compressed digital image signals into corresponding cyan, magenta, yellow, and black digital signals.

5,283,672

HOLOGRAPHIC TECHNIQUES FOR GENERATING HIGH RESOLUTION TELESCOPIC IMAGES

John H. Hong, Moorpark, and Pochi A. Yeh, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed May 4, 1992, Ser. No. 878,147
Int. Cl.[5] G03H *1/02, 1/26;* G02B *23/00*
U.S. Cl. 359—7 **11 Claims**



1. A multiple aperture imaging system, comprising:

a plurality of lenses forming a plurality of apertures;

a thin holographic medium for receiving an incoming wave front;

a reference point source for projecting light from an image plane, through said plurality of apertures, and onto said holographic medium;

means for directing plane wave light onto said holographic medium, said plane wave and point source derived from a common source of coherent light and interfering and writing a hologram in said holographic medium, said hologram recording phase errors resulting from piston and tilt errors associated with said plurality of apertures;

said hologram diffracting said incoming wave front, said diffracted wave front containing said phase errors;

said holographic medium sufficiently thin to provide non-zero response to said incoming wave front not exactly counter-propagating with respect to said reference plane wave used to write said hologram;

means for splitting said diffracted wave front for propagation through said plurality of apertures, said propagation canceling said phase errors; and

means for recombining said diffracted and split wave front to form a high resolution image at said image plane.

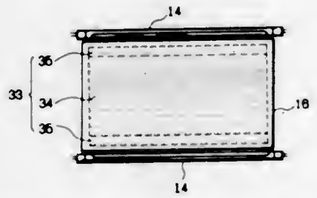
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5,283,673

SURFACE LUMINOUS SOURCE PANEL WITH AREAS HAVING DIFFERENT REFLECTOR SPECK DENSITIES

Shinzo Murase, and Hirokazu Matsui, both of Ohtsu, Japan, assignors to Kabushiki Kaisha Meitaku Shisutemu, Ohtsu, Japan

Continuation-in-part of Ser. No. 587,763, Sep. 26, 1990, abandoned. This application Sep. 4, 1991, Ser. No. 756,260
Claims priority, application Japan, Sep. 30, 1989, 1-256820
Int. Cl.[5] G02F *1/1335*; F21V *7/04*
U.S. Cl. 359—49 **4 Claims**



1. A surface luminous source panel for use in a surface luminous source apparatus having a first light source and a second light source, said surface luminous source panel comprising:
a transparent substrate having opposing faces and a plurality of peripheral edges, a first of said peripheral edges being disposed at a first end of said transparent substrate and being positioned adjacent said first light source, and a second of said peripheral edges being disposed at a second end of said transparent substrate opposite said first end thereof and being positioned adjacent said second light source; and
an irregular reflection layer comprising irregular reflector specks arranged on one of said opposing faces of said transparent substrate, said irregular reflection layer including a parallel pattern section in which said irregular reflector specks occupy an area per unit length of said irregular reflection layer which smoothly increases at a first rate with a distance from said first peripheral edge in an area between said second peripheral edge and a center location midway between said first and second peripheral edges and with a distance from said second peripheral edge in an area between said second peripheral edge and said center location, and first and second regulating pattern sections in which said irregular reflector specks occupy an area per unit length of said irregular reflection layer which smoothly increases at a second rate with a distance from said first and second peripheral edges, respectively, said first rate being greater than said second rate; and
wherein said one of said opposing faces of said transparent substrate includes first and second narrow margin portions extending adjacent and parallel to said first and second peripheral edges, respectively, said first and second narrow margin portions being free of said irregular reflector specks.

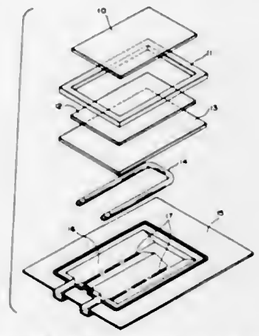
5,283,674

BACKLIGHT APPARATUS HAVING VENTILATING HOLES FOR LIQUID CRYSTAL DISPLAY

Shunsuke Hanaoka, Tokyo; Arifumi Etoh, and Heihachi Ide, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 954,340
Claims priority, application Japan, Sep. 30, 1991, 3-278855
Int. Cl.[5] G02F *1/133*; F21S *3/00*
U.S. Cl. 359—49 **4 Claims**

1. A liquid crystal display apparatus comprising:
a liquid crystal display panel;
a backlight apparatus including a fluorescent lamp disposed on the rear face side of said liquid crystal display panel for illuminating backlight therefrom upon said liquid crystal display panel; and
a reflecting plate disposed remote from said liquid crystal display panel with respect to said fluorescent lamp and having a plurality of ventilating holes formed at portions



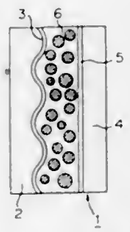
thereof opposing to an outer periphery of said fluorescent lamp, said plurality of ventilating holes being of a width less than a diameter of said fluorescent lamp to restrict deposits inside said fluorescent lamp to an area less than a diameter of said fluorescent lamp.

5,283,675

LIQUID CRYSTAL DISPLAY ELEMENT WITH ELECTRODE HAVING CONCAVE-CONVEX SURFACE AT LIQUID CRYSTAL SIDE

Yoshiharu Ooi; Yoshinori Hirai; Satoshi Niiyama, and Tsuneo Wakabayashi, all of Yokohama, Japan, assignors to AG.Technology Co., Ltd., Yokohama, Japan

Filed Aug. 28, 1992, Ser. No. 936,633
Claims priority, application Japan, Aug. 30, 1991, 3-245136
Int. Cl.[5] G02F *1/13*, *1/1343*
U.S. Cl. 359—51 **32 Claims**



27. A projection type liquid crystal display apparatus which comprises:
a liquid crystal display element comprising a liquid crystal and solidified matrix composite, in which liquid crystal is dispersed and held in a solidified matrix composite, which is interposed between a pair of substrates with electrodes, at least one of which is transparent, characterized in that at least one of the electrodes has a concave-convex electrode surface at the side facing the liquid crystal and solidified matrix composite,
a driving circuit to drive the liquid crystal display element,
a projection light source for emitting light to the liquid crystal display element, and
a projection optical system for projecting the light from the liquid crystal display element onto a projection screen, wherein the relation $0.03 \cdot G < Ra < 0.3 \cdot G$ is satisfied, where G is the mean electrode gap, and Ra is the mean distance from a peak convex portion of said concave-convex surface to a plane parallel to said pair of substrates and cutting through the concave-convex surface such that the amount of the surface above the plane is the same as that below the plane, and the pitch P of said concave-convex surface is two or more times as large as the mean diameter R_{LC} of liquid crystal droplets of the liquid crystal dispersed in said solidified matrix.

5,283,676

LIQUID CRYSTAL LIGHT VALVE

Thomas C. Borah, Vista, and Javier A. Ruiz, Oceanside, both of Calif., assignors to Hughes-JVC Technology Corporation, Carlsbad, Calif.

Continuation of Ser. No. 699,123, May 13, 1991, abandoned. This application May 10, 1993, Ser. No. 59,511
Int. Cl.[5] G02F *1/1335*, *1/135*, *1/13*
U.S. Cl. 359—67 **14 Claims**

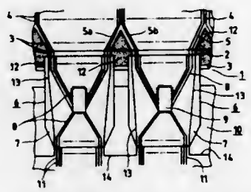
14. In an AC biased liquid crystal field effect light valve having a plurality of layers including a liquid crystal layer having a predetermined response time, and a photosensitive layer that internally generates a DC voltage in the presence of input illumination, which DC voltage causes optical overshoot, a method for reducing optical overshoot caused by the DC voltage internally generated in the AC biased light valve, said method being characterized by doping the material of the liquid crystal layer to lower the resistivity of the liquid crystal layer by at least 100 times.

5,283,677

LIQUID CRYSTAL DISPLAY WITH GROUND REGIONS BETWEEN TERMINAL GROUPS

Fumihiko Sagawa; Takehiro Ishikawa, and Takao Tanaka, all of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,989
Claims priority, application Japan, May 31, 1991, 3-156203
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—88 **1 Claim**



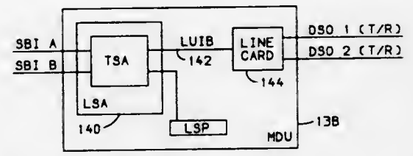
1. A liquid crystal display apparatus comprising:
a liquid crystal element including a plurality of electrode terminals formed into terminal groups and arranged along an edge portion of said liquid crystal element;
a plurality of flexible substrates connected to said edge portion of said liquid crystal element, each flexible substrate including a printed circuit board connected to an associated terminal group by a lead pattern group;
ground terminals formed on each side of each of said terminal groups and being electrically independent of said electrode terminals and having contours similar to pattern shapes of the space between the terminal groups, said ground terminals being disposed on said liquid crystal element adjacent said edge portions and between adjacent electrode terminal groups; and
ground patterns, being electrically independent of said lead pattern groups disposed on said flexible substrates and connected to said ground terminals and grounded through said printed circuit board.

5,283,678

METALLIC ACCESS IN A FIBER REMOTE TERMINAL

Richard M. Czerwiec, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Mar. 18, 1992, Ser. No. 853,532
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—109 **3 Claims**



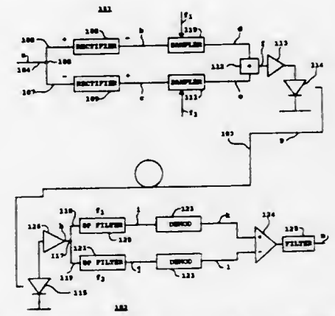
1. Apparatus, comprising:
an optical distribution shelf having a plurality of optical distribution units each responsive to one of a plurality of metallic serial bus interface (SBI) signals for providing same as optical serial bus interface signals; and
a metallic distribution unit for insertion in the optical distribution shelf, responsive to one of the plurality of metallic (SBI) signals, for providing at least one metallic subscriber level signal.

5,283,679

COMMUNICATIONS PROCESS, TRANSMITTER AND RECEIVER FOR ANALOG SIGNALS

Berthold Wedding, Korntal-Münchingen, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Dec. 10, 1991, Ser. No. 804,398
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1990, 4040170
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—154 **17 Claims**



11. In a communications system having a transmitter, a transmission medium and a receiver, a transmitter comprising:
dividing means for dividing an input signal into two identical signals;
rectifying means, operatively coupled to the dividing means, for receiving the identical signals and outputting two differential signals, a first of the differential signals containing components of the identical signals having negative amplitude values and a second of the differential signals containing components of the identical signals having positive amplitude values;
sampling means, operatively coupled to the rectifying means, for individually sampling the respective first and second differential signals differently and producing respective first and second sampled signals;

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combining means, operatively coupled to the sampling means, for combining the first and second sampled signals to produce a combined signal;

amplifying means, operatively coupled to the combining means, for amplifying the combined signal; and

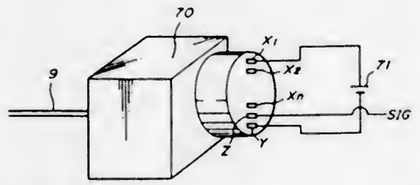
transducer means, operatively coupled to the amplifying means, for transducing the amplified combined signal to produce a transmission signal for communication to the receiver of the system over the transmission medium.

5,283,680

OPTICAL CONNECTOR ASSEMBLY

Minoru Okugawa; Masakazu Moritoki, and Yasuyoshi Suzuki, all of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Division of Ser. No. 499,549, Jun. 27, 1990, Pat. No. 5,163,109.
This application Jun. 18, 1992, Ser. No. 900,841
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—171 **2 Claims**



1. An optical connector assembly for connecting optical fibers, comprising:

a switching circuit which is switched to an on or off status responsive to data sent to said circuit;

a light-emitting diode connected with said switching circuit, said light-emitting diode being turned on or off in response to the status of the switching circuit;

an optical fiber means comprising a plurality of optical fibers for transmitting light emitted from the light-emitting diode, each of said optical fibers having a different length;

resistor means including a plurality of fixed resistors having different resistance values corresponding to said different lengths of optical fibers, one end of said resistor means connected in parallel with one terminal of the light-emitting diode;

a plurality of first power supply terminals, each of said terminals connected in series with each of the other ends of the plurality of fixed resistors, each of said first power supply terminals having the same polarity;

a data supply terminal connected to the switching circuit for supplying transmission data;

a second power supply terminal connected to the switching circuit, said second power supply terminal having a polarity different from that of said first power supply terminals; and

power source means connected to one of the plurality of first power supply terminals and to the second power supply terminal for supplying power to the light-emitting diode,

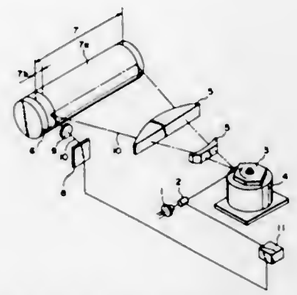
wherein the switching circuit, the light-emitting diode and the resistor means are built in a single module having said first power supply terminals, said second power supply terminal and said data supply terminal.

5,283,681

SCANNING OPTICAL EQUIPMENT

Osamu Hoshino, Ebina; Isamu Shimoda, Zama; Kazuo Isaka, Tokyo, and Masayuki Suzuki, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1990, Ser. No. 515,870
Claims priority, application Japan, Apr. 28, 1989, 1-111357; Aug. 4, 1989, 1-202383
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—198 **26 Claims**



1. Scanning optical equipment comprising:

a source for a light beam;

optical means to focus the light beam on a photosensitive member;

deflecting means to deflect the light beam;

detecting means to detect the light beam deflected by said deflecting means, coming via said photosensitive member, and not returning to said deflecting means; and

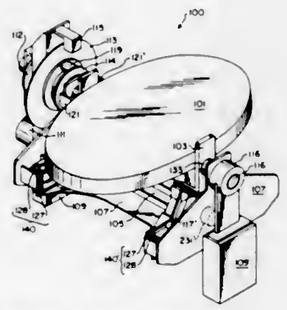
control means to control the focus of the light beam by said optical means according to a signal received from said detecting means.

5,283,682

REACTIONLESS SCANNING AND POSITIONING SYSTEM

Miroslaw A. Ostaszewski, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Oct. 6, 1992, Ser. No. 957,420
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—198 **23 Claims**



1. Pivotal platform apparatus comprising:

a yoke member;

a mirror carrier pivotally attached by first flexible pivot means to said yoke member and having a first rotational inertia about a first axis;

a reaction mass pivotally attached by a second flexible pivot means to said yoke member and having a second rotational inertia about a second axis;

drive flexure means for transmitting pivotal movement between said reaction mass and said mirror carrier;

motor means effective when energized for pivotally moving said reaction mass from a first reaction mass position to a second reaction mass position about said second axis;

said drive flexure means being responsive to said pivotal movement of said reaction mass to effect a pivotal movement of said mirror carrier about said first axis from a first mirror carrier position to a second mirror carrier position;

said first flexible pivot means and said second flexible pivot means being effective to move said mirror carrier pivotally from said second mirror carrier position to said first mirror carrier position and to move said reaction mass pivotally from said second reaction mass position to said first reaction mass position when said motor means is de-energized; and

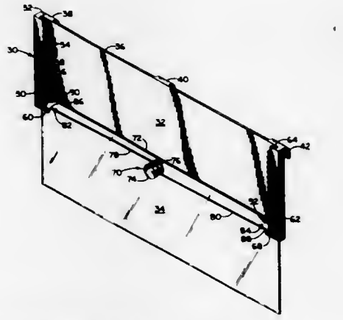
means for using said second rotational inertia of said reaction mass to react against said first rotational inertia of said mirror carrier so as to cause a reactionless effect of said apparatus comprising said mirror carrier and said reaction mass.

5,283,683

WINDSHIELD VISOR

Ray Yamamoto, 5801 Ashue Rd., Wapato, Wash. 98951

Filed Aug. 25, 1992, Ser. No. 936,352
Int. Cl.[5] G02B *26/02, 7/18;* B60J *3/00*
U.S. Cl. 359—229 **6 Claims**



1. A windshield visor attachment comprising:

a conventional windshield visor:

a first rigid rectangular panel;

a second rigid rectangular panel slidable within and capable of extending downward from the first panel;

a means for fastening the visor attachment to the conventional windshield visor, said means comprising screws penetrating the conventional windshield visor, said screws being fastened to the first panel; and

a means to move the second panel to a selected position and to retain the second panel in the selected position, said means comprising;

two series of inward-facing opposing serrations formed on the first panel; and

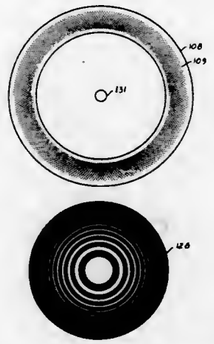
extendible rods attached to the second panel and engageable within the opposing serrations.

5,283,684

METHOD OF CONSTRUCTING CONFOCAL MICROSCOPE COMPONENTS

Robert L. Thomas; Lawrence D. Favro, both of Huntington Woods; Pao-Kuang Kuo, Troy, and Li Chen, Detroit, all of Mich., assignors to The Board of Governors of Wayne State University, Detroit, Mich.

Division of Ser. No. 734,398, Jul. 23, 1991, Pat. No. 5,162,941.
This application Jul. 31, 1992, Ser. No. 922,931
Int. Cl.[5] G02B *5/30*
U.S. Cl. 359—234 **4 Claims**



1. For use in a confocal microscope, a method for constructing a Nipkow disk using a zone plate disk, including the steps of:

(A) constructing a zone plate disk, including the substep of disposing a plurality of focusing means along a disk, wherein said plurality of focusing means have a common focal distance,

(B) placing a photographic plate at the focal distance of said plurality of focusing means,

(C) illuminating said plurality of focusing means with a light source such that the illumination is passed through said plurality of focusing means and focused onto the photographic plate thereby creating an image of a plurality of points of focused illumination, and

(D) capturing the image created on the photographic plate illuminated in step (C) and using it to construct the Nipkow disk.

5,283,685

METHOD OF MANUFACTURING AN NLO-ACTIVE DEVICE

Winfried H. G. Horsthuis, Enschede, Netherlands, assignor to Akzo NV, Arnhem, Netherlands

Filed Dec. 15, 1992, Ser. No. 990,871
Claims priority, application Netherlands, Dec. 23, 1991, 9102167
Int. Cl.[5] G02F *1/35*
U.S. Cl. 359—332 **13 Claims**

1. A method of manufacturing a non-linear optically active (NLO) device, in which method an optical waveguiding structure is formed which comprises at least a layer of an NLO polymer containing hyperpolarizable groups, with the NLO polymer being exposed, with heating, to an electric field for poling of the hyperpolarizable groups wherein the NLO polymer is heated by an electric conductor which is in contact with the NLO polymer and which generates thermal energy for the heating of the NLO polymer.

11. A device comprising an optical waveguiding structure comprising at least a layer of an NLO polymer containing poled hyperpolarizable groups, a component for coupling light into the waveguiding structure, and electrodes for electro-opti-

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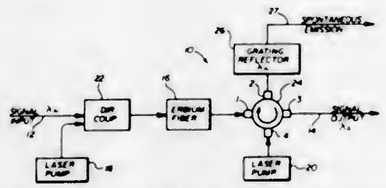
cally affecting the coupled light wherein the device is manufactured using a method according to claim 1 with the live electric conductor also functioning as an electrode in electro-optically affecting the coupled light.

5,283,686

OPTICAL SYSTEMS WITH GRATING REFLECTOR

David R. Huber, Warrington, Pa., assignor to General Instrument Corporation, Jerrold Communications, Hatboro, Pa.

Filed Jul. 27, 1992, Ser. No. 919,823
Int. Cl.[5] H01S *3/02*
U.S. Cl. 359—337 **5 Claims**



1. An optical amplifier and filter for providing an amplified optical signal having a desired signal and undesired emission and for removing said undesired emission from said amplified optical signal to provide an optical output signal having substantially only said desired signal, said optical amplifier and filter comprising:

an optical amplifier for receiving an optical signal input and providing said amplified optical signal;

an optical circulator having at least three circulator ports for circulating optical signals from one port to the next port in a circulating direction;

means for coupling said amplified optical signal having said desired signal and said undesired emission to a first of said circulator ports;

a grating reflector for reflecting substantially only said desired signal while not reflecting said undesired emission from said grating reflector to separate the desired signal from the undesired emission;

means for coupling said grating reflector to a second of said circulator ports which is the next circulator port in the circulating direction from said first circulator port for reflecting said desired signal back to said second circulator port; and

said optical output signal having substantially only said desired signal coupled from a third of said circulator ports which is the next port in the circulating direction from said second circulator port, so that said desired signal is separated from the undesired emission.

5,283,687

AMPLIFIER FOR OPTICAL FIBER COMMUNICATION LINK

Hai-Pin Hsu, Northridge; Ronald B. Chesler, Woodland Hills, and Gregory L. Tangonan, Oxnard, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 655,615, Feb. 15, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 929,193
Int. Cl.[5] H04B *10/24*
U.S. Cl. 359—341 **3 Claims**

1. A bidirectional communication link comprising:

an optical fiber having a first and a second end, said optical fiber including first and second fiber segments;

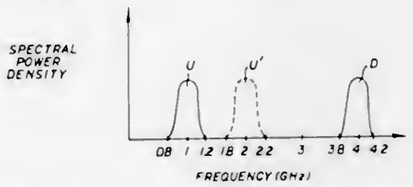
first means for launching a first optical carrier of a first wavelength onto said fiber at said first end thereof, said first launching means including means for impressing a first modulating signal having a first spectral power density distribution upon said first carrier;

second means for launching a second optical carrier of a second different wavelength onto said fiber at said second end thereof, said second launching means including means for impressing upon said second carrier a second modulating signal having a second power density distribution substantially segregated from said first power distribution;

first receiver means, coupled to said second end of said fiber, for extracting said first modulating signal from said first optical carrier;

second receiver means, coupled to said first end of said fiber, for extracting said second modulating signal from said second optical carrier; and

an optical fiber amplifier connected between said first and second optical fiber segments, said optical fiber amplifier including:



pump laser means for generating optical energy of a second wavelength;

wavelength selective optical coupler means, optically coupled to said first fiber segment and to said pump laser means, for combining said optical energy of said second wavelength with optical energy of said first wavelength entering said coupler means from said first fiber segment; and

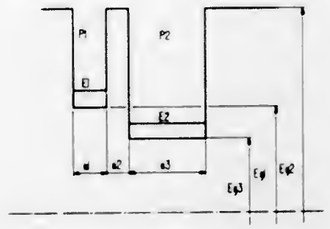
doped fiber means, optically connected between said optical coupler means and said second optical fiber segment, for amplifying optical energy from said first and second fiber segments within a predetermined wavelength spectrum encompassing said first wavelength.

5,283,688

OPTICAL AMPLIFIER HAVING A SEMICONDUCTOR WITH A SHORT SWITCHING TIME

Benoit Deveaud-Pledran, Lannion, France, assignor to France Telecom Etablissement Autonome De Droit Public, Paris, France

Filed Jan. 26, 1993, Ser. No. 9,138
Claims priority, application France, Jan. 31, 1992, 92 01083
Int. Cl.[5] H01S *3/25, 3/19*; C02F *3/00*
U.S. Cl. 359—344 **10 Claims**



1. An optical amplifier with a short switching time, characterized in that said optical amplifier comprises a stack of semiconductor layers comprising:

a first layer (**12**) of a first semiconductor material (SC_1) having a first band gap (Eg_1) and a first thickness (e_1),

a second layer (**14**) of a second semiconductor material (SC_2) having a second band gap (Eg_2) wider than the first band gap (Eg_1) of the first semiconductor material, said second layer having a second thickness (e_2),

a third layer (**16**) of a third semiconductor material (SC_3) having a third band gap (Eg_3) smaller than the first band gap (Eg_1) of the first semiconductor material (SC_1), said third layer (**16**) having a third thickness (e_3),

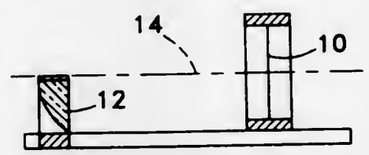
said stack thus creating a shallow quantum well (**P1**) in the first layer (**12**) coupled to a deep quantum well (**P2**) in the third layer (**16**) across a potential barrier (**BP**) in the second layer (**14**), said stack also being surrounded by two layers (**30, 32**) constituting antireflection layers for a wavelength ($\lambda 1$) corresponding to the energy of the first band gap (Eg_1) of the first semiconductor material (SC_1) creating the shallow quantum well (**P1**) and partial reflection layers for a wavelength ($\lambda 2$) corresponding to the energy of the third band gap (Eg_3) of the third semiconductor material (SC_3) creating the deep quantum well (**P2**), wherein optical amplification occurs at the wavelength ($\lambda 1$) corresponding to the shallow well (**P1**) and a laser effect occurs at the wavelength ($\lambda 2$) corresponding to the deep well (**P2**).

5,283,689

OPTICAL SIGHTING DEVICE

Warren A. Carlough, 5 Old Forge La., Pittsford, N.Y. 14534

Filed Jul. 15, 1991, Ser. No. 729,592
Int. Cl.[5] G02B *23/00*
U.S. Cl. 359—427 **5 Claims**



1. An optical sighting device comprising means defining an optical axis having mutually opposite objective and ocular directions, a field of view spaced from said defining means in said objective direction when the device is in use being the object field, a reticle, means for mounting said reticle transversely relative to said axis, a lens element of relatively high positive power, and means for mounting said lens element immediately adjacent to said axis closely spaced in the ocular direction therealong from said reticle, said lens element being effective to focus an image of said reticle on the retina of the eye of a user when his eye is brought close to said lens element, and said lens element being effective visually to block out a portion of the object field in line with said reticle and leaving a relatively large portion of the object field adjacent to said reticle unobstructed.

5,283,690

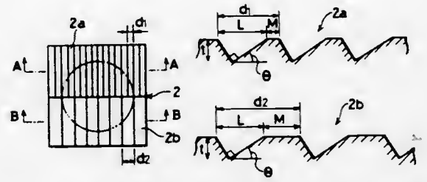
OPTICAL DIFFRACTION GRATING ELEMENT

Takahiro Miyake; Yoshio Yoshida, and Yukio Kurata, all of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1990, Ser. No. 503,039
Claims priority, application Japan, Apr. 4, 1989, 1-85510; Mar. 7, 1990, 2-57472
Int. Cl.[5] G02B *5/18, 27/44*
U.S. Cl. 359—566 **18 Claims**

1. An optical diffraction grating element comprising:

a plurality of diffraction gratings, each grating having a configuration in which grooves and flat lands are alternately formed so that each groove is adjoined on either side by a land, wherein the diffraction gratings have the same groove depth, groove width and groove tilt angle, the tilt angle being the angle of the inclined surface of the groove with respect to the plane which intersects the bottom of the groove and is parallel with the land surface,



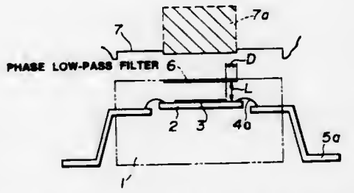
while the pitches of the diffraction gratings differ by having a different land width for each diffraction grating.

5,283,691

SOLID STATE IMAGING APPARATUS

Yuji Ogasawara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 833,130
Claims priority, application Japan, Feb. 15, 1991, 3-6331[U]
Int. Cl.[5] G02B *5/18, 27/44*; H01L *31/02, 27/14*
U.S. Cl. 359—566 **15 Claims**



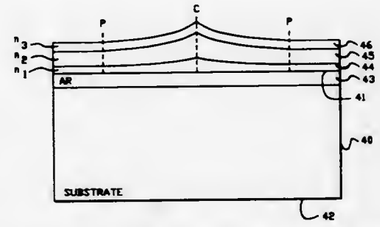
1. A solid state imaging apparatus having a clear molded package covering a solid state imaging device, characterized in that a phase low pass filter is formed on a surface of a light receiving side of said clear molded package.

5,283,692

MULTI-LAYER GRADED REFLECTIVITY MIRROR

Richard L. Herbst, Palo Alto, Calif., assignor to Spectra Physics Lasers, Inc., Mountain View, Calif.

Continuation of Ser. No. 383,865, Jul. 21, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 824,715
Int. Cl.[5] G02B *1/10, 5/28, 5/26*
U.S. Cl. 359—580 **9 Claims**



1. A mirror having graded reflectivity at a given wavelength λ, comprising:

a substrate, having a first surface and a second surface opposite the first surface.

a first dielectric layer, on the first surface of the substrate,

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having an index of refraction n_1 and having an optical thickness profile with a maximum optical thickness of $\lambda/4$ at a peak area C and essentially continuously decreasing away from the peak area C to an optical thickness of greater than or equal to a determinate value Z at a perimeter P and continuing outside the perimeter P at a constant optical thickness equivalent to the optical thickness at the perimeter P for a distance D, wherein D is greater than zero;

a second dielectric layer, on the first dielectric layer, having an index of refraction n_2 and having an optical thickness profile with a maximum optical thickness of $\lambda/4$ at the peak C and essentially continuously decreasing away from the peak area C to optical thickness of greater than or equal to the determinate value Z at the perimeter P and continuing outside the perimeter P at a constant optical thickness equivalent to the optical thickness at the perimeter P for a distance D greater than zero;

wherein the determinate value Z is an optical thickness greater than zero at which the reflectivity of the mirror is near a minimum for the given wavelength λ.

5,283,693

COMPACT ZOOM LENS SYSTEM

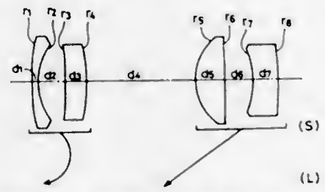
Tetsuo Kohno, Toyonaka; Takashi Okada, Osaka; Mitsuko Date, Sakai, and Hiroyuki Matsumoto, Wakayama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Jun. 12, 1991, Ser. No. 714,266

Claims priority, application Japan, Jun. 13, 1990, 2-156421; Jun. 13, 1990, 2-156422; Jun. 14, 1990, 2-156233; Jun. 22, 1990, 2-164854; Jul. 6, 1990, 2-180353; Jul. 6, 1990, 2-180354; Oct. 29, 1990, 2-291493

Int. Cl.[5] **G02B** *15/14*

U.S. Cl. 359—691 **15 Claims**



1. A compact zoom lens system for a photo-taking lens system comprising, from the object side to the image side:

a front lens component of a negative refractive power, said front lens component consists of two lens elements;

a rear lens component of a positive refractive power with a variable air space between the front and the rear lens components, said rear lens component consisting of two lens elements;

and wherein the zoom lens system has at least two aspherical surfaces;

and wherein each lens element of the front and rear lens components has a different Abbe number than the other lens element.

5,283,694

LINE PROJECTOR LENS

Richard A. Frady, 620 County Rd. #324, Moulton, Ala. 35650

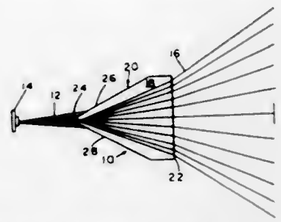
Filed Sep. 21, 1992, Ser. No. 947,559

Int. Cl.[5] **G02B** *27/44*

U.S. Cl. 359—719 **13 Claims**

1. An optical lens disposed for cooperation with a light source having a non-circular output to redistribute said output in two directions and transform said non-circular output into a line of uniform width and intensity with defined ends, comprising:

a body having a primary surface and a secondary surface, said primary surface defined by a pair of side surfaces which converge to form an apex defining an anamorphic asphere surface, said apex disposed in spaced relation with



said secondary surface, and, said anamorphic asphere surface defined by the following equation:

$$Z = \frac{CUX\,X^2 + CUY\,Y^2}{1 + \sqrt{1 - (1 + KX)\,CUX^2\,X^2 - (1 + KY)\,CUY^2\,Y^2}} + AR \cdot \{(1 - AP) \cdot X^2 + (1 + AP) \cdot Y^2\}^2 + BR \cdot \{(1 - AP) \cdot X^2 + (1 + BP) \cdot Y^2\}^3 + CR \cdot \{(1 - CP) \cdot X^2 + (1 + CP) \cdot Y^2\}^4 + DR \cdot \{(1 - DP) \cdot X^2 + (1 + DP) \cdot Y^2\}^5$$

where,

Z	is the sag of the surface parallel to the Z axis.
CUX, CUY	are the curvatures in X and Y, respectively.
KX, KY	are the conic constants in X and Y, respectively, and correspond to eccentricity.
AR, BR, CR, DR	are the rotationally symmetric portions of the 4th, 6th, 8th, and 10th order deformations from the conic.
AP, BP, CP, DP	Represent the non-rotationally symmetric portion of the 4th, 6th, 8th and 10th order deformation from the conic.

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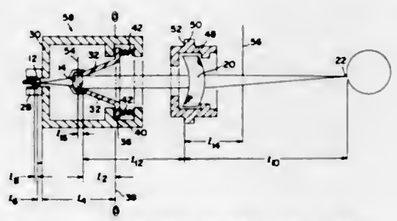
ATHERMALIZED OPTICAL SYSTEM AND METHOD

Leah Ziph-Schatzberg, North Andover; Joseph A. Wheeler, Gloucester, and Philip A. Rombult, Bradford, all of Mass., assignors to Miles, Inc., Wilmington, Mass.

Filed Aug. 10, 1992, Ser. No. 927,607

Int. Cl.[5] **G02B** *7/02*

U.S. Cl. 359—820 **11 Claims**



1. An athermalized imaging apparatus comprising:

(a) a light source means for emitting a light beam;

b) a collimating lens means for collimating the light beam from said light source means to produce a collimated light beam;

(c) a focusing lens means for focusing the collimated light beam from said collimating lens means; and,

(d) means responsive to temperature effects on said light source means, said collimating lens means and said focusing lens means for decollimating said collimated light beam as a function of the combined temperature effects on said light source means, said collimating lens means and said focusing lens means.

5,283,696

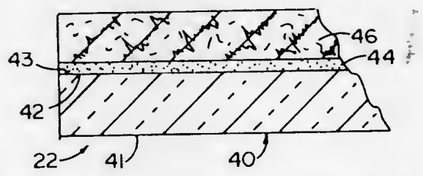
SHATTER RESISTANT MIRROR

Michael L. Lanser, and Paul T. Vander Kuyl, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Nov. 7, 1991, Ser. No. 788,935

Int. Cl.[5] **G02B** *5/08, 7/182*

U.S. Cl. 359—870 **25 Claims**



1. A mirror assembly for use in a vehicle interior comprising:

a frangible glass mirror having a reflective rear surface;

a stiff planar backing member having a shape to substantially cover the rear surface of said mirror; and

an elastomeric adhesive bonding said backing member to said rear surface of said mirror, said adhesive being selected to be sufficiently elastic, glass retentive, and thick to provide limited and controlled flexing of said mirror when subjected to flexing forces, and when subjected to forces sufficient to break said mirror the resulting shards of glass will be securely held by said adhesive without exceeding a 0.010 inch step between adjacent mirror shards.

5,283,697

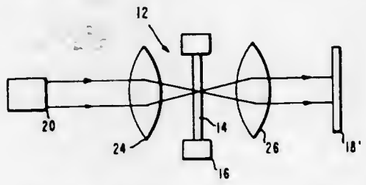
PASSIVE PROTECTION OF OPTICALLY SENSITIVE MATERIALS WITH TARNSITION-METAL ORGANOMETALLIC CLUSTER COMPOUNDS

Lee W. Tutt, Thousand Oaks, and Stephen W. McCahon, Newbury Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 502,076, Mar. 29, 1990. This application Sep. 4, 1992, Ser. No. 941,023

Int. Cl.[5] **G02B** *5/24;* **H01S** *3/113*

U.S. Cl. 359—885 **11 Claims**



1. A method for protecting a light sensitive material from light of high intensity while permitting it to receive light of low intensity, comprising the step of placing between a light source and an optically sensitive material a semi-transparent absorber medium including a carrier selected from the group consisting of a solvent or a solid polymer, with a reverse saturable absorber formed of an organometallic cluster compound comprising a core of at least two multiply-bonded transition metal atoms selected from group 8, group 6b, or group 7b of the periodic table bonded together with ligands that supply a sufficient number of electrons such that the shells of the core metal atoms are filled.

5,283,698

IMAGE READING APPARATUS

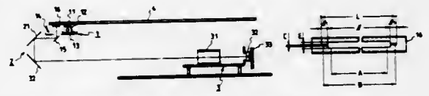
Nobumasa Fukuzawa, Yokohama, and Akiyoshi Kimura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 863,782

Claims priority, application Japan, Apr. 8, 1991, 3-103127; Jul. 12, 1991, 3-198927; Nov. 7, 1991, 3-321366

Int. Cl.[5] **G02B** *26/02*

U.S. Cl. 359—896 **22 Claims**



1. An image reading apparatus comprising:

a line sensor;

an image forming optical system for forming an image of an object on said line sensor; and

a slit member disposed in an optical path between the object and said image forming optical system, said slit member having a slit and having opening portions at both end portions of said slit in a longitudinal direction thereof, said opening portions corresponding to portions outside an effective image region of said line sensor, and said opening portions being provided for detecting a shift in a relative positional relationship between said slit and said line sensor.

5,283,699

MICRO-BAR CODE READER SYSTEM

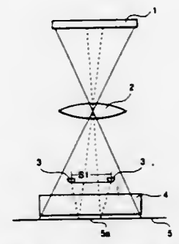
Toshiyuki Komai, Nagoya, and Yuuki Nakamura, Ichinomiya, both of Japan, assignors to Neorex Co., Ltd., Nagoya, Japan

Filed Dec. 23, 1992, Ser. No. 996,407

Claims priority, application Japan, Dec. 28, 1991, 3-359030

Int. Cl.[5] **G02B** *27/00*

U.S. Cl. 359—896 **16 Claims**



1. A bar code reader system for reading information contained in a micro-bar code, said system comprising:

a light emitting body for irradiating a light beam onto a bar code surface on which said micro-bar code to be read is provided;

a focusing lens for focusing a reflected light from said bar code surface;

an image pick-up means for receiving the focused reflected light and forming an image of said micro-bar code to be read; and

a cylindrical lens body arranged to pass both of the light beam from said light emitting body and the reflected light beam reflected from said bar code surface therethrough,

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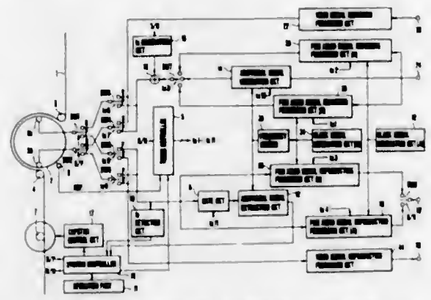
said cylindrical lens, body being arranged with the axis thereof oriented substantially consistent with a bar code reading direction.

5,283,700

DIGITAL SIGNAL RECORDING/REPRODUCING APPARATUS FOR RECORDING AND/OR REPRODUCING MAIN INFORMATION ALONG WITH ADDITIONAL INFORMATION

Kenichi Nagasawa, and Koji Takahashi, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1991, Ser. No. 657,431
Claims priority, application Japan, Feb. 20, 1990, 2-40226
Int. Cl.[5] G11B *27/36, 5/09*
U.S. Cl. 360—31 **17 Claims**



1. A digital signal recording apparatus comprising:
a) a plurality of main information generating circuits for generating a plurality of kinds of digital main information signals having different data rates from each other;
b) recording means for selectively recording said plurality of kinds of digital main information signals on a recording medium at different recording data rates, respectively;
c) an additional information generating circuit for generating a digital additional information signal concerned with the digital main information signal recorded by said recording means;
d) a plurality of clock signal generating circuits for respectively generating a plurality of kinds of clock signals, wherein said main information generating circuits generate said main information signals by using the clock signals generated by said plurality of kinds of clock signal generating circuits; and
e) frequency dividing means for generating a clock signal to be used for said additional information generating circuit by frequency-dividing one of said plurality of kinds of clock signals.

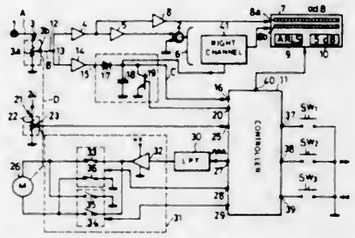
5,283,701

AUTOMATIC RECORDING LEVEL CONTROL SYSTEM PROVIDING FOR MANUAL CHANGE OF THE STANDARD LEVEL

Masatsugu Yamashita, Hino, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,783
Claims priority, application Japan, Dec. 17, 1991, 3-353244
Int. Cl.[5] G11B *5/035, 5/09*
U.S. Cl. 360—65 **9 Claims**

1. A device for recording a record signal on a record medium such as magnetic tape, comprising:
(a) an input terminal for receiving a variable amplitude record signal;
(b) a transducer for recording the input record signal on a record medium;
(c) a recording circuit connected between the input terminal and the transducer, the recording circuit including an adjustable attenuator for reducing the amplitude of the input record signal;
(d) an amplitude detector circuit connected to the adjustable attenuator for detecting the amplitude of the record signal that has traveled through the attenuator;
(e) standard level generator means for generating a standard level signal representative of a standard amplitude to which the amplitude of the input record signal is to be limited by the attenuator;



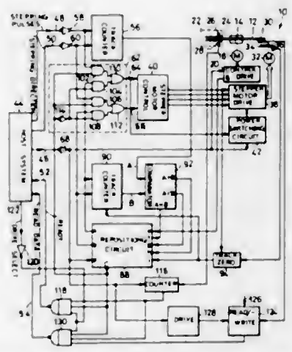
(f) control means connected to the amplitude detector circuit and the standard level generator means for controlling the attenuator so as to reduce the amplitude of the input record signal to the standard amplitude when the amplitude of the record signal that has traveled through the attenuator exceeds the standard amplitude; and
(g) means connected to the standard level generator means for manually varying the standard amplitude.

5,283,702

POWER SAVING SYSTEM FOR ROTATING DISK DATA STORAGE APPARATUS

Hiroshi Tsuyuguchi, Tokyo; Yoshio Hirose, Urawa; Kazuhiko Inoue, Hohya; Tohru Miura, Mitaka, and Miya Enami, Higashikurume, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Aug. 16, 1991, Ser. No. 746,773
Claims priority, application Japan, Aug. 21, 1990, 2-219409
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.04 **4 Claims**



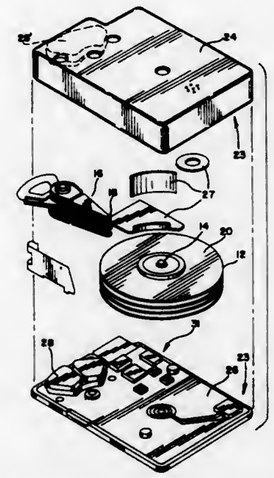
1. A power saving method for a data storage apparatus having a data transducer for data transfer with a disklike record medium having a multiplicity of annular data storage tracks arranged concentrically on at least one side thereof, the apparatus further having a disk drive motor for setting the record medium into rotation when a binary "motor on" signal is in a first state, and out of rotation when the "motor on" signal is in a second state, a seek motor for causing the transducer to travel from track to track on the record medium, and a high and a low power supply for energizing the seek motor, the high power supply having a higher supply voltage than the low power supply, which method comprises:
(a) supplying seek data representative of successive destination tracks on the record medium on which the transducer is to be positioned by the seek motor;
(b) energizing the seek motor from the high power supply when the seek data is being supplied, in order to enable the seek motor to position the transducer on the successive destination tracks;
(c) energizing the seek motor from the low power supply when the "motor on" signal is in the first state but when no seek data is being supplied, in order to enable the seek motor to hold the transducer on each destination track;
(d) always memorizing the latest of the successive destination tracks represented by the seek data;
(e) saving power by disconnecting the seek motor from both high and low power supplies when the "motor on" signal gains the second state and by holding the seek motor deenergized until the "motor on" signal subsequently regains the first state, with the consequent possibility that while the seek motor is held deenergized, the transducer may be displaced from the destination track on the record medium which has been represented by the seek data before the seek motor becomes deenergized; and
(f) repositioning the transducer on the memorized latest destination track on the record medium after the "motor on" signal regains the first state.

5,283,704

ROTARY ACTUATOR FOR DISK DRIVE ASSEMBLIES

John R. Reidenbach, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 636,330, Dec. 31, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 18,464
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **5 Claims**



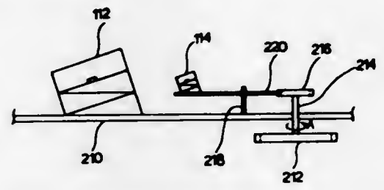
1. A disk drive assembly comprising in combination:
an enclosure;
a spindle;
at least two disks in a stack rotatably mounted on said spindle and having at least one pair of interfacing, spaced apart disk surfaces;
a rotatory actuator including at least two transducer heads adapted to fly over said disk surfaces for reading and writing data on said pair of interfacing, spaced apart disk surfaces;
said rotary actuator including pivot means for pivotally mounting said rotary actuator and at least one support assembly for holding two of said transducer heads between said pair of interfacing, spaced apart disk surfaces;
motor means for pivoting said rotary actuator in order to move said transducer heads across said disk surfaces;
said disk drive assembly being characterized by:
said support assembly including two integral and one piece beams each having front and back surfaces, a pivot mount structure and an end portion including a head mount region spaced from said pivot mount structure;
said beams each including means defining a flexible and resilient hinge region between said head mount region and said pivot mount structure;
one of said transducer heads being mounted at said head mount region of each of said beams; and
said beams being mounted with said back surfaces facing one another, with said pivot mount structures in engagement with said pivot means and with said end portions spaced apart to permit independent flexing movement of said transducer heads;
each of said beams comprising a stamped and formed sheet metal body, said hinge region defining means including an aperture in said body, an upstanding stiffening flange along the periphery of said body, and a gap in said flange adjacent said hinge region.

5,283,703

VIDEO CASSETTE RECORDER USABLE VIDEO TAPE HAVING OPPOSED MAGNETIC RECORDING SURFACES AND A DRUM MOVABLE MEANS

Seung-lyul Choi, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1992, Ser. No. 897,770
Claims priority, application Rep. of Korea, Jun. 19, 1991, 91-10191
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **19 Claims**



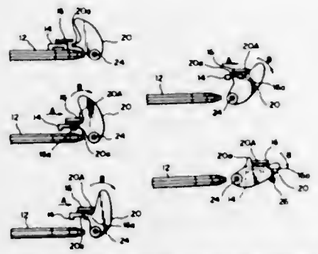
1. A video cassette recorder, comprising:
a front head drum for recording and reproducing first desired signals on and from, respectively, a front surface of a video tape;
a back head drum for recording and reproducing second desired signals on and from, respectively, a back surface of said video tape;
drum movable means for moving said back head drum toward said back surface of said video tap to closely contact said back surface; and,
control means for controlling said front head drum, said back head drum and said drum movable means to enable recordation and reproduction of said first desired signals and said second desired signals on and from both surfaces of said video tape.

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5,283,705
HEAD RETRACTING MECHANISM FOR A MAGNETIC DISK DRIVE

Masanori Iwabuchi, Ibaragi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,848
Claims priority, application Japan, Jun. 17, 1991, 3-144363
Int. Cl.[5] G11B *21/02*
U.S. Cl. 360—105 **5 Claims**

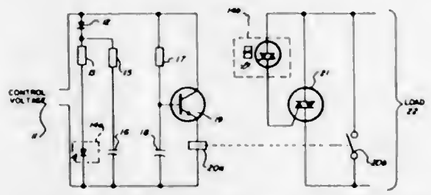


1. A magnetic disk drive for recording and reproducing data from at least one surface of a spinning recording medium by a magnetic head, comprising:
- a suspension arm supporting the magnetic head at the tip thereof and movable in a rotary motion parallel with the surface of the recording medium toward and away from the outer edge of said recording medium; and
- a lifter movable in a rotary motion by being urged by said suspension arm when said suspension arm is moved toward the outer edge of the recording medium, thereby lifting said suspension arm.

5,283,706
SWITCHING CIRCUIT

Sverre Lillemo, N-7060 Klaebu, and Kjell I. Iversen, Nordslettv. 325, N-7038 Trondheim, both of Norway

Filed Mar. 19, 1991, Ser. No. 671,519
Claims priority, application Norway, Sep. 19, 1988, 884150
Int. Cl.[5] H01H *9/30*
U.S. Cl. 361—3 **3 Claims**

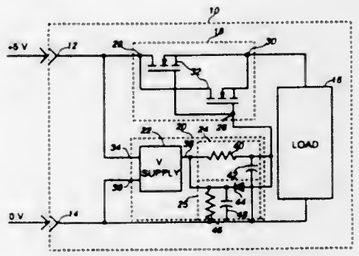


1. A switching circuit for making and breaking an electrical load by means of an electromagnetic relay having electrical contacts for making and breaking said load and a primary coil for actuating said contacts, a bidirectively controlled contactless switch is connected in parallel with said contacts and an optical coupler having a light emitting section and a light sensitive section is connected to control said contactless switch, wherein
- at making, the bidirectively controlled contactless switch first will connect the load, and after a certain period of time, the electromagnetic relay contacts will be energized to connect the load; and
- at breaking, the electromagnetic relay contacts will first open, whereupon the bidirectively controlled contactless switch will disconnect the load at a zero voltage phase crossing;
- the optical coupler includes a zero voltage phase crossing detector, wherein after activation or deactivation of the light-emitting section, the zero voltage phase crossing detector will detect a zero voltage phase crossing of the load energy source so that the light-sensitive section activates or deactivates the bidirectively controlled contactless switch at a zero voltage phase crossing of the load energy source, and
- the primary coil of the electromagnetic relay is connected in series with a transistor, said transistor amplifies the voltage level from a first RC-network, comprising a first resistor and a first capacitor, said first RC-network is connected in parallel to the transistor and the primary coil, with the base of the transistor connected between the resistor and the capacitor, to delay the energizing of said primary coil.

5,283,707
INRUSH CURRENT LIMITING CIRCUIT

Christopher R. Conners, Nepean, and Manfred K. Ficker, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 27, 1992, Ser. No. 982,536
Int. Cl.[5] H02H *9/00*
U.S. Cl. 361—58 **16 Claims**

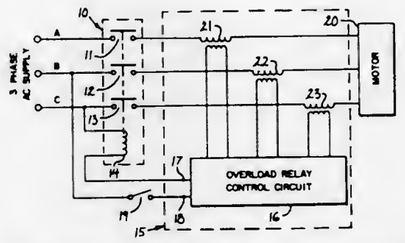


1. An inrush current limiting circuit, comprising:
- input terminals for connection to a power supply output and a reference potential;
- output terminals for connection to a load;
- power FET means having a control electrode and a conductive controlled path which is connected between the power input terminal and a respective one of the output terminals;
- voltage supply means connected to the input terminals and having an output for providing sufficient voltage to render the power FET means conductive;
- first time constant means coupled between the voltage supply means and the control electrode for controlling the rate at which the power FET means is rendered conductive in accordance with a first predetermined time constant; and
- second time constant means coupled between the control electrode and the reference potential input for controlling the rate at which the power FET means is rendered nonconductive in accordance with a second predetermined time constant.

5,283,708
OVERLOAD CURRENT PROTECTION APPARATUS

Richard W. Waltz, Milwaukee, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 589,154, Sep. 27, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 950,984
Int. Cl.[5] H02H *7/08*
U.S. Cl. 361—93 **7 Claims**

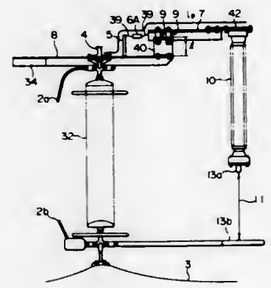


1. An overload protection device, for controlling the application of multi-phase electric current for a source to a load, comprising
- a switch coupled to the source for selectively connecting the load to the source;
- means for periodically sensing a level of current flowing between the source and the load;
- means for detecting a phase imbalance in the current flowing from the source to the load;
- means, responsive to the sensed level of current and to said means for detecting a phase imbalance, for deriving a change in temperature of the load since a previous sensing of the level of current;
- means for combining the change in temperature with a previous load temperature value to determine the present temperature of the load; and
- means for activating said switch to disconnect the load from the source when the present temperature of the load exceeds a threshold level.

5,283,709
LIGHTNING ARRESTER ON TOWER FOR POWER TRANSMISSION

Shingo Shirakawa; Syuichi Terakado; Jun Ozawa, all of Hitachi, and Kazuya Ooishi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1990, Ser. No. 620,057
Claims priority, application Japan, Dec. 7, 1989, 1-316414
Int. Cl.[5] H02H *1/00, 3/22*
U.S. Cl. 361—117 **23 Claims**

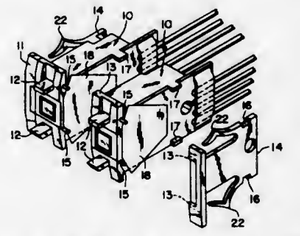


23. A lightning arrester system for a power transmission line, the lightning arrester system comprising:
- an arm structure of a tower;
- a fitting fixed to said arm structure;
- a suspension insulator string having one end connected to said fitting for suspending said power transmission line at the end of said suspension insulator spring;
- a ground-side conductor mounted on said fitting and opposed by an insulator spacer therebetween;
- a grounding conductor connected between one end of said ground-side conductor and said fitting;
- a lightning isolator unit connected to the other end of said ground-side conductor;
- a failure detector device connected in circuit with said grounding conductor for fusing and cutting off said grounding inductor due to heat generated by an abnormal current through said lightning arrester system; and
- a series gap formed between said lightning isolator unit and said power transmission line.

5,283,710
ELECTROSTATIC DISCHARGE SHIELD FOR SWITCHES

Charles S. Hamilton, Bountiful; Michael Johnson, Ogden, and David Jones, North Layton, all of Utah, assignors to Iomega Corporation, Roy, Utah

Continuation of Ser. No. 620,281, Nov. 30, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,828
Int. Cl.[5] H05F *3/02*; H02H *1/04*
U.S. Cl. 361—212 **18 Claims**



1. Apparatus for protecting electric circuitry from external electro-static discharge comprising:
- a switch operatively coupled to said electronic circuitry, said switch having at least one finger contact outer surface where an operator touches and at least one non-finger contact outer surface where said operator does not tough during normal switch operation; and
- an electro-static discharge shield disposed on said non-finger contact outer surface, said discharge shield being sufficiently close to said finger contact outer surface for providing a substantially lower resistance path than other alternate paths on said switch when said operator touches said finger contact outer surface, whereby said substantially lower resistance path reduces the risk of interrupting the operation of said electric circuitry by electro-static discharge.

5,283,711
CAPACITIVE HUMIDITY SENSOR

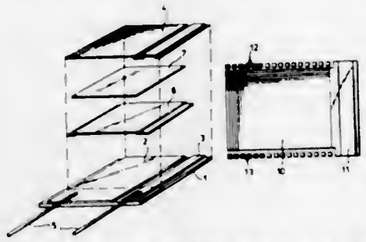
Pieter P. J. Schmitz, Alphen aan den Rijn, Netherlands, assignor to Flucon B.V., Alphen aan den Rijn, Netherlands

PCT No. PCT/NL89/00100, § 371 Date Aug. 22, 1991, § 102(e) Date Aug. 22, 1991, PCT Pub. No. WO90/07708, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 28, 1989, Ser. No. 720,430
Claims priority, application Netherlands, Dec. 30, 1988, 8803223
Int. Cl.[5] H01G *5/20, 5/28*
U.S. Cl. 361—286 **6 Claims**

1. Capacitive humidity sensor comprising a substrate being a

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flexible copper laminate, a moisture-impermeable conducting bottom layer etched in said copper laminate as first capacitor plate, a dielectric layer of which the dielectric constant is a function of moisture absorption, and a moisture-permeable conducting top layer as second capacitor plate, said bottom layer and a contact layer making contact with the moisture-



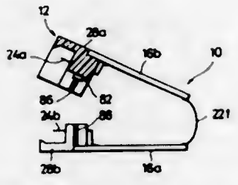
permeable top layer being deposited adjacent each other and isolated from each other on the substrate, the top layer extending both over the dielectric layer and over the contact layer, wherein the top layer comprises a solid printed grid pattern of conducting ink, and a row of small conducting ink areas at at least one side of the grid pattern.

5,283,712

INTEGRATED CIRCUIT FOR VEHICLE

Osamu Michihira, Hiroshima; Tomoji Izumi, Hatsukaichi; Nagahisa Fujita; Yuichi Itoh, both of Hiroshima; Masaaki Shimizu, Iwakuni, and Seiji Hirano, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 426,596, Oct. 25, 1989, abandoned.
This application Aug. 4, 1992, Ser. No. 921,999
Claims priority, application Japan, Oct. 27, 1988, 63-269447; Oct. 31, 1988, 63-273301; Dec. 23, 1988, 63-323744; Sep. 5, 1989, 1-228279
Int. Cl.[5] H01R *23/70, 9/09*
U.S. Cl. 361—785 **17 Claims**



1. An integrated circuit for a vehicle, which is formed in the shape of a case, the circuit comprising:

a pair of circuit boards opposed to and parallel with each other, each of said circuit boards including

a metal plate defining an outer portion of the case; an insulating layer formed on an entire inner surface of said metal plate; a conductive layer formed on said insulating layer in a predetermined circuit pattern; a plurality of circuit elements electrically connected to a predetermined portion of said conductive layer; and

externally connecting connection means for electrically connecting the circuit board to another connector, wherein said eternally connecting connector means includes

a connector housing fixed to said pair of circuit boards and having a recess for receiving said another connector and an upright segment for closing an open end of the case with a plurality of through holes being formed through said upright segment; and

a plurality of connector pins, one-end portions of which are connected to connecting terminals formed at an edge portion of said conductive layer, middle portions of which extend through the through holes formed through the upright segment of said connector housing, and the outer-end portions of which project into said recess and contactable with said another connector, and

wherein said connector housing includes

first and second connector housing halves respectively fixed to said pair of circuit boards before said pair of circuit boards are assembled to oppose each other, and having a plurality of connector pins connected to the conductive layers of said pair of circuit boards,

said first connector housing half being substantially U-shaped and having a first pair of engaging portions extending in an engaging direction, said engaging portions being formed on inner side surfaces of said U-shaped first connector housing half and said engaging portion opposing each other,

said second connector housing half being formed to be fitted into said U-shaped first connector housing half and having a second pair of engaging portions extending in the engaging direction to engage with said first pair of engaging portions,

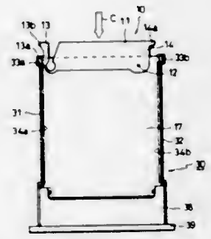
whereby said first and second pair of engaging portions serve as slide guides upon assembling said U-shaped first connector housing half with said second connector housing half by sliding in the engaging direction.

5,283,713

INJECTOR/EJECTOR SYSTEM FOR A PLUG-IN MODULE AND APPARATUS USING THE SYSTEMS

Toshiaki Nagafuji; Makoto Kuwahara, both of Tokyo; Kenichi Hatakeyama, and Yuji Sato, both of Iwate, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,878
Claims priority, application Japan, Sep. 20, 1991, 3-240674; Feb. 28, 1992, 4-042693
Int. Cl.[5] H05K *5/02;* **B25G** *3/18;* **H01R** *13/62*
U.S. Cl. 361—796 **12 Claims**



1. A injector/ejector system for a plug-in module comprising a circuit board in which electrical components are mounted on at least one rectangular surface of the circuit board and are surrounded by the four sides, a grip for inserting and removing the module which is mounted on a first side of the circuit board, second and third sides of the circuit board adjacent to the first side and running parallel to each other which are intended to slide, a first connector for electrical connection mounted on any one side of the circuit board other than the first side, and a housing comprising a guide means for guiding the second and third sides of the circuit board of the plug-in module when the fourth side of the circuit board is inserted into the housing such that the plug-in module may slide into the housing up to a predefined position and a second connector that may be electrically connected with the first connector when the plug-in module is inserted to the predefined position;

the grip of the plug-in module having a first end portion and a second end portion, the first end portion having a first engaging end that may be deformed by pressure and

which generates a resilient force, the grip being attached to the plug-in module by means of a rotating shaft at a predefined position between the first and second end portions so that the grip may be rotated in a plane parallel to the surface of the circuit board;

the resilient force of the first engaging end of the first end portion exerting pressure so as to allow engagement between the first engaging end and a second engaging end provided in the housing when the plug-in module is inserted into the housing up to the predefined position, while deformation of the first engaging end allowing disengagement between the first end portion and the second engaging end in the housing when pressure is applied against the resilient force of the first end portion;

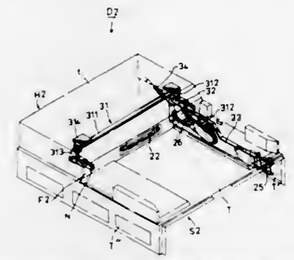
the second end portion having a protruding portion which is in a position separated from the insertion side of the housing when the first and second engaging ends are engaged, which lies to one side of the second end portion, which abuts the insertion end of the housing when the first and second engaging ends are disengaged and the first end portion is pulled away from the first side of the circuit board, causing the grip to rotate on its shaft, and which applies a force that assists in removing the plug-in module from the housing as the first end portion is further rotated.

5,283,714

DOCKING APPARATUS FOR A PORTABLE COMPUTER

Collins Tsai, and Ray Lan, both of Taipei City, Taiwan, assignors to Mitac International Corp., Taiwan

Filed Nov. 17, 1992, Ser. No. 977,761
Int. Cl.[5] H05K *7/10;* **G06F** *1/16;* **H01R** *13/62*
U.S. Cl. 361—683 **7 Claims**



1. A docking apparatus for a portable computer which has a first connector unit, comprising:

a housing having a front side;

a second connector unit mounted in said housing and protruding from said front side;

a computer support extending forwardly from said front side, said computer support having a top wall which supports the portable computer so that the first connector unit is engageable with said second connector unit;

an elongated rod mounted pivotally in said housing and being disposed parallel to said front side of said housing, said elongated rod having two ends;

a lever having a front part, a rear part and an intermediate part disposed between said front and rear parts, said lever being mounted in said computer support and being movable longitudinally between a normal rear position and a front position;

a crank fixed to said elongated rod and engaging slidably said lever; and

a pushing unit mounted on said elongated rod and protruding through said front side of said housing in order to push the portable computer forward;

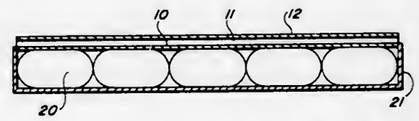
said crank being rocked forward and said elongated rod rotating with said crank so as to move said pushing unit forward in order to push the portable computer forward away from said front side of said housing when said lever is, moved to said front position, thereby disengaging the first connector unit of the portable computer from said second connector unit of said docking apparatus.

5,283,715

INTEGRATED HEAT PIPE AND CIRCUIT BOARD STRUCTURE

Ronald W. Carlsten; Sung J. Kim, and Alan L. Murphy, all of Tucson, Ariz., assignors to International Business Machines, Inc., Armonk, N.Y.

Filed Sep. 29, 1992, Ser. No. 953,080
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—702 **9 Claims**



1. A metal-backed printed circuit board with electronic components mounted thereon for use in electronic circuits such as power supplies, comprising:

a metallic flat baseplate for said printed circuit board;

a flat heat pipe structure including a frame incorporated into direct contact with said baseplate thereby forming an integral circuit board and heat pipe assembly, said heat pipe structure comprised of a plurality of separate linear heat pipes packed side by side in direct physical contact each said heat pipe, having therein an encapsulated working fluid said assembly having an evaporator portion upon which said components are mounted and a cooling portion separate from said evaporator portion, said cooling portion for attachment to a cooling structure, said baseplate and said heat pipe structure extending throughout said evaporator portion and said cooling portion whereby heat generated in said evaporator portion vaporizes said working fluid to move the vaporized fluid through said heat pipe to said cooling portion, where said fluid is returned to a liquid state to move by capillary action through said heat pipe back to said evaporator portion.

5,283,716

ELECTRICAL COMPONENT SUPPORT STRUCTURE

Troy R. Banitt, Savage; Patrick M. Dobrowski, Burnsville; Michael P. Grant, Maple Grove; Michael A. La Haye, Edina; Carey M. Manson, Mound, and Kelly M. Orth, Apple Valley, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 16, 1992, Ser. No. 963,317
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—810 **14 Claims**

1. An assembly that retains, electrically insulates and enhances the thermal transfer of a plurality of electrical components, each electrical component having at least one major planar heat dissipating surface associated with the operation of a printed circuit card comprising:

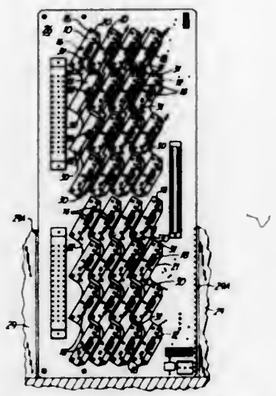
a plurality of base members each having first and second substantially planar faces and made of an electrically insulating material;

receiving means for releasably retaining the electrical components to the first face of each of the base members and oriented to be one above the other in use; and

securing means for anchoring the second face of each of the base members to a printed circuit card so that the major heat dissipating surfaces of electrical components retained by the receiving means are generally parallel and extend

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outwardly from the first face of the respective base member and the receiving means being positioned to hold the



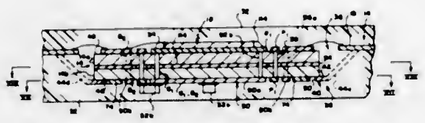
major heat dissipating surfaces of the electrical components inclined at an acute angle relative to vertical.

5,283,717

CIRCUIT ASSEMBLY HAVING INTERPOSER LEAD FRAME

Michael J. Hundt, Double Oak, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 4, 1992, Ser. No. 986,117
Int. Cl.[5] H05K 5/02
U.S. Cl. 361—813 12 Claims



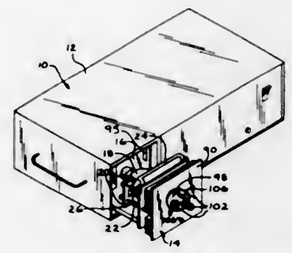
1. A circuit assembly comprising, in combination:
a finger lead assembly having a plurality of conductive finger leads and having a support structure, the support structure defining a seat having an opening therethrough;
an interposer substrate assembly mounted on the support structure seat and having a portion extending over the opening, the substrate assembly having a first surface adjacent the support structure seat and a second, oppositely facing surface;
an electronic circuit device mounted on the substrate assembly adjacent the second surface of the substrate assembly, the circuit device having a power circuit and having power and ground nodes connected to the power circuit;
a capacitor mounted on the substrate assembly adjacent the first surface of the substrate assembly and in alignment with the opening; and
electrical connecting means, having inter-level connectors extending between the first and second substrate assembly surfaces, for connecting the capacitor between the power and ground nodes of the circuit device.

5,283,718

FIBER OPTIC ARC LAMP SYSTEM

James G. Stephenson, Kalamazoo; William F. Lohness, Jonesville, and Jeffrey L. Cornell, Coldwater, all of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Division of Ser. No. 753,302, Aug. 30, 1991. This application Mar. 29, 1993, Ser. No. 38,893
Int. Cl.[5] F21V 8/00, 25/00
U.S. Cl. 362—32 2 Claims



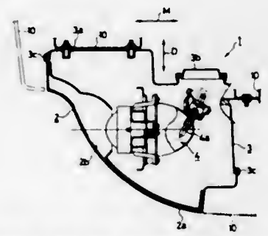
1. Fiber optic medical diagnostic light source apparatus supplying light to a fiber optic cable interface which is attached to a cabinet having a lamp power supply and a lamp circuit comprising in combination, a lamp bracket holder mounted on the cabinet, a lamp bracket movably supported on said lamp bracket holder, interlock switch operating means defined on said lamp bracket, a focused lamp mounted on said lamp bracket having a beam adapted to be received by the cable interface at a predetermined position of said lamp bracket, and an electric interlock switch controlling energizing of the lamp circuit adapted to be operated by said lamp bracket switch operating means at said predetermined position of said lamp bracket.

5,283,719

HEADLAMP AND METHOD FOR FORMING THE SAME

Tsuneo Sekiguchi, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,510
Claims priority, application Japan, Mar. 27, 1991, 3-85925
Int. Cl.[5] F21M 3/00
U.S. Cl. 362—61 11 Claims



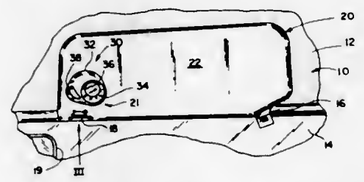
1. A headlamp for a vehicle, said headlamp emitting light substantially along a lengthwise direction, said headlamp comprising:
a molded housing including:
housing mounting means for mounting said housing to the vehicle, said mounting means extending in a direction which said housing is removed from a mold and which substantially perpendicular to said lengthwise direction, and
a bulb replacing opening having an axis substantially perpendicular to said lengthwise direction,
wherein said housing can be removed from a mold for forming said housing in a direction substantially perpendicular to said lengthwise direction,
a front lens secured to said housing to form, with said housing, a lamp chamber, and
a lamp body encased in said chamber, said lamp body including bulb mounting means for mounting said bulb at a predetermined angle to said lengthwise direction, said bulb mounting means being accessible through said bulb replacing opening.

5,283,720

VISOR WITH ILLUMINATION

Edward T. Boerema, West Olive, and Thomas E. Arbisi, Holland, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jun. 26, 1992, Ser. No. 904,709
Int. Cl.[5] F21V 33/00
U.S. Cl. 362—83.3 4 Claims



1. A visor for use with a vehicle having an interior with a headliner, a driver seat, a passenger seat, and a central area between said driver seat and passenger set, said visor including means for illuminating the interior of a vehicle comprising:
a visor body generally extending along a plane and means for mounting said visor body to a vehicle for movement between a raised position adjacent the vehicle headliner and a lowered sunblocking position, said visor body including a recess formed din a corner of said visor body located toward the central area of the vehicle and formed in a side of the visor facing inwardly toward the interior of the vehicle when said visor body is in said raised position;
illumination means including lamp means mounted in said recess for directing illumination form said visor body, wherein said illumination means includes a housing including a housing recess inclined to said plane along which said visor body extends and lamp means mounted to said housing to direct illumination through said housing recess at an angle directed sway from the central area of the vehicle, and wherein said illumination means further includes lens means mounted to said housing recess for focusing light from said lamp means which is mounted to said housing in a plane parallel to said lens means;
switch means mounted to said housing an coupled to said lamp means for selectively applying power to said lamp means; and
reflector means mounted to said housing and extending behind said lamp means for reflecting illumination from said lamp means toward said lens means and further including heat dissipative means mounted to a floor of said recess of said visor.

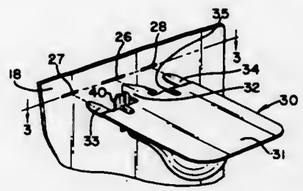
5,283,721

SELF MOUNTING REFRIGERATOR LIGHT HEAT SHIELD

John M. Powell, Charlestown, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 23, 1993, Ser. No. 35,611
Int. Cl.[5] H25D 27/00
U.S. Cl. 362—92 9 Claims

1. For use in a refrigerator including a liner forming a compartment to receive items to be refrigerated, a shield to protect a first predetermined wall of the liner from heat from an adjacent light, said shield including:
a sheet of material sized to effectively shield the first wall of the liner from the light;
three tabs extending outwardly of one edge of said sheet for receipt in corresponding slots in a second predetermined wall of the liner, said tabs being symmetrical about a line through the center of the middle one of the tabs;



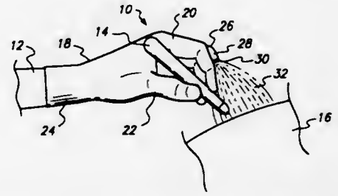
said middle tab including laterally projecting ears having rest positions angled with respect to the remainder of that tab, said ears flexing to pass through the corresponding slot and then returning to their rest position so as to overlie the second liner wall; and
a pair of oppositely projecting feet extending generally perpendicular to said sheet and positioned to lie closely adjacent said second wall when said shield is mounted to said second wall.

5,283,722

SURGICAL-TYPE GLOVE AND ILLUMINATOR ASSEMBLY

Howard P. Koenen, and Raymond W. Trow, both of 1526 E. Lind St., Tucson, Ariz. 85719

Filed Aug. 5, 1992, Ser. No. 926,164
Int. Cl.[5] F21L 15/08
U.S. Cl. 362—103 8 Claims



1. A surgical-type glove and illuminator assembly, said assembly comprising:
a) a surgical-type glove having a distal fingers portion, said glove adapted to be worn over a hand of a user when examining or operating on a work surface; and
b) illumination means for providing light to the work surface, said illumination means comprising
i) a light housing mounted on an exterior surface of said fingers portion of the surgical-type glove and terminating in a distally facing light output lens, the light housing further characterized in having an underside substantially adjacent to the surgical-type glove and a topside substantially opposite the underside,
ii) a self-containing battery-powered light source carried within the light housing, and
iii) switch means for operating the light source, the switch means located on the underside of the light housing and extending through and interior of said fingers portion of the surgical-type glove so as to be operable by finger movement of the user.

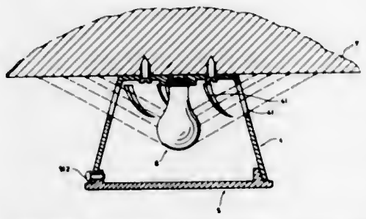
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5,283,723

BACKWARD PROJECTION TYPE WALL LAMP

Wen-Chou Wu, No. 4-1, Lane 324, An Kang Rd., Nei Hu, Taipei, Taiwan

Filed Mar. 24, 1992, Ser. No. 856,753
Int. Cl.[5] F21S 1/02
U.S. Cl. 362—147 2 Claims



1. A wall lamp comprising:

a lamp enclosed by a lamp shade and a semi-transparent cover, said lamp shade including a flat circular top edge, a circular bottom edge and a peripheral side wall having a shape of a conical drum integrally formed with said top edge, said cover closing said bottom edge of said lamp shade,

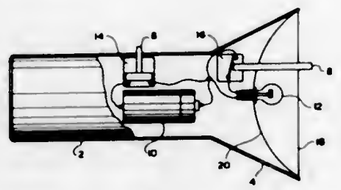
said top edge having holes and being directly secured to a flat surface by screws passing through said holes, said peripheral wall having a plurality of slots arranged in a row about its peripheral in a upper half thereof adjacent said top edge, said curved slots having a shape and curvature for projecting a plurality of light beams from said lamp bulb outward and backwards onto said flat surface so that said light beams overlap each other thereon.

5,283,724

FLASHLIGHT WITH AUXILIARY SWITCH

Thomas S. Mulholland, P.O. Box 2466, Slidell, La. 70459

Filed Feb. 9, 1993, Ser. No. 15,607
Int. Cl.[5] F21L 7/00
U.S. Cl. 362—205 4 Claims



1. A flashlight, comprising:

(a) a base portion adapted to be held in the hand and containing a source of electrical current, the source being adapted for electrical connection to a main switch and an auxiliary switch;

(b) a face portion protruding from the base portion, the face portion containing a light bulb adapted for electrical connection to a main switch and an auxiliary switch;

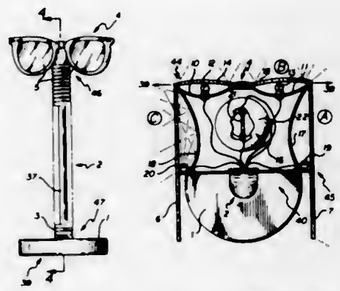
(c) an electrical circuit comprising in series the light bulb, a main switch, said source of electrical current, and an auxiliary switch, the auxiliary switch having mechanically attached thereto an actuator for altering the state of the auxiliary switch depending on the position of said face portion relative to a solid surface.

5,283,725

LAMP DEVICE

R. Scott Penza, 8829 National Blvd. #1094, Culver City, Calif. 90232

Filed Dec. 24, 1991, Ser. No. 813,959
Int. Cl.[5] F21S 5/00; F21V 13/00
U.S. Cl. 362—414 24 Claims



1. A lamp device for multi-purpose illumination, which comprises:

a base for support of said lamp device;

an upright stem having a bottom end and a top end, with said bottom end affixed to said base;

a lamp shade attached to said top end of said upright stem and having a frame member with ends and temple members, with said temple members attached to said ends of said frame member and extending therefrom at a generally perpendicular angle to a longitudinal axis of said frame member so as to define a central cavity between said temple members;

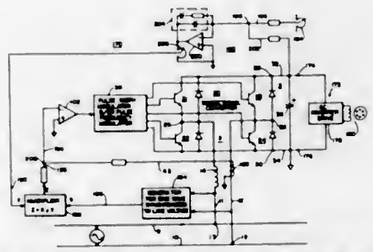
a first light disposed in said central cavity having a corresponding first reflector positioned over said first light to enable said first light to project a directed illumination for the viewing of reading material.

5,283,726

AC LINE CURRENT CONTROLLER UTILIZING LINE CONNECTED INDUCTANCE AND DC VOLTAGE COMPONENT

Alan W. Wilkerson, W61 N14280 Taunton Ave., P.O. Box 191, Cedarburg, Wis. 53012

Filed Dec. 20, 1991, Ser. No. 810,961
Int. Cl.[5] H02M 1/12
U.S. Cl. 363—41 50 Claims



1. An electrical controller in which a current having desired, arbitrarily selected properties of magnitude, flow direction, and changes of the foregoing with respect to time can be established, said controller being connectable to AC means providing an AC voltage and comprising:

at least a pair of AC conductors in which the current having the desired, arbitrarily selected properties can be established, said AC conductors being connectable to the AC means for being subjected to the AC voltage;

inductive means connected in at least one of said AC conductors and through which said current flows;

DC bus means;

DC means connected across said DC bus means, said DC means being capable of attaining a DC voltage, the magnitude of which is greater than the magnitude of the AC voltage in said AC conductors, said DC means being capable of accepting or supplying currents involved in the operation of the controller from or to said DC bus means without excessive change in the DC voltage;

a configuration having AC terminals connected to said AC conductors and DC terminals connected to said DC bus means, said configuration having a plurality of current path means capable of connecting at least one of said AC terminals to at least one of said DC terminals or said AC terminals to each other, each of said current path means including a current conduction means through which current may flow in the respective current path means, at least one of said current conduction means being controllable for allowing or preventing current flow in the current path means having same;

means for providing a signal corresponding to the current desired in said AC conductors and for which the properties of current magnitude, current flow direction, and changes in the foregoing with respect to time can be arbitrarily selected; and

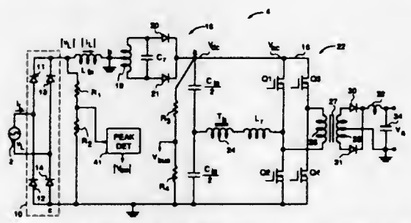
control means coupled to said signal providing means and controlling the controllable current conduction means responsive to said signal for forming current paths in said controller that establish that polarity and magnitude of voltage across said inductive means that cause the current paths in said controller that establish that polarity and magnitude of voltage across said inductive means that cause the current in said inductive means, and hence the current through said AC conductors, to increase, decrease, or maintain its value in a desired manner and that cause either direction of current to flow through said inductive means for either polarity of AC voltage to which said AC conductors are subjected, thereby to permit bidirectional power transfer through said controller to or from the AC means and so that the current in said AC conductors has the desired, arbitrarily selected properties.

5,283,727

INDEPENDENT CONTROL OF THE AC LINE CURRENT AND OUTPUT DC VOLTAGE OF A HIGH POWER FACTOR AC-TO-DC CONVERTER

Mustansir H. Kheraluwala, Schenectady, and Robert L. Steigerwald, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,791
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—98 9 Claims



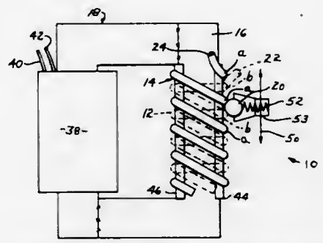
1. A control system for a dual output power converter, the converter having a pair of input terminals connectable to a source of rectified alternating current (AC) power of variable voltage amplitude, the converter further comprising a boosting circuit including a secondary winding of a boost transformer coupled in series between the source of rectified AC power and a direct current (DC) power bus, the boosting circuit further including resonant circuit means comprising a combination of said boost transformer, a resonant inductance and a resonant capacitance, the converter further comprising a full-bridge inverter including at least one controllable switching device in each leg thereof, the inverter having an input connected to the DC bus and a pair of output terminals connected to respective ends of a primary winding of an output transformer, at least one of the pair of output terminals being connected in circuit with a primary winding of the boost transformer, the control system comprising comparison means coupled via separate respective signal detectors to the source of rectified AC power and to the direct current power bus, said comparison means comparing the signals representative of the magnitude of the AC power voltage to the signals representative of the DC bus voltage and providing an error signal corresponding to the difference therebetween to a frequency control means, said frequency control means varying the inverter frequency of operation in a manner to adjust the magnitude of the DC bus voltage according to a preselected ratio of DC bus voltage to AC power voltage.

5,283,728

VARIABLE TRANSFORMER WITH SLIDABLE CONTACTOR

Edward J. Hobart, 2155 E. Rusk Rd., Troy, Ohio 45373

Filed Oct. 15, 1992, Ser. No. 961,348
Int. Cl.[5] H02M 7/06; G05F 1/14
U.S. Cl. 363—100 13 Claims



1. In a voltage control system for an alternating current power supply;

a core having an elongated coil-supporting portion electromagnetically connected to said power supply;

a first electrically-conducting coil having multiple spaced clockwise turns evenly wound about and extending essentially helically lengthwise of said elongated coil-supporting portion;

a second electrically-conducting coil having multiple spaced counter-clockwise turns evenly wound about and extending essentially helically lengthwise of said elongated portion for essentially the same effective length as said first coil, with at least a portion of each turn of said second coil being alternately interleaved with a portion of each turn of said first coil;

means insulating said coils from each other and from said elongated coil-supporting portion;

said portions of each of said turns of said coils being uninsulated at least on their outermost sides and said turn portions extending perpendicularly to said elongated coil-supporting portion where said coils are interleaved, all of said outermost sides of the turns of both coils being located in a common linear plane extending parallel to said elongated coil-supporting portion to provide a linear set of electrical contacting surfaces, and said outermost sides providing adjacent spaced pairs of such electrical contact surfaces;

an electrically-conducting bridging member for simulta-

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neously contacting and electrically bridging a selected pair of said contact surfaces, one from said first coil and the other from said second coil whereby to provide a first effective number of electrical turns of said combined coils to provide a first voltage output therefrom;

means mounting said bridging member for movement along a fixed path parallel to said linear set of contacting surfaces whereby said bridging member can bridge other selected adjacent pairs of contact surfaces to provide a different effective number of electrical turns of said combined coils and different output voltages therefrom; and,

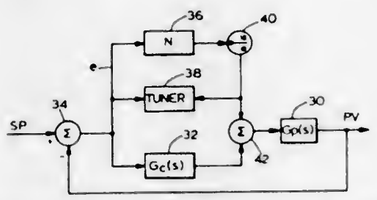
means supporting said bridging member for firm electrical contact with said contact surfaces when said bridging member is moved along said set.

5,283,729

TUNING ARRANGEMENT FOR TURNING THE CONTROL PARAMETERS OF A CONTROLLER

Sheldon G. Llyod, Austin, Tex., assignor to Fisher-Rosemount Systems, Inc., Austin, Tex.

Filed Aug. 30, 1991, Ser. No. 753,217
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—157 **21 Claims**



1. A system for tuning for at least one control parameter of a controller means, said controller means operating in series with a process in a control loop and controlling said process in response to an error defined as the difference between a process variable and a set point, said system comprising:

a tuning loop including oscillation causing means and said process, said oscillation causing means being outside of said control loop, said oscillation causing means for selectively causing said control loop to oscillate at a tuning frequency while said controller m is in control of said process, said control loop having a tuning gain while said control loop is oscillating at said tuning frequency; and,

tuning means responsive to said tuning gain and to said tuning frequency for tuning said at least one control parameter.

5,283,730

SYSTEM FOR AUTOMATICALLY INCREASING PROGRAM EXECUTION SPEED

Hiroshi Ito, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 841,078
Int. Cl.[5] G06F *15/20, 15/38*
U.S. Cl. 364—400 **7 Claims**

1. A system for automatically increasing execution speed of a program on a computer hardware having a vector processing architecture and an operating system having a tool for collecting program running characteristics in running and revising a FORTRAN source program DO loop, which aims at computing numerical values comprising:

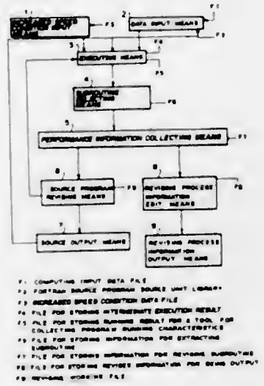
increased speed condition input means for entering parameters such as an execution frequency, a CPU execution time, and a vectoring ratio, each of which serves as a measure for extracting subroutines to be revised;

data input means for entering computing input data necessary to run said FORTRAN source program;

means for executing said FORTRAN source program by said tool based on the data entered from said data input means to collect the program running characteristics;

means for selecting subroutines to be revised from among the parameters regarding the execution frequency, the CPU execution time and the vectoring ratio for each subroutine, which is emitted by said tool based on the parameters entered at said increased speed condition input means;

performance information collecting means for collecting the information regarding the presence of DO loops, vectoring of the DO loop, absence of any READ, WRITE, IF, GO TO statements, for any non-vectored DO loop, a possibility of vectoring in accordance with vectoring directives and a possibility of vectoring by being developed within the DO loop of the subroutine in the same order for each subroutine selected and determined necessary to be revised by said subroutine selecting means, to determine whether a more efficient operating process of the DO loop is possible or not so that, if yes, content of said more efficient operating process necessary to be revised is indicated;



source program revising means for issuing vectoring directives to the DO loop within the source program based on said instruction for said performance information collecting means, or for actually revising by developing any external function invoked within the DO loop; and

source output means for overwriting said subroutine, which has been revised at said source program revising means, onto an original source program to emit to a SYSOUT.

5,283,731

COMPUTER-BASED CLASSIFIED AD SYSTEM AND METHOD

James E. Lalonde, Seattle, and Terry R. Dettmann, Kirkland, both of Wash., assignors to EC Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 819,484, Jan. 19, 1992. This application Dec. 23, 1992, Ser. No. 995,798
Int. Cl.[5] G06F *15/22, 15/24;* G06G *7/52;* H04M *1/64*
U.S. Cl. 364—401 **17 Claims**

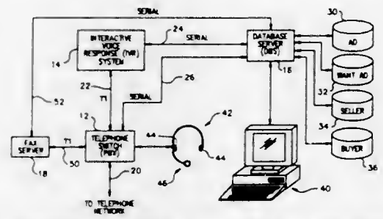
16. A computer based classified ad system comprising:

(a) a data processor including:

(i) a memory storing an ad database, said ad database comprising a plurality of ads, each ad comprising data in fields describing an item available through the system, a unique ad number being assigned to each ad for use with text ads distributed outside the computer based classified ad system;

(ii) a telephone switch device for receiving telephone calls from an individual desiring to obtain information about a specific item available through the system and for receiving at least a first ad number entered by the individual;

(iii) a database server, coupled to said memory and to said telephone switch, for processing said first ad number, to identify the ad for the specific item referenced in one of the ads distributed outside the computer based classified ad system, for recalling data comprising the ad for the specific item, based upon said first ad number and for



searching the database for other ads for items similar to the specific item, based on data in predefined fields of the ad for the specific item matching data in corresponding fields of the ads for the items thus determined to be similar; and

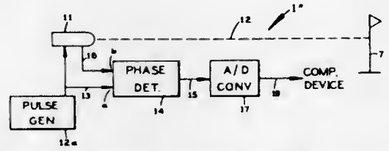
(b) an interactive response system, coupled to said data processor, for assembling an output message conveying the data in the fields of the ad for the specific item over the telephone to the individual, thereby providing information about the specific item to the individual.

5,283,732

GOLF CLUB NUMBER COMPUTING DEVICE

Frank Mauritz, P.O. Box 9133, Fort Lauderdale, Fla. 33310

Filed Feb. 14, 1992, Ser. No. 836,778
Int. Cl.[5] G06F *15/44*
U.S. Cl. 364—410 **12 Claims**



1. A golf club number computing device for computing a best golf club number for a player comprising range finding means for finding range data from a player to a hole, computing means, data input means connected to said computing means for receiving the range data and the player's personal data, wherein said player's personal data include at least one of the data: player's weight, player's height, player's age and player's handicap, memory means in said computing means, data tables in said memory means holding golf club number data related to said range data and to statistical player personal data selected from a representative group of players; and display means connected to said computing means for displaying a computed best golf club number derived from said data tables.

5,283,733

COMPUTER ON-LINE GOLF SCORING DEVICE

Russell H. Colley, 2611 Ocean Dr., Vero Beach, Fla. 32963

Filed Mar. 24, 1992, Ser. No. 858,336
Int. Cl.[5] G06F *15/28, 15/44;* G06G *7/48*
U.S. Cl. 364—411 **13 Claims**

1. A system for generating, storing and retrieving golf scoring data in real time for a plurality of players playing in groups or teams on a golf course having holes or cups, said system comprising:

A) a plurality of computer-controlled terminals distributed about said course so that any point on said course is close to at least one said terminal, each said terminal including,

1) a terminal transceiver means for wireless transmission and receipt of golf scoring data,

2) display means for visible display of golf scoring data, and

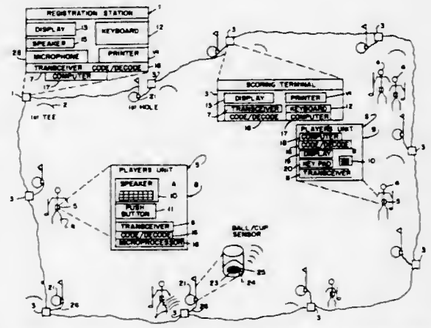
3) connecting means operatively connecting all said terminals together in a network for transmitting, receiving and real time sharing of golf scoring data therebetween;

B) a plurality of computer-controlled, portable player's units for assignment to individual players to carry about the course for wireless communication of golf scoring data with said terminals, each said player's unit including,

1) a player's transceiver means for wireless transmission and receipt of golf scoring data in cooperation with said terminal transceiver means,

2) a manually-operable input means for inputting golf scoring data into said system,

3) signalling means for producing sounds audible to a player carrying a unit, said sounds conveying only information



related to golf scoring information relevant to said player carrying said unit,

4) computer means for controlling operation of said unit, and

5) portable electric power means for providing power for operation of said unit;

C) player's unit encoding means for providing a unique, wireless-transmissible code for each said player's unit which identifies a particular player's unit when transmitting golf scoring information between any two transceiver means;

D) each said player's unit being provided with coding means for coding wireless transmissions with only a unique code assigned to that particular player's unit and no other code to enable said system to verify the identity of a data entry;

E) each said player's unit being provided with decoding means for decoding received wireless transmissions and operating said signalling means only when the unique code assigned to the particular player's unit is received; and

F) said network being provided with coding and decoding means for identifying the source of a transmission received and for directing a transmission to a particular player's unit.

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5,283,734

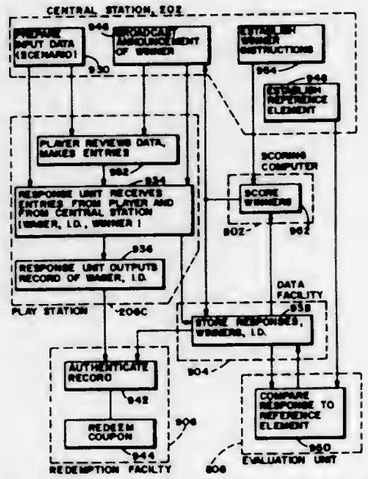
SYSTEM AND METHOD OF COMMUNICATION WITH AUTHENTICATED WAGERING PARTICIPATION

Henry Von Kohorn, 945 Treasure La., Vero Beach, Fla. 32963-3044

Continuation-in-part of Ser. No. 603,882, Oct. 25, 1990, Pat. No. 5,057,915, which is a continuation-in-part of Ser. No. 424,089, Oct. 19, 1989, Pat. No. 5,034,807, which is a continuation-in-part of Ser. No. 192,355, May 10, 1988, Pat. No. 4,926,255, which is a continuation-in-part of Ser. No. 837,827, Mar. 10, 1986, Pat. No. 4,745,468. This application Sep. 19, 1991, Ser. No. 763,672

Int. Cl.[5] G06F *15/28;* A63B *71/00*

U.S. Cl. 364—412 81 Claims



1. A system for conducting a forgery-resistant game, including a lottery and a wagering by players at playing stations, said game being played with an entry including any one of a player's selected entry, indicium, wager, lottery selection, and ticket number, said system comprising

a data facility having means for storing wagering data including individual players' wagers, a plurality of playing stations remote from said data facility, and communication means linking said playing stations with said data facility for communication of wagering data, there being a reference element to serve as a basis for judging a winning wager, there being a determination of a winning wager;

redemption means distant from said data facility and from said playing stations for presenting to one or more of said players a prize in response to a winning wager;

wherein said communication means communicates players' wagers from respective ones of said playing stations to said data facility;

said system further comprises comparing means connecting with said data facility for comparing players' wagers to the reference element to determine a winning wager;

each of said playing stations comprises means for outputting a record of data including a player's wager; and

said system further comprises means at said redemption means and connecting with said data facility for authenticating records of the respective playing stations by comparing player's data on a record with the winning wager and with the player's data stored in said data facility, said authentication means being operated prior to presentation of said prize.

5,283,735

FEEDBACK SYSTEM FOR LOAD BEARING SURFACE

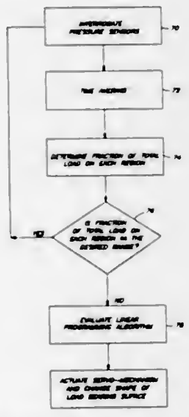
Clifford M. Gross, Roslyn; Jose Banaag, Middle Village; Ravi Goonetilleke, and Chandra Nair, both of Dix Hills, all of N.Y., assignors to Biomechanics Corporation of America, Melville, N.Y.

Continuation of Ser. No. 623,220, Dec. 6, 1990, Pat. No. 5,170,364. This application Dec. 4, 1992, Ser. No. 986,094

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] A61B *5/103*

U.S. Cl. 364—413.02 1 Claim



1. An electronic system for adjusting a load bearing surface to provide a desired level of comfort for an individual user comprising

pressure sensing means for generating data indicating the actual distribution of pressure exerted by said individual user on said surface,

electronic processing means for processing said data generated by said pressure sensing means for determining from said data a time average actual comfort level of said individual user, and for determining if said actual comfort level is a desired comfort level

servo-means responsive to said processing means for reconfiguring said load bearing surface until said actual level of comfort is a desired level of comfort for the individual user,

said actual comfort level of the individual user being a time average for preventing the load bearing surface from being reconfigured for every small change in position of the individual user.

5,283,736

RADIOGRAPHIC IMAGE PROCESSING APPARATUS

Sumiya Nagatsuka, and Hisanori Tsuchino, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,519

Claims priority, application Japan, Nov. 29, 1990, 2-325605

Int. Cl.[5] G06F *15/00*

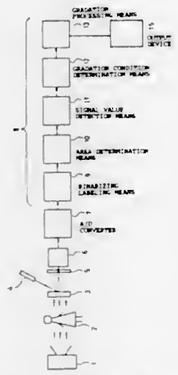
U.S. Cl. 364—413.13 19 Claims

1. An apparatus for processing digital image data of pixels which are obtained by radiographing an image area including a subject so as to generate image signals, said image signals being converted into digital image data of pixels, each said digital image data of pixels representing a density level corresponding to an amount of radioactive rays transmitted through a respective portion of said radiographed image area, and each pixel having a position data representing the position of the respective pixel on said image area, said apparatus comprising:

means for determining a threshold value on the basis of digital image data of said subject;

means for binarizing each said digital image data of pixels of said image area by comparison with said threshold value so that each pixels is represented by a binary code;

means for classifying each pixel in accordance with its binary code and its position data, and for dividing said image area into plural sub-image areas so that all pixels adjoining each other in the same sub-image area have the same binary code;



means for comparing said digital image data and the position data of each of said plural sub-image areas with a predetermined condition to produce a comparison result, and for selecting a desired sub-image area from said plural sub-image areas responsive to the comparison result; and

means for determining an image processing condition for said digital image data of said image area on the basis of said digital image data of said desired sub-image area.

5,283,737

MECHANISM FOR GENERATING LINGUISTIC EXPRESSIONS BASED ON SYNONYMS AND RULES DERIVED FROM EXAMPLES

John Van Praag, Arlington, Mass., assignor to ProLab Software Inc., Arlington, Mass.

Filed Sep. 21, 1990, Ser. No. 586,251

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.14 60 Claims

MICROFICHE APPENDIX INCLUDED

(3 Microfiche, 3 Pages)

1. A computer implemented method for deriving a rule from the combination of:

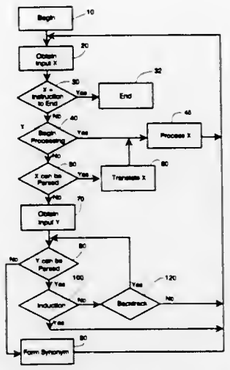
a first formal language input, and

a firs: arbitrary input which is indicative of said first formal language input,

said method comprising, in combination, the steps of:

accepting and storing said first formal language input and said first arbitrary input;

comparing said first formal language input and said first arbitrary input to identify a first data element common to said first formal language input and said first arbitrary input,; and



generating said rule by substituting at least one data object for at least one occurrence of said first data element in said first formal language input.

5,283,738

PROCESS AND DEVICE FOR CONTROLLING A CLUTCH

Manfred Schwab, Friedrichshafen; Wolfgang Runge, Ravensburg, and Wolf-Dieter Gruhle, Tettnang, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

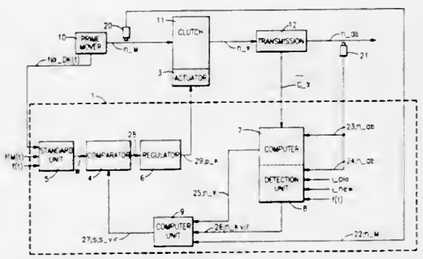
PCT No. PCT/EP89/00878, § 371 Date Jan. 18, 1991, § 102(e) Date Jan. 18, 1991, PCT Pub. No. WO90/01431, PCT Pub. Date Feb. 22, 1990

PCT Filed Jul. 26, 1989, Ser. No. 640,402

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1988, 3826068

Int. Cl.[5] G06F *15/50;* F16D *11/06*

U.S. Cl. 364—424.1 8 Claims



1. A process for controlling a clutch located in a drive path between an engine (1) and a gear transmission (12) of a motor vehicle, said clutch being one of a bridging clutch (WK), a hydrodynamic unit, and a dividing clutch (11), and having an actuator (3) for controlling actuation of said clutch;

said process incorporating devices for determining an output speed of the engine (n_M) and an output speed of the gear transmission (n_ab) and a slip regulating switch mechanism (1) for determining the pressure of said actuator (3) of said clutch (K or WK);

said process comprising the steps of:

determining a clutch output speed (n_K, n_WK), needed for determining slip, via a gear ratio (G_x) of the gear

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transmission (12) and a determined gear transmission output speed (n_ab) thereof,

determining and comparing (comparator 4) a given nominal slip value (w) of the engine with an actual sip value (s) of the engine;

converting a difference between the given nominal slip value (w) and the actual sip value (s) into a pressure according to a standard algorithm (6); and,

controlling said clutch, during a gear change operation (t_0 to t_3) on the basis of a virtual clutch speed (n_Kvir) for which a virtual ratio i_vir (t)=i_old×f(t)-+i_new×(1−f(t)) is defined as an intermediate magnitude, wherein i_old is the ratio of the previous gear, i_new is the ratio of the new gear and f(t) is a transition period function which, during the course of the gear change (from t_0 to t_3), decreases from 1 to 0.

5,283,739

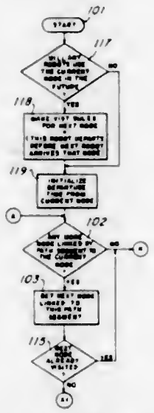
STATIC COLLISION AVOIDANCE METHOD FOR MULTIPLE AUTOMATICALLY GUIDED VEHICLES

David F. Summerville, Garland; John P. Williston; Martin A. Wand, both of Plano; Thomas J. Doty, Dallas, and Haradon J. Rice, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 129,914, Dec. 4, 1987, Pat. No. 4,887,013, which is a division of Ser. No. 771,379, Aug. 30, 1985, abandoned. This application Oct. 31, 1988, Ser. No. 265,206

Int. Cl.[5] **G06F** *15/50;* **G05D** *1/02*

U.S. Cl. 364—424.02 **5 Claims**



1. A method of scheduling the routes for a plurality of AGVs, implementable in a computer, comprising:

(a) defining a plurality of paths, each of which comprises a beginning node and an ending node with a plurality of nodes in between, each path of the plurality of paths containing nodes common with other of said plurality of paths;

(b) determining which of said plurality of paths permit a given AGV to reach a destination node from an origin node;

(c) selecting and assigning one of said possible paths to said given AGV;

(d) calculating the times that each node along said assigned path would be occupied by said given AGV; and

(e) assigning each node along the assigned path to said given AGV for the calculated time needed to be occupied by said given AGV.

5,283,740

STEERING HANDLE POSITION SENSOR CHECKING APPARATUS

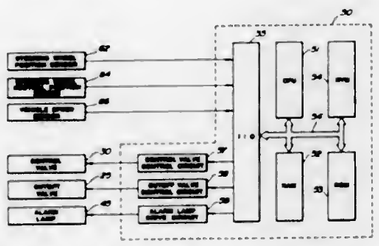
Hiroyuki Sato; Takaaki Eguchi, and Yasuki Ishikawa, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 3, 1992, Ser. No. 816,898

Claims priority, application Japan, Jan. 28, 1991, 3-008660

Int. Cl.[5] **B62D** *5/00*

U.S. Cl. 364—424.05 **2 Claims**



1. An apparatus for use with a vehicle speed sensor, a steering handle position sensor and a steering handle neutral position sensor, the vehicle speed sensor being sensitive to vehicle speed for producing a vehicle speed signal indicative of a sensed vehicle speed, the steering handle position sensor being sensitive to steering handle position for producing a steering handle position signal indicative of a sensed steering handle position, the steering handle neutral position sensor being sensitive to steering handle position for producing a steering handle neutral position signal having a first level when the sensed steering handle position is in a predetermined neutral range and a second level when the sensed steering handle position is out of the predetermined neutral range, the apparatus comprising:

means for estimating a steering handle neutral position based upon the steering handle position signal and the steering handle neutral position signal;

means for calculating a steering angle corresponding to an absolute value of a difference of the sensed steering handle position from the estimated steering handle neutral position; and

means for producing a failure signal to indicate that at least one of the steering handle position sensor and the steering handle neutral position sensor is subject to failure when the calculated steering angle is equal to or greater than a predetermined steering angle value and when the vehicle speed is held above a predetermined vehicle speed normal for vehicle running in an urban area for a predetermined interval of about 60 seconds.

5,283,741

CONTROL APPARATUS FOR A VEHICLE POWER STEERING SYSTEM

Dany Desrus, Paris, France, assignor to Valeo Electronique, Voisins-Le-Bretonneux, France

Filed Jun. 7, 1991, Ser. No. 711,872

Claims priority, application France, Jun. 8, 1990, 90 07130

Int. Cl.[5] **B62D** *6/04*

U.S. Cl. 364—424.05 **15 Claims**

1. A control apparatus for a power steering system for a vehicle, wherein the control can be activated or deactivated by at least one control signal, wherein the apparatus includes:

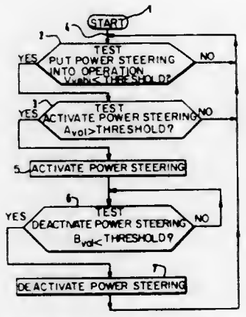
means (17) for measuring rotational speed of the power steering system;

first means (26) receiving the measured rotational speed and for calculating at least one parameter for activation of the power steering system (18);

second means (27) connect to said calculating means for calculating at least one parameter for deactivation of the power steering system;

means (29), connected to said first calculating means, for performing a first test to detect whether at least one activation parameter meets an activation condition;

means (32), connected to said first performing means, for activating the power steering (19) in response to the first test;



means (28), connected to said second calculating means, for performing a second test to detect whether at least one deactivation parameter meets a deactivation condition; and

means (33), connected to said second performing means, for deactivation of the power steering (19) in response to the second test.

5,283,742

EXCESS SLIP CONTROL DEVICE FOR DRIVING WHEEL

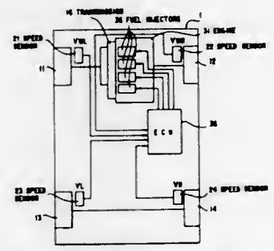
Yoshio Wazaki, and Tetsuya Oono, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 794,378, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 326,835, Mar. 21, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 983,097

Claims priority, application Japan, Mar. 23, 1988, 63-68701

Int. Cl.[5] **B60K** *28/16*

U.S. Cl. 364—426.02 **6 Claims**



1. An excess slip control device for controlling an output torque of a driving wheel, which is driven by an engine, by reducing an output of the engine during an excess slip condition of the driving wheel, comprising:

driving wheel speed sensor for detecting a driving wheel speed of said driving wheel of said vehicle;

a slip determining means for determining a slip condition of said driving wheel based on an output of said driving wheel speed sensor;

a fuel supply suppressing means including fuel decreasing and fuel cutting means for suppressing fuel supply to engine in response to said slip condition detected by said slip determining means; and

a retard control means for controlling an ignition timing of said engine to a retard position in response to said slip condition detected by said slip determining means, said retard position being determined in accordance with the suppressing degree of fuel suppressing control; whereby said fuel supply suppressing means and said retard control means control excess slip of said driving wheel by reducing power supplied by said engine to said driving wheel.

5,283,743

VEHICLE-DIRECTION MEASURING APPARATUS

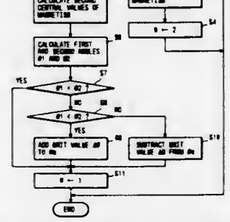
Satoshi Odagawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,163

Claims priority, application Japan, Apr. 16, 1991, 3-084196

Int. Cl.[5] **G06F** *15/50;* **G01C** *17/38*

U.S. Cl. 364—457 **5 Claims**



1. A vehicle-direction measuring apparatus for determining the direction of a vehicle in correspondence with a declination correction value by obtaining the direction of the vehicle on the basis of X-Y coordinate data detected by a vehicle-mounted terrestrial magnetism sensor, said apparatus comprising:

obtaining means for obtaining the direction of a road on which the vehicle is traveling in correspondence with map data;

calculating means for calculating central coordinate data located on a circle of magnetism, said circle having a center representing a true center of magnetism, based on the direction of the road, a present declination correction value, and said X-Y coordinate data detected by said terrestrial magnetism sensor each time the direction of the road is obtained by said obtaining means;

correcting means for correcting the declination correction value based on outputs of said calculating means to produce a corrected declination correction value; and

means for determining the direction of the vehicle in accordance with an output of said terrestrial magnetism sensor and said corrected declination correction value.

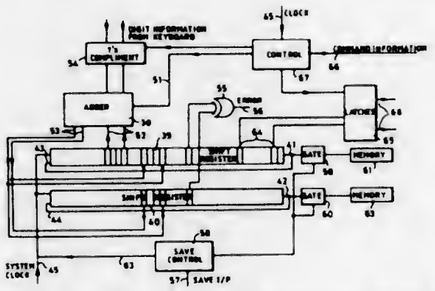
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,744

FRANKING MACHINE

Cyrus Abumehdi, Harlow, and Raymond J. Herbert, Leigh-on-Sea, both of United Kingdom, assignors to Alcatel Business Systems Limited, Essex, United Kingdom

Filed Jul. 1, 1991, Ser. No. 724,217
Claims priority, application United Kingdom, Jul. 4, 1990, 9014827
Int. Cl.[5] G07B 17/00
U.S. Cl. 364—464.02 7 Claims



1. A franking machine including an accounting circuit to carry out accounting functions in relation to postage values used in franking mail items; memory means to store accounting data generated by the accounting circuit; control circuits to carry out control functions to control operation of the franking machine; means to input a selected value of postage to the accounting circuit; a print head; feed means operable to feed a mail item past the print head to receive a franking impression; said print head being operable by said accounting and control circuits to print a franking impression including at least a postage value; said accounting and control circuits being constructed as a single integrated circuit; said accounting and control circuits being constructed to carry out specific accounting and control functions respectively; and in which said accounting circuit includes a first recirculating shift register having a first plurality of stages to store bits of a first string of items of accounting data and an adder having first and second inputs and an output for the result of addition of data applied to said first and second inputs; said first input being connected to a first stage of the recirculating shift register and the output being connected to a second stage of the shift register; and control means to control operation of the adder to receive bits of a data item from the first stage and to output bits of the data item, after modification by data applied to the second input, to the second stage of the shift register.

5,283,745

PRODUCTION EXECUTION METHOD

Nobuhiro Tanaka, Miyashiro, Japan, assignor to Kao Corporation, Tokyo, Japan

Filed Dec. 5, 1990, Ser. No. 622,560
Claims priority, application Japan, Dec. 5, 1989, 1-316227
Int. Cl.[5] G06F 15/46
U.S. Cl. 364—468 7 Claims

2. A production execution method for producing a product from various goods comprising the steps of:

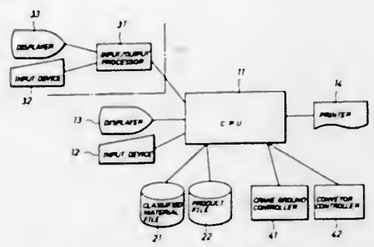
storing the various goods in a storage facility in respective unit loads of plural cases;

calculating in calculation means a producible quantity of the product in accordance with a presently procured quantity or presently stocked quantity of the various goods;

selecting a desired quantity of the product to be produced which is less than or equal to the producible quantity of the product;

setting a production quantity of the product by dividing the desired quantity of the product into first and second smaller quantities;

the calculation means, subsequent to said step of setting, determining the required number of cases of the various goods needed to produce the first and second smaller quantities of the product;



removing the various goods from the storage facility by respective unit loads such that the least amount of unit loads of the various goods needed to produce the first smaller quantity of the product are removed; and

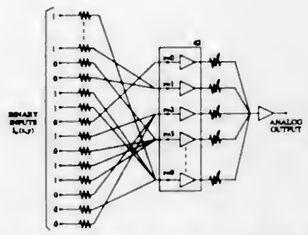
producing the first smaller quantity of the product using the removed various goods.

5,283,746

MANUFACTURING ADJUSTMENT DURING ARTICLE FABRICATION

Kevin D. Cummings, Neshanic Station; Robert C. Frye, Piscataway, and Edward A. Rietman, Madison, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 483,530, Feb. 22, 1990, abandoned.
This application Feb. 25, 1993, Ser. No. 23,158
Int. Cl.[5] G06F 15/18
U.S. Cl. 364—468 7 Claims



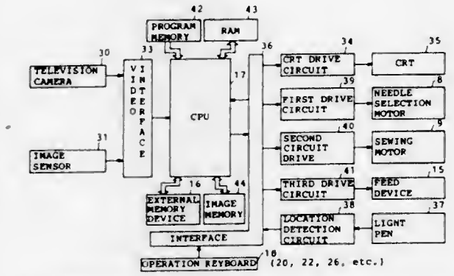
1. A process for manufacturing an article having desired specifications, said process being complex and comprising the steps of causing a neural network, having parameters determined through a prototypical article so that a solution derived from data representing a variable for said prototypical article yields in said process a resulting article corresponding to said prototypical article that essentially meets said desired specifications, to be applied to data representing a variable of said process, generating a control signal corresponding to the solution derived from said data by said neural network to effect the fabrication of said article, and adjusting said variable in conformance with said signal without adjusting said parameters based on said signal.

5,283,747

EMBROIDERY PATTERN DATA PROCESSOR

Kyozi Komuro; Atsuya Hayakawa, and Hideaki Shimizu, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 18, 1990, Ser. No. 539,207
Claims priority, application Japan, Jun. 28, 1989, 1-167875
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] G06F 15/46
U.S. Cl. 364—470 19 Claims



1. An embroidery pattern data processor generating needle location data for a multi-needle embroidery sewing machine that sews embroidery patterns under control of the needle location data, the needle location data for an embroidery pattern being generated based on a plurality of sections formed by divided a closed area defined by an outline representing the embroidery pattern to be stitched by the sewing machine, comprising:

memory means for storing section data representing the plurality of sections of the embroidery pattern;

determination means for determining from the section data stored in the memory means whether each of the plurality of sections is

an end section connected to only one other section, or

a fork section connected to more than two other sections;

running stitch computing means for automatically computing running stitch needle location data for controlling the sewing machine to prevent cross threads and form running stitches along a running stitches route from each fork section to at least one end section prior to the embroidering of the fork sections; and

needle location computing means for automatically computing embroidery needle location data for controlling the sewing machine to prevent cross-threads and form embroidery stitches along an embroidery route associated with each running stitches route from each end section where the running stitches routes end to the fork section where the running stitches routes begin.

5,283,748

EMBROIDERY DATA PRODUCING METHOD AND APPARATUS

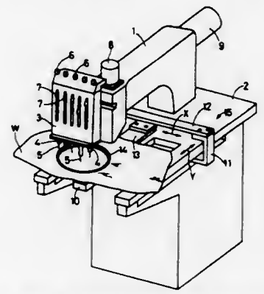
Kiyoji Muramatsu, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Jan. 21, 1992, Ser. No. 823,110
Claims priority, application Japan, Jan. 23, 1991, 3-006333
Int. Cl.[5] G06F 15/46; D05B 21/00
U.S. Cl. 364—470 20 Claims

1. A process of producing embroidery data for controlling a sewing machine to move a sewing needle and a work cloth relative to each other so as to form stitches filling a desired original pattern on the cloth, the embroidery data including sets of coordinate data each representing a stitch position when the needle penetrates the cloth, the process comprising the steps of:

specifying a plurality of first defining points defining a first curve including at least one first adjustable curve segment in series, and a plurality of second defining points defining a second curve including at lease one second adjustable curve segment in series and cooperating with said first curve to approximate an outline of said original pattern;

establishing an embroidery area by connecting between each of both ends of said first curve and a corresponding one of both ends of said second curve, and producing first sets of coordinate data representing a plurality of first stitch positions including at least one position along said first



curve, and second sets of coordinate data representing a plurality of second stitch positions including at least one position along said second curve;

producing said embroidery data by using said first and second sets of coordinate data; and

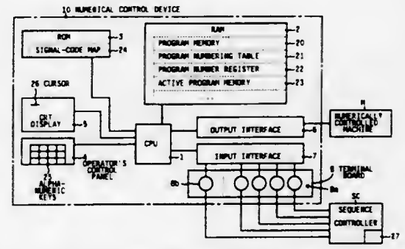
controlling said sewing machine in accordance with said embroidery data to form the stitches filling said embroidery area by sequentially connecting with a sewing thread between said first stitch positions and said second stitch positions.

5,283,749

DEVICE FOR OUTPUTTING MACHINE CONTROL PROGRAMS IN RESPONSE TO EXTERNAL PROGRAM SELECTING SIGNALS

Yasuo Tanahashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 21, 1991, Ser. No. 795,382
Claims priority, application Japan, Nov. 24, 1990, 2-319564
Int. Cl.[5] G06F 15/46
U.S. Cl. 364—474.01 11 Claims



1. A control device for outputting to a workpiece processing machine a selected one of machine control programs in response to program selection signals received from an external device, comprising:

a program memory for storing a plurality of machine control programs, in relation to respective program numbers which identify said machine control programs, respectively;

a signal input portion having a plurality of program selection

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terminals for receiving respective program selection signals from said external device;

correlating means for correlating said program numbers of selected ones of said machine control programs with respective code values corresponding to respective combinations of states of said program selection signals, the number of said code values and the number of said selected ones of said machine control programs being smaller than the number of said program numbers and the number of said machine control programs, respectively;

correlation memory means for storing a relationship between said program numbers of said selected ones of the machine control programs and said code values which are obtained by said correlating means;

encoding means for encoding the combination of states of said program selection signals which are received at said program selection terminals, into a corresponding one of said code values;

program number reading means for reading one of said program numbers which corresponds to said corresponding one code value obtained by said encoding means; and

program output means for outputting to said machine one of said selected ones of said plurality of machine control programs, whose program number has been read by said program number reading means.

5,283,750

AUTOMATIC EDITING METHOD FOR POLYHEDRON MACHINING PROCESSES

Masaki Seki, Suginami; Takashi Takegahara, Hachioji; Toru Matunaka, Yanai, and Shizuaki Hayanagi, Oshino, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

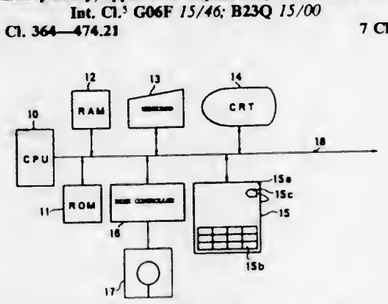
PCT No. PCT/JP91/00662, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/19238, PCT Pub. Date Dec. 12, 1991

PCT Filed May 17, 1991, Ser. No. 807,822

Claims priority, application Japan, May 29, 1990, 2-137046

Int. Cl.[5] **G06F** *15/46;* **B23Q** *15/00*

U.S. Cl. 364—474.21 **7 Claims**



1. An automatic editing method for multi-faced polyhedron machining processes, comprising the steps of:

(a) automatically dividing multi-faced polyhedron machining processes defined beforehand in relation to an operation of a machine tool of a type inevitably entailing tool exchange when a shift is made between workpiece upper face machining and workpiece side face machining, into a first group of machining processes associated with the workpiece upper face machining and a second group of machining processes associated with the workpiece side face machining;

(b) automatically dividing the first group of machining processes into ones for respective types of tools employed to conduct the first group of machining processes; and

(c) automatically dividing the second group of machining processes into ones for respective types of tools employed to conduct the second group of machining processes.

5,283,751

CONTROL DEVICE AND METHOD FOR AN INCREMENTAL NUMERICAL AXIS IN A MACHINING STATION

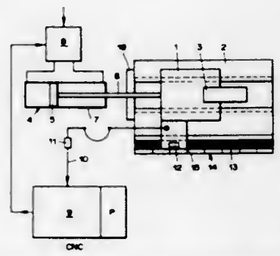
Jean-Claude Simonin, Moutier, Switzerland, assignor to Tornos-Bechler SA, Fabrique de Machines Moutier, Moutier, Switzerland

Filed Apr. 16, 1991, Ser. No. 685,728

Claims priority, application Switzerland, Apr. 24, 1990, 1384/90

Int. Cl.[5] **G05B** *23/02;* **B23Q** *17/22*

U.S. Cl. 364—474.28 **13 Claims**



1. A device for controlling an incremental numerical axis in a machining station, comprising:

a movable carriage capable of moving along a predetermined path;

drive means for moving said carriage incrementally in either direction along said path;

at least one preselected reference mark disposed in a preselected position along said path;

deviation means, disposed along said path of said carriage, for causing an instantaneous position of said carriage to deviate from a programmed position to which said drive means attempts to move said carriage;

a position detector mounted to said carriage for detecting said at least one preselected reference mark; and

a control unit for controlling movement of said carriage and including:

first means for causing said drive means to move said carriage toward said deviation means until said carriage reaches said deviation means;

determining means for determining when a deviation between the instantaneous position of said carriage and the programmed position to which said drive means attempts to move said carriage reaches a preset limit value due to interaction between said carriage and said deviation means; and

second means for causing said drive means to move said carriage away from said deviation means until said position detector outputs a reference signal when said position detector detects said at least one preselected reference mark.

5,283,752

METHOD OF PREPARING AN ITEM TO BE MAILED AND SYSTEM FOR CARRYING OUT THAT METHOD

Jacobus F. Gombault, Drachten, and Gerhard Hidding, Heerenveen, both of Netherlands, assignors to Hadewe B.V., Drachten, Netherlands

Continuation of Ser. No. 541,310, Jun. 21, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 44,118

Claims priority, application Netherlands, Jun. 21, 1989, 8901557

Int. Cl.[5] **G06F** *15/20;* **B65H** *39/02*

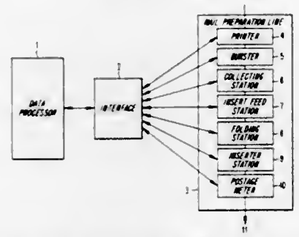
U.S. Cl. 364—478 **18 Claims**

1. A method for preparing an item to be mailed, comprising the steps of:

outputting a set of instructions to a mail preparation line, the mail preparation line including a printer and one or more stations of the mail preparation line, the set of instructions including instructions for controlling the printer and associated instructions for controlling the one or more stations, the instructions for controlling the printer and the associated instructions being outputted at the same time;

subsequently printing a document in accordance with the instructions for controlling the printer;

subsequently directly feeding individual printed documents from the printer to the one or more stations;



supplying operating instructions to the one or more stations in accordance with the associated instructions for controlling the one or more stations and in accordance with the prioting of the documents and the feeding of the printed documents form the printer to the one or more stations; and

subsequently processing the printed documents in accordance with the associated instructions for controlling the one or more stations.

5,283,753

FIRM FUNCTION BLOCK FOR A PROGRAMMABLE BLOCK ARCHITECTED HETEROGENEOUS INTEGRATED CIRCUIT

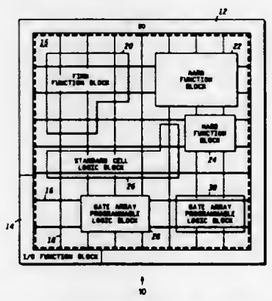
Douglas W. Schucker, Mesa, and Richard Swindlehurst, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 25, 1991, Ser. No. 735,738

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] **G01R** *23/16;* **G06F** *15/00*

U.S. Cl. 364—490 **6 Claims**



5. A method for developing a firm function block which is to be placed within an integrated circuit, the integrated circuit including a power grid structure having a first plurality of power conductors being separated by a first predetermined distance and a second plurality of a power conductors being separated by a second predetermined distance, each one of the first plurality of power conductors being perpendicular to each one of the second plurality of power conductors, the integrated circuit including a signal grid structure having a first plurality of signal line conductors being separated by a third predetermined distance and a second plurality of signal line conductors being separated by a fourth predetermined distance, each one of the first plurality of signal line conductors being perpendicular to each one of the second plurality of signal line conductors, the method comprising the steps of:

(a) utilizing standard library elements of a base cell array of the integrated circuit;

(b) placing and routing a predetermined number of said standard library elements in a predetermined fashion and with respect to the power and signal line grid structures to create the firm function block which implements a predetermined function;

(c) storing said placement and routing information generated in step (b);

(d) retrieving said information stored in step (c) to generate a top level design.

5,283,754

PROCEDURE FOR MEASURING ANGLES BETWEEN REFERENCE DIRECTIONS BY MEANS OF A GYRO

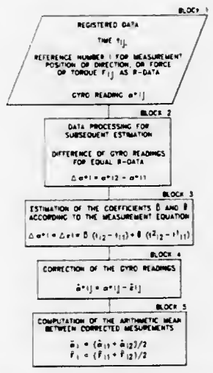
Bernhard F. M. Stieler, and Volker Wetzig, both of Braunschweig, Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fur Luft- und Raumfahrt e.V., Fed. Rep. of Germany

Filed May 13, 1991, Ser. No. 699,481

Claims priority, application Fed. Rep. of Germany, May 14, 1990, 4015800; Jul. 9, 1990, 4021793

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 364—571.02 **2 Claims**



1. A method for measuring an angle between first and second reference directions in a predetermined plane by means of a single gyro comprising the steps of:

moving said gyro from a first measurement position in said first reference direction to a second measurement position in said second reference direction, said gyro continuously outputing a gyro signal α^*;

continuously registering said gyro signal;

registering reference data at said first and second measurement positions, said reference data having a predetermined relationship with the reference direction to be measured;

registering a time t at which said reference data are registered;

repeating at least once for each of said first and second reference directions, the prior steps of registering reference data and registering a time t at which said reference data are registered;

calculating for each of two equal reference data, a difference of said registered times t at which the reference data are registered, and a difference of said registered gyro signal

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α^* at which the reference data are registered, said time difference and said gyro difference being used as input for a measurement equation comprising:

$$\alpha_i^* = \alpha_{i2}^* - \alpha_{i1}^* = D(t_{i2} - t_{i1}) + R(t_{i2}^2 - t_{i1}^2) = D(t_{i2} - t_{i1}) + R(t_{i2} + t_{i1})(t_{i2} - t_{i1}) ,$$

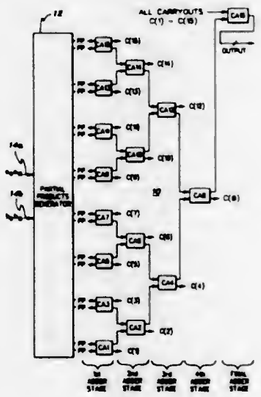
wherein
D=optimal estimate for an unknown component of earth rate plus gyro drift, and
R=optimal estimate for a variation with time of the unknown earth rate plus gyro drift,
subscript i=marking of the measurement position or reference direction, or reference data, respectively, and
subscript 1,2=marking of a measurement event at i;
optimally estimating said gyro measurement error model coefficients D and R; and
correcting said registered gyro reading accordingly thereby producing a measurement of said angle between said first and second reference directions.

5,283,755

MULTIPLIER EMPLOYING CARRY SELECT OR CARRY LOOK-AHEAD ADDERS IN HIERARCHICAL TREE CONFIGURATION

Roland A. Bechade, So. Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1993, Ser. No. 48,396
Int. Cl.[5] G06F 7/52
U.S. Cl. 364—757 **26 Claims**



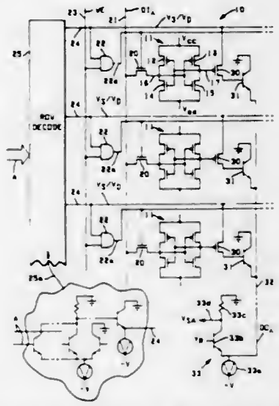
1. A multiplier circuit comprising:
a plurality of adders connected in a binary tree structure to complete multiplication of an M bit multiplicand (wherein M is an integer) and an N bit multiplier (wherein N=i, i being an integer) given partial products thereof, each adder of said plurality of adders having a number of bits equal to the number of bits M in the M bit multiplicand, and the number of adders in said binary tree structure being equal to the number of bits N in the N bit multiplier, multiple adder stages being defined by said binary tree structure, each adder of said plurality of adders outputting a sum and a carry;
a first adder stage of said multiple adder stages of said plurality of adders receiving pairs of partial products of said M bit multiplicand and said N bit multiplier, each adder of said first adder stage receiving partial product pairings such that the partial products are offset one bit position; and
a final adder stage of said multiple adder stages of said plurality of adders, said final adder stage being coupled to said first adder stage and connected to receive the carrys of all adders of said first adder stage, the sum and the carry of said final adder stage comprising a portion of the product resulting from multiplication of said M bit multiplicand and said N bit multiplier.

5,283,757

HIGH SPEED BICMOS MEMORY HAVING LARGE NOISE MARGIN AND REPEATABLE READ PORT

Lo-Shan Lee, San Diego, and Babak Mansoorian, La Jolla, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 28, 1992, Ser. No. 843,403
Int. Cl.[5] G11C 7/00, 11/40
U.S. Cl. 365—177 **14 Claims**



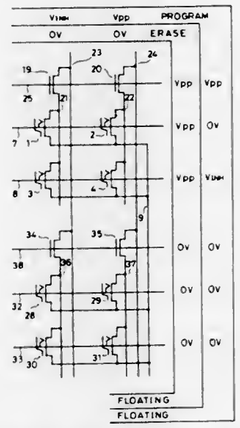
1. An integrated circuit memory that is comprised of a plurality of memory cells which are arranged in rows and columns; wherein, to read data from said cells, said memory has a read port which includes:
a single respective field effect transistor for each memory cell having a gate coupled to an output node of the cell which carries first and second output voltages;
each field effect transistor in a row of memory cells having a drain coupled to a respective row line for the row of cells which is otherwise disconnected from the cells, and which carries select and deselect voltages;
each occurrence of from one to four consecutive field effect transistors in a column of cells having their source coupled only to the base of a respective bipolar transistor such that said base floats when all of the field effect transistors that are coupled thereto are turned OFF;
said first output voltage, second output voltage, select voltage, and deselect voltage being generated such that for each memory cell, said respective field effect transistor is always turned ON when that cell carries said first output voltage on its output node and is otherwise turned OFF; and,
each bipolar transistor in a column of memory cells having a collector coupled to a voltage bus and having an emitter coupled via a bit line to a sense amplifier for the column.

5,283,758

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Takeshi Nakayama; Yasushi Terada; Kazuo Kobayashi; Masanori Hayashikoshi, and Yoshikazu Miyawaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 536,876, Jun. 12, 1990, abandoned. This application Nov. 20, 1991, Ser. No. 794,708
Claims priority, application Japan, Jun. 13, 1989, 1-150884
Int. Cl.[5] G11C 11/34
U.S. Cl. 365—185 **17 Claims**



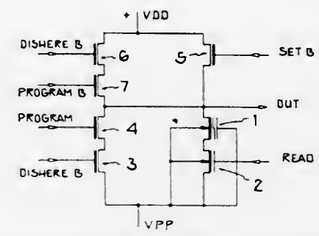
1. A non-volatile semiconductor memory device for storing information in a non-volatile manner and being electrically alterable, comprising:
a memory cell array having a plurality of memory cell transistors disposed in matrix in a direction of row and column, and divided into a plurality of sectors each comprising a predetermined plural number of rows;
each of said plurality of memory cell transistors comprising a drain, a source, a control gate, and a floating gate;
a plurality of word lines provided in rows of said memory cell array, each word lie being connected to control gates of the memory cell transistors in a corresponding row;
a plurality of main bit lines each of which is provided for a column of said memory cell array;
a plurality of sub bit lines provided in columns of each sector of said memory cell array, each sub bit line being connected to drains of the memory cell transistors in a corresponding sector and column such that a plurality of memory cell transistors are connected in parallel to each sub bit line;
a plurality of sector selecting transistors including a predetermined number of sector selecting transistors provided for each of said sub bit lines, each sector selecting transistor having its drain connected to the main bit line of a corresponding column, and its source connected to a corresponding sub bit line;
a plurality of sector selecting lines, at least one provided for each sector of said memory cell array and connected to gates of the sector selecting transistors in a corresponding sector;
means for providing sector select signals to said sector selecting lines to select one of said sectors; and
write inhibiting voltage supplying means for supplying a write inhibiting voltage to non-selected word lines in the selected sector during a writing operation.

5,283,759

ONE-TIME-PROGRAMMABLE EEPROM CELL

Stuart Smith, München, Fed. Rep. of Germany, assignor to Eurosil Electronic GmbH, Eching, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,482
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1991, 4121053
Int. Cl.[5] G11C 16/02
U.S. Cl. 365—185 **12 Claims**



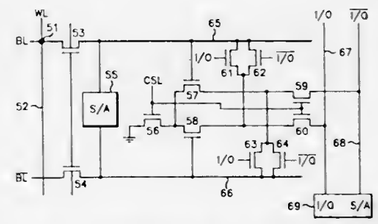
1. A one-time electrically programmable read-only memory comprising:
a floating gate MOS transistor serving as a physical memory element and having a source connection, a drain connection, a bulk connection and a control gate connection, with said control gate and said bulk connections being connected to a common line for a programming voltage (VPP), and circuit means for supplying the drain connection of said floating gate transistor with a supply voltage during programming, with said circuit means comprising a series circuit of a first and a second MOS transistor connected between said drain connection and a supply voltage terminal and having respective control gates for receiving respective control signals.

5,283,760

DATA TRANSMISSION CIRCUIT

Dae-Je Chin, and Byung-Hyuk Min, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 27, 1992, Ser. No. 918,615
Claims priority, application Rep. of Korea, Aug. 14, 1991, 3-14098; Aug. 14, 1991, 3-14099
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.01 **13 Claims**



1. A data transmission circuit for use in a semiconductor memory device for writing and reading data into and out of a memory cell in accordance with a control signal, provided with a plurality of memory cells, a pair of bit line respectively connected to the memory cell, and a sense amplifier for amplifying an electric potential difference in between the bit lines, the circuit comprising:
common input/output line means having a pair of input/output lines for transmitting input or output data with a complementary logic operation;

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a discharging transistor receiving the control signal at its gate and having a channel connected with a ground voltage node, for transferring an electric potential applied to one end of the channel into the ground voltage level;

a transmission transistor means having a pair of transistors receiving the control signal at their respective gates and having each channel connected with the common input-/output lines;

input transistor means including two pairs of input transistors connected with the bit lines, each channel of the input transistors being connected between one of the bit lines and one of the input/output lines, each gate electrode of the input transistors receiving an electric potential on one of the input/output lines; and

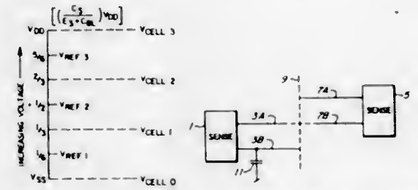
output transistor means including a pair of transistors each having a gate electrode connected to one of the bit lines, and having a channel connected between one end of the channel of the discharging transistor and one end of the channel of the transmission transistors.

5,283,761

METHOD OF MULTI-LEVEL STORAGE IN DRAM

Peter B. Gillingham, Kanata, Canada, assignor to Mosaid Technologies Incorporated, Ontario, Canada

Filed Jul. 22, 1992, Ser. No. 916,673
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.07 **9 Claims**



1. A method of processing data having one of four voltage levels stored in a DRAM cell comprising:

(a) sensing whether or not the data voltage is above or below a voltage level midway between a highest and a lowest of said four levels,

(b) setting the voltage on a reference line higher than the lowest and lower than the next highest of said four levels in the event the data voltage is below said midway voltage level, and setting the voltage on the reference line higher than the second highest and lower than the highest of said four levels in the event the data voltage is above said midway voltage level, and

(c) sensing whether the data voltage is higher or lower than the reference line, whereby which of the four levels the data occupies is read.

5,283,762

SEMICONDUCTOR DEVICE CONTAINING VOLTAGE CONVERTING CIRCUIT AND OPERATING METHOD THEREOF

Kazuyasu Fujishima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

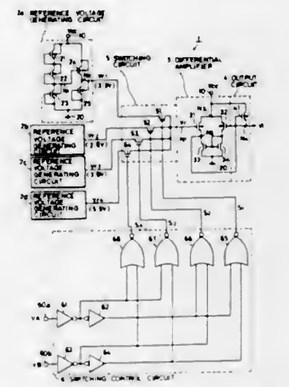
Filed May 6, 1991, Ser. No. 695,028
Claims priority, application Japan, May 9, 1990, 2-120746; Jun. 5, 1990, 2-148130
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.09 **26 Claims**

1. A semiconductor device containing a voltage converting circuit for converting an externally applied power supply voltage to a predetermined voltage and providing the same to an internal circuit, said voltage converting circuit comprising:

reference voltage generating means for receiving the externally applied power supply and generating a plurality of reference voltages at different levels;

selecting means for selecting one of said plurality of reference voltages; and

output means for supplying the reference voltage selected by said selecting means to said internal circuit, wherein



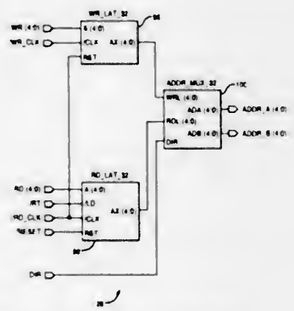
said output means comprises control means for effecting voltage control in a negative feedback manner so that the voltage to be supplied to said internal circuit may be constant.

5,283,763

MEMORY CONTROL SYSTEM AND METHOD

Giao N. Pham, Vancouver, Wash., and Kenneth C. Schmitt, Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 21, 1989, Ser. No. 410,773
Int. Cl.[5] G11C *7/00, 8/00*; G08C *25/02*; H04L *1/18*
U.S. Cl. 365—221 **12 Claims**



1. A memory control system comprising:

a memory;

a first counter connected to said memory for receiving a read signal and generating the address of the next data element to be read from said memory;

a second counter for receiving a first signal for each data element read from said memory without a transmission error and generating the address of the last data element read from said memory without a transmission error; and

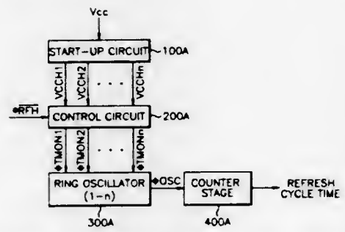
a circuit for transferring the address in said second counter to said first counter in response to a second signal indicating a transmission error.

5,283,764

REFRESH TIMER FOR PROVIDING A CONSTANT REFRESH TIMER REGARDLESS OF VARIATIONS IN THE OPERATING VOLTAGE

Myong-Jae Kim, and Jei-Hwan You, both of Suwon, Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 15, 1992, Ser. No. 990,914
Claims priority, application Rep. of Korea, Dec. 18, 1991, 1992-23343
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **20 Claims**



1. A refresh timer suitable for use in a semiconductor memory device which has a refresh mode of operation which is enabled by a refresh enable clock signal, and which utilizes an operating voltage having a plurality of different operating levels, Vi, where i=1−n, and n is an integer equal to or greater than two, the refresh timer comprising:

first circuit means responsive to said operating voltage for generating a plurality of output voltage signals OVi, where i=1−n, corresponding to said plurality of different operating voltage levels, said first circuit means including a plurality of individual voltage detection circuits, VDi, where i=1−n, corresponding to said plurality of different operating voltage levels, with each ith one of said voltage detection circuits being adapted to detect whether said operating voltage is at said corresponding ith level and to drive the corresponding ith one of said output voltage signals high when it is detected that said operating voltage is at the corresponding ith level; and,

means responsive to said refresh enable clock signal and the ith one of said output voltage signals which was last driven high by said first circuit means, for generating a refresh cycle time control signal having a constant period.

5,283,765

ADDRESS INPUT BUFFER CIRCUIT FOR A SEMI-CONDUCTOR STORAGE DEVICE

Jong H. Oh, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichonkun, Rep. of Korea

Filed Jul. 10, 1991, Ser. No. 728,145
Claims priority, application Rep. of Korea, Jul. 12, 1990, 1990/10590
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.08 **9 Claims**

1. An address input buffer circuit for a semi-conductor storage device, comprising:

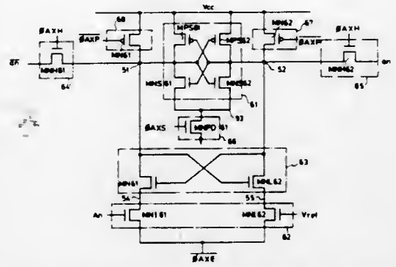
input means being controlled by an external input address signal, an internal reference voltage signal and a setup enable signal;

setup means connected to both stages of said input means;

sense amplifying means connected to both stages of said setup means;

a pair of charging means connected to said both stages of said setup means respectively and to a power source, said pair of charging means being controlled by a precharge signal;

a pair of hold means connected to said both stages of said setup means respectively, said pair of hold means being controlled by a hold signal;



drive means connected to said sense amplifying means, said drive means being controlled by a sense signal; and

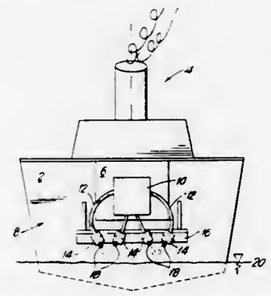
output means connected to said pair of hold means.

5,283,766

METHOD AND APPARATUS FOR SIMULATION OF PROPULSION NOISES OF SELF-PROPELLED SHIPS

Wolfgang Klein, Bodman-Ludwigshafen, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed May 23, 1990, Ser. No. 535,951
Int. Cl.[5] H04K *3/00*
U.S. Cl. 367—1 **26 Claims**



1. Method of simulating ships noises in water, especially ships of high tonnage, preferably for use in defense technology, comprising the steps of drawing water into a relatively small watercraft in a body of water having a water level, pumping the drawn water in liquid jets downwardly from the watercraft into the body of water from a location above the water level.

5,283,767

AUTONOMOUS OCEANOGRAPHIC PROFILER

Kim McCoy, P.O. Box 191,, Carmel, Calif. 93921

Filed Feb. 27, 1992, Ser. No. 843,852
Int. Cl.[5] H04B *1/59*; G01S *5/00*
U.S. Cl. 367—004 **26 Claims**

1. A portable free drifting instrument package for cyclically collecting oceanic and/or fresh water environmental data over a range of depths, comprising:

a submersible housing;

a sensor suite mounted to said housing for collecting selected environmental data relating to a surrounding medium;

a data storage resource mounted to said housing for storing environmental data sensed by said sensor suite;

a dive control system mounted to said housing for controllably positioning the instrument package at a selected depth;

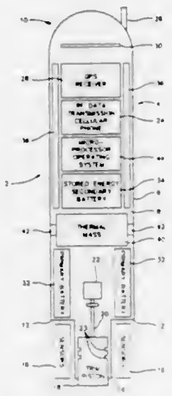
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a data communications system mounted to said housing for facilitating bi-directional (full duplex) communication between the instrument package and a remote communications site;

a locating system mounted to said housing for self determination of navigational position of the instrument package;

a clock system mounted to said housing for synchronizing one or more time-based instrument functions of said instrument package;

a clock reset system mounted to said housing for receiving a time signal from a remote source and resetting said clock



system and time-based instrument functions for increased energy efficiency;

a rechargeable power system mounted to said housing for providing operational power to the instrument package;

an energy collection system mounted to said housing for collecting energy from the environment to recharge said power system; and

a system controller mounted to said housing for controlling operations of said sensor suite, said data storage resource, said dive control system, said data communications system, said locating system, said rechargeable power system and said energy collection system.

5,283,768

BOREHOLE LIQUID ACOUSTIC WAVE TRANSDUCER

Louis H. Rorden, Los Altos, Calif., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 14, 1991, Ser. No. 715,364

Int. Cl.[5] G01V *1/40*

U.S. Cl. 367—83 **56 Claims**

1. A borehole acoustic communication transducer for converting between electrical power and acoustical power defined by acoustic waves travelling lengthwise in a borehole with liquid therein being the transmission medium, comprising:

a generally elongated housing for enclosing said transducer at a downhole location in said borehole;

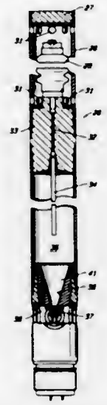
means in said housing defining at least one magnetic circuit having a plurality of gaps spaced lengthwise in said housing;

a multiple number of electrical windings in said housing, each of which is in a corresponding one of said gaps for interaction with magnetic flux flowing therethrough;

a piston in said housing connected to said multiple number of windings for movement therewith in a force additive manner;

at least one side of said piston positioned to interact with a liquid in a communication channel of said borehole either to radiate acoustic waves into the same or to receive acoustic power therefrom:

wherein during a transmission mode of operation, said piston is responsive to an electrical signal pattern, in selected ones of said multiple number of electrical windings, which is representative of a coded signal and will radiate an acoustic pulse pattern in said liquid corresponding thereto; and



wherein during a reception mode of operation, said piston is responsive to an acoustic pulse pattern in said liquid which is representative of a coded signal which is developed in said liquid at a remote location communication mode, and which will cooperate in generating an electrical signal corresponding thereto in selected ones of said multiple number of electrical windings.

5,283,769

CLOCK

Julian E. Renton, Frankleigh Farm, Bath Road, Bradford on Avon BA15 2PF, England

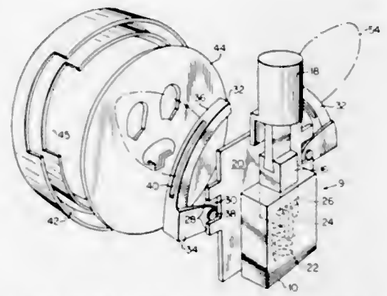
PCT No. PCT/GB91/00890, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO91/19234, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 4, 1991, Ser. No. 966,168

Claims priority, application United Kingdom, Jun. 4, 1990, 9012385.2

Int. Cl.[5] G04B *21/02*; G04C *21/00*

U.S. Cl. 368—74 **7 Claims**



1. A clock having a clock mechanism, display means which are displaceable between first and second configurations, in at least one of which they are at least partly visible from the exterior of the clock so that the configurations are visually distinct; and means coupling the display means to the clock mechanism so that at a predetermined time the clock mechanism actuates the coupling means whereby it tends to urge the display means from the first to the second configuration; wherein said display means tend to remain in the second configuration until the clock is reset, so that the state of the clock after the predetermined time is visually distinct from the state of the clock before the predetermined time on the basis of the configuration of the display means; said coupling means comprising an element movable between first and second configurations; characterised in that there are urging means urging said element to its second configuration; and releasable latching means for retaining the element in its first configuration; the latching means being coupled to the clock mechanism so that, at the predetermined time, the latching means releases the element.

5,283,770

METHOD OF RECORDING INFORMATION ON AND REPRODUCING INFORMATION FROM MAGNETO-OPTICAL RECORDING MEDIUM

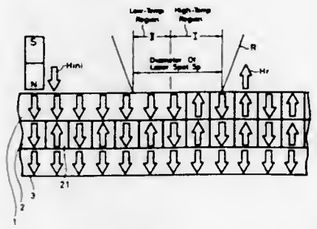
Isamu Nakao, Tokyo, and Masahiko Kaneko, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 956,047

Claims priority, application Japan, Oct. 9, 1991, 3-262364

Int. Cl.[5] G11B *11/00, 5/02*

U.S. Cl. 369—13 **2 Claims**



1. A method of recording information on and reproducing information from a magneto-optical recording medium having a multilayer magnetic film comprising at least a reproducing layer, a memory layer, and a recording layer which are successively deposited in magnetically coupled relationship to each other, said method comprising the steps of:

recording information on the magneto-optical recording medium selectively in a first state in which the reproducing layer and the memory layer are magnetized by copying a magnetized condition of the recording layer, with a intensity-modulated light beam of a low intensity applied to the magneto-optical recording medium, or a second state in which the reproducing layer, the memory layer, and the recording layer are magnetized by an external recording magnetic field, with a intensity-modulated light beam of a high intensity applied to the magneto-optical recording medium; and

reproducing recorded information from the magneto-optical recording medium by copying the information from the memory layer to the reproducing layer in a limited high-temperature region which is produced due to a temperature distribution within a spot of a reproducing light beam applied to the magneto-optical recording medium.

5,283,771

OPTICAL PICKUP HEAD

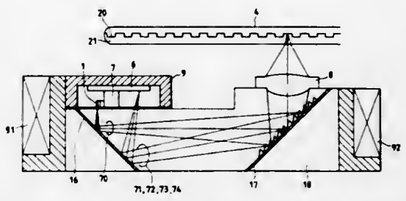
Shinichi Kadowaki; Yoshiaki Komma, and Seiji Nishino, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 8, 1991, Ser. No. 666,768

Claims priority, application Japan, Jun. 26, 1990, 2-167673

Int. Cl.[5] G11B *7/12*

U.S. Cl. 369—44.14 **2 Claims**



1. An optical pickup head operating on an optical recording medium, comprising:

a light source emitting a light beam;

a reflecting section reflecting the light beam emitted from the light source and changing a direction of travel of the light beam emitted from the light source into a first predetermined optical path;

a holographic optical element receiving the light beam from the reflecting section via the first predetermined optical path, diffracting the light beam which has been reflected by the reflecting section, and generating a forward diffraction light beam from the light beam which has been reflected by the reflecting section;

means for focusing the forward diffraction light beam generated by the holographic optical element on the optical recording medium, wherein the forward diffraction light beam is reflected and diffracted by the optical recording medium so that a return light beam is generated by the optical recording medium from the forward diffraction light beam;

the holographic optical element receiving the return light beam from the optical recording medium, diffracting the return light beam, generating a backward diffraction light beam from the return light beam, and directing the backward diffraction light beam in a second predetermined optical path which differs in position from the first predetermined optical path;

the reflecting section receiving the backward diffraction light beam from the holographic optical element via the second predetermined optical path, reflecting the backward diffraction light beam, and changing a direction of travel of the backward diffraction light beam; and

means for detecting the backward diffraction light beam which has been reflected by the reflecting section.

5,283,772

OPTICAL HEAD

Takahiro Miyake; Yoshio Yoshida; Yukio Kurata, all of Tenri, and Hideaki Sato, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 697,330, May 8, 1991, abandoned. This application May 20, 1993, Ser. No. 65,458

Claims priority, application Japan, May 15, 1990, 2-125139

Int. Cl.[5] G11B *7/09*

U.S. Cl. 369—44.23 **12 Claims**

1. An optical head comprising:

a light source;

focusing means for focusing a light projected from the light source onto a recording medium;

an optical path between the light source and the focusing means;

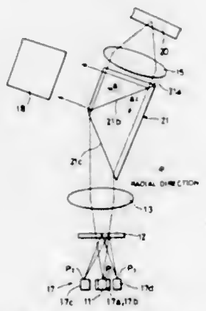
VOL 1159 ISS 1 FE 1 1994 UMI

a diffracting element for diffracting a return light reflected off the recording medium in a direction different from the light source, said diffracting element being disposed in the optical path between the light source and the focusing means; and

a light receiving element for receiving diffracted lights from the return light diffracted in the diffracting element to detect a focusing error and a tracking error,

said diffracting element including

two tracking diffracting regions separated by a first division line, said first division line extending in a direction corresponding to a track direction of the recording medium; and



one focusing diffracting region separated from said tracking diffracting regions by a second division line, said second division line extending in a direction corresponding to a radial direction of the recording medium,

said light receiving element including

two tracking light receiving regions, said two tracking light receiving regions respectively receiving the diffracted lights diffracted from the tracking diffracting regions of the diffracting element; and

two adjoining focusing light receiving regions for receiving the diffracted light diffracted from the focusing diffracting region of the diffracting element.

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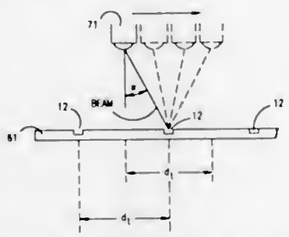
STEERING LASER BEAM WHILE ETCHING OPTICAL SERVO TRACKS FOR MAGNETIC DISKS

Fred C. Thomas, Kaysville; Don W. Wallentine, Layton; James Bern, Ogden, all of Utah, and Scott Wilson, Westminster, Colo., assignors to Iomega Corporation, Roy, Utah

Filed Jun. 10, 1992, Ser. No. 896,188

Int. Cl.[5] G11B *21/10, 7/00*

U.S. Cl. 369—44.26 **12 Claims**



1. A method of etching a plurality of concentric optical servo tracks about the rotational axis of a magnetic storage disk in relation to magnetic tracks on said disk comprising:

generating a beam of light for etching each of said optical servo tracks;

mechanically moving the optics which generate said beam of light so that said optics move continuously radially of said disk; and

steering said beam of light in a radial direction of said disk with an acousto-optical device as the optics move continuously radially of the disk to maintain said beam in a concentrical pattern on the disk while etching each of said concentric optical servo tracks.

5,283,774

OPTICAL DISK STORAGE HAVING FOCUS SERVOCONTROL SYSTEM IN ACCORDANCE WITH ASTIGMATISM METHOD

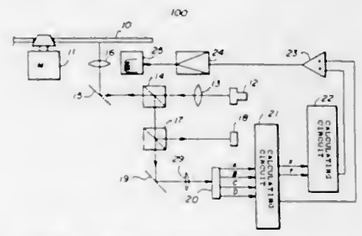
Akira Mashimo, Tokorozawa, Japan, assignor to TEAC Corporation, Japan

Filed Sep. 24, 1991, Ser. No. 764,711

Claims priority, application Japan, Sep. 28, 1990, 2-259238

Int. Cl.[5] G11B *7/095*

U.S. Cl. 369—44.320 **13 Claims**



1. An optical disk storage comprising:

optical beam generating means for generating an optical beam;

a first lens which focuses the optical beam generated from said optical beam generating means toward an optical disk having a radiation surface so that the optical beam can be focused on the radiation surface of the optical disk;

a second lens which focuses the optical beam reflected from the optical disk so that a section of the optical beam, which is orthogonal to an optical axis of the optical beam, is distorted differently in accordance with a distance along the optical axis from said second lens;

means for directing the optical beam reflected from the optical disk to said second lens;

a photosensor having a radiation surface on which the optical beam focused via said second lens is radiated, the photosensor generating an output in accordance with a light amount distribution of the optical beam radiated on the radiation surface of said photosensor;

first calculating means for detecting how the section of the optical beam radiated on the photosensor, which is othogonal to the optical axis, is distorted, so as to detect a change of a length of an optical path of the optical beam, by means of the output generated by said photosensor, for calculating an error, in a direction along the optical axis, of a focus of the optical beam to be focused on the optical disk, and for generating a control signal representing the error;

lens driving means for controlling said first lens, by means of the control signal output from said first calculating means, in order to change a distance between said first lens and the optical disk so that the optical beam can be focused on the radiation surface of the optical disk; and

second calculating means for calculating, on the basis of the light amount distribution of the optical beam radiated on the radiation surface of said photosensor, an error in alignment of the optical axis of the optical beam radiated on the radiation surface of said photosensor with respect to said photosensor.

5,283,775

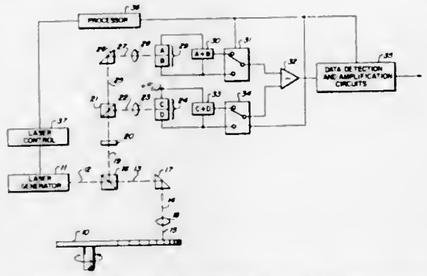
SPLIT DETECTOR SYSTEM FOR DIRECT READ-WHILE-WRITE OPERATION ON MAGNETO-OPTIC MEDIA

Blair I. Finkelstein, and Morovat B. Tayefeh, both of Tucson, Ariz., assignors to International Business Machines, Inc., Armonk, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,607

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—54 **1 Claim**



1. An optical disk drive apparatus including a magneto-optic (MO) optical disk, said disk containing a succession of separated marks written on the disk, said marks representative of stored binary data, motive means for moving said disk, a laser generator, an optical system for focussing light output from said laser generator onto the surface of said optical disk, said focussed light forming an illuminated spot on said surface whereby said marks on said disk are moved in succession under said spot, said optical system also conducting light reflected from said surface to components for separately producing first and second light signals, a light detector circuit for individually receiving the separated light signals, said detector circuit capable of separately detecting the leading and trailing segments of reflected light distribution from said spot as said marks move under the spot, comprising:

a first photodetector optically connected to receive said first light signal from said optical system;

a second photodetector optically connected to receive said second light signal from said optical system;

data detecting and amplifying means connected to said first and second photodetector means for producing a data pulse train in accordance with signals received from said first and second photodetectors;

control means connected to said laser generator for controlling the application of power to said generator at read or write levels;

said first photodetector comprised of two separate detecting sections, a first section for receiving the leading segment of the reflected light beam and for producing an output signal proportional to the magnitude of said leading segment, and a second section for receiving the trailing segment of said reflected light beam and for producing an output signal proportional to the magnitude of said trailing segment;

said second photodetector comprised of two separate detecting sections, a first section for receiving the leading segment of the reflected light beam and for producing an output signal proportional to the magnitude of said leading segment, and a second section for receiving the trailing segment of said reflected light beam and for producing an output signal proportional to the magnitude of said trailing segment;

said control means including mode setting means for operating said apparatus in a read only mode (RO mode) and in a read while performing a write mode (RDW mode), said mode setting means connected to said first and second photodetectors to enable both first and second detecting sections for said RO mode, and for enabling only said second sections for said RDW mode.

5,283,776

TRACK-COUNTING METHOD FOR USE IN OPTICAL DISK APPARATUS

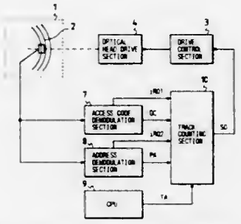
Genzo Takagi, Urawa, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed May 29, 1991, Ser. No. 706,705

Claims priority, application Japan, May 29, 1990, 2-141137

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—58 **12 Claims**



1. A method of counting the number of tracks on a disk each track comprising a plurality of sectors each having an address segment and a plurality of data segments, each of the segments having at its head portion a region for recording an access code representing a track number to which the segment belongs, said method comprising the steps of: establishing a track count value (TCNT) representing the number of tracks to be traversed; sampling an access code number; obtaining a code number difference (V0) between the present sampled access code number (GC) and a previous sampled access code number (GC1); calculating the absolute value of a variation of the present code number difference (V0) with respect to a previous code number difference (V1); comparing the absolute value of the variation with the predetermined value (AMAX); and adding the present code number difference (V0) to the track count value (TCNT) when the absolute value of the variation is below the predetermined value (AMAX) and adding the previous code number difference (V1) to the track count value (TCNT) when the absolute value thereof exceeds the predetermined value (Amax) to thereby obtain the number of the tracks that said recording-reproducing head moves to traverse.

5,283,777

THREE-DIMENSIONAL OPTICAL RECORDING MEDIUM AND OPTICAL INFORMATION RECORDING APPARATUS USING THE SAME

Naohiro Tanno, 15-27, Matsumi-cho, Yamagata; Teruo Toma, and Kiyofumi Chikuma, both of Tsurugashima, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo and Naohiro Tanno, Yamagata, both of Japan

Filed Nov. 29, 1991, Ser. No. 800,133

Claims priority, application Japan, Apr. 26, 1991, 3-097650

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—108 **13 Claims**

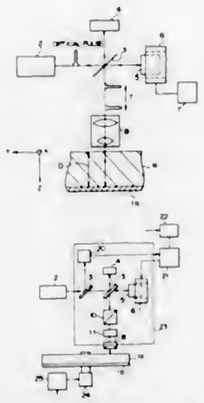
1. An optical information recording apparatus comprising:

a recording light forming means for imparting a relative time lag from a first light to a second light as a variable of information to be recorded; and

a light emitting means for causing the first and second lights to propagate along a common optical axis in opposite directions so as to meet each other in a three-dimensional optical recording medium, the recording medium being made of a material whose refractive index changes in

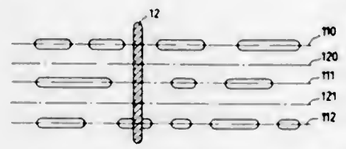
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accordance with an intensity of irradiated light and having a first surface, thereby forming a refractive index-



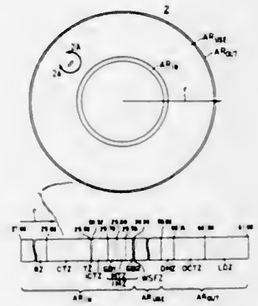
changing portion at a portion where the first and second light meets.

5,283,778
PICKUP DEVICE
Takanori Maeda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed May 22, 1992, Ser. No. 886,852
Claims priority, application Japan, Nov. 12, 1991, 3-295410
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—112 **4 Claims**



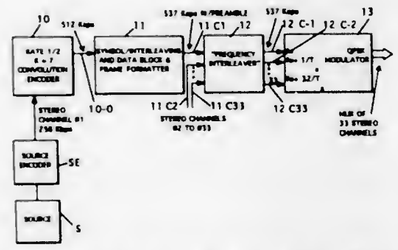
1. A pickup device for optically reading data from a plurality of recording tracks on a recording surface of a recording medium, the pickup device comprising:
a light source including a linear light emitting part arranged orthogonal with respect to the direction of an array of data stored in the plurality of recording tracks, said light source emitting a unitary linear light beam, shaped linear in cross section, from said light emitting part;
a condenser lens for condensing the linear light beam emitted from said light source and projecting the light beam on the recording surface of the recording medium at a magnification to form a unitary light beam spot on the recording medium which is long enough to range over a plurality of recording tracks on the recording medium, said condenser lens receiving and emitting, as signal light, light reflected by the recording surface of the recording medium;
a photo detector including a plurality of detecting elements, said photo detector being disposed at a position where the signal light emitted from said condenser lens forms a line image corresponding to the beam spot, and said photo detector detecting the signal light returned from the plurality of recording tracks with said plurality of detecting elements;
a frequency analyzing circuit for analyzing frequencies of detect signals output from said detecting elements of said photo detector; and
a computing circuit for computing signal levels based on the analyzation performed by said frequency analyzing circuit in order to produce output values.

5,283,779
REWRITABLE OPTICAL DISC
Tadashi Otsuki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 686,024, Apr. 16, 1991, abandoned.
This application Jun. 2, 1992, Ser. No. 893,587
Claims priority, application Japan, Apr. 20, 1990, 2-104515
Int. Cl.[5] G11B *3/90*
U.S. Cl. 369—275.2 **10 Claims**



1. A rewritable optical disk wherein information data is writable to and readable from a user recording area, the use recording area having a plurality of sectors, the disk comprising:
a written sector flag zone, radially separated from the user recording area, and
a plurality of written sector flag means in the written sector flag zone, each written sector flag means corresponding to a sector in the user recording area, and indicating whether information data has been written in the sector.

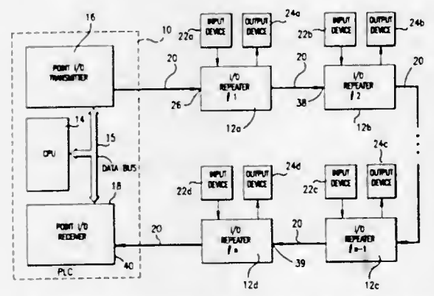
5,283,780
DIGITAL AUDIO BROADCASTING SYSTEM
Leonard Schuchman, Potomac; John E. Miller, Wheaton, both of Md., and Ronald Bruno, Arlington, Va., assignors to Stanford Telecommunications, Inc., Santa Clara, Calif.
Filed Oct. 18, 1990, Ser. No. 598,396
Int. Cl.[5] H04J *4/00*
U.S. Cl. 370—50 **14 Claims**



1. A digital audio broadcasting system for providing a large number N of high quality stereophonic (stereo) channels to one or more mobile receivers in an environment having multipath delay and fading comprising:
radio broadcast means including,

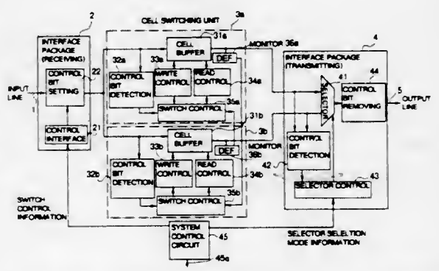
1) for each stereo channel:
a) means for converting an input audio signal to a digital signal having a predetermined data rate,
b) first convolution encoder means for encoding said digital signal with an error correcting code and generate a stereo channel signal,
c) first interleaver means for receiving a stereo channel signal from said convolution encoder and interleaving successive blocks of symbols and data blocks and supplying a sequential train of interleaved data blocks of symbols, and
2) second interleaver means for interleaving each stereo channel signal between a plurality of carrier frequencies equal in number to the number N of stereo channels, and means for periodically changing the carrier frequency of each said stereo channel, and
3) multiplexer means for forming a composite signal of the carrier signals from said second interleaver means, and means for radio broadcasting said composite of signal carrier signals.

5,283,781
APPARATUS FOR RECEIVING AND MODIFYING A SERIAL DATA PACKET FROM A COMMUNICATIONS NETWORK TO INDICATE ITS STATUS
Paul R. Buda; Gary L. Dowdy, both of Raleigh, and Kelvin Peele, Cary, all of N.C., assignors to Square D Company, Palatine, Ill.
Filed Dec. 23, 1991, Ser. No. 811,727
Int. Cl.[5] H04J *3/14*; H04L *12/42*
U.S. Cl. 370—13.1 **12 Claims**



1. A remote input/output repeator (IOR) module for transferring data between a host microprocessor based device and a plurality of other IOR modules connected on a synchronous serial loop communications network, said remote IOR module comprising:
(A) a serial input for receiving a data packet from a preceding device connected on said network;
(B) a clock input for synchronizing said remote IOR module with said host microprocessor based device connected on said network.
(C) an input means for connecting an input device;
(D) an output means for connecting an output device;
(E) detecting means connected to said serial input for decoding said data packet for an output byte;
(F) modifying means connected to said detecting means for inserting an input byte into said data packet to produce a data stream, said input byte received from said input means and representing a status of said input device;
(G) extracting means coupled to said modifying means for removing said output byte from said data stream wherein said extracted output byte is coupled to said output means to control said output device and said extracting means for producing a modified data packet;
(H) sending means coupled between said extracting means and a serial output for sending said modified data packet to a next device connected in series on said network; and
wherein the address for said remote IOR module is determined by its position on said network and requires no unique hardware to detect its address.

5,283,782
SYSTEM SWITCHING METHOD AND APPARATUS WITHOUT LOSS OF SIGNAL IN CELL SWITCHING SYSTEM OF ASYNCHRONOUS TRANSFER MODE
Akihiko Takase, Tokyo; Yoshihiro Ashi; Takashi Mori, both of Yokohama, and Junichirou Yanagi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 15, 1991, Ser. No. 745,332
Claims priority, application Japan, Aug. 17, 1990, 2-215709
Int. Cl.[5] H04J *1/16*
U.S. Cl. 370—16 **14 Claims**



1. A system switching method for performing cell multiplexing or cell switching in a duplex system without loss of signal, said duplex system comprising a primary system and a standby system in a communication apparatus using an asynchronous transfer mode, said primary system and said standby system including cell switches each having a cell buffer, at least one receiving interface means provided interstage preceding a plurality of said cell switches, for receiving cells from a first transmission path, at least on transmitting interface means provided in the stage succeeding said plurality of said cell switches, for performing output control upon transferred cells from said cell switches and outputting cells to a second transmission path, said receiving interface means including adding means for adding control information for controlling the cell state of the cell buffer to conduct switching between the primary system and the standby system to the received cell, and each of said cell switches including monitoring means for monitoring the cell storage state of a cell buffer included in said cell switches and informing each of said cell switches of information of cell storage state to the cell buffer, and execution means for executing switching between the primary system and the standby system based on said control information and information of cell storage state, said system switching method comprising the steps of:
at a first point of time, inhibiting said cells of said primary system from being outputted and discarding contents of said cell buffer of said primary system;
at a second time point when the discarding of the contents of said cell buffer of said primary system is completed, inhibiting cells from being inputted to said standby system and inputting cells to only said primary system; and
at a third time point when all contents of said cell buffer of said standby system are outputted, outputting the cells of said primary system.

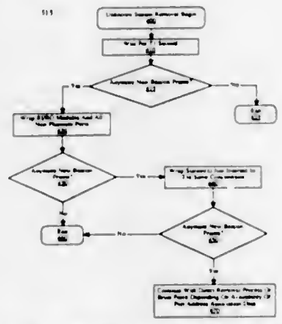
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5,283,783

APPARATUS AND METHOD OF TOKEN RING BEACON STATION REMOVAL FOR A COMMUNICATION NETWORK

Truong Q. Nguyen, and Isaac P. Choi, both of San Jose, Calif., assignors to Synoptics Communications, Inc., Santa Clara, Calif.

Filed Jan. 28, 1993, Ser. No. 11,176
Int. Cl.[5] H04L *12/42*
U.S. Cl. 370—16.1 **37 Claims**



1. In a token ring network having a plurality of stations coupled in a ring topology, said stations generating and repeating beacon dataframes to indicate a communication fault within said token ring network, an apparatus for isolating faulty stations comprising:

first isolating means for isolating from said network newly inserted stations of said plurality of stations in response to said beacon dataframes, said newly inserted stations being those stations that were recently inserted into said network;

second isolating means for directly isolating from said network particular stations of said plurality of stations identified by a port address association database indexed by said beacon dataframes, said second isolating means operable if said first isolating means fails to remove said beacon dataframes from said token ring network; and

third isolating means for sequentially isolating from said network each station of said plurality of stations, said third isolating means operable if said first isolating means and said second isolating means fail to remove said beacon dataframes from said token ring network.

5,283,784

ECHO CANCELLER PROCESSING TECHIQUES AND PROCESSING

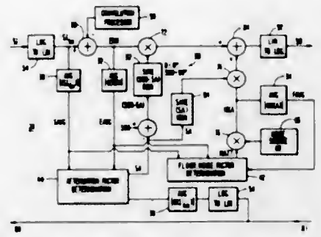
Roland E. Genter, Falls Church, Va., assignor to Coherent Communications Systems, Hauppauge, N.Y.

Continuation of Ser. No. 562,713, Aug. 3, 1990, Pat. No. 5,157,653. This application Jul. 30, 1992, Ser. No. 922,990
Int. Cl.[5] H04B *3/20*; H04J *3/00*
U.S. Cl. 370—32.1 **25 Claims**

1. A device for reducing residual echo in an echo canceler adapted to receive a send signal from a near-end telecommunication device and a receive signal from a remote telecommunication device, said echo canceler providing an error signal by removing an expected echo of the receive signal from the send signal, said device comprising:

attenuation factor determining means connected to receive the send signal, the receive signal, and the error signal for generating a first attenuation signal in response to the send, receive, and error signals; and

a signal attenuator connected to receive the error signal and responsive to the first attenuation signal for attenuating



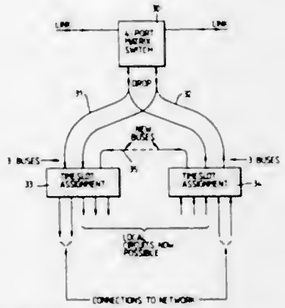
the error signal, whereby an attenuated error signal is provided.

5,283,785

BUS BYPASSING MATRIX SWITCH IN ADD-DROP MULTIPLEXER

Stephen P. Ferguson, Coventry, United Kingdom, assignor to GPT Limited, England

PCT No. PCT/GB91/00396, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO91/14318, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 14, 1991, Ser. No. 777,228
Claims priority, application United Kingdom, Mar. 14, 1990, 9005723
Int. Cl.[5] H04J *1/10, 3/08*
U.S. Cl. 370—55 **4 Claims**



1. An add-drop multiplexer, comprising:

a matrix switch for routing traffic through the multiplexer, said switch having a drop side;

input tributaries operatively connected to the switch and having an input tributary ports for adding data to the traffic;

output tributaries operatively connected to the switch and having output tributary ports for dropping data to the traffic;

a pair of time slot assignment circuits operatively connected to the drop side of the switch, one of the assignment circuits being operative for assigning time slots for data added via the input tributary ports, and the other of the assignment circuits being operative for assigning time slots for data dropped via the output tributary ports; and

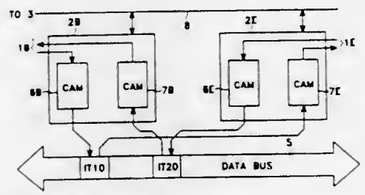
a bus connected between the assignment circuits and bypassing the switch, said bus being operative for conveying the data between the tributaries without passing through the switch.

5,283,786

BURST ARCHITECTURE TIME-DIVISION SWITCH AND EQUIPMENT ACCESS MODULE FOR USE IN A SWITCH OF THIS KIND

Jean Hoff, Saint Jean Saverne, and René Graouer, Strasbourg, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Nov. 20, 1991, Ser. No. 796,060
Claims priority, application France, Nov. 21, 1990, 90 14525
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—67 **9 Claims**



1. Time-division switch comprising:

a control arrangement further comprising

at least one processor and

a clock;

a time-shared synchronous data bus; and

a plurality of equipment access modules which are each connected to said data bus and which are each associated with a respective item of equipment and which each further comprises

a multiplex link linking the equipment access module to its respective item of equipment,

a bus counter clocked by clock signals currently in use on the data bus,

a link counter clocked by clock signals currently in use on the multiplex link, and

send and receive content-addressable memories dynamically programmed by the control arrangement to send data on the data bus from its said multiplex link and receive data on said multiplex link from the data bus, using respective multiplex link frame structures defined by and time slots selected by said control arrangement, wherein each content-addressable memory further comprises

two respective time slot selection portions also under the control of the control arrangement and each operated by a respective one of said counters,

a data buffer portion between the respective multiplex link and the data bus and being selectively controlled by one or the other of said respective selection potions either in write or in read mode depending on the relevant direction of sending, and

a control buffer portion also under the control of the control arrangement for storing control information relating to channels corresponding to the selected time slots.

5,283,787

SYNCHRONIZATION OF DIGITAL AUDIO SIGNALS

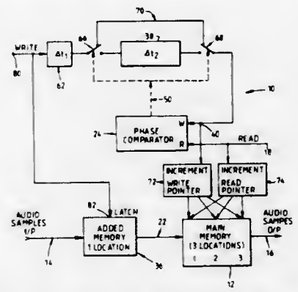
William H. Fletcher, Leicester; Simon C. Wegerif, and Christopher J. Travis, both of London, all of United Kingdom, assignors to British Broadcasting Corporation, London, England

Filed Apr. 19, 1991, Ser. No. 688,122
Claims priority, application United Kingdom, Apr. 20, 1990, 9008932.7
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.3 **8 Claims**

1. A method of receiving a digital signal, input data samples of which are subject to timing uncertainty due to jitter, and synchronizing said input data samples with a reference source, comprising the steps of:

providing a main read-write memory capable of storing at least one input data sample and having a data input, a data output, a write control input and a read control input;

selectively applying the input data samples and timing pulses related to the input data samples to the main memory either in one mode by applying undelayed timing pulses to the write control input of the main memory so as to supply the input data without delay, or in another mode by applying delayed timing pulses to the write control input through a timing pulse delay means so as to supply the



input data samples to the data input of the main memory after a time delay; and

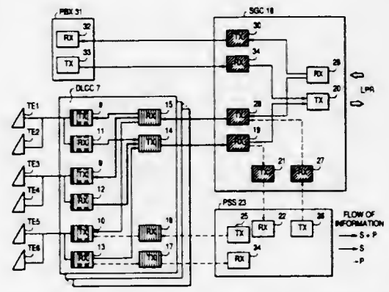
comparing successive timing pulses applied to the write control input and the read control input of the main memory, and if the pulses approach to within less than a predetermined time interval related to the timing uncertainty due to jitter of the input samples, changing the mode of application of the timing pulses and input data samples to the main memory.

5,283,788

ISDN D CHANNEL CONGESTION CONTROL METHOD

Sumie Morita, Yokohama; Takashi Hatano, Machida; Masako Shinmura, Hamamatsu; Hisashi Koga, and Tsutomu Shiomitsu, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 10, 1991, Ser. No. 757,328
Claims priority, application Japan, Sep. 10, 1990, 2-237230
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—110.1 **9 Claims**



1. An ISDN D channel congestion control method for of an ISDN digital switching apparatus for controlling traffic congestion between terminals and the digital subscriber line circuit common, comprising:

a step storing D channel packet information concentrated by a signaling controller in a first buffer;

a step of transferring the D channel packet information stored in the first buffer to at least one of second buffers

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each corresponding to respective terminals in dependence upon distribution data;

a step of detecting whether the used capacities of the second buffers exceed a threshold, when the terminals receive the D channel packet information through the corresponding one of the second buffers connected to the terminals;

a step of discarding the D channel packet information for those of the second buffers whose used capacities exceed the threshold; and

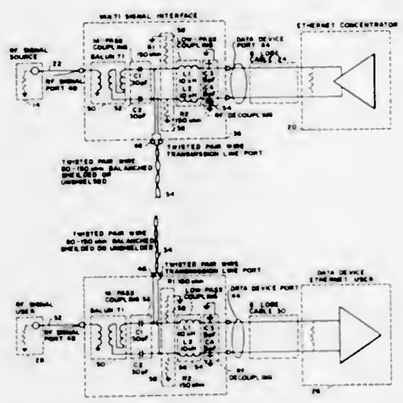
a step of notifying a packet linked controller access of said discarding through a simplified linked layer access procedure D channel protocol.

5,283,789

COMMUNICATION SYSTEM PROVIDING DATA AND TELEVISION SIGNALS TO PC WORK STATIONS

Gunnar Gunnarsson, Dumont, N.J., and Gregory A. Burch, Durham, N.H., assignors to Private Satellite Network, Inc., New York, N.Y.

Filed May 15, 1992, Ser. No. 884,487
Int. Cl.[5] H04J *1/00*
U.S. Cl. 370—124 **51 Claims**



1. A communication system for transmitting and receiving both broadband and baseband electrical signals representative of broadband and baseband information, respectively, said system comprising, in combination:

(a) a backbone communication network including:

(1) a first subassembly network for presenting said broadband signals in an unbalanced mode; and

(2) a second subassembly network for presenting said baseband signals;

(b) a distribution communication network for simultaneously transmitting said broadband signals and said baseband signals to at least one user work station via a twisted pair wire; and

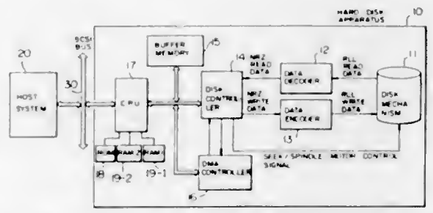
(c) circuit means, coupling said first and second subassembly networks with said distribution communication network, for converting the unbalanced broadband signals received from said first subassembly network to balanced broadband signals and transmitting said balanced broadband signals on said twisted pair wire, and for transmitting said baseband signals received from said second subassembly network on said twisted pair wire.

5,283,790

EXTERNAL STORAGE APPARATUS AND DEFECTIVE BLOCK REASSIGNMENT PROCESSING METHOD THEREFOR

Asayoshi Kawashita, Chigasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1990, Ser. No. 630,304
Claims priority, application Japan, Dec. 25, 1989, 01-335778
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—101 **10 Claims**



1. An external storage apparatus with a recording medium, including a plurality of recording blocks for recording data and a plurality of spare blocks for recording the data in place of defective ones of said recording blocks, comprising:

reassignment processing means responsive to reception of a reassignment command issued from a host system for performing processing for reassigning a spare block to a defective spare block and allowing said spare block to record data to be recorded in said defective spare block;

communication means for allowing information exchange between said host system and said reassignment processing means;

managing means for managing a number of spare blocks remaining unused for said reassignment processing performed by said reassignment processing means; and

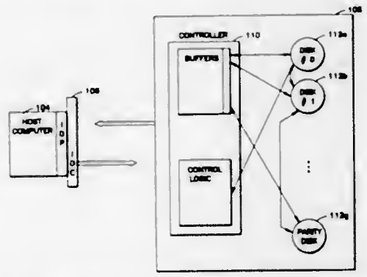
informing means for informing said host system of information concerning the number of remaining spare blocks managed by said managing means through said communication means.

5,283,791

ERROR RECOVERY METHOD AND APPARATUS FOR HIGH PERFORMANCE DISK DRIVES

Robert J. Halford, Chippewa Falls, Wis., assignor to Cray Research Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 555,927, Jul. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,437, Jul. 19, 1989, which is a continuation-in-part of Ser. No. 227,367, Aug. 2, 1988.
This application Mar. 18, 1993, Ser. No. 33,423
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.4 **9 Claims**



1. A two-dimensional error detection and correction system for a multi-platen disk drive, comprising:

input means for receiving a plurality of data words each having a plurality of data bits;

a data storage device having a plurality of recording surfaces for storing data;

write means operatively connected to said data storage device and said input means, for writing each of said data bits of each of said plurality of data words onto a different one of said plurality of recording surfaces such that the same bit position in said plurality of data words are written to the same recording surface;

parity bit means, connected to receive said plurality of data words and operatively connected to said data storage device, for assigning a parity bit to each of said data words and for writing said parity bits of said data words to a single one of said recording surfaces, each of said parity bits being operable to enable single bit error correction within each of said data words; and

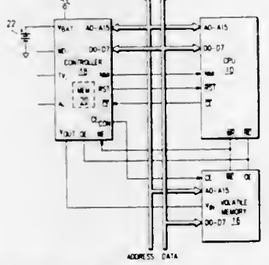
error correction code means operatively connected to each of said recording surfaces of said data storage device, for assigning error correction codes to groupings of bits on each of said recording surfaces and for writing said error correction codes to each of said recording surfaces, said error correction codes being operable to enable multi-bit error correction within one of said groupings of bits on a single recording surface to which it is assigned.

5,283,792

POWER UP/POWER DOWN CONTROLLER AND POWER FAIL DETECTOR FOR PROCESSOR

William F. Davies, Jr., Carrollton, and Ronald T. Taylor, Grapevine, both of Tex., assignors to Benchmarq Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 19, 1990, Ser. No. 601,248
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—66 **40 Claims**



1. A power fail controller for detecting early failure of a power supply for providing power to a system having a processor and a volatile memory, comprising:

an early power fail detection circuit for detecting a potential power supply failure in the power supply and generating a power fail signal for output to the processor;

an out of tolerance detection circuit for detecting when the power supply is out of tolerance in accordance with predetermined tolerance parameters and generating an out of tolerance signal for output to the processor;

a non-volatile memory accessible by the processor for storage of information therein, said information including executable instructions that are directly executable by the processor; and

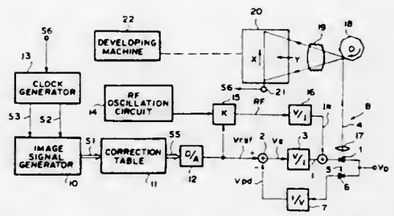
an inhibit circuit for inhibiting the processor from accessing said non-volatile memory when said out of tolerance signal is generated.

5,283,793

LASER BEAM RECORDING APPARATUS

Takashi Shoji, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1992, Ser. No. 987,814
Claims priority, application Japan, Dec. 17, 1991, 3-333479
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—24 **2 Claims**



1. A laser beam recording apparatus provided with a semiconductor laser for producing a laser beam, a beam scanning system for scanning the laser beam on a photosensitive material, and a laser operation control circuit for producing a light emission level instructing signal corresponding to an image signal, and controlling a drive current for the semiconductor laser over a natural light emission region and a laser oscillation region on the basis of the light emission level instructing signal, thereby to modulate the intensity of the laser beam,

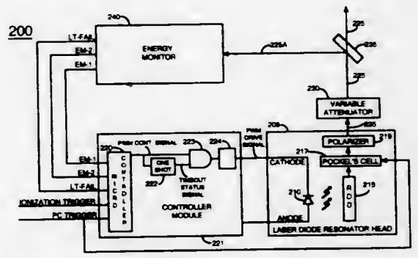
wherein the improvement comprises the provision of a means for superimposing a radio-frequency current upon the drive current for the semiconductor laser only in a region in which the drive current exceeds a predetermined value.

5,283,794

LASER APPARATUS AND METHOD EMPLOYING FUZZY LOGIC BASED PULSE WIDTH MODULATION

David M. Gibbs, Apopka, and Robert D. Fischer, Winter Park, both of Fla., assignors to Litton Systems, Inc., Little Falls, N.J.

Filed Mar. 1, 1993, Ser. No. 24,078
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—30 **6 Claims**



1. A laser apparatus comprising:

a semiconductor laser source for generating a plurality of first laser pulses in response to a drive signal, each of said first laser pulses having a pulse width which varies with the width of a respective drive pulse in said drive signal, each of said first laser pulses being spaced apart in time and occurring in a respective window;

a laser rod positioned such that said semiconductor laser source pumps said laser rod to produce a laser beam;

an electronic shutter, situated to intercept said laser beam, which opens for a predetermined amount of time in response to a trigger signal during each window to permit

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emission of a second laser pulse of predetermined duration, a plurality of second laser pulses thus being emitted by said shutter, each of said second laser pulses being emitted during the same respective window as a corresponding first laser pulse;

an energy monitor for continuously monitoring the energy level of said second laser pulses and reporting said energy level as an energy report signal, and

a controller, coupled to said energy monitor, for generating said drive signal in response to said energy report signal, said drive signal including a plurality of drive pulses, the pulse width of each of said drive pulses being dependent on said energy report signal and being continuously updated in response to said energy report signal, said controller being coupled to said semiconductor laser source to provide said drive signal thereto to continuously control the width of the first laser pulses generated by said semiconductor laser source.

5,283,795

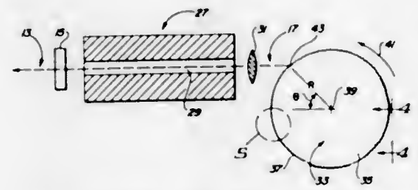
DIFFRACTION GRATING DRIVEN LINEAR FREQUENCY CHIRPED LASER

David Fink, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 21, 1992, Ser. No. 871,877

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—32 **28 Claims**



1. An improved laser system including at least first and second lasers for simultaneously emitting first and second output beams corresponding to an up-chirp signal and a down-chirp signal, respectively, each of said first and second lasers including a laser cavity having an optical path and an optical beam circulating along said optical path, said laser system comprising:

a wheel having an outer peripheral rim at least partially disposed in each of the optical paths of said first and second laser cavities;

means for rotating said wheel;

diffraction grating means disposed on the outer peripheral rim of said wheel;

means for impinging the optical beams on said diffraction grating means as said wheel rotates and moves said grating means for producing said up-chirp signal and said down-chirp signal without any real changed in the cavity length of said laser cavities;

each of said laser cavities including an output location having an output mirror, the output location or said second laser further including a mirror for reflecting the output beam corresponding to one of said up-chirp signal and said down-chirp signal;

a polarizing beamsplitter means disposed at the output location of said first laser cavity for passing said first laser-emitted output beam corresponding to the other of said up-chirp signal and said down-chirp signal; and

a one-half waveplate disposed in the path of the reflected beam from said mirror at the output of said second laser to the polarizing beamsplitter at the output of the first laser for combining the second signal with the first signal to form a combined laser output for simultaneously outputting both said up-chirp signal and said down-chirp signal without interference therebetween since each of said output signals has an orthogonal polarization from the other.

5,283,796

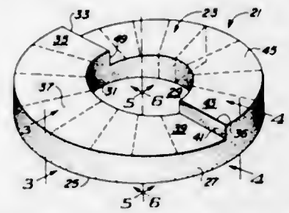
PHASE PLATE OR SPIRAL PHASE WHEEL DRIVEN LINEAR FREQUENCY CHIRPED LASER

David Fink, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 21, 1992, Ser. No. 871,888

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—32 **19 Claims**



1. An improved frequency-modulated laser radar transmitter system having a laser for generating an output beam, said laser having a resonant cavity, an optical path, and an optical beam circulating along said optical path within said cavity, the frequency of said optical beam being determined by the optical length of said cavity, the improvement comprising:

a wheel having a pair of opposite face surfaces and an outer peripheral rim surface, said wheel being disposed in said optical path within said resonant cavity;

a wedge of optical material disposed in a layer of at least one of a repetitively linearly increasing and a repetitively linearly decreasing thickness with respect to angular position on a surface of said wheel;

means for rotating said wheel, and

means of impinging said optical beam onto said wedge of optical material within said resonant cavity for linearly varying the length of said cavity with time to linearly chirp the frequency of the laser, and

said one face of said wheel includes at least two cycles of said optical wedge for mechanical dynamic balancing such that a smooth linear chirp is achieved.

5,283,797

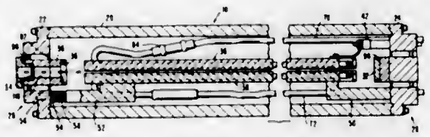
RF EXCITED CO_2 SLAB WAVEGUIDE LASER

Wayne S. Mefferd, Los Altos Hills, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Division of Ser. No. 958,555, Oct. 8, 1992, which is a division of Ser. No. 819,747, Jan. 13, 1992, Pat. No. 5,155,739, which is a division of Ser. No. 596,672, Oct. 12, 1990, Pat. No. 5,131,003. This application Apr. 6, 1993, Ser. No. 43,356

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 **2 Claims**



1. An apparatus for cooling an electrically hot electrode within laser housing comprising:

an electrically grounded housing;

an elongated conductive electrode located within said housing, said electrode being connected to a power source; and

means for cooling said electrode, said means including fluid carrying electrically conductive pipe which passes into and through said housing, said pipe including a center segment a portion of which is in thermal contact with said electrode and a pair of end segments which are spaced from said electrode and grounded to said housing with said center segment being joined to said end segments by electrically insulative pipe sections such that the center segment can be electrically hot while said end segments remain grounded.

5,283,798

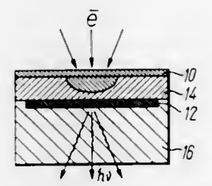
LASER SCREEN FOR A CATHODE-RAY TUBE AND METHOD FOR MAKING SAME

Vladimir I. Kozlovsky, and Andrey A. Kolchin, both of Moscow Oblast, U.S.S.R., assignors to Principia Optics, Inc., Los Angeles, Calif. and P.N. Lebedev Institute of Physics, Moscow, U.S.S.R.

Filed Apr. 30, 1992, Ser. No. 875,822

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **8 Claims**



1. A semiconductor for a laser screen, comprising:

an optical cavity comprising a partly transparent mirror and a reflecting mirror;

a semiconductor member made of a compound selected from the group consisting of binary, three-component and four-component compounds of elements of the second and sixth Groups of the Periodic System positioned between said partly transparent mirror and said reflecting mirror; and

a support member overgrown on said partly transparent mirror of said semiconductor compound of which said semiconductor member is made, maximum 15% of atoms of said overgrown semiconductor compound being substituted for isovalent atoms, the bandgap width of the semiconductor compound of said support member being such as to make it transparent for radiation generated by said screen.

5,283,799

SEMICONDUCTOR LASER WITH A SATURABLE ABSORBER

Joël Jacquet, Orsay; Denis Leclerc, Bourg la Reine; Jean-Louis Lievin, Paris, and Didier Sigogne, Villebon sur Yvette, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 26, 1992, Ser. No. 841,712

Claims priority, application France, Feb. 27, 1991, 91 02352

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—50 **8 Claims**

1. A semiconductor laser comprising:

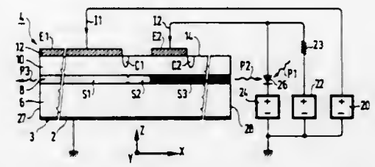
a light guide defined in a semiconductor substrate and further comprising

a light amplifier section for producing an emission light in response to an amplification current flowing through said light amplifier section,

a passive section for transmitting the emission light in substantially unaltered form, and

a saturable absorber section optically coupled between said light amplifier section and said passive section for absorbing said emission light when an absorbance control current flowing through the saturable absorber section is below a predetermined threshold; and

an absorbance control electrode electrically coupled between a source of said absorbance control current and said saturable absorber section, said electrode being disposed on said semiconductor substrate above said light guide and extending at least partially over said passive section.



5,283,800

METAL VAPOR LASER APPARATUS AND METHOD

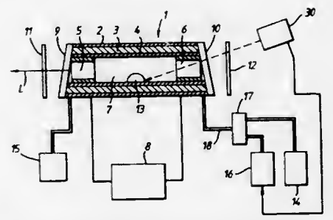
Setsuo Suzuki; Yasushi Iseki; Ikuo Watanabe; Kazuo Hayashi; Etsuo Noda; Tomoko Ogawa; Hironobu Kimura, and Nobutada Aoki, all of Tokyo, Japan, assignors to Kabushiki KaishaToshiba, Kanagawa, Japan

Filed Mar. 26, 1992, Ser. No. 858,375

Claims priority, application Japan, Mar. 27, 1991, 3-063502; Mar. 27, 1991, 3-063520

Int. Cl.[5] H01S *3/22*

U.S. Cl. 372—60 **38 Claims**



1. A metal vapor laser apparatus for generating a laser beam comprising:

a vacuum container;

a pair of spaced electrodes in the vacuum container;

a metal medium in the vacuum container;

means for supplying a buffer gas to the vacuum container;

a power supply for applying a discharge voltage across the electrodes to excite the buffer gas so that the metal melts and vaporizes; and

means, separate from the buffer gas supplying means, for supplying at least one other gas to the vacuum container after melting of the metal medium occurs to enhance lasing efficiency.

5,283,801

EXTERNAL RESONANT RING CAVITY FOR GENERATING HIGH-PEAK-POWER LASER PULSES

George S. Mecherle, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 26, 1992, Ser. No. 891,973

Int. Cl.[5] H01S *3/083*

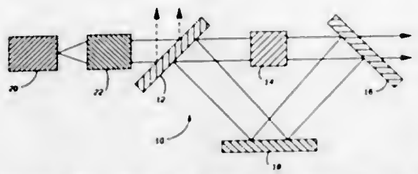
U.S. Cl. 372—94 **10 Claims**

2. A high-Q, gainless external resonant ring cavity for generating high-peak-power laser pulses for use in conjunction with a continuous wave laser source, comprising:

a partially-reflecting input mirror for coupling laser light from the laser source into the resonant ring cavity;

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an output polarizer transmissive to rotated laser light;
an electro-optical switch positioned between the partially-reflecting input mirror and the output polarizer for rotating the polarization of the laser light; and
a totally-reflecting mirror;



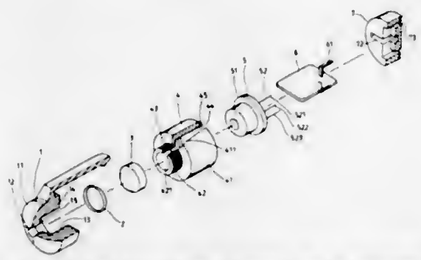
wherein laser energy is concurrently accumulated and stored in the resonant ring cavity, by allowing laser light to enter through the input mirror, and periodically dumped from the cavity in high peak power pulses, the electro-optical switch being energized for each pulse to rotate the polarization of the laser light and allow the stored laser energy to exit through the output polarizer.

5,283,802

ADJUSTABLE LASER MODULE MOUNTING DEVICE

Bear Hsiung, 5F, No. 30, Lane 179, Sec. 2, Nei Hu Rd., Taipei, Taiwan

Filed Jun. 4, 1993, Ser. No. 71,403
Int. Cl.[5] H01S *3/08;* **G02B** *6/26*
U.S. Cl. 372—107 **1 Claim**



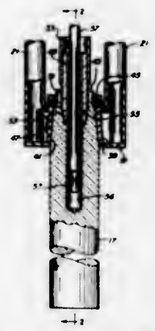
1. An adjustable laser module mounting device comprising:
a lens holder made in a cylindrical configuration having a laser firing hole through the center of a conical front end thereof, a rear chamber, a shoulder inside said rear chamber around said laser firing hole, and an inner thread around said rear chamber;
a rubber ring mounted on said shoulder around said laser firing hole;
a condensing lens received inside said rear chamber and stopped against said rubber ring, said condensing lens having a front surface curved outwards;
an inner socket comprised of a big cylinder and a small cylinder longitudinally connected to said big cylinder at one end, said big and small cylinders each having a bore communicated with each other, said small cylinder having an outer thread threaded into said inner thread of said lens holder to stop said condensing lens against said rubber ring, said big cylinder having an annular groove around the inside wall at a rear end thereof;
a laser diode inserted in said big cylinder of said inner socket and having an outward rear flange fitted into said annular groove on said big cylinder of said inner socket and three contact legs respectively welded to said printed circuit board;
a printed circuit board made from a flat, rectangular board and disposed behind said laser diode, said printed circuit board having mounting pins at a rear end thereof;
an adjusting end block connected to said printed circuit board, said adjusting end block having an elongated slot, which receives said printed circuit board, and a plurality of pin holes, which receive said mounting pins of said printed circuit board respectively;
whereby when said laser diode is driven by said printed circuit board to produce a laser beam through said laser firing hole via said condensing lens, the border of the laser beam is blocked by said shoulder of said lens holder so that the laser beam forms a circular light spot on an object; the focal distance of said condensing lens is adjusted by rotating said lens holder on said inner socket; the alignment of said laser diode with said condensing lens is adjusted by turning said adjusting end block in either direction.

5,283,803

ELECTRODE ASSEMBLY FOR GLASS MELTING FURNACE

Cenek A. Kottnauer, West Vancouver, Canada, and Albert Lewis, Covina, Calif., assignors to Glass Incorporated International, Chino, Calif.

Filed Jun. 1, 1992, Ser. No. 890,833
Int. Cl.[5] C03B *5/027;* **H05B** *7/10*
U.S. Cl. 373—36 **12 Claims**



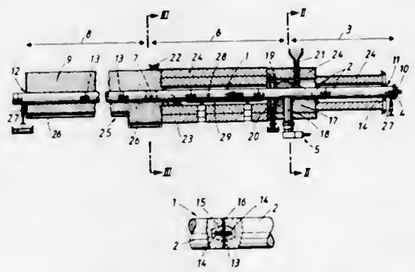
1. An electrode assembly for a glass melting furnace, comprising:
an elongated electrode body having a lower end portion insertable into the glass to be melted, and an upper end portion,
a holding fixture telescopically engageable with the upper end portion of the electrode body,
two elongated support arms spaced apart and connected with said holding fixture to support the electrode body while extended into the furnace, said support arms being movable as a unit for raising and lowering the electrode body,
an elongated current supply tube extending alongside said support arms in a space between said support arms tubes,
electrical connector means carried by said current supply tube for releasably gripping the upper end portion of the electrode body, whereby current is supplied to the electrode body through the connector means,
said holding fixture comprising an annular housing with an inner annular surface defining a tapered socket, the upper end portion of said electrode body having a tapered outer side surface to engage to said socket,
said electrode body having an externally threaded section extending upwardly from said tapered outer side surface, and a nut threaded onto said externally threaded section to clamp said holding fixture to said electrode body,
said annular housing defining an annular coolant passageway surrounding said tapered socket, said support arms having end portions communicating with said coolant passageway at spaced points therealong,
one of said support arms forming a coolant supply passage for delivering coolant to said annular passageway, and the other arm forming a coolant exhaust passage for removing coolant from said annular passageway, whereby the coolant removes heat from the tapered outer side surface of the electrode body.

5,283,804

PROCESS AND APPARATUS FOR GRAPHITIZING CARBON BODIES

Claude Holuigue, le Fayet, France, and Heinrich Panholzer, Linz, Austria, assignors to Voest-Alpine Machinery, Construction & Engineering Gesellschaft M.B.H., Linz, Austria

Filed Jul. 29, 1991, Ser. No. 737,053
Claims priority, application Austria, Aug. 1, 1990, 1621/90
Int. Cl.[5] H05B *3/00*
U.S. Cl. 373—120 **15 Claims**



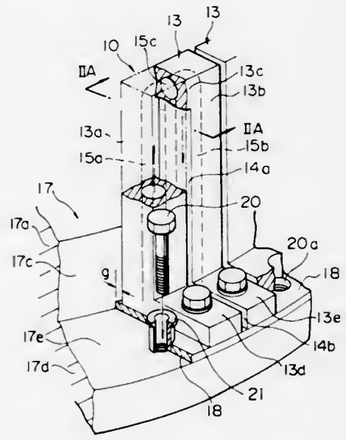
1. In a process of graphitizing carbon bodies in a graphitizing furnace having an entrance, an exit, a graphitizing zone between said entrance and said exit, and a cooling zone between said graphitizing zone and said exit, which process comprises
clamping a plurality of carbon bodies together to form a horizontally extending train, in which adjacent end faces of said carbon bodies adjoin each other,
longitudinally moving said train in said graphitizing furnace from said entrance through said graphitizing zone and subsequently through said cooling zone to said exit,
causing electric current to flow in said train in said graphitizing zone to heat said train,
subsequently cooling said train in said cooling zone,
adding from time to time a new carbon body to said train at its trailing end at said entrance and removing from time to time a carbon body from the leading end of said train at said exit, and
said train is moved in said furnace in contact with furnace electrodes at two electrode contact points spaced apart along said train,
the improvement comprising
connecting said carbon bodies at adjoining end faces by axially extending connecting means in assembling said train so that said train is held to be self-supporting between said two electrode contact points.

5,283,805

SEGMENTED COLD-WALL INDUCTION MELTING CRUCIBLE

Hitoshi Kawano; Masanori Tsuda, both of Ise, and Yasuhiro Nakai, Mie, all of Japan, assignors to Shinko Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,362
Claims priority, application Japan, Oct. 16, 1991, 3-294848; Oct. 9, 1992, 4-296667
Int. Cl.[5] H05B *5/16, 11/00*
U.S. Cl. 373—156 **6 Claims**



1. A segmented cold-wall induction melting crucible, comprising;
a crucible main body composed of a side wall defined by a plurality of intermittently upstanding segments in an array and spaced apart from each other in circumferential direction so as to define a slit of a specified width between adjacent segments, each of said segments being fabricated of an electrically conductive material,
a base made of an electrically conductive material and inserted in a space defined by said intermittently upstanding segments and which includes a crucible base contiguous with said side wall, and
an induction heating coil disposed around the outer face of said crucible, and generate a magnetic field wherein:
said plurality of segments comprise a plurality of pairs of unit segments, spaced apart from one other with a specified gap and including two adjacent legs spaced apart with said specified gap such that magnetic flux from said magnetic field passes through said gap; and wherein each leg has a contiguously formed foot, one leg of each of said unit segments having an inlet water passage and the other leg having an outlet water passage, said inlet and outlet passages being connected so as to form a one-way flow passage for cooling water and said foot of each leg of said unit segments extending radially outward so as to form an L shaped leg member;
said base including a raised central portion inserted in said space defined by said side wall, and an annular flange extending radially outward from a lower part of said raised central portion for supporting each foot of said plurality of unit segments laid thereon and fixed to said base, and
an insulation member mounted on said base for insulating said unit segments from one another and said base.

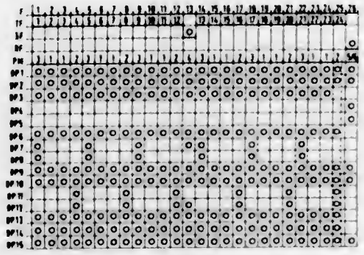
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5,283,806

METHOD OF SEQUENCING SIGNAL PROCESSING IN THE COMMUNICATION MODE OF A DIGITAL CELLULAR RADIO SYSTEM

Luc Dartois, Carrieres sous Poissy, and Emmanuel Rousseau, Paris, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 15, 1992, Ser. No. 913,836
Claims priority, application France, Jul. 18, 1991, 91 09088
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **30 Claims**



1. Method of sequencing signal processing in a digital cellular radio system having a communication mode for conveying digitized speech over a communication channel between a terminal and a base station, said radio system using multiframes each comprising a sequence of frames, at least some of said frames being designated as traffic frames, said digitized speech comprising coded blocks each representing a single group of speech samples, each coded block being formed of 2·s sub-blocks each conveyed during a different respective traffic frame, a pth sub-block of a coded block and a (p+s)th sub-block of a preceding coded block being combined in a pth packet, each said multiframe comprising a number of traffic frames which is a multiple k of the number of sub-blocks 2·s, any traffic frame being identified within its respective said multiframe by the expression s·j+p, each of said traffic frames comprising at least two disjoint time slots including a first time slot for a send packet and a second time slot for a receive packet, said method comprising the steps:

during each of 2·s·k traffic frames s·j+p of a current said multiframe:

performing a configuration process,

processing a pth receive packet in a respective receive time slot by recovering the pth receive sub-block of a (j+n) th coded receive block and the (p+s)th receive sub-block of a (j+n−1)th coded receive block, and

processing a pth send packet in a respective send time slot by combining a pth send sub-block of a (j+n)th coded send block and a (p+s)th send sub-block of a (j+n−1)th coded send block;

during each of 2·k send mode traffic frames s·j+a of a first subset of said 2·s·k traffic frames:

shaping a next (j+n+1)th coded send block from a group of speech samples to be sent; and

during each of 2·k receive mode traffic frames s·j+b of a second subset of said 2·s·k traffic frames:

recovering a last (j+n−1)th coded receive block and recovering any corresponding speech samples contained therein,

where

s is a positive integer representative of the number of sub-blocks in a coded block divided by 2,

k is a positive integer representative of the number of coded blocks in a multiframe,

j is a first integer variable $0 \leqq j \leqq 2k$ representative of the position of a coded block within a multiframe,

n is a second integer variable representative of the rank of the coded send-block whose first sub-block is sent on the first frame of said current multiframe,

p is a third integer variable $0 \leqq p \leqq s$ representative of the position of a sub-block within a coded block,

a is first predetermined value of p representative of the position of a send frame within a coded block, and

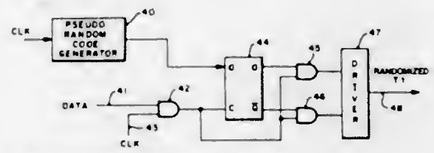
b is a second predetermined value of p representative of the position of a receive frame within a coded block.

5,283,807

EMI SUPPRESSION CODING

Martin H. Graham, Berkeley, Calif., assignor to Tutankhamon Electronics, Inc., Pleasant Hill, Calif.

Filed Oct. 21, 1992, Ser. No. 964,508
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **9 Claims**



9. A communication system comprising:

an encoder comprising:

an encoder means coupled to receive said digital signal for encoding said digital signal such that one binary state is represented by either one of two different signal levels,

a signal generator for generating a pseudorandom signal; and,

a selector for selecting between said two different signal levels under control of said pseudorandom signal;

a decoder comprising means for recognizing said two different signal levels as representing said one binary state; and

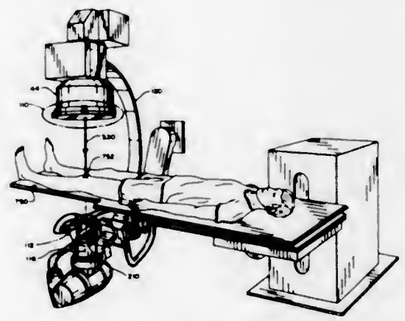
a link coupled between said encoder and decoder.

5,283,808

X-RAY DEVICE HAVING A CO-AXIAL LASER AIMING SYSTEM IN AN OPPOSED CONFIGURATION

Steven L. Cramer, Sandy, and Li Yuan, Salt Lake City, both of Utah, assignors to Diasonics, Inc., Milpitas, Calif.

Filed Jul. 1, 1992, Ser. No. 908,320
Int. Cl.[5] A61B *6/08*
U.S. Cl. 378—206 **14 Claims**



1. A laser aiming system for use with an x-ray machine having an x-ray emitter for emitting x-rays and an x-ray collector for receiving said x-rays, said laser aiming system comprising:

a) a laser housing removably coupled to said x-ray collector, said laser housing including:

i) a laser light source adjustably coupled to an outer perimeter of said laser device assembly, said laser light source producing a visible point laser beam,

ii) a power source coupled to said laser device assembly and said laser light source, and

iii) a laser light reflector immovably coupled to the center of said laser housing for redirecting said laser beam into coaxial alignment with said x-rays emitted by said x-ray emitter; and

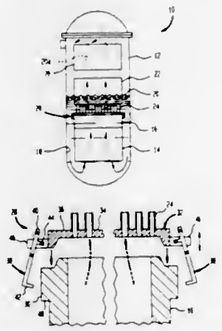
b) a laser sight removably coupled to said x-ray emitter, said laser sight having a radio-opaque reference mark disposed at the center of said laser sight.

5,283,809

STEAM SEPARATOR LATCH ASSEMBLY

Roy C. Challberg, Livermore, and Irvin R. Kobsa, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 3, 1993, Ser. No. 55,478
Int. Cl.[5] G21C *15/16*
U.S. Cl. 376—260 **16 Claims**



1. A latch assembly for removably joining a steam separator assembly to an annular support flange disposed at a distal end of a tubular shroud in a pressure vessel of a nuclear reactor comprising:

an annular head having a central portion for supporting said steam separator assembly thereon, and an annular head flange extending around a perimeter thereof for supporting said head on said support flange;

a plurality of latches circumferentially spaced apart around said head flange, each having a top end, a latch hook at a bottom end thereof, and a pivot support disposed at an intermediate portion therebetween pivotally joining said latch to said head flange; and

means for pivoting said latches about said pivot supports for selectively engaging and disengaging said latch hooks with said support flange.

5,283,810

PRESSURIZED WATER NUCLEAR REACTOR WITH INHERENT SAFETY

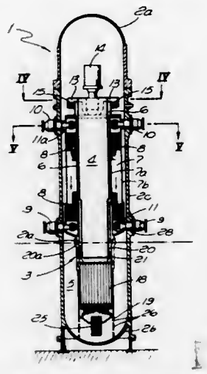
Luciano Cinotti, Genova, Italy, assignor to Ansaldo S.P.A., Genova, Italy

Filed Jul. 21, 1992, Ser. No. 918,330
Claims priority, application Italy, Aug. 14, 1991, 91 A 002258
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—282 **5 Claims**

1. A pressurized-water nuclear reactor with inherent safety, comprising:

an outer pressure vessel in form of a vertical cylinder having a cylindrical wall, a hemispherical upper wall and a hemispherical bottom wall, said vessel being filled with borated water;

a reactor body placed inside said vessel and axially extending therewith, said reactor body comprising an axially extending upper portion fixed to said cylindrical wall and an axially extending lower portion fixed to said bottom wall, said upper and lower portions being each other hydraulically interconnected and mutually axially slidable;



steam generating tube bundles extending between inlet and outlet connectors passing through said cylindrical wall, said tube bundles being housed in said upper portion of the reactor body; and

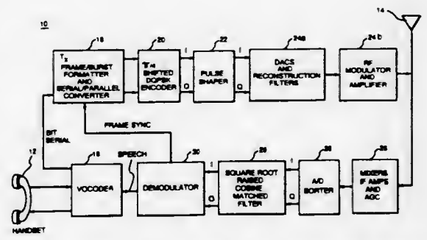
a reactor core housed in said lower portion of the reactor body.

5,283,811

DECISION FEEDBACK EQUALIZATION FOR DIGITAL CELLULAR RADIO

Sandeep Chennakeshu, Cliftoo Park; Anand Narasimhan, Troy, and John B. Anderson, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1991, Ser. No. 754,105
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—14 **12 Claims**



1. Apparatus for demodulating a Time Division Multiple Access (TDMA) signal having a time slot comprised of a plurality of symbols including at least one sequence of synchronizing symbols and a plurality of data symbols, comprising:

receiver means for receiving the signal over a channel;

adaptive filter means for adaptively filtering the received signal to minimize inter-symbol interference due to channel multipath propagation, the adaptive filter means having an input coupled to an output of the receiving means and comprising a decision feedback equalizer having a

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plurality (n) of feed-forward taps and a plurality (m) of feedback taps;

a plurality of multiplying nodes, each of the taps, respectively, being coupled to one of said nodes, respectively, for modifying the output signal on each of the taps, respectively, in accordance with a value of an associated coefficient;

coefficient generating means coupled to an output of the adaptive filter means for recursively generating the coefficients for each of said nodes in accordance with a Complex Fast-Kalman Algorithm;

circuit means for initially adapting the adaptive filter means to the sequence of synchronizing symbols, said circuit means including means for switchably coupling an input of the (m) plurality of feedback taps to a time slot midamble of synchronizing symbols; and

means for buffering all of the symbols of the time slot.

5,283,812

BOTTOM NOZZLE OF A FUEL ASSEMBLY FOR A WATER-COOLED NUCLEAR REACTOR

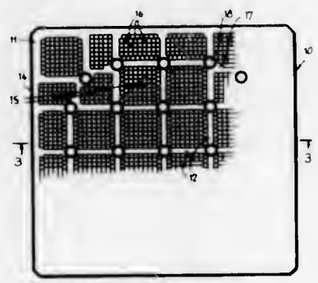
Michel Verdier, Villeurbanne, France, assignor to Framatome, Courbevoie and Cogema, Velizy Villacoublay, both of France

Filed Oct. 5, 1992, Ser. No. 956,171

Claims priority, application France, Oct. 4, 1991, 9112242

Int. Cl.[5] G21C *1/04*

U.S. Cl. 376—352 **9 Claims**



1. Bottom nozzle with reduced pressure drop for a fuel assembly for a water-cooled nuclear reactor, said bottom nozzle comprising a structural part having a transverse arrangement and consisting of a flat part having parallel upper and lower faces and ribs providing mechanical strength to said structural part and disposed substantially perpendicular to said faces, said ribs projecting from said lower face and delimiting between them cells and zones of said lower face into each of which zones emerges a group of openings passing through said flat part so as to permit the passage of cooling water therethrough and stopping of debris entrained by said cooling water under said lower face, said openings being of substantially square cross-section and disposed in a pattern.

5,283,813

METHODS AND APPARATUS PARTICULARLY USEFUL FOR BLIND DECONVOLUTION

Ofir Shalvi, Ramat Hasbaron, and Ehud Weinstein, Ramat Gan, both of Israel, assignors to Ramat University Authority for Applied Research & Industrial Development Ltd., Tel-Aviv, Israel

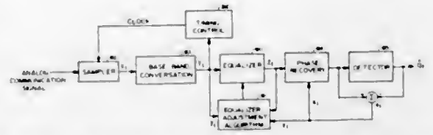
Filed Feb. 12, 1992, Ser. No. 834,092

Claims priority, application Israel, Feb. 24, 1991, 97345

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—12 **19 Claims**

1. A method for controlling an equalizer to be coupled to an unknown system having an input and an output which equalizer receives the output of the unknown system in order to produce a response recovering the input to said system, characterized by iteratively adjusting the equalizer such that the unknown system combined with the equalizer behaves essentially as a linear system whose (t,n) taps, for some combinations



of t and n, are iteratively adjusted according to the following rule:

$$s_{t,n}' = \sum_{i=1}^{I} \alpha_i s_{t,n}^{p_i} (s_{t,n}^{*})^{q_i}$$

where $s_{t,n}$ denotes the (t,n) tap before the iteration, $s'_{t,n}$ denotes the (t,n) tap after the iteration, I is a preselected integer greater than or equal to one, α_i i=1,2. . . I are preselected scalars that may vary from iteration to iteration, and p_i, q_i i=1,2, . . . I are preselected non-negative integers such that $p_i + q_i \geq 2$.

5,283,814

APPARATUS FOR PROCESSING DIGITAL SIGNAL

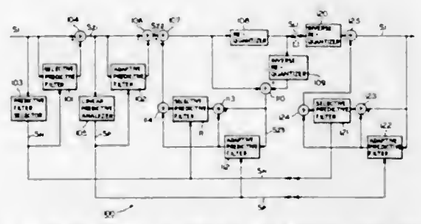
Naoto Iwahashi, and Kenzo Akagiri, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 16, 1989, Ser. No. 324,048

Claims priority, application Japan, Mar. 17, 1988, 63-65192

Int. Cl.[5] H04B *14/06*

U.S. Cl. 375—27 **5 Claims**



3. An apparatus for processing a digital signal comprising:

a first predictive filter responsive to an input signal for outputting a predictive residual signal;

a second predictive filter responsive to said predictive residual signal for outputting an optimal predictive residual signal;

means responsive to said optimal predictive residual signal for manifesting a transmission output signal, wherein one of the first and second predictive filters is a selective filter and the other is an adaptive filter; and

including a linear predictive analyzer for generating a control signal connected to said adaptive filter for changing the filter characteristics of said adaptive filter.

5,283,815

TANGENTAL TYPE DIFFERENTIAL DETECTOR FOR PULSE SHAPED PI/4 SHIFTED DIFFERENTIALLY ENCODED QUADRATURE PHASE SHIFT KEYING

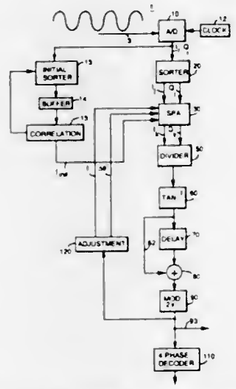
Sandeep Chennakeshu, Clifton Park, and Gary J. Saulnier, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1991, Ser. No. 703,637

The portion of the term of this patent subsequent to Apr. 13, 2000, has been disclaimed.

Int. Cl.[5] H04L *27/22*

U.S. Cl. 375—84 **6 Claims**



1. In a receiver of a cellular telephone for receiving phase angles encoded in a received signal, a digital discriminator, said discriminator comprising:

a) a heterodyne circuit adapted for converting said received signal to an intermediate frequency (IF) signal;

b) an analog to digital (A/D) converter circuit coupled to the heterodyne circuit adapted for sampling said IF signal and for creating a digital output signal having of a plurality of samples, each sample comprising a quadrature coefficient signal and an in-phase coefficient signal;

c) a sorter circuit coupled to receive the digital signal from the A/D converter and adapted to provide a predetermined number of samples for decoding;

d) means for producing an initial sample index;

e) a sample and phase adjustment (SPA) circuit coupled to the sorter circuit adapted for receiving the samples of the sorter circuit, coupled to the means for producing an initial sample timing index, receiving a sample timing index, selecting samples for decoding based upon the sample timing index, receiving a carrier phase adjustment, and creating a set of output samples based upon the selected samples and carrier phase adjustment, each SPA output sample comprising a quadrature coefficient and an in-phase coefficient;

f) a relative phase angle providing means adapted for providing a set of relative phase angle samples from the set of output samples from the SPA circuit, the relative phase angle providing means coupled to the SPA circuit;

g) a modulo-2π correction circuit coupled to the relative phase angle providing means adapted for receiving the relative phase angle samples, correcting for phase angles which wrap-around the real axis and creating a set of corrected relative phase angle samples;

h) a four-phase decoder circuit coupled to the modulo-2π correction circuit adapted for receiving the set of corrected relative phase angle samples and decoding the samples into a pair of decoded bits; and

i) an adjustment circuit coupled to receive the signal sent to the four-phase decoder circuit adapted to calculating a decoding error between the decoded phase angle for each symbol in a preamble and a respective one of a predetermined set of phase angles stored by the adjustment circuit, and adjusting the sample timing and carrier phase adjustment to minimize the decoding error.

5,283,816

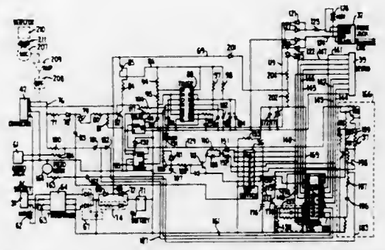
SMOKE DETECTOR USING TELEPHONE LINK

Leo A. Gomez Diaz, Laredo, Tex., assignor to DIP Technologies, Inc., Laredo, Tex.

Filed Jan. 15, 1991, Ser. No. 641,490

Int. Cl.[5] H04M *11/04*

U.S. Cl. 379—40 **27 Claims**



1. An apparatus comprising: sensor means for detecting an alarm condition; a telephone dialer circuit and means for facilitating coupling of said telephone dialer circuit to a telephone line, said telephone dialer circuit having a plurality of keypad matrix inputs; means coupled to said matrix inputs of said dialer circuit and responsive to detection of said alarm condition by said sensor means for simulating a manual key press at said matrix inputs to said dialer circuit, said dialer circuit including means responsive to said simulated manual key press for automatically dialing a telephone number; means for generating an alarm signal at an audible frequency in response to detection of said alarm condition by said sensor means; and sound generating means responsive to said alarm signal for producing an audible sound at said audible frequency; said telephone dialer circuit including means for applying to the telephone line said alarm signal at said audible frequency after said automatic dialing of said telephone number; wherein said telephone dialer circuit includes means responsive to said automatic dialing for thereafter waiting a predetermined period of time while said alarm signal is applied to said telephone line, for thereafter interrupting said coupling of said telephone dialer circuit to said telephone line, for thereafter waiting a further predetermined period of time, for thereafter causing said telephone dialer circuit to again effect said automatic dialing, and for thereafter applying to the telephone line said alarm signal at said audible frequency, said audible frequency being applied to said telephone line regardless of whether a remote end of said telephone line is answered; and wherein said telephone dialer circuit includes memory means for storing a first telephone number and includes manually settable switch means for specifying a second telephone number and for selecting one of said first and second telephone numbers, said telephone dialer circuit being responsive to said simulated manual key press for automatically dialing said selected one of said first and second telephone numbers.

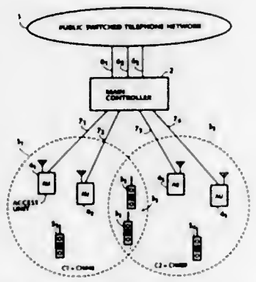
VOL 1159 ISS 1 FE 1 1994 UMI

5,283,817

CORDLESS KEY TELEPHONE SYSTEM FOR COVERING MULTIPLE SERVICE AREAS HAVING EXCLUSIVELY ASSIGNED CONTROL CHANNELS

Toshihiro Hara; Yukihiro Shimura; Shinji Kumataka, and Kosuke Hashimoto, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,469
Claims priority, application Japan, Apr. 17, 1990, 2-100617; Apr. 17, 1990, 2-100618
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 **5 Claims**



4. A cordless key telephone system for covering first and second service areas, wherein a frequency spectrum of radio signals used by said system is equally divided into a plurality of channels of equal bandwidth, comprising:

a plurality of access units divided into first and second groups, the access units of the first group being located in the first service area for broadcasting a control signal on a first control channel which is an even-numbered one of said channels and broadcasting a speech signal on a first speech channel which is an odd-numbered one of said channels excluding a second control channel, the access units of the second group being located in the second service area for broadcasting a control signal on said second control channel which is an odd-numbered one of said channels and broadcasting a speech signal on a second speech channel which is an even-numbered one of said channels excluding said first control channel, each of said control signals containing a recurrent sequence of address signals;

a plurality of cordless stations switchable to the first control channel for detecting an address signal and subsequently switchable to the second control channel if said address signal is not detected in a first sequence for detecting said addressed signal in a second sequence; and

a controller coupled to a switched telephone network for causing said access units of each group to broadcast a control signal in response to an incoming call from said network and establishing a connection between said network and one of said cordless stations via one of said access units.

5,283,818

TELEPHONE ANSWERING DEVICE LINKING DISPLAYED DATA WITH RECORDED AUDIO MESSAGE

Judah Klausner, Sagaponack, N.Y., and Robert Hotto, La Jolla, Calif., assignors to Klausner Patent Technologies, Sagaponack, N.Y.

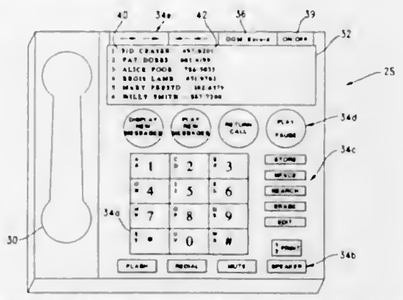
Filed Mar. 31, 1992, Ser. No. 860,699
Int. Cl.[5] H04M *1/64, 11/00, 15/06*
U.S. Cl. 379—67 **14 Claims**

12. A telephone answering device coupled to a telephone line for automatically answering incoming telephone calls and storing and retrieving information from the incoming telephone calls, comprising:

means for receiving a signal having an identifier from said telephone line identifying the caller of an incoming call;

means for receiving a voice message from said caller and storing said voice message;

means for linking said identifier with the corresponding voice message;



means for displaying the identifiers for a plurality of incoming calls; and

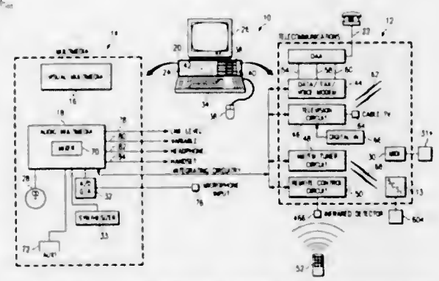
means for selecting any one of the identifiers from said display and audibly directly retrieving the voice message linked to the selected identifier without scrolling through individual displayed identifiers.

5,283,819

COMPUTING AND MULTIMEDIA ENTERTAINMENT SYSTEM

James A. Glick, Granite Shoals; Ronald B. Graczyk, Round Rock; Albert F. Nurick, and Brittain D. Fraley, both of Austin, all of Tex., assignors to Compuadd Corporation, Austin, Tex.

Filed Apr. 25, 1991, Ser. No. 691,461
Int. Cl.[5] H04M *11/00*; H04N *7/14*
U.S. Cl. 379—90 **12 Claims**



1. A remotely controllable computing and multimedia entertainment system, comprising:

a personal computer comprising a personal computer chassis and a monitor;

an entertainment circuit for receiving a plurality of entertainment signals, said entertainment circuit comprising in association with said personal computer and in said personal computer chassis a radio frequency circuit, a television circuit and an audio multimedia circuit;

said radio frequency circuit for receiving a plurality of radio frequency signals, said radio frequency circuit comprising circuitry for recording said radio frequency signals within said personal computer;

said television circuit for receiving a plurality of television signals, said television circuit further comprising circuitry for associating said television circuit with video graphics array monitor circuitry;

said audio multimedia circuit further associated with said radio frequency circuit and said television circuit for programmably controlling and integrating said radio frequency signals with said television signals, said audio multimedia circuit comprising an analog mixing circuit for mixing a plurality of analog audio signals, and an analog-to-digital/digital-to-analog converter in association with said analog mixture circuit for generating a plurality of analog output signals and directing said analog output signals to said analog mixing circuit, said analog-to-digital/digital-to-analog converter further associated with said analog mixing circuit for receiving a plurality of analog audio signals to generate a plurality of digital output signals; and

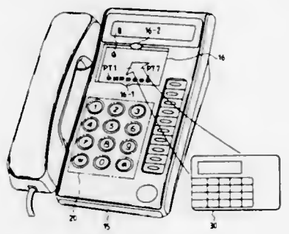
a telephone circuit for communicating over a telephone line a plurality of telephone input signals, said telephone circuit comprising a data/fax/voice modem circuit for communicating over said telephone line data, fax, and voice telephone signals; and a remote control circuit comprising a receiving circuit and a remote control device and in association with said personal computer for transmitting control signals to said receiving circuit, said receiving circuit associated with said personal computer for programmably controlling said entertainment circuit, said remote control circuitry comprising a remote control hand held device and a remote control photodetector within said personal computer chassis.

5,283,820

SYSTEM UTILIZING PORTABLE DEVICE

Masumi Ishiwatari, Zushi, and Tsuyoshi Kawanabe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 538,972, Jun. 15, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,526
Claims priority, application Japan, Jun. 16, 1989, 1-154162
Int. Cl.[5] H04M *1/57, 1/00*
U.S. Cl. 379—100 **26 Claims**



1. A call generation apparatus comprising:

a plurality of keys;

a plurality of photoreception elements; and

call generation means for generating a call according to outputs of said plurality of keys and outputs of said plurality of photoreception elements,

wherein said plurality of keys comprises a plurality of informing lines for informing operating states of said plurality of keys to said call generation means,

said plurality of informing lines are connected to said plurality of photoreception elements, and

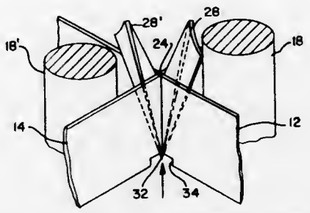
said call generation means detects the outputs of said plurality of keys and the outputs of said plurality of photoreception elements through said plurality of informing lines.

5,283,821

SPLIT-CONE SPACER GRID

Zeses E. Karoutas, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1992, Ser. No. 905,629
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 **12 Claims**



1. A flow deflector grid for a nuclear fuel assembly, comprising:

a plurality of metal strips which intersect in a regular array to form an egg-crate type lattice, the lattice defining a plurality of coolant flow channels, each channel having sidewalls defined by the strips, a height dimension defined by the height of the strips, a plurality of corners defined by the strip intersections, a channel central axis parallel to the height dimension, and a flow cross section normal to the channel axis for coaxially receiving a fuel rod spaced within the channel sidewalls; and

a unitary flow deflector member attached to and situated in the corner of each channel so as to be cradled between first and second sidewalls, the deflector member having a hood portion which projects above the height dimension of the channel and which includes

a substantially planar vane extending obliquely upward from said first sidewall and oriented transversely to the channel axis, and

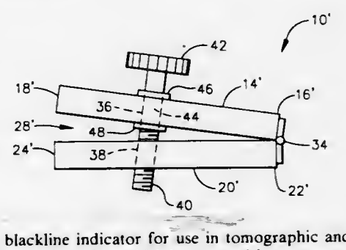
a substantially planar flow containment wall extending substantially vertically from said second sidewall to said vane.

5,283,822

BLACKLINE INDICATOR FOR USE IN TOMOGRAPHIC AND/OR RADIOSCOPIC INSPECTION OF WELD JOINTS

Francis H. Little, Cincinnati, and Gerald B. Nightingale, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 29, 1992, Ser. No. 953,151
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—162 **17 Claims**



1. A blackline indicator for use in tomographic and radioscopic inspection of a weld joint, comprising:

a first elongated member having a first and a second end;

a second elongated member juxtaposed to said first member and having a first end and a second end, said first end being in contact with said first end of said first member; and

VOL 1159 ISS 1 FE 1 1994 UMI

spacer means disposed between said first and second members to position said second ends thereof at a selected distance from one another, said selected distance being at least equal to a thickness of the weld joint under inspection, and said first and second members and said spacer means defining a calibrated wedge shaped gap which is radiographically imageable to permit determination and control of x-ray inspection parameters.

5,283,823

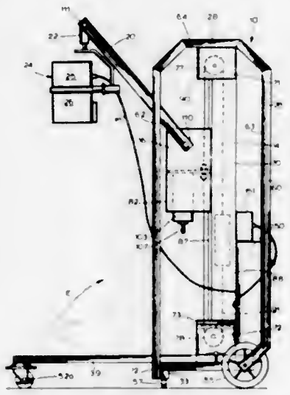
PORTABLE RADIOGRAPHIC DEVICE

William W. Morris, Woodstock, Ill., assignor to X-Cel X-Ray Corporation, Crystal Lake, Ill.

Continuation-in-part of Ser. No. 800,154, Nov. 27, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 944,496

Int. Cl.[5] A61B *6/10*

U.S. Cl. 378—198 **27 Claims**



16. A portable x-ray unit adapted to be placed in an open or collapsed position, said device comprising:

a base assembly;

a first pair of wheels connected to the base assembly;

a pair of spaced leg extension members having movable means located thereon for assisting and moving said unit;

means connected to said base assembly for permitting manual movement of said unit from one position to another;

each of said leg extension members having a first end pivotally connected to said base assembly and a second outboard end positioned away from said base assembly when said unit is in an open position;

a column assembly extending upward from said base assembly;

a carriage assembly connected to said column assembly, said carriage assembly including means for permitting said carriage assembly to travel along at least a portion of the length of said column assembly;

a pair of spaced arm extension members, each member having first and second ends;

said arm extension member first ends being pivotally connected to and extending outward from said carriage assembly;

an x-ray head; and,

means for releasably connecting said x-ray head to said second arm extension member ends.

5,283,824

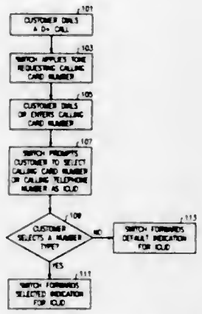
CALLING LINE IDENTIFICATION

I-Nuoh R. Shaw, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 25, 1991, Ser. No. 782,703

Int. Cl.[5] H01M *1/54, 1/57*

U.S. Cl. 379—142 **9 Claims**



1. In a telephone network, a method of indicating a number for use as an incoming calling line identification (ICLID) number, comprising the steps of:

in an originating telephone switching system, interpreting dialing signals from a calling customer to specify a choice of an ICLID number, other than the calling telephone number, for a call; and

in a common channel signaling message from the originating system to a terminating switching system serving a called customer of said call, transmitting data including the specified ICLID number and indication data for selecting the specified number for use as by said terminating system as ICLID data for said call.

5,283,825

TELEPHONE ADAPTOR FOR TELEPHONE SETS

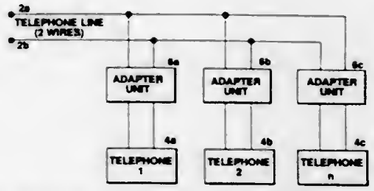
Gil Druckman, 10 Patai Street, and Amnon Abiri, 5 Patai Street, both of Ramat Aviv, 69973 Tel Aviv, Israel

Filed Jun. 26, 1991, Ser. No. 721,079

Claims priority, application Israel, Feb. 15, 1991, 97250

Int. Cl.[5] H04M *3/56*

U.S. Cl. 379—167 **6 Claims**



1. A telephone adaptor system for a telephone set directly connectible, with one or more other like telephone adaptor systems for other telephone sets, between the respective telephone set and a common telephone line, comprising:

(a) an audio circuit including an audio amplifier and a speaker connected to the telephone line;

(b) a switching mechanism for enabling said audio circuit to receive audio signals from the telephone line and to reproduce such signals via said speaker for use in paging; and

(c) a controller effective, when actuated, to actuate said switching mechanism of the other telephone adaptor systems to enable said audio circuit of the other telephone adaptor systems to receive audio signals from the telephone line and to reproduce such signals via their speakers.

5,283,826

SYSTEM USING A PORTABLE CALL INFORMATION DEVICE

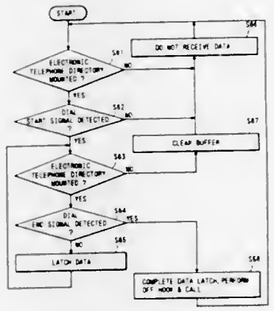
Yuji Kurosawa, Kawasaki, and Shingo Isozaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 538,888, Jun. 15, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 961,034

Claims priority, application Japan, Jun. 16, 1989, 1-154163; Jun. 22, 1989, 1-160317; Jul. 5, 1989, 1-173702; Oct. 5, 1989, 1-261876

Int. Cl.[5] H04M *1/274*

U.S. Cl. 379—357 **26 Claims**



1. A call generation apparatus comprising:

means for mounting a portable device;

connecting means for connecting a call communication line; and call generation means for generating a call to the call communication line which has been connected by said connecting means, according to information received from said portable device,

wherein said connecting means disconnects the call communication line which has been connected, when said portable device is unmounted during the reception of the information from said portable device.

5,283,827

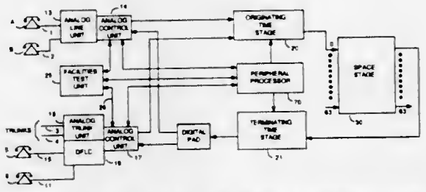
DIGITAL LINE CARD FOR INTERFACING A REMOTELY LOCATED DIGITAL TELEPHONE TO A CENTRAL OFFICE SYSTEM

Joseph A. Conforti, Phoenix; Thomas C. Bissonnette, and Anthony J. Baca, both of Glendale, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Nov. 19, 1990, Ser. No. 615,528

Int. Cl.[5] H04M *9/06*

U.S. Cl. 379—399 **17 Claims**



1. A digital line card for interfacing a remotely located digital telephone to a central office system by a two-wire connection, said digital line card comprising:

a line interface means connected to said two-wire connection, said line interface means provides a full duplex transmission link with said remotely located digital telephone over said two-wire connection;

a buffer means connected to said line interface means and said central office system, said buffer means converts data between said line interface means and said central office system;

a protocol controller means connected to said line interface means, said protocol controller means performs a packet protocol; and

a processor means connected to said protocol controller means and to said central office system, under the direction of said central office system, said processor means controls the operation of said digital line card, and said processor means, through said protocol controller means, communicates with and controls said remotely located digital telephone;

said processor means further comprising:

a microprocessor means arranged to control the operations of said digital line card;

a Read Only Memory (ROM) means for storing a boot program used by said microprocessor means;

a Random Access Memory (RAM) means used by said microprocessor means for storing an operating program and for temporary storage; and

a NonVolatile RAM (NVRAM) means for retention of data when power to said digital line card is removed, and;

a Keylock means connected to said microprocessor means, said RAM means, and said NVRAM means, said Keylock means allows said microprocessor means to lock said NVRAM means and to lock individual pages of said RAM means such that said microprocessor means can only read said located NVRAM means and said locked individual pages of said RAM means.

5,283,828

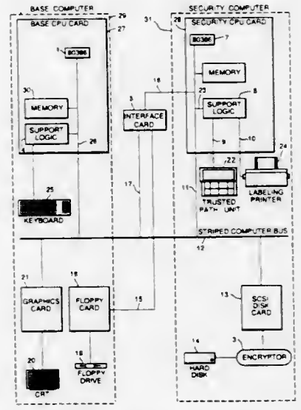
ARCHITECTURE FOR UTILIZING COPROCESSING SYSTEMS TO INCREASE PERFORMANCE IN SECURITY ADAPTED COMPUTER SYSTEMS

Randy Saunders, Upland, and Emmanuel C. Francisco, Covina, both of Calif., assignors to Hughes Training, Inc., Arlington, Tex.

Continuation of Ser. No. 662,658, Mar. 1, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,878

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **6 Claims**



1. A security system for enabling an unsecured base com-

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puter to process sensitive data for security use when running nonsecurity use software, said security system comprising:

a base computer, said base computer having a processor and a memory for processing non-security use software and sensitive data for security use;

a security computer;

interface means coupled between the base computer and the security computer for communicating sensitive data for security use from the base computer to the security computer; and

trusted path interface means coupled to the security computer for providing user access data to the security computer;

said security computer comprising:

means for processing sensitive data for security use and user secure access data to generate security control data;

means for generating encrypted data; and

means for communicating encrypted data and security control data to the base computer via the interface means.

5,283,829

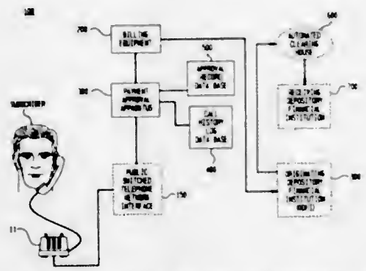
SYSTEM AND METHOD FOR PAYING BILLS ELECTRONICALLY

Milton M. Anderson, Fair Haven, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 1, 1992, Ser. No. 955,087

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—24 **19 Claims**



1. A bill payment system for allowing subscribers to pay their bills via electronic funds transfer, comprising:

billing equipment including

means for preparing a billing statement of each of the subscribers' current charges, at least a first of said billing statements including a pre-authorization form to be completed by subscribers to pre-authorize payment of future bills via electronic transfer,

means for creating an approval record for each of the subscribers who pre-authorize electronic bill payment, and

means for generating a unique approval number for each of the subscribers who have pre-authorized electronic payment and to be used by said pre-authorized subscribers to approve electronic payment of said current bill;

means common to subscribers for storing approval records of subscribers and

means for approving electronic payment of the subscribers' current charges in response to signalling from subscribers, said payment approval means including

means for prompting subscribers for information and detecting subscribers' responses and other information, and

means for comparing subscribers' responses with information in said means for storing said approval records.

5,283,830

SECURITY MECHANISM FOR A COMPUTER SYSTEM

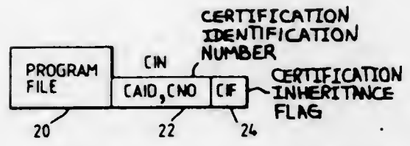
Stewart R. Hinsley, Alsager, and Christopher D. Hughes, Audlem, both of Great Britain, assignors to International Computers Limited, London, Great Britain

Filed Sep. 30, 1992, Ser. No. 954,570

Claims priority, application United Kingdom, Dec. 17, 1991, 9126779

Int. Cl.[5] H04K *1/00*; H04L *9/00, 9/02*

U.S. Cl. 380—25 **8 Claims**



1. A computer system including a plurality of programs and a plurality of objects, accessible by a plurality of users, each program having an associated program identifier, each user having a user identifier, and at least some of the objects having respective access control lists (ACL) associated with them, each ACL containing a list of entries, each entry comprising a program identifier key, a user identifier key and an access permission indication, and wherein the system includes means operative when a user attempts to access an object by way of a program, for selecting an entry in the ACL of the object by matching the program identifier key and user identifier key in the entry with the program identifier of the program and the user identifier of the user and for granting or denying access on the basis of the access permission indication in the selected entry.

5,283,831

METHOD OF SYNCHRONIZING THE PSEUDO-RANDOM BINARY SEQUENCE IN A DESCRAMBLER

Andrew R. J. Cook, Essex, and David W. Faulkner, Suffolk, both of England, assignors to British Telecommunications, London, Great Britain

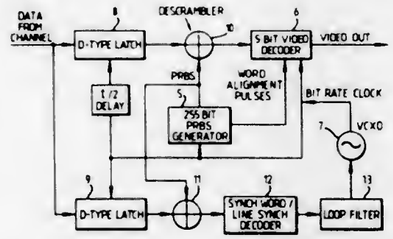
PCT No. PCT/GB91/00570, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/15910, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 10, 1991, Ser. No. 915,860

Claims priority, application United Kingdom, Apr. 10, 1990, 9008151

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—48 **6 Claims**



1. A method of communicating data from a transmitter to a receiver comprising coding an input signal with n-bit codewords, where n is an integer, converting the n-bit codewords to a serial bit-stream, generating with a pseudo-random binary sequence generator in the transmitter a fixed length n x m bit pseudo-random binary sequence, where m is an integer, generating a word synchronization signal in response to a predetermined point in each repetition of the pseudo-random binary sequence in said transmitter pseudo-random binary sequence generator, synchronizing the coding of the input signal in accordance with the word synchronization signal, scrambling the serial bit-stream with the pseudo-random binary sequence, transmitting the scrambled data to the receiver, generating with a pseudo-random binary sequence generator in the receiver a corresponding binary sequence, generating a corresponding word alignment signal in response to the predetermined point in each repetition of the corresponding binary sequence, descrambling the data at the receiver with the corresponding binary sequence, synchronizing the corresponding binary sequence to the scrambling sequence in the transmitter, and assembling the descrambled data into n-bit words in accordance with said corresponding word alignment signal, thereby maintaining word alignment between the transmitter and the receiver.

5,283,832

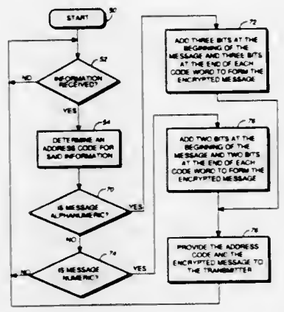
PAGING MESSAGE ENCRYPTION

Robert K. Lockhart, Jr., Boynton Beach, and William J. Kuznicki, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1991, Ser. No. 781,546

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—49 **18 Claims**



1. A paging terminal for secure radio frequency (RF) paging communications comprising:

receiving means for receiving message information;

encoding means for encoding the message information into data comprising a plurality of symbols;

control means for determining whether the message information is numeric information or alphanumeric information;

encryption means coupled to the encoding means and the control means for encrypting the data by adding a first predetermined number of additional symbols to the data to form an encrypted message if the control means determines that the message information is numeric information and for encrypting the data by adding a second predetermined number of additional symbols to the data to form the encrypted message if the control means determines that the message information is alphanumeric information; and

transmission means for modulating the encrypted message to form a paging signal and for transmitting the paging signal.

5,283,833

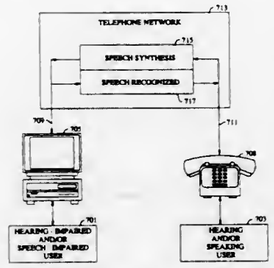
METHOD AND APPARATUS FOR SPEECH PROCESSING USING MORPHOLOGY AND RHYMING

Kenneth W. Church, and Cecil H. Coker, both of Chatham, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 19, 1991, Ser. No. 762,289

Int. Cl.[5] G01L *5/00*

U.S. Cl. 381—41 **3 Claims**



1. In a machine, a method for determining an orthography of a first word having a known pronunciation, the method comprising the steps of:

locating a reference word which has a known pronunciation and a known orthography such that a subset of said pronunciation of said reference word is a subset of said pronunciation of said first word; and

determining said orthography of said first word by rhyme analogy to said orthography of said reference word.

5,283,834

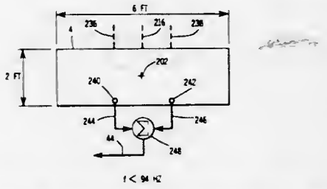
ACOUSTIC SYSTEM SUPPRESSING DETECTION OF HIGHER ORDER MODES

Seth D. Goodman, and Kirk G. Burlage, both of Madison, Wis., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed Aug. 26, 1991, Ser. No. 749,904

Int. Cl.[5] H03B *29/00*

U.S. Cl. 381—71 **42 Claims**



1. A method for suppressing detection of higher order mode transverse modal energy of an acoustic wave propagating longitudinally along a waveguide, comprising placing a plurality of acoustic sensors at designated locations across said waveguide and summing the outputs of said acoustic sensors such that the resultant sum is zero for a given higher order mode.

5,283,835

FERROELECTRIC COMPOSITE FILM ACOUSTIC TRANSDUCER

Lewis S. Athanas, 240 Middle St., West Newbury, Mass. 01985

Filed Nov. 15, 1991, Ser. No. 792,581

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—190 **21 Claims**

1. An acoustic transducer that converts between electrical energy and acoustical energy comprises,

a substrate,

a strip of a sheet material held on said substrate along its

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longitudinal edges only and is spaced from and curves away from said substrate viewed in a plane perpendicular to said longitudinal edges in the form of a parabola created by the tension in the strip itself,

said strip including an intermediate layer of a ferroelectric material and outer layers of a conductive material extending over both faces of said intermediate layer, and said



ferroelectric material having a preferred direction of displacement in the presence of said electrical energy applied across said outer conductive layers where the direction of displacement is transverse to the longitudinal axis of said strip, and

means for securing said strip to said substrate at said longitudinal edges only.

5,283,836

PLANAR SPEAKERS

Anthony L. Trufitt, 13 Dellas Avenue, Templestowe, Victoria 3106, Australia

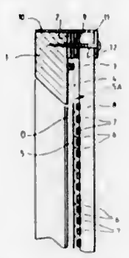
PCT No. PCT/AU90/00442, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO91/04643, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 21, 1990, Ser. No. 842,350

Claims priority, application Australia, Sep. 22, 1989, PJ6521

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—199 **14 Claims**



1. An audio transducer comprising a planar diaphragm, a conductor defining a voice coil secured to said diaphragm, and means for creating magnetic fields which intersect said conductor, said diaphragm being supported in a tensioned overlying relationship with said magnetic field creating means, characterized in that said planar diaphragm comprises a lightweight woven cloth having a first region substantially coincident with said voice coil treated to close the open mesh of the woven cloth, and a second region substantially surrounding said first region in which the mesh of said cloth is substantially open and baffle means overlying but spaced from said second region.

5,283,837

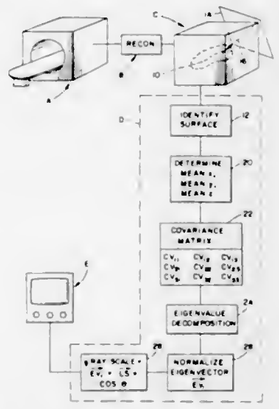
ACCURATE ESTIMATION OF SURFACE NORMALS IN 3-D DATA SETS

Christopher H. Wood, Cleveland, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 27, 1991, Ser. No. 750,812

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—6 **18 Claims**



1. A method of providing gray scale shading in computer generated two dimensional surface rendering images which convey contour information concerning interior three dimensional object surfaces, the method comprising:

generating image voxel data values representing a three dimensional array of voxels of a three dimensional region of a subject;

storing the voxel data values in a computer memory;

with a computer, determining voxels of the voxel array stored in the computer memory (i) which lie on an interior surface of a selected subregion of the three dimensional region and (ii) which are visible from a viewing plane which corresponds to a two dimensional displayed image, the two dimensional displayed image being defined by a plurality of pixels;

with the computer, determining interior surface voxels of the voxel array which correspond to each of the displayed image pixels;

for each of the determined interior surface voxels, determining with the computer a variation in the voxel data along each of at least three axes;

computer generating an array of voxel data variance values indicative of a variance in the voxel data values relative to the axes;

determining with the computer a direction of most rapid change of the voxel data variance values in the array;

determining with the computer a gray scale value for each interior surface voxel in accordance with the direction of greatest change;

with an image display, displaying the two dimensional displayed image such that each displayed image pixel has the gray scale value determined for the corresponding interior surface voxel.

5,283,838

NEURAL NETWORK APPARATUS

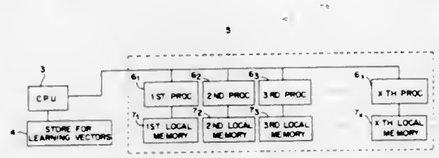
Fumio Togawa, Hillsboro, Oreg.; Toru Ueda, Nara, Japan; Takashi Aramaki, Hillsboro, Oreg., and Yasushi Ishizuka, Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1991, Ser. No. 685,596

Claims priority, application Japan, Apr. 16, 1990, 2-99974

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—14 **11 Claims**



1. A neural network apparatus comprising self-organization learning means for performing self-organization learning to a plurality of learning vectors in a category to which said learning vectors belong, a plurality of weight vectors defined in said neural network apparatus, said weight vectors being allocated to said category, said self-organization learning means having

modification means for modifying contents of a predetermined number of said weight vectors which are in a vicinity of one of said learning vectors, toward said one learning vector,

said apparatus further comprising

an initial contents setting means for setting said modified contents of predetermined number of said weight vectors as initial contents of said predetermined number of said weight vectors,

teacher-supervised learning means for performing teacher-supervised learning to said learning vectors, using said initial contents.

5,283,839

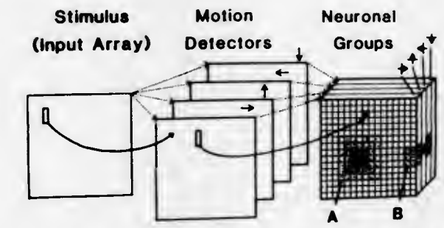
APPARATUS CAPABLE OF FIGURE-GROUND SEGREGATION

Gerald Edelman; Olaf Sporns, and Giulio Tononi, all of New York, N.Y., assignors to Neurosciences Research Foundation, Inc., New York, N.Y.

Filed Dec. 31, 1990, Ser. No. 636,637

Int. Cl.[5] G06K *9/62, 9/34;* H04N *7/18*

U.S. Cl. 382—15 **4 Claims**



1. Apparatus for distinguishing moving figures from background in a visual field comprising

means for providing visual field data as intensity values data to a computer,

an input array of intensity values in said computer whose state corresponds to said intensity values,

a first network of motion detecting neural elements receiving first connections from said input array,

said first connections each comprising a synapse having a synaptic strength,

a second network comprising layers of neuronal groups, each layer comprising direction and orientation detecting neuronal elements receiving second connections topographically connected to said first network,

each second connection comprising a synapse having a synaptic strength,

a third set of connections between elements of the same layer of neuronal groups and comprising synapses having a synaptic strength and a synaptic efficacy, and

a fourth set of connections providing reentrant connections between said layers of neuronal groups said reentrant connections further comprising synapses having a synaptic strength and a synaptic efficacy,

said synaptic efficacy of said reentrant connections being governed by an amplification function and varying with time, and wherein correlations of activity between said layers of neuronal groups increases the efficacy of said reentrant connections and groups in said layers that are not correlated are decoupled by decreasing the efficacy of said reentrant connections.

5,283,840

METHOD AND APPARATUS FOR EXTRACTING IMAGE DATA

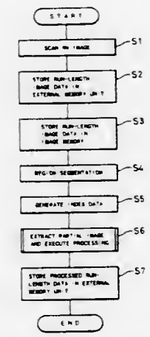
Hideaki Kitamura, and Katsuya Yamaguchi, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Apr. 22, 1992, Ser. No. 872,220

Claims priority, application Japan, Apr. 26, 1991, 3-125438

Int. Cl.[5] G06K *9/46*

U.S. Cl. 382—16 **15 Claims**



1. A method of extracting partial image data representing a desired part of a whole image from total image data representing said whole image, comprising the steps of:

(a) preparing total run-length data representing said whole image in order of scanning, and storing said total run-length data in a first memory;

(b) reading out said total run-length data from said first memory in order of scanning, generating index data for each scanning line in said whole image indicative of relationship between a subscanning coordinate of each scanning line and a first address of said first memory where run-length data representing a first run on each scanning line is stored, and storing said index data in a second memory;

(c) specifying an area of a partial image to be extracted;

(d) determining a first range of main scanning coordinate and a second range of subscanning coordinate each range covering said partial image; and

(e) extracting partial run-length data representing said partial image out of said total run-length data from said first memory on the basis of said first and second range of

VOL 1159 ISS 1 FEBRUARY 1994 UMI

coordinate while referring to said index data corresponding to said second range of subscanning coordinate.

5,283,841

IMAGE PROCESSING METHOD AND APPARATUS

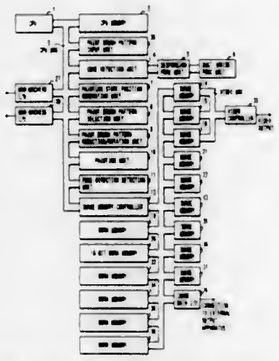
Shigeki Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,100

Claims priority, application Japan, Mar. 30, 1990, 2-86156; Mar. 30, 1990, 2-86157; Mar. 30, 1990, 2-86160; Mar. 30, 1990, 2-86161

Int. Cl.[5] G06K *9/40*

U.S. Cl. 382—54 **14 Claims**



1. An image processing apparatus comprising:
paint brush pattern forming means for forming a paint brush pattern;
input means for inputting image data; and
processing means for processing the image data input by said input means in accordance with the paint brush pattern formed by said paint brush pattern forming means,
wherein said paint brush pattern forming means forms an arbitrary paint brush pattern on the basis of shape data input by an operator.

5,283,842

OPERATING POINT TRIMMING METHOD FOR OPTICAL WAVEGUIDE MODULATOR AND SWITCH

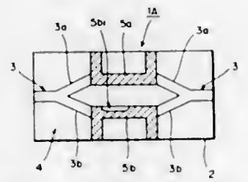
Hironao Hakogi, Kawasaki, and Hisashi Takamatsu, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1991, Ser. No. 666,051

Claims priority, application Japan, Mar. 8, 1990, 2-54976

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—3 **12 Claims**



1. An operating point trimming method for an optical waveguide modulator, said optical waveguide modulator including a waveguide substrate, a first and a second branch optical waveguide formed on said substrate, a buffer layer covering said first and second branch optical waveguides, and a first and a second electrode respectively mounted on said first and second branch optical waveguides, and adapted such that a voltage from a voltage source applied between said first and second electrodes is varied so that a phase difference is produced between light beams propagating through said first and second branch optical waveguides and the light beams having the phase difference therebetween are combined to be output as an intensity modulated light beam, said operating point trimming method comprising the steps of:
monitoring the waveform of said intensity modulated light beam; and
removing, while monitoring the waveform, said buffer layer over a portion of either one of said first and second branch optical waveguides, with one of said first and second electrodes not mounted thereon, such that the waveform of said intensity modulated light beam takes on a desired waveform.

5,283,843

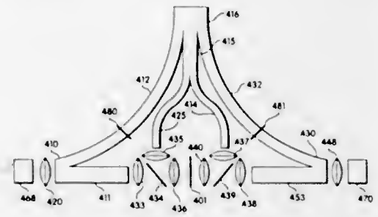
OPTICAL SWITCHES

Charles H. Olmstead, Acton, Mass., assignor to Digital Optical Corporation, Acton, Mass.

Continuation-in-part of Ser. No. 807,155, Dec. 13, 1991. This application Feb. 2, 1993, Ser. No. 12,048

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—16 **18 Claims**



1. Optical switching apparatus comprising:
an optical waveguide fabricated of a material that rotates the plane of polarization of an optical input signal transmitted therethrough in the absence of an optical control signal and rotates the plane of polarization of said optical input signal to a lesser degree in response to an optical control signal;
means for conveying said optical input signal and said optical control signal to said optical waveguide;
means for combining said optical input signal and said optical control signal in said optical waveguide such that said signals have π radians phase difference in said optical waveguide; and
means for conveying from said optical waveguide an optical output signal having a plane of polarization that is controlled by the presence or absence of said optical control signal.

5,283,844

MONOLITHIC ACTIVE WAVEGUIDE OPTICAL CROSSBAR SWITCH

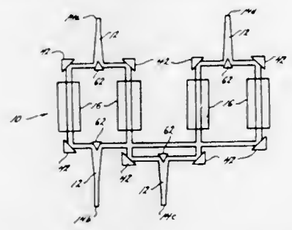
Robert R. Rice, Chesterfield; Mark S. Zediker, Florissant; Chester L. Balestra, Ellisville, and Allen Priest, University City, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 5, 1992, Ser. No. 846,578

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—17 **20 Claims**

1. An optical crossbar switch, comprising:
a) a semiconductor substrate;
b) a plurality of semiconductor layers, positioned upon said semiconductor substrate, having an active layer therein forming a semiconductor waveguide for propagating optical signals, said active layer having a first semiconductor layer of a first conductive type on a first side and a second semiconductor layer of a second conductive type on a second side, said first and second semiconductor layers having a greater and smaller refractive indices, respectively than said active layer to provide transverse confinement for the optical signals;
c) interconnection means for connecting multiple sections of the semiconductor wave guide wherein said semiconductor waveguide forms a plurality of first ports and a plurality of second ports, said first and second ports capable of receiving and emitting optical signals, each first port being



interconnected via the semiconductor waveguide with every second port; and
d) a plurality of excitation means positioned along the semiconductor waveguide forming a switching means which interconnect each first port with each second port, each of said excitation means having a first on state in which energy is applied to said excitation means such that said optical signals may be transmitted in the active layer through said semiconductor waveguide underlying said switching means with no loss in signal strength and a second off state in which no energy is applied to said switching means such that said optical signal is significantly attenuated in the portion of said semiconductor waveguide underlying said switching means.

5,283,846

OPTICAL ISOLATOR, OPTICAL CIRCUIT, AND RARE-EARTH-DOPED FIBER OPTICAL AMPLIFIER

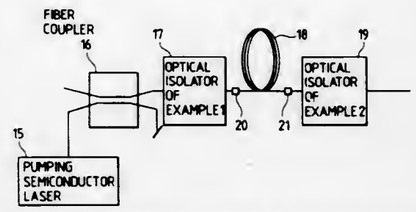
Takashi Toyonaka, Hachiouji; Shinji Tsuji, Hidaka; Makoto Haneda, Takasaki, and Yuichi Ono, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,556

Claims priority, application Japan, Jun. 21, 1991, 3-150094

Int. Cl.[5] G02B *6/32*

U.S. Cl. 385—27 **9 Claims**



1. An optical amplifier comprising a rare-earth-doped fiber, a pumping light source, an optical circuit which can couple pumping light from said pumping light source and an optical signal from a transmission fiber, and at least one optical isolator connected to said rare-earth-doped fiber, wherein the transmission fiber is connected to one of an input side single-mode fiber and an output side single-mode fiber of said optical isolator, said rare-earth-doped fiber is connected to the other single-mode fiber of said optical isolator, the mode field diameter of said one single-mode fiber is equal to the mode field diameter of said transmission fiber, and the mode field diameter of said other single-mode fiber is equal to the mode field diameter of the base material fiber of said rare earth-doped fiber.

5,283,845

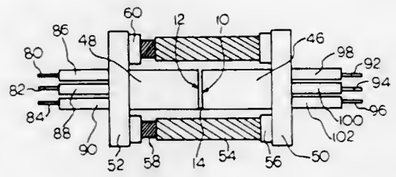
MULTI-PORT TUNABLE FIBER-OPTIC FILTER

Joseph W. Ip, Kanata, Canada, assignor to JDS Fitel Inc., Nepean, Canada

Filed Jul. 20, 1992, Ser. No. 915,249

Int. Cl.[5] H01S *3/30;* **G02B** *6/32*

U.S. Cl. 385—24 **13 Claims**



1. A multi-port tunable fiber-optic etalon filter comprising:
a single etalon having two partially reflective mirrors, mounted in parallel spaced-apart relationship to form a gap between the mirrors;
means for varying the effective gap between said mirrors; and
at least three fiber ports optically coupled to said etalon filter, at least two ports connected to one mirror and at least one port connected to the other mirror; the ports positioned such that optical beams extending through the filter having a non-zero incidence angle.

5,283,847

METHOD OF MANUFACTURING AND EVALUATING AN OPTICAL FIBER COUPLER AND APPARATUS THEREFOR

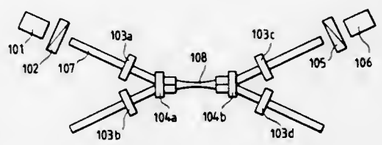
Eisuke Sasaoka, and Tetuya Kawakami, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 1, 1992, Ser. No. 937,720

Claims priority, application Japan, Sep. 9, 1991, 3-228913; Oct. 25, 1991, 3-306609

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—43 **27 Claims**



1. A method of manufacturing an optical fiber coupler comprising the sequential steps of:
heating a plurality of polarization maitaining, optical fibers having a main line fiber and a branch line fiber to conjoin together through fusion and elongated thereby to constitute a tapered portion of the coupler;
positively twisting said tapered portion of the coupler; and
housing and securing said tapered portion as said portion remains positively twisted.

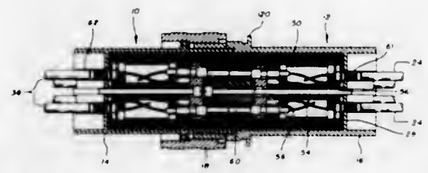
VOL 1159 ISS 1 FEB 1 1994 UMI

5,283,848

CIRCULAR MULTI-FIBER FIBER-OPTIC CONNECTOR

Frederic H. Abendschein, Columbia; Edmund J. Haley, Dillsburg; Alan E. Plotts, Harrisburg, and Robert N. Weber, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 23, 1992, Ser. No. 995,724
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—59 **11 Claims**



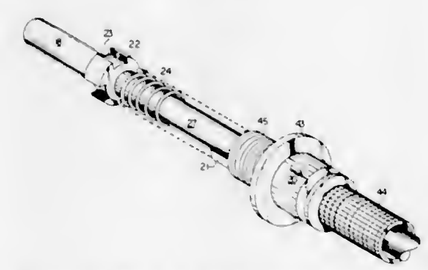
8. A fiber optic system, comprising:
an outer shell;
a cartridge mounted within and to said shell;
said cartridge having a radial front flange and a plurality of fiber-optic terminals extending axially in positions circumferentially spaced about said front flange;
an optical fiber secured to each of said terminals;
a radially-extending rear flange on said cartridge, spaced apart rearwardly of said front flange to enable the fibers to freely flex within the connector, said front flange having a plurality of fiber-holding members mounted thereon and spaced about its periphery, for fixedly securing different ones of said fibers with respect to said shell;
said terminals each being mounted for limited axial motion with respect to said forward flanges, and being spring-biased forwardly;
each of said fibers extending rearwardly from said terminals through one of said fiber-securing members which is not axially aligned with the terminal to which said each fiber is secured.

5,283,849

OPTICAL CONNECTOR PREASSEMBLY

Terry L. Cooke, Hickory, and Mark W. Spriggle, Taylorsville, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Feb. 1, 1993, Ser. No. 11,589
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—77 **3 Claims**



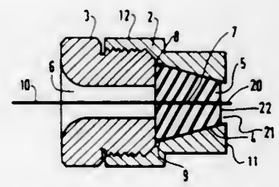
3. Apparatus used in an optical connector assembly, comprising:
a rigid tubular ferrule holder having a slotted outer flange between first and second holder terminal ends, a light waveguide ferrule on the first holder terminal end and heat shrinkable tubing secured over the second holder terminal end;
a rigid tubular latching body carried on the heat shrinkable tubing and having an outer flange between a first latching body terminal end and an outwardly knurled second latching body terminal end, said first latching body terminal end having first engagement means for engaging the slotted outer flange of the ferrule holder to prevent rotation of the latching body with respect thereto and a second engagement means;
a coil spring carried on the ferrule holder over the heat shrinkable tubing;
a rigid tubular end member having an outer flange and a terminal end having third engagement means for engaging the second engagement means of the latching body; and,
a rigid tubular outer member carried between the outer flanges of the latching body and the rigid tubular end member.

5,283,850

OPTICAL FIBER CONNECTOR WITH DEFORMABLE NON-METALLIC SLEEVE

Alain Souloumiac, 71, rue Bichat, FR-75010 Paris, France

PCT No. PCT/FR91/00653, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO92/02836, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 7, 1991, Ser. No. 852,175
Claims priority, application France, Aug. 7, 1990, 90 10068
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—84 **9 Claims**



1. An optical fiber connector for receiving at least one end of an optical fiber having a front end for optical connection, the connector comprising:
a rigid tubular connector body having a front reference face defining a reference plane, a rear end and a cavity; and,
a deformable non-metallic sleeve having a front end and a longitudinal bore for receiving said fiber, said sleeve being inserted in said cavity wherein the transverse and axial positioning of the optical fiber are provided by said flexible sleeve without any direct contact between the rigid tubular connector body and the optical fiber and wherein the front face of said flexible sleeve once mounted inside said cavity is set back relative to said reference plane, the front face of said optical fiber projecting beyond the front face of said flexible sleeve up to the limit of the reference plane.

5,283,851

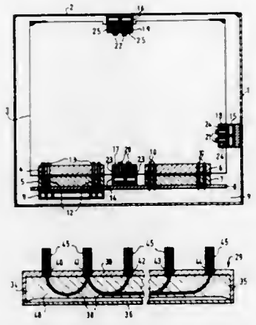
OPTICAL INTERCONNECTION STRIP

Claude Vergnolle, Limours, France, assignor to Thomson-CSF, Puteaux, France

Filed Sep. 21, 1992, Ser. No. 947,797
Claims priority, application France, Oct. 8, 1991, 91 12348
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—134 **23 Claims**

1. An optical strip to interconnect a set of printed circuit boards (3) mounted in a housing (1), the strip comprising:
a U-section (29) mounted alongside and against one edge of the printed circuit boards (3) with its back (30) turned towards the circuit boards (3), the section having two lateral flanges (31 and 32) and containg apertures (39, . . . , 44) drilled at the same pitch as the printed circuit boards (3) are spaced and

optical fibers (37 and 38) placed in the U-section (29) and running from one aperture (39, . . . , 44) to another, each aperture (39, . . . , 44) in the back (30) of the U-section (29)



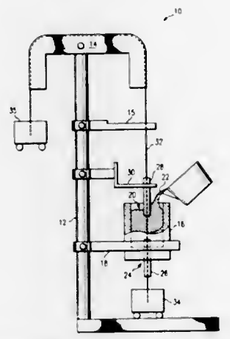
accomodating one or several optical fiber (37, 38) ends positioned opposite half an optical connector mounted on the edge of one of the set of printed circuit boards (3).

5,283,852

APPARATUS AND METHOD FOR EMBEDDING OPTICAL FIBERS IN METAL

William N. Gibler, Bryan; Robert A. Atkins, College Station; CHung-Eun Lee, College Station, and Henry F. Taylor, College Station, all of Tex., assignors to The Texas A & M University System, College Station, Tex.

Filed Aug. 7, 1992, Ser. No. 926,756
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—136 **21 Claims**



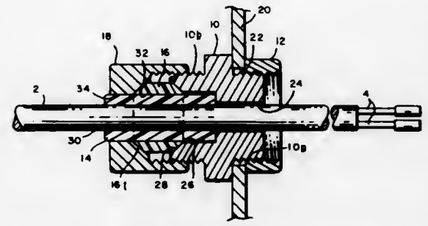
13. Apparatus having embedded optical fibers, comprising:
a first tube through which at least one of said optical fiber passes; and
a metallic component having a first end and embedding said first tube and said optical fiber. said first tube extending partially beyond said first end of said metallic component, and said optical fiber extending beyond said first end of said metallic component, said optical fiber comprising an optical sensor.

5,283,853

FIBER OPTIC END CONNECTOR

Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc. Inc., Manlius, N.Y.

Filed Feb. 14, 1992, Ser. No. 836,079
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—139 **16 Claims**



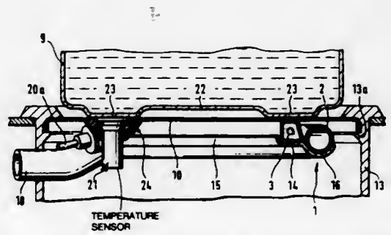
1. A connector for connecting a tubular support structure associated with a fiber optic cable to a terminal of a signal processing device, said tubular support structure enclosing at least one optic fiber, said connector comprising:
a housing member having a front end and a rear end, said housing member defining a first passageway extending from said rear end to said front end for axially passing said tubular support structure therethrough;
coupling means threadedly engageable with the front end of said housing for coupling said housing member to said terminal;
flexible clamp means at least partially received within said first passageway at said front end and adapted to at least partially surround said tubular support structure;
clamp adjustment means threadedly engageable with said rear end; and
compression means responsive to threaded engagement of said clamp adjustment means with the rear end of said housing for radially inwardly urging said clamp means from an expanded state accommodating axial passage of said tubular support structure through said housing into a constricted state fixedly securing said tubular support structure with respect to said housing.

5,283,854

CONTINUOUS FLOW HEATER CONTROL SYSTEM FOR AN APPARATUS FOR MAKING INFUSION BEVERAGES

Heinz Schiebelhuth, Frankfurt am Main, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 7, 1992, Ser. No. 880,184
Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4116618
Int. Cl.[5] H05B *1/02*; A47J *31/057, 31/56*; F24H *1/14*
U.S. Cl. 392—467 **15 Claims**



1. A continuous flow heater for an apparatus for making infusion beverages comprising a water pipe and an electrically

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operated heating element which simultaneously heats a warming plate and the water pipe, the brewing process taking place in that cold water out of a supply tank flows via an inlet opening into the water pipe, is heated there and is supplied by vapour pressure through an outlet opening to a brewing unit to perform a brewing process, from which the infusion beverage exits into a storage tank in which, upon completion of the brewing process, the beverage is further kept warm by the warming plate in a temperature-controlled fashion during a keep-warm process, comprising a thermostat which is electrically connected in series with the heating element and is in good thermal contact with the continuous flow heater, the said thermostat remaining always closed during the brewing process even if the water pipe is moderately calcified and reaching its opening temperature only upon completion of the brewing process whereupon it acts as an opened electric switch, while after its consequently occurring cooling to its closing temperature it acts as a closed electric switch again, whereby the commencement of the keep-warm process is determined, characterised in that, in electric series connection to the thermostat (12), another electric switching element (26), having an open and a closed position is connected which is always closed in the brewing process and can be opened and closed again in the keep-warm process by a control circuit (11) which, in turn, comprises a temperature sensor (21) which is in good heat contact with the storage tank containing the infusion beverage, in that in the event that at the commencement of the keep-warm process the sensor temperature is in excess of a predefinable switching temperature, the control circuit (11) keeps the switching element (26) in its open position for as long as the sensor temperature in the course of the consequently occurring cooling of the infusion beverage remains in excess of the switching temperature, in that in the event that the sensor temperature is less than or equal to the switching temperature of the switching element (26), the control circuit (11) in the keep-warm process always keeps the switching element (26) in its closed position for a predefinable first length of time defining a heating cycle irrespective of the sensor temperatures occurring during the heating cycle, the said heating cycle being timed so short that the temperature of the thermostat (12) always remains below its opening temperature, and in that upon completion of a heating cycle the control circuit (11) opens the switching element (26) and keeps it open for a predefinable dead time irrespective of the temperature measured by the temperature sensor (21) after the end of the heating cycle.

5,283,855

NEURAL NETWORK AND METHOD FOR TRAINING THE NEURAL NETWORK

Shuji Motomura; Toshiyuki Furuta, and Hirotoshi Eguchi, all of Yokahama, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,952

Claims priority, application Japan, Nov. 22, 1990, 2-320472; Apr. 23, 1991, 3-091876; Jul. 19, 1991, 3-203420

Int. Cl.[5] 395 *23, 27, 24*

U.S. Cl. 395—27 **31 Claims**

9. A neuron network comprising:

an input layer;

an output layer; and

at least one hidden layer located between said input layer and output layer,

wherein the input layer, hidden layer and output layer each respectively includes at least one neuron unit, neuron units arranged at subsequent layers being interconnected to each other via a synapse, an input signal to be supplied to each neuron unit in hidden layers and output layer, said input signal being weighted by a weight of a corresponding synapse whereby each neuron unit receives weighted input signals, and

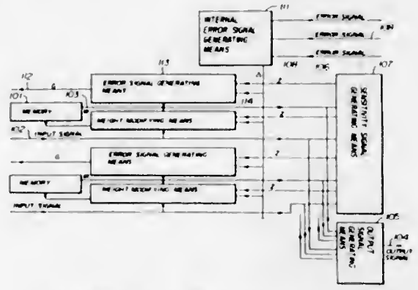
wherein each neuron unit comprises:

output signal generating means for generating an output signal from a plurality of weighted input signals, said means including further means for separating the plurality of weighted input signals into more than one group, for summing up weighted input signals in each group to provide each group's intermediate output signals, and for processing the intermediate output signals to produce an output signal of the neuron unit;

internal error signal generating means for generating an internal error signal for each neuron unit in the output layer which is representative of a difference between a desired output signal and an actual output signal of the neuron unit at the output layer;

internal error generating means for generating an internal error signal for each neuron unit in hidden layers by summing error signals backpropagated to the neuron unit from neuron units in other layers;

sensitivity generating means for generating a sensitivity signal, said sensitivity signal being representative of a



partial differential coefficient that is the result of successively partially differentiating the output signal of the neuron unit with respect to each weighted input signal;

error signal generating means for generating error signals, by electronically processing the sensitivity signal for the synapse, the internal error signal, and the weight for the synapse; and

back-propagation means, coupled to said error signal generating means, for back-propagating each of said error signals through each synapse; and

weight modifying means, coupled to said internal error signal generating means and sensitivity signal generating means, for modifying each weight of a weighted input signal of said neuron unit, by electronically processing the internal error signal and sensitivity signal of said neuron unit.

5,283,856

EVENT-DRIVEN RULE-BASED MESSAGING SYSTEM

Kevin C. Gross, Belmont; Charles J. Digate, Boston, and Eugene H. Lee, Cambridge, all of Mass., assignors to Beyond, Inc., Cambridge, Mass.

Filed Oct. 4, 1991, Ser. No. 771,197

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—51 **19 Claims**

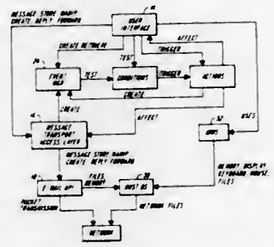
1. Apparatus for manipulating information in a rule based messaging system comprising:

a rule processor for processing information at said apparatus in accordance with a plurality of rules;

at least one of said rules having a first portion consisting of an event indicia, a second portion consisting of a condition indicia and a third portion consisting of an action indicia;

an event generator operative to indicate an occurrence of one of a plurality of events including physical occurrences relating to said information in said rule based system, said event generator including an event manager prioritizing said plurality of events and at least one event queue storing selected ones of said plurality of events for processing by said event manager;

said rule processor being operative to compare each of said plurality of events to said first portion of said at least one of said rules to determine if said event indicia specifies said occurrence of one of said plurality of events which results in further processing of said at least one rule, and said rule processor being operative to evaluate said second portion of each of said plurality of rules for which there is a correspondence between a respective one of said plurality of



events and said first portion of a respective rule to determine if said condition indicia specifies conditions that are true resulting in still further processing of said at least one rule,

an action processor operative to invoke at least one action with respect to information being processed in accordance with said third portion of said respective rule upon satisfaction of said at least one condition specified n said second portion of said respective rule.

5,283,857

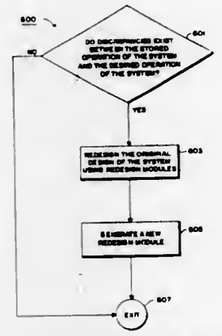
EXPERT SYSTEM INCLUDING ARRANGEMENT FOR ACQUIRING REDESIGN KNOWLEDGE

Evangelos Simoudis, Marlboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 735,320, Jul. 24, 1991, abandoned, which is a division of Ser. No. 270,893, Nov. 14, 1988, abandoned. This application Jan. 8, 1993, Ser. No. 1,911

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—77 **10 Claims**



1. A method of redesigning a system performed by a data processor, comprising the steps of:

identifying a discrepancy between the desired operation of the system and the expected operation of a design representation of the system stored in memory in the data processor;

selecting a redesign module stored in the memory and associated with the identified discrepancy to be a candidate to redesign the system to eliminate the identified discrepancy;

redesigning the system by modifying the design representation of the system according to a first sequence of redesign operators generated by the selected redesign module upon a decision that the first sequence of redesign operators is appropriate for redesigning the system;

generating a new redesign module associated with the identified discrepancy and containing the redesign operators from a second sequence of redesign operators to be specified upon a decision that the first sequence of redesign operators is not appropriate for redesigning the system;

storing the new redesign module in the memory to be available as a candidate to redesign the system to eliminate the discrepancy; and

redesigning the system by modifying the design representation of the system according to a third sequence of redesign operators generated by the new redesign module.

5,283,858

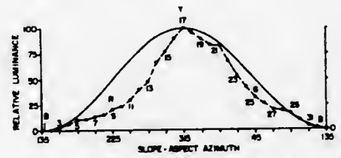
CONTINUOUS HIERARCHICAL SLOPE-ASPECT COLOR DISPLAY FOR PARAMETRIC SURFACES

Harold J. Moellering, Columbus, Ohio, and A. Jon Kimerling, Corvallis, Oreg., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 331,929, Mar. 31, 1989, Pat. No. 5,067,098. This application Mar. 16, 1990, Ser. No. 495,564

Int. Cl.[5] G06F *15/62;* **G09B** *29/12*

U.S. Cl. 395—126 **6 Claims**



RELATIVE LUMINANCES OF COLORS SELECTED FOR A 32 CLASS ASPECT MAP.

3. A method for generating an image on a two dimensional surface from which light is radiated to an observer to give a three dimensional relief appearance, the image having a selected light origin azimuth and representing a three dimensional surface which has been subdivided into an array of contiguous surface elements on a positional coordinate system, each of the elements being defined by stored data including at least two positional coordinate parameters and an additional parameter, the method comprising:

(a) subdividing the entire 360 degree universe of aspect azimuth into a plurality of contiguous, angular aspect intervals;

(b) assigning to each aspect interval a different color, each color having, in the HLS color system, a maximum saturation, an intermediate lightness, and a hue of:

(i) yellow for the aspect interval, which includes the light origin azimuth, (ii) blue for the diametrically opposite aspect interval;

(ii) a hue selected from red and green for a third aspect interval, which is orthogonal to the first and second intervals;

(iv) the hue from red and green which is not selected for the third aspect interval for a fourth aspect interval, which is diametrically opposite the third interval; and

(v) assigning to remaining, interposed intervals, colors which are perceived as being combinations of the interval's bounding two of said four colors and which are arranged progressively between the bounding colors to have perceived proportional mixtures of the bounding colors proportional to the interval's angular distance from them and having an intermediate lightness;

wherein the lightness for each hue is selected to be approximately in the range of 25% to 60% and arranged approxi-

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mately as a cosine function of its aspect interval, the cosine function having the peak lightness at yellow;

(c) determining the aspect of the slope of each element from said stored data and then determining for each element the aspect interval in which the element's aspect lies; and

(d) displaying for each element, as its coordinate position on the image, the above assigned color for its aspect interval.

5,283,859

METHOD OF AND SYSTEM FOR GENERATING IMAGES OF OBJECT TRANSFORMS

Peter Quarendon, Romsey, and Stephen J. P. Todd, Winchester, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

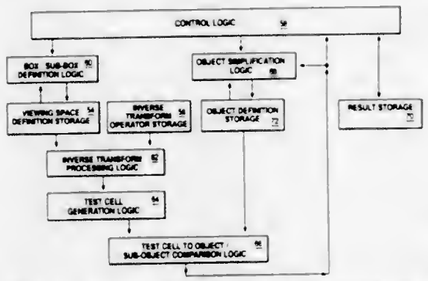
Continuation of Ser. No. 86,764, Aug. 18, 1987, abandoned. This application Aug. 31, 1989, Ser. No. 403,848

Claims priority, application United Kingdom, Sep. 3, 1986, 8621256

The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] **G06F** *15/72*

U.S. Cl. 395—127 **10 Claims**



10. A graphics processing system for generating a two-dimensional image as viewed in a viewing direction from a viewing point of a three-dimensional solid object including:

first storage means (72) for a functional representation of the object (46) defined with respect to world space;

second storage means (54) for a functional representation of a three-dimensional box (48) defining viewing space;

third storage means (56) for an inverse transform operator which is the inverse of the transform operation which would need to be performed on the object in order that its transform could lie within the box in viewing space; and

processing means (58, 60, 62, 64, 66, 68) for subdividing the box in transform space into progressively smaller sub-boxes until sub-boxes are created whose frontal area corresponds to at least a desired resolution,

for generating test-cells in object space by performing the inverse transform operations on sub-boxes using the inverse transform operator,

for determining, for each row of sub-boxes having said frontal area corresponding to at least a desired resolution, said rows extending in said box parallel to the viewing direction and being associated with corresponding pixels in the array forming the image, which is the sub-box, if any, nearest in that row to the viewing point whose corresponding test-cell intersects the object; and

for storing results storage (70) the setting of the color and/or intensity for the pixels associated with the respective rows appropriate to the determination of the nearest sub-box for each row.

5,283,860

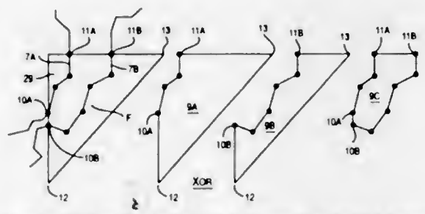
SYSTEM AND METHOD FOR DISPLAYING TRIMMED SURFACES USING BITPLANE MASKING

Mark A. Einkauf, Leander, Tex.; Jaroslaw R. Rossignac, Ossining, N.Y.; Michael T. Vanover, Austin, Tex., and Jeffrey Wu, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1990, Ser. No. 614,352

Int. Cl.[5] **G06F** *15/72*

U.S. Cl. 395—134 **18 Claims**



1. A method of displaying, on a computer graphics system, a trimmed surface defined by a surface description and at least one trimming curve, said method comprising the steps of:

tessellating the surface to be trimmed into a plurality of polygons;

determining whether said at least one trimming curve intersects any of said polygons;

creating at least one mask, based upon the intersection of said at least one trimming curve with an intersected one of said polygons; and

comparing said intersected polygon with said mask.

5,283,861

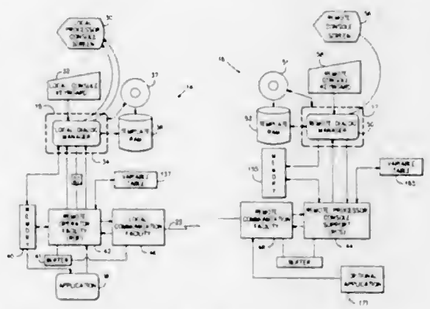
REMOTE CONTROL OF A LOCAL PROCESSOR CONSOLE

Mary K. Dangler, Endicott, and Samuel L. Wentz, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 575,746

Int. Cl.[5] **G06F** *15/401*

U.S. Cl. 395—149 **13 Claims**



1. A computer system comprising:

a first processor console including a first display screen and a first keyboard means for entering first data;

first storage means, local to and serving said first processor console, for storing at least one panel template containing fixed panel information for display on said first display screen;

a second processor console including a second display screen, a second keyboard means for entering second data, and memory means for storing said second data;

second storage means, local to and serving said second processor console, for storing at least one panel template containing fixed panel information for display on said second display screen;

communication facility means, coupling said first processor console to said second processor console, for supporting communication between said first processor console and said second processor console;

first means, resident within said first processor console, for transmitting to said second processor console via said communication facility means an identification of a panel template for display on said second display screen; and

second means, resident within said second processor console and coupled to said memory means, for receiving said panel template identification, determining if said panel template identification identifies a panel template stored in said second storage means, and

if so, controlling said second display screen to display the identified panel template, and

if not, requesting transmission of said identified pane template from said first storage means, said first means receiving and responding to said request from said second means by transmitting said identified panel template to said second storage means via said communication facility means, said second means fetching said identified panel template transmitted by said first means and stored in said second storage means and controlling said second display screen to display said identified panel template; and wherein

said second means fetches said second data from said memory means and controls said second display screen to merge and display said second data with said identified panel template, and sends said second data to said first processor console via said communication facility means, said second means controlling said second display screen to merge and display said second data with said identified panel template in response to the entering of said second data from said second keyboard means without direction from said first processor console to merge and display said second data with said identified panel template;

said first means determines if variable information instead of said second data shall be merged and displayed with said identified panel template on said second display screen based on said second data received from said second processor console, and

if so, sends said variable information to said second processor console, and said second means receives said variable information and controls said second display screen to merge and display said variable information with said identified panel template, and

if not, does not send said variable information to said second processor console and said second data remains displayed.

5,283,862

NOTEBOOK COMPUTER WITH REVERSIBLE COVER FOR EXTERNAL USE OF MEMBRANE SWITCH SCREEN

Alan K. Lund, 4165 Lafayette Pl., Lee's Summit, Mo. 64063

Continuation of Ser. No. 612,956, Nov. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 420,047, Oct. 11, 1989, abandoned. This application Apr. 16, 1993, Ser. No. 48,900

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—155 **20 Claims**

1. A portable computer unit comprising:

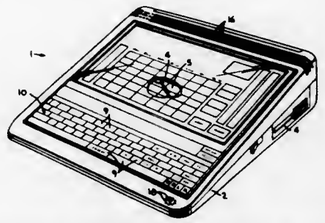
(a) a portable computer housing;

(b) computer means positioned in said housing;

(c) flat panel display means interfaced to said computer means;

(d) a transparent data entry array interfaced to said computer means and overlayed on said display means; and

(e) closure panel means having said display means and said array mounted thereon on one side and reversibly hingedly connected to said housing in such a manner as to enable said closure panel means to be pivotally positioned in a first position in overlying relation to said housing with said display means facing away from said housing for use of said data entry array and alternatively to be pivotally positioned in a second position in overlying relation to



said housing with said display means facing toward said housing, said computer housing means and said closure panel means incorporating electrical connecting means adapted to electrically connect said display means and said data entry array to said computer means in both said first and said second positions.

5,283,863

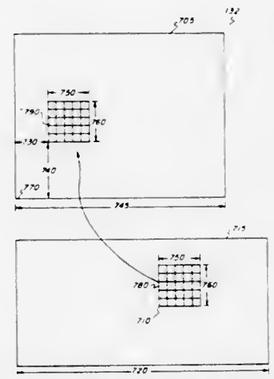
PROCESS FOR EFFECTING AN ARRAY MOVE INSTRUCTION, A GRAPHICS COMPUTER SYSTEM, A DISPLAY SYSTEM, A GRAPHICS PROCESSOR AND GRAPHICS DISPLAY SYSTEM

Karl M. Guttag, Houston; Michael D. Asal, Sugarland, both of Tex., and Mark F. Novak, Ypsilanti, Mich., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 631,744, Dec. 20, 1991, Pat. No. 5,077,678, which is a continuation of Ser. No. 422,427, Nov. 21, 1989, abandoned, which is a continuation of Ser. No. 317,043, Feb. 24, 1989, abandoned, which is a continuation of Ser. No. 790,299, Oct. 22, 1985, abandoned. This application Nov. 20, 1991, Ser. No. 797,488

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—157 **22 Claims**



1. A process for effecting an array move instruction otherwise moving each source data from a location in a source array to a location in a destination array, said process comprising:

A. reading an address of a selected location in said destination array;

B. testing in special graphics hardware circuits whether said selected location in said destination array is within a defined window within said destination array;

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C. determining whether a window interrupt mode is set upon said selected location in said destination array being outside said defined window; and

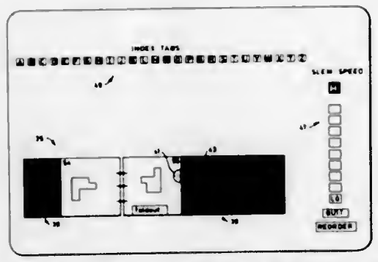
D. aborting said effecting an array move instruction upon said window interrupt mode being set and said selected location in said destination array being outside said defined window.

5,283,864

COMPUTER APPARATUS AND METHOD FOR GRAPHICAL FLIP BOOK

Kenneth C. Knowlton, Merrimack, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 30, 1990, Ser. No. 605,617
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—158 **27 Claims**



1. In a data processing system having a digital processor and a display unit for displaying screen views, computer apparatus comprising:

means, coupled to said display unit, for displaying a multiplicity of entities in a screen view, each entity providing data desired to be displayed, the entities being displayed simultaneously and ordered in a series and aligned with each other, each entity displayed partially overlapping at least one of a respective succeeding entity and a respective preceding entity in at least one display of the series, such that edge portions of entities are non-overlapped and viewable, said edge portions serving as non-overlapped portions of the entities and displaying non-overlapped contents of the entities, entities in the series having a currently displayed entity which is non-overlapped and which has a predetermined number of immediate succeeding and preceding entities having wider exposed edge portions than edge portions of entities beyond the predetermined number of succeeding and preceding entities in the ordered series;

means for indicating a user-desired entity, by user selection of a non-overlapped portion of the desired entity; and

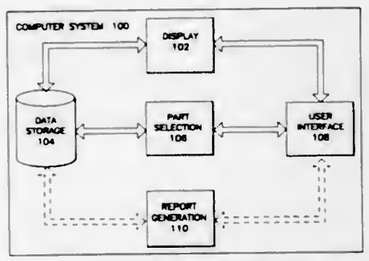
processor means for controlling said displaying means to display the user-desired entity non-overlapped in the series by changing display of the series from a screen view of the currently displayed entity in the series having the user-desired entity partially overlapped by at least one of a preceding and succeeding entity, through intermediate screen views of entities in the series to a screen view the user-desired entity in of the series having each entity succeeding the user-desired entity in the series partially overlapping a respective succeeding entity and each entity preceding the user-desired entity in the series partially overlapping a respective preceding entity.

5,283,865

COMPUTER-ASSISTED PARTS SALES SYSTEM

Jerome D. Johnson, Mankato, Minn., assignor to Clear With Computers, Inc., Mankato, Minn.

Continuation of Ser. No. 435,809, Nov. 13, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 959,525
Int. Cl.[5] G06F *15/24, 3/00*
U.S. Cl. 395—161 **13 Claims**



1. A computerized system for selling parts for particular equipment specified by a customer, comprising:

a) input means for receiving information identifying a customer's parts requirements for the equipment, comprising:

i) means for receiving at least a portion of a manufacturer's part number; and

ii) means for receiving equipment application information, comprising an identification of the equipment with which one or more parts are to be used;

b) storage means for electronically specifying information identifying a plurality of parts and specifications for the parts;

c) processing means, operatively coupled to the input means and the storage means, for gathering parts-related information for one or more parts within the plurality of parts which meets the customer's requirements, comprising:

i) first cross-referencing means for electronically associating at least one of the parts within the plurality of parts with the received portion of a manufacturer's part number; and

ii) second cross-referencing means for electronically associating at least one of the parts within the plurality of parts with the received equipment application information; and

d) output means, operatively coupled to the processing means, for receiving the gathered parts-related information and for compiling the parts-related information into a proposal meeting the customer's requirements.

5,283,866

IMAGE PROCESSING SYSTEM

Ryohei Kumagai, Tama, Japan, assignor to Ezel, Inc., Tokyo, Japan

Continuation of Ser. No. 217,544, Jul. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 141,534, Jan. 7, 1988, abandoned. This application Oct. 24, 1990, Ser. No. 602,379
Claims priority, application Japan, Jul. 9, 1987, 62-171790; Jul. 9, 1987, 62-171791; Oct. 9, 1987, 62-255511; Oct. 19, 1987, 62-263265; Oct. 20, 1987, 62-264797; Oct. 22, 1987, 62-266718; Oct. 22, 1987, 62-266720; Nov. 2, 1987, 62-278039; Feb. 9, 1988, 63-27935
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **37 Claims**

1. An image processing system, comprising:

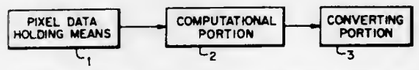
input means for receiving an image formed of input pixel data;

computational means, receiving said input pixel data, for calculating a parameter indicative of image processing from said input pixel data for each predetermined convolution area of said image, said convolution area being an area on which an image processing operation will be performed, said computational means comprising:

a) multiplication means, having a plurality of inputs, each receiving one data indicative of one pixel from said input means, and having a plurality of outputs, said multiplication means for multiplying each input by a weighting factor, and providing a weighted output for each result of multiplication;

b) logic means, coupled to receive at least two outputs of said multiplication means and to produce an output which is a logical operation between said at least two outputs, from the group consisting of AND, OR, EX-OR, NOP, NAND, NOR, EX-NOR, NOT or combinations thereof;

c) selecting means, coupled to receive said weighted outputs and an output of said logic means at inputs thereof, for selecting ones of said weighted outputs and coupling them to outputs of said selecting means, a connection between



inputs and outputs of said selecting means being changeable, and

d) operation means, having inputs coupled to outputs of said selecting means, for performing a predetermined mathematical operation on values which are coupled to its inputs by said selecting means, to produce a lesser number of outputs than a number of said inputs, and producing said parameter based thereon; and

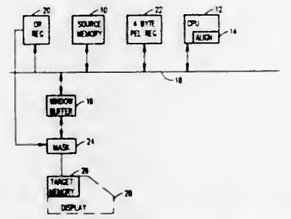
converting means for converting at least one of said parameter and said input pixel data into image processing data and for calculating an integration of said image processing data in accordance with said parameter indicative of image processing, said converting means including high speed memory means having a plurality of addresses for high speed storage of data during said conversion of said input pixel data, whereby a number of data the same as a number of addresses are simultaneously stored in said high speed memory.

5,283,867

DIGITAL IMAGE OVERLAY SYSTEM AND METHOD

Michael W. R. Bayley, San Jose, and Peter C. Yanker, Portola Valley, both of Calif., assignors to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 366,962, Jun. 16, 1989, abandoned. This application Jun. 9, 1992, Ser. No. 898,377
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **7 Claims**



7. In a data processing system for transferring Pel bits of display data from a bit-planar, byte organized source memory through an N byte window buffer, to a display memory, the combination comprising:

(a) register means for aligning N multi-bit Pel values from said source memory;

(b) bit mask means having a position corresponding to each multi-bit Pel value in said window buffer;

(c) logic means for ORing all bits in each multi-bit Pel value to determined non-zero multi-bit Pel values, and setting said bit mask means to pass such non-zero multi-bit Pel values; and

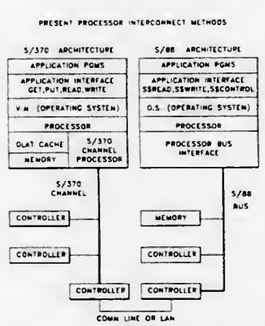
(d) means controlled by said bit-mask means for writing only said non-zero multi-bit Pel values from said window buffer into said display memory, whereby zero-value multi-bit Pel values are prevented from altering multi-bit Pel values stored in said display memory.

5,283,868

PROVIDING ADDITIONAL SYSTEM CHARACTERISTICS TO A DATA PROCESSING SYSTEM THROUGH OPERATIONS OF AN APPLICATION PROGRAM, TRANSPARENTLY TO THE OPERATING SYSTEM

Ernest D. Baker, Boca Raton; John M. Dinwiddie, Jr., West Palm Beach; Lonnie E. Grice; James M. Joyce, both of Boca Raton; John M. Loffredo, Deerfield Beach, and Kenneth R. Sanderson, West Palm Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 17, 1989, Ser. No. 353,111
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—200 **26 Claims**



1. A method of processing of I/O functions of application programs being executed on a first central processing element and its associated first operating system in a first data processing system which is lacking a predetermined characteristic comprising the steps of

directly coupling the first central processing element to a second central processing element which forms a part of a second data processing system having said characteristic and including I/O devices and facilities coupled to the second processing element and addressable by an associated second operating system and indirectly addressable by a programmer via requests to the second operating system;

transferring, under the control of a predetermined second application program executed on the second processing element, I/O commands and data of first application programs being executed on the first processing element from the first processing element to the second processing element via said direct coupling in a manner which is transparent to the second operating system; and

converting in one of said data processing systems said I/O commands and data to commands executable by and data useable by said second processing element and its second operating system so that I/O functions of programs being executed on the first processing element and its first operating system are available for processing in the second

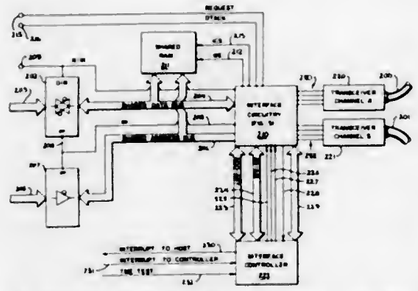
VOL 1159 ISS 1 FE 1 1994 UMI

data processing system under control of the second operating system having said predetermined characteristic.

5,283,869
INTERRUPT STRUCTURE FOR NETWORK INTERFACE CIRCUIT

Shawn L. Adams, Ann Arbor, and Jonathan R. Engdahl, Saline, both of Mich., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jul. 25, 1989, Ser. No. 384,614
Int. Cl.[5] G06F *9/00*; H04J *3/24*
U.S. Cl. 395—200 **4 Claims**

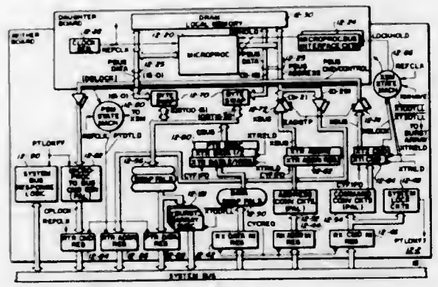


1. A communications interface circuit which comprises:
a protocol machine coupled to a communications link and being operable to transmit and receive message data on said communications link;
an interface controller coupled to the protocol machine;
communication interrupt means connected to a host processor for generating an interrupt to the interface controller;
a shared memory coupled to the host processor and the interface controller for storing message data received by the protocol machine for reading by the host processor, and for storing message data from the host processor for transmission by the protocol machine;
means coupled to the host processor and the interface controller for storing a handshake segment which contains a set of host interrupt flags and a corresponding set of acknowledge flags, and as set of interface interrupt flags and a corresponding set of acknowledge flags;
the interface controller includes first means for toggling one of said host interrupt flags and producing an interrupt to the host processor, and second means which is responsive to the interrupt to the interface controller generated by the communications interrupt means to examine the set of interface interrupt flags for one which has been toggled by the host processor and to toggle the corresponding acknowledge flag; and
in which the message data received by the protocol machine is stored in an indicate FIFO within the shared memory and one of said host interrupt flags is associated with the indicate FIFO, in which the message data from the host processor is stored in a request FIFO within the shared memory and one of said interface interrupt flags is associated with the request FIFO, and
wherein the interface controller is operable in response to the toggling of said one interface interrupt flag to read the message data from the request FIFO and couple it to the protocol machine for transmission on said communications link.

5,283,870
METHOD AND APPARATUS FOR AVOIDING PROCESSOR DEADLY EMBRACE IN A MULTIPROCESSOR SYSTEM

Thomas F. Joyce, Westford, Mass., and James W. Keeley, Nashua, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,296
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—200 **10 Claims**

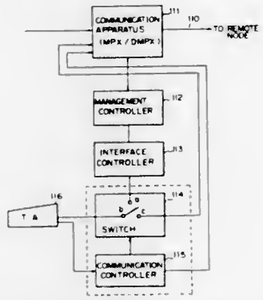


1. A multiprocessor system comprising a system memory, a number of system processors and a number of peer processors, each processor being tightly coupled according to a first protocol and a system memory, each of said peer processors comprising:
a microprocessor;
an on-board local memory;
a synchronous local bus connected for tightly coupling said microprocessor and said local memory together to operate according to a second protocol; and, bus interface circuits coupled to said system bus and to said local bus, said bus interface circuits including:
first transfer means coupled to said system bus and to said synchronous bus for transferring requests of said each of said peer processors received from any one of said system processors and other ones of said peer processors;
second transfer means coupled to said system bus and to said synchronous local bus for transferring requests generated by said microprocessor to said system bus according to said second protocol for reading and writing said system memory or said local memory of another one of said peer processors;
system bus response means coupled to said system bus for generating responses to requests transmitted to or received from said system bus, said response means including on-board memory lock indicator means coupled to said system bus; and,
processor system lock indicator means coupled to said system bus, to said second transfer means and to said system bus response means;
said on-board memory lock indicator being set in response to each memory read lock command generated by one of said processors and received from said system bus which is used for performing a read-modify-write operation on an item of information stored in said local memory in response to each memory read lock command, said first transfer means generating an output signal on said local bus to said microprocessor for inhibiting further accesses by said microprocessor to said local memory until completion of said read-modify-write operation by said local memory; and,
said processor lock indicator means being set in response to a first microprocessor memory read lock request transferred to said system bus by said second transfer means and acknowledged by said system bus response means of a specified one of said peer processors, said processor indicator means when set generating an output lock signal for inhibiting said second transfer means from transferring any further microprocessor memory read lock requests to said system bus until completion of said first read lock request thereby preventing a possibility of a deadlock condition in accessing said on-board local memories of said peer processors.

5,283,871
ROUTING SYSTEM FOR ACCESSING REMOTE NODE IN NETWORK FROM CRAFTMAN'S TERMINAL

Selichi Kobayashi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 16, 1990, Ser. No. 614,513
Claims priority, application Japan, Nov. 17, 1989, 01-297677
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **8 Claims**

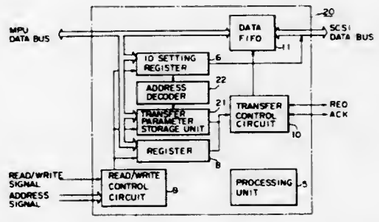


1. A communication system comprising:
a plurality of node elements; and
at least one transmission line, connecting said node elements with each other for transmitting time-division multiplexed signals therebetween, where said time-division multiplexed signal contains at least one overhead channel;
each of said node elements comprising main communication means, connected to said transmission line, transmitting and receiving said time-division multiplexed signals including an overhead channel, containing a multiplexer/demultiplexer means having an overhead signal input/output port for inserting a first overhead signal generated in said each node element which contains said each node element into said overhead channel and dropping down a second overhead signal transmitted from one of the plurality of node elements other than said each node element which contains said each node element from said overhead channel;
management control means for monitoring first information on a status of said main communication means, holding said first information and second information for controlling the main communication means, and controlling the operation of said main communication means based on the first and second information;
data input/output terminal means for accessing said management control means in said each node element which contains the data input/output terminal means by outputting a first command, and for accessing said management control means in one of the plurality of node elements other than said each node element which contains the data input/output terminal means by outputting second and third commands;
switch means, having first, second, and third contacts, where said first contact is connected to said management control means, said second contact is connected to said data input/output terminal means, said third contact is connected to said overhead signal input/output port in said multiplexer/demultiplexer means, and
communication control means, operatively connected to said data input/output terminal means in said each node element which contains the communication control means, and to said overhead signal input/output port in said multiplexer/demultiplexer means, for receiving said first or second command from said data input/output terminal means in said each node element which contains the communication control means, and receiving said third command from one of said plurality of node elements other than said each node element which contains the communication control means through said overhead signal input/output port as said second overhead signal, and controlling said switch means so that said first contact is connected to said second contact when receiving the first command from said data input/output terminal means in said each node element which contains the communication control means, said second contact is connected to said third contact when receiving the second command from said data input/output terminal means in said each node element which contains the communication control means, and said first contact is connected to said third contact when receiving the third command from one of the plurality of node elements other than said each node element which contains the communication control means, where said third command received by said communication control means is transmitted through said overhead channel from said one of the plurality of node elements other than said each node element which contains the communication control means, and in said one of the plurality of node elements, the third command is output from the data input/output terminal means, and transferred through the switch means to the overhead signal input/output port in said one of the plurality of node elements.

5,283,872
SCSI DEVICE HAVING TRANSFER PARAMETER STORAGE MEMORY BLOCKS WHICH CORRESPOND TO EACH APPARATUS

Masatoshi Ohnishi, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Mar. 13, 1991, Ser. No. 668,554
Claims priority, application Japan, Mar. 15, 1990, 2-65133
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—325 **12 Claims**

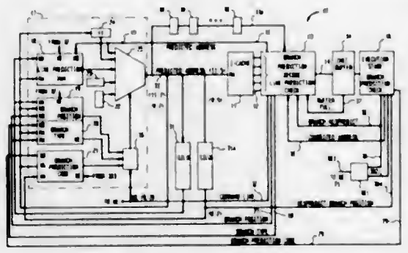


1. A SCSI device in a small computer system including a plurality of apparatuses, each of said apparatuses having a similar SCSI device connected to a microprocessor in the apparatus by a MPU (microprocessor) bus, and each apparatus connected to each other through the SCSI device and a SCSI bus, said SCSI bus carrying a plurality of signals including request signals, acknowledge signals, and data phase start signals with each apparatus having an identification (ID) code, said SCSI device comprising:
an ID setting register (**6**) operatively connected to the MPU bus for setting the ID code of one of said plurality of apparatuses;

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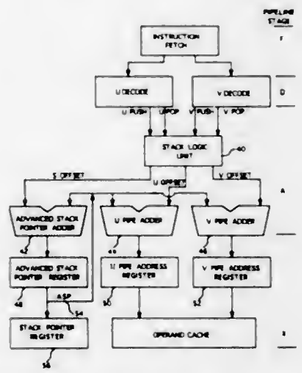
an address decoder (22) operatively connected to the ID setting register for decoding the ID code;
a transfer parameter storage means (21) operatively connected to the MPU bus and the address decoder for storing transfer parameters for all apparatuses constituting the small computer system, said transfer parameter storage means being divided into a plurality of memory blocks equivalent to the number of the apparatuses to store the transfer parameters for each apparatus;
a register (8) operatively connected to the MPU bus for storing data from the MPU bus;
a read/write control means (9) for receiving a read/write signal for an address signal from the microprocessor, and for outputting these signals to the ID setting register, the transfer parameter storage means, and the register;
a data FIFO (11) connected between the SCSI bus and the MPU bus for temporarily storing data; and
a transfer control means (10) operatively connected to the data FIFO and the transfer parameter storage means for controlling the transfer of the data based on a request signal and an acknowledge signal from the SCSI bus.

5,283,873
NEXT LINE PREDICTION APPARATUS FOR A PIPELINED COMPUTED SYSTEM
Simon C. Steely, Jr., Hudson, N.H., and David J. Sager, Acton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 29, 1990, Ser. No. 546,364
Int. Cl.[5] G06F *9/34, 9/38, 9/40*
U.S. Cl. 395—375 **7 Claims**



1. A computer pipeline comprising:
a) an instruction cache storing a plurality of instructions and having an address input and a data output;
b) a next line prediction mechanism coupled to the address input of the instruction cache;
c) a prediction check stage coupled to the data output of the instruction cache;
d) an execution stage coupled to the prediction check stage;
e) the instruction cache outputting at least one of the plurality of instructions in response to application of a preselected address at the address input;
f) the next line prediction mechanism including
1) a next instruction address prediction memory having a plurality of entries, latency of the next instruction address prediction memory being less than the latency of the instruction cache, each one of the plurality of entries storing branch information including a next instruction address, for one of the plurality of instructions;
2) the next instruction address prediction memory including a read address input for input of an instruction address and an output for output of the branch information corresponding to the instruction address;
3) the output being coupled to each of
the address input of the instruction cache,
the read address input of the next instruction address prediction memory for input of a next instruction address, and
a predicted line address input of the prediction check stage;
g) the prediction check stage having an instruction input for receiving at least one of the plurality of instructions from the instruction cache;
h) the prediction check stage including a branch prediction device having an input coupled to the predicted line address input, the branch prediction device accepting the instruction addresses from the next line prediction mechanism, the branch prediction device containing branch taken history for the instruction addresses, the branch prediction device operating to predict the next instruction address for the input at least one of the plurality of instructions;
i) the prediction check stage including a prediction checker to compare the next instruction address output of the branch prediction device to the output of the next instruction address prediction memory to determine one of a match or a mismatch,
1) the prediction check stage accepting the instruction from the instruction cache only upon a match;
2) the prediction check stage having an output coupled to the next line prediction mechanism for outputting corrected prediction information to the next line prediction mechanism upon a mismatch; and
j) the prediction check stage outputting accepted instructions to the execution stage for execution.

5,283,874
CROSS COUPLING MECHANISMS FOR SIMULTANEOUSLY COMPLETING CONSECUTIVE PIPELINE INSTRUCTIONS EVEN IF THEY BEGIN TO PROCESS AT THE SAME MICROPROCESSOR OF THE ISSUE FEE
Gary N. Hammond, Campbell, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Oct. 21, 1991, Ser. No. 779,636
Int. Cl.[5] G06F *9/38, 9/28*
U.S. Cl. 395—375 **23 Claims**



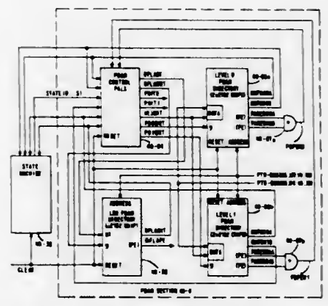
7. A microprocessor comprising:
pipelining means for processing a plurality of instructions, wherein said plurality of instructions are instructions wherein memory locations of said microprocessor are addressed for writing thereto or reading therefrom, and wherein addresses of said memory locations are determined by adding an offset value to a numerical value stored in a Stack Pointer Register;
said pipelining means comprising a plurality of pipelines, each of said plurality of pipelines having a plurality of pipeline stages;
said pipelining means processing each of said plurality of instructions through each of said plurality of pipeline stages of a pipeline of said plurality of pipelines;
said pipelining means further comprising a pipeline coupling means coupled to at least two pipelines and including a logic unit means for receiving a plurality of logic unit input signals, each of said plurality of logic unit input signals representing an instruction processed in a corresponding one of said plurality of pipelines;
said logic unit means further having means for simultaneously computing a plurality of logic unit output signals, each of said plurality of logic unit output signals specifying a corresponding offset value for each pipeline dependent upon at least one of said plurality of logic unit input signals, each of said corresponding offset values to be added to the numerical value stored in said Stack Point Register;
said pipeline coupling means further having an adding means, coupled to said logic unit means, comprised of a plurality of adders, each of said adders having a first adder input receiver, wherein said first adder input receiver of each of said adders is connected to one of said logic unit output signals of said logic unit means;
each of said adders of said plurality of adders including means for simultaneously computing a sum of said corresponding offset value of each of said plurality of logic unit output signals and said numerical value stored in said Stack Pointer Register, each of said adders further outputting said sum as an adder output signal;
said pipeline coupling means further having an output register means, coupled to said adding means, comprised of a plurality of output registers, wherein each of said plurality of output registers receives an adder output signal of one of said adders; and
wherein one of said plurality of output registers is connected to a second adder input receiver of each of said adders for providing an updated value of said Stack Pointer Register to each of said adders, wherein said updated value of said Stack Pointer Register is added to said corresponding offset value of each of said plurality of logic unit output signals.

5,283,875
METHOD AND APPARATUS FOR OPTIMIZING PREFETCH CACHING BY REVERSE ORDERING OF LOGICAL BLOCKS
Kenneth J. Gibson, Monument; James P. Jackson, Colorado Springs; Richard F. Lary, Colorado Springs, and Wayne A. Thorsted, Colorado Springs, all of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 13, 1990, Ser. No. 509,037
Int. Cl.[5] G06F *12/00, 12/08, 12/06*
U.S. Cl. 395—400 **16 Claims**



1. A method of arranging logical data blocks in physical block locations in a disc drive type storage unit having a plurality of discs, each of said discs having a top and bottom surface, each of said disc surfaces having a plurality of bands, each band having a plurality of tracks and each track having a plurality of sectors, and each said disc drive having a plurality of heads, each head associated with a top or bottom surface of one of said plurality of discs, and each of said tracks on each of said surfaces associated with each of said heads forming a cylinder, said method comprising the steps of:
determining parameters of said disc storage unit, said parameters comprising at least the number and order of said sectors in each of said tracks for each of said cylinders in said disc drive and the number and order of said tracks in each of said cylinders; and
assigning logical block numbers to said disc drive in the reverse order of said tracks and sectors in said cylinders so that said logical block numbers for said top and bottom surfaces of each of said discs pass under said associated head in decreasing order from one of said heads to the next.

5,283,876
VIRTUAL MEMORY UNIT UTILIZING SET ASSOCIATIVE MEMORY STRUCTURE AND STATE MACHINE CONTROL SEQUENCING WITH SELECTIVE RETRY
Steven A. Tague, Tyngsboro, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.
Filed Oct. 5, 1990, Ser. No. 593,825
Int. Cl.[5] G06F *12/08, 12/02*
U.S. Cl. 395—400 **10 Claims**



1. A virtual memory unit (VMU) including:
a set associative memory having a plurality of parallel addressed levels for storing information pertaining to a number of predetermined sets of address translations, each level having a buffer store having a plurality of locations for storing descriptor information for performing address translations and a directory circuit having address and data inputs for receiving address and tag portions respectively of a common input virtual address, said directory circuit including a random access memory (RAM) containing a plurality of storage locations for storing address tags for designating which predetermined set of address translations is actually stored in corresponding locations of said buffer store of said each level containing said descriptor information, a comparator for generating match output signals for indicating detection of a true comparison indicative of a match between the address tag contents of said directory RAM storage locations specified by said address portion of said input virtual address and said tag portion of said virtual address and error detection circuits for detecting an error in said address tag contents of one of said directory locations producing said match output signals;
a least recently used (LRU) device having a number of

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addressable storage locations for storing level information for said plurality of levels used for generating signals for indicating a next level in said buffer store of one of said plurality of levels in said next level into which descriptor information is to be written;

state machine apparatus for generating a plurality of states for sequencing said VMU through a series of operations for translating said input virtual address into a physical address; and

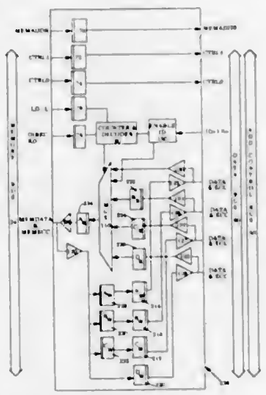
control means coupled to said state machine apparatus, to said LRU device and to said set associative memory, said control means generating control signals for accessing and updating said descriptor information contents of said set associative memory and said level information contents of said LRU device in addition to generating hit output signals for signalling detection of a hit condition, said control means including retry means coupled to said error detection circuits, said retry means causing said state machine apparatus to alter said plurality of states and said control signals applied to said LRU device as a function of whether said match was detected by said comparator of said directory circuit of one of said plurality of levels and which one of said plurality of levels detected said match, said plurality of states and said control signals being altered for recovering from said error which is transient in nature.

5,283,877

SINGLE IN-LINE DRAM MEMORY MODULE INCLUDING A MEMORY CONTROLLER AND CROSS BAR SWITCHES

Jean A. Gastinel, Palo Alto; Shen Wang, Saratoga; Stan Graham, Daly City; Fred Cerauskis, Mountain View, and Gil Chesley, Los Altos, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif. and Xerox Corporation, Stamford, Conn.

Filed Jul. 17, 1990, Ser. No. 554,283
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **30 Claims**



1. A data processing system, comprising:

memory controller means for providing memory address, data and control signals; and

a plurality of memory modules coupled to said memory controller means, each of said modules including:

a plurality of memory devices for storing and retrieving data;

a plurality of cross bar switches, (CBS) with each of said cross bar switches coupled to said memory controller means and to at least two corresponding memory devices, said cross bar switches receiving portions of a memory address provided by said memory controller means and providing said address portions to respective corresponding memory devices, said memory address identifying a location of corresponding data, said memory address portion identifying a location of a portion of said corresponding data, each of said CBS further including input/output means for sequentially providing said portion of said data corresponding to said portion of said memory address from said memory controller means to said corresponding memory devices, and for sequentially receiving said portion of said data from said corresponding memory devices for transfer to said memory controller means;

wherein each of said cross bar switches is coupled to said corresponding memory device over a data and an address-/control bus;

wherein in the event of a read operation, upon the receipt of first predefined control signals from said memory controller means, each of said CBS receives said portion of data from said corresponding memory devices and provides said received portions of data to said memory controller means;

wherein in the event of a write operation, each of said CBS receives said portion of data to be stored from said memory controller means and upon receipt of second predefined control signals from said memory controller means, said CBS stores said portion of data in said corresponding memory devices; and

wherein each CBS includes:

first input register means coupled to said data bus for receiving data from said corresponding memory devices;

counter and decoder means;

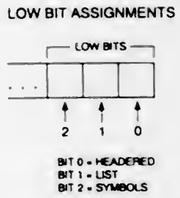
multiplexor means coupled to said first input register means and to said counter and decoder means, said multiplexor shifting said received data in said first input register means out to said memory controller means upon the receipt of multiplexor control signals from said counter and decoder means.

5,283,878

METHOD AND APPARATUS FOR ENCODING DATA TYPES FOR OBJECT IDENTIFICATION

Kelly E. Murray, Belchertown, Mass., assignor to Top Level, Inc., Amherst, Mass.

Filed Jul. 31, 1990, Ser. No. 560,442
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **8 Claims**



1. In a data processing system including a byte-addressed memory, a method for encoding data tyes to identify the type of object being operated on during execution of a computer program on the system, the object being represented by at least one machine word including a lower byte, the method comprising the steps of:

storing an object in the byte addressed memory wherein the lower byte of the word is reserved for encoding the object type and wherein the lower three bits of the lower byte are in a zero state;

setting at least two bits of the three lower bits to a non-zero state to indicate a particular data type; wherein the step of setting the two upper bits of the three lower bits indicates that the object is a member of two data types; and

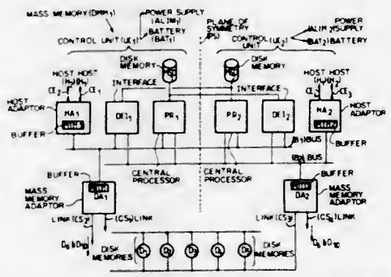
performing an operation on the particular data type, the operation including accessing a particular memory location in the byte-addressed memory, the upper two of the lower three bits are set such that the particular memory location accessed falls on a word boundary in the byte-addressed memory.

5,283,879

PROTECTED METHOD FOR FAST WRITING OF DATA FOR MASS MEMORY APPARATUS

Daniel Carteau, Paris, and Philippe Schreck, Maurepas, both of France, assignors to Bull, S.A., Paris, France

Filed Dec. 19, 1990, Ser. No. 631,722
Claims priority, application France, Dec. 22, 1989, 89 17111
Int. Cl.[5] G06F *12/00, 13/00*
U.S. Cl. 395—425 **26 Claims**



1. A method of fast writing of information for at least one mass memory apparatus (DMM_1) including a plurality of mass memory units and belonging to an information processing system including at least one central host (H_1, H_2), a first and second control unit (UC_1, UC_2), connected to a first and second parallel bus (B_1, B_2), wherein said control units (UC1, UC2) include a first and second central processor (PR_1 and PR_2), respectively, the central host (H_1, H_2) being connected to each of the buses via at least one first host adaptor (HA_1, HA_2) of the first control unit (UC_1, UC_2), and at least a first and second mass memory device for controlling and organizing writing of information on each mass memory unit, said mass memory device being connected to at least one of said first and second parallel buses, wherein said at least one host adaptor, the mass memory device and the mass memory units are on the same data path; comprising the steps of

I) storing a block of data to be written, sent from the central host, in the first host adaptor (HA_1, HA_2) and then in the first mass memory device (DA_1, DA_2) by communication between the central host (H_1, H_2) and the host adaptors (HA_1, HA_2), and between the host adaptors and the mass memory device (DA_1, DA_2), respectively;

II) causing the first mass memory device (DA_1, DA_2) to send a request to the first central processor for reservation of the mass memory (D_1-D_5) for writing information therein;

III) informing the host adaptor (HA_1), by signal from the mass memory device, that the reservation request has been made, and sending an acknowledgement signal from the host adaptor HA_1 to the central host (H_1); and

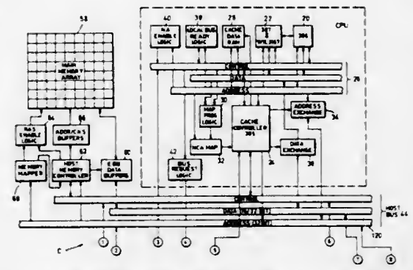
IV) writing the block of data in its entirety in the mass memory under the control of the first mass memory device (DA_1), in all cases when the first mass memory adapter is functioning properly, and by the second mass memory device (DA_2) when the first mass memory device (DA_1) is defective, wherein if said first mass memory device is defective the block of data is transferred to said second mass memory device.

5,283,880

METHOD OF FAST BUFFER COPYING BY UTILIZING A CACHE MEMORY TO ACCEPT A PAGE OF SOURCE BUFFER CONTENTS AND THEN SUPPLYING THESE CONTENTS TO A TARGET BUFFER WITHOUT CAUSING UNNECESSARY WAIT STATES

Fernando Marcias-Garza, Puebla, Mexico, assignor to Compaq Computer Corp., Houston, Tex.

Filed Jan. 2, 1991, Ser. No. 636,732
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **7 Claims**



1. In a computer system having a microprocessor having a plurality of registers, main memory utilizing paged mode memory devices, a memory controller, a cache memory and a cache memory controller, an improved method for copying information from a first buffer beginning at a first address in main memory, the first buffer having a size less than that of the cache memory, to a second buffer beginning at a second address in main memory, the steps comprising:

(a) reading n bytes from the first buffer, where n is a word width;

(b) writing said n bytes to a location which does not result in a page miss of the paged mode memory devices and simultaneously writing said n bytes into the cache memory;

(c) performing steps (a) through (b) as a series of page hit read operations of the paged mode memory devices until the contents of the first buffer have been loaded into cache memory;

(d) reading n bytes of the first buffer from the cache memory;

(e) writing said n bytes to the second buffer address; and

(f) performing steps (d) through (e) as a series of cache read hits and page write hits to the paged mode memory devices until the contents of the first buffer have been written from the cache memory to the second buffer.

5,283,881

MICROCOPROCESSOR, MEMORY MANAGEMENT UNIT INTERFACE TO SUPPORT ONE OR MORE COPROCESSORS

William J. Martini, Ellicott City; Thomas J. Neufelder, Pasadena; Joel E. Lawbon, Catonsville, and Robert F. Eyler, Glen Burnie, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

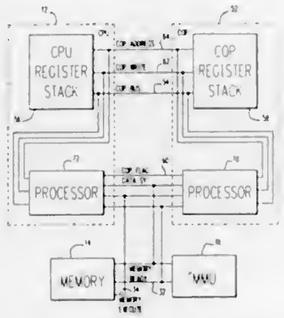
Filed Jan. 22, 1991, Ser. No. 643,624
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—425 **7 Claims**

1. An interface for switching control of a memory management unit (MMU) between a central processing unit (CPU), including a processor and a register stack, and one or more coprocessors (COP), each coprocessor including a processor and a register stack, wherein a memory retrievably stores information in selected address locations for use by the CPU and the MMU and is normally responsive to the CPU for controlling the exchange of information between the memory and the CPU, each COP is operative when enabled to perform

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predetermined functions not normally performed by the CPU utilizing information in the memory, the interface comprising:

means responsive to the register stack of the CPU or COP currently in control for updating the register stacks in the CPU or COP not currently in control, with current changes in the register stack of the CPU or COP currently in control, such that, each register stack has currently stored therein information sufficient to allow any of said



CPU or COP to immediately assume control of the MMU in response to a command without reloading the register stacks with current information;

means for enabling any one of the CPU or COP processors to control the MMU immediately in response to prefetch commands produced by the CPU or COP processor currently in control; and

means for passing control between the CPU and COP processors in response to executed instructions.

5,283,882

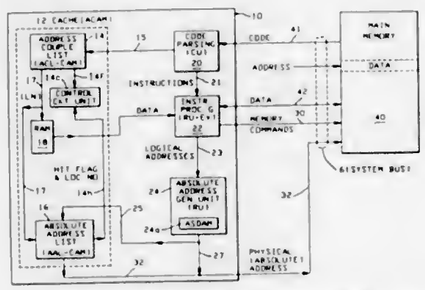
DATA CACHING AND ADDRESS TRANSLATION SYSTEM WITH RAPID TURNOVER CYCLE

Christopher E. Smith, Orange; Robert L. Noble, Riverside, and Howard J. Keller, San Diego, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 22, 1991, Ser. No. 660,455

Int. Cl.[5] G06F *12/06*

U.S. Cl. 395—425 **12 Claims**



1. An address couple associative memory system (ACAM) for servicing a processor and main memory means comprising:

(a) a first content addressable memory (CAM) means for holding address-couples (logical addresses) of data words residing in a local cache RAM unit and including:

(a1) a first dual port CAM array having N locations for storing said logical addresses and including:

(a1a) means for searching said logical addresses and outputting, if a match occurs, a location number LN, for accessing a data word in said local cache RAM unit in a one clock cycle period;

(a1b) means for outputting a match signal to a second CAM means and to a control unit circuit means;

(b) said second content addressable memory (CAM) means for holding absolute main memory addresses of each said address couple residing in said first CAM means, and including:

(b1) a second dual port CAM array having N locations for storing said absolute main memory addresses and including:

(b1a) means for receiving said Location Number LN, when said match occurs in said first dual port CAM array;

(b1b) means for transmitting an absolute address to said main memory during a Write operation;

(b1c) means for outputting a match signal to said control unit circuit means;

(c) said local cache RAM unit having N locations for holding frequently used data words and including:

(c1) means for receiving said location number LN, from said first CAM means for outputting a data word to said processor on a read operation;

(d) control unit circuit means for receiving said output match signal from said first CAM means, and said second CAM means, and including:

(a1) means to set a validate/invalidate status signal for each location of address data in said first and second CAM means;

(a2) means to generate "write enable" and "write address" signals to said local cache RAM unit and said first and second CAM means.

5,283,883

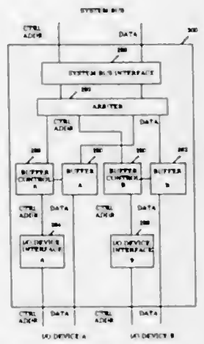
METHOD AND DIRECT MEMORY ACCESS CONTROLLER FOR ASYNCHRONOUSLY READING/WRITING DATA FROM/TO A MEMORY WITH IMPROVED THROUGHPUT

Conan Mishler, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 17, 1991, Ser. No. 778,507

Int. Cl.[5] G06F *13/00, 13/28, 13/36*

U.S. Cl. 395—425 **20 Claims**



1. A method for asynchronously reading data from a memory, and writing data into said memory, with improved throughput, said method comprising the data reading steps of:

receiving a first read signal, a first read size and a first read address from a first input-output device, said first read signal in conjunction with said first read size and said first read address identifying n_1 data bytes to be retrieved and returned to said first input-output device, n_1 being equal to at least one;

retrieving a first m_1 data bytes comprising said n_1 data bytes from said memory, storing said retrieved first m_1 data bytes into a first read buffer, and marking said stored first m_1 data bytes as valid, m_1 being greater than or equal to n_1;

sending said validly stored n_1 data bytes from said first read buffer to said first input-output device and marking said validly stored n_1 data bytes as invalid;

determining if a second m_1 data bytes are to be pre-fetched from said memory, and if said second m_1 data bytes are to be pre-fetched, pre-fetching and storing said second m_1 data bytes into a second read buffer, and marking said stored second m_1 data bytes as valid, said pre-fetching determination being made in a pre-determined manner, said pre-fetching determination, pre-fetching, storing, and marking of said second m_1 data bytes, being performed while said validly stored n_1 data bytes are retrieved from said first read buffer and returned to said first input-output device;

receiving a second read signal, a second read size and a second read address from said first input-output device, said second read signal in conjunction with said second read size and said second read address identifying n_2 data bytes to be retrieved and returned to said first input-output device, n_2 being equal to at least one;

determining if said n_2 data bytes are validly stored in one of said first and second read buffers, and if said n_2 data bytes are not validly stored in one of said first and second read buffers, retrieving a third m_1 data bytes comprising said n_2 data bytes from said memory, storing said retrieved third m_1 data bytes into a third read buffer, and marking said stored third m_1 data bytes as valid, m_1 being greater than or equal to n_2, said valid storage determination being made independent of whether said second read address is sequential to said first read address; and

sending said validly stored n_2 data bytes from one of said first, second and third read buffers to said first input-output device and marking said validly stored n_2 data bytes as invalid.

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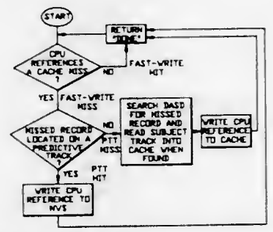
CKD CHANNEL WITH PREDICTIVE TRACK TABLE

Jaishankar M. Menon; John E. Lindley, both of San Jose, and Robert W. Shomler, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1991, Ser. No. 816,017

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **9 Claims**



1. In a channel controller having memory means for data storage and first transfer means for writing CKD formatted records to a DASD, said DASD containing a plurality of CKD formatted records stored in DASD tracks, said first transfer means including one or more NVS means for storing said records, a method for updating one or more host-specified records located in a DASD track, said method comprising steps of:

(1) storing in a Predictive Table Track (PTT) in said memory means a plurality of track and record descriptors identifying the DASD track in which each aid CKD formatted record is located;

(2) updating at least one said host-specified record in said memory means to produce an updated host-specified record in said memory means;

(3) ascertaining, by reference to said Predictive Track Table, the DASD track in which said at least one host-specified record is located;

(4) writing said updated host-specified record to said NVS means; and

(5) transferring said updated host-specified record to said DASD track asynchronously from said NVS means.

5,283,885

STORAGE MODULE INCLUDING A REFRESH DEVICE FOR STORING START AND STOP REFRESH ADDRESSES

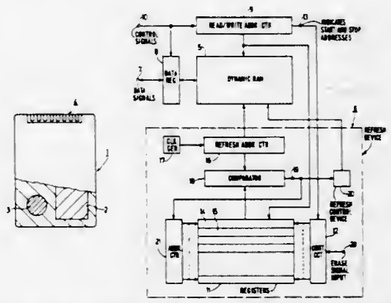
Werner Hollerbauer, Dobrastrasse 24, A-2344 Maria Enzersdorf, Austria

Continuation of Ser. No. 337,022, Apr. 12, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 945,424

Claims priority, application Austria, Sep. 9, 1988, 2217/88

Int. Cl.[5] G06F *12/06; G11C 11/406*

U.S. Cl. 395—425 **8 Claims**



1. A storage module for use with data processing apparatus and which comprises an at least partly randomly accessible storage device for storing digital data signals, an access device for serially accessing a series of storage locations in the storage device in order to write to, and read data from these storage locations between a start address and a stop address, and a battery for powering the storage module when it is disconnected from the data processing apparatus, characterized in that the storage device is constructed as a storage device requiring refresh which cooperates with a refresh device for refreshing data signals stored in the storage device, the refresh device comprising additional storage devices in which, upon writing in storage locations of the storage device, start and stop addresses from the access device are stored, under the control of a control circuit, storage locations of the storage device which are situated between a pair of start and stop addresses being timely refreshed under the control of a refresh control device, storage locations of the storage device which are situated outside a pair of start and stop addresses not being refreshed.

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5,283,886

MULTIPROCESSOR CACHE SYSTEM HAVING THREE STATES FOR GENERATING INVALIDATING SIGNALS UPON WRITE ACCESSES

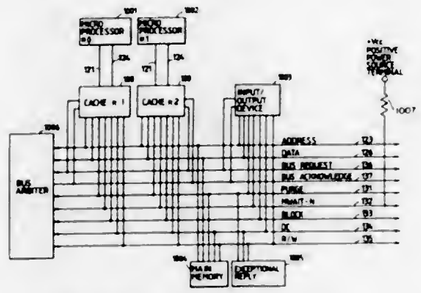
Osamu Nishii, Kokubunji; Kuoio Uchiyama, Hachioji; Hirokazu Aoki, Hachioji; Kanji Oishi, Koganei; Jun Kitano, Tokorozawa, and Susumu Hatano, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 556,119, Jul. 20, 1990. This application Sep. 24, 1992, Ser. No. 950,746

Claims priority, application Japan, Aug. 11, 1989, 1-206773

Int. Cl.[5] G06F *12/12*

U.S. Cl. 395—425 **14 Claims**



1. A multiprocessor comprising:

a first processor for generating a first address;

a first cache memory adapted to be accessed in accordance with said first address from said first processor;

a second processor for generating a second address;

a second cache memory adapted to be accessed in accordance with said second address from said second processor;

an address bus to which is transmitted said first address through said first cache memory and said second address through said second cache memory;

a data bus connected to said first processor through said first cache memory and to said second processor through said second cache memory;

an invalidating signal line connected to said first cache memory and said second cache memory; and

memory means connected to said address bus and said data bus,

wherein said first cache memory and said second cache memory store data and are operated by at least the copy-back method,

wherein the data for said first cache memory exists in a one state selected from a group consisting of: a first state corresponding to an invalid state of pertinent data in said cache memory; a second state corresponding to a valid and non-updated state of the pertinent data in said cache memory; and a third state corresponding to a valid and updated state of the pertinent data in said cache memory,

wherein the data of said second cache memory exists in a one state selected from said group,

wherein when a write access from said first processor hits said first cache memory with a first write hit address, the state of the data of said first cache memory is shifted from said valid and non-updated second state to said valid and updated third state, and said first cache memory outputs said first write hit address and an invalidating signal to said address bus and said invalidating signal line effecting a shift of the state of the data of the first write hit address stored elsewhere than the first cache memory to the invalid first state,

wherein, when a write access from said second processor hits said second cache memory with a second write hit address, the state of the data of said second cache memory is shifted from said valid and non-updated second state to said valid and updated third state, and said second cache memory outputs said second write hit address and an invalidating signal to said address bus and said invalidating signal line effecting a shift of the state of the data of the second write hit address stored elsewhere than the second cache memory to the invalid first state,

wherein, when the write access from the first processor misses said first cache memory, said first cache memory outputs the address of said write miss to said address bus to block-read the data of one block from said memory means and outputs the invalidating signal to said invalidating signal line and then executes a write of data of said write miss to said first cache memory,

wherein, when the write access from said second processor misses said second cache memory, said second cache memory outputs the address of said write miss to said address bus to block-read the data of one block from said memory means and outputs the invalidating signal to said invalidating signal line and then executes a write of data of said write miss to said second cache memory, and

wherein, in case one of said first cache memory and said second cache memory hold data of the valid and updated third state relating to an address of access request when said address bus is fed with the address of access request for a read or a write, said cache includes means for writing back said data to said memory means from said one cache memory and shifting said data relating to said address from said third state to the valid and non-updated second state.

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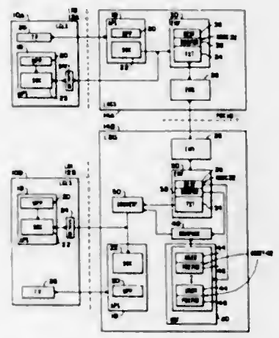
AUTOMATIC DOCUMENT FORMAT CONVERSION IN AN ELECTRONIC MAIL SYSTEM BASED UPON USER PREFERENCE

Leon Zachery, Watertown, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Filed Dec. 19, 1990, Ser. No. 629,926

Int. Cl.[5] G06F *5/00, 13/00*

U.S. Cl. 395—500 **1 Claim**



1. In a data processing system having a first local node and a second local node, wherein there is a first user connected from the first local node and having a means for creating and editing documents and a plurality of second user connected from the second local node and having a means for creating and editing documents, and an electronic mail system having a first part residing in the first local node and a second part residing in the second local node and the first and second parts of the electronic mail system being connected between the first local node and the second local node for sending documents from the first user to a second user wherein the documents have differing formats, a method for converting a document sent from the first user to the second user and having a first format into a document having a second format preferred by the second user, comprising the steps of:

in the second local node, storing a table of user document format preferences,

the user preference table containing, for each second user,

an entry containing an identification of the document format preferred by the user, the entry being modifiable by the user:

in the first local node and responsive to a command by the first user to send a document having a first format to the second user,

appending a tag to the document to be sent to the second user, the tag including

a field containing an identification of the second user, and

a field containing an identification of the first format of the document;

in the first part of the electronic mail system in the first local node and responsive to a command by the first user to send the document to the second user,

sending the document to the second part of the electronic mail system in the second local node;

in the second local node,

receiving and storing the document received from the first part of the electronic mail system in an electronic mail file of the second part of the electronic mail system;

reading the identification of the second user from the tag appended to the document;

reading the identification of the first format of the document from the tag appended to the document;

responsive to the identification of the second user from the tag appended to the document,

reading from the user preference table the identification of the document format preferred by the second user;

comparing the identification of the first format of the document and the identification of the document format preferred by the second user; and

in the second local node,

when the identification of the first format of the document is different from the identification of the document format preferred by the second user,

invoking a document conversion facility; and,

by operation of the document conversion facility, converting the document from the first format to the document format preferred by the second user.

5,283,888

VOICE PROCESSING INTERFACE UNIT EMPLOYING VIRTUAL SCREEN COMMUNICATIONS FOR ACCESSING A PLURALITY OF PRIMED APPLICATIONS

Vinh D. Dao, Cupertino, and Jeffrey A. Kusnitz, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1991, Ser. No. 750,671

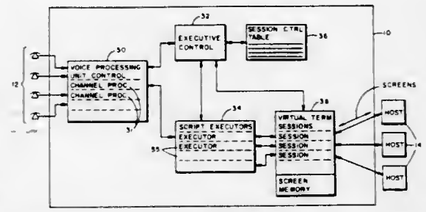
Int. Cl.[5] G06F *13/00, 3/00*

U.S. Cl. 395—500 **10 Claims**

1. A method for enabling rapid access from an interface processor to applications running on a plurality of host processors, each said host processor communicating with said interface processor by providing screens to said interface processor, a screen comprising a block of data which if provided to a display terminal would be displayed for user viewing, said method performed by said interface processor and comprising the steps of:

(a) establishing at least one virtual terminal session with each said host processor and initializing said applications running on said host processor to a ready state to ready said applications for further commands;

(b) responding to user input data that is interpreted as requiring a process to be performed by an application, by accessing a virtual terminal session with a host processor on which said application is running, entering user input data in a stored block of data comprising a screen from said application, and transmitting at least said user-input data to said host processor, whereby said host processor immediately processes said user input data; and



(c) receiving in response to said user input data transmitted to said host processor in step b, a screen from said host processor containing reply data for said user, and transmitting said reply data to said user, whereby said interface processor enables a plurality of host processors to rapidly respond to user input data without requiring modification of host processor-controlling software.

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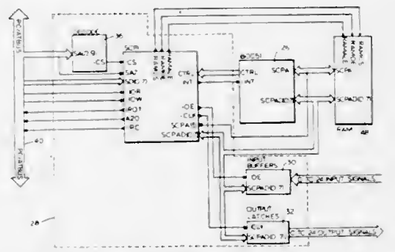
HARDWARE BASED INTERFACE FOR MODE SWITCHING TO ACCESS MEMORY ABOVE ONE MEGABYTE

David J. DeLisle, Berrien Springs; Saifee Fakhruddin; Lloyd Gauthier, both of St. Joseph, and Robert A. Kohtz, St. Joseph, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 735,619, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 459,055, Dec. 29, 1989, abandoned. This application Mar. 11, 1993, Ser. No. 31,029

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—500 **6 Claims**



1. A computer system comprising:

a central processing unit (CPU) for processing data adapted to be coupled to one or more peripheral devices by way of a predetermined keyboard interface, said CPU having at least two modes of operation including a real mode of operation for accessing memory up to one megabyte, said mode of accessing memory above one megabyte, said mode of operation adapted to be selected by one or more predetermined control signals, said CPU adapted to be reset by way of a predetermined reset signal;

a memory for storing data, said memory having a preselected number of addressable storage locations larger than one megabyte, said storage locations being selectable by at least twenty-one address lines A0–A20, said memory and said CPU connected to a common bus;

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means for enabling said A20 address line for memory accesses over one megabyte in response to a hardware based Gate A20 control signal;

a system control processor (SCF) for communicating with said CPU and adapted to generate the reset signal for resetting said CPU under predetermined conditions; and

interfacing means interconnected between said CPU and said SCP for interfacing said CPU and said SCP for controlling communication between said CPU and said SCP and for emulating said predetermined keyboard interface, said interfacing means including predetermined hardware for enabling switching the mode of operation of said CPU from said real mode of operation to said protected mode of operation and for generating the hardware based Gate A20 signal for enabling said CPU to access memory above one megabyte by automatically enabling said A20 address line in response to said hardware based Gate A20 control signal, said interfacing means further including means for enabling either said SCP or said CPU to generate said reset signal.

5,283,890

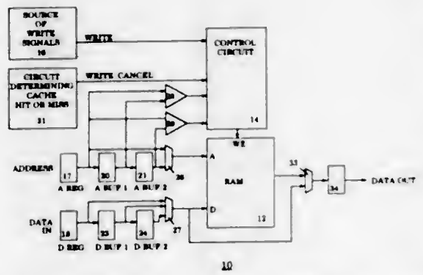
CACHE MEMORY ARRANGEMENT WITH WRITE BUFFER PIPELINE PROVIDING FOR CONCURRENT CACHE DETERMINATIONS

Joseph A. Petolino, Jr., Palo Alto, Calif., and Emil W. Brown, III, Cleveland Heights, Ohio, assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 516,322, Apr. 3, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,621

Int. Cl.[5] **G06F** *13/14*

U.S. Cl. 395—425 **12 Claims**



10

1. A cache memory arrangement comprising:

an array of Random Access Memory (RAM) for caching information, said RAM having an address input, a data input, a write enable input, and a data output;

address buffer means having an address buffer input and an address buffer output, said address buffer output coupled to said address input of said RAM;

data buffer means having a data buffer input and a data buffer output, said data buffer output coupled to said data input of said RAM;

circuit means for determining whether a cache hit or miss has occured in response to an access directed to said RAM;

control circuit means, coupled to said array of RAM and said circuit means, for selectively coupling write enable signals to said array of RAM;

wherein an address transferred to said address buffer input is transferred from said address buffer input to said address buffer output while said circuit means determines whether a cache hit or miss has occurred;

further wherein, data transferred to said address data input is transferred from said data buffer input to said data buffer output while said circuit means determines whether a cache hit or miss has occurred.

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ERROR INFORMATION SAVING APPARATUS OF COMPUTER

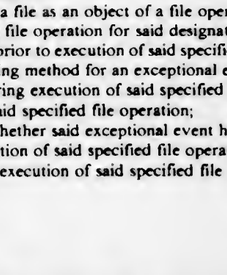
Shinichiro Suzuki, Tokyo; Yoichiro Takeuchi, Urawa; Ikuo Uchihori, Tokyo; Tadashi Ishikawa, Tokyo, and Ryuji Sakai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 7, 1992, Ser. No. 926,174

Claims priority, application Japan, Aug. 8, 1991, 3-199541; Nov. 15, 1991, 3-300338

Int. Cl.[5] **G06F** *11/00*

U.S. Cl. 395—575 **5 Claims**



1. An error information saving apparatus of a computer, comprising at least one arithmetic unit, a plurality of storage means used in processing performed by said arithmetic unit, and control means, connected to said storage means and said arithmetic unit, for controlling said storage means and said arithmetic unit to perform a predetermined pipeline operation, wherein

said storage means comprise

an arithmetic register file consisting of a plurality of registers each of which can be designated as a destination operand in a statement of an operation instruction, and

a status flag string consisting of a plurality of flags provided in a one-to-one correspondence with said registers of said arithmetic register file.

5,283,892

METHOD AND APPARATUS FOR FILE OPERATION

Kelichi Nakane; Kazunari Suzuki, both of Yokohama; Toshio Kushida; Junichi Seki, both of Hitachi; Hiroshi Kodaka, Hitachi, and Tadashi Kuwabara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microsoftware Systems, Inc., Yokohama, both of Japan

Filed Aug. 17, 1989, Ser. No. 395,016

Claims priority, application Japan, Aug. 24, 1988, 63-208421; Aug. 26, 1988, 63-210765

Int. Cl.[5] **G06F** *9/40*

U.S. Cl. 395—600 **20 Claims**

1. A method of file operation, in a computer system including an operation unit connected to a memory device, a display unit and an input unit, comprising the steps, performed by said computer system, of:

designating a file as an object of a file operation;

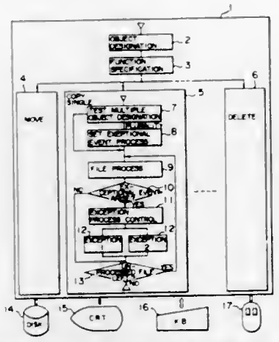
specifying a file operation for said designated file;

specifying, prior to execution of said specified file operation, a processing method for an exceptional event which may occur during execution of said specified file operation;

executing said specified file operation;

detecting whether said exceptional event has occurred during execution of said specified file operation; and

suspending execution of said specified file operation and in place thereof processing said designated file based on said specified processing method when occurrence of said exceptional event has been detected during execution of said specified file operation.



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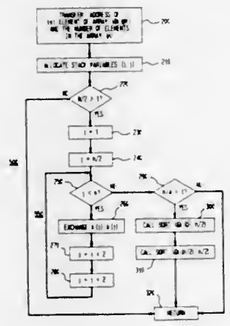
METHOD FOR SORTING OBJECTS IN A SEQUENTIALLY ADDRESSED ARRAY

Robert C. Penn, Santa Clara, Calif., assignor to Rolm Company, Santa Clara, Calif.

Filed Apr. 24, 1990, Ser. No. 513,726

Int. Cl.[5] **G06F** *7/00*

U.S. Cl. 395—600 **2 Claims**



1. Method for sorting objects stored in an original array of sequentially addressed locations of a memory apparatus associated with a processor, the sorting requiring movement of the objects within the original array, the number of elements in the original array being equal to an even power of two, the method being for sorting objects of the original array into a partition comprised of even addressed objects in the original array and a partition comprised of odd addressed objects in the original array, the method comprising the steps of:

the processor designating the original array as an array;

(a) the processor splitting the array into tow partitions, a first partition being comprised of a first half of the sequentially addressed locations in the array and a second partition being comprised of a second half of the sequentially addressed locations in the array;

(b) the processor for each location in the first partition, one location at a time, exchanging an object stored at each odd addressed location in the first partition with an object stored at a corresponding, even addressed location in the second partition, wherein a corresponding, even addressed location refers to a location having an address which is the address of the odd addressed location plus $n/2-1$ where n is the number of locations in the array; and

(c) considering the first partition and the second partition separately, the first and second partitions each now being referred to as a new partition, the processor determining the number of locations in the new partition; wherein, if the new partition only contains two locations, the new partition has been sorted; however, if there are move than two locations in the new partition, returning to step (a) recursively so that the new partition is now treated as the array.

5,283,894

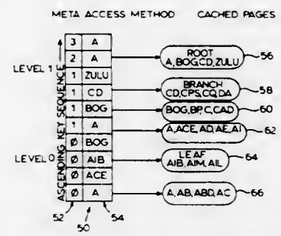
LOCKLESS CONCURRENT B-TREE INDEX META ACCESS METHOD FOR CACHED NODES

Roger L. Deran, 1958 Menalto Ave., Menlo Park, Calif. 94025

Division of Ser. No. 393,093, Aug. 2, 1989, Pat. No. 5,010,478, which is a continuation of Ser. No. 850,961, Apr. 11, 1986, abandoned. This application Jan. 30, 1991, Ser. No. 648,142

Int. Cl.[5] **G06F** *15/417*

U.S. Cl. 395—600 **25 Claims**



1. A data storage and retrieval system comprising:

first generating means for generating a key sequence for constructing a basic index tree structure; second generating means for generating said basic tree index structure responsive to said key sequence; secondary direct access storage means, coupled to said first and second generating means, for storing a plurality of nodes of said basic tree index structure and corresponding key-indexed data;

primary direct-access memory means for storing a selected subset of said plurality of nodes of said basic tree index structure and said corresponding key indexed data;

means, coupled between said secondary storage means and said primary memory means, for copying said selected subset from said secondary storage means to said primary memory means;

means, coupled to said primary memory means, for modifying said selected subset;

first accessing means, coupled to said secondary storage means, responsive to a first external inputted key access sequence for sequential accessing said basic tree index structure and said corresponding key indexed data and to an external inputted key value for randomly accessing said basic tree index structure and corresponding key indexed data;

second accessing means, coupled to said primary memory means, responsive to a second external inputted key access sequence for sequentially accessing said selected subset and external inputted key value for randomly accessing said selected subset;

third accessing means, coupled to said primary memory means, for accessing said copied or modified selected subset;

said third accessing means includes determining means for determining a key value range of one of said plurality of nodes of said selected subset and means responsive to an

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external inputted key value within said key value range to access said selected subset and corresponding key indexed data.

5,283,895

APPARATUS AND METHOD FOR PROCESSING DATA CORRESPONDING TO WORD LABELS

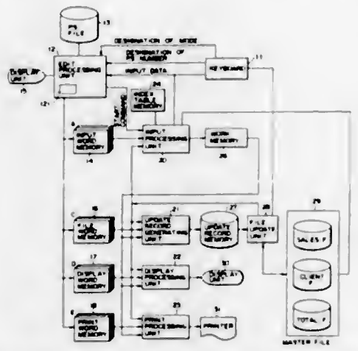
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 360,236, Jun. 1, 1989, abandoned. This application May 28, 1992, Ser. No. 891,678

Claims priority, application Japan, Jul. 14, 1988, 63-175411; Jul. 14, 1988, 63-175413; Jul. 14, 1988, 63-175414

Int. Cl.[5] G06F *15/40, 15/403*

U.S. Cl. 395—600 **7 Claims**



1. An apparatus for processing word data, comprising:

input word storing means for storing an input word table including a first set of word labels;

file word storing means for storing a plurality of file word tables, each file word table including a file name and a second set of word labels;

display word storing means for storing a display word table including a third set of word labels and a display output format;

print word storing means for storing a print word table including a fourth set of word labels and a print output format;

input processing means for inputting a plurality of input word data assigned to the first set of word labels included in the input word table, and for generating input records based on said input word table, each input record including a respective one of the input word data, said input word data being inputted by an operator;

first data storing means for storing the generated input records;

generating means for designating an input record stored in said first data storing means, for reading out from the designated input record a plurality of word data assigned to the second set of word labels included in one of the file word tables stored in said file word storing means to produce first read out respective word data, for generating an update record including the read out respective word data and the same file name included in one of the file word tables, and for performing said reading out and said generating for every file word table stored in said file word storing means;

second data storing means for storing respective ones of the update records generated for every file word table stored in said file word storing means;

file update means for reading out, in response to a file update instruction, one of the update records stored in said second data storing means, for updating the file corresponding to the file name included in the update record by the respective word data included in the update record, and for performing said reading out and said updating for every update record stored in said second data storing means;

display processing means for reading a plurality of word data assigned to the third set of word labels included in the display word table for every input record stored in said first data storing means to produce second read out respective word data, and for displaying on a display screen the second read out respective word data with the display output format included in said display word table; and

print processing means for reading out a plurality of word data assigned to the fourth set of word labels included in the print word table for every input record stored in said first data storing means to produce third respective read out word data, and for printing the third read out respective word data with said print output format included in the print word table.

5,283,896

METHOD AND SYSTEM FOR CONTROLLING MUTUALLY EXCLUSIVE RESOURCES USING A MODIFIED PETRI NET PROCESS CONTROL GRAPH

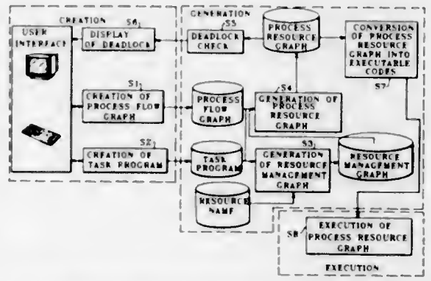
Takashi Temmyo, Tokyo, and Masaki Hasegawa, Kamakura, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,818

Claims priority, application Japan, Feb. 13, 1989, 1-311461

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—650 **7 Claims**



1. A computer implemented method for the control of mutually exclusive resources in a multi-tasking environment in which a plurality of tasks are executed using a plurality of critical resources, comprising the steps of:

generating a process resource graph representing the plurality of tasks to be performed using the plurality of critical resources, said process resource graph containing a plurality of task nodes, a plurality of resource nodes, a plurality of gate nodes and a plurality of arcs connecting each task node and each resource node to a pair of gate nodes, wherein the nodes of a pair of tasks executed concurrently are connected by arcs in parallel, the nodes of a pair of tasks executed sequentially are connected by arcs in series, and the node of each critical resource is connected in parallel with the node of each task that may appropriate the critical resource;

searching said process resource graph for a deadlock condition in which one of the resource nodes is connected to one of the gate nodes by more than one arc;

displaying said deadlock condition to a user for modification of said process resource graph to remove said deadlock condition;

converting said process resource graph into an executable control program;

loading said executable control program into a memory if said computer and generating a first token in a first gate node to start said executable control program by a processor;

generating a token by said processor in each task node and each resource node connected to said first gate node and removing said first token from said first gate node to begin execution of each task represented by said each task node connected to said first gate node;

after detecting completion of all tasks represented by said each task node connected to said first gate node, removing said token by said processor in each task node and each resource node connected to said first gate node and generating a token by said processor in a subsequent gate node;

testing each gate node periodically by said processor to determine if the tasks represented by the task nodes connected to said each gate node have the critical resources available for execution;

for each gate node having the critical resources available for execution, generating a token by said processor in each task node and each resource node connected to said each gate node, and removing said token in said each gate node to begin execution of each task represented by said each task node connected to said each gate node.

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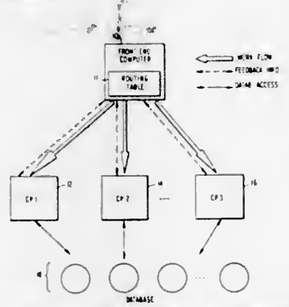
SEMI-DYNAMIC LOAD BALANCER FOR PERIODICALLY REASSIGNING NEW TRANSACTIONS OF A TRANSACTION TYPE FROM AN OVERLOAD PROCESSOR TO AN UNDER-UTILIZED PROCESSOR BASED ON THE PREDICTED LOAD THEREOF

Leonidas Georgiadis, Chappaqua; Christos N. Nikolaou, New York, and George W. Wang, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1990, Ser. No. 516,642

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—650 **7 Claims**



1. A semi-dynamic load balancer for a transaction-type computer system having multiple processors and a shared database, said load balancer reassigning transaction types to respective ones of said multiple processors to balance respective loads of said multiple processors; the load balancer comprising:

routing means connected to said multiple processors for assigning new transactions of a same type to a processor of said multiple processors according to a routing table;

monitoring means connected to said multiple processors for periodically determining whether a load imbalance has occurred among said processors, said monitoring means including threshold means for determining whether a processor utilization of one of said multiple processors exceeds a predetermined threshold; and

reallocation means connected to and responsive to said monitoring means and including lock contention means for determining a predicted load to a candidate processor of said multiple processors for a possible reassignment of said new transactions of said same type of said one of said multiple processors having a processor utilization exceeding said predetermined threshold; said reallocation means updating said routing table to thereby automatically reassign said new transactions of said same type to said candidate processor of said multiple processors.

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SYSTEM AND METHOD FOR MAINTAINING A MUTUAL RELATIONSHIP BETWEEN OBJECTS

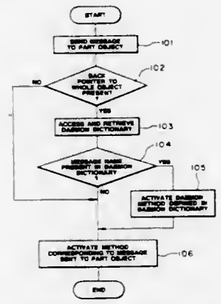
Koji Kusumoto; Makoto Murata, and Toru Aratani, all of Kawasaki, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Oct. 28, 1991, Ser. No. 783,373

Claims priority, application Japan, Oct. 29, 1990, 2-291012

Int. Cl.[5] G06F *9/40*

U.S. Cl. 395—650 **7 Claims**



1. A system for maintaining a mutual relationship between a plurality of objects in an object-oriented language computer system including a first whole object, a second whole object, and a plurality of part objects including at least one part object bound by said second whole object and having a specific mutual relationship bound by instance variables of said first whole object, said system comprising:

first storage means for storing therein a pointer which points out said first whole object from said at least one part object;

second storage means for storing therein indices indicating said instance variables of said first whole object;

third storage means for storing therein a method of said first whole object which maintains the specific mutual relationship between said plurality of part objects in correspondence with said instance variables of said first whole object and messages received by said part object from said second whole object; and

method invoking means for retrieving said first whole object by referring to said pointer stored in said first storage means, deriving said instance variable of said first whole object by referring to said indices in said second storage means from said retrieved first whole object, determining that a method exists in the first whole object that maintains the said mutual relationship, determining that the said specific mutual relationship between the plurality of part objects remain valid, deriving said method of said first whole object stored in said third storage means from said derived instance variable and said message and invoking said derived method, when the said mutual relationship is determined to be not valid said method invoking means being executed when said messages are received from said second whole object, said message causing a method of said part object to invoked.

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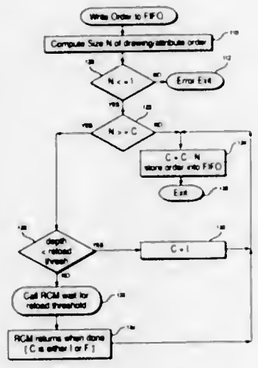
FIRST-IN/FIRST-OUT BUFFER QUEUE MANAGEMENT FOR MULTIPLE PROCESSES

John A. Cook; Gregory A. Flurry, and Larry W. Henson, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 480,181, Feb. 13, 1990. This application Nov. 25, 1992, Ser. No. 982,251

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—650 **20 Claims**



1. A data processing system, comprising:

a first processor having a plurality of processes running independently thereon;

a second processor, including a command buffer queue for receiving a plurality of specialized commands from said first processor, and for executing said commands;

buffer management means, in said first processor, for controlling the output of said plurality of commands to be executed by said second processor;

means, included in said buffer management means, for loading a synchronization token into said command buffer queue to indicate to said second processor that a first one of said processes has stopped loading commands into said queue and a second process of said plurality of processes is to start loading commands into said queue; and

means, included in said second process, for loading said commands from said second process into said buffer queue when said synchronization token is encountered by said second processor.

5,283,900

REAL-TIME OPERATING SYSTEM AND VIRTUAL DIGITAL SIGNAL PROCESSOR FOR THE CONTROL OF A DIGITAL SIGNAL PROCESSOR

Robert E. Frankel; David M. Lindsay; David A. Russo, and David Y. Wong, all of Santa Barbara, Calif., assignors to Spectron Microsystems, Inc., Santa Barbara, Calif.

Filed Oct. 2, 1989, Ser. No. 415,882

Int. Cl.[5] G06F *9/455, 15/31, 15/332, 15/347*

U.S. Cl. 395—700 **25 Claims**

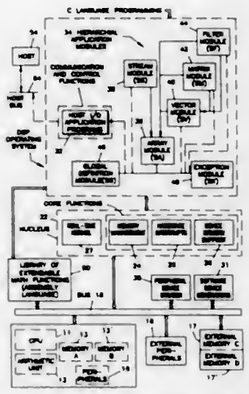
1. An apparatus for managing the operation f a digital signal processor (DSP), comprising:

(a) a digital signal processor (DSP); and

(b) virtual DSP machine means, performed by the DSP, for insulating computer programs executed by the DSP from the DSP's specific architecture, wherein functions of the DSP are accessed by the computer programs via a high-level programming interface, wherein the virtual DSP machine means comprises a plurality of modules arranged in a hierarchy, comprising:

(1) an array module for creating arrays of data and allocating memory blocks therefor through the memory management means;

(2) a stream module for processing continuous data streams being input and output by the I/O devices coupled to the DSP, comprising means for binding the I/O devices to the computer programs, means for transferring the data between the arrays and the I/O devices, and means for invoking device-dependent control functions for the I/O devices;



(3) a vector module for creating vectors of data that provide a one dimensional view of the arrays, and for performing vector math operations on the vectors;

(4) a matrix module for creating matrices of data that provide a two dimensional view of the arrays, and for performing matrix math functions on the matrices; and

(5) a filter module for creating finite impulse response filters, infinite impulse response filters, and all-pole filters, and for applying the filters to the vectors.

5,283,901

MICROCOMPUTER WITH HIGH SPEED ACCESS MEMORY AND LANGUAGE PROCESSING PROGRAM EXECUTION SYSTEM

Hiroyuki Masuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,605

Claims priority, application Japan, Apr. 9, 1991, 3-104878

Int. Cl.[5] G06F *3/00, 5/00, 12/00*

U.S. Cl. 395—700 **2 Claims**

1. A microcomputer having a high speed access memory capable of reading out and writing in data at a high speed and a language processing program execution system for analyzing information of an input source program and outputting object information, the language processing program execution system comprising:

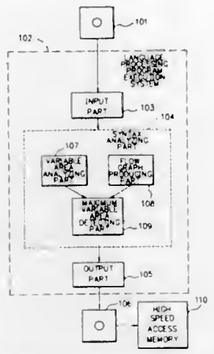
variable memory area analyzing means for calculating variable areas in memory used by subroutines of the source program;

flow graph producing means for producing a flow graph of an interrelation of callings of the subroutines;

maximum variable memory area detecting means for calculating a maximum variable memory area used by a whole program from sizes of the variable memory areas calculated by the variable memory area analyzing means and the flow graph produced by the flow graph producing means; and

output means for outputting the object information with

variables allocated in the high speed access memory, when the maximum variable area detecting means is



smaller than a memory area of the high speed access memory.

5,283,902

MULTIPROCESSOR SYSTEM HAVING TIME SLICE BUS ARBITRATION FOR CONTROLLING BUS ACCESS BASED ON DETERMINED DELAY TIME AMONG PROCESSORS REQUESTING ACCESS TO COMMON BUS

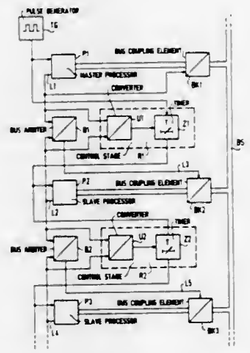
Hermann Dorn, Rathsberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 13, 1991, Ser. No. 759,894

Claims priority, application European Pat. Off., Sep. 20, 1990, 90118137.0

Int. Cl.[5] G06F *13/14, 13/36, 13/372, 13/00*

U.S. Cl. 395—725 **3 Claims**



1. A bus arbitration device for use in a multiprocessor system having a master processor with a clock input, a bus request line and at least one of an output and an input, a higher-priority slave processor with a clock input, a bus request line and at least one of an output and an input, a lower-priority slave processor with a clock input, a bus request line and at least one of an output and an input, and a common bus, said bus arbitration device comprising:

a) a pulse generator, said pulse generator,

i) having an output line being connected to said clock input of said master processor, and

ii) being adapted to generate a periodic signal and to provide said period signal at said output line;

b) a first bus coupling element, said first bus coupling element

i) having a control input connected to said bus request line of said master processor, and

ii) being adapted to connect said at least one of said output and said input of said master processor to said common bus when a bus request signal is provided on said bus request line of said master processor;

c) a first bus arbiter, said first bus arbiter

i) having a first input connected to said bus request line of said master processor and a second input connected to said bus request line of said higher-priority slave processor,

ii) having a control output, and

iii) adapted to provide an enable signal on said control output when said higher-priority slave processor is requesting said common bus but said master processor is not requesting said common bus;

d) a second bus coupling element, said second bus coupling element

i) having an input connected to said control output of said first bus arbiter, and

ii) being adapted to connect said at least one of said output and said input of said higher-priority slave processor to said common bus when said enable signal of said first bus arbiter is provided on said output of said first bus arbiter;

e) a first converter, said first converter

i) having a first input connected to said bus request line of said master processor, and a second input connected to said bus request line of said higher-priority slave processor,

ii) having an output line, and

iii) being adapted to determine a delay time during which both said master processor and said higher-priority slave processor are requesting said common bus, and to provide said delay time on its output line;

f) a first timer, said timer

i) having a first input connected to said output line of said pulse generator, and a second input connected to said output line of said first converter,

ii) having an output line being connected to said clock input of said higher-priority slave processor, and

iii) being adapted to generate said periodic signal delayed by a time equal to said time delay determined by said first converter, and to provide the generated signal on its output line;

g) a second bus arbiter, said second bus arbiter

i) having a first input connected to said bus request line of said higher-priority slave processor and a second input connected to said bus request line of said lower-priority slave processor,

ii) having a control output, and

iii) adapted to provide an enable signal on its control output a when said lower-priority slave processor is requesting said common bus but the higher-priority slave processor is not requesting said common bus;

h) a third bus coupling element, said third bus coupling element

i) having an input connected to said control output of said second bus arbiter, and

ii) being adapted to connect said at least one of said output and said input of said lower-priority slave processor to said common bus when said enable signal of said second bus arbiter is provided on said output of said first bus arbiter;

i) a second converter, said second converter

i) having a first input connected to said bus request line of said higher-priority slave processor, and a second input connected to said bus request line of said lower-priority slave processor,

ii) having an output line, and

iii) being adapted to determine a second delay time during which both said higher-priority slave processor and said lower-priority slave processor are requesting said com-

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mon bus, and to provide said second delay time on its output line; and

j) a second timer, said second timer

i) having a first input connected to said output line of said first timer, and a second input connected to said second converter,

ii) having an output line being connected to said clock input of said lower-priority slave processor, and

iii) being adapted to generate said periodic signal delayed by a time equal to said second time delay determined by said second converter and said first time delay determined by said first converter, and to provide the generated signal on its output line.

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PRIORITY SELECTOR

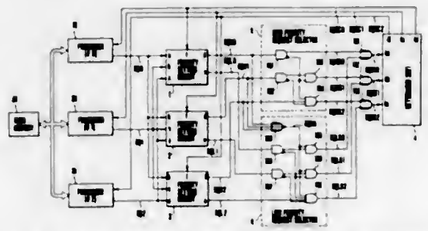
Izushi Uehara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 553,364, Jul. 17, 1990, which is a continuation of Ser. No. 136,954, Dec. 23, 1987, abandoned. This application Sep. 17, 1991, Ser. No. 759,947

Claims priority, application Japan, Dec. 25, 1986, 61-314765

Int. Cl.[5] **G06F** *13/37*

U.S. Cl. 395—725 **1 Claim**



1. A priority selector system, including an information source and a plurality of processors sharing said information source and supplying requests for use of said information source, for setting priority for said requests to allow use of said information source, said priority selector system comprising:

a plurality of lock request priority setting means for setting priority for said requests, each setting means having a corresponding processor of said processors and receiving said requests and each setting means, when a contention occurs between an own request form said corresponding processor and at least one other request from another processor, upgrading a non-permitted own request as a high priority request when another request is permitted, and each setting means downgrading a following own request as a low priority request, when said own request is permitted; and

request selection means, connected to said plurality of lock request priority setting means, for selecting a high priority request prior to a low priority request, and for selecting a request in accordance with a predetermined priority when said requests for use of said information source have a same priority;

wherein each of said plurality of lock request priority setting means includes

means for detecting said contention between said own request and said other request and for generating a lock request contention output signal;

means for detecting lock success of said own request and for generating a lock success output signal; and

a flip-flop which is set and rest in accordance with a combination of said output signals from said means for detecting said contention and said means for detecting lock success to output high and low priority request signals;

wherein said request selection means has a first selector for outputting a high priority request from each of said plurality of lock request priority setting means in accordance with said predetermined priority, and a second selector for receiving high and low priority requests supplied from said plurality of lock request priority setting means and, when no high priority request is supplied, selecting a low priority request in accordance with said predetermined priority, output signals form said first and second selectors being supplied to said plurality of processors and said plurality of lock request priority setting means.

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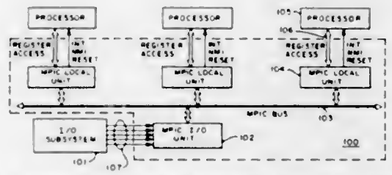
MULTI-PROCESSOR PROGRAMMABLE INTERRUPT CONTROLLER SYSTEM

David G. Carson; Herman D. D'Hooge, both of Hillsboro, and Kevin C. Kahn, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 632,149, Dec. 21, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 8,074

Int. Cl.[5] **G06F** *13/26*

U.S. Cl. 395—725 **18 Claims**



1. A multi-processor programmable controller system for operation in a multi-processor environment that includes a multiplicity of processors and at least one peripheral unit interconnected by a common multi-processor system bus, wherein the peripheral unit has an interrupt request line that may signal a request for servicing from at least one processor and, wherein any processor may request service from any other processor using an interrupt bus without the use of the common multi-processor system bus, comprising:

a) an interrupt bus for communicating interrupt request and interrupt request status messages;

b) an I/O controller connected to the interrupt request line of at least one associated peripheral and the interrupt bus, for accepting at least one peripheral interrupt signal, for formatting the interrupt signals for transmission on said interrupt bus, the formatted signal being representative of the nature and priority of the peripheral interrupt signal, and indicative of the group of processors eligible to service the interrupt, for transmitting the formatted interrupt signals and for receiving status information on the disposition of the interrupt request;

c) a multiplicity of local processor controllers, each local processor controller associated with a specific processor, each local processor controller comprising means for accepting processor interrupt request signals from the associated processor, means for formatting the associated processor interrupt request signals, the formatted associated processor interrupt signals being indicative of the nature and priority of the associated processor interrupt, connected to said interrupt bus for receiving and accepting both I/O controller and other local processor controller formatted interrupt signals for which its associated processor is eligible to service, means for transmitting the associated processor formatted interrupt signals on said interrupt bus, means for broadcasting on said interrupt bus an acceptance signal upon acceptance of the received interrupt signals, means for queuing the accepted interrupt signals, and means for delivering accepted interrupts to the associated processor for servicing in priority order.

5,283,905

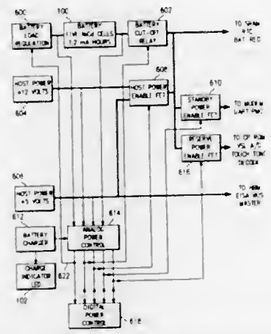
POWER SUPPLY FOR COMPUTER SYSTEM MANAGER

Said S. Saadeh; Paul R. Fulton, both of Plano; Thomas J. Hernandez, Houston; Arthur D. Heald, Plano, and Richard A. Stupek, Houstnn, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 24, 1991, Ser. No. 719,394

Int. Cl.[5] **G06F** *1/32*

U.S. Cl. 395—750 **17 Claims**



1. An apparatus for delivering, monitoring and conserving power to an energy demanding device having a variety of individualized components, said individualized components including a random access memory, said apparatus comprising:

at least one input power source;

means for monitoring energy conducted by said input power source;

input power delivery means for delivering energy from said input power source to said energy demanding device;

a secondary power source;

means for monitoring energy conducted by said secondary power source;

secondary power delivery means for delivering energy from said secondary power source to said energy demanding device;

means for switching from said input power delivery means to said secondary power delivery means and for switching from said secondary power delivery means to said input power delivery means as directed by said input power source monitoring means;

means for conserving energy conducted by said secondary power source to said energy demanding device by selectively terminating energy flow to said variety of individualized components when said secondary power source powers said energy demanding device; and

means for terminating all energy flow when said secondary power source monitoring means determines that energy conducted by said secondary power source fails to meet preset threshold values;

said means for conserving energy further comprising means for preserving data stored in said random access memory until all energy flow is terminated by selectively terminating energy flow to said variety of individualized components other than said random access memory when said secondary power source powers said energy demanding device while maintaining energy flow to said random access memory;

wherein said means for switching from said input power delivery means to said secondary power delivery means comprises a switch and a battery load regulator, said switch and battery load regulator being activated by said means for monitoring energy conducted by said input power source.

5,283,906

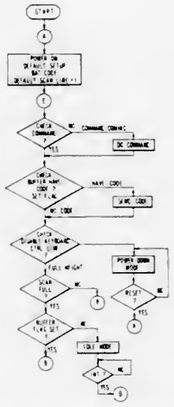
NOTEBOOK COMPUTER CMOS FIRMWARE PROCESSING METHOD AND THE RELATED HARDWARE

Cheng-Wen Chen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Oct. 22, 1991, Ser. No. 780,227

Int. Cl.[5] **G06F** *1/32*

U.S. Cl. 395—750 **3 Claims**



1. A method of operating a combination of (i) a computer having a buffer and a reset button and (ii) an associated keyboard having a plurality of keys and scannable key sensing lines to selectively reduce power consumption of the combination by automatically selectively entering one of an idle mode and a power-down mode of operation, said method comprising the steps of:

scanning the key sensing lines of the keyboard in sequence one after another to completely scan the key sensing lines within one full scan period

detecting a command supplied by the computer to the keyboard and, in response, executing the command and then returning to the scanning step;

checking the buffer to detect a code to be sent and, in response to detecting a command to be sent from the computer to the keyboard, sending the code to the computer and then returning to the scanning step, and, in response to detecting no code to be sent from the buffer to the computer, scanning a next line of the key sensing lines;

checking to detect if all codes stored in the buffer have been sent out after one scan period and, in response, operating said keyboard in an idle mode of operation wherein said scanning step is not performed;

detecting an activation of a key of said keyboard and, in response, supplying an interrupt signal for operating said keyboard in an active mode wherein said scanning step is performed;

enabling an interrupt of the keyboard with the keyboard operated in said idle mode wherein said keyboard is responsive to a command to the keyboard received from the computer for changing a mode of operation from said idle mode to said active mode for performing said scanning step;

detecting a disable signal from the keyboard to the computer after one scan period so as to operate said computer in a power down mode of operation; and

detecting an operation of the reset button and, in response, operating the keyboard in the active mode of operation wherein said scanning step is performed.

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5,283,907

PROCESS FOR SAFEGUARDING TRANSFER OF DATA FROM A TEMPORARY PART INTO A MAIN PART OF A NON-VOLATILE MEMORY

Jürgen Bräunlinger, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

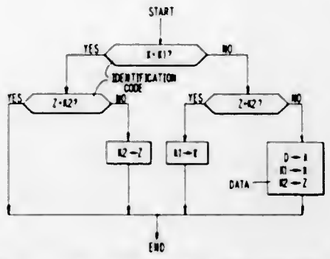
Continuation of Ser. No. 155,714, Jan. 19, 1988, abandoned. This application Feb. 9, 1990, Ser. No. 478,733

Claims priority, application Fed. Rep. of Germany, May 20, 1986, 3616895

Int. Cl.[5] **G06F** *12/16*

U.S. Cl. 395—800 **4 Claims**

1. Process for safeguarding storage of data into a non-volatile memory of a computerized control device, comprising the steps of storing, in the following order, two identification codes (K1, K2), and address (a), data (D) and a temporary identification code (KO) into a temporary part of the memory; storing the data (D) into a main part of the memory at the address (A); and if an interference occurs during the storing steps, the control device initiates a routine which tests the two identification codes in the temporary memory part and if a corruption of the two codes has been determined, the routine



reloads the temporary memory part and restores the data (D) in the main memory part.

DESIGNS

FEBRUARY 1, 1994

343,718

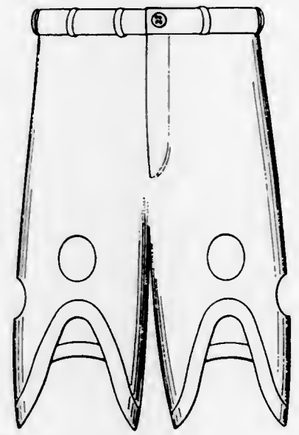
SHORT PANTS

Robert L. Laster, 3208 Fork Shoal Rd., Simpsonville, S.C. 29681

Filed Mar. 11, 1991, Ser. No. 666,676

Term of patent 14 years

U.S. Cl. D2—738



343,719

SHOE HEEL PROTECTOR

Toshikazu Kayano, Kobe, Japan, assignor to Asics Corporation, Nyogo, Japan

Filed Apr. 30, 1992, Ser. No. 875,711

Claims priority, application Japan, Nov. 5, 1991, 3-33512

Term of patent 14 years

U.S. Cl. D2—977



343,720

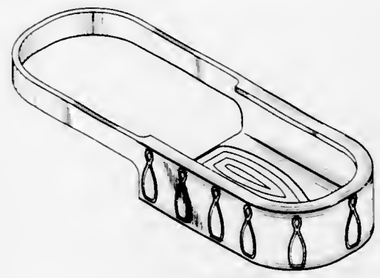
BOWLING SHOE SOLE PROTECTOR

Daniel Rose, 6403 12th St., East, Tacoma, Wash. 98424

Filed Jun. 17, 1992, Ser. No. 900,695

Term of patent 14 years

U.S. Cl. D2—897



343,721

SHOE WITH INTEGRAL ANKLE SUPPORT

Mark Van Dyke, Pittsburgh, Pa., assignor to Ronin Inc., St. Louis, Mo.

Filed May 5, 1992, Ser. No. 878,781

Term of patent 14 years

U.S. Cl. D2—912



343,722

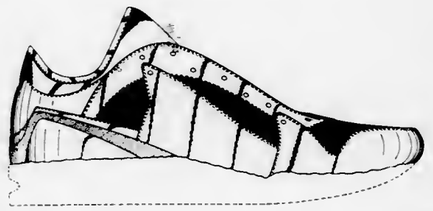
SHOE UPPER

Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Portland, Oreg.

Filed Feb. 5, 1993, Ser. No. 4,451

Term of patent 14 years

U.S. Cl. D2—969



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343,723
SHOE UPPER
Fiona J. Adams, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Apr. 7, 1993, Ser. No. 6,809
Term of patent 14 years
U.S. Cl. D2—970



343,724
SHOE UPPER
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 23, 1993, Ser. No. 6,259
Term of patent 14 years
U.S. Cl. D2—969



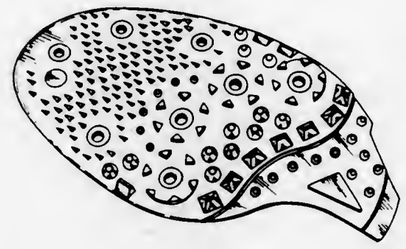
343,725
BLADDER FOR A SHOE SOLE
Lester Q. Lee, Gaston, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 4, 1993, Ser. No. 4,392
Term of patent 14 years
U.S. Cl. D2—961



343,726
SHOE SOLE
Toshiaki Kawasaki, 13-14, 2 Chome, Nago-Cho, Nagata-ku, Kobe City, Japan
Filed Feb. 20, 1991, Ser. No. 657,735
Term of patent 14 years
U.S. Cl. D2—960



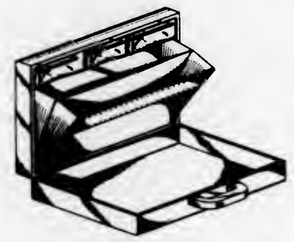
343,727
FORE SHOE SOLE
Masanobu Inohara, Akashi, and Akira Kataoka, Kobe, both of Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Jun. 30, 1992, Ser. No. 906,853
Claims priority, application Japan, May 13, 1992, 4-13969
Term of patent 14 years
U.S. Cl. D2—949



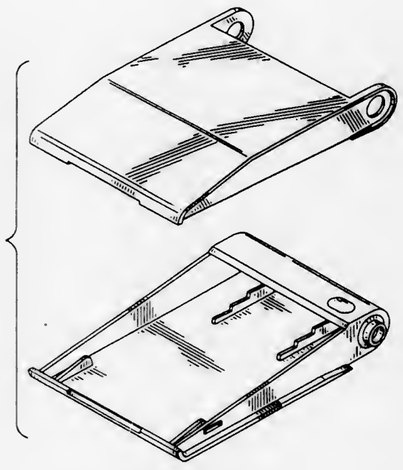
343,728
LOOP STITCHER
Javin C. Pierce, Winooski, Vt., assignor to Pierce Instruments, Inc., Winooski, Vt.
Filed Sep. 12, 1991, Ser. No. 758,081
Term of patent 14 years
U.S. Cl. D3—18



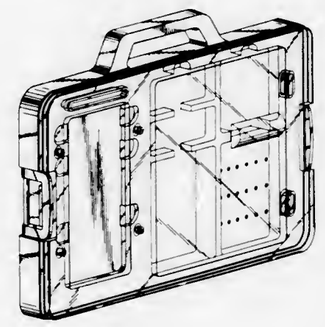
343,729
ATTACHE CASE
William L. King, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 23, 1992, Ser. No. 856,195
Term of patent 14 years
U.S. Cl. D3—285



343,730
DISKETTE HOLDER
Jon B. Taylor, Lawrence, Kans., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 10, 1991, Ser. No. 777,897
The portion of the term of this patent subsequent to Apr. 6, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—630



343,731
CHILDREN'S MAKE-UP AND FASHION KIT
Mitsuyo Tsumita, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Mar. 13, 1992, Ser. No. 851,145
Claims priority, application Japan, Sep. 13, 1991, 3-27737
Term of patent 14 years
U.S. Cl. D3—282

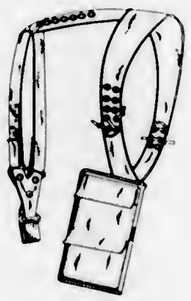


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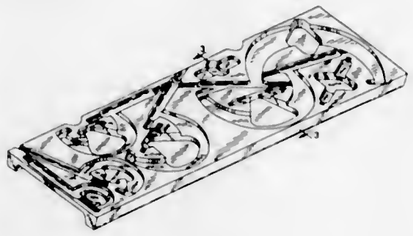
343,732
INSULATED CONTAINER
Thomas E. McConnell, Santa Ynez, Calif., assignor to Prince Lionheart, Inc., Santa Maria, Calif.
Filed Oct. 5, 1992, Ser. No. 143
Term of patent 14 years
U.S. Cl. D3—287



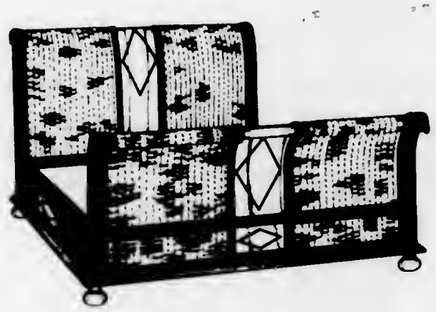
343,733
OVER-THE-SHOULDER WALLET
Marilyn H. Brask, 22 Sand Point Rd., Kennebunkport, Me. 04046
Filed May 20, 1991, Ser. No. 702,709
Term of patent 14 years
U.S. Cl. D3—230



343,734
MICROMETER ORGANIZING AND PROTECTING DEVICE
Keith R. Ebeling, P.O. Box 20505, Portland, Oreg. 97220-0505
Filed Jul. 30, 1992, Ser. No. 921,708
Term of patent 14 years
U.S. Cl. D3—313



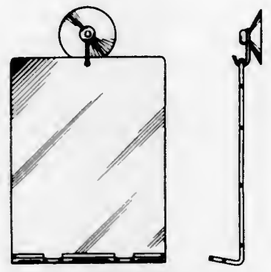
343,735
BED
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 886,136
Term of patent 14 years
U.S. Cl. D6—393



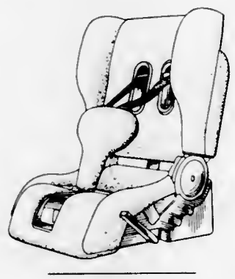
343,736
FRAME FOR A DIPLOMA
Chong Y. Ng, 900 First Ave. South, Suite 303, Seattle, Wash. 98134
Filed May 10, 1991, Ser. No. 698,531
Term of patent 14 years
U.S. Cl. D6—300



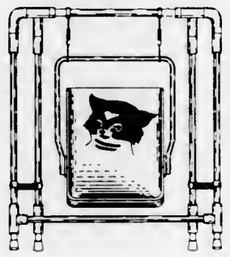
343,737
SHAVING MIRROR
James Huttner, 6940 Ramblehurst Rd., Sylvania, Ohio 43560
Filed Feb. 3, 1992, Ser. No. 829,176
Term of patent 14 years
U.S. Cl. D6—300



343,738
CAR CHAIR
Toshiro Koyanagi, Tokyo, and Yayoi Hashimoto, Hikone, both of Japan, assignors to Takata Corporation, Japan
Filed May 27, 1992, Ser. No. 889,743
Claims priority, application Japan, Nov. 29, 1991, 3-35830
Term of patent 14 years
U.S. Cl. D6—333



343,739
INFANT GLIDER
Donald R. Bennett, and Dorothy F. Bennett, both of 620 Birch Dr., Campbell, Calif. 95008
Filed Jul. 5, 1991, Ser. No. 726,003
Term of patent 14 years
U.S. Cl. D6—344



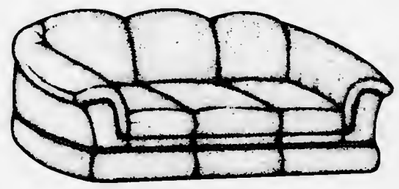
343,740
CHAIR
Jonathan Ginat, 26 W. 9th St., New York, N.Y. 10011
Filed Jun. 11, 1991, Ser. No. 713,454
Term of patent 14 years
U.S. Cl. D6—366



343,741
CHAIR
Reiko Kato, 242 E. 19th St. Apt. 8H, New York, N.Y. 10003, and Richard H. Perney, 55 W. 16th St., New York, N.Y. 10011
Filed Nov. 26, 1991, Ser. No. 800,382
Term of patent 14 years
U.S. Cl. D6—380

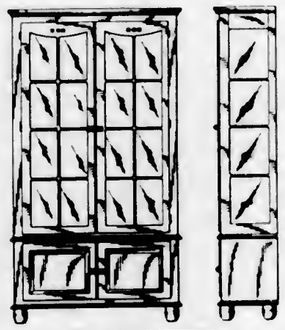


343,742
SOFA
Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Apr. 22, 1992, Ser. No. 873,081
Term of patent 14 years
U.S. Cl. D6—381

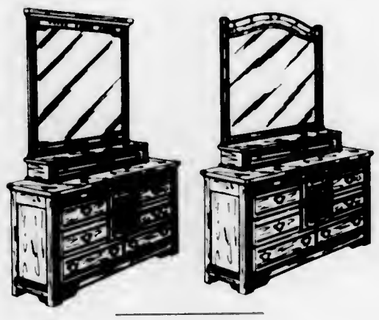


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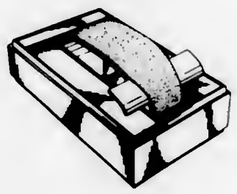
343,743
CURIO CHINA
Philip Stone, Woodbury, Conn., assignor to Ethan Allen Inc., Danbury, Conn.
Filed May 13, 1992, Ser. No. 882,629
Term of patent 14 years
U.S. Cl. D6—438



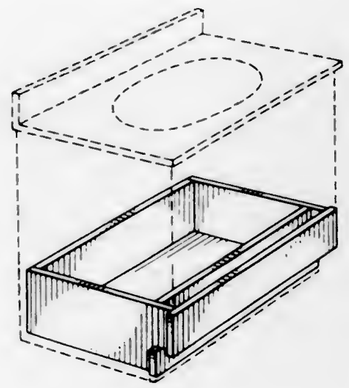
343,744
DRESSER
H. Thomas Keller, High Point, N.C., assignor to Vaughan Furniture Company, Inc., Galax, Va.
Filed Apr. 10, 1992, Ser. No. 867,805
Term of patent 14 years
U.S. Cl. D6—444



343,745
WATCH DISPLAY CASE
Fred Wenger, St-Laurent, Canada, assignor to Wenger's Limited, St-Laurent, Canada
Filed Oct. 8, 1992, Ser. No. 224
Term of patent 14 years
U.S. Cl. D9—466



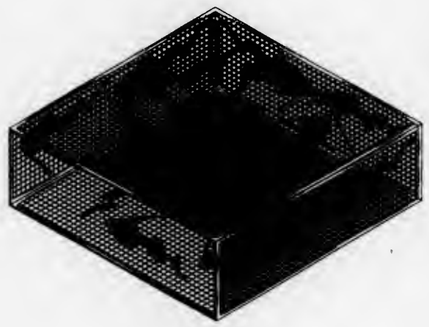
343,746
TOE KICK DRAWER DESIGN
Ron Simon, Torrance, Calif., assignor to RSI Home Products, La Mirada, Calif.
Filed Jan. 28, 1992, Ser. No. 827,955
Term of patent 14 years
U.S. Cl. D6—491



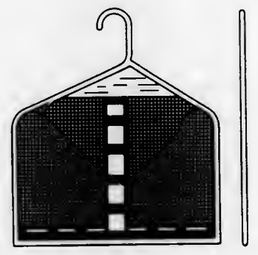
343,747
SPANNER EXTRUSION FOR CONNECTING TABLE LEGS
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Feb. 28, 1992, Ser. No. 841,759
Term of patent 14 years
U.S. Cl. D6—495



343,748
SEAT ATTACHABLE STORAGE RACK
Patricia J. Bittner, 295 Bluff Ct., Barrington, Ill. 60010
Continuation-in-part of Ser. No. 249,099, Sep. 26, 1988, abandoned. This application Dec. 6, 1991, Ser. No. 803,361
Term of patent 14 years
U.S. Cl. D6—510



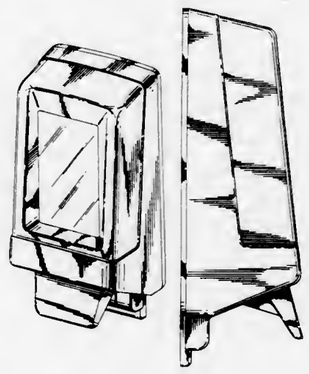
343,749
HANGING PIERCED EARRING HOLDER
Sandra J. Thompson, 3752 Devils Garden Rd., Medford, Oreg. 97504
Filed Aug. 19, 1991, Ser. No. 752,253
Term of patent 14 years
U.S. Cl. D6—513



343,750
HAIR BOW AND HEAD BAND HANGER
Cinde Wolf, 9889 Bolingbroke Dr., Cincinnati, Ohio 45241
Filed Apr. 23, 1992, Ser. No. 872,668
Term of patent 14 years
U.S. Cl. D6—514

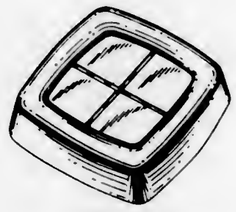


343,751
DISPENSER FOR SOAP OR SIMILAR VISCOUS MATERIAL
Ronald F. Bell, Uniontown, and Thomas Kearnes, Richfield, both of Ohio, assignors to Gojo Industries, Inc., Cuyahoga Falls, Ohio
Filed May 4, 1992, Ser. No. 878,311
Term of patent 14 years
U.S. Cl. D6—545

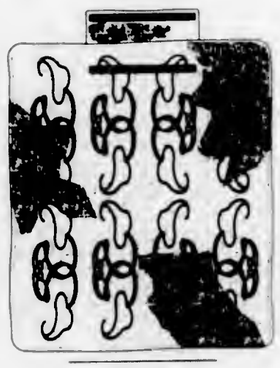


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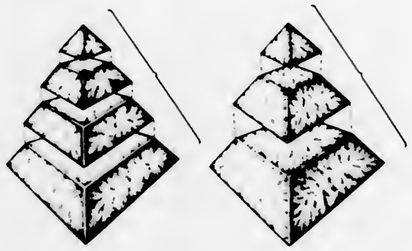
343,752
TOWEL HOLDER
Janet R. Corbin, New York, N.Y., assignor to Dawson Home Fashions, Inc., New York, N.Y.
Filed Jun. 17, 1992, Ser. No. 900,682
Term of patent 14 years
U.S. Cl. D6—546



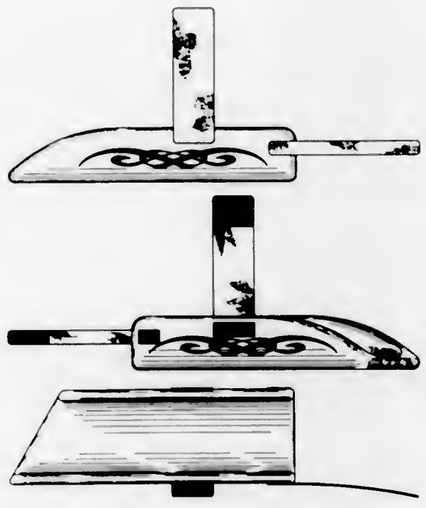
343,753
PLAYPEN PAD COVER
Ingrid E. Traver, 66555 4th St., #42, Desert Hot Springs, Calif. 92240
Filed Jan. 27, 1993, Ser. No. 4,098
Term of patent 14 years
U.S. Cl. D6—600



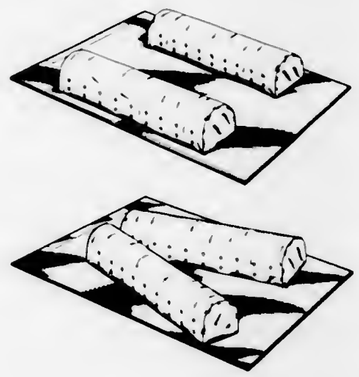
343,754
PYRAMID SHAPED PILLOW SET
Diane Pierce, 3277 20th St., San Francisco, Calif. 94110, and Lisa M. Oda, 2339 40th Ave., San Francisco, Calif. 94116
Filed Oct. 21, 1991, Ser. No. 780,270
Term of patent 14 years
U.S. Cl. D6—601



343,755
COMFORT THERAPEUTIC PILLOW
Mabel M. Tallent, Rte. 3 Box 532, Arkadelphia, Ark. 71923
Filed Sep. 21, 1992, Ser. No. 948,991
Term of patent 14 years
U.S. Cl. D6—601



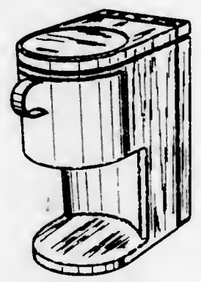
343,756
INFANT CUSHION UNIT
Stephen Sher, Toronto, Canada, assignor to Pearl Baths, Inc., Minneapolis, Minn.
Filed Dec. 17, 1992, Ser. No. 2,596
Claims priority, application Canada, Oct. 15, 1992, 15-10-92-6
Term of patent 14 years
U.S. Cl. D6—601



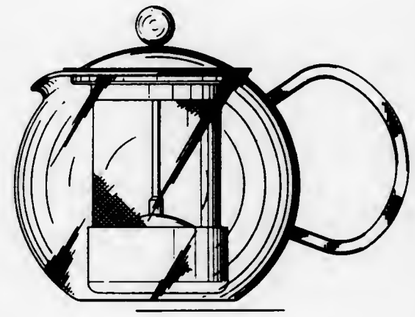
343,757
BEVERAGE MAKER
Francis R. Bannigan, Huntingdale, Australia, assignor to Kambrook Distributing Pty. Ltd., Australia
Filed May 9, 1991, Ser. No. 699,801
Term of patent 14 years
U.S. Cl. D7—309



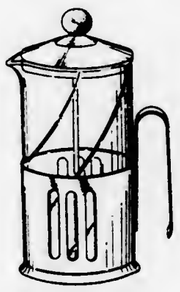
343,758
COFFEE MAKER
Aloysius J. M. Beeren, Haren, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 567,445, Aug. 14, 1990, abandoned.
This application Jan. 27, 1993, Ser. No. 10,801
Claims priority, application World Int. Prop. O., Mar. 28, 1990, DM/016.273
Term of patent 14 years
U.S. Cl. D7—309



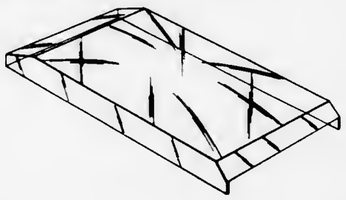
343,759
TEAPOT
Carsten Jorgensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Jul. 30, 1991, Ser. No. 737,515
Term of patent 14 years
U.S. Cl. D7—318



343,760
TEA/COFFEE MAKER
Gary Lin, 8-2F, No. 164, Sec. 4, Nanking E. Rd., Taipei, Taiwan
Filed May 18, 1992, Ser. No. 884,569
Term of patent 14 years
U.S. Cl. D7—318

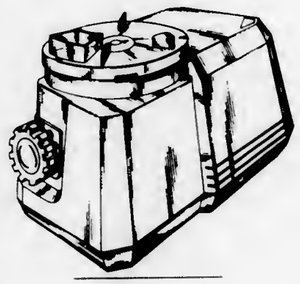


343,761
SOLAR FRUIT DRYING
Jan E. Van Iterson, 7432 N. Fowler Ave., Clovis, Calif. 93612
Filed Aug. 22, 1991, Ser. No. 748,896
Term of patent 14 years
U.S. Cl. D7—324

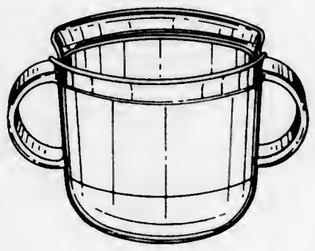


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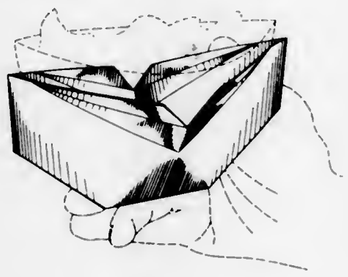
343,762
KNEADING MACHINE
Luca Pagani, Castellanza - Varese, Italy, assignor to Micromax International S.r.L., Como, Italy
Filed Jan. 17, 1991, Ser. No. 642,362
Claims priority, application Italy, Jul. 17, 1990, 21496/90[U]
Term of patent 14 years
U.S. Cl. D7—368



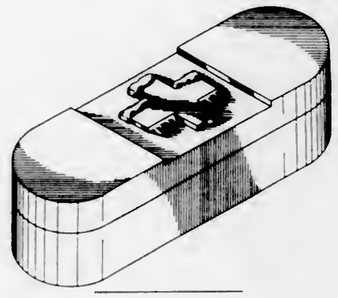
343,763
SUGAR BOWL
Larry G. Zimmerman, Champaign, Ill., assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Aug. 1, 1991, Ser. No. 740,207
Term of patent 14 years
U.S. Cl. D7—548



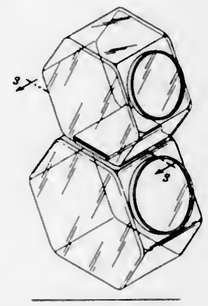
343,764
PITA SANDWICH HOLDER
Carum Baroud, 7 Adin Dr., Shrewsbury, Mass. 01545
Filed Jun. 26, 1992, Ser. No. 906,126
Term of patent 14 years
U.S. Cl. D7—601



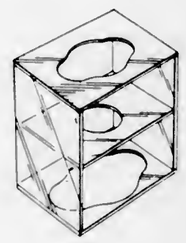
343,765
TEMPERATURE CONTROLLED MEDICINE CONTAINER
Saheed A. Khan, 11746 Ovide Clermont Ave., Montreal Nord Quebec, Canada H1G 3Z3
Filed Sep. 12, 1991, Ser. No. 758,100
Term of patent 14 years
U.S. Cl. D7—605



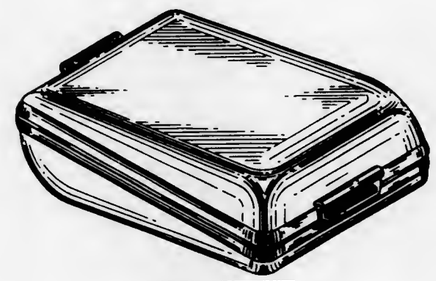
343,766
MULTIPLE CONTAINER UNIT
Hugo Bastidos, 6510 Elmquist, Whittier, Calif. 90601
Filed Mar. 19, 1992, Ser. No. 854,061
Term of patent 14 years
U.S. Cl. D7—614



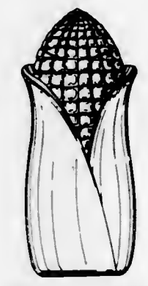
343,767
BOTTLE DRAINER
Samuel R. Sambrookes, and Sheryl R. Sambrookes, both of 19603 N. 36th Dr., Glendale, Ariz. 85308
Filed Aug. 10, 1992, Ser. No. 927,355
Term of patent 14 years
U.S. Cl. D7—619



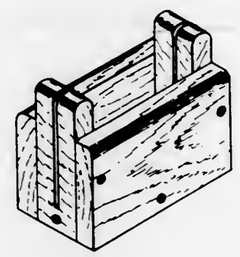
343,768
CONVERTIBLE LUNCHBOX
Victor J. J. Cautereels, Borsbeek, Belgium; Lee E. Fether, London, and Ian Ferris, Wokingham, both of United Kingdom, assignors to Dart Industries Inc., Deerfield, Ill.
Filed May 21, 1992, Ser. No. 886,997
Term of patent 14 years
U.S. Cl. D7—629



343,769
STICK BUTTER DISPENSER
Joseph J. Hannon, 199 Cassidy Hill Rd., Tolland, Conn. 06084
Filed Apr. 27, 1992, Ser. No. 873,565
Term of patent 14 years
U.S. Cl. D7—670



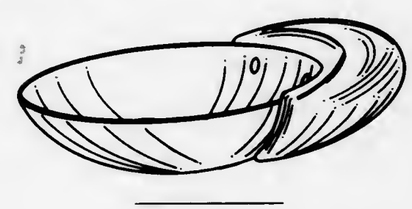
343,770
BAGEL SLICER
Jay A. McFarling, and Jennie E. McFarling, both of P.O. Box 300461, Escondido, Calif. 92027
Filed Apr. 27, 1992, Ser. No. 874,420
Term of patent 14 years
U.S. Cl. D7—673



343,771
COMBINED SALT AND PEPPER MILL
Carsten Jorgensen, Kriens, Switzerland, assignor to PI-Design AG, Triensaong, Switzerland
Filed Jul. 18, 1991, Ser. No. 731,937
Term of patent 14 years
U.S. Cl. D7—679



343,772
HAND HELD UTENSIL
Peter Hoodes, Salt Lake City, Utah, assignor to Scoop Corporation, Salt Lake City, Utah
Filed Mar. 16, 1992, Ser. No. 852,090
Term of patent 14 years
U.S. Cl. D7—688

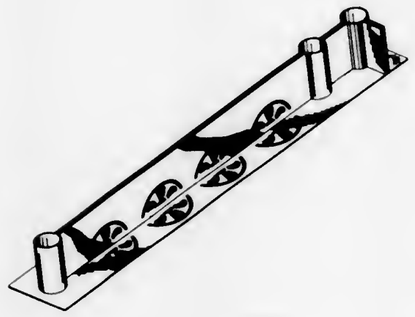


343,773
TREE PRUNER HOOK
David E. Lutzke, Madison, Wis., assignor to Fiskars Oy Ab, Helsinki, Finland
Continuation-in-part of Ser. No. 758,957, Sep. 12, 1991, Pat. No. Des. 336,835. This application Mar. 12, 1992, Ser. No. 851,347
The portion of the term of this patent subsequent to Jun. 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—1

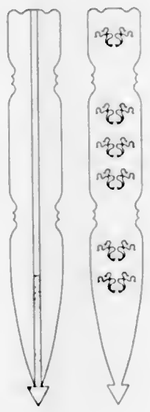


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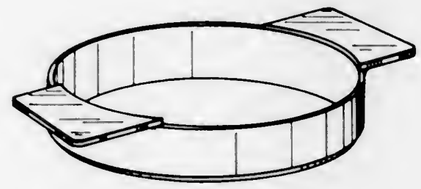
343,774
FENCE GUARD FOR PREVENTING WEED GROWTH
William F. Cox, P.O. Box 371, Accoville, W. Va. 25606, and Claude K. Chapman, P.O. Box 345, Anawalt, W. Va. 24808
Filed Oct. 31, 1991, Ser. No. 785,619
Term of patent 14 years
U.S. Cl. D8—1



343,775
GARDEN STAKE
Thomas L. Steen, Rte. 3, Box 696, Chester, S.C. 29706
Filed Dec. 7, 1992, Ser. No. 2,253
Term of patent 14 years
U.S. Cl. D8—1



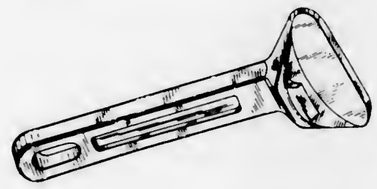
343,776
SOD PLUGGER
David G. Johnson, 10695 Lee Dr., Eden Prairie, Minn. 55347
Filed Dec. 5, 1991, Ser. No. 802,477
Term of patent 14 years
U.S. Cl. D8—7



343,777
COMBINED PRUNER AND EXTENSION POLE THEREFOR
Sohrab Vossoughi; David Knaub, and Robert Dillon, all of Portland, Oreg., assignors to Blount, Inc., Portland, Oreg.
Filed Apr. 6, 1992, Ser. No. 864,025
Term of patent 14 years
U.S. Cl. D8—9



343,778
LID OPENER
Brix-Hansen, Helge, No. 6, Hjortsogaardvej, DK-4771 Kalvehave, Denmark
Filed Aug. 28, 1992, Ser. No. 936,910
Claims priority, application Denmark, Mar. 11, 1992, 240/92
Term of patent 14 years
U.S. Cl. D8—40



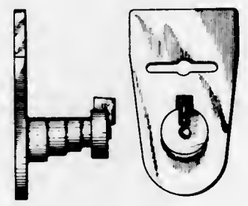
343,779
PLIERS
Joseph M. Imhoff, El Paso County, Colo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 13, 1990, Ser. No. 612,244
Term of patent 14 years
U.S. Cl. D8—52



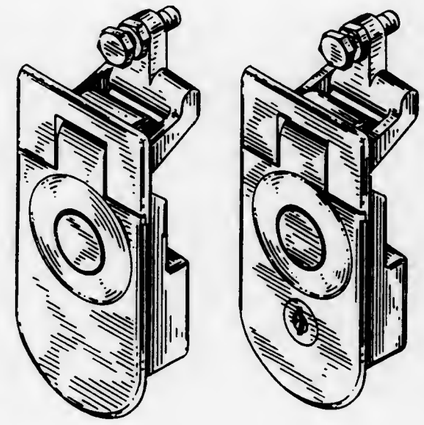
343,780
CHUCK ADAPTOR
Joseph A. Balbaugh, III, 318 W. Johnson, Saginaw, Mich. 48604
Filed Aug. 19, 1991, Ser. No. 746,592
Term of patent 14 years
U.S. Cl. D8—70



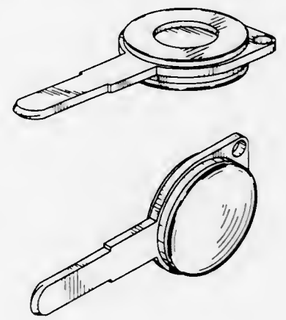
343,781
ADJUSTABLE TOOL HOLDER
Karl T. Baughman, Oake Forest, Ill., assignor to Hand Tools International, Inc., Dallas, Tex.
Filed Jun. 4, 1992, Ser. No. 894,275
Term of patent 14 years
U.S. Cl. D8—71



343,782
SEALED LEVER LATCH
Gabriel Gromotka, Caledonia, N.Y., and Peter W. Bressler, Philadelphia, Pa., assignors to Southco, Inc., Concordville, Pa.
Continuation-in-part of Ser. No. 838,313, Feb. 20, 1992. This application Aug. 18, 1992, Ser. No. 932,013
Term of patent 14 years
U.S. Cl. D8—331

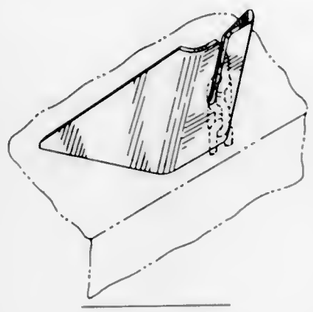


343,783
KEY
Hans Zaugg, Derendingen, and Heinrich Gretler, Hinwil, both of Switzerland, assignors to Bauer Kaba AG, Wetzikon, Switzerland
Filed Aug. 5, 1992, Ser. No. 925,531
Claims priority, application Switzerland, Feb. 6, 1992, DM/021921
Term of patent 14 years
U.S. Cl. D8—347

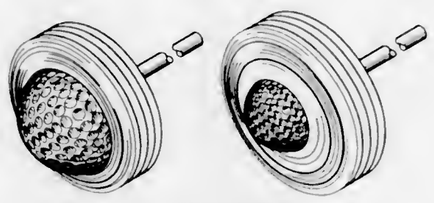


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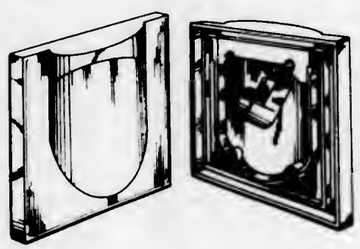
343,784
EJECTOR ATTACHMENT MOUNT
LeRoy G. Hagenbuch, 4602 N. Rosemead Dr., Peoria, Ill. 61614
Filed Dec. 18, 1991, Ser. No. 809,320
Term of patent 14 years
U.S. Cl. D8—349



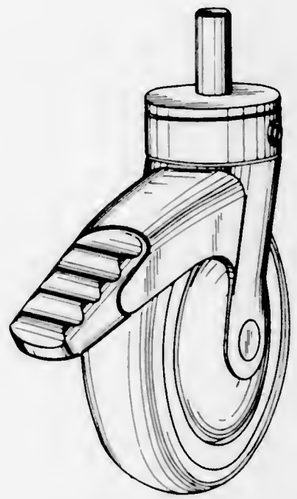
343,785
WHEEL FOR GOLF CART
Carl G. Warren, Charlotte, N.C., assignor to Warren Textile Sales, Inc., Charlotte, N.C.
Filed Nov. 10, 1992, Ser. No. 1,322
Term of patent 14 years
U.S. Cl. D8—375



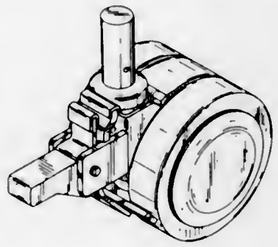
343,786
VIDEO CAMERA WALL MOUNTING BRACKET
David Hines, Santa Ana; Clair Samhammer, Orange, and Rey Harju, Fullerton, all of Calif., assignors to Multiplex Technology, Inc., Brea, Calif.
Filed Oct. 27, 1992, Ser. No. 865
Term of patent 14 years
U.S. Cl. D8—373



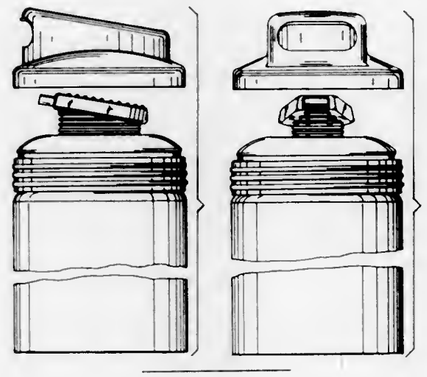
343,787
CASTER WHEEL
Ulli Finkeldey, and Stephan Quenkert, both of Bad Salzuflen, Fed. Rep. of Germany, assignors to Tente-Rollen GmbH & Co., Wermelskirchen, Fed. Rep. of Germany
Filed Nov. 29, 1991, Ser. No. 802,448
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 9103961; Sep. 28, 1991, 9107017
Term of patent 14 years
U.S. Cl. D8—375



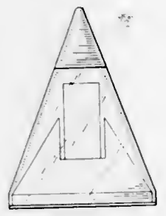
343,788
DOUBLE WHEEL CASTER
Sohrab Soltani, Charleston, S.C., assignor to SSI Medical Services, Inc., Charleston, S.C.
Division of Ser. No. 617,064, Nov. 21, 1990. This application Apr. 27, 1993, Ser. No. 7,620
Term of patent 14 years
U.S. Cl. D8—375



343,789
COMBINATION ACTUATOR AND HOOD FOR DISPENSING FOAM MATERIAL
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 30, 1991, Ser. No. 785,512
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—300



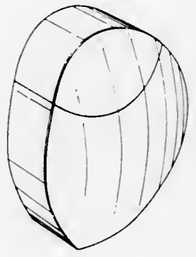
343,790
DISPLAY BOX FOR WATCH
David Mermelstein, Monsey, N.Y., assignor to Croton Watch Co., Inc., New York, N.Y.
Filed May 7, 1993, Ser. No. 8,118
Term of patent 14 years
U.S. Cl. D9—430



343,791
COMBINED BOTTLE AND CAP
Supak Pitaknarongphorn, Orange, Calif., assignor to Sun Lee, Inc., Westminster, Calif.
Filed Nov. 25, 1991, Ser. No. 797,240
Term of patent 14 years
U.S. Cl. D9—503

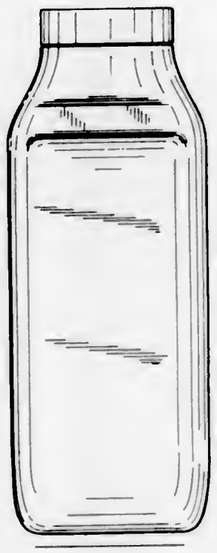


343,792
BOTTLE WITH CAP
Martin C. Bunce, and David P. Myerson, both of London, Great Britain, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Aug. 5, 1991, Ser. No. 745,111
Claims priority, application United Kingdom, Feb. 7, 1991, 2012899
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—529



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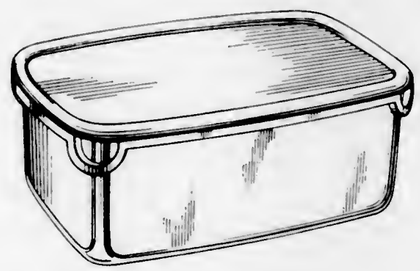
343,793
BOTTLE AND CAP
John Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 25, 1991, Ser. No. 721,361
Term of patent 14 years
U.S. Cl. D9—529



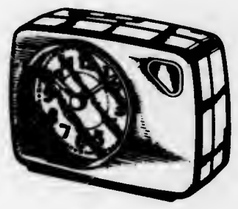
343,794
BOTTLE
Stephen W. D'Amico, Cincinnati, Ohio; Jim F. Warner, New York, N.Y., and Samuel Ross, Jr., Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 11, 1992, Ser. No. 928,610
Term of patent 14 years
U.S. Cl. D9—530



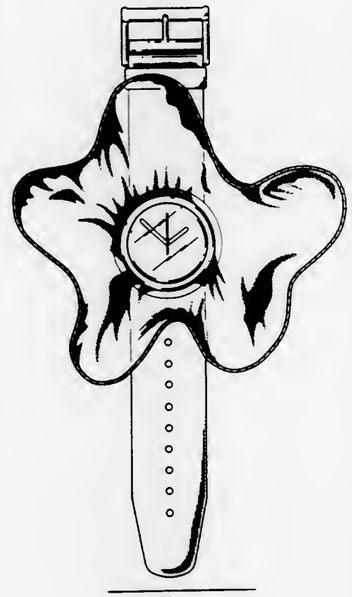
343,795
COVERED CONTAINER
Maurice J. Verchere, Oyonnax, France, assignor to Injectaplastic, Martignat, France
Filed Jul. 13, 1992, Ser. No. 912,609
Claims priority, application World Int. Prop. O., Jan. 16, 1992, 021699
Term of patent 14 years
U.S. Cl. D9—425



343,796
CLOCK
Kyoko Hatsuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1991, Ser. No. 812,227
Term of patent 14 years
U.S. Cl. D10—25



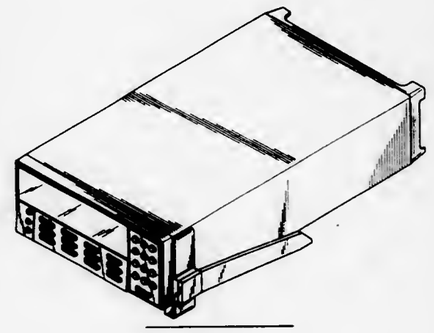
343,797
WRISTWATCH
Beatrice Santiccioli, Anteila (FI), Italy, assignor to SMH Swiss Corporation for Microelectronics and Watchmaking Industries, Ltd., Bienne, Switzerland
Filed Apr. 1, 1991, Ser. No. 678,633
Claims priority, application World Int. Prop. O., Oct. 1, 1990, 017751
Term of patent 14 years
U.S. Cl. D10—32



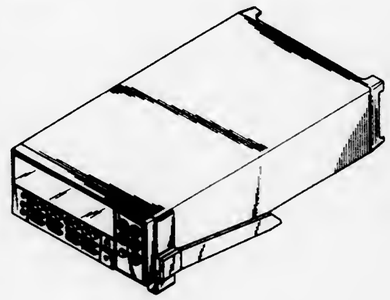
343,798
CLOCK
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 6, 1992, Ser. No. 817,276
Term of patent 14 years
U.S. Cl. D10—23



343,799
ELECTRONIC MEASURING/MONITORING INSTRUMENT
Robert G. Spinks, Twinsburg; William J. Kasprik, Berea; Maria G. Mock, Bainbridge, and Kenneth A. Reindel, Broadview Heights, all of Ohio, assignors to Keithley Instruments, Inc., Cleveland, Ohio
Filed Oct. 11, 1991, Ser. No. 775,257
Term of patent 14 years
U.S. Cl. D10—75

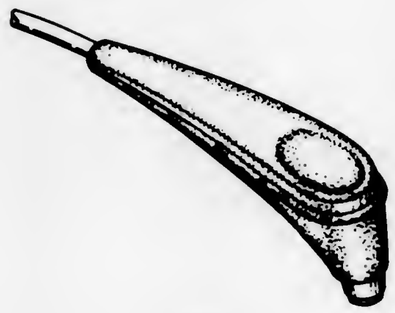


343,800
ELECTRONIC MEASURING/MONITORING INSTRUMENT
Robert G. Spinks, Twinsburg; David J. Krusewski, Parma; Michael P. Minneman, Hudson, and Kenneth A. Reindel, Broadview Heights, all of Ohio, assignors to Keithley Instruments, Inc., Cleveland, Ohio
Filed Oct. 11, 1991, Ser. No. 775,258
Term of patent 14 years
U.S. Cl. D10—75



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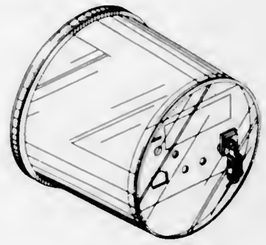
343,801
HAND-HELD ULTRASONIC CONTACT TRANSDUCER
Robert N. Burns, San Jose, and Robert R. Butcher, Santa Clara, both of Calif., assignors to Velocity Kontrol Systems, Hollister, Calif.
Filed Apr. 17, 1992, Ser. No. 870,705
Term of patent 14 years
U.S. Cl. D10—78



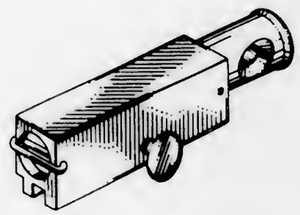
343,802
COAXIAL TEST PROBE
Robert R. Kornowski, Schaumburg, Ill.; Charles J. Johnston, Walnut, and Charles M. Tygard, Diamond bar, both of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.
Filed Jun. 26, 1992, Ser. No. 906,278
Term of patent 14 years
U.S. Cl. D10—80



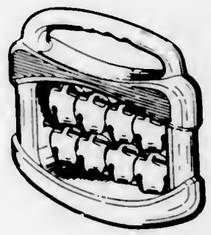
343,803
ELECTRONIC ENERGY METER
Maurice J. Ouellette, North Berwick, Me.; Warren R. Germer, Dover, N.H.; Donald F. Bullock, Madbury, N.H.; Raymond E. Fearnley, Rochester, N.H.; Leslie J. Rosenau, Dover, N.H.; David H. Masury, Kittery Point, and Thomas H. Stevens, Cape Neddick, both of Me., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 412,352, Sep. 25, 1989. This application Aug. 13, 1992, Ser. No. 928,166
Term of patent 14 years
U.S. Cl. D10—100



343,804
AUDIBLE ALARM FOR DOORS AND WINDOWS
James K. Sims, Scottsdale, Ariz., assignor to Emma A. MacDowell, Scottsdale, Ariz., a part interest
Continuation-in-part of Ser. No. 866,425, Apr. 10, 1992, Pat. No. 5,197,407. This application Dec. 17, 1992, Ser. No. 2,715
Term of patent 14 years
U.S. Cl. D10—106



343,805
HAND BELL
Yitzhak Bar-Yona, Petach Tikva, Israel, assignor to Halilit Export (1974) Ltd., Yehuda, Israel
Filed Nov. 12, 1992, Ser. No. 1,337
Term of patent 14 years
U.S. Cl. D10—116



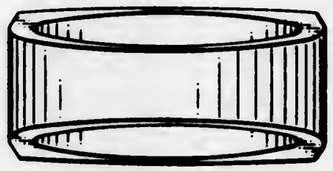
343,806
FOUR-SIDED LINK-BASED JEWELRY ROPE CHAIN
Krikor Bedoyan, North Hollywood, Calif., assignor to Oroamerica, Inc., Burbank, Calif.
Continuation-in-part of Ser. No. 575,502, Aug. 27, 1990, Pat. No. Des. 330,343. This application Feb. 6, 1992, Ser. No. 831,970
Term of patent 14 years
U.S. Cl. D11—13



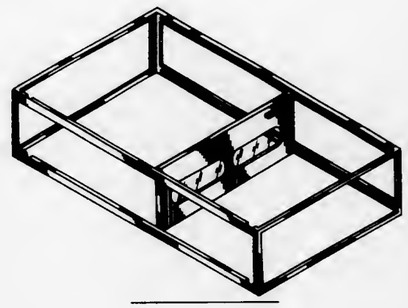
343,807
INCENSE BURNER
Mark R. Newman, P.O. Box 17009, Tucson, Ariz. 85731, and Jeffrey J. Richards, 9201 N. 29th Ave., Bldg. 63, Suite 317, Phoenix, Ariz. 85051
Filed Sep. 21, 1992, Ser. No. 949,051
Term of patent 14 years
U.S. Cl. D11—131.1



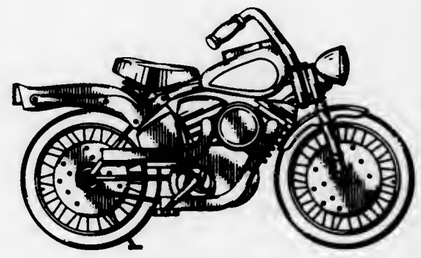
343,808
RING
Paul A. Montgomery, 2937 Linbergh, Bellingham, Wash. 98225
Filed Jan. 8, 1992, Ser. No. 818,229
Term of patent 14 years
U.S. Cl. D11—31



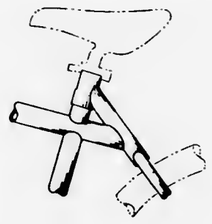
343,809
ADJUSTABLE TAILGATE FOR A TRUCK
Daniel Cannon, 12787 Catalpa, Southgate, Mich. 48195
Filed Sep. 1, 1992, Ser. No. 937,666
Term of patent 14 years
U.S. Cl. D12—98



343,810
BICYCLE
Jim V. Sanborn, Ft. Lauderdale, Fla., assignor to J & B Importers, Inc., Miami, Fla.
Filed Jul. 13, 1992, Ser. No. 912,603
Term of patent 14 years
U.S. Cl. D12—111

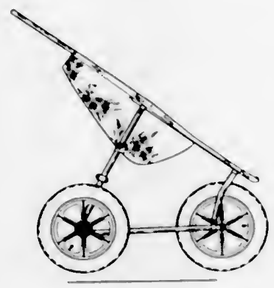


343,811
BICYCLE SEAT SUPPORT
Clifford R. Weidberg, 11 Constance Ct., Hauppauge, N.Y. 11788
Filed Dec. 12, 1991, Ser. No. 805,929
Term of patent 14 years
U.S. Cl. D12—119



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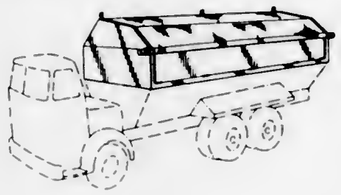
343,812
BABY STROLLER
Philip A. Baechler, and Timothy O. Armstrong, both of Yakima, Wash., assignors to Racing Strollers, Inc., Yakima, Wash.
Filed Sep. 18, 1992, Ser. No. 948,913
Term of patent 14 years
U.S. Cl. D12—129



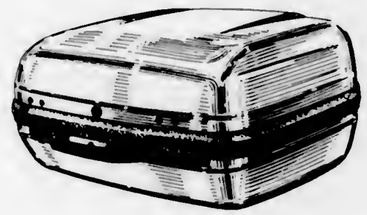
343,813
PROTECTIVE COVER FOR AUTOMOBILES
Tommy L. Brown, and Izola B. Brown, both of 1618 State St., Monroe, La. 71203
Filed Oct. 8, 1991, Ser. No. 778,619
Term of patent 14 years
U.S. Cl. D12—403



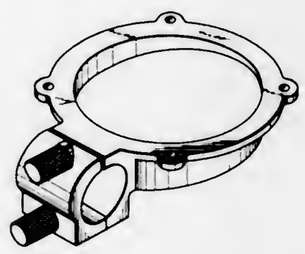
343,814
TRUCK COVER TARPUALIN UNIT
Walter Michel, P.O. Box 119, Sasakatchewan, Canada S0K 3X0
Filed Oct. 27, 1992, Ser. No. 836
Claims priority, application Canada, Sep. 22, 1992, 2209923
Term of patent 14 years
U.S. Cl. D12—401



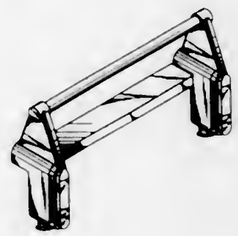
343,815
TRUNK FOR A MOTORCYCLE
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1992, Ser. No. 853,162
Claims priority, application Japan, Nov. 26, 1991, 3-35592
Term of patent 14 years
U.S. Cl. D12—410



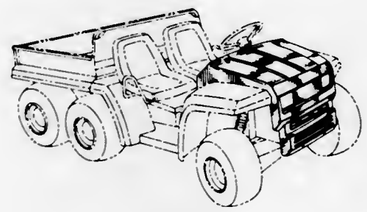
343,816
VARIABLE BICYCLE BALL CARRIER
Glenn De Silva, 10121 Tabor St., #12, Los Angeles, Calif. 90034
Filed Oct. 23, 1992, Ser. No. 761
Term of patent 14 years
U.S. Cl. D12—407



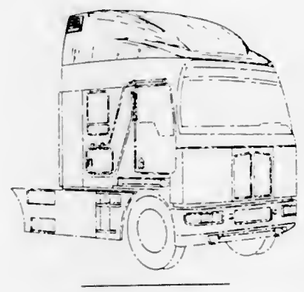
343,817
VEHICLE PUSH BAR FOR MOUNTING TO A BUMPER OF A VEHICLE
Dennis S. Morrow, Fort Worth, Tex., assignor to Lectric Lites Co., Ft. Worth, Tex.
Filed Feb. 25, 1992, Ser. No. 841,034
Term of patent 14 years
U.S. Cl. D12—172



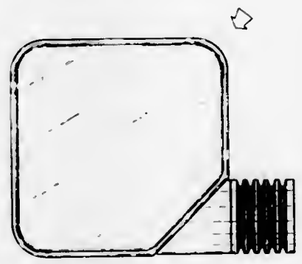
343,818
VEHICLE HOOD
Stanley J. DeBraal, West Bend, Wis.; Daniel R. Nickles, Hewitt; William E. Crookes, Waldwick, both of N.J.; Alberto J. Mantilla, Brooklyn; Tor G. Bonnier, New York, both of N.Y., and David R. Holm, Oconomowoc, Wis., assignors to Deere & Company, Moline, Ill.
Filed Nov. 16, 1992, Ser. No. 1,565
Term of patent 14 years
U.S. Cl. D12—173



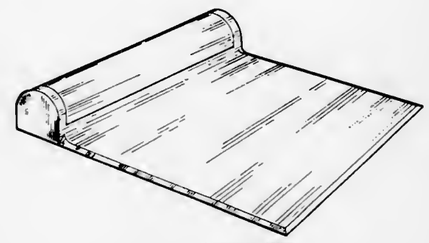
343,819
TRUCK CAB TOP FAIRING
Roy L. Meryman, and Thomas R. Liethen, both of Renton, Wash., assignors to Paccar Inc, Bellevue, Wash.
Filed Jan. 8, 1992, Ser. No. 818,223
Term of patent 14 years
U.S. Cl. D12—181



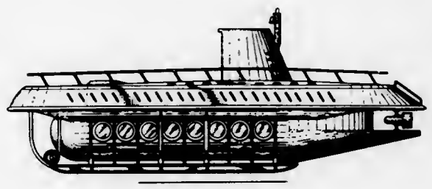
343,820
VEHICLE EXTERNAL REARVIEW MIRROR
Antonio Borello, Settimo Torinese, Italy, assignor to Gilardini S.p.A., Torin, Italy
Filed Apr. 29, 1992, Ser. No. 876,202
Claims priority, application Italy, Oct. 31, 1991, T0910000239
Term of patent 14 years
U.S. Cl. D12—187



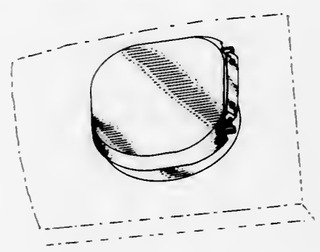
343,821
COMBINED FLOOR MAT AND VEHICLE STOP
Larry A. Bush, 211 Avenida Malaga, Anaheim, Calif. 92808, and Theo F. Smit, 4134 Tomlinson Ave., Riverside, Calif. 92503
Filed Aug. 10, 1992, Ser. No. 926,449
Term of patent 14 years
U.S. Cl. D12—217



343,822
TOURIST TYPE SUBMARINE
Dennis Hurd, 2619 West 3rd Avenue, Vancouver, British Columbia, Canada V6K 1M4 ; John Witney, P.O. Box 360, Lions Bay, British Columbia, Canada V0N 2E0 , and Thomas Roberts, 3044 Ontario Street, Vancouver, British Columbia, Canada V5T 2Y8
Filed Oct. 20, 1986, Ser. No. 896,242
Term of patent 14 years
U.S. Cl. D12—308

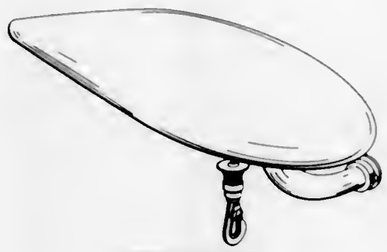


343,823
ROTATABLE BOAT HATCH COVER
Lawrence B. Potter, East End Post Office, Tortola, British Virgin Isls.
Filed Sep. 14, 1992, Ser. No. 948,736
Term of patent 14 years
U.S. Cl. D12—318

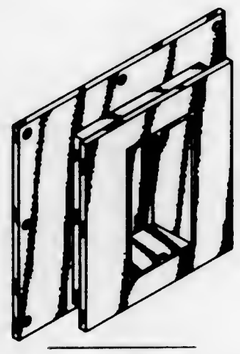


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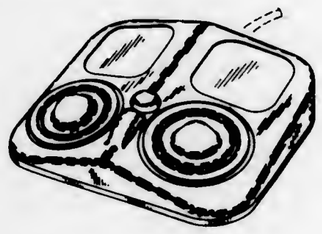
343,824
EXTERNAL HOIST FOR A HELICOPTER
Dennis Halwes, Arlington, Tex., assignor to Aeronautical Accessories, Inc., Bristol, Tenn.
Filed Dec. 29, 1992, Ser. No. 3,125
Term of patent 14 years
U.S. Cl. D12—345



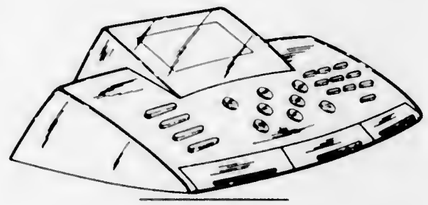
343,825
COMBINED ELECTRICAL BOX AND MOUNTING BLOCK THEREFOR
Timothy Enderby, 402 E. Oak Orchard St., Medina, N.Y. 14103
Filed Aug. 21, 1991, Ser. No. 748,058
Term of patent 14 years
U.S. Cl. D13—152



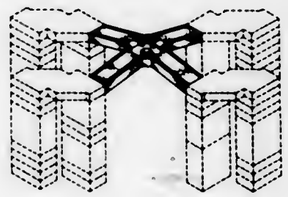
343,826
FOOT SWITCH CONTROLLER
Paul B. Krebs, and Shawn R. Irwin, both of Newberg, Oreg., assignors to A-dec, Inc., Newberg, Oreg.
Filed Nov. 19, 1992, Ser. No. 1,651
Term of patent 14 years
U.S. Cl. D13—168



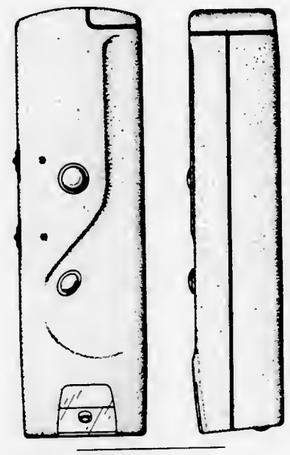
343,827
TELECONTROL PANEL FOR HOUSEHOLD CIRCUITRY
Philippe Piret, Ifs, France, assignor to Moulinex Societe Anonyme, Bagnolet, France
Filed May 13, 1992, Ser. No. 882,634
Claims priority, application France, Nov. 13, 1991, 917049
Term of patent 14 years
U.S. Cl. D13—164



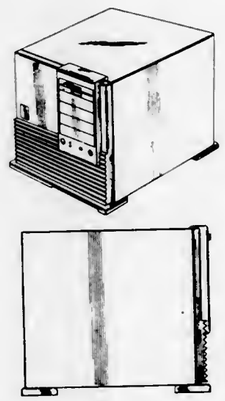
343,828
COMPUTER CABLE TROUGH FOR ROUTING COMPUTER CABLES BETWEEN STACKS OF COMPUTER MODULES
Richard E. Lettermann, Newton; Neal H. Marshall, Bolton; John c. Costello, Wellesley, and Benjamin J. Beck, Boston, all of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.
Filed Jun. 10, 1991, Ser. No. 713,342
Term of patent 14 years
U.S. Cl. D13—155



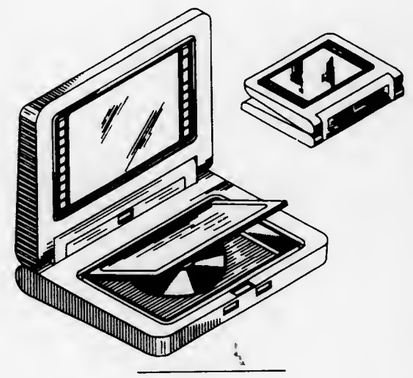
343,829
OPTICAL SCANNER FOR A WORD PROCESSOR
Mitsukazu Okuda; Kazumi Osaka, and Yasuhiko Mano, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 21, 1992, Ser. No. 824,266
Claims priority, application Japan, Jul. 18, 1991, 3-21549
Term of patent 14 years
U.S. Cl. D14—116



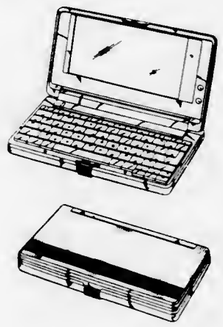
343,830
PERSONAL COMPUTER
Lawrence M. Kuba, Nashua, N.H., and Pius S. Leung, Tewksbury, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Jun. 18, 1992, Ser. No. 900,890
Term of patent 14 years
U.S. Cl. D14—100



343,831
COMBINED HOUSING AND DISPLAY SCREEN FOR LAPTOP COMPUTER AND CD ROM TERMINAL
Carl R. Spoeth, 12412 Cobblestone Dr., Bayonet Point, Fla. 34667
Filed May 25, 1990, Ser. No. 528,796
Term of patent 14 years
U.S. Cl. D14—106

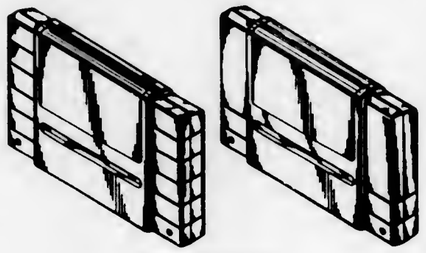


343,832
COMPUTER
Shinya Haraga, and Hajime Sekino, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Feb. 7, 1992, Ser. No. 832,853
Claims priority, application Japan, Aug. 8, 1991, 3-24280
Term of patent 14 years
U.S. Cl. D14—106



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343,833
CARTRIDGE FOR VIDEO GAME MACHINE
Lance Barr, Redmond, Wash., and Mitsuru Hitomi, Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan
Filed Sep. 10, 1991, Ser. No. 757,431
Claims priority, application Japan, Mar. 26, 1991, 3-8433
Term of patent 14 years
U.S. Cl. D14—121



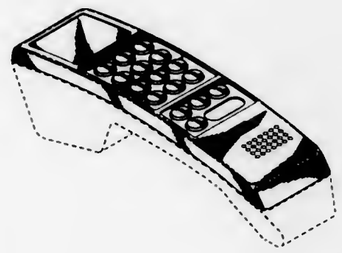
343,834
PORTABLE TELEPHONE
Terrance N. Taylor, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 888,325, May 26, 1992, which is a continuation of Ser. No. 718,877, Jun. 21, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 948,706
Term of patent 14 years
U.S. Cl. D14—138



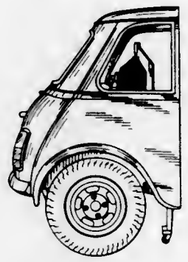
343,835
PORTABLE TELEPHONE
Albert L. Nagele, Wilmette, and Joseph Tomaino, Elk Grove Village, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 4, 1992, Ser. No. 2,205
Term of patent 14 years
U.S. Cl. D14—138



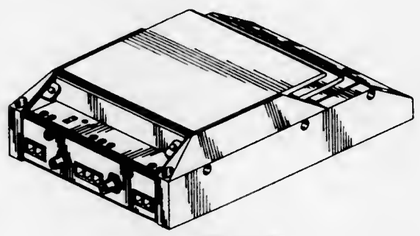
343,836
TELEPHONE HANDSET
Nicholas Mischenko, Mount Prospect, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1992, Ser. No. 853,311
Term of patent 14 years
U.S. Cl. D14—148



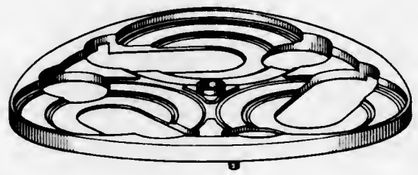
343,837
JUKEBOX
Stephen K. Joynes, 15/16 Bennington Street, Cheltenham, Gloucestershire, United Kingdom
Filed Jun. 5, 1991, Ser. No. 710,319
Claims priority, application United Kingdom, Dec. 11, 1990, 2011653
Term of patent 14 years
U.S. Cl. D14—173



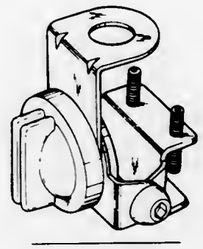
343,838
AMPLIFIER HOUSING
Brett M. Frank, Canoga Park, and Kim L. Christie, Sylmar, both of Calif., assignors to Infinity Systems, Inc., Chatsworth, Calif.
Filed Dec. 18, 1991, Ser. No. 809,977
Term of patent 14 years
U.S. Cl. D14—198



343,839
COMPACT DISC CAROUSEL
James T. Dennis, 2312 NW. 57th St., Oklahoma City, Okla. 73112
Filed Jul. 22, 1992, Ser. No. 919,555
Term of patent 14 years
U.S. Cl. D14—217



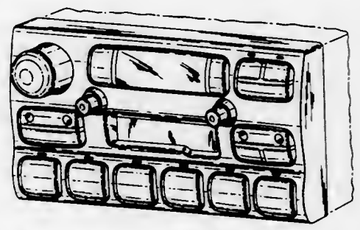
343,840
AUTOMOBILE ROOF SIDE ANTENNA MOUNT
Hironobu Watanabe, Itabashi, Japan, assignor to Dai-Ichi Denpa Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1992, Ser. No. 819,001
Claims priority, application Japan, Aug. 14, 1991, 3-24611
Term of patent 14 years
U.S. Cl. D14—238



343,841
PORTABLE RADIOTELEPHONE CHARGER
Moo H. Hon; Bee L. Khoo, both of Johor, Malaysia; Craig F. Siddoway, Davie, and Bruce A. Claxton, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 19, 1991, Ser. No. 747,231
Term of patent 14 years
U.S. Cl. D14—251

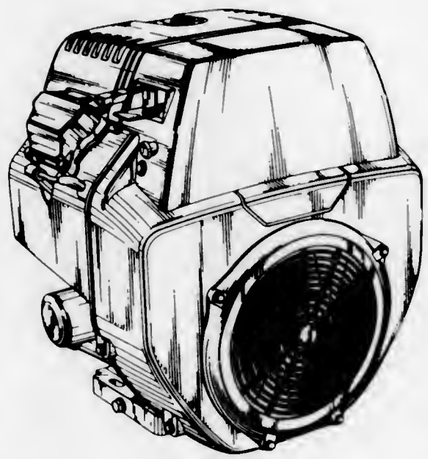


343,842
CONTROL PANEL FOR AN AUTOMOTIVE RADIO/CASSETTE
James H. Fowler, Dearborn, and Nevenka Schumaker, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 14, 1992, Ser. No. 929,560
Term of patent 14 years
U.S. Cl. D14—258

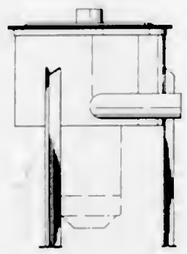


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343,843
INTERNAL COMBUSTION ENGINE
Yoshio Mikado, Niiza, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan
Filed Oct. 15, 1991, Ser. No. 775,409
Claims priority, application Japan, Apr. 15, 1991, 3-10684
Term of patent 14 years
U.S. Cl. D15—1



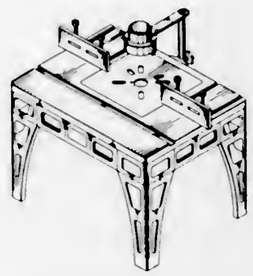
343,844
TURBO COMPRESSOR CASING
John J. Dulak, Glastonbury, Conn., assignor to The Spencer Turbine Company, Windsor, Conn.
Filed Nov. 12, 1991, Ser. No. 791,061
Term of patent 14 years
U.S. Cl. D15—7



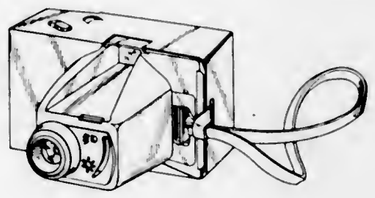
343,845
REFRIGERATOR MAT PROTECTOR
Darci A. Drumm, 3210 Perry Ave. #2G, New York, N.Y. 10467
Filed Dec. 16, 1991, Ser. No. 808,282
Term of patent 14 years
U.S. Cl. D15—89



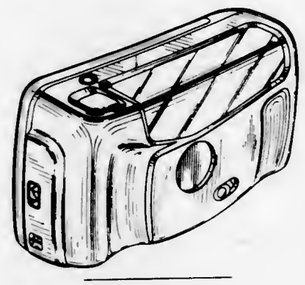
343,846
ROUTER TABLE
Shiraz H. Balolia, and Steven A. Erbach, both of Bellingham, Wash., assignors to Woodstock International, Inc., Bellingham, Wash.
Filed Mar. 18, 1992, Ser. No. 855,336
Term of patent 14 years
U.S. Cl. D15—127



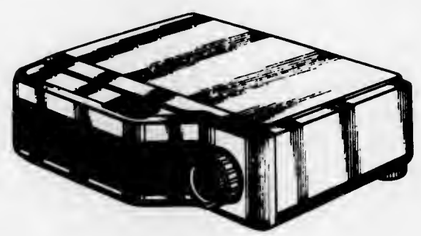
343,847
TELEFOTO CAMERA
John K. McBride, and James D. Gresko, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 4, 1992, Ser. No. 831,118
Term of patent 14 years
U.S. Cl. D16—218



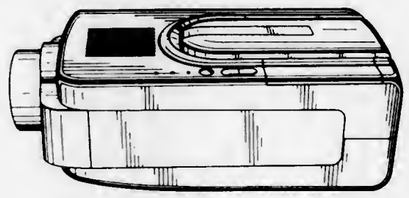
343,848
35 MM CAMERA
Chie Hatakeyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 18, 1992, Ser. No. 930,050
Claims priority, application Japan, Feb. 19, 1992, 4-4449
Term of patent 14 years
U.S. Cl. D16—218



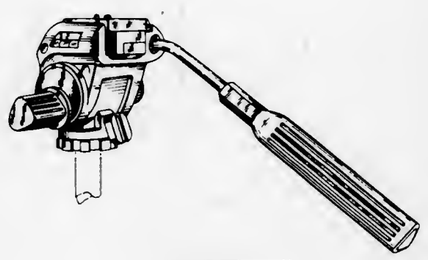
343,849
VIDEO PROJECTOR
Akihiro Miyahara, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,873
Term of patent 14 years
U.S. Cl. D16—225



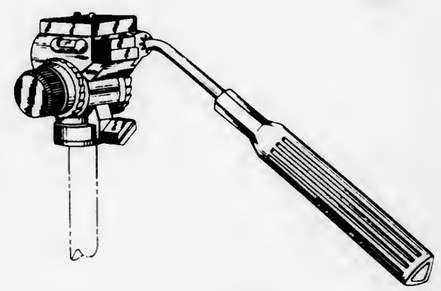
343,850
VIDEO PROJECTOR
Taisuke Saeki; Harumi Sakamoto; Sakata Fumitoshi, and Isao Yoshinaka, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 26, 1992, Ser. No. 904,399
Claims priority, application Japan, Dec. 26, 1991, 3-39568
Term of patent 14 years
U.S. Cl. D16—234



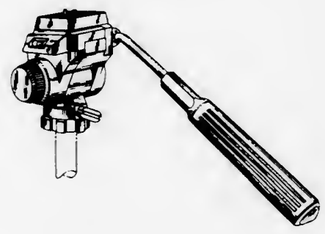
343,851
TRIPOD HEAD
Yee M. Haung, 5 F, No. 151, Nan Da Rd., Hsinchu, Taiwan
Filed Apr. 4, 1991, Ser. No. 680,266
Term of patent 14 years
U.S. Cl. D16—245



343,852
TRIPOD HEAD
Yee M. Haung, 5 F, No. 151, Nan Da Rd., Hsinchu, Taiwan
Filed Apr. 4, 1991, Ser. No. 680,285
Term of patent 14 years
U.S. Cl. D16—245

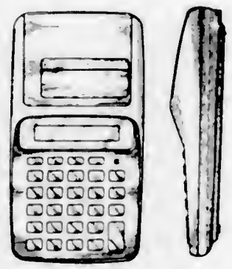


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Term of patent 14 years
U.S. Cl. D16—245

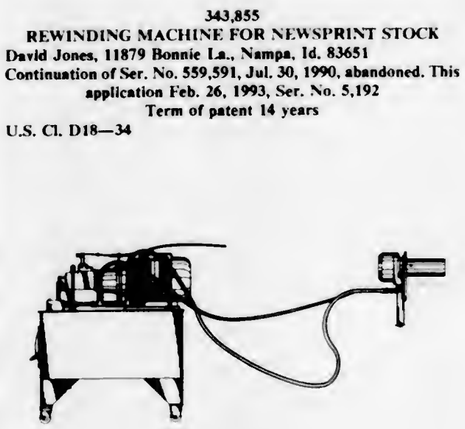


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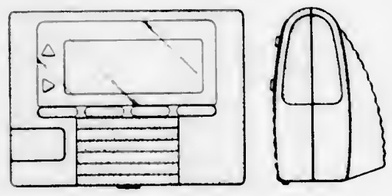
343,854
ELECTRONIC CALCULATOR
Toru Suzuki, Sagamihara, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1991, Ser. No. 812,364
Claims priority, application Japan, Feb. 7, 1991, 2786/1991
Term of patent 14 years
U.S. Cl. D18—7



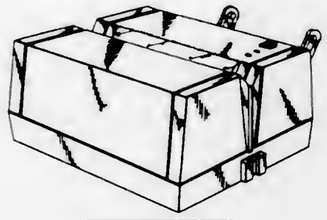
343,855
REWINDING MACHINE FOR NEWSPRINT STOCK
David Jones, 11879 Bonnie La., Nampa, Id. 83651
Continuation of Ser. No. 559,591, Jul. 30, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 5,192
Term of patent 14 years
U.S. Cl. D18—34



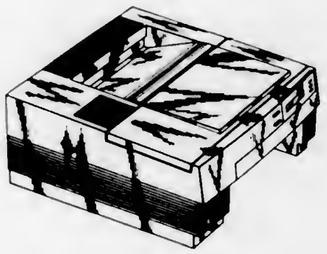
343,856
TIME PRINTER
Raymond Chan, Hong Kong, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda
Filed Mar. 9, 1992, Ser. No. 848,611
Claims priority, application United Kingdom, Jan. 6, 1992, 2020009
Term of patent 14 years
U.S. Cl. D18—50



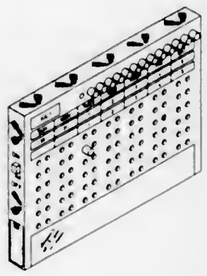
343,857
DATA PRINTER
John G. Clary, 2850 Thorndike Rd., Pasadena, Calif. 91107
Filed Sep. 8, 1992, Ser. No. 939,645
Term of patent 14 years
U.S. Cl. D18—50



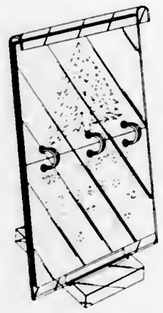
343,858
LASER BEAM PRINTER
Naoki Tashiro, Tokyo; Hiroyuki Tokuda, Yokohama; Toshimi Chiba, Chigasaki; Hideki Ito, Kawagoe, and Ryoko Mizuta, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1992, Ser. No. 887,929
Claims priority, application Japan, Nov. 28, 1991, 3-35954
Term of patent 14 years
U.S. Cl. D18—55



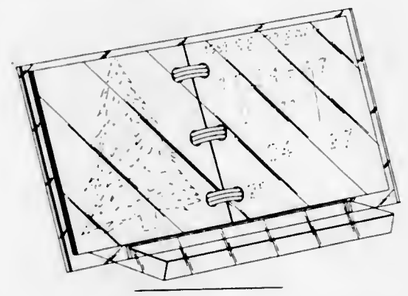
343,859
COMBINED PILL REMINDER CALENDAR AND MESSAGE BOARD
Dale A. Fisher, Box 2711, Prince George, British Columbia, Canada V2N 4T6
Filed Oct. 13, 1992, Ser. No. 328
Term of patent 14 years
U.S. Cl. D19—20



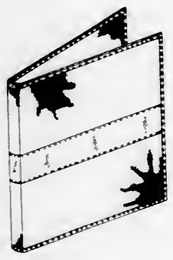
343,860
COMBINED CALENDAR AND PHOTOGRAPH HOLDER
Linda DeWitt, P.O. Box 5191, Santa Cruz, Calif. 95063
Filed Oct. 4, 1991, Ser. No. 771,932
Term of patent 14 years
U.S. Cl. D19—21



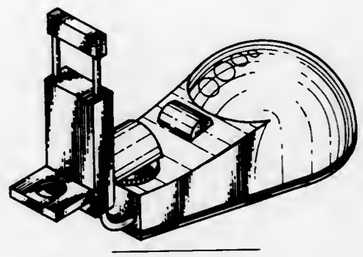
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COMBINED CALENDAR AND PHOTOGRAPH HOLDER
Linda DeWitt, P.O. Box 5191, Santa Cruz, Calif. 95063
Filed Oct. 4, 1991, Ser. No. 771,935
Term of patent 14 years
U.S. Cl. D19—21



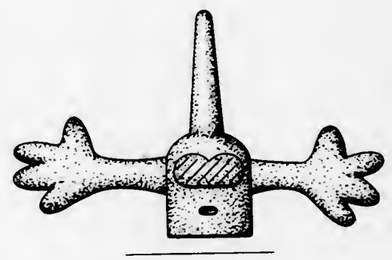
343,862
FABRIC COVER FOR BINDER OR PORTFOLIO
Jon R. Wyant, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Sep. 26, 1991, Ser. No. 766,170
Term of patent 14 years
U.S. Cl. D19—26



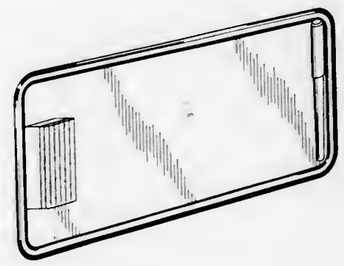
343,863
POWERED STIPPLER
Remi J. Gits, 500 W. Cermak Suite 501, Chicago, Ill. 60616-1818
Filed Jan. 28, 1992, Ser. No. 827,829
Term of patent 14 years
U.S. Cl. D19—35



343,864
COMBINED MESSAGE-RETAINING MAGNET AND RUBBER STAMP
Mark F. Rebong, 69 Georges Hill Rd., Newtown, Conn. 06470
Filed Jun. 1, 1992, Ser. No. 890,485
Term of patent 14 years
U.S. Cl. D19—36

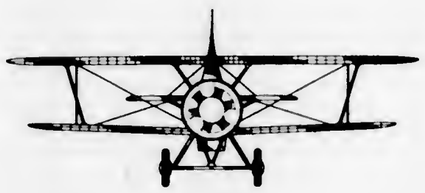


343,865
COMBINED VISOR-MOUNTABLE WRITING BOARD AND MARKING INSTRUMENT
Louise Pohl, 1179 Wild Rose Dr., Santa Rosa, Calif. 95401
Filed Oct. 31, 1991, Ser. No. 786,921
Term of patent 14 years
U.S. Cl. D19—78

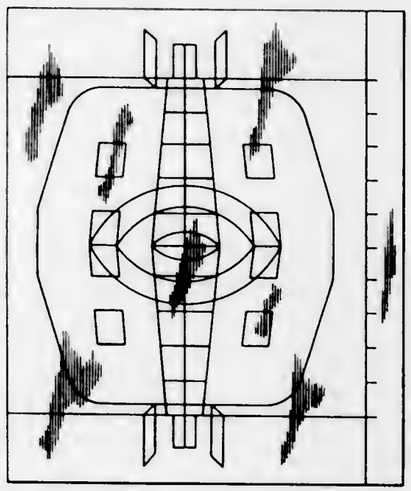


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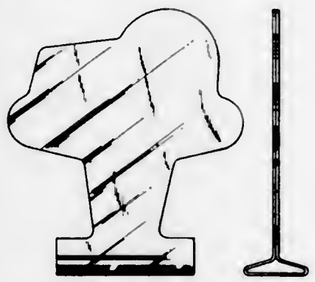
343,866
APPLIQUE FOR USE WITH A CEILING FAN
Richard A. Pearce, Memphis, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Division of Ser. No. 835,264, Feb. 13, 1992. This application Apr. 23, 1993, Ser. No. 7,465
Term of patent 14 years
U.S. Cl. D20—11



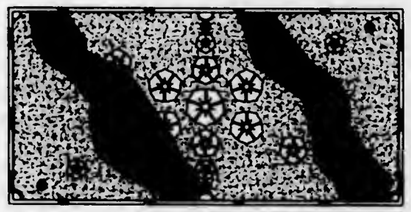
343,868
DART BOARD
Glen S. Tolson, 4599 Angus Dr., Gainesville, Va. 22065
Filed Mar. 2, 1992, Ser. No. 843,105
Term of patent 14 years
U.S. Cl. D21—6



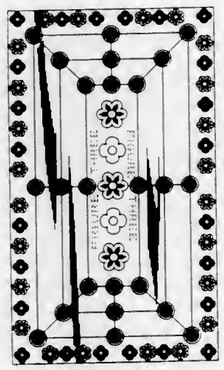
343,867
ADVERTISEMENT STAND FOR GRAPHIC DESSERT DISPLAY
Joseph H. Mendelsohn, 4208 Inverrary Blvd., Suite 80A, Lauderhill, Fla. 33319
Filed Nov. 13, 1992, Ser. No. 1,459
Term of patent 14 years
U.S. Cl. D20—40



343,869
PUTTER POOL PLAYING BOARD
Sophia R. Atkinson; David L. Atkinson, III, and Dale C. Grochler, III, all of 5245 Whitney Blvd., Rocklin, Calif. 95677
Filed Jun. 14, 1991, Ser. No. 715,121
Term of patent 14 years
U.S. Cl. D21—11



343,870
FIGURE THREE GAME
Atlee A. Weaver, R.D. 3, Punxsutauney, Pa. 15767
Continuation-in-part of Ser. No. 578,679, Sep. 7, 1990, abandoned. This application Jun. 17, 1991, Ser. No. 716,332
Term of patent 14 years
U.S. Cl. D21—34



343,871
MOUTH INSERTED NOVELTY FOR CREATING FACIAL EXPRESSIONS
Norma E. Baron, Morganville, and Natalie L. Winters, East Brunswick, both of N.J., assignors to The Smile People, Inc., East Brunswick, N.J.
Filed May 8, 1991, Ser. No. 697,285
Term of patent 14 years
U.S. Cl. D21—59



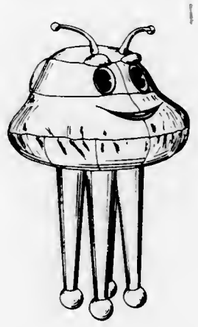
343,872
INTERLOCKING BLOCK
Leslie Wallant, 400 E. 85th St., New York, N.Y. 10028
Filed Jun. 14, 1991, Ser. No. 715,139
Term of patent 14 years
U.S. Cl. D21—108



343,873
TOY GUN
Gary D. Aigner, Chicago, Ill., assignor to Strombecker Corporation, Chicago, Ill.
Filed Sep. 25, 1992, Ser. No. 951,546
Term of patent 14 years
U.S. Cl. D21—147



343,874
TOY FIGURE
Karl Messerli, Lupsingen, Switzerland, assignor to Gis-Handels AG, Lupsingen, Switzerland
Filed Feb. 28, 1992, Ser. No. 843,967
Term of patent 14 years
U.S. Cl. D21—148

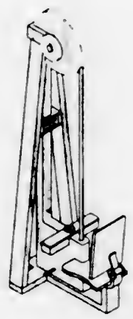


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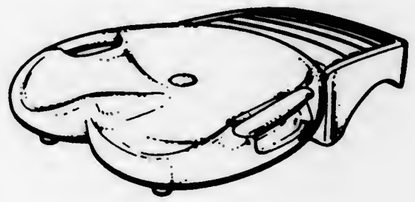
343,875
EXERCISING STICK
John S. Webster, 7925 Hemingway Ave., San Diego, Calif. 92120
Filed Jul. 6, 1992, Ser. No. 909,444
Term of patent 14 years
U.S. Cl. D21—191



343,876
ROPE CLIMBER EXERCISER
Ronald A. McConnell, 97 S. Water St., Vergennes, Vt. 05491
Filed Jul. 20, 1992, Ser. No. 915,199
Term of patent 14 years
U.S. Cl. D21—191



343,877
MULTI-PURPOSE PHYSICAL EXERCISER
Sam Yin, No. 74, Lane 140, Sec. 2, Chung Hsing Rd., Hsin Tien, Taipei, and Ming-Chih Huang, No. 33, Lane 1000, Chun Jih Rd., Tao Yuan, both of Taiwan
Filed Jul. 30, 1992, Ser. No. 921,261
Term of patent 14 years
U.S. Cl. D21—191



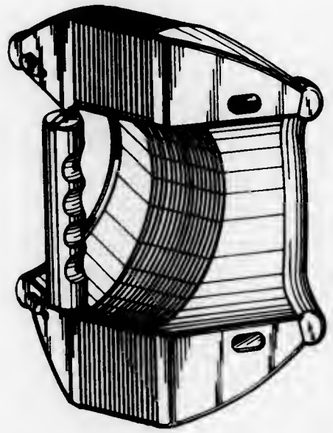
343,878
PHYSICAL EXERCISER
Paul G. Hughes, 2013 Bodega Ave., Petaluma, Calif. 94952
Filed Dec. 6, 1991, Ser. No. 804,195
Term of patent 14 years
U.S. Cl. D21—195



343,879
STAIR CLIMBING EXERCISE MACHINE
Harukaze Koga, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan
Filed Jun. 9, 1992, Ser. No. 894,209
Claims priority, application Japan, Dec. 14, 1991, 3-37650
Term of patent 14 years
U.S. Cl. D21—195



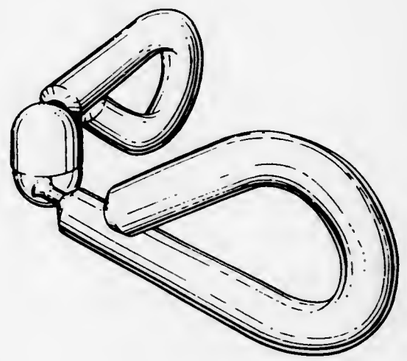
343,880
UNDERWATER EXERCISE DEVICE
Robert N. Shelton, Princeton, and Andrew F. Fireman, Needham, both of Mass., assignors to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Jun. 18, 1992, Ser. No. 900,842
Term of patent 14 years
U.S. Cl. D21—197



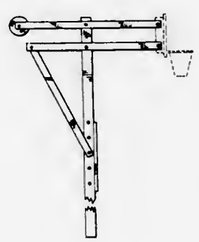
343,881
ISOMETRIC EXERCISER
Andy S. Wilson, 1945 W. 154th St., Gardena, Calif. 90249
Filed Dec. 16, 1991, Ser. No. 808,276
Term of patent 14 years
U.S. Cl. D21—198



343,882
PHYSICAL EXERCISER
Anne-Marie Bennstrom; Leslie G. Sinclair, both of Topanga; George Reynolds, Laguna Beach, and Stephan A. Schwartz, Los Angeles, all of Calif., assignors to V-Partners, Ltd., Los Angeles, Calif.
Continuation-in-part of Ser. No. 473,701, Feb. 2, 1990, Pat. No. Des. 322,827. This application Dec. 30, 1991, Ser. No. 817,109
Term of patent 14 years
U.S. Cl. D21—198

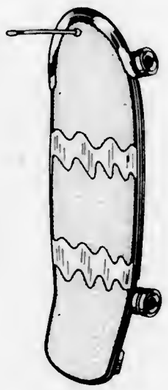


343,883
ADJUSTABLE BASKETBALL GOAL
Timothy D. Hall, 905 Kent La., Troy, Ohio 45373
Filed Mar. 19, 1991, Ser. No. 672,595
Term of patent 14 years
U.S. Cl. D21—201



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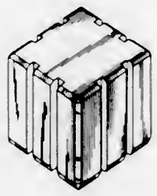
343,884
COMBINED SKATEBOARD AND RADIO
Heung H. Park, 14730 Willow Creek La., Chino Hills, Calif. 91709
Filed Jun. 11, 1992, Ser. No. 898,753
Term of patent 14 years
U.S. Cl. D21—227



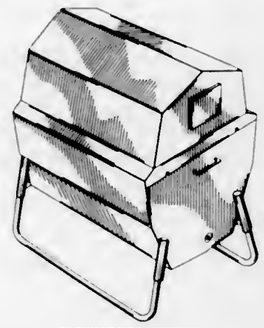
343,885
GOLFER'S TOOL
Frank A. Wilkie, Sr., 856 Links View Dr., Wood Ranch, Calif. 93065
Filed Sep. 3, 1987, Ser. No. 92,693
The portion of the term of this patent subsequent to Jun. 1, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—234



343,886
MOTH DETERRENT CUBE
Henry Mattesky, Cedar Grove, N.J., assignor to Herbert Glatt, Morristown, N.J.
Filed Mar. 26, 1991, Ser. No. 675,473
Term of patent 14 years
U.S. Cl. D22—122



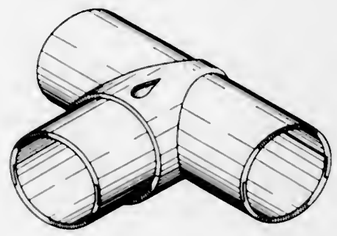
343,887
ANTI-SPILL CONTAINER FOR A CHEMICAL DRUM
Larry L. Shed, P.O. Box 2248; Jerry L. Dunlap, Box 5192, both of Hobbs, N. Mex. 88240, and Jimmy C. Henson, Box 11101, Midland, Tex. 79702
Filed Jun. 24, 1991, Ser. No. 721,375
Term of patent 14 years
U.S. Cl. D23—202



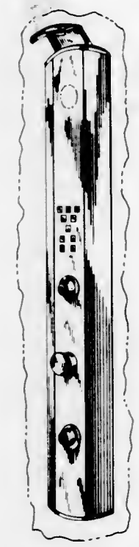
343,888
FIRE FIGHTER WATER MANIFOLD
Dean W. Rupp, 7414 Barclay Rd., Cheltenham, Pa. 19012
Filed Oct. 7, 1991, Ser. No. 772,011
Term of patent 14 years
U.S. Cl. D23—259



343,889
PLUMBING SPLIT FITTING
Bobby B. Stonecypher, 1383 Fohlander Dr. S., Columbus, Ohio 43229
Filed May 16, 1991, Ser. No. 700,928
Term of patent 14 years
U.S. Cl. D23—263



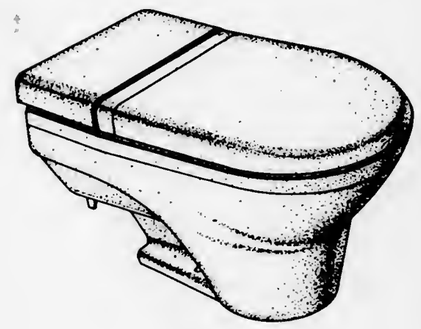
343,890
SHOWER FIXTURE
Alan D. Bengtson, Sheboygan, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Kohler Co., Kohler, Wis.
Filed Nov. 8, 1991, Ser. No. 792,050
Term of patent 14 years
U.S. Cl. D23—283



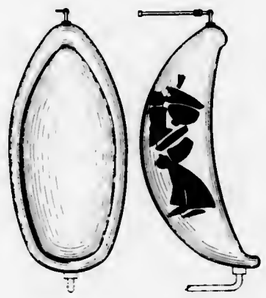
343,891
CHILDREN'S TRAINING TOILET
Bruce Kessler, 157 E. 18th St., Apt. 2H, New York, N.Y. 10003
Filed Apr. 3, 1992, Ser. No. 864,927
Term of patent 14 years
U.S. Cl. D23—297



343,892
TOILET
Shyh-Shin Chen, Taipei, Taiwan, assignor to Hocheng Pottery Mfg. Co., Ltd., Taipei, Taiwan
Filed Dec. 16, 1991, Ser. No. 808,271
Term of patent 14 years
U.S. Cl. D23—301

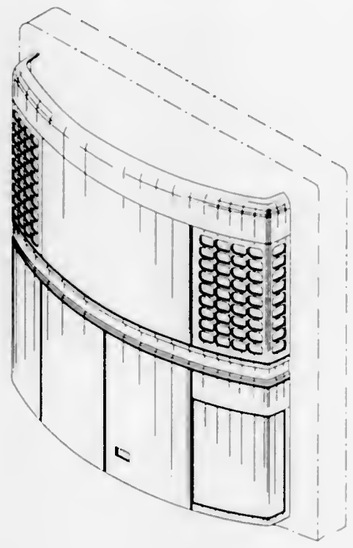


343,893
URINAL
Wellington S. Roberts, 7330 S. Paulina, Chicago, Ill. 60636
Filed Aug. 19, 1991, Ser. No. 746,578
Claims priority, application Australia, Nov. 9, 1990, 3594/90
Term of patent 14 years
U.S. Cl. D23—302

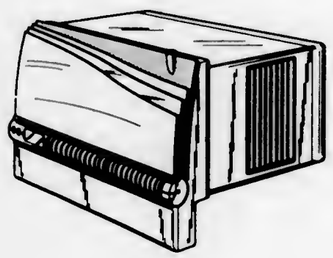


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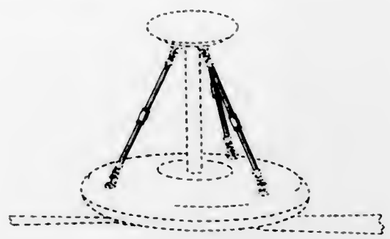
343,894
COVER FOR A TRANSPORT REFRIGERATION UNIT
Lowell M. Anderson, Bloomington; Rodney H. Volk, Eden Prairie; Gary L. Zebeli, Waconia, and Peter B. Allard, Minnetonka, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed May 1, 1991, Ser. No. 694,160
Term of patent 14 years
U.S. Cl. D23—325



343,895
AUTOMATIC ATMOSPHERE CONDITIONER
M. Edward Lawing, San Diego, Calif.; Deane W. Richardson, Worthington, Ohio; James S. Couch, Powell, Ohio, and Mark J. Ciesko, Westerville, Ohio, assignors to Norm Pacific Automation Corp., Hsien, Taiwan
Filed Aug. 30, 1991, Ser. No. 752,315
Term of patent 14 years
U.S. Cl. D23—353



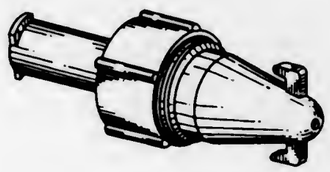
343,896
SET OF TOP ORNAMENTS FOR A CEILING FAN
Jean C. Mason, 2777 Woodshire Dr., Hollywood, Calif. 90068
Filed Dec. 31, 1991, Ser. No. 815,355
Term of patent 14 years
U.S. Cl. D23—411



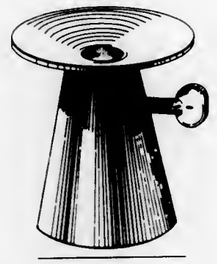
343,897
AUTO-INJECTOR FOR MEDICANT
Paul K. Rand, Letchworth, and Philip M. Regan, Cheshunt, both of United Kingdom, assignors to Glaxo Group Limited, London, United Kingdom
Filed Jun. 18, 1991, Ser. No. 717,126
Claims priority, application United Kingdom, Dec. 21, 1990, 2011919
Term of patent 14 years
U.S. Cl. D24—112



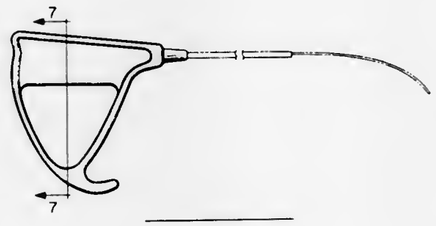
343,898
CATHETER ADAPTER
Peter L. Bryant, Libertyville, and Nicolaos A. Drivas, Des Plaines, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Nov. 22, 1991, Ser. No. 797,763
Term of patent 14 years
U.S. Cl. D24—112



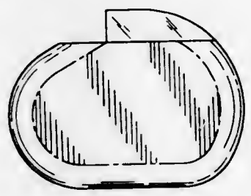
343,899
MEDICAL NEEDLE RESHEATHER
Timothy R. Lott, and Diane E. Lott, both of 2149 Sheraton Hills Rd., Wayzata, Minn. 55391
Filed Apr. 2, 1992, Ser. No. 862,591
Term of patent 14 years
U.S. Cl. D24—130



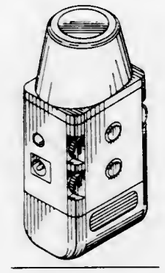
343,900
HANDLE FOR CANNULAE
James H. DeVries, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.
Filed Mar. 25, 1992, Ser. No. 857,305
Term of patent 14 years
U.S. Cl. D24—133



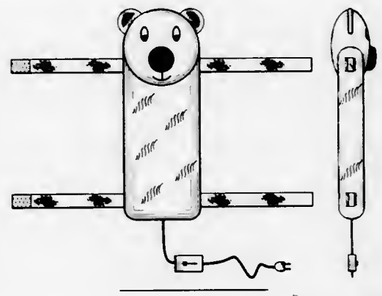
343,901
CARDIOVERTER DEFIBRILLATOR CANNISTER
Kenneth M. Anderson, Bloomington, Minn., assignor to Angeion Corporation, Plymouth, Minn.
Filed Apr. 28, 1992, Ser. No. 876,201
Term of patent 14 years
U.S. Cl. D24—167



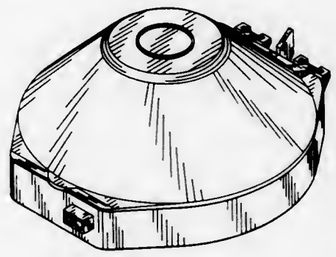
343,902
HAND-HELD SPEECH AID
Dennis H. Kosanke, 469 Ena Rd., Apt. 3003, Honolulu, Hi. 96815, and Richard E. Watkins, II, Denton, Tex., assignors to Dennis H. Kosanke, Honolulu, Hi.
Filed May 12, 1992, Ser. No. 881,544
Term of patent 14 years
U.S. Cl. D24—175



343,903
HEATING PAD
Rickie J. Perteet, 720 Booth Ave., Larimore, N. Dak. 58251
Filed Feb. 21, 1992, Ser. No. 837,985
Term of patent 14 years
U.S. Cl. D24—206

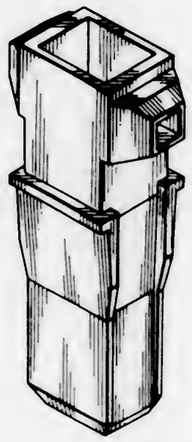


343,904
CENTRIFUGE
Jerry B. Silver, Newport Beach, and John McGettrick, San Clemente, both of Calif., assignors to Davstar California, Inc., Newport Beach, Calif.
Filed Mar. 12, 1992, Ser. No. 849,974
Term of patent 14 years
U.S. Cl. D24—219

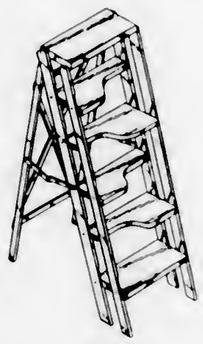


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343,905
CUVETTE FOR USE IN CHEMICAL ANALYSIS
Takashi Nagata, Hachioji, and Atsunori Yamashita, Shizuoka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1991, Ser. No. 657,560
Claims priority, application Japan, Aug. 23, 1990, 2-28276
Term of patent 14 years
U.S. Cl. D24—224



343,906
STEP LADDER HAVING RECESSED STEPS
Jules Murray, R.R. #2, Bracebridge, Ontario, Canada P1L 1W9
Filed Feb. 28, 1992, Ser. No. 843,287
Term of patent 14 years
U.S. Cl. D25—64



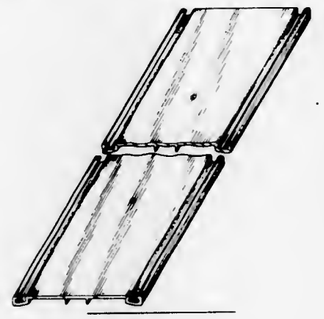
343,907
LADDER SECURE
Donald L. Porter, 7809 Shawnee Run St., Cincinnati, Ohio 45243
Filed May 28, 1992, Ser. No. 889,302
Term of patent 14 years
U.S. Cl. D25—68



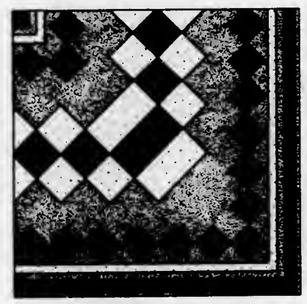
343,908
INTERLOCKING PAVING BLOCK
Friedrich S. Naether, R.R. #1, Box 1295, Freedom, Ind. 47431
Filed Dec. 7, 1992, Ser. No. 2,291
Term of patent 14 years
U.S. Cl. D25—113



343,909
METAL EXTRUSION SHAPE FOR SUPPORTING SCREENING AROUND PORCHES
Gerald B. Flynn, 5221 Bush River Rd., Columbia, S.C. 29212
Filed Jun. 8, 1992, Ser. No. 900,345
Term of patent 14 years
U.S. Cl. D25—123



343,910
CERAMIC FLOORING AND WALL TILE
Rafael Benavent Adrian, Nules, Spain, assignor to Gres De Nules, S.A. -Gresnul, Nules, Spain
Filed Mar. 27, 1991, Ser. No. 676,232
Claims priority, application Spain, Sep. 27, 1990, 21.155
Term of patent 14 years
U.S. Cl. D25—138



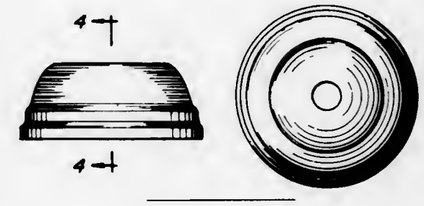
343,911
SHINGLE
John K. Hulett, 920 Garland La., Plymouth, Minn. 55447
Filed Jul. 30, 1992, Ser. No. 923,167
Term of patent 14 years
U.S. Cl. D25—139



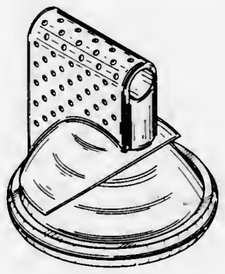
343,912
CANDLESTICK
Andy Huang, 3rd Fl., No. 72, Sec. 1, Cheng Kung Rd., Taipei, Taiwan
Filed Sep. 2, 1992, Ser. No. 939,367
Term of patent 14 years
U.S. Cl. D26—9



343,913
LIQUID CANDLE SNUFFER
Richard J. Kane, Middlesex, N.J., assignor to Standex International Corporation, Salem, N.H.
Filed Mar. 17, 1992, Ser. No. 855,332
Term of patet 14 years
U.S. Cl. D26—23

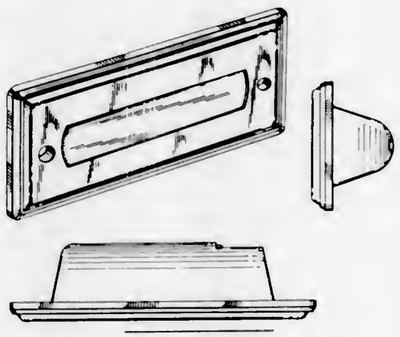


343,914
MEDICAL EXAMINATION LIGHT
Barry Wingate, Santa Clara County, Calif., assignor to Meddev Corporation, Los Altos, Calif.
Filed Mar. 12, 1991, Ser. No. 669,208
Term of patent 14 years
U.S. Cl. D26—24

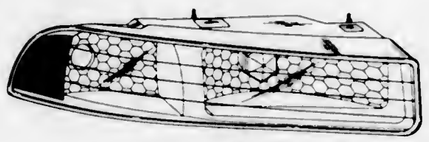


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343,915
RECESSED HOUSING FOR VEHICLE INTERIOR DOME LIGHT
Joseph E. Baader, 333 Holiday Dr., Springfield, Ohio 45505, and Edward J. Baader, 232 Stephen La., Springfield, Ohio 45505
Filed Oct. 24, 1991, Ser. No. 783,074
Term of patent 14 years
U.S. Cl. D26—28



343,916
HEADLAMP WITH HEXAGONAL FACETED REFLECTOR
Robert L. Klog, and James J. Murphy, both of Seymour, Ind., assignors to GTE Products Corporation, Danvers, Mass.
Filed Dec. 26, 1991, Ser. No. 813,427
Term of patent 14 years
U.S. Cl. D26—35



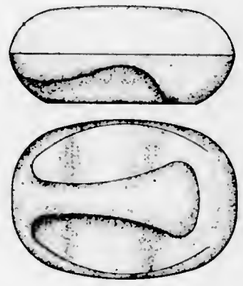
343,917
HAND HELD SPOTLIGHT WITH TRIPOD HANDLE
Choe T. Yuen, Shamshuipo, Hong Kong, assignor to Chiat Sl Industrial Company, Ltd., Hong Kong, China
Filed Nov. 8, 1991, Ser. No. 789,475
Term of patent 14 years
U.S. Cl. D26—50



343,918
LIGHTER
Francisco X. L. Capilla, Sant Vicenc de Montait, Spain, assignor to Flamagas, S.A., Barcelona, Spain
Filed Dec. 7, 1992, Ser. No. 2,337
Claims priority, application Spain, Jun. 25, 1992, 127;934
Term of patent 14 years
U.S. Cl. D27—154



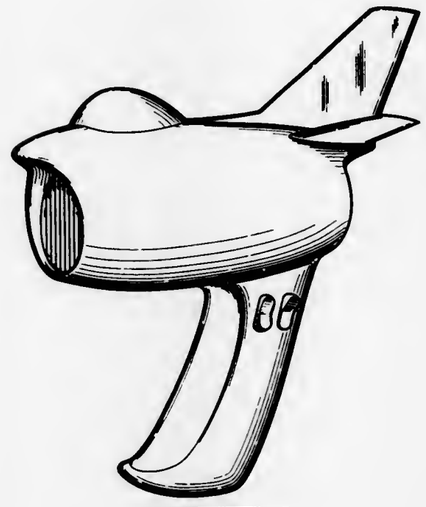
343,919
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,158
Term of patent 14 years
U.S. Cl. D28—8.1



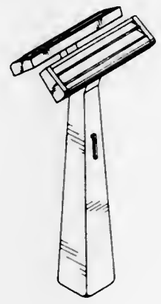
343,920
HAIR DRYER
Todd A. Bland, 4301 Abbott Rd., Lincoln, Nebr. 68516
Continuation-in-part of Ser. No. 247,576, Sep. 22, 1988, abandoned. This application Feb. 11, 1991, Ser. No. 653,275
Term of patent 14 years
U.S. Cl. D28—13



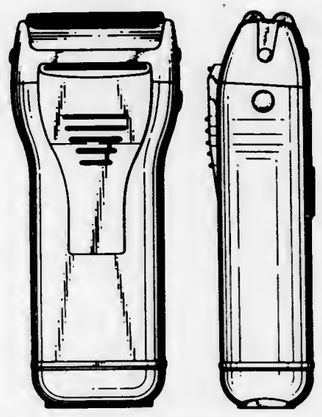
343,921
AIRPLANE HAIRDRYER
Frank Dimino, 72 Grecian Garden Dr., Rochester, N.Y. 14626
Filed Mar. 16, 1992, Ser. No. 851,762
Term of patent 14 years
U.S. Cl. D28—13



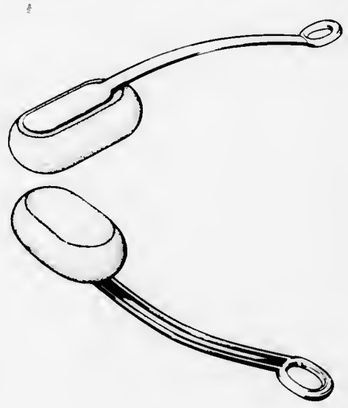
343,922
DISPOSABLE RAZOR
Erick L. Ahlgren, 7629 Edna, Houston, Tex. 77087-5517
Filed Oct. 13, 1992, Ser. No. 290
Term of patent 14 years
U.S. Cl. D28—46



343,923
ELECTRIC SHAVER
Yoshiyuki Nakashima; Akio Goto; Shinji Yamamoto; Masashi Nomura, all of Kadoma, Japan, and Florian Seiffert, Wiesbaden, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 22, 1992, Ser. No. 903,805
Claims priority, application Japan, Dec. 24, 1991, 3-39060
Term of patent 14 years
U.S. Cl. D28—49

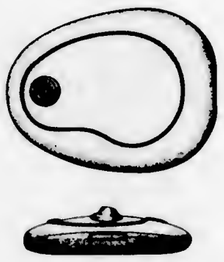


343,924
SPONGE BRUSH
Mark Kaplan, Brockton, Mass., assignor to Laloren, Inc., Stoughton, Mass.
Filed Jul. 28, 1992, Ser. No. 921,492
Term of patent 14 years
U.S. Cl. D28—63



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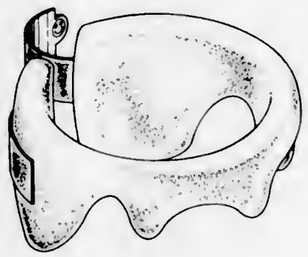
343,925
COSMETIC POWDER COMPACT
Elizabeth Garouste, Marcilly sur Eure, and Mattia Bonetti, Paris, both of France, assignors to Parfums Nina Ricci, Paris, France
Filed Jun. 3, 1992, Ser. No. 893,252
Term of patent 14 years
U.S. Cl. D28—78



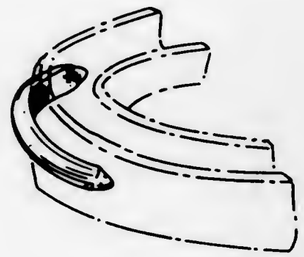
343,926
LIPSTICK CASE
Elizabeth Garouste, Marcilly sur Eure, and Mattia Bonetti, Paris, both of France, assignors to Parfums Nina Ricci, Paris, France
Filed Jun. 3, 1992, Ser. No. 894,153
Term of patent 14 years
U.S. Cl. D28—88



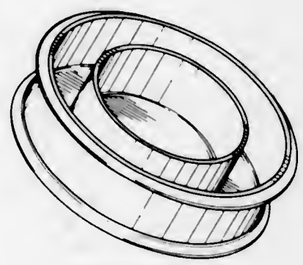
343,927
CHILD'S HEAD PROTECTOR
Nabil G. Hamdan, 119 N. Greenwood Ave., Hopewell, N.J. 08525
Filed Aug. 27, 1990, Ser. No. 572,379
Term of patent 14 years
U.S. Cl. D29—12



343,928
ATTACHABLE BRACE FOR A MOUTHGUARD
Jon D. Kittelsen, Fridley, Minn., assignor to E-Z Gard Industries, Inc., Minneapolis, Minn.
Filed Jun. 9, 1992, Ser. No. 896,569
Term of patent 14 years
U.S. Cl. D29—17



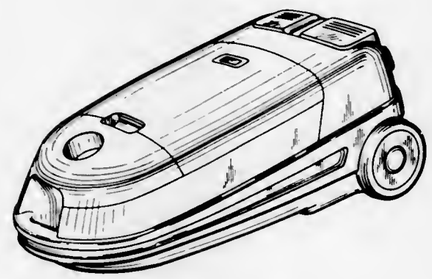
343,929
PET DISH
Vahe Karapetian, 4801 Los Feliz Blvd., Los Angeles, Calif. 90027
Filed Oct. 28, 1991, Ser. No. 784,049
Term of patent 14 years
U.S. Cl. D30—130



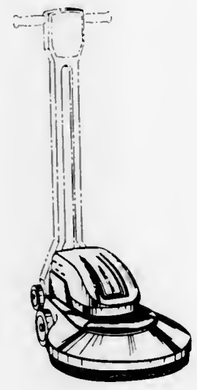
343,930
DOG CHEW TOY
Salvador Garcia, Inglewood, Calif., assignor to Booda Products, Inc., Gardena, Calif.
Filed Jun. 17, 1992, Ser. No. 900,257
Term of patent 14 years
U.S. Cl. D30—160



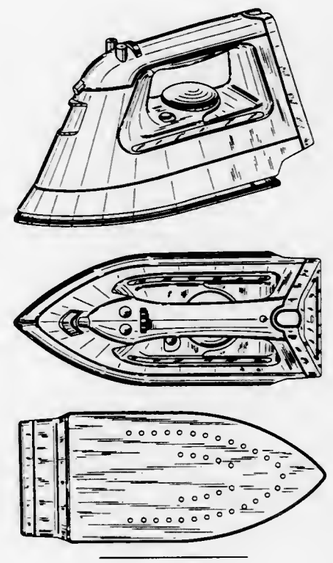
343,931
ELECTRIC VACUUM CLEANER
Toshiaki Tsuruha, and Takashi Shoji, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 6, 1992, Ser. No. 846,426
Claims priority, application Japan, Nov. 12, 1991, 3-34264
Term of patent 14 years
U.S. Cl. D32—21



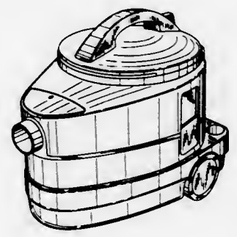
343,932
BURNISHER
Richard F. Wulff, Maple Plain, Minn., and Luciano Hernandez, IV, Holland, Mich., assignors to Castex Industries, Inc., Holland, Mich.
Filed Mar. 12, 1992, Ser. No. 850,062
Term of patent 14 years
U.S. Cl. D32—25



343,933
ELECTRIC IRON
Manfred Nitsch, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 28, 1992, Ser. No. 844,402
Claims priority, application World Int. Prop. O., Sep. 6, 1991, DM/020.606
Term of patent 14 years
U.S. Cl. D32—70

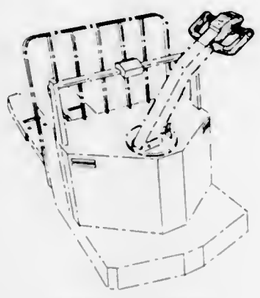


343,934
COMBINED ALL PURPOSE WET AND DRY SHAMPOO CLEANER
Hans T. Meelen, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 8, 1992, Ser. No. 880,434
Claims priority, application Switzerland, Dec. 3, 1991, DM/021.326
Term of patent 14 years
U.S. Cl. D32—24

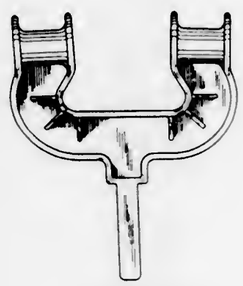


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343,935
CONTROL HANDLE FOR MOTORIZED PALLET TRUCK
Robert M. Drobeck, and John A. Tarasovitch, both of New Bremen, Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio
Filed May 15, 1992, Ser. No. 883,347
Term of patent 14 years
U.S. Cl. D34—35



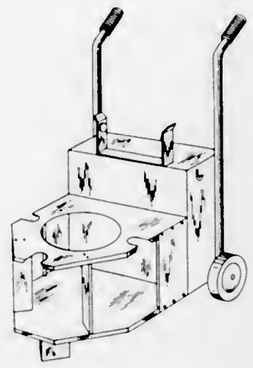
343,936
CONVEYOR TROLLEY BRACKET
Clayton C. McDonald, and Brian G. Stewart, both of Howell, Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.
Filed Sep. 18, 1992, Ser. No. 948,946
Term of patent 14 years
U.S. Cl. D34—35



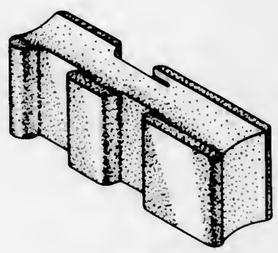
343,937
SPITTOON
Euell E. Wooten, and Debora L. Wooten, both of Rte. 1 Box 2, Simms, Tex. 75574
Filed Apr. 10, 1991, Ser. No. 683,742
Term of patent 14 years
U.S. Cl. D34—2



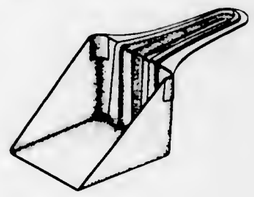
343,938
PORTABLE CAR WASH CART
James V. Liverman, Zebulon, N.C., assignor to BLE Incorporated, Zebulon, N.C.
Filed Dec. 23, 1991, Ser. No. 812,208
Term of patent 14 years
U.S. Cl. D34—25



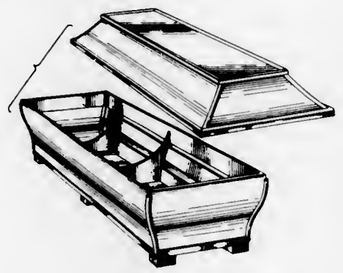
343,939
MULTI-POSITIONABLE ARM REST FOR A DECEASED
Ilija Rojdev, Cincinnati, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Jun. 11, 1992, Ser. No. 896,335
Term of patent 14 years
U.S. Cl. D99—99



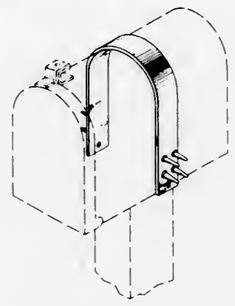
343,940
COIN SCOOP
Marne Glass, 9210 Whitney Way, Cypress, Calif. 90630
Filed Dec. 22, 1992, Ser. No. 2,894
Term of patent 14 years
U.S. Cl. D99—34



343,941
COFFIN
Soini Andersson; Stefan Lindh, both of Tyringe, and Stig Svensson, Perstorp, all of Sweden, assignors to Perstorp AB, Perstorp, Sweden
Filed Dec. 20, 1991, Ser. No. 810,921
Claims priority, application Sweden, Jun. 24, 1991, 9911298
Term of patent 14 years
U.S. Cl. D99—1



343,942
SEASONAL DECORATION SUPPORT FOR A MAILBOX
Thomas Herrick, and Walter Dombrowski, both of 177 Norcross St., Alpharetta, Ga. 30202
Filed Jul. 1, 1992, Ser. No. 907,326
Term of patent 14 years
U.S. Cl. D99—99



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF FEBRUARY, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

ABB Vetco Gray Inc.: *See—*
Marietta, Dale B., 5,282,655, Cl. 285-315.000.

Abbasszadeh, Siavash: *See—*
Norton-Wayne, Leonard; and Abbasszadeh, Siavash, 5,283,443, Cl. 250-572.000.

Abbate, Richard; and Parente, Richard, to United States Surgical Corporation. Needle transporting apparatus. 5,282,715, Cl. 414-757.000.

Abbott Laboratories: *See—*
Chang, Chi-Deu, 5,283,344, Cl. 548-546.000.
Cunningham, David D.; and Johnson, Kenneth S., 5,283,186, Cl. 435-180.000.
Kessler, Marsha A.; and Prewitt, Patricia L., 5,283,178, Cl. 435-7.250.
Miller, Robert H.; Parlet, Nickki L.; Cipollo, Kent L.; Dhaon, Madhup K.; Houbion, John A.; and Lundell, Edwin O., 5,283,260, Cl. 514-563.000.

Abe, Isao: *See—*
Suzuki, Satoshi; and Abe, Isao, 5,283,565, Cl. 345-98.000.

Abe, Kazuaki; Tsubouchi, Toshiyuki; and Hata, Hitoshi, to Idemitsu Kosan Co., Ltd. Traction drive fluid, process for producing the same and bicyclo octane compound. 5,283,384, Cl. 585-22.000.

Abe, Masayuki: *See—*
Yamane, Koichi; Abe, Masayuki; Itabashi, Masaki; and Comas, Jose S., 5,282,871, Cl. 8-155.600.

Abe, Nobumasa: *See—*
Kobayashi, Atushi; Abe, Nobumasa; and Suzuki, Takashi, 5,283,611, Cl. 355-27.000.

Abell, Gerald D.: *See—*
Bruse, Johnny M.; Novak, John P., Jr.; Morley, John P.; and Abell, Gerald D., 5,282,798, Cl. 606-17.000.

Abell, Irwin R. Flywheel engine. 5,282,356, Cl. 60-39.350.

Abendschein, Frederic H.; Haley, Edmund J.; Plotts, Alan E.; and Weber, Robert N., to Whitaker Corporation, The. Circular multi-fiber fiber-optic connector. 5,283,848, Cl. 385-59.000.

Abiri, Amnon: *See—*
Druckman, Gil; and Abiri, Amnon, 5,283,825, Cl. 379-167.000.

Abiru, Toichi: *See—*
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Hannula, Paul, to Lakeside Ltd. Illuminated sign with ice-like characters. 5,282,330, Cl. 40-552.000.

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Hara, Toshihiro; Shimura, Yukihiro; Kumataka, Shinji; and Hashimoto, Kosuke, to NEC Corporation. Cordless key telephone system for covering multiple service areas having exclusively assigned control channels. 5,283,817, Cl. 379-61.000.

Hara, Yasuaki; Nakazato, Morizo; Takaichi, Yasunori; Urashima, Tsuyoshi; Aoyama, Tsuyoshi; and Nishimura, Seiichi, to Shin-Etsu Chemical Co., Ltd. Flame retardant coating compositions and coated articles. 5,283,279, Cl. 524-492.000.

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Takatou, Masao; Takahashi, Kazunori; Hamada, Nobuhiro; Kitamura, Tadaaki; Kikuchi, Kuniyuki; Takenaga, Hiroshi; and Morooka, Yasuo, 5,283,573, Cl. 340-937.000.

Takahashi, Koji: *See*—
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Takahashi, Shinsuke; Sekozawa, Teruji; and Shioya, Makoto, to Hitachi, Ltd. Method and system for engine control. 5,282,449, Cl. 123-350.000.

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Takahashi, Yasuhiro: *See*—
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Takahashi, Yoshiyuki: *See*—
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Takasago, Toshiyuki: *See*—
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Takatou, Masao; Takahashi, Kazunori; Hamada, Nobuhiro; Kitamura, Tadaaki; Kikuchi, Kuniyuki; Takenaga, Hiroshi; and Morooka, Yasuo, to Hitachi, Ltd. Traffic flow measuring method and apparatus. 5,283,573, Cl. 340-937.000.

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Zysset, Edgar H., to Crown Cork & Seal Company, Inc. Method and apparatus for indexing can ends. 5,282,531, Cl. 198-803.140.

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Baker Hughes Incorporated: *See*—
Pessier, Rudolf C. O., Re. 34,526, Cl. 175-353.000.

Bell, John; and Keopfgen, William, to Ekstrom Industries, Inc. Watthour meter socket adapter. Re. 34,531, Cl. 439-135.000.

Bicknell, Rainie M.; Kittredge, Barbara J.; Palmer, Craig F.; and Young, Robert L., to AT&T Bell Laboratories. Arrangement for providing a call-connection service. Re. 34,529, Cl. 379-220.000.

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Franaszek, Peter A., to International Business Machines Corporation. Delta network of a cross-point switch. Re. 34,528, Cl. 340-825.790.

International Business Machines Corporation: *See*—
Franaszek, Peter A., Re. 34,528, Cl. 340-825.790.

Keopfgen, William: *See*—
Bell, John; and Keopfgen, William, Re. 34,531, Cl. 439-135.000.

Kirkpatrick, John W., to Lawrence Equipment Inc. Dough ball conveyor loader apparatus and method. Re. 34,530, Cl. 426-502.000.

Kittredge, Barbara J.: *See*—
Bicknell, Rainie M.; Kittredge, Barbara J.; Palmer, Craig F.; and Young, Robert L., Re. 34,529, Cl. 379-220.000.

Lawrence Equipment Inc.: *See*—
Kirkpatrick, John W., Re. 34,530, Cl. 426-502.000.

Lazzaroni, John J.; and Lazzaroni, Melinda K. Motorcycle helmet microphone mount and plug mount. Re. 34,525, Cl. 2-422.000.

Lazzaroni, Melinda K.: *See*—
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Luu, Daniel H. V.: *See*—
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Luu, Lionel T. V.; and Luu, Daniel H. V., to Pacomax Industries, Inc. Plug-in electrical outlet. Re. 34,532, Cl. 439-651.000.

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Palmer, Craig F.: *See*—
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MacBurney, Michael G.: *See*—
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834 5,282,532

CLASS 200
6 A 5,283,401
61.45 R 5,283,402
61.54 5,283,403
5,283,404
80 R 5,283,405
243 5,283,406
332 5,283,407
345 5,283,408

CLASS 203
91 5,282,929

CLASS 204
1.11 5,282,934
59 R 5,282,936
64 R 5,282,937
98 5,282,935
105 R 5,282,938
131 5,282,939
5,282,940
182.8 5,282,941
183.2 5,282,942
192.12 5,282,943
192.38 5,282,944
206 5,282,945
298.13 5,282,946
298.2 5,282,947
406 5,282,950
413 5,282,949
421 5,282,948

CLASS 205
75 5,282,951
153 5,282,952
253 5,282,953
302 5,282,954
317 5,282,955

CLASS 206
63.3 5,282,533
232 5,282,534
315.1 5,282,535
387 5,282,536
485 5,282,537

CLASS 208
48 AA 5,282,956
5,282,957
111 5,282,958
251 R 5,282,959
299 5,282,960

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CLASS 209

164 5,282,538

CLASS 210

169 5,282,961
5,282,962
223 5,282,963
321.8 5,282,964
5,282,966
500.36 5,282,965
638 5,282,967
639 5,282,974
640 5,282,968
5,282,969
641 5,282,970
645 5,282,971
652 5,282,972
656 5,282,973
691 5,282,975
697 5,282,976
724 5,282,977
767 5,282,978
774 5,282,979
787 5,282,980
789 5,282,981
800 5,282,982

CLASS 211

64 5,282,539

CLASS 215

229 5,282,541
252 5,282,540

CLASS 219

93 5,283,413
121.43 5,283,414
121.64 5,283,415
121.83 5,283,416
121.85 5,283,417
130.01 5,283,418
137 PS 5,283,419
432 5,283,420
519 5,283,421
619 5,283,409
627 5,283,412
704 5,283,410
719 5,283,411

CLASS 220

7 5,282,542
255 5,282,543
403 5,282,544
5,282,545
565 5,282,546
731 5,282,547

CLASS 222

55 5,282,548
95 5,282,549
105 5,282,550
146.6 5,282,561
153 5,282,551
181 5,282,552

CLASS 223

85 5,282,553

CLASS 224

36 5,282,554
42.03 B 5,282,555
42.42 5,282,556
148 5,282,557
150 5,282,558
243 5,282,559
316 5,282,560
329 5,282,562

CLASS 225

47 5,282,563

CLASS 227

14 5,282,564

CLASS 228

161 5,282,566
180.22 5,282,565

CLASS 229

120.25 5,282,567
304 5,282,568

CLASS 235

375 5,283,422
492 5,283,423

CLASS 236

34.5 5,282,828

CLASS 238

8 5,282,569

CLASS 239

5 5,282,570
54 5,282,571
56 5,282,572
85 5,282,573
90 5,282,574
96 Re 34,527
255 5,282,575
265.33 5,282,576
533.4 5,282,577
542 5,282,578

CLASS 241

69 5,282,579

CLASS 242

4 R 5,282,580
35.6 E 5,282,581
43 A 5,282,582
58 5,282,583
67.2 5,282,584
71.1 5,282,585
190 5,282,586

CLASS 244

1 R 5,282,587
3.3 5,282,588
114 R 5,282,589
134 C 5,282,590
199 5,282,591

CLASS 248

150 5,282,592
188.4 5,282,593
205.1 5,282,594
214 5,282,595
219.2 5,282,596
237 5,282,597
311.2 5,282,598
5,282,599
343 5,282,600
638 5,282,601
680 5,282,602

CLASS 249

35 5,282,603

CLASS 250

201.8 B1 3,875,401
205 5,283,424
208.1 5,283,425
5,283,426
214 VT 5,283,427
214.1 5,283,428
227.14 5,283,429
227.23 5,283,430
229 5,283,431
5,283,432
234 5,283,433
237 G 5,283,434
289 5,283,435
292 5,283,436
306 5,283,437
338.3 5,283,438
368 5,283,439
492.2 5,283,440
551 5,283,441
561 5,283,442
572 5,283,443

CLASS 251

129.17 5,282,604

CLASS 252

8.554 5,282,984
8.6 5,282,983
12 5,282,985
18 5,282,986
34 5,282,987
35 5,282,991
46.7 5,282,988
48.2 5,282,989
51.5 R 5,282,990
5,282,992
63.2 BT 5,282,993
70 5,282,994
80 5,282,995
100 5,282,996
162 5,282,997
182.14 5,282,998
189 5,282,999
314 5,283,001
321 5,283,002
350 5,283,003
358 5,283,004
380 5,283,005
392 5,283,006
518 5,283,007
5,283,008
548 5,283,009
626 5,283,010

CLASS 254

420 5,282,605

CLASS 256

26 5,282,606

CLASS 257

18 5,283,444
24 5,283,445
85 5,283,447
194 5,283,448
204 5,283,449
223 5,283,450
229 5,283,451
277 5,283,452
304 5,283,453
328 5,283,454
329 5,283,455
347 5,283,456
351 5,283,457
416 5,283,458
419 5,283,459
432 5,283,460
433 5,283,446
508 5,283,461
595 5,283,462
663 5,283,465
667 5,283,466
692 5,283,463
714 5,283,464
718 5,283,467
774 5,283,468

CLASS 261

23.1 5,283,012
23.2 5,283,011
35 5,283,013

CLASS 264

1.5 5,283,014
4.33 5,283,016
4.7 5,283,015
25 5,283,017
40.1 5,283,018
44 5,283,019
46.6 5,283,020
102 5,283,021
5,283,022
103 5,283,023
118 5,283,024
130 5,283,025
234 5,283,026
320 5,283,027
511 5,283,028
544 5,283,029

CLASS 266

205 5,282,607
237 5,282,608

CLASS 267

120 5,282,609

CLASS 269

258 5,282,610

CLASS 270

53 5,282,611

CLASS 271

9 5,282,612
202 5,282,613
227 5,282,614

CLASS 273

26 E 5,282,615
32 A 5,282,616
73 G 5,282,617
73 J 5,282,618
80 D 5,282,619
138 A 5,282,620
148 B 5,282,621
164.1 5,282,622
167 H 5,282,624
5,282,625
177 R 5,282,626
186.1 5,282,627
201 5,282,628
5,282,629
252 5,282,630
272 5,282,631
302 5,282,632
306 5,282,633
318 5,282,634
342 5,282,635
457 5,282,636

CLASS 279

144 5,282,638

CLASS 280

231 5,282,639
234 5,282,640
432 5,282,641
615 5,282,642
626 5,282,643
638 5,282,644
707 5,282,645
729 5,282,646
732 5,282,647
733 5,282,648

CLASS 283

56 5,282,649
81 5,282,650
117 5,282,651

CLASS 285

55 5,282,652
110 5,282,653
112 5,282,654
315 5,282,655

CLASS 290

1 C 5,283,469
45 5,283,470
46 5,283,471

CLASS 292

259 R 5,282,656
336.3 5,282,657
338 5,282,658

CLASS 294

1.3 5,282,660
2 5,282,659

CLASS 296

27 5,282,661
65.1 5,282,662
155 5,282,663
203 5,282,637

CLASS 297

31 5,282,664
216.1 5,282,665
237 5,282,666
238 5,282,667
5,282,668
248 5,282,669
370 5,282,670
411.31 5,282,671
468 5,282,672

CLASS 301

64.4 5,282,673

CLASS 303

9.71 5,282,674
108 5,282,675
113.2 5,282,676
116.2 5,282,677

CLASS 307

10.1 5,283,472
10.6 5,283,473
116 5,283,474
141.4 5,283,475
227 5,283,476
264 5,283,477
270 5,283,478
446 5,283,479
449 5,283,481
451 5,283,631
456 5,283,480
475 5,283,482
520 5,283,483
555 5,283,484

CLASS 310

49 5,283,485
49 R 5,283,486
5,283,487
55 5,283,488
71 5,283,489
89 5,283,490
90 5,283,491
114 5,283,492
227 5,283,493
239 5,283,494
257 5,283,495
312 5,283,496
328 5,283,497

CLASS 312

221 5,282,678
316 5,282,679

CLASS 313

17 5,283,498
135 5,283,499

CLASS 315

58 5,283,500
169.3 5,283,501
244 5,283,502
370 5,283,504
411 5,283,505

CLASS 318

77 5,283,506
376 5,283,507
569 5,283,508
577 5,283,509
696 5,283,510

CLASS 320

2 5,283,511
18 5,283,512
56 5,283,513

CLASS 323

280 5,283,514
288 5,283,515
322 5,283,516

CLASS 324

115 5,283,517
158 F 5,283,605
158 P 5,283,518
207.19 5,283,519
220 5,283,520
225 5,283,521
239 5,283,524
244 5,283,522
248 5,283,523
307 5,283,525
309 5,283,526
391 5,283,527
679 5,283,528

CLASS 328

223 5,283,529
233 5,283,530

CLASS 329

316 5,283,531
360 5,283,532

CLASS 330

2 5,283,533
45 5,283,534
253 5,283,535
279 5,283,536
288 5,283,537

CLASS 333

24 R 5,283,538
28 R 5,283,539
127 5,283,540
156 5,283,541

CLASS 335

6 5,283,542
8 5,283,543
297 5,283,544

CLASS 338

21 B1 4,727,350
308 5,283,545

CLASS 340

287 5,283,546
432 5,283,547
439 5,283,548
521 5,283,549
539 5,283,550
567 5,283,551
605 5,283,552
623 5,283,569
664 5,283,553
721 5,283,561
815.69 5,283,567
825.40 5,283,570
825.44 5,283,568
825.52 5,283,571
825.79 Re.34,528
870.02 5,283,572
937 5,283,573
970 5,283,574
990 5,283,575

CLASS 341

58 5,283,576
95 5,283,577
143 5,283,578
145 5,283,579
5,283,580
156 5,283,581
158 5,283,582
162 5,283,583

CLASS 342

21 5,283,584
169 5,283,585
189 5,283,586
372 5,283,587
427 5,283,588

CLASS 343

715 5,283,589
754 5,283,590
755 5,283,591
872 5,283,592

CLASS 345

2 5,283,595
87 5,283,564
98 5,283,565
102 5,283,563
113 5,283,560
131 5,283,562
132 5,283,557
134 5,283,596
153 5,283,554
156 5,283,555
168 5,283,558
5,283,559
174 5,283,556
211 5,283,566

CLASS 346

108 5,283,597
140 R 5,283,593
159 5,283,594

CLASS 348

6 5,283,639
14 5,283,638
17 5,283,637
42 5,283,640
92 5,283,641
135 5,283,642
143 5,283,643
152 5,283,644
223 5,283,632
234 5,283,634
257 5,283,655
281 5,283,633
384 5,283,645
415 5,283,646
468 5,283,647
5,283,648
500 5,283,649
594 5,283,652
614 5,283,650
704 5,283,651
725 5,283,653
730 5,283,654

CLASS 351

212 5,283,598

CLASS 353

30 5,283,599
34 5,283,600
62 5,283,601
69 5,283,602
114 5,283,603

CLASS 354

21 5,283,604
289.1 5,283,606
400 5,283,607
403 5,283,608
416 5,283,610

CLASS 355

27 5,283,611
200 5,283,612
203 5,283,613
233 5,283,614
245 5,283,615
5,283,616
253 5,283,617
261 5,283,619
269 5,283,618
290 5,283,621

CLASS 356

4 5,283,622
43 B1 4,527,896
238 5,283,623
319 5,283,624
345 5,283,625
350 5,283,626
5,283,627
355 5,283,628
359 5,283,629
376 5,283,630

CLASS 358

261.1 5,283,656
296 5,283,657
5,283,658
310 5,283,659
320 5,283,660
406 5,283,661
409 5,283,662
426 5,283,663
429 5,283,664
434 5,283,665
453 5,283,666
462 5,283,667
474 5,283,668
482 5,283,669
516 5,283,635
527 5,283,636
530 5,283,670
532 5,283,671

CLASS 359

7 5,283,672
49 5,283,673
5,283,674
51 5,283,675
67 5,283,676
88 5,283,677
109 5,283,678
154 5,283,679
171 5,283,680
198 5,283,681
5,283,682
229 5,283,683
234 5,283,684
332 5,283,685
337 5,283,686
341 5,283,687
344 5,283,688
427 5,283,689
566 5,283,690
5,283,691

580 5,283,692
691 5,283,693
719 5,283,694
820 5,283,695
870 5,283,696
885 5,283,692
896 5,283,698
5,283,699

CLASS 360

31 5,283,700
65 5,283,701
77.04 5,283,702
85 5,283,703
104 5,283,704
105 5,283,705

CLASS 361

3 5,283,706
58 5,283,707
93 5,283,708
117 5,283,709
212 5,283,710
286 5,283,711
683 5,283,714
702 5,283,715
785 5,283,712
796 5,283,713
810 5,283,716
813 5,283,717

CLASS 362

32 5,283,718
61 5,283,719
83.3 5,283,720
92 5,283,721
103 5,283,722
147 5,283,723
205 5,283,724
414 5,283,725

CLASS 363

41 5,283,726
98 5,283,727
100 5,283,728

CLASS 364

157 5,283,729
400 5,283,730
401 5,283,731
410 5,283,732
411 5,283,733
412 5,283,734
413.02 5,283,735
413.13 5,283,736
419.14 5,283,737
424.02 5,283,739
424.05 5,283,740
5,283,741
424.1 5,283,738
426.02 5,283,742
457 5,283,743
464.02 5,283,744
468 5,283,745
5,283,746
470 5,283,747
5,283,748
474.01 5,283,749
474.21 5,283,750
474.28 5,283,751
478 5,283,752
490 5,283,753
571.02 5,283,754
757 5,283,755

CLASS 365

177 5,283,757
185 5,283,758
5,283,759
189.01 5,283,760
189.07 5,283,761
189.09 5,283,762
221 5,283,763
222 5,283,764
230.08 5,283,765

CLASS 366

69 5,282,680
246 5,282,681

CLASS 367

1 5,283,766
83 5,283,768
004 5,283,767

CLASS 368

74 5,283,769

CLASS 369

13 5,283,770
44.14 5,283,771
44.23 5,283,772
44.26 5,283,773
44.320 5,283,774
54 5,283,775
58 5,283,776
108 5,283,777
112 5,283,778
275.2 5,283,779

CLASS 370

13.1 5,283,781
16 5,283,782
16.1 5,283,783
32.1 5,283,784
50 5,283,780
55 5,283,785
67 5,283,786
105.3 5,283,787
110.1 5,283,788
124 5,283,789

CLASS 371

40.4 5,283,791
66 5,283,792
101 5,283,790

CLASS 372

24 5,283,793
30 5,283,794
32 5,283,795
5,283,796
34 5,283,797
45 5,283,798
50 5,283,799
60 5,283,800
94 5,283,801
107 5,283,802

CLASS 373

36 5,283,803
120 5,283,804
156 5,283,805

CLASS 374

16 5,282,682
150 5,282,683
160 5,282,684
172 5,282,685

CLASS 375

1 5,283,806
5,283,807
12 5,283,813
14 5,283,811
27 5,283,814
84 5,283,815

CLASS 376

260 5,283,809
282 5,283,810
352 5,283,812
439 5,283,821

CLASS 378

162 5,283,822
198 5,283,823
206 5,283,808

CLASS 379

5,283,816
61 5,283,817
67 5,283,818
90 5,283,819
100 5,283,820
142 5,283,824
167 5,283,825
220 Re 34,529
357 5,283,826
399 5,283,827

CLASS 380

4 5,283,828
24 5,283,829
25 5,283,830
48 5,283,831
49 5,283,832

CLASS 381

41 5,283,833
71 5,283,834
190 5,283,835
199 5,283,836

CLASS 382

6 5,283,837
14 5,283,838
15 5,283,839
16 5,283,840
54 5,283,841

CLASS 383

10 5,282,686
25 5,282,687

CLASS 384

279 5,282,688
492 5,282,689

CLASS 385

3 5,283,842
16 5,283,843
17 5,283,844
24 5,283,845
27 5,283,846
43 5,283,847
59 5,283,848
77 5,283,849
84 5,283,850
134 5,283,851
136 5,283,852
139 5,283,853

CLASS 392

467 5,283,854

CLASS 395

27 5,283,855
51 5,283,856
77 5,283,857
126 5,283,858
127 5,283,859
134 5,283,860
149 5,283,861
155 5,283,862
157 5,283,863
158 5,283,864
161 5,283,865
164 5,283,866
5,283,867
200 5,283,868
5,283,869
5,283,870
275 5,283,871
325 5,283,872
375 5,283,873
400 5,283,874
5,283,875
425 5,283,876
5,283,877
5,283,878
5,283,879
5,283,880
5,283,881
5,283,882
5,283,883
5,283,884
5,283,885
5,283,886
5,283,890
500 5,283,887
5,283,888
5,283,889
575 5,283,891
600 5,283,892
5,283,893
5,283,894
5,283,895
650 5,283,896
5,283,897
5,283,898
5,283,899
700 5,283,900
5,283,901
725 5,283,902
5,283,903
5,283,904
750 5,283,905
5,283,906
800 5,283,907

CLASS 402

79 5,282,690

CLASS 404

3 5,282,691
35 5,282,692
47 5,282,693

CLASS 405

36 5,282,694
128 5,282,695
184 5,282,696
245 5,282,701
259.6 5,282,697
5,282,698
271 5,282,699
284 5,282,700

CLASS 407

16 5,282,702
114 5,282,703

CLASS 408

124 5,282,704
211 5,282,705

CLASS 410

100 5,282,706

CLASS 411

3 5,282,707
386 5,282,708
433 5,282,709
544 5,282,710

CLASS 414

9 5,282,711
331 5,282,712
412 5,282,713
680 5,282,714
757 5,282,715
790.3 5,282,716
798.2 5,282,717

CLASS 415

57.3 5,282,718

CLASS 416

1 5,282,719
97 R 5,282,721
220 R 5,282,720

CLASS 417

15 5,282,722
45 5,282,723
222.1 5,282,725
243 5,282,726
423.15 5,282,727
454 5,282,724

CLASS 418

55.5 5,282,728
5,282,729

CLASS 419

53 5,283,030
58 5,283,031

CLASS 420

586 5,283,032

CLASS 422

21 5,283,033
22 5,283,034
31 5,283,035
70 5,283,036
82.01 5,283,037
101 5,283,038
104 5,283,039
133 5,283,040
168 5,283,048
198 5,283,049
211 5,283,050
219 5,283,051
223 5,283,052
300 5,283,053

CLASS 423

206.2 T 5,283,054
239.1 5,283,055
240 S 5,283,041
322 5,283,042
328.2 5,283,043
345 5,283,044
445 R 5,283,045
515 5,283,046
713 5,283,047

CLASS 424

49 5,283,056
54 5,283,057
88 5,283,058
93 K 5,283,059
93 L 5,283,060
401 5,283,061
427 5,283,062
451 5,283,063
467 5,283,064
484 5,283,065
489 5,283,066
679 5,283,067
5,283,068

CLASS 425

130 5,282,730
133.5 5,282,731
153 5,282,732
183 5,282,733
393 5,282,734
525 5,282,736
549 5,282,735

CLASS 426

18 5,283,069
249 5,283,070
274 5,283,071
312 5,283,072
332 5,283,073
496 5,283,074
502 Re.34,530
549 5,283,075
575 5,283,076
637 5,283,077
665 5,283,078

CLASS 427

2 5,283,079
8 5,283,080
96 5,283,081
118 5,283,082
227 5,283,083
407.1 5,283,084
534 5,283,085
576 5,283,086
577 5,283,087

CLASS 428

16 5,283,088
35.4 5,283,090
40 5,283,092
41 5,283,093
64 5,283,094
5,283,095
67 5,283,096
91 5,283,097
113 5,283,098
116 5,283,099
120 5,283,100
141 5,283,101
167 5,283,102
172 5,283,103
195 5,283,104
5,283,105
5,283,115
198 5,283,106
209 5,283,107
5,283,108
216 5,283,109
227 5,283,110
247 5,283,111
261 5,283,112
280 5,283,113
294 5,283,114
323 5,283,116
343 5,283,117
344 5,283,089
349 5,283,118
375 5,283,119
379 5,283,120
381 5,283,121
402.2 5,283,122
403 5,283,123
411.1 5,283,125
457 5,283,126
476.3 5,283,127
516 5,283,128
537.5 5,283,129
611 5,283,130
623 5,283,131
690 5,283,132
694 NF 5,283,133
698 5,283,134

CLASS 429

103 5,283,135
175 5,283,137
192 5,283,136
217 5,283,138
224 5,283,139

CLASS 430

6 5,283,140
30 5,283,141
58 5,283,142
59 5,283,143
71 5,283,144
78 5,283,145
5,283,146
106 5,283,147
114 5,283,148
137 5,283,149
5,283,150
5,283,151
138 5,283,152
5,283,153
192 5,283,155
204 5,283,156
5,283,157
264 5,283,158
275 5,283,159
281 5,283,160
301 5,283,154
375 5,283,161
382 5,283,162
505 5,283,163
506 5,283,164
522 5,283,165
556 5,283,166
598 5,283,167
600 5,283,168
603 5,283,169

CLASS 431

2 5,282,737
3 5,282,738
51 5,282,739
344 5,282,740

CLASS 432

5,282,741
122 5,282,742

CLASS 433

8 5,282,743
92 5,282,744
114 5,282,745
172 5,282,746
221 5,282,747

CLASS 434

254 5,282,748
395 5,282,749

CLASS 435

1 5,283,170
5 5,283,171
5,283,172
6 5,283,173
5,283,174
5,283,175
7.1 5,283,176
5,283,177
7.25 5,283,178
8 5,283,179
5,283,180
26 5,283,181
106 5,283,182
119 5,283,183
172.3 5,283,184
5,283,185
180 5,283,186
182 5,283,187
193 5,283,188
207 5,283,189
240.27 5,283,190
252.3 5,283,191
252.31 5,283,192
280 5,283,193
287 5,283,194

CLASS 436

48 5,283,195
86 5,283,196
87 5,283,197
173 5,283,199

CLASS 437

29 5,283,200
31 5,283,201
5,283,202
34 5,283,203
52 5,283,204
101 5,283,207
147 5,283,205
194 5,283,206
228 5,283,208
5,283,209

CLASS 439

72 5,282,750
77 5,282,751
79 5,282,752
106 5,282,753
108 5,282,754
135 Re.34,531
233 5,282,755
336 5,282,756
374 5,282,757
395 5,282,758
620 5,282,759
651 Re.34,532
752 5,282,760
790 5,282,761

CLASS 440

30 5,282,762
42 5,282,763
88 5,282,764

CLASS 446

8 5,282,765
72 5,282,766
126 5,282,767
220 5,282,768

CLASS 453

49 5,282,769

CLASS 454

239 5,282,770

CLASS 460

8 5,282,771

CLASS 472

59 5,282,772

CLASS 474

24 5,282,773

CLASS 475

84 5,282,774
252 5,282,775

CLASS 482

118 5,282,776
122 5,282,777

CLASS 493

1 5,282,778
44 5,282,779

CLASS 494

1 5,282,780

CLASS 501

32 5,283,210
41 5,283,211
73 5,283,212
87 5,283,213
96 5,283,214
120 5,283,215

CLASS 502

30 5,283,216

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167	5,283,217	563	5,283,260	249	5,283,304	262.2	5,283,341	161	5,283,380		5,282,821						
417	5,283,219	605	5,283,261	263	5,283,305	304.1	5,283,342	165	5,283,381	182	5,282,822						
	CLASS 503	651	5,283,262	312	5,283,306	496	5,283,343	168	5,283,382	198	5,282,823						
			5,283,263		**CLASS 528**	546	5,283,344	189	5,283,383		5,282,824						
200	5,283,220	709	5,283,264	15	5,283,307		**CLASS 549**		**CLASS 585**	203	5,282,825						
204	5,283,221		**CLASS 522**		5,283,308	214	5,283,345	22	5,283,384	207	5,282,826						
209	5,283,227	18	5,283,265	27	5,283,309	341	5,283,346	317	5,283,385	215	5,282,827						
213	5,283,222		**CLASS 523**	30	5,283,310		**CLASS 552**		**CLASS 600**	219	5,282,829						
227	5,283,223	122	5,283,271	49	5,283,311	304	5,283,347	3	5,282,781	232	5,282,832						
	5,283,224	206	5,283,266	60	5,283,312	306	5,283,355		**CLASS 602**	241	5,282,834						
	5,283,225	216	5,283,267	125	5,283,313		**CLASS 556**	30	5,282,782	242	5,282,835						
	5,283,226	313	5,283,272	204	5,283,314				**CLASS 604**		**CLASS 607**						
	CLASS 504	404	5,283,124	326	5,283,315	415	5,283,348	4	5,282,783	4	5,282,836						
113	5,283,228		5,283,269	397	5,283,316	436	5,283,349	8	5,282,784	5	5,282,837						
116	5,283,229	466	5,283,270	405	5,283,317		**CLASS 558**	21	5,282,785	9	5,282,838						
130	5,283,230		**CLASS 524**	481	5,283,318	197	5,283,350	22	5,282,786	17	5,282,465						
148	5,283,231	99	5,283,273		**CLASS 530**	260	5,283,351	30	5,282,787	19	5,282,839						
	CLASS 505	100	5,283,274	209	5,283,319		5,283,356	49	5,282,788	28	5,282,840						
1	5,283,232	108	5,283,275	325	5,283,320	401	5,283,352	55	5,282,789	36	5,282,841						
	5,283,233	166	5,283,276	326	5,283,321		**CLASS 560**	167	5,282,790	88	5,282,842						
	5,283,234	211	5,283,277	374	5,283,322	41	5,283,357	180	5,282,791	115	5,282,843						
	CLASS 507	399	5,283,278	387.1	5,283,323	53	5,283,359	187	5,282,792	120	5,282,844						
118	5,283,235	492	5,283,279		**CLASS 534**	106	5,283,358	192	5,282,793	128	5,282,845						
	CLASS 512	559	5,283,280	557	5,283,324	220	5,283,360	283	5,282,794	145	5,282,481						
8	5,283,237		**CLASS 525**	721	5,283,325		**CLASS 562**	351	5,282,795		**CLASS 623**						
	CLASS 514	56	5,283,281	766	5,283,326	623	5,283,361		**CLASS 606**	1	5,282,846						
2	5,283,236	66	5,283,283		**CLASS 536**		**CLASS 564**	1	5,282,796		5,282,847						
12	5,283,238	67	5,283,285	17.2	5,283,353	48	5,283,362	9	5,282,797	3	5,282,848						
23	5,283,239	75	5,283,286	23.5	5,283,354	336	5,283,363	17	5,282,798		5,282,849						
80	5,283,240	86	5,283,287	27.22	5,283,327	393	5,283,364	48	5,282,799	6	5,282,850						
183	5,283,241	92	5,283,282	120	5,283,328	423	5,283,365	52	5,282,800		5,282,851						
186	5,283,242	102	5,283,288		**CLASS 540**	446	5,283,366	61	5,282,801		5,282,852						
224.5	5,283,243	111	5,283,290	301	5,283,329	509	5,283,367	72	5,282,802		5,282,853						
249	5,283,244	133	5,283,289		**CLASS 544**		**CLASS 568**	80	5,282,803		5,282,854						
	5,283,245	152	5,283,291	99	5,283,330	45	5,283,368	86	5,282,804	8	5,282,856						
255	5,283,246	164	5,283,292	229	5,283,331	71	5,283,369	99	5,282,805		5,282,857						
259	5,283,247	179	5,283,284	320	5,283,332	576	5,283,370	139	5,282,806	10	5,282,858						
267	5,283,248	247	5,283,294		**CLASS 546**	639	5,283,371	143	5,282,807	11	5,282,859						
274	5,283,249	332.2	5,283,293	27	5,283,333	683	5,283,372	148	5,282,808	12	5,282,860						
311	5,283,250	439	5,283,295	104	5,283,334	697	5,283,373	150	5,282,809	16	5,282,861						
314	5,283,252	445	5,283,296	167	5,283,335	721	5,283,374	157	5,282,810	17	5,282,862						
357	5,283,268	454	5,283,297	179	5,283,336	726	5,283,375	158	5,282,811		5,282,863						
399	5,283,254	458	5,283,298	279	5,283,337	760	5,283,376	159	5,282,812	18	5,282,864						
410	5,283,255	529	5,283,299	345	5,283,338	896	5,283,377	161	5,282,813	19	5,282,865						
415	5,283,251		**CLASS 526**		**CLASS 548**		**CLASS 570**	166	5,282,814	20	5,282,866						
444	5,283,253	75	5,283,300	104	5,283,339	143	5,283,378	167	5,282,815		5,282,867						
452	5,283,256	124	5,283,301	144	5,283,340	156	5,283,379	170	5,282,816		5,282,868						
458	5,283,257	216	5,283,302						5,282,817		5,282,869						
474	5,283,258	245	5,283,303						5,282,820		5,282,870						
531	5,283,259																

CLASSIFICATION OF DESIGNS

D2—	738	343,718	D7—	309	343,757			343,793		116	343,829		11	343,869	D25—	64	343,906
	897	343,720			343,758		530	343,794		121	343,833		34	343,870		68	343,907
	912	343,721		318	343,759	D10—	23	343,798		138	343,834		59	343,871		113	343,908
	949	343,727			343,760		25	343,796			343,835		108	343,872		123	343,909
	960	343,726		324	343,761		32	343,797		148	343,836		147	343,873		138	343,910
	961	343,725		368	343,762		75	343,799		173	343,837		148	343,874		139	343,911
	969	343,722		548	343,763			343,800		198	343,838		191	343,875	D26—	9	343,912
		343,724		601	343,764		78	343,801		217	343,839			343,876		23	343,913
	970	343,723		605	343,765		80	343,802		238	343,840			343,877		24	343,914
	977	343,719		614	343,766		100	343,803		251	343,841		195	343,878		28	343,915
D3—	18	343,728		619	343,767		106	343,804		258	343,842			343,879		35	343,916
	230	343,733		629	343,768		116	343,805	D15—	1	343,843		197	343,880		50	343,917
	282	343,731		670	343,769	D11—	13	343,806		7	343,844		198	343,881	D27—	154	343,918
	285	343,729		673	343,770		31	343,808		89	343,845			343,882	D28—	8.1	343,919
	287	343,732		679	343,771		131.1	343,807		127	343,846		201	343,883		13	343,920
	313	343,734		688	343,772	D12—	98	343,809	D16—	218	343,847		227	343,884			343,921
D6—	300	343,736	D8—	1	343,773		111	343,810			343,848		234	343,885		46	343,922
		343,737			343,774		119	343,811		225	343,849	D22—	122	343,886		49	343,923
	333	343,738			343,775		129	343,812		234	343,850	D23—	202	343,887		63	343,924
	344	343,739		7	343,776		172	343,817		245	343,851		259	343,888		78	343,925
	366	343,740		9	343,777		173	343,818			343,852		263	343,889		88	343,926
	380	343,741		40	343,778		181	343,819			343,853		283	343,890	D29—	12	343,927
	381	343,742		52	343,779		187	343,820	D18—	7	343,854		297	343,891		17	343,928
	393	343,735		70	343,780		217	343,821		34	343,855		301	343,892	D30—	130	343,929
	438	343,743		71	343,781		308	343,822		50	343,856		302	343,893		160	343,930
	444	343,744		331	343,782		318	343,823			343,857		325	343,894	D32—	21	343,931
	491	343,746		347	343,783		345	343,824		55	343,858		353	343,895		24	343,934
	495	343,747		349	343,784		401	343,814	D19—	20	343,859		411	343,896		25	343,932
	510	343,748		373	343,786		403	343,813		21	343,860	D24—	112	343,897		70	343,933
	513	343,749		375	343,785		407	343,816			343,861			343,898	D34—	2	343,937
	514	343,750			343,787		410	343,815		26	343,862		130	343,899		25	343,938
	545	343,751			343,788	D13—	152	343,825		35	343,863		133	343,900		35	343,935
	546	343,752	D9—	300	343,789		155	343,828		36	343,864		167	343,901			343,936
	600	343,753		425	343,795		164	343,827		78	343,865		175	343,902	D99—	1	343,941
	601	343,754		430	343,790		168	343,826	D20—	11	343,866		206	343,903		34	343,940
		343,755		466	343,745	D14—	100	343,830		40	343,867		219	343,904		99	343,939
		343,756		503	343,791		106	343,831	D21—	6	343,868		224	343,905			343,942
	630	343,730		529	343,792			343,832									

CLASSIFICATION OF PLANTS

P.—	7.1	8,566		11	8,568		40.1	8,570		76	8,572		86.2	8,574		87.12	8,576
	10	8,567		20	8,569		71.1	8,571		80	8,573		87.1	8,575		88/6	8,577

STATUTORY INVENTION REGISTRATIONS

128—	204.23	H1282	257—	410	H1287	367—	69	H1289	395—	800	H1291						
152—	154.2	H1283	340—	870.07	H1288		140	H1290	427—	447	H1284	430—	569	H1285	514—	91	H1286

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
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Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
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Delaware	10	Montana	30	Vermont	50
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Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,282,629		5,282,686		5,283,458		5,282,802		5,282,763		5,283,079						
	5,282,736		5,282,709		5,283,471		5,282,891		5,282,795		5,283,126						
	5,283,694		5,282,712		5,283,479		5,283,137		5,282,979		5,283,128						
04 :	Re.34,525		5,282,719		5,283,483		5,283,154		5,282,997		5,283,135						
	5,282,648		5,282,751		5,283,497		5,283,447		5,283,002		5,283,178						
	5,282,972		5,282,755		5,283,499		5,283,482		5,283,253		5,283,186						
	5,283,192		5,282,768		5,283,512		5,283,518		5,283,418		5,283,238						
	5,283,416		5,282,786		5,283,520		5,283,596		5,283,461		5,283,240						
	5,283,431		5,282,787		5,283,526		5,283,631		5,283,462		5,283,250						
	5,283,454		5,282,806		5,283,536		5,283,682		5,283,559		5,283,284						
	5,283,501		5,282,808		5,283,552		5,283,875		5,283,570		5,283,306						
	5,283,626		5,282,814		5,283,558		3,875,401		5,283,627		5,283,322						
	5,283,640		5,282,816		5,283,560	09 :	5,282,442		5,283,732		5,283,343						
	5,283,715		5,282,820		5,283,575		5,282,533		5,283,733		5,283,344						
	5,283,722		5,282,830		5,283,579		5,282,543		5,283,734		5,283,373						
	5,283,753		5,282,841		5,283,586		5,282,693		5,283,794		5,283,406						
	5,283,775		5,282,845		5,283,587		5,282,708		5,283,832		5,283,653						
	5,283,827		5,282,852		5,283,590		5,282,715		5,283,868		5,283,823						
05 :	5,282,456		5,282,853		5,283,598		5,282,748	13 :	5,282,348		5,283,824						
	5,282,940		5,282,856		5,283,625		5,282,797		5,282,557	18 :	Re.34,532						
	5,283,375		5,282,861		5,283,628		5,282,810		5,282,683		5,282,281						
06 :	Re.34,530		5,282,862		5,283,637		5,282,829		5,283,023		5,282,386						
	5,282,287		5,282,876		5,283,652		5,282,864		5,283,074		5,282,440						
	5,282,308		5,282,922		5,283,670		5,282,921		5,283,093		5,282,490						
	5,282,319		5,282,941		5,283,672		5,283,005		5,283,549		5,282,556						
	5,282,334		5,282,942		5,283,676		5,283,020	15 :	5,283,511		5,282,656						
	5,282,339		5,282,944		5,283,687		5,283,048	16 :	5,282,356		5,282,706						
	5,282,357		5,282,958		5,283,692		5,283,062		5,282,559		5,282,790						
	5,282,381		5,282,964		5,283,697		5,283,129		5,282,923		5,282,804						
	5,282,393		5,282,982		5,283,725		5,283,274		5,283,204		5,282,906						
	5,282,455		5,283,034		5,283,757		5,283,299	17 :	5,282,279		5,283,249						
	5,282,463		5,283,037		5,283,767		5,283,444		5,282,284		5,283,329						
	5,282,466		5,283,038		5,283,768		5,283,561		5,282,288		5,283,361						
	5,282,473		5,283,060		5,283,783		5,283,567		5,282,309		5,283,469						
	5,282,476		5,283,088		5,283,795		5,283,821		5,282,352		5,283,721						
	5,282,501		5,283,099		5,283,796	10 :	5,282,966		5,282,379	19 :	5,283,172						
	5,282,532		5,283,108		5,283,797		5,283,382		5,282,389		5,283,432						
	5,282,535		5,283,109		5,283,801		5,283,390		5,282,511		5,283,475						
	5,282,537		5,283,123		5,283,807	12 :	5,282,332		5,282,516	20 :	5,282,649						
	5,282,549		5,283,141		5,283,809		5,282,359		5,282,540		5,282,652						
	5,282,550		5,283,171		5,283,828		5,282,437		5,282,565		5,282,771						
	5,282,567		5,283,174		5,283,867		5,282,479		5,282,566		5,283,012						
	5,282,578		5,283,184		5,283,874		5,282,517		5,282,568		5,283,159						
	5,282,588		5,283,257		5,283,877		5,282,531		5,283,571	21 :	5,282,282						
	5,282,590		5,283,277		5,283,882		5,282,606		5,282,574		5,282,504						
	5,282,598		5,283,293		5,283,883		5,282,622		5,282,605		5,282,842						
	5,282,600		5,283,317		5,283,884		5,282,658		5,282,613	22 :	5,282,302						
	5,282,625		5,283,336		5,283,888		5,282,660		5,282,620		5,282,458						
	5,282,635		5,283,339		5,283,890		5,282,669		5,282,824		5,282,528						
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STATUTORY INVENTION REGISTRATIONS

06 : H1287 24 : H1282 34 : H1286 41 : H1291 48 : H1284 H1289
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
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U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
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Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

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All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 5, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,989,265 through 4,991,229
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 3, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,639,944 through 4,641,378
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 1, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,370,754 through 4,371,982
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due hy seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 28, 1989 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,303,114	06/217,910	12/01/81
4,303,513	06/226,623	12/01/81
4,303,573	06/223,212	12/01/81
4,303,623	06/225,915	12/01/81
4,303,768	06/233,151	12/01/81
4,554,683	06/226,920	11/26/85
4,554,685	06/585,533	11/26/85
4,554,686	06/584,605	11/26/85
4,554,691	06/547,981	11/26/85
4,554,703	06/572,184	11/26/85
4,554,708	06/641,258	11/26/85
4,554,710	06/624,183	11/26/85
4,554,711	06/654,345	11/26/85
4,554,712	06/604,647	11/26/85
4,554,717	06/559,546	11/26/85
4,554,720	06/640,056	11/26/85
4,554,721	06/535,516	11/26/85
4,554,722	06/463,643	11/26/85
4,554,730	06/569,069	11/26/85
4,554,735	06/607,041	11/26/85
4,554,736	06/446,558	11/26/85
4,554,740	06/583,748	11/26/85
4,554,745	06/587,056	11/26/85
4,554,747	06/703,190	11/26/85
4,554,750	06/669,732	11/26/85
4,554,756	06/548,649	11/26/85
4,554,757	06/493,510	11/26/85
4,554,760	06/560,339	11/26/85
4,554,762	06/722,418	11/26/85
4,554,769	06/478,413	11/26/85
4,554,772	06/578,157	11/26/85
4,554,776	06/467,172	11/26/85
4,554,777	06/653,624	11/26/85
4,554,779	06/622,290	11/26/85
4,554,782	06/637,586	11/26/85
4,554,783	06/512,706	11/26/85
4,554,784	06/524,048	11/26/85
4,554,785	06/563,426	11/26/85
4,554,786	06/533,023	11/26/85
4,554,788	06/564,062	11/26/85
4,554,791	06/567,416	11/26/85
4,554,792	06/665,861	11/26/85
4,554,801	06/407,935	11/26/85
4,554,804	06/455,691	11/26/85
4,554,806	06/580,738	11/26/85
4,554,809	06/540,507	11/26/85
4,554,821	06/522,203	11/26/85
4,554,822	06/502,034	11/26/85
4,554,825	06/585,041	11/26/85
4,554,828	06/537,647	11/26/85
4,554,829	06/626,092	11/26/85
4,554,836	06/645,888	11/26/85
4,554,840	06/643,574	11/26/85
4,554,845	06/538,030	11/26/85
4,554,846	06/578,933	11/26/85
4,554,847	06/585,524	11/26/85
4,554,848	06/644,575	11/26/85
4,554,849	06/566,901	11/26/85
4,554,850	06/632,394	11/26/85
4,554,855	06/572,625	11/26/85
4,554,860	06/435,504	11/26/85
4,554,861	06/516,139	11/26/85
4,554,866	06/544,222	11/26/85
4,554,868	06/457,429	11/26/85
4,554,869	06/585,113	11/26/85
4,554,871	06/553,677	11/26/85
4,554,872	06/557,664	11/26/85

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4,554,873	06/414,922	11/26/85
4,554,874	06/451,801	11/26/85
4,554,881	06/441,533	11/26/85
4,554,885	06/660,649	11/26/85
4,554,886	06/583,707	11/26/85
4,554,889	06/623,682	11/26/85
4,554,891	06/593,289	11/26/85
4,554,893	06/656,519	11/26/85
4,554,894	06/548,975	11/26/85
4,554,895	06/578,095	11/26/85
4,554,899	06/632,552	11/26/85
4,554,903	06/585,464	11/26/85
4,554,904	06/692,070	11/26/85
4,554,905	06/596,959	11/26/85
4,554,912	06/571,821	11/26/85
4,554,913	06/548,932	11/26/85
4,554,914	06/538,911	11/26/85
4,554,931	06/537,586	11/26/85
4,554,933	06/420,221	11/26/85
4,554,934	06/661,096	11/26/85
4,554,935	06/578,511	11/26/85
4,554,936	06/590,408	11/26/85
4,554,937	06/472,029	11/26/85
4,554,946	06/587,944	11/26/85
4,554,959	06/608,368	11/26/85
4,554,963	06/524,520	11/26/85
4,554,966	06/500,254	11/26/85
4,554,968	06/344,141	11/26/85
4,554,969	06/648,571	11/26/85
4,554,971	06/545,530	11/26/85
4,554,977	06/590,266	11/26/85
4,554,979	06/619,083	11/26/85
4,554,981	06/751,999	11/26/85
4,554,985	06/678,776	11/26/85
4,554,992	06/530,833	11/26/85
4,554,993	06/629,603	11/26/85
4,554,994	06/698,456	11/26/85
4,554,997	06/709,211	11/26/85
4,554,998	06/652,368	11/26/85
4,555,006	06/360,973	11/26/85
4,555,009	06/564,151	11/26/85
4,555,010	06/566,137	11/26/85
4,555,018	06/574,516	11/26/85
4,555,022	06/577,375	11/26/85
4,555,024	06/668,405	11/26/85
4,555,030	06/581,403	11/26/85
4,555,032	06/478,193	11/26/85
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4,555,036	06/671,944	11/26/85
4,555,039	06/397,761	11/26/85
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4,555,053	06/618,516	11/26/85
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4,555,057	06/471,930	11/26/85
4,555,065	06/613,347	11/26/85
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4,555,079	06/566,753	11/26/85
4,555,084	06/585,922	11/26/85
4,555,092	06/498,787	11/26/85
4,555,095	06/588,617	11/26/85
4,555,096	06/553,412	11/26/85
4,555,101	06/588,934	11/26/85
4,555,102	06/492,721	11/26/85
4,555,105	06/485,147	11/26/85
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4,555,110	06/618,840	11/26/85
4,555,119	06/285,786	11/26/85
4,555,122	06/442,320	11/26/85
4,555,127	06/584,318	11/26/85
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4,555,140	06/583,033	11/26/85
4,555,141	06/520,644	11/26/85
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4,555,157	06/647,118	11/26/85
4,555,160	06/403,954	11/26/85
4,555,162	06/586,175	11/26/85
4,555,171	06/467,168	11/26/85
4,555,176	06/562,150	11/26/85
4,555,177	06/564,583	11/26/85
4,555,178	06/579,887	11/26/85
4,555,180	06/476,628	11/26/85
4,555,182	06/634,591	11/26/85
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4,555,194	06/610,744	11/26/85
4,555,199	06/553,058	11/26/85
4,555,200	06/593,108	11/26/85
4,555,204	06/729,078	11/26/85
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4,555,220	06/343,141	11/26/85
4,555,232	06/486,538	11/26/85
4,555,233	06/602,772	11/26/85
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4,555,238	06/665,618	11/26/85
4,555,239	06/383,856	11/26/85
4,555,240	06/360,423	11/26/85
4,555,242	06/572,687	11/26/85
4,555,243	06/586,036	11/26/85
4,555,245	06/522,813	11/26/85
4,555,252	06/594,104	11/26/85
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4,555,261	06/667,470	11/26/85
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4,555,266	06/527,715	11/26/85
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4,555,297	06/613,333	11/26/85
4,555,298	06/611,716	11/26/85
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4,555,308	06/633,862	11/26/85
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4,555,313	06/435,796	11/26/85
4,555,316	06/637,829	11/26/85
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4,555,328	06/572,039	11/26/85
4,555,332	06/574,312	11/26/85
4,555,334	06/516,456	11/26/85
4,555,337	06/663,868	11/26/85
4,555,338	06/658,999	11/26/85
4,555,342	06/598,172	11/26/85
4,555,345	06/709,365	11/26/85
4,555,349	06/594,584	11/26/85
4,555,353	06/695,607	11/26/85
4,555,354	06/645,898	11/26/85
4,555,356	06/508,521	11/26/85
4,555,358	06/497,577	11/26/85
4,555,359	06/458,744	11/26/85
4,555,363	06/572,196	11/26/85
4,555,374	06/670,086	11/26/85
4,555,375	06/558,883	11/26/85
4,555,376	06/588,718	11/26/85
4,555,377	06/526,077	11/26/85
4,555,378	06/600,139	11/26/85
4,555,385	06/524,663	11/26/85
4,555,391	06/634,234	11/26/85
4,555,392	06/661,842	11/26/85
4,555,405	06/509,498	11/26/85
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4,555,417	06/470,836	11/26/85
4,555,419	06/627,125	11/26/85
4,555,429	06/622,973	11/26/85
4,555,432	06/640,943	11/26/85
4,555,438	06/711,690	11/26/85
4,555,439	06/570,295	11/26/85
4,555,443	06/624,097	11/26/85
4,555,450	06/605,725	11/26/85
4,555,453	06/307,446	11/26/85
4,555,454	06/724,322	11/26/85
4,555,455	06/701,724	11/26/85
4,555,456	06/612,857	11/26/85
4,555,457	06/536,634	11/26/85
4,555,471	06/678,051	11/26/85
4,555,478	06/688,478	11/26/85
4,555,490	06/618,949	11/26/85
4,555,491	06/462,532	11/26/85
4,555,495	06/604,268	11/26/85
4,555,498	06/669,675	11/26/85
4,555,499	06/576,079	11/26/85
4,555,500	06/665,843	11/26/85
4,555,502	06/425,133	11/26/85
4,555,503	06/466,622	11/26/85
4,555,506	06/334,271	11/26/85
4,555,508	06/585,697	11/26/85
4,555,509	06/592,117	11/26/85
4,555,511	06/572,179	11/26/85
4,555,513	06/452,146	11/26/85
4,555,515	06/705,171	11/26/85
4,555,518	06/606,872	11/26/85
4,555,522	06/567,914	11/26/85
4,555,533	06/284,209	11/26/85
4,555,539	06/359,077	11/26/85
4,555,544	06/687,230	11/26/85
4,555,551	06/616,035	11/26/85
4,555,553	06/702,699	11/26/85
4,555,554	06/702,700	11/26/85
4,555,563	06/679,529	11/26/85
4,555,565	06/480,705	11/26/85
4,555,573	06/551,967	11/26/85
4,555,579	06/478,598	11/26/85
4,555,584	06/592,422	11/26/85
4,555,585	06/607,879	11/26/85
4,555,593	06/467,011	11/26/85
4,555,600	06/544,391	11/26/85
4,555,613	06/661,587	11/26/85
4,555,614	06/685,943	11/26/85
4,555,618	06/500,584	11/26/85
4,555,621	06/507,614	11/26/85
4,555,625	06/477,202	11/26/85
4,555,634	06/439,059	11/26/85
4,555,636	06/417,944	11/26/85
4,555,637	06/401,781	11/26/85
4,555,638	06/696,862	11/26/85
4,555,640	06/511,923	11/26/85
4,555,646	06/587,837	11/26/85
4,555,647	06/749,129	11/26/85
4,555,649	06/557,959	11/26/85
4,555,660	06/603,746	11/26/85
4,555,671	06/462,865	11/26/85
4,555,675	06/569,711	11/26/85
4,555,681	06/636,774	11/26/85
4,555,684	06/639,106	11/26/85
4,555,687	06/620,595	11/26/85
4,555,688	06/628,532	11/26/85
4,555,689	06/527,919	11/26/85
4,555,694	06/384,029	11/26/85
4,555,702	06/418,254	11/26/85
4,555,706	06/498,334	11/26/85
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4,555,708	06/569,642	11/26/85
4,555,730	06/460,450	11/26/85
4,555,733	06/613,932	11/26/85
4,555,734	06/409,827	11/26/85
4,555,738	06/570,302	11/26/85
4,555,741	06/616,166	11/26/85
4,555,745	06/425,519	11/26/85
4,555,748	06/693,816	11/26/85
4,555,752	06/613,730	11/26/85
4,555,757	06/492,061	11/26/85
4,555,758	06/471,474	11/26/85
4,555,763	06/394,436	11/26/85
4,555,764	06/334,513	11/26/85
4,555,768	06/502,014	11/26/85
4,555,770	06/541,820	11/26/85
4,555,779	06/476,690	11/26/85
4,555,780	06/442,244	11/26/85
4,555,782	06/572,578	11/26/85
4,555,783	06/373,809	11/26/85
4,555,788	06/583,085	11/26/85
4,555,793	06/555,783	11/26/85
4,555,795	06/515,581	11/26/85
4,555,798	06/505,848	11/26/85
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4,882,788	07/229,079	11/28/89
4,882,789	06/735,282	11/28/89
4,882,794	07/338,531	11/28/89
4,882,798	07/219,724	11/28/89
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4,882,804	07/282,580	11/28/89
4,882,818	07/267,806	11/28/89
4,882,821	07/195,148	11/28/89
4,882,824	07/215,386	11/28/89
4,882,838	07/370,489	11/28/89
4,882,841	07/310,856	11/28/89
4,882,844	07/279,491	11/28/89
4,882,846	07/217,633	11/28/89
4,882,849	07/225,101	11/28/89
4,882,858	07/192,765	11/28/89
4,882,859	07/262,443	11/28/89
4,882,861	07/109,213	11/28/89
4,882,862	07/143,723	11/28/89
4,882,864	07/119,682	11/28/89
4,882,869	07/231,029	11/28/89
4,882,870	07/266,816	11/28/89
4,882,875	07/289,263	11/28/89
4,882,877	07/300,442	11/28/89
4,882,880	07/194,973	11/28/89
4,882,882	07/177,086	11/28/89
4,882,883	07/018,916	11/28/89
4,882,886	07/092,337	11/28/89
4,882,888	07/271,028	11/28/89
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4,882,896	07/179,673	11/28/89
4,882,900	07/126,690	11/28/89
4,882,907	07/186,919	11/28/89
4,882,913	07/260,228	11/28/89
4,882,914	07/320,518	11/28/89
4,882,915	07/204,298	11/28/89
4,882,921	07/278,481	11/28/89
4,882,929	07/150,085	11/28/89
4,882,930	07/208,742	11/28/89
4,882,935	07/215,033	11/28/89
4,882,942	07/206,047	11/28/89
4,882,943	07/278,822	11/28/89
4,882,945	07/339,522	11/28/89
4,882,948	07/125,934	11/28/89
4,882,950	07/148,021	11/28/89
4,882,953	07/288,765	11/28/89
4,882,955	07/053,820	11/28/89
4,882,958	07/283,077	11/28/89
4,882,959	07/265,825	11/28/89
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4,883,053	07/339,916	11/28/89
4,883,055	07/167,301	11/28/89
4,883,068	07/167,778	11/28/89
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4,883,081	07/334,172	11/28/89
4,883,095	07/128,646	11/28/89
4,883,097	06/904,028	11/28/89
4,883,098	07/262,900	11/28/89
4,883,102	07/016,127	11/28/89
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4,883,104	07/206,703	11/28/89
4,883,107	07/128,909	11/28/89
4,883,117	07/221,803	11/28/89
4,883,119	07/226,386	11/28/89
4,883,124	07/281,170	11/28/89
4,883,126	07/312,757	11/28/89
4,883,127	07/312,442	11/28/89
4,883,140	07/168,407	11/28/89
4,883,142	07/242,312	11/28/89
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4,883,144	07/240,712	11/28/89
4,883,148	07/255,834	11/28/89
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4,883,165	07/221,958	11/28/89
4,883,167	07/093,881	11/28/89
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4,883,173	07/359,577	11/28/89
4,883,176	07/351,587	11/28/89
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4,883,181	07/269,648	11/28/89
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4,883,188	07/114,092	11/28/89
4,883,192	07/255,347	11/28/89
4,883,193	07/246,442	11/28/89
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4,883,197	07/098,279	11/28/89
4,883,203	07/197,870	11/28/89
4,883,204	07/270,197	11/28/89
4,883,207	07/227,809	11/28/89
4,883,209	07/212,202	11/28/89
4,883,211	07/319,425	11/28/89
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4,883,218	07/324,856	11/28/89
4,883,222	07/317,550	11/28/89
4,883,223	07/345,900	11/28/89
4,883,228	07/242,867	11/28/89
4,883,229	07/258,123	11/28/89
4,883,231	07/238,692	11/28/89
4,883,237	07/235,033	11/28/89
4,883,239	07/260,882	11/28/89
4,883,240	06/930,065	11/28/89
4,883,242	07/123,862	11/28/89
4,883,243	07/121,531	11/28/89
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4,883,255	07/150,888	11/28/89
4,883,258	07/244,316	11/28/89
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4,883,268	07/336,835	11/28/89
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4,883,273	07/273,222	11/28/89
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4,883,279	07/093,770	11/28/89
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4,883,286	07/227,147	11/28/89
4,883,290	07/311,476	11/28/89
4,883,295	07/106,360	11/28/89
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4,883,308	07/239,397	11/28/89
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4,883,318	07/105,995	11/28/89
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4,883,323	07/261,363	11/28/89
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4,883,334	07/126,931	11/28/89
4,883,343	07/173,662	11/28/89
4,883,349	07/248,491	11/28/89
4,883,353	07/154,929	11/28/89
4,883,362	07/148,800	11/28/89
4,883,368	07/130,208	11/28/89
4,883,369	07/173,298	11/28/89
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4,883,387	07/212,801	11/28/89
4,883,393	07/181,169	11/28/89
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4,883,402	07/197,593	11/28/89
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4,883,481	07/242,225	11/28/89
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4,883,753	07/074,284	11/28/89
4,883,760	07/209,332	11/28/89
4,883,765	07/091,218	11/28/89
4,883,769	07/234,069	11/28/89
4,883,778	06/924,959	11/28/89
4,883,782	07/215,295	11/28/89
4,883,798	07/221,529	11/28/89
4,883,804	06/932,473	11/28/89
4,883,805	07/078,805	11/28/89
4,883,815	07/215,003	11/28/89
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4,883,882	07/088,257	11/28/89
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4,883,919	07/194,240	11/28/89
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4,884,045	07/145,112	11/28/89
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4,884,062	07/256,312	11/28/89
4,884,076	06/427,087	11/28/89
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4,884,086	07/251,498	11/28/89
4,884,090	07/327,393	11/28/89
4,884,092	07/259,334	11/28/89
4,884,094	07/215,227	11/28/89
4,884,096	07/218,155	11/28/89
4,884,098	07/173,051	11/28/89
4,884,101	07/151,188	11/28/89
4,884,107	07/344,462	11/28/89
4,884,114	07/515,175	11/28/89
4,884,152	07/290,836	11/28/89
4,884,157	07/078,909	11/28/89
4,884,173	07/296,006	11/28/89
4,884,175	07/206,424	11/28/89
4,884,176	07/200,364	11/28/89
4,884,177	07/154,595	11/28/89
4,884,180	07/273,965	11/28/89
4,884,181	07/230,894	11/28/89
4,884,183	07/330,388	11/28/89
4,884,186	07/130,906	11/28/89
4,884,212	07/055,908	11/28/89
4,884,215	07/019,968	11/28/89
4,884,223	07/170,036	11/28/89
4,884,229	07/265,282	11/28/89
4,884,242	07/199,980	11/28/89
4,884,245	07/326,629	11/28/89
4,884,251	06/342,756	11/28/89
4,884,257	07/324,734	11/28/89
4,884,260	07/210,527	11/28/89
4,884,262	07/078,524	11/28/89
4,884,273	07/147,723	11/28/89

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,488,413	06/458,617	12/11/84	1/17/83	11/23/93
4,495,768	06/357,495	1/29/85	3/12/82	11/23/93
4,544,461	06/479,476	10/01/85	3/28/83	11/15/93
4,831,234	07/126,597	5/16/89	11/30/87	11/30/93
4,854,547	07/088,809	8/08/89	8/24/87	11/23/93
4,854,592	07/249,410	8/08/89	9/26/88	11/30/93
4,865,207	07/204,544	9/12/89	6/09/88	11/30/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

D319,306, Re. S.N. 29/014,803, Oct. 14, 1993, Cl. D-23, AIR CONDITIONER, Shusuke Yamazaki, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan,* Attorney or Agent: Joseph M. Potenza, Ex. Gp.: 2901

4,605,498, Re. S.N. 07/725,908, July 3, 1991, Cl. 210/222, APPARATUS FOR MAGNETIC TREATMENT OF LIQUIDS, Peter A. Kulish, Owner of Record: *Inventor,* Attorney or Agent: Donald R. Piper, Jr., Ex. Gp.: 1306

4,717,183, Re. S.N. 08/129,240, Sept. 29, 1993, Cl. 285/334, CONICAL THREAD CONFIGURATION FOR RAPID MAKE-UP CONNECTION, Phillippe C. Nobileau, Owner of Record: *Votoo Gray, Inc., Houston, Tex.,* Attorney or Agent: Joseph W. King, Jr., Ex. Gp.: 3501

4,720,804, Re. S.N. 08/165,015, Dec. 6, 1993, Cl. 364/525, ELECTRICALLY ADRESSABLE OPTO-ELECTRONIC INDICATOR FOR MAKING DYNAMIC EVALUATIONS OF MICROSCOPIC OR LARGER SUBJECTS, Sidney D. Moore, Owner of Record: *Inventor,* Attorney or Agent: David L. Hoffman, Ex. Gp.: 2304

4,920,370, Re. S.N. 08/163,588, Dec. 6, 1993, Cl. 354, PHOTO SIGNAL PROCESSING APPARATUS, Nobuyuki Taniguchi, et. al., Owner of Record: *Minolta Camera Kabushiki Kaisha Osaka-Shi, Japan,* Attorney or Agent: Joseph W. Price, Ex. Gp.: 2101

4,935,475, Re. S.N. 08/163,511, Dec. 9, 1993, Cl. 526/169, PROCESS FOR PRODUCING CYCLOOLEFIN RANDOM COPOLYMER, Kotareh Kishimura, et. al., Owner of Record: *Mitsui Petrochemical Industries, Ltd., Tokyo, Japan,* Attorney or Agent: Richard A. Steinberg, Ex. Gp.: 1505

5,038,556, Re. S.N. 08/106,109, Aug. 12, 1993, Cl. 59/784, GUIDE CHAINS FOR FEED LINES, Werner Moritz, et. al., Owner of Record: *Kabelschlepp, Siegen, Federal Republic of Germany,* Attorney or Agent: Phillip G. Meyers, Ex. Gp.: 3201

5,065,321, Re. S.N. 08/147,835, Nov. 3, 1993, Cl. 364/424.04, SOLID STATE EVENT RECORDER, Angel P. Bezos, et. al., Owner of Record: Pulse Electronics, Inc., Rockville, Md., Attorney or Agent: Sean M. McGinn, Ex. Gp.: 2304

5,072,764, Re. S.N. 08/149,604, Nov. 8, 1993, Cl. 157/001, PNEUMATIC METHOD AND APPARATUS FOR SEATING TUBELESS TIRES, Sandy Ochoa, Owner of Record: *Tire Service Equipment Manufacturing Co., Inc., Phoenix, Ariz.,* Attorney or Agent: Charles E. Cates, Ex. Gp.: 3203

5,075,608, Re. S.N. 08/156,297, Nov. 28, 1993, Cl. 318/599, CONTROL SYSTEM, ELECTRONICALLY COMMUTATED MOTOR SYSTEM, DRAFT INDUCER APPARATUS AND METHOD, David M. Erdman, et. al., Owner of Record: *General Electric Company, New York, N.Y.,* Attorney or Agent: Ralph E. Krisher, Jr., Ex. Gp.: 2107

5,158,928, Re. S.N. 08/166,103, Dec. 14, 1993, Cl. 503/227, AZO DYES FOR THERMOTRANSFER PRINTING, Volker Bach, et. al., Owner of Record: *BASF Aktiengesellschaft, Rheinland-Pfalz, Federal Republic of Germany,* Attorney or Agent: Herman F. Oblon, Ex. Gp.: 1513

5,175,329, Re. S.N. 08/151,654, Nov. 15, 1993, Cl. 556/467, PRODUCTION OF ORGANOSILANES FROM POLYSILANES, Gary M. Bokerman, et. al., Owner of Record: *Dow Corning Corporation, Midland, Mich.,* Attorney or Agent: William F. Boley, Ex. Gp.: 1204

5,185,415, Re. S.N. 08/163,327, Dec. 6, 1993, Cl. 526/265, ADSORPTIVE RESIN FOR MICROORGANISMS, Nariyoshi Kawahata, et. al., Owner of Record: *Japane Vilene Co., Ltd., Tokyo, Japan,* Attorney or Agent: Anthony M. Lorusso, Ex. Gp.: 1505

5,230,025, Re. S.N. 08/154,924, Nov. 18, 1993, Cl. 382/4, METHOD AND APPARATUS FOR CAPTURING SKIN PRINT IMAGES, Brian H. Fishbine, et. al., Owner of Record: *Digital Biometrics, Inc., Minnetonka, Minn.,* Attorney or Agent: Albin J. Nelson, Ex. Gp.: 2613

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,279,873, Reexam. No. 90/003,279, Dec. 15, 1993, Cl. 423/244.07, PROCESS FOR FLUE GAS DESULFERIZATION, Karsten S. Felsvang, et. al., Owner of Record: *Karsten S. Felsvang, Allerod, Denmark; Ove E. Hansen, Vaerlose, Denmark;* Attorney or Agent: Rodger L. Tate, Banner, Birch, Mc Kie & Beckett, Washington, D.C., Ex. Gp.: 1103, Requester: St. Onge, Stewart, Johnson & Reens, Stamford, Conn.

4,678,783, Reexam. No. 90/003,276, Dec. 7, 1993, Cl. 514/218, SUBSTITUTED ISOQUINOLINESULFONYL COMPOUNDS, Hiryoshi Hidaka, et. al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Kita-Ku, Japan,* Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 1205, Requester: Owner

5,062,535, Reexam. No. 90/003,277, Dec. 10, 1993, Cl. 211/162, SIDE-SLIDING STORAGE RACK FOR 3480 CARTRIDGES, Frank Potter, Owner of Record: *Wright Line, Inc., Worchester, Ma.,* Attorney or Agent: Nicholas J. Garofalo, Floral Park, N.Y., Ex. Gp.: 3505, Requester: Engineered Data Products, Inc., Broomfield, Colo.

5,076,920, Reexam. No. 90/003,278, Dec. 13, 1993, Cl. 210/243, ELECTROSTATISTICALLY DISSIPATIVE FUEL FILTER, Daniel R. Danowski, et. al., Owner of Record: *Allied-Signal, Inc., Morris Township, N.J.,* Attorney or Agent: Allied Signal, Inc., South Bend, Ind., Ex. Gp.: 1308, Requester: Douglas W. Sprinkle, Gifford, Groh, Sprinkle, Patmore & Anderson, Birmingham, Miss.

5,251,873, Reexam. No. 90/003,280, Dec. 15, 1993, Cl. 251/149.1, MEDICAL COUPLING SITE, Gordon E. Atkinson, et. al., Owner of Record: *Vernay Laboratories, Inc., Yellow Springs, Ohio,* Attorney or Agent: Thomas P. Flynn & Michael D. Folkerts, Biebel & French, Dayton, Ohio, Ex. Gp.: 3400, Requester: Kurt L. Grossman, Wood, Herron & Evans, Cincinnati, Ohio

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 20, 1993 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
39,933	70/039,933	3/17/1903
90,692	71/028,111	3/18/1913
90,728	71/066,878	3/18/1913
90,758	71/066,576	3/18/1913
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Reg. No.	Serial No.	Reg. Date
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571,978	71/619,542	3/17/1953
571,993	71/621,676	3/17/1953
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571,999	71/622,408	3/17/1953
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572,011	71/623,754	3/17/1953
572,013	71/623,941	3/17/1953
572,019	71/624,208	3/17/1953
572,031	71/625,630	3/17/1953
572,032	71/625,702	3/17/1953
572,036	71/625,849	3/17/1953
572,042	71/626,403	3/17/1953
572,045	71/626,497	3/17/1953
572,049	71/626,839	3/17/1953
572,050	71/626,841	3/17/1953
572,051	71/626,880	3/17/1953
572,052	71/626,882	3/17/1953
572,053	71/626,943	3/17/1953
572,054	71/626,948	3/17/1953
572,057	71/627,351	3/17/1953
572,081	71/629,386	3/17/1953
572,082	71/629,471	3/17/1953
572,083	71/629,492	3/17/1953
572,088	71/629,636	3/17/1953
572,089	71/629,706	3/17/1953
572,092	71/629,817	3/17/1953
572,095	71/629,987	3/17/1953
572,102	71/630,176	3/17/1953
572,105	71/630,504	3/17/1953
572,106	71/630,505	3/17/1953
572,115	71/631,239	3/17/1953
572,119	71/631,348	3/17/1953
572,122	71/632,370	3/17/1953
572,125	71/633,759	3/17/1953
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572,130	71/634,365	3/17/1953
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572,134	71/560,942	3/17/1953
572,139	71/620,932	3/17/1953
572,157	71/609,180	3/17/1953
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572,169	71/619,048	3/17/1953
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954,814	72/416,454	3/13/1973
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954,896	72/411,153	3/13/1973
954,898	72/411,573	3/13/1973
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954,904	72/413,217	3/13/1973
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954,907	72/413,298	3/13/1973
954,909	72/413,844	3/13/1973
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955,037	72/370,909	3/13/1973
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955,040	72/379,309	3/13/1973
955,041	72/382,814	3/13/1973
955,049	72/393,514	3/13/1973
955,050	72/394,069	3/13/1973
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955,067	72/415,284	3/13/1973
955,069	72/415,617	3/13/1973
955,070	72/416,103	3/13/1973
955,072	72/390,943	3/13/1973
955,073	72/390,944	3/13/1973
955,080	72/411,245	3/13/1973
955,083	72/415,094	3/13/1973
955,084	72/415,095	3/13/1973
955,085	72/415,096	3/13/1973
955,086	72/415,097	3/13/1973
955,088	72/415,099	3/13/1973
955,089	72/415,100	3/13/1973
955,090	72/415,101	3/13/1973
955,091	72/415,102	3/13/1973
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955,093	72/415,104	3/13/1973
955,094	72/415,105	3/13/1973
955,095	72/415,106	3/13/1973
955,096	72/415,107	3/13/1973
955,097	72/415,108	3/13/1973
955,098	72/415,109	3/13/1973
955,099	72/415,110	3/13/1973
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955,101	72/415,113	3/13/1973
955,102	72/415,114	3/13/1973
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955,420	72/415,373	3/13/1973
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955,501	72/416,447	3/13/1973
955,503	72/420,837	3/13/1973

Patents Available For License or Sale

4,406,121 ROTARY FLUID DEVICE

Contact: Gregory J. Nelson
Nelson & Roediger
2623 North 7th Street
Phoenix, Ariz., 85006
(602) 263-8782

4,541,810 SWIMMING APPARATUS - DOL-FIN TAIL

Contact: Clarence E. Wenzel
400 Plantation Road
Huddleston, Va., 24104-3003

4,608,263 METHOD FOR MAKING FLA-VORED DIPEPTIDESWEETENED COMES,TIBLE

Contact: Lars S. Johnson
The Quaker Oats Company
P.O. Box 049001 STE 25-7
Chicago, Ill., 60604-9001
(312) 222-7407

4,614,657 DIPEPTIDESWEETENED READY-TO- EAT CEREAL AND COATING METHOD

Contact: Lars S. Johnson
The Quaker Oats Company
P.O. Box 049001 STE 25-7
Chicago, Ill., 60604-9001
(312) 222-7407

4,809,507 ROTARY FLUID DEVICE

Contact: Gregory J. Nelson
Nelson & Roediger
2623 North 7th Street
Phoenix, Ariz., 85006
(602) 263-8782

4,905,321 COMBINED WORKOUT GLOVE AND WRIST WRAP

Contact: Phillip M. Goldman
Fredrikson & Byron
1100 International Centre
900 Second Avenue South
Minneapolis, Minn., 55402
(612) 347-7088

4,990,813 ROLLING TRIBOELECTRIC GENERATOR

Contact: Gabriel Lorente-Paramo
Universidad Nacional de Educacion a Distancia
Apartado 60.149
28080 Madrid, Spain
34-1-398 64 13

5,157,674 SECOND HARMONIC GENERA TION AND SELF FREQUENCY DOUBLING LASER MATERI ALS COMPRISED OF BULK GERMANOSILICATE AND ALUMINOSILICATE GLASSES

Contact: Harry F. Smith
Intellectual Property Development Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

5,202,687 ANALOG TO DIGITAL CON-VERTER

Contact: Harry F. Smith
Intellectual Property Development Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn.,
(203) 254-7538

5,233,621 SECOND HARMONIC GENERA TION AND SELF FREQUENCY DOUBLING LASER MATERALS COMPROSED OF BULk GERMANOSILICATEAND ALUMI NOSILICATE GLASSES

Contact: Harry F. Smith
Intellectual Property Development Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

5,253,258 OPTICALLY ENCODED PHASE MATCHED SECOND HARMONIC GENERATION DE VICE AND SELF FREQUENCY DOUBLING LASER MATERIAL USING SEMICONDUCTOR

Contact: Harry F. Smith
Intellectual Property Development Associates of Connecticut
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

Service By Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Ambassador Studios for Men, Limited, Chicago, Ill., Reg. No. 1,013,746 for the mark PERMA-BOND, Canc. No. 21,148.

Kicks Unlimited, Inc., Bloomington, Mich., Reg. No. 1,433,984 for the mark SHOWBIZ*BUDDY, Canc. No. 21,268.

Leander Acquisition Corp., Portland, Me., Reg. No. 1,062,787 for the mark PORT-A-CRIB, Canc. No. 21,421.

Thermaljet, Ltd., Louisville, Ky., Reg. No. 1,194,265 for the mark THERMAJET, Canc. No. 21,433.

Fine Fast Foods, Inc., Irvine, Calif., Reg. No. 1,570,445 and Reg. No. 1,570,446 for the marks PINKY'S and Design and PINKY'S respectively, Canc. No. 21,569.

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For Robert M. Anderson
Acting Assistant Commissioner for Trademarks

Registration To Practice

The following person successfully passed the registration examination that was held April 21, 1993. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 25, 1994.

Swope, Bradley A., 6106 Ruatan St., Berwyn Hgts., Md. 20740

January 11, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 25, 1994.

Diaconescu, Aprilia U., 93 Grosvenor St., Ottawa, Ont., K1S 4S7, Canada
Dube, Louis, 5980 McShane St., Montreal, Que., H3S 2G3, Canada
Lindquist, William F., RR 3 Box 178, Aledo, Ill., 61231
Luo, Li-Hua, 1400 S. Joyce St., #A1212, Arlington, Va., 22202
Rosen, Sam, 3503 W. Strathmore Ave., Baltimore, Md., 21215
Waddell, Frederick E., 7018 Tarquin Ave., Camp Springs, Md., 20748
Zhang, Douglas D., 42-22 Ketcham St., #7A, Elmhurst, N.Y., 11371

January 11, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Economics and Statistics Administration
Technology Administraion

Notice of Cancellation of Public Hearings on

Economic Aspects of the U.S. Patent System

Agencies: Patent and Trademark Office; Economics and Statistics Administration; Technology Administration; Department of Commerce
Action: Notice of Cancellation of Public Hearing
Summary: The Patent and Trademark Office (PTO), Economics and Statistics Administration (ESA) and Technology Administration (TA) announce the cancellation of a public hearing scheduled for January 25, 1994, at the San Jose Convention Center, on certain economic aspects of the United States patent system. The hearing has been canceled due to the lack of interest of parties in presenting oral testimony. Parties interested in commenting on the topics addressed in the Federal Register notice annnouncing the hearing [58 FR 68394], dated December 27,1993, may provide those comments in written form pursuant to the guidelines indicated in that notice.
Dates: Written comments on topics presented in the supplementary information section of the Federal Register notice announcing the hearing [58 FR 68394], dated December 27, 1993 should be received by the PTO on or before March 1, 1994. The public hearing scheduled for January 25, 1994, in San Jose, California, is canceled.
Addresses: Those interested in presenting writen comments should consult the Federal Register notice announcing the hearing [58 FR 68394] for information regarding such comments.
For Further Information Contact: Jeff Kushan by telephone at (703) 305-9300, by fax at (703) 305-8885, by electronic mail at kushan@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C., 20231.

Jan. 6, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

U.S. DEPARTMENT OF COMMERCE

Meeting of The Public Advisory Committee For Trademark Affairs

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the open meeting of the Public Advisory Committee for Trademark Affairs.
Date: The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 4:00 p.m. on February 8, 1994.
Place: U.S. Patent and Trademark Office, 2121 Crystal Drive, Crystal Park 2, Room 912, Arlington, Va.
Status: The meeting will be open to public observation; seating will be available for the public on a first-come-first-served basis. Members of the public will be permitted to make oral comments of three (3) minutes each. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed. Copies of the minutes will be available upon request.
Matters To Be Considered: The agenda for the meeting is as follows:

(1) Finance
(2) Automation
(3) Strategic Planning

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(4) Current Trademark Office Practice Issues
(5) International Trademark Law

Contact Person For More Information: For further information, contact Lynne Beresford, Office of the Assistant Commissioner for Trademarks, Building CPK2, Room 910, Patent and Trademark Office, Washington, D.C., 20231. Telephone: (703) 305-9464.

Jan. 7, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Announcement Of Certain Amendments To The Regulations Under The Patent Cooperation Treaty (PCT) Effective 01 January 1994

Certain of the Regulations under the Patent Cooperation Treaty were amended with effect from 01 January 1994, and are reproduced below. The following amendments may be of primary interest to applicants from the United States:

1) a change to PCT Rule 19.1 which establishes the International Bureau as an alternative receiving Office; and

2) a provision in PCT Rule 19.4 for transmitting an international application to the International Bureau in its capacity as a receiving Office if it is filed with a national Office that is not competent to act as a receiving Office under PCT Rule 19.1 or 19.2. An international application that indicates at least one applicant as a resident or national of a PCT member country, but that does not indicate at least one applicant as a resident or national of the United States is such an application and will be considered to have been received by the U.S. Patent and Trademark Office on behalf of the International Bureau as receiving Office under Rule 19.1(a)(iii).

PCT Rule 19.4 Provides that transmittal of such an international application by a national Office to the International Bureau may be subject to the payment of a fee equal to the transmittal fee charged by that Office under Rule 14. Accordingly, the fee currently charged by the U.S. Patent and Trademark Office is $200.

Applicants are cautioned that before an application may be filed with the International Bureau in its capacity as a receiving Office, appropriate permission to file abroad must be obtained. See 35 U.S.C. 184 and 37 CFR 5.11.

The information contained in this notice should be sufficient pending appropriate changes that will be made in Title 37 of the Code of Federal Regulations.

Amended Rules Of The Regulations Under The Patent Cooperation Treaty Applicable From 01 January 1994

Rule 4
The Request (Contents)

4.1 Mandatory and Optional Contents: Signature

(a) [No Change]
(b) The request shall, where applicable, contain:
(i) to (iv) [No Change]
(v) a reference to a patent application or parent patent,
(vi) an indication of the applicant's choice of competent International Searching Authority.
(c) and (d) [No Change]

4.2 to 4.14 [No Change]

4.14bis Choice of International Searching Authority

If two or more International Searching Authorities are competent for the searching of the international application, the applicant shall indicate his choice of International Searching Authority in the request.

4.15 to 4.17 [No Change]

Rule 10
Terminology and Signs

10.1 Terminology and Signs

(a) to (c)[No change]
(f) When the international application or its translation is in Chinese, English or Japanese, the beginning of any decimal shall be marked by a period, whereas, when the international application or its translation is in a language other than Chinese, English or Japanese, it shall be marked by a comma.

10.2 [No change]

Rule 11
Physical Requirements of the International Application

11.1 to 11.8 [No change]

11.9 Writing of Text Matter

(a) [No change]
(b) Only graphic symbols and characters, chemical or mathematical formulae, and certain characters in the Chinese or Japanese language may, when necessary, be written by hand or drawn.
(c) and (d) [No change]
(e) As far as spacing of the typing and the size of the characters are concerned, paragraphs (c) and (d) shall not apply to texts in the Chinese or Japanese language.

11.10 to 11.14 [No change]

Rule 18
The Applicant

18.1 Residence and Nationality

(a) Subject to the provisions of paragraph (b) and (c), the question whether an applicant is a resident or national of the contracting state of which he claims to be a resident or national shall depend on the national law of that State and shall be decided by the receiving Office.
(b) In any case,
(i) possession of a real and effective industrial or commercial establishment in a Contracting State shall be considered residence in that State, and
(ii) a legal entity constituted according to the national law of a Contracting State shall be considered a national of that State.
(c) Where the international application is filed with the International Bureau as receiving Office, the International Bureau shall, in the circumstances specified in the Administrative Instructions, request the national Office of, or acting for, the Contracting State concerned to decide the question referred to in paragraph (a). The International Bureau shall inform the applicant of any such request. The applicant shall have an opportunity to submit arguments directly to the national Office. The national Office shall decide the said question promptly.

18.2 [Deleted]

18.3 and 18.4 [No change]

Rule 19
The Competent Receiving Office

19.1 Where to File

(a) Subject to the provisions of paragraph (b), the international application shall be filed, at the option of the applicant,
(i) with the national Office of or acting for the Contracting State of which the applicant is a resident,
(ii) with the national Office of or acting for the Contracting State of which the applicant is a national, or
(iii) irrespective of the Contracting State of which the applicant is a resident or national, with the International Bureau.
(b) and (c) [No Change]

19.2 Two or More Applicants

If there are two or more applicants:
(i) the requirements of Rule 19.1 shall be considered to be met if the national Office with which the international application is filed is the national Office of or acting for a Contracting State of which at least one of the applicants is a resident or national;
(ii) the international application may be filed with the International Bureau under Rule 19.1(a)(iii) if at least one of the applicants is a resident or national of a Contracting State.

19.3 [No change]

19.4 Transmittal to the International Bureau as Receiving Office

(a) Where an international application is filed with a national Office acts as a receiving Office which under the Treaty by an applicant who is a resident or national of a Contracting State, but that national Office is not competent under Rule 19.1 or 19.2 to receive that international application, that application shall, subject to paragraph (b), be considered to have been received by that Office on behalf of the International Bureau as receiving Office under Rule 19.1(a)(iii).
(b) Where, pursuant to paragraph (a), an international application is received by a national Office on behalf of the International Bureau as receiving Office under Rule 19.1(a)(iii), that national Office shall, unless prescriptions concerning national security prevent the international application from being so transmitted, promptly transmit it to the International Bureau. Such transmittal may be subjected by the national Office to the payment of a fee, for its own benefit, equal to the transmittal fee charged by that Office under Rule 14. The international application so transmitted shall be considered to have been received by the International Bureau as receiving Office under Rule 19.1(a)(iii) on the date of receipt of the international application by that national Office.

Rule 35
The Competent International Searching Authority

35.1 and 35.2 [No change]

35.3 When the International Bureau Is Receiving Office Under Rule 19.1(a)(iii)

(a) Where the international application is filed with the International Bureau as receiving Office under Rule 19.1(a)(iii), an International Searching Authority shall be competent for the searching of that international application if it would have been competent had that international application been filed with a receiving Office competent under Rule 19.1(a)(i) or (ii), (b) or (c) or Rule 19.2(i).
(b) Where two or more International Searching Authorities are competent under paragraph (a), the choice shall be left to the applicant.
(c) Rules 35.1 and 35.2 shall not apply to the International Bureau as receiving Office under Rule 19.1(a)(iii).

Rule 37
Missing or Defective Title

37.1 [Amendment to the French text only]

37.2 Establishment of Title

If the international application does not contain a title and the International Searching Authority has not received a notification from the receiving Office to the effect that the applicant has been invited to furnish a title, or if the said Authority finds that the title does not comply with Rule 4.3, it shall itself establish a title. Such title shall be established in the language in which the international application is published or, if a translation was transmitted under Rule 12.1(c) and the International Searchimg Authority so wishes, in the language of that translation.

Rule 38
Missing or Defective Abstract

38.1 [Amendment to the French text only]

38.2 Establishment of Abstract

(a) If the international application does not contain an abstract and the International Searching Authority has not received a notification from the receiving Office to the effect that the applicant has been invited to furnish an abstract, or if the said Authority finds that the abstract does not comply with Rule 8, it shall itself establish an abstract. Such abstract shall be established in the language in which the international application is published or, if a translation was transmitted under Rule 12.1(c) and the International Searching Authority so wishes, in the language of that translation.
(b) [No change]

Rule 43
The International Search Report

43.1 to 43.3 [No change]

43.4 Language

Every international search report and any declaration made under Article 17(2)(a) shall be in the language in which the international application to which it relates is published or, if a translation was transmitted under Rule 12.1(c) and the International Searching Authority so wishes, in the language of that translation.

43.5 to 43.10 [No change]

Rule 48
International Publication

48.1 and 48.2 [No change]

48.3 Languages

(a) If the international application is filed in Chinese, English, French, German, Japanese, Russian or Spanish, that application shall be published in the language in which it was filed.
(b) If the international application is filed in a language other than Chinese, English, French, German, Japanese, Russian or Spanish, that application shall be published in English translation. The translation shall be prepared under the responsibility of the International Searching Authority, which shall be obliged to have it ready in time to permit international publication by the prescribed date, or where Article 64(3)(b) applies, to permit communication under Article 20 by the end of the 19th month after the priority date. Notwithstanding Rule 16.1(a), the International Searching Authority may charge a fee for the translation to the applicant. The International Searching Authority shall give the applicant an opportunity to comment on the draft translation. The International Searching Authority shall fix a time limit reasonable under the circumstances of the case for such comments. If there is no time to take the comments of the applicant into account before the translation is communicated or if there is a difference of opinion between the applicant and the said Authority as to the correct translation, the applicant may send a copy of his comments, or what remains of them, to the International Bureau and each designated Office to which the translation was communicated. The International Bureau shall publish the essence of the comments together with the translation of the International Searching Authority or subsequently to the publication of such translation.
(c) [No change]

48.4 to 48.6 [No change]

Rule 54
The Applicant Entitled to Make a Demand

54.1 Residence and Nationality

(a) Subject to the provisions of paragraph (b), the residence or nationality of the applicant shall, for th purposes of Article 31(2), be determined according to Rule 18.1(a) and (b).
(b) The International Preliminary Examining Authority shall, in the circumstances specified in the Administrative Instructions, request the receiving Office or, where the international application was filed with the International Bureau as receiving

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Office, the national Office of, or acting for, the Contracting State concerned to decide the question whether the applicant is a resident or national of the Contracting State of which he claims to be a resident or national. The International Preliminary Examining Authority shall inform the applicant of any such request. The applicant shall have an opportunity to submit arguments directly to the Office concerned. The Office concerned shall decide the said question promptly.

54.2 [No change]

54.3 International Applications Filed with the International Bureau as Receiving Office

Where the international application is filed with the International Bureau as receiving Office under Rule 19.1 (a)(iii), the International Bureau shall, for the purposes of Article 31(2)(a), be considered to be acting for the Contracting State of which the applicant is a resident or national.

54.4 [No change]

Rule 55
Languages (International Preliminary Examination)

55.1 Language of Demand*

The demand shall be in the language of the international application or, if the international application has been filed in a language other than the language in which it is published, in the language of publication. However, if a translation of the international application is required under Rule 55.2, the demand shall be in the language of that translation.

* The title has been amended to read "Language of Demand" instead of "The Demand".

55.2 Translation of International Application

(a) Where the international application is neither filed nor published in the language, or one of the languages, specified in the agreement concluded between the International Bureau and the International Preliminary Examination Authority competent for the international preliminary examination of that application, that Authority may require that, subject to paragraph (b), the applicant furnish with the demand a translation of the international application into the language, or one of the languages, specified in the said agreement.

(b) Where a translation of the international application into a language referred to in paragraph (a) was transmitted to the International Searching Authority under Rule 12.1(c) and the International Preliminary Examining Authority is part of the same national Office or intergovernmental organization as the International Searching Authority, the applicant need not furnish a translation under paragraph (a). In such a case, unless the applicant furnishes a translation under paragraph (a), the international preliminary examination shall be carried out on the basis of the translation transmitted under Rule 12.1(c).

(c) If the requirement of paragraph (a) is not complied with and paragraph (b) does not apply, the International Preliminary Examining Authority shall invite the applicant to furnish the required translation within a time limit which shall be reasonable under the circumstances. That time limit shall not be less than one month from the date of the invitation. It may be extended by the International Preliminary Examining Authority at any time before a decision is taken.

(d) If the applicant complies with the invitation within the time limit under paragraph (c), the said requirement shall be considered to have been complied with. If the applicant fails to do so, the demand shall be considered not to have been submitted.

(e) Paragraphs (a) to (d) shall apply only where the International Preliminary Examining Authority has declared, in a notification addressed to the International Bureau, that it accepts to carry out international preliminary examination on the basis of the translation referred to in those paragraphs.

55.3 Translation of Amendments

(a) Where a translation of the international application is required under Rule 55.2, any amendments which are referred to in the statement concerning amendments under Rule 53.9 and which the applicant wishes to be taken into account for the purposes of the international preliminary examination, and any amendments under Article 19 which are to be taken into account under Rule 66.1(c), shall be in the language of that translation. Where such amendments have been or are filed in another language, a transition shall also be furnished.

(b) Where the required translation of an amendment referrred to in paragraph (a) is not furnished, the International Preliminary Examining Authority shall invite the applicant to furnish the missing translation within a time limit which shall be reasonable under the circumstances. That time limit shall not be less than one month from the date of the invitation. It may be extended by the International Preliminary Examining Authority at any time before a decision is taken.

(c) If the applicant fails to comply with the invention within the time under paragraph (b), the amendment shall not be taken into account for the purposes of the international preliminary examination.

Rule 59
The Competent International Preliminary Examining Authority

59.1 Demands Under Article 31(2)(a)

(a) For demands made under Article 31(2)(a), each receiving Office of or acting for a Contracting State bound by the provisions of Chapter II shall, in accordance with the terms of the applicable agreement referred to in Article 32(2) and (3), inform the International Bureau which International Preliminary Examining Authority is or which International Preliminary Examining Authorities are competent for the international preliminary examination of international applications filed with it. The International Bureau shall promptly publish such information. Where several International Preliminary Examining Authorities are competent, the provisions of Rule 35.2 shall apply *mutatis mutandis*.

(b) Where the international application was filed with the International Bureau as receiving Office under Rule 19.1(a)(iii), Rule 35.3(a) and (b) shall apply *mutatis mutandis*. Paragraph (a) of this Rule shall not apply to the International Bureau as receiving Office under Rule 19.1(a)(iii).

59.2 [No change]

Rule 60
Certain Defects in the Demand or Elections

60.1 Defects in the Demand

(a) If the demand does not comply with the requirements specified in Rules 53.1, 53.2(a)(i) to (iv), 53.2(b), 53.3 to 53.8 and 55.1, the International Preliminary Examining Authority shall invite the applicant to correct the defects within a time limit which shall be reasonable under the circumstances. That time limit shall not be less than one month from the date of the invitation. It may be extended by the International Preliminary Examining Authority at any time before a decision is taken.

(b) to (g) [No change]

60.2 [No change]

Rule 61
Notification of the Demand and Elections

61.1 Notification to the International Bureau and the Applicant

(a) [No change]

(b) The International Preliminary Examining Authority shall promptly inform the applicant in writing of the date of receipt of the demand. Where the demand has been considered under Rules 54.4(a), 55.2(d), 57.4(c), 58.2(c) or 60.1(c) as if it had not been submitted or where an election has been considered under Rule 60.1(d) as if it had not been made, the International Preliminary Examining Authority shall notify the applicant and the International Bureau accordingly.

(c) [No change]

61.2 to 61.4 [No change]

Rule 66
Procedure before the International Preliminary Examining Authority

66.1 to 66.8 [No change]

66.9 Language of Amendments

(a) Subject to paragraphs (b) and (c) if the international application has been filed in a language other than the language in which it is published, any amendment, as well as any letter referred to in Rule 66.8(a), shall be submitted in the language of publication.

(b) if the international preliminary examination is carried out, pursuant to Rule 55.2, on the basis of a translation of the international application, any amendment, as well as any letter referred to in paragraph (a), shall be submitted in the language of that translation.

(c) Subject to Rule 55.3, if an amendment or letter is not submitted in a language as required under paragraph (a) or (b), the International Preliminary Examining Authority shall, if practicable having regard to the time limit for establishing the international preliminary examination report, invite the applicant to furnish the amendment or letter in the required language within a time limit which shall be reasonable under the circumstances.

(d) If the applicant fails to comply, within the time limit under paragraph (c), with the invitation to furnish an amendment in the required language, the amendment shall not be taken into account for the purposes of the international preliminary examination. If the applicant fails to comply, within the time limit under paragraph (c), with the invitation to furnish a letter referred to in paragraph (a) in the required language, the amendment concerned need not be taken into account for the purposes of the international preliminary examination.

Rule 70
The International Preliminary Examination Report

70.1 to 70.16 [No change]

70.17 Languages of the Report and the Annexes

(a) The report and any annex shall be in the language in which the international application to which they relate is published, or, if the international preliminary examination is carried out, pursuant to Rule 55.2, on the basis of a translation of the international application, in the language of that translation.

(b) [Remains deleted]

Rule 74
Translations of Annexes of the International Preliminary Examination Report and Transmittal Thereof

74.1 Contents of Translation and Time Limit for Transmittal Thereof

(a) Where the furnishing of a translation of the international application is required by the elected Office under Article 39(1), the applicant shall, within the time limit applicable under Article 39(1), transmit a translation of any replacement sheet referred to in Rule 70.16 which is annexed to the international preliminary report, unless such sheet is in the language of the required translation of the international application. The same time limit shall apply where the furnishing of a translation of the international application to the elected Office must, because of a declaration made under Article 64(2)(a)(i), be effected within the time limit applicable under Article 22.

(b) Where the furnishing under Article 39(1) of a translation of the international application is not required by the elected Office, that Office may require the applicant to furnish, within the time limit applicable under that Article, a translation into the language in which the international application was published of any replacement sheet referred to in Rule 70.16 which is annexed to the international preliminary examination report and is not in that language.

Rule 83
Right to Practice Before International Authorities

83.1 [No change]

83.1*bis* Where the International Bureau Is the Receiving Office

(a) Any person who has the right to practice before the national Office of, or acting for, a Contracting State of which the applicant or, if there are two or more applicants, any of the applicants is a resident or national shall be entitled to practice in respect of the international application before the International Bureau in its capacity as receiving Office under Rule 19.1 (a)(iii).

(b) Any person having the right to practice before the International Bureau in its capacity as receiving Office in respect of an international application shall be entitled to practice in respect of that application before the International Bureau in any other capacity and before the competent International Searching Authority and competent International Preliminary Examining Authority.

83.2 [No change]

Rule 90
Agents and Common Representatives

90.1 Appointment as Agent

(a) A person having the right to practice before the national Office with which the international application is filed or, where the international application is filed with the International Bureau, having the right to practice in respect of the international application before the Internattional Bureau as receiving Office may be appointed by the applicant as his agent to resent him before the receiving Office, the International Bureau, International Searching Authority and the International Preliminary Examining Authority.

(b) and (c) [No change]

(d) An agent appointed under paragraph (a) may, unless otherwise indicated in the document appointing him, appoint one or more sub-agents to represent the applicant as the applicant's agent:

(i) before the receiving Office, the International Bureau, the International Searching Authority and the International Preliminary Examining Authority, provided that any person so appointed as sub-agent has the right to practice before the national Office with which the international application was filed or to practice in respect of the international application before the International Bureau as receiving Office, as the case may be;

(ii) [No change]

90.2 to 90.6 [No change]

Rule 91
Obvious Errors in Documents

91.1 Rectification

(a) to (d) [No change]

(e) No rectification shall be made except with the express authorization:

(i) and (ii) [No change]

(iii) of the International Preliminary Examining Authority if the error is in any part of the international application other than the request or in any paper submitted to that Authority,

(iv) [No change]

(f) to (q-**quater**) [No change]

Rule 92
Correspondence

92.1 [No change]

92.2 Languages

(a) Subject to Rules 55.1 and 66.9 and to paragraph (b) of this Rule, any letter or document submitted by the applicant to the International Searching Authority or the International Prelimi-

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nary Examining Authority shall be in the same language as the international application to which it relates. However, where a translation of the international application has been transmitted under Rule 12.1(c) or furnished under Rule 55.2(a) or (c), the language of such translation shall be used.

(b) to (e) [No change]

92.3 and 92.4 [No change]

Jan. 18, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed.** To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates ofCorrections
Week of
February 8, 1994

PP: 8,176	4,906,518	4,990,712	5,024,961
PP: 8,255	4,911,829	4,993,390	5,027,281
Des: 313,210	4,913,323	4,994,270	5,027,793
Des: 336,528	4,917,269	4,998,942	5,031,159
Des: 336,616	4,923,743	4,999,736	5,034,896
Des: 336,715	4,930,685	5,006,930	5,034,899
Des: 336,769	4,960,457	5,008,249	5,037,840
4,402,261	4,961,127	5,009,956	5,040,361
4,714,638	4,962,277	5,011,828	5,047,566
4,739,084	4,963,774	5,019,371	5,050,111
4,812,462	4,981,698	5,020,548	5,052,868
4,859,515	4,984,152	5,020,920	5,053,507
4,885,841	4,990,024	5,024,785	5,054,336
5,061,164	5,151,517	5,186,454	5,206,087
5,061,310	5,151,913	5,186,630	5,206,283
5,063,162	5,153,104	5,186,846	5,206,365
5,063,560	5,153,568	5,186,853	5,206,677
5,064,514	5,153,737	5,186,885	5,206,731
5,064,574	5,155,037	5,187,186	5,206,901
5,064,834	5,155,045	5,187,344	5,206,983
5,065,849	5,155,232	5,187,465	5,207,588
5,066,478	5,155,382	5,187,536	5,207,615
5,066,767	5,155,571	5,188,152	5,207,953
5,068,234	5,156,924	5,188,886	5,207,970
5,075,866	5,156,960	5,188,958	5,208,017
5,078,985	5,157,692	5,188,974	5,208,055
5,080,243	5,157,987	5,189,460	5,209,118
5,080,749	5,158,003	5,189,521	5,209,131
5,080,883	5,159,324	5,189,525	5,209,368
5,081,031	5,160,262	5,189,555	5,209,577
5,082,557	5,160,399	5,189,630	5,209,869
5,085,671	5,163,023	5,189,702	5,210,128
5,085,695	5,163,992	5,189,934	5,210,160
5,087,263	5,164,265	5,189,995	5,210,248
5,087,636	5,164,307	5,190,923	5,210,469
5,087,775	5,164,825	5,191,035	5,210,528
5,088,195	5,164,974	5,191,443	5,210,692
5,089,120	5,165,454	5,191,893	5,210,873
5,094,683	5,165,845	5,191,900	5,211,466
5,096,830	5,165,870	5,191,920	5,211,597
5,098,347	5,166,810	5,192,308	5,211,972
5,102,210	5,167,545	5,192,550	5,212,062
5,102,630	5,167,587	5,192,661	5,212,171
5,105,328	5,167,756	5,193,341	5,212,183
5,106,540	5,167,857	5,193,517	5,212,240
5,108,192	5,168,467	5,193,524	5,212,466
5,112,873	5,169,207	5,193,791	5,213,341
5,114,277	5,169,223	5,193,800	5,213,387
5,116,803	5,169,295	5,194,353	5,213,745
5,118,886	5,169,576	5,194,355	5,213,767
5,118,952	5,169,754	5,194,473	5,214,101
5,121,606	5,169,830	5,194,612	5,214,262
5,122,119	5,169,868	5,194,710	5,214,531
5,122,245	5,169,971	5,194,995	5,214,762
5,122,251	5,170,608	5,195,547	5,214,824
5,123,649	5,170,631	5,195,897	5,214,902
5,124,517	5,170,990	5,196,130	5,214,906
5,125,540	5,172,105	5,196,184	5,215,008
5,126,040	5,172,138	5,196,729	5,215,009
5,126,125	5,172,448	5,196,900	5,215,206
5,126,280	5,173,257	5,196,923	5,215,596
5,126,322	5,173,717	5,197,422	5,215,668
5,127,836	5,173,770	5,198,037	5,215,915
5,130,005	5,175,204	5,198,086	5,215,922
5,130,186	5,176,924	5,198,142	5,216,118
5,132,336	5,177,536	5,198,718	5,216,143
5,133,504	5,177,916	5,198,748	5,216,211
5,133,624	5,178,083	5,198,909	5,216,222
5,134,092	5,178,726	5,199,016	5,216,704
5,134,210	5,178,829	5,199,551	5,216,756
5,134,720	5,178,884	5,199,699	5,216,832
5,136,689	5,179,134	5,199,961	5,217,224
5,137,978	5,179,950	5,200,053	5,217,273
5,138,577	5,180,287	5,200,082	5,217,627
5,139,195	5,180,918	5,200,719	5,217,709
5,139,892	5,181,105	5,200,725	5,218,616
5,139,930	5,181,277	5,200,787	5,219,077
5,140,950	5,181,335	5,200,839	5,219,492
5,141,595	5,181,987	5,201,985	5,219,567
5,141,774	5,182,101	5,202,095	5,219,603
5,142,434	5,182,106	5,202,595	5,219,635
5,143,797	5,182,175	5,202,775	5,219,851
5,144,490	5,182,237	5,203,081	5,219,889
5,146,267	5,182,253	5,203,108	5,220,302
5,147,447	5,182,662	5,203,299	5,220,651
5,147,764	5,182,778	5,203,619	5,221,008
5,147,994	5,182,984	5,203,679	5,221,232
5,149,610	5,185,077	5,203,730	5,222,565
5,150,465	5,185,150	5,203,826	5,222,656
5,150,554	5,185,358	5,204,746	5,222,838
5,151,201	5,185,563	5,205,444	5,222,975
5,151,240	5,186,431	5,205,929	5,223,160

5,223,182	5,224,122	5,225,568	5,226,663	5,227,821	5,228,198	5,228,298	5,229,666
5,223,607	5,224,304	5,226,269	5,226,667	5,227,833	5,228,272	5,229,153	5,230,485
5,223,890	5,225,311	5,226,343	5,227,144				

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 13-17, 1993

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
12-13	EX	74/185,395	Sean Haley Thackrey	2(d)	Refusal Affirmed		"AQUILA" [wines]	"AQUILA ROSSA" [wines]	No
12-13	EX	74/051,143	Hart Crowser, Inc.	2(d)	Refusal Affirmed		"FAST" (and design) [analytical chemical testing, performed in a mobile lab, of environmental and waste materials found in soils, water, etc.]	"F.A.S.T." [forensic laboratory, consultative, expert opinion and testimony services in criminal and civil proceedings, involving forensic toxicology, chemical hazard detection of food, etc.]	No
12-13	EX	74/834,714	Financial Institutions Marketing Association	genericness	Refusal Reversed		"FINANCIAL INSTITUTIONS MARKETING ASSOCIATION" [association services, namely, promoting the interests of financial institutions]		No
12-13	EX	74/114,889	Stokely USA, Inc.	2(e)(1)	Refusal Affirmed		"CRISP-N-SWEET" [canned and frozen vegetables]		No
12-13	EX	74/240,813	Ultra Care Products Inc.	2(d)	Refusal Affirmed		"BABY CHANGES" [disposable baby diapers]	"BABY CHANGE" [medicated skin cleanser]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION, C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
12-14	EX	74/126,146	Schoeneman Enterprises, Inc.	2(d)	Refusal Reversed		"DONCASTER" [men's coats, vests, trousers]	"DONCASTER" and design et al. [ladies clothing]	Yes
12-14	EX	74/124,019	Greater Anchorage, Inc.	Whether matter asserted for registration is used as a service mark for the services recited in the application	Refusal Reversed		"WORLD CHAMPION REINDEER RACE" [organizing and presenting races and festivals featuring sporting competitions, etc.]		No
12-16	EX	74/132,721	88 Open Consortium Ltd.	Whether matter asserted is registrable as a service mark	Refusal Reversed		"88 OPEN COMPATIBILITY CERTIFIED" [certifying design and manufacture of computers, etc. to standards that allow those computers, etc. to operate certified software]		No
12-16	EX	74/127,271	Texas Richmond Corp.	2(e)(1)	Refusal Affirmed		"THE MEN'S CLUB" [restaurant and cabaret services]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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SPECIAL BOXES FOR MAIL

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
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Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
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Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
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		(414) 278-3247
	Milwaukee Public Library	Not Yet Operational
Wyoming	Casper: Naprona County Public Library	

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	1/30/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	12/24/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/16/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	10/16/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	2/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/07/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	6/20/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	2/03/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	5/06/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	3/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/13/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/09/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/07/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/09/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/01/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/29/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	2/18/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Jan. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents	Numbers 4,000,520 to 4,005,493 inclusive
Plant Patents	4,000 to 4,012

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of January 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	12/15/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	11/18/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/23/93	10/08/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/18/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	9/15/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	10/10/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/11/93	10/18/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/21/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/20/93	11/01/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	11/24/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/19/93	11/10/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/16/93	11/11/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/13/93	11/11/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	10/02/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

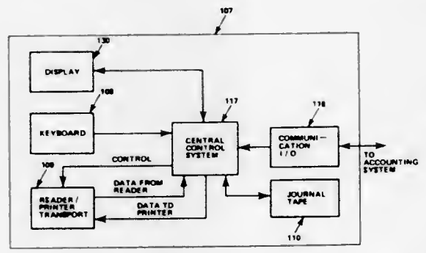
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

FEBRUARY 8, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,404,649 (2211th)
DOCUMENT PROCESSING SYSTEM
Leonard J. Nunley; Willis D. Simpson, both of Dallas, and William J. Reid, Richardson, all of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.
Reexamination Request No. 90/002,506, Nov. 12, 1991.
Reexamination Certificate for Patent No. 4,404,649, issued Sep. 13, 1983, Ser. No. 202,970, Nov. 3, 1980.
Int. Cl.[5] **G06F** *15/30*
U.S. Cl. 364—419



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** are cancelled.

[7. A system for processing documents having machine readable characters on the face of each document and for assinging a number unique to the document, comprising a document feed station and a document path, means for moving the document along said document path past at least on read station for reading at least some of the characters on the face of the documents, a print station for printing information on the document derived from the reading or characters, manually inputing information to the system, or from some other source, control means for directing the system through the feed, read and print steps required by the system, means for generating a source item identification number based on the information read from the document manually input into the system, and-/or from said other source, which number is printed on said document, and an interface electronics for interfacing this system with storage means for recording the information read from and/or printed on the document and for relaying said information to an accounting system.]

B1 5,006,563 (2212th)
ALKYLAMINO AND ALKYLAMINO ALKYL DIARYLKETONES
R. Richard L. Hamer, Lebanon; Brian Freed, Somerset, and Richard C. Allen, Flemington, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.
Reexamination Request No. 90/002,401, Aug. 16, 1991.
Reexamination Certificate for Patent No. 5,006,563, issued Apr. 9, 1991, Ser. No. 561,202, Jul. 31, 1990.
Continuation of Ser. No. 450,502, Dec. 14, 1989, abandoned
Int. Cl.[5] **A61K** *31/135;* **C07C** *225/10, 225/22*
U.S. Cl. 514—646

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

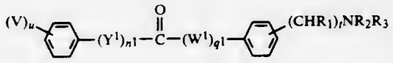
Claims **1, 4, 5, 12** and **21** are cancelled.

Claims **2, 6–9, 11, 13–15, 17, 19, 22** and **23** are determined to be patentable as amended.

Claims **3, 10, 16, 18** and **20**, dependent on an amended claim, are determined to be patentable.

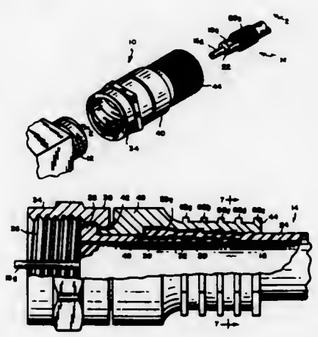
New claim **24** is added and determined to be patentable.

24. An alkylamino, alkylaminoalkyl diarylketone of the formula



wherein
(a) R_1 is H or loweralkyl;
(b) R_2 and R_3 are loweralkyl;
(c) Y^1 is $-CH_2-$, $-CHF-$, $-CF_2-$, $-OCH_2-$, $-CHOHCF_2-$, or $-CHFCF_2$;
(d) W^1 is $-CH_2-$, $-CH_2O-$, or $-CF_2CHOH-$;
(e) V is H, halogen, loweralkyl, loweralkoxy, CF_3, or NO_2;
(f) u is 1, 2, or 3;
(g) n^1 is 0 or 1;
(h) q^1 is 0 or 1; and
(i) t is 0 or 1, with the proviso that when q^1 is 0 and t is 0 or 1, n^1 is 1 and Y^1 is $-CHF-$, $-CF_2-$, $-OCH_2-$, $-CHOHCF_2-$, or $-CHFCF_2-$; the pharmaceutically acceptable acid addition salts thereof and where applicable the geometric isomers, or optical isomers and racemic mixtures thereof.

B1 5,073,129 (2213th)
COAXIAL CABLE END CONNECTOR
Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc. Inc., Manlius, N.Y.
Reexamination Request No. 90/002,961, Feb. 11, 1993.
Reexamination Certificate for Patent No. 5,073,129, issued Dec. 17, 1991, Ser. No. 647,837, Jan. 30, 1991.
Division of Ser. No. 364,303, Jun. 12, 1989, Pat. No. 4,490,106
Int. Cl.[5] **H01R** *17/04*
U.S. Cl. 439—585



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims **4–6** and **8–10** is confirmed.

Claims **1** and **7** are determined to be patentable as amended.

Claims **2**, **3**, **11–13** and **14** dependent on an amended claim, are determined to be patentable.

1. [An end connector for connecting a coaxial cable to a port,] *For use in combination with a plurality of differently sized coaxial cables, each of* said [cable] *cables* being of the type having an electrical inner conductor surrounded by and spaced inwardly from an electrical outer conductor, with a dielectric insulator interposed between said inner and outer conductors, and with a dielectric jacket surrounding the outer conductor, *an end connector for connecting said plurality of differently sized cables to a port,* said end connector comprising:

a tubular post having a front end and a rear end, with a cylindrical first sleeve opening towards said rear end;

fastener means at the front end of said post for attaching said connector to said port; and

a tubular body supported at the front end of said post at a location adjacent to said fastener means, said body having a cylindrical second sleeve surrounding and spaced radially from said first sleeve to define an annular chamber therebetween, said second sleeve having an open rear end leading to said annular chamber, said second sleeve having an interior surface and having grooves in its exterior surface defining a plurality of axially spaced circular ribs, with the rearmost of said ribs located at the rearmost extremity of said tubular body and surrounding said open end,

said first sleeve being adapted for insertion into *respective ends of said plurality of differently sized cables in* a position [in an end of said cable] at which said second sleeve is in electrical contact with [said] *the* outer [conductor] *conductors* and electrically isolated from [said] *the* inner [conductor] *conductors* by [said] *the* dielectric *insulators at said respective ends, with the jackets at said respective ends* [insulator, with said jacket] being received in said chamber and being surrounded by said second sleeve, at least some of said ribs including said rearmost rib being deformable into *a* hexagonal [configurations] *configuration* and having diameters greater than f/0.866 where "f" is the distance between any two opposed flats of said hexagonal configuration, the *dimensions by which the diameters of said ribs exceed f/0.866 being such that upon* deformation of said ribs into hexagonal [configurations causes] *configuration,* said interior surface [to] *will* be deformed inwardly into indented mechanical engagement with *the jackets of said plurality of differently sized cables* [said jacket] at said rearmost extremity [to sealingly engage said jacket] as well as at other locations which are spaced axially along the length of [that] *those* [portion] *portions* of said [jacket] *jackets* received in said chamber, *the said indented mechanical engagement being effective to sealingly engage said jackets at said rearmost extremity and to coact with said first sleeve in deforming said jackets to an extent sufficient to produce a reliable electrical connection and secure mechanical coupling of said connector to said cables while also achieving a weather tight seal between said cables and said end connector.*

REISSUES

FEBRUARY 8, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

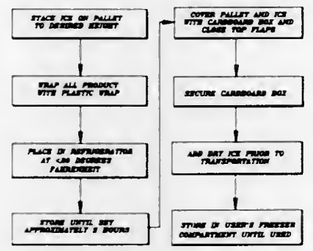
Re. 34,533
METHOD FOR PREPARING ICE FOR TRANSPORTATION

Freddie J. Wigley, 118 N. Ash, Ponca City, Okla. 74601

Original No. 4,903,494, dated Feb. 27, 1990, Ser. No. 396,092, Aug. 21, 1989. Application for reissue Oct. 15, 1991, Ser. No. 775,423

Int. Cl.[5] **B65B** *63/08*

U.S. Cl. 62—60 **10 Claims**



9. A method for preparing a quantity of prepackaged ice for transportation to a remote location comprising the steps of:

(a) placing a pallet at a location to be loaded;

(b) placing a piece of insulation material on top of said pallet, sized to cover said pallet;

(c) stacking said prepackaged ice on top of said insulation material, said stack having a dimension equal to or less than the dimension of said pallet and to a predetermined height;

(d) wrapping said stacked prepackaged ice with a stretchable material from said pallet to the top of said stack to form a first assembled unit;

(e) placing said first assembled unit in a refrigerated room having a temperature of 20 degrees F. or less for a period sufficient to set said prepackaged ice;

(f) removing said first assembled unit from said refrigerated room for shipment to said remote locction;

(g) placing a quantity of dry ice on top of said first assembled unit;

(h) covering said first assembled unit with an insulated covering to form a second assembled unit;

(i) moving said second assembled unit into an enclosed refrigerated truck having a temperature of less than 60 degrees F.;

(j) transporting said second assembled unit to said remote location; and,

(k) placing said second assembled unit in a refrigerated location having a temperature of 20 degrees F. or less.

Re. 34,534
DIRECT POWER VENTED WATER HEATER

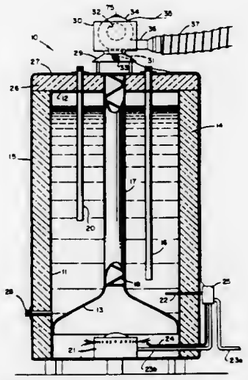
Charles W. Staats, Yeadon, Pa., assignor to Bradford-White Corporation, Ambler, Pa.

Original No. 4,867,106, dated Sep. 19, 1989, Ser. No. 208,846, Jun. 17, 1988. Continuation of Ser. No. 936,478, Nov. 26, 1986, abandoned, which is a continuation of Ser. No. 742,605, Jun. 7, 1985, Pat. No. 4,762,919. Application for reissue Mar. 18, 1991, Ser. No. 670,712

Int. Cl.[5] **F22B** *5/00*

U.S. Cl. 122—13.1 **9 Claims**

1. A water heater having exhaust means *for exhausting flue gases from an interior space to an exterior space and* adapted for installation through a through-the-wall vent formed in an upstanding wall, said *water* heater having an insulated water tank with a cold water inlet line, a hot water outlet line and a baffled flue pipe extending upwardly through the tank, said flue pipe opening at one end thereof upon a combustion chamber located beneath the tank, said combustion chamber containing a fuel burner, and the other end of said flue pipe opening at the top of the tank upon flue gas collection and exhaust means said collection and exhaust means *including a flue gas collector, a flue gas exhaust line and blower means connected to the water heater and being located* [comprising a collection chamber spaced] above said flue pipe, [and a flue gas exhaust line, said flue gas exhaust line comprising an airtight, flexible and extendable high temperature accordion pleated conduit with a continuous operating temperature rating above about 200° F.] said [exhaust line having] blower means [conneced to draw] *drawing* room air *from said interior space* into said



[collection chamber] *collector* and said exhaust line along with flue gases *to dilute the flue gases and substantially eliminate formation of condensation in the exhaust line* and to convey the *diluted* flue gases at a reduced temperature *by causing the diluted flue gases to flow along said exhaust line to* said through-the-wall vent *and then to said exterior space,* and including control means for sensing the temperature of the water in the tank and controlling the amount of fuel supplied to the burner in response thereto, said control means activating and deactivating the blower means and including means for sensing *either when said exhaust line is blocked or when flue gases spill outwardly of said flue gas collector* [the temperature of said reduced temperature flue gases] and for interrupting the flue supplied to the burner in response thereto.

Re. 34,535
FLOATING GATE MEMORY WITH IMPROVED DIELECTRIC

James L. Paterson, Richardson, and Roger A. Haken, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original No. 4,613,956, dated Sep. 23, 1986, Ser. No. 469,075, Feb. 23, 1983. Continuation of Ser. No. 249,019, Sep. 23, 1988, abandoned. Application for reissue Jun. 22, 1990, Ser. No. 541,435

Int. Cl.[5] **G11C** *11/40*

U.S. Cl. 365—185 **8 Claims**

1. A floating gate memory [cell] *device* comprising:

(a) a silicon substrate;

(b) a plurality of polysilicon insulated floating gates *overlying*

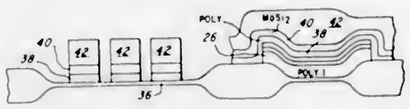
VOL 1159 ISS 2 FE 8 1994 UMI

a first gate insulating layer on said silicon substrate, said floating gates defining respective channel regions beneath said respective floating gates in the surface of said substrate;

(c) at least one other transistor gate overlying a second gate insulating layer on said silicon substrate;

[(c)] *(d)* a plurality of polysilicon control gates over respective ones of said floating gates;

[(d)] *(e)* a composite dielectric comprising both silicon nitride and silicon dioxide disposed between said control gates and said respective floating gates;



[(e)] *(f)* a plurality of source and drain regions respectively separated by respective ones of said channel regions; and

[(f)] *(g)* means for applying a write voltage to a selected one of said control gates[,];

[(g)] *(h)* said voltage being about 15 volts [when said dielectric is about 400 angstroms, said voltage varying therefrom proportionally with the thickness of said dielectric] *when the thickness of said second gate insulating layer is about 400 angstroms, 21 volts when the thickness of said second gate insulating layer is about 600 angstroms, said voltage varying therefrom proportionally with the thickness of said second gate insulating layer.*

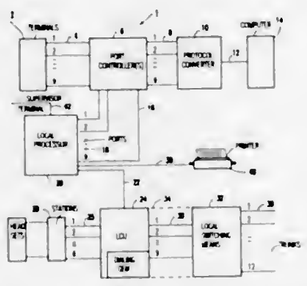
Re. 34,536
CALL MANAGEMENT SYSTEM WITH PROTOCOL CONVERTER AND PORT CONTROLLER

James J. Frimmel, Jr., Pacifica, Calif., assignor to International Telesystems Corporation, Herndon, Va.

Original No. 4,817,130, dated Mar. 28, 1989, Ser. No. 938,405, Dec. 5, 1986. Continuation-in-part of Ser. No. 905,959, Sep. 11, 1986, abandoned. Application for reissue Jun. 28, 1990, Ser. No. 545,058

Int. Cl.[5] H04M *1/26*

U.S. Cl. 379—88 **19 Claims**



18. A call management system comprising in combination:

a host processor storing customer records;

a local processor storing data from customer records including telephone numbers to be dialed;

dialing means selectably connectable to a plurality of telephone trunks for placing an outgoing call by dialing one of said telephone numbers on one of said trunks;

a plurality of operator stations, each operator station comprising a data terminal for displaying and inputting customer record data and audio communication means;

trunk switching means for selectively connecting a selected one of said trunks to a selected one of said audio communications means; and

switching means for: (a) coupling said local processor and said host processor to transfer customer record data from said host processor to said local processor; (b) coupling said local processor to each of said data terminals to transfer customer record data from said local processor to each of said data terminals; and (c) coupling each of said data terminals to said host processor to transfer customer record data updates from each of said data terminals to said host processor.

Re. 34,537
PLASTIC COMPOSITE BARRIER STRUCTURES

Edward J. Deyrup, North East, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 5,039,565, dated Aug. 13, 1991, Ser. No. 530,764, May 30, 1990. Continuation of Ser. No. 100,191, Sep. 23, 1987, Pat. No. 4,973,625. Application for reissue Sep. 21, 1992, Ser. No. 947,607

Int. Cl.[5] B65D *23/00*; B32B *27/08*

U.S. Cl. 428—35.7 **14 Claims**

1. A coextruded composite packaging film comprising at least one foil of a high density linear polyethylene adhered to at least one foil of a polar, oxygen barrier resin with a melt extrudable bonding resin composition, said oxygen barrier resin foil being selected from the group consisting of ethylene/vinyl alcohol copolymer, polyvinyl alcohol and polycarboxylamides, said melt extrudable bonding resin composition consisting essentially of a blend of from 70 to 90 weight percent of composition (i) and from 10 to 30 weight percent of composition (ii) wherein composition (i) is composed of a blend of high density linear polyethylene having a melt index in the range of from 0.1 to 8.0 g/10 min. and a density in the range of from above 0.950 to 0.970 g/cm^3 and sufficient of a modified linear high density polyethylene having a density in the range of 0.950 to 0.970 g/cm^3 and a melt index in the range of from 0.1 to 8.0 g/10 min. having from [0.7 to 14 mole] *0.5 to 1 weight* percent of unsaturated dicarboxylic acid anhydride grafted to a portion of said high density linear polyethylene to provide from [0.245 to 1.05 mole] *0.055 to 0.2 weight* percent of said grafted anhydride in said composition (i), and wherein composition (ii) is a linear low density polyethylene selected from the group consisting of linear copolymers of ethylene with butene-1 and linear copolymers of ethylene with octene-1 having a density in the range of 0.912 to 0.930 g/cm^3 and a melt index in the range of 0.5 to 6.0 g/10 min.

Re. 34,538
GLAZING LAMINATES

Heinrich Agethen; Paul Gesenhues, both of Herdecke; Helmer Rädisch, Aachen; Otto Jandeleit, Alsdorf, and Wolfgang Schäfer, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Paris, France

Original No. 4,925,734, dated May 15, 1990, Ser. No. 191,785, May 4, 1988. Continuation of Ser. No. 844,882, Mar. 27, 1986, abandoned, which is a continuation of Ser. No. 659,025, Oct. 9, 1984, Pat. No. 4,643,944, which is a continuation of Ser. No. 274,547, Jun. 17, 1981, abandoned, which is a continuation of Ser. No. 190,341, Sep. 24, 1980, abandoned, which is a continuation of Ser. No. 70,732, Aug. 29, 1979, abandoned, which is a continuation of Ser. No. 811,430, Jun. 29, 1977, abandoned. Application for reissue May 7, 1991, Ser. No. 696,846

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629779

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—349 **11 Claims**

5. A coated transparent article comprising:

a) a rigid transparent substrate;

b) a transparent energy-absorbing elastomeric sheet, one surface of which is bonded to said rigid substrate; and

c) coated on the other surface of said elastomeric sheet, an abrasion-resistant branched polyurethane which is the reaction product of:

(1) an aliphatic polyisocyanate and



(2) a polyol selected from the group consisting of polyether and polyester polyols having a molecular weight within the range of 450–4,000,

wherein at least one of said polyisocyanate and said polyol has a functionality greater than 2.

Re. 34,539
ELECTRICAL CONNECTOR

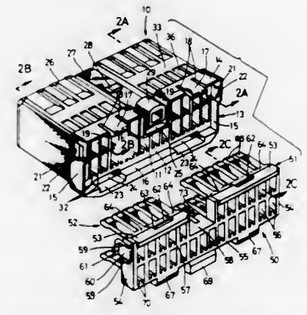
Koji Aoyama, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Original No. 5,004,436, dated Apr. 2, 1991, Ser. No. 470,022, Jan. 25, 1990. Application for reissue Apr. 14, 1992, Ser. No. 868,593

Claims priority, application Japan, Mar. 5, 1989, 1-52669

Int. Cl.[5] H01R *13/436*

U.S. Cl. 439—752 **17 Claims**



9. An electrical connector housing for receiving and securing electrical terminals therein, comprising:

a dielectric housing member having a plurality of terminal-receiving passages for receiving electrical terminals therein and a latch-receiving frame at one end of said housing member;

a dielectric latching member having a frame section provided with openings and latching arms, said latching arms extending outwardly from said frame section;

first, second and third cooperating latching members on said latch-receiving frame and said frame section for maintaining said frame section adjacent said latch-receiving frame at a first position with said openings of said latching member and said terminal-receiving passages being aligned and said latching arms extending along said terminal-receiving passages so that the electrical terminals can be inserted through said openings into the terminal-receiving passages; and

said second and third cooperating latching members controlling movement of said frame section relative to said latch-receiving frame from said first position to a second position whereby the openings and terminal-receiving passages are offset, the latching arms are positioned adjacent sections of the terminals to secure them in said terminal-receiving passages and said second and third cooperating latching members latching said latching member at said second position.

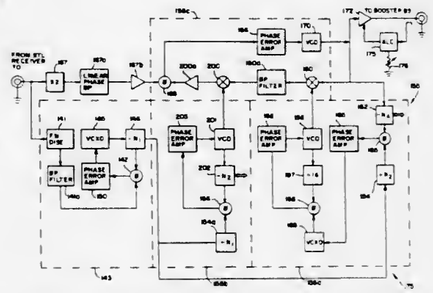
Re. 34,540
FREQUENCY MODULATED RADIO FREQUENCY BROADCAST NETWORK EMPLOYING A SYNCHRONOUS FREQUENCY MODULATED BOOSTER SYSTEM

Joseph C. Wu, Saratoga; Charlie L. Hu, San Jose, and Yee S. Law, Milpitas, all of Calif., assignors to TFT, Inc., Santa Clara, Calif.

Original No. 5,065,450, dated Nov. 12, 1991, Ser. No. 586,502, Sep. 21, 1990. Continuation-in-part of Ser. No. 326,744, Mar. 21, 1989, Pat. No. 5,046,124. Application for reissue Apr. 3, 1992, Ser. No. 863,654

Int. Cl.[5] H04B *7/15*

U.S. Cl. 455—20 **12 Claims**



8. A synchronous frequency modulated booster for re-transmitting a frequency modulated broadcast signal comprising:

A. transmitting means for re-transmitting a frequency modulated broadcast signal;

B. receiving means for receiving a frequency modulated intermediate frequency signal *modulated by a frequency reference signal*; and

C. a synchronous frequency modulated exciter receiving said frequency modulated intermediate frequency signal from said receiving means and applying to said transmitting means a frequency modulated broadcast signal for re-transmission by said transmitter means;

D. said synchronous frequency modulated exciter comprising:

(a) first means responsive to said receiving means for producing a frequency reference signal representative of the frequency modulated intermediate frequency signal,

(b) a phase locked loop circuit including a voltage controlled oscillator, said voltage controlled oscillator generating the frequency modulated broadcast signal, said voltage controlled oscillator being phase locked to said frequency reference signal produced by said first means, and

(c) second means including a phase error correcting circuit connected to the output of said voltage controlled oscillator and said phase locked loop circuit and responsive to said receiving means for correcting phase differences between the output of said voltage controlled oscillator and said frequency reference signal produced by said first means.

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PLANT PATENTS

GRANTED FEBRUARY 8, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,578

MINIATURE ROSE PLANT NAMED 'JACMO'

Alene B. Warriner, Tustin, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 28, 1992, Ser. No. 952,962
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—10.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright orange flowers, by having appendages on all of its sepals, by its compact plant habit and its ease of propagation by softwood cuttings.

8,579

FLORIBUNDA ROSE PLANT NAMED 'JACDOR'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 14, 1992, Ser. No. 883,280
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright red with light yellow reverse flowers, its high centered hybrid tea flower form, its long vase life and its many small prickles on main stems and glands on peduncles.

8,580

ROSE PLANT KORCILMO

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Oct. 19, 1992, Ser. No. 964,522
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its very high production of stems per m^2 of greenhouse, its long vase life, its small thorns and its overall high vigor and ease of production as a cut flower.

8,581

FLORIBUNDA ROSE PLANT NAMED 'JACSIM'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 14, 1992, Ser. No. 883,309
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact, upright and well branched growth habit, its high level of disease resistance, its early and rapid rebloom and its ease of propagation both by traditional budding and by soft and hardwood cuttings.

8,582

FLORIBUNDA ROSE PLANT NAMED 'JACSIMPL'

William A. Warringer, deceased, late of Tustin, Calif. by Alene B. Warringer, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 14, 1992, Ser. No. 883,253
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright red flower color, thick petals, abundance of glands on stipules and petiole rachis, ease of propagation by soft and hardwood cuttings and its resistance to powdery mildew and rust.

8,583

PLUM TREE "EARLIQUEEN"

Chris F. Zaiger, 537 Rosemore Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Apr. 12, 1993, Ser. No. 45,021
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—38.1 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and a productive and regular bearer of early maturing, large, firm, clingstone fruit with good flavor and eating quality; the new variety is further characterized in comparison to the early maturing Red Beaut Plum (U.S. Plant Pat. No. 2,539) as producing larger fruit, being heavier in production and the fruit being approximately 2 days later in maturity.

8,584

GERBERA PLANT "TEROPTIMA"

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,275
Claims priority, application Netherlands, Dec. 10, 1990, GRB 1191
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Teroptima', as illustrated and described, characterized by its single type, a unique pink ray floret which fades to white toward the center, a red-purple disc floret the outer petaloids of which fade to white, pink perianth lobe color and 120 mm overall flower diameter.

8,585

GERBERA PLANT: TERBERTOLA

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,276
Claims priority, application Netherlands, May 20, 1988, GRB 855
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Terbertola', as illustrated and described, characterized by its single type, a red ray floret which is a solid red color throughout, a red-purple disc floret the outermost florets of which show white stigmas and the middle floret of which show yellow

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anthers, red perianth lobe color and 100 mm overall flower diameter.

8,586

GERBERA PLANT: "TERALKO"

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,277

Claims priority, application Netherlands, Nov. 2, 1990, GRB 1171

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant names 'Teralko', as illustrated and described, characterized by its single type, a distinctive very bright red ray floret which is a solid bright red color throughout, a green disc floret the outermost petaloids of which are red and display yellow stigmas and anthers, red perianth lobe color and 75 mm overall flower diameter.

8,587

GERBERA PLANT: "TERREINO"

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,278

Claims priority, application Netherlands, Nov. 9, 1989, GRB 1061

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Terreino', as illustrated and described, characterized by its semi-double type, a pink ray floret which is a solid pink color throughout, a red-purple disc floret the outermost petaloids of which fade to pink and display white stigmas and brown anthers, pink perianth lobe color and 120 mm overall flower diameter.

8,588

GERBERA PLANT "TERFARO"

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,279

Claims priority, application Netherlands, Dec. 18, 1990, GRB 1188

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Terfaro', as illustrated and described, characterized by its single type, a red ray floret which is a solid red color throughout, a green disc floret the outermost petaloids of which are red and display yellow stigmas and anthers, red perianth lobe color and 110 mm overall flower diameter.

8,589

GERBERA PLANT: "TERKAROLA"

Lambertus J. M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., Netherlands

Filed Sep. 9, 1992, Ser. No. 942,280

Claims priority, application Netherlands, May 20, 1988, GRB 854

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Terkarola', as illustrated and described, characterized by its semi-double type, a distinctive orange ray floret which is a solid orange color throughout, a red-purple disc floret the outermost petaloids of which fade to orange and display yellow stigmas and anthers, orange perianth lobe color and 110 mm overall flower diameter.

PATENTS

GRANTED FEB. 8, 1994

ERRATA

For CLASS	See PATENT NO.
004-420	5,283,913
084-318	5,284,077
607-004	5,284,135
607-004	5,284,136
173-176	5,284,217
118-107	5,284,229
273-072	5,284,332
606-005	5,284,477
606-159	5,284,478
424-085	5,284,931
523-457	5,284,938
435-252	5,284,999
526-222	5,285,002
560-248	5,285,006
257-392	5,285,069
345-003	5,285,192
345-133	5,285,193
345-108	5,285,196
345-213	5,285,197
348-441	5,285,262
348-441	5,285,263
348-441	5,285,264
348-571	5,285,265
348-565	5,285,266
348-665	5,285,267
348-663	5,285,268
348-760	5,285,269
348-233	5,285,270
348-242	5,285,272
348-006	5,285,273
348-169	5,285,274
385-129	5,285,275
348-384	

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ERRATA – CONTINUED

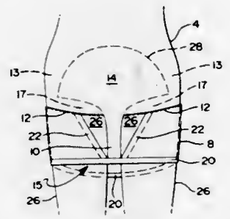
348-409	5,285,276
348-607	5,285,277
348-010	5,285,278
348-614	5,285,279
348-614	5,285,280
348-578	5,285,281
348-561	5,285,282
348-705	5,285,283
348-731	5,285,284
348-570	5,285,285
348-187	5,285,286
348-745	5,285,287
395-425	5,285,323
372-038	5,285,457

PATENTS

GRANTED FEBRUARY 8, 1994

GENERAL AND MECHANICAL

5,283,908
ELASTIC GARMENT WITH DISPLACEABLE SECTION
Frances C. Martin, Sun City West, Ariz., assignor to Martin Enterprises, Sun City West, Ariz.
Filed Jul. 9, 1992, Ser. No. 911,180
Int. Cl.[5] A41B *9/02;* **A41D** *27/00*
U.S. Cl. 2—69 **7 Claims**



1. An elastic garment to cover the wearer's body comprising:

a main section engaging the shoulders and substantially covering the torso of a wearer and extending to individually encircle the wearer's legs thereby forming leg portions, said main section extending to form a crotch section attached to said leg portions for covering the wearer's crotch area and having a posterior opening for exposing the buttocks of the wearer, said posterior opening extending from just below the wearer's waist to said crotch section and further defined by two side panels and two underneath panels where said underneath panels extend around the back of the wearer's legs and are joined to said leg portions and said side panels for providing increased wearer support;

an elastic one piece waistband encircling the wearer's waist;

an extension section attached to said waistband and extending from said waistband, said extension section overlapping said main section and joined to said leg portions from approximately the center of the back of the wearer's legs to approximately the center of the front of the wearer's legs thereby concurrently partially encircling the wearer's legs with said main section, said extension section forming a posterior cover, said posterior cover partially overlapping said main section and covering said posterior opening, said extension section extending from said posterior cover and attaching to said crotch section;

said garment being capable of repeated displacement where said waistband is pulled in a downward direction to displace said extension section and said posterior cover and said crotch section thereby exposing the wearer's posterior and other private areas to allow performance of bodily functions.

5,283,909
LAP HUGGER
Lucille K. Hill, 1315 Chapel View Dr., Odenton, Md. 21113
Filed Aug. 14, 1992, Ser. No. 929,437
Int. Cl.[5] A41D *3/00;* **A41B** *13/06*
U.S. Cl. 2—69 **2 Claims**

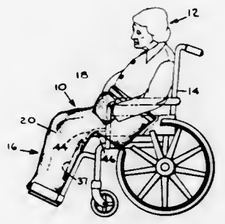
1. A garment for receiving and containing the legs and resting upon the waist of an individual seated in a chair, comprising:

a lower tubular leg enclosure portion defining an inner cavity for receiving the individual's legs, the leg enclosure portion having a closed bottom end and an open upper end through which the individual's legs are placed;

the lower tubular leg enclosure portion further characterized by a front side for covering the individual's legs and a rear side for extending up to and covering the thighs of the individual's legs;

the rear side terminating at an upper rear edge which lays upon a forward edge of the chair for keeping the lower portion in place by the weight of the individual's thighs pressing the upper rear edge against the forward edge of the chair;

an upper portion integrally attached to the leg enclosure portion at the front side and generally extending to the waist of the seated individual;

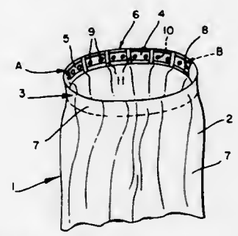


the upper portion further characterized by a pair of opposed flaps integrally formed from and extending transverse to the upper portion for draping over and covering the thighs of the individual seated in the chair;

an interior storage pocket affixed to the rear side of the leg enclosure portion for disposition within the inner cavity for holding medical equipment and concealing the medical equipment from view; and

a closure means located on the rear side of the leg enclosure portion for permitting selective access to the interior storage pocket in order to place medical equipment within the storage pocket or remove medical equipment therefrom.

5,283,910
EXPANDABLE AND RETRACTABLE GARMENT
Cynthia Flint, 57 Beach St., New York, N.Y. 10013
Continuation of Ser. No. 587,962, Sep. 25, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,790
Int. Cl.[5] A41D *1/06, 1/14*
U.S. Cl. 2—76 **16 Claims**



1. An economically constructable comfortable and front and back adjustable garment, comprising a body, said body including a front portion and a back portion and having a continuous upper peripheral edge extending around said body defining a waist opening, tubular casing means extending around said waist opening and fixed to said body at a lower end of said tubular casing means, said body including elastic band means, said elastic band means having a length to encircle the entire

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garment and to overlap at least part of said back portion, said elastic band extending through said casing, said tubular casing means having an opening at one end, an end portion of said elastic band means extending beyond said tubular casing means opening, said elastic band means fixed at another end in said casing adjacent said tubular casing means opening at one side of said back portion, said elastic band means further fixed at an other side of said back portion to permit expansion of said back portion within predetermined limits, said elastic band means freely extending through said tubular casing means at said front portion to permit free expansion and retraction of said band means at said front portion, said band expanding from where it is fixed at said other side of said back portion, and means to selectively fasten said extending end portion of said elastic band means to said back portion on the casing, whereby said garment may be adjusted to a selected size and fit comfortably in use.

5,283,911

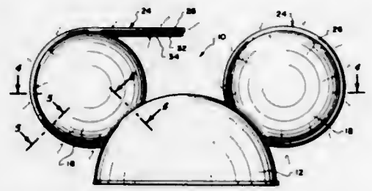
SNAP-ON ATTACHMENT FOR WEARING APPAREL

Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367

Continuation-in-part of Ser. No. 926,283, Aug. 10, 1992, Pat. No. 5,177,812, and a continuation-in-part of Ser. No. 972,849, Nov. 6, 1992. This application Jan. 7, 1993, Ser. No. 1,589

Int. Cl.[5] A42B *1/24*

U.S. Cl. 2—209.13 **5 Claims**



1. An article of wearing apparel comprising:

a housing, said housing adapted to fit onto a portion of the body of a human, said housing having a specific ornamental exterior configuration;

an elongated illuminating tube in the form of a body having a hollow interior chamber, said elongated illuminating tube being flexible permitting bending to any desired configuration, said hollow interior chamber including an activatable liquid substance, said activatable liquid substance being selectly activatable so as to emit light for a first period of time, said body being impregnated with a light activatable substance which will cause said body to emit light after expiration of said first period of time for a second period of time; and

connection means formed on said elongated illuminating tube, said connection means clampingly securely engaging said housing, said activatable liquid substance being activated to cause said elongated illuminating tube to glow, each tube being engaged with said housing and said housing being capable of being worn by the human, said connection means comprising an L-shaped member, an elongated gap formed between said L-shaped member and said body, said housing having a flange, said flange being resiliently and tightly locatable within said gap, said elongated illuminating light tube being manually disengagable from said housing.

5,283,912

MEN'S UNDERPANTS

Seun-Yung Chung, Kwangmyung, Rep. of Korea, assignor to Shin Jeong Yil, Seoul, Rep. of Korea, a part interest

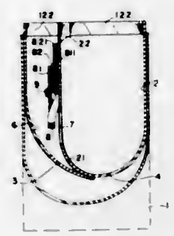
PCT No. PCT/KR91/00011, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/18021, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 8, 1992, Ser. No. 867,095

Claims priority, application Rep. of Korea, Apr. 11, 1991, 91-4939; Apr. 11, 1991, 91-4940

Int. Cl.[5] A41B *9/02*

U.S. Cl. 2—403 **6 Claims**



1. Briefs for the support of male genitalia, the genitalia including a penis, the briefs comprising:

an inner pants having a hole at a front side of the inner pants for the insertion of the genitalia;

a front side band having two ends, each end attached to the front of the inner pants;

a cover attached to the front side band at one end of the cover and attached to the front side of the inner pants at an opposite end of the cover for exposing or covering the genitalia as desired;

loop means attached to the front side of the inner pants and located between the front side of the inner pants and the cover, the loop means for receiving the penis of the genitalia.

5,283,913

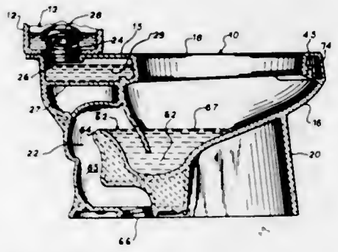
WATER CONSERVING TOILET

Norman J. Jaeckels, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Apr. 19, 1993, Ser. No. 49,216

Int. Cl.[5] E03D *11/08*

U.S. Cl. 4—420 **7 Claims**



1. A toilet, comprising:

a bowl having an upper lip and a lower wall having a sump portion at its base, the sump portion being connected through a bowl outlet to a siphon for the discharge of cleaning liquid and waste from the bowl;

a hollow rim for receiving cleaning liquid, the rim having a rim floor adjacent to the upper lip of the bowl, the rim being constructed and arranged to allow passage of cleaning liquid into the bowl through a first hole and a second hole;

a well having a well floor formed in the rim floor adjacent the front of the bowl; and

wherein the first hole is formed in the rim floor, the second hole is formed in the well floor, and the second hole opens inside the rim at a lower level than the first hole opens inside the rim.

5,283,914

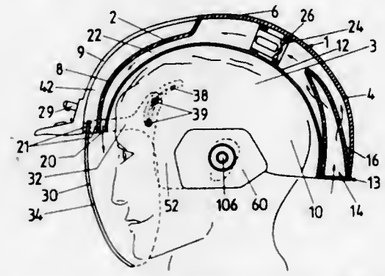
PROTECTIVE HELMETS

Granville C. James, Ashby-de-la-Zouch, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation-in-part of Ser. No. 810,909, Dec. 20, 1991. This application Oct. 9, 1992, Ser. No. 959,103

Int. Cl.[5] A42B *3/00*

U.S. Cl. 2—424 **20 Claims**



1. A protective helmet including a protective shell for accommodating a wearer's head, a visor at the front part of the shell and retractable therewithin, an ear defender at each side thereof at each side of the shell, each ear defender being substantially within the profile of the shell, an air duct defined within the shell, an inlet means to the duct towards the rear part of the shell and a number of outlet means associated with the front part of the shell and directed on to the internal surface of the visor and at least some of its marginal edges which in use extend adjacent the wearer's face, a filter associated with the duct, and an air mover for introducing air to the duct, wherein the front part of the shell is provided with protective side cheeks which in use complement the visor and the ear defenders to provide continuity around the wearer's face.

5,283,915

POWER PACKAGE FOR SPA APPARATUS

Carsten H. Idland; John M. Popovich, both of Los Angeles, and Roc V. Fleishman, Venice, all of Calif., assignors to Softub, Inc., Chatsworth, Calif.

Filed Aug. 10, 1992, Ser. No. 927,005

Int. Cl.[5] E03C *1/084;* **E04H** *4/12*

U.S. Cl. 4—541.1 **57 Claims**

1. Tub apparatus, comprising

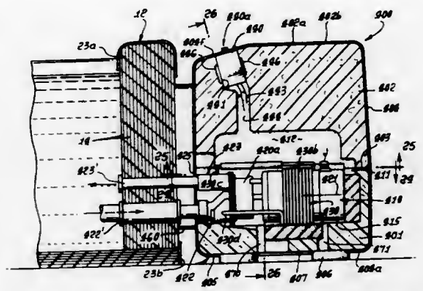
a) a plastic tub wall having an inner side and an outer side, the tub having an interior to receive liquid, and ports extending through said side wall,

b) a plastic pack having a cavity formed therein,

c) a pump unit received in said cavity and protectively enclosed by said plastic pack,

d) and tubular duct means connected with said pump unit and extending from said cavity to said ports for circulating liquid between the tub interior and said pump unit,

e) said pack including a base and a cover on the base, at least one of the base and cover consisting of plastic material, and there being means enclosing said base and cover for retaining said base and cover in integrated relation, while



allowing said duct means to extend relative thereto between the cavity and said ports, as aforesaid.

5,283,916

PROCESS FOR TRANSPORTING INJURED OR STRANDED PEOPLE, AND PROTECTIVE CAPSULE FOR CARRYING OUT THE PROCESS

Jurgen Haro, Warteweg 7 + 46, Stadtoldendorf 3457, Fed. Rep. of Germany

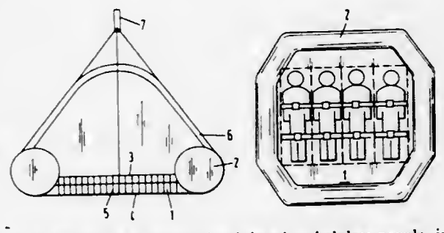
PCT No. PCT/DE91/00330, § 371 Date Dec. 23, 1991, § 102(e) Date Dec. 23, 1991, PCT Pub. No. WO91/16026, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 22, 1991, Ser. No. 793,362

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1990, 4012922

Int. Cl.[5] A61G *1/00;* **B63C** *9/04*

U.S. Cl. 5—81.1 **25 Claims**



1. A method for transporting injured or helpless people, in particular for the rapid transport of a large number of injured persons, comprising the following steps:

erecting a capsule provided with an inflatable floor, a roof and wall structure and a suspension device to form a plurality of enclosed litters with retainer means for releasably securing an injured person thereto,

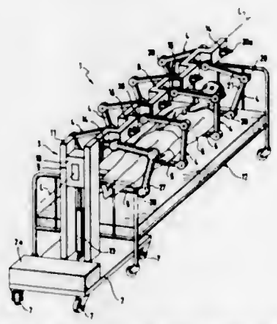
placing at least one injured person in said capsule and installing said injured person on one of said litters,

securing said injured person in said capsule, and

carrying said said capsule containing said injured person using said suspension device.

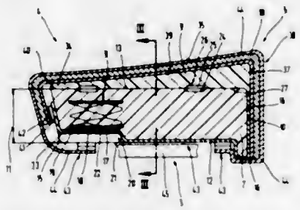
VOL 1159 ISS 2 FEB 8 1994 UMI

5,283,917
APPLIANCE FOR LIFTING OR POSITIONING A SICK OR HANDICAPPED PERSON
Werner Dietze, Heinrich-Fuchs-Str. 7, 6900 Heidelberg, Fed. Rep. of Germany
PCT No. PCT/DE91/00317, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO91/16028, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 16, 1991, Ser. No. 937,854
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1990, 4012308
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—83.1 **22 Claims**



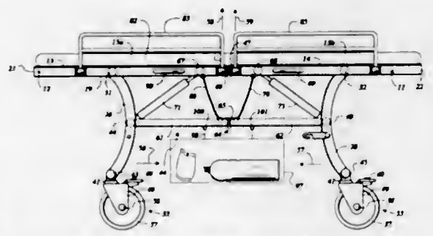
1. Apparatus for lifting or positioning a sick or handicapped person, comprising a base (2), a multiplicity of support elements (5) and a positioning device (3) connecting the elements (5) and the base (2), wherein at least a portion of the support elements (5) is fastened to multi-hinges (20), of which at least two are continuously lockable and comprise locking surfaces (25*a*) which slide over one another when the hinge is moved and locking of the hinges (20) is effected by pressing the locking surfaces (25*a*) against each other.

5,283,918
VEHICLE SEAT CUSHION
Rudolf Weingartner, Neuhofen a.d. Krems, and Johann Möseneder, Grieskirchen, both of Austria, assignors to C. A. Greiner & Sohne, Kremsmunster, Austria
Filed Apr. 20, 1992, Ser. No. 870,959
Claims priority, application Austria, Apr. 22, 1991, 832/91; Oct. 11, 1991, 2031/91
Int. Cl.[5] A47C *7/02*
U.S. Cl. 5—481 **22 Claims**



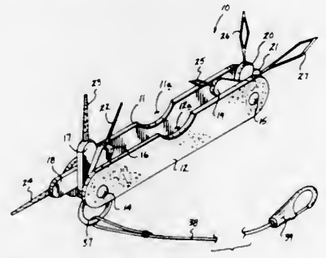
1. In combination with an aircraft seat, a seat cushion comprising:
(a) supporting body of foamed plastic material, the supporting body comprising
(1) a major lower supporting part having lateral, front and rear edges, and a planar upper surface and a lower surface extending therebetween, and
(2) a minor upper sitting part having an upper surface remote from the supporting part and a planar lower surface in contact with substantially the entire upper surface of the support part, the upper and lower surfaces of the sitting part extending between lateral edges of the sitting part,
(b) a spring core formed of wires, the spring core being embedded in, and surrounded by, the foamed plastic material of the lower supporting part,
(c) detachable connecting means for attaching the supporting and sitting parts to each other,
(d) a flameproofing layer of a flame-retardant foamed plastic material covering at least the upper surface of the sitting part and overlapping the supporting part along the edges thereof, and
(e) an outer covering material attached to the flameproofing layer.

5,283,919
FOLDING TRAUMA STRETCHER
Fred W. Grant, 3177 Terrace Ct., Apt. H, Norcross, Ga. 30092
Filed Nov. 29, 1991, Ser. No. 800,289
Int. Cl.[5] A47C *19/12*
U.S. Cl. 5—620 **4 Claims**



1. A foldable stretcher having an open position for transporting a patent and a folded position for storing the stretcher, said stretcher comprising:
first and second juxtaposed frame assemblies each having an adjacent end;
said frame assemblies including patient support means for providing a flat surface for supporting a patient;
a hinge pivotally joining said frame assemblies at their adjacent ends for allowing the adjacent ends of said frame assemblies to pivot upward from an open horizontal position to a folded position;
frame support means for supporting said frame assemblies, said frame support means comprising a first pair of spaced legs pivotally mounted to said first frame assembly and a second pair of legs pivotally mounted to said second frame assembly;
securing means for securing said stretcher in the open position, said securing means comprising means for maintaining said frame assemblies in fixed horizontal positions with respect to one another and means for maintaining said legs in a fixed position with respect to said frame assemblies when said frame assemblies are in their fixed horizontal positions, comprising
first and second brace arms each having a first and a second end,
said first end of said first brace arm being pivotally coupled to said first pair of legs and said first end of said second brace arm being pivotally connected to said second pair of legs,
a hinge for pivotally connecting together said second ends of said brace arms; and
means for maintaining said brace arms in fixed position with respect to each other;
said means for maintaining said legs in fixed position with respect to said frame assemblies further comprising a first piston/cylinder and a second piston/cylinder each having a first end and a second end, said first end of said first piston/cylinder being pivotally coupled to said first pair of legs and said second end of said first piston/cylinder being pivotally coupled to said first frame assembly adjacent said adjacent end thereof, said first end of said second piston/cylinder being pivotally coupled to said second pair of legs and said second end of said second piston/cylinder being pivotally coupled to said second frame assembly adjacent said adjacent end thereof, wherein said piston/cylinders are retracted when said stretcher is in the operative position.

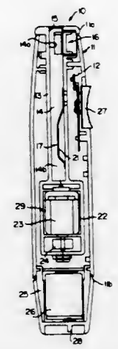
5,283,920
FISHING HOOK TOOL
Harold H. Plummer, R. 1, Box 206F, Marshall, Mo. 65340
Filed Dec. 31, 1992, Ser. No. 999,275
Int. Cl.[5] B25F *1/04*
U.S. Cl. 7—106 **5 Claims**



1. A fishing hook tool, comprising,
a first side wall spaced from a second side wall, and a floor plate extending between the first side wall and the second side wall, wherein a first axle is orthogonally directed through the first side wall and the second side wall, and a second axle spaced from and parallel the first axle is directed through the first side wall and the second side wall, wherein the first axle and the second axle are spaced apart a predetermined spacing, with a plurality of blade plates mounted to the first axle, and a plurality of further blade plates mounted to the second axle, wherein each of the blade plates includes a conical file member fixedly mounted to each of the blade plates, and
a spring loop member mounted to each of the further blade plates, wherein the file member includes an abrasive exterior surface for cleaning a fish hook eyelet, and the spring loop includes a spring loop opening for receiving a fishing line for directing the fishing line and pulling said fishing line through said eyelet.

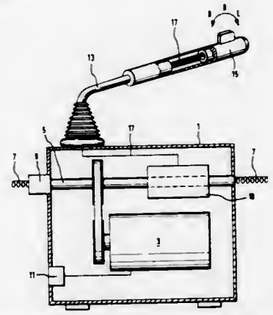
5,283,921
ELECTRIC TOOTHBRUSH HOLDER
Poon-Kee G. Ng, Room A908, 9th Floor, Block A, 2-8 Watson Road, North Point, Hong Kong
Filed May 21, 1992, Ser. No. 887,772
Claims priority, application United Kingdom, May 21, 1991, 9110963.7
Int. Cl.[5] A61C *17/32*
U.S. Cl. 15—22.1 **8 Claims**

1. An electric toothbrush holder comprising a elongate casing having a forward end and an electric motor vibration unit supported within the casing, the casing forming a elongate cavity having an opening at the forward end of the casing for insertion of the handle of a toothbrush, in which opening there is provided clamping means and a resilient member, said clamping means having at least two clamping surfaces which are resiliently biased relatively together by the resilient member so as to clamp or hold said toothbrush at its handle automatically when the toothbrush handle is inserted into the cavity through the opening;
said clamping means being provided by a fixed clamping element/member and a movable clamping member, the



two being resiliently biased relatively together by the resilient member;
the fixed clamping element/member has a flat clamping surface and the movable clamping member has a concave clamping surface facing the flat clamping surface.

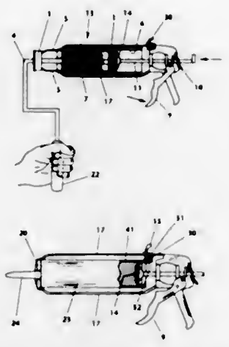
5,283,922
PIPE CLEANING TOOL
Gustl W. Ruprecht, Ranstadt, Fed. Rep. of Germany, assignor to Horst K Lunder GmbH, Nidda, Fed. Rep. of Germany
Filed Sep. 2, 1992, Ser. No. 939,691
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.33 **3 Claims**



1. A pipe cleaning machine for the operation of a pipe cleaning coil, the pipe cleaning machine comprising: a power unit having a housing; a rotating pipe shaft assembly comprising a hollow pipe shaft extending through the housing of the power unit, the pipe shaft being adapted for the insertion of the pipe cleaning coil therethrough; the power unit including an electric motor power drive unit for driving the pipe shaft with a changeable rotation direction; the pipe shaft assembly further including a clamp mechanism for the temporary stable coupling of the pipe shaft to the pipe cleaning coil in a temporary rotation transmitting position; a hand lever provided on the top of the power housing unit for operating the clamp mechanism wherein the hand lever includes a switch for engaging the electric power drive unit and for changing the rotation direction.

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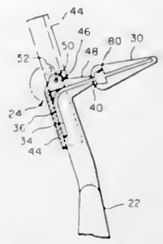
5,283,923
PAINT ROLLER SLEEVE REMOVER
Richard Schaedel, 872 Lovell Ave., Mill Valley, Calif. 94941
Filed Mar. 1, 1993, Ser. No. 24,392
Int. Cl.[5] B05C *17/02, 21/00*
U.S. Cl. 15—230.11 10 Claims



1. In combination with a paint roller assembly including a roller sleeve removably secured to a roller frame having a roller shaft and a handle extending from the shaft, a tool for removing a roller sleeve from a roller frame, including;
a ring-shaped nose piece at a front end of said tool, said nose piece having an end opening dimensioned both to engage an end portion of said roller sleeve and to pass said roller frame therethrough;
a skeletal frame extending from said nose piece toward a rear end of said tool, said skeletal frame dimensioned to accept the roller sleeve;
a plunger supported at said rear end of said tool and operative along a tool axis, said tool axis extending generally colinearly with the center of said ring-shaped nose piece; and
means for advancing said plunger along said tool axis toward said front end of said tool to push said roller frame out of said roller sleeve and through and out of said end opening of said nose piece.

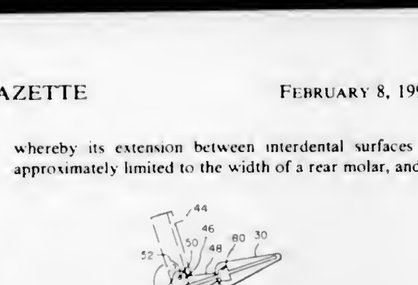
5,283,924
INTERDENTAL FOAM BRUSH AND TREATMENT GEL COMBINATION THEREWITH
John A. Kaminski, Newark, Calif.; Mingchih M. Tseng, Hingham, Mass.; Adrian Hart, Menlo Park, Calif.; Christopher H. Suhonen, Providencia Santiago, Chile, and Robert G. Pitts, Half Moon Bay, Calif., assignors to Gillette Canada, Inc., Kirkland, Canada
Continuation-in-part of Ser. No. 893,479, Jun. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 724,129, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,067, Sep. 21, 1990, abandoned. This application Mar. 11, 1993, Ser. No. 29,843
Int. Cl.[5] A61C *15/00*; A46B *3/08*
U.S. Cl. 15—244.1 18 Claims

1. An interdental foam brush comprising:
an elongate stem having a boss, the stem having a brush support portion extending from the boss in the distal direction to a distal tip and a flexible handle engaging portion extending from the boss in the proximal direction,
the brush support portion including its distal tip and the boss being enclosed in resilient, open-cell polymeric foam, the outer surface of the brush being tapered and con verging in the distal direction,
wherein the boss is a stop means for limiting movement of the brush portion beyond interdental surfaces, and the brush support portion has a length of from 8 to 22 mm, whereby its extension between interdental surfaces is approximately limited to the width of a rear molar, and a



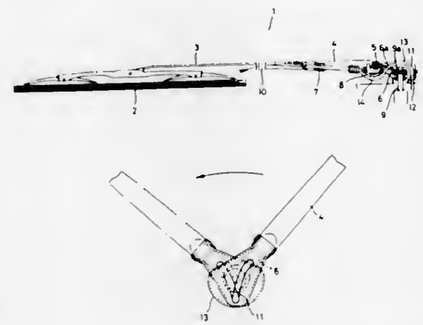
diameter of from 1.5 to 3.3 mm, providing a brush support surface for effective cleaning while permitting passage of the brush between inter dental surfaces.

5,283,925
WINDSHIELD WIPER AIR DEFLECTOR MOVABLE IN A SINGLE PLANE TO COMPENSATE FOR WINDSHIELD CURVATURE
Daniel Maubray, Issy-les-Moulineaux, France, assignor to Valeo Systemes d'Essuyage, Montigny-le-Bretonneux, France
Filed Jul. 23, 1990, Ser. No. 556,373
Claims priority, application France, Jul. 26, 1989, 89 10041
Int. Cl.[5] B60S *1/04*
U.S. Cl. 15—250.20 11 Claims



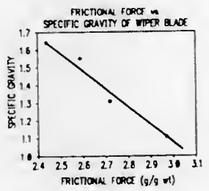
1. A windshield wiper assembly comprising a driving wiper arm (1'), an elongated main stirrup (3) driven by said wiper arm, an elongated wiping strip (2) having a longitudinal plane of symmetry (M) which defines two sides of said strip, support means connecting said wiper strip to said main stirrup, an air deflector (47) spaced from and extending substantially coextensively with said wiping strip to one side thereof, portions of said air deflector defining a longitudinal plane (P) which extends at an angle with respect to the plane of symmetry (M) of said wiper strip, means (59) for mounting said air deflector on said main stirrup, said means for mounting comprising plural spaced pivotal connection means between said main stirrup and said air deflector to enable motion between said air deflector relative to said main stirrup in said longitudinal plane (P).

5,283,926
WASHER HOSE ARRANGEMENT IN WIPER ARM DEVICE
Takashi Hoshino, Isesaki, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Kiryo, Japan
Filed Oct. 7, 1992, Ser. No. 957,165
Claims priority, application Japan, Jan. 22, 1992, 4-6661
Int. Cl.[5] B60S *1/46, 1/32, 1/32*
U.S. Cl. 15—250.04 7 Claims



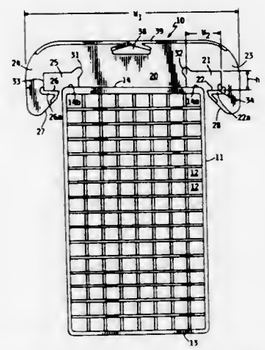
1. A wiper arm device, comprising:
an elongated, rotatably mounted wiper shaft having an upper end protruding from a vehicle body, said wiper shaft defining a longitudinal pivot axis;
a wiper arm having an elongated support, said support fixed at one end to said wiper shaft and pivotally supporting an arm shank at the other end by a support shaft, said support having an aperture therethrough, said arm being oscillatable with said shaft about said axis over an oscillation stroke, which defines an angle of oscillation;
a washer nozzle attached to said wiper arm to discharge washer liquid towards a vehicle windshield; and
an elongated washer hose for supplying said washer liquid to said washer nozzle, said washer hose having a first end portion protruding from the vehicle body at a position adjacent and spaced radially outwardly from said wiper shaft and unobstructed by said oscillation stroke of said wiper arm, said washer hose extending over said upper end of said wiper shaft, through said aperture in said support, along said wiper arm and being connected at a second end portion to said washer nozzle, wherein said position adjacent said wiper shaft is disposed on a bisector of said angle of oscillation of the wiper arm.

5,283,927
SILICON RUBBER WIPER BLADE WITH LOW COEFFICIENT OF FRICTION
Robert M. Gibbon, and Michael L. Hyer, both of Fort Worth, Tex., assignors to JMK International, Inc., Fort Worth, Tex.
Filed May 31, 1991, Ser. No. 708,245
Int. Cl.[5] B60S *1/02*
U.S. Cl. 15—250.36 37 Claims



1. A silicone windshield wiper blade capable of inexpensive manufacture and having good wipe quality, and exhibiting a coefficient of friction with respect to glass in the range of 2.4 to 2.7 grams/g.wt. inclusive, comprising
about 100 parts by weight of a vulcanizable elastomeric including at least one silicone polymer; and
about 75 to 220 parts by weight of a filler dispersed in said elastomer and selected from the group consisting of siliceous materials, calcareous materials and mixtures thereof, said filler including from 25 to 200 parts by weight of a first filler having an average particle diameter in the range of 5 to 100 microns and from 20 to 55 parts by weight of a second filler having an average particle diameter of less than 5 microns such that the specific gravity of the wiper blade falls within the range of 1.3 to 1.7.

5,283,928
UNIVERSAL PAINT GRID
Richard A. Linn, Minneapolis, and Wade H. Krinke, Marine on St. Croix, both of Minn., assignors to Padco, Inc., Minneapolis, Minn.
Filed Nov. 4, 1992, Ser. No. 971,199
Int. Cl.[5] B44D *3/12*
U.S. Cl. 15—257.06 8 Claims



1. A universal paint grid for attachment to either an internal ledge of a container or an external ledge of a different container comprising:
a grid member for rolling a paint roller thereon to remove excess paint from the paint roller;
a pair of lips located on said grid member for engaging an internal ledge of a first container to hold the grid member therein; and
a panel integrally connected to said grid member, said panel having a pair of ears for engaging an underside of an external ledge on a different container to hold the grid member therein.

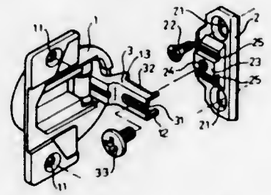
5,283,929
HINGE
Tsong-Chi Lin, No. 146, Min Chuan Road, Dar Hu Village, Hu-Nei Shiang, Kaohsiung Hsien, Taiwan
Filed Jun. 1, 1992, Ser. No. 891,060
Int. Cl.[5] E05D *7/04*
U.S. Cl. 16—237 4 Claims

1. A hinge for pivotally connecting a door and a side wall adjacent thereto comprising:
a) a hinge arm pivotally combined at one end thereof to a base, a lengthwise slot provided substantially in a middle portion of the hinge arm, said slot defined by a pair of substantially parallel walls and opening to a distal end of said hinge arm, a line of saw teeth on a bottom surface of each said parallel wall;

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b) a mounting plate having oval holes therein for receiving fixing members, said oval holes allowing for vertical adjustment of the mounting plate relative to a surface to which said mounting plate is attached;

c) a substantially rectangular projection on said mounting plate having a hole therein and a pair of parallel racks on either side thereof, each said rack having a line of notches which are engaged with said saw teeth;



d) a locating lug extending substantially perpendicularly from the bottom surface at each end of each line of saw teeth able to abut the projection and the racks so as to locate said slot in substantially horizontal alignment with the hole in said substantially rectangular projection,

e) each said line of saw teeth being longer than each said line of notches so that said hinge arm is relatively horizontally adjustable in relation to said mounting plate, and

f) a fixing member passing through the lengthwise slot and into the hole in said projection.

5,283,930

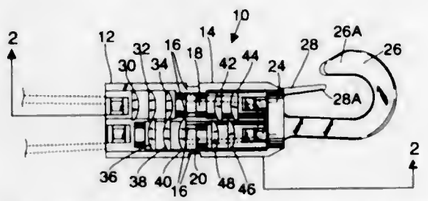
CORD CLAMP WITH HASP FOR FOLDED CORDS AND THE LIKE

Mark Krauss, E. Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.

Filed Feb. 12, 1993, Ser. No. 17,473

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—129 R **11 Claims**



1. A molded cord clasp of single piece construction comprising:

a first body portion;

a second body portion;

an integral hinge means for integrally hingedly coupling said first and second body portions between a closed and an open position;

locking means for locking said body portions into a clasp body in said closed position, said clasp body having a first and a second opening; and

first and second gripping means disposed respectively on said first and second body portions and cooperating to define two tortious paths between said first and second opening, said gripping means being arranged and constructed to grip a cord folded in said clasp body between and extending through said first and second openings into said two tortious paths.

5,283,931

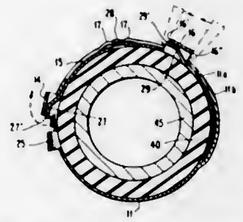
REUSABLE EARLESS CLAMP STRUCTURE

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland

Filed May 20, 1992, Ser. No. 886,337

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **39 Claims**



1. An open reusable clamp structure, especially of the earless type, comprising clamping band means having overlapping inner and outer band portions adapted to be detachably interconnected by mechanical connecting means, first tool-engaging means in the inner and outer band portions for tightening the clamping band means about an object to be fastened thereby by the application of tightening forces corresponding substantially to the installed condition of the clamp structure, and second tool-engaging means in said inner and outer band portions separate from said first tool-engaging means for disassembling the clamp structure from its previously installed condition by reopening the overlapping band portions previously interconnected by the application of the tightening forces.

5,283,932

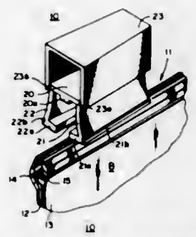
FLEXIBLE PLASTIC ZIPPER SLIDER WITH RIGIDIZING STRUCTURE FOR ASSEMBLY WITH PROFILED PLASTIC ZIPPER

Dale S. Richardson, Westerville, and Roger W. Smith, Jackson Township Jackson County, both of Ohio, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 10, 1993, Ser. No. 74,577

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—400 **7 Claims**



1. A plastic slider for straddling a profiled plastic reclosable fastener particularly suited for plastic-film bags for opening and closing the fastener, the slider being constructed for assembly with the fastener by transverse movement, the slider comprising a support member having a separator finger depending therefrom for insertion between the profiled elements of the reclosable fastener, a pair of sidewalls depending from the support member and located on opposite sides of said separator finger, said sidewalls having at the lower ends thereof inwardly extending shoulder structures, said sidewalls diverging outwardly in an uninstalled slider so that said inwardly extending shoulder structures are spaced apart a distance adequate for transverse installation of the slider over the profiled elements of the reclosable fastener without interference, and rigidizing means on the slider to move the sidewalls into and retain them in an assembled position on the fastener whereby said shoulders cooperate with the bottom of the reclosable fastener to prevent the slider from being lifted off the fastener while the slider straddles the fastener.

5,283,933

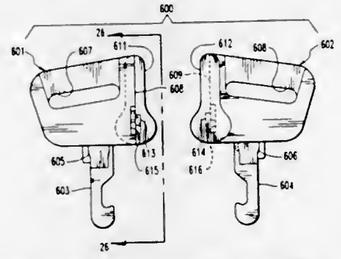
BELT BUCKLE WITH INTERACTIVE DUAL TONGUES

Michael A. Wiseman, and James R. Chinni, both of Indianapolis, Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 896,208, Jun. 10, 1992, Pat. No. 5,182,837, which is a continuation-in-part of Ser. No. 714,710. Jun. 13, 1991, Pat. No. 5,142,748, which is a continuation-in-part of Ser. No. 536,170, Jun. 11, 1990, Pat. No. 5,038,446, which is a continuation-in-part of Ser. No. 370,240, Jun. 22, 1989, Pat. No. 5,023,981. This application Jan. 26, 1993, Ser. No. 9,327

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—642 **12 Claims**



1. A belt buckle-tongue combination comprising:

a first tongue having a first main body with a first contact surface and a first web attachment aperture, and further including a first tongue bar extending therefrom in a first direction;

a second tongue having a second main body with a second contact surface shaped to mesh with said first contact surface and a second web attachment aperture, and further including a second tongue bar extending therefrom in said first direction;

a buckle main body having a cavity therein shaped to force said first and second contact surfaces to mesh when one of said first and second tongue bars is partially received in said cavity and the other of said first and second tongue bars is inserted into said cavity and advanced in said first direction;

interactive means formed on said first contact surface of said first tongue and said second contact surface of said second tongue and operable when said first tongue is inserted into said buckle main body prior to said second tongue which is thereafter inserted to force both tongues simultaneously fully into said buckle main body when insertion pressure is applied to only one of said tongues in said first direction;

a movable latch mounted in said body and movable from an unlatched position to a latched position wherein said latch engages said first and second tongue bars;

manual operating means accessible at the exterior of the buckle main body for moving said latch between said latched position and said unlatched position to release said first and second tongues from locking engagement with said buckle main body; and

false latching means movably mounted in said buckle main body and contactable and moved by said first and second tongues when inserted into said buckle main body, said false latching means being operable to allow said latch to lockingly engage said tongues when said first and second tongue bars are simultaneously fully inserted into said buckle main body but further operable to hold said latch from moving to said latched position when only one of said first or second tongue bars is inserted into said buckle main body.

5,283,934

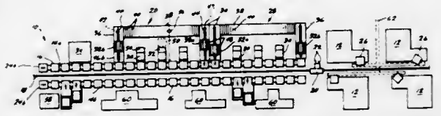
AUTOMATED PART STORAGE AND MACHNINING SYSTEM

John J. Zimpel, West Allis, and David R. Koplin, Waukesha, both of Wis., assignors to Kearney & Trecker Corporation, Fond du Lac, Wis.

Continuation of Ser. No. 323,465, Nov. 20, 1981, abandoned. This application Dec. 5, 1986, Ser. No. 938,477.

Int. Cl.[5] B23Q *7/00*

U.S. Cl. 29—33 P **12 Claims**



2. A machining system comprising: a plurality of work stations for performing work operations on workpieces; a workpiece storage for the storage of workpieces; a transporter adapted to transport workpieces between said workpiece storage and said work stations; means on said transporter for loading and unloading workpieces to and from said workpiece storage and said work stations; a control for regulating the operation of said transporter; data means for supplying data to said control designating the workpiece to be transferred from said workpiece storage and the work station to which such workpiece is to be transferred; power means responsive to said control for actuating said transporter to remove the workpiece designated by said data from said workpiece storage and transfer it to the work station designated by said data; the workpieces being mounted on storage pallets as well as on machine pallets for securement in a work station while a work operation is being performed on the workpiece carried by the machine pallet; a part preparation station at which a workpiece is removed from a storage pallet and is set up on a machine pallet for the performance of a work operation and removed therefrom after the work operation is completed; and shuttle means movable about said part preparation station for moving either a storage pallet with the part thereon or a machine pallet with a part thereon to place the pallet in a convenient position for the operator.

5,283,935

TIRE RASP BLADE

Wayne E. Jensen, Olympia Fields, Ill., assignor to B & J Manufacturing Company, Glenwood, Ill.

Continuation-in-part of Ser. No. 344,920, Apr. 28, 1989, Pat. No. 5,054,177. This application Feb. 19, 1991, Ser. No. 657,565

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] B23D *71/00*

U.S. Cl. 29—78 **36 Claims**



36. A tire rasp blade and hub assembly comprising:

a curved-faced rasp hub and a plurality of tire rasp blades mounted to said curved-faced hub, each said blade includ-

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ing an elongated body having a working portion with a plurality of uniformly and closely spaced teeth; each of said teeth having a base, an outer working edge, a leading edge that attacks the tire surface as the hub rotates in the operation of the buffing machine, and a trailing edge; a first portion of said teeth being laterally displaced to one side of said body and a second portion of said teeth being laterally displaced to the other side of said body, said first and second portions together comprising all of said uniformly and closely spaced teeth; and

said teeth being laterally displaced at an angle to the plane of said body between about 1° and 7°.

5,283,936

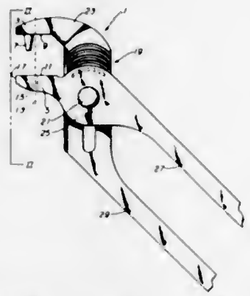
APPARATUS FOR REMOVING PRESS FIT PINS

James Pickles, Wilmerding, and Alvin J. Matthews, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation of Ser. No. 917,537, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 737,087, Jul. 29, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 28,597

Int. Cl.[5] **B23P** *19/04*; **B25B** *7/02*

U.S. Cl. 29—268 **6 Claims**



1. An apparatus for removing a pin press-fitted into a bore of an article, said apparatus comprising:

(a) a first jaw member having a substantially flat first face;

(b) a second jaw member having a substantially flat second face, said first face of said first jaw member being in confronting relationship to said second face of said second jaw member;

(c) a tapered peg member having a truncated cone shape secured to a predetermined portion of said first face and extending outwardly therefrom towards said second face, said second face of said jaw member being configured such that said tapered peg member will not contact said second face even when at least a portion of said first face is in contact with said second face;

(d) a means engageable with each of said first jaw member and said second jaw member for moving at least one of said first and said second jaw members towards an opposite one of said first and second jaw members while maintaining said first face and said second face in confronting relationship, said means including;

i. a first jaw support secured at a first end thereof to one end of said first jaw member,

ii. a second jaw support secured at a first end thereof to one end of said second jaw member,

iii. a pivotal linkage member engageable with each of said first jaw support and said second jaw support, said pivotal linkage member including an elongated slot formed in one of said first and said second jaw supports and a pin member secured to an opposite one of said first and said second jaw supports which extends through said elongated slot,

iv. an arcuately shaped boss disposed on an inner surface of one of said first and said second jaw supports, and

v. a plurality of arcuately shaped grooves formed on an inner surface of an opposite one of said first and said second jaw supports which matingly engage said arcuately shaped boss;

(e) a first handle member secured at one end thereof to a second end of said first jaw support; and

(f) a second handle member secured at one end thereof to a second end of said second jaw support.

5,283,937

TRUCK LID MOUNTING APPARATUS

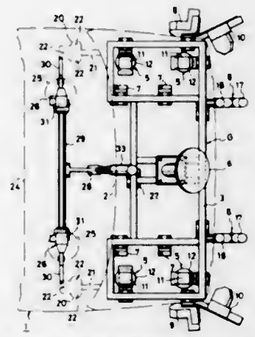
Kyohei Uesugi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 9, 1992, Ser. No. 973,501

Claims priority, application Japan, Nov. 15, 1991, 3-300676

Int. Cl.[5] **B23P** *19/00*

U.S. Cl. 29—281.5 **4 Claims**



1. A trunk lid mounting apparatus for use in assembling an automobile comprising:

first means for holding the trunk lid in position relative to a car body, said trunk lid having hinges attached thereto for rotatably securing the trunk lid to the car body; and

second means for positioning the hinges onto the car body, located closer to a front of the automobile than a front end of the trunk lid held by said first means, said second means being selectively positioned between an angular position wherein said second means can pass downward through openings provided on a package tray located behind rear seats and into which audio speakers are to be fit, and a horizontal position for positioning the hinges in a predetermined position for assembly operation.

5,283,938

METHOD OF MAKING A CONNECTING ROD FRACTURING TOOL

Joel Jones, Windsor, Canada, assignor to Tri-Way Machine Ltd., Ontario, Canada

Filed May 18, 1993, Ser. No. 62,751

Int. Cl.[5] **B23P** *17/00*

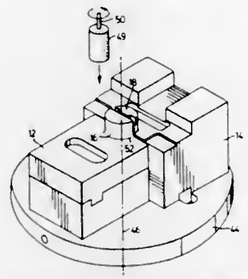
U.S. Cl. 29—416 **4 Claims**

1. A method of making a fracturing tool for connecting rods, comprising the steps:

a) cutting a first body and a second body from material having a grain direction, each body having an integral, generally semi-cylindrical protuberance projecting therefrom and constituting one-half of a substantially cylindrical mandrel, the protuberances each including a flat, substantially diametral surface and being larger than the desired finished size, the cylindrical axis of each protuberance being substantially parallel with the grain direction of the material, the bodies being configured such that the protuberances can be placed together coaxially with said surfaces in contact to define said mandrel,

b) mounting the bodies to a rotary table having an axis of rotation, such that the axis of the mandrel defined by the protuberances is coaxial with said axis of rotation,

c) using a grinding means to finish grind the surface of the mandrel, while rotating said rotary table,



d) removing the bodies from said rotary table, and mounting them such that one body is slidable toward and away from the other body in a direction perpendicular to the axis of the mandrel and perpendicular to both said surfaces, said one body being movable between a first position in which the protuberances are together and coaxial and a second position in which the protuberances are spaced apart, and

e) providing means for forcefully urging the bodies together and apart.

5,283,939

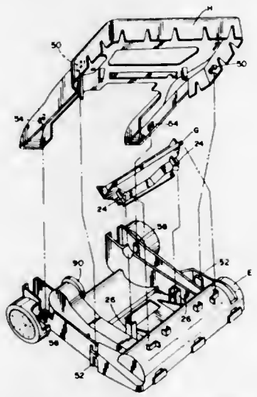
METHOD OF ASSEMBLING A VACUUM CLEANER

Craig M. Saunders, Rocky River; James J. Kopco, Richmond Heights; Robert O. Wraight, Westlake; Paul D. Stephens, Cleveland Heights, and Michael F. Wright, Cuyahoga Falls, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio

Continuation of Ser. No. 753,717, Sep. 3, 1991, abandoned, which is a division of Ser. No. 464,202, Jan. 12, 1990, Pat. No. 5,093,956. This application Oct. 23, 1992, Ser. No. 965,359

Int. Cl.[5] **B29C** *65/58*; **A47L** *9/00*

U.S. Cl. 29—453 **6 Claims**



1. A method of assembling a vacuum cleaner housing, the method comprising the steps of:

providing a nozzle base, having wheels for movement over a floor surface and a suction opening, and a nozzle cover which is positioned above said nozzle base, wherein each of said base and cover comprise cooperating fastening elements which are of one piece with said base and cover, respectively;

positioning said base and cover adjacent each other;

advancing said base and cover toward each other;

manually elastically deforming said fastening elements of at least one of said base and cover as said base and cover are advanced toward each other;

snapping said fastening elements together to secure said cover to said base;

providing a nozzle guard which is positioned beneath said nozzle base, said nozzle guard and said nozzle base comprising cooperating fastening elements which are of one piece with said guard and base, respectively;

advancing said guard and base toward each other;

manually elastically deforming said fastening elements of at least one of said guard and base as said base and guard are advance toward each other; and,

snapping said fastening elements together to secure said guard to said base.

5,283,940

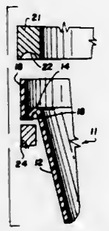
METHOD OF FORMING TAMPER-EVIDENT CONTAINER AND CLOSURE BY CURLING

Daniel Luch, Los Gatos, and Rawson Chenault, Newark, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Division of Ser. No. 741,650, Aug. 7, 1991, Pat. No. 5,163,575. This application Oct. 6, 1992, Ser. No. 957,402

Int. Cl.[5] **B29D** *11/02*

U.S. Cl. 29—453 **4 Claims**



1. A method of forming a tamper-evident closure of a container with a lid, comprising the steps of

providing a molded plastic container formed of a curlable material having a wall formed with an upper lip having an uppermost edge, an initially cylindrical tamper-evident band having an initial diameter and an upper end spaced outwardly and extending above said lip and frangible means joining said band to said wall adjacent said lip,

axially applying a curling tool to said upper end of said band, thereby forming an inward-downward curl in excess of 90° to said band, said curl having a lowermost edge opposed to an spaced above said uppermost edge,

providing a lid having the outside diameter greater than an outside diameter of said lip and less than an initial diameter of said band,

forcing said lid axially downward toward said container, thereby causing said lid to resiliently displace said curl outward, said lid to engage said lip, and said curl to return to its initial position with said lowermost edge spaced above said lid, whereby said lid cannot be removed without fracturing said frangible means and removing said tamper-evident band.

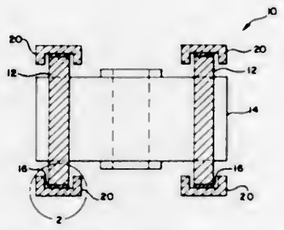
VOL 1159 ISS 2 FE 8 1994 UMI

5,283,941

METHOD FOR BRAZING ROTOR BARS TO END RINGS OF A ROTOR FOR AN ASYNCHRONOUS AC MOTOR

James A. Meyer, Erie; Paul L. Flynn, Fairview; James Kobrinetz; Anthony W. Glammarise, both of Erie; James M. Nuber, Waterford, all of Pa., and Shaun P. Luther, Jr., Lydooville, Vt., assignors to General Electric Company, Erie, Pa.

Filed Jul. 21, 1992, Ser. No. 917,701
Int. Cl.[5] H02K *15/06*
U.S. Cl. 29—598 **2 Claims**



1. A process for brazing a plurality of rotor bars to end rings of a rotor for an asynchronous motor comprising

a. forming a rotor assembly by

(1) positioning a plurality of rotor bars in slots in a rotor core;

(2) positioning each end ring opposite end faces of the rotor bars; and,

(3) positioning a braze shim between each end face of each rotor bar and the end ring opposite such end face to define a prebrazing joint having a thickness greater than the thickness of a post brazing joint;

b. forming a brazing assembly by positioning the rotor assembly in a brazing fixture which has a lower coefficient of thermal expansion than the rotor bars;

c. preheating the brazing assembly to a predetermined temperature that is

(1) sufficiently below the aged temperature of the rotor bars and end rings so that the temperature of the entire rotor assembly does not rise above the aged temperature of the rotor bars and end rings during brazing and is

(2) sufficiently high so that the difference in thermal expansion of the rotor bars and brazing fixture applies a predetermined amount of pressure on the brazing joint such that after the joint is brazed and has cooled, a braze filler having a predetermined thickness will bond the rotor bar end faces to at least one of the end rings;

d. brazing each prebrazing joint to bond the rotor bar end faces to at least one of the end rings.

5,283,942

SACRIFICIAL LAYER PLANARIZATION PROCESS FOR FABRICATING A NARROW THIN FILM INDUCTIVE HEAD

Mao-Min Chen; Jyh-Shuey J. Lo, and Po-Kang Wang,*all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 998,085
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 **22 Claims**

1. A method for fabricating a thin film magnetic head having two staggered pole-tips separated by a gap region, said method comprising the steps of:

(a) depositing a first planar layer of ferromagnetic pole material on a substrate;

(b) depositing a second planar layer of nonmagnetic gap material over said first planar layer;

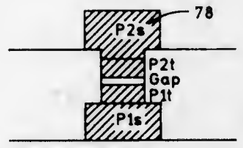
(c) depositing a third planar layer of sacrificial material over said second planar layer to form a first assembly;

(d) defining a lower pole region of said first assembly;

(e) removing all material in said first, second and third planar layers outside of said lower pole region to form a raised lower pole structure;

(f) depositing a fourth layer of nonmagnetic insulating material over said raised lower pole structure to form a second assembly;

(g) removing from said second assembly all material beyond a plane disposed further from said substrate than the bottom of said third planar layer and closer to said substrate than the top of said third planar layer, thereby forming a planarized lower pole structure;



(h) removing from said planarized lower pole structure all remaining said sacrificial material in said third planar layer to form a stepped lower pole structure;

(i) defining an upper pole-tip region of said stepped lower pole structure; and

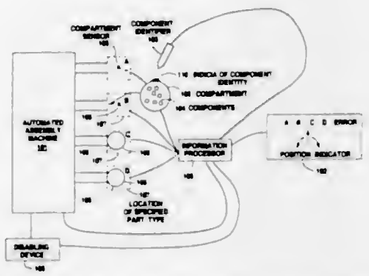
(j) depositing a fifth layer of ferromagnetic pole material over said upper pole-tip region of said stepped lower pole structure, thereby completing the formation of said two staggered pole-tips.

5,283,943

AUTOMATED ASSEMBLY APPARATUS

Kermit Aguayo, 807 E. Oltorf, Austin, Tex. 78704, and Khanh Tran, 10801 Barnhill Dr., Austin, Tex. 78758

Filed Aug. 31, 1992, Ser. No. 938,414
Int. Cl.[5] B23P *21/00;* **G06F** *15/46*
U.S. Cl. 29—701 **28 Claims**



1. A system for assembling multiple component products, comprising:

an assembly machine which assembles products using components retrieved from a plurality of compartments located at a corresponding plurality of locations, each compartment located according to a type of component stored within;

a component identifier that identifies the type of component stored in each compartment by analyzing indicia of the components or component compartments; and

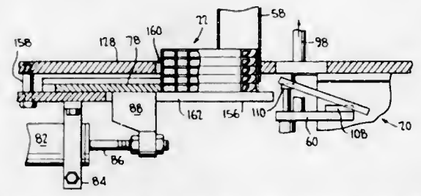
at least one location indicator, responsive to the component identifier, for producing an indication signal of the corresponding location of each component compartment or component after the type of component has been identified.

5,283,944

APPARATUS FOR PLACEMENT OF ANGLE PLATES IN TRANSVERSE DUCT FLANGES

William V. Goodhue, 57 Pojac Point, North Kingstown, R.I. 02852

Filed Feb. 23, 1993, Ser. No. 21,453
Int. Cl.[5] B23P *19/00;* **B23Q** *7/10*
U.S. Cl. 29—701 **17 Claims**



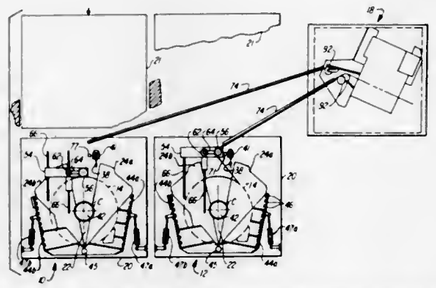
1. An apparatus for automatically assembling an angle plate in channel shaped flanges at ends of duct panels joined in a corner to form a duct section with said flanges separated by a notch, said apparatus comprising a platen for engaging an end of a duct section, positioning means for locking a duct in a preselected position relative to said platen, angle plate advancing means for advancing an angle plate into engagement with a corner of a clamped duct section in axial alignment with said duct flanges, and pressing means for axially pressing an angle plate into said corners.

5,283,945

CASSETTE OPENING SYSTEM

Donald O. Bigelow, Webster; Craig A. Caprio, Rochester, and John B. Chemelli, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 633,508, Dec. 28, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 917,536
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—806 **15 Claims**



1. Apparatus for automatically opening a cassette having at least two separable parts and for removing a web wound on a roll contained within the cassette, the cassette having a releasable latch retaining the parts in the closed position, said apparatus comprising:

first actuatable means for releasing the latch;

second actuatable means for moving one of the cassette parts from said closed position to an open position;

third actuatable means for moving the other of the cassette parts from said closed position to an open position;

fourth means for picking up the leading end of the web wound on said roll and transporting it to a remote location; and

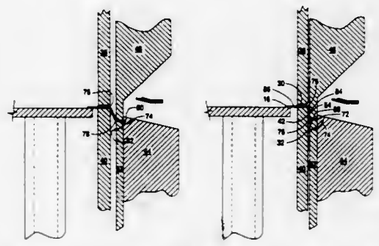
fifth means for actuating said first means to release the latch, said second and third means to open the cassette parts, and said fourth means to pick up and transport the web end.

5,283,946

METHOD AND APPARATUS FOR FORMING METAL LEADS

Richard L. Simmons, Jonestown; James D. Wehrly, Jr., and Michael J. Bertram, both of Austin, all of Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 817,214, Jan. 6, 1992, Pat. No. 5,210,936. This application May 17, 1993, Ser. No. 62,876
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **17 Claims**



1. A method of excising and forming a plurality of metal leads connected to a device, comprising the steps of:

clamping a first portion of the leads spaced from the device by contacting the top of the first portion with the bottom surface of a first lead clamp and the bottom of the first portion with the top surface of a form anvil, said form anvil further comprising a forming edge between the top surface and a forming surface on the side opposite the device;

clamping a second portion of the leads further from the device than the first portion and spaced from the first portion by contacting the top of the second portion with the bottom surface of an excise/form tool and contacting the bottom of the second portion with the top surface of a second lead clamp, said excise/form tool further comprising a forming surface on the side facing the device, an outer surface on the side opposite the device and a forming edge between the bottom surface and the forming surface, and said second lead clamp further comprising an outer surface on the side opposite the device, wherein the outer surfaces of the excise/form tool and second lead clamp are aligned;

excising a third portion of the leads further from the device than the second portion which extends beyond the outer surfaces of the excise/form tool and second lead clamp, thereby forming outer lead ends;

moving the excise/form tool and second lead clamp downwards and toward the device until a fourth portion of the leads between the first and second portions is moved through an arc between the forming surfaces of the form anvil and the excise/form tool, thereby bending the leads at the forming edge of the form anvil to form a first corner in the leads and at the forming edge of the excise/form tool to form a second corner in the leads; and

releasing the leads from the first lead clamp, form anvil, form/excise tool, and second lead clamp.

15. An apparatus for excising and forming a plurality of metal leads connected to a device, comprising the steps of:

means for clamping a first portion of the leads spaced from the device by contacting the top of the first portion with the bottom surface of a first lead clamp and the bottom of

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the first portion with the top surface of a form anvil, said form anvil further comprising a forming edge between the top surface and a forming surface of the side opposite the device;

means for clamping a second portion of the leads further from the device than the first portion and spaced from the first portion by contacting the top of the second portion with the bottom surface of an excise/form tool and contacting the bottom of the second portion with the top surface of a second lead clamp, said excise/form tool further comprising a forming surface on the side facing the device and an outer surface on the side opposite the device and a forming edge between the bottom surface and the forming surface, and said second lead clamp further comprising an outer surface on the side opposite the device, wherein the outer surfaces of the excise/form tool and second lead clamp are aligned;

means for excising a third portion of the leads further from the device than the second portion which extends beyond the outer surfaces of the excise/form tool and second lead clamp for forming outer lead ends;

means for moving the excise/form tool, second lead clamp and excise blade downwards and toward the device in a curved path until a fourth portion of the leads between the first and second lead corners is moved through an arc between the forming surfaces of the form anvil and the excise/form tool in order to bend a first corner in the leads at the forming edge of the form anvil and a second corner of the leads at the forming edge of the excise/form tool; and

means for releasing the leads from the first lead clamp, form anvil, form/excise tool, and second lead clamp.

5,283,947

METHOD OF MOUNTING ELECTRONIC COMPONENTS ON A CIRCUIT BOARD

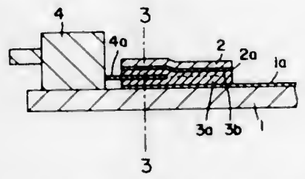
Kouichi Santo, Hirakata; Kouji Tanabe, Katano; Naohiro Nishioka, Yawata; Kenji Ootomo, Kadoma, and Yoshihito Okazaki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Kadoma, Japan

Filed Feb. 10, 1993, Ser. No. 16,082

Claims priority, application Japan, Feb. 10, 1992, 4-023515

Int. Cl.[5] H05K *3/34*

U.S. Cl. 29—840 **2 Claims**



1. A method of mounting an electronic component on a printed circuit board, comprising the steps of:

attaching anisotropic conductive material to a lower wiring pattern which is printed on a lower insulating board or sheet;

attaching anisotropic conductive material beneath an upper wiring pattern which is printed beneath an upper insulating sheet or board;

sandwiching terminals of said electronic component between a) said anisotropic conductive material on said lower wiring pattern printed on said lower insulating board or sheet and b) said anisotropic conductive material beneath said upper wiring pattern printed beneath said upper insulating sheet or board; and

bonding by thermocompression from both outside surfaces of said lower insulating board or sheet and said upper insulating sheet or board.

5,283,948

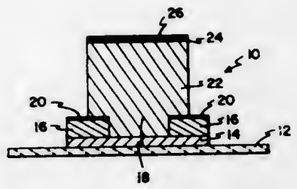
METHOD OF MANUFACTURING INTERCONNECT BUMPS

Paul E. Schroeder, Chippewa Falls, and Deanna M. Dowdle, Bloomer, both of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed May 31, 1991, Ser. No. 708,447

Int. Cl.[5] H01R *9/09*; **H01K** *3/10*

U.S. Cl. 29—843 **1 Claim**



1. A method of coating a base layer to form an electrically conductive interconnect bump having elevated connection means rising above support means, the elevated connection means for making electrical connection between a point elevated above the base layer and the base layer and the support means for providing a mechanical interlock with the elevated connection means to prevent displacement of the elevated connection means comprising the steps of:

coating the base layer with a photoresist layer;

exposing the photoresist layer to radiation in a pattern defining the shape of the support means and an interlock cavity in the support means;

removing the photoresist layer to form a first cavity in the photoresist layer defining the shape of the support means and the interlock cavity in the support means, the first cavity exposing a portion of the base layer;

depositing a first layer of conductive material on the base layer in the first cavity formed in the photoresist layer, said first layer of conductive material forming the support means and interlock cavity;

depositing a layer of gold on the support means;

coating the base layer and support means with a second photoresist layer;

exposing the second photoresist layer to radiation in a pattern defining the shape of the elevated connection means;

removing the photoresist layer in the pattern defining the shape of the elevated connection means to form a second cavity in the second photoresist layer in the shape of the elevated connection means, the second cavity exposing the interlock cavity in the support means and a portion of the support means;

depositing a second layer of conductive material in the interlock cavity in the support means and on the exposed portion of the support means in the pattern defined by the second layer of photoresist material to form the elevated connection means;

planarizing a top surface of the elevated connection means of the interconnect bump;

depositing a layer of gold on the top surface of the elevated connection means; and

removing the remaining second photoresist layer.

5,283,949

METHOD OF PRODUCING A PRINTED CIRCUIT BOARD HAVING A CONDUCTIVE PATTERN THEREON

Peter L. Jurisich, 26232 Tierra Cir., Mission Viejo, Calif. 92691

Filed Nov. 3, 1992, Ser. No. 971,079

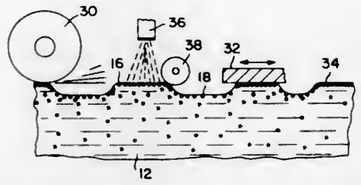
Int. Cl.[5] H05K *3/02*

U.S. Cl. 29—846 **11 Claims**

1. A method of producing a printed circuit board having a conductive pattern thereon, comprising the steps of:

processing a surface of a substrate board to provide the surface with raised portions defining a desired conductive pattern; and

treating the raised portions of the surface of the substrate board to form conductors at the raised portions by providing the substrate board with a relatively hard particulate



filler, grinding the raised portions of the surface of the substrate board to expose the relatively hard particulate filler at the raised portions of the surface, and welding conductive particles onto the exposed relatively hard particulate filler at the raised portions of the surface to form conductors.

5,283,950

APPARATUS FOR RECEIVING AND DELIVERING OBJECTS AND METHOD OF USING SUCH APPARATUS

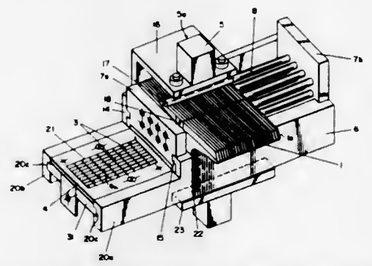
Bruno Fischer, Dietikon, Switzerland, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 755,647, Sep. 6, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 541

Claims priority, application Switzerland, Sep. 14, 1990, 02996/90

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—884 **18 Claims**



1. An apparatus for receiving of objects arranged in a first pattern and delivering such objects arranged in a second pattern, said objects being contact elements, said apparatus comprising:

at least one infeed device for transporting objects arranged in the first pattern to the receiving location;

means for infeeding body members to which there can be delivered the objects arranged in the second pattern;

at least one tool equipped with mutually non-displaceable object carriers for receiving, fixedly holding and delivering object, said object carriers being clamps;

at least one tool equipped with mutually displaceable object carriers for receiving, fixedly holding and delivering objects, said object carriers being clamps;

the at least one tool equipped with mutually displaceable object carriers serves for picking-up objects from at least one receiving location;

the at least one tool equipped with mutually non-displaceable object carriers serves for picking-up objects from the at least one tool equipped with the mutually displaceable object carriers and inserting said contact elements into said body members.

5,283,951

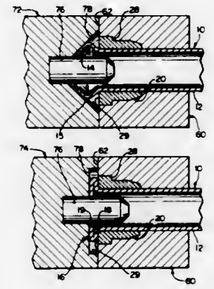
METHOD OF PRODUCING A TUBING FOR USE AS A FLOW CONDUIT

Eugene F. Davenport, Union, Mich.; Curtis R. Heckaman, South Bend, Ind.; Benjamin R. Kessler, South Bend, Ind., and Jay A. Simpson, South Bend, Ind., assignors to Curtis Products, Inc., South Bend, Ind.

Filed Dec. 17, 1992, Ser. No. 992,548

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—890.144 **1 Claim**



1. A method of producing a tubing for use as a flow conduit including a tubular wall forming a part of said flow conduit, said wall terminating in a flat end flange, said end flange being formed at an end portion of said wall by the following steps:

a) inserting a sleeve onto said tubing;

b) positioning said sleeve along said wall end portion with a part of said wall end portion protruding from said sleeve;

c) expanding said wall into compressing engagement with said sleeve to secure said sleeve to said wall;

d) compacting said protruding wall end portion part a partial distance to flare said wall outward to form an annular radially extending V-shaped flange overlying said sleeve;

e) compressing said V-shaped flange against said sleeve with a first component of the V-shaped flange extending radially outward and an integrally connected second component of the V-shaped flange being return bent upon said first component to form said flat end flange.

5,283,952

REPLACEMENT CARTRIDGE FOR A SHAVER WITH AN APPLICATOR

Elmar Mock, Biel, and Philipp Gaechter, Itingen, both of Switzerland, assignors to Kai Industries Co. Ltd., Seki, Japan

Filed Jan. 15, 1992, Ser. No. 820,927

Claims priority, application Switzerland, Jan. 17, 1991, 00125/91

Int. Cl.[5] B26B *19/40*

U.S. Cl. 30—41 **8 Claims**

1. A replacement cartridge in combination with a shaver having a shaving fluid application device comprising

a reservoir in said cartridge for holding shaving fluid;

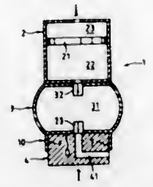
means defining a fluid path extending between said cartridge and said application device, said fluid path being sealed from ambient air;

coupling means including mating parts on said cartridge and said shaver for connecting said cartridge to said shaver and for permitting limited relative reciprocatory movement between said shaver and said cartridge; and

shaving fluid feeding means including said means defining

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said fluid path and responsive to reciprocatory motion between said shaver and said cartridge to feed shaving

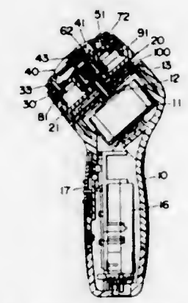


fluid from said reservoir through said fluid path to said shaver.

5,283,953
ROTARY DRY SHAVER

Toshio Ikuta; Masao Tanahashi, and Takeshi Shiba, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 929,656
Claims priority, application Japan, Nov. 26, 1991, 3-311079; Nov. 26, 1991, 3-311080
Int. Cl.[5] B26B *19/14*
U.S. Cl. 30—43.6 **12 Claims**

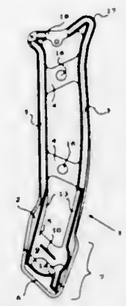


1. In a rotary dry shaver comprising:
an outer shearing foil supported on a head frame;
an inner cutter holder having a center axis and
carrying a plurality of inner blades in hair
shearing engagement with the outer shearing foil, said inner cutter holder being operatively connected to a rotary drive shaft of an electric motor so as to be driven thereby to rotate about the center axis, said outer shearing foil being held movable along said center axis relative to said head frame, and said inner cutter holder being held movable along said center axis relative to said rotary drive shaft so as to be floatingly supported thereby and;
a floating joint which is floatingly supported on the rotary drive shaft to be movable relative thereto along the center axis together with the inner cutter holder,
said dry shaver being characterized in that said outer shearing foil is connected in the direction of the center axis to said inner cutter holder by means of a pin extending along said center axis such that the outer shearing foil and the inner cutter holder are movable together along said center axis relative to the head frame as well as said rotary drive shaft, said pin having a rounded end which is supported on a rounded recessed top surface of said floating joint, thereby keeping contact pressure between the inner blades and the outer shearing foil substantially constant irrespective of the relative movement of the outer shearing foil to the head frame.

5,283,954
KNIFE

Stephan Szabo, Tumigerstr. 62A, 8606 Greifensee, Switzerland

Filed Nov. 17, 1992, Ser. No. 977,713
Claims priority, application Switzerland, Nov. 21, 1991, 3417/91
Int. Cl.[5] B26B *1/00*
U.S. Cl. 30—125 **9 Claims**

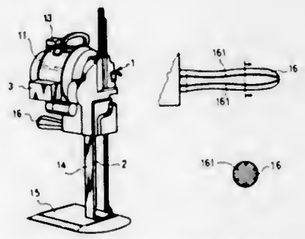


1. A knife having a knife handle with a front end section and a rear end, a blade guiding means located at said front end section and clamping means for arresting a blade in the front end section, said knife handle consisting of a one piece frame body in the form of a lattice work having longitudinal frame spars forming narrow sides of the knife handle and cross struts interconnecting said longitudinal frame spars, on of said cross struts forming a blade resting surface and being provided with a supporting body covered by a hard metal arranged in said blade resting surface to project therefrom, said blade being adapted to be pressed against said supporting body covered by hard metal by means of a clamping screw which is held in a thread formed in the frame body-front end section including a further cross strut.

5,283,955
CONTACT AND INDUCTION CUTTING MACHINE

Cheng K. Liang, 6, Alley 10, Lane 118, Syh Wei Rd, Wou Ku Shiang, Taipei, Taiwan

Filed May 11, 1993, Ser. No. 59,379
Int. Cl.[5] B26B *7/00*
U.S. Cl. 30—275 **2 Claims**



1. A contact and induction cutting machine comprising a motor, a blade holder, a base, an inductive handle, and an induction controlling means;
said motor being located at a left upper corner of said cutting machine and being controlled by said induction controlling means to drive an elongate belt-like blade to slide up and down in reciprocating action at high speed within said blade holder;
said blade holder being located between said motor and said base and being a substantially flat column having a slide rail therein for said blade to slide therein in reciprocating action, said blade holder also acting as a support of said motor to connect said motor with said base;
said base being an extremely thin body for supporting said entire cutting machine;
said inductive handle being located below said induction controlling means and having a plurality of high-conductibility inductive copper sheets inset at adequate interval around the periphery of said inductive handle, said inductive handle, when being gripped by an operator, being capable of producing an electrostatic induction; and
said induction controlling means being located at one side of said motor and above said inductive handle and being controlled via an induction control circuit; at the time said inductive handle being contacted by a conductor, for example, an operator's hand, and thereby producing an electrostatic induction, a field effect transistor T1 in said induction control circuit causing a current to pass a diode D3 and a resistor R8 and flow into a transistor T2 which in turn causes a diode D4 to emit light as a signal which is received by a diode AC-switch (DIAC) D5 to cause a current to pass a resistor R10 and flow into a triode AC-switch (TRIAC) D6, and thereby making the entire induction control circuit a close circuit; at the time said induction control circuit becoming a close circuit, said motor being powered and actuated to drive said blade to slide up and down in reciprocating action for cutting a stack of cloth; reversely, said induction control circuit becoming an open circuit and said motor stopping runing at the time said inductive handle being released, or being separated from a conductor and said electrostatic induction disappeared and thereby said signal of emitted light discontinued.

5,283,956
DEVICE FOR INDICATING THE AIM OF THE OPTICAL AXIS OF A REFLECTOR ON A MOTOR VEHICLE RELATIVE TO A REFERENCE DIRECTION

Patrice Collot, Pantin; Charles Wassen, Saint Barthelemy D'Anjou; Ghislaine Pinson, Villeneuve-la-Garenne; Hector Fratty, Paris; Jean-Marie Brel, Claye-Souilly; Guy Dorleans, Boulogne, and Norbert Brun, Bobbigny, all of France, assignors to Valeo Vision, Bobigny, France

Continuation-in-part of Ser. No. 652,436, Feb. 8, 1991, abandoned. This application Nov. 4, 1991, Ser. No. 787,394
Claims priority, application France, Feb. 9, 1990, 90 01539
Int. Cl.[5] G01B *5/25*
U.S. Cl. 33—288 **8 Claims**

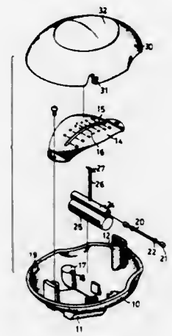


1. In a motor vehicle pair of left and right headlights each comprising a housing and a reflector adjustably mounted in said housing for varying the aim of the optical axis of the reflector, a device for indicating the aim, at least in bearing of said optical axis relative to a longitudinal axis of the vehicle, wherein the device comprises:
a pair of members each comprising means for removable clamping on a reflector of each headlight of the vehicle, respectively, through an aperture of its respective housing, each member establishing the direction of the optical axis of each reflector, respectively, said members being distinct from beam generating surfaces of said reflectors;
a cord removably tensioned between said members and establishing a reference direction that is well determined relative to said longitudinal axis; and
indicator means provided on each of said members for indicating the position of the optical axis direction relative to the reference direction.

5,283,957
INCLINOMETER FOR WHEELED CYCLES

Ming-Fu Chou, No. 27, Alley 2, Lane 437, Peitun Rd., Taichung, Taiwan

Filed Feb. 25, 1993, Ser. No. 22,186
Int. Cl.[5] G01C *9/12*
U.S. Cl. 33—391 **2 Claims**



1. An inclinometer for a wheeled cycle comprising a housing for fixing on said wheeled cycle and having a pair of stubs formed therein, a panel fixed on said housing and including a slot longitudinally formed therein and a graduation provided beside said slot, a shaft extending in a direction substantially perpendicular to said slot of said panel, said shaft including two ends each of which having a head rotatably engaged in said depressions of said stubs respectively, said shaft including at least two discs provided thereon, each of said discs having an outer diameter identical to that of said heads, a tube rotatably engaged on said shaft, a weight secured to a bottom portion of said tube, a pointer extending upward from said tube and movable along said slot of said panel, said pointer moving along said slot and moving relative to said graduation when said wheeled cycle and said housing relatively rotate about said shaft, whereby, the inclination of said wheeled cycle is indicated by said pointer.

5,283,958
ADJUSTABLE SAW GAUGE FIXTURE

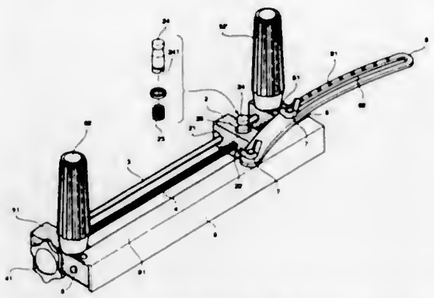
Chin T. Chang, Chang Nan Rd. 26, Lane 224, Sec. 2, Changhua, Taiwan

Filed Nov. 30, 1992, Ser. No. 983,782
Int. Cl.[5] G01B *3/56;* **B26D** *7/02*
U.S. Cl. 33—538 **2 Claims**

1. An adjustable saw gauge fixture comprising a first end plate and a second end plate joined by two parallel guide rods and a screw rod, two handles made on said first and second end plates respectively, a movable jaw plate movably mounted on said parallel guide rods and said screw rod, locating means to retain said movable jaw plate to said screw rod in place, an adjusting knob turned to rotate said screw rod in causing said movable jaw plate to be alternatively moved along said screw rod pitch by pitch toward said first or second end plate in holding down a workpiece, a miter gauge carrier made of an angle bar having one end pivoted to said first end plate and an opposite end freely moved toward or apart from said second

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end plate, a miter gauge having one end fixed to said angle bar by a wing screw and an elongated groove peripherally marked



with graduations movably secured to said second end plate by a wing screw.

5,283,959

SYSTEM FOR DRYING MOIST SLUDGE

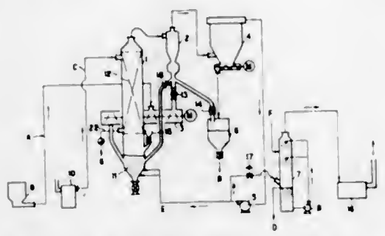
Yoshikazu Nagayoshi; Hajime Nakajima, and Misao Igarashi, all of Tokyo, Japan, assignors to Tsukishima Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 958,074

Claims priority, application Japan, Oct. 14, 1991, 3-331104

Int. Cl.[5] F26B *17/00*

U.S. Cl. 34—57 R **15 Claims**



1. A system for drying moist sludge, comprising:

a dryer including a first fluidizing section and a second fluidizing section arranged above said first fluidizing section in which sludge-coated fluidizing particles, each having a comparatively large particle size are fluidized, and from which sludge-coated particles, each having a comparatively small particle size, are flown away into said second fluidizing section having a gas flow area smaller than that of said first fluidizing section,

a first particle collecting means arranged downstream of said dryer to collect dried coarse sludge-coated particles flown away from said second fluidizing section,

a second particle collecting means arranged downstream of said first particle collecting means to collect dried fine sludge-coated particles flown away from said first particle collecting means;

a mixer arranged in the vicinity of said dryer so as to allow the moist sludge and a fluidizing particle, each having a comparatively large particle size to be mixed and stirred with each other so as to prepare the sludge-coated particles to be fluidized in the first fluidizing section; and

a dried sludge hopper for receiving dried sludge particles from said first particle collecting means and said second particle collecting means.

5,283,960

SINGLE TIER DRYER SECTION FOR CURL CONTROL

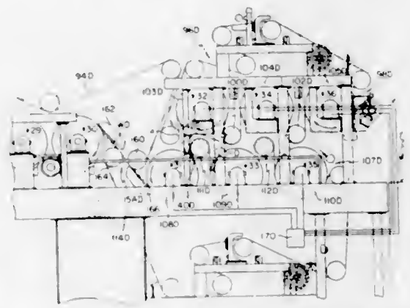
Duke N. Sims, South Beloit, Ill., and Gregory L. Wedel, Beloit, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 873,420, Apr. 24, 1992. This application Jul. 21, 1993, Ser. No. 95,135

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] F26B *5/04*

U.S. Cl. 34—117 **1 Claim**



1. A drying apparatus for drying a web of paper, said apparatus comprising:

a plurality of drying sections for drying the web;

each of said drying sections including:

a plurality of dryers disposed in a single tier configuration;

a plurality of vacuum transfer rolls, each vacuum roll being disposed between adjacent dryers of said plurality of dryers;

a dryer felt extending alternately around each dryer and each vacuum roll, the arrangement being such that each of said dryers is top felted so that broke removal is facilitated, each of said drying sections being arranged in succession;

a further single drying section only disposed downstream relative to said plurality of drying sections such that the web extends between said plurality of drying sections and said further drying section;

said further drying section including:

an upper tier of dryers:

an upper plurality of rolls disposed between adjacent dryers of said upper tier;

an upper felt extending alternately around each dryer of said upper tier and each roll of said upper plurality of rolls;

a lower of tier of dryers;

a lower plurality of rolls disposed between adjacent dryers of said lower tier;

a lower felt extending alternately around each dryer of said lower tier and each roll of said lower rolls, the arrangement being such that the web extends in open draw between each dryer of said upper and lower tiers so that any tendency of the web to curl is controlled during movement of the web through said further drying section;

said plurality of drying sections further including:

a downstream felt roll;

a blow box disposed adjacent to a dryer felt and immediately upstream relative to said felt roll;

said further single drying section further including:

an upstream felt roll disposed closely adjacent to said dryer felt and upstream relative to said downstream felt roll; and

a further blow box disposed closely adjacent to and downstream relative to said downstream felt roll such that the web is sandwiched between said dryer felt and said lower felt, the arrangement being such that the web is transferred without open draw from said dryer felt to said lower felt.

5,283,961

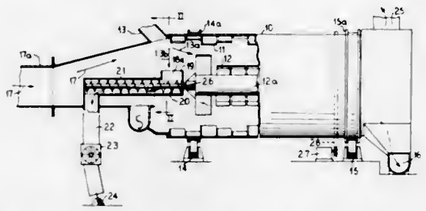
TRAMP REMOVAL SYSTEM

Richard J. Gobel, Scappoose, Oreg., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Apr. 6, 1992, Ser. No. 863,929

Int. Cl.[5] F26B *11/02*

U.S. Cl. 34—136 **18 Claims**



14. In a rotary dryer apparatus having an elongate, tubular dryer shell mounted for rotation, means for driving the shell in rotation, a center shaft extending through the shell and being driven in rotation with the shell, material engaging fights disposed on the shell and the center shaft for engaging and tumbling material in the dryer, a material inlet and a material outlet in the shell, and a heated gas supply means for conducting heated gases through the shell to dry material tumbled in the shell, the improvement comprising:

receiving means disposed beneath the material inlet for capturing foreign material supplied to the dryer in a flow of material to be dried, said receiving means being adapted to receive the foreign material while minimizing the reception of material to be dried; and

transfer means for transporting out of the dryer foreign material captured in said receiving means.

5,283,962

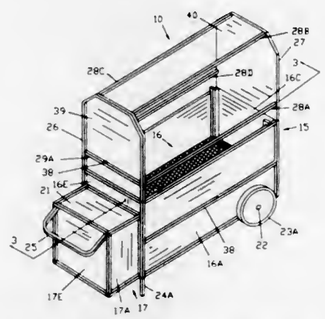
PORTABLE CALF DRYER APPARATUS

Ruben W. Humann, Rte. 1, Box 56, Hazelton, N. Dak. 58544

Filed May 20, 1993, Ser. No. 64,272

Int. Cl.[5] F26B *25/06*

U.S. Cl. 34—202 **6 Claims**



1. A portable calf dryer apparatus comprising:

a durably-constructed container fixedly mounted upon wheel and leg means and having a calf-receiving compartment and a heater unit-storing compartment, each of said compartments having side, end, and bottom walls and further having an open top, said container further having a plurality of slots extending downwardly through top edges along said end walls of said calf-receiving compartment, said top end of said heater unit-storing compartment coverable by a lid hingedly attached to a top edge thereof, for easy transportability of said calf dryer apparatus on a ground surface;

a mesh-like platform removeably and horizontally suspended inside said calf-receiving compartment and elevated above said bottom wall of said container, to support a calf thereupon and to substantially pass droppings from and about said calf to said bottom wall of said calf-receiving compartment;

a handle member fixedly attached to the exterior of an end of said container for conveniently moving and positioning said dryer apparatus as desired by a user; and

a heater unit means stored in said heater unit-storing compartment, capable of generating heated air for said calf-receiving compartment to dry and warm said calf.

5,283,963

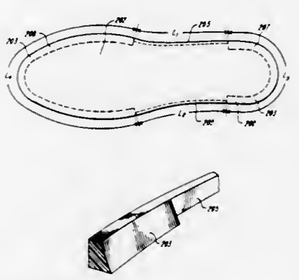
SOLE FOR TRANSFERRING STRESSES FROM GROUND TO FOOT

Moisey Lerner, 75 Rolling La., Needham, Mass. 02192, and Leonid Dabuzhsky, 86 High Rock Ter., Newton, Mass. 02167

Continuation-in-part of Ser. No. 395,368, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 138,957, Dec. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 106,152, Oct. 8, 1987, abandoned. This application Nov. 21, 1991, Ser. No. 795,690

Int. Cl.[5] A43B *13/20*

U.S. Cl. 36—28 **27 Claims**



1. A sole comprising:

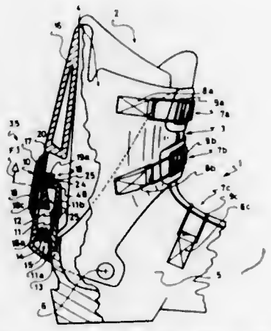
a case having a top member for providing a foot receiving surface, a bottom member spaced apart from said top member and generally coextensive therewith, a peripheral wall connecting said top member to said bottom member at their periphery and defining between said top member and said bottom member and within said peripheral wall a chamber for containing a continuous incompressible fluid;

at least one portion of said peripheral wall, defining a first component of the wall, being formed with a first constant thickness between said top member and said bottom member, whereby said first component is able to buckle when pressure inside said chamber exceeds a predetermined pressure level; and

the rest of said peripheral wall, defining a second component of the wall, being formed with a second constant thickness between said top member and said bottom member, said second thickness being greater than said first constant thickness, whereby said second component is resistant to buckling at pressure levels which cause said first component of the wall to buckle.

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5,283,964
SKI BOOT WITH UPPER LOCKING DEVICE
Jean-Pierre Chemello, Annecy-le-Vieux, France, assignor to Salomon S.A., Chavenod, France
Filed Jul. 1, 1992, Ser. No. 907,019
Claims priority, application France, Jul. 1, 1991, 91 08504
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 **9 Claims**



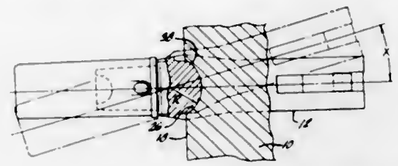
1. Alpine ski boot comprising a shell base (5) surmounted by an upper (2, 2B, 2C, 2D) provided with a system for closure on a base of a leg of a skier, said shell base being composed of a front part (3, 3B, 3C, 3D) and a rear part (4, 4B, 4C, 4D) made of at least one piece, the rear part of said upper (2, 2B, 2C, 2D) pivoting partially in the back-to-front and/or front to back direction, and comprising a device (35, 36, 37, 38) for immobilizing the upper in relation to said shell base (5) and which is functional for at least one of the directions of the pivoting motion of said rear part (4, 4B, 4C, 4D) of said upper (2, 2B, 2C, 2D) by means of a stop zone (13, 43, 43A) on said shell base (5), wherein said immobilization device (35, 36, 37, 38) is manipulated independently of said closure system by means of a rectilinear-motion control mechanism (10) comprising an external gripping portion (18) and an internal portion (19) connected to said external gripping portion by a bearing (20), said control mechanism (10) being slidable on a slide-rail (17) constituted by at least one longitudinal edge of an oblong opening (17') in a wall (16*a*) of said rear part (4, 4B, 4C, 4D) of said upper (2, 2B, 2C, 2D) and on which said control mechanism (10) is held while remaining free to travel in translational motion, by means of said bearing (20) and said external gripping portion (18) which jointly define a sliding groove cooperating with at least one longitudinal edge of said oblong opening (19'), said inner part (19) acting, by means of a cam (19*a*, 40*a*) cooperating with a sensing device (41, 49) on an oscillating lever (11, 40) which, pivoting about an axis (12, 12A) and subjected to the force of a return spring (14), is thus secured while pivoting in relation to said stop zone (13, 43, 43A) of said shell base (5).

5,283,965
ATTACHMENT ASSEMBLY FOR EXCAVATION TEETH
Charles Clendenning, Broken Arrow, Okla., assignor to H & L Tooth Company, Montebello, Calif.
Filed Jan. 21, 1992, Ser. No. 789,098
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—455 **21 Claims**

17. A shank adapted for securement to a lip of an excavation bucket on earth excavation equipment wherein the lip defines a central axis and is provided with a plurality of spaced-apart curvilinear bearing surfaces defining constant and equal radii of curvature adjacent the forward edge thereof, said shank comprising:

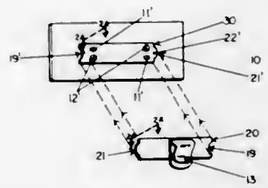
a nose portion adapted to carry an excavation tooth thereon; and

a base portion having a lateral channel defined therein adapted to receive a portion of the bucket lip and terminating in a curvilinear bearing surface defining a radius of curvature equal to the radius of curvature defined by the



bearing surfaces in the lip so as to abut and mate with any one of the bearing surfaces in said lip upon said base portion being disposed thereover, whereby said shank can be secured to the bucket lip in a mating engagement with any one of the bearing surfaces therein and aligned parallel to and at a lateral angular disposition with respect to said axis.

5,283,966
BADGE CONTAINING INTERCHANGEABLE FASTENERS
Norman P. Rader, Manchester, Mo.; Richard C. Haug, East Moriches, and Peter C. Schellack, Huntington, both of N.Y., assignors to MetalMasters By Rader Corporation, St. Louis, Mo.
Filed May 4, 1992, Ser. No. 877,986
Int. Cl.[5] A44C *3/00*
U.S. Cl. 40—1.5 **9 Claims**



1. A badge system for attaching a badge to clothing and other objects, comprising:

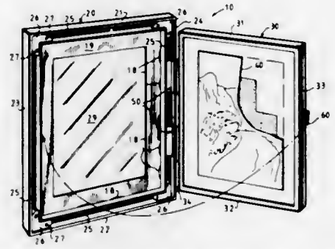
(a) a front badge plate having front and rear surfaces, the front surface for bearing identifying information and the rear surface being adapted for selectively removable connection to one of a plurality of interchangeable first panels;

(b) a plurality of interchangeable first panels each having a front surface and a rear surface, the front surface of each of the interchangeable first panels being adapted for selectively removable connection to the rear surface of the front badge plate and the rear surface of each of the interchangeable first panels providing a site for mounting any of a number of types of fasteners for fastening the badge to clothing and other objects, and for permitting the user to readily transfer the front badge plate from one article of clothing or other object to another;

(c) a fastener mounted on the rear surface of each of the first panels, the fastener mounted on the rear surface of any one of the interchangeable first panels not necessarily being of the same type as any other fastener mounted on any other one of the plurality of interchangeable first panels;

whereby each of the interchangeable first panels may be attached to the front badge plate and selectively removed therefrom in order to replace it with another of the interchangeable first panels having a different fastener attached thereto.

5,283,967
MULTI-PURPOSE DISPLAY FRAME
Charles Abrams, 10 Buckminster Rd., Rockville Centre, N.Y. 11570
Filed Jun. 15, 1992, Ser. No. 897,922
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—155 **11 Claims**



1. A multi-purpose, front loading display frame, comprising:

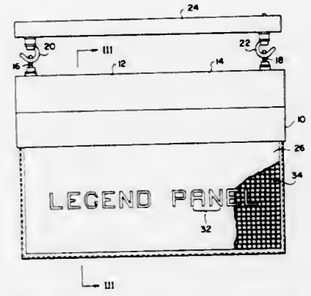
a front frame member having a window section for viewing a display item disposed therebehind, said front frame member including a rectangular frame having top, bottom, and two side frame sections joined together to form a frame about an open area for display and a transparent window panel defining said window section mounted within said frame sections and occupying said open area so as to provide a front supporting and protective surface for a display item supported in said display frame, said front frame also having a recessed cavity;

a rear frame member, having a front surface for releasably supporting at least one interchangeable display item, which rear frame member is securable to a support, said rear frame member including a rectangular frame having top, bottom and two side frame sections jointed together to form a frame about an open area for display support and a display rear support for the display item mounted within said frame sections and occupying said display support open area so as to provide a rear support for the display item, wherein said rear support includes a rear panel which fits within said rear frame sections and has a flat surface for holding the display item against the window panel of said front frame member when said frame members abut one another in a closed position;

normally concealed hinge means for hingeably securing said front frame member to said rear frame member so as to allow for pivotable movement of said frame members between a closed position, in which said frame members are disposed closely adjacent to one another with said rear frame member received in said recessed cavity of said front frame member, so that a display item supported on said rear frame member is disposed behind said window section for viewing, and an open position, in which said frame members are pivoted apart from one another to permit removal and replacement of the display item, said hinge means being substantially concealed and hidden from view when said frame members are in said closed position; and

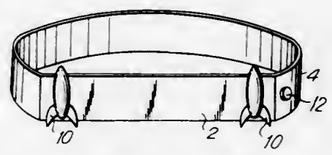
normally concealed closure means mounted on at least one of said front and rear frame members for releasably maintaining said front and rear frame members in said closed position, said closure means being positioned so as to allow said front frame to swing outwardly via pivotable movement into said open position while said rear frame member is secured on a support, said closure means being substantially concealed and hidden from view when said frame members are in said closed position.

5,283,968
EDGELIT LUMINAIRES
Christopher Williams, Stoke-on-Trent, United Kingdom, assignor to JSB Electrical Plc, Crewe, United Kingdom
Filed Feb. 26, 1992, Ser. No. 841,494
Int. Cl.[5] G09F *13/18*
U.S. Cl. 40—546 **9 Claims**



1. An edgelit luminaire comprising: a housing having an opening, a display panel having an upper edge and at least one surface carrying a layer having sections of differing transparency forming a graphic symbol, a source of illumination arranged in the housing and located substantially adjacent to the upper edge of said display panel, said display panel attached to the housing such that the panel extends from the opening in the housing and an array of dots on substantially the entire said one surface including said layer of differing transparency, said array of dots having a luminous quality affected by said source of illumination to spread light throughout the entire surface of said display panel thereby greatly enhancing illumination of said graphic symbol.

5,283,969
IDENTIFICATION BAND
Steven J. Weiss, 84 Village Cir., Bridgewater, N.J. 08807
Filed Jul. 29, 1992, Ser. No. 921,554
Int. Cl.[5] A61B *5/103;* **A44C** *5/00*
U.S. Cl. 40—633 **8 Claims**



1. An identification band, comprising:

an elongated band element having a pocket portion and a strap portion, the pocket portion being adapted to retain identification information pertaining to a wearer of the band, the pocket portion having a face through which may be viewed the identification information, the strap portion extending from one side of the pocket portion, the strap portion being adapted to be wrapped around the wrist of the wearer, the band element having a peripheral edge;

means for fastening the strap portion to an opposite side of the pocket portion; and

means for conveying a creative aristic impression, said conveying means including a configuration resembling at least a portion of any one of a cartoon character, functional manufactured article, decoration associated with any one of a special occasion and holiday, natural object,

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person, plant and animal, said configuration having a peripheral edge which may be touched and which is configured to appear as at least a portion of an outline of that which is being resembled, said configuration extending outwardly from the band element at least as far as the peripheral edge of an adjacent portion of the band element, said peripheral edge of said configuration defining a portion of said band element.

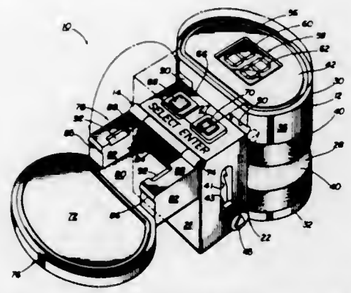
5,283,970
TOY GUNS
Gary D. Aigner, Chicago, Ill., assignor to Strombecker Corporation, Chicago, Ill.
Filed Sep. 25, 1992, Ser. No. 951,213
Int. Cl.[5] F41C *3/06*; A63H *5/04*
U.S. Cl. 42—57 **12 Claims**



1. A toy gun comprising:
a housing having a fixedly attached grip assembly and
a rotatingly mounted barrel assembly interconnected therewith at opposed ends of said housing;
a trigger mechanism movably connected to said grip assembly;
a first contact means engageable by said trigger mechanism to actuate a first set of operating conditions in said toy gun;
a second contact means engageable by said trigger mechanism to actuate a second set of operating conditions in said toy gun;
said first set of operating conditions including light effects resulting from illumination of a light emitting means positioned in said barrel assembly and sound effects resulting from activation of a speaker assembly positioned in said housing; and
said second set of operating conditions including rotation of said barrel assembly.

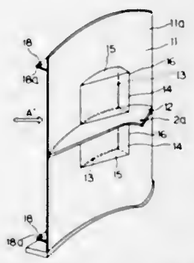
5,283,971
TRIGGER GUARD ALARM FOR A FIREARM
Robert M. Fuller; Ann D. Fuller, both of P.O. Box 908, Helen, Ga. 30545, and Richard P. Smyth, 3649 Cherbourg Rd., Marietta, Ga. 30062
Continuation-in-part of Ser. No. 848,704, Mar. 9, 1992, Pat. No. 5,191,158. This application Aug. 7, 1992, Ser. No. 926,924
Int. Cl.[5] F41B *17/54*
U.S. Cl. 42—70.07 **20 Claims**

1. A trigger lock for preventing unauthorized use of a firearm, comprising:
a. a trigger locking means moveable between an operative position on the firearm preventing movement of the trigger an inoperative position allowing movement of the trigger;
b. an actuator means to detect between the operative and inoperative positions of the trigger locking means and to generate a position signal indicative of the position of the trigger locking device;
c. numerical combination entry means to enter a numerical combination and to generate a numerical combination signal indicative of the numerical combination;
d. numerical combination display means to display the numerical combination indicated by the numerical combination signal;
e. signal processing means responsive to the position signal



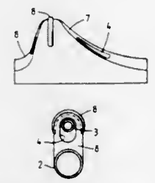
and the numerical combination signal to generate an alarm signal when the position signal and the numerical combination signal indicate an unauthorized attempt to use the firearm; and
f. alarm indicator means responsive to the alarm signal to emit an audible alarm when the unauthorized attempt to use the firearm is indicated.

5,283,972
OTTER BOARD
Hiromi Kinoshita, Shimonoseki, Japan, assignor to Nichimo Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1991, Ser. No. 791,916
Claims priority, application Japan, Dec. 6, 1990, 2-400151[U]
Int. Cl.[5] A01K *73/045*
U.S. Cl. 43—9.7 **20 Claims**



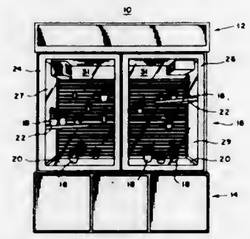
1. A rigid biplanar otter board towable through the sea for laterally diverting an object towed therefrom, comprising:
a. a pair of spaced apart, parallel curved boards having generally smooth exteriors and apertures formed therein;
b. stringers extending generally transversely between and fixedly connecting said curved boards, for maintaining said boards in spaced disposition respecting one another;
c. flap means connected to said boards at downstream edges of said apertures and diverging from said boards with lateral position on said board to define a mouth facing upstream along said board surface;
d. planar fixing means extending transversely between said board and said flap means at respective vertical extremities of said flap means, for defining a conduit for passage therethrough of water from said mouth to said aperture; whereby water flows into said mouth, through said conduit and exits from said aperture to a convex surface of said board as said board is towed, shifting any vortex formed proximate the convex surface of said board towards the rear of said board.

5,283,973
FISHING LINE GUIDE
Mitsuyoshi Oyama, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jun. 29, 1992, Ser. No. 905,388
Claims priority, application Japan, Jul. 5, 1991, 3-60188[U]
Int. Cl.[5] A01K *87/04*
U.S. Cl. 43—24 **7 Claims**



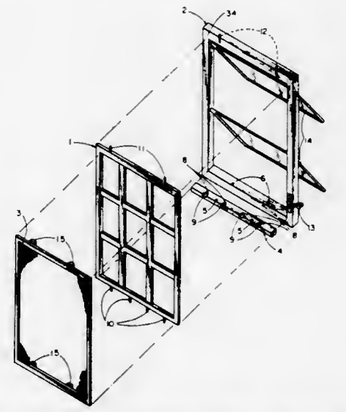
1. A fishing line guide comprising:
attaching seat means for connecting a fishing line guide part to a fishing rod, said attaching seat means having a width substantially equal to and spanning a diameter of the fishing rod to which it is attached;
the fishing line guide part is located along a longitude of the fishing rod by the attaching seat, said fishing line guide part having a corresponding width substantially equal to or smaller than the width of the attaching seat, and said fishing line guide part is formed with front and rear end faces respectively inclined to front and rear parts of the attaching seat with side faces formed as smoothly sloped surfaces, so as to present a substantially conical outer configuration;
a fishing line guide hole passing through said fishing line guide part, said fishing line guide hole being constricted at an intermediate portion along its longitudinal surface; and
protection frame means for resisting abrasion and impact on said fishing line guide, said protection frame means including a rib which does not circumscribe said fishing line guide hole.

5,283,974
ENVIRONMENTALLY CONTROLLED DISPLAY CABINET
David B. Graf, Jr., 517 Indian Creek Dr., Trophy Club, Tex. 76262
Filed May 9, 1991, Ser. No. 697,888
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—60 **7 Claims**



1. A portable cabinet for storing plants, comprising:
an enclosed chamber for storing the plants;
control means located in said cabinet and responsive to input commands for automatically controlling selected environmental conditions in said chamber according to a predetermined set of program instructions, said environmental conditions including the temperature of the chamber;
input means for entering input commands into said control means, said input commands indicating desired environmental conditions to be maintained in said chamber;
air moving means adjacent one side of said chamber for directing a substantially lateral flow of air toward an opposite side of said chamber;
air cooling means located outside said chamber;
first air duct means communicating between said opposite side of said chamber and said air cooling means for directing at least a portion of the air directed toward said opposite side of said chamber by said air moving means to said air cooling means; and
second air duct means communicating between said opposite side of said chamber and said air cooling means for directing cooled air form said air cooling means into said chamber adjacent said opposite side of said chamber, the cooled air having a lower temperature than the temperature of the air directed toward said opposite side of said chamber by said air moving means, whereby a temperature differential is maintainable between said one side of said chamber and said opposite side of said chamber.

5,283,975
SECURITY WINDOW
John P. Piterski, 737 Bayvista Blvd., St. Petersburg, Fla. 33705
Filed Jul. 28, 1992, Ser. No. 920,655
Int. Cl.[5] E06B *3/68*
U.S. Cl. 49—50 **3 Claims**



1. Security apparatus installable within a frame of an awning-type window, said window including a first plurality of holes in a top jamb thereof, said apparatus comprising:
a generally rectangular framework comprising a top, a bottom, and two sides, each said side a predetermined length shorter than a side jamb of said window, said framework including a plurality of rigid pins extending from said top, each said rigid pin located in alignment respectively with one of said first plurality of holes, said framework further including a plurality of spring-biased pins depending from and biased outward from said bottom, and
a strip, shaped generally as a rectangular parallelpiped having a height slightly less than said predetermined length and having a second and a third plurality of holes extending therethrough, said strip affixable to a bottom jamb of said window by a plurality of fasteners, each said fastener insertable respectively through one of said second plural-

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ity of holes, said third plurality of holes spaced in alignment with ones of said plurality of spring-biased pins, whereby said security apparatus is affixable within said window frame by inserting said plurality of rigid pins into said first plurality of holes, raising said spring-biased pins, and pushing said framework into said frame of said window whereupon said spring-biased pins extend under the bias of said springs into said third plurality of holes.

5,283,976

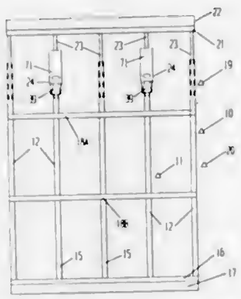
PORTABLE SECURITY GRILL APPARATUS

Tim La Mont, 2130 W. Crescent, #1001, Anaheim, Calif. 92801

Continuation of Ser. No. 729,222, Jul. 12, 1991, Pat. No. 5,131,186, which is a continuation-in-part of Ser. No. 372,839, Jun. 29, 1989, abandoned. This application Aug. 4, 1992, Ser. No. 912,727

Int. Cl.[5] **E06B** *7/00*

U.S. Cl. 49—55 **10 Claims**



1. A security grill apparatus for removable installation in a window opening comprising;

a. a first, larger grill section comprising a plurality of spaced apart bars,

b. a second, smaller grill section assembled to said first grill section, and telescopically movable with respect thereto, and

c. extension clamping means including at least first and second, spaced-apart clamping means, each clamping means comprising a toggle lever assembly attached to one of said first and second grill sections and comprising a lever arm, a lug member, an adjustable support means a base plate having first and second ends, and a channel, with said lever arm having a first pivotal connection to said lug member, and with said base plate pivotally secured at its first end to said lever arm at a second pivotal connection located beneath and inward of said first pivotal connection, thereby providing a toggle joint and slidably received in said channel, with said channel fixedly secured to said one grill section, with the second end of said base plate resting on said adjustable support means also located within said channel, and with said lug member received in a coacting lug member receptacle on the other of said grill sections, and including means to advance and retract said adjustable support means whereby said first and second grill sections may be moved telescopically apart by movement of said lever arm, and the amount of said telescopic movement of said first and second grill sections may be varied by adjustment of said adjustable support means to exert compressive force on respectively opposite frame members of said window opening to make removal of said apparatus from said window difficult.

5,283,977

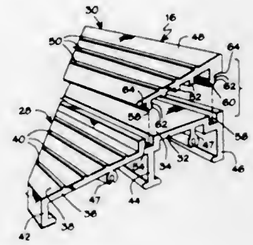
REVERSIBLE DOOR FRAME THRESHOLD

Rick Smith, Pittsburg, Kans., assignor to Castlegate, Inc., Pittsburg, Kans.

Filed Oct. 21, 1992, Ser. No. 964,302

Int. Cl.[5] **E06B** *1/70*

U.S. Cl. 49—380 **20 Claims**



1. A threshold comprising:

a base;

a riser coupled with the base and having a top surface which extends in a plane at an angle to a horizontal plane; and

interlocking members carried by the base and the riser for allowing the riser to be removably connected to the base in a first position with the top surface of the riser tilted in one direction in relation to a reference orientation of the base, said riser and interlocking members being constructed in a manner to permit the riser to be detached from the base and then reconnected to the base in a second position rotated from the first position with the top surface tilted in an opposite direction in relation to the reference orientation of the base.

5,283,978

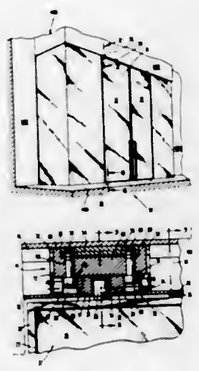
GLASS DOOR AND HINGING MECHANISM WITH METHOD OF INSTALLATION

William J. Horgan, Jr., New Smyrna Beach, Fla., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 13, 1991, Ser. No. 807,081

Int. Cl.[5] **E05D** *7/08*

U.S. Cl. 49—388 **31 Claims**



1. A glass door assembly comprising:

a) a glass door panel having a top edge, a bottom edge, and a pair of side edges, the panel edges defining the perimeter of the panel;

b) a frame portion disposed on at least two opposite panel edges, the frame portion being provided entirely outside of the perimeter of the glass panel;

c) a zone of bonding material provided between the frame portion and at least a portion of a perimetric panel edge along which a frame portion is disposed.

5,283,979

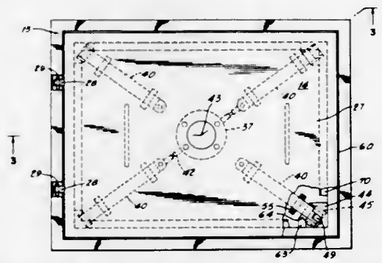
LOCKING/OPENING SYSTEM FOR WATERTIGHT HATCH

Edward R. Carlson, New Fairfield, Conn., and Robert Elwell, Hyde Park, N.Y., assignors to The Presray Corporation, Pawling, N.Y.

Filed Nov. 23, 1992, Ser. No. 980,619

Int. Cl.[5] **E05C** *9/00*

U.S. Cl. 49—395 **10 Claims**



1. In a watertight hatch assembly of the type comprising

(a) a frame defining an opening of predetermined size and shape,

(b) a hatch cover mounted in said frame for opening and closing movements with respect thereto,

(c) a continuous resilient sealing member supported by one of said frame or said hatch cover within said opening and having a contact surface facing the other of said frame or hatch cover and engageable therewith when said hatch cover is in a closed position with respect to said frame,

(d) said resilient sealing member forming a continuous peripheral seal between said hatch cover and said frame when said hatch cover is in a closed position, and

(e) locking means for securing said hatch cover in closed position with respect to said frame with said sealing member under sealing compression therebetween, the improvement characterized by

(f) said locking means comprising a plurality of locking bars slidably mounted on inside surface areas of said hatch cover for movement toward and away from said frame,

(g) actuator means engageable from an external side of said hatch cover for extending said locking bars toward said frame and into a locked relation therewith and retracting said locking bars away from said frame and into an unlocked relation therewith,

(h) at least certain of said locking bars having outer end portions engageable with portions of said frame, when said locking bars are actuated to extended positions, to displace said hatch cover in a closing direction with respect to said frame and thereby to compress said continuous peripheral seal,

(i) at least certain of said locking bars having outer end portions engageable with portions of said frame when said locking bars are actuated to retracted positions, away from said frame and into an unlocked relation therewith, to forcibly displace said hatch cover in an opening direction with respect to said frame, to free said hatch cover for opening.

5,283,980

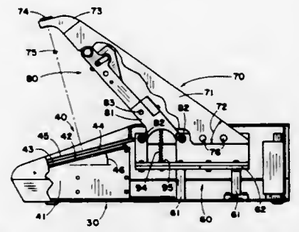
LENS BLOCKER

Marold H. Lohrenz, and Richard W. Pembroke, both of Tulsa, Okla., assignors to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Dec. 4, 1992, Ser. No. 985,897

Int. Cl.[5] **B24B** *49/00*

U.S. Cl. 51—165.72 **25 Claims**



1. A lens blocker for securing a grinding block on a lens blank selected from a variety of lens blanks on a desired location displaced from an optical center of the selected lens blank permitting the lens to be ground to fit a frame rim of known contour comprising:

a work surface having known refraction characteristics and a point of origin thereon;

means for electronically displaying an image of a type of target suited to alignment with the selected lens blank on said work surface;

means spaced from said work surface and aligned on a sight line extending through said point of origin for visual observation of said work surface; and

computer means for calculating the displacement between the desired location and the selected lens blank optical center, for compensating in said calculated displacement for parallax resulting from said sight line space and said refraction characteristics and for shifting the location of said image by said compensated, calculated displacement in relation to said point of origin whereby the desired location on the selected lens blank coincides with said point of origin when the selected lens blank is oriented on said work surface to visually coincide through said observation means with said shifted image.

5,283,981

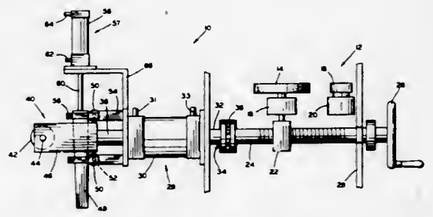
CAM FEED UNIT FOR A MACHINE TOOL

Merrill G. Johnson; Frank E. Stotts, both of Marion, and Glen E. DeBoard, Wabash, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 21, 1993, Ser. No. 6,743

Int. Cl.[5] **B24B** *1/00*

U.S. Cl. 51—165.89 **19 Claims**

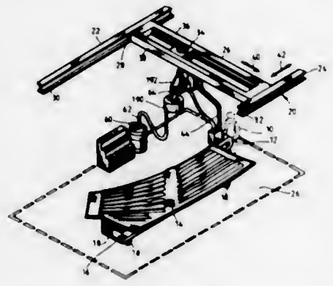


1. A cam feed unit for moving a tool slide linearly towards and away from a workpiece, comprising:

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advance means for linearly moving said tool slide towards and away from a workpiece said advance means being stationary with respect the workpiece;
a cam engaging member connected to said advance means for linear movement with said tool slide;
a cam in selective engagement with said cam engaging member; and
feed means for linearly reciprocating said cam, whereby when said cam is in engagement with said cam engaging member, the linear movement of said cam controls the linear movement of said tool slide.

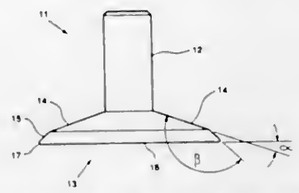
5,283,982
COMPLEX CONTOUR MILLING MACHINE
Jack E. Harper, Jr., Carrollton; John R. Ballieu, Irving, both of Tex.; Scott J. Pleva, Breatwood, England, and Ronald C. Smith, Arlington, Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.
Filed Apr. 1, 1992, Ser. No. 861,757
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.77 **40 Claims**



1. A milling machine comprising:
a C-shaped frame having an upper arm portion and a lower arm portion;
a plurality of first roller members coupled to said lower arm portion of said C-shaped frame, said plurality of first roller members extending upwardly from said lower arm portion toward said upper arm portion, said plurality of first roller members being arranged in a planar configuration;
a cutting head being rotatably coupled to said upper arm portion of said C-shaped frame, said cutting head extending downwardly from said upper arm portion toward said lower arm portion and being rotatable about an axis; and
a plurality of second roller members coupled to said upper arm portion of said C-shaped frame, said plurality of second roller members extending downwardly from said upper arm portion toward said lower arm portion and being slidably moveable generally toward and away from said plurality of first roller members.

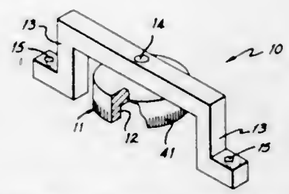
5,283,983
SHARPENING DEVICE
Jim Lazarou, Lot 1 Killara Road, Cowra, New South Wales, 2794, Australia
Filed Jun. 15, 1992, Ser. No. 898,408
Int. Cl.[5] B24D *7/02, 7/10*
U.S. Cl. 51—209 R **12 Claims**

7. A rotatable sharpening device including:
a mounting shaft, and a sharpening head integral with said mounting shaft, the sharpening head being substantially in the form of a shallow frusto-cone having a frusto-conical surface, a planar base and a frusto-conical chamfered rim portion extending between said planar base and the frusto-conical surface of said frusto-cone; the planar base being coated with fine hard particles to constitute a planar sharpening face; wherein the frusto-conical surface and the frusto-conical chamfered rim portion contact each other such that the included angle between the frusto-conical surface and the frusto-conical chamfered rim



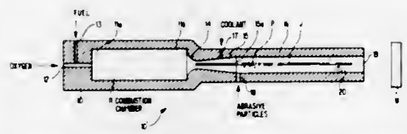
portion is between 135° and 165° and the included angle between a projection of said frusto-conical surface and said sharpening face is between 5° and 40°.

5,283,984
LENS AXIS ALIGNMENT DEVICE FOR USE IN A LENS-SURFACING MACHINE
Donald L. Gilman, Cincinnati, Ohio, assignor to Lyric Optical Company, Inc., Cincinnati, Ohio
Continuation of Ser. No. 774,558, Oct. 10, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,484
Int. Cl.[5] B24B *41/06, 7/00*
U.S. Cl. 51—216 LP **10 Claims**



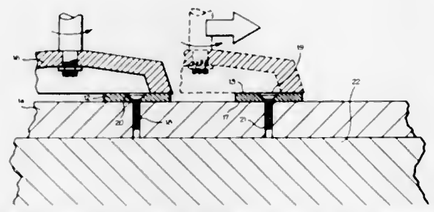
1. A lens axis alignment device comprising a lens carrier for a blocked lens having locking means for locking the blocked lens on the carrier, said blocked lens having a zero axis,
a lens axis alignment means having an arcuate scale directly on said carrier for alignment of said blocked lens axis with respect to said carrier, said carrier for supporting said blocked lens for alignment by said alignment means by pivotally moving said blocked lens axis with respect to the carrier to align said blocked lens axis with said scale,
said carrier comprising a central portion having a depression adapted to receive the blocked lens for supporting said lens on a lens-surfacing machine,
said carrier having two pivot sockets along a carrier longitudinal axis for receiving locating means on said lens-surfacing machine,
a central aperture is received through the center of said carrier depression between said two pivot sockets for checking a thickness of the blocked lens during lens grinding by said lens-surfacing machine,
said carrier central aperture is aligned with said pivot sockets along the carrier longitudinal axis.

5,283,985
EXTREME ENERGY METHOD FOR IMPACTING ABRASIVE PARTICLES AGAINST A SURFACE TO BE TREATED
James A. Browning, c/o Draco, P.O. Box 6, Hanover, N.H. 03755
Filed Apr. 13, 1993, Ser. No. 45,229
Int. Cl.[5] B24C *1/00*
U.S. Cl. 51—319 **7 Claims**



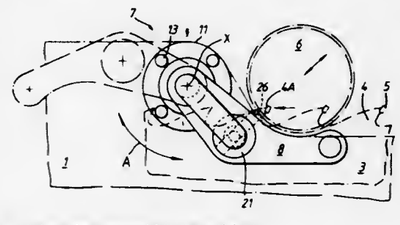
1. A method of abrasive blasting a surface to be cleaned or treated comprising supplying an oxy-fuel mixture to an internal burner combustion chamber open at a downstream end to, in order, a restricting nozzle, a restricting nozzle throat, a supersonic expansion nozzle section, and an extended nozzle length forming an elongated duct by combusting said oxygen and fuel mixture within said combustion chamber, producing a flow of high-temperature products of combustion to supersonic velocity through said restricting nozzle throat and said supersonic expansion nozzle section, forming a jet stream and maintaining the supersonic flow through the elongated duct, introducing abrasive particles into the supersonic flow in the vicinity of said elongated duct to thereby accelerate the particles to extreme velocity, and maintaining the combustion pressure sufficiently high to limit the jet stream temperature passing through the elongated duct to a level which is insufficient to raise the temperature of the particle to the plastic point of the particles.

5,283,986
APPARATUS AND METHOD FOR SHARPENING CONTOUR PROFILE CUTTER BLADES
Gianfranco Pozzo, Via Padova 3, 33010 Feletto U., Udine, Italy
Filed Jun. 22, 1992, Ser. No. 901,877
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—285 **5 Claims**



4. A method for grinding wheel sharpening of contour profile knife blades, said knife blades being supported for sharpening by a tool holder, said method comprising the steps of:
(1) providing at least one knife blade having a generally flat cutting surface with a cutting edge formed along one side thereof, a mounting surface, and at least one passageway formed therethrough, said passageway having openings to said flat surface and said mounting surface, said opening to said flat surface being of a greater diameter than said opening in said mounting surface, and extending a predetermined distance into said passageway;
(2) providing a tool bar having a plurality of threaded openings formed therein;
(3) placing said knife blade on said tool bar with said mounting surface in proximate facing relation with said tool bar and having said passageway in said knife blade and at least one of said openings in said tool bar therealigned;
(4) securing said knife blade to said tool bar using screw means having a screw head formed with a diameter that is less than said diameter of said opening to said flat surface and greater than said diameter of said opening to said mounting surface, with said screw head being positioned intermediate said flat surface and said mounting surface;
(5) simultaneously sharpening said knife blade by grinding away a selected portion of said flat surface thereof using said grinding wheel, said selected portion being intermediate said screw head and said grinding wheel so that said screw head is not exposed to said grinding wheel.

5,283,987
SAW BLADE CLAMP UNIT
Benno Iseli, Schotz, Switzerland, assignor to Iseli & Co., A.G., Schotz, Switzerland
Filed May 7, 1992, Ser. No. 880,180
Claims priority, applicatioo United Kingdom, May 7, 1991, 9109801
Int. Cl.[5] B24B *19/00;* **B23D** *63/00*
U.S. Cl. 51—221 BS **17 Claims**



1. A clamping assembly comprising:
a first cylinder,
a ram rod having a first portion movably situated within the first cylinder and a second portion projecting outward from the first cylinder, the first cylinder and ram rod first portion having means for defining a fluid receiving chamber,
an arm fixed to the second portion,
a clamping member fixed to the arm including a second cylinder and a piston within the second cylinder,
a duct connecting the fluid receiving chamber and the second cylinder for allowing fluid pressure to be applied to both, and
means coupling the ram rod and first cylinder for permitting the arm to be rotated between a first operational position and a second retracted position.

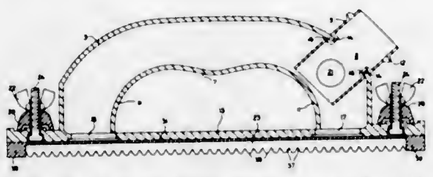
5,283,988
MANUAL VACUUM SANDER
Geoffrey P. Brown, 1923 West 41st Avenue, Vancouver, British Columbia, Canada
Continuation of Ser. No. 674,536, Mar. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 448,871, Dec. 12, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 925,905
Int. Cl.[5] B24D *15/04*
U.S. Cl. 51—392 **3 Claims**

1. A sanding device for attachment to a source of vacuum and sanding a working surface comprising:
a) a thin, planar base member having upper and lower planar surfaces and first and second apertures extending through the thickness dimension thereof at spaced locations from the upper to the lower surface;
b) a hollow handle secured to said upper surface of said base member, said handle having an opening for connecting a source of vacuum, the interior of said handle being in fluid

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communication with both said first and second apertures in said base member and with said opening;

c) an elastomeric supporting pad having first and second apertures formed through the thickness dimension thereof at spaced locations in registry with the locations of said apertures in said base member, said supporting pad comprising an upper planar surface and a lower planar surface, said upper planar surface of the supporting pad being secured directly to said lower surface of said base member, said lower planar surface of the supporting pad comprising a plurality of channels forming a raised outer perimeter having an inner edge and an outer edge and a



plurality of air distribution passageways communicating between said apertures of the supporting pad and said inner edge of said outer perimeter, said channels and said air distribution passageways thereby forming with said working surface a sole negative pressure storage chamber of the device located between the hollow handle and the raised outer perimeter, said outer perimeter having a lower surface which comprises a plurality of passageways provided across said perimeter to communicate between said inner and outer edge, and

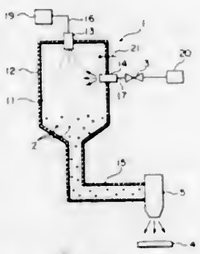
d) means for releasably attaching an abrasive, air-premeable sheet to overlay said supporting pad.

5,283,989

APPARATUS FOR POLISHING AN ARTICLE WITH FROZEN PARTICLES

Akiko Hisasue; Itaru Kanno, and Takaaki Fukumoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1990, Ser. No. 577,536
Claims priority, application Japan, May 30, 1990, 2-138277
Int. Cl.[5] B24R *7/00*
U.S. Cl. 51—410 **3 Claims**



1. A polishing apparatus comprising:

frozen particle producing means for producing superfine frozen particles including

a freezing vessel containing a frozen particle producing chamber,

a coolant supply nozzle mounted on the freezing vessel for spraying a coolant into the frozen particle producing chamber to form a freezing atmosphere in the chamber, and

a liquid supply nozzle mounted on the freezing vessel spaced from the coolant supply nozzle for spraying a liquid into the frozen particle producing chamber so that the liquid thus sprayed mixes with, is cooled by, and is frozen by the coolant to produce superfine frozen particles;

particle hardness adjusting means for adjusting the hardness of the frozen particles produced by the frozen particle producing means by adjusting the temperature in the frozen particle producing chamber at which the frozen particles are formed comprising a flow control valve disposed between the coolant supply nozzle and a coolant source for adjusting the amount of coolant sprayed from the coolant supply nozzle into the frozen particle producing chamber, thereby controlling the temperature at which the frozen particles are formed; and

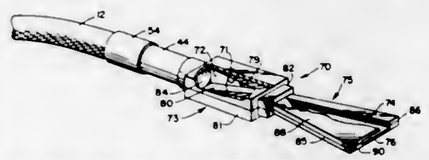
means for ejecting the frozen particles towards an article for polishing the article.

5,283,990

BLAST NOZZLE WITH INLET FLOW STRAIGHTENER

James D. Shank, Jr., Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Nov. 20, 1992, Ser. No. 979,301
Int. Cl.[5] B24C *5/04, 7/00*
U.S. Cl. 51—427 **11 Claims**



1. An apparatus for removing adherent material from a surface with abrasive particles propelled by air, comprising: a blast nozzle for directing abrasive particles to a surface, said blast nozzle having an inlet for receiving a stream of compressed air and entrained abrasive particles and a substantially rectangular outlet for directing said particles to said surface, said blast nozzle containing an inlet passage communicating with said inlet and being formed from a pair of opposing flat top and bottom surfaces which converge from said inlet to an orifice and a pair of opposing substantially flat side surfaces, said inlet passage converging substantially only by means of said pair of opposing flat top and bottom surfaces to said orifice, said blast nozzle further comprising an outlet passage from said orifice to said outlet, said outlet passage being formed from a pair of opposing side surfaces which diverge from said orifice to said outlet and a pair of opposed substantially flat top and bottom surfaces, said outlet passage diverging substantially only by means of said pair of opposing side surfaces, said apparatus further comprising a flow straightening means to homogenize the abrasive particles within the compressed air stream and placed contiguous with and upstream of said inlet of said blast nozzle, said flow straightening means having a longitudinal bore therethrough, said bore having a circular cross-section and a length to diameter ratio of at least about 5, said bore, said blast nozzle inlet, said inlet passage, and said outlet passage defining a substantially straight flow path.

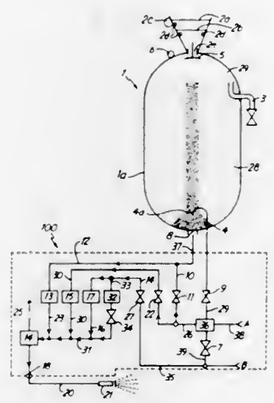
5,283,991

SANDBLASTING METHOD AND A MOIST-SAND BLASTING APPARATUS

Josef Keizers, Konisberger Str. 2-4, D-4280 Borken/Westf., Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 940,913
Int. Cl.[5] B24C *7/00*
U.S. Cl. 51—438 **8 Claims**

1. A moist-sand blasting apparatus having a feed means for the abrasive, a pressure tank into which the feed means opens through a feed opening, a water supply pipe to the pressure tank for producing a water-abrasive mixture, a discharge opening for removing the water-abrasive mixture from the pressure tank, and a hose pipe for feeding the water-abrasive mixture to a blast nozzle, with a connection for compressed air and a connection for water being provided, characterized in that a control unit is provided between the discharge opening and the hose pipe, said control unit having a first switch means for the water-abrasive mixture, a second switch means for water and a third switch means for compressed air, the switch units being separately controllable, and the first switch means for the



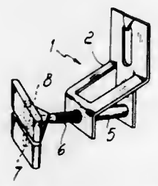
water-abrasive mixture being connected with the discharge opening via a mixture pipe, the second switch means for water being connected with the water connection via a water pipe, and the third switch means for compressed air being connected with the compressed-air connection via a compressed-air pipe, the outputs of the switch units being connected to a fast-stop switch means which is connected with a common pipe which is in turn connected with the hose pipe, and the fast-stop switch means is designed such that it opens when the first to third switch means are closed in order to quickly reduce the pressure in the hose pipe and blast nozzle.

5,283,992

ADAPTER ELEMENT FOR ANCHORING DEVICES FOR WALL COVERING SLABS

Paolo Morassutti, Padua, Italy, assignor to Fischer Italia Sas di Paolo Morassutti & C., Padua, Italy

PCT No. PCT/EP92/00073, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO92/13153, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 15, 1992, Ser. No. 934,434
Claims priority, application Italy, Jan. 18, 1991, PD91 U 000005
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—509 **5 Claims**



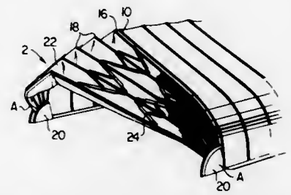
1. Adapter element for dowel-type anchoring devices for wall covering slabs having slotted seats, said adapter element comprising a parallelepipedal flattened body insertable edgeways in a slotted seat of a slab and having a base, a laminar wing extending laterally from said base of said body, a hole for insertion of a dowel of an anchoring device being arranged in a medium region of said body, wherein said dowel insertion hole is a blind hole.

5,283,993

HYDRAULICALLY-OPERATED SCISSOR OPENING FOR STRESSED MEMBRANE STRUCTURE

Philip D. Sprung, Sr., 12219 Lake Louise Way SE., Calgary, Alberta, Canada T2J 2N2

Filed Jun. 3, 1991, Ser. No. 709,713
Int. Cl.[5] E04B *1/346*
U.S. Cl. 52—64 **19 Claims**



1. In a stressed fabric structure of the type having walls and a roof formed of fabric secured to and extending under tension between spaced arched beams having ends supported on a base, a door system comprising

a stationary arched anchor beam having ends supported on the base at one end of the structure;

a plurality of movable arched beams on one side of said anchor beam away from the structure and having supporting ends pivotally secured at the ends of the anchor beam, said movable beams being pivotal along a common radial path about a common pivot axis at the ends, between a raised, open position adjacent to said anchor beam and a closed position in which said movable beams are spaced progressively from said anchor beam to the structure base;

fabric panels secured to and extending between each of said anchor beam and its adjacent movable beam and adjacent pairs of movable beams so as to be under similar tension when said beams are in said closed position; and

mechanical means simultaneously to move said movable beams to said open or closed positions and to maintain said movable beams in said open or closed position or positions intermediate thereto.

5,283,994

LANDSCAPE TIMBER SYSTEM

Douglas A. Callison, Des Moines, Iowa, assignor to Callison & Associates XXI, Inc., Des Moines, Iowa

Filed Jun. 19, 1992, Ser. No. 901,494
Int. Cl.[5] E02D *27/00;* **E04B** *1/344*
U.S. Cl. 52—71 **12 Claims**

1. A modular landscape timber system to serve as a retaining wall for particulate material having a plurality of vertically aligned layers of a number of elongated interconnectable modular members, said system comprising:

(a) each of said members having;

(i) a generally concave socket joint at one end;

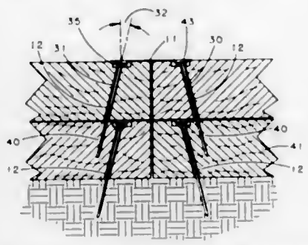
(ii) a generally circular ball joint at the other end, said ball joint designed to partially fit within said socket joint of an adjacent member;

(iii) a pre-drilled through bore located proximately in the middle of each end of said member extending from top to bottom on an incline;

(b) a brace for each adjoining ball joint and socket joint having a pair of holes spaced apart in relation to said bores of the adjoining ends of two adjacent members; and

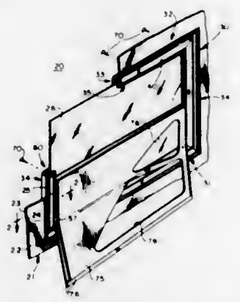
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(c) a pair of spikes for each adjoining ball joint and socket joint designed to be driven through the holes of said brace



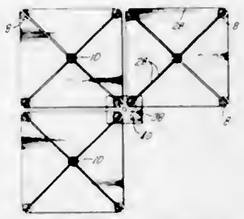
and the bores of said adjoining ends and into a portion of a modular member located in a layer directly beneath said adjacent members.

5,283,995
DOOR LIGHT FRAME ASSEMBLY
Thomas S. Richter, Rock Falls, Ill., assignor to Frantz Manufacturing Company, Sterling, Ill.
Filed May 4, 1992, Ser. No. 877,802
Int. Cl.[5] E06B *1/34*
U.S. Cl. 52—202 **13 Claims**



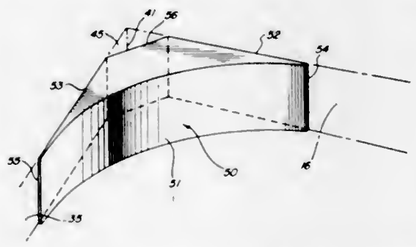
1. Window framing structure or accommodating an associated window panel unit comprising: peripheral frame body means defining an aperture therethrough and shaped and dimensioned to extend around the periphery of an associated window pane unit for secure attachment thereto, said body mean including spaced-apart wall portions cooperating to define therebetween a groove extending around the perimeter of an opening toward said aperture, one of said wall portions being cut away at spaced-apart locations thereon to define access openings to said groove, and a flexible insert shaped and dimensioned to cover said aperture and having a peripheral edge receivable in said groove through said access openings for accommodating movement of said insert to and from a mounted position wherein said insert covers said aperture and it retained around its entire perimeter in said groove solely by said wall portions.

5,283,996
INTERLOCKING GROUND COVER
Raymond T. Myers, 2609 S. El Camino Real, San Clemente, Calif. 92672
Filed Apr. 17, 1992, Ser. No. 870,291
Int. Cl.[5] E04C *2/04*
U.S. Cl. 52—223.6 **11 Claims**



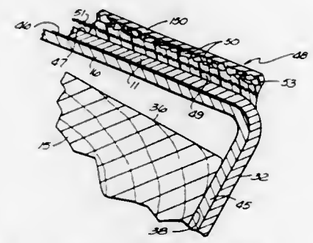
1. A prestressed concrete slab comprising:
a corner post at each corner of the slab, the corner post comprising,
a first cylindrical member having a cylindrical open core;
at least one slot across the diameter of each an upper end and a lower end of the first cylindrical member; and
at least one aperture in the side of the cylindrical member;
a center post at the intersection of the diagonals drawn from the corner posts, the center post comprising:
a second cylindrical member having a cylindrical open core; and
at least two slots across the diameter of each end of the second cylindrical member where a first slot is at a right angle to a second slot;
reinforcing members wrapped around the corner posts and through the slots on an upper end of the corner posts and through the slots on the upper end of the center posts to connect each to the other;
reinforcing members wrapped around the corner posts and through the slots on a lower end of the corner posts and through the slots on the lower end of the center posts to connect each to the other;
a plug inserted into the upper end and the lower end of the cylindrical core of each of the corner and center posts to retain and secure the reinforcing members; and
concrete set and cured around and between the corner posts and around the center posts and the reinforcing members.

5,283,997
CORNER ELEMENT FOR CABINETS
Edward J. Lackie, 250 Flower St., Costa Mesa, Calif. 92627
Filed Jul. 17, 1992, Ser. No. 916,021
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—287.1 **9 Claims**



1. For use in combination with a cabinet structure having convergingly angled base portions, a corner element comprising:
a body having convergingly angled side portions corresponding to said angled base portions and a generally vertical concave generally cylindrically curved surface extending between said angled side portions forming generally vertical intersecting thin edge portions therebetween,
said body being positionable with said side portions contacting said base portions such that said curved surface extends between said base portions.

5,283,998
ROOFING TILE
Slosson B. Jong, 20722 Hunter La., Huntington Beach, Calif. 92646
Continuation-in-part of Ser. No. 327,795, Mar. 23, 1989, Pat. No. 5,060,445. This application Oct. 7, 1991, Ser. No. 772,457
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—515 **18 Claims**



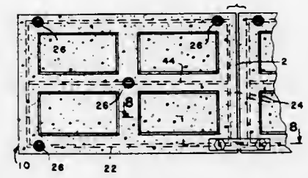
1. A tile for covering a building comprising:
a tile body having an upper surface;
a coating adhered to said upper surface and including acrylic adhesive, at least one fire retardant substance intermixed with said adhesive and selected from the group consisting of sodium carbonate and ammonium phosphate, and light weight concrete particles intermixed with said adhesive and with said at least one fire retardant substance and formed from a composition consisting essentially of the following ingredients in the proportions set forth below, by weight,

portland cement	70 to 94 parts
gypsum	10 to 30 parts
sodium hydroxide	1 to 3 parts
sodium silicate solution (saturated)	150 to 275 parts
particles of a metal or metals selected from the group consisting of aluminum and zinc	¼ 1½ parts
an acidic ingredient	2 to 5 parts; and
water in an amount rendering the concrete composition moldable; and	

decorative particles adhered to said coating.

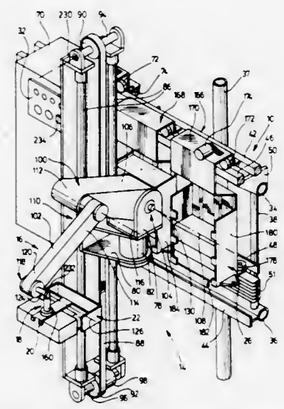
5,283,999
PREFABRICATED PANEL FOR BUILDING CONSTRUCTION
Frank J. Cooney, Lake Worth, and Donald H. Dworkes, Margate, both of Fla., assignors to Novatek International, Inc., Boynton Beach, Fla.
Filed Jun. 14, 1991, Ser. No. 715,494
Int. Cl.[5] E04B *5/14*; E04C *2/28*
U.S. Cl. 52—583 **11 Claims**

1. A precast concrete panel for nesting securely side by side to form a building wall comprising:
a threaded bolt receiving insert imbedded in each corner of said panel;
said insert extending through the entire thickness of said panel;
each said insert having a cylindrical threaded bore therethrough;
said threaded bore having an opening on the top and bottom surfaces of said panel for receipt of a securing bolt;
each said insert having a passageway located transverse to said cylindrical threaded bore of said insert for receiving



a reinforcing bar therethrough so when said panel has hardened, said reinforcing bars securely hold said inserts in position;
the front of said panel having a different aesthetic appearance than the appearance of the back of said panel;
said panel reversibly mountable to a supporting structure so that either the front or the back of said panel can form a part of the exterior wall of a building.

5,284,000
AUTOMATING BRICKLAYING
W. Warren Milne, Toronto; Jacek A Wiercienski, and Pawel Kuzan, both of Oakville, all of Canada, assignors to Redwall Engineering Corp., Toronto, Canada
Filed Nov. 30, 1992, Ser. No. 983,221
Int. Cl.[5] E04G *21/14*
U.S. Cl. 52—749 **35 Claims**



1. Apparatus for use in laying bricks on brick masonry, comprising:
a frame;
a tool assembly comprising a controllable mechanism for gripping a brick and a mechanism for dispensing a charge of mortar, the mortar-dispensing mechanism comprising a form for receiving and shaping the mortar charge, a discharge opening in the form, a gate mechanism having a closed orientation in which the gate mechanism closes the discharge opening and an open orientation in which that gate mechanism releases the shaped charge through the discharge opening, and controllable means for displacing

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the gate mechanism between its open and closed orientations; and,

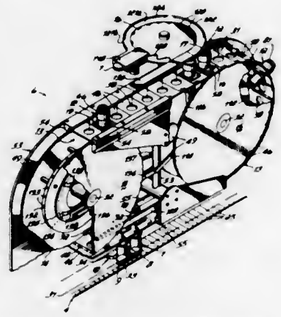
controllable tool-displacing means secured to the frame and to the tool assembly for displacing the tool assembly relative to the frame.

5,284,001

SPINDLE TYPE STRAIGHT LINE CAPPER

Charles S. Ochs, Lancaster, Ohio, assignor to Anchor Hocking Packaging Co., Lancaster, Ohio

Filed Oct. 16, 1992, Ser. No. 962,262
Int. Cl.[5] B67B *3/20;* **B65B** *7/28*
U.S. Cl. 53—307 **36 Claims**



1. A closure holder for a capper, comprising

a closure holder support mountable in a closure conveyor,

a closure holder body mounted to said support,

said body mounting a spindle having a closure-receiving chuck at one end thereof, said spindle mounted for rotation and axial movement in said body,

a rotatable pulley for applying rotation to said spindle,

a cam follower for following a cam,

means coupling said spindle to said cam follower and yieldably biasing said spindle to follow movement of said cam follower to extend said spindle, and

means for moving said spindle toward a retracted position, movement of said cam follower from a starting position yieldably moving said spindle to an extended position, said spindle being rotatable as it is moving toward said extended position.

5,284,002

APPARATUS AND METHOD FOR MAKING A RECLOSABLE STORAGE BAG

Dwight P. Fowler, Middlefield, Conn., and Andrew McG. Martin, Boston, Mass., assignors to Simple Packaging Solutions, Inc., Sausalito, Calif.

Continuation-in-part of Ser. No. 842,845, Feb. 25, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 997,701
Int. Cl.[5] B65B *61/18, 9/06;* **B31B** *23/90, 23/64*
U.S. Cl. 53—412 **37 Claims**

1. A method for forming successive storage bags from an indeterminate length of polyethylene-based film, each storage bag having a removable closure tie, said method comprising the steps of:

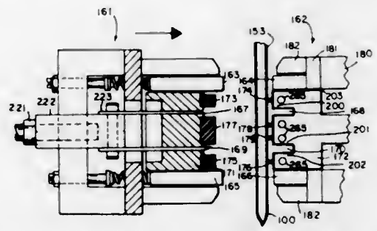
A. forming the film into a wall of an open-ended, hollow structure extending along a first axis,

B. clamping a portion of the hollow structure along a second axis that is transverse to the first axis to form a margin portion in coextensive film wall portions, said margin portion having first and second sections disposed along the second axis and providing a boundary between successive storage bags,

C. perforating the film walls in said margin portion along a perforation line that is parallel to the second axis,

D. severing the film walls in the margin portion along a severance line that is parallel to and spaced from the second axis thereby to form a removable closure tie between the perforation and severance lines and to form an adjacent first sealing area,

E. forming a first seal between the film walls along a line in the first sealing area that is parallel to the second axis and that is coextensive with the first and second sections,



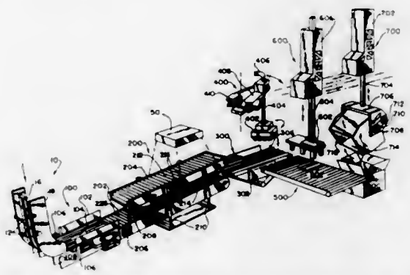
F. forming a second seal between the film walls along a line in the removable closure tie that is parallel to the second axis and that is coextensive with only the first section whereby the film walls in the second section remain unsealed and the unsealed film wall is free of any film structure that fails by delamination.

5,284,003

MACHINE FOR CONDITIONING PRODUCT IN A SEALED BAG

James A. Goodman, Glencoe, and Fred A. Herdrich, Lake Villa, both of Ill., assignors to Prototype Equipment Corporation, Lake Forest, Ill.

Division of Ser. No. 857,837, Mar. 26, 1992, Pat. No. 5,251,422. This application May 4, 1993, Ser. No. 59,431
Int. Cl.[5] B65B *61/24*
U.S. Cl. 53—437 **12 Claims**



1. A method of dispersing product within a sealed bag that has been compacted or segregated which comprises the steps of:

a) depositing the sealed bag on a continuously moving conveyor such that the bag moves with the conveyor;

b) accelerating the speed of the continuously moving conveyor such that the bag accelerates along with the continuously moving conveyor but the product within the bag does not and consequently moves within the bag;

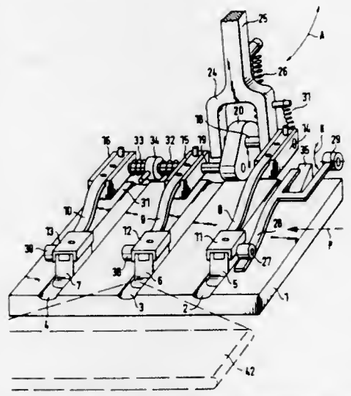
c) decelerating the speed of the continuously moving conveyor such that the bag decelerates along with the continuously moving conveyor but the product within the bag does not and consequently moves within the bag.

5,284,004

INSERTION STATION FOR ENVELOPE-STUFFING APPARATUS OR FOR A SECTION THEREOF OF MAIL HANDLING APPARATUS

Kurt O. Metzler, Friedberg/Hessen, Fed. Rep. of Germany, assignor to Bell & Howell GmbH, Friedberg, Fed. Rep. of Germany

PCT No. PCT/EP92/00830, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/20532, PCT Pub. Date Nov. 26, 1992
PCT Filed Apr. 13, 1992, Ser. No. 969,279
Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4116708
Int. Cl.[5] B65B *35/20, 5/04*
U.S. Cl. 53—569 **17 Claims**



1. An insertion station for envelope-stuffing sections of mail-handling apparatus which operates in accordance with an operating cycle to insert material into envelopes, said insertion station comprising:

a driving lever;

means for swivelling said driving lever according to said operating cycle, said swivelling being back and forth and vertically to a feeding direction of said material to be inserted into said envelopes;

at least one axle member;

a first member mounted to said at least one axle member;

spring means extending between said driving lever, and said first member;

a base plate having grooves therein;

finger-roller guides having front and rear ends and being mounted above said base plate;

insertion ramps located below said rear ends o said finger-roller guides;

inserting arm means having insertion arms having insertion fingers and finger rollers attached thereto;

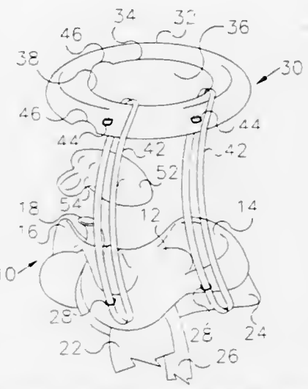
said inserting arm means being connected to said at least one axial member; said fingers being mounted on said insertion arms which are adapted to slide said fingers forwardly in an input direction in said grooves of said base plate; and, said finger rollers being in engagement with said finger-roller guides for movement backwardly and upwardly above said base plate under control of said finger-roller guides, wherein, upon reaching said rear end of said finger-roller guides, said finger rollers fall onto said insertion ramps for the gradual insertion of said insertion fingers into the corresponding grooves of said base plate; and, rotary tension adjustment means connected between said at least one axle and said inserting arm means for reducing bounce of said inserting-arm means.

5,284,005

A CHILD'S OR HANDICAPPED PERSON'S SADDLE RESTRAINT DEVICE

Lisa Jacobi, Rte. 5, Box 5039, Buhl, Id. 83316

Filed Jan. 27, 1993, Ser. No. 11,465
Int. Cl.[5] B68C *1/18*
U.S. Cl. 54—44.2 **2 Claims**



1. A releasable restraint means for securing a rider's lower torso to a saddle, thereby allowing his upper torso free movement, comprising:

(a) a toroidal, doughnut-shaped restraining means for circumventing the rider wherein the doughnut-shaped restraining means is made of a flexible bladder material, said bladder chosen from the group consisting of rubber, plastic, and vinyl; and

(b) attachment means for securing the restraining means to the saddle, further comprising:

(i) multiple "D" rings attached to the restraining means;

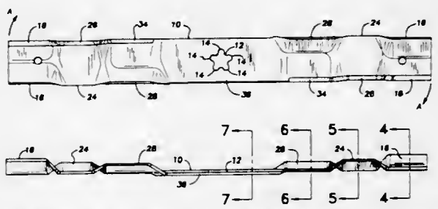
(ii) multiple straps threaded through the "D" rings thereby securing the restraining means tot he saddle.

5,284,006

COMBINATION MOWER BLADE

John D. Sheldon, Orangeburg, S.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 11, 1992, Ser. No. 897,009
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **16 Claims**



1. A rotary mower blade for cutting grass, said comprising a rigid elongate strip having:

a central mounting portion for attaching said blade to rotate about said central mounting portion in a substantially horizontal plane;

means for producing a first grass circulation path comprising a laterally upswept outboard portion including a leading cutting edge;

an intermediate portion including a leading cutting edge,

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said intermediate portion cutting edge being in a plane vertically above said outer portion cutting edge; and

means for producing a second grass circulation path comprising a laterally upswept inboard portion, said intermediate portion providing a common path for said first and second circulation paths.

5,284,007

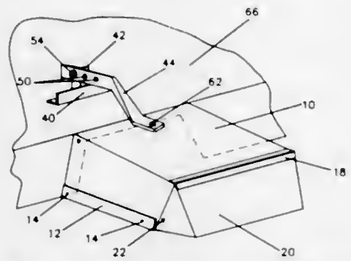
LAWN MOWER MOUNTED LEAF MULCHER

William R. Poe, 1209 Richards Ave., and Kirk Sawall, 1008 Montrose Ave., both of Colorado Springs, Colo. 80906

Filed Feb. 4, 1993, Ser. No. 13,312

Int. Cl.[5] A01D *75/00*

U.S. Cl. 56—320.2 **9 Claims**



1. A leaf mulcher when attached to a rotary lawn mower deck or lawn vacuum discharge opening, slices leaf matter as said leaf matter is forced through said leaf mulcher by means of a blade rotating within said lawn mower deck or said lawn vacuum, thereby mulching said leaf matter below lawn surface after exiting said leaf mulcher comprising:

(a) a removalbly mountable housing over said discharge opening whereby all lawn matter exiting said opening passes through said housing which is enclosed on all sides,

(b) a cutter grid that is inserted in said housing and held in place by a rod,

(c) to said cutter grid are blades attached, spaced and spanning the width of said housing, thereby allowing edges of said blades to align with the path of said exiting leaf matter,

(d) a deflector positioned at outer end of said housing that aims in the downward direction, and

(e) a bracket with a movable and removable lever which attaches said housing to the lawn equipment.

5,284,008

SLIVER DELIVERY SYSTEM IN TEXTILE MACHINES THAT PROCESS SLIVER

Hans Raasch, Mönchengladbach, Fed. Rep. of Germany, assignor to W. Schlfhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

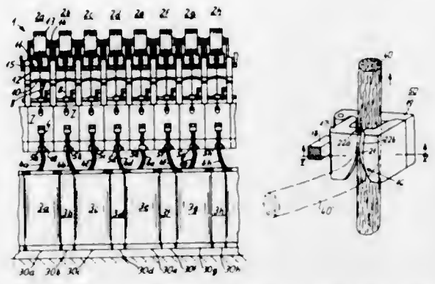
Filed Dec. 2, 1991, Ser. No. 801,645

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 4038214

Int. Cl.[5] D01H *13/18*

U.S. Cl. 57—86 **9 Claims**

1. A textile machine for processing sliver, comprising a plurality of work stations disposed side by side, each of said work stations having a respective fixedly assigned parking place, sliver cans each being disposed on a respective one of said parking places behind one another in at least two rows for simultaneously supplying said respective work stations with sliver, said work stations having sliver delivery means, said work stations including given work stations, and said sliver delivery means of said given work stations each having means for permitting sliver supply to a respective one of said given work stations only from a sliver can located on said fixedly assigned parking place of said respective one given work station and for severing sliver supplied from a sliver can located on another parking place.



5,284,009

FIBER BLENDS FOR IMPROVED CARPET TEXTURE RETENTION

Wae-Hai Tung, Seaford, Del.; Leif R. Simonsen, Salisbury, Md.; Yashavant V. Vinod, Hockessin, Del., and Frank Werny, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 9, 1993, Ser. No. 28,112

Int. Cl.[5] D02G *3/02*

U.S. Cl. 57—239 **7 Claims**

1. A ply-twisted yarn comprising a blend of about 70 to 90% by weight base fibers selected from the group consisting of polyamide fibers, polyester fibers, and fiber mixtures thereof, and about 10 to 30% by weight non-melt compatible polyolefin fibers having a melting point of about 130° to 170° C., wherein the polyolefin fibers are bonded to each other at contact points along the length of the yarn.

5,284,010

METHOD FOR DOFFING A YARN WINDING MACHINE

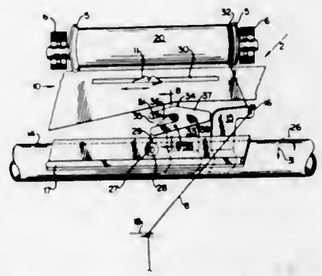
Peter Dammann, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Division of Ser. No. 503,319, Apr. 2, 1990, Pat. No. 5,107,668. This application Mar. 17, 1992, Ser. No. 852,706

Claims priority, applicatioo Fed. Rep. of Germany, Jun. 19, 1989, 3919855; Nov. 2, 1989, 3936486; Feb. 23, 1990, 4005821

Int. Cl.[5] D01H *9/14, 9/00*

U.S. Cl. 57—278 **14 Claims**



1. A method of simultaneously making a plurality of yarn packages, comprising the steps of:

(a) mounting a plurality of empty tubes in laterally adjacent winding stations of a yarn winding machine;

(b) driving said tubes at the same predetermined rotational speed;

(c) initiating a yarn winding cycle at each of said stations by threading a yarn from a yarn supply onto each tube and guiding the yarn in stationary guides positioned at indentical locations relative to said tubes within the axial extent thereof and radially displaced therefrom;

(d) simultaneously releasing the yarns from said guides into traversing means associated with each station;

(e) winding and traversing said yarn at each station for a predetermined time;

(f) simultaneously cutting said yarns by simultaneously moving identically oriented cutting means into the yarn traversing path at each station; and

(g) withdrawing the end of each cut yarn which is connected to said yarn supply, to waste.

5,284,011

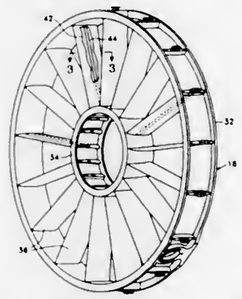
DAMPED TURBINE ENGINE FRAME

John D. Von Benken, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 14, 1992, Ser. No. 990,384

Int. Cl.[5] F02C *7/20;* **F01D** *25/06*

U.S. Cl. 60—39.31 **9 Claims**



1. A frame for a gas turbine engine comprising:

an annular outer casing;

an annular inner hub spaced radially inwardly from said outer casing;

a plurality of circumferentially spaced apart struts extending radially between said casing and said hub and fixedly joined thereto, each of said struts having spaced apart first and second sidewalls defining a strut passage extending radially between said casing and said hub; and

a plurality of elongate dampers, each damper being disposed in a respective one of said strut passages and extending radially between said casing and said hub, and each damper being disposed in an interference fit laterally between said first and second sidewalls for maintaining contact therewith for effecting sliding friction to dampen vibration of said struts;

wherein said damper is configured in the form of a single tube having an internal passage, said tube contacting each of said first and second sidewalls.

5,284,012

NACELLE COOLING AND VENTILATION SYSTEM

Daniel J. Laborie, Cincinnati; Joseph R. Marban, Springdale; Wallace M. Schulze, and Robert J. Baumbick, both of West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 16, 1991, Ser. No. 700,975

Int. Cl.[5] F02C *7/06*

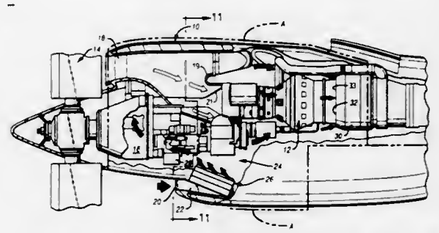
U.S. Cl. 60—39.08 **2 Claims**

1. In a nacelle having a turbine engine in a bay thereof, an engine inlet for supplying combustion air to said engine, an exhaust shroud forming an annular passage with an exhaust conduit of said engine for evacuating air from within said engine bay, a chin scoop for receiving cooling air and an air/oil heat exchanger receiving cooling air from said chin scoop, a cooling and ventilation system comprising:

duct means for discharging air from said heat exchanger into said bay wherein said discharged air cools said engine and is drawn through said annular passage into said engine exhaust, whereby thrust recovery is minimized and overboard dumping of cooling air is minimized;

wherein said annular passage includes an entrance adjacent to and in direct fluid flow communication with said bay;

wherein said bay is substantially enclosed by said nacelle wherein effectively all cooling air entering said bay enters from said chin scoop, wherein the cooling air provided for use in said air/oil heat exchanger and for cooling said



engine is provided with minimum reductions in aerodynamic efficiency;

said cooling and ventilation system further comprising means for regulating air flow from said heat exchanger through said bay such that nacelle cooling and ventilation flows are held to a minimum;

wherein said regulating means includes adjustable louver means mounted on said heat exchanger and temperature sensing means for positioning said louver means to increase or decrease air flow to said nacelle whereby bay temperature of oil cooled by said heat exchanger is maintained within a predetermined range; and

wherein said louver means is oriented to discharge cooling air toward a forward portion of said nacelle before the cooling air is drawn rearwardly through said annular passage.

5,284,013

GAS TURBINE ARRANGEMENT

Jakob Keller, Dottikon, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 10, 1991, Ser. No. 757,192

Claims priority, application European Pat. Off., Sep. 10, 1990, 90117375.7

Int. Cl.[5] F02C *3/02*

U.S. Cl. 60—39.45 **9 Claims**

1. A gas turbine arrangement with at least one gas turbine with at least two stages, having at least one compressor driven by the gas turbine, and having a main combustion chamber and at least one energy exchanger interacting with a separate combustion chamber, which energy exchanger is installed upstream of the gas turbine, wherein

the separate combustion chamber receives a part of the gases generated in the main combustion chamber and is designed as an afterburner chamber for said part of the gases generated in the main combustion chamber;

injection means for the additional injection of at least one of a liquid and a vapor medium are provided in the region of the separate combustion chamber;

the arrangement further including:

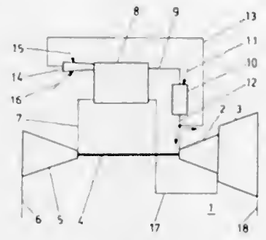
a first conduit or providing air at a high pressure level from

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the energy exchanger to be fed into the main combustion chamber;

a second conduit for feeding driving gas produced in the main combustion chamber into the separate combustion chamber;

a third conduit for feeding driving gas produced in the main combustion chamber to a first stage of the gas turbine;



wherein the separate combustion chamber is located immediately upstream of the energy exchanger at an inlet of the energy exchanger; and

wherein hot gas emerging from the energy exchanger is fed through a fourth conduit into a second stage of the gas turbine.

5,284,014

TURBOJET-RAMJET HYPERSONIC AIRCRAFT ENGINE

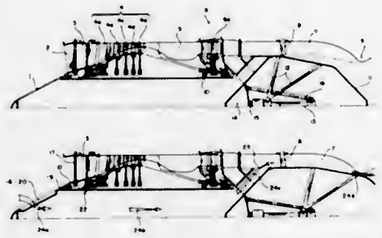
Pascal N. Brossier, Lieusaint; Georges Mazeaud, Yerres, and Pascal C. Wurniesky, Savigny le Temple, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation ("S.N.E.C.M.A."), Paris, France

Filed Oct. 15, 1992, Ser. No. 961,319

Claims priority, application France, Oct. 16, 1991, 91 12732

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—225 **12 Claims**



1. A combination turbojet-ramjet hypersonic aircraft engine having a longitudinal axis, comprising:

a) a turbojet engine portion having an air intake, air compressor means communicating with the air intake, combustion chamber means communicating with the air compressor means, and a turbine wheel driven by gases emanating from the combustion chamber means;

h) a ramjet intake duct having an upstream end and extending generally parallel to the longitudinal axis, the duct located inwardly of the air compressor means, the combustion chamber means and the turbine wheel in a direction toward the longitudinal axis;

c) first flow control means operatively associated with the turbojet engine air intake to selectively open and close the air intake;

d) second flow control means operatively associated with the upstream end of the ramjet intake duct to selectively open and close the ramjet intake duct; and,

e) actuating means operatively interconnecting the first and second flow control means such that, when the first flow control means opens the turbojet engine air intake the second flow control means closes the ramjet intake duct and vice versa.

5,284,015

TURBOJET ENGINE THRUST REVERSER WITH DIRECTIONAL CONTROL

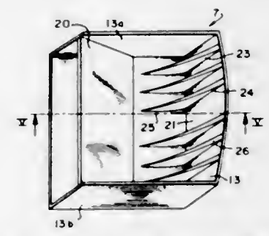
Félix Carimali, and Michel J. L. Legras, both of Le Havre, France, assignors to Societe Hispano-Suiza, Cedex, France

Filed Sep. 9, 1992, Ser. No. 942,218

Claims priority, application France, Sep. 11, 1991, 91 11192

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **3 Claims**



1. A thrust reverser for a turbojet engine assembly, having a longitudinal axis, mounted on an aircraft, the turbojet engine assembly having a housing defining a gas flow duct adapted to allow gases to flow therethrough in an upstream to downstream direction, the thrust reverser comprising:

a) a movable thrust reversing door having an upstream edge portion and opposite lateral sides, the thrust reversing door pivotally attached to the turbojet engine housing so as to be movable between a forward thrust position and a reverse thrust position wherein the movable thrust reversing door redirects at least a portion of the gases in the gas flow duct in a reverse thrust direction; wherein the thrust reversing door comprises:

i) an outer panel defining the upstream edge portion; and

ii) an inner panel having a front edge portion which is movable toward the outer panel as the thrust reversing door moves to its reverse thrust position;

b) a gas flow deflector extending from the upstream edge portion of the thrust reversing door; and

c) a plurality of spaced apart vanes arranged in an array extending between the opposite lateral sides of the thrust reversing door adjacent to the upstream edge portion of the thrust reversing door and extending generally parallel to the longitudinal axis so as to direct the reverse thrust gases in a desired direction, wherein the vanes each have a generally triangular configuration with a first side affixed to the thrust reverser door and a second side affixed to the gas flow detector.

5,284,016

EXHAUST GAS BURNER REACTOR

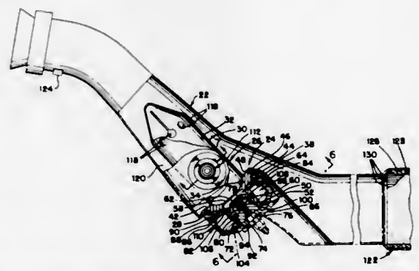
Terrance L. Stark, Washington, Mich.; Joel L. Toof, Carmel, Ind., and Frank Ament, Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1992, Ser. No. 936,468

Int. Cl.[5] F01N *3/02*

U.S. Cl. 60—303 **7 Claims**

1. An exhaust treatment apparatus comprising a burner assembly having a first, fuel/air mixing chamber and a second, primary combustion chamber, said chambers in communication therewith, said fuel/air mixing chamber having means for the introduction of fuel and air thereto, said air supply means comprising a series of air inlets positioned about said fuel/air mixing chamber, said primary combustion chamber comprising an elongated tubular member having a first end in communication with said fuel/air mixing chamber, ignition means operable to ignite fuel and air entering said chamber from said fuel/air mixing chamber, and a second end having outlets for the burning fuel/air mixture, said burner assembly mounted within an exhaust gas conduit such that said primary combustion chamber extends in a substantially coaxial relationship to said conduit with said outlets located upstream from said burner assembly relative to the flow of exhaust gas through said conduit, said burner assembly and said exhaust gas conduit defining an exhaust gas reactor downstream of said outlets, wherein burner output exiting said combustor through said outlets heats exhaust gas flowing through said conduit and said exhaust gas reactor combusts excess fuel in the exhaust gas flowing therethrough.



5,284,017

HYDRAULIC MASTER CYLINDER

Boris Kopacin, Nantere, France, assignor to Automotive Products, plc, Warwickshire, England

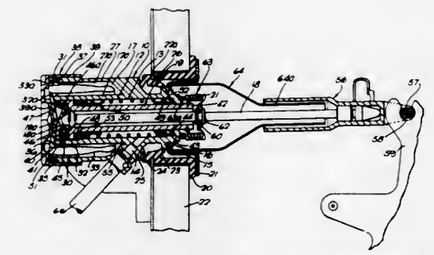
PCT No. PCT/EP91/00058, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO91/11621, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 15, 1991, Ser. No. 910,153

Claims priority, application France, Jan. 24, 1990, 90 00812

Int. Cl.[5] F15B *7/00*; **B60T** *11/26*

U.S. Cl. 60—533 **9 Claims**



1. A hydraulic master cylinder comprising a body formed with a bore, a piston slidable in the bore to discharge hydraulic working fluid from a pressure chamber of the bore and a reservoir extending concentrically around the bore to form an annular fluid chamber which is arranged to communicate with the pressure chamber of the bore when the piston is in an 'at-rest' condition, the reservoir containing a flexible diaphragm which seals fluid in the reservoir from ambient air, and which projects axially into the reservoir annular chamber.

5,284,018

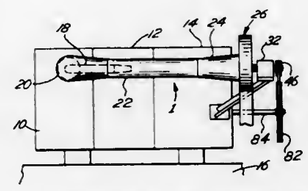
INTERNAL COMBUSTION ENGINE WITH EXHAUST TURBINE

Lamont B. Koontz, deceased, late of Tallahassee, and by Hazel Koontz, executor, 2408 Napoleon Bonaparte, Tallahassee, both of Fla.

Filed Jul. 28, 1992, Ser. No. 920,886

Int. Cl.[5] F02B *41/10*; **F01N** *5/04*

U.S. Cl. 60—614 **2 Claims**



1. An internal combustion engine comprising one or more cylinders and having one or more exhaust pipes for discharging hot exhaust gases at relatively high temperatures and velocity and at relatively low pressures, conduit means having a capacity in excess of that needed for said exhaust gases and enclosing said pipe or pipes, said conduit means having a portion open to outside air, wherein said conduit means has a flared collector portion adjacent to but spaced from said engine so that outside air may flow into said conduit means and around said exhaust pipe, said exhaust pipe in said conduit being downstream from said collector portion including a plurality of openings arranged to permit exhaust gases to exit from said exhaust pipe means in a direction to induce outside air to flow through said conduit means in the same direction as the exhaust flow and to mix said exhaust gases with the outside air at lower temperatures and velocities than the exhaust gases in the aforesaid pipe or pipes, gas turbine means connected to the conduit means to receive said mixed gases, said turbine means including a wheel, bearing means for the wheel, and power outlet means for the wheel, said wheel having a series of buckets, each having an inlet side, an outlet side and a curved intermediate portion connecting said sides and arranged so that gases flowing into the inlet side will be reversed at the intermediate portion and exit at the outlet side, a housing for said turbine wheel, said housing having an inlet portion and means permitting the exit of the gases discharged by the turbine wheel, the inlet portion having a plurality of shaped openings arranged to direct gases flowing into the inlet side of the wheel in a direction to travel along the inner inlet side of the buckets and following the surface contour of the buckets until it exhausts at the outlet side.

5,284,019

DOUBLE DOME, SINGLE ANULAR COMBUSTOR WITH DAISY MIXER

John W. Vdoviak, Marblehead, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 12, 1990, Ser. No. 541,670

Int. Cl.[5] F02G *1/00*

U.S. Cl. 60—733 **1 Claim**

1. A double dome combustor comprising in combination:

an outer annular combustor wall;

an inner annular wall spaced from and concentric with said outer wall, the space between said inner and outer walls comprising a chamber for the combustion of fuels, said chamber having an inlet end and an outlet end;

an outer annular array of combustor swirlers and injectors comprising a dome in the inlet end of said chamber;

an inner annular array of combustor swirlers and injectors comprising a dome in the inlet end of said chamber, said

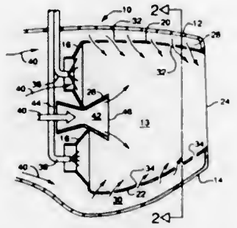
VOL 1159 ISS 2 FE 8 1994 UMI

inner array being spaced from and concentric with said outer array;

a daisy-type mixer in said inlet end intermediate said arrays, said mixer extending axially and radially into said chamber in the areas between each of said domes, said daisy-type mixer comprising an annulus disposed between the arrays, and having a flared outlet which extends axially and radially into the gas streams of adjacent domes in said inner and outer arrays;

means for supplying air to said chamber through said inlet end and through said mixer;

and a plurality of air inlet openings in said inner and outer walls, air from said inlet being supplied through said openings in said walls.



5,284,020

FUEL SUPPLY SYSTEM FOR GAS TURBINE ENGINES

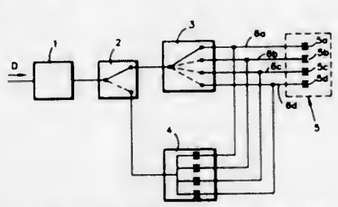
Jean-Marie Brocard, Rubelles; Pierre G. J. Hebert, Crosne, and Thierry N. de Jongh, Bonaeuil-Matours, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation ("S.N.E.C.M.A."), Paris, France

Filed Dec. 14, 1992, Ser. No. 990,058

Claims priority, application France, Dec. 18, 1991, 91 15694

Int. Cl.[5] F02C *7/228*

U.S. Cl. 60—739 **13 Claims**



1. A system for supplying fuel to a plurality of fuel injectors of a gas turbine engine wherein the fuel injectors are interconnected into a plurality of groups of fuel injectors, the system including a source of fuel and comprising:

a) first fuel distribution means operatively associated with the plurality of fuel injectors so as to sequentially supply fuel to each of the plurality of groups of fuel injectors when the fuel flow is below a predetermined threshold value such that the flow rate from the fuel source is generally constant, wherein the fuel distribution means comprises:

i) a generally cylindrical casing having a central axis and defining a plurality of axially elongated slits circumferentially spaced apart around the casing, and further defining a fuel inlet chamber;

ii) a generally cylindrical feed slide valve located in the generally cylindrical casing, the feed slide valve defining at least one aperture communicating with the fuel inlet chamber;

iii) conduit means operatively connecting each slit to a group of fuel injectors; and,

iv) rotating means to rotate the feed slide valve about a rotational axis relative to the casing such that, as the slide valve rotates, the at least one aperture is sequentially in communication alignment with the plurality of slits so as to allow fuel to pass from the fuel inlet chamber into the conduit means;

b) second fuel distribution means operatively associated with the plurality of fuel injectors so as to supply fuel to all of the plurality of fuel injectors when the fuel flow exceeds a predetermined threshold value; and,

c) fuel transfer means operatively associated with the first and second fuel distribution means so as to direct fuel from the fuel source to the first and second fuel distribution means as a function of the fuel flow.

5,284,021

Patent Not Issued For This Number

5,284,022

STIRLING CYCLE TYPE COLD AIR GENERATING DEVICE

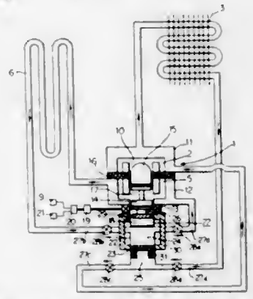
Woo S. Chung, Seoul, Rep. of Korea, assignor to Goldstar Co. Ltd., Rep. of Korea

Filed Oct. 9, 1992, Ser. No. 958,948

Claims priority, application Rep. of Korea, Oct. 10, 1991, 17822/1991

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **8 Claims**



1. A Stirling cycle type cold air generating device comprising:

a Stirling module having a module cylinder and a module piston disposed in the module cylinder to be vertically reciprocated;

a heat-absorbing heat exchanger being communicated with the Stirling module;

a brine serving as an operating medium for transferring cold air to the heat-absorbing heat exchanger;

a heat-discharging heat exchanger being communicated with the Stirling module;

a heat transfer medium for transferring heat to the heat-discharging heat exchanger;

a pump cylinder disposed beneath the module cylinder and isolated therefrom;

a pump piston disposed in the pump cylinder to be vertically reciprocated, the pump piston defining an upper pumping chamber for pumping the heat transfer medium and a lower pumping chamber for pumping the brine in the interior of the pump cylinder;

a magnetic pole piston extending downwardly from a lower end of the module piston, the magnetic pole piston being moved integrally with the module piston;

connecting means adapted to connect operatively magnetically the pump piston and the magnetic pole piston with each other;

first communicating means adapted to communicate selectively the upper pumping chamber with the Stirling module and the heat-absorbing heat exchanger; and

second communicating means adapted to communicate selectively the lower pumping chamber with the Stirling module and the heat-discharging heat exchanger.

5,284,023

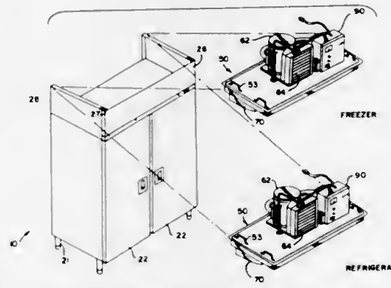
REACH-IN COOLER WITH WINDOW

Robert K. Silva, Two Rivers, and Kenneth L. Kaiser, Manitowoc, both of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Division of Ser. No. 882,462, May 12, 1992, which is a continuation-in-part of Ser. No. 589,929, Sep. 28, 1990, Pat. No. 5,199,273. This application May 27, 1993, Ser. No. 68,402

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—77 **9 Claims**



6. A method of assembling a reach-in cooler that can be used as both a refrigerant and a freezer, comprising the following steps:

a) providing an insulated cabinet member with walls having at least one door opening and a floor completing the cabinet body, but with an open roof area, the cabinet member constructed to be useable as both a refrigerator cabinet and a freezer cabinet;

b) providing two insulated roof members configured to close the open roof area of the cabinet, the first roof member comprising a refrigeration system sized to maintain refrigeration temperatures in the insulated cabinet during normal commercial use and the second roof member comprising a refrigeration system sized to maintain freezing temperatures in the insulated cabinet during normal commercial use;

c) selecting one of the two insulated roof members to close off the open roof area of the cabinet to form a refrigerator or a freezer reach-in cooler; and

d) positioning roof member selected in step c) to close off the open roof area of the cabinet.

5,284,024

METHOD OF DETECTING SHORT CYCLING OF AIR DISCHARGED BY A REFRIGERATION UNIT

Jay L. Hanson; Gerald J. Ladendorf, both of Bloomington, and Doyle G. Herrig, Elko, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 25, 1993, Ser. No. 23,020

Int. Cl.[5] F25B *49/00*

U.S. Cl. 62—126 **17 Claims**

1. A method of monitoring the operation of a refrigeration unit which includes a return air inlet and a discharge air outlet in air flow communication with a conditioned space, with the refrigeration unit conditioning air returning from the conditioned space via the air inlet and discharging conditioned air back into the conditioned space via the discharge air outlet, characterized by the steps of:

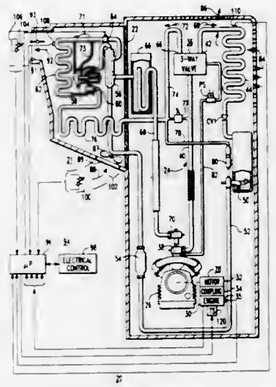
detecting a short cycling condition wherein air from the discharge air outlet returns prematurely to the return air inlet,

said detecting step including the steps of:

measuring the temperatures DA and RA of the discharge air and return air, respectively,

detecting changes of the discharge air temperature DA and the return air temperature RA over a predetermined period of time,

comparing a detected change of the temperature DA of the discharge air with a first constant,



comparing a detected change of the temperature RA of the return air with a second constant,

and indicating that air flow in the conditioned space is proper in response to predetermined results of the comparison steps.

5,284,025

AIR CONDITIONING APPARATUS FOR AN ELECTRICALLY-POWERED MOTOR VEHICLE

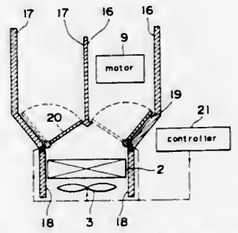
Minoru Kajitani, and Norio Yoshida, both of Moriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 17, 1992, Ser. No. 900,939

Claims priority, application Japan, Jun. 17, 1991, 3-144466; Feb. 26, 1992, 4-39114

Int. Cl.[5] F25B *13/00*

U.S. Cl. 62—160 **3 Claims**



1. An air conditioning apparatus for an electrically-powered motor vehicle comprising:

a heat pump heating and cooling system including a compressor, an outside air heat exchanger, an outside air heat exchanger fan, an expansion valve, an interior air heat exchanger, an interior air heat exchanger fan, and a four-way selector valve;

a first air duct enclosing a drive shaft motor for ducting air that has passed said drive shaft motor;

a second air duct for direct ducting of outside air; and

a switching means for switching between said two air ducts

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provided at an air intake of said outside air heat exchanger.

5,284,026

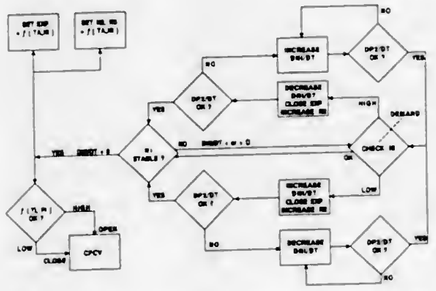
CONTROL SYSTEM FOR AN AIR CONDITIONING/REFRIGERATION SYSTEM

James W. Powell, Guilford, Conn., assignor to ECOAIR Corporation, New Haven, Conn.

Division of Ser. No. 845,675, Mar. 4, 1992, Pat. No. 5,203,179. This application Feb. 26, 1993, Ser. No. 23,690

Int. Cl.[5] F25B *1/00*

U.S. Cl. 62—209 **7 Claims**



1. A method of controlling a refrigeration system having a working fluid and, in sequence, an evaporator, a variable speed centrifugal compressor, a condenser and an expansion valve, comprising:

a) accelerating rotation of said compressor;

b) measuring the acceleration of said compressor;

c) measuring the temperature or pressure of the working fluid at said compressor;

d) determining rate of change of the temperature or pressure of said working fluid during any acceleration of said compressor;

e) decreasing acceleration of said compressor if said rate of change of the temperature or pressure of said working fluid indicates surging of said compressor; and

f) repeating steps (b) through (e) until said compressor stops accelerating.

5,284,027

AIR CONDITIONING SYSTEMS

Lendell Martin, Sr., 7037 Brittmoore, Houston, Tex. 77041

Continuation-in-part of Ser. No. 787,392, Nov. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 606,896, Oct. 31, 1990, Pat. No. 5,062,280. This application Nov. 3, 1992, Ser. No. 971,524

Int. Cl.[5] F25D *21/14*

U.S. Cl. 62—291 **8 Claims**

1. A device for conditioning air, the device comprising

an enclosure having an interior and the enclosure having sides made of an insulative material and having a top metal member and a bottom metal member over the insulative material and an air conditioning coil with a plurality of vanes disposed in the enclosure,

a first opening in the enclosure through which unconditioned air flows to the coil,

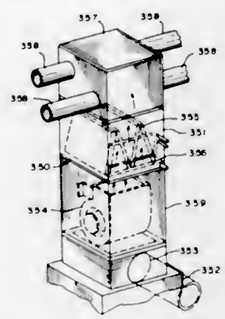
air conducting means connected to the enclosure for conducting conditioned air from the enclosure, the air-conducting means comprising a plurality of at least two air-conducting conduits,

at least two second openings in the enclosure to which flows air conditioned by the coil and from which air flows to the air-conducting means, one second opening corresponding to each of the at least two air-conducting conduits, the air flowing only once through the coil,

the coil's vanes directing air in the general direction of the at least two second openings,

a customizable connection member for connecting the first opening to an outlet of an air-conveying apparatus which conducts the unconditioned air to the first opening,

the connection member comprising metal bracing members movably positionable about and securable about the first



opening for accommodating the outlet of the air-conveying apparatus,

a blower for moving unconditioned air to the first opening of the enclosure,

the blower mounted adjacent to the air-conveying apparatus which conducts the unconditioned air to the second openings.

5,284,028

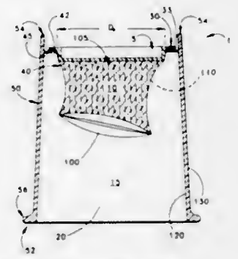
ICE HOLDER INCORPORATED WITHIN A BEVERAGE CONTAINER

Wilco R. Stuhmer, 4688 Namba Way, Salt Lake City, Utah 84107

Filed Dec. 24, 1992, Ser. No. 996,624

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—457.3 **47 Claims**



1. A beverage container comprising:

a. a container having a circumferential sidewall and a base which define an interior beverage chamber;

b. said base of said container having an opening, where the opening has an opening rim and a flared out rim ridge which is proximal to the periphery of the opening at said base of said container;

c. an impermeable, flexible and stretchable polymeric film pouch forming an interior chamber having an opening at one end;

d. said polymeric film pouch extending into said interior beverage chamber of said container through the opening of said base and retained thereby through the opening in the flexible and stretchable film which extends over the opening rim and said flared out rim ridge and is attached thereto by an attaching means; and

e. a removable cap member which adapts to the opening at said base for sealing purposes thereof by plugging the opening at said base of said container and squeezing the opening of said polymeric film pouch against the opening rim and said rim ridge;

f. whereby prior to plugging said removable cap member, said polymeric film pouch is filled with ice and is then sealed, a cool liquid beverage is poured into said container and the beverage retains its cool temperature through heat transfer with the ice in said polymeric film pouch.

5,284,029

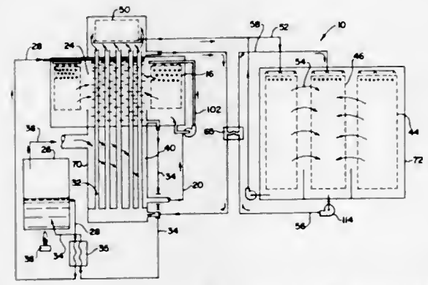
TRIPLE EFFECT ABSORPTION HEAT EXCHANGER COMBINING SECOND CYCLE GENERATOR AND FIRST CYCLE ABSORBER

Edward F. Keuper, La Crosse, Wis., and William J. Plzak, La Crescent, Minn., assignors to Gas Research Institute, Chicago, Ill.

Filed Sep. 15, 1992, Ser. No. 945,021

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—476 **26 Claims**



1. Apparatus for transferring heat from a heat load to a heat sink, said apparatus comprising:

A. a first loop comprising a first generator, a first condenser, a first evaporator, and a first absorber operatively linked together; and

B. a second loop comprising a second generator, a second condenser, a second evaporator, and a second absorber operatively linked together;

wherein said first absorber and said second generator are in direct heat exchange relation.

5,284,030

FLAT KNITTING MACHINE STOP MOTION ASSEMBLY

Franz Schmid, Bodelshausen; Jurgen Ploppa, Pfullingen, and Heinz Wilhelm, Mossingen, all of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Fed. Rep. of Germany

Filed Sep. 17, 1992, Ser. No. 945,321

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 4130816

Int. Cl.[5] D04B *7/00*

U.S. Cl. 66—60 R **5 Claims**

1. A device for switching on, accelerating and switching off a carriage drive of a flat knitting machine comprising:

a manually movable handlebar oriented parallel to a needle bed of said flat knitting machine;

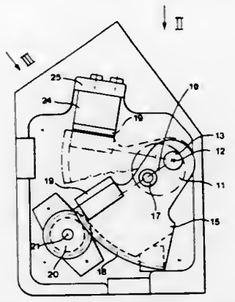
a potentiometer for controlling speed of said carriage device;

means, in communication with said potentiometer, for pivoting said handlebar between a lower end position and an upper end position;

means for mounting said pivoting means to a wall of said flat knitting machine such that a pivot axis of said handlebar is offset from a longitudinal axis of said handlebar;

a stationarily positioned electromagnet; and

an armature located at an end of said pivoting means, wherein when said electromagnet is excited, said armature remains in contact with said electromagnet, retaining said handlebar in said upper end position, and, when said handlebar is struck, said handlebar is no longer retained in said upper end position and said pivoting means pivots into said lower end position, setting said potentiometer to zero, thus switching off said carriage drive.



5,284,031

KNIT PLY FABRIC WITH CONNECTING LAYER

Thomas Stoll, Reutlingen, and Wolfgang Rempp, D-Sonnenbühl, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 667,226, Mar. 11, 1991. This application Sep. 21, 1992, Ser. No. 947,950

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1990, 4008057

Int. Cl.[5] D04B *1/00*

U.S. Cl. 66—64 **2 Claims**



1. A method of producing a fabric structure comprising first and second fabric webs coupled together in stages, using a flat-bar knitting machine comprising first and second needle beds and a transfer device, wherein the first and second fabric webs are coupled together with spacing therebetween by at least a third fabric web, by knitted stitches, and wherein said method comprises:

(a) knitting a course of stitches in the first needle bed of the knitting machine with every second needle of the first bed;

(b) knitting a course of stitches in the second needle bed of the knitting machine with every second needle of the second bed;

(c) repeating step (a) and (b) to form sections of a desired length of the first and second fabric webs;

(d) forming a tucking course with every needle of the first needle bed;

(e) forming a course of stitches with every second needle of the first needle bed not used in step (a) to thus start said third fabric web;

(f) repeating step (e) to produce a desired length of said third fabric web;

(g) transferring stitches formed in the first needle bed on every second needle onto needles of the second needle bed to thus connect said desired length of third fabric web to said second fabric web and thereby produce a three fabric web structure; and

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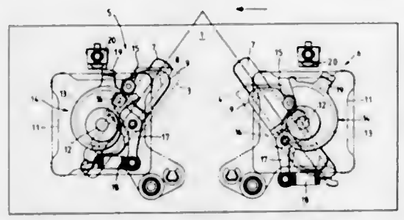
(h) repeating steps (a) to (g) until a desired overall length of said three fabric web structure is produced.

5,284,032

STITCH CONTROL MECHANISM FOR A FLAT KNITTING MACHINE

Masahiro Shima, Wakayama, Japan, assignor to Shima Seiki Mfg. Ltd., Wakayama, Japan

Filed Mar. 26, 1991, Ser. No. 675,416
Claims priority, application Japan, Apr. 5, 1990, 2-91158
Int. Cl.[5] D04B *15/36*
U.S. Cl. 66—77 **2 Claims**



1. A stitch control mechanism for a flat knitting machine comprising:
- a carriage with a base plate having a slot therein;
- a control cam having a periphery and two sides and rotatably mounted on the base plate about an axis;
- a spiral cam on one side of said control cam having two opposed surfaces parallel to the rotational axis of said control cam extending about a varying radius to define a spiral path;
- a stitch cam having a member received in the slot of the base plate so that said stitch cam is guided for reciprocal movement in the slot of the base plate;
- a stitch cam holding plate supported on said stitch cam for reciprocal movement therewith;
- a pair of cam rollers supported on said stitch cam holding plate, each said cam roller engaging a surface of said stitch cam,
- a swing arm pivotally mounted to said stitch cam holding plate;
- a first cam roller of said pair of cam rollers being directly supported on said stitch cam holding plate and a second cam roller of said pair of cam rollers being supported at one end of said swing arm; and
- a spring connected between said stitch cam holding plate and the other end of said swing arm to bias said second cam roller against said spiral cam, wherein

said spiral cam extends between said cam rollers such that as said control cam rotates, said stitch cam holding plate moves in a direction perpendicular to rotational axis of said control cam by the engagement of said rollers with said spiral cam strip.

5,284,033

SINGLE-CYLINDER CIRCULAR KNITTING MACHINE WITH ANTI-TWIST DEVICE, IN PARTICULAR FOR MANUFACTURING SOCKS AND STOCKINGS

Francesco Lonati; Tiberio Lonati; Ettore Lonati, and Fausto Lonati, all of Brescia, Italy, assignors to Lonati S.r.l., Monza, Italy

Filed Mar. 6, 1992, Ser. No. 846,507
Claims priority, application Italy, Mar. 14, 1991, M191A-000691; Dec. 5, 1991, M191A-003258
Int. Cl.[5] D04B *15/92*
U.S. Cl. 66—149 S **15 Claims**

1. Single-cylinder circular machine with anti-twist device, for manufacturing socks and stockings, comprising:

a plurality of needles;

a needle cylinder having an upper end and a needle cylinder axis, said needle cylinder being rotatable about said needle cylinder axis and supporting said plurality of needles proximate to said upper end;

a perforated region extending around said needle cylinder axis and being spaced downward from said upper end of said needle cylinder;

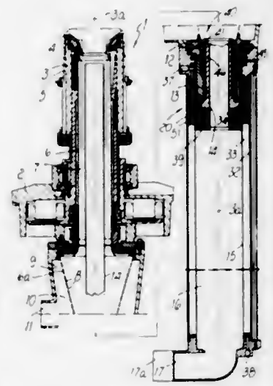
a suction device;

a cavity having an inner wall, said cavity being defined substantially coaxially in said needle cylinder and open at said upper end of said needle cylinder, means for connecting said cavity through said perforated region to said suction device for retaining a product being formed against said inner wall of said cavity;

an inner tubular body having a tubular body upper end and an outer surface, said inner tubular body being accommodated in said cavity substantially coaxially to said needle cylinder and controllably connectable to said suction device for aspirating a finished product through said inner tubular body;

means for controllably axially moving said inner tubular body along said cavity between a first position, whereat said tubular body upper end is proximate to said upper end of said needle cylinder, and a second position, whereat said tubular body upper end is located proximate to said perforated region;

an inner surface defined by said needle cylinder;



an outer tubular body fixed to said inner surface of said needle cylinder and having said cavity defined therein;

a plurality of holes traversing a portion of said outer tubular body spaced downward from said upper end of said needle cylinder and constituting said perforated region;

an annular chamber extending around said perforated region and being controllably connectable to said suction device;

a bottom closing said outer tubular body, and being coaxially traversed by said inner tubular body, and;

auxiliary means for disengaging a finished product from said tubular body upper end when in said second position,

wherein said inner tubular body is connected to said outer tubular body in rotation about said needle cylinder axis and axially slideably supported by said bottom, and;

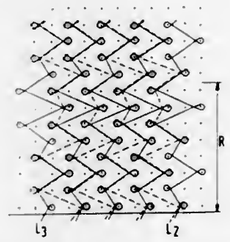
wherein said auxiliary means for disengaging the product comprise an auxiliary tubular body arranged coaxially around said inner tubular body and being axially slideably supported by said bottom of said outer tubular body, said auxiliary tubular body having an upper edge, said upper edge being in sliding contact with said outer surface of said inner tubular body and controllably movable from an inoperative position, whereat said upper edge is located proximate to said bottom of said outer tubular body, to an operative position, whereat said upper edge is located above said upper end of said inner tubular body in said second position in order to aid aspiration of a product into said inner tubular body.

5,284,034

PATTERNED FABRIC AND MACHINE AND METHOD FOR MAKING THE FABRIC

Joachim Weis, Obertshausen, and Gerhard Bergmann, Heusenstamm, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,269
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138255
Int. Cl.[5] D04B *21/14*
U.S. Cl. 66—195 **14 Claims**



1. Warp knitted fabric having both in the weft as well as the warp direction differently structured areas comprising:
- at least one ground thread system for the formation of a fabric ground; and
- a pattern thread system including at least a pair of threads which are stitched to change successively in the warp direction between (a) a plurality of basis regions in 2 & 1 stitch, and (b) a plurality of pattern areas in a sequence of different laps, selected from the group consisting of pillar, tricot, 2 & 1, satin, and velvet stitches, said basis regions and said pattern areas and their laps changing periodically according to a predetermined schedule to make average periodic thread consumption due to successive underlap motions substantially equal to thread consumption due to underlap motion in a 2 & 1 lap.

5,284,035

APPARATUS FOR MONITORING THE APPLICATION OF DYE TO TEXTILE MATERIAL

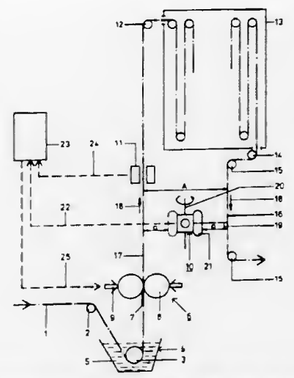
Manfred Pabst, Cologne, and Kurt van Wersch, Wegberg, both of Fed. Rep. of Germany, assignors to A. Monforts GmbH & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,451
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140600
Int. Cl.[5] D06B *23/26*
U.S. Cl. 68—13 R **5 Claims**

1. Apparatus for controlling a dye treatment process in which a web of textile material is sequentially traveled through a dye application location at which dye is applied to the web, a moisture reduction location at which dye is removed from the web by a device for selectively removing moisture, and a drying location at which the dye treated web is subjected to a further treatment, comprising:

means for detecting a color characteristic of the web, the color characteristic detecting means being operable in an initial detecting position in which it detects a color characteristic of the web as the web travels between the dye application location and the further treatment location, and in another detecting position at which it detects a color characteristic of the web after the web has exited the further treatment location; and

means, operatively connected to the device for selectively removing moisture from the web and the color characteristic detecting means, for controlling the device for selectively removing moisture from the web in response to detection of the web by the color characteristic detecting means in both its initial detecting position and its another detecting position.

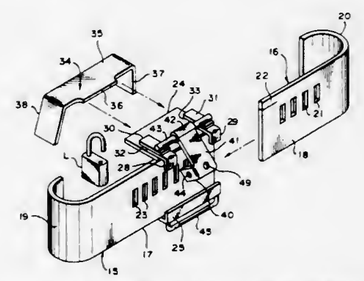


5,284,036

TAMPER-RESISTANT SECURITY LOCK FOR CARGO CONTAINER DOORS

Nathan B. Rosenbaum, 6401 SW. 82 St., Miami, Fla. 33143

Filed Dec. 2, 1992, Ser. No. 984,378
Int. Cl.[5] B65D *45/16*
U.S. Cl. 70—14 **12 Claims**



1. A security lock assembly for preventing unauthorized opening of doors to containers having lockrods for locking the doors closed, and lock arms connected to the lockrods for actuating the lockrods, wherein at least one door has an edge movable with respect to another member to form a door opening, comprising:
- a pair of adjustably telescopically interengaged hasps having means on outer ends thereof for connection with a pair of lockrods spaced on opposite sides of the door opening to prevent movement apart of said lockrods and thus prevent opening of said door in an adjusted position of said hasps;
- means for locking said hasps in said adjusted position to thereby prevent disengagement of said hasps from said lockrods; and
- an elongate guard secured on one end of one of the hasps in a position to extend into covering relationship to at least a portion of a lock arm to prevent actuation of the lock arm

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and thus prevent operation of an associated lockrod when the security lock assembly is in operative position on a pair of spaced lockrods.

5,284,037

AUTOMOTILE STEERING LOCK

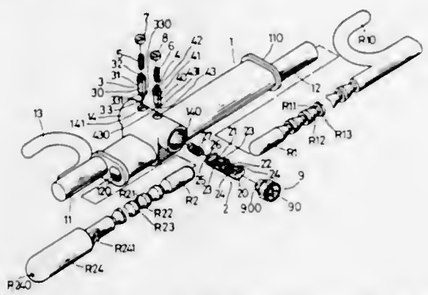
Shih-Yu Chen, and Song-Ming Wang, both of Tainan, Taiwan, assignors to All Ship Enterprise Co., Ltd., Tainan, Taiwan

Continuation of Ser. No. 594,982, Oct. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 536,742, Jun. 12, 1990, Pat. No. 5,022,246. This application Oct. 28, 1992, Ser. No. 967,859

The portion of the term of this patent subsequent to Jun. 11, 2006, has been disclaimed.

Int. Cl.[5] **B60R** *25/02*

U.S. Cl. 70—209 **1 Claim**



1. An antitheft device for attachment to a steering wheel of an automobile, comprising:

a longitudinally extended integrally formed housing, said housing including:

a. a first tubular member extending longitudinally, said first tubular member having a bore extending axially a predetermined distance from an opening formed in a first end of said first tubular member to an opposing second end;

b. a second tuhular member transversely displaced from said first tubular member extending longitudinally in a direction parallel to said first tubular member, said second tubular member having a bore extending axially a predetermined distance from an opening formed in a first end of said second tubular member to an opposing second end;

c. a substantially L-shaped member coupled to said first tubular member adjacent said second end of said first tubular member and extending therefrom, said L-shaped member defining a hook for engagement with a first rim portion of a steering wheel; and,

d. a third tubular member extending transverse said longitudinal direction of said first and second tubular members, said third tubular member being cylindrically shaped is formed on an upper surface of said first and second tubular members, said third tubular member having a transversely extending cylindrical passage formed therein, said third tubular member having (1) a first through opening extending between said passage and said bore formed in said first tubular member, and (2) a second through opening extending between said passage and said bore formed in said second tubular member;

a first rod member dimensioned for telescopic receipt within said bore formed in said first tubular member, said first rod member having a plurality of annular grooves formed in axially spaced relation on one end thereof, and having a substantially U-shaped portion formed on an opposing end for engagement with a second rim portion of a steering wheel, each of said annular grooves having an inclined side wall extending from a vertical sidewall of said annular groove;

a second rod member dimensioned for telescopic receipt within said bore formed in said second tubular member, said second rod member having a plurality of annular grooves formed in axially spaced relation on a first end thereof, each of said annular grooves having an inclined side wall extending from a vertical sidewall of said annular groove, said second rod member having a manually operable tear gas cartridge coupled to a second end thereof; and,

locking means disposed within said passage of said third tubular member for releasably coupling said first and second rod members to said housing, said locking means including:

a. a pair of spring biased rod-like locating members, each of said locating members being disposed in a respective one of said first and second through openings formed in said third tubular member, each of said locating members having an insert end for respective engagement with one of said plurality of annular grooves of one said respective first or second rod members;

b. an actuating member disposed within said cylindrical passage of said third tubular member, said actuating member having (1) an arcuate front wall, (2) two pairs of upstanding ribs, each of said pairs of ribs being disposed in spaced longitudinal relation, each of said ribs of one of said two pairs of ribs having an inclined camming surface, each of said locating members having a pair of side surface portions disposed in mating relationship with respective inclined camming surfaces of a respective pair of said ribs, and (3) a pair of slotted through openings, each of said slotted through openings being disposed between a respective one of said pairs of ribs, each of said slotted through openings being aligned with a respective one of said first or second through openings for passage of a portion of a respective one of said pair of locating members, said locating members being vertically displaced responsive to lateral displacement of said actuating member; and,

c. a lock disposed within said cylindrical passage of said third tubular member and having an inclined end surface abutting said arcuate front wall of said actuating member for laterally displacing said actuating member responsive to a rotative actuation of said lock.

5,284,038

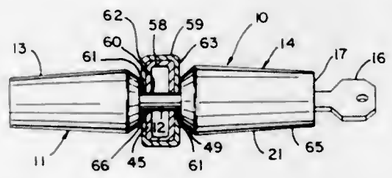
COUPLER LOCKING DEVICE

Clyde T. Johnson, P.O. Drawer 100, Escanaba, Mich. 49829

Filed Oct. 3, 1990, Ser. No. 592,130

Int. Cl.[5] **F16B** *41/00*

U.S. Cl. 70—232 **16 Claims**



1. A locking device comprising:

a) a stud including a first threaded surface on a forward section of the stud and at least one flat face cut through the first threaded surface forming a plane parallel to the axial direction of the stud; and

b) a knob which locks over the forward section of the stud, including

i) a casing having an inner surface which defines a hole, and at least one flat surface extending axially through an extreme rearward section of the inner casing surface, such that when the knob is placed over the forward section of the stud, each flat surface on the casing receives the corresponding flat face of the stud to prevent rotation of the casing with respect to the stud;

ii) a tumbler housing which is mounted for rotation in an axially fixed position within the forward section of the casing hole, and means for selectively locking the tumbler housing to prevent rotation of the housing within the casing while permitting rotation when unlocked; and

iii) a second threaded surface in a rearward end of the tumbler housing such that when the knob is placed over the forward section of the stud, rotation of the tumbler housing in one direction causes the second threaded surface to engage the first threaded surface of the stud so that the forward section of the stud is drawn into the rearward section of the casing hole.

5,284,039

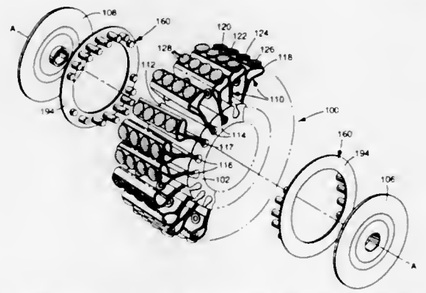
SPACER FOR ROTARY PEENING APPARATUS

Donald R. Torgerson, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 8,601

Int. Cl.[5] **B21J** *1/02*, **B24C** *3/00*

U.S. Cl. 72—53 **16 Claims**



1. A spacer ring for a rotary peening apparatus including a hub having a generally cylindrical peripheral surface comprising means for releasably retaining a retaining end of each of a plurality of peening flaps, the peripheral surface bounded by opposed hub ends, the spacer comprising:

(a) a base member; and

(b) a series of circumferentially spaced pin members of at least two different lengths attached to and projecting from said base member, said pin members adapted for cooperative engagement with said retaining means to position said peening flaps with respect to the hub ends of the hub.

5,284,040

TUBE BENDING APPARATUS WITH STOP AND ABUTMENT MEANS TO SET BEND ANGLE

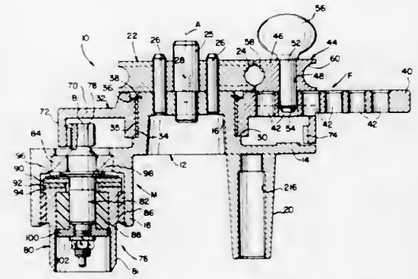
Valere H. J. Beelen, St. Trond, Belgium, and David L. Machovina, Elyria, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 9, 1992, Ser. No. 987,798

Int. Cl.[5] **B21D** *7/024*

U.S. Cl. 72—157 **58 Claims**

1. In a tube bender comprising mandrel means providing a bending groove extending about a bend axis, forming means, means supporting said mandrel means and forming means for relative angular displacement about said bend axis, whereby a tube between said mandrel means and said forming means is urged into said bending groove during said relative angular displacement, means to relatively displace said mandrel means and said forming means, and means for limiting said relative angular displacement during a bending operation, the improvement comprising: said means for limiting relative angular displacement including means providing a plurality of abutment surfaces on one of said mandrel means and forming means angularly spaced apart relative to said bend axis, stop means on the other of said mandrel means and forming means adjustable to selectively engage any one of said plurality of abutment surfaces, and means to preclude relative angular displacement between said mandrel means and said forming means immediately upon engagement of said stop means with said any one of said abutment surfaces.



5,284,041

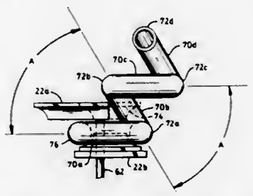
METHOD FOR BENDING TUBES USING SPLIT DIE

David M. Christensen, Amana; Eugene H. Schuchert, Iowa City, and Richard N. Walker, Victor, all of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed May 10, 1993, Ser. No. 59,684

Int. Cl.[5] **B21D** *7/04*

U.S. Cl. 72—159 **17 Claims**



1. In a tube bending system comprising a bend die having first and second mating sections, a method of preparing for a next one in a sequence of bending operations on a tube, comprising the steps of:

lifting said second section to a region above said first section to split said first and second sections of said bend die;

rotating said section of said bend die about a vertical axis to displace at least a portion of said second section from said region;

moving said tube through at least a portion of said region from which said second section is displaced during said rotating step to reposition said tube with respect to said first section of said bend die in preparation for said next bending operation; and

moving said second section of said bend die into mating relationship with said first section of said bend die.

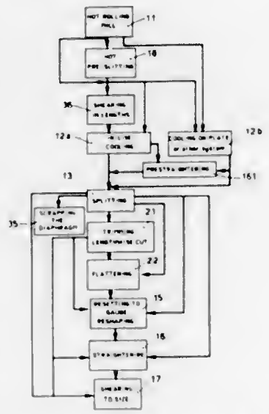
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5,284,042

METHOD TO OBTAIN SECTIONS AND/OR BARS IN THE COLD STATE, AND SECTIONS AND/OR BARS THUS OBTAINED

Giampietro Benedetti, Campoformido, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 18, 1992, Ser. No. 884,176
Claims priority, application Italy, May 27, 1991, 91A000090
Int. Cl.[5] B21B *1/12*; B21D *28/26*
U.S. Cl. 72—204 **14 Claims**



1. A method to obtain a plurality of sections and/or bars in a cold state, comprising:

a step of obtaining a hot-rolled multiple-section element comprising a plurality of sections and/or bars joined together lengthwise along nominal lines of splitting from a hot rolling mill, wherein said rolling mill has a size useful for typically rolling a single section or bar having a cross-sectional size within a predetermined dimensional range and wherein each of said plurality of sections and/or bars has a cross-sectional size smaller than said predetermined dimensional range;

a step of pre-slitting said hot-rolled multiple-section element lengthwise thereby providing slits completely through said hot-rolled multiple-section element discontinuously along said normal lines of splitting;

a step of cooling the pre-slit, hot-rolled multiple-section element; and

a step of simultaneously lengthwise splitting, in a cold state, of the cooled, pre-slit, hot-rolled multiple-section element into a plurality of individual sections and/or bars;

wherein said steps are conducted without a break of continuity.

5,284,043

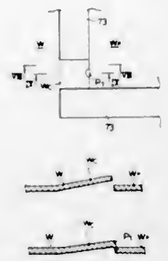
METHOD AND DEVICE FOR SEPARATING A CONTOURED PRODUCT FROM SHEET METAL

Tetsuji Hayashi, La Mirada, Calif., assignor to Amada Manufacturing America Inc., La Mirada, Calif.

Filed Sep. 29, 1992, Ser. No. 953,086
Int. Cl.[5] B21D *28/10*
U.S. Cl. 72—330 **12 Claims**

1. A method of separating a product from a piece of sheet metal, comprising the steps of:

contouring the product while leaving a small joint of a connecting web which connects the product to the sheet metal; forming a protrusion on or near the small joint, wherein the product is connected to the sheet metal through the connecting web, forming a tab joint on the connecting web by lancing the connecting web so that the



product is connected to the sheet metal only through the tab joint; and

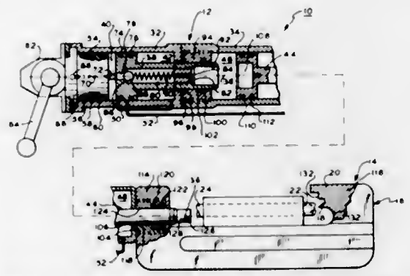
pressing the protrusion in order to shear the small joint.

5,284,044

WIRE JOINING DEVICE

Bruce Bier, Warren, N.J., assignor to Richard's Manufacturing Company, Sales Inc., Irvington, N.J.

Filed Apr. 14, 1992, Ser. No. 868,624
Int. Cl.[5] B23P *11/00*
U.S. Cl. 72—453.07 **8 Claims**



1. A device for securing in a two stage operation two electrical wires together with a spacer between the wires by a connector clamp securely surrounding the wires and the spacer comprising:

a connector clamp for extending around the two wires;

a spacer within the clamp for maintaining separation between the two wires,

a two stage compound hydraulic or pneumatic fluid cylinder having first and second coaxial cylinders and respectively first and second coaxial pistons forming first and second chambers in the first cylinder and third and fourth chambers in the second cylinder;

jaws affixed to one end of the second piston rod;

a work fixture affixed to one of the jaws capable of gripping the clamp and locking the wedge into the clamp by rupturing a portion of an outer surface of the wedge;

a passage means containing a pressure valve which connects to the first and third chambers, said pressure valve upon the application of increased pressure will open to allow fluid into the secondary cylinder whereby a two-stage two-level force can be applied to the spacer for first initial joining and at the second pressure a final joining of the wires in the connector;

said second piston having a dual diameter and a second pressure chamber for increasing the pressure in the first piston whereby fluid fills the pressure chamber of the first piston first and then fills the pressure chamber of the second piston, said second piston having a smaller diameter causing the second piston to displace fluid in the pressure chamber of the first piston, and wherein the ratio of the diameters in the second piston provides a greatly increased pressure on the primary piston for a limited stroke; the wires and the spacer and clamp are joined initially by the application of the low pressure and the higher pressure completes the joining thereby forming the clamped assembly of wires, clamp and spacer and the spacer is locked therein by way of rupture of a portion of a surface of the spacer.

5,284,045

END TOOLING FOR MULTIPLE END DIAMETERS

Frank J. Herdzina, South Barrington, Ill., assignor to Service Tool International, Inc., Elk Grove Village, Ill.

Filed Jan. 6, 1993, Ser. No. 1,256
Int. Cl.[5] B21J *13/00*; B21D *37/08*
U.S. Cl. 72—477 **8 Claims**

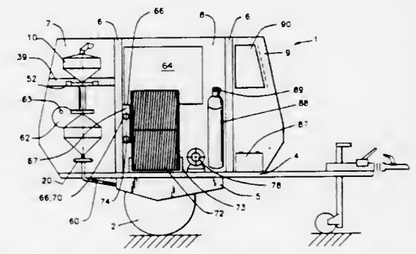
1. End tooling of the type comprising cooperatively-engageable, reciprocable upper and lower tooling defining a plurality of stations having tools which progressively convert shells indexed by a conveyor into can ends, the ends having a central panel and a turned edge on the periphery of the panel, the improvement comprising tooling for converting ends of multiple diameters, the tooling comprising at each station a common locating means engageable with a first portion of an edge of any diameter end for aligning the end relative to that station's tools, at least one first custom locating means for a first particular diameter end to be converted, and at least one second custom locating means for a second particular diameter end to be converted, the custom locating means being circumferentially spaced from the common locating means and engageable with a second portion of an edge of its particular diameter end for further aligning said end.

5,284,046

MOBILE CALIBRATING APPARATUS FOR CONTROL OF VOLUME METERS FOR LIQUID, ESPECIALLY PROPELLANT PUMPS IN THE TRAFFIC SECTOR

Erik Jensen, Taastrup; Jorgen H. Kjeldgaard, Vaerlose; Henrik Blichfeldt, Copenhagen; Michael Engmann, Copenhagen; Flemming Lundh, Copenhagen, and Michael Mannstaedt, Allerod, all of Denmark, assignors to Dantest, Dansk Institut For Proevning OG Justering, Copenhagen, Denmark

PCT No. PCT/DK90/00176, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/00988, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 6, 1990, Ser. No. 778,901
Claims priority, application Denmark, Jul. 12, 1989, 3461/89
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 **24 Claims**



1. A calibrating apparatus for control of volume meters comprising,

a support frame having a plurality of wheels,

a reception tank located in said support frame,

at least one standard suspended in said support frame in a lockable cardan suspension and having a determined volume, a filling opening, a discharge opening connected by a flexible discharge hose and a remote controlled discharge valve to the reception tank placed below the standard and a foam top with a cover connected to the reception tank by a ventilation hose,

a buffer tank place at top of said support frame and connected partially to the reception tank by a pipeline having at least one pump and partially to a hose rolled from a hose drum for connection to a filling pipe on a storage tank in a petrol station,

hydraulic and electric power means,

control means for controlling the pump, the power means and the remote control discharge valve,

an electric generator connected to one of said wheels by a releasable driving device, and

an accumulator charged by said generator through charging devices wherein said power means, said control means, said generator and said accumulator is located in said support frame remote from said standard.

5,284,047

MULTIPLEXED SINGLE-CHANNEL KNOCK SENSOR SIGNAL CONDITIONER SYSTEM FOR INTERNAL COMBUSTION ENGINE

A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Wilmington, Mass.

Filed Oct. 31, 1991, Ser. No. 785,940
Int. Cl.[5] G01L *23/22*
U.S. Cl. 73—35 **11 Claims**

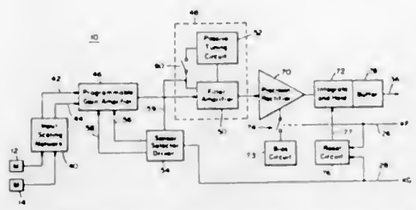
1. A multiplexed, single channel knock sensor signal conditioner system for internal combustion engines, comprising:

a plurality of sensors for sensing the vibrations associated with knocking in an internal combustion engine;

a single signal conditioning channel for providing a signal level representative of the magnitude of the knock; said

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single signal conditioning channel including a band pass filter; and



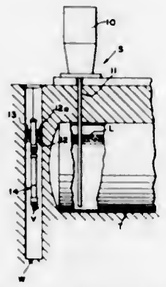
means for selectively connecting said sensors to said signal conditioning channel and for adjusting the frequency characteristics of the filter according to the sensor selectively connected to the signal conditioning channel.

5,284,048

LIQUID HYDROCARBON SKIMMER SYSTEMS AND METHODS OF MONITORING LEAKS IN HAZARDOUS LIQUID TANKS

John A. Horner, 2707 Inverness, Bay City, Mich. 48706

Continuation-in-part of Ser. No. 749,919, Aug. 26, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 938,297
Int. Cl.[5] E02B *15/04*
U.S. Cl. 73—49.2 **23 Claims**



1. A liquid hydrocarbon skimmer system for monitoring possible leaks in hazardous liquid tanks comprising:

a. a vertically disposed tubular housing with an upper liquid admitting portion forming an admitting chamber, the housing having a closed upper end and side passages to admit liquid thereto;

b. the housing further having a lower closed collection chamber spaced downwardly from said admitting chamber for recovered hydrocarbon liquids;

c. said housing having a vertically disposed hydrocarbon liquid-water separator within said admitting chamber and leading to said collection chamber and sealing said admitting chamber from said collection chamber;

d. said separator including a perforate portion with a tubular hydrophobic filter film membrane with microscopic pores of a diameter to pass hydrocarbon liquid by capillary attraction through to said collection housing, while being impervious to the passage of water;

e. a hydrophobic wick in said admitting chamber wrapping around and in close contact with said filter film membrane to draw the hydrocarbon liquid to said filter membrane;

f. a selectively opened and closed valve outlet for said collection chamber to permit emptying of the collected hydrocarbon liquid; and

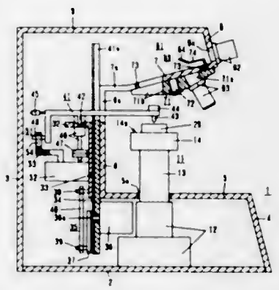
g. an outlet in the upper end of said separator above said filter membrane and wick for removing air from said collection chamber as the collection chamber fills.

5,284,049

INDENTATION HARDNESS TESTER

Mitoshi Fukumoto, Tokyo, Japan, assignor to Matsuzawa Seiki Kabushikikaisha, Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,332
Claims priority, application Japan, Apr. 10, 1991, 3-104786
Int. Cl.[5] G01N *3/42*
U.S. Cl. 73—82 **1 Claim**



1. An indentation hardness tester comprising:

a specimen table for placing thereon a specimen, which is vertically movable with respect to a stationary part;

an upward fulcrum bearing member;

a balance which has a downward fulcrum located centrally thereof, carries at one free end portion an indenter disposed just above said specimen table for making an indentation in said specimen and a test load weight, and carries a horizontal balancing weight at the other free end portion; and

optical means for indentation observation use, said optical means including an objective lens;

wherein said fulcrum bearing member is vertically movably mounted on said stationary part so that said indenter mounted on said balance is vertically brought up from or down to a position right above said specimen table in close proximity thereto; and

wherein said optical means or at least said objective lens is pivotally mounted on said stationary part so that said objective lens turns to or turn away from a position right above said specimen table.

5,284,050

SELF-DIAGNOSIS APPARATUS IN SYSTEM FOR PREVENTION OF SCATTERING OF FUEL EVAPORATION GAS

Hisashi Iida, Aichi; Toshihiro Suzumura, Nagoya; Toshio Kondo, and Shigenori Isomura, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 3, 1992, Ser. No. 863,091
Claims priority, application Japan, Apr. 8, 1991, 3-075405; Apr. 8, 1991, 3-075413
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **5 Claims**

1. A self-diagnosis apparatus in a system for preventing the scattering of fuel evaporation gas, comprising:

a fuel tank;

a canister containing an absorption material for absorbing fuel evaporation gas in said fuel tank;

a communication passage communicating said fuel tank with said canister;

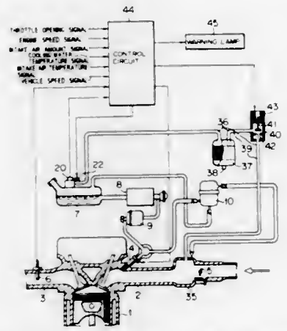
a discharge passage communicating said canister with an intake passage of an internal combustion engine;

opening/closing means provided in said discharge passage so as to open and close said discharge passage;

air-fuel ratio detection means for detecting an air-fuel ratio of an air-fuel mixture supplied to said internal combustion engine;

gas flow amount detection means for detecting the amount of flow of the gas supplied from said fuel tank to said canister;

judgment means for controlling said opening/ closing means to close said discharge passage, and then for controlling said opening/closing means to close and open said discharge passage when said gas flow amount detection



means detects that the amount of the gas flow supplied from said fuel tank to said canister exceeds a set value, and for judging in accordance with a change in the air-fuel ratio detected at this time by said air-fuel ratio detection means whether or not any abnormality exists;

judgment control means for setting said set value of said gas flow amount to a value greater than said set value when said judgment means judges that there exists abnormality, and then for causing said judgment means to again judge whether or not there is any abnormality; and

warning means for giving warning when the result of the judgment of said judgment means executed by said judgment control means indicates that there is abnormality.

5,284,051

METHOD FOR IDENTIFYING RESIDUAL OIL CHARACTERISTICS OF POROUS RESERVOIR ROCK

Hooman Laali, and Ralph Navarro, Jr., both of Dallas, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 9, 1993, Ser. No. 15,014
Int. Cl.[5] E21B *49/00*
U.S. Cl. 73—153 **4 Claims**

1. Method for determining the efficiency with which oil can be displaced from porous reservoir rock, comprising the steps of:

a) fully saturating a porous reservoir rock with a first fluid including a first dyed styrene monomer,

b) injecting a second fluid which is miscible with said first fluid and includes a second dyed styrene monomer of a differing color dye from said first dyed styrene monomer to displace said first fluid from said porous rock, and

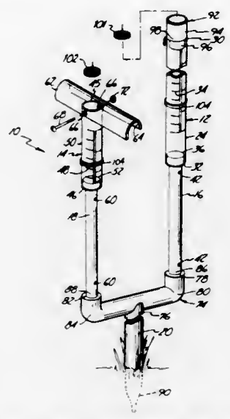
c) monitoring effluent flow of said first and second fluids from said porous rock with UVvisible light spectroscopy for identifying an oil displacement characteristic of said porous rock.

5,284,052

MOISTURE GAUGE

Glen F. Thompson, R.R. 1, Box 50, Cogswell, N. Dak. 58017

Filed Jul. 1, 1992, Ser. No. 907,506
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—170.21 **18 Claims**



1. An apparatus for collecting and accurately measuring precipitation, the apparatus comprising:

a collection vessel open at a first end for collecting precipitation;

an evaporation vessel open at a first end for measuring the evaporation of collected precipitation;

cover means attached to the evaporation vessel for preventing precipitation from entering the evaporation vessel; and

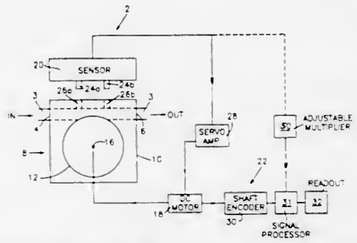
support means for supporting the collection vessel and the evaporation vessel.

5,284,053

CONTROLLED FLOW VOLUMETRIC FLOWMETER

David Wadlow, Basking Ridge, N.J., and Lawrence M. Layden, Seneca, S.C., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jan. 10, 1992, Ser. No. 819,042
Int. Cl.[5] G01F *1/05, 1/34*
U.S. Cl. 73—199 **14 Claims**



1. Apparatus for metering the flow rate of a fluid comprising

(a) transducer means for transferring the fluid from an inlet region to an outlet region of a conduit comprising a substantially cylindrical housing comprising a substantially circular wall defining a cylindrical cavity and a rotatable element substantially concentric to the housing which together define an arcuate pathway having substantially smooth boundaries for the flow of the fluid from the inlet

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region to the outlet region, said rotatable element having a smooth and unobstructed outer surface spaced apart from the circular wall to define said arcuate pathway, said pathway comprising a major portion for the passage of the fluid from the inlet to the outlet region of the conduit, and a minor portion which permits free rotation of the rotatable element within the cavity;

(b) pressure change detecting means for detecting in the form of a pressure error signal a change of pressure of the fluid between the inlet and outlet regions and for translating the pressure error signal into a detectable signal; and

(c) speed changing means operatively connected to the transducer means for changing the speed of the rotatable element in response to the detectable signal to reduce the differential pressure of the fluid between the inlet and outlet regions.

5,284,054

METHOD AND APPARATUS FOR PREPARING A GAS MIXTURE FOR PURPOSES OF ANALYSIS AND APPLICATION OF THE METHOD

Ernst Loebach, Tonagass 374, 9492 Eschen, Fed. Rep. of Germany

PCT No. PCT/EP90/01479, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/03719, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 4, 1990, Ser. No. 835,466

Claims priority, application Switzerland, Sep. 4, 1989, 3203/89

Int. Cl.[5] **G01N** *1/22, 33/497*

U.S. Cl. 73—23.3 **24 Claims**



1. A method for determining an isotope ratio in exhaled CO_2 in a breath sample comprising the steps of

at a sampling site, blowing respiratory air sequentially through at least one fixed bed of adsorbent for adsorbing water vapor and one fixed bed for adsorbing CO_2,

moving the bed for adsorbing CO_2 from the sampling site to a testing site;

at the testing site, desorbing the CO_2 by heating, and

analyzing the desorbed CO_2 for isotope ratios therein.

5,284,055

DEVICE FOR MEASURING THE FUEL LEVEL IN A MOTOR VEHICLE TANK

Christian Baux, Levallois-Perret, France; Simon Bach, Bishops Tachbrook, Great Britain, and Thierry Salaun, Montsoult, France, assignors to Jaeger, France

Filed Mar. 18, 1992, Ser. No. 853,498

Claims priority, application France, Mar. 19, 1991, 91 03313

Int. Cl.[5] **G01F** *23/32*

U.S. Cl. 73—317 **13 Claims**

1. A device for measuring the level of fuel in a motor vehicle tank, the device comprising:

a float suitable for following the level of the fuel;

a base fixedly attached to a wall of the tank;

a housing fixedly attached to the base;

an electrical transducer provided in said housing, the transducer comprising:

a resistive track, and

a slider;

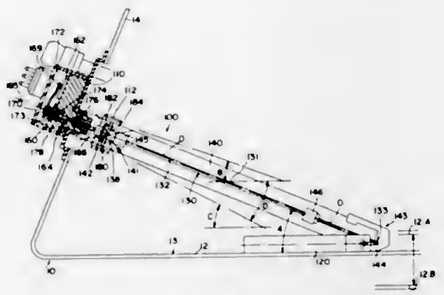
a shaft having a first end, a second end and a rotation axis, the first end of the shaft projecting in the tank, the second end of the shaft coupled to the slider of the transducer, the shaft being mounted to the base so that the rotation axis of the shaft intersects the wall of the tank that the base is fixedly attached to and the shaft can rotate about the rotation axis of the shaft,

a support component having a longitudinal axis and top and bottom ends, the bottom end of the support component disposed inside the tank, the top end of the support component being attached to the base so that it can pivot about a horizontal axis perpendicular to said longitudinal axis of the support component and to said rotation axis of said shaft;

urging means for permanently urging the bottom end of said support component against a bottom wall of the tank to follow any displacement thereof;

a lever comprising

a main member having a top end, a bottom end, and a longitudinal axis, the main member mounted on the



support component so that the longitudinal axis of the main member is disposed parallel to the longitudinal axis of the support component, the bottom end of the main member being substantially adjacent to the bottom end of the support component, the main member mounted on the support component so that the main member can pivot about the main member's longitudinal axis, and

at least an auxiliary member having a first end, a second end, and a longitudinal axis, the second end of the auxiliary member fixedly attached to the bottom end of said main member, the longitudinal axis of the auxiliary member disposed at an angle to the longitudinal axis of the main member,

means for connecting the float to the first end of the auxiliary member of the lever; and

a universal joint type structure substantially adjacent to the top end of the support component, the universal joint type structure coupling the first end of the shaft to the top end of the lever so that:

when the float moves causing the main member of the lever to rotate about the longitudinal axis of the main member of the lever, the shaft is caused to rotate about the rotation axis of the shaft so that the transducer supplies a signal representative of the level of fuel in the tank, and

the lever is allowed to pivot about said horizontal axis when the support component pivots about said horizontal axis.

5,284,056

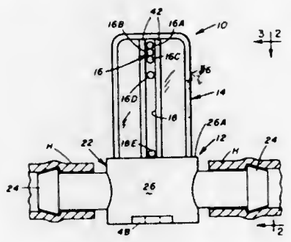
HYDROMETER FOR DETERMINING COOLANT FLUID ANTIFREEZE CONCENTRATION

Delbert D. Randolph, 2717 Augusta Ln. Apt. D, Hays, Kans. 67601, and Gerald E. Wagnon, R.R. #1, Box 147, Great Bend, Kans. 67530

Continuation of Ser. No. 782,521, Oct. 24, 1991, abandoned. This application May 7, 1993, Ser. No. 59,512

Int. Cl.[5] **G01N** *9/10*

U.S. Cl. 73—440 **19 Claims**



1. A hydrometer for determining coolant fluid antifreeze concentration, comprising:

(a) a hollow housing having a pair of spaced openings for inflow and outflow of coolant fluid to and from said housing;

(b) a transparent hollow view dome having an interior and an exterior and being mounted upon and extending above said housing with said interior in flow communication with said housing;

(c) a plurality of float elements of different specific gravities;

(d) a pair of spaced longitudinal rails disposed above said housing and connected to and extending vertically along a portion of a sidewall of said transparent view dome on said interior of said view dome to define a longitudinal channel, said spaced longitudinal rails defining a narrow slot therebetween along the extent of said channel for establishing flow communication with said interior of said view dome, said longitudinal rails having predetermined cross-sectional shapes providing said longitudinal channel with a predetermined cross-sectional shape for movably containing said float elements and for restricting said float elements to only substantially vertical longitudinal movement relative to said transparent view dome and for visual observation from said exterior thereof; and

(e) means for defining a dam in the housing between and spaced from said openings of said housing and below said view dome and being capable of obstructing the path of coolant fluid flow directly between said openings so as to cause deflection of coolant fluid flow into and from said transparent view dome and said longitudinal channel.

5,284,057

MICROACCELEROMETER HAVING LOW STRESS BONDS AND MEANS FOR PREVENTING EXCESSIVE Z-AXIS DEFLECTION

Steven E. Staller, Kokomo, and David W. De Roo, Carmel, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Division of Ser. No. 625,397, Dec. 11, 1990, Pat. No. 5,221,400. This application Nov. 13, 1992, Ser. No. 976,100

Int. Cl.[5] **G01P** *15/08*

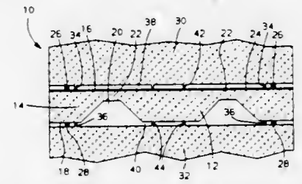
U.S. Cl. 73—517 R **7 Claims**

1. An accelerometer comprising:

a silicon support oriented essentially along a single crystallographic plane having front and back surfaces which are substantially parallel to each other;

a mass formed within said silicon support such that said mass is suspended from said support with a gap provided substantially everywhere between a perimeter region of said support and said mass;

a silicon capping plate having a first support column of a first predetermined dimension provided continuously adjacent an outer perimeter of said silicon capping plate, said silicon capping plate being bonded to said front surface of said silicon support adjacent said first support column such that the outer perimeter of said silicon capping plate is separated from the front surface of said silicon support at least in the vicinity of said mass by a gap corresponding to said first predetermined dimension, and at least one stop means of a second predetermined dimension which is less than said first predetermined dimension provided in the vicinity of said mass on said silicon capping plate, the second predetermined dimension being less than said first predetermined dimension; and



a silicon back plate having a second support column of a third predetermined dimension provided continuously adjacent an outer perimeter of said silicon back plate, said silicon back plate being bonded to said back surface of said silicon support adjacent said second support column such that the outer perimeter of said silicon back plate is separated from the back surface of said silicon support at least in the vicinity of said mass by a gap corresponding to said third predetermined dimension, and at least one stop means of a fourth predetermined dimension provided in the vicinity of said mass on said silicon back plate, the fourth predetermined dimension being less than said third predetermined dimension;

such that said stop means on said silicon capping plate and said silicon back plate prevent excessive deflection of said mass in a direction perpendicular to said front and back surfaces of said silicon support.

5,284,058

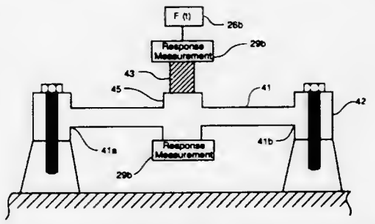
DUAL BEAM COMPLEX MODULUS APPARATUS

David I. G. Jones, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 820,427, Jan. 8, 1992, Pat. No. 5,245,876. This application Jun. 2, 1993, Ser. No. 70,746

Int. Cl.[5] **G01N** *29/12*

U.S. Cl. 73—579 **5 Claims**



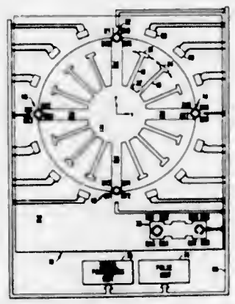
1. A system for measuring complex shear or Young's modulus of a polymeric material, comprising:

(a) a beam of preselected length and thickness firmly supported at a first end thereof;

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(b) a gripping member attached to said beam along the length thereof for attaching to said gripping member a specimen of polymeric material for measurement of said complex shear or Young's modulus of said material;
(c) means for generating a time varying force operatively attached to one of said beam and said specimen;
(d) means for operative attachment to at least one of said beam and said specimen for measuring time varying displacements of said beam; and
(e) means for calculating said modulus of said material utilizing measurements of said time varying displacements.

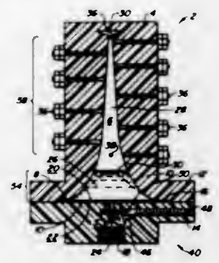
5,284,059
ROTATION SENSOR
Lawrence A. Wan, Malibu, Calif., assignor to Bei Electronics, Inc., Sylmar, Calif.
Continuation of Ser. No. 751,280, Aug. 29, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,866
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **29 Claims**



5. A rotation sensor comprising:
a plurality of radially extending tines;
drive means for causing each tine to vibrate in rotational sequence so that the plurality of tines establish a net angular momentum which approximates a spinning wheel;
mounting means for mounting the plurality of tines to a support, so that rotation of the structure about a selected axis causes the mounting means to deform; and
deformation sensing means, disposed on the mounting means, for sensing deformation of the mounting means.

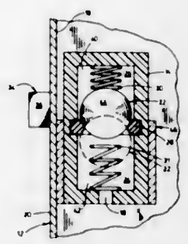
5,284,060
PRESSURE/CONTROL GAGE
Donald G. Martinez, P.O. Box 584, Calistoga, Calif. 94515
Continuation of Ser. No. 845,546, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 325,623, Mar. 20, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 991,495
Int. Cl.[5] G01L *9/00*
U.S. Cl. 73—707 **15 Claims**

1. A pressure gage for measuring the pressure at a source of pressure comprising:
a housing defining a fluid chamber having an open end;
a movable seal covering the open end so to seal the fluid chamber, the seal having a first surface facing the fluid chamber and a second surface;
the fluid chamber containing a liquid and a gas, the liquid and gas defining an interface therebetween; and
a fluid passageway, including an intermediate portion, fluidly coupling the source of pressure and the second surface so the second surface is subjected to the pressure causing the movable seal to be deflected thus changing the location of the interface according to the pressure; and
a surge control valve positioned along the fluid passageway, the surge control valve including:
a resilient valve element having a first part positioned transversely within the intermediate portion and having a second part positioned within a transverse bore opening into said intermediate portion;
a control element contacting the second part of the resilient valve element to apply a compressive force on the resilient valve element; and



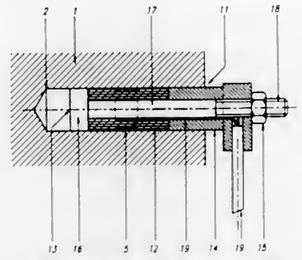
the first part of the resilient valve element being sized to provide a desired partial obstruction to said fluid passageway when placed in a desired compressive state by the control element applying a compressive force on the resilient valve element.

5,284,061
INTEGRAL PRESSURE SENSOR
Eric E. Seeley, 538 Rio Bravo St., Ridgecrest, Calif. 93555, and Allan D. Jackson, P.O. Box 246, Weldon, Calif. 93283
Filed Sep. 21, 1992, Ser. No. 948,502
Int. Cl.[5] G01L *7/16, 9/00*
U.S. Cl. 73—746 **15 Claims**



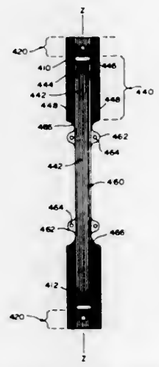
11. An integral pressure sensor for a pressurized vessel comprising:
a housing defining an upper chamber, a lower chamber and an opening, said housing attached proximate to an interior surface of said pressurized vessel;
a core element movably disposed in said upper and lower chambers, said core element moving in said upper and lower chambers under the effect of a vessel pressure and an upper chamber pressure;
a means to trap said vessel pressure in said upper chamber, said means to trap being sealably disposed in said housing and in operative association with said core element so that said upper chamber pressure is isolated from said vessel pressure; and
a detector shield disposed on said housing proximate the opening and further covering a portion of said housing.

5,284,062
SENSOR FOR MEASURING ELONGATIONS
Martin Ryffel, Dietikon, Switzerland, assignor to Straintec AG, Zurich, Switzerland
Filed Mar. 12, 1992, Ser. No. 850,130
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—768 **8 Claims**



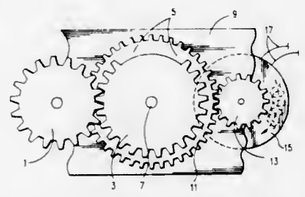
1. A sensor for measuring the elongation of material surrounding a structure member in a bore, comprising a cylinder-shaped body made of an elastomeric material, and at least ne resistive wire strain gauge arranged on the circumference of said cylinder-shaped body, a means for pressing said at least one resistive wire straing gauge against the inner wall of the bore in such a manner that said at least one resistive wire straing gauge is in contact with the inner wall by resistive forces in a force-locked manner in order to measure the elongation caused by an acting of force onto the structure member having the bore.

5,284,063
CREEP TEST COUPON FOR METAL MATRIX COMPOSITES
Kenneth J. Newell, Redondn Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Mar. 4, 1991, Ser. No. 664,196
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—822 **13 Claims**



1. A test coupon for structural testing of fiber-reinforced metal matrix compound materials, said coupon comprising:
a gage portion with a longitudinal axis and a predetermined length,
a pair of end portions, each end portion including
a clamping section at a free end thereof for clamping said end portion in a test fixture, and
a medial section interconnecting said gage portion with said clamping section,
said end portions being disposed opposite one another and defining therebetween said predetermined length, and
each of said medial sections including at least one slot having an elongated opening that extends in a direction normal to said longitudinal axis along the width of the coupon.

5,284,064
QUIET, SINGLE-CYCLE MECHANISM
Timothy A. Green, Lexington; David K. Klaffenbach, Versailles; Mohsen Marefat, and Kevin D. Schoedinger, both of Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Dec. 9, 1992, Ser. No. 987,840
Int. Cl.[5] F16H *27/08*
U.S. Cl. 74—435 **4 Claims**



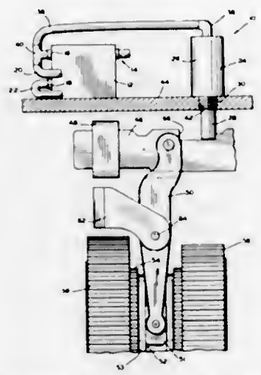
1. Single-cycle, driven-shaft selection apparatus comprising a drive gear, a driven shaft, a first gear axially mounted integral with said driven shaft, said drive gear having peripheral engaging means with said first gear except at a sector of said first gear, an angularly rotatable solenoid seeking a detent position which may be overcome by a predetermined force and permitting full circumferential rotation of said solenoid without impairing said operation of said solenoid, said driven shaft being operatively mounted for rotation by rotation of said first gear and being operatively mounted for rotation by rotation of said solenoid, the detent position of said solenoid being a location at which said drive gear faces said sector.

5,284,065
REMOVABLE OVERDRIVE LOCKOUT
John M. Loeffler, Toledo, and George A. Willford, Waterville, both of Ohio, assignors to Dana Corporation, Toledo, Ohio
Filed Sep. 18, 1992, Ser. No. 947,767
Int. Cl.[5] F16H *63/36*
U.S. Cl. 74—477 **12 Claims**

1. A gear combination lockout device for a range shift type transmission having a main gear section and a range gear section disposed within a housing, said main gear section including a first gear ratio selection means for effecting at least two distinct gear drive ratios, and further including at least one axially translatable shift rail associated with said first gear selection means, said range gear section including a second gear selection means for effecting at least two distinct gear drive ratios to selectively multiply the gear ratio provided by the main section, said second gear selection means including an actuator, the lockout device for inhibiting the selection of certain gear combinations comprising:
an actuation member mounted to said housing;
a rod disposed within said actuation member which is selectively translatable between a retracted position and an extended position by activation of said actuation member, said rod extending through an aperture in said housing in its extended position;
a means for activating the actuation member of said lockout device substantially simultaneously with the activation of the actuator of said second gear selection means; and
an engagement means provided on said at least one shift rail associated with said first gear selection means;

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said actuation member being positioned on said housing so that said rod engages the engagement means on said shift



rail when said rod is in its extended position to thereby selectively limit axial translation of said shift rail.

5,284,066

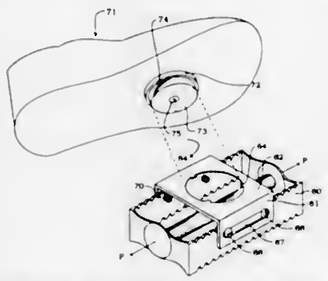
AUTOMATIC PEDAL

Jonathan Weiss, 3675 Clarington Ave., #1, Los Angeles, Calif. 90034

Continuation of Ser. No. 86,578, Aug. 18, 1987, abandoned. This application Apr. 29, 1991, Ser. No. 696,303

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.6 **18 Claims**



1. An apparatus for releasably attaching a bicycle rider's shoe to a bicycle pedal, said apparatus comprising:

a first member;

first securing means for securing the first member to the bicycle rider's shoe;

a second member;

second securing means for securing the second member to the pedal so as to substantially preclude upward vertical movement of the second member with respect to the pedal, independent of the bicycle rider's shoe;

the second member having at least one releasable attaching means for engaging the at least one spiral shaped slot and for releasably attaching the first member with the second member in a screw threading manner while the second member is secured to the pedal by the second securing means.

5,284,067

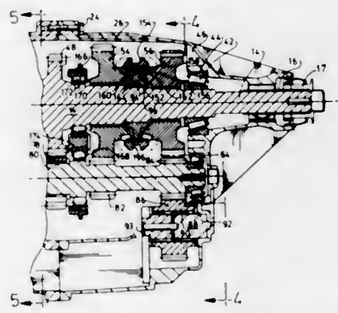
MANUAL TRANSMISSION SHAFT CENTER CONTROL SUPPORT DEVICE

Robert L. Seaman, Farmington Hills, Mich., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Dec. 15, 1992, Ser. No. 990,875

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **8 Claims**



1. A gear transmission adapted to transmit torque between a driving member and a driven member, said transmission comprising:

a mainshaft and a countershaft, said mainshaft being adapted to be connected to said driving member, said mainshaft and said countershaft having offset axes;

a transmission casing having axially spaced bearing support structures connected thereto;

meshing gear elements on said mainshaft and countershaft establishing torque flow paths; and

a shaft-mounted support having first and second bearing openings therein, said shaft-mounted support being independent of said casing and freely movable relative thereto, said mainshaft and said countershaft extending through said openings and being supported by said shaft-mounted support intermediate center-distance of said mainshaft and said countershaft is maintained as is the center-distance of said meshing gear elements notwithstanding gear tooth separating forces acting transversely with respect thereto.

5,284,068

TRANSFER CASE WITH INTEGRATED PLANETARY GEAR ASSEMBLY

Barry L. Frost, Waterford, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Oct. 15, 1992, Ser. No. 961,486

Int. Cl.[5] F16H *37/00*

U.S. Cl. 74—665 GA **24 Claims**

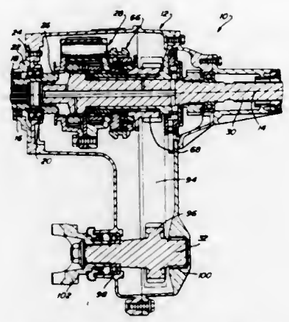
1. A transfer case for a four-wheel drive vehicle comprising:

a housing;

an input member supported for rotation in said housing;

first and second output means supported for rotation in said housing; and

a planetary gear assembly that is axially moveable relative to said input member and said first and second output means and having a first sun gear, a plurality of first planet gears meshed with said first sun gear and journalled on a carrier, a second sun gear, and a plurality of second planet gears meshed with said second sun gear and journalled on said carrier with each of said second planet gears being meshed with an associated one of said first planet gears, said planetary gear assembly being moveable between a first position for establishing a part-time four-wheel high-range mode wherein said carrier couples said input member to said first and second output means, a second position for establishing a full-time four-wheel high-range mode wherein said input member is coupled to said carrier and said first and second sun gears are respectively coupled to said first and second output means for permitting speed differentiation therebetween, and a third position for establishing a part-time four-wheel low-range mode wherein said input member is coupled to said first sun gear, said second sun gear is coupled to said housing and said carrier is directly coupled to said first and second output means.



5,284,069

BALL LOCK PUNCH RETAINER

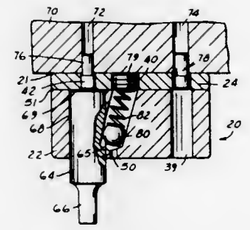
Charles G. Wellman, Novi, Mich., assignor to AIP inc., Troy, Mich.

Continuation of Ser. No. 708,696, May 31, 1991, Pat. No. 5,181,438, which is a continuation-in-part of Ser. No. 506,773, Apr. 10, 1990, Pat. No. 5,038,599. This application Dec. 15, 1992, Ser. No. 990,872

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] B21K *5/20*

U.S. Cl. 76—107.1 **13 Claims**



1. A method of forming a punch retainer, comprising the steps of:

(1) permanently connecting a retainer body to a backing plate; and

(2) finally grinding a passage within at least said backing plate relative to a corresponding passage in said retainer body, such that the passages in said backing plate and said retainer body are properly aligned, and wherein said passage in said backing plate is smaller than said corresponding passage formed in said retainer body.

5,284,070

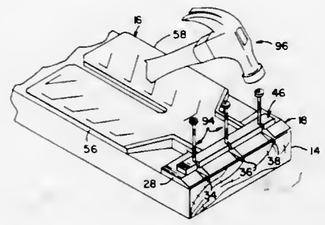
NAILING SHIELD AND NAIL SET FOR USE IN DRIVING NAILS

Kenneth J. Rieck, Fairport, N.Y., assignor to Johnson Level & Tool Mfg. Co., Inc., Mequon, Wis.

Filed Feb. 8, 1993, Ser. No. 14,636

Int. Cl.[5] B25C *3/00*

U.S. Cl. 81—44 **11 Claims**



1. A nailing shield for use in combination with a hammer for driving fasteners such as nails into a workpiece, comprising:

a body;

a head connected to the body, the head including retaining structure for holding one or more nails in a predetermined position over the workpiece, the retaining structure accommodating initial engagement of nails with the workpiece; and

a slot formed in the body for receiving the one or more nails therein after initial engagement of the one or more nails with the workpiece, the slot accommodating driving of the nails into the workpiece, wherein the body functions to prevent the hammer from striking the workpiece during driving of the nails.

5,284,071

UNFOLDING BOLT TIGHTENING SPANNER

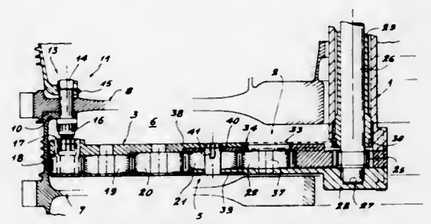
Philippe Brettes, Saint Ouen, and José C. Guillard, Souppes sur Loing, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Nov. 30, 1992, Ser. No. 982,941

Claims priority, application France, Jun. 18, 1992, 92 07399

Int. Cl.[5] B25B *21/00*

U.S. Cl. 81—57.14 **10 Claims**



1. A spanner for tightening bolts, which comprises:

a tubular handle,

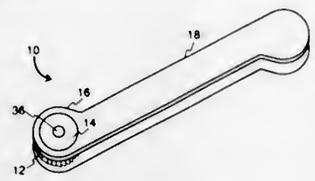
a first section fixed to one end of the handle,

a second section articulated to one end of the first section remote from the handle, the first and second sections being substantially perpendicular to the handle, the handle containing a first and second rotating shaft, the first section including a first transmission arranged so as to driven by the first shaft for rotating the second section with respect to said first section, wherein the first section and the second section contain a second transmission having a socket for rotating on a portion of the second section

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remote from the first section, and wherein the second transmission is driven by the second shaft.

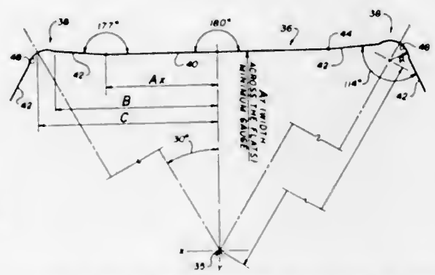
5,284,072
CLEAT REMOVAL/INSERTION TOOL
Rodney Smith, Rte. 5, Box 128E, Staunton, Va. 24401
Filed Feb. 20, 1992, Ser. No. 839,309
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—63 **6 Claims**



1. A cleat removal tool (**10**) having:
a handle member (**18**),
said handle member having a first end and a second end, said first end having a ratchet member receiving region (**16**), said ratchet member receiving region having a first side and a second side;
a ratchet member (**12**),
said ratchet member being positioned proximate said first end and within said ratchet receiving region, said ratchet member having a multisided gripping means;
a cleat removal member (**50**),
said cleat removal member being positioned within said ratchet member and having a first side and a second side, said cleat member second side having a concave surface (**30**), said concave surface conforming to the contour of a golf shoe cleat, said second side concave surface having a spike receiving recess (**36**) for receiving a spike of a golf shoe cleat, said cleat removal member being a removable two piece member having a first portion and a second portion (**52, 56**), said first portion and said second portion having threaded mating means (**54, 58**), said first portion and said second portion being dimensioned to fit within said ratchet member (**62**) multisided gripping means;
a pair of prong members (**32, 34**),
said pair of prong members extending from said concave side (**30**) of said cleat removal member, sad prongs being dimensioned to interact with the prong receiving recesses in golf shoe cleats.

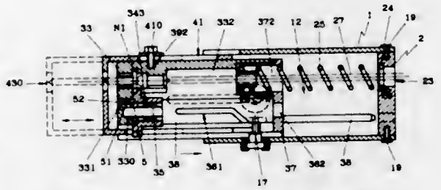
5,284,073
SOCKET WRENCH OPENING
Richard B. Wright, Akron, and Theodore M. Vozenilek, Canton, both of Ohio, assignors to Wright Tool Company, Barberton, Ohio
Continuation of Ser. No. 671,195, Mar. 18, 1991. This application Jul. 13, 1992, Ser. No. 914,055
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—121.1 **1 Claim**

1. A wrench for turning a fastener, the fastener having a central axis and an even-numbered plurality of flat bounding surfaces parallel to the central axis with diametrically opposed pairs of flat bounding surfaces being parallel to each other, and the bounding surfaces of the fasteners meeting to form fastener corners, said wrench having a central opening axis and comprising:
a plurality of uniformly spaced sides disposed peripherally and radially about said central axis; said sides being equal in number to the number of flat bounding surfaces of the fasteners to be turned and diametrically opposed sides being generally parallel;
a plurality of uniformly spaced corner recesses disposed peripherally and radially about said central opening axis, where projected adjacent sides would meet, each corner recess being part of a circle having a radius of curvature of approximately 0.075 times (×) the minimum dimension across the flats of a minimum gauge (GO-gauge) used to establish the minimum wrench opening for the fastener to be turned; and
each side including a planar surface disposed between a pair of complimentary surfaces, each complimentary surface extending from an end of the planar surfaces and diverging outwardly from said central opening axis by approximately 3° from the adjacent planar surfaces and intersecting the adjacent corner recess;



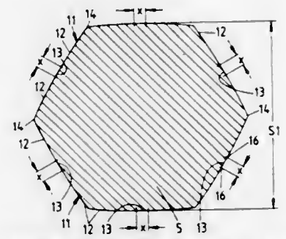
the planar surface of each side being spaced from the planar surface of the diametrically opposed side by a distance equal to the minimum dimension across the flats of a minimum gauge (GO-gauge) used to establish the minimum wrench opening for the fastener to be driven; and having a length substantially equal to 0.35 times (×) the minimum dimension across the flats of minimum gauge (GO-gauge) used to establish the minimum wrench opening of the fastener to be driven;
said wrench having relatively thick wall thickness at the corners, a large corner radius to reduce stress concentration, a low contact angle between the respective sides and the fastener being turned, and a low angle of rotation before the wrench starts turning one fastener.

5,284,074
AUTOMATIC SCREW-DRIVING DEVICE
Ho T. Chen, 2F3R, No. 14, Ching Chung St., Tainan, Taiwan
Filed Dec. 14, 1992, Ser. No. 990,650
Int. Cl.[5] B25B *23/04*
U.S. Cl. 81—434 **6 Claims**



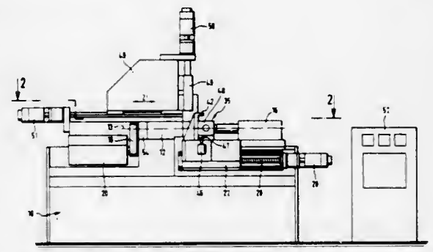
1. An automatic screw-driving device comprising;
a housing of a rectangular cross-sectional shape, having (1) an interior cavity for a sliding box to fit and move therein, (2) two rails on an upper and a lower inner wall for rail grooves of the sliding box to fit with, (3) two holes respectively in an upper wall and a slide wall for an orienting rod to pass through, two orienting rods respectively fitting in a long slot in a sliding box and a shaft;
a stop block fixed in a rear side opening of the housing;
a sliding box having (1) a screw passageway of a cross shape extending from an upper surface down to a bottom for a screw belt to enter an entrance in the bottom and to move up gradually and (2) a curved hole in an intermediate portion of the screw passageway for a screw to go out, (3) a front side wall provided with a shaft hole and a small threaded hole, (4) a hollow cavity formed with a sustaining block fixed in a rear side opening and (5) a guide opening respectively at two opposite sides;
a sprocket member combined just behind the front side wall of the sliding box, having (1) a plurality of pawls around its front circumference, (2) a plurality of bead holes around an front side surface, (3) a central shaft hole for one end of a shaft to fit therein, (4) a one-way bearing fixed in the shaft hole for sustaining the shaft. The shaft being placed between said sprocket member and said sustaining block fixed in a rear side opening of said sliding box, having a smallest diameter left end portion and a largest diameter intermediate long portion and a medium right end portion and a non-straight groove in the intermidiate portion, for a orienting rod to insert and move therein;
an adjustable cap of a U-shape being combined with the front portion of the sliding box to be pulled out or in of the sliding box, having (1) a horizontal slot in one side wall, (2) two horizontal parallel rods in the opposite side wall, and (3) a a screw exit hole in the front side wall; and
said pawls of the sprocket member pushing and moving up the screw belt to locate a screw at a pre-set position for being driven, said sprocket member never rotating in a reverse direction even if said shaft is rotated in the reverse direction, said shaft having a lengthwise slot for the one of two orienting rods of the housing to fit therein and being rotated for an angle by the orienting rod in case of manually pulling the sliding box, said adjustable cap being pulled out of the sliding box to adjust a distance to extend out of the sliding box to suit to a screw to be driven.

5,284,075
SCREWING TOOL, PARTICULARLY A SCREWDRIVER
Martin Strauch, Wuppertal, and Andreas Reusch, Remscheid, both of Fed. Rep. of Germany, assignors to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Fed. Rep. of Germany
Filed Apr. 9, 1992, Ser. No. 866,319
Claims priority, application Fed. Rep. of Germany, May 2, 1991, 9105419[U]; Sep. 3, 1991, 9110904[U]
Int. Cl.[5] B25B *13/48*
U.S. Cl. 81—436 **10 Claims**



1. A polygonal screwing tool, particularly a screwdriver or screwdriver bit, for polygon socket screws, particularly hexagonal socket screws, the screwing tool comprising
a plurality of flanks of similar configuration arranged circumferentially around a work end of the tool for engagement with a socket of a socket screw, successive ones of the flanks contacting each other; and
wherein each of the flanks has an intermediate flank section and two convex flank sections disposed on opposite sides of the intermediate section and extending to opposed ends of the flank, the two convex sections of each flank having a curvature which extends in a circumferential path about the tool, a surface of the intermediate section of each flank being retracted from the circumferential path.

5,284,076
DEVICE FOR THE NON-CIRCULAR MACHINING OF WORKPIECES
Hermann Fritz, Mutlangen; Hans Staiger, Goeppingen; Hans Straub, and Friedrich Winckler, Schwaebisch Gmuend, all of Fed. Rep. of Germany, assignors to Ex-Cell-O GmbH, Eislingen, Fed. Rep. of Germany
Filed Sep. 27, 1991, Ser. No. 766,821
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 4031091
Int. Cl.[5] B23B *5/24*
U.S. Cl. 82—118 **58 Claims**



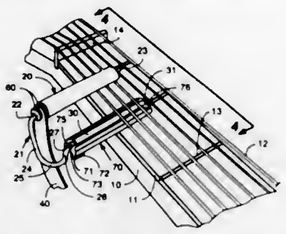
1. A device for the non-circular machining of workpieces comprising:
a machine frame;
a workpiece spindle held on said machine frame and rotatable about a C-axis for a workpiece to be machined;
a Z-slide displaceable on said machine frame in a Z-direction in relation to said workpiece spindle and having a Z-axis drive, said Z-direction being generally parallel to said C-axis;
an X-axis drive in the form of a linear motor arranged on said Z-slide for advancing a tool carrier bearing a tool in an X-direction towards said workpiece, said X-direction being generally transverse to said C-axis; and
a numerical control system for activating said X-axis drive in correlation with a rotation of said workpiece spindle;
said linear motor serving as the X-axis drive being a three-phase asynchronous linear motor designed as a double-comb-type linear motor with two opposed primary parts, at least one of said primary parts fixedly arranged in said X-direction on said Z-slide and said primary parts enclosing a secondary part between them;
said secondary part being movable relative to said primary parts and carrying said tool; and
said secondary part being guided with hydrostatic sliding bearings spaced from one another along said secondary part in said X-direction.

5,284,077
DOBRO CAPO
Ted B. Ellis, 21910 Miller Bay Rd., Poulsbo, Wash. 98370
Filed Oct. 22, 1992, Ser. No. 964,927
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—318 **20 Claims**

1. A capo for a dobro or similar instrument having a plurality of strings elevated above a fretted fingerboard, said capo being composed of:
a string-support member and spacer member for sliding

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between said strings and said fingerboard over a selected fret, said spacer member having a recess underneath for

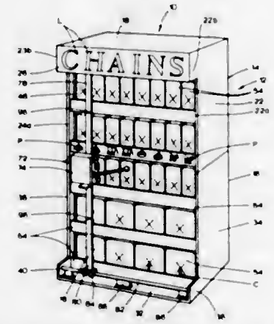


sliding said spacer member over said fret, and said spacer member containing said string-support member.

5,284,078
CHAIN CUTTER

Richard D. Hayes, Edwardsville; Robert Schroeder; Dale A. Thorstens, both of Rockford, and Larry L. Schumacher, Machesney Park, all of Ill., assignors to Laclede Chain Manufacturing Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 723,931, Jul. 1, 1991, Pat. No. 5,165,316. This application Aug. 28, 1992, Ser. No. 937,520
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] **B26D** *7/26*
U.S. Cl. 83—582 **10 Claims**



10. The combination of a chain merchandising apparatus and a chain cutting assembly, wherein said chain merchandising apparatus comprises:

a. frame,

b. a cabinet secured to said frame,

c. adjustable chain container support means mounted to said frame and located within said cabinet,

d. a plurality chain containers; and

further wherein said chain cutting assembly comprises:

a. a cutter head portion;

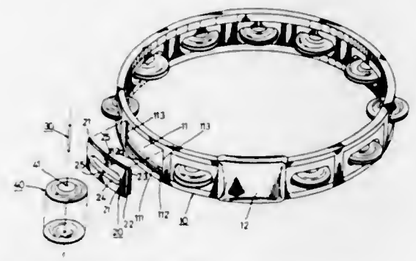
b. a set of bars upon which said cutter head portion is moveably fixed, at least one of said bars being fixed in relation to the chain merchandising apparatus so that said cutter head portion is selectively adjustable vertically and horizontally in relation to the merchandising apparatus for permitting a user to position said chain cutter head portion substantially adjacent to a preselected chain container on the chain merchandising apparatus; and

c. counterbalance means connected to said cutter head portion to facilitate vertical movement thereof for safe, easy selective vertical adjustment of said cutter head portion.

5,284,079
TAMBOURINE

Jeng-Shyong Wang, No. 9-3, Hai-Wei Tzu Lane, Chung-Yang Rd., Chung-Ho Tsun, Lung-Ching Hsiang, Taichung Hsien, Taiwan

Filed Jan. 25, 1993, Ser. No. 8,306
Int. Cl.[5] **G10D** *13/02*
U.S. Cl. 84—418 **4 Claims**



1. A tambourine comprising:

an annular frame having a plurality of jingle slots therein;

a plurality of jingle units, each of said jingle units extending through one of said jingle slots;

a plurality of positioning bars each extending through at least one of said jingle units and being coupled with said annular frame at two ends thereof so as to position each of said jingle units on said annular frame;

said annular frame having a plurality of equidistant rectangular positioning holes formed therethrough, each of said positioning holes being defined by two longer hole walls and two shorter hole walls, said two longer hole walls having two stop ribs each other which project respectively therefrom toward one another;

a plurality of flexible positioning plates respectively fitted in said positioning holes of said annular frame, each of said positioning plates having two longer side walls and two shorter side walls, each of said longer side walls having a positioning rib projecting outward therefrom, each said positioning rib extending away from one another, each of said shorter side walls having a locking rib projecting outward therefrom, each said locking rib extending away from one another, each said positioning rib of each said longer side wall having an inward surface abutting against an outward surface of a corresponding one of said stop ribs of said longer hole walls, each said locking rib of each said shorter side wall having an outward surface abutting against an inner surface of said annular frame so as to retain said positioning plate on said annular frame,

each of said positioning plates having at least one said jingle slot formed therethrough and extending in a direction parallel to said longer side walls, and a pair of aligned receiving grooves formed in an inward surface of each said positioning plate along two sides of said slot and which grooves extend in a direction parallel to said two shorter side walls,

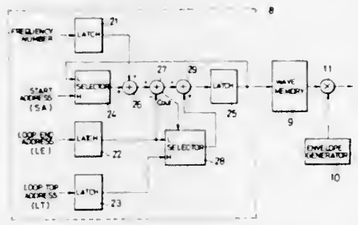
each of said positioning bars being received within said receiving grooves of each of said positioning plates, each end of each of said positioning bars being positioned between one of said stop ribs of said annular frame and one of said positioning ribs of said two longer side walls of said positioning plate in such manner that each said jingle unit extends through each said jingle slot of each said positioning plate and is retained on said annular frame;

whereby, when said annular frame is held and one of said flexible positioning plates is pressed outward, said positioning plate can be removed from said annular frame to replace a damaged jingle unit with a new one.

5,284,080
TONE GENERATING APPARATUS UTILIZING PREPROGRAMMED FADE-IN AND FADE-OUT CHARACTERISTICS

Atsushi Noguchi, and Yasushi Sato, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Apr. 29, 1991, Ser. No. 693,450
Claims priority, application Japan, May 2, 1990, 2-115258
Int. Cl.[5] **G10H** *7/00, 1/04*
U.S. Cl. 84—604 **32 Claims**



1. A tone generating apparatus comprising:

a pre-programmed wave memory having pre-programmed and stored therein for each timbre first tone wave data acquired by modulating a tone waveform in a first predetermined interval starting at an attack of a musical tone, second tone wave data acquired by subjecting tone wave data, obtained by modulating a tone a waveform in a second predetermined interval following said first predetermined interval, to a predetermined process, wherein the first and second tone wave data are stored between a start address and a loop top address, and third tone wave data produced by synthesizing waveform components of a tone waveform in a third predetermined interval following said second predetermined interval based on a characteristic of said tone waveform in said third predetermined interval, wherein the third tone wave data is stored between the loop top address and a loop end address;

a tone generator for reading out said pre-programmed first tone wave data, said pre-programmed second tone wave data and said pre-programmed third tone wave data once in a named order from the start address to the loop end address in said wave memory, and then repeatedly reading out said third pre-programmed tone wave data between the loop top address and the loop end address;

means for generating a tone signal directly from the read out pre-programmed tone wave data; and

wherein said second tone wave data pre-programmed in said wave memory is prepared by adding that tone wave data which is acquired by subjecting said tone waveform in said second predetermined interval to pulse code modulation and is then weighted with a fade-out characteristic, and that tone wave data which is acquired by synthesizing waveform components of said tone waveform in said third predetermined interval based on a characteristic of said tone waveform in said third predetermined interval and is then weighted with a fade-in characteristic after being linked for said second predetermined interval.

5,284,081
LIGHTWEIGHT GRENADE LAUNCHER

Eugene M. Stoner, Palm City, Fla.; Seth Bredbury, Biddeford, Me., and John Wilson, Dover, N.H., assignors to Saco Defense Inc., Saco, Me.

Filed Nov. 3, 1992, Ser. No. 970,819
Int. Cl.[5] **F41A** *9/02*
U.S. Cl. 89—33.17 **5 Claims**

1. A grenade launcher for the firing of a plurality of cartridges in sequence, comprising:

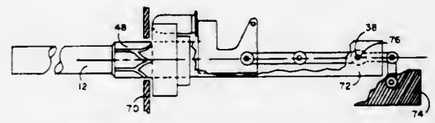
a barrel having a chamber with a breach defined therein;

a bolt having cartridge firing means;

a receiver carrying said barrel and said bolt;

a rotary feed mechanism having an aperture defined therein with said barrel passing through said aperture, said feed mechanism adapted to receive said cartridges in sequence while rotating around said barrel;

an alignable toggle link mechanism including a bolt link having a first and second end a main link having a first and second end, said second end of said bolt link pivotally attached to said first end of said main link, said bolt link and main link having a first aligned position where said bolt link and main link are aligned with one another and an unaligned position where said bolt link and main link have pivoted at an angled to one another and are in the unaligned position where said first end of said bolt link and second end of said main link are first end and second ends



of said toggle link mechanism, respectively, said toggle link mechanism attached at said first end to said bolt and attached at said second end to said receiver, said toggle link mechanism in a first mode to move said bolt into battery against the breach of said chamber in said barrel and upon firing of a cartridge, said bolt being moved away from said chamber causing said toggle link mechanism in a second mode to become unaligned;

means on said bolt to pick up a cartridge from said rotary feed mechanism;

means to move said cartridge into position aligned with the breach of the chamber of said barrel;

means to simultaneously eject any spent cartridge shells out of said receiver; and

means to pull said toggle link mechanism to become realigned into said first mode to move said bolt back into said battery, pushing said next sequential cartridge into said chamber for firing.

5,284,082
AMMUNITION BUNKER RESTING AGAINST A MILITARY-TANK TURRET

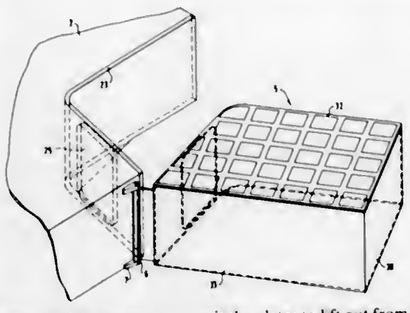
Uwe Sprafke, Schauenburg; Klaus Hersemeyer, Kassel, and Klaus-Peter Pietrzok, Kaufungen, all of Fed. Rep. of Germany, assignors to Firma Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Jan. 4, 1993, Ser. No. 48
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1992, 4200903
Int. Cl.[5] **F41H** *5/20*
U.S. Cl. 89—36.13 **3 Claims**

1. In a military tank having a turret with a crew compartment and means forming an ammunition bunker disposed immediately adjacent to the turret and having an unscored wall facing the crew compartment, means for storing ammunition in the bunker pointing away from the crew compartment, scored outwardly facing walls breakable at the scores in response to a given pressure level in the bunker caused by exploding stored ammunition, the improvement wherein the turret has means forming a niche in one wall thereof configured to receive the ammunition bunker; wherein the means forming the ammunition bunker comprises a totally enclosed housing separate from the turret, means connecting the housing to the turret to space the unscored wall of the housing facing the crew compartment at a given distance from the one wall of the turret to permit the unscored wall of the housing to mold against the one wall of the turret in response to pressure in the bunker caused by an

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explosion of stored ammunition and wherein the housing comprises a roof including a grating having a plurality of interstices, a plurality of plates and means mounting the plates in the



interstices of the grating to permit the plates to lift out from the grating and outwardly of the housing in response to pressure in the bunker caused by an explosion of stored ammunition.

5,284,083

SYSTEM FOR POWERING THE DRIVING ACTUATOR OF AN AIRCRAFT UNDERCARRIAGE

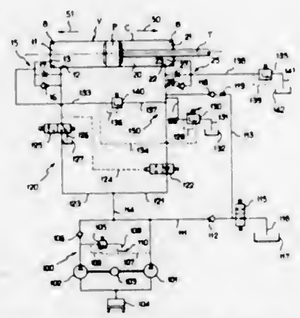
Jean-Philippe Vaslin, Montigny-le-Bretonneux, France, assignor to Messier-Bugatti, Velizy-Villacoublay, France

Filed Nov. 20, 1992, Ser. No. 979,256

Claims priority, application France, Nov. 26, 1991, 91 14574

Int. Cl.[5] **F01B** *25/02*; **F16D** *31/02*

U.S. Cl. 91—19 **7 Claims**



1. A system for powering an aircraft undercarriage driving actuator, said actuator including a piston and rod assembly defining a full-section chamber and an annular chamber, the system comprising a hydraulic generator capable of delivering fluid under pressure to the annular chamber of the driving actuator to lift the undercarriage, or to the full-section chamber of said actuator to lower the undercarriage, wherein the system includes a safety device for avoiding overloading the rod of the driving actuator under the effect of pressure peaks, said safety device comprising first and second pressure relief valves, said first pressure relief valve fluidically communicating with said annular chamber and a fluid tank for limiting the pressure delivered to the annular chamber while under the control of the pressure that exists in the full-section chamber so as to cause the pressure in said annular chamber to drop when the piston is close to the end of its corresponding stroke, at the lifting as well as the lowering of said undercarriage, by putting said annular chamber into communication with said fluid tank, said second pressure relief valve being of the differential type and continuously controlling the pressure difference between the two chambers of the actuator by allowing fluid to pass automatically as soon as a predetermined pressure difference arises across said second pressure relief valve, and wherein said system further includes an electrically-controlled directional control valve in fluidic communication with the hydraulic generator, said electrically-controlled valve being open when at rest, so as firstly to enable said hydraulic generator to be started up under low load, with said electrically-controlled valve then being excited so as to direct fluid under pressure to one or other of the chambers of the actuator, and secondly to enable the undercarriage to be lowered in an emergency in the event of the hydraulic generator failing, said electrically-controlled valve then being at rest and said first and second pressure relief valves being closed.

5,284,084

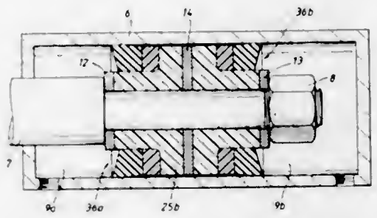
LIGHT WEIGHT PISTON

Frederick B. Pippert, and John T. Rogers, both of Houston, Tex., assignors to Utex Industries, Inc., Houston, Tex.

Continuation of Ser. No. 642,405, Jan. 17, 1991, abandoned. This application Nov. 12, 1991, Ser. No. 794,348

Int. Cl.[5] **F16J** *9/00*

U.S. Cl. 92—241 **15 Claims**



1. A lightweight mud pump piston for reciprocating inside of a cylinder, said piston comprising:

a. a hub, said hub having a volume, said hub comprising:

a radially projecting annular backing plate, said backing plate having an axial length, said backing plate being composed of a first material, said backing plate extending radially outward so that it has an outside diameter substantially equivalent to a corresponding outside periphery of said hub;

an annular cylindrically symmetrical body, said body having a volume equal to between fifty-five and eighty-five percent of said hub volume, said body being composed of a second material, said body having a first compression chamber end and a second end opposite said first end, said backing plate being bonded to said second end of said body so that said backing plate is concentrically positioned with respect to said body,

said first material of said backing plate having a tensile strength and a density greater than the tensile strength and density of said second material of said body; and

b. a lip seal, said lip seal being disposed around a portion of said hub so that said lip seal forms a seal between said hub and said cylinder, said piston being rated for compression pressures of at least three thousand pounds per square inch, said lip seal being bonded to said body so as to form a single unit piston, said single unit piston having a first leading end with an annular groove formed therein.

5,284,085

APPARATUS FOR THE HEAT TREATMENT OF PARTICULATE MATERIAL SUCH AS FOOD

Bengt Palm, Genarp, Sweden, assignor to Alfa-Laval Food Engineering AB, Stockholm, Sweden

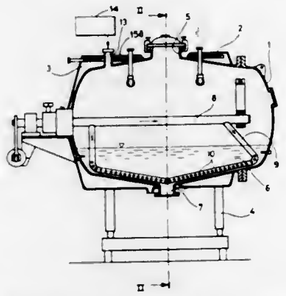
PCT No. PCT/SE90/00055, § 371 Date Jul. 12, 1991, § 102(e) Date Jul. 12, 1991, PCT Pub. No. WO90/08482, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 25, 1990, Ser. No. 720,834

Claims priority, application Sweden, Jan. 27, 1989, 8900297

Int. Cl.[5] **A23L** *3/16*; **A47J** *27/00, 27/04*

U.S. Cl. 99—348 **6 Claims**



1. In an apparatus for the treatment of particulate material such as food comprising a treatment vessel having an inlet for material to be treated and an outlet for treated material, means to evacuate and pressurize the vessel and means to cool material in the vessel, the improvement which comprises a horizontal cylindrical treatment chamber, a hollow agitating device having a plurality of perforations in said chamber, means for supplying steam to said agitating device and means for oscillating said agitating device across the bottom of said chamber, thus to furnish steam through said perforations to material in the bottom of said chamber to heat said material.

5,284,086

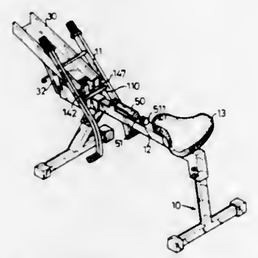
MECHANISM FOR CRUSHING CANS

Chao-Chia Wang, and Chuan-Cheng Chen, both of No. 439, Ho Ping Rd., Ta Chia Chen, Taichung Hsien, Taiwan

Filed Feb. 12, 1993, Ser. No. 17,472

Int. Cl.[5] **B30B** *1/04, 9/32*

U.S. Cl. 100—102 **8 Claims**



8. A mechanism comprising:

a base including a rear portion having a seat disposed thereon on which a user sits and a front portion having a housing disposed thereon, said housing including a panel disposed thereon and located closer to said seat;

a slide slidably engaged in said housing and movable toward and away from said panel, said slide including a notch formed therein;

means for moving said slide, including a pair of levers pivotally coupled to said base, and means for coupling said slide to said levers; and

an actuator pivotally secured on said base and including a piston rod having ahead provided thereon, said actuator being selectively located in first and second positions;

whereby when in said first position, said head of said piston rod engages with said notch in said slide, said actuator acts as a resistance means to allow the user to exercise when operating said levers; and

when in said second position, said head of said piston rod disengages with said notch in said slide, said panel and said slide define a space therebetween for a can, whereby said can is stopped by said panel and crushed between said panel and said slide when said slide moves toward said panel in response to a motion of said levers.

5,284,087

METHOD AND MEANS FOR MARKING A WORKPIECE

Harri Vaarala, Opettajankuja 6 A 9, SF-62200 Kauhava, Finland

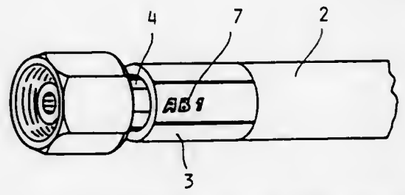
PCT No. PCT/FI90/00285, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992, PCT Pub. No. WO91/08062, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 23, 1990, Ser. No. 858,969

Claims priority, application Finland, Nov. 27, 1989, 895655

Int. Cl.[5] **B31F** *1/07*

U.S. Cl. 101—32 **17 Claims**



1. A method of producing a mark in an object comprising providing a holding strip having marking means separate and distinct from said holding strip affixed thereto, adhesively securing said holding strip onto a surface of said object, said marking means having a thickness substantially greater than the thickness of the strip to project from said strip,

applying external pressure on said object via the marking means and said strip to press the marking means into the object and leave an imprint of the marking means in said object, and

releasing the external pressure and removing the marking means from the object to leave the imprint of the marking means in said object.

5,284,088

DEVICE FOR THE REGISTER ADJUSTMENT

Giuseppe Fantoni, Ozzano Monferrato; Mario Forno, Casale Monferrato; Gianfranco Gibellino, Trino Vencellese, and Giampiero Miglietta, Casale Monferrato, all of Italy, assignors to Officine Meccaniche Giovanni Cerutti S.p.A., Italy

Filed Nov. 9, 1992, Ser. No. 973,741

Claims priority, application Italy, Mar. 23, 1992, MI92A-000659

Int. Cl.[5] **B41F** *13/06, 5/04*

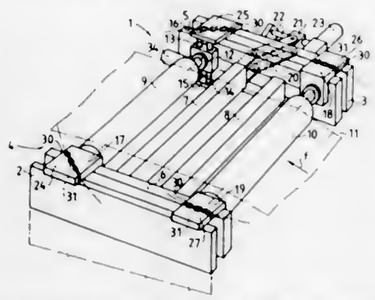
U.S. Cl. 101—228 **5 Claims**

1. An arrangement for adjusting web register in a printing machine, comprising:

(a) a frame detachably mounted on the machine, said frame having a pair of frame members extending in mutual parallelism along a longitudinal direction, and spaced apart along a transverse direction generally perpendicular to the longitudinal direction;

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(b) a pair of guide rollers over which a web is sequentially guided along a path to a printing station, said guide rollers extending along the transverse direction between the frame members and being spaced apart along the longitudinal direction, said guide rollers being journaled for rotation about respective axes lying in a common plane;



(c) elevation means for raising and lowering a dowstream one of the guide rollers for movement in an elevation direction generally perpendicular to both the transverse and longitudinal directions; and

(d) means for turning the guide rollers and the frame members as a unitary assembly relative to the machine in a curved course in said common plane.

5,284,089

PROTECTIVE SYSTEM OF A PILE LIFTING DEVICE FOR SHEET PILES IN SHEET-FED PRINTING MACHINES

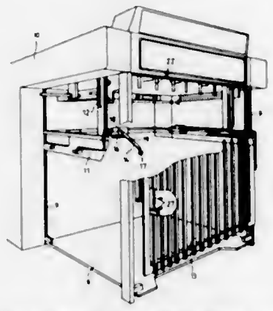
Helmut Buck, Schriesheim; Udo Ganter, Hirschberg-Leutershausen, and Christian Thomas, Walldorf, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 22,054

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1992, 9202352

Int. Cl.[5] B41F *13/24*

U.S. Cl. 101—232 **6 Claims**



1. Protective system of a pile lifting device for sheet piles in feeders and deliveries of sheet-fed printing machines, wherein a pile support board for supporting a sheet pile thereon is liftable and lowerable in guides of a frame by a motorized drive of a lifting unit controllable independently of the printing-machine drive, the motorized drive having at least one fast-speed operating condition and one comparatively slower speed operating condition for both the lifting and lowering directions of movement, the pile support board and a sheet pile supported thereby, respectively, being drivable by the motorized drive to a position switch and into a collision region in which it can collide with another machine part, comprising a control member operative between the pile support board and the sheet pile supported thereby, respectively, on the one hand, and a machine part present in the collision region, on the other hand, said control member being articulatingly fastened to at least one of a location in vicinity of the position switch and the machine part in the collision region, and having switch elements arranged in at least two switching stages for controlling the lifting unit drive, said switch elements being switched via contact surfaces formed on the pile support board and including a first plurality thereof arranged in a first one of said switching stages and a second plurality thereof arranged in a second switching stage, said first plurality of switch elements being located upstream of said second plurality of switch elements in a direction of mutual approach of the pile support board and the machine part in the collision region, said first plurality of switch elements being actuatable for switching the lifting unit drive from fast speed operation to a slower speed operation, and said second plurality of switch elements being actuatable for switching the lifting unit drive off.

5,284,090

COLOR PRINTING APPARATUS FOR BOTH SIDES OF PRINTING PAPER

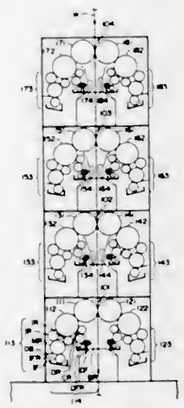
Yuichi Okamura, and Komei Kawahara, both of Tokyo, Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Division of Ser. No. 528,542, May 25, 1990, Pat. No. 5,152,222. This application Sep. 30, 1992, Ser. No. 953,949

Claims priority, application Japan, May 30, 1989, 1-137071

Int. Cl.[5] B41F *13/24*

U.S. Cl. 101—248 **3 Claims**



1. A color printing apparatus for applying colored ink to both sides of a printing paper comprising:

a plurality of printing sections which are arranged spaced apart from one another at regular intervals in a piled configuration, wherein each of said printing sections includes:

a pair of blanket cylinders which face each other and which each can be moved between a contacting position and an isolating position;

a plate cylinder connected to each of said blanket cylinders and provided with an inking unit, or an inking unit and a dampening unit;

fine adjusting means, connected to each of said plate cylinders, for shifting said plate cylinder in its axial direction while said plate cylinder is rotating to adjust the position of said plate cylinder with respect to said blanket cylinder so as to compensate for variations in the dimensions of said paper web resulting from the presence of varying amounts of moisture in said paper web;

wherein said fine adjusting means includes a threadingly slidable member fixed on at least one end of the axis of said plate cylinder; and

wherein said fine adjusting means further comprises an adjusting shaft whose center is formed with a male screw section; said adjusting shaft being slidably mounted on a frame through a key and a bracket, and further connected to one end of said axis of said plate cylinder through a bearing and a bearing housing; said male screw section being threadingly engaged with a first gear through a through-female screw section; said first gear being meshed with a second gear which is driven by a driving unit.

5,284,091

PLATE ROLL AND AN ADHESIVE SHEET THEREFOR

Kazuhiro Kon, Kawaguchi; Koichi Hirota, Tokyo; Masao Kogure, Fukiage, and Takanori Saito, Misato, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 681,871, Apr. 5, 1991, abandoned. This application May 8, 1992, Ser. No. 884,270

Claims priority, application Japan, Apr. 12, 1990, 2-96833

Int. Cl.[5] B41F *13/10*; **H01L** *21/68*

U.S. Cl. 101—378 **19 Claims**

1. A plate roll attached to a printing plate comprising a printing plate made of a resin which is transparent to electromagnetic waves and which is attached to a plate roll by a photocurable adhesive which loses its adhesive ability by curing by irradiation with electromagnetic waves.

5,284,092

PLATE CYLINDER HOLDER WITH SLIDE RAIL CIRCULAR BEARING ASSEMBLY

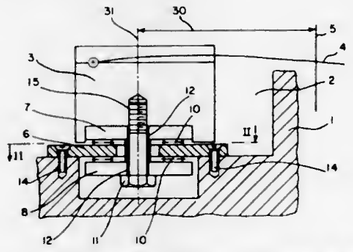
Claus Simeth, Geisenheim, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,309

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4210897

Int. Cl.[5] B41F *13/10*

U.S. Cl. 101—378 **13 Claims**



1. A printing machine plate cylinder comprising means for supporting a printing plate about the outer perimeter of the cylinder, means forming a hollow in said cylinder, an elongated slide rail disposed in said hollow, means for securing one end of said printing plate to said slide rail, means for supporting said slide rail for selected movement in an adjusting plane substantially parallel to a plane tangent to the plate cylinder at such location, said supporting means comprising a plurality of roll bodies for enabling free movement of the slide rail in any direction in the adjusting plane.

5,284,093

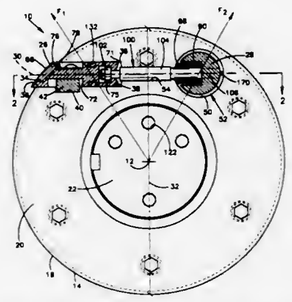
PLATE CYLINDER WITH SEMI-AUTOMATIC PLATE LOCK UP

Glenn A. Guaraldi, Kingston; Bertrum S. Ramsay, Alton, and Warren H. Jarrard, Rochester, all of N.H., assignors to Heidelberg Harris Inc., Dover, N.H.

Filed Feb. 24, 1993, Ser. No. 24,391

Int. Cl.[5] B41F *1/28*

U.S. Cl. 101—415.1 **20 Claims**



1. A rotatable plate cylinder (**10**) for supporting a printing plate (**150**), said plate cylinder (**10**) comprising:

a body (**14**) with a cylindrical outer surface (**16**);

locking means for securing the printing plate (**150**) to said plate cylinder (**10**), said locking means including means for defining a passage (**34**) in said plate cylinder (**10**), said passage (**34**) having an opening (**36**) at said cylindrical outer surface (**16**) and extending into said plate cylinder (**10**) from said opening (**36**);

said locking means further including a locking member (**26**) supported for movement in said passage (**34**) between a closed position and an open position, said locking means securing the printing plate (**150**) to said plate cylinder (**10**) when said locking member (**26**) is in said closed position, and releasing the printing plate (**150**) from said plate cylinder (**10**) when said locking member (**26**) is in said open position, said locking member (**26**) being movable outward of said passage (**34**) from said closed position toward said open position;

the mass of said locking member (**26**) subjecting said locking member (**26**) to a first centrifugal force when said plate cylinder (**10**) rotates, said first centrifugal force urging said locking member (**26**) to move outward of said passage (**34**) from said closed position toward said open position;

a balance member (**28**), the mass of said balance member (**28**) subjecting said balance member (**28**) to a second centrifugal force when said plate cylinder (**10**) rotates; and

force balancing means (**100**) for directing said second centrifugal force against said locking member (**26**) oppositely to said first centrifugal force and in an amount great enough not to permit said first centrifugal force to move said locking member (**26**) outward of said passage (**34**) from said closed position toward said open position.

5,284,094

PYROTECHNIC IGNITION APPARATUS

Joseph L. La Mura, West Caldwell, and Ronald C. Wallenburg, Pennsauken, both of N.J., assignors to Joanell Laboratories, Inc., Livingston, N.J.

Division of Ser. No. 419,549, Oct. 10, 1989, Pat. No. 5,157,222. This application May 4, 1992, Ser. No. 877,809

Int. Cl.[5] F23Q *21/00*

U.S. Cl. 102—217 **14 Claims**

1. A pyrotechnic ignition circuit for igniting a selected pyro-

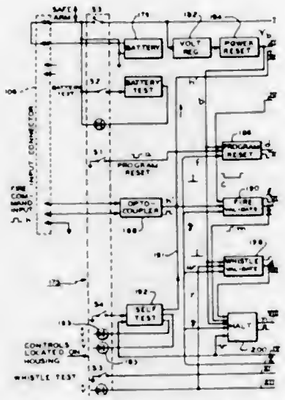
VOL 1159 ISS 2 FEB 8 1994 UMI

technic device in a given array, each position of the array having a given address, said circuit comprising:

switch means for applying electrical power to said circuit;

means for receiving an ignition command input signal having a given amplitude and a given time duration;

means for validating the input signal as a valid command signal;



means responsive to the valid command signal for applying an ignition signal to a given device of the array; and

means for disabling said means responsive to the valid command signal within a given time interval after said switch means applies said power.

5,284,095

COMPARTMENT FOR ELECTRIC CIRCUITS

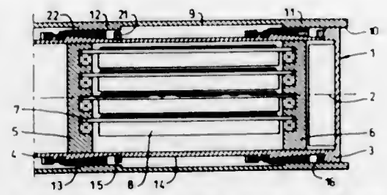
Jacques Sabah, Vincennes, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 24, 1992, Ser. No. 840,763

Claims priority, application France, Feb. 27, 1991, 9102335

Int. Cl.[5] F42B *30/00*; H05K *7/20*

U.S. Cl. 102—293 **9 Claims**



1. An enclosure of reception of electronic components embarked aboard a missile to be first fixed to a carrying aircraft and to follow a carried flight, then after being fired, to follow a free flight, said enclosure being located inside an outer casing and means sensitive to acceleration are provided for, within a given acceleration, to form a thermal bridge between said enclosure and said casing, and beyond said given acceleration, to break said thermal bridge and to insulate said enclosure from said casing.

5,284,096

VEHICLE FOR USE IN PIPES

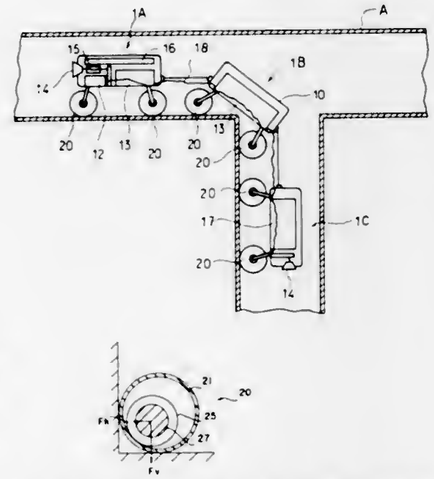
Ronald E. Pelrine; Eric A. Edwards, both of Menlo Park, and Lawrence S. Gullman, La Honda, all of Calif., assignors to Osaka Gas Company, Limited, Japan

Filed Aug. 6, 1991, Ser. No. 740,899

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] B62D *57/02*; B61C *15/04*

U.S. Cl. 104—138.2 **15 Claims**



1. A vehicle adapted to freely travel three-dimensionally on a running surface and comprising a vehicle body, and at least one wheel on the vehicle body, the wheel comprising an outer wheel member having an annular peripheral wall and having a rigidity capable of bearing the load of the vehicle and magnetic forces applied to the wheel, an inner wheel member including a portion of magnetically permeable material having an outside diameter smaller than the inside diameter of the other wheel member and rollable on the inner peripheral surface of the outer wheel member, a magnet provided in the inner wheel member and having magnetic poles in contact with the permeable portion, a drive assembly for driving said at least one wheel, the drive assembly being connected to the inner wheel member of said wheel, so that when the vehicle travels from a first surface portion to a second surface portion at an angle inclined relative to the first surface portion such that the outer wheel member simultaneously comes into contact with the first surface portion at a first point and with the second surface portion at a second point and initially remains stationary, the inner wheel member rolls along the inner peripheral surface of the outer wheel member from a first position wherein the portion of the outer peripheral surface of the inner wheel in contact with the inner peripheral surface of the outer wheel lies adjacent to said first point and the inner wheel member is magnetically attracted to the first surface portion to a second position wherein the portion of the outer peripheral surface of the inner wheel in contact with the inner peripheral surface of the outer wheel lies adjacent to said second point and the inner wheel member is magnetically attracted to the second surface portion so as to maintain the outer wheel in contact with said second surface portion so that the vehicle can then travel from said initial stationary position along said second surface portion.

5,284,097

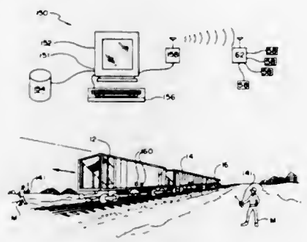
BALLAST DISTRIBUTION, REGULATION AND RECLAIMING RAILROAD MAINTENANCE DEVICE

Richard A. Peppin, Minnetonka; Robert G. Vieau, Plymouth, and James S. Bell, Brooklyn Park, all of Minn., assignors to Loram Maintenance of Way, Inc., Hamel, Minn.

Continuation-in-part of Ser. No. 605,998, Oct. 31, 1990, abandoned. This application Oct. 31, 1991, Ser. No. 786,332

Int. Cl.[5] B61D *7/02*

U.S. Cl. 105—311.1 **8 Claims**



1. A railroad maintenance system for distributing ballast at any point along a railroad track bed while said system transits along said railroad track bed, comprising:

a plurality of ballast cars operably coupled together and to a self-powered motive car into a ballast train, each of said ballast cars including rail engaging wheels for supporting said respective ballast cars along said railroad track bed, each of said ballast cars further including a plurality of ballast hoppers, and each of said hoppers having a lowermost ballast door shiftable between a closed position wherein ballast can be retained within said respective hoppers, and an open position wherein ballast carried within said respective ballast hoppers can exit through said respective ballast doors on to said railroad track bed;

drive means operably coupled to each of said ballast doors for shifting said respective ballast doors between said open and closed positions;

actuating means operably coupled to each of said drive means for selectively actuating said respective drive means for shifting of said respective ballast doors;

radio frequency receiver means operably coupled to respective ones of said drive means for selectively providing said respective drive means with actuation signals for operating said respective ballast doors of said respective ballast hoppers;

radio frequency transmitter means for selectively transmitting a coded radio frequency command signal to said receiver means for initiating said actuation signals whereby selected ones of said ballast doors of selected ones of said ballast cars can be selectively remotely actuated for shifting between said closed and said open positions, such that ballast from selected hoppers from selected cars can be remotely, alternately deposited at any selected portion along said roadbed while said ballast train transits along said railroad track bed; and

control means operably coupled to said actuating means for coordinating the positions of said plurality of ballast doors to control the discharge of ballast from said system at a predetermined optimum ballast flow rate while said ballast train transits along said railroad track bed, said control means including means for establishing said predetermined optimum ballast flow rate based on the number of ballast cars in said system, the amount of ballast in each of said cars, the amount of ballast desired to be deposited along said road bed, the size and number of operable ballast doors, the length of the road bed to be maintained, the distance between ballast doors, and the size of the ballast to be deposited.

5,284,098

AIR CARGO PALLET

Leo Klapperich, Wehr, and Jürgen Graffa, Herne, both of Fed. Rep. of Germany, assignors to Aluteam Geratebau GmbH, Mayen, Fed. Rep. of Germany

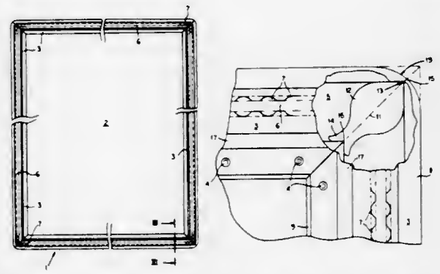
PCT No. PCT/DE91/00187, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/13000, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 2, 1991, Ser. No. 910,018

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 40064"9

Int. Cl.[5] B65D *19/38*

U.S. Cl. 108—55.5 **4 Claims**



1. Air cargo pallet consisting of a quadrilateral plate of light metal with corners, trimmed around the outer edges with a hollow profile of light metal and said plate connected with the hollow profile by rivets, whereby the light-metal hollow profile has a closed hollow space and a longitudinal slot with a T-shaped cross section outwardly open at one end of the section, the slot being for holding elements of stretching nets, holding elements having a head portion shaped to fit the slot to be longitudinally slidable and insertable or removable from the slot with the head portion in an enlarged circularly shaped space in an open area of the slot, stretching nets can be securely tied down to the pallet by inserting the elements in the slots and whereby the hollow profile has miter-cut sections at the corners of the pallet, these miter-cut sections being interconnected in a shear-resistant manner, characterized in that an insert part (**12**) is clamping and symmetrically positioned at each corner in the hollow space (**5**) of the light-metal hollow profile (**3**) such that the insert part (**12**) has a rectangular point (**13**) and a rectangular recess (**14**) said point and said recess angles are symmetrical with respect to a miter joint plane (**11**), and the distance between the apex of the point and the apex of the recess corresponds approximately to the length of the opening in the hollow space (**5**) of the hollow profile (**3**) along the miter joint plane (**11**).

5,284,099

TABLE MAT

Paul J. Cohen, 1655 Flatbush Ave., - Apt. B709, Brooklyn, N.Y. 11210

Filed Jun. 6, 1991, Ser. No. 711,151

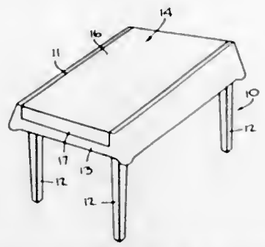
Int. Cl.[5] A47B *13/08*

U.S. Cl. 108—90 **20 Claims**

1. A paper table mat of polygonal shape having at least one pair of parallel lines of perforations defining a central area for

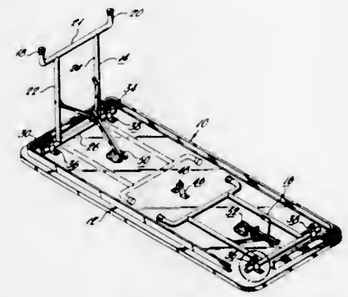
VOL 1159 ISS 2 FE 8 1994 UMI

disposition over a table surface and a pair of end areas for folding about said lines of perforations to depend downwardly



from two sides of a table, each said end area being of smaller size than said central area.

5,284,100
FOLDING TABLE SYSTEM AND APPARATUS
William M. Thorn, Killen, Ala., assignor to Hunt Holdings, Inc., Wilmington, Del.
Filed Jan. 31, 1992, Ser. No. 830,294
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—129 **5 Claims**



1. Apparatus for foldably mounting the leg structure of a table to the underside of the top of said table, and for supporting a plurality of such tables, one above the other, in a stacked array, comprising:

bracket means comprising a band having a central portion of generally cylindrical shape providing a horizontal journal for receiving a horizontal shaft extending horizontally from one of said legs, whereby said shaft and said one leg may be rotated about the horizontal axes of said journal to fold and unfold said one leg with respect to a table top;

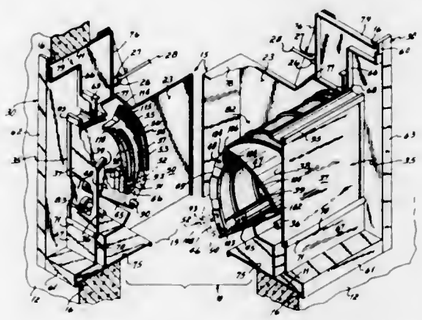
said bracket means also comprising a table attachment portion for securing it to the underside of said table top; and

resilient bumper means having a high-friction surface, secured to the lower side of said bracket means and extending away from said table top beyond all other portions of said table, whereby said bumper contacts the adjacent table when in said stacked array;

wherein said band is provided with a substantially flat, downwardly-facing portion to which said resilient bumper means is secured; and

wherein said substantially flat portion has an aperture in it, and said bumper means is provided at one end with a portion larger in diameter than said aperture but small enough in diameter to be elastically compressed and forced into said aperture, said bumper means having a circumferential groove formed in said large end portion thereof in which the edges of said band adjacent said aperture seat themselves.

5,284,101
AFTER HOUR DEPOSITORY DOOR SECUREMENT MECHANISM
Charles D. Oder, Hamilton, and Douglas W. Lohrey, Somerville, both of Ohio, assignors to Mosler Incorporated, A Corp. of De, Hamilton, Ohio
Filed Dec. 13, 1991, Ser. No. 808,183
Int. Cl.[5] E05G *1/024*
U.S. Cl. 109—46 **6 Claims**



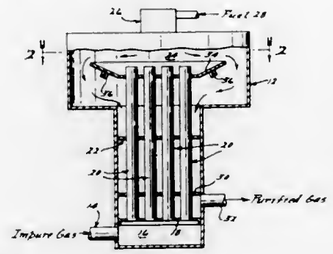
1. A night depository for the secure placement of articles within a receptacle for emptying into a bank vault comprising:

a receptacle with a door, floor and two vertical, parallel sides having interior and exterior surfaces, said door and said floor being located intermediate said sides with said door joined along a lower portion thereof to a forward portion of said floor, each being joined to each of said sides,

means for mounting said receptacle in an opening in a building wall, said receptacle being mounted for pivotal motion about a first horizontal axis proximate the lower edge thereof between a first position of travel wherein said door is flush against said mounting means so said door covers an opening portion not covered by said mounting means and a second position of travel about said horizontal axis wherein said floor substantially blocks said opening portion and said door is angularly disposed outwardly of said building wall; and

a movable wall having two edges and two ends with one of said ends being mounted about a second horizontal axis proximate the edge of said floor remote from said door so said movable wall may be pivotably moved about said second horizontal axis, an unmounted end of said movable wall being pivoted away from said floor when said receptacle is at said first position of travel and pivoting toward said floor when said receptacle is pivoted to said second position of travel, said unmounted end being separated from said door by a gap of approximately 0.25 inches when pivoting towards said floor, said edges of said movable wall being separated from said interior surfaces of said receptacle vertical sides by a spatial clearance of approximately 0.062 inches that is less than said gap so that the air trapped underneath said movable wall is expelled along said unmounted end through said gap at a rate which cushions the fall of said movable wall to said floor to reduce the noise from said unmounted end of said movable wall end impacting said receptacle floor.

5,284,102
FUME INCINERATOR WITH BAFFLE
Michael C. Thomason, Ann Arbor, Mich., assignor to Salem Industries, Inc., South Lyon, Mich.
Filed Jul. 27, 1992, Ser. No. 920,245
Int. Cl.[5] F23G *7/06, 5/00*
U.S. Cl. 110—210 **3 Claims**



1. A fume incinerator comprising:

a housing having an upper and lower end;

an inlet pipe for feeding ambient fumes containing volatile organic combustible contaminants into the lower end of said housing;

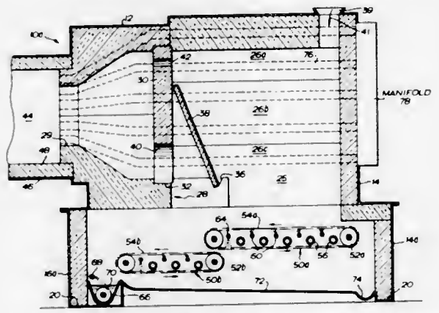
a combustion chamber in the upper end of said housing, said combustion chamber oxidizing said volatile organic combustible contaminants in said fumes and outputing a hot exhaust;

a plurality of heat exchange tubes affixed only to the lower end of said housing, said plurality of tubes delivering said fumes from the lower end of said housing to said combustion chamber;

an outlet pipe connected intermediate the lower and upper ends of said housing for expelling said exhaust from said incinerator; and,

a baffle affixed to said housing proximate said combustion chamber for evenly directing said hot exhaust between said housing and the outer surfaces of said plurality of tubes to said outlet pipe thereby heating said ambient fumes inside said plurality of tubes and cooling said hot exhaust.

5,284,103
BIO-MASS BURNER CONSTRUCTION
David J. Hand, Warsaw, Va.; Calvin H. Hand, Jr., Denver, and Stan E. Abrams, Castle Rock, both of Colo., assignors to Waste Conversion Systems, Inc., Englewood, Colo.
Division of Ser. No. 755,735, Sep. 6, 1991, Pat. No. 5,178,076.
This application Dec. 4, 1992, Ser. No. 985,707
Int. Cl.[5] F23G *5/00*; F23D *1/02*
U.S. Cl. 110—255 **2 Claims**



1. A traveling grate construction for providing an oxygen-starved combustion zone in a bio-mass burner which comprises:

(a) a plurality of endless belt conveyors, each belt conveyor having upper and lower flights placed in a lower portion of a combustion chamber to receive unburned fuel by gravity flow through an entrained bed zone positioned above said endless belt conveyors,

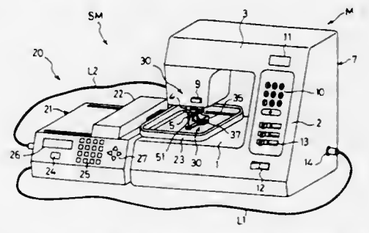
(i) said endless belt conveyors being positioned in head-to-head relationship but disposed at different elevations whereby fuel drops progressively from the highest belt conveyor to a lower conveyor thereby agitating and jostling the unburned fuel to enhance the burning thereof,

(ii) each endless belt conveyor being formed from woven steel having a porosity of at least 20 percent,

(b) means for supplying a primary air supply through said woven steel belts to create an oxygen-starved burning of said fuel, and

(c) means for uniformly applying a water mist between the upper and lower flights of at least one of said belt conveyor to regulate the temperature of said combustion zone and prevent clinkers form forming in the ash.

5,284,104
EMBROIDERING MACHINE INCLUDING SEWING MACHINE AND EMBROIDERING UNIT CONNECTABLE TO SEWING MACHINE
Masayuki Hori, Gifu, and Hideki Goto, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Dec. 28, 1992, Ser. No. 997,217
Claims priority, application Japan, Feb. 6, 1992, 4-56713
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **17 Claims**



6. An embroidering machine including a sewing machine which has a bed and a main motor for sewing embroidery patterns, comprising:

an embroidering unit detachably connected to the sewing machine, said embroidering unit having:

an embroidery frame extending over the bed of the sewing machine for holding a workpiece;

moving means for moving said embroidery frame in a horizontal plane over the bed;

storing means for storing movement data representing movement of the embroidery frame in the horizontal plane for forming each stitch of a plurality of embroidery patterns; and

movement control means for controlling said moving means and for generating a speed control signal based on the movement data; and

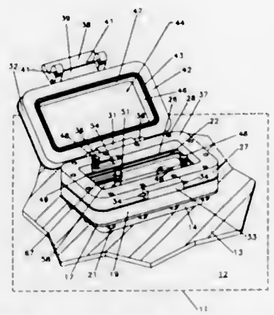
first connecting means for connecting said movement control means to the sewing machine, wherein the sewing machine has stitch forming means driven by the main motor at a speed designated by the speed control signal.

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5,284,105
SIGHT GLASS ASSEMBLY AND WIPER FOR CARGO HOLDS

Larry C. Wilkins, New Albany, Ind., assignor to Electromechanical Research Laboratories, Inc., New Albany, Ind.

Filed Feb. 26, 1991, Ser. No. 661,551
Int. Cl.[5] B63B *19/02*
U.S. Cl. 114—173 **4 Claims**



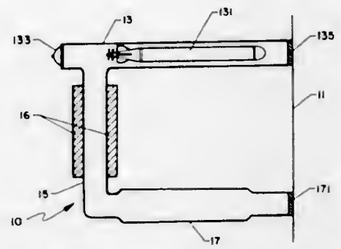
1. In combination with a cargo compartment, a sight glass assembly comprising:
a base frame sealingly adhered to the top of the compartment and forming a frame around an opening through the top of the compartment;
the base frame having an upstanding frame portion and a perimetrical flange extending laterally outward from the frame portion around the perimeter of the frame portion;
a first sealing ring mounted on top of the frame around the perimeter of the frame portion;
a sight glass mounting frame mounted to the top of the first sealing ring and secured to the flange;
a sight glass sealingly mounted to the mounting frame;
a glass retainer frame secured to the mounting frame and sealingly confining the sight glass; and
a wiper assembly including a wiper cartridge assembly immediately below the glass and including a wiping element engaging the lower face of the glass, a driving member above the glass operatively associated with the wiper cartridge assembly and operable from above the glass to operate the wiper cartridge assembly to move the wiping element along the lower face of the glass, and thereby wipe foreign material from the lower face of the glass;
the cargo compartment being in a boat, and the top of the cargo compartment being boat deck;
the base frame being welded to the deck around the entire perimeter of the frame; and
the sight glass mounting frame being secured to the flange by a plurality of fasteners having heads under the flange and screw threaded shanks screwed into the mounting frame.

5,284,106
SUPERCONDUCTING ELECTROMAGNETIC TORPEDO LAUNCHER

James C. S. Meng, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1993, Ser. No. 16,349
Int. Cl.[5] B63H *19/00*
U.S. Cl. 114—238 **1 Claim**

1. A torpedo launching system comprising:
a launch tube having a breech door and a muzzle door;
an impulse tank constructed of a non-conducting material and having an intake and an exit end, said exit end connected to said launch tube near its breech end;
a sea chamber for admitting seawater to the torpedo launching system being connected to the intake of said impulse tank on a first end and ported to the sea on a second end;
seawater electrodes embedded in the inner walls of said impulse tank thereby providing an electric field across the diameter of said impulse tank;

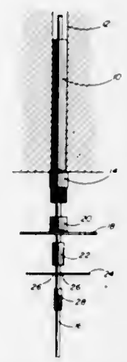


a cryogenic dewar surrounding said impulse tank providing a low temperature environment cooled by liquid helium; and
a super-conducting electromagnet located within said dewar and providing an intensified magnetic field across said impulse tank oriented so that a Lorentz force is generated in the seawater within said impulse tank.

5,284,107
CABLE BOLT MONITORING DEVICE

Douglas Milne, Vancouver; Alain Condron, Ste-Catherine, and Yves Potvin, Pincourt, all of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Feb. 8, 1993, Ser. No. 14,483
Claims priority, application Canada, Mar. 9, 1992, 2062543
Int. Cl.[5] F16B *31/02*; **E02D** *33/00*
U.S. Cl. 116—212 **3 Claims**

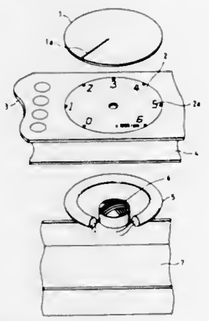


1. A monitoring unit for installation on a cable bolt, comprising:
(a) a tube designed to be securedly fit within a cable bolt hole and having a tube collar near one end thereof;
(b) a cable bolt adapted to be grouted in rock at the centre of the tube and extending past an upper end of the tube;
(c) a base plate having a portion placed tightly against the tube collar adjacent the rock face;
(d) a centralizer sleeve designed to fit over the cable bolt to keep the cable bolt centralized within the base plate and tube;
(e) an elongated measuring plate having a centre hole for insertion of the cable bolt to fit tightly against the base plate and a groove cut at equal distances from each side of the centre hole for allowing the measuring plate to bend if the rock moves with respect to the cable bolt; and
(f) a cable clamp for fixing the measuring plate tight against the base plate.

5,284,108
DISPLAY DEVICE FOR A VEHICLE

Yoshiyuki Furuya, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,289
Claims priority, application Japan, Jul. 1, 1991, 3-160294
Int. Cl.[5] G01D *11/28*; **F21V** *9/14*
U.S. Cl. 116—286 **6 Claims**



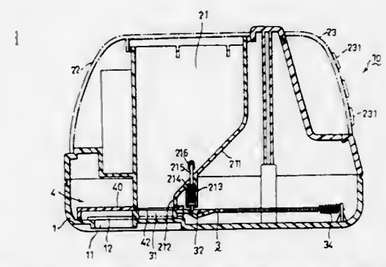
1. A display device comprising:
a dial having a character portion arranged on an outer circumference portion thereof;
a circular disk-shaped pointer disposed in front of said dial, said circular disk-shaped pointer including a slit-shaped indicating portion radially extending from a central portion to an outer peripheral portion of said circular disk-shaped pointer, an outer peripheral portion of said slit-shaped indicating portion covering said character portion on said dial;
a light source arranged behind said dial to illuminate said dial and said circular disk-shaped pointer; and
a driving source for driving said circular disk-shaped pointer,
wherein said pointer is constructed of a polarizing plate with a first predetermined polarizing direction exclusive of said indicating portion of said pointer, said dial having a portion defined by overlapping said dial and said pointer, wherein said dial is constructed of a polarizing plate having a second predetermined polarizing direction exclusive of said character portion and wherein a light beam emitted from said light source passes through said portion defined by overlapping said slit-shaped indicating portion and said character portion.

5,284,109
FEEDING DEVICE HAVING MECHANISM FOR RELEASING FEED AT PRE-ARRANGED INTERVALS

Jieh-Chin Jeng, No. 8, Lane 732, Chung-Chen Rd., Yen-Hsing Tsun, Yung-Kang Hsiang, Tainan Hsien, Taiwan

Filed Jan. 27, 1993, Ser. No. 9,825
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.11 **1 Claim**

1. A feeding device comprising a casing with a bottom that has a first opening extending therethrough, a container provided above said bottom to receive feed therein, said container having an outlet formed adjacent to said bottom, and an enclosed chamber adjacent to said outlet, said chamber accommodating a depression rod and a compression spring, said first opening of said bottom and said outlet of said container lying in a straight line; a food-carrying plate provided between said bottom and said container and being movable horizontally along said bottom, said food-carrying plate having a second opening extending therethrough, said food-carrying plate having a depression formed adjacent to the second opening, a lower end of the depression rod being in contact with the depression of the plate; a driving unit moving said food-carrying plate on said bottom at pre-arranged intervals between a first position, wherein said second opening of said food-carrying plate is aligned and communicated with said outlet of aid container, and a second position, wherein said first opening of said bottom of said casing is aligned and communicated with said second opening of said food-carrying plate; an inverted U-shaped covering member which includes a base that is mounted above said food-carrying plate across said straight line and that has two opposite arm portions extending downward from said base to connect with said bottom of said casing,



said container being disposed on said base of said covering member, said base of said covering member having a third opening communicated with said outlet of said container and aligned with said second opening of said food-carrying plate when said food-carrying plate is at said first position, said covering member confining a guiding path above said bottom, said food-carrying plate extending through said guiding path of said inverted U-shaped covering member to move along said straight line; and a feed vibrator being fixed on an upper end of the depression rod which extends out of the chamber; wherein said food-carrying plate includes a rack connected to and driven by said driving unit, said food-carrying plate being reciprocated linearly between said first and second positions when said rack of said food-carrying plate is driven by said driving unit so that the depression rod is moved up and down within said enclosed chamber by the food-carrying plate, while the vibrator propels the feed in the container toward the outlet.

5,284,110
BRACKET CONNECTOR FOR A WATER SUPPLY SYSTEM

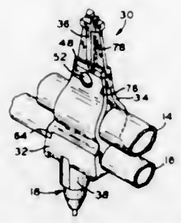
Robert D. Hostetler, Elkhart, Ind., assignor to Avtron, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 747,863, Aug. 20, 1991, abandoned. This application Apr. 22, 1992, Ser. No. 871,975
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—72 **25 Claims**

1. A suspended water supply system for chickens and small animals, said water supply system comprising:
a conduit for transmitting water, said conduit including a plurality of saddle portions, each said saddle portion including an outer surface having a predetermined orientation relative to said conduit;
a plurality of dispenser valves for selectively dispensing water from said conduit, each said dispenser valve disposed on one of said saddle portions;
ballast means for supporting said conduit; and
means for connecting said ballast means and said conduit, said connecting means including a ballast attachment portion disposed around said ballast means, said connecting means further including a saddle receiving portion

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disposed about said conduit and being keyed to said outer surface of said saddle portion, whereby said connecting means is keyed to said saddle portion of said conduit and



aligns said dispenser valves with said ballast means so that when said water supply system is suspended, said dispenser valves are automatically positioned perpendicularly relative to the ground.

5,284,111

TWO-STATE INTERNAL COMBUSTION ENGINE

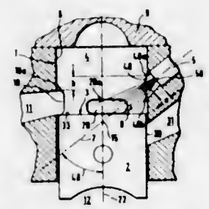
Werner Geyer, Waiblingen, and Ralf Tuckermann, Stuttgart, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

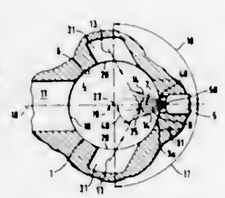
Filed Jun. 3, 1993, Ser. No. 70,784

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1992, 4219955

Int. Cl.[5] F02M *69/10;* **F02B** *25/14, 33/00*

U.S. Cl. 123—73 C **11 Claims**





1. A two-stroke internal combustion engine, especially for handheld portable tools such as a motor-driven chain saw, the two-stroke internal combustion engine comprising:

a cylinder defining a cylinder wall;

a piston defining a longitudinal axis and being mounted in said cylinder for reciprocating therein between bottom and top dead center positions;

said piston having an essentially flat rotationally symmetrical upper end face;

said end face and said cylinder conjointly defining a combustion chamber;

said cylinder wall defining an inner wall surface and having an exhaust opening formed in said surface;

said cylinder wall having an exhaust channel extending from said exhaust opening for conducting hot combustion gases entering said exhaust opening away from said combustion chamber;

said end face of said piston having a first half surface area directly adjacent said exhaust opening and a second half surface area disposed away from said exhaust opening;

an injection valve mounted in said cylinder wall opposite said exhaust opening and being adapted to discharge an injection jet directed at least substantially toward said second half surface area;

said injection jet defining a jet axis;

said jet axis and said longitudinal axis of said piston conjointly defining an angle of less than 90°;

a crankcase;

said cylinder wall having an inlet channel formed therein for conducting combustion air into said crankcase as said piston moves toward said top dead center position;

said cylinder wall having an overflow channel formed therein communicating with said crankcase for conducting said combustion air from said crankcase to said combustion chamber when said piston moves downwardly toward said bottom dead center;

said overflow channel having an overflow opening formed in said inner wall surface for passing said combustion air from said overflow channel into said combustion chamber;

said overflow opening being disposed between said injection valve and said exhaust opening;

means for directing said combustion air through said overflow opening and into said combustion chamber in a direction which is approximately opposite to the direction of said injection jet;

said inner wall surface having an injection opening formed therein through which said injection jet passes into said combustion chamber;

said injection opening being at an elevation above the elevation of at least one of said exhaust opening and said overflow opening by a predetermined amount (b) so as to cause said injection opening to be closed last after closure of said at least one of said exhaust opening and said overflow opening during the movement of said piston toward top dead center thereby permitting the duration of the injection of said injection jet to continue after the closure of said at least one of said exhaust opening and said overflow opening.

5,284,112

VALVE OPERATING MECHANISM INCLUDING VALVE LIFTER

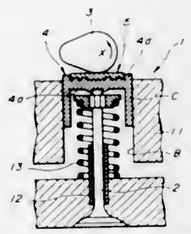
Takeichiro Takehara, Yokohama, and Yoshiki Muto, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 19, 1993, Ser. No. 34,369

Claims priority, application Japan, Apr. 6, 1992, 4-083624

Int. Cl.[5] F01L *1/14*

U.S. Cl. 123—90.48 **12 Claims**



1. A valve operating mechanism comprising:

a valve lifter made of fiber reinforced plastic and including a cylindrical section, and a partition section connected to said cylindrical section and located perpendicular to the axis of said cylindrical section, said partition section having a first side, and a second side at which an end portion of a valve stem of an engine valve is to be pushed;

means defining at least one shim contacting surface at said first side of said valve lifter partition section, said shim contacting surface extending along an annular surface coaxial with said valve lifter cylindrical section;

a generally disc-shaped shim disposed on said first side of said valve lifter partition section, said shim having a first side in slidable contact with a cam, and a second side in contact with said first side of said valve lifter partition section; and

means defining at least one lifter contacting surface at said second side of said shim, said lifter contacting surface extending along an annular surface coaxial with said shim and in engagement with said shim contacting surface of said valve lifter partition section.

5,284,113

ARRANGEMENT IN AN I. C. ENGINE

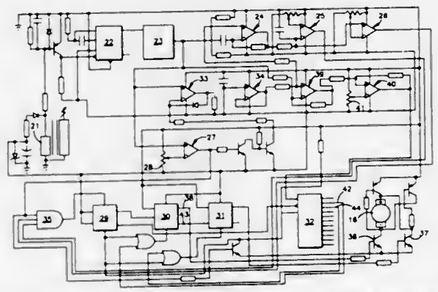
Ulf M. Svensson, Trollhättan, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Sep. 10, 1992, Ser. No. 943,293

Claims priority, application Sweden, Sep. 11, 1991, 9102629-4

Int. Cl.[5] F02M *7/00*

U.S. Cl. 123—344 **2 Claims**



1. Arrangement in a two-cycle internal combustion engine provided with means (**11, 12**) for adjusting a ratio of air to fuel (A/F), a control unit (**19**) having a tachometer (**21**) and control means (**36, 37**) for electro-mechanical control of the adjusting means, and means (**30, 31, 33, 34**) for determining a maximum engine speed, wherein a primary circuit (**21**) of an engine ignition coil is utilized as a pulse transducer for the tachometer, a differentiating circuit (**24**) is connected to said tachometer for providing the derivative of the engine speed function, and a starting pulse circuit (**35**) is connected to said control means and operable in relation to digital circuits (**29, 30, 31**) connected to said differentiating circuit and to different branches of said control means adapted to increase and reduce the air to fuel ratio, respectively, resulting in a corresponding variation of the engine speed, and a peak value memory (**33, 34**) is connected to said tachometer to provide a final setting of said adjusting means at said maximum engine speed.

5,284,114

APPARATUS AND METHOD FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,712

Claims priority, application Japan, Dec. 10, 1991, 3-326156

Int. Cl.[5] F02D *41/30;* **F02P** *7/077*

U.S. Cl. 123—414 **2 Claims**

1. An apparatus for controlling an internal combustion engine, comprising:

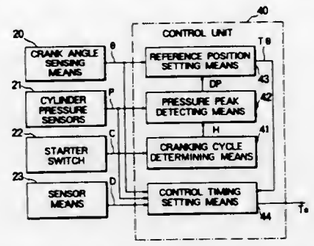
crank angle sensing means for generating a crank angle signal comprising a series of successive pulses in synchronization with the rotation of the engine;

pressure sensing means for sensing an internal pressure in at least one of cylinders of the engine and generating a corresponding cylinder pressure signal;

pressure peak detecting means for detecting a peak in the internal pressure in said at least one cylinder during an engine cranking cycle;

reference position setting means for setting as a reference position the crank angle signal at the instant when the pressure peak in said at least one cylinder is detected; and

control timing setting means including a position counter which counts the number of pulses in said crank angle signal and which is resets in response to an occurrence to said reference position, said control timing setting means



being operable to set a control time corresponding to a control timing for each of said cylinders on the basis of a counted value of said counter.

5,284,115

COOLING SYSTEM FOR A WORKING VEHICLE

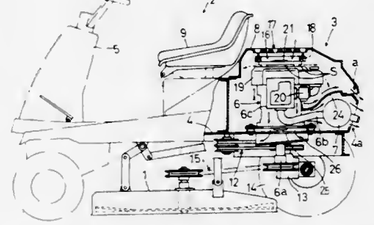
Ryozo Imanishi; Nobuyuki Yamashita, and Katsuhiko Uemura, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Jun. 23, 1993, Ser. No. 81,517

Claims priority, application Japan, Sep. 8, 1992, 4-239453

Int. Cl.[5] F01P *1/02*

U.S. Cl. 123—41.7 **7 Claims**



1. A working vehicle having an air-cooled engine, comprising:

an engine hood having an ambient air intake opening defined in an upper surface thereof;

said engine being mounted in said hood and having a vertical output shaft, said engine further including a cylinder head, and a carburetor attached to a side wall of said cylinder head;

a body frame supporting said engine;

fan means disposed above said engine for drawing cooling air in through said ambient air intake opening and directing the cooling air toward said cylinder head and said carburetor;

a muffler disposed adjacent and below said carburetor;

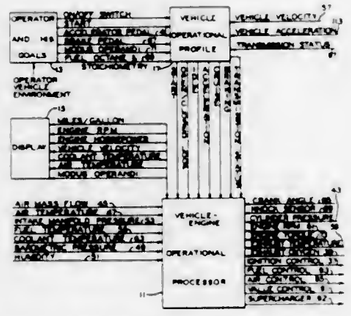
a muffler cover disposed to separate said carburetor and said muffler;

first air passage means for allowing said cooling air drawn in for cooling said cylinder head and said carburetor to flow along an upper surface of said muffler cover and out of said hood; and

second air passage means for allowing said cooling air drawn in for cooling said cylinder head and said carburetor to flow along a lower surface of said muffler cover and out of said hood.

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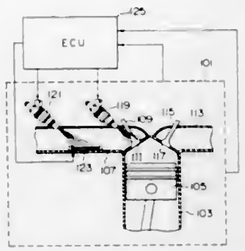
5,284,116
VEHICLE MANAGEMENT COMPUTER
William E. Richeson, Jr., Fort Wayne, Ind., assignor to North American Philips Corporation, New York, N.Y.
Division of Ser. No. 521,500, May 19, 1990, Pat. No. 5,123,397, which is a division of Ser. No. 226,418, Jul. 29, 1988, Pat. No. 4,945,870. This application Apr. 8, 1992, Ser. No. 865,152
Int. Cl.[5] F02P *5/15*; **F01L** *25/08*; **F02D** *41/04*
U.S. Cl. 123—425 **7 Claims**



1. A vehicle management system comprising:
means for sensing a plurality of current vehicle performance indicators including vehicle speed and engine crankshaft angle, environmental conditions, and driver input including the degree to which the accelerator pedal is depressed;
means responsive to the means for sensing for determining a plurality of engine operating parameters including the duration and timing of opening and closing of engine intake and exhaust vlaves, the means for determining including a microprocessor, and a read only memory including a look-up table of optimum engine operating parameters under a wide variety of vehicle performance indicators, environmental conditions, and driver inputs, the microprocessor being responsive to the means for sensing to retrieve selected ones of the optimum engine operating parameters from the read only memory and to modify the selected optimum engine operating parameters according to the current sensed vehicle performance indicators, environmental conditions and driver input; and
means actuated by the responsive means subsequent to the modification of the selected optimum engine operating parameters for controlling the vehicle in accordance with the modified optimum engine operating parameters.

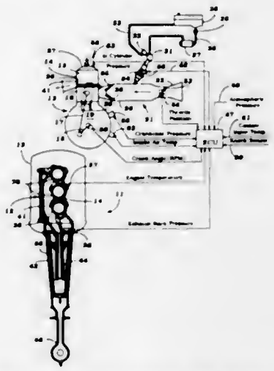
5,284,117
FUEL SUPPLY APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Yoshiaki Akase, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 26, 1993, Ser. No. 51,544
Claims priority, application Japan, Apr. 27, 1992, 4-107581; Jun. 18, 1992, 4-159264; Jun. 30, 1992, 4-172834
Int. Cl.[5] F02D *41/06, 41/32*; **F02M** *31/135*
U.S. Cl. 123—445 **10 Claims**

1. A fuel supply apparatus for an internal combustion engine comprising:
a first fuel injector provided for each cylinder of said engine for injecting fuel into an intake pipe of said engine;
a second fuel injector disposed at a location upstream of said first fuel injector for injecting fuel into said intake pipe independently of said first fuel injector; and
a heater disposed on the inner surface of said intake pipe at a location between said first and second fuel injectors for



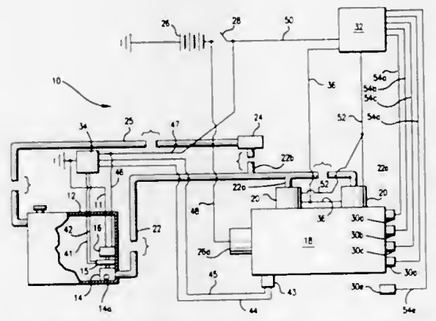
heating and evaporating the fuel injected from said second fuel injector.

5,284,118
FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE
Masahiko Kato, and Yasumari Okamoto, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Dec. 11, 1992, Ser. No. 989,195
Claims priority, application Japan, Dec. 12, 1991, 3-351400
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—478 **76 Claims**



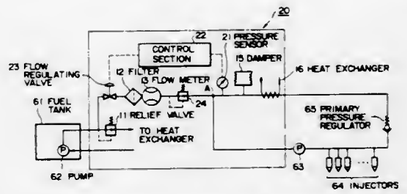
1. A fuel injection control system for an internal combustion engine having a fuel injector for injecting fuel for engine operation, first sensor means for sensing a first engine running condition, second sensor means for sensing a second engine running condition different from said first running condition, and control means for receiving signals from said first sensor means and said second sensor means and controlling the fuel injected by said fuel injector, said control means including determining means for determining which of the signals from said first sensor means and said second sensor means will determine the primary control of the fuel injected by said fuel injector and controlling the fuel injected by said fuel injector from the output only of the selected sensor means.

5,284,119
INTERNAL COMBUSTION ENGINE FUEL INJECTION APPARATUS AND SYSTEM
Marion L. Smitley, Birmingham, Mich., assignor to Walter Potoroka, Sr., Oakland, Mich.
Continuation-in-part of Ser. No. 726,788, Jul. 8, 1991. This application Jul. 10, 1992, Ser. No. 911,476
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—497 **16 Claims**



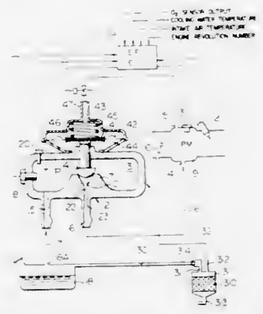
1. A fuel supply system for an internal combustion engine having at least one cylinder, said system comprising a fuel tank, a fuel pump driven by a d. c. variable speed electric motor, an electronically operated fuel injector for metering the fuel supplied to the engine cylinder, one or more engine operating condition sensors each generating an electrical output signal representative of an instantaneous engine operating condition, a computer for receiving said sensor output signal(s) and generating an integrated output signal for controlling said fuel injector(s), an injector fuel feed conduit connecting said fuel tank, pump and injector(s), a fuel by-pass or return conduit including a pressure regulating valve for returning to said tank or a sump pumped fuel not required by the engine and thus not injected into the engine by the injector(s), an additional sensor for generating an electrical signal representative of an instantaneous fuel flow condition in said by-pass conduit, an electronic control means for receiving said additional sensor signal and generating an output signal supplied to said d. c. motor for varying fuel pump speed in a manner to not only supply the variable quantity of fuel required by the engine over the entire range of engine operating conditions to maintain the required system fuel pressure in the injector fuel supply conduit but to supply that required amount of fuel plus some additional quantity of fuel "Q" to make sure that the by-pass valve (pressure regulator) is always by-passing some amount of fuel, said system being electronically programmed so that said additional fuel "Q" is dependent upon and determined by the effect of transient conditions and the inability of a variable fuel supply system to maintain the system design fuel pressure in said injector(s) fuel supply conduit, said fuel "Q" being minimal but sufficient to assure that said fuel supply system including said pressure regulating valve is constantly operating as designed and that fuel by-pass is never permitted to reach, and is prevented from ever reaching, a condition of zero by-pass, thereby positively and completely eliminating the danger that the quantity of fuel pumped is less than the quantity of fuel required to be injected into the engine, as could occur in a fuel supply system wherein fuel by-pass were allowed to reach zero at any time, even for an instant.

5,284,120
FUEL CONSUMPTION MEASURING DEVICE
Susumu Fukushima, and Yukimitsu Omori, both of Yokohama, Japan, assignors to Ono Sokki Co., Ltd., Japan
Filed Nov. 16, 1992, Ser. No. 977,152
Claims priority, application Japan, Apr. 13, 1992, 4-119730
Int. Cl.[5] G01L *3/26*
U.S. Cl. 123—510 **4 Claims**



2. In a fuel consumption measuring device having a flow meter which is mounted on a fuel feeding passage extending from a fuel tank to an engine, wherein return fuel which is not consumed by said engine is returned through a return passage to a passage downstream of said flow meter, and a quantity of the fuel consumed in said engine is measured by said flow meter, said fuel consumption measuring device comprising:
pressure detecting means for detecting a pressure of a confluence between said fuel feeding passage and said return passage;
flow regulating means for regulating a flow rate of said fuel feeding passage; and
control means for controlling said flow regulating means so as to maintain said confluence between said fuel feeding passage and said return passage at atmospheric pressure depending upon a detected result of said pressure detecting means.

5,284,121
INTERNAL COMBUSTION ENGINE WITH EVAPORATED FUEL PURGE SYSTEM
Seiko Abe, Okazaki; Toshihiko Igashira, Toyokawa, and Yasuyuki Sakakibara, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Jul. 22, 1992, Ser. No. 917,209
Claims priority, application Japan, Jul. 26, 1991, 3-187802; Oct. 21, 1991, 3-272789
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 **12 Claims**



1. An internal combustion engine comprising: a fuel tank; intake pipe means for supplying air to said engine; injector means for injecting fuel into a flow of the air passing through said intake pipe means; and an evaporated fuel purge system, said system including purge control valve means for causing an

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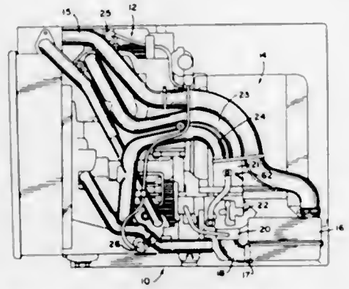
upper space of said fuel tank to communicate with said intake pipe means to thereby allow the evaporated fuel in said fuel tank to be sucked into said intake pipe means, control means for opening and closing said purge control valve means, and means for detecting a flow rate of the purged fuel vapor, said detecting means being connected to said control means which controls operation of said purge control valve means on the basis of an input from said detecting means; wherein said evaporated fuel purge system further comprises a throttle section provided in series with said purge control valve means for flowing the purged evaporated fuel at a constant flow rate, said detecting means including pressure and temperature sensors for detecting a pressure and a temperature of the evaporated fuel, respectively, which are located on the upstream side of any upstream one of said purge control valve means and said throttle section, in which controller a certain pressure value is predetermined to provide a critical pressure ratio at which the flow rate of the evaporated fuel at said throttle section equals to a sonic velocity, and said controller operating to open said purge control valve means when the detected value of said pressure sensor exceeds said predetermined value.

5,284,122

ANTI-ICING HEATER FOR AN ENGINE CARBURETOR

Lawrence N. Will, Plymouth, and James L. King, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Mar. 4, 1993, Ser. No. 27,299
Int. Cl.[5] F02M *23/14*
U.S. Cl. 123—549 **15 Claims**



5. A heater for a carburetor comprising:
a heat exchanger fabricated of thermally conductive material with two surfaces and a plurality of channels extending between the two surfaces;
a mechanism for attaching the heat exchanger to an air inlet of the carburetor so that air entering the carburetor flows through the channels, and so that heat can be conducted between said heat exchanger and the carburetor;
an electric heating device attached to said heat exchanger; and
means for applying electricity to said heating device.

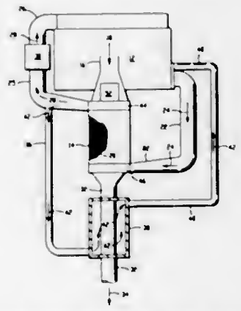
5,284,123

PRESSURE WAVE SUPERCHARGER HAVING A STATIONARY CELLULAR MEMBER

Raymon P. Dones, El Cerrito, Calif., assignor to Pulso Catalytic Superchargers, Oakland, Calif.

Filed Jan. 22, 1993, Ser. No. 7,718
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—559.2 **20 Claims**

1. A pressure wave supercharger comprising,
an engine having a pressurized air flow path thereto and having a pressurizing exhaust gas flow path therefrom,
fresh air intake means for supplying fresh air to be selectively channeled to said pressurized air flow path to said engine,
exhaust means in fluid communication with the outside atmosphere for selectively discharging gas thereto,
a stationary cellular member having an axis and having an array of closely spaced parallel channels extending along a length of said stationary cellular member, said channels having axially opposed first and second ends,
first rotational means rotatably mounted relative to said first ends of said channels for receiving fresh air from said fresh air intake means in an axial direction and for discharging in a substantially radial direction said fresh air into said pressurized air flow path of said engine, wherein rotation of said first rotational means alternates each first end of



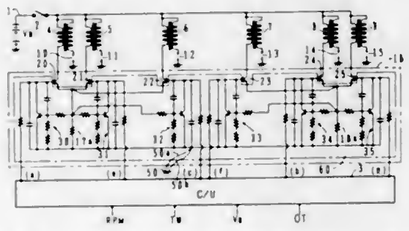
said channels between generally axial flow from said fresh air intake means and substantially radial flow to said pressurized air flow path,
second rotational means rotatably mounted relative to said second ends of said channels for radially receiving said gas from said pressurizing exhaust gas flow path of said engine and for axially discharging said gas by way of said exhaust means, wherein rotation of said second rotational means alternates said second ends of said channels between generally radial flow from said pressurizing exhaust gas flow path and generally axial flow to said exhaust means, and
means for correspondingly rotating said first and second rotational means.

5,284,124

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Norio Moriyama, Ibaraki; Noboru Sugiura, Mito, and Noriyoshi Urushiwara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,703
Claims priority, application Japan, Sep. 26, 1991, 3-248001
Int. Cl.[5] F02P *3/12*
U.S. Cl. 123—643 **5 Claims**



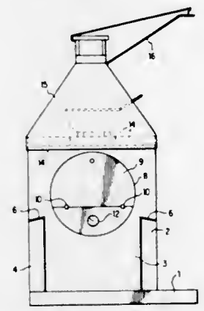
1. In an ignition system for an internal combustion engine having a plurality of ignition coils and a power switching module connected to said ignition coils to control the switching of primary currents of said ignition coils, said power switching module comprising:
a number of switching circuits for power supply control corresponding in number to the number of said ignition coils, and a plurality of current detecting circuits connected to said switching circuits, said switching circuits and said current detecting circuits being formed on a thickfilm circuit board having a ground (GND) portion formed thereon with said current detecting circuits being connected to said GND portion;
wherein two current detecting circuits are provided respectively to form with said switching circuits a total of two control systems which each control the ignition coils of N/2 cylinders, in which N is the number of cylinders of said engine, and two GND wires are connected in parallel to said GND portion on said thick-film circuit board for connection to an external GND terminal, so as to limit the maximum current carried by each of said GND wires.

5,284,125

MULTI-PURPOSE FIREPLACE FOR OUTDOOR USE

Werner Hunziker, Mattenweg 8, CH-5040 Schöftland, Switzerland

PCT No. PCT/CH91/00124, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO91/19448, PCT Pub. Date Dec. 26, 1991
PCT Filed May 28, 1991, Ser. No. 828,877
Claims priority, application Switzerland, Jun. 18, 1990, 2019/90-5
Int. Cl.[5] A47J *37/00*
U.S. Cl. 126—25 R **13 Claims**



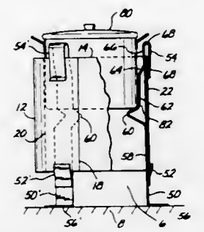
1. In a multi-purpose fireplace for outdoor use having a firebox, a baking chamber and, above the baking chamber, at least one grill, the improvement comprising: an outer housing forming said firebox, a metal wall having a door (9) accessible from outside of the multi-purpose fireplace forming said baking chamber, said baking chamber disposed within said outer housing above said firebox, said metal wall and said outer housing forming at least one open flue conduit between said metal wall and said outer housing directly above a hearth, said outer housing comprising at least four interlocking sidewalls (2, 3, 4, 5), two opposed said sidewalls (3, 5) of said outer housing shaped as a T and the two other opposed said sidewalls (2, 4) shaped as an inverted T, two arms of each said T-shaped sidewall (2, 3, 4, 5) each having a length corresponding to a wall thickness, and at least one oblique surface (6) of each said sidewall (2, 3, 4, 5) interlocking to maintain said sidewalls (2, 3, 4, 5) together.

5,284,126

HIGH PERFORMANCE COMBUSTION HEATER

J. Arnold Varney, 7326 Ogelsby Ave., Los Angeles, Calif. 90045

Filed Aug. 10, 1992, Ser. No. 927,747
Int. Cl.[5] F24C *5/00*
U.S. Cl. 126—50 **51 Claims**



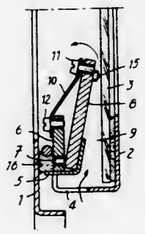
1. A fuel burning heater comprising:
a substantially cylindrical shell having an upper rim and a lower rim, at least the lower portion of said shell defining a combustion zone,
a plurality of strut means for resting on a support surface, such as the ground, and supporting said shell so that said lower rim is elevated above said support surface to provide a circumferential opening between said lower rim and said support surface for flow of combustion air into said combustion zone,
said strut means extending unitarily within said shell from below said lower rim to a level adjacent said upper rim,
a heat source disposed within said combustion zone, and
said strut means including means for attachment to said shell whereby said strut means are fixed substantially normal to said upper rim and said lower rim.

5,284,127

DEVICE FOR REGULATING THE STRENGTH OF THE FLUE DRAUGHT IN HEATING APPLIANCES

Jean Driesmans, Linden/Lubbeek, Belgium, assignor to V.F.M. Verkoop en Fabrikatie van Metaalprodukten Naamloze Vennootschap, Belgium

Filed Nov. 13, 1992, Ser. No. 976,014
Claims priority, application Belgium, Nov. 14, 1991, 09101044
Int. Cl.[5] F24C *1/14*
U.S. Cl. 126—77 **6 Claims**

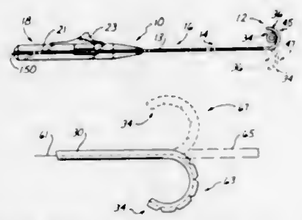


1. Device for regulating the flue draught strength in heating appliances, comprising a grille, a door, an air supply vent provided in the heating appliance between said door and the grille of the appliance and for the supply of secondary combustion air and ballast air, an adjustable damper installed inside the appliance between the air supply vent and the inside of the door for regulating the supply of secondary combustion air and ballast air and directing the supplied secondary combustion air and ballast air against the inside of the door and towards the top of the combustion chamber, and at least one heat sensitive element connected between said damper and one of the parts

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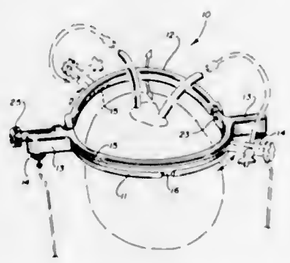
of the heating appliance, for the adjustment of said damper, which element reacts to the prevailing temperature in the combustion chamber of the heating appliance.

5,284,128
SURGICAL MANIPULATOR
Charles C. Hart, Huntington Beach, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.
Filed Jan. 24, 1992, Ser. No. 825,145
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—4 **19 Claims**



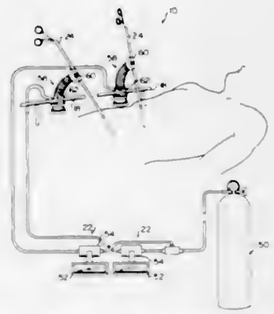
1. A surgical manipulator, comprising:
an outer tube having an axis extending between a distal end and a proximal end of the outer tube;
first and second sidewalls included in the outer tube and extending axially in proximity to the distal end of the outer tube, the first sidewall being weakened relative to the second sidewall;
a handle assembly coupled to the proximal end of the outer tube;
an actuator disposed interiorly of the outer tube and having properties for transmitting compressive stresses and tensile stresses;
means coupling the actuator distally of the sidewalls; and
means included in the handle assembly for causing the actuator to apply a tensile stress to the coupling means to bend the outer tube toward the first sidewall and for causing the actuator to apply a compressive stress to the coupling means to bend the outer tube toward the second sidewall.

5,284,129
SWIVEL RING SURGICAL RETRACTOR
Victor B. Agbodoe, Boston; Edward L. Gallini, Marion, and Robert E. David, Duxbury, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Aug. 28, 1992, Ser. No. 936,970
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **3 Claims**



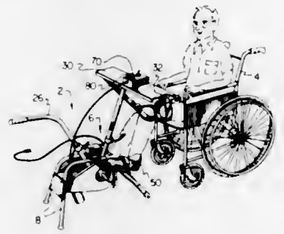
1. In a generally circular hinged surgical retractor for retaining tissue in a retracted position in a surgical incision including a generally semi-circular fixed portion and a generally semi-circular swivel portion secured together to allow movement of said swivel portion relative to said fixed portion and an outwardly directed channel around the major portion of the circumference of each of said fixed and swivel portions to receive a retractor arm holder to which a retractor blade may be attached and support means on said fixed portion to hold the retractor in a position over an incision, the improvement comprising a first boss having an inwardly directed sunburst clamping insert located on said fixed portion, a second boss having an outwardly directed sunburst clamping insert located on the swivel portion, a threaded opening centrally located in said second boss insert, a rotatable handle affixed to a shaft extending through said first boss and said inwardly directed sunburst clamping insert to engage said outwardly directed sunburst clamping insert, and said threaded opening in said second boss and a screw thread on an inward portion of said shaft, and said shaft having an inward extremity having no threads, an outwardly directed swivel pin on the fixed portion which is aligned with the shaft, a smooth walled bore on the swivel portion to receive the swivel pin, the swivel portion being releasably secured to the fixed portion by said screw thread, said first and second bosses and said sunburst clamping inserts to allow movement of said swivel portion relative to said fixed portion and the separation of said swivel portion from said fixed portion.

5,284,130
SURGICAL INSTRUMENT POSITIONING AND SECURING APPARATUS
Jack L. Ratliff, 739 Hayne Ave., Aiken, S.C. 29801
Filed Jun. 3, 1992, Ser. Nn. 893,329
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **14 Claims**



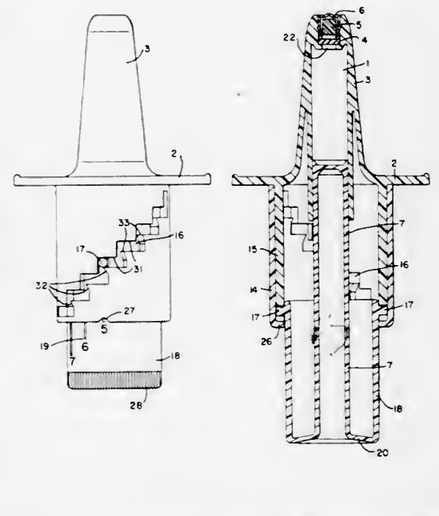
1. An apparatus for selectively positioning a surgical instrument relative to an operating table, the apparatus comprising:
an actuable compressible flexible column having opposite ends, said column in an unactuated state rigidifying in the desired posture;
an actuable instrument gripping member pivotably mounted to one end of said flexible column so that a frictional interface exists between said instrument gripping member and said flexible column, said instrument gripping member in an unactuated state being configurable into any desired attitude relative said flexible column and in an actuated state rigidifying relative said flexible column;
said gripping member further comprising an actuable instrument clamping device for allowing a surgical instrument to be held thereby and to be repositioned relative to said gripping member in an unactuated state and in an actuated state securely clamping a surgical instrument relative to said gripping member;
an actuable locking device pivotally mounted to the other end of said flexible column so that a frictional interface exists between said locking device and said flexible column, said locking device in an unactuated state configured to slide along an operating table positioning bar and in an actuated state configured to securely clamps upon a positioning bar;
tensioning means operatively connected to said flexible column, said instrument gripping member and said locking device for simultaneously actuating said instrument gripping member, said instrument clamping device, said flexible column, and said locking device so that substantially simultaneously, said instrument gripping member and said clamping device securely grip and hold a surgical instrument at some predetermined attitude, said flexible column is compressed and assumes a rigid posture, and said locking device maintains a preselected position on an operating table positioning bar; and
an actuation device in operative communication with said tensioning means for controlling said tensioning means.

5,284,131
THERAPEUTIC EXERCISE DEVICE FOR LEGS
Errol Gray, Apt. #4, 72 Pretoria Avenue, Ottawa, Ontario, Canada K1S 1W9
Continuation-in-part of Ser. No. 623,020, Dec. 6, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 846,879
Claims priority, application Canada, Nov. 26, 1990, 2030864
Int. Cl.[5] A61H *1/02*
U.S. Cl. 128—25 B **12 Claims**



1. A device for exercising passive legs of a person seated remotely with respect to the device, the device comprising:
(a) a frame;
(b) a motor secured to the frame;
(c) an axle extending outwardly from the frame to either side, the axle powered by the motor for rotation about a horizontal axis;
(d) a pair of crank arms secured to the axle on either side, the crank arms to rotate in a plane perpendicular to the axis of rotation of the axle;
(e) adjustment means secured to the free end of each of the crank arms;
(f) a pair of pedals, each secured to a different one of the adjustment means to rotate about its own pedal axis;
(g) means associated with each of the pedals to releasably secure a user's foot to a portion of the pedal; and
(h) elastic leg support strap means extending from a portion of the frame, in operation an end of the strap means to be wrapped around a leg just behind the knee and the strap means being of a length and positioned so that a leg is free to move as the pedal means rotates with one's foot strapped to the pedal means while sufficient force is provided by the strap on the leg to prevent unwanted lateral movement of the leg,
said adjustment means operable so as to permit selection of a predetermined angle which the pedal axis of rotation makes with respect to the axis of rotation of the angle so that the pedal axis will automatically follow a conical path thereby to permit varying the orientation of the foot and leg of a user as they move on the foot pedal during operation of the device.

5,284,132
DEVICE FOR THE TRANSNASAL OR ORAL ADMINISTRATION OF DRUGS OR THE LIKE
Adalbert Geier, Villazzano, Italy, assignor to Coster Tecnologie Speciali S.p.A., Mailand, Italy
Filed Apr. 9, 1991, Ser. No. 682,464
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1990, 4012270; May 18, 1990, 4016126
Int. Cl.[5] A61M *11/00, 15/08, 5/315*
U.S. Cl. 128—200.22 **13 Claims**



1. A device for the administration of fluid drugs or similar fluid media to a patient by a human operator, comprising a finger-like applicator (**3**) having a spray nozzle (**6**) disposed at the free end thereof and a cylinder unit (**1**) for accommodating the media to be administered, a piston (**7**) having an inner end located within the cylinder unit and having an outer actuating end (**20**) projecting from the cylinder unit, said outer actuating end engagable by the fingers of the human operator for movement of said inner end through the cylinder unit (**1**) and forcing the media through the spray nozzle (**6**), the improvement comprising a substantially flat membrane seal (**4**) located between the cylinder unit and the spray nozzle, said membrane seal having an outer peripheral edge secured to said cylinder unit and spray nozzle having a central flexible portion having a first side exposed to the cylinder unit and a second side exposed to the spray nozzle, said central flexible portion including at least one slot portion forming a normally closed fluid passage, said flexible portion of said membrane seal being deflected adjacent said slot in response to a selected pressure applied to said membrane seal to open said fluid passage, said first and second sides of said central flexible portion of said membrane seal being unsupported and free to deflect toward said cylinder unit or toward said spray nozzle, said selected pressure generated by movement of said piston by the operator forcing said media from the cylinder unit and deflecting said flexible portion to open said slot portion of said membrane seal and transfer the media into the spray nozzle (**6**), means for coupling and loading said nozzle and said cylinder unit with pressurized source of said media, said selective pressure deflecting said flexible portion toward said cylinder unit to open said slot and transfer media into said cylinder unit from said pressurized source of said media.

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5,284,133

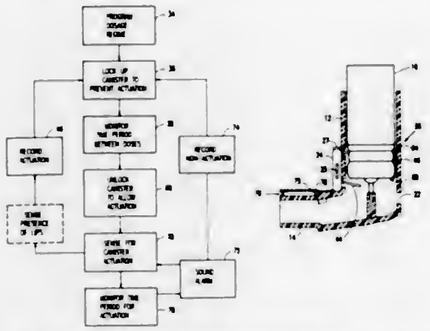
INHALATION DEVICE WITH A DOSE-TIMER, AN ACTUATOR MECHANISM, AND PATIENT COMPLIANCE MONITORING MEANS

James S. Burns, Darien, Conn., and Daniel R. Marshak, Cold Spring Harbor, N.Y., assignors to Armstrong Pharmaceuticals, Inc., New Canaan, Conn.

Filed Jul. 23, 1992, Ser. No. 919,030

Int. Cl.[5] **A61M** *11/00, 16/00;* **A62B** *9/00, 27/00;* **G08B** *3/00*

U.S. Cl. 128—200.23 **16 Claims**



1. A patient compliance system, comprising:

a drug delivery means;

a controller connected to said drug delivery means programmed or preset with dose and time of dose information for a drug being delivered by said drug delivery means, said dose and time of dose information setting forth a number of actuations of said drug delivery means to be provided at prescribed intervals;

a timer connected to said controller for tracking the time between actuations of said drug delivery means;

an actuator connected to said drug delivery means and said controller for actuating said drug delivery means, said actuator including means for preventing actuation of said drug delivery means when a patient attempts to actuate the drug delivery means at non-prescribed intervals or when a patient tries to exceed said number of actuations at said prescribed intervals;

means, coupled to said controller, for recording a time and number of actuations of said drug delivery means, said recording means being actuated by said actuator; and

means for verifying that a patient is properly positioned to inhale drug from said drug delivery means,

said verifying means comprising means for simultaneously sensing a patients mouth in close contact and around said drug delivery means, a drop in pressure in said drug delivery means and an actuation of said drug delivery means by said actuator.

5,284,134

SWIVEL CONNECTOR

E. Lanny Vaughn, 4334 Heights Ave., and James Cromwell, 2225-A Freed Way, both of Pittsburg, Calif. 94565

Continuation-in-part of Ser. No. 849,272, Mar. 11, 1992, Pat. No. 5,222,486. This application Jul. 16, 1992, Ser. No. 913,828

Int. Cl.[5] **A61M** *39/00*

U.S. Cl. 128—200.24 **1 Claim**

1. A two-piece, locking swivel connector for use in either an intravenous liquid supply line or an oxygen supply line, comprising:

a body portion having a cylindrical cavity formed in one end thereof,

the length of said cylindrical cavity being at least three times as great as its diameter,

a hollow, cylindrical male member having distal and proximal ends, said member being adapted to slide into and to rotate within said cylindrical cavity, the length of said male member being at least three times as great as its diameter,

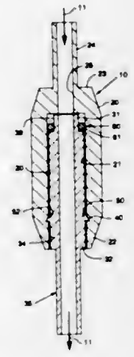
a groove formed in said body, said groove extending circumferentially around and opening into said cylindrical cavity, said groove having a cross-section which forms an acute angle with said cylindrical cavity,

locking flange means formed on the surface of and near the proximal end of said male member, said locking flange means forming an acute angle with the surface of said male member, whereby said locking flange means engages said groove when said male member is slid into said cylindrical cavity, the acute angle of said locking flange means engaging the acute angle of said groove, preventing removal of said male member from said cylindrical cavity,

said male member having a reduced diameter projecting portion at its distal end, and

sealing means comprising an O-ring carried by said projecting portion,

the distance between said O-ring and said locking flange means of said male member being greater than the diameter of said male member.



5,284,135

ELECTRICAL CONNECTION BETWEEN TRANSCUTANEOUS PACING CIRCUITRY AND DEFIBRILLATION CIRCUITRY

Michael L. Lopin, Newton, Mass., assignor to ZMD Corporation, Wilmington, Del.

Filed Feb. 21, 1992, Ser. No. 839,796

Int. Cl.[5] **A61N** *1/39*

U.S. Cl. 607—4 **6 Claims**

1. Apparatus for transcutaneously pacing and defibrillating the heart of a patient, the apparatus comprising:

pacing stimuli generating circuitry means for generating transcutaneous pacing stimuli delivered at a pacing stimuli output, the pacing stimuli output having a positive connection and a negative connection,

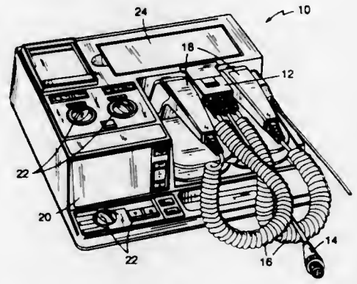
defibrillation pulse circuitry means for generating defibrillation pulses discharged at a defibrillating pulse output, the defibrillating pulse output having a positive connection and a negative connection,

a first multipin electrical connector installed on said apparatus, said positive and negative connections of said pacing stimuli output and said positive and negative connections of said defibrillating pulse output being supplied at pins of said multipin connector, said connector and pins being configured to support at least a 2500 V potential between adjacent ones of said pins without malfunction,

a second multipin electrical connector configured to mate with said first multipin electrical connector, said second connector having internal connections electrically connecting said positive connections of said pacing stimuli and defibrillating pulse outputs to provide a multifunction positive connection and electrically connecting said negative connections of said pacing stimuli and defibrillating pulse outputs to provide a multifunction negative connection, said positive and negative multifunction connections being suited for connecting to multifunction electrodes through which both pacing stimuli and defibrillating pulses are supplied to the patient, and

a third multipin electrical connector also configured to mate with said first multipin electrical connector, said third connector having internal connections configured to isolate said positive and negative connections of said pacing stimuli output from said positive and negative connections of said defibrillating pulse output, to provide pacing stimuli outputs suitable for connecting to pacing electrodes and defibrillating pulse outputs suitable for connecting to defibrillation electrodes,

said second and third multipin electrical connections being configured to be alternately connected to said first multipin electrical connector, with said second connector being used with multifunction electrodes and said third connector being used with separate pacing and defibrillation electrodes.



5,284,136

DUAL INDIFFERENT ELECTRODE PACEMAKER

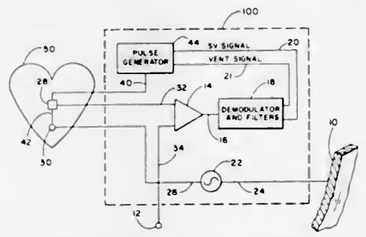
John A. Hauck, Shoreview, and Brian D. Pederson, St. Paul, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 503,991, Apr. 4, 1990, Pat. No. 5,036,849. This application May 13, 1991, Ser. No. 698,789

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] **A61N** *1/362*

U.S. Cl. 607—24 **9 Claims**



1. A variable rate cardiac pacer apparatus responsive to metabolic needs of a patient, wherein the cardiac pacer apparatus includes a pulse generator, comprising:

(a) a source of alternating current carrier signals of a predetermined frequency;

(b) an endocardial lead having at least first and second electrodes disposed thereon;

(c) a pacer housing including a conductive pacer can;

(d) a third electrode disposed on said housing and insulated from the pacer can;

(e) sense amplifier means having first and second inputs and an output;

(f) means coupling said source of alternating current carrier signals between said first electrode and one of said pacer can and said third electrode;

(g) means coupling said first and second inputs of said sense amplifier means individually to the other of said pacer can and said third electrode and to said second electrode, respectively, for sensing at said output of said sense amplifier a modulated signal proportional to the instantaneous tissue impedance within the thoracic cavity;

(h) demodulator and filter circuit means for demodulating said modulated signal and recovering a demodulated signal therefrom, said demodulated signal also being proportional to instantaneous impedance within the thoracic cavity wherefrom the demodulator and filter circuit means develops a control signal consistent with the instantaneous impedance in the thoracic cavity; and

(i) means for applying said control signal to said pulse generator for modifying the pacing rate thereof.

5,284,137

PROCESS AND DEVICE FOR THE DETERMINATION OF LOCAL DYE CONCENTRATIONS AND OF SCATTERING PARAMETERS IN ANIMAL AND HUMAN TISSUES

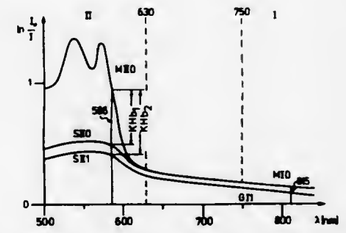
Manfred Kessler, Schlehenstr. 14, and Klaus Frank, Schlehenstr. 14A, both of D-8520 Erlangen, Fed. Rep. of Germany

Continuation of Ser. No. 385,617, Jul. 26, 1989, abandoned. This application Dec. 2, 1991, Ser. No. 801,618

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1988, 3825352

Int. Cl.[5] **A61B** *6/00*

U.S. Cl. 128—633 **25 Claims**



1. Process for the determination of local dye concentrations in animal and human tissues, in which light of differing wavelengths is irradiated into a subregion of the tissue, at least a part of the back-scattered light is collected, the diffuse reluctance is determined as a function of the wavelength and the concentration of dyes is determined from the spectral diffuse reflectance, including the following steps:

in a step of a first group of steps, radiation from a first wavelength region in which the influence of the hemoglobin on the diffuse reflectance is small is irradiated into the subregion of tissue and the diffuse reflectance in this first wavelength region is measured, obtaining a measured curve/-measured values of the zeroth order in the first wavelength region, in a separate further step of the first group of steps light from a second wavelength region in which

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the diffuse reflectance is dominated by the influence of the hemoglobin is irradiated into the same subregion of the tissue and the diffuse reflectance in this second wavelength region is measured, obtaining a measured curve/-measured values of the zeroth order in the second wavelength region;

in a step of a second group of steps from the measured diffuse reflectance of the zeroth order in the first wavelength region and at least one tissue-type-specific standard basic diffuse reflectance curve obtained in advance in a zeroth step of a zeroth group of steps for both the first and the second wavelength regions a tissue-person-specific standard basic diffuse reflectance curve of the zeroth order for the second wavelength region is determined; and that

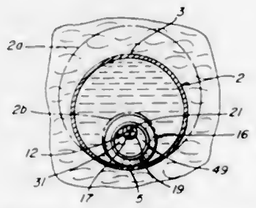
in a step from a third group of steps from the determined tissue-person-specific standard basic diffuse reflectance curve of the zeroth order in the second wavelength region and the measured diffuse reflectance of the zeroth order in the second wavelength region a value of the first order for the hemoglobin concentration is obtained.

5,284,138

APPARATUS AND METHOD FOR POSITIONING A SENSOR AWAY FROM THE BLOOD VESSEL WALL

Dennis Kujawski, Brookline, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 9, 1991, Ser. No. 727,573
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **22 Claims**



1. A probe assembly for inserting a probe through a lumen of a catheter and into a blood vessel, while maintaining a flow path through a catheter and positioning a distal end of the probe at a location spaced from a luminal surface of the blood vessel, wherein the catheter tends to lie along a lower vessel wall opposite a site of insertion, the probe assembly comprising:

a probe having means for sensing a parameter of the blood;

a support tube having an outer diameter sized to be slidably engaged within the catheter lumen and a tube lumen which forms a fluid flow path through both the tube and catheter;

the probe being disposed within the tube lumen and attached to an upper tube wall portion while maintaining the flow path along a lower tube wall portion;

wherein the upper wall portion of the support tube may be aligned along an upper wall of the catheter so that the probe is spaced from said lower wall of the vessel.

5,284,139

HEMOMETRIX TEMPERATURE COMPENSATION

Gamal-Eddin Khalil, Bellevue, and David P. Brown, Edmonds, both of Wash., assignors to Abbot Laboratories, Abbott Park, Ill.

Filed Dec. 30, 1991, Ser. No. 815,925
Int. Cl.[5] A61B *5/00, 5/02;* **G01N** *33/48;* **F21V** *9/16*
U.S. Cl. 128—634 **20 Claims**

1. A method for determining a partial pressure of oxygen of blood at a predefined reference temperature of blood during an in vivo blood gas measurement, comprising the steps of:

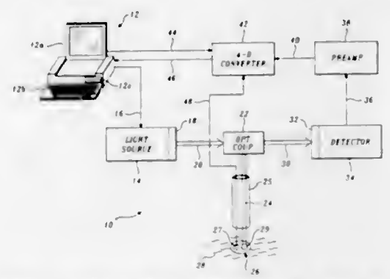
(a) measuring in vivo a partial pressure of oxygen of blood at an arbitrary temperature that is substantially different than the reference temperature of blood, as a function of a physical parameter that changes to indicate the partial pressure of oxygen of blood at a measurement site, said step of measuring including the steps of:

(i) producing a first signal indicative of the partial pressure of oxygen of blood, in response to changes in the physical parameter;

(ii) producing a second signal indicative of the arbitrary temperature of blood at the measurement site; and

(iii) processing the first signal to determine the partial pressure of oxygen of blood at the arbitrary temperature;

(b) determining an estimate of a partial pressure of oxygen of blood at the predefined reference temperature of blood as a function of the partial pressure of oxygen of blood at the arbitrary temperature of blood, and of the second signal;



(c) determining a more accurate estimate of the partial pressure of oxygen of blood at the predefined reference temperature as a function of:

(i) the partial pressure of oxygen of blood at the arbitrary temperature of blood;

(ii) the second signal; and

(iii) the estimate of the partial pressure of oxygen of blood at the predefined reference temperature; and

(d) iteratively repeating step (c), each iteration using said more accurate estimate of the partial of oxygen of blood from a previous iteration as a value for said estimate in (c)(iii), until a predefined number of such iterations have been completed, a more accurate estimate that results from a last of such iterations approximating the partial pressure of oxygen of blood at the predefined reference temperature corresponding to the measurement of the partial pressure of oxygen of blood made at the arbitrary temperature of blood.

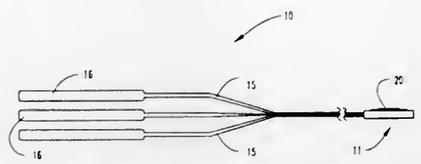
5,284,140

ACRYLIC COPOLYMER MEMBRANES FOR BIOSENSORS

Douglas J. Allen, and Robert S. Nevin, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Ind.

Filed Feb. 11, 1992, Ser. No. 834,002
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **15 Claims**

1. In an implatable device for determining the level of an anlyte in a body, said device comprising a biosensor having sensor elements for evaluating the presence of the analyte and including a membrane enclosing the sensor elements, said membrane providing biocompatibility, protection of the sensor elements from the surrounding biological environment, and control of diffusion of materials to the sensor elements, the improvement comprising forming said membrane from an acrylic copolymer comprising first monomer units consisting of an acrylic ester having methoxy poly(ethylene oxide) methacrylate as part of the alcohol moiety, and second monomer units selected from methacrylates, acrylates and combinations



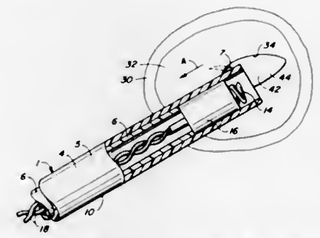
thereof, said membrane absorbing water in an amount of about 10% to about 50% of the dry weight of said membrane.

5,284,141

ELECTRODE EMPLACEMENT APPARATUS FOR AMNIOTOMY AND FETAL MONITORING AND METHOD OF USE

David L. Eibling, 1617 N. California St., Ste. 2-A, Stockton, Calif. 95204

Filed Jul. 31, 1992, Ser. No. 922,396
Int. Cl.[5] A61B *5/0448, 17/42*
U.S. Cl. 128—642 **16 Claims**



1. Electrode emplacement apparatus for amniotomy and fetal monitoring including:

introducer sleeve means for introducing a monitoring electrode, the introducer sleeve means having a forward end;

a monitoring electrode slideably recessed within the forward end; and

hook means for rupturing amniotic membranes, the hook means fixedly attached to an outside surface of the forward end.

5,284,142

THREE-DIMENSIONAL IMPEDANCE IMAGING PROCESSES

John C. Goble; David Isaacson, both of Latham, and Margaret Cheney, Troy, all of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Dec. 16, 1991, Ser. No. 808,795
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.1 **8 Claims**

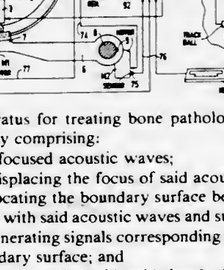
1. A method for three-dimensionally imaging the interior of a body having an internal resistivity using electrical impedance tomography, comprising:

applying an electrode array having a first selected number of electrodes (L) to the surface of the body;

applying a second selected number of current patterns to the electrode array;

measuring a number of voltage patterns, which is equal to the second selected number, resulting from application of the current patterns;

reconstructing an approximation of the internal resistivity, in which the resistivity ρ^1 is expressed in terms of a finite-dimensional basis, and its coefficients in this basis are given by equation (10), $F(\rho^0)$ is a known vector given by equation (9), and a matrix F' is a previously obtained approximation;



$$0 = \frac{\partial E}{\partial \rho_n} = F(\rho) = -2 \sum_{k=1}^{L=1} \sum_{l=1}^{L} (V_l^k - U_l^k) \frac{\partial U_l^k}{\partial \rho_n} \quad (9)$$

$$\rho^{i+1} = \rho^i - [F'(\rho^i)]^{-1} F(\rho^i), \quad (10)$$

where V_l^k is the measured voltage pattern and U_l^k is a predicted voltage pattern, E is an error and $\partial U_l^k / \partial \rho_n$ is a change in voltage; and

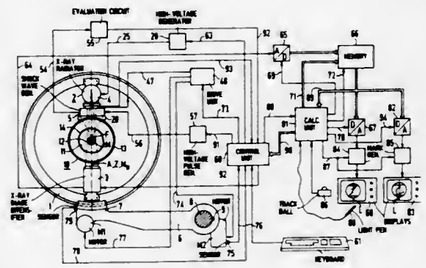
making a three-dimensional image of the interior of the body based on the approximation of the internal resistivity.

5,284,143

APPARATUS FOR TREATING BONE PATHOLOGIES WITH ACOUSTIC ENERGY

Manfred Rattner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 19, 1992, Ser. No. 885,749
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119524
Int. Cl.[5] A61B *6/00, 8/00;* **A61N** *1/00*
U.S. Cl. 128—653.1 **44 Claims**



1. An apparatus for treating bone pathologies in situ with acoustic energy comprising:

a source of focused acoustic waves;

means for displacing the focus of said acoustic waves;

means for locating the boundary surface between a bone to be treated with said acoustic waves and surrounding tissue and for generating signals corresponding to the position of said boundary surface; and

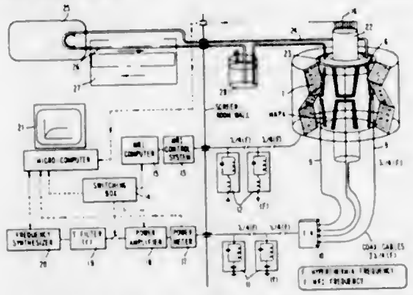
control means, supplied with said signals, for actuating and controlling said means for displacing the focus for maintaining said focus substantially in said boundary surface independently of the position of said source while treating said bone with said acoustic waves.

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5,284,144
APPARATUS FOR HYPERTHERMIA TREATMENT OF CANCER

Jose Delannoy, Monsen Baroeul, France; Denis Le Bihan, Rockville, Md.; Ching-nien Chen, Catonsville, Md.; Ronald L. Levin, Olney, Md., and Robert Turner, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Dept. of Health & Human Services, Washington, D.C.

Continuation of Ser. No. 735,682, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 439,661, Nov. 22, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 35,536
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **19 Claims**



1. An apparatus for hyperthermia treatment of a subject wherein the temperature of the subject'body part being treated may be controlled within about ±0.5° C., comprising:
an MRI probe which includes a tuning/matching circuit and a radiofrequency coil for receiving and transmitting magnetic resonance signals, said tuning/matching circuit and radiofrequency coil being connected to one another, the radiofrequency coil receiving a rotating field signal induced by the subject's body part;
a hyperthermia applicator for transmitting radiant energy, said hyperthermia applicator being positioned inside the MRI probe and being provided with an inner surface for exposure to a subject's target body part to be treated;
said MRI probe being positioned inside a magnet and capable of providing information for detecting a variation in the temperature of the subject's body part being treated;
a magnetic gradient coil encoding diffusion images, said magnetic gradient coil being positioned outside the hyperthermia applicator; and
a filter connected to at least one of the hyperthermia applicator and the MRI probe to isolate signals thereof from one another, wherein all components of the probe, the applicator and the gradient coil are made of substantially non-ferromagnetic materials.

5,284,145

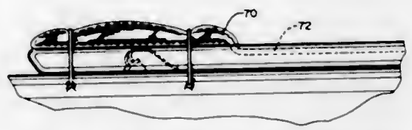
Patent Not Issued For This Number

5,284,146
REMOVABLE IMPLANTED DEVICE

Carl T. Czar, Shoreview, and Edward J. Mikolajczyk, Minneapolis, both of Minn., assignors to Applied Biometrics Inc., Eden Prairie, Minn.

Division of Ser. No. 709,343, Jun. 3, 1991, Pat. No. 5,205,292. This application Feb. 25, 1993, Ser. No. 23,193
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.03 **3 Claims**

1. An implantable, extractable probe for attachment to a vessel or organ comprising:
(a) an elongate probe body having front and rear ends, the elongate probe body terminating in a flexible tube;
(b) at least one biological sensor attached to the probe body;
(c) at least one lead wire connected to the biological sensor, said lead wire extending through the flexible tube;
(d) an inflatable balloon situated on the probe body; and
(e) suture securing means attached to the probe body and

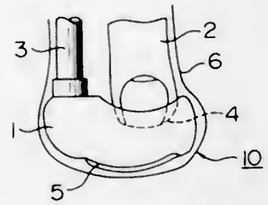


looped over the balloon, such that the probe body is secured by inflating the balloon and released for extraction from the body by deflating the balloon.

5,284,147
ULTRASONIC PROBE TO BE INSTALLED ON FINGERTIP

Akihiko Hanaoka, Misato; Mikio Izumi, Tokyo, and Yutaka Sato, Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 523,468, May 15, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,309
Claims priority, application Japan, May 22, 1989, 1-128569
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **5 Claims**



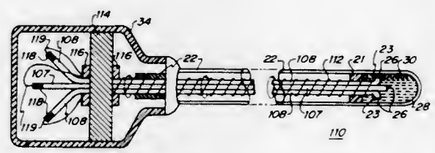
1. An ultrasonic probe to be inserted into a body of a subject for image-processing a diagnostic target of the subject by means of ultrasonic waves transmitted to and received from an inside of the body comprising:
a transducer array for transmitting and receiving the ultrasonic waves;
a housing coupled to said transducer array, said housing being provided with a recess, having a depth corresponding to a length from a tip of a finger of an operator to at most a point within a nail of the finger, for receiving the tip of the finger of the operator, said housing being constructed to permit a portion of the side of the finger directly opposite the nail and said transducer array to both be in contact with the same surface area of the diagnostic target; and
electric wiring means connected to said transducer array and extending from said housing to the outside so that transmission and reception signals of the ultrasonic waves are supplied therethrough.

2. An ultrasonic probe according to claim 1 wherein said recess is formed on one of a back side and a lateral side with respect to a surface of said housing where said transducer array is provided.

5,284,148
INTRACAVITY ULTRASOUND DIAGNOSTIC PROBE USING FIBER ACOUSTIC WAVEGUIDES

J. Fleming Dias, Palo Alto, and Hewlett E. Melton, Jr., Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 579,428, Sep. 7, 1990, Pat. No. 5,152,291, which is a continuation-in-part of Ser. No. 352,517, May 16, 1989, Pat. No. 5,217,018. This application Jul. 22, 1992, Ser. No. 918,298
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **40 Claims**

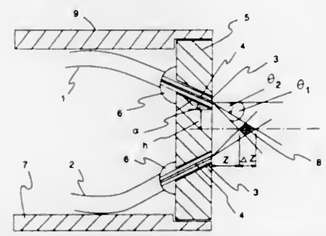


1. An intracavity ultrasound diagnostic probe, comprising:
a. a means for guiding an emitted imaging acoustic signal from outside a body through a body cavity to an imaging site within the body and for guiding a reflected imaging acoustic signal from the imaging site through the body cavity to outside the body, the means for guiding has a proximal end that stays outside a body and a distal end that goes into the body;
b. a means for rotating the means for guiding the emitted imaging acoustic signal; and
c. a catheter covering a portion of the means for guiding that goes inside the body.

5,284,149
METHOD AND APPARATUS FOR DETERMINING THE PHYSICAL CHARACTERISTICS OF OCULAR TISSUE

Harbans S. Dhadwal, 6 Ben Pl., Setauket, N.Y. 11733, and Rafat R. Ansari, 18313 Chagrin Blvd., Shaker Hts., Ohio 44122

Filed Jan. 23, 1992, Ser. No. 824,590
Int. Cl.[5] A61B *3/10*
U.S. Cl. 128—665 **15 Claims**

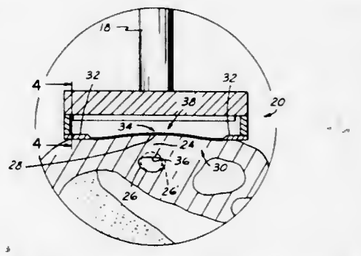


1. A method of determining the physical characteristics of ocular tissue comprising:
providing a first optical fiber having a lens-less end;
providing a second optical fiber having a lens-less end positioned in close proximity to the lens-less end of said first optical fiber;
positioning the lens-less ends of said first and second optical fibers in close proximity to ocular tissue such that said lens-less ends are at a selected, non-parallel angle with respect to each other;
causing said first optical fiber to deliver an expanding beam of monochromatic laser light to said ocular tissue such that said light is back scattered by said ocular tissue into said lens-less end of said second optical fiber and said second optical fiber acts as a self-beating receiver of said scattered light;
converting said scattered light received by said second optical fiber into an electrical signal, and
analyzing said electrical signals to determine whether changes in the molecular structure of the ocular tissue have occurred.

5,284,150
TONOMETRY SYSTEM FOR DETERMINING BLOOD PRESSURE

Robert D. Butterfield, Poway; Kenneth J. Pytel; Charles R. Holdaway, both of San Diego, and Stephen A. Martin, Carlsbad, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

Continuation of Ser. No. 621,165, Nov. 30, 1990, Pat. No. 5,158,091. This application Oct. 16, 1992, Ser. No. 962,364
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/021*
U.S. Cl. 128—672 **19 Claims**



1. For use in a system for noninvasively determining the intra-arterial blood pressure of a patient, a tissue contact stress sensing apparatus comprising:
a continuous diaphragm,
means for placing said continuous diaphragm against a patient's tissue which covers an underlying artery, said diaphragm adapted to deform in response to stress in said tissue caused by the intra-arterial blood pressure of said artery,
semiconductor means placed in close proximity to and spaced apart from said continuous diaphragm for irradiating said diaphragm with electromagnetic radiation,
means for receiving said electromagnetic radiation reflected from said continuous diaphragm,
whereby the quantity of electromagnetic radiation received by said receiving means is a function of the displacement of said continuous diaphragm in response to said tissue stress caused by said intra-arterial blood pressure of said artery.

5,284,151
ELECTROCARDIOGRAPH SYSTEM

Masahiro Onoda, Kanagawa, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

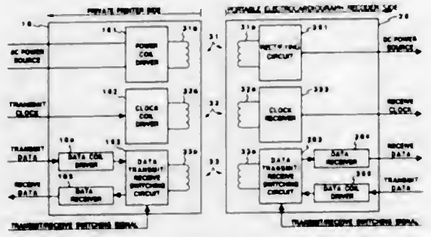
Filed Nov. 29, 1991, Ser. No. 800,139
Claims priority, application Japan, Nov. 30, 1990, 2-330253
Int. Cl.[5] A61B *5/0432*
U.S. Cl. 128—710 **7 Claims**

1. An electrocadiograph system comprising:
a portable electrocardiograph for measuring and storing an electrocardiograph waveform,
a recorder having electric power and positioning means for reading said electrocardiograph waveform stored in said portable electrocardiograph;
signal transfer means for transferring electrical signals between said portable electrocardiograph and said recorder,

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said signal transfer means including a first electro-magnetic coupling having first coils for said portable electrocardiograph and said recorder; and

power transfer means including a second electro-magnetic coupling having second coils for said portable electrocardiograph and said recorder, said power transfer means



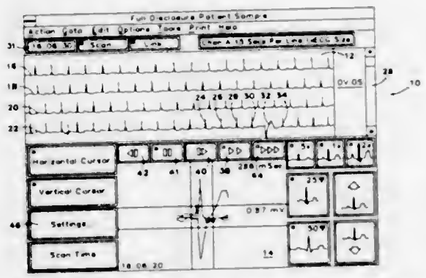
transferring electric power from said recorder to said portable electrocadiograph, said power and positioning means positioning first and second coils of said portable electrocardiograph so that each coil of said portable electrocardiograph faces a corresponding coil of said recorder.

5,284,152

METHOD FOR DISPLAYING SUPERIMPOSED HEARTBEAT WAVEFORMS

Colin M. Portnuff, Tualatin; Matthew S. Glei, and Rommel R. Raj, both of McMinnville, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 28, 1992, Ser. No. 843,368
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—710 **6 Claims**



1. A method for displaying superimposed heartbeat waveforms contained in stored ECG data comprising the steps of:

defining a data window having a length substantially equal to a predetermined number of successive heartbeats contained in the stored ECG data;

advancing the window across the data in one heartbeat increments so that each window position contains the predetermined number of heartbeats;

displaying the heartbeats contained in the window superimposed over one another; and

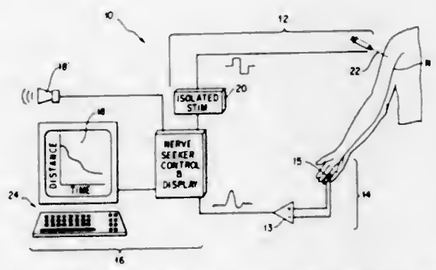
varying the predetermined number of successive heartbeats contained in the window.

5,284,153

METHOD FOR LOCATING A NERVE AND FOR PROTECTING NERVES FROM INJURY DURING SURGERY

Stephen A. Raymond, Charlestown; Gary R. Strichartz, West Roxbury; James H. Philip, Chestnut Hill; Daniel B. Raemer, Brookline, all of Mass., and Martyn A. Vickers, Jr., Augusta, Me., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Apr. 14, 1992, Ser. No. 868,387
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—741 **19 Claims**



1. A method for locating a nerve comprising the steps of:

(a) delivering a stimulus to a nerve using a stimulus delivery means;

(b) detecting the response of said nerve to said stimulus using a response detecting means;

(c) determining the distance of said nerve from said stimulus delivery means by comparing the response of said nerve to said stimulus against a predetermined criterion;

(d) modifying the next stimulus to be delivered to said nerve, wherein said next stimulus is automatically modified by a control means which continually modifies the next stimulus delivered to said nerve based on the response of the nerve to the previously delivered stimulus so as to hold the level of the nerve's response substantially constant at a predetermined value;

(e) conveying to the user the distance between said stimulus delivery means and said nerve;

(f) repositioning said stimulus delivery means in relation to said nerve; and

(g) delivering said next stimulus to said nerve using said stimulus delivery means.

5,284,154

APPARATUS FOR LOCATING A NERVE AND FOR PROTECTING NERVES FROM INJURY DURING SURGERY

Stephen A. Raymond, Charlestown; Gary R. Strichartz, West Roxbury; James H. Philip, Chestnut Hill; Daniel B. Raemer, Brookline, all of Mass., and Martyn A. Vickers, Jr., Augusta, Me., assignors to Brigham and Women's Hospital, Boston, Mass.

Division of Ser. No. 868,387, Apr. 14, 1992. This application Oct. 23, 1992, Ser. No. 965,790
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—741 **11 Claims**

1. An apparatus for locating a nerve, comprising:

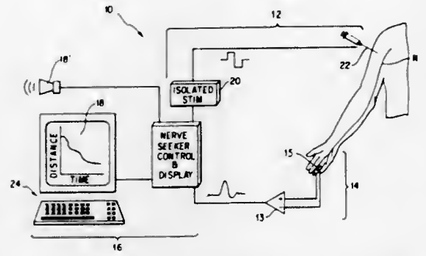
a surgical instrument for delivering a stimulus to a nerve;

a detector for detecting a response of the nerve to a stimulus delivered to the nerve by said surgical instrument;

a recorder for recording the intensity of the response of the nerve;

means for evaluating the recorded response of the nerve, wherein said recorded response is evaluated against a predetermined criterion;

a modulator for automatically modulating the magnitude of a subsequent stimulus delivered to the nerve, wherein the modulator modifies the subsequent stimulus delivered to the nerve based on the recorded response of the nerve to the previously delivered stimulus so as to hold the level of



the nerve's response substantially constant at a predetermined value; and

an indicator for conveying to the user the proximity of the surgical instrument relative to the nerve.

5,284,155

CARTILAGE DEGRADATION ASSAY SYSTEM

Benjamin V. Treadwell, Boston; Hieu T. Ball, Somerville, and Henry T. Mankin, Brookline, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Dec. 6, 1991, Ser. No. 802,892
Int. Cl.[5] A61B *10/00, 5/00;* **A61F** *2/28*
U.S. Cl. 128—749 **10 Claims**

1. A method for diagnosing arthritic disease with an inflammatory joint component involving protease activity in a mammal, said method comprising,

mixing a sample of powdered cartilage obtained from said mammal with protein which is detectably labeled thereby forming a mixture wherein an amount of label is released from forming said mixture;

determining the amount of said label released from said protein, said amount being indicative of the level of protease activity in said sample; and

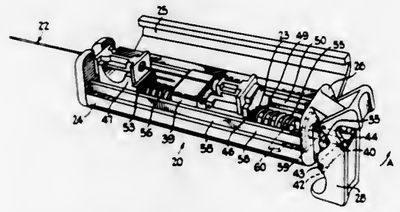
comparing said level to a standard, wherein an elevated level of said protease activity in said sample is an indication that said mammal has said arthritic disease.

5,284,156

AUTOMATIC TISSUE SAMPLING APPARATUS

John B. Schramm, and Anton Mittermeier, both of Skokie, Ill., assignors to M3 Systems, Inc., Northbrook, Ill.

Filed Aug. 30, 1991, Ser. No. 753,602
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **23 Claims**



1. An automatic tissue sampling apparatus for use with a biopsy needle system of the kind including a first needle having a shaft member and two ends, a first handle disposed at one end of the shaft member, a cutting point disposed at the other end of the shaft member, and a tissue holding region positioned between the cutting point and the first handle; and a second needle having a hollow shaft and two ends, a cutting point disposed at one end of the hollow shaft, a second handle with a passageway arranged therethrough for telescopic receipt and reciprocation of said first needle therewithin, and particularly for the automated and facilitated handling and operation of said biopsy needle system during a biopsy procedure, said automatic tissue sampling apparatus comprising:

housing means having a forward region, a rearward region, a longitudinal axis and a transverse axis;

first transport means operably disposed in said rearward region of said housing means, for reciprocating movement, between a first transport means forward position and a first transport means retracted position therewithin said rearward region, in a direction substantially parallel to said longitudinal axis of said housing means;

second transport means operably disposed in said forward region of said housing means for reciprocating movement between a second transport means forward position and a second transport means retracted position therewithin said forward region, in a direction substantially parallel to said longitudinal axis of said housing means,

said first transport means and said second transport means being configured to receive and longitudinally move, in said reciprocating directions, said first handle of said first needle and said second handle of said second needle, respectively;

first biasing means operably arranged in said rearward region of said housing means for biasing said first transport means forwardly toward said first transport means forward position;

second biasing means, operably arranged in said forward region of said housing means, for biasing said second transport means forwardly toward said second transport means forward position;

cocking means, integrally and operably associated with said first transport means and said second transport means, for drawing said first transport means, and, in turn, said first needle, rearwardly into said first transport means retracted position thereof, within said rearward region, and for drawing said second transport means, and, in turn, said second needle, rearwardly into said second transport means retracted position thereof, within said forward region,

first transport retaining means operably associated with said first transport means for releasably retaining said first transport means for releasably retaining said first transport means in said first transport means retracted position;

second transport retaining means operably associated with said second transport means for releasably retaining said second transport means for releasably retaining said second transport means in said second transport means retracted position;

first release means operably associated with said first transport retaining means to actuate said first transport retaining means to release said first transport means from said first transport means retracted position to, in turn, enable said first transport means to be driven rapidly forward by said first biasing means, toward said first transport means forward position thereof;

second release means operably associated with said second transport retaining means to actuate said second transport retaining means to release said second transport means from said second transport means retracted position, when said first transport means substantially reaches said first transport means forward position thereof, to, in turn, enable said second transport means to be driven rapidly forward to said second transport means forward position thereafter, by said second biasing means;

automatic tissue sample inspection means for enabling the facilitated reorientation of said second transport means relative to said first transport means after removal of said biopsy needle system from said tissue being sampled, with

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the first transport means, and, in turn, said first needle, in substantially its first transport means forward position in the rearward region, with the second transport means, and, in turn, the second needle in substantially said second transport means retracted position, exposing said tissue holding region and said sampled tissue removed as a result of said tissue sampling procedure; and

safety means operably associated with at least said first release means and said cocking means to preclude inadvertent actuation of at least said first release means and, in turn, said first transport means thereof,

said safety means including a stop member, positionable along said first release means between a locked position in which said stop member obstructs and blocks reciprocation of said first release means upon direct access and prompting of said release means, and an opposed, unlocked position, said stop member further operably configured to be automatically positioned to physically preclude actuation of at least said first release means, by releasably immobilizing said first release means, upon actuation of said cocking means.

5,284,157

ELASTOMERIC FILM PRODUCTS WITH IMPROVED CHEMICAL RESISTANCE

Robert G. Miller, Willowdale; Oskar Tankovitz, Toronto, and Duncan A. Mackillop, Etobicoke, all of Canada, assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jul. 26, 1991, Ser. No. 736,369
Int. Cl.[5] A61F *6/00*
U.S. Cl. 128—844 **3 Claims**

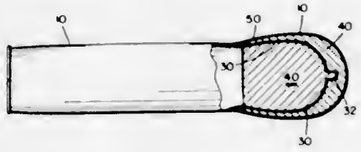
1. A latex film product comprising a film shaped as a condom consisting essentially of a cured mixture of (a) a copolymer of acrylonitrile and butadiene or isoprene, and (b) a styrene-butadiene copolymer wherein said styrene-butadiene copolymer contains greater than about 50 weight percent polymerized styrene, and wherein said styrene-butadiene copolymer is employed in said film in proportions of from one to about one to about fifteen weight percent, based on weight of the copolymer of acrylonitrile and butadiene or isoprene.

5,284,158

SENSITIVE CONDOM

Kermit J. Mallette, 3923 South Dakota Ave. NE., Washington, D.C. 20018-3037

Filed Apr. 13, 1992, Ser. No. 867,870
Int. Cl.[5] A61F *6/04*
U.S. Cl. 128—844 **9 Claims**



1. A condom comprising:

a tubular main sheath having an open proximal end and a closed distal end;

a reinforcing membrane fixedly secured to said main sheath so as to be disposed therewithin in spaced relation to said distal end thereof and so as to define a substantially closed compartment between the reinforcing membrane and the distal end of the main sheath;

a first elastic, circular band element coupled to said main sheath at said proximal end thereof; and

a second elastic, circular band element disposed adjacent to but remote from said distal end of said main sheath, between said main sheath and said reinforcing membrane;

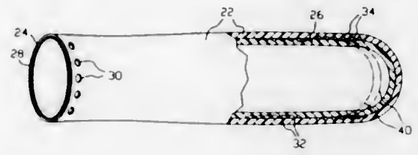
whereby sensitivity is preserved for the shaft and neck of the penis while the head of the penis is shielded and osmotic transmission of bodily fluids in a distal direction is prevented.

5,284,159

PROPHYLACTIC DEVICE

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 816,461, Jan. 3, 1992, Pat. No. 5,191,902. This application Dec. 7, 1992, Ser. No. 986,282
Int. Cl.[5] A61F *6/04*
U.S. Cl. 128—844 **20 Claims**



1. A prophylactic device comprising:

a first condom having a first base, said first condom being closed at an end opposite said first base; and

a second condom inserted inside said first condom so as to be substantially slidable with respect to said first condom, said second condom having a second base, said second condom being open at said second base and closed at an end opposite said second base, said first condom and said second condom being attached to one another about their respective bases,

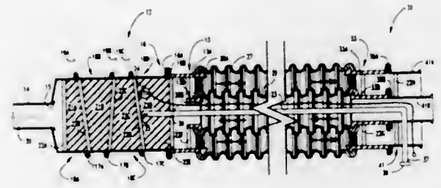
at least one of said first condom and said second condom being provided along a surface facing the other condom with a series of projections for enhancing genital stimulation during intercourse.

5,284,160

CONSOLIDATED ANESTHESIA CIRCUIT

Gale E. Dryden, 5835 N. Tacoma, Indianapolis, Ind. 46220

Filed Nov. 13, 1991, Ser. No. 791,289
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.12 **18 Claims**



1. A unilimb breathing assembly comprising:

a flexible outer breathing hose suitable to pass patient expiratory gas and having a patient end and a machine end;

a flexible inner breathing hose suitable to pass patient inspiratory gas and having a patient end and a machine end, said inner breathing hose being contained within said outer flexible breathing hose;

a flexible sampling hose suitable to convey sampled gas to an analyzer, and having a sampling end and a machine end and contained within at least one of said flexible outer and inner breathing hoses for the majority of the length of said sampling hose;

a sampling adaptor with a breathing hose connector connected to said breathing hoses, a swivel to allow said breathing hose connector to rotate freely in relation to the remainder of the adaptor, an angular swivel to allow adjustment of the angular shape of the adaptor, a filter which encloses said sampling end of said sampling hose, and a patient end connector means; and

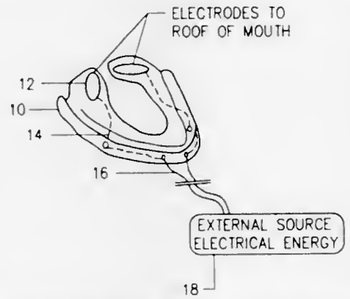
a machine end adaptor having a hose end and a machine end and, at the hose end, having a breathing hose connector secured to said outer and inner flexible breathing hoses, the machine end adaptor having a sampling port connected to said machine end of said sampling hose, and having a machine input connector communicating with said outer breathing hose, and a machine output connector communicating with said inner breathing hose.

5,284,161

SNOPPER-THE SNORING STOPPER ANTI-SNORING MOUTH DEVICE

Manuel L. Karell, 3573-22 St., San Francisco, Calif. 94114

Filed Nov. 12, 1992, Ser. No. 975,425
Int. Cl.[5] A61F *5/56*
U.S. Cl. 128—848 **4 Claims**



1. An apparatus for the cessation of snoring, wherein said apparatus comprises:

mouthpiece means for fitting over an entire upper tooth plate in a person's mouth and providing surfaces for contacting a upper mouth roof;

electrode means, implanted within said mouthpiece means, for ceasing snoring through an application of electrical energy to the upper mouth roof; and

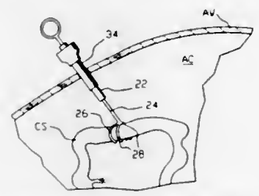
energy means for supplying electrical energy to said electrode means.

5,284,162

METHOD OF TREATING THE COLON

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Jul. 14, 1992, Ser. No. 913,442
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **13 Claims**



1. A surgical method comprising the steps of:

inserting a distal end of an elongate tubular member into a patient's abdomen;

ejecting from a distal end of said tubular member a pair of prongs;

during said step of ejecting, spreading said prongs apart from one another to form a pair of jaws;

moving said jaws towards a colon of the patient to insert a portion of said colon between said jaws so that said jaws essentially surround said colon;

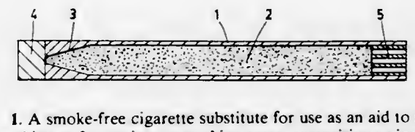
shifting said tubular member towards said prongs, thereby at least partially closing said jaws about said colon to essentially clamp said colon between said jaws, thereby closing said colon at said jaws.

5,284,163

MEANS FOR USE AS AN AID TO STOP SMOKING OR FOR USE IN NON-SMOKING AREAS

Svein Knudsen, Lindlokka 50, N-1370 Asker, and Tor Rasmussen, S. P. Muntbe Kaas vei 17, N-1346 Gjettum, both of Norway

PCT No. PCT/NO90/00119, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/01656, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 16, 1990, Ser. No. 778,952
Claims priority, application Norway, Jul. 31, 1989, 893095
Int. Cl.[5] A24F *47/00*
U.S. Cl. 131—270 **5 Claims**



1. A smoke-free cigarette substitute for use as an aid to stop smoking or for use in non-smoking areas, comprising a nicotine containing carrier which is provided in a tubular sleeve (1), whereby an air-permeable plug (5) has been incorporated in one end of the sleeve, characterized in that said nicotine containing carrier comprises a binder to which has been added a nicotine containing material and optionally other aromatic agents, and that the other end of the sleeve (1) has been provided with a funnel-shaped suction orifice (3) and a gum base (4), which orifice allows a wanted dose of said nicotine containing carrier (2) to reach the oral cavity of the user by drawing in, and that said carrier (2) after reaching the oral cavity is intended to be chewed together with the gum base (4) and agglomerate with said gum, and in this way dispense nicotine in the mouth.

5,284,164

METHOD FOR IMPROVING THE QUALITY OF PRODUCTS PRODUCED IN THE CIGARETTE MANUFACTURING PROCESS

Evelyn M. Andrews; Gregory J. Bricker, both of Macon; Ernest E. Collins, Gray; John N. Jewell; Dennis L. Sinksen, both of Macon; Darrel R. Stephens, Lizella, and Charles H. Wysowski, Bonaire, all of Ga., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 7, 1991, Ser. No. 789,235
Int. Cl.[5] A24C *5/32*
U.S. Cl. 131—280 **18 Claims**

1. A method for improving the quality of products produced in a cigarette manufacturing process by machines operating in tandem, which comprises the steps of:

a. retrieving from a database expected baseline values of product quality parameters and machine operating parameters for a product selected by an operator of at least one set of tandem machines from a plurality of supported products produced by said at least one set of tandem machines;

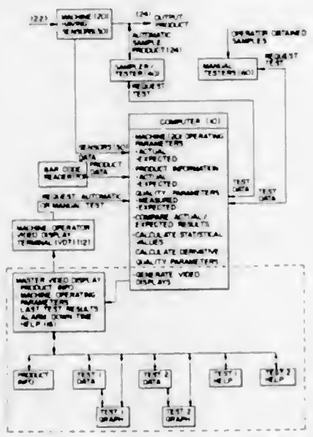
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b. monitoring by a computer of selected data representing machine operating parameters of said at least one set of tandem machines to provide an historical footprint for each unique machine of said at least one set of tandem machines and storing said selected data in said database;

c. automatically directing the obtaining of samples at preselected time intervals of the products being produced by said at least one set of tandem machines on a sequential basis as directed by said computer;

d. automatically testing quality parameters of the product produced by said manufacturing process utilizing a plurality of sensing devices as directed by said computer to obtain data representing said quality parameters to provide said historical footprint for each unique machine of said at least one set of tandem machines and storing by said computer of said sensed values to said database;

e. evaluating in real time by said computer said stored data representing said machine operating parameters and said stored data representing said product quality parameters to determine if said parameters fall outside of said retrieved baseline values or if said parameters have fallen outside of said historical footprint of each unique machine and if so, enabling said computer to:



(i) notify the operator, in real time, of said at least one set of tandem machines of an error condition when said sensed values fall outside of said retrieved expected values,

(ii) recommend possible solutions to said operator of said at least one set of tandem machines for correcting the error condition,

(iii) resequence said testing of quality parameters whenever said data representing sensed values falls outside of said historical footprint of each unique machine;

f. tracking by said computer for said at least one set of tandem machines the time period and downtime reason when said at least one set of tandem machines is inoperative;

g. generating by said computer a hierarchial set of video displays to provide information to the operators of said at least one set of tandem machines; and,

h. displaying a master video display to the operator of said at least one set of tandem machines, said display showing the operational status, the product being produced, estimated production of the machine operator's machine and the other machine operating in tandem with it along with said quality parameters and said historical data generated by said computer means.

5,284,165

STATISTICAL VENTILATION CONTROL DEVICE FOR VENTILATED CIGARETTES

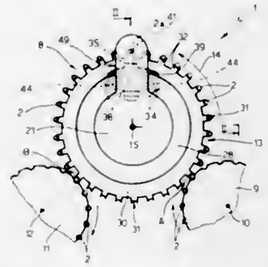
Fiorenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy

Filed Sep. 21, 1992, Ser. No. 949,773

Claims priority, application Italy, Sep. 25, 1991, B091 A000343

Int. Cl.[5] **A24C** *5/34*

U.S. Cl. 131—281 **6 Claims**



1. A statistical ventilation monitoring device comprising:

an annular conveyor having a plurality of seats thereon, adapted to receive a ventilated cigarette therein, which move with said conveyor along an annular path, said seats including a plurality of fixed seats fixed relative to said conveyor and at least one movable seat movable in a direction perpendicular to said annular path;

ventilation control means for monitoring the ventilation of a cigarette received in said at least one movable seat, said ventilation control means moving with said conveyor along said annular path;

a movable supporting means between said conveyor and said movable seat for supporting said movable seat; and

actuating means for moving said movable supporting means in said perpendicular direction into and out of an operating position in which a cigarette received in said movable seat engages said ventilation control means.

5,284,166

METHOD OF PRODUCING BROWN CIGARETTE WRAPPER PAPER

William F. Cartwright, Roswell; Sean M. Kelly, Alpharetta, and David P. Pozzetta, Dunwoody, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 7, 1992, Ser. No. 957,968

Int. Cl.[5] **A24D** *1/02*

U.S. Cl. 131—365 **24 Claims**

1. A method of making a colored paper for use as wrappers for smoking products which comprises the steps of:

forming a furnish;

adding at least one colorant to the furnish;

forming the paper from the thus treated furnish; and

adding at least one colorant to the paper.

5,284,167

METHOD AND APPARATUS FOR HAIR DRESSING

Gayle R. Gill, 1921 St. Michael's Rd., Lincoln, Nebr. 68512, assignor to Gayle R. Gill and Turner H. Gill, JR., both of Lincoln, Nebr.

Filed Jul. 29, 1993, Ser. No. 98,791

Int. Cl.[5] **A45D** *24/00*

U.S. Cl. 132—200 **8 Claims**

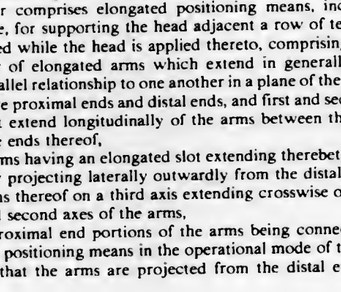
8. A method for styling hair, comprising the steps of:

brushing the hair rearwardly on the head to form a ponytail having long hair strands and short hair strands;

gripping the ponytail with an elongated clamp apparatus of the type having a pair of elongated ribs with opposing ends connected together to grip hair therebetween, said clamp apparatus attached at a location on the ponytail to grip both the long and short strands;

folding the free end of the ponytail upon itself to form a roll having a longitudinal axis generally parallel to the longitudinal axis of the clamp apparatus;

continuing to roll the formed roll towards the wearer's head until the clamp apparatus is wrapped into the roll;



providing a comb having a back portion with projecting teeth and opposing end legs parallel to the teeth, said comb having means on the legs for releasably connecting the legs to the ends of said clamp apparatus;

inserting the comb into the hair with the back portion parallel to the clamp apparatus, with the comb teeth located between the formed roll and the wearer's head; and

connecting said comb legs to said clamp apparatus ends to secure the clamp apparatus and formed roll in position.

5,284,168

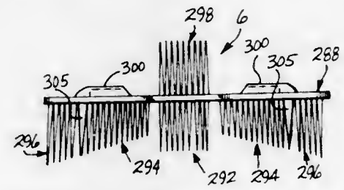
TOOTH CLEANING DEVICE

Ronald W. Klinkhammer, Seattle, Wash., assignor to Oral Logic, Inc., Seattle, Wash.

Continuation of Ser. No. 664,487, Mar. 4, 1991, Pat. No. 5,137,039, which is a continuation of Ser. No. 145,771, Jan. 19, 1988, abandoned. This application Aug. 3, 1992, Ser. No. 924,096

Int. Cl.[5] **A45D** *44/18*

U.S. Cl. 132—308 **14 Claims**



1. A straddle-type tooth cleaning head for a straddle-type tooth cleaning device which in the operational mode thereof further comprises elongated positioning means, including a handle, for supporting the head adjacent a row of teeth to be cleaned while the head is applied thereto, comprising:

a pair of elongated arms which extend in generally spaced parallel relationship to one another in a plane of the head and have proximal ends and distal ends, and first and second axes that extend longitudinally of the arms between the respective ends thereof,

the arms having an elongated slot extending therebetween and jaw projecting laterally outwardly from the distal end portions thereof on a third axis extending crosswise of the first and second axes of the arms,

the proximal end portions of the arms being connected with the positioning means in the operational mode of the device so that the arms are projected from the distal end of the positioning means as relatively rigid extensions of the same, longitudinally thereof, and the jaws are inclined to the plane of the head at corresponding but oppositely disposed acute angles thereto,

and a tooth cleaning implement which is connected with the arms to straddle the slot at the distal end portions of the arms,

the implement comprising a cowling which is supported on the jaws and comprises a pair of spaced wings and a midsection in the space therebetween, which are serially interconnected with one another along the third axis of the arms, and a pair of additional portions which are interposed between the respective wings and the midsection of the cowling on the third axis of the arms,

the respective additional portions of the cowling being connected with the midsection and the wings at pairs of spaced first and second connections, respectively,

the wings having tooth cleaning means on corresponding sides thereof, and in the operational mode of the device being reentrantly folded about the midsection at the first connections, to give the cowling an operatively U-shaped configuration wherein the tooth cleaning sides of the wings are folded relatively toward one another, but spaced apart from one another by a gap having a mouth opposite the midsection of the cowling for the introduction of the teeth to the gap,

the distal end portions of the arms being resiliently flexible in relation to one another in directions parallel to the third axis of the arms, and the wings and jaws being connected with one another at third connections which are disposed on opposite sides of the second connections from the first connections in directions parallel to the third axis of the arms, so that in the operational mode of the device, the jaws yieldably bias the wings relatively toward one another to the extent that when the cowling is straddled about a row of teeth, a user must relative forcibly wedge the tops of the teeth between the tooth cleaning sides of the wings to introduce the teeth to the gap through the mouth thereof, and

the added portions of the cowling are cantilevered into the slot from the second connections and flexibly interposed in the slot between the wings and the midsection so that when the teeth are introduced to the gap between the tooth cleaning sides of the wings and the cowling is translated along the length of the row of teeth, the midsection and added portions of the cowling form an articulated linkage between the wings which flexes in relation to the arms to preserve the bias on the wings while the wings reciprocate in relation to one another to adjust to the varying diameters of the teeth along parallels to the third axis of the arms.

5,284,169

METHOD OF PRODUCING A THIN BRUSH DENTAL FLOSS

Sean G. Gilligan, Kilcullen, Ireland; John A. Kaminski, Newark; Adrian Hart, Menlo Park, both of Calif.; Dermot T. Freeman, Killiney, Ireland; Patrick J. Hanley, So. San Francisco, Calif.; Jeffrey S. Meessmann, Iowa City, and Larry J. Oliphant, Swisher, both of Iowa, assignors to Gillette Canada, Inc., Kirkland, Canada

Filed May 15, 1992, Ser. No. 883,511

Int. Cl.[5] **A61C** *15/00*

U.S. Cl. 132—321 **8 Claims**



1. A process for manufacturing a continuous length of dental floss brush comprising alternating sequences of thread portions

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and floss brush portions integral therewith, the process comprising the steps of

a) coating a reverse twisted high tenacity nylon yarn with a solution of polymer in a volatile solvent, the polymer being selected from the group consisting of nylon, polyurethane and mixtures thereof;

b) selectively vaporizing solvent from thread portions of the yarn and preventing significant vaporization of solvent from brush portions of the yarn while the yarn is maintained under a tension of from 0.15 to 1 N;

c) exposing the brush portions of the yarn to steam while the yarn is under a tension of approximately zero until the brush portions of the yarn have regained at least 100 percent of the diameter of the uncoated, relaxed yarn; and

d) removing residual solvent from the brush portions of the yarn while the yarn is under a tension of approximately zero.

5,284,170

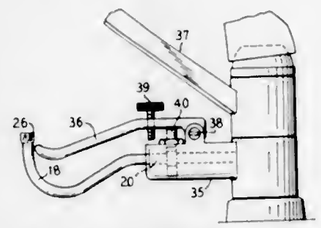
RECYCLABLE RINSER

Mark Larsen, 4431 S. Wenonah, Stickney, Ill. 60402

Filed Apr. 9, 1992, Ser. No. 865,932

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—44 **10 Claims**



1. A spraying device for rinsing a recyclable or reusable container having an interior bottom surface and interior walls projecting from said bottom surface, said device rotatably-fixed intermediate a basin top and a valve controller which regulates a flow of water from a water source, said device comprising:

a hook-shaped, rigid, tubular member of substantially uniform diameter having an inlet end for receiving said flow of water from said water source activated by said valve controller, a threaded end and an open end for directing a stream of water in an upward direction to individually rinse the entirety of said interior bottom surface and said interior walls of said container inverted above said open end; and

a depressible lever for initiating said stream of water extending between a valve proximate to said threaded end of said tubular member and substantially adjacent proximity to said open end of said tubular member such that the weight of said inverted container held by a user and/or pressure applied to said container by said user on said lever at a point on said lever substantially adjacent said open end controls opening of said valve to initiate said water stream.

5,284,171

SUNSHADE OPENING AND SUPPORTING DEVICE

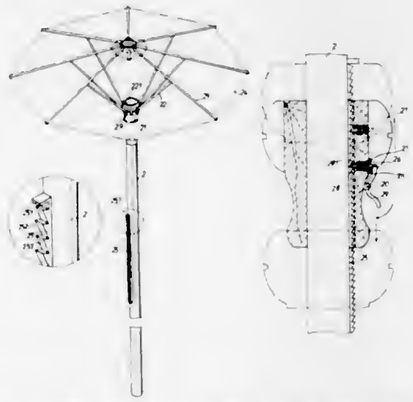
Chin-Hsiang Liu, No. 123, Liu Tze Lin, Liu Hsiang Ts'un, Shui Shang Hsiang, Chiayi Hsien, Taiwan

Filed Dec. 7, 1992, Ser. No. 986,499

Int. Cl.[5] A45B *11/00*

U.S. Cl. 135—20.3 **1 Claim**

1. An improved opening and supporting device adapted for a sunshade of the type comprising a main shaft, a runner, a plurality of supporting ribs and a plurality of frame ribs; said runner having an inner wall and an outer wall, and being slidably mounted onto said main shaft of the sunshade with said supporting ribs pivotally connected thereto, the other ends of said supporting ribs are pivotally associated with said frame ribs of said sunshade to which a canopy is attached; said opening and supporting device being characterized in that an elongated rack-like member is secured to a section of said main shaft, said runner slidably travels over said rack-like member during the opening and closing of the sunshade; said rack-like member having a topmost end and is provide with a plurality of Z-shaped teeth each of which has an oblique face; a horizontal stop piece is disposed at said topmost end of said rack-like member so as to prevent said runner from disengagement with said rack-like member; a groove disposed on said inner wall of said runner permits the slidable engagement of said rack-like member with said runner an arc arm and a lug being mounted on said runner; an open-ended cavity having a rear opened end and a front end, and being disposed on said runner; said cavity having a lid at said rear opened end and a through hole at said



front end; said cavity accommodates a spring biased supporting pin having a front tip with an oblique face in parallel with said oblique face of said Z-shaped tooth; said supporting pin having a front portion and a rear end and being provided with a restraint flange at said front portion thereof so that a spring is confined between said flange and said lid, permitting said supporting pin to be retrievably actuated as the rear end of said supporting pin is pivotally connected to said arc arm wherein said arc arm being pivotally secured to said lug disposed on said outer wall of said runner whereby said supporting pin can automatically withdraw into said cavity when said runner is pushed against each tooth of said rack-like member, and can pop out to retain said runner in place when said supporting pin passes over each tooth repeatedly until said runner is moved to a desired position in the opening of said sunshade; said pivotal arc arm is triggered and held to make said supporting pin withdraw into said cavity for a short span of time so as to permit said supporting pin to slide downwardly in the closing of said sunshade.

5,284,172

REVERSING UMBRELLA APPARATUS

James R. Teate, Jr., 216B Woodburn Dr., Dothan, Ala. 36301

Filed Mar. 9, 1992, Ser. No. 848,079

Int. Cl.[5] A45R *25/02*

U.S. Cl. 135—27 **4 Claims**

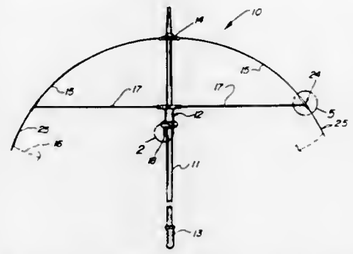
1. A reversing umbrella apparatus, comprising,

a tubular support shaft, the tubular support shaft including a shaft lower distal end and a shaft upper distal end, the shaft lower distal end mounting a handle fixedly thereto, the shaft upper distal end mounting a shaft collar, and

the shaft collar pivotally mounting at least one pair of canopy ribs, each rib of said pair of canopy ribs includes a rib upper distal end and a rib lower distal end, the rib upper distal end is pivotally mounted to the shaft collar, and

each rib lower distal end including slide means for sliding along said each rib, and

a slide member slidably mounted about the tubular support shaft between the shaft collar and the handle, wherein the slide member includes at least one pair of support ribs, with each support rib of said support ribs pivotally mounted to the slide member and to said slide means of each canopy rib, and



the slide means includes a slide housing, the slide housing including a slide housing cavity, and the slide housing cavity further including a spring cavity, the slide housing including a slide housing access longitudinally directed through the slide housing, and the spring cavity arranged parallel and spaced from the access, and the canopy rib lower distal end including an abutment flange positioned within the spring cavity, and the slide housing further including a canopy rib extension directed through a lower distal end of the slide housing, wherein the canopy rib extension includes a canopy rib extension upper distal end plate positioned within the spring housing, and a spring member positioned between the canopy rib and the canopy rib extension within the slide housing.

5,284,173

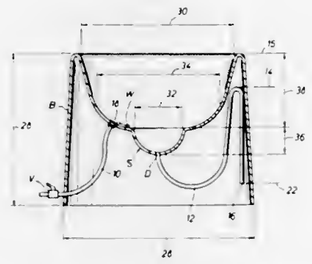
AUTOMATIC CONTINUOUS SELF-DRAINING, SELF-CLEANING AND SELF-REPLENISHING APPARATUS AND SYSTEM FOR WATERING STOCK

Thomas W. Graves, 6606 Tam O'Shanter, Houston, Tex. 77036, and Robert R. Green, Rte. 4, Box 2B, Granbury, Tex. 76049

Filed Oct. 23, 1992, Ser. No. 965,809

Int. Cl.[5] F04F *10/00*; **A01K** *7/00*

U.S. Cl. 137—1 **7 Claims**



1. An automatic, continuous self-draining, self-cleaning and self-replenishing system for watering stock comprising

connecting a source of water to at least one bowl shaped and dimensioned to permit a stock animal to drink from the bowl bottom, the bowl having lower walls sloping to a drain in the bottom, the drain communicating with a siphon, the siphon having a siphon height corresponding to a substantially filled bowl and a discharge height below the drain level; and

controllably dripping water from the source into the bowl such that when the water in the bowl reaches the substantially filled height the siphon drains the bowl.

5,284,174

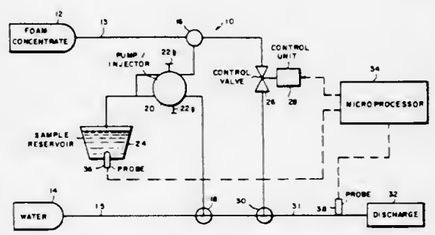
SYSTEM AND METHOD FOR PRODUCING AND MAINTAINING PREDETERMINED PROPORTIONATE MIXTURES OF FLUIDS

Edward C. Norman, Chester Springs, Pa., assignor to Chubb National Foam, Inc., Lionville, Pa.

Filed Aug. 18, 1992, Ser. No. 931,933

Int. Cl.[5] F16K *31/00*

U.S. Cl. 137—5 **16 Claims**



8. A system for maintaining a predetermined proportionate mixture of first and second fluids, said system comprising:

first mixing means for mixing said first and second fluids to continuously produce a proportionate discharge mixture;

second mixing means for mixing said first and second fluids to produce a sample mixture at a ratio corresponding to said predetermined proportionate mixture;

means for measuring and comparing the conductivity of the discharge mixture with the conductivity of said sample mixture, and for generating a control signal representative of any difference therebetween; and

means responsive to said control signal for adjusting said first mixing means in order to minimize the difference between the measured conductivities of said sample mixture and said discharge mixture.

5,284,175

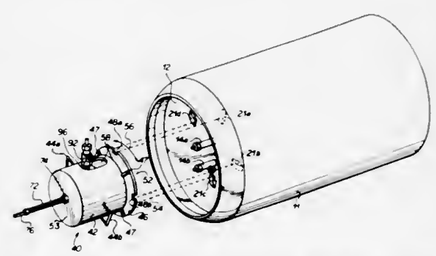
CAPPING APPARATUS AND METHOD

James Mykytyn, 840 Midway Rd., Powder Springs, Ga. 30073

Filed Feb. 16, 1993, Ser. No. 17,853

Int. Cl.[5] F16K *23/00*

U.S. Cl. 137—15 **19 Claims**



17. A method for producing a capping apparatus for stopping fluid from leaking from a leaking valve of a tank, comprising the steps of:

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disposing an inner capping enclosure within an outer housing with said inner capping enclosure being selectively movable within said outer housing and having an opening with a perimeter for surrounding said leaking valve;

forming a lip on said outer housing with lip openings, said opening for receiving restraining straps on said tank and said lip for securing said outer housing to said retaining straps upon rotation of said outer housing; and

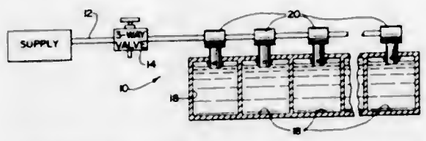
providing an adjustment means for moving said inner capping enclosure within said outer housing and for moving said perimeter about said valve and against said tank.

5,284,176

BATTERY REFILL SYSTEM

Daniel Campau, Grand Rapids, Mich., assignor to Flow-Rite Controls, Ltd., Grand Rapids, Mich.

Filed Jun. 30, 1992, Ser. No. 907,930
Int. Cl.[5] F16K *31/126*
U.S. Cl. 137—260 **8 Claims**



1. A battery refill system for filling and maintaining a plurality of interconnected battery cells at a predetermined level with liquid provided by an external liquid supply means, the system also including a plurality of refill valves, each valve being associated with a single battery cell, and at least one main supply valve for controlling the supply of the liquid to the battery cells and their respective refill valves, said system further comprising:

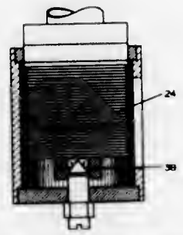
conduit means communicating between the main supply valve and the refill valves, said conduit means being constructed of a thermoplastic elastomer which, over a temperature range of between about −20° F. and 200° F., is substantially free of plasticizer bleed, has a minimum bend radius of about 2.50 inches, and has a burst strength of up to about 40 psi.

5,284,177

NON-RECLOSING PRESSURE RELIEF DEVICE FOR VACUUM SYSTEMS

William A. Swansiger, Livermore, Calif., assignor to Sandia Corporation, Albuquerque, N. Mex.

Filed Nov. 13, 1990, Ser. No. 611,617
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **14 Claims**



1. A non-reclosing overpressure protection device for a vacuum system, said device comprising:

rupturable means for providing a non-reclosing opening upon forcible contact with rupturing means;

rupturing means for rupturing said rupturable means; and

a hollow operating assembly consisting of:

an inlet sealably connected to said vacuum system;

expansible wall means having a first end extending from said inlet and an opposed, movable, second end; and

an outlet carried by said second end from a first position when said wall means is in an unexpanded condition to a second position when said wall means is in an expanded condition, said outlet being sealed by said rupturable means;

said wall means being held in an unexpanded condition when said vacuum system is under negative pressure, and expanding when said vacuum system is under positive pressure greater than about 0.1 psig;

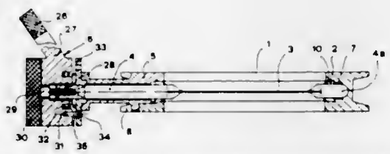
said rupturable means being spaced from said rupturing means when said outlet is in the first position and ruptured by said rupturing means when said outlet is at the second position.

5,284,178

BUTTERFLY VALVE

Salvatore Lardieri, Altopascio, Italy, assignor to CO.I.RA. S.R.L., Altopascio, Italy

Filed Jan. 15, 1993, Ser. No. 5,145
Claims priority, application Italy, Jan. 16, 1992, FI/92/A/6
Int. Cl.[5] F16K *1/22, 35/00*
U.S. Cl. 137—315 **11 Claims**



1. Improved butterfly valve for intercepting a conduit where substances flow, especially suitable for the pharmaceutical, alimentary and chemical fields, comprising:

an annular body (**1**) integral with said conduit,

a butterfly valve dish (**3**) having a rotation stem (**4**), said rotation stem (**4**) rotatably engaged on said annular body,

said butterfly valve dish operable at one end by an actuating lever (**6**) to open and close an internal port of said annular body (**1**),

a seal (**2**) housed in said annular body and tightly engaging with said butterfly valve dish (**3**) in a closed position,

said annular body (**1**) including a removable bock (**5**) which forms a small section on one flat side of said annular body at a top surface thing,

said removable block having a supporting seat (**18**) for said stem (**4**),

said annular body further including a blind seat (**7**), diametrically opposite to said block (**5**) in which a rotation pivot (**4***a*) of said butterfly valve dish (**3**) aligned to said stem (**4**) is engaged,

said seal (**2**) having an annular shape and a pair of radially diametrically opposite seal holes (**9***a*, **9***b*), in which said stem (**4**) and said rotation pivot (**4***a*) are respectively received and engaged therein,

wherein said dismounting for cleaning and the assembling of said butterfly valve dish (**3**) from and to said annular body (**1**) are allowed by extracting said small removable block (**5**) from said body and partially pulling out said seal from said housing and raising said stem for sliding said stem (**4**) and pivot (**4***a*) respectively from said supporting seat and said blind seal (**7**, **18**) and said seal holes (**9***a*, **9***b*) of said seal (**2**) and vice versa while at the same time extracting and inserting said seal together as a single unit without dismantling a remaining portion of said annular body, and

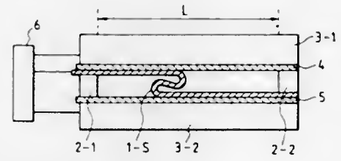
said actuating lever (**6**) comprising means (**27**,**33**,**35**) for locking said butterfly (**3**) in a plurality of operating positions.

5,284,179

VALVE AND SEMICONDUCTOR FABRICATING EQUIPMENT USING THE SAME

Mitsuhiro Shikida, Kokubunji; Kazuo Sato, Tokyo; Yoshio Kawamura, Kokubunji; Shinji Tanaka, Ibaraki; Yasuaki Horiuchi, Yono; Akira Koide, Ibaraki, and Toshimitsu Miyada, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,711
Claims priority, application Japan, May 30, 1991, 3-127705; Sep. 30, 1991, 3-250721
Int. Cl.[5] F16K *11/24, 31/06*
U.S. Cl. 37—334 **11 Claims**



1. A valve comprising:

a vessel filled with fluid;

a ribbon-like film having at least one inflextion plane movable within said vessel;

a plurality of ports provided on the wall of said vessel; and

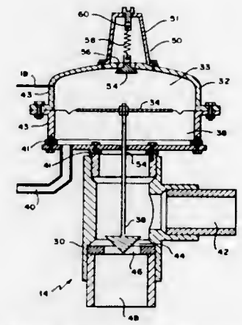
film operating means for opening and closing a plurality of said ports by movement of said inflexion plane of said film.

5,284,180

CONTROLLING VACUUM LEVEL WITH A TWO-LEVEL VACUUM SYSTEM CONTROLLER AND ADJUSTABLE SPEED DRIVE

Fangjiang Guo, Ithaca; Roger A. Pellerin, Freeville; David C. Ludington, and Daniel J. Aneshansley, both of Ithaca, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 623,464, Dec. 7, 1990, Pat. No. 5,141,403. This application Jun. 29, 1992, Ser. No. 905,744
Int. Cl.[5] G05D *16/16*
U.S. Cl. 137—488 **8 Claims**



1. A dual-vacuum diaphragm-driven cone controller for monitoring the vacuum in an automated milking vacuum system having a low vacuum and subject to leakage and a high vacuum end during periods of vacuum disturbances by regulating the amount of air passing from the low vacuum end via the high vacuum reserve to a vacuum pump, which comprises:

a) a connector having a first outlet connected to the high vacuum reserve, a second outlet connected to the low vacuum end of the automated milking system, orifice means between said first and second outlets, and valve means for said orifice means to control air flow therebetween;

b) a vacuum sensor chamber;

c) a reference chamber to provide a reference vacuum for said sensor chamber;

d) an adjustable vacuum reference regulator connected to said reference chamber and supplying a selected amount of ambient air thereto to establish a reference vacuum in said reference chamber;

e) diaphragm means connecting said reference chamber to said sensor chamber and movable in response to vacuum differences between the low vacuum end and the high vacuum reserve and rapidly responsive to changes in the low vacuum end; and

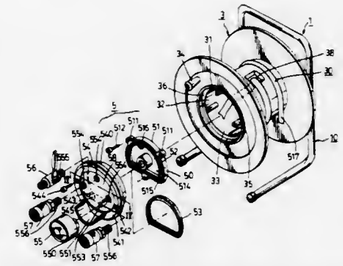
f) shaft means connecting said diaphragm means to said valve means for said orifice to adjust said valve means to regulate the air flow through said connector, whereby substantially constant vacuum is maintained in the low vacuum end.

5,284,181

COUPLER ASSEMBLY FOR A PRESSURE PUMP

Chung-Jang Wang, No. 3, Pei-Chuang Rd., Shen-Kang Hsiang, Taichung Hsien, Taiwan

Filed May 10, 1993, Ser. No. 60,221
Int. Cl.[5] F16K *37/00*; **B65H** *75/46*
U.S. Cl. 137—557 **3 Claims**



1. A coupler assembly for a pressure pump comprising:

a base support having an internal wall which confines a recess therein and a through bore that passes through said internal wall;

an enclosed casing provided in said recess of said base support and having a threaded inlet-hole which is formed through a wall body of said enclosed casing and which is communicated with said through bore, and a circular plate which is opposite to a bottom of said recess, said circular plate having a pressure gauge, a plurality of quick release coupling members and a valve connected to said circular plate in order to communicate an interior of said enclosed casing and an exterior of said enclosed casing; and

a coil of connecting gas pipe having an end that enters said through bore of said base support to connect threadedly with said inlet hole of said enclosed casing.

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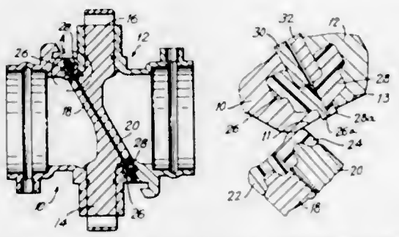
WIPER FOR A ROTARY DISK VALVE

William R. McLennan, Easton, Pa., assignor to Victaulic Company of America, Easton, Pa.

Continuation-in-part of Ser. No. 738,182, Jul. 30, 1991, Pat. No. 5,095,946, and a continuation-in-part of Ser. No. 468,351, Jan. 22, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,249

Int. Cl.[5] F16L 29/00; F16K 25/00

U.S. Cl. 137—614.01 3 Claims



1. A rotary valve of the type having a valve body providing a valve seat, and having a valve member rotatable relative to said valve seat between a first position providing for fluid flow through said valve body and a second position prohibiting fluid flow through said valve body, the improvement comprising:

a wiper member formed from an elastomeric material, said wiper member extending circumferentially of said valve seat, and, in an unstressed condition of said wiper member extending radially inwardly of said valve seat, said wiper member being operatively positioned for it to wipe clean an outer circumferential surface of said valve member as said valve member is moved from said first position to said second position;

means supporting said wiper member for limited radially outwards movement relative to said valve seat, upon stressing of said wiper member by said valve member, whereby said wiper member can retract into said valve seat upon stressing of said wiper member by said rotary valve;

said valve body including complimentary and interfitting valve halves, each of said valve halves including a said valve member;

further including a said wiper member associated with each said valve half, said respective wiper members being operative conjointly to wipe clean at an outer circumferential surface of said valve member associated with that valve half.

5,284,183

HYDRAULIC COUPLER WITH RADIAL METAL SEAL

Robert E. Smith, III, Stafford, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.

Continuation of Ser. No. 879,026, May 6, 1992, abandoned, which is a continuation of Ser. No. 702,633, May 17, 1991, abandoned, which is a continuation of Ser. No. 589,767, Sep. 28, 1990, Pat. No. 5,029,613. This application Jan. 11, 1993, Ser. No. 2,539

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[5] F16L 29/00

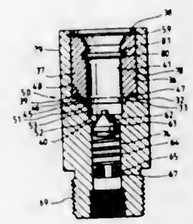
U.S. Cl. 137—614.04 5 Claims

1. An undersea hydraulic coupling comprising:

(a) a female member having a longitudinal bore with an internal shoulder;

(b) a male member insertable into the longitudinal bore for fluid communication with the female member;

(c) a metal sealing member insertable into the longitudinal bore for sealing between the male and female members, the metal sealing member having adjoining first and second surfaces, the first surface sealing with the female member and having a substantially flat surface facing the internal shoulder, the second surface having a curved surface extending radially outwardly and convex side facing radially inwardly, forming a cavity between the concave side and the longitudinal bore whereby hydraulic



pressure acting on the cavity tends to urge the convex side radially inwardly to form a radial metal-to-metal seal against the male member; and

(d) retaining means engageable with the female member for retaining the metal sealing member in the longitudinal bore upon removal of the male member from the longitudinal bore.

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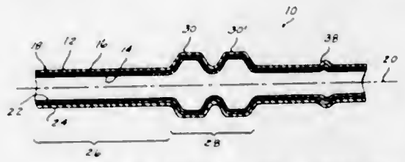
CORRUGATED MULTI-LAYER TUBING HAVING AT LEAST ONE FLUOROPLASTIC LAYER

David L. Noone, Southfield, and Frank L. Mitchell, Rochester, both of Mich., assignors to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 868,754, Apr. 14, 1992. This application Oct. 16, 1992, Ser. No. 962,300

Int. Cl.[5] F16L 11/04

U.S. Cl. 138—121 29 Claims



1. A multi-layer tube suitable for use on motor vehicles comprising a cylindrical wall having an outer surface, and an inner surface essentially parallel to the outer surface, the inner surface defining an essentially cylindrical interior, said essentially cylindrical interior extending longitudinally through the tube coaxial to a longitudinal axis, the cylindrical wall itself comprising:

a first region having an essentially uniform cross-sectional diameter in which the cylindrical wall has a flat in longitudinal cross-section, the cylindrical wall oriented essentially parallel to the coaxial longitudinal axis; and

a second region in which the cylindrical wall has at least one convolution having a cross-sectional diameter which varies positionally depending on longitudinal location in the second region, the convolution having cross-sectional diameter different from the essentially uniform cross-sectional diameter of the first region, the cylindrical wall of the multi-layer tubing further comprising:

a thick flexible outer layer having an inner and an outer face, the outer layer consisting essentially of an extrudable melt processible thermoplastic having an elongation value of at least 150% and an ability to withstand impacts of at least 2 ft/lbs at temperatures below about −20° C.;

a thin intermediate bonding layer bonded to the inner face of the thick outer layer, the bonding layer consisting essentially of an extrudable melt processible thermoplastic capable of sufficiently permanent laminar adhesion to the outer layer; and

an inner hydrocarbon barrier layer bonded to the intermediate bonding layer, the inner layer consisting of an extrudable melt processible thermoplastic capable of sufficiently permanent laminar adhesion with the intermediate bonding layer, the thermoplastic containing as a major constituent a fluoroplastic material selected from the group consisting of polyvinylidine fluoride, polyvinylfluoride, polychlorotrifluoroethylene, ethylene tetrafluoroethylene copolymers, and mixtures thereof.

5,284,185

PRESSURE-RESISTANT HELICAL CORRUGATED PIPE AND METHOD OF PRODUCING SAME

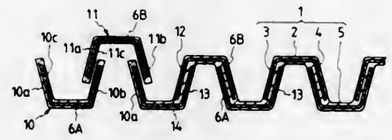
Shiro Kanao, Osaka, Japan

Continuation of Ser. No. 454,557, Dec. 21, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 804,544

Claims priority, application Japan, Dec. 27, 1988, 333134/88

Int. Cl.[5] F16L 11/112

U.S. Cl. 138—122 10 Claims



1. A pressure-resistant pipe having a helical corrugated outer surface, comprising:

a helical corrugated pipe wall including first and second thin metal belt plates which are disposed to define said corrugated outer surface of the pipe;

a resin material covering both sides of at least one of said first and second metal belt plates such that said at least one metal belt plate is embedded in said resin material, and such that said resin material forms said corrugated pipe wall, said first and second metal belt plates being disposed at least partially in overlapping relation in the direction of thickness of said pipe wall, the overlapped portions of said first and second metal belt plates being spaced from and held out f contact with each other by said resin material, and said overlapped portions being integrally connected together by said intermediate resin layer.

5,284,186

HAND WEAVING FRAME FOR FORMING A FLOOR MAT

Sholem Bontshek, Melbourne, Australia, assignor to Intermart USA Corporation, Miami, Fla.

Filed Dec. 30, 1992, Ser. No. 998,288

Int. Cl.[5] D03D 29/00

U.S. Cl. 139—34 20 Claims

1. A method of weaving a mat from an elongated flexible member comprising the steps of:

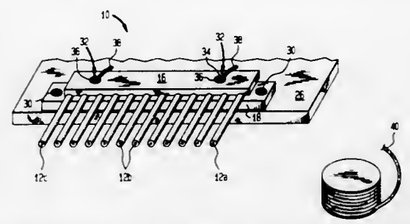
providing a plurality of substantially parallel tubes, said tubes being releasably secured at one end by holder means;

placing a flexible member having a lead end and a tail end over a first of said tubes so that said tail end of said flexible member hangs a predetermined distance below said first tube;

forming a plurality of substantially parallel warp lengths on said tubes by alternately training a first section of said flexible member over and under said tubes, adjacent warp lengths being trained in opposite directions;

releasing the ends of said tubes from said holder means with said warp lengths formed thereon; and

passing said lead end of the flexible member through each of



said tubes to form a plurality of weft lengths from a second section of the flexible member, wherein each tube is removed from said warp lengths after said lead end emerges therefrom.

5,284,187

METHOD AND DEVICE FOR TREATING POWDER COAL IN A SOLID-FUEL INJECTION INSTALLATION

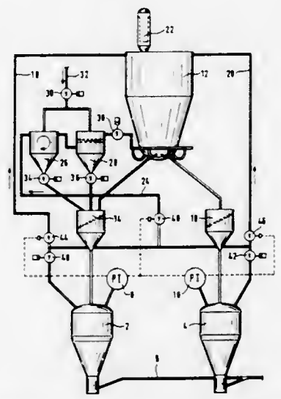
Louis Schmit, Luxembourg, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Mar. 19, 1992, Ser. No. 853,627

Claims priority, application Luxembourg, Mar. 20, 1991, 87 910

Int. Cl.[5] B65B 1/04

U.S. Cl. 141—1 19 Claims



12. A method for treating powdered coal comprising the steps of:

(a) storing a volume of powdered coal in a first chamber, the coal being intended for delivery to at least one second chamber;

(b) delivering a gas under pressure to said second chamber to pressurize the coal in said second chamber to deliver the coal to an installation for use;

(c) depressurizing said second chamber by;

(1) a first depressurizing stage including the steps of:

(i) discharging pressurized gas from said second chamber through filter means for filtering coal powder remnants of said pressurized gas, to obtain a filtered pressurized gas;

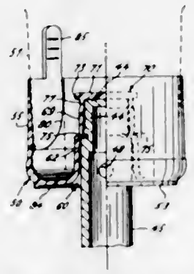
(ii) distributing said filtered pressurized gas through said volume of powdered coal in said first chamber; and

(iii) venting said first chamber to atmosphere; and

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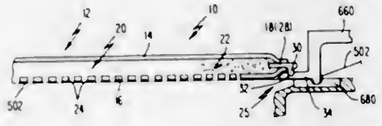
(2) a second depressurizing stage including the steps of:
(i) injecting pressurized gas from said second chamber into said first chamber above said volume of powdered coal; and
(ii) venting said first chamber to atmosphere.

5,284,188
ONE-PIECE HYGIENIC CAP AND LIQUID DISPENSING PROBE
Henry E. Baker; John B. Baker; David H. Baker, all of Litchfield; Peter K. Baker, Bethlehem, all of Conn.; Edward H. Donselman, Freeport, and Ronald C. Katz, Willowbrook, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.
Continuation of Ser. No. 684,597, Apr. 12, 1991, Pat. No. 5,222,530, which is a continuation-in-part of Ser. No. 257,627, Oct. 14, 1988, abandoned. This application May 6, 1993, Ser. No. 58,529
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—18 **18 Claims**



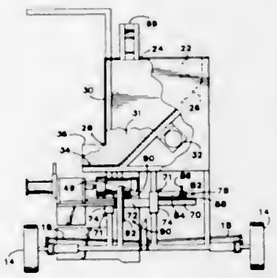
1. A hygienic cap for enclosing drinking water or other potable liquid within a substantially rigid liquid dispensing container during storage and transportation thereof, said container having a neck defining a discharge opening, said cap comprising, in combination, a lid portion adapted to overlie and sealingly close said discharge opening and an annular skirt portion extending axially away from said lid portion and adapted to surround an outer axial portion of said container neck, said lid portion having a one-piece axially inwardly extending recess formed therein including a first annular sleeve portion located generally centrally in said lid portion and integrally connected thereto and a second annular plug portion integrally connected to the inner end of said sleeve portion and extending axially inwardly therefrom, said plug portion having a closed inner end for normally closing sida recess, said cap having means defining a frangible connection including an area of reduced wall thickness between said plug portion and said sleeve portion, said frangible connection being adapted to be ruptured and said plug portion axially separated from said sleeve portion upon the forcible insertion of an upstanding probe into said recess in order to permit the discharge of liquid from said contianer, said plug portion being formed with internal gripping means thereinfor temporarily securing said plug portion on said probe when said probe is inserted in said recess and said frangible connection is ruptured, said plug portion being formed with an outside annular surface dimensioned to fit within said sleeve portion when said probe is withdrawn from sid recess, said plug portion being formed with sealing means for engaging complementary sealing menas formed on said sleeve portion when said plug portion is drawn into said sleeve portion.

5,284,189
CONDUCTIVE INK PACKAGING FOR PRINTED CIRCUIT BOARD SCREEN PRINTING OPERATIONS
David R. Best, Los Alamos, N. Mex., assignor to Printron, Inc., Albuquerque, N. Mex.
Continuation-in-part of Ser. No. 852,049, Mar. 16, 1992. This application Mar. 18, 1992, Ser. No. 853,399
Int. Cl.[5] B65D *17/00*
U.S. Cl. 141—114 **14 Claims**



1. A package for containing an ink or slurry to be deposited onto a substrate for subsequent firing into electrical conductors, comprising:
(a) a bag for containing said ink or slurry, said bag having a first side wall formed of a material isolating the ink or slurry from the external environment, and a second side wall connected to the first side wall to form a bag interior therewith containing the ink, said second side wall being formed with openings of predetermined size to allow for flow of the ink or slurry therethrough; and
(b) a cover attached to the bag for normally covering the second side wall to prevent flow of ink from the bag interior through the openings and to isolate the ink in cooperation with the first side wall from the external environment, whereby removal of the cover from the bag exposes the ink to an operating environment for flow through the second side wall openings for use; and
(c) further comprising a mating attachment arrangement disposed around the periphery of the bag, for attaching the bag to a complementary mating periphery of a spring frame of a screen printer.

5,284,190
SOIL DISTRIBUTION SYSTEM TO FACILITATE POTTING PLANTS
Dudley W. Jones, and David T. McCoy, both of Cornelius, Oreg., assignors to Thomas N. Tibbs and Julia M. Tibbs, both of Beaverton, Oreg.
Filed May 15, 1992, Ser. No. 883,542
Int. Cl.[5] A01C *11/00*
U.S. Cl. 141—129 **10 Claims**



1. Apparatus for filling planting receptacles with soil and plants, comprising:
(a) a soil hopper having an opening to receive soil and an elongate outlet to discharge soil;

(b) a generally horizontal elongate stationary distribution surface arranged to receive soil discharged from said outlet, said distribution surface being integral with said soil hopper;
(c) endless belt conveyor means for transporting plant receptacles, said endless belt conveyor means being oriented proximate to and parallel to said distribution surface; and
(d) means for adjusting the position of said conveyor means relative to said distribution surface both horizontally and vertically.

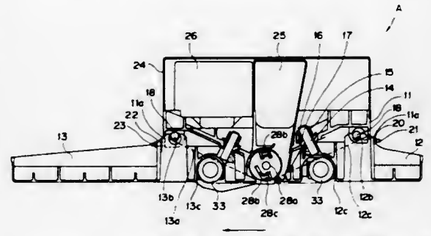
5,284,191
SAFETY TANK APPARATUS FOR LIQUID STORAGE
David C. McGarvey, San Gabriel, Calif., assignor to LRS, Inc., El Monte, Calif.
Continuation-in-part of Ser. No. 681,003, Apr. 5, 1991, Pat. No. 5,137,064, which is a continuation-in-part of Ser. No. 562,820, Aug. 6, 1990, Pat. No. 5,005,615. This application Apr. 2, 1992, Ser. No. 862,211
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B65B *1/04;* **B67C** *3/00*
U.S. Cl. 141—198 **34 Claims**



1. In safety tank apparatus for installation to receive and store a liquid hydrocarbon or hydrocarbons, or the like, and from which the liquid may be withdrawn, the combination comprising:
a) tank structure including an inner metallic tank, and an outer metallic tank protectively receiving the inner tank, the tank structure having a side wall, there being interior space laterally of the inner tank and within the tank structure,
b) the tank structure including a barrier wall means extending between said inner tank and said interior space,
c) an opening in said sidewall, and a locking closure closing said opening, the closure movable to expose said interior space to access from the exterior,
d) and control means in said interior space, and accessible through said opening for controlling flow of said liquid into the inner tank from the exterior of said safety apparatus.

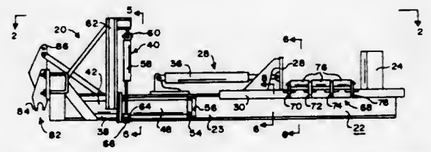
5,284,192
AUTOMATIC PLANING MACHINE
Mitsumasa Sato; Tatsuya Wada, and Kouichi Miyamoto, all of Tokyo, Japan, assignors to Ryobi Limited, Tokyo, Japan
Filed Jul. 31, 1992, Ser. No. 924,341
Claims priority, application Japan, Aug. 1, 1991, 3-060823[U]; Aug. 6, 1991, 3-196523; Sep. 17, 1991, 3-074369[U]
Int. Cl.[5] B27C *1/02*
U.S. Cl. 144—117 R **20 Claims**

1. An automatic planning machine for cutting a surface of a workpiece, comprising:
a base portion having a feeding path on which the workpiece is to be laid to feed the workpiece;
a rotatable cutter block disposed on one side of said feeding path of the base to face the feeding path, said rotatable cutter having a rotary shaft substantially extended in a vertical direction with respect to the feeding path;
a reference base having a guide surface disposed on the other side of said feeding path to face said rotatable cutter block, and extending along the feeding path, said guide surface being substantially vertical to the feeding path; and
a feeding device for moving the workpiece laid on said feeding path in a feeding direction along the feeding path;



wherein an upper side of said feeding path between said reference base and said cutter block is opened.

5,284,193
LOG SPLITTER
Ronald E. Mires, Rte. 4, and Albert C. Crowder, 312 Lynn St., both of Ripley, Tenn. 38063
Filed Aug. 2, 1993, Ser. No. 100,369
Int. Cl.[5] B27L *7/00*
U.S. Cl. 144—193 A **14 Claims**



13. An improved log splitter having: a first frame; a wedge fixedly attached thereto and extending outwardly therefrom; a carriage mounted for reciprocation upon said first frame; an abutment plate fixedly attached to said carriage and extending outwardly therefrom in alignment with said wedge and spaced a distance therefrom and so arranged as to split a log between said wedge and said abutment plate as said carriage is reciprocated to close said distance between said wedge and said abutment plate; and powered means for reciprocatingly moving said abutment plate toward and away from said wedge, wherein the improvement comprises:
(a) a second frame rotatably mounted to said first frame so that said first frame may rotate relative to said second frame about a first axis;
(b) rotation means for rotating said first frame about said first axis between a splitting position and a loading position, said rotation means comprising a hydraulic piston and-cylinder operably interposed between said first frame and said second frame, said hydraulic piston-and-cylinder being attached to said first frame a radial distance from said first axis; and
(c) a log support cradle fixedly attached to and extending outwardly from said carriage substantially perpendicular to the direction of reciprocating movement of said abutment plate.

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5,284,194

GOLF CLUB HEAD AND SHAFT COVER

John H. Gaffney, Scottsdale, Ariz., assignor to Arizona Manufacturing & Embroidery, Inc., Tempe, Ariz.

Filed Jun. 15, 1993, Ser. No. 76,627
Int. Cl.[5] A63B *57/00*
U.S. Cl. 150—160 **10 Claims**



1. An improvement in a golf club head cover including in combination:

a generally hollow cylindrically shaped head cover for the head of a golf club, said head cover having an upper end and a lower end, said upper end closed and said lower end open; and

an elongated shaft protector having a predetermined length and made of flexible material secured to the inside of said head cover at a point intermediate said upper and lower ends thereof and extending downwardly through said open lower end of said head cover a predetermined distance below said lower end of said head cover, said shaft protector being normally open throughout the length thereof and including closure means thereon for closing said shaft protector around a shaft of a golf club.

5,284,195

TIRE WITH TREAD BASE RUBBER BLEND

Paul H. Sandstrom, Tallmadge; William P. Francik, Bath, and David M. Smith, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 13, 1992, Ser. No. 850,650
Int. Cl.[5] B60C *11/00*
U.S. Cl. 152—209 R **4 Claims**

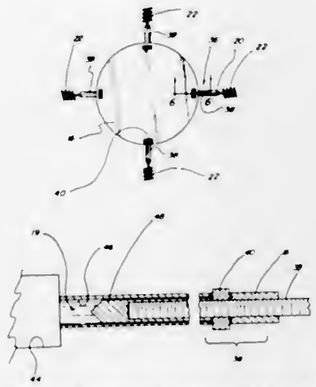
1. A rubber tire having a rubber tread of a cap/base construction where said base rubber composition is comprised of, based on 100 parts by weight rubber, (A) about 50 to about 95 parts by weight of at least one diene rubber selected from natural and/or synthetic cis 1,4-polyisoprene rubber, cis 1,4-polybutadiene rubber, styrene/butadiene copolymer rubber, styrene/isoprene/butadiene terpolymer rubber and 3,4-polyisoprene rubber; and (B) about 5 to about 50 parts by weight of a trans 1,4-polyisoprene rubber characterized by having at least about a 90 percent trans 1,4-content; wherein the tire cap rubber is at least one rubber selected from natural and/or synthetic cis 1,4-polyisoprene rubber, 3,4-polyisoprene rubber, styrene/butadiene copolymer rubbers, styrene/isoprene/butadiene terpolymer rubbers, and cis 1,4-polybutadiene rubber.

5,284,196

TIRE CHAIN TIGHTENING APPARATUS

Charles R. Nielsen, P.O. Box 859, Lovelock, Nev. 89419

Filed Mar. 11, 1993, Ser. No. 29,717
Int. Cl.[5] B60C *27/12*
U.S. Cl. 152—216 **8 Claims**



1. An apparatus for tightening a chain installed on a tire that is mounted on a wheel of a motor vehicle, the apparatus comprising:

a hub assembly, and

a plurality of tension assemblies which include a first end for connecting to said hub assembly, a tensioning element connected to said first end, and a second end connected to said tensioning element, wherein said second end is connected to a portion of the chain, such that said hub assembly and said tension assemblies exert tension on the chain in a radial direction toward said hub assembly, at least one of said tension assemblies comprising a threaded shaft disposed for relative movement in a sleeve,

wherein said hub assembly includes:

a container portion means for containing a quantity of de-icer liquid,

dispenser conduit means, connected to said container portion means, for dispensing de-icer liquid out from said container portion means, said dispenser conduit forming a portion of said sleeve, and

metering valve means, located in said dispenser conduit means, for metering the dispensing of the de-icer liquid out from said container portion means, and

wherein said metering valve means is connected to a threaded shaft of a tension adjustment assembly for adjustment of said metering valve, said threaded shaft being disposed in said sleeve.

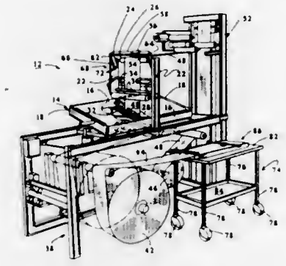
5,284,197

METHOD AND APPARATUS FOR PREPARING AND POSITIONING A WEB FOR SPLICING

Roger Cederholm, Roscoe, Ill.; Christopher J. Plude, Beloit, Wis., and John Siebel, Rockford, Ill., assignors to Martin Automatic, Inc., Rockford, Ill.

Filed Dec. 23, 1992, Ser. No. 995,766
Int. Cl.[5] B32B *31/00*; **G05G** *15/00*
U.S. Cl. 156—350 **13 Claims**

1. An improved method of preparing and positioning the leading end of a new web for splicing in a splicer where the new web is wound on a roll and is to be spliced to a web that is running from an expiring roll and through the splicer and a downstream web processing operation; where the new web and the running web each have an identical, regularly repeating and longitudinally spaced patterns thereon, which patterns need to be matched during splicing so that the regular repetition and longitudinal spacing of the patterns continues uninterruptedly across the splice; where the new web and the running web each have a series of regularly, longitudinally spaced registration marks thereon, which registration marks have a predetermined relationship with respect to the patterns on the webs and with respect to adjacent registration marks; and where the splicer includes a pre-splice, web reference position for the leading end of the new web, a signal generating sensor for sensing the passage of a registration mark on the running web, with the sensor being spaced a predetermined distance from the pre-splice reference position, and means for actuating



the splicing of the webs upon the receipt of a signal from the sensor, the improved method comprising the steps of:

identifying at least one point which has a preselected relationship with an adjacent registration mark on the leading end of the new web;

marking this identified point on the leading end of the new web; and

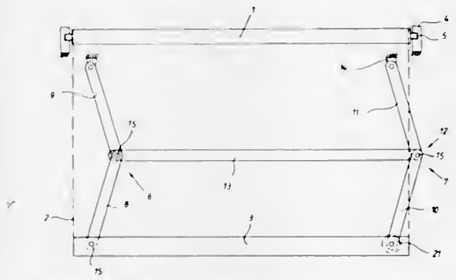
positioning the leading end of the new web in the splicer so that the leading end is ready for splicing and so that there is a preselected relationship between the marked point on the new web and the pre-splice reference position of the splicer.

5,284,198

GUIDE MECHANISM FOR WINDOW SHADE

Christof Kauka, Cologne, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 904,825
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121623
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—70 **7 Claims**



1. A window shade, comprising:

a winding shaft and means supporting the winding shaft for rotation in an unwinding direction and a winding direction;

a shade having one edge which is fastened to the shaft so that the shade is wound onto the shaft from the one edge; the shade having an opposite edge, a pull strip fastened on the opposite edge of the shade, such that pulling on the pull strip pulls on the shade and unwinds the shade from the winding shaft;

a guide mechanism adapted for acting in the plane of the shade being pulled down, the guide mechanism being arranged between the pull strip and a fixed support for the window shade; the guide mechanism comprising a first and a second pair of toggle-like link arms, the pairs of link arms being spaced apart in the direction transverse to movement of the shade; the two arms of each respective pair of link arms having first ends which are swingably connected to each other for enabling the arms to pivot with respect to each other; one of the link arms of each pair having a second end spaced from the first end thereof, and the second end of each one arm being swingably fastened to a stationary part; the other link arm of each pair having a third end spaced from the first end thereof, the third end being swingably fastened to the pull strip to pivot with respect to the pull strip, whereby as the shade is unwound or wound, the link arms of each pair respectively pivot apart and toward each other;

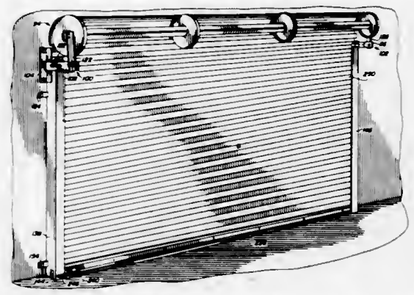
the guide mechanism further comprising a strut having opposed ends which is pivotably connected to and extends between the pivotably connected first ends of each pair of toggle link arms and which extends in the direction transverse to movement of the pull strip, wherein, upon movement of the pull strip to selectively unwind or wind the shade on the winding shaft, the guide mechanism causes the pull strip to remain parallel with the winding shaft.

5,284,199

PANEL CONSTRUCTION FOR A WALL OR ROLL-UP DOOR SYSTEM

Harry E. Finch, 36410 Monte De Oro, Temecula, Calif. 92592, and Geza J. Szayer, 24771 Acropolis Dr., Mission Viejo, Calif. 92691

Continuation-in-part of Ser. No. 424,944, Oct. 23, 1989, Pat. No. 5,172,744. This application Dec. 18, 1992, Ser. No. 992,713
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] E06B *9/08*
U.S. Cl. 160—133 **14 Claims**



1. A replaceable panel for use in a roll-up door system or the like comprising:

a generally square-cornered sheet of formed material bounded by opposite side edges and opposed first and second edges extending between said side edges, said sheet having a plurality of transverse, regularly spaced corrugations extending between said side edges;

said first and second edges being formed with mating configurations such that the first edge of one panel may be slid into engagement with the second edge of an adjacent panel in a direction generally parallel to said side edges so that a pair of adjacent panels may be joined together;

said first edge configuration including a generally planar

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edge segment joined to said sheet by a flat-folded, double thickness portion adjacent said first edge; and

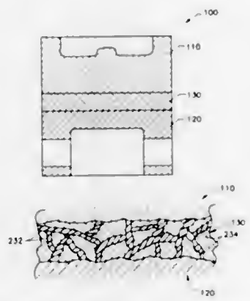
said second edge configuration including a narrow U-shaped section in which the sides of the U are separated by the thickness of the sheet material for receiving said generally planar edge segment of said first edge configuration in mating engagement therein.

5,284,200

METHOD OF FORMING A BONDED COMPONENT

Gerald A. Gegel, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 2, 1992, Ser. No. 970,453
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—98 **7 Claims**



1. A method of forming a bonded component comprising the steps of:

selecting a ceramic powder;

mixing a plurality of fibers with a preselected portion of said powder and forming a mixture of fibers and ceramic powder;

compacting said ceramic powder and said mixture of fibers and ceramic powder and forming a ceramic part having a bond region consisting essentially of said mixture of said fibers and ceramic powder;

removing said fibers from said bond region and forming a plurality of interconnected voids in said bond region of the ceramic part;

subsequently heating said ceramic part;

placing said ceramic part into a pressure casting die;

pouring a molten metal into said die;

pressurizing said die to cast a metal part from said molten metal and simultaneously forcing said molten metal into said interconnected voids in said bond region of the ceramic part;

solidifying said molten metal in said interconnecting voids, thereby bonding said ceramic part and said metal part together to form a bonded component; and

ejecting said bonded component from said die.

5,284,201

VERTICAL SHOT MECHANISM FOR DIE CASTING MACHINE

Robert Hegel, Holland, and Jon R. Mullen, West Olive, both of Mich., assignors to Prince Machine Corporation, Holland, Mich.

Filed Nov. 13, 1992, Ser. No. 976,266
Int. Cl.[5] B22D *17/12, 17/30*
U.S. Cl. 164—312 **22 Claims**

1. In a die casting machine having a base support means supporting opposing dies with means for providing relative movement between said dies for urging at least one die against the other to define a die cavity between said dies;

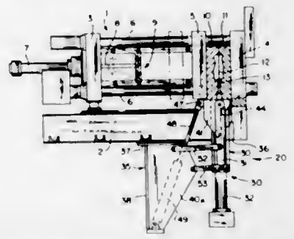
a die cavity opening leading into said die cavity;

a shot cylinder mechanism supported below said dies for injecting molten metal into said die cavity through said die cavity opening;

means for moving said shot cylinder mechanism from a molten metal receiving position for receiving molten metal to a shot injection position for injecting molten metal into said die cavity; the improvement wherein the means for moving said shot cylinder mechanism comprises:

motive power means pivotal about a first axis;

a pivotal support member pivotal about a second axis fixed relative to said opening leading into said die cavity;



said motive power means being pivotally connected to said support member for pivoting said support member about said second axis; and

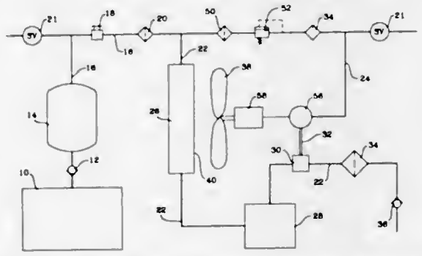
link means connected to said pivotal support member and said shot cylinder mechanism for supporting said shot cylinder mechanism, transmitting the motion of said motive power means to said shot cylinder mechanism, and for controlling the path of movement of said shot cylinder mechanism from said metal receiving position to said shot injection position under said die cavity and vice versa.

5,284,202

COMPRESSOR AFTERCOOLER APPARATUS FOR USE IN LOW TEMPERATURE OPERATIONS, AND METHOD OF USE

James R. Dickey, Winston Salem; Daniel T. Martin, Clemmons, and Michael J. Shannon, Mocksville, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 873,143, Apr. 24, 1992, abandoned.
This application Jun. 11, 1993, Ser. No. 75,845
Int. Cl.[5] F28F *27/02*; F04B *23/00, 25/00, 49/10*
U.S. Cl. 165—1 **2 Claims**



1. A method of inhibiting the formation of frozen condensate in a compressed working fluid of a compressor system, the method comprising the steps of:

passing to an aftercooler a portion of a total volume of a compressed working fluid which is provided by a compressor;

displacing a cooling fluid across the aftercooler with a fan;

driving the fan with a variable speed, compressed working fluid powered, motor means which is provided with the portion of the total volume of the compressed working fluid which has not been provided to the aftercooler;

measuring the temperature of the compressed working fluid flowing downstream of the aftercooler; and

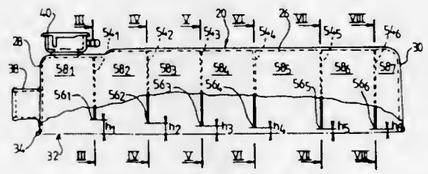
inhibiting the formation of frozen condensate within a compressed working fluid, which has a temperature of about 32° F., through continuous regulation of the flow rate of the compressed working fluid driving the compressed working fluid powered motor means to incrementally vary the speed of the compressed working fluid powered motor means in direct response to the measured temperature of the compressed working fluid.

5,284,203

FLUID HEADER WITH AN INTEGRAL EXPANSION CHAMBER FOR A HEAT EXCHANGER, IN PARTICULAR FOR A MOTOR VEHICLE

Jean Dauvergne, Fosses, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed May 12, 1993, Ser. No. 60,747
Claims priority, application France, May 13, 1992, 92 05808
Int. Cl.[5] F28F *9/22*
U.S. Cl. 165—174 **9 Claims**



1. A heat exchanger having a fluid header with an integral expansion chamber, the header comprising a substantially horizontal header plate and a hollow header body overlying and secured to the header plate, the header body having at opposite ends thereof a first end wall and a second end wall and defining an elongated open face which is closed by the header plate, for flow of a liquid in the header between the said ends, wherein the header body has a plurality of integral transverse baffles spaced apart from each other between the said first and second end walls, each baffle having a free edge close to the said open face and an opening through the baffle defining a flow cross section, the respective said flow cross sections of the baffles being of decreasing area going from the said first end wall to the second end wall.

5,284,204

HYDRONIC THERMAL DISTRIBUTION SYSTEM FOR SPACE HEATING AND COOLING

Dean T. Morgan, Sudbury, Mass., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 10, 1991, Ser. No. 698,266
Int. Cl.[5] F25B *29/00*; F24D *3/02*; F24F *5/00*
U.S. Cl. 165—22 **5 Claims**

1. A thermal distribution system for heating and/or cooling a plurality of enclosed spaces comprising:

at least one fan coil unit located in each of said enclosed spaces, said fan coil units each including an air circulation fan;

a centralized heat pump unit comprising:

a heat pump containing a refrigerant;

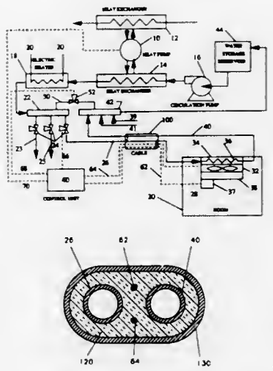
a first heat exchanger in fluid communication with said heat pump for transferring heat between said refrigerant ambient air;

a second heat exchanger in communication with said heat pump, and adapted for circulation therethrough of said refrigerant and a distribution liquid in order to transfer heat between the distribution liquid and the refrigerant;

a pump for circulating said distribution liquid through said second heat exchanger and through said fan coil units;

a supply manifold located at said centralized heat pump unit for receiving distribution liquid from said second heat exchanger and directing said distribution liquid to said fan coil units;

a return manifold located at said centralized heat pump unit and in fluid communication with said fan coil units and said second heat exchanger;



a plurality of flexible, elastic cables each having therein an insulated, plastic supply tube and an insulated, plastic return tube for carrying distribution liquid, said supply tube having one end connected to said supply manifold and its opposite end connected to a fan coil unit, said return tube having one end connected to said fan coil unit and its opposite end connected to said return manifold;

means for sensing temperature in each of said enclosed spaces; and

means for controlling said air circulation fans in response to said temperature sensing means.

5,284,205

METAL TO METAL SEAL FOR WELL SAFETY VALVE

Roddie R. Smith, Plano, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 1, 1992, Ser. No. 861,995
Int. Cl.[5] E21B *33/10*
U.S. Cl. 166—72 **21 Claims**

1. A surface controlled, subsurface safety valve for use in an oil or gas well comprising:

a. a tubular body having a first longitudinally extending bore with a valve closure means disposed therein, and a second longitudinally extending bore radially offset from the first bore with a piston means disposed therein;

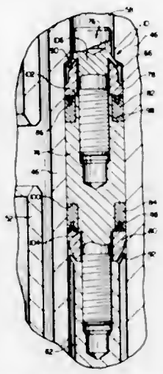
b. the second longitudinal bore comprising an upper section having a first diameter, a lower section having a second diameter larger than the first diameter, and an annular shoulder therebetween;

c. means for establishing control fluid communication between the surface and the second longitudinal bore; and

d. means for establishing a fluid seal between the piston means and the second longitudinal bore, the seal means further comprising a metal seal member on the piston and a cooperating metal annular seat on the annular shoulder

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between the upper and lower sections of the second longitudinal bore, the seal member further comprising an in-



wardly deflectable, annular skirt means for contacting and slidably engaging the annular seat.

5,284,206

FORMATION TREATING

Billy W. Surles, Houston; Philip D. Fader, Katy, and Carlos W. Pardo, Missouri City, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 793,928, Nov. 18, 1991, Pat. No. 5,199,490. This application Nov. 16, 1992, Ser. No. 976,747

Int. Cl.[5] E21B *33/134*

U.S. Cl. 166—270 **28 Claims**

1. A method for treating a subterranean petroleum containing formation penetrated by at least one well in fluid communication with the formation, said formation comprising at least two layered intervals having differing permeabilities to fluid injection, including a first-interval of relatively high permeability and a second interval of relatively lower permeability in order to improve the injectivity profile of the formation to subsequently-injected oil recovery fluid, comprising:

(a) providing an aerosol treating fluid comprising a liquid portion comprising a polymerizable, oligomer of furfuryl alcohol, a diluent for the compound, and an acid catalyst whose strength and concentration are selected to cause polymerization of the oligomer in from 60 to 480 minutes at formation temperatures, the liquid portion being mixed with a non-condensable gas to form the aerosol treating fluid;

(b) injecting said aerosol treating fluid into the formation to pass into the more permeable interval of the petroleum formation and to deposit on the mineral surfaces of the formations; and

(c) allowing the injected aerosol treating fluid to remain in the formation for a period of time sufficient to accomplish at least partial polymerization of the polymerizable compound, thereby reducing the permeability of the more permeable layer of the formation, so an increased portion of the subsequently injected oil recovery fluid enters the second interval.

5,284,207

METHOD OF CLEANING A WELL BORE PRIOR TO A CEMENTING OPERATION

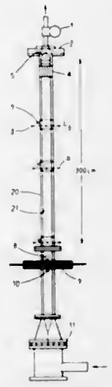
Simon H. Bittleston, Fen Drayton; Andrew Hunt, West Hembury Farm, and Mostafa A. Tehrani, Ely, all of England, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 14, 1992, Ser. No. 882,778

Claims priority, application United Kingdom, May 14, 1991, 9110451

Int. Cl.[5] E21B *33/16, 37/00*

U.S. Cl. 166—291 **9 Claims**



2. A method of cleaning a well bore prior to a cementing operation, said well bore having a casing suspended therein, being filled with a drilling fluid and having deposits on surfaces thereof which might affect bonding of cement, the method comprising:

a) introducing a wash fluid liquid phase and a wash fluid gaseous phase to the well bore;

b) mixing the wash fluid liquid phase and the wash fluid gaseous phase at or near the bottom of the well bore so as to form a bubbly turbulent flow in an annulus formed between an outer surface of the casing and the well bore; and

c) passing the wash fluid through the annulus so as to clean deposits therefrom as the wash fluid passes therethrough.

5,284,208

PRODUCTION LOGGING SYSTEM USING THROUGH FLOW LINE TOOLS

Jack G. Clemens, Plano; John H. Yonker, Carrollton, both of Tex., and Asmundur Jonsson, Stabanger, Norway, assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 25, 1991, Ser. No. 782,421

Int. Cl.[5] E21B *23/08*

U.S. Cl. 166—383 **12 Claims**

1. A system for deploying, operating and recovering tools through a flow line in a well bore, the system comprising:

a fluid recirculation means for controlling the direction of fluid flow within said flow line,

an interconnecting means disposed in the flow line,

a pump down transport assembly connected upon the interconnecting means,

a releasable locking locator assembly disposed about said interconnecting means for relative motion therewith and so that said interconnecting means is capable of axial travel within said flow line, and

a well tool connected upon the interconnecting means.

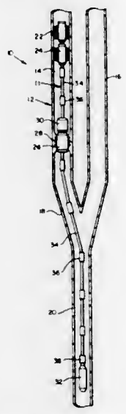
11. A method for deploying, operating and recovering a tool string through a conduit disposed in a well bore without supporting the tool string from the surface, the method comprising the steps of:

providing a conduit and a second, substantially parallel, fluid flow path extending between the surface and a predetermined depth downhole;

providing a selected internal profile in the conduit just above the predetermined depth downhole;

providing means for establishing fluid communication between the conduit and the second fluid flow path at the predetermined depth downhole;

providing means at the surface for selectively controlling the pressure and direction of flow through the conduit and the second fluid flow path;



pumping a tool string comprising a transport assembly, locking locator assembly, well tool and means interconnecting the transport assembly and well tool downward through the conduit until the locking locator assembly engages the internal profile, the interconnecting means passing through the locking locator assembly and being sufficiently long that the means for establishing fluid communication between the conduit and the second fluid flow path is disposed between the transport assembly and the well tool;

operating the well tool; reversing the direction of fluid circulation;

disengaging the locking locator assembly from the profile;

and thereafter forcing the tool string back up through the conduit to the surface.

5,284,209

COILED TUBING CUTTING MODIFICATION

Craig Godfrey, Richardson, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 19, 1992, Ser. No. 932,391

Int. Cl.[5] E21B *29/00*

U.S. Cl. 166—380 **7 Claims**

1. A valve apparatus for use with a string of coiled tubing extending therethrough, comprising:

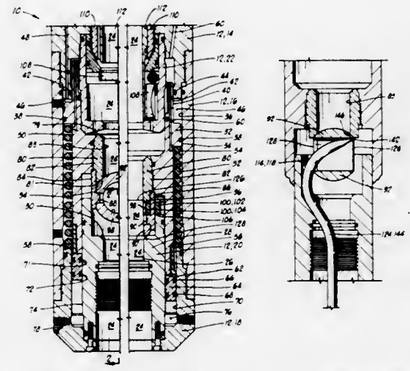
a housing having a longitudinal housing passage defined therethrough;

an annular ball carrier reciprocably disposed in said housing, said ball carrier having upper and lower ends and having a carrier bore defined longitudinally therethrough, said ball carrier having an annular seat defined on its said lower end and surrounding said carrier bore;

first and second control arms extending downward from said carrier;

a spherical ball valve member pivotally mounted on said control arms and having a spherical outer surface portion sealingly engaging said annular seat, said ball valve member being carried longitudinally relative to said housing by said ball carrier, said ball valve member having a ball valve bore extending therethrough;

eccentric actuator means, interconnecting said ball valve member and said housing, for rotating said ball valve member between an open position and a closed position as said ball carrier and said ball valve member reciprocate longitudinally relative to said housing, said ball valve member being in its said open position when said ball carrier is in a lowermost position relative to said housing, and said ball valve member being in a closed position



when said ball carrier is in an uppermost position relative to said housing; and

said housing having a lateral housing recess means defined therein interrupting said longitudinal housing passage for receiving a lower portion of said string of coiled tubing extending through said longitudinal housing passageway to reduce the plastic deformation of said lower portion of said string of coiled tubing and thus reduce a closing force necessary to cut said coiled tubing adjacent said annular seat as said ball valve member moves to its said closed position.

5,284,210

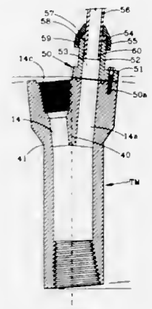
TOP ENTRY SUB ARRANGEMENT

Charles M. Helms, 1202 Castlewood, Friendswood, Tex. 77546, and Charles W. Bleifeld, 2315 Heritage, Pearland, Tex. 77581

Filed Feb. 4, 1993, Ser. No. 13,649

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—385 **17 Claims**

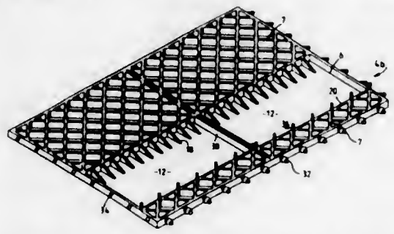


1. A top entry sub including:

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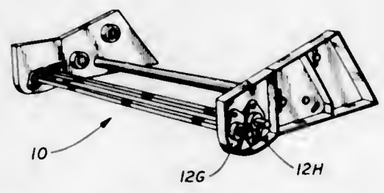
a tubular member;
said tubular member having a main body section with a lower end and an enlarged external diameter upper end portion;
an upper surface on said enlarged external diameter upper end portion;
a lower surface on said lower end;
a single longitudinal passage in said main body section extending through said tubular member lower end; and
said single longitudinal passage terminating at its upper end in two spaced passages extending through said enlarged external diameter upper end portion and upper surface thereon.

5,284,211
GROUND SURFACE DEBRIS COLLECTION MAT
Warwick Tozer, Eltham, Australia, assignor to Slevin Pty. Ltd., Victoria, Australia
PCT No. PCT/AU90/00173, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO90/13712, PCT Pub. Date Nov. 15, 1990
PCT Filed May 2, 1990, Ser. No. 772,368
Claims priority, application Australia, May 3, 1989, PJ4000/89; Aug. 3, 1989, PJ5601/89
Int. Cl.[5] E01H *1/00*; **A63B** *47/02*
U.S. Cl. 172—29 **30 Claims**



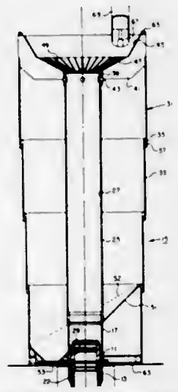
1. A mat for sweeping a surface comprising a substantially flat mat of grid-like, semi-flexible material having a leading edge for pulling the mat over a surface in a direction of travel substantially transverse to said leading edge wherein portions of said grid-like material are missing to define at least one elongated open slot having a leading edge and a trailing edge extending therethrough and disposed transversely relative to the direction of travel whereby debris can pass through each slot over the trailing edge thereof to collect on an upper surface of the mat.

5,284,212
TOMATO HARVESTER MOUNTABLE DOUBLE ROD CUTTER
Jeffrey A. Huckins, and Willard Long, both of Woodland, Calif., assignors to Woodland Tractor and Equipment Co., Inc., Woodland, Calif.
Filed Aug. 19, 1992, Ser. No. 932,608
Int. Cl.[5] A01B *39/19*
U.S. Cl. 172—44 **9 Claims**



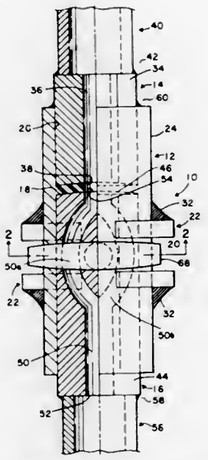
8. An apparatus adaptable to be mounted on tomato harvesters of various manufacturers for the purpose of removing tomato plants from the ground with their tomatoes attached for delivery onto a tomato harvester, which apparatus comprises:
a. a gear box assembly and
b. an idler box assembly, in a spaced relationship,
c. each of which box assemblies includes means for retaining a pair of spaced lock collars in paired aligned opposed positions;
d. lock collars disposed in each of said means for retaining lock collars;
e. a pair of spaced cutter bars disposed in each pair of aligned opposed lock collars;
f. said gear box assembly further including a hydraulic motor in operative engagement with said gear box assembly to drive said gear box and turn said cutter bars and
g. means for mounting the gear assembly and the idler assembly to a tomato harvester.

5,284,213
SUBSEA DRILLING CUTTINGS COLLECTOR AND METHOD OF DRILLING
Philippe C. Nobileau, Paris, France, assignor to ABB Vetco Gray, Inc., Houston, Tex.
Filed Aug. 11, 1992, Ser. No. 928,002
Int. Cl.[5] E21B *7/12, 17/01*
U.S. Cl. 175—5 **40 Claims**



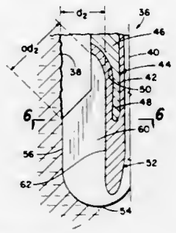
37. A method of drilling a subsea well with a drilling vessel, comprising:
providing a riser with a surrounding cage, providing ports at upper ends of the riser and cage which communicate the interior of the riser with the interior of the cage, and providing an upward facing guide at the upper ends of the riser and cage;
connecting a lower end of the riser to an outer wellhead housing;
installing the outer wellhead housing on a subsea floor with a string of conductor pipe extending into the well;
lowering a drill bit from the vessel into the guide, through the riser and the conductor pipe; then
drilling the well to a selected depth, causing cuttings from the drilling to flow up the riser and through the ports and into the cage for collection; then
retrieving the drill bit from the well and from the riser while the riser and cage remain connected to the outer wellhead housing; then
removing the riser and cage from the outer wellhead housing, and dumping the cuttings from the cage at a place remote from the outer wellhead housing.

5,284,214
DRILL PIPE COUPLING APPARATUS
Joseph F. Van Gundy, Sr., 203 Sears Ct., Plano, Ill. 60545
Filed Sep. 25, 1992, Ser. No. 950,709
Int. Cl.[5] E21B *17/00*
U.S. Cl. 175—320 **9 Claims**



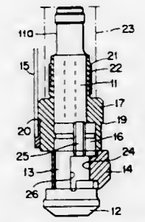
1. A drill pipe coupling apparatus for coupling of drill string components for rotational driving relationship in either direction of rotation, comprising:
an elongated female member having structure defining a bore spanning the length thereof, said bore having a cross-sectional shape other than circular;
a first hollow elongated male member having an end portion with a cross-sectional shape complimentary to said bore wherein said end portion is non-rotatably affixed within a portion of said bore;
a second elongated male member having an end portion with a cross-sectional shape complimentary to said bore wherein said second male member is slidably engagable within remainder of said bore such that said second male member is non-rotatable with respect to said female member,
said second male member presenting opposing ends and having structure defining an aperture intermediate of said opposed ends wherein said aperture presents a cross-sectional shape,
said female member having structure defining first and second holes corresponding in cross-sectional shape to said aperture, said first and second holes being positioned such that said aperture aligns with said first and second holes when said second male member is within said female member thereby creating an opening which extends through said female and second male members,
said second male member further including structure defining a passage spanning the length thereof presenting an inlet and outlet at each end thereof wherein said passage diverges on said inlet side of said aperture there by defining multiple passages around said aperture, said multiple passages converging on said outlet side of said aperture thereby reforming a single passage;
lock pin means slidably engagable through said aligned aperture and holes for locking said second male member within said female member; and
gasket means for providing a fluid-tight seal between said first and second male members.

5,284,215
EARTH-BORING DRILL BIT WITH ENLARGED JUNK SLOTS
Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Dec. 10, 1991, Ser. No. 805,847
Int. Cl.[5] E21B *10/60*
U.S. Cl. 175—340 **25 Claims**



1. A drill bit comprising:
a shank having a generally cylindrical surface and including means for connecting the upper end thereof to a drill string pipe;
a blank mounted on the lower end of said shank and having a longitudinal axis coaxial with said shank axis;
an integral matrix formed about the circumference of said blank;
a circumferential chamfered surface concentric with said blank, said surface being formed entirely on said matrix; and
a junk slot formed in said matrix and extending from a lower portion thereof to said chamfered surface.

5,284,216
DOWN-THE-HOLE DRILL TOOL FOR DRILLING IN ADVANCE OF A CASING TUBE
Anders Brungs, Gävle; Jan-Gunnar Hedlund; Kjell-Ove Jansson, both of Sandviken, and Bengt Asberg, Gävle, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden
PCT No. PCT/SE91/00108, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/12406, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 15, 1991, Ser. No. 920,556
Claims priority, application Sweden, Feb. 19, 1990, 9000582-8
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—385 **8 Claims**



1. A down-the-hole drill tool adapted to drill a hole in advance of a drilling casing tube, said drill tool including a central pilot bit, a reamer means and a guide means for guiding the drill tool and said casing tube relative to one another, said reamer means widening a plot hole drilled by said pilot bit to enable the casing tube to travel downwardly with said tool, and a shaft adapted to be connected to a down-the-hole hammer, the shaft and the pilot bit constituting a one-piece unit

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whereby said shaft and said pilot bit cannot be disconnected relative to one another.

5,284,217

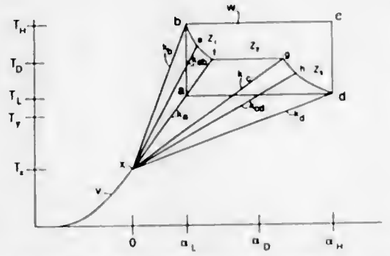
APPARATUS FOR TIGHTENING THREADED FASTENERS BASED UPON A PREDETERMINED TORQUE-ANGLE SPECIFICATION WINDOW

Siavash Eshghy, Solon, Ohio, assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Division of Ser. No. 889,932, Jun. 2, 1992, Pat. No. 5,212,862, which is a continuation of Ser. No. 594,532, Oct. 9, 1990, Pat. No. 5,131,130. This application Apr. 7, 1993, Ser. No. 43,881

Int. Cl.[5] **B23P** *19/04*; **B23Q** *5/00*

U.S. Cl. 173—176 **4 Claims**



1. Apparatus for tightening a threaded fastener to within a torque-angle specification window defined by a lower angle limit, an upper angle limit, a lower torque limit, and an upper torque limit, said apparatus comprising:

a powered instructable tool for tightening said fastener;

means for sensing torque and angle at various angles of advance of said fastener during tightening by the tool;

means for determining from the sensed values of torque and angle an advancement of said fastener which will result in said fastener being tightened to torque and angle values which are higher than the lower limits or torque and angle and which are inside of the torque-angle window a predetermined proportion of the way therethrough; and

means for instructing the tool to terminate tightening in response to attaining said determined advancement.

5,284,218

MOTORIZED CART WITH FRONT WHEEL DRIVE

James T. Rusher, Jr., Badin, N.C., assignor to Rusher Corporation, Badin, N.C.

Filed Mar. 22, 1993, Ser. No. 34,080

Int. Cl.[5] **B62D** *51/04*; **B62B** *3/00*

U.S. Cl. 180—19.1 **7 Claims**



1. A wheeled cart for facilitating the transportation and delivery of a load of material comprising:

an elongated frame;

a pair of front wheels serving as drive wheels mounted to and supporting the forward end of said frame;

a pair of rear wheels operatively engaged with and supporting the rear end of said frame said rear wheels being smaller than the front wheels;

a hopper attached to said frame having a front portion of the hopper located above and over the front wheels whereby dumping a load is facilitated;

motive means mounted on said frame adjacent said forward end of said frame;

drive means connecting said motive means to said front wheels;

a handle connected to and extending rearwardly and upwardly from said frame; and

control means attached to said handle and connected to said motive means for controlling the operation of the motive means.

5,284,219

STEERING APPARATUS WITH VARIABLE STEERING ANGLE RATIO

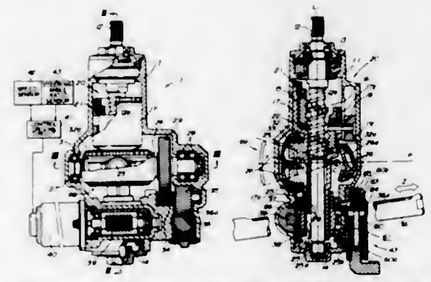
Yasuo Shimizu; Toshitake Kawai, and Junji Yuzuriha, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 826,043

Claims priority, application Japan, Jan. 25, 1991, 3-025553

Int. Cl.[5] **B62D** *3/08, 6/02*

U.S. Cl. 180—79.1 **4 Claims**



1. A steering apparatus for steering a steerable road wheel in response to turning movement of a steering wheel with a variable steering angle ratio therebetween, comprising:

a ball screw mechanism having a screw shaft adapted to be coupled to one of said steerable road wheel and said steering wheel and rotatable about a first axis in response to rotation of said one of said steerable road wheel and said steering wheel, and a ball nut threaded over said screw shaft through a plurality of circulating balls interposed therebetween;

an angularly movable member adapted to be coupled to another of said steerable road wheel and said steering wheel, and angularly movable about a second axis in response to turning movement of said one of said steerable road wheel and said steering wheel;

a conversion mechanism having a conversion member mounted on said ball nut for linear movement along said first axis in unison with said ball nut and angular movement along said first axis, and a lever member held in engagement with said conversion member at a position and angularly movable in unison with said angularly movable member, for effecting conversion between linear movement of said conversion member and angular movement of said lever member, with the distance between said position and said second axis being variable in response to angular movement of said conversion member about said first axis; and

a drive mechanism for angularly moving said conversion member about said axis.

5,284,220

PRESSURE CONTROL VALVE ASSEMBLY FOR HYDRAULIC CIRCUIT AND AUTOMOTIVE REAR WHEEL STEERING SYSTEM UTILIZING THE SAME

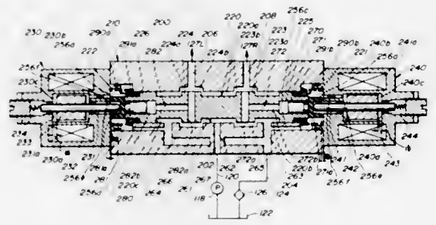
Hideaki Shimizu, and Shinya Matsumoto, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Continuation of Ser. No. 461,920, Jan. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 384,800, Jul. 25, 1989, abandoned. This application Mar. 6, 1992, Ser. No. 845,845

Claims priority, application Japan, Jul. 25, 1988, 63-98180[U]; Jan. 10, 1989, 1-1321[U]

Int. Cl.[5] **F15B** *13/044*

U.S. Cl. 180—140 **12 Claims**



11. A pressure control valve assembly comprising:

a valve housing defining a valve bore, first and second control ports respectively connected to first and second loads, an induction port connected to a high pressure side of a fluid pressure source and a drain port connected to a low pressure side of said fluid pressure source;

a valve spool disposed within said valve bore for axial movement therein, said valve spool including means for adjusting fluid flow to said first and second control ports in a manner which is inversely proportional to each other, said valve spool and said valve bore defining a first chamber at one end of said valve spool communicated with said drain port;

an actuation means having a first portion housed within a second chamber while maintaining clearance between the periphery of said second chamber and a second portion extending from said first portion into said first chamber for causing axial movement of said valve spool, said actuation means being responsive to a command representative of pressure distribution between said first and second ports for exerting an actuation force on said valve spool so as to adjust the fluid flow to said first and second control ports;

a reaction force generating means, associated with said valve spool and responsive to a fluid pressure at one of said first and second control ports which is introduced into a feedback path defined in said valve spool, for generating a reacting force which acts against said actuation force and which varies according to a stroke of said valve spool so as to place said valve spool in a position at which said actuation force and said reacting force balance and at which said commanded pressure distribution is achieved, said feedback path including a first section extending substantially in an axial direction and a second section extending substantially in a direction transverse to the axis of said valve spool; and

a communication path defining a fluid communication between said first and second chambers, said communication path having a flow restriction orifice disposed therein between said first and second chambers to provide a constant restricted fluid flow path therebetween.

5,284,221

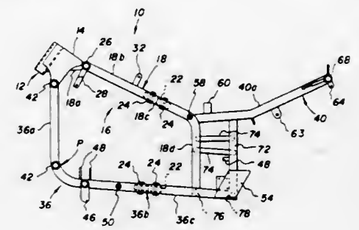
MOTORCYCLE FRAME

Monte Warne, 4180 Highway 104 West, Dyersburg, Tenn. 38024

Filed Mar. 11, 1992, Ser. No. 849,354

Int. Cl.[5] **B62K** *11/02*

U.S. Cl. 180—219 **6 Claims**



1. A frame for a two wheeled vehicle having a longitudinal centerline which vehicle is to be powered by a conventional automobile V-8 engine block to be supported in the frame, the frame comprising:

a steering head;

a housing for the engine block which is formed by a left and a right subframe extending longitudinally and on respective sides of the vehicle,

each said subframe having a substantially quadrilateral configuration when viewed from a side of the vehicle and being formed by an upper tube and a lower tube,

each of said upper and lower tubes having a forwardmost end portion which is secured to said steering head and which then flares laterally away from said steering head, whereby said upper tubes and said lower tubes are all secured together at the forwardmost end portions thereof,

each of said upper tubes also having an end distal from said forwardmost end which is connected to said lower tube of the respective said subframe,

each of said subframes including a separating means for separating said upper tubes and said lower tubes into front and back sections whereby said housing is separated into a front half and a back half, and

each said front section of said lower tubes including a semicircular support tube having an upper end and a lower end, said support tube being formed in a plane which extends laterally from the vehicle and with said upper end connected to said forwardmost end portion of said lower tube adjacent said steering head and with said lower end connected to said front section of said lower tube therebelow; and

a mounting means for securing the engine block in said housing symmetrically about the longitudinal centerline of the vehicle, said mounting means including a base tube connected laterally between said front sections of said lower tubes.

5,284,222

SPEAKER CABINET

Masayoshi Ito, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,177

Claims priority, application Japan, Dec. 13, 1991, 3-330881; Dec. 13, 1991, 3-351892

Int. Cl.[5] **H05K** *5/00*

U.S. Cl. 181—152 **3 Claims**

1. A speaker cabinet comprising:

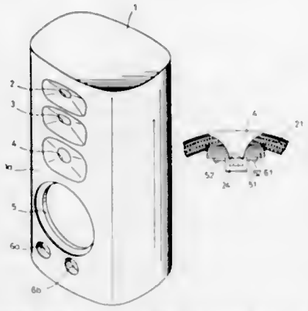
an outer peripheral wall portion arranged substantially vertically and being formed of a laminated plywood member, said wall portion having open upper and lower end faces;

a top plate and a bottom plate for respectively closing said upper and lower end faces of said outer peripheral wall portion to form a closed cabinet;

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an opening portion formed on a front surface of said cabinet; and

a speaker attached to an inside surface of said wall portion at said opening portion, wherein a cross-section of said outer



peripheral wall portion at said opening portion is formed as an ellipse and said opening portion is formed as a horn-shape whose diameter is increased toward an outside surface of said wall portion.

5,284,223

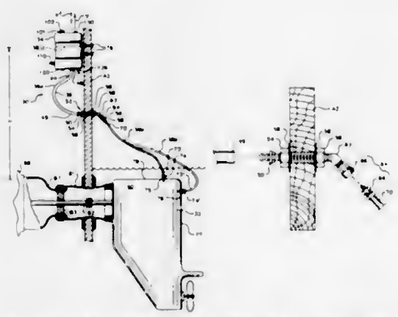
APPARATUS AND METHOD FOR VENTING AND FOR MONITORING OIL LEVELS IN MARINE OUTDRIVES

Chelsea G. Fisher, Seattle, Wash., assignor to Unit Saver, Inc., Auburn, Wash.

Continuation-in-part of Ser. No. 274,280, Nov. 21, 1988, abandoned. This application Jun. 25, 1992, Ser. No. 904,339

Int. Cl.[5] **F01M** *1/18, 11/10*

U.S. Cl. 184—6.4 **4 Claims**



1. A venting and oil reservoir apparatus for marine outdrives having an upper head with oil contained therein, said marine outdrive adapted for connection to an inboard mounted engine in a boat having a transom, said apparatus comprising:

(a) a fluid passage means, said fluid passage means comprising:

(1) a first oil line segment, said segment having a first end and a second end, said first end communicating with and attached to said upper head of said marine outdrive;

(2) a thru transom fitting, said fitting having an interior portion and an exterior portion, said exterior portion affixed to and communicating with said second end of said first oil line segment;

(3) a second oil line segment, said segment having a first end and a second end, said first end affixed to and communicating with said thru transom fitting;

(4) a swivel type quick coupling connection, said connection located adjacent said through transom fitting and joining said fitting with said second oil line segment;

(b) a liquid reservoir, said reservoir suitable for receiving oil therein, said reservoir affixed to and communicating with said second end of said second oil line segment;

(c) wherein said reservoir and said upper head are interconnected by said fluid passage means.

5,284,224

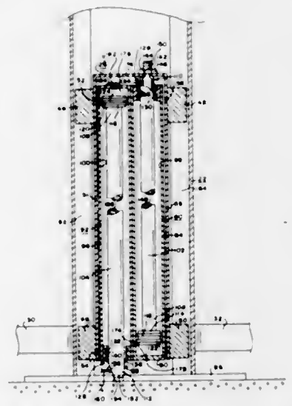
LOW CLEARANCE VEHICLE LIFT

Wybert L. Carruth, Temple, Tex., and Edgar B. Provine, III, Millington, Tenn., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Apr. 19, 1993, Ser. No. 48,230

Int. Cl.[5] **B60S** *13/00*

U.S. Cl. 187—8.41 **10 Claims**



1. A vehicle lift for raising and lowering a vehicle, said lift comprising:

(a) a lift column;

(b) a carriage mounted on said lift column for vertical movement with respect thereto; and

(c) hydraulic lifting means for moving said carriage vertically with respect to said lift column, said hydraulic lifting means comprising a first and a second hydraulic cylinder, each said hydraulic cylinder comprising:

i. a cylinder body having a longitudinal bore thereinto; and

ii. a piston rod mounted for reciprocating movement within said longitudinal bore, said piston rod having a first end within said longitudinal bore and having a second end extending outwardly of said cylinder body;

said first and said second hydraulic cylinder bodies being secured from longitudinal motion with respect to each other with said second ends of said piston rods of said first and said second hydraulic cylinders extending outwardly in opposite directions, said second end of said piston rod of said first hydraulic cylinder being attached to said carriage for joint movement therewith and said second end of said piston rod of said second hydraulic cylinder being secured from movement with respect to said lift column.

5,284,225

LIFT DOOR APPARATUS

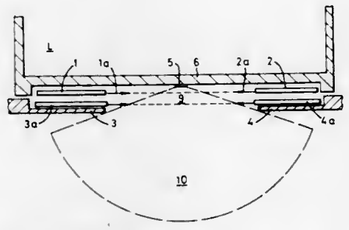
Terence C. Platt, Binfield, United Kingdom, assignor to Memco Limited, Berks, United Kingdom

Filed Sep. 21, 1992, Ser. No. 948,020

Claims priority, application United Kingdom, Sep. 23, 1991, 9120267

Int. Cl.[5] **B66B** *13/00*

U.S. Cl. 187—51 **8 Claims**



1. Lift door apparatus comprising:

optical image sensing means for viewing a zone extending between a closing path of at least one lift door and a position remote from said closing path and for generating an image of the zone in the form of a matrix, corresponding means for selectively and repetitively scanning a first portion of the matrix corresponding with a first part of said zone which is remote from the closing path of said door;

means for storing data representing the scanning of said first portion of the matrix,

means for processing the data to determine whether an object in the first part of said one is a moving object and for distinguishing between moving objects which approach said closing path and which move transversely thereto, and

means connected to said data processing means for generating a signal in response to a moving object approaching said closing path, which signal is used to delay closure of said lift door to enable said approaching object to enter the lift.

5,284,226

CARRIAGE GUIDING POST IN A TRANSFER LIFTER

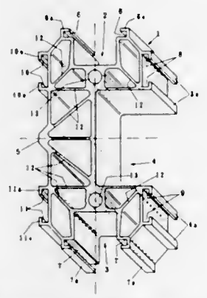
Katsuyoshi Makimura, Kobe; Kazuhiko Koyama, Osaka, and Masahiro Ishibashi, Toyonaka, all of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan

Filed Nov. 4, 1992, Ser. No. 971,300

Claims priority, application Japan, Dec. 11, 1991, 3-351421; Dec. 11, 1991, 3-351423; Dec. 11, 1991, 3-351424

Int. Cl.[5] **B66B** *7/02*

U.S. Cl. 187—95 **10 Claims**



1. A carriage guiding post in a transfer lifter, comprising a four-sided support post of an approximately square shape in cross section said support post having carriage guiding rail recesses provided in three of the four sides thereof, and a counter weight guiding rail track provided on the remaining side of said support post, said carriage guiding rail recesses and said counter weight guiding rail all extend continuously throughout the length of the support post, wherein said counter weight guiding rail track is a rib projecting from a central region of the side of the support post and extends lengthwise thereof, said rib having an approximately isosceles triangle shaped cross section.

5,284,227

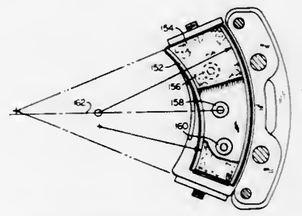
DISC BRAKE ASSEMBLY AND BRAKE PAD FOR USE THEREWITH

Rick D. Pelfrey, Beavercreek, Ohio, assignor to Enginetics Brake Corporation, Huber Heights, Ohio

Continuation of Ser. No. 633,987, Dec. 26, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,533

Int. Cl.[5] **F16D** *25/0635, 55/228, 65/092*

U.S. Cl. 188—71.1 **24 Claims**



14. A disc brake assembly comprising:

a rotor;

a cylinder housing;

a brake pad carrier displaceably mounted on said housing;

said brake pad carrier having a single, unitary brake pad being tapered in width along its length, said brake pad having an inner surface positioned adjacent to piston means, mounted on said housing, for displacing said pad into engagement with said rotor;

means for mounting said disk brake assembly on an associated vehicle such that a leading edge of said pad, which is first swept by said rotor when rotating in a forward direction, is wider than a trailing edge of said pad, so that said taper is oriented in a direction of forward rotor rotation such that an area of said pad adjacent to said leading edge is greater than an area adjacent to said trailing edge, whereby even wear of said inner surface is promoted.

5,284,228

FLOATING-CALIPER SPOT-TYPE DISC BRAKE WITH ACTIVELY RESTORED BRAKE SHOES

Rolf Weiler, Eppstein, and Uwe Hendrich, Mainz, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 862,138

Int. Cl.[5] **F16D** *65/02, 65/52*

U.S. Cl. 188—71.8 **4 Claims**

1. A floating-caliper spot-type disc brake including:

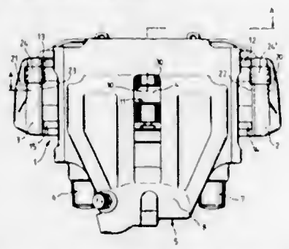
a brake disc;

a stationary brake carrier comprising two carrier arms which extend beyond the outer edge of said brake disc substantially in an axial direction;

a floating caliper which straddles the outer edge of said brake disc and is axially slidingly supported on said brake carrier, said floating caliper having an external and an internal side;

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a hydraulic actuator mounted in said floating caliper internal side, said actuator comprising a brake cylinder and a brake piston axially slidable within said brake cylinder;
an internal and an external brake shoe respectively disposed on either side of said brake disc, said brake shoes each having a projection at either end engaging said carrier arms of said brake carrier so as to be axially slidably guided thereon;
said internal and external brake shoes straddles by said floating caliper so that upon actuation of said disc brake by pressurization of said cylinder, said internal brake shoe is urged against said brake disc directly by said piston and said external brake shoe is urged against said brake disc indirectly by said external side of said floating caliper which slides in an axial direction, circumferential forces occurring during braking action transmitted by said brake shoes to said carrier arms;



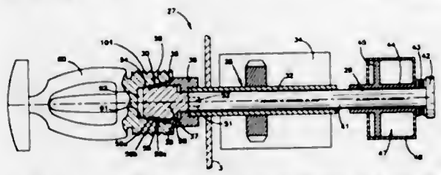
a pair of spring elements, each axially slidingly mounted on a respective carrier arm, each of said spring elements frictionally gripping said respective carrier arm, each, spring element having an elastically movable tongue projection to be engaged by said external brake shoe upon actuation of said disc brake, said tongue elastically deflected by movement of said external brake shoe caused by axial movement of said floating caliper in the direction of said brake disc to generate a spring force acting on said external brake shoe, said spring force not being sufficient overcome said friction to slide the said spring element on said carrier arm;
said spring element having a stop engaged by said elastic tongue upon deflection thereof to a predetermined extent, to allow said external brake shoe to exert a force sufficient to overcome said frictional grip and to slide said spring element on said carrier arm.

5,284,229

APPARATUS AND METHOD FOR SELECTIVELY GRIPPING AND ROTATING A PART

Russell J. Logan, Pepper Pike; Keith K. Logan, and P. Clark Hungerford, both of Cleveland Heights, all of Ohio, assignors to Federal Process Company, Cleveland, Ohio

Filed Nov. 14, 1991, Ser. No. 791,361
Int. Cl.[5] B05C *11/02, 13/00;* **B23Q** *3/14*
U.S. Cl. 118—107 **17 Claims**



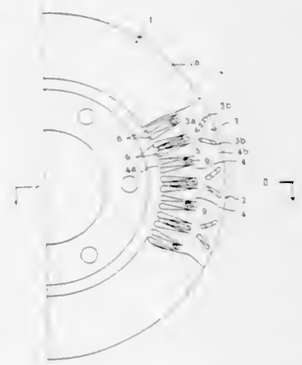
1. An apparatus for gripping a gripping surface of a part and for selectively rotating such part, the gripping surface of the part having a certain size and shape, said apparatus comprising:
a drive shaft assembly selectively rotatably driven by a motor;
a draw bar assembly generally coaxial with and selectively axially movable relative to the drive shaft assembly; and
an expandable media positioned between part of the drive shaft assembly and part of the draw bar assembly;
the draw bar assembly having (i) a first axial position in which the expandable media is in an uncompressed state and (ii) a second axial position in which the expandable media is compressed between said part of the drive shaft assembly and said part of the draw bar assembly to a radially expanded state for gripping the surface of the part and for rotatably coupling the drive shaft assembly to the draw bar assembly to selectively rotatably drive the gripped part when the motor is operated.

5,284,230

VENTILATED DISC UNIT FOR AUTOMOTIVE BRAKE SYSTEM

Kiyoaki Takaki, Aichi, Japan, assignor to Aisin Takaoka Co., Ltd., Toyota, Japan

Filed Jun. 24, 1992, Ser. No. 903,286
Claims priority, application Japan, Jun. 25, 1991, 3-250155; Jun. 25, 1991, 3-250156; Dec. 6, 1991, 3-360772; Dec. 11, 1991, 3-360858
Int. Cl.[5] F16D *65/12*
U.S. Cl. 188—218 XL **14 Claims**



1. A ventilated disc unit comprising:
an inner annular disc and an outer annular disc coaxially coupled to said inner disc by a plurality of radially extending rib units having bifurcated outer ends,
each of said rib units comprising a radially extending straight segment extending towards radially inner periphery of the inner and outer discs and a pair of bifurcated segments extending towards radially outer periphery of the discs,
said bifurcated segments being arranged on both sides of and symmetrically with respect to a radial line passing through said straight segment so that a circumferential distance between said bifurcated segments is increased from radially inner ends towards radially outer ends thereof,
the straight segment of each rib unit being formed discontinuously with said bifurcated segments via a discontinuously bifurcated point area,
wherein a plurality of grooves are disposed extending in a substantially radial direction on inner surfaces of the inner and outer annular discs from the inner periphery of the annular discs substantially to the middle of the annular discs.

5,284,231

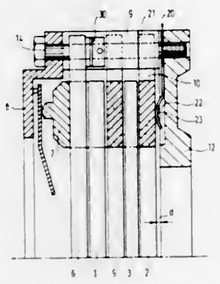
Patent Not Issued For This Number

5,284,232

CLUTCH WITH STRUCTURAL PLATES, ESPECIALLY OF CARBON-CARBON

Guy Prud'Homme, Ste Foy Les Lyon, France, assignor to Carbone Industrie, Bagnolet Cedex, France

Filed Oct. 5, 1992, Ser. No. 956,277
Claims priority, application France, Oct. 9, 1991, 9112430
Int. Cl.[5] F16D *13/56*
U.S. Cl. 192—70.21 **9 Claims**



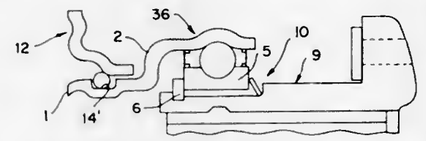
1. In a clutch with structural plates of carbon-carbon, comprising:
a drive flywheel,
a first driving plate forming with the flywheel a first non-clutching interface,
at least one pair of driven plates connected to an output shaft, a driving plate being interposed between each pair of driven plates, and forming respective active clutching interfaces therebetween,
a second driving plate,
a thrust plate forming with the second driving plate a second non-clutching interface,
a casing with a mechanism operable to apply pressure to the thrust plate and being provided with a plurality of bars fitted into radial recesses of the driving plates and being fixed to the flywheel,
the improvement wherein the clutch further includes a device interposed in at least one of the non-clutching interfaces and urging a respective driving plate of said one non-clutching interface towards a respective adjacent driven plate, and against abutment means, and wherein the progressive device is formed by a corrugated ring fitted in a circular groove recessed into a part constituted by one of the flywheel and the thrust plate forming the non-clutching interface with the driving plate.

5,284,233

CLUTCH RELEASE BEARING FOR A CLUTCH OF THE PULL-OFF TYPE, ESPECIALLY FOR MOTOR VEHICLES

Jacques Feigler, St. Brice S/Foret, France, assignor to Valeo, Paris, France

Filed Sep. 14, 1992, Ser. No. 944,659
Claims priority, application France, Sep. 17, 1991, 91 11444
Int. Cl.[5] F16D *23/14*
U.S. Cl. 192—98 **11 Claims**



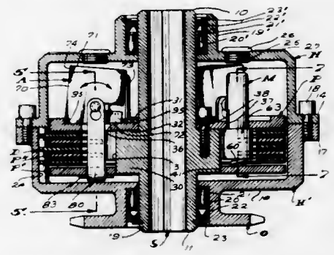
11. A clutch release bearing for an apparatus comprising a primary drive unit, a transmission unit, a clutch means of the pull-off type for releasably transmitting drive from the primary drive unit to the transmission unit, and a clutch control means for controlling an operation of said clutch means, said clutch release bearing comprising:
a coupling assembly engaging said clutch means, said coupling assembly comprising a main coupling means for coupling said clutch release bearing to a declutching member of said clutch means, and a resilient intermediate coupling member carried by said main coupling means;
a manoeuvring element operatively connected to and adapted to be moved by said clutch control means;
a bearing means carried by said manoeuvring element for facilitating movement of said manoeuvring element with respect to said coupling assembly, said bearing means including an inner ring member and a housing member defining an outer ring member;
an actuating element carried by said housing member and adapted to be coupled to said coupling assembly; and
locating means positioned between the inner ring of said bearing means and said manoeuvring element for axially locating the bearing means with respect to said manoeuvring element and for axially coupling said bearing means to said manoeuvring element.

5,284,234

CENTRIFUGAL CLUTCH

Anthony Miglizzi, 1537 McKinley St., Unit 19, Azusa, Calif. 91702

Filed Mar. 22, 1993, Ser. No. 35,302
Int. Cl.[5] F16D *43/08*
U.S. Cl. 192—105 C **10 Claims**



1. A clutch including an elongate housing with front and rear end walls and an axially extending outer side wall; a rotary power output part axially outward of and in rotary driving engagement with one end of the housing; an elongate power input shaft concentric with the housing and having a power input end accessible at one end of the housing; bearing means coupling the housing and shaft for free relative rotation; a drive plate with front and rear surfaces carried by the shaft and projecting radially outwardly therefrom within the housing; a pressure plate with flat front and rear surfaces within the housing and spaced rearward from the drive plate, drive plate coupling means coupling the pressure plate with the shaft in rotary driving and axial shifting engagement therewith; a radially extending friction disk positioned between the drive and pressure plates; disk coupling means coupling the disk in rotary driving and axial shifting engagement with the housing; spring means normally yieldingly urge the pressure plate rearwardly and away from the drive plate and disk; and, actuating means to move the pressure plate forward into pressure engagement with the disk and to move the disk forwardly into pressure engagement with the drive plate; said actuating means includes circumferentially spaced radially inwardly and axially forwardly disposed pivot seats at the front surface of the drive plate; an actuating weight related to each pivot seat and extending radially inwardly and projecting axially forward therefrom, each weight has a radially outwardly and axially rearwardly disposed pivot point engaged in the pivot seat; each

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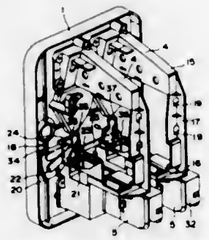
weight has a center of gravity spaced radially inward and forward from its pivot point; and, an elongate tow part with front and rear ends extending rearwardly from each weight to the pressure plate; a front coupling means coupling the front end of each tow part to its related weight at a point spaced radially inward of the pivot point and axially rearward from the center of gravity of the weight; and, rear coupling means coupling the rear end of each tow part to the pressure plate.

5,284,235

COIN DOOR ASSEMBLY

Yoshinobu Tanaka, Saitama, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,924
Claims priority, application Japan, Dec. 9, 1991, 3-113942[U]
Int. Cl.[5] G07D *1/04*
U.S. Cl. 194—344 **2 Claims**



1. A coin door assembly comprising a service door panel having an inner surface and a coin selector assembly disposed to said inner surface, said coin selector assembly comprising:

a pair of chutes attached to said inner surface of said service door panel;

a coin selector secured to said inner surface of said service door panel between said chutes, said coin selector having a front surface and a rear surface, and said front surface facing to said inner surface of said service door panel;

a first fixing pin projected from said front surface of said coin selector; and

a plurality of second fixing pins projected from said rear surface of said coin selector; wherein said coin door assembly further comprises:

a first holding member secured between rear ends of said chutes for holding said coin selector, said first holding member having a right-angled portion;

a second holding member secured to said inner surface of said service door panel;

a plurality of L-shaped openings formed on said right-angled portion of said first holding member, said L-shaped openings being equal in number to said plurality of second fixing pins and each of the L-shaped openings receiving the corresponding second fixing pin;

a concave formed on said second holding member to receive said first fixing pin, thereby said coin selector is correctly positioned with said first and said second fixing pins being engaged with said concave and said L-shaped openings, respectively;

a lock lever pivoted to said inner surface of said serviee door panel, said lock lever having a first projection projected from one end thereof;

a clamp piece integrally formed with said lock lever to prevent said first fixing pin from moving away from said concave;

a second projection projected from said inner surface of said service door panel; and

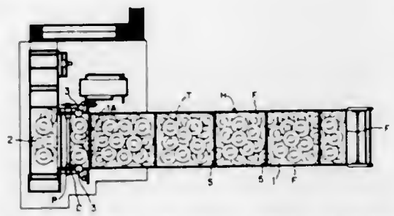
a spring disposed between said first and said second projections to force said clamp piece to said first fixing pin.

5,284,236

STACKED RUBBER TIRE SEPARATION-TRANSPORT APPARATUS

Yasuhiro Ohta, Sakurai; Masaru Umemoto, Kashiwara, and Kenryo Kashiwagi, Yao, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,406
Claims priority, application Japan, Jan. 11, 1993, 5-17860
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—454 **1 Claim**



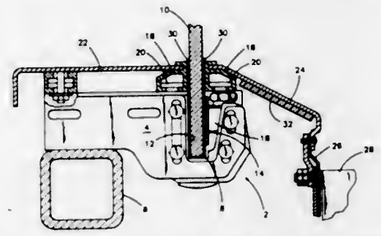
1. A stacked rubber tire separation-transport apparatus for separating stacked rubber tires equipped with a low-speed discharge conveyor at the bottom of a rubber tire stack hopper with a discharge end section formed on a downward inclined discharge surface and with high-speed separation rollers in the vicinity of both sides of said discharge end section for contact with at least some of said tires.

5,284,237

SOUND INSULATION FOR ESCALATOR BALUSTRADE

Ary O. Mello, Newington; Gerald E. Johnson, Farmington, and Mukunda Pramanik, Burlington, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 30, 1992, Ser. No. 998,097
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—335 **7 Claims**



1. In an escalator or moving walkway, an assembly for mounting a planar balustrade on a truss, said assembly comprising:

a) clamp means secured to said truss and defining a channel which receives a lower edge portion of said balustrade;

b) inner and outer deck panels flanking said balustrade and extending respectively toward and away from a tread portion of the escalator or moving walkway, thereby forming an inner and an outer deck;

c) inner and outer trim channels interposed between said inner and outer deck panels and said balustrade, said trim channels providing pockets for receiving edges of said inner and outer deck panels which are proximal to said balustrade; and

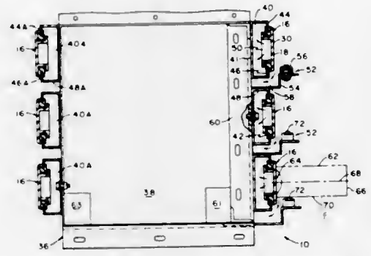
d) sound-insulating closed-cell foam strips sandwiched between said trim channels and opposite sides of said balustrade, said foam strips being operable to muffle sound emanating from moving components of the escalator or walkway to provide a quieter environment for passengers on said tread portion.

5,284,238

VACUUM CONVEYOR FOR CANS

Thomas M. Ingraham, West Liberty, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 22, 1992, Ser. No. 995,187
Int. Cl.[5] B65G *17/46*
U.S. Cl. 198—689.1 **19 Claims**



1. An apparatus for transporting from an upstream location to a downstream location an article having a generally cylindrical body portion with a first end and a second end defining a longitudinal axis extending through said body portion, comprising:

means defining an endless belt path extending between the upstream location and the downstream location;

flexible belt means having a first surface and an opposed second surface defining a plurality of openings therein for fluid communication therethrough, operatively associated with said means defining an endless belt path such that said first surface is vertically oriented for at least a portion of the belt path from said upstream location to said downstream location, wherein the article's first end is in contact with the first surface during transport;

guide rail means extending from the upstream location to the downstream location and disposed proximate said flexible belt means so as to support the article body portion proximate said flexible belt means first surface;

a first plenum means operatively associated with said means defining an endless path and extending from the upstream location to the downstream location;

a second plenum means proximate said guide rail means operatively associated with said guide rail means; and

vacuum means operatively coupled to said first and second plenum means for applying a negative pressure therethrough wherein the vacuum from said first plenum means is sufficient to rotatably retain the article first end in contact with said flexible belt means first surface and the vacuum from said second plenum means is sufficient to maintain contact of the article body portion with said guide rail means, such contact imparting rotational motion to the article about the longitudinal axis thereof during transport.

5,284,239

BOTTLE WITH ANTI-ROTATION INSERT

Charles P. Kiricoples, Salem, Mass., assignor to The Gillette Company, Boston, Mass.

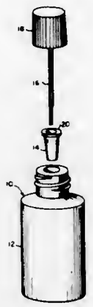
Filed Jun. 4, 1993, Ser. No. 71,531
Int. Cl.[5] B65D *43/00*
U.S. Cl. 206—229 **14 Claims**

1. A fluid dispenser assembly for use with an elongated applicator; comprising

a container having a lower reservoir portion and an upper cylindrical neck portion;

a tubular insert disposed in said cylindrical neck portion having an internal diameter smaller at its lower end than at its upper end for receiving said elongated applicator therein;

said container neck portion having a plurality of axially disposed vanes formed on the internal surface thereof and the outer surface of said tubular insert being of a larger



diameter than the internal diameter of said neck portion formed by said vanes; and

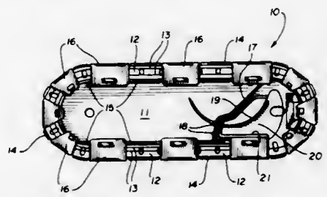
a screw cap means disposed adjacent the upper surface of said container neck portion, said screw cap means being rotatably attached to said container and contacting said insert when in its downwardmost sealing position.

5,284,240

NO TOUCH SUTURE PACKAGE

Marvin Alpern, Glen Ridge, N.J.; Robert Cerwin, Pipersville, and Joseph Pergine, Chalfont, both of Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 22, 1993, Ser. No. 8,444
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.3 **9 Claims**



1. A suture package for a suture with an attached needle, said package comprising a suture holding member, said member having a flat bottom section and means disposed on one side of said bottom section for holding the suture and displaying said needle on said side, a portion of said flat bottom section underlying said needle being deflectable out of the plane of said flat bottom section and a protective sleeve member enclosing said suture holding member said sleeve having a top, bottom, and two longitudinal sides connecting said top and bottom, said bottom having a deflectable portion underlying the deflectable portion of said suture holding member.

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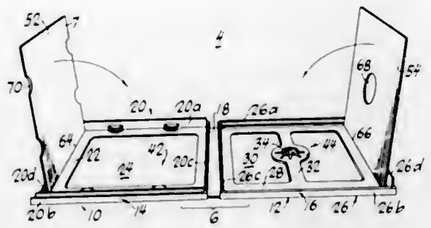
5,284,241
COMMUTATOR HANDLING APPARATUS
W. Patrick Winton, and Alvin C. Banner, both of Montgomery County, Ohio, assignors to Globe Products Inc., Huber Heights, Ohio
Division of Ser. No. 675,630, Mar. 25, 1991, Pat. No. 5,170,553.
This application Dec. 11, 1992, Ser. No. 989,200
Int. Cl.[5] B65D *85/42*
U.S. Cl. 206—303 10 Claims



1. For use in supplying commutators to a commutator placing machine, the combination comprising:
an elongate, hollow, cylindrical, commutator supply tube having a longitudinally-extending center axis and configured to hold a plurality of commutators in end-to-end relationship, tube-alignment means on the outside surface of said tube for releasably engaging tube handling mechanisms associated with a commutator delivering apparatus so that said tube is located on said delivering apparatus with said tube alignment surfaces in a predetermined angular orientation with respect to said center axis, and commutator guide means on said tube for orienting commutators housed within said tube in a predetermined angular orientation with respect to said tube-alignment means so that commutators may be supplied in said tube to a commutator placing machine in a predetermined angular orientation;
a row of commutators angularly oriented by said guide means substantially filling said tube and aligned end-to-end substantially along said center axis; and
means for at least partly covering the ends of said tube.

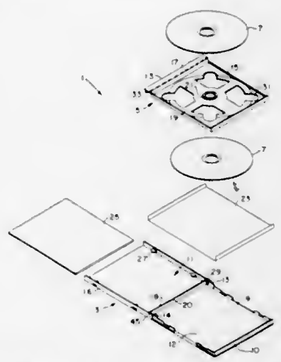
5,284,242
FOLDING PAPERBOARD PACKAGE
Richard Roth, and Paul D. Miller, both of New York, N.Y., assignors to Queens Group, Inc., Long Island, N.Y.
Filed Jun. 22, 1992, Ser. No. 904,342
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 24 Claims

1. A folding package structure having a lid and a base, comprising:
a support frame including a lid section and a base section;
hinge means for connecting the lid and base sections together and for allowing the lid and base sections to be folded together when the package structure is closed;
a slot formed in an end of each of said lid and base sections opposite the hinge means; and
a folded body of relatively flexible sheet material having a first segment attached to the lid section to form an outer surface of the package lid, a second segment attached to the base section to form an outer surface of the package base, a third segment attached to the lid section to form an inner surface of the package lid, and a fourth segment attached to the base section to form an inner surface of the



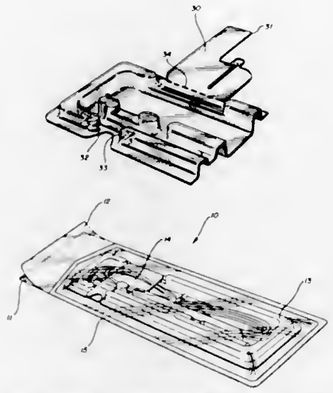
package base, wherein the third and fourth body segments extend through the slots from the outside of the package to the inside.

5,284,243
INSERTABLE TRAY FOR PROVIDING A MULTIPLE DISC CONTAINER
Anthony L. Gelardi, and John A. Gelardi, both of Kennebunkport, Me., assignors to Lakewood Industries, Inc., Pittsfield, Mass.
Filed Oct. 21, 1992, Ser. No. 964,066
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 20 Claims



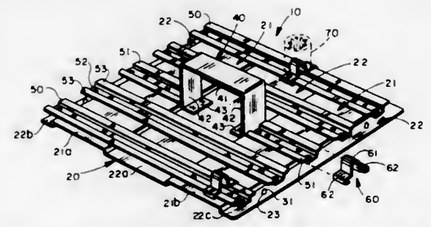
1. An insertable tray for holding multiple discs within a storage container having a container lid and a container base, comprising a leaf having first and second opposite sides, each side incorporating a disc engagement means for engaging and holding a disc, and a connected shelf, the shelf having attachment means for attaching to a said storage container that allows for insertion of a graphics card when snapped into a jewel box, a longitudinal living hinge provided between the shelf and the leaf for providing rotational movement therebetween, wherein the leaf and attached shelf are snapped into a holding compact discs proximal a hinge between the container lid and container base, and further wherein a compact disc engaged on the first or second sides can be accessed by rotating the leaf within the open container.

5,284,244
STERILE PACKAGE FOR SURGICAL INSTRUMENTS
Michael O'Toole, Suffern, N.Y., and Robert J. Kalinski, Milford, N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Aug. 31, 1992, Ser. No. 937,932
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—363 2 Claims



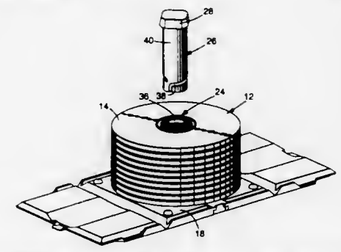
1. A sterile package for sterile instruments comprising an upper layer of paper, film, nonwoven fabric or combinations of the same and a lower layer of paper, film, nonwoven fabric or combinations of the same, said layers being substantially coextensive and being heat sealed together about the entire periphery of said layers and a thermal formed tray member disposed between said layers, said tray member having at least one thermal formed cavity for holding a surgical instrument, said tray member having an outwardly extending flange disposed about the periphery of said tray member, said flange being disposed substantially midway between the top plane and the bottom plane of said tray member to reduce premature separation of the heat sealed upper and lower layers, and a tab portion foldably attached to said outwardly extending flange, said tab portion being foldable back on said thermal formed tray member to enclose a surgical instrument disposed in said cavity.

5,284,245
PORTABLE SOCKET HOLDER
George R. Slivon, Kenosha, and Kenneth C. Happ, Burlington, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Continuation of Ser. No. 856,362, Mar. 23, 1992, abandoned.
This application May 19, 1993, Ser. No. 63,355
Int. Cl.[5] B65D *85/28*
U.S. Cl. 206—378 8 Claims



1. A socket holder comprising a corrugated base plate having opposite sides, one of said sides including a plurality of alternating first and second elongated sections respectively defining first and second elongated surfaces with said first surfaces spaced from said second surfaces, a plurality of rails disposed substantially parallel to each other and extending substantially perpendicular to the direction of elongation of said surfaces and being attached to only said first surfaces and being spaced from said second surfaces, and a plurality of socket-receiving clips frictionally and slidably carried by said rails.

5,284,246
SUPPORT FOR TAPE PANCAKES
Davis W. Chamberlin, Gerald J. Niles, both of, St. Paul, Minn. assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 17, 1992, Ser. No. 915,119
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—394 15 Claims



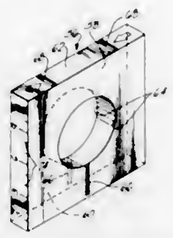
1. A system for securing a plurality of disk-shaped articles having a central opening, comprising:
a compressible baffled core support on which the articles can be mounted comprising at least one free end;
an interior rod which fits and is received within the baffled core support, wherein the interior rod comprises means for engaging the free end of the baffled core support; and
means for compressing the baffled core support to provide an axial compression load on the articles and for radially expanding the baffled core support to provide a radial load on the articles, wherein the compressing and expanding means comprises means for threadedly and rotationally engaging the interior rod within the baffled core support such that rotation of the interior rod within the baffled core support after the interior rod engaging means engages the interior rod within the baffled core support moves the interior rod toward the articles and further rotation after the free end engaging means contacts the end of the baffled core support provides an axial compression load onto the baffled core support and onto the articles to expand the baffles to contact and tighten radially against the inside of the articles to secure the articles in place.

5,284,247
STRUCTURAL UTILITY STRAP CARTON AND DISPENSER
Arthur R. Turner, Terranora, Australia, assignor to SAF-T Corporation, San Diego, Calif.
Continuation of Ser. No. 378,883, Jul. 12, 1989, abandoned. This application May 29, 1992, Ser. No. 891,665
Int. Cl.[5] B65D *85/66*
U.S. Cl. 206—395 18 Claims

1. For use in containing and dispensing preselected lengths of a structural building material at a building site, the combination comprising:
a dispensing carton having front and rear walls interconnected by a peripheral end wall for enclosing a hollow interior;
a continuous length of steel structural utility strapping of 16-

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to 20-gauge thickness wound in the form of a coil and contained within the hollow interior of the dispensing carton; and



means for dispensing a preselected lengthwise portion of the utility strapping from the coil to the exterior of the dispensing carton for use in cutting off a preselected length of the utility strapping.

5,284,248

STORAGE CASE AND A DISC HOLDING PART FOR STORAGE CASES FOR ROUND DATA DISCS

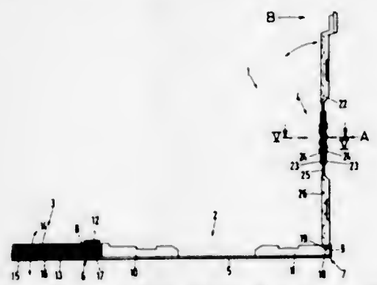
Petra Dunker, Ratingen, Fed. Rep. of Germany, assignor to Cartonneries de Thulin, S.A., Thulin, Belgium

Filed Feb. 28, 1991, Ser. No. 662,720

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1988, 8810917[U]; Juo. 22, 1989, 3920485

Int. Cl.[5] B65D *85/30*

U.S. Cl. 206—444 **10 Claims**



3. Storage case (**1**) for round information discs (**29**), comprising a bottom part (**2**), a lid part (**3**) and a disc holding part (**4**) in which the bottom part with respect to the lid part is pivotable by means of a first hinge device (**12, 17**), and the disc holding part with respect to the bottom part is pivotable by a second hinge device (**18, 19**), the lid part (**3**) and the bottom part (**2**) up to the second hinge device (**18, 19**) being commercial parts of a storage case (**1**) for a single round data disc, the disc holding part having opposite sides facing away from each other, each side of the disc holding part including means for providing forces which clamp a round information disc to hold the round information disc adjoining the respective side of the disc holding part, and the second hinge device being arranged on the edge (**7**) of the bottom part lying opposite the first hinge device.

5,284,249

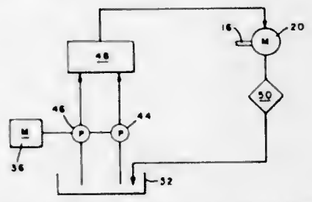
DIRECT HYDRAULIC DRIVE FOR LARGE FLOTATION CELLS

George A. Lawrence, Weston; Andres Paredes, Stamford, and Roderick R. Roy, Milford, all of Conn., assignors to Dorr-Oliver Incorporated, Milford, Conn.

Filed Feb. 5, 1993, Ser. No. 13,843

Int. Cl.[5] B03D *1/16*

U.S. Cl. 209—169 **3 Claims**



1. A flotation apparatus for removing mineral particles from fluid containing such particles comprising:

a flotation cell for containing the fluid containing the particles;

a mixing means comprising a stator and rotor located inside the flotation cell;

drive means comprising a drive shaft and a hydraulic motor mounted in-line with said drive shaft for directly driving said drive shaft and said rotor connected to said drive shaft;

sensor means for detecting and measuring the pressure drop and flow rate of hydraulic fluid across the hydraulic motor;

a hydraulic power pack means for powering said hydraulic motor, said power pack means comprising:

instrument means for controlling the pressure and flow of hydraulic fluid to modify cell performance by varying rotor speed, torque and energy consumption;

a high torque, low speed rotation pump for starting said hydraulic motor;

a low torque, high speed rotation pump for maintaining the continuous operation of said mixing means;

a computer means responsive to the output of said sensor means to actuate said instrument means for adjustment of said pressure drop and flow rate of hydraulic fluid; and

a motor for powering said pumps.

5,284,250

PARTICLE SEPARATION APPARATUS

Gary F. Stepenhoff, 8732 E. Piccadilly, Scottsdale, Ariz. 85251

Filed Sep. 13, 1991, Ser. No. 759,213

Int. Cl.[5] B03B *5/00*

U.S. Cl. 209—211 **6 Claims**

1. In apparatus for separating from a liquid slurry fractions of particles contained in the liquid slurry,

(a) wall means defining a separation chamber;

(b) an slurry feed orifice formed in said chamber;

(c) a rotary distributor in said chamber provided with rotating distribution disk means, said disk means including at least first and second spaced apart disks each having a smooth planar upper surface free of vanes and a smooth planar lower surface free of vanes, said first disk including a central slurry distribution aperture formed therethrough;

(d) means for rotatably driving said disk means;

(e) outlet means, formed in said wall means;

(f) an open toroidal-shaped particle circulation space intermediate said disk means and said outlet means and circumscribed by a portion of said wall means, said outlet means opening directly into said toroidal-shaped space;

(g) means for charging a selected quantity of liquid slurry

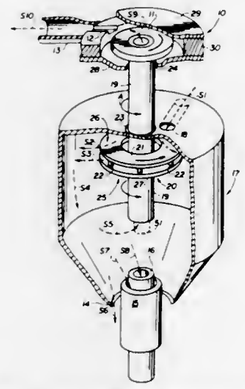
through said orifice into said separation chamber and against said disk means such that the liquid slurry

(i) in part, impinges said upper surface of said first disk means, and

(ii) in part, passes through said slurry distribution aperture and impinges said upper surface of said second disk for outward radial distribution by said upper planar surface of said first disk and said upper surface of said second disk, said disk means providing the motive power to move

(i) the slurry outwardly over said upper planar surfaces of said disks and into said chamber away from said disk means,

(ii) a first portion of the slurry outwardly over said upper planar surfaces of said disks and into said chamber in a primary continuous helical path of travel away from



said disk means and said orifice through said toroidal-shaped space toward and into said outlet means,

(iii) a second portion of the slurry in a secondary recirculating helical path of travel away from said disk means and said orifice through said toroidal-shaped space toward said outlet means, and away from said outlet means back toward and proximate said lower surface of said second disk,

said smooth planar lower surface of said second disk imparting energy to said secondary portion of the slurry to move said secondary portion along said secondary recirculating helical path of travel, a quantity of said second portion of the slurry continuing to move along said secondary recirculating helical path of travel after said selected quantity of liquid slurry is charged into said separation chamber and the charging of the slurry into said chamber is discontinued.

5,284,251

TENSION BAR SCREEN

Gevan R. Marrs, Puyallup, Wash., and Karl B. Werginz, Dunwoody, Ga., assignors to Weyerhaeuser Co., Tacoma, Wash.

Filed Jul. 21, 1992, Ser. No. 918,645

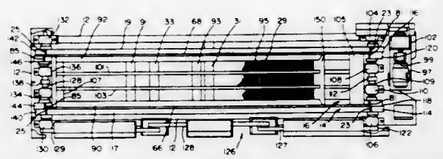
Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—396 **15 Claims**

1. A wood chip screen system using bar elements under tension, comprising:

a first screen assembly which includes a first set of relatively thin, blade-like bar elements; a second screen assembly which includes a second set of relatively thin blade-like bar elements, wherein the first and second screen assemblies are arranged such that bar elements in the first set thereof are interleaved with bar elements in the second set thereof;

means for placing the bar elements in said first and second sets thereof under sufficient constant longitudinal tension during operation of the apparatus to maintain rigidity and relative spacing of the bar elements over their entire lengths; and



means for driving the bar elements in the first and second sets thereof in such a manner that they move both longitudinally and vertically in a predetermined path, resulting in acceptable size wood chips falling therethrough and oversize wood chips moving to an outfeed end of the screen apparatus.

5,284,252

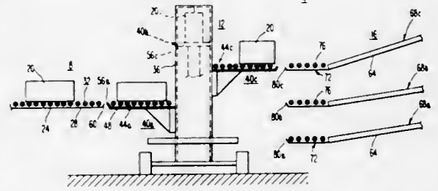
AUTOMATIC ROTARY SORTER

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Nov. 13, 1991, Ser. No. 792,211

Int. Cl.[5] B07C *5/00*

U.S. Cl. 209—552 **63 Claims**



1. A system for sorting a plurality of objects having object source means for providing said objects for sorting and a plurality of object receiving means for receiving said objects after sorting, wherein the individual object receiving means of said plurality of object receiving means are spaced apart both horizontally and vertically, comprising:

a plurality of object receiving and discharging means for receiving said objects from said object source means and transferring said objects to said object receiving means; and,

each of said plurality of object receiving and discharging means having means for simultaneously moving an object of said plurality of objects both horizontally and vertically from the vicinity of said object source means to the vicinity of a selected one of said horizontally and vertically spaced apart object receiving means to transfer said object to said selected object receiving means, wherein each of said object receiving and discharging means is coupled to a rotatable member which rotates about an axis of rotation.

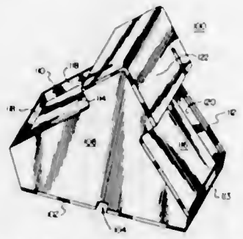
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5,284,253

STACKER FOR ELECTRONIC PAYMENT SYSTEM KEY PADS

William D. Watt, Walnut, and Fred C. Coblentz, Lake Forest, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 25, 1992, Ser. No. 981,661
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 **3 Claims**



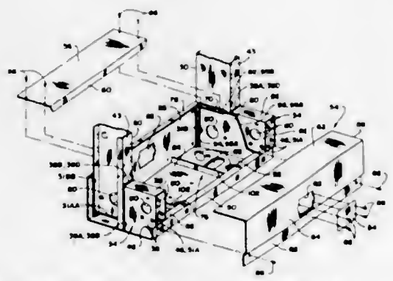
1. A terminal stacker having a base comprising:
(a) a first holder having a first face connected to and forming a first acute angle between the base and the first face and having portions defining both a first recess and a first slot opening into the first recess;
(b) a second holder having a second face connected to and forming a second acute angle between the base and second face and having portions defining a second recess facing in a substantially opposite direction from the first side having portions defining a second slot opening into the second recess; and
(c) a front plate connected to and forming an acute angle with the first face and protruding above the plane of said first face.

5,284,254

RACK FOR ELECTRICAL EQUIPMENT

Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.

Filed Jun. 24, 1992, Ser. No. 903,357
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—26 **23 Claims**



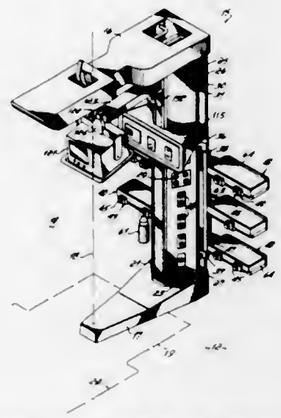
1. A rack for electrical equipment, comprising
a base having a front, a back and opposite sides, a bottom wall, and a back wall extending up from the bottom wall at the back of the rack, said bottom wall having a plurality of fastener openings therein through which fasteners may be driven into a surface supporting the rack for securing the rack to the surface,
a pair of legs extending up from the bottom wall of the base at opposite sides of the base adjacent the back wall of the base,
a cover adapted to be removably fastened to the base of the rack in a position where the cover extends forward from the back wall of the base between the legs of the rack and is spaced above the bottom wall of the base to form, in combination with the back and bottom walls of the base, an enclosure for electrical wiring and the like, and
fasteners for removably fastening the cover in fixed position on the base, said fasteners being adapted to be unfastened for removing the cover from the base thereby to provide ready access to said electrical wiring and the like and also to said fastener openings in the bottom wall of the base thereby to facilitate securement of the rack to said surface;
said cover comprising a back cover part extending forward from the back wall of the base a distance less than the full front-to-back dimension of the base, and a front cover part extending forward from adjacent the back cover part to the front of the base, said back cover part being separately fastened to the base so that it may be unfastened and nondestructively removed from the base without removing the front cover part.

5,284,255

PIVOTED POWER COLUMN

L. Dale Foster, Brookville, Ind., and Timothy A. Kappers, Cincinnati, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.

Continuation of Ser. No. 743,215, Aug. 9, 1991, Pat. No. 5,186,337. This application Dec. 22, 1992, Ser. No. 995,207
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—26 **12 Claims**



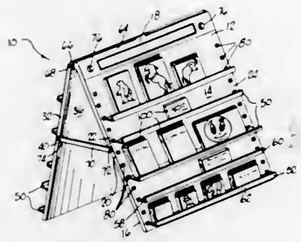
1. A power column adapted to be accurately moved from one side of a hospital bed around its end to the other side of said bed, said power column comprising:
a hollow, vertical housing having six vertical walls,
means supporting said housing and permitting said housing to be arcuately moved from one side of the bed past one end of the bed to the other side of the bed,
said vertical walls including a front wall having two vertical edges,
an outlet wall extending from each vertical edge of said front wall at an angle of about 45° to the plane of said front wall,
opposed side walls connected to said outlet walls,
a back wall connected to said side walls,
and a plurality of electrical outlets on said outlet walls,
whereby, when said column is arcuately moved to either side of said bed, an outlet wall will be disposed substantially perpendicular to the side of the bed and thus optimally accessible to an attending nurse.

5,284,256

CHILD'S BOOK STAND

Holly E. K. Correll-Antoun, 23986 W. Currant Dr., Golden, Colo. 80401-9214

Filed Aug. 19, 1992, Ser. No. 932,419
Int. Cl.[5] A47B 65/00
U.S. Cl. 211—42 **13 Claims**



1. A child's book stand comprising:
a first support member having a front portion, a rear portion, a top portion, a mid portion, a front left side portion, and a front right side portion;
a second support member having a front portion, a rear portion, a top portion, a mid portion, a front left side portion, and a front right side portion;
at least one elongated shelf member having a front portion, a bottom portion, a left side portion, and a right side portion, said shelf member also having a protruding lip which extends along said front portion thereof, said shelf member being adapted for displaying a book in a forwardly facing orientation;
shelf attachment means for removably attaching said shelf member to one of said first support member and said second support member;
first connecting means for removably connecting said top portion of said first support member and said top portion of said second support member;
second connecting means for removably connecting said mid portion of said first support member and said mid portion of said second support member;
first mounting means for enabling said first support member to be mounted on a wall after disconnecting said first support member and said second support member; and
second mounting means for enabling said second support member to be mounted on a wall after disconnecting said first support member and said second support member.

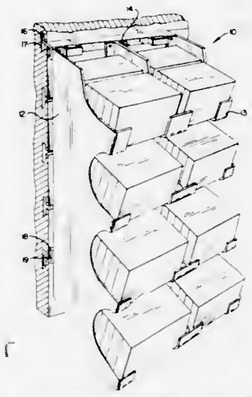
5,284,257

MODULAR SELF-SERVICE MERCHANDISE DISPLAY RACK

Richard Schum, Winston-Salem, N.C., assignor to Chesapeake Display and Packaging Company, Winston-Salem, N.C.

Filed Oct. 26, 1992, Ser. No. 966,736
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—59.2 **8 Claims**

1. A modular self-service merchandise display rack for displaying and permitting access to articles:
(a) a pair of opposed spaced apart vertical side support members in cooperating relationship with each other;
(b) each side support member having a plurality of vertically spaced apart shelf-like tiers formed integrally therewith and extending inwardly from said side support member for a distance sufficient to support one side of an article;
(c) said tiers extending outwardly from and downwardly inclined from the rear of each of said side support member so as to urge the articles of each shelf therein to slide toward a forward dispensing position as articles are removed from the shelf-like tier;
(d) frontal support means integral with each of said shelf-like tiers whereby articles can be placed upon said shelf-like tiers in slanted accessible fashion, the ends of said articles resting against said frontal support for ready access;
(e) at least one interior support member positioned in cooperating relationship with and in between said side support members, said interior member having a center wall and a plurality of vertically spaced shelf-like tiers formed integrally with and on each side of said center wall, said tiers extending outwardly from and downwardly inclined from



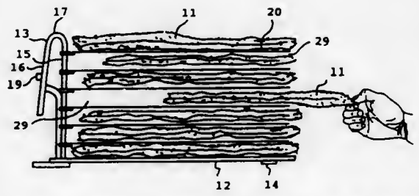
the rear of said interior support so as to urge the articles of each shelf therein to slide toward a forward dispensing position as articles are removed from the shelf-like tiers;
(f) frontal support means integral with each of said shelf-like tiers whereby articles can be placed upon said shelf-like tiers in slanted accessible fashion, the ends of said articles resting against said frontal support; and
(g) attachment for supporting each of said support members to a permanent fixture.

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TOWEL OR BLANKET SUPPORT DEVICE

Claude P. Genero, and Gail A. Genero, both of 30 Phillips Street, Dianella (Perth) WA 6062, Australia

PCT No. PCT/AU91/00077, § 371 Date Aug. 25, 1992, § 102(e) Date Aug. 25, 1992, PCT Pub. No. WO91/13582, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 6, 1991, Ser. No. 923,907
Claims priority, application Australia, Mar. 6, 1990, PJ8941; Nov. 20, 1990, PK3426
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—59.4 **25 Claims**



1. A device for supporting articles in a pile, said device comprising: a guide means; a plurality of spacing elements each having two opposed surfaces, each surface having a low sliding coefficient of friction; means provided on the spacing elements for co-acting with said guide means to allow movement relative thereto for varying the spacing between said two opposed surfaces of said adjacent spacing element members;

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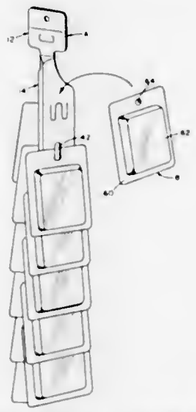
said co-acting means being substantially unrestrained by said guide means in the direction of said movement; said spacing elements adjacent to one another when in a spaced apart relationship defining a storage zone for receiving and storing an article; said spacing elements in use at least partially separating neighboring articles in the pile to permit any one of the articles to be removed without disrupting the pile, said low sliding coefficient of friction of said opposed surfaces facilitating removal of the article from the respective storage zone.

5,284,259

TWO SIDED MERCHANDISING STRIP

Gerald A. Conway, Cleveland; Daniel J. Kump, Mayfield Heights, and David B. Schott, Cuyahoga Falls, all of Ohio, assignors to Fasteners For Retail, Inc., Cleveland, Ohio

Filed Apr. 7, 1992, Ser. No. 864,533
Int. Cl.[5] A47G *29/00*
U.S. Cl. 211—73 **21 Claims**



1. A merchandise display strip comprising:
an elongated plastic strip having a mounting portion and an article suspending portion, wherein said article suspending portion comprises a first panel, a second panel, a means for suspending an article from a respective one of said first and second panels and a longitudinally extending fold line separating said first and second panels, wherein said longitudinally extending fold line enables said first and second panels to be folded in relation to each other so that at least two articles can be supported by said article suspending portion, one on each panel, a transversely extending fold line disposed between said mounting portion and said article suspending portion wherein said transversely extending fold line enables said mounting portion to be displaced from a plane of said article suspending portion and wherein said article suspending portion further comprises a third panel interposed between said first and second panels and said transversely extending fold line.

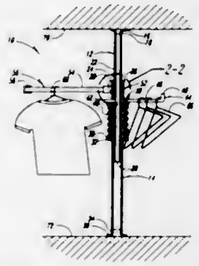
5,284,260

METIIOD AND MEANS FOR SUPPORTING CLOTHES HANGERS

Gerald J. Caligiuri, Sr., 3124 Park Plaza, Des Moines, Iowa 50315

Filed Nov. 23, 1992, Ser. No. 980,480
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—86 **11 Claims**

1. Apparatus for supporting clothes hangers comprising:
first and second tube sections each having first and second opposite ends, at least said second tube section having a longitudinal bore extending therethrough;
said first tube section being telescopically received within said second tube section for longitudinal telescoping movement therein from a retracted position wherein said first tube section protrudes a first distance from said first end of said second tube section to a plurality of extended positions wherein said first tube protrudes from said first end of said second tube a plurality of distances respectively, each of which is greater than said first distance;
said first tube section having a plurality of radially extending bores therein, said plurality of bores being axially spaced from one another along the length of said first tube section;



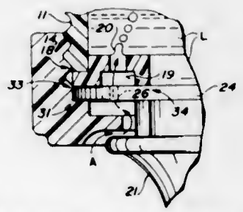
first stop means surrounding said first tube section and engaging said first end of said second tube section;
second stop means comprising pin means fitted within one of said bores in said first tube section;
an elongated axially compressible coil spring surrounding said first tube section between said first and second stop means whereby said spring means is axially confined between said first and second stop means for yieldably holding said first tube section in one of said plurality of extended positions and said first tube section is yieldably movable toward said retracted position against the bias of said compressible spring means;
a support member comprising a sleeve slidable on said first tube section, and a support arm connected to said sleeve and extending perpendicularly to said first tube section.

5,284,261

BABY BOTTLE AIR VENT

Sam C. Zambuto, 4744 W. Las Palmaritas, Glendale, Ariz. 85302

Filed Jul. 20, 1992, Ser. No. 915,288
Int. Cl.[5] A61J *11/02*
U.S. Cl. 215—11.5 **5 Claims**



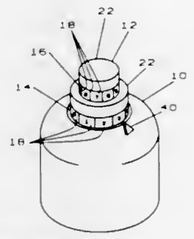
1. In means for feeding a suckling comprising a container for a liquid to be fed to a suckling, a nipple coupled to said container, said nipple to be suckled, and coupling means for coupling said nipple to said container; said nipple having a central opening adjacent said container through which liquid enters said nipple from said container, an opening through which liquid is drawn from said container by said suckling, and an air vent opening for allowing the passage free of vent values and of air into said container; said air vent opening being small enough to prevent liquid leaking therethrough as said nipple is manipulated by a suckling feeding at the nipple, and, further said air vent opening being generally ineffective in venting said container while a suckling is feeding; the improvement comprising:
an insert cooperating with said coupling means to be coupled to said container with said nipple, said insert having:
a liquid entry opening adjacent said central opening of said nipple;
a first surface coupled to said nipple adjacent said central opening of said nipple and permitting unimpeded passage of air through said air vent opening in said nipple;
a second surface coupled to said nipple where said nipple is coupled to said container, said second surface permitting free passage of air through said air vent opening in said nipple;
a region between said first surface and said second surface of said insert, said region defining an air reservoir means coupled to said nipple and said container, said reservoir receiving air at ambient pressure from said air vent opening; and
an air passage coupling air from said air reservoir to said container as liquid within said container is withdrawn by a suckling feeding at said nipple,
said air passage having a cross sectional area small enough to inhibit entry of liquid from said container into said air reservoir and large enough to permit free passage of air from said air reservoir, through said liquid, into said container as said liquid is being withdrawn from said container by a suckling.

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PROGRAMMABLE SAFETY CONTAINER AND CLOSURE MEANS

Rocky K. K. O'Nan, 818 King St., #1403, Honolulu, Hi. 96813

Filed Nov. 19, 1992, Ser. No. 978,772
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—206 **6 Claims**



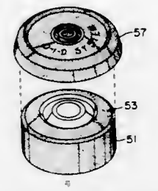
1. A safety container comprising:
a container having a neck,
closure means for said neck having a plurality of annular bands rotatably mounted on said closure means,
each of said bands being formed with a plurality of elements which are selectably removable for programming said closure means and which must be positioned in a selected manner in order to gain access to the contents of said container, and
an index mark carried by said container for indicating when the selected elements are aligned in said selected manner.

5,284,263

DECORATION, IDENTIFICATION AND DIFFERENTIATION CLOSURE SYSTEM

Charles Papciak, Exton, Pa., assignor to The West Company, Incorporated, Phoenixville, Pa.

Continuation of Ser. No. 807,458, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 605,494, Oct. 30, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 50,851
Int. Cl.[5] A61J *1/00*
U.S. Cl. 215—230 **9 Claims**



1. A closure for containers for pharmaceutical products comprising a cap seal having a top and a depending skirt, a removable overseal overlying the top of the cap seal and removably mounted thereto, means defining color indicia and instructive indicia on the top of the cap seal and the overseal including characters which contrast in color with the surface on which the characters are placed on said cap seal and said overseal.

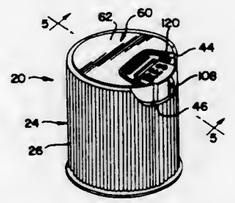
9. A closure system, comprising:
a pharmaceutical container having an opening at one end;
a stopper sealingly closing said opening in said container;
a cap seal having a top and a depending skirt sealingly mounting said stopper in said opening;
a removable overseal overlying the top of the cap seal and removably mounted thereto; and
means defining color indicia and instructive description indicia on the top of the cap seal and the overseal including characters which contrast in color with the surface on which the characters are placed on said cap seal and said overseal.

5,284,264

TOGGLE-ACTION DISPENSING CLOSURE WITH SLIDE LOCK

Richard A. Gross, Oconomowoc, Wis., assignor to AptarGroup, Inc., Crystal Lake, Ill.

Filed Sep. 3, 1992, Ser. No. 940,001
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—237 **11 Claims**



1. A dispensing closure for an opening to a container, said closure comprising:
a body for engaging said container over said opening and defining an abutment surface;
an actuator means on said body adjacent said abutment surface for occluding flow from said container when said actuator means is in a closed non-dispensing position and for permitting flow from said container when said actuator means is in an open dispensing position;

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mounting means defined by said body and actuator means for pivotally mounting said actuator means on said body to accommodate pivoting movement of said actuator means from said closed position to said open position in response to a force applied to said actuator means at a first location; and

a locking member slidably disposed on said actuator means for movement between (1) an extended locked position in which said locking member overlies said body abutment surface to prevent pivoting of said actuator means to said open position and (2) a retracted unlocked position in which said locking member clears said body abutment surface to permit pivoting of said actuator means to said open position.

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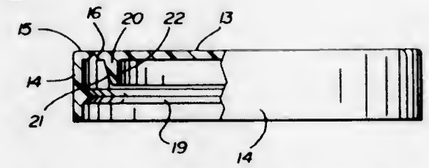
NON-REPLACEABLE SNAP ON CAP FOR SCHOOL MILK BOTTLES

Harry E. Crisci, New Castle, Pa., assignor to Northern Engineering & Plastics Corp., New Castle, Pa.

Continuation-in-part of Ser. No. 931,006, Aug. 17, 1992, Pat. No. 5,224,616. This application Mar. 1, 1993, Ser. No. 24,343

Int. Cl.[5] B65D *41/46*

U.S. Cl. 215—256 **4 Claims**



1. A snap on non-replaceable resilient cap comprises a top, an annular tear skirt depending from said top an inturned flange forming an upper edge of said tear skirt and an annular sealing flange depending from said top inwardly of said annular tear skirt, said sealing flange having an outer surface curved downwardly from said top, an annular inturned rib on the inner surface of said tear skirt in spaced vertical relation to said inturned flange, said inturned flange on said tear skirt joined to said top by a continuous tear line, a second tear line in said tear skirt extending outwardly and downwardly from the arcuate tear line and a tab formed on said tear skirt adjacent the second tear line to facilitate removal of the tear skirt.

5,284,266

STRUCTURE SUCH AS A CONTAINER OR MOBILE SHELTER

Bernard Januel, Saint Etienne, and Michel Ravilly, Rennes, both of France, assignors to Marrel and GIAT Industries, France

PCT No. PCT/FR91/00461, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/19654, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 11, 1991, Ser. No. 829,075

Claims priority, application France, Jun. 11, 1990, 90 07237

Int. Cl.[5] B65D *90/14*

U.S. Cl. 220—1.5 **17 Claims**

1. A structure adapted to be loaded onto a vehicle having a hydraulic lifting-arm-type handling mechanism, said structure comprising:

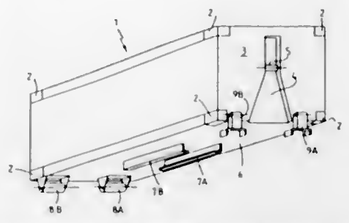
a bottom member having a bottom surface;

a handling bar positioned with respect to said bottom member;

at least one bottom rail juxtaposed said bottom member of said structure;

a housing connected to said bottom member of said structure, said housing having an open side contiguous with said bottom member, said housing being adapted to receive said at least one bottom rail, and

means for moving said at least one bottom rail between a first position whereby said at least one bottom rail extends



in a direction away from said bottom surface of said bottom member and a second position whereby said at least one bottom rail forms a substantially planar surface with said bottom surface of said bottom member, said moving means being connected to said at least one bottom rail.

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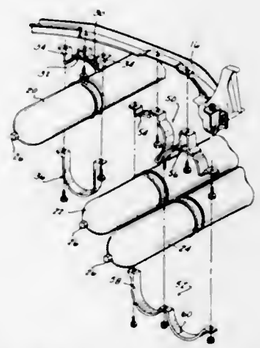
FUEL INJECTION APPARATUS FOR VEHICLES

David F. Polletta, Northville; David F. Bjerke, Birmingham; William S. Miller, Wixom, and Steven G. Todd, Sterling Heights, all of Mich., assignors to PAS, Inc., Troy, Mich.

Division of Ser. No. 839,959, Feb. 21, 1992, Pat. No. 5,237,981. This application Apr. 22, 1993, Ser. No. 52,075

Int. Cl.[5] B65D *6/02*

U.S. Cl. 220—4.14 **3 Claims**



1. In a gaseous fuel injection apparatus for a vehicle having a frame structure with at least one cross member extending between two longitudinally extending side rails, the improvement comprising:

a tank for storing gaseous fuel at a high pressure, the tank having a cylindrical shape with a side wall;

a first annular recess formed in the side wall of the tank and spaced from one end of the tank;

first and second raised annular shoulders disposed on opposite sides of the recess and extending outward above the side wall of the tank; and

mounting means, engageable with the recess on the tank, for mounting the tank to a vehicle.

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COMBINATION PAPER AND TRASH RECEPTACLE

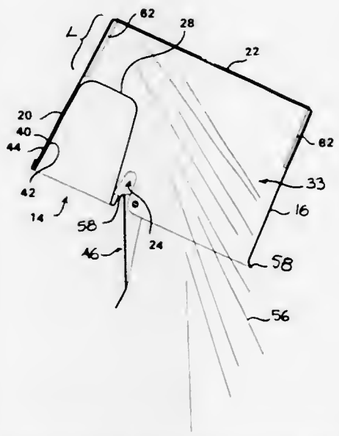
Normand Marsan, 10791, St-Laurent, Montreal, Quebec, Canada H3L 2P8 , and Robert Cossette, 4418, Christophe Colomb, Montreal, Quebec, Canada H3C 2M7

Filed Oct. 6, 1992, Ser. No. 956,996

Claims priority, application United Kingdom, Nov. 15, 1991, 9121819

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—23.83 **7 Claims**



1. A compartmented waste receptacle for segregating different types of waste comprising:

a main container body with an open top, said main container body having a main body front wall, a main body back wall, a set of main body side walls and a main body bottom wall,

a secondary container body positioned inside said main container body and including a secondary body front wall, a secondary body back wall, a set of secondary body side walls and a secondary body bottom wall,

said secondary container body having a rim extending integrally from said secondary body front, back and side walls; said main body front, side and back walls having an upper edge, said rim of said secondary body back and side walls correspondingly resting on said upper edge of said main body back and side walls, said secondary container body covering only one portion of the main container body open top,

said secondary container body being fixed to said main container body with said secondary body bottom wall positioned above said main body bottom wall such that said secondary body and main body bottom walls, a portion of said main body side walls, a portion of said main body front wall and a portion of said main body back wall define a lower compartment,

said secondary body front wall being spaced from said main body front wall such that said secondary and main body front wall define a chute, with an open top portion extending over the remaining portion of the main container body open top, and said chute leads to said lower compartment, said waste receptacle further comprising a hinged cover pivoting between a generally vertical opened and a horizontal closed position, said cover partially covering said opened top portion of said chute when positioned in said horizontal closed position.

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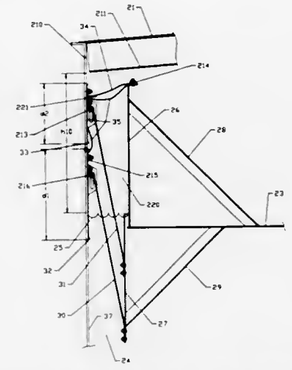
SPACE SAVING DOUBLE SEAL

Jack G. Petrie, 3031 Longs Peak Rt., Estes Park, Colo. 80517, and John R. Mulkey, 3858 W. 102nd Ave., Westminster, Colo. 80030

Filed Jun. 28, 1993, Ser. No. 84,536

Int. Cl.[5] B65D *88/46*

U.S. Cl. 220—224 **7 Claims**



1. In a liquid storage tank having an inner wall and a floating roof having an outer periphery, a double seal comprising a plurality of sealing units spaced circumferentially about said periphery and each having:

an outer rim plate extending vertically from the outer periphery of the floating roof;

a pusher brace depending from the outer periphery of the floating roof;

a lower shoe slidingly engaged against the tank's inner wall;

spring means between said pusher brace and the lower shoe, thereby pushing the lower shoe against the inner wall;

an upper shoe slidingly engaged against the tank's inner wall; and

spring means pushing the upper shoe against the inner wall;

said upper and lower shoes each further comprising a top and a bottom;

said double seal further comprising a primary sealing means extending from the outer rim plate to the lower shoe about said periphery; and

secondary sealing means extending from the outer rim plate to the upper shoe about said periphery.

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LEVER LATCH RING FOR SECURING A COVER PANEL TO A CONTAINER

Fred A. Kusta, Birmingham, Ala., assignor to Self Industries, Inc., Birmingham, Ala.

Continuation of Ser. No. 739,405, Aug. 2, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 927,592

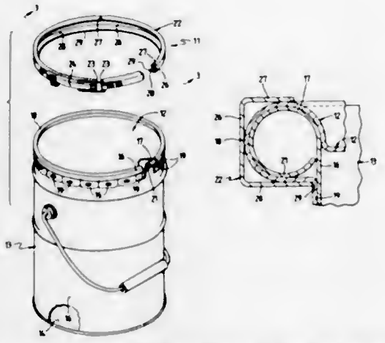
Int. Cl.[5] B65D *45/34*

U.S. Cl. 220—321 **1 Claim**

1. In a container having an upstanding cylindrical outer wall and an outwardly extending upper rim, a cover extending over said rim such that a plurality of malleable tabs extending from said cover are deformed in sealing engagement beneath said rim and against said outer wall beneath said rim, the combination therewith of a lever latch ring comprising an arcuate member having two adjacent and opposing ends circumscribing said rim and defined by an upper horizontal portion resting on said cover, a vertical portion integral with said horizontal portion and a lower horizontal portion integral with said vertical portion and extending therefrom toward said outer wall, wherein said lower horizontal portion extends from said verti-

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cal portion toward said tabs a distance at least equal to a maximum horizontal diameter of said rim adjacent said malleable



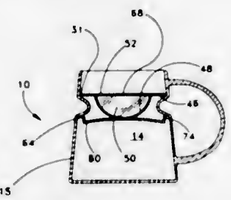
tabs to restrict the outward deformation of said tabs subjacent said rim, and a means for connecting said adjacent opposing ends for retaining said lever latch ring on said container.

5,284,271

SAFETY MUG FOR LIQUIDS WITH IMPROVED LID WHICH PERMITS THE LIQUID TO RETAIN ITS TEMPERATURE AND IMPROVED EXTERIOR BODY CONTOUR TO FACILITATE DESIGNS SILKSCREENED ON THE MUG

Gary Ross, 140 Oxnard Ave., Oxnard, Calif. 93035

Filed Oct. 19, 1992, Ser. No. 962,965
Int. Cl.[5] A47G *19/22;* **B65D** *41/06*
U.S. Cl. 220—711 **30 Claims**



11. A mug comprising:

a. a unitary body member having a circumferential sidewall and a base, where the sidewall has an interior surface and an exterior surface, and the base has a top surface and a flat bottom surface;

b. said interior surface of said sidewall and said top surface of said base forming an internal chamber with a top opening;

c. said interior surface of said sidewall being configured to have a protruding annular shelf which divides said sidewall into an upper neck portion and a lower container portion;

d. said upper neck portion and said lower container portion of said exterior surface of said sidewall having a common inclined angle and aligned with a same frustum shaped surface; and

e. a lid further comprising

i. a body member having a central hemisphere and a circumferential disk, the hemisphere having a recessed top surface forming a well and a bottom surface, the body member also having a handle disposed within the well for lifting said lid;

ii. at least one flexible retaining member attached to said bottom surface of said body member and extending laterally to reach underneath said disk;

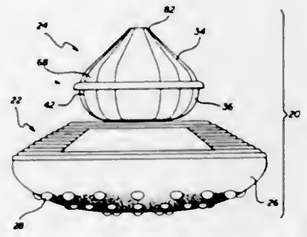
f. whereby said exterior surface of said sidewall of said body member facilitates quick and easy manufacture and ornamentation of said mug.

5,284,272

MULTIPURPOSE BOTTLE AND CAP WITH MASSAGING DEVICES

Winston S. T. Wei, Singapore, Singapore, assignor to Multiscience System Pte. Ltd., Singapore, Singapore

Filed Oct. 19, 1992, Ser. No. 963,071
Int. Cl.[5] A61H *7/00*
U.S. Cl. 222—192 **12 Claims**



1. A bottle and cap combination comprising:

a bottle for containing contents, the bottle comprising a neck with an opening through which the contents may flow, and a bottom;

a cap secured to the neck of the bottle, the cap having means in flow communication with the neck opening for controlling the flow of the contents through the cap, and means for securing the cap to the neck of the bottle;

first massaging means provided on the cap; and

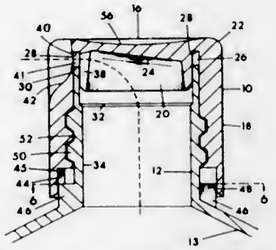
second massaging means provided on the bottom of the bottle.

5,284,273

DISPENSING CLOSURE HAVING MULTIPLE FLUID SEALS, AND AN INTERIOR CAP WALL WITH NOTCH AND EXTERIOR CAP WALL WITH RECESSED OPENING DEFINING A DISPENSING CANAL

Alexander R. Schreiber, 159 Windsong St., Thousand Oaks, Calif. 91360

Filed May 10, 1993, Ser. No. 58,389
Int. Cl.[5] B65D *47/00;* **B67D** *5/06*
U.S. Cl. 222—39 **2 Claims**



1. A closure for a container, comprising in combination;

a cap having an annular exterior wall and a smaller diameter annular interior wall placed concentric to and in spaced relationship with said exterior wall, the cap walls depending from a cap top defining a closed top end of said cap, the cap walls extending from said cap top toward an opened bottom end of said cap oppositely disposed from said closed top end, said exterior wall extending further than said interior wall, said interior wall terminating at a bottom end thereof in an angled plane seal component, said cap top having an outer surface oppositely disposed from said interior wall with said outer surface of said cap top structured for providing stability to said cap when inverted and resting on said outer surface of said cap top so as to be able to support an inverted container connected to said cap,

said interior surface of said exterior wall having affixed threading approximately positioned in elevation between said opened bottom end of said cap and the terminal bottom end of said interior wall,

a dispensing notch transversely through said interior wall with said dispensing notch extending and opening through the terminal bottom end of said interior wall,

a dispensing opening through said exterior wall and aligned with said dispensing notch to define a dispensing canal, said dispensing opening positioned at an approximately juncture between said cap top and said exterior wall of said cap,

a depression around said dispensing opening, said depression positioned in said exterior wall and extending into said cap top adjacent said exterior wall, said dispensing opening positioned within said depression,

said cap placed upon

a generally cylindrical hollow neck attached to a container with said neck sized to fit within said cap, an exterior surface of said neck affixed with threads engaged with said threading of said cap and arranged so that rotation of said cap on said neck in a first direction causes rising of said cap relative to said neck, and rotation of said cap on said neck in a second direction causes lowing of said cap relative to said neck,

an interior of said container neck having at least two diameters with the two diameters including an upper neck portion being a substantially thinned portion tightly and sealingly yet movably fitted between said exterior and interior walls of said cap with said interior wall of said cap positioned within said neck,

a narrow top rim of said upper neck portion sealingly abutted against an underside portion of said cap top, the thinned upper portion of said neck positioned between said dispensing notch and said dispensing opening and blocking said dispensing canal, said angled plane seal component at the bottom end of said interior wall sealingly abutted against a cooperatively structured angled plane seal within said neck defined by a transition between said at least two diameters in the interior of said container neck,

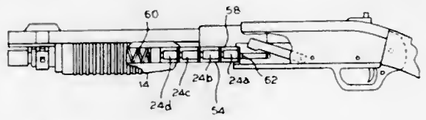
said threading of said cap and said threads of said neck arranged to allow sufficient cap rising so as to allow sufficient withdrawal of the thinned upper portion of said neck to clear said dispensing notch and said dispensing opening and thus open said dispensing canal with said interior wall of said cap remaining at least in part within said neck.

5,284,274

ACTION TOY WATER GUN

James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Kowloon, Hong Kong, assignors to C. J. Associates, Monrovia, Liberia

Filed Jan. 2, 1992, Ser. No. 815,959
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **14 Claims**



1. An action toy comprising:

a capsule for containing a liquid, said capsule having an orifice;

a housing for supporting said capsule;

an elongated passage disposed in said housing in communication with said orifice for directing liquid ejected from said capsule;

means for driving liquid from said capsule through said orifice;

a means for receiving water driven through said orifice before it enters said elongated passage and a one-way valve at the point at which said receiving means receives water driven through said orifice;

spring means for storing energy; and

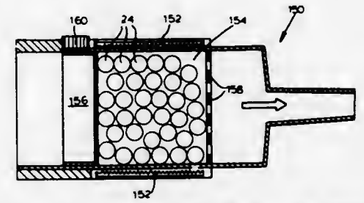
trigger means for releasing the stored energy of said spring means to said driving means.

5,284,275

DISPENSING CONTAINER FOR MULTI-COMPONENT CURABLE COMPOSITIONS USING A HEATING ELEMENT TO CAUSE MIXING

John Shomer, 19 Hareuth St., Hod-Hasharon, Israel

Division of Ser. No. 914,762, Jul. 15, 1992, Pat. No. 5,244,121, which is a division of Ser. No. 641,290, Jan. 15, 1991, Pat. No. 5,154,321. This application May 25, 1993, Ser. No. 66,726
Claims priority, application Israel, Jan. 22, 1990, 093133
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—145 **1 Claim**



1. A system for storing, initiating curing of and dispensing a multicomponent curable material having at least two components capable of interacting upon being mixed together, said system comprising:

container means having a chamber receiving both of said components;

outlet means on said container means for discharging a curable material formed upon mixing of said components, one of said components being present in said chamber in a form of globules surrounded by respective destructible layers of a substance which is nonreactive with said components, said layers being in contact with the other of said components;

means for applying pressure to said components to cause said components to flow toward said outlet means; and

heating means along a path of said components flowing toward said outlet means for melting said layers of said globules and causing said components to mix and interreact.

5,284,276

PUMP DISPENSER WITH COMBINED INLET AND OUTLET PORTS

Miro S. Cater, Newtown, Conn., assignor to Bespak PLC, Norfolk, England

Filed Oct. 21, 1992, Ser. No. 964,385
Int. Cl.[5] B05B *11/02;* **B67D** *5/42;* **G01F** *11/04, 11/38*
U.S. Cl. 222—321 **8 Claims**

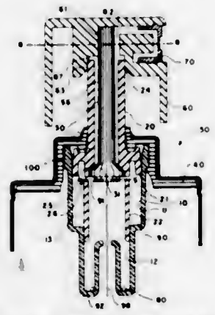
1. A pump dispenser comprising:

a body having integral upper and lower vertical hollow cylinders, the diameter of the upper cylinder being larger than the diameter of the lower cylinder, the upper cylin-

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der having a first opening in its lower end communicating with the lower cylinder;

a piston slidably in said body, the piston having an upper vertical hollow cylindrical section open at opposite ends, a first extension secured to the outer surface of the lower end of the upper section and a lower and smaller hollow second extension having upper and lower ends, the lower end being open, and an aperture located between the ends of the second extension, the first extension being in sealing



engagement with the inner surface of the upper cylinder, the second section being in sealing engagement with the inner surface of the lower cylinder; and

a vertical stem slidable within and extending through the upper section of the piston and spaced therefrom to define a vertical discharge path therebetween, the stem having an enlarged head at its lower end which is in slidable sealing engagement with the inner surface of second extension, the head having a rest position at which it closes the discharge path and is disposed above the aperture.

5,284,277

TWO-PART CAPTIVE DISPENSING CAP DEVICE FOR USE WITH A CONTAINER OR THE LIKE

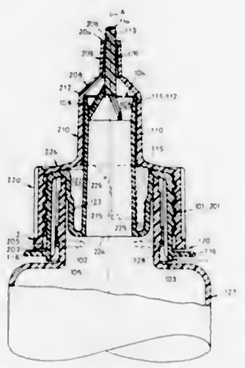
Gerhard Leuenberger, Oberrieden, Switzerland, assignor to S. Kisling & Cie. AG, Zurich, Switzerland

Filed Aug. 10, 1990, Ser. No. 565,603

Claims priority, application Switzerland, Aug. 11, 1989, 2952/89

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—521 **7 Claims**



1. A two-part captive dispensing cap device for use with a container, which comprises:

a lower part slidable onto a container and rotationally symmetrical about a longitudinal axis of the cap device, a lower portion of the lower part having an inner side and an outer side where the outer side includes a plurality of external threads and the inner side of the lower portion of the lower part includes an organ which attaches to the container, the lower part defining a substantially central longitudinal aperture therethrough and including an upper end and a lower end each having an opening communicating with the longitudinal aperture, the lower part further including a non-perforated surface area extending between the upper and lower ends consistent with the longitudinal aperture and substantially centered about the longitudinal axis of the cap device;

an upper part substantially symmetrical around the axis of the cap device and including a lower portion having an inner side and an outer side, the inner side having a plurality of internal threads designed and configured for mating with the external threads of the lower part, the upper part further defining a longitudinal aperture which extends therethrough and being substantially centered about the longitudinal axis of the cap device, the upper part including an upper end a lower end each having an opening communicating with the longitudinal aperture, the upper part including a non-perforated surface area between the upper and lower ends;

a valve pin extending substantially upwards from the upper end of the lower part and positioned about the longitudinal axis of the cap device and held in a substantially stationary position by at least two connecting bars coupled at one end to the valve pin and at an opposite end connected proximal the upper end of the lower part;

a valve tube extending substantially upwards from the upper end of the upper part and positioned about the longitudinal axis of the cap device, the valve tube being integral with an intermediate conical portion attached to the upper end of the upper part, the valve pin cooperates with the valve tube and the internal threads of the upper part cooperate with the external threads of the lower part when the upper and the lower part are in the mounted state to axially displace the valve pin in relation to the valve tube by turning the upper part in relation to the lower part;

an upper cylinder section positionable about the longitudinal axis of the cap device between the lower end and the upper end of the upper part, the cylinder section being integral with the lower end of the upper part and integral with the intermediate conical portion of the upper part;

a lower cylinder section positionable about the longitudinal axis of the cap device between the lower end and the upper end of the lower part;

a sealing bulge positioned about the upper end of the lower part and substantially circumferentially continuous about the upper end and extending radially outward towards an inner side of the upper cylinder section of the upper part when the upper and lower parts are in a mounted state such that the sealing bulge of the lower part substantially communicates with the inner side of the upper cylinder section of the upper part when the upper and lower parts are mounted such that a substantial seal is provided continuously along the upper cylinder section of the upper part when the upper and lower cylinder sections are displaced axially in relation to each other, the upper part and the lower part communicating such that the internal threads of the upper part and the external threads of the lower part cooperate such that the upper part rotates and elevates itself or lowers itself in relation to the lower part, and when the upper part is in its lowest position respective to the lower part the upper ends of the upper part upper cylinder section and the lower part lower cylinder section are facing each other along a portion of the axis and the valve tube and the valve pin substantially communicate along their respective lengths, and when the upper part is at a most elevated position with respect to the lower part the valve pin and the valve tube are not axially coextensive; and

a sealing piece positioned at an upper end of the valve pin is axially positioned above the valve pin, such that when the upper part is mounted on the lower part and when the upper part is in its lowest position relative to the lower part the sealing piece is introduced into the upper part of the valve tube;

a rib located at the lower part parallel to the axis and at a distance from it and directed, upward and a baffle located at the upper part parallel to the axis and at a distance from it and directed downward, the rib and the baffle acting jointly in the mounted state of the cap device in order to limit the possible rotation of the upper part relative to the lower part, by means of stopping each other at a twisting angle which is smaller than a full revolution; and

the lower part being equipped with a cam located parallel to the axis and at a distance from it and directed radially inward which, in the mounted state of the cap device and when it is in a position between being fully screwed-on and at the most one-fourth unscrewed, acts jointly with the baffle in order to surmountably impede a rotation of the upper part in relation to the lower part against the action of the elasticity of the material.

5,284,278

SHUT OFF PLATE ASSEMBLY FOR SLIDE GATE

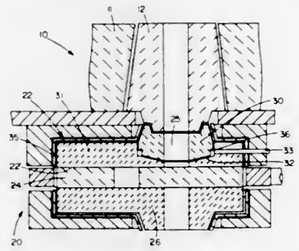
Rolf Waltenspühl, Hünenberg, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Nov. 5, 1992, Ser. No. 973,009

Claims priority, application Switzerland, Nov. 19, 1991, 03371/91-9

Int. Cl.[5] B22D *41/42*

U.S. Cl. 222—603 **27 Claims**



1. A shut off plate assembly for use in a slide gate for controlling the discharge of molten metal from a metallurgical vessel, said assembly comprising:

a refractory plate having on respective opposite sides thereof a planar surface to define a slide plane of the slide gate and a recess, and a discharge opening extending through said refractory plate and having opposite ends respectively opening onto said planar surface and into said recess, with said recess expanding outwardly the respective said end of said discharge opening;

a gas impermeable insert formed of a non-porous highly refractory material and having therethrough a discharge opening, said insert being positioned in said recess with said discharge openings of said plate member and said insert in alignment to define a discharge passage; and

said insert and said plate member having respective confronting surfaces defining a joint opening into said discharge passage and forming means to introduce gas into said discharge passage.

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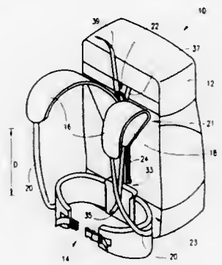
BACKPACK

Dan Sason, Kochav Yair, and Ziv Orovan, Hinanit, both of Israel, assignors to Modan Industries (1983) Ltd., Tel Aviv, Israel

Filed Feb. 13, 1992, Ser. No. 835,276

Int. Cl.[5] A45F *3/04*

U.S. Cl. 224—209 **18 Claims**



8. A backpack comprising:

article carrying means;

shoulder support means arranged for fastening said article carrying means about an upper body portion of the user and defining a position of attachment of said shoulder support means to said article carrying means; and

means for attaching said shoulder support means to said article carrying means and including means for adjusting the position of attachment of said shoulder support means to said article carrying means while said backpack is being worn by the user, said means for adjusting comprising

track means mounted onto said article carrying means;

sliding buckle means attached to said shoulder support means and configured for sliding along said track means, and having a body portion and first and second buckle portions;

first elongate, flexible fastening means attached to said article carrying means and extending through said buckle means in association with said first buckle portion; and

second elongate, flexible fastening means attached to said article carrying means and extending through said buckle means in association with said second buckle portion,

and wherein said body portion and said first and second buckle portions are configured to cooperate so as to selectably lock together said buckle means and at least one of said first and second flexible fastening means, thereby locking together said shoulder support means and said article carrying means,

and wherein application of tension to said first or second elongate flexible fastening means is operative to unlock said shoulder support means and said article carrying means and to change the relative positions thereof.

5,284,280

ADJUSTABLE-BACKPACK-SHOOTING TABLE

John W. Stonebraker, Sr., 21st St. Ext., and Daniel P. Stonebraker, R.D. 3, Box 113D, both of Tyrone, Pa. 16686

Filed Dec. 28, 1992, Ser. No. 998,140

Int. Cl.[5] A45F *4/02*

U.S. Cl. 224—153 **8 Claims**

1. A portable back pack shooting table for use in aiming a firearm adapted to be back transported in both a disassembled transportation mode and assembled shooting mode, comprising in combination:

an oval shaped frame, said frame having a forward section and a rear section thereon;

a forward support plate extending across said forward section and attached thereto, said forward support plate having shoulder strap attaching holes therethrough;

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a rear support table extending across said rear section and attached thereto, said rear support table having both shoulder strap attaching holes therethrough, and back pack attaching holes therethrough;

a back pack bag having attaching straps thereon, said attaching straps tied to said back pack attaching holes;

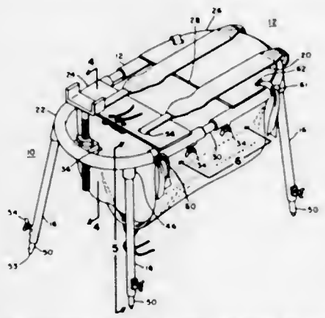
shoulder straps tied to said shoulder strap attaching holes;

legs removably attached to said oval shaped frame, extending generally perpendicular from said oval shaped frame;

a leg adjusting element movably positioned within each of said legs;

an extension block attached to the side of each leg, said extension block and leg having a threaded hole therethrough;

a threaded clamping screw within said threaded hole in clamping relationship with said leg adjusting element;



a gun rest assembly attached to said forward section of said oval shaped frame comprising in combination:

a mounting block attached to an inner side of said forward section of said oval shaped frame and extending into a plane formed by said oval frame, said mounting block having an adjustment hole therethrough;

a threaded adjustment column extending through said adjustment hole;

a U-shaped gun rest attached to the end portion of said threaded adjustment column;

clamping nuts in threaded engagement with said threaded adjustment column, positioned on either side of said adjustment column and in clamping relationship with said mounting block.

5,284,281

HOLSTER WITH TRIGGER GUARD GRIPPING DEVICE

Richard E. D. Nichols, 13223 Black Mountain Rd., #357, San Diego, Calif. 92129

Filed Oct. 4, 1991, Ser. No. 771,206

Int. Cl.[5] F41C *33/02*

U.S. Cl. 224—244 **26 Claims**

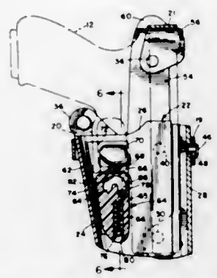
1. A handgun holster, comprising:

a holster body having a handgun receiving cavity with a first open end for receiving a handgun and a second end;

a substantially rigid locking pocket within the handgun receiving cavity;

a trigger guard gripping device movably mounted in the cavity for movement between first and second positions, the gripping device having at least one gripping projection for projecting into a trigger guard of a handgun inserted in said cavity, the gripping projection being located in said locking pocket in the first position of said device and projecting out of said pocket in the second position of said device; and

said pocket having at least one bearing surface for locking said gripping projection in said trigger guard in the first position of said gripping device;



said gripping projection being moved from said pocket on movement into said second position to permit withdrawal of a handgun from said gripping device.

5,284,282

DEVICE FOR LOADING, UNLOADING AND CARRYING BICYCLES ON MOTOR VEHICLE ROOFS PROVIDED WITH A PAIR OF CARRIER RAILS

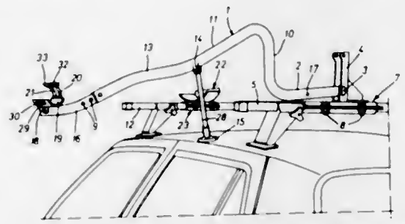
Alessandro Mottino, Chieri, Italy, assignor to Almas s.r.l., Almese, Italy

Filed Jul. 21, 1992, Ser. No. 917,818

Claims priority, application Italy, Mar. 30, 1992, T092A000286

Int. Cl.[5] B60R *9/10*

U.S. Cl. 224—310 **8 Claims**



1. A device for loading, unloading and carrying bicycles on the roof of motor vehicles, comprising:

a pair of carrier rails;

a hollow rest support adapted to be orthogonally fastened to a first one of said carrier rails in a position perpendicular to the roof of a vehicle;

a pin passing through said hollow rest support in a direction parallel to a direction of elongation of the vehicle;

a tube including four tube sections defined longitudinally of the tube and extending successively at about 90° one relative to the other, said tube being rotatably connected at one end thereof to said pin so as to rotate by at least 90° from an upright position to a collapsed position in a plane which is substantially orthogonal to the elongation of the vehicle wherein a free end of said tube protrudes in said collapsed position outwardly from the roof of the vehicle.

5,284,283

RAIL PROCESSOR

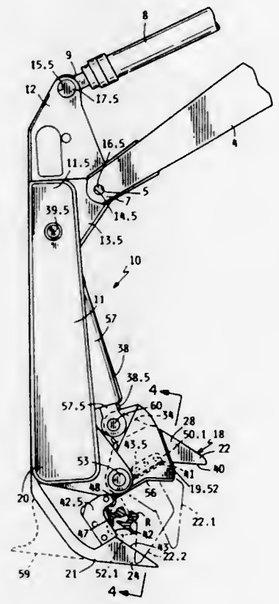
Roy E. LaBounty, and Kenneth R. LaBounty, both of Two Harbors, Minn., assignors to LaBounty Manufacturing, Inc., Two Harbors, Minn.

Continuation-in-part of Ser. No. 592,530, Oct. 4, 1990, Pat. No. 5,127,567. This application Oct. 8, 1991, Ser. No. 773,157

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] B23P *17/02*; **B26F** *3/00*

U.S. Cl. 225—96.5 **20 Claims**



1. A rail breaker for attachment to the boom structure and hydraulic system of a hydraulic machine, comprising:

(a) an elongate frame comprising an inner portion and an outer portion;

(b) upper and lower grapple jaw portions affixed on the outer portion of the frame and having a width to clamp along a length of the rail and immobilize the rail with respect to the frame, at least the upper jaw portion being swingable toward and away from the lower jaw portion to receive a rail transversely therebetween for clamping and releasing the rail with the lower jaw portion;

(c) a powered breaker arm portion swingably mounted on the outer portion of the frame in side-by-side and spaced relation with the grapple jaw portions to engage and break the rail clamped by said jaw portions, the breaker arm being adjacent the upper jaw portion to apply breaking force against the rail and toward the lower jaw portion;

(d) the lower jaw portion comprising a fulcrum portion engageable with the rail, the fulcrum portion comprising a pair of rail engaging face portions extending transversely of each other; and

(e) an attachment mounting assembly fixed onto the inner portion of the elongate frame for mounting the frame to the boom structure as to orient the grapple jaw portions and breaker arm portion generally toward the hydraulic machine.

5,284,284

METHOD FOR CONTROLLING SIDE GUIDE MEANS

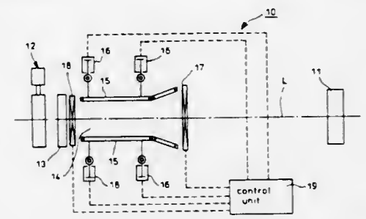
Shigeki Narishima, Yokosuka; Yoshinori Katayama; Koji Minoura, both of Yokohama; Mikio Soya, and Hisao Takenaka, both of Chiba, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabusniki Kaisha, Tokyo and Kawasaki Steel Corporation, Kobe, both of Japan

Filed Aug. 29, 1991, Ser. No. 751,959

Claims priority, application Japan, Oct. 23, 1990, 2-285124

Int. Cl.[5] B65H *23/02*

U.S. Cl. 226—3 **6 Claims**



1. A method of guiding a strip of material comprising feeding a leading end of the strip into a guide assembly which defines a gap between parallel guide members through which the strip may pass and narrowing the gap in two stages while maintaining the guide members parallel to each other, the first stage occurring on the introduction of the leading end of the strip into the upstream end of the guide assembly, the second stage occurring on or after engagement of the leading end of the strip with pinch rolls downstream of the guide assembly.

5,284,285

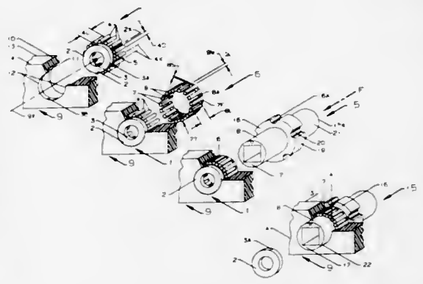
BEARING ASSEMBLY AND WEB FEED DEVICE INCORPORATING SAME

Gregory A. Ferguson, New Bedford, Mass., assignor to Precision Handling Devices, Fall River, Mass.

Filed Mar. 13, 1992, Ser. No. 850,759

Int. Cl.[5] B65H *20/20*

U.S. Cl. 226—74 **30 Claims**



1. A plastic bearing assembly comprising a unit having a circular annular member with multiple rollable bearing members frangibly attached thereto, an outer element having a hole therethrough in which said unit is received by axially and slidable inserting said circular member with its said attached bearing members, and an inner element disposed in said hole and inside said bearing members, said inner elements having a diameter greater than the inside diameter of said circular member whereby said inner element engages said circular member when axially inserted through said hole in said outer element upon assembly freeing said bearing members from said circular

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member by axial force and ejecting said circular member from said outer element.

5,284,286

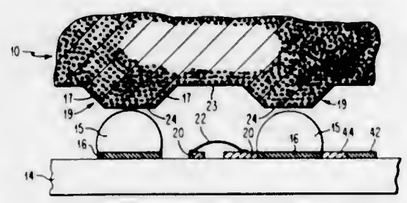
POROUS METAL BLOCK FOR REMOVING SOLDER OR BRAZE FROM A SUBSTATE AND A PROCESS FOR MAKING THE SAME

Peter J. Brofman; Shaji Farooq; Kathleen A. Lidestri, all of Hopewell Junction; Gregg B. Monjeau, Wallkill, and Karl J. Puttlitz, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 786,201

Int. Cl.[5] B23K *1/018*

U.S. Cl. 228—19 **9 Claims**



1. A structure for the selective removal of solder or braze from a substrate comprising, a porous metal block, said block having at least one surface having at least one porous protrusion for the selective absorption of said solder or braze.

5,284,287

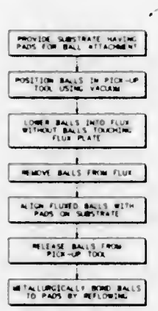
METHOD FOR ATTACHING CONDUCTIVE BALLS TO A SUBSTRATE

Howard P. Wilson, and Fonzell D. J. Martin, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,267

Int. Cl.[5] H01L *21/58*

U.S. Cl. 228—180.2 **16 Claims**



1. A method for attaching conductive balls to a substrate comprising the steps of:

providing a substrate having a plurality of conductive ball receiving areas;

providing a pick-up tool having a plurality of conductive balls held therein by a vacuum, each conductive ball having a diameter;

providing a flux plate having a recess formed therein, the recess having a bottom surface and being filled with a flux;

lowering the pick-up tool toward the flux plate until each conductive ball is partially immersed in the flux, but without allowing any conductive balls to touch the bottom surface of the recess and without allowing the pick-up tool to come in contact with the flux;

raising the pick-up tool to remove the conductive balls from the flux;

aligning the pick-up tool having the fluxed conductive balls therein to the substrate such that each conductive ball is in contact with a corresponding one of the plurality of conductive ball receiving areas;

releasing the conductive balls from the pick-up tool; and

reflowing the conductive balls to metallurgically bond each conductive ball to the corresponding conductive ball receiving area of the substrate.

5,284,288

METHOD OF MANUFACTURING AN ARTICLE BY DIFFUSION BONDING

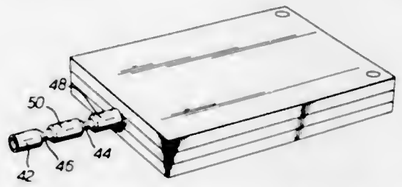
James Woodward, Lancashire, England, assignor to Rolls-Royce plc, London, England

Filed Jun. 30, 1993, Ser. No. 83,484

Claims priority, application United Kingdom, Aug. 15, 1992, 9217415

Int. Cl.[5] B23K *20/14, 20/18*

U.S. Cl. 228—157 **14 Claims**



1. A method of manufacturing an article by diffusion bonding at least two metal workpieces comprising the steps of

(a) assembling the at least two workpieces into a stack relative to each other so that the surfaces are in mating abutment,

(b) sealing the edges of the at least two workpieces together, except where a pipe is to be inserted, and joining a pipe to the stack to provide a sealed assembly,

(c) sequentially evacuating the interior of the sealed assembly and supplying inert gas to the interior of the sealed assembly through the pipe to remove oxygen from the interior of the sealed assembly,

(d) evacuating the interior of the sealed assembly,

(e) sealing the pipe with a first seal, and sealing the pipe with a second seal which is spaced from the first seal,

(f) applying sufficient heat and pressure across the thickness of the at least two workpieces to diffusion bond the at least two workpieces together to form an integral structure and to collapse the pipe at a first region between the joint between the pipe and the stack and the first seal and to collapse the pipe at a second region between the first seal and the second seal,

(g) observing the first and second regions of the pipe to determine whether a successful diffusion bond has been formed between the workpieces in the stack to form an integral structure.

5,284,289

PLUG-WELDED AUTOMOTIVE BRACKET FOR AN AIR CHAMBER

Michael L. Killian, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 2, 1991, Ser. No. 739,667

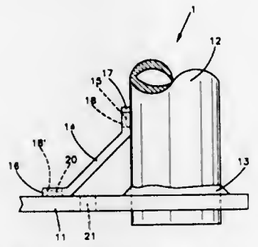
Int. Cl.[5] B23K *31/02;* **F16D** *65/00*

U.S. Cl. 228—165 **11 Claims**

1. A fatigue resistant automotive air chamber bracket comprising a pair of joined weldable automotive structural portions subject to dynamic fatigue loading, said structural portions having adjoining surfaces which meet at a junction and diverge therefrom to form a gap therebetween,

a brace having a bridging portion with two ends and a weldable foot portion at each end thereof,

said brace spanning the gap with one of its foot portions having a contact surface in contact with a contact surface



of one of said structural portions to form a first interface, and another of its foot portions having a contact surface in contact with a contact surface of the other of said structural portions to form a second interface,

at least one of the contact surfaces having a hole extending therethrough and a plug weld disposed in the hole, and

said plug weld attaching one of said foot portions to an associated structural portion at the interface therebetween.

5,284,290

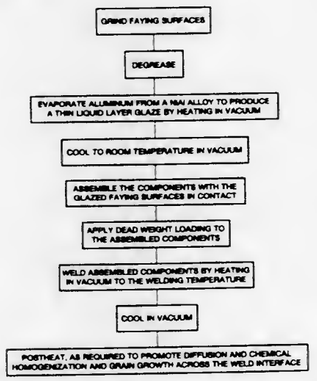
FUSION WELDING WITH SELF-GENERATED FILLER METAL

Thomas J. Moore, Berea, and Joseph M. Kalinowski, Strongsville, both of Ohio, assignors to The United States of America as represented by the Adminstrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 23, 1993, Ser. No. 63,222

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—211 **15 Claims**



1. A method of joining members of a metal alloy containing at least two alloying elements along faying surfaces without the addition of other material, filler metal, or brazing material comprising

removing one of said alloying elements from said faying surfaces thereby lowering the solidus and the liquidus temperatures of the alloy at said faying surfaces whereby a glazed layer of the remaining alloying elements is produced,

placing said glazed surfaces in contact in a chamber,

applying a pressure to said contacting surfaces, and

heating said contacting surfaces in said chamber while applying said pressure thereby fusion welding the same.

5,284,291

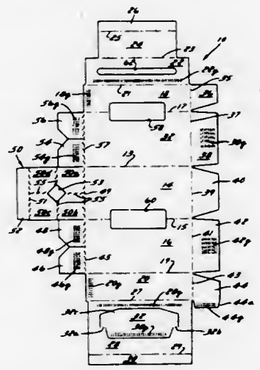
MULTI-COMPARTMENT CARTON

Thomas J. Sellors, Winthrop Harbor, Ill., assignor to Olympic Packaging, Inc., Mundelein, Ill.

Filed Aug. 27, 1992, Ser. No. 936,574

Int. Cl.[5] B65D *5/48*

U.S. Cl. 229—120.03 **7 Claims**



1. An elongate blank for forming a multi-compartment folding carton, the blank comprising a plurality of panels hingedly coupled by score lines, the panels including three adjoining full-length and full-width side wall panels for forming three sides of the carton, first and second full-length and half-width panels on either end of the side wall panels, a further full-length and full-width panel adjoining the first of the half-width panels, the further full-length, full-width panel including a flap cut therein, a pair of aligned score lines at opposite ends of the flap whereby the flap may be foiled 90° with respect to said further panel along the aligned score lines and so that a first portion of the flap extends perpendicularly to one side of this further panel and so that a second portion of the flap extends perpendicularly to the other side of this further panel, a further full-length half-width panel adjoining the second full-length, half-width panels, a half-width, partial-length panel adjoining the further full-length, half-width panel, a glue flap panel at either end of the blank and closure elements along the sides of the blank.

5,284,292

CAN DISPENSER

Mark M. Johnson, 3106 Panama, Sioux City, Iowa 51103

Filed Sep. 25, 1992, Ser. No. 950,889

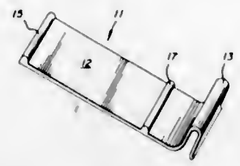
Int. Cl.[5] B65D *5/72*

U.S. Cl. 229—122.1 **10 Claims**

1. In combination, a carton housing multiple rows of cylindrical articles stacked on their sides one on top of the other, an end of said carton having a lower section capable of forming a discharge opening that allows for lengthwise removal of a cylindrical article, and a substantially planar member slidably insertable through said opening under the lowermost row of said cylindrical articles and outwardly pullable to discharge a cylindrical article, said member having a curved lip at one end for retaining a cylindrical article on discharge, an upwardly projecting first ridge at the other end extending substantially

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the width of said member and when said member is fully inserted said first ridge is positioned beyond the furthest article in the lowermost row and an upwardly projecting second



ridge positioned a distance from the curved lip that is slightly larger than the diameter of said cylindrical article and extending substantially the width of said member.

5,284,293

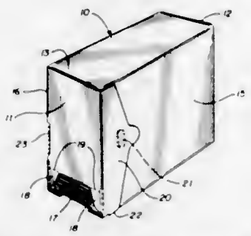
DISPENSER BOX FOR PACKAGES OF STERILE SUTURES

Marvin Alpern, Glen Ridge, N.J.; Robert J. Cerwin, Pippersville, Pa.; Mario De Martin, Flemington, N.J.; Teresa M. Simons, Milltown, N.J., and Deborah M. Transue, Bridgewater, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 21, 1993, Ser. No. 6,575

Int. Cl.[5] B65D *5/72*

U.S. Cl. 229—122.1 **2 Claims**



1. A dispenser for a plurality of packages of sterile suture materials, said dispenser comprising:

a top panel and a bottom panel, one of said top or bottom panels having a slit therein;

a pair of side panels extending from said top panel to said bottom panel,

a back panel extending from said top panel to said bottom panel and connecting said side panels, and

a front panel member having a pair of parallel side edges, one of said edges of said front panel being a side panel and the opposite edge of said front panel having a foldable tab portion extending from said opposite edge, said foldable tab portion being slightly longer than said side panel and being adhered to said side panel to form the front panel of the dispenser, whereby when said tab portion is unadhered from said side panel it may be inserted inside said side panel with said longer portion inserted in the slit to stabilize said front panel, said front panel having an opening disposed at the bottom thereof, said opening abutting the bottom panel for removing a single suture package from said dispenser and an area of said front panel adjacent said opening being easily deflected to allow for removal of a plurality of suture packages at one time.

5,284,294

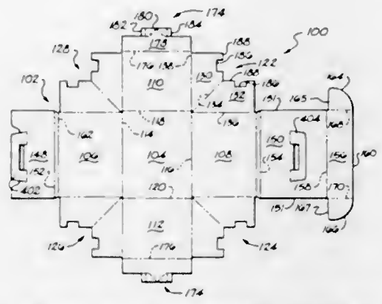
DISPOSABLE COOLER

Roy V. Floyd, 1214 Meadowood Dr., Shelby, N.C. 28150

Filed May 29, 1992, Ser. No. 891,559

Int. Cl.[5] B65D *5/24*

U.S. Cl. 229—179 **18 Claims**



1. A disposable container, comprising containerboard for folding between a relatively flat configuration for storage thereof and a set-up configuration for receiving articles therein, said container including a bottom wall, a pair of opposing side walls foldably attached along respective proximal edges thereof to said bottom wall, a pair of opposing end walls foldably attached along respective proximal edges thereof to said bottom wall and respectively interposed between said side walls about the periphery of said bottom wall, four pairs of gusset pleats interconnecting adjacent edges of adjacent side and end walls so as to form a seamless container interior portion whenever said end and side walls are raised into set-up configuration respectively perpendicular to said bottom wall, at least one top wall foldably attached to a distal edge of one of said end walls for closing said container interior, handle means associated with said at least one top wall for carrying of said disposable container, at least one first wall locking member received on each respective distal edge of said side walls, and at least one second wall locking member respectively operatively and removably associated with each first wall locking member in linear surface contact therewith for reversibly holding said container in said set-up configuration thereof, each said second wall locking member being associated with one of said end walls and a pair of said gusset pleats interconnecting said end wall and said side walls associated therewith; said container further including top closure locking means for positive locking closure of said container interior, w herein said top closure locking means includes

planar slots formed between said side walls and adjacent gusset pleats whenever said container is in said set-up configuration thereof, and with longitudinal slotted openings thereto;

two top walls foldably attached along respective proximal edges thereof to respective distal edges of said end walls;

a locking panel attached to a distal edge of one of said top walls so as to extend down at least a part of the exterior of an opposite end wall whenever said container is in said set-up configuration thereof and said top wall are folded inwardly across the top of said container interior so as to close same; and

a pair of locking tabs carried respectively on opposite lateral edges of said locking panel so as to be received in respective of said planar slots passed through said slotted openings thereto, such that said locking panel becomes positively locked with said one top wall across said top of said container interior so as to foldably form a self-locking closable container.

5,284,295

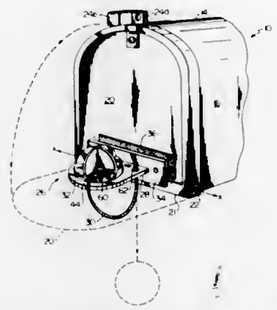
MAILBOX DELIVERY SIGNAL DEVICE

Edward F. Steinfeldt, 4031 Kinney Gulf Rd., Cortland, N.Y. 13045

Continuation-in-part of Ser. No. 967,143, Dec. 7, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 83,707

Int. Cl.[5] B65D *91/00*

U.S. Cl. 232—35 **5 Claims**



1. A mail delivery signal device for a mailbox having a door which pivotally connects to the mailbox housing and may be moved between open and closed positions in downward and upward directions, respectively, about a horizontal pivot axis, said device comprising:

a) a signal ball having a first maximum diameter;

b) a signal ball support bracket including a planar signal ball support member having a circular hole formed therethrough, said circular hole having a second diameter smaller than said first diameter;

c) means attaching said signal support bracket to said mailbox door with said signal ball support member extending perpendicularly from said door and lying in a horizontal plane when said door is in said closed position; and

d) a tether of predetermined length attaching said signal ball to said signal ball support bracket, said signal ball being removably positionable in said circular hole in said signal ball support member when said door is in said closed position, said opening of said door causing said signal ball to fall from said signal ball support member and become suspended by said tether at a point below said mailbox housing.

5,284,296

SYSTEM FOR SPRAYING CERAMIC SLURRIES ONTO SURFACES IN CONTACT WITH MOLTEN METALS

Timothy L. Connors, Chicago; Mohammed Ismail, Wheaton, and Madjid Soofi, St. Charles, all of Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.

Filed Dec. 12, 1991, Ser. No. 805,513

Int. Cl.[5] B05B *7/04*

U.S. Cl. 239—10 **21 Claims**

1. A method for spraying ceramic coatings on surfaces in contact with molten metals comprising the steps of:

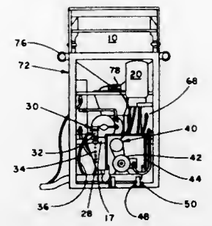
providing water;

providing ceramic powder;

mixing the water and ceramic powder to produce a slurry;

directing said slurry to a pump;

delivering said slurry directed to said pump to a nozzle having a valve connected to a source of compressed air; and



opening said valve so that said pump is turned on and said slurry is dispersed through said nozzle.

5,284,297

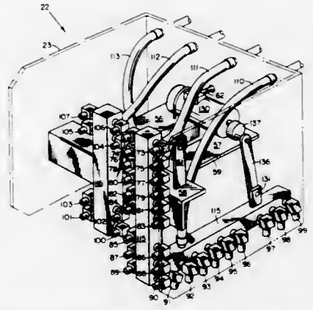
ROADSIDE SPRAYING APPARATUS FOR MINIMIZING DRIFT

Johnny L. Kubacak, Jourdanton, and Gerald C. Gebheim, Pleasanton, both of Tex., assignors to Cibolo Manufacturing Company, Inc., Jourdanton, Tex.

Continuation of Ser. No. 70,044, Jul. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 722,411, Apr. 10, 1985, Pat. No. 5,007,585. This application Aug. 9, 1989, Ser. No. 393,076

Int. Cl.[5] B05B *1/08*

U.S. Cl. 239—102.1 **15 Claims**



1. A spraying apparatus for spraying liquids to the side of a moving vehicle in a plurality of laterally adjacent swaths comprising:

means mountable on a vehicle for supporting a spray head;

said spray head including a plurality of sets of spraying means provided with orifices for directionally spraying liquid in aerial streams;

the spraying means in each set being mounted on the spray head and oriented to collectively spray a predetermined width of swath at a predetermined distance from the side of the vehicle;

each set communicating with a liquid source through a separate control means for operating each respective set of spraying means as a unit;

said control means being independently actuatable to selectively deliver liquid to selected sets of spraying means to provide the desired spray pattern and width of coverage; and

means operatively connected to said spraying means for vibrating the stream flow from said stream spraying means to produce and scatter liquid particles.

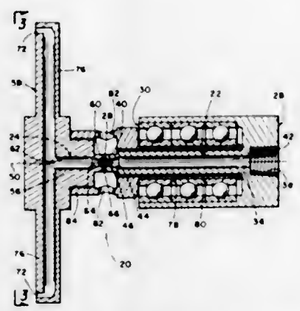
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5,284,298

FLUID-CONDUCTING SWIVEL AND METHOD

Henry T. Haynes, Jenks, and Earl E. Thompson, Sr., Tulsa, both of Okla., assignors to Fluid Controls Inc., Tulsa, Okla.

Filed Apr. 13, 1993, Ser. No. 46,646
Int. Cl.[5] B05B *3/06*
U.S. Cl. 239—254 **20 Claims**



1. A fluid-conducting swivel, comprising:
(a) an upstream conduit having a first end connectable to a fluid source, a second end, and a fluid passageway extending through the first and second ends, the upstream conduit comprising:
an acceleration nozzle disposed in the fluid passageway for accelerating the velocity of the fluid flow; and
an upstream throat, extending between the acceleration nozzle and the second end of the upstream conduit, for maintaining the accelerated velocity of the fluid flow from the acceleration nozzle;
(b) a downstream conduit having a first end connectable to a fluid user, a second end, and a fluid passageway extending through the first and second ends, the downstream conduit comprising:
a deceleration nozzle disposed in the fluid passageway for decelerating the velocity of the fluid flow; and
a downstream throat, extending between the deceleration nozzle and the second end of the downstream conduit, for receiving the accelerated fluid from the upstream throat and substantially preventing expansion of the accelerated fluid, thereby substantially preventing fluid leakage and pressure loss between the upstream and downstream conduits; and
(c) support means for holding the upstream and downstream conduits with the upstream and downstream throats aligned, for allowing rotation of one of the upstream and downstream conduits and for maintaining a space between the upstream and downstream conduits and between the upstream and downstream throats.

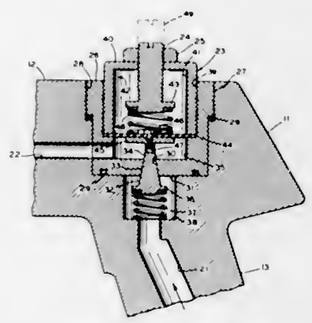
5,284,299

PRESSURE COMPENSATED HVLP SPRAY GUN

D. William Medlock, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 667,459, Mar. 11, 1991, abandoned. This application Aug. 24, 1992, Ser. No. 933,561
Int. Cl.[5] B05B *7/12*
U.S. Cl. 239—301 **15 Claims**

1. An improved high volume, low pressure air atomization spray gun capable of operation from a source of high pressure air, having a pressure of at least 2.8 Kg/cm^2 and including a hose for delivering said high pressure air to said spray gun, and for receiving liquid to be atomized from a liquid source, comprising:
a housing comprising a horizontally disposed, radially extending barrel portion, and a vertically disposed, axially extending handle portion having air inlet means for attachment to said air hose for receiving said high pressure air delivered by said air hose;
first axially extending passage means defined within said handle portion of said housing and fluidically connected to said air inlet means for conducting said high pressure air into said handle portion of said housing;
a high pressure air chamber defined within said handle portion of said housing and fluidically connected to said first passage means at a location remote from said air inlet means for receiving high pressure air from said first passage means;
air and fluid nozzle means attached to a distal, free end of said horizontally disposed, radially extending barrel portion of said housing for atomizing said liquid;
second radially extending passage means defined within said barrel portion of said housing and fluidically connected to said air and fluid nozzle means for delivering low pressure air to said air and fluid nozzle means;
a low pressure air chamber defined within said housing at a



junction defined between said handle and barrel portions of said housing so as to fluidically connected to said second radially extending passage means at a location remote from said air and fluid nozzle means for delivering low pressure air to said second radially extending passage means;
a valve seat interposed between and separating said high pressure chamber from said low pressure chamber; and
variable control valve means, movably disposed within said valve seat and extending between said low pressure chamber and said high pressure chamber so as to be responsive to pressure within said first and second pressure means, and within said high and low pressure chambers, for automatically adjusting said pressure within said second radially extending passage means to a predetermined constant, low pressure value of not greater than 0.7 Kg/cm^2 and for maintaining said predetermined low pressure constant during changes in the pressure of said high pressure air and during changes in the flow rate of said air through said air and fluid nozzle means.

5,284,300

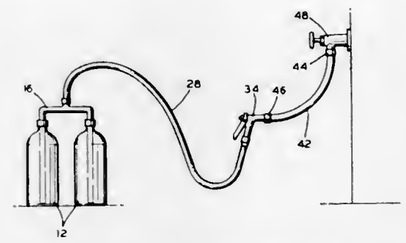
PORTABLE SPRAY SYSTEM

Ronald E. Gries; Aaron D. Gries, and Andrew S. Gries, all of Perrysburg, Ohio, assignors to Jon Brown; Greg Dickerson and John Naylor, Perrysburg, Ohio

Filed Aug. 19, 1992, Ser. No. 932,074
Int. Cl.[5] B05B *9/04*
U.S. Cl. 239—373 **10 Claims**

1. A portable spray system comprising:
a) storage means for storing a fluid, said storage means including at least one plastic container having an aperture;
b) a trigger nozzle provided with a first orifice and a first connector at a first end of said trigger nozzle, and a second orifice and a male connector at a second end of said trig-

ger nozzle to facilitate two-way fluid communication through said trigger nozzle; and
c) communication means for providing fluid communication between said storage means and said trigger nozzle, said communication means having a first hose connector on a first end for connection to the aperture of said storage means, and said communication means having a second hose connector on a second end for connection to the first connector of said trigger nozzle;



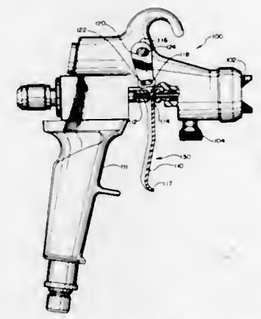
d) a transfer hose having a female connector at each end, a first of said female connectors for selectively connecting said transfer hose to the male connector of said trigger nozzle, and a second of said female connectors for selectively connecting said transfer hose to a source of pressurized fluid, whereby said transfer hose is connected to the source of pressurized fluid and said trigger nozzle for supplying pressurized fluid from the source to said storage means, and whereby said transfer hose is disconnected from said trigger nozzle for spraying pressurized fluid from said storage means through said trigger nozzle.

5,284,301

DOUBLE-PIVOT TRIGGER

Joseph W. Kieffer, Maple Grove, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Dec. 15, 1992, Ser. No. 991,489
Int. Cl.[5] B05B *7/24*
U.S. Cl. 239—528 **18 Claims**



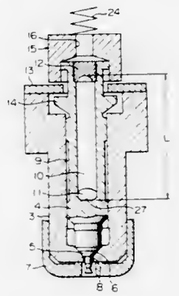
1. A trigger assembly for opening an air valve and a paint valve in a spray gun, the trigger assembly comprising:
a) a trigger having
i) an elongated body extending from a first end to a second end,
ii) a first aperture in the elongated body, and
iii) a second aperture intermediate the first aperture and the first end of the elongated body;
b) a first pivot peg mounted on the spray gun and projecting into the first aperture such that the first aperture slides past the first pivot peg;
c) a second pivot peg mounted on the spray gun and projecting into the second aperture such that the second aperture slides past the second pivot peg; and
d) an actuating means for actuating the air valve and paint valve, the actuating means being in operational contact with the trigger intermediate the first aperture and the second end of the elongated body, such that when the trigger is pulled and rotated about the first pivot peg, the actuating means opens the air valve, and when the trigger is further pulled and rotated about the second pivot peg, the actuating means opens the paint valve.

5,284,302

FUEL INJECTION VALVE

Masaaki Kato, Kariya, and Yukio Sakamoto, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 11, 1993, Ser. No. 16,220
Claims priority, application Japan, Feb. 12, 1992, 4-025082
Int. Cl.[5] F02H *51/06*
U.S. Cl. 239—585.1 **9 Claims**



1. A fuel injection valve comprising:
a fuel passage;
a needle valve axially movable to open and close said fuel passage;
a definition member to which said needle valve is abutted, said member defining an amount of axial of said needle valve; and
an inertial collision element axially movable by a specified distance with respect to said needle valve, for colliding against said needle valve with a specified time lag after said needle valve moves in a specified direction and collides with said definition member, thereby applying an inertia force to said needle valve in said specified direction.

5,284,303

EQUIPMENT FOR DEOILING SWARF RESULTING FROM MACHINING OPERATIONS

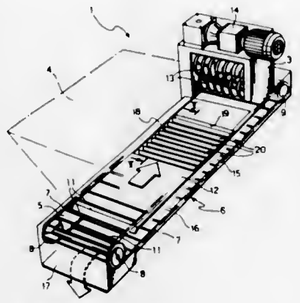
Alfonso Galletti, Turin, Italy, assignor to GI. PI. S.R.l., Turin, Italy

Filed Jul. 17, 1992, Ser. No. 916,200
Claims priority, application Italy, Aug. 8, 1991, T091A000641
Int. Cl.[5] B02C *23/14*
U.S. Cl. 241—24 **10 Claims**

1. A method of operating equipment for deoiling swarf resulting from machining operations comprising the steps of:
conveying the swarf along a conveyor to a separation station having a grating;

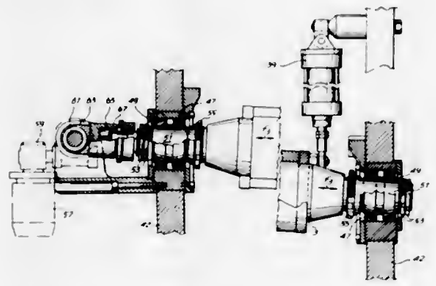
VOL 1159 ISS 2 FE 8 1994 UMI

allowing smaller swarf to pass through the grating but conveying larger swarf further along the conveyor;
then moving the smaller swarf to a deoiling apparatus;



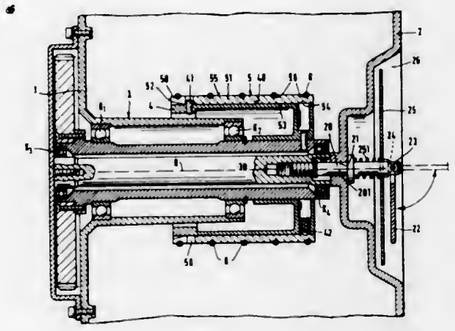
deoiling the smaller swarf; and
discharging the deoiled swarf.

5,284,304
PERFORATING APPARATUS FOR PAPER WEBS AND THE LIKE, WITH RECIPROCATING MOTION OF TRANSLATION OF THE COUNTER-BLADE
Guglielmo Biagiotti, Capannori, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy
Filed Mar. 24, 1992, Ser. No. 856,542
Claims priority, application Italy, Apr. 3, 1991, FI/91/A72
Int. Cl.[5] B65H *35/08*
U.S. Cl. 242—56.8 **7 Claims**



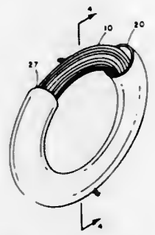
1. A perforating apparatus for perforating a web material (N) in a rewinding machine comprising a rotating roller (5), on which cutting blades (31) are disposed, and a non-rotating shaft (3) carrying a perforating counterblade (33), characterized in that said counterblade (33) is indented and said blades have smooth cutting edges, that a drive means (57, 59, 61, 63, 65) combined to the shaft (3) provides a reciprocating translation motion of the shaft (3) in a direction (f3) parallel to the axis of said shaft (3), and that said shaft (3) is supported by end supports (47) which allow a variation of the inclination of the shaft (3) with respect to the web feeding direction as well as said reciprocating translation motion of the shaft in the direction (f3) parallel to the axis of said shaft (3).

5,284,305
CASSETTE FOR WINDING UP PHOTOGRAPHIC STRIP MATERIAL
Werner Gassmann, Dänikon; Albert Dünner, Zürich, and Erich G. Binder, Buchs, all of Switzerland, assignors to Gretag Systems, Inc., Bothell, Wash.
Filed Jun. 28, 1991, Ser. No. 723,052
Claims priority, application Switzerland, Jun. 29, 1990, 2174/90
Int. Cl.[5] B65H *18/02*
U.S. Cl. 242—67.1 R **20 Claims**



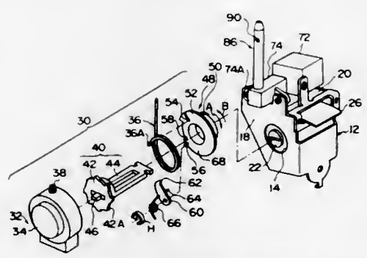
1. A cassette for winding photographic strip material comprising:
a housing with two opposing end plates;
a light-tight casing for connecting said end plates wherein at least one end plate is removable from said housing to open the cassette;
a bearing arbor securely connected to a first of said end plates;
a drivable winding core mounted on said bearing arbor;
a guide sleeve substantially formed as a hollow cylinder placed on said winding core;
guide members pivotable around a common shaft and positioned around said guide sleeve to guide said photographic strip material around said guide sleeve when said photographic material is being wound onto said guide sleeve;
means for securing said guide sleeve and said winding core into an operating position when said guide sleeve is placed onto said winding core, wherein during rotation of the winding core said guide sleeve is secured to and rotates with said winding core, said securing means further including:
at least one pin positioned on said winding core which projects from a first end of said winding core in a substantially radially outward direction from an outer wall of said winding core;
at least one groove in a wall of said guide sleeve for receiving said pin, said groove extending parallel to an axis of rotation of said guide sleeve from a first end of said guide sleeve into said guide sleeve by at least a distance from the first end of the winding core to the pin, said first end of said guide sleeve establishing initial contact with said winding core when said guide sleeve is slipped onto said winding core; and
at least one ball pressure piece placed in a second end of said winding core, said ball pressure piece being locked into a groove around an inner wall of the guide sleeve proximate to a second end of the guide sleeve when said guide sleeve is slipped onto said winding core.

5,284,306
FISH TAPE CONTAINER AND METHOD OF USE
Sangkil O, 993 S. Wilton Pl., Los Angeles, Calif. 90019
Filed Jan. 27, 1993, Ser. No. 9,987
Int. Cl.[5] E21C *29/16;* **B65H** *75/36*
U.S. Cl. 242—96 **4 Claims**



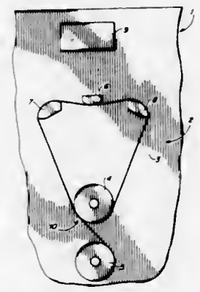
1. A special container for fish tape comprising: a tubular body, said body having a plastic outer surface and a steel inner surface and having spaced apart ends, said body being in the shape of a semicircle extending for 300 arc degrees between said ends, with said ends being spaced apart by a gap extending 60 arc degrees, and a rim element covering each of said ends.

5,284,307
PRELOADER
Shigeru Kotama, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan
Filed Jul. 8, 1992, Ser. No. 910,549
Claims priority, application Japan, Jul. 25, 1991, 3-058725[U]
Int. Cl.[5] B60R *22/46*
U.S. Cl. 242—107 **11 Claims**



1. A preloader used with a webbing retractor for winding an occupant restraining webbing on a webbing take-up shaft, and used to firmly apply said webbing to an occupant when a vehicle is abruptly decelerated, comprising:
gas generating means for generating gas when the vehicle is abruptly decelerated;
a piston moved by a generated gas;
clutch means for disconnecting said piston from said webbing take-up shaft when said piston is stopped, and connecting said piston to said webbing take-up shaft upon the movement of said piston by the gas so as to convert the movement of said piston into a rotational force of said webbing take-up shaft in a webbing winding direction, thereby transmitting said rotational force to said webbing take-up shaft;
a cylinder for accommodating said piston such that said piston is movable along an axial direction of said cylinder; and
a degassing portion for discharging the gas in said cylinder to an outside when said piston has been moved by the gas so as to reach a vicinity of a terminal region of a traveling stroke thereof,
wherein said cylinder is a cylindrical member, and said piston is provided in said cylinder,
and wherein said degassing portion is a weak portion formed in said piston coaxially with an outer periphery of said piston, said weak portion being broken by a pressure of the gas, when said piston has reached the vicinity of the terminal region of a traveling stroke thereof, so as to lead the gas in said cylinder to the outside.

5,284,308
TAPE PATH HAVING IMPLICIT SQUEEZE BEARING
Wayne T. Comeaux; Don G. East; Steven L. Felde, and Douglas W. Johnson, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 689,396, Apr. 22, 1991, abandoned.
This application Jun. 29, 1992, Ser. No. 908,608
Int. Cl.[5] G11B *15/60*
U.S. Cl. 242—199 **15 Claims**



1. A path for a flexible web comprising:
a first rotatable reel and a second rotatable reel;
a web guide;
a flexible web having a first end wound upon the first reel, a second end wound upon the second reel, and a middle portion between the first reel and the second reel, the middle portion extending from the first reel, around the web guide, and, when said web is motionless and taut, contacting the first end without winding upon the first reel before winding onto the second reel, the middle portion not contacting the second end before winding onto the second reel regardless of the relative amount of the web wound upon the first and second reels; and
means for controllably rotating the first and second reels to advance said web at a velocity sufficient to prevent the middle portion from contacting the first end yet forming an air film between the first end and the middle portion without the middle portion winding upon the first reel.

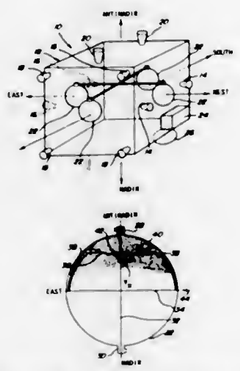
5,284,309
PROPELLANT IMMOBILIZING SYSTEM AND METHOD
Jeremiah O. Saivatore, Redondo Beach, and John R. Murphy, El Segundo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 18, 1992, Ser. No. 992,397
Int. Cl.[5] B64D *37/00*
U.S. Cl. 244—135 C **13 Claims**

1. A propellant immobilizing method for use in an orbiting spacecraft to reduce propellant motion during velocity change maneuvers, said spacecraft including a propellant tank having curved side walls and at least one center of curvature for said curved side walls, a propellant management device within said propellant tank for attracting and loosely holding propellant in the tank at the location of the propellant management device and a plurality of thrusters for producing impulses in multiple directions, said method comprising the steps of:

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firing a portion of said thrusters producing a first impulse whereby the propellant center of mass acquires a velocity relative to the tank in a direction opposite said first impulse direction;

allowing said propellant to move relative to said tank and follow the curved side walls of said tank until the propellant center of mass has moved to a location in which a line from said center of mass to the tank center of curvature is parallel with the direction of said desired velocity change;



firing a portion of said thrusters producing a second impulse in the direction of motion of said propellant center of mass to null the velocity of said propellant center of mass relative to said tank; and

firing a portion of said thrusters to produce a third impulse in the direction of said desired velocity change to complete the desired velocity change, said third impulse being in the direction of alignment of said propellant center of mass and said tank central curvature whereby movement of said propellant center of mass relative to said tank in reaction to said third impulse is minimized.

5,284,310

PARACHUTE LINE SEVERING APPARATUS

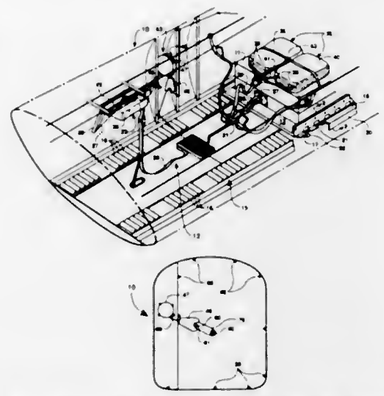
Richard E. Conway, Jr., Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 22, 1993, Ser. No. 38,747

Int. Cl.[5] B64D *17/30*

U.S. Cl. 244—151 B **8 Claims**

1. An apparatus for severing an extraction line connected at the opposite ends thereof to an extraction parachute and a cargo load located in an aircraft comprising: a viper line looped about said extraction line and releasably secured along the interior walls of said aircraft, an extensible cutting head having cutting means mounted therein, said cutting head including a take-up reel for coiling said viper line thereabout, means for rotating said reel to wind said viper line about said reel and draw said viper line into engagement with said extraction line to generate a reactive force for extending said cutting



head and cutting means into engagement with said extraction line for severing said extraction line.

5,284,311

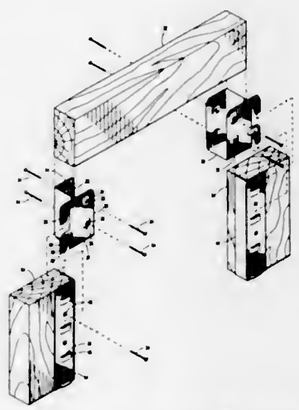
HOOK BRACKET AND KIT FOR STORAGE STRUCTURE

Thomas R. Baer, Edgerton, Wis., assignor to Newco, Inc., Janesville, Wis.

Continuation of Ser. No. 605,530, Oct. 29, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 871,911

Int. Cl.[5] A47G *29/02*

U.S. Cl. 248—243 **12 Claims**



1. A kit for constructing a free standing adjustable frame structure from standard dimensioned timber members, comprising:

a) at least four sheet metal L-shaped racks, each L-shaped rack having a first planar leg and a second leg which extends from the first leg, the second leg having a planar face with a plurality of vertically spaced slots, the racks being adapted to being connected by fasteners to standard dimensioned timbers to support the racks in a vertical upright position, wherein the first leg is adapted to lie adjacent to a first upright timber surface, and the second leg is adapted to be positioned by the first leg adjacent to an upright timber surface perpendicular to the first upright timber surface;

b) at least four sheet metal hook brackets, each bracket having portions defining a fastener opening to permit mounting to the ends of standard dimensioned horizontal timers, each bracket having portions forming at least one hook for engagement with the vertically spaced slots of the L-shaped racks wherein the hook brackets are adapted to be attached to opposite ends of horizontally disposed timber members and to join said horizontal timber members to the vertical timbers, wherein each bracket has an end plate which is adapted to abut the rack first leg and wherein the slots are positioned with respect to the first leg such that the hooks may engage within the slots, and wherein the sheet metal hook brackets each have a U-shaped band having two vertical arms adapted to be fastened to and to lie along opposed parallel surfaces of a standard dimensioned horizontal timber member, the arms being joined by a horizontal base for underlying a lower surface of the timber member.

5,284,312

PILLAR INTENDED TO FORM PART OF A FURNITURE SUPPORT EQUIPPED WITH A GAS SPRING

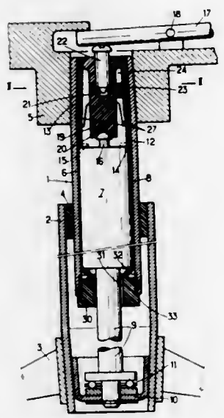
Dominique Dony, Roulans, France, assignor to Airax, S.A., Montferrand Le Chateau, France

Filed Jun. 24, 1992, Ser. No. 903,454

Claims priority, application France, Jul. 1, 1991, 91 08156

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—161 **11 Claims**



1. A pillar intended to form part of a piece of furniture when interposed between a foot and a top part of said piece of furniture, said pillar comprising:

a support tube which can be fastened to the foot;

a sliding tube having a top conical end portion which can be engaged by a force fit in a correspondingly shaped cavity in the top part; and

a gas spring, said gas spring including a body, a piston rod, and a control finger, said body disposed in the sliding tube, with lateral clearance therebetween, said rod being fixed, at its end remote from the piston, to the bottom of the support tube, said control finger being located at an end of said body remote from said rod,

wherein said pillar is further equipped with a top stop means, situated in the top end portion of the sliding tube, to limit upward movement of the gas spring body, said top stop means including a vertical through passage in which a pushrod is movable to actuate said control finger and a rigid sleeve which is force fitted within the entire conical end portion of the sliding tube, in order to reinforce said tube, and

wherein said sliding tube includes a bottom stop means situated at the bottom of the sliding tube and adapted to limit downward displacement of the gas spring body, said bottom stop means having a vertical through passage in which the piston rod of the gas spring can move.

5,284,313

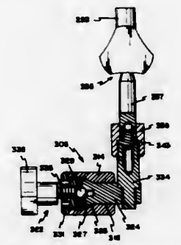
MOUNTING SYSTEM

Leander Hallgren, St. Paul, Minn., assignor to AbleNet, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 818,177, Jan. 8, 1992. This application Jun. 8, 1992, Ser. No. 894,987

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—279 **24 Claims**



1. An adjustable mounting system for holding a device in a particular position, the system comprising:

(a) support means comprising a base member for coupling the system to a rigid support structure;

(b) an expandable arm comprising adjustment means for adjusting the length of the expandable arm anywhere between fully extended and fully shortened positions, the expandable arm having first and second ends;

(c) locking positioning means coupled between the first end of the expandable arm and the base member for positioning and locking the arm so that the device can be held proximate the first end of the arm anywhere within first and second hemispheres, the first hemisphere being defined by the length of the expandable arm when the arm is fully extended and the second hemisphere being defined by the length of the arm expandable arm when the arm is fully shortened; and

(d) securing means coupled between the second end of the expandable arm and the device to be held for securing the device to be held proximate the second end of the expandable arm, said securing means comprising a locking swing joint which has 360 degrees of freedom and which can be locked in any position to which it can be oriented, said locking swing joint comprising:

(i) a swing joint housing attached to the expandable arm, said swing joint housing having a central longitudinal axis and defining a longitudinal cavity oriented along at least a portion of its central longitudinal axis;

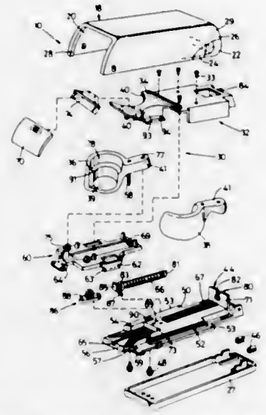
(ii) a cover attached to said swing joint housing;

(iii) a rod-shaped member that fits within the longitudinal cavity defined by the swing joint housing, the longitudinal cavity defined by the swing joint housing and the rod-shaped member each comprising a portion having a matching tapered configuration; and

(iv) swing joint locking means for biasing the tapered portion of the rod-shaped member toward the tapered portion of the longitudinal cavity, said swing joint locking means comprising an adjustment member extending through said cover, said adjustment member being movable so as to bias the tapered portion of the rod-shaped member toward the tapered portion of the longitudinal cavity.

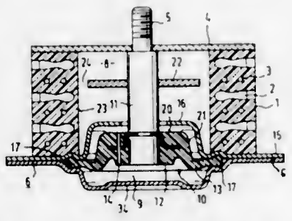
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5,284,314
MODULAR DUAL MUG AND CUP HOLDER
David M. Misaras, Pontiac, and Dennis W. Poosch, Utica, both of Mich., assignors to Davidson Textron Inc., Dover, N.H.
Filed Oct. 13, 1992, Ser. No. 959,763
Int. Cl.[5] A47K *1/00*
U.S. Cl. 248—311.2 **19 Claims**



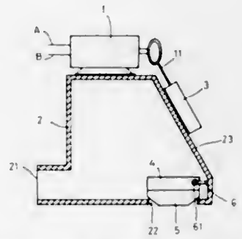
15. A container holder assembly adapted to be utilized in a vehicle for supporting containers, said assembly comprising:
holder means for supporting at least two containers; and
said holder means including a center divider member and a pair of pivotal arcuate cup members for pivoting outwardly with respect to said center divider member to form a pair of container holders between said center divider member and said arcuate cups,
each of said arcuate cup members including a side wall for supporting a side of a container and a base fixedly connected to said side wall for supporting a bottom of the container so that said side wall and base pivot with one another in a common direction during movement between said open and closed positions.

5,284,315
ELASTIC ENGINE MOUNT
Manfred Hofmann, Hünfelden; Rainer Steffens, Hillscheid, and Wolfgang Sauer, Puderbach, all of Fed. Rep. of Germany, assignors to Metzeler Gimetall AG, Munich, Fed. Rep. of Germany
Filed Sep. 24, 1992, Ser. No. 950,201
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1991, 4131771
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—562 **6 Claims**



1. An elastic engine mount, comprising upper and lower bearing plates, a hollow-cylindrical spring block having top and bottom ends being clamped between said bearing plates and defining an inner space, a bolt protruding into said inner space from said upper bearing plate, said spring block being formed of an elastomer and having conduits formed therein with at least one open end and a varying cross section, said conduits being disposed in a plurality of planes and being mutually parallel within each respective plane, and a transverse elastic wall for additional damping being centrally fixed to said bolt for dividing said inner space into two liquid-filled chambers, said elastic wall having through openings formed therein and having an outer periphery clamped between said lower bearing plate and said bottom end of said spring block.

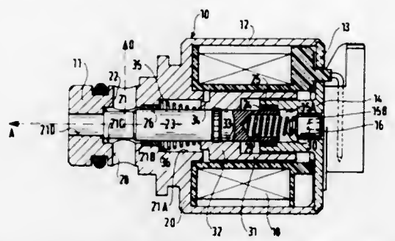
5,284,316
HYDRAULIC MAGNETIC CONTROL VALVE
Cheng-Hao Chen, No. 21 Lane 117, Sec 2 Si Chuan Rd., Pan Chiao, Taipei Hsien, Taiwan
Filed May 10, 1993, Ser. No. 58,122
Int. Cl.[5] F16K *31/08*
U.S. Cl. 251—65 **1 Claim**



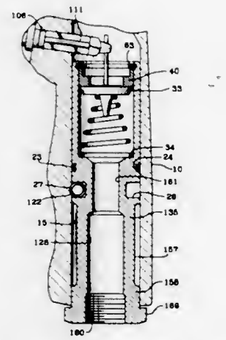
1. A hydraulic magnetic control valve for controlling hydraulic flow, comprising:
a base having an inlet and an outlet, one wall of the base being a slanted side wall and the outlet thereof being formed beneath the slanted side wall;
a plug positioned above the outlet of the base, used to open or close the outlet;
a first magnetic member;
a D.C. driving motor mounted on the base, for moving the first magnetic member upward or downward along the slanted side wall; and
a second magnetic member attached to the plug;
whereby the first magnetic member slides downward along the slanted side wall, the second magnetic member together with the plug moves away from the outlet of the base to permit the hydraulic flow from the inlet to the outlet of the base; while the first magnetic member slides upward along the slanted side wall, the plug covers over the outlet of the base to stop up the hydraulic flow.

5,284,317
PRESSURE CONTROL VALVE
Werner Brehm, Hemmingen, and Reiner Kimmich, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 20, 1991, Ser. No. 764,139
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1990, 4035853
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.08 **3 Claims**

1. A pressure control valve, comprising a substantially closed housing; an armature provided with an integrated valve body; a valve seat with which said valve body cooperates; a spring acting on said valve body so that said valve body cooperates with said valve seat; an electro-magnet arranged to adjust a control pressure, said magnet armature being somewhat bucket-shaped; a projection extending in an interior of said housing and operating for guiding a magnetic flux, said magnet armature surrounding said projection and being mounted on said valve body in a friction-transmitting manner; a second spring acting on said valve body so as to counteract an action of said first mentioned spring; and means for adjusting a tensioning of said first mentioned spring, said valve seat being formed as a flat seat, said valve body being provided with a flat end side corresponding to said flat seat and cooperating with the latter.

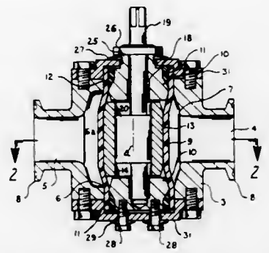


5,284,318
FLUID CONNECTION AND CONTROL DEVICE FOR FLUID MACHINES
Robert E. Geiger, and John M. Clapp, both of Sayre, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Continuation-in-part of Ser. No. 809,109, Dec. 13, 1991, Pat. No. 5,197,711, which is a continuation-in-part of Ser. No. 723,770, Jul. 1, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,716
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—152 **12 Claims**



1. A fluid hose connection device for a portable pressure fluid operated machine, comprising:
an elongated radially symmetrical body having first and second ends and a central axial fluid passage therebetween;
means at the first end for attachment of said body to a flexible hose;
means at the second end for providing a circumferential fluid tight seal between said body and a fluid channel of said fluid operated machine;
non-threaded means intermediate of said first and second ends for retaining said body and permitting rotation thereof in said fluid channel; and
means for supporting said body fully within said fluid channel while permitting only axial rotation of said body.

5,284,319
ECCENTRICALLY ROTATABLE SLEEVE VALVE
Hans D. Baumann, 32 Pine St., Rye, N.H. 03870
Filed Aug. 20, 1993, Ser. No. 109,245
Int. Cl.[5] F16K *27/00*
U.S. Cl. 251—251 **6 Claims**



1. Eccentrically Rotatable Sleeve Valve, comprising a housing having at least one inlet port and outlet port and one central opening having an enlarged mid-section and extending essentially perpendicular to said inlet port, the interface between said inlet port and the perpendicular central opening constituting a valve seat, a flexible sleeve inserted within the central opening, a cylindrical core snugly fitting within said flexible sleeve and extending in width beyond the cross-sectional dimension of said inlet port, a shaft extending through the length of said central opening and having an eccentric element, said core having a bore cooperatively engaging with the shaft and having suitable configured portions to engage said eccentric element of the shaft and capable of causing the lateral displacement of said core toward said inlet port thereby forcing the central portion of said flexible sleeve to make a complimentary motion and thereby causing the sleeve to contact the valve seat to close off and prevent fluid from flowing from the inlet to the outlet port upon sufficient rotational displacement of said shaft, and suitable closure means attached to either terminating end of said central opening, additional inserts having tapered exterior surfaces engaging within the upper and lower portion of said sleeve and straddling said core, deformable wedge elements dispersed between said tapered exterior surfaces of the inserts and the interior surface of said sleeve, and means to compress said deformable wedge elements.

5,284,320
SURFACE VALVE WITH PRESSURE ENERGIZED SEAL AND GEAR ACTUATION
Robert K. Michael, Lewisville, and Timothy M. Young, Coppell, both of Tex., assignors to Halliburton Company, Duncan, Okla.
Filed Aug. 12, 1992, Ser. No. 929,635
Int. Cl.[5] F16K *3/00*
U.S. Cl. 251—304 **24 Claims**

1. A valve comprising:
a body comprising:
an inlet;
an outlet;
a first surface adjacent to said inlet; and
a second surface adjacent to said outlet and spaced from said first surface;
a plate disposed between said first and second surfaces and defining a port therethrough, said plate being movable between an open position wherein said port is substantially aligned with said inlet and outlet for providing communication therebetween and a closed position wherein said port is unaligned with said inlet and said outlet;
first sealing means for sealingly engaging a first side of said plate, said first sealing means being disposed around an

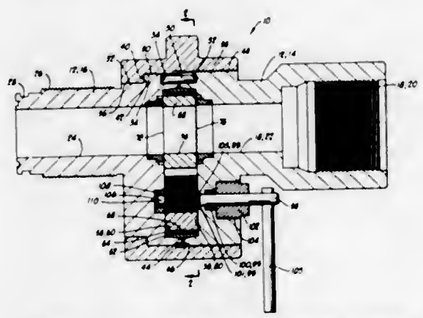
VOL 1159 ISS 2 FE 8 1994 UMI

end of said inlet such that differential pressure as a result of fluid flowing through the valve forces said first sealing means against said first surface of said plate; and

second sealing means for sealingly engaging a second side of said plate, said second sealing means being disposed around an end of said outlet such that said differential pressure forces said second side of said plate against said second sealing means;

wherein:

said first surface defines a recess therein around said end of said inlet, said first recess having a shoulder therein



sealingly engaged with said first sealing means and disposed at an acute angle with respect to a central axis of said first and second sealing means;

said second surface defines a second recess therein around said end of said outlet, said second recess having a shoulder therein sealingly engaged with said second sealing means and disposed at an acute angle with respect to said central axis;

said first sealing means is disposed in said first recess; and

said second sealing means is disposed in said second recess.

5,284,321

HYDRAULIC JACK WITH SINGLE CONTROL FOR ACTUATING HYDRAULIC VALVE MEANS

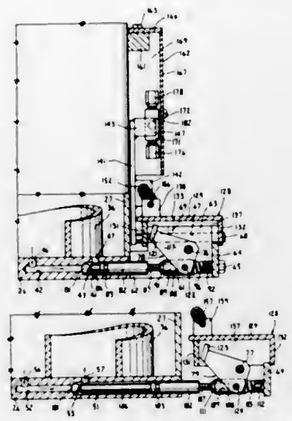
Barry G. Meyer, Fabius Township, St. Joseph County, Mich., assignor to Meyer Hydraulics Corporation, Centreville, Mich.

Filed Jan. 10, 1992, Ser. No. 819,185

Int. Cl.[5] B60P *1/06*

U.S. Cl. 254—2 B **29 Claims**

1. A hydraulic jack, comprising: a hydraulic cylinder having a piston rod reciprocable between extended and retracted positions; a load supporting member movable between two positions in response to movement of said piston rod between said extended and retracted positions; means defining a reservoir partially filled with a hydraulic fluid; means for pressurizing air disposed in said reservoir above said hydraulic fluid; a manually operable control member supported for movement between first and second positions through a third position; hydraulic valve means communicating with said reservoir and with said hydraulic cylinder, said hydraulic valve means being responsive to movement of said control member from said third position toward said first position for preventing fluid flow from said hydraulic cylinder to said reservoir and for permitting fluid flow from said reservoir to said hydraulic cylinder at a rate which increases progressively as said control member is moved progressively closer to said first position, and being responsive to movement of said control member from said third position toward said second position for permitting fluid flow out of said hydraulic cylinder at a rate which



increases progressively as said control member is moved progressively closer to said second position.

5,284,322

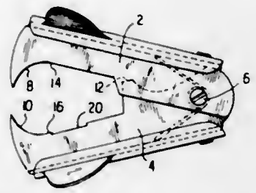
STAPLE PULLER WITH MEANS FOR GRIPPING A STAPLE

Conrad J. Clark, 7058 Idylwood Rd., Falls Church, Va. 22043

Filed Dec. 8, 1992, Ser. No. 986,685

Int. Cl.[5] B25C *11/00*

U.S. Cl. 254—28 **10 Claims**



1. In a staple puller having first and second parts mounted for movement with respect to each other, each of said parts having a cam surface at a respective end thereof for coacting with the cam surface of the other of said parts for engaging and pulling said staple from an object as said first and second parts move toward each other, the improvement comprising

gripping means contiguous with upper portions of said cam surfaces for receiving a staple moved into contact therewith by said cam surfaces and for gripping said staple tightly and

releasing means contiguous with said gripping means for releasing said staple from said gripping means upon movement of a subsequent staple into engagement with said gripping means.

5,284,323

APPARATUS FOR MARINE SEISMIC CABLE RETRIEVAL AND DEPLOYMENT

James P. Pawkett, P.O. Box 313, Sheridan, Tex. 77475

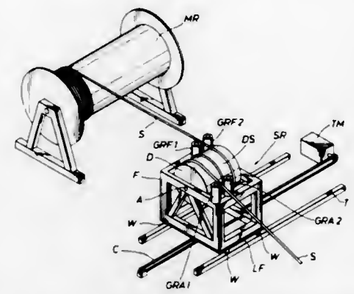
Filed Feb. 6, 1992, Ser. No. 831,893

Int. Cl.[5] B65H *54/00*

U.S. Cl. 254—134.3 SC **2 Claims**

1. Apparatus for use in deploying and retrieving marine seismic cable, comprising

a secondary reel located aft of a cable main reel, movably attached to a track that traverses the width of the main reel, the secondary reel having a drum of a diameter between approximately fifty percent and one hundred percent of the diameter of the main reel drum and having



aft and forward cable guides, each located at a fixed position with respect to the surface of the drum to fix the position at which the cable is taken upon and fed from the drum and wherein the secondary reel is flexibly attached to a wheel mechanism that is movably attached to the track.

5,284,324

DERRICK

Richard E. Bunger, 13625 S. 33rd St., Phoenix, Ariz. 85044

Filed Oct. 5, 1992, Ser. No. 956,162

Int. Cl.[5] B66D *1/00*; **A47J** *47/16*

U.S. Cl. 254—266 **6 Claims**



1. A derrick adapted to lift a corner of a cargo container comprising:

a tripod comprising first, second and third elongated legs each having a pivotally mounted shoe at their ground engaging ends and tapering to an apex at their other ends,

collar means mounted at said other ends to pivotally hold said legs in a tripod arrangement,

a windlass mounted within the confines of said legs at the apex end thereof, and including a chain with a hook means at one end thereof,

said windlass including a rachet actuated by a handle for winding said chain therearound for lifting the cargo container when said hook means engages a wall thereof, and

roller means mounted at said other ends of said legs for extending outwardly of the confine of said tripod arrangement for rollingly engaging a surface of the cargo container being lifted.

5,284,325

HOIST WITH LOAD SHIFTED GEAR, DETECTOR, AND MOTOR SPEED CHANGER

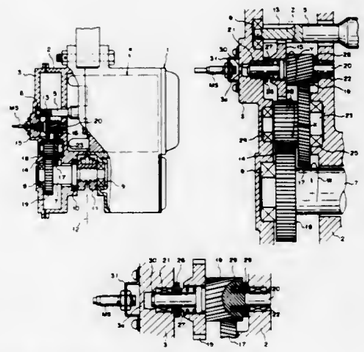
Masatoshi Sasaki, Kofu, and Masahiko Mochizuki, Minamikoma, both of Japan, assignors to Kabushiki Kaisha Kito, Yamanashi, Japan

Filed Mar. 18, 1992, Ser. No. 853,475

Claims priority, application Japan, Apr. 22, 1991, 3-116550; Dec. 13, 1991, 3-351332

Int. Cl.[5] B66D *1/58, 1/24, 3/26*; **F16H** *1/08*

U.S. Cl. 254—274 **23 Claims**



1. An electric hoist comprising:

an electric motor having an output shaft;

a driven shaft for lifting and lowering a load;

a load sheave fixed to said driven shaft for lifting a load chain;

a reduction gear arranged between said output shaft and said driven shaft, said reduction gear comprising at least two helical gears in mesh with each other, one of said helical gears being movable in an axial direction thereof when a load exceeds a predetermined value;

detecting means for detecting the movement of said movable helical gear; and control means for controlling the speed of rotation of said electric motor in response to an output signal from said detecting means for indicating movement of said helical gear, to thereby change the speed of rotation of said electric motor from a higher speed to a lower speed when the weight of the load exceeds said predetermined value, resulting in movement of said movable helical gear.

5,284,326

RESILIENT ROAD-GUARD POST, AND METHOD OF MANUFACTURE THEREOF

Domenico Chiovitti, 627, Paul Émile Victor, Boucherville, Quebec, Canada J4B 6W4 , and Pierre Blanchard, 57, Lindor Street, Granby, Québec, Canada J2G 8C8

Filed Sep. 14, 1992, Ser. No. 944,256

Int. Cl.[5] E01F *15/00*

U.S. Cl. 256—13.1 **7 Claims**

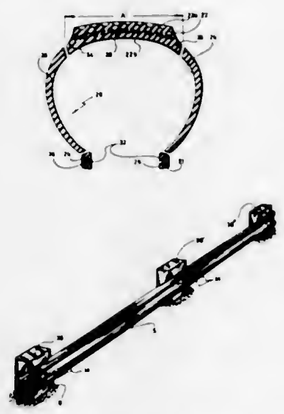
1. A post structure for use as a ground driven anchor member for a road guard, said post structure consisting exclusively of pneumatic tire components, comprising:

(a) a selected number of developed tire treads, flatly compressed against one another in a generally quadrangular, flat pack of treads;

(b) a plurality of tire wire rings, surroundingly engaging said treads pack transversely thereof;

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said-number of treads being selected in such a way that said number of treads is high enough to provide taut, friction-fit engagement of said wire rings around said pack of treads, said taut engagement of wire rings around said pack of treads positively preventing said treads from sliding displacement relative to one another within said wire rings;



wherein each said tread and each said wire ring includes a full length, rigid core and a sheath into which the rigid core is embedded;

said post structure imparting both substantial sturdiness yet resilient, impact-absorbing property to the road guard, while boasting spring-back capability under a lateral blow, whereby a vehicle striking this road-guard would be diverted with minimum damage back on the roadway.

5,284,327

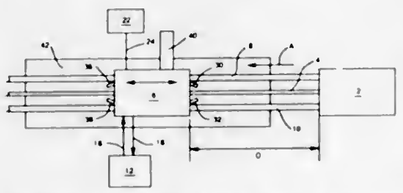
EXTRUSION QUENCHING APPARATUS AND RELATED METHOD

William R. Arthur, Pittsburgh; Douglas T. Bozich, Verona; Richard B. Jacobus, New Kensington; Thomas J. Rodjom, and Joseph R. Sikora, both of Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 29, 1992, Ser. No. 875,863

Int. Cl.[5] C21D *1/62*

U.S. Cl. 266—113 **25 Claims**



1. Apparatus for quenching a metal extrusion comprising

a carriage having a path for passage of said extrusion therethrough,

track means supporting said carriage for movement thereon,

drive means for moving said carriage on said track means to adjust the spacing between said carriage and the output end of an extrusion press,

a plurality of elongated tubular cooling liquid discharge means disposed in spaced relationship with respect to said path, and

cooling liquid supply means for supplying cooling liquid to said discharge means.

5,284,328

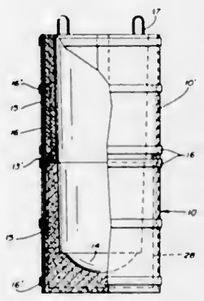
CONSUMABLE CHARGE BOX AND ASSEMBLY FOR RECHARGING MATERIAL INTO A FURNACE OR VESSEL FOR PRODUCING MOLTEN METAL

Michael D. LaBate, II, East Palestine, Ohio, assignor to Insul Company, Inc., East Palestine, Ohio

Filed Jan. 21, 1993, Ser. No. 6,980

Int. Cl.[5] F27D *3/14*

U.S. Cl. 266—196 **12 Claims**



1. A charge box for receiving, holding and recharging material from a molten metal furnace into said molten metal furnace comprising a container having a bottom and upstanding sidewall therein, said sidewalls are of a known thickness and said bottom is of a thickness greater than that of said sidewalls, said charge box is a solid shape of consumable material of a known density having a predetermined lifetime determined by said density and combustibility of said consumable material, when said charge box is in contact with molten metal.

5,284,329

SYSTEM FOR THE PRODUCTION OF POWDERS FROM METALS

Michael Hohman, Hanau, and Norbert Ludwig, Niedernberg, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellshaft, Hanau, Fed. Rep. of Germany

Filed May 23, 1991, Ser. No. 704,323

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102101

Int. Cl.[5] H05B *6/36*

U.S. Cl. 266—202 **12 Claims**

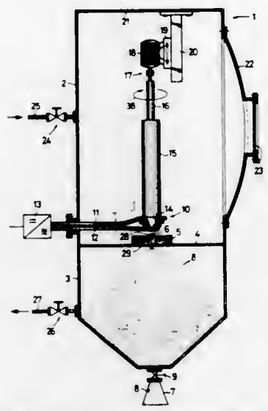
1. System for the production of powders from materials which can be melted by an induction coil comprising: a rod; an induction coil for melting off material at a lower end of the rod, and which at least has two turns of a winding with different diameters of which a turn of the winding with a smaller diameter is further removed from an upper area of the rod than a turn of the winding with a greater diameter, a dispersion device dispersing the melted-off material, and a container collecting the disintegrated material, wherein:

a) a straight line (**34**) extending through the cross section center points of two adjacent coil turns have an angle of slope α between 20° and 90° and specifically relative to a horizontal line (**35**) extending perpendicularly to an axis of the rod (**15**);

b) a chamber (**2**) in which is disposed the rod (**15**) and a chamber (**3**) for receiving the disintegrated material (**8**) are separated from each other through a partitioning wall (**4**) having an annular nozzle (**5**) having an annular gap around an opening (**6**); and

c) the system also comprising means for providing in the

chamber (**2**) in which is disposed the rod (**15**) a higher gas pressure than in the chamber (**3**) in communication with



which is disposed a container (**7**) for the disintegrated material (**8**).

5,284,330

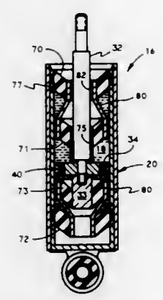
MAGNETORHEOLOGICAL FLUID DEVICES

J. David Carlson, Cary; Michael J. Chrzan, Raleigh, both of N.C., and Frank O. James, Girard, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 18, 1992, Ser. No. 900,567

Int. Cl.[5] F16F *6/00*

U.S. Cl. 267—140.14 **7 Claims**



1. Apparatus for damping motion between first and second relatively movable members, said apparatus comprising:

a) a housing containing a volume of magnetorheological fluid;

b) first means for attaching said housing to one of said movable members;

c) a piston rod mounted for relative movement with respect to said housing;

d) second means for attaching said piston rod to another one of said first and second movable members;

e) a first block of elastomer interconnecting said housing and said piston rod, said block being fixedly attached to each of said housing and a first end of said piston rod, said block of elastomer forming at least a portion of a first fluid-containing chamber for said magnetorheological fluid;

f) a second block of elastomer interconnecting said housing and said piston rod, said block being fixedly attached to each of said housing and a second end of said piston rod and, together with said first block, functioning as the sole means for permitting said piston rod to move relative to said housing, said second block of elastomer forming at least a portion of a second fluid-containing chamber for said magnetorheological fluid;

g) a piston attached to an intermediate portion of said piston rod for movement therewith which divides said first fluid-containing chamber from a second fluid-containing chamber for said magnetorheological fluid, substantially all of the movement of said piston being accommodated by flow of fluid past said piston;

h) valve means for permitting magnetorheological fluid to flow from and to said first fluid-containing chamber to and from said second fluid-containing chamber, said valve means including

i) aperture means for permitting said flow,

ii) a magnetic coil associated with said aperture means for controlling said flow therethrough,

whereby a desired level of damping of said relative movement is provided.

5,284,331

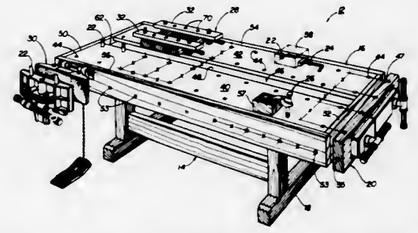
WOODWORKING BENCH SYSTEM

Leonard G. Lee; John S. Lynn, both of Ottawa; Francis A. McLean, Oxford Station; Edwin C. Tucker, Ottawa; Lloyd Sevack, Nepean; Gary W. Lacoste, Almonte; Timothy C. Frank, Ottawa; Michel Perrier, Orleans, and Michael T. O'Malley, Carp, all of Canada, assignors to Lee Valley Tools Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 816,924, Jan. 3, 1992, Pat. No. D. 339,728, and a continuation-in-part of Ser. No. 927,327, Aug. 10, 1992, and a continuation-in-part of Ser. No. 927,326, Aug. 10, 1992. This application Oct. 15, 1992, Ser. No. 961,489

Int. Cl.[5] B25B *1/00*

U.S. Cl. 269—16 **31 Claims**



1. An apparatus for holding woodworking workpieces, comprising:

(1) a woodworking bench comprising two bench slabs forming a bench top and separated by a tool trough, each of which slabs has round dog holes penetrating the top and arranged in at least two parallel rows spanning the length of the slab and forming files of holes across the bench top, each of which holes is equally distant from each immediately adjacent hole and wherein the bench top has front and back edges and two ends and a row of round dog holes along at least one of the edges of the top, and

(2) a twin screw vise mounted on one of the ends of the bench and having a moveable jaw having:

a. a top and tow ends,

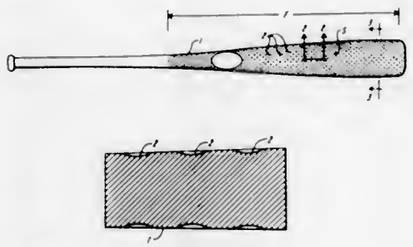
b. a width substantially equal to the width of the bench,

c. one dog hole in the top of the jaw corresponding to each row of holes in the bench top and

d. a dog hole in one of the ends of the jaw corresponding to the row of holes in the bench edge.

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5,284,332
REDUCED AERODYNAMIC DRAG BASEBALL BAT
Jeffrey C. DiTullio, Stoneham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Sep. 23, 1992, Ser. No. 949,613
Int. Cl.[5] A63B 59/06
U.S. Cl. 273—72 R **17 Claims**



1. A baseball bat comprising:
a. a handle portion; and
b. an end portion, the end portion having a generally cylindrical surface, and a striking portion, the surface of the striking portion impressed with a plurality of shallow depressions, selected depressions having a radius r sized so that

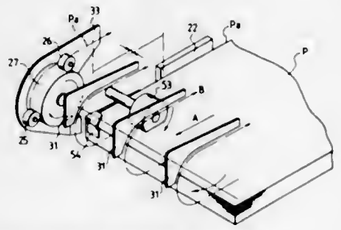
$$2.50 \leq \frac{r}{\delta_{45°}} \leq 25.0$$

and a depth h sized so that

$$0.5 < \frac{h}{\delta_{45°}} < 5.0$$

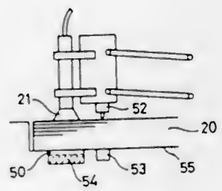
where $\delta_{45°}$ is the laminar boundary layer thickness that would arise around the bat if smooth at a point +/−45° from the upstream stagnation point of air flowing at a speed of between 80 and 120 feet per second around the bat at the location of the respective selected depression.

5,284,333
SHEET FEEDING APPARATUS
Noriyoshi Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 780,990, Oct. 24, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,090
Claims priority, application Japan, Oct. 26, 1990, 2-290359; Oct. 31, 1990, 2-294821
Int. Cl.[5] B65H 9/16
U.S. Cl. 271—22 **34 Claims**



1. A sheet feeding apparatus, comprising:
a feeding means for feeding a sheet;
a regulating member for regulating a position of a lateral edge of the sheet fed by said feeding means;
a first rotary member disposed at a downstream side of said feeding means in a sheet feeding direction and adapted to feed the sheet fed by said feeding means while urging said lateral edge of the sheet against said regulating member;
a second rotary member disposed at a downstream side of said first rotary member in the sheet feeding direction and adapted to feed the sheet fed by said first rotary member while urging said lateral edge of the sheet against said regulating member; and
a guide means for guiding the sheet in such a manner that the sheet is curved between said feeding means and said first rotary member;
wherein an urging force of said first rotary member by which the sheet is urged against said regulating member is set to be smaller than an urging force of said second rotary member by which the sheet is urged against said regulating member.

5,284,334
SHEET FEEDING DEVICE
Junich Yamamoto, Hadano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Mar. 30, 1993, Ser. No. 39,646
Claims priority, applicatinn Japan, Apr. 1, 1992, 4-79635; Jan. 7, 1993, 5-1300
Int. Cl.[5] B65H 3/08
U.S. Cl. 271—107 **19 Claims**

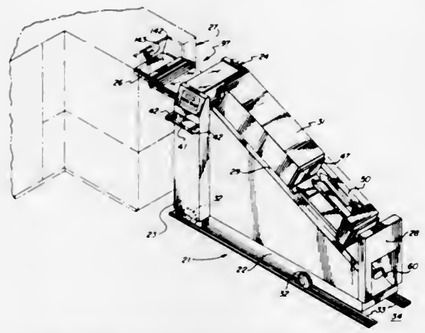


1. A sheet feeding device comprising:
sheet accommodating means for accommodating sheets;
suction means for suctioning sheets accommodated by said sheet accommodating means so as to pick up and transport the sheets through vertical movement thereof;
opening portion formed on said sheet accommodating means; and
cleaning means arranged under said opening portion for cleaning said suction means after the sheets accommodated by said sheet accommodating means are run out.

5,284,335
HIGH CAPACITY SHEET FEEDERS FOR HIGH VOLUME PRINTERS
Roman M. Golicz, Clinton, Conn., assignor to Roll Systems, Inc., Burlington, Mass.
Continuation of Ser. No. 775,200, Oct. 9, 1991, Pat. No. 5,167,408. This application Oct. 6, 1992, Ser. No. 957,244
Int. Cl.[5] B65H 1/02
U.S. Cl. 271—149 **21 Claims**

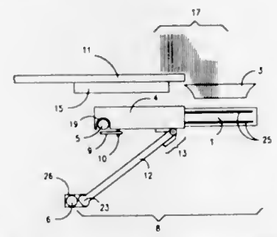
1. A high capacity sheet feeder, for use in conjunction with a device having an elevator platform for supporting a stack of sheets, comprising:
a feeder frame movably mounted for translation between a feed position adjacent said elevator platform and a retracted position remote from said elevator platform,
a singulator support column mounted on said frame,
a singulator shingling mechanism mounted on said support column and having a sheet stream feeder extending therefrom overlying the elevator platform,

a feed ramp mounted on said frame having a delivery end adjacent said singulator shingling mechanism,
a pusher plate slidingly mounted on said feed ramp for engaging sheets stacked edgewise on the feed ramp,
a delivery deck located at the delivery end of the feed ramp, the delivery deck including a second ramp having a downwardly slanting angle taken along a downstream direction and the second ramp constructed and arranged so that



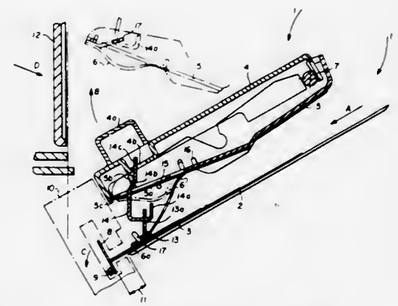
downstream most sheets of the stack are guided down the second ramp into contact with the singulator shingling mechanism to drive the downstream most sheets from the stack,
means for driving the pusher plate along the feed ramp toward the singulator shingling mechanism,
means for reversing the means for driving, and
ramp feed control means to govern the means for driving and means for reversing.

5,284,336
SLIDABLE, LOWERABLE, AND REMOVABLE BIN TRAY
Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Phillipsburg Company, Evanston, Ill.
Filed Aug. 28, 1992, Ser. No. 935,777
Int. Cl.[5] B65H 31/00
U.S. Cl. 271—213 **14 Claims**



1. A sliding tray assembly for receiving documents fed by a document processing means, comprising:
a receiving bin for receiving documents from said document processing means;
a housing comprising a rigid frame and a slide means attached thereto;
a bin tray for supporting said receiving bin, said bin tray being slidably attached to said housing by said slide means, said slide means being operable to allow said bin tray to be recessed into said housing; and,
an upper support member extending below said document processing means for supporting said housing at a first location on said housing.

5,284,337
SHEET DEPOSITING DEVICE
Helmut Ettischer, Ostfildern, and Werner Hess, Stuttgart, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 10, 1992, Ser. No. 988,497
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201076
Int. Cl.[5] B65H 31/00
U.S. Cl. 271—220 **3 Claims**



1. A sheet collecting tray assembly comprising:
a sheet collecting tray having an inclined surface, having a lower end and an abutment at the lower end for receiving sheets one at a time and for stacking the sheets on the inclined surface with edges of the sheets engaging the abutment,
a cover pivotally mounted adjacent an upper end of the inclined surface extending toward the abutment, and pivotable for movement between positions covering and uncovering the inclined surface,
a sheet hold-down member pivotally mounted to the cover between the pivotal mounting of the cover and the abutment, said sheet hold-down member extending toward the abutment to rest against a top sheet in the stack when the cover is in its covering position, and
means for pivoting the hold-down member toward the cover in response to movement of the cover toward its uncovering position to make a stack on the inclined surface accessible when the cover is moved to its uncovering position.

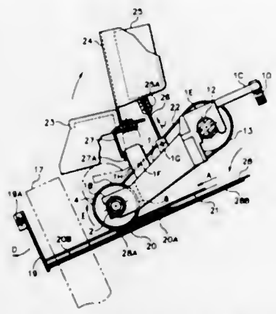
5,284,338
DEVICE FOR ALIGNING INDIVIDUALLY SUPPLIED SHEETS
Franz Allmendinger, Eichwald, and Markus Weber, Esslingen, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 26, 1993, Ser. No. 23,408
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207070
Int. Cl.[5] B65H 31/26
U.S. Cl. 271—220 **5 Claims**

1. A device for aligning sheets which are supplied individually to a collecting tray that has a depositing surface including a lateral limiting wall and an abutment associated with a front end thereof relative to the direction of sheet entrance, the aligning device comprising:
(a) a pivotable arm having a free end for resting on an incoming sheet to align the sheet with respect to both the lateral limiting wall and the abutment;
(b) first and second drivable wheels mounted about a common shaft at said free end of said pivotable arm;
(c) a lifting mechanism connected to said pivotable arm for lifting said pivotable arm and said first and second wheels

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off a stack of aligned sheets on the depositing surface of the collecting tray; and

(d) a control device connected to said lifting mechanism for



maintaining said pivotable arm and said first and second wheels in a raised position and for moving the same to a lowered position when a sheet is being supplied onto the depositing surface so as to contact and align such sheet.

5,284,339

SHEET DEPOSITION SYSTEM

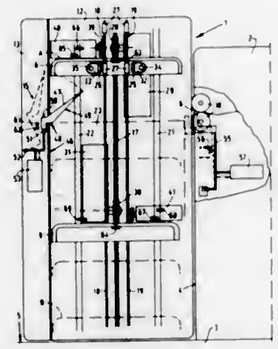
Franciscus C. P. van Opstal, Velden, and Peter J. A. Sampers, Linne, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Jul. 24, 1992, Ser. No. 917,965

Claims priority, application Netherlands, Aug. 1, 1991, 9101324

Int. Cl.[5] B65H *39/10*

U.S. Cl. 271—288 **11 Claims**



1. A sheet deposition system for depositing sheets on at least two supports situated one above the other, comprising:

providing a sheet deposition device including a means for selectively placing the supports in a sheet deposition position; and

sheet deposition means for depositing a sheet on a support disposed in said sheet deposition position or on a stack of sheets disposed on said support, wherein a first support of said at least two supports is movable into a position in which a distance to a next higher support is less than a predetermined maximum thickness of a stack of sheets to be formed on said first support.

5,284,340

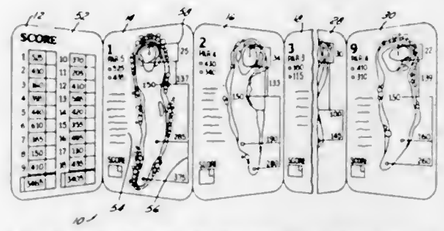
GOLF SCORECARD

John K. Laakso, 3456 Fairview Ct., Kennesaw, Ga. 30144

Filed Sep. 28, 1992, Ser. No. 952,669

Int. Cl.[5] A63B *57/00*

U.S. Cl. 273—32 H **10 Claims**



1. A golf scorecard and yardage guide for assisting players in playing a golf course and keeping score, said guide comprising

at least ten sheets of card material, each of said sheets having two sides,

the first of said sheets being connected to another of said sheets along one edge thereof,

the last of said sheets being connected to another of said sheets along one edge thereof,

the remaining sheets being connected to two adjacent sheets along two opposite edges,

said sheets of material being foldable along said edges into a booklet substantially the size as said first of said sheets,

one side of said first of said sheets being a cover means containing information about the golf course,

one side of another of said sheets being a scoresheet with a scoring grid thereon, and

at least eighteen of the remaining sides of said sheets containing respective written and graphic depictions about individual holes of the golf course.

5,284,341

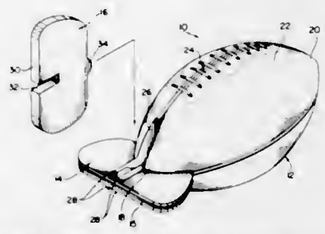
FOOTBALL

James E. Routzong, Essex, Mass., and Keith D. Patterson, Providence, R.I., assignors to Little Kids, Inc., East Providence

Filed Jan. 26, 1993, Ser. No. 9,542

Int. Cl.[5] A63B *43/02*

U.S. Cl. 273—65 EF **6 Claims**



1. A football comprising:

a body portion having first and second ends and a longitudinal axis of rotation extending between said first and second ends, said body portion increasing in diameter from said first end to a mid-point on said body portion and decreasing in diameter from said mid-point to said second end;

a first fin element attached to the first end of said body portion perpendicular to said axis of rotation, said first fin element having a width substantially equal to the diameter

of said body portion at said midpoint, said first fin element extending rearwardly from the said body portion so as to extend substantially beyond said first end;

a slot in said body portion and said first fin element, said slot being perpendicular to the axis of rotation of said body portion and further being perpendicular to said first fin element;

a second fin element having a width substantially equal to the diameter of said body portion at said midpoint and further having a notch therein, said second fin element being received in said slot, said second fin element extending rearwardly from said body portion so as so extend substantially beyond the first end thereof,

said first and second fin elements promoting a tight spiralling effect of said body portion around said longitudinal axis when said football is thrown through the air,

said first and second fins being receivable on a supporting surface so as to support said body portion in a an upright position for kicking, said rearwardly extending fins substantially elevating said body portion above said supporting surface

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5,284,342

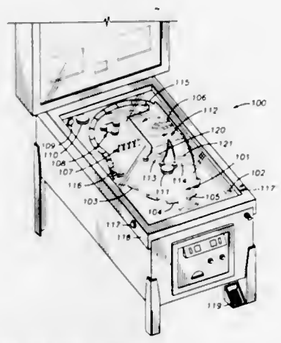
PINBALL MACHINE HAVING A SYSTEM CONTROLLED ROTATING FLIPPER

Raymond C. Tanzer, Naperville, and Marian Czyz, Niles, both of Ill., assignors to Premier Technology, Bensenville, Ill.

Filed Jan. 4, 1993, Ser. No. 372

Int. Cl.[5] A63B *71/00*

U.S. Cl. 273—121 A **23 Claims**



4. A pinball machine comprising:

a playfield supporting a rolling ball;

a flipper mounted on said playfield for rotation about an axis generally perpendicular to said playfield and having a surface for striking and deflecting said ball; and

a motor coupled to said flipper for rotating said flipper by more than 360 degrees;

wherein rotation of said flipper by said motor intermittently defines a predetermined path for said ball to reach a predefined region of said playfield and deflects said ball from said predefined region of said playfield unless passage of said ball over said predetermined path is synchronized to said rotation of said flipper by said motor;

wherein said predefined path originates from another flipper that is activated by an operator of said pinball machine; and

wherein said pinball machine further includes a speed control coupled to said motor for manipulation by a player of said pinball machine for speed adjustment of said motor.

5,284,343

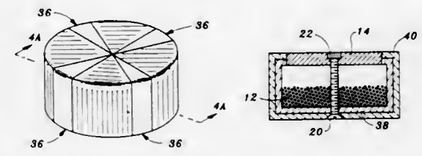
PRACTICE HOCKEY PUCK

Boniface G. Bigornia, and Susan Bigornia, both of 839 Tampico St., Walnut Creek, Calif. 94598

Filed Apr. 17, 1992, Ser. No. 870,567

Int. Cl.[5] A63B *21/00*

U.S. Cl. 273—128 R **4 Claims**



1. A practice hockey puck comprising:

a) a main body member having generally flat top and bottom surfaces joined by a cylindrical side surface generally in the form of a hockey puck, said main body member having a cavity for receiving a plurality of weighted means,

b) a plurality of weighted means emplaced within said cavity,

c) a flat cover member having sufficient size to cover said cavity,

d) a means for joining said main body member to said cover member, so as to retain said plurality of weighted means within said cavity, and

e) a plurality of line markings on said flat top and bottom surfaces and said cylindrical side surface, having one color, wherein said plurality of line markings pass through the center of said flat top and bottom surfaces, whereby said plurality of line markings provide a visual guideline to analyze the rotational velocity of said practice hockey puck.

5,284,344

GAMING MACHINE REEL SUPPORT STRUCTURE

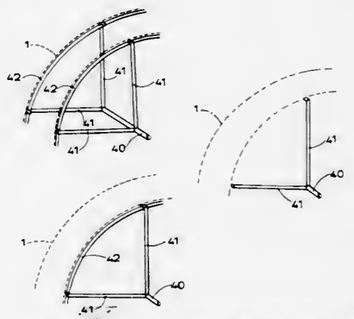
Terence Howard, Redhill, England, assignor to Bell-Fruit Manufacturing Company Limited, Nottingham, England

Filed Feb. 11, 1992, Ser. No. 834,115

Claims priority, application United Kingdom, Aug. 12, 1989, 8918448

Int. Cl.[5] A63F *5/04*

U.S. Cl. 273—143 R **6 Claims**



1. A reel for a gaming or amusement machine comprising a support structure and a reel strip, said reel strip having an axis of rotation, said support structure extending from said axis of rotation and said support structure supporting said reel strip, wherein said support structure is provided with one or more support formations which engage said reel strip, said support formations being provided at the periphery of said support structure, and wherein said support formations are provided in

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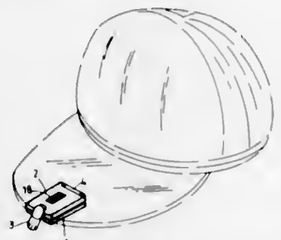
a single radial plane only, said radial plane being normal to said axis of rotation, and said support formations contacting only a small proportion of the width of said reel strip, said reel strip being self-supporting over the remainder of said width of said reel strip.

5,284,345

LASER INDICATOR TO BE USED IN GOLF TRAINING

E. F. Jehn, 10F, No. 185, Yung Chi Rd., Taipei, Taiwan

Filed Oct. 26, 1992, Ser. No. 966,641
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **1 Claim**



1. A laser indicator comprising:

a bottom shell having smoothly curved battery supports aligned in rows, retaining notches symmetrically made on two opposite sides thereof, an upright center locating pin, two opposite dowels raised from two opposite front corners thereof, a U-shaped front opening on a front end thereof with the two semi-circular pivot holes transversely and bilaterally extended outwards, two conductive spring leaves mounted on two raised blocks disposed between the U-shaped opening and the battery supports, and a rear chamber transversely disposed on a rear end thereof;

a top shell having smoothly curved battery supports fitted over the smoothly curved battery supports on said bottom shell to hold a set of dry batteries, a plurality of hooks symmetrically disposed on two opposite sides thereof and respectively hooked in the retaining notches on said bottom shell, two opposite dowel holes on two front corners thereof, which receive the dowels on said bottom shell, a U-shaped front opening on a front end thereof with two semi-circular pivot holes transversely and bilaterally extended outwards, the two semi-circular pivot holes on said bottom shell being incorporated with the two semi-circular pivot holes on said top shell into two pivot holes, a button hole and a lamp hole, and a hook on a rear chamber thereof;

a laser module having a laser firing lens mount pivotably retained in the U-shaped openings of said front and bottom shells by two symmetrical swivel connectors, said two symmetrical swivel connectors being connected together by inserting dowels on one swivel connector into dowel holes on the other swivel connector and pivotably fastened to the pivot holes on the U-shaped front openings of said bottom and top shells;

a battery cap inserted in the rear chambers of said top and bottom shell and hooked in place by the hook on the rear chamber of said top shell to connect said set of dry batteries;

a circuit board fastened between said bottom and top shells on the inside and electrically connected with said laser module and a set of dry batteries, having a pin hole, into which the locating pin on said bottom shell fits, an ON/-OFF power switch controlled by a press button inserted through said button hole on said top shell, and a power indicator lamp inserted through said lamp hole on said top shell; and a visor fastening means

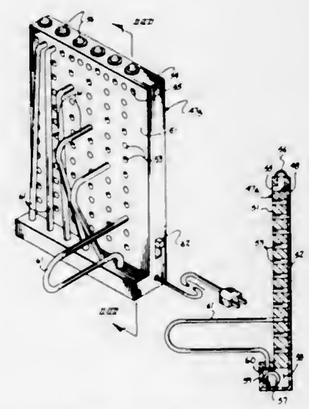
wherein said top shell is adapted to be fastened to the visor of a golf player's cap by said fastening means to hold said laser module in position for permitting it to be controlled by said press button to project a laser beam on the golf ball to be hit by the golf player, in helping the golf player take the correct hitting position.

5,284,346

GAME APPARATUS

Regina M. Reinhardt, and Henry E. Reinhardt, both of 861 Maple Crest Dr., Baltimore, Md. 21220

Filed Mar. 24, 1993, Ser. No. 36,359
Int. Cl.[5] A63F *3/00, 9/24*
U.S. Cl. 273—237 **2 Claims**



1. A game apparatus, comprising,

a game board, the game board having a serpentine path, including a plurality of spaces, and

the spaces including at least a first category of spaces, a second category of spaces, a third category of spaces, a fourth category of spaces, a fifth category of spaces, a sixth category of spaces, a seventh category of spaces, an eighth category of spaces, a ninth category of spaces, and a tenth category of spaces, wherein each of the category of spaces directs selective award and penalty, some of said category of spaces directs selective gaining of a point or losing of a point, with a plurality of tokens provided, with players of a plurality of players each having one of said tokens and employing chance means for directing the tokens along the serpentine path, and

a deck of cards arranged for positioning upon the game board, and the deck of cards having a plurality of card categories relative to the deck of cards, with the card category arranging award and penalty relative to landing upon the first category of spaces, and

a scoring member arranged for providing scoring for said players

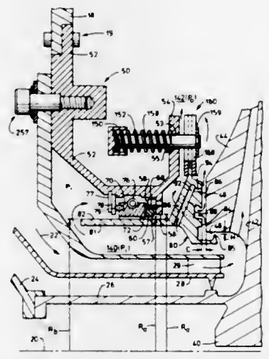
the scoring member includes a rear wall spaced from a top wall, and a first end wall spaced from a second end wall, and a plurality of bores directed into the scoring member from the rear wall towards the top wall, the bores being arranged in rows and columns, each player having a corresponding column of bores, and the top wall having a transparent plate coplanar with the top wall and substantially coextensive therewith, and indicator means arranged for reception within the bores for providing for indication of relative scoring among the players, said indicator means includes a plurality of elongate fiber optic flexible cables, each cable corresponding to a column of bores, and a housing cavity mounted within the scoring member between the bores and the second end wall, and the housing having an elongate bulb therewithin, and each of the fiber optic cables having a cable first end directed into the housing in adjacency to the bulb, and each of the fiber optic cables having a cable second end arranged for reception with one of the bores.

5,284,347

GAS BEARING SEALING MEANS

Adam N. Pope, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 675,977, Mar. 25, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,220
Int. Cl.[5] F16J *15/16*
U.S. Cl. 277—1 **30 Claims**



1. A gas bearing face seal assembly for use in a gas turbine engine to restrict fluid flow from a relatively higher pressure region to a relatively lower pressure region at a juncture of an engine stationary member and an engine rotating member mounted for rotation about an axis, the assembly comprising:

(a) a face seal ring member including a gas bearing face surface, a primary flow restrictor means, passage means disposed in the face seal ring member for providing fluid communication between the higher pressure region and the gas bearing face surface, gas bearing vent means disposed in the face seal ring member, the vent means in flow communication with the relatively lower pressure region, and a first secondary sealing surface;

(b) seal housing means including a second secondary sealing surface and a housing structure fixedly attached to the engine stationary member;

(c) face seal ring support means including at least three pin and radially extending groove combinations, the pins positioned on one of the face seal ring member and the housing structure, and the grooves disposed on the other of the face seal ring member and the housing structure, the pin and groove combinations concentrically supporting the face seal ring member on the seal housing means for movement from a retracted position to establish a primary restrictor clearance between the primary flow restrictor means and a primary sealing surface on the engine rotating member, the face seal ring support means maintaining a circumferentially uniform radial clearance between the face seal ring and the seal housing means; and

(d) secondary seal means biased into sealing engagement with the first and second secondary seal surfaces; and

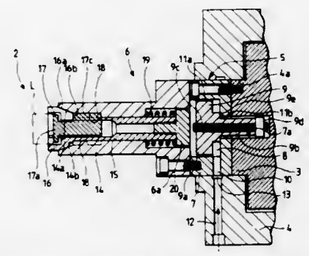
(e) wherein said primary flow restrictor means comprises a primary restrictor dam having a radially and circumferentially extending seal dam surface which is radially spaced apart from said gas bearing face surface, said primary restrictor dam being more effective in restricting fluid flow from the relatively higher pressure region to the relatively lower pressure region than a circumferentially extending labyrinth tooth.

5,284,348

APPARATUS FOR CUTTING OCULAR LENS MATERIALS

Kyoichi Tanaka; Toyoyasu Tanaka, both of Aichi, and Yasuyoshi Yamamoto, Gifu, all of Japan, assignors to Menicon Co., Ltd., Nagoya, Japan

Filed Oct. 8, 1992, Ser. No. 957,898
Int. Cl.[5] B23B *31/20*
U.S. Cl. 279—43.7 **10 Claims**



1. An apparatus for cutting an ocular lens material comprising:

(a) a rotating drive unit

(b) a chuck for holding the ocular lens material, said chuck including finger members and being movable along a longitudinal axis of said drive unit, biasing means for normally urging said chuck, and attendantly said finger members, in a first direction along said longitudinal axis so as to urge said finger members to a closed position and an opening means for opening said finger members by moving said chuck, and attendantly said finger members, in a second direction opposite said first direction, said opening means including a passageway means for applying a working pressure to said apparatus so as to move said chuck in said second direction;

(c) a main shaft concentrically connected to said chuck for transmitting a rotational force from the rotating drive unit to said chuck; and

(d) a coupling for rotatably supporting said main shaft and said chuck together.

5,284,349

CAB STEP ASSEMBLY

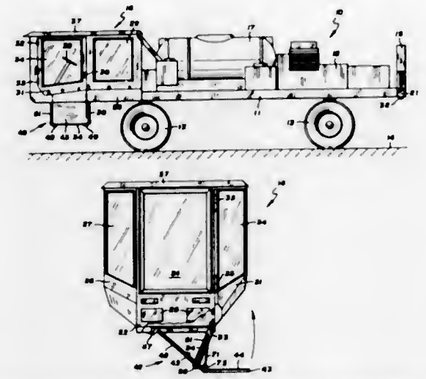
Mark W. Bruns, and Wesley W. Bruns, both of Gibbon, Minn., assignors to May-Wes Manufacturing, Inc., Gibbon, Minn.

Filed Nov. 30, 1992, Ser. No. 983,785
Int. Cl.[5] B60R *3/02*
U.S. Cl. 280—166 **22 Claims**

15. A vehicle cab comprising: a frame, a side wall mounted on the frame, said side wall having an upright doorway, a door mounted on the side wall for movement between open and closed position, said doorway having an opening below the door when the door is closed, a floor located in a generally horizontal plane, said floor having an opening aligned with the doorway, a step assembly having a floor section or closing the opening in the floor and a step section joined to the floor section for closing the opening in the side wall below the door, hinge means pivotally connecting the floor section to the frame to allow the floor section and step section to move between closed positions wherein the floor section is located in the horizontal plane of the floor to close the opening in the floor and the step section is located in the opening in the side wall to close the opening in the side wall and a step position wherein the floor section extends downwardly and the step section is

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located generally horizontal below the doorway, first means connected to the step assembly and frame to hold the floor section and step section in the step position, and second means

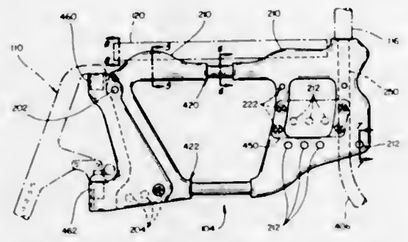


connected to the step assembly and floor operable to move the floor section and step section to the closed positions and retain said floor section and step section in the closed positions.

5,284,350
FOLDABLE WHEELCHAIR AND SIDE FRAME ASSEMBLY

Richard Geiger, Alameda; A. Scott Robertson, and Neville Page, both of San Francisco, all of Calif., assignors to Medical Composite Technology, Soquel, Calif.

Filed May 22, 1992, Ser. No. 886,850
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **25 Claims**

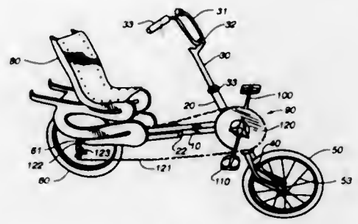


1. A side assembly of a wheelchair frame comprising:
means for receiving a drive wheel axle at any of a plurality of different locations in a rearward region of said side assembly such that a center of gravity of said wheelchair may be varied;
means for supporting a wheelchair seat assembly on said side assembly;
pivot means for pivotally attaching said side assembly to a caster frame piece so that the side assembly can pivot relative to the caster frame piece about a pivot point to change a seat angle relative to a surface; and
means for adjusting the seat angle, said means for adjusting the seat angle including a plurality of holes for allowing a drive wheel to be mounted on the side assembly, said plurality of holes being disposed along an arc having a radius that originates at said pivot point.

5,284,351
RECUMBENT BICYCLE

Gregg R. Fleishman, 2732 S. La Cienega, Los Angeles, Calif. 90034

Filed Jul. 9, 1991, Ser. No. 727,553
Int. Cl.[5] B62K *3/02*; B62M *1/02*
U.S. Cl. 280—259 **11 Claims**



1. A bicycle comprised of:
(a) a main frame having a front portion and rear portion;
(b) a steering tube attached near the front portion of said main frame;
(c) a steering mechanism rotatably engaged in said steering tube;
(d) front forks attached to said steering mechanism;
(e) a front wheel rotatably attached to the front forks;
(f) a rear wheel rotatably attached to the rear portion of said main frame;
(g) a seat mounted on said main frame in front of and above the rear wheel;
(h) drive means for powering the bicycle forward by the pedaling of the rider comprising a crank assembly attached to said main frame in close proximity of the steering tube;
(i) said crank assembly comprising a spindle and a pair of crank arms attached to the spindle, and pedals attached to the crank arms, said pedals spaced outwardly to allow wheel clearance during operation;
(j) said drive means comprising a device for transferring power from the crank assembly to the rear wheel; and
(k) wherein the crank arms are spread outwardly at an angle of from 5° to 25°.

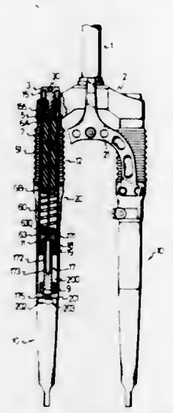
5,284,352
COMPRESSION-ADJUSTABLE BICYCLE SHOCK-ABSORBING APPARATUS

Tsai L. Chen, No. 2, Lane 371, Hua Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Dec. 3, 1992, Ser. No. 985,619
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 **9 Claims**

1. A compression-adjustable bicycle shock-absorbing apparatus (10) clamped in a steerer crown (2) of a bicycle comprising a lower tube (20) having an upper cavity and a mount member (201) thereunder and an upper tube (16) partially and slidably received within said cavity of said lower tube (20), a first socket means (15) having a central channel being fixed inside said upper tube (16);
an adjusting means (3) having a head portion (31), a first neck portion (32), and a second neck portion (33), with said neck portions (32, 33) being rotatably received inside said first socket means (15);
a union means (5) having a threaded channel (53) at the bottom thereof being rotatably and threadedly engaged to said second neck portion (33) of said adjusting means (3) thus having a downward movement when said adjusting means (3) is rotated counter-clockwise;
a rod member (51) being threadedly fixed inside said channel (53) of said union means (5) and downwardly extending therefrom;

a bellows (12) being engaged on a top end of said lower tube (20) and also slidably receiving a portion of said upper tube (16), said upper tube (16) and said bellows (12) being clamped by said steerer crown (2);
a plurality of compressive units (7) and a compression spring (60) being arranged longitudinally inside said upper tube (16), said rod member (51) passing through said compressive units (7) and said compression spring (60);

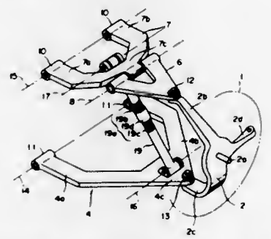


a washer member (63) having a central hole allowing said rod member (51) to pass therethrough contacting against said compression spring (60);
a socket bolt located under said washer member (63) having an upper socket (171) and a lower bolt member (172), a channel (173) being defined from said upper socket (171) down to said bolt member (172), said lower bolt member (172) being engaged to said mount member (201).

5,284,353
INDEPENDENT SUSPENSION

Kawano Shinji, Yokohama; Nakajima Hiroshi, Sagamihara; Okamoto Kimio, Yokohama, and Yanagisawa Mayumi, Tokyo, all of Japan, assignors to Yorozu Manufacturing Corporation, Yokohama, Japan

PCT No. PCT/JP90/01635, § 371 Date Aug. 7, 1991, § 102(e) Date Aug. 7, 1991, PCT Pub. No. WO91/08918, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 14, 1990, Ser. No. 741,445
Claims priority, application Japan, Dec. 15, 1989, 1-323862; Jan. 17, 1990, 2-6319; Jan. 17, 1990, 2-6320; Jan. 17, 1990, 2-6321; Jan. 17, 1990, 2-6322; Jan. 17, 1990, 2-6323
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—660 **7 Claims**

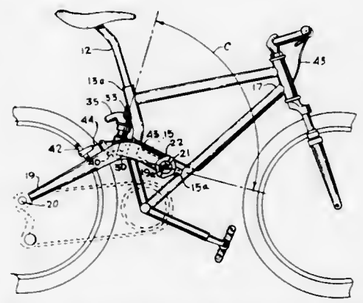


1. An independent wheel suspension for suspending a wheel on a frame of an automotive vehicle, said suspension comprising:
wheel carrier means for rotatably supporting a wheel, said wheel carrier means including an upper and lower portion;
lower arm means connecting said lower portion of said wheel carrier means to said frame;
upper arm means for connecting said upper portion of said wheel carrier means to said frame, said upper arm means including a first upper arm member pivotably connected to said upper portion of said wheel carrier means and a second upper arm member pivotably connected to said second upper arm member at a first vibrating axis; and
linking means for linking said second upper arm member to said lower arm means,
said linking means moves said second arm member upwardly thereby moving said first vibrating axis upwardly so that a rectilinear length from said wheel carrier means to said frame is shortened by a predetermined length to decrease the distance between said upper portion of said wheel carrier means and said frame when said wheel carrier means moves a distance in an upward direction which is larger than a predetermined value.

5,284,354
BICYCLE SUSPENSION SYSTEM

Robert T. McWethy, Ventura, Calif., assignor to Western States Import Company, Inc., Camarillo, Calif.

Filed Jan. 4, 1993, Ser. No. 5
Int. Cl.[5] B62K *25/28*
U.S. Cl. 280—284 **11 Claims**



1. In a bicycle having front and rear wheels, and a generally triangular frame formed from a plurality of posts, a set tube forming one of said posts, the other of said posts extending from said seat tube towards the front wheel of said bicycle, said seat tube having an upper portion, a lower portion offset from said upper portion towards the rear wheel of said bicycle, and a central portion joining said upper and lower portions together, a suspension system comprising:
a swing arm pivotally attached at one end thereof to one of the other of said posts and fixedly attached at the other end thereof to the rear wheel axle of said bicycle, and
a shock absorber, means for pivotally supporting one end of said shock absorber on said seat tube, means for pivotally supporting the other end of said shock absorber on said swing arm, said shock absorber being positioned adjacent to the central portion of the seat tube on the side of said seat tube facing the rear wheel of said bicycle.

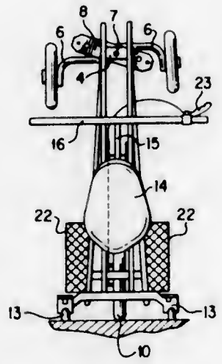
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,355

TREADLE-TYPE VEHICLE HAVING A FOLDABLE FRONT WHEEL SHAFT

Shizuo Ishii, 1-9-11, Ushidahon-cho, Higashi-ku, Hiroshima City, Hiroshima, Japan

Filed Jan. 21, 1993, Ser. No. 6,947
Claims priority, application Japan, Jul. 30, 1992, 4-059540
Int. Cl.[5] B62K *15/00*
U.S. Cl. 280—287 12 Claims



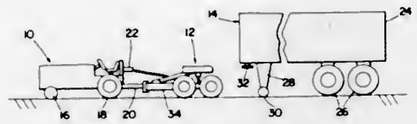
1. A human-powered vehicle comprising:
a frame;
front wheel means coupled to said frame and including a pair of front wheels and a folding axle assembly for mounting the front wheels, said front wheels having an extended position for running said vehicle and a retracted position for parking, said folding axle assembly including:
a central member pivotally coupled to said frame by first securing means located at a midpoint of said central member, said central member having a left end and a right end;
a left half-axle pivotally coupled to the left end of said central member by left-hand second securing means, and having left bearing means for mounting one of said pair of front wheels;
left-hand locking means for locking said left half-axle in an extended position relative to said central member;
a right half-axle pivotally coupled to the right end of said central member by right-hand second securing means, and having right bearing means for mounting one of said pair of front wheels; and
right-hand locking means for locking said right half-axle in an extended position relative to said central member so that said folding axle assembly is locked into the extended position by said left-hand locking means and said right-hand locking means, or folded into an N shape when unlocked and so retracted inward for parking, said pair of wheels being angularly fixed to said axle assembly in the extended position;
a seat coupled to said frame, said seat being disposed such that a vehicle driver may steer said vehicle by pressing upon said axle assembly with feet to rotate said axle assembly about said first securing means;
at least one rear wheel coupled to said frame;
drive means coupled to said rear wheel; and
support means mounted to said frame, said support means and said rear wheel defining a polygon lying in a plane generally perpendicular to a plane joining said front wheel means and said at least one rear wheel so that said vehicle may be stood upright on said rear wheel and said support means to reduce a parking area of said vehicle.

5,284,356

TRANSPORTING SYSTEM AND METHOD FOR USING SAME

Merle J. Helder, 203-12th St., SW.; Dale J. Helder, 1108 8th Ave., SW., and Leon J. Helder, 1107 Third Ave., SW., all of Humboldt, Iowa 50548

Filed Jun. 5, 1992, Ser. No. 893,719
Int. Cl.[5] B60D *1/00*
U.S. Cl. 280—425.1 3 Claims



1. A method for transporting a trailer having a storage box with forward and rear ends, ground engaging wheels rotatably mounted to said storage box adjacent said rear end thereof, a pair of support legs having supper ends connected to said box having lower ends engaging the ground, and a king pin connected to said box adjacent said forward end thereof, said method comprising:
connecting a three point hitch of an agricultural tractor having front wheels and rear drive wheels to a dolly having a dolly frame, ground engaging wheels rotatably mounted to said dolly frame, and a fifth wheel assembly mounted to said frame, said fifth wheel assembly comprising a fifth wheel plate adapted to retentively engage said king pin of said trailer, link means movably mounting said fifth wheel plate to said dolly frame for movement between a lowered and an elevated position, and power means for moving said fifth wheel plate between said lowered and said elevated positions;
actuating said power means to move said fifth wheel plate to a height registered with the height of said king pin;
using said tractor to move said dolly toward said king pin until said fifth wheel plate moves into retentive engagement with said king pin;
actuating said power means to move said fifth wheel plate to said elevated position for lifting said lower ends of said support legs off the ground and transferring the weight of said forward end of said box onto said dolly, said tractor being free from bearing the weight of said forward end of said box;
gradually raising said three point hitch to raise said dolly after said fifth wheel plate retentively engages said king pin and after said step of said lifting of said support legs off the ground until the desired amount of weight of said forward end of said trailer is transferred to said rear drive wheels of said tractor to increase traction of said drive wheels to a desired amount on a supporting surface.

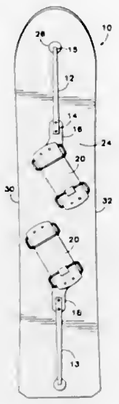
5,284,357

APPARATUS AND METHOD FOR DAMPING DEFLECTIONS AND VIBRATIONS IN SKIS

Michael R. Tinkler, 1130 Fifth St., Hood River, Oreg. 97031

Filed Nov. 1, 1991, Ser. No. 786,743
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 20 Claims

1. A damping apparatus for use on a ski having a skiing surface, an opposed upper surface, and left and right edges, said damping apparatus comprising:
an elongated damping member having a mounting end and a bearing end;
a first connector for interconnecting said damping member mounting end and the ski;
means for positioning said damping member bearing end for slidably engaging said ski upper surface for resisting vertical deflection of the ski during skiing; and



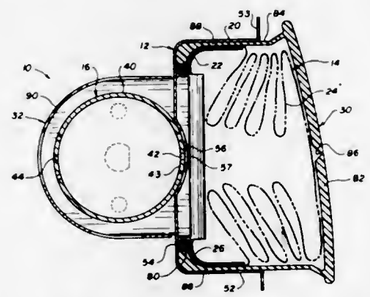
differential biasing means for differentially biasing said left and right edges.

5,284,358

AIR BAG ASSEMBLY

John F. Rhein, St. Clair, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 15, 1992, Ser. No. 884,534
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A 22 Claims



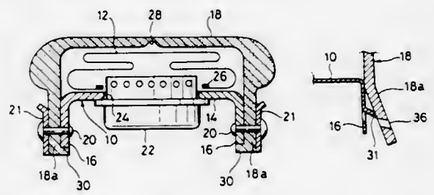
1. An air bag assembly comprising a reaction/coupling structure, an air bag subassembly coupled to the reaction/coupling structure, and an inflator also coupled to the reaction/-coupling structure;
said reaction/coupling structure including a reaction device and a coupling device which are coupled together in a mated arrangement;
said air bag subassembly including an air bag having a mouth portion which defines a gas inlet opening disposed in a plane;
said inflator comprising a cylindrical housing having a radius and an axis substantially longer than said radius, said axis being positioned substantially parallel to the plane of said gas inlet opening;
said inflator being positioned to supply inflation fluid to said air bag through said inlet opening;
said mouth portion of said air bag being trapped between said reaction device and said coupling device thereby coupling said air bag subassembly to said reaction/coupling structure; and
said reaction device and said coupling device being locked in said mated arrangement by said inflator.

5,284,359

AIR BAG DEVICE

Yoshiyuki Baba, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 688,455, Apr. 22, 1991, Pat. No. 5,167,427. This application Sep. 3, 1992, Ser. No. 940,282
Claims priority, application Japan, Oct. 17, 1991, 3-269394
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 R 5 Claims



1. An air bag device, comprising,
an air bag,
a retainer including a plate portion with side edges and an outer surface, said air bag being placed on the outer surface, and erected pieces extending from the side edges of the plate portion in the direction away from the outer surface of the plate portion and having outer surfaces,
a module cover for covering the air bag placed on the retainer, said module cover having leg portions overlapping the erected pieces of the retainer, said module cover being molded by one-color molding,
a plurality of tongues formed on the erected pieces, each tongue having an upper end flush with the outer surface of an erected piece and a lower end located away from the outer surface of the erected piece so that each tongue extends downwardly outwardly from the erected piece at a predetermined angle, and
a plurality of openings formed in the leg portions of the module cover at positions corresponding to the tongues of the erected pieces so that when the leg portions of the module cover are slid over the erected pieces of the retainer for assembling together, the leg portions pass over the tongues and allow the openings to engage with the tongues to thereby firmly hold the module cover over the retainer.

5,284,360

PIVOTABLE ROLLOVER BAR FOR MOTOR VEHICLES

Gerhard Busch, Gechingen, and Rolf Kimmerle, Walddorfhäslach, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

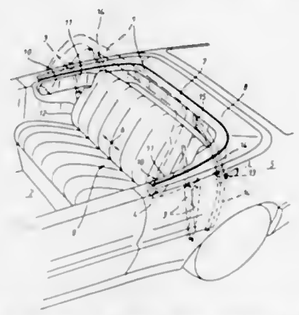
Filed Sep. 14, 1992, Ser. No. 944,322
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130470
Int. Cl.[5] B60R *21/13*
U.S. Cl. 280—756 9 Claims

1. Pivotable rollover bar assembly for motor vehicles, in particular for four-seater convertibles, comprising
a rollover bar curved in the shape of a U having a transverse portion and a pair of lateral limbs to surround a rear seating area of a passenger compartment in a lowered rest position,
lateral bearings for pivotally supporting the rollover bar to be movable about a transverse axis of the vehicle, and

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a drive apparatus for moving the rollover bar between the lowered rest position to a raised position spanning the interior of the passenger compartment,

wherein the rollover bar is provided on each of said pairs of lateral limbs a flattened portion on a side facing the interior of the passenger compartment, these flattened portions enlarging the interior of the passenger compartment at the sides of a seat as compared with a rollover bar without such flattened portions a cross sectional width of



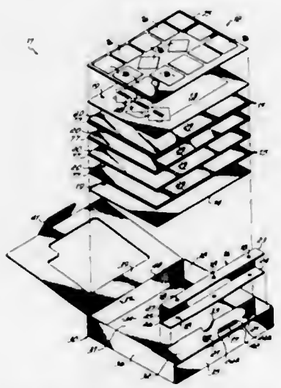
each of said pair of lateral limbs measured through the flattened portion being less than a cross sectional width of each of said pair of lateral limbs measured through a non-flattened portion, and wherein at least one supporting tube projects from the rollover bar towards the vehicle body, said at least one supporting tube being displaceable together with the rollover bar and being guided in a guide in the vehicle body and serving to absorb forces acting on the rollover bar primarily in the transverse direction of the vehicle.

5,284,361

MODULAR BOOK KIT AND METHOD OF ASSEMBLY

Thomas K. Walker, 86 Ipswich Rd., Topsfield, Mass. 01983; Dean Sherman, 5908 Longewood Dr., Cincinnati, Ohio 45244, and Clifford Koehler, 6509 Oregon Pass, West Chester, Ohio 45069

Filed Mar. 30, 1992, Ser. No. 860,027
Int. Cl.[5] B42D *1/00*; B42F *13/04*
U.S. Cl. 281—15.1 3 Claims



1. A method of forming a book kit comprising:

forming a plurality of individually wrapped modules, each module comprising a plurality of hole-punched pages, gathering selected modules but not all of said modules together and placing said selected modules in a box, wherein said selected modules have a thickness;

providing a spine protector from a plurality of spine protectors, each of said spine protectors having two hole punched side sections and a rear section, said plurality of spine protectors having different widths; wherein said selected spine protector has a rear section having a width equal to the thickness of said selected modules and placing said selected spine protector in said box;

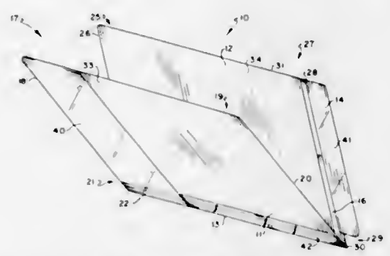
further adding to said box a plurality of posts having a length equal to the width of the rear section and side sections of said spine protector, said posts adapted to bind said modules and said spine protector together to form a book, wherein said package is sealed enclosing said modules, spine protector and posts in sid box in an unassembled form whereby a customer may assemble a book from said selected modules, said selected spine protector and said posts to form a book with pages tightly bound within said spine protector.

5,284,362

REINFORCED SHELF FILING FOLDERS

Theodore V. Kachel, Purchase, N.Y.; Jonathan B. Rivlin, East Brunswick, N.J.; Lee A. Boy, Staten Island, N.Y.; Robert E. Hawes, Jr., Huntington Bay, N.Y.; Cheryl Dellacroce-Steinberg, Jericho, N.Y.; Eric Aaldenberg, Bayside, N.Y., and James J. Lynch, Berkley Heights, N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Continuation-in-part of Ser. No. 769,001, Sep. 30, 1991, which is a continuation of Ser. No. 483,094, Feb. 21, 1990, Pat. No. 5,066,045. This application Mar. 23, 1992, Ser. No. 855,078
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—45 30 Claims



1. A reinforced shelf filing folder comprising:

front and rear panel members each having first and second surfaces and side edges, said panel members joined along a fold line, and a tab member having first and second surfaces and extending along a first side edge of the rear panel member;

first reinforcing means applied to both the first and second surfaces of the tab member; and

second reinforcing means applied to the fold line and onto a portion of the adjacent first surfaces of the front and rear panel members;

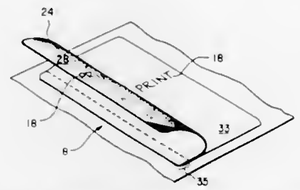
wherein the first and second reinforcing means increase the wear resistance and useful life of the folder.

5,284,363

MULTI-LAYER HINGED LABEL

Gerald J. Gartner, Hollis; Paul Cote, Wilton, and Michael S. Kelley, Hollis, all of N.H., assignors to Gar-Doc, Inc., Milford, N.H.

Filed Aug. 15, 1991, Ser. No. 745,446
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 37 Claims



1. A label for displaying intelligible matter, comprising:

a first layer having an inner surface and having an outer surface partially coated with an adhesive release material; and

a second layer superposed upon said first layer, said second layer having an inner surface provided with a pressure sensitive adhesive along substantially the entirety of its surface and facing toward said outer surface of said first layer and being separable from at least a portion of said first layer so as to expose said first layer outer surface,

wherein all but a section adjacent to one edge of said first layer outer surface is coated with said adhesive release material, and

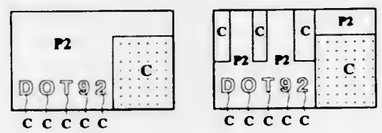
wherein said section of said first layer allows for substantially permanent adhesion to a corresponding section of said inner surface of said second layer.

5,284,364

INCREASED-SECURITY IDENTIFICATION CARD SYSTEM

Kanti Jain, Briarcliff Manor, N.Y., assignor to Anvik Corporation, Elmsford, N.Y.

Filed Jun. 10, 1992, Ser. No. 897,199
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—87 20 Claims



1. A security-document system comprising:

a) a polarizing viewer; and

b) an identification document comprising:

a data substrate having a display surface upon which visible indicia may be displayed;

a polarization-altering transparent overlay lamination permanently attached to said data substrate, whereby any visible data displayed on said display surface remains visible through said polarization-altering overlay lamination; and

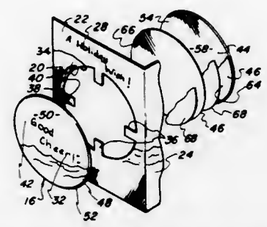
polarization-coded personalizing indicia borne by said polarization-altering overlay lamination as physical changes viewable through said polarizing viewer.

5,284,365

GREETING CARD ASSEMBLY

James H. Stuart, Pueblo, Colo., assignor to Sangray Corporation, Pueblo, Colo.

Filed May 19, 1992, Ser. No. 885,538
Int. Cl.[5] B12D *15/00*
U.S. Cl. 283—117 28 Claims



1. A greeting card assembly having a removable message and artistic indicia member, comprising:

a) a card section having an insert mounting opening with anchor tabs extended inwardly therefrom;

b) a removable message insert assembly including a primary message insert member and a support member;

c) said primary message insert member mounted against said card section about said insert mounting opening; and

d) said support member secured to said primary message insert member and said anchor tabs to achieve said greeting card assembly;

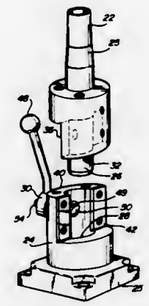
whereby said anchor tabs may be severed to remove said removable message insert assembly from said card section for continued use and enjoyment.

5,284,366

QUICK-CONNECT RECEIVER

Alfred F. Herberman, Ann Arbor, and Edward C. Larsen, Ypsilanti, both of Mich., assignors to Syron Engineering & Manufacturing Corporation, Saline, Mich.

Filed Sep. 12, 1991, Ser. No. 758,048
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—26 30 Claims



1. A connector for securing a work member comprising:

a receiver comprising a lock mechanism means, a mount surface and defining a mount space;

a work member having a first end, said first end having a central part and a hole formed therein, said first end selectively positioned within said mount space such that said mount surface at least partially supports said work member, said lock mechanism means securing said work member within said receiver, said lock mechanism means including a lock pin received in said hole formed in said first

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end central part, and said lock pin engaging a surface of said first end defining said hole;

said lock pin selectively transmitting a force from said receiver to said work member in a direction into said mount space; and means biasing

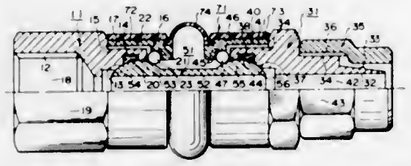
said lock pin downwardly into said hole, and allowing said lock pin to be selectively forced upwardly out of said hole.

5,284,367

FLEXIBLE PIPE JOINT

Kazuo Yano, 12-6, Minaimiyukigaya 3-chome, Ota-ku, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 914,919
Claims priority, application Japan, Apr. 1, 1992, 4-105294
Int. Cl.[5] F16L *27/04*
U.S. Cl. 285—51 **5 Claims**



1. A flexible pipe joint for joining two connected objects comprising;

a first joint member formed with a first flow passage, and a first part-spherical inner surface of a predetermined diameter in the region of one end, the other end being adapted to be connected directly or indirectly to one of the connected objects; a second joint member formed with a second flow passage, and a second part-spherical inner surface of a predetermined diameter in the region of one end, the other end being adapted to be connected directly or indirectly, to the other of the connected objects;

an interpolating member formed with an intermediate flow passage which communicates with the first and second flow passage in the first and second joint members in the interpolating member having first and second part-spherical outer surfaces formed at respective ends each having a diameter suitable to permit the first and second spherical outer surfaces to make a rockable and slidable contact with the first and second spherical inner surfaces respectively; and

first restraining means comprising a first ring fixed to the first joint member and including a first ball bearing which engages the first spherical outer surface, and a second restraining means comprising a second ring fixed to the second joint member and including a second ball bearing which engages the second spherical outer surface, in which the first and second restraining means act to keep the first and second spherical outer surfaces in slidable contact with the first and second spherical inner surfaces, respectively such that said first, second and intermediate flow passage can selectively be in axial alignment or adjusted relative to said axial alignment.

5,284,368

CONNECTION FOR FLEXIBLE AND STRETCHABLE TUBES, ESPECIALLY SILICON TUBES

Hans Oetiker, Horgen, Switzerland, and Emil Badertscher, Marlette, Mich., assignors to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland

Filed Jul. 25, 1991, Ser. No. 735,934
Int. Cl.[5] F16L *33/12*
U.S. Cl. 285—81 **34 Claims**

1. A tube connection, comprising a nipple structure and clamping sleeve means, said nipple structure including at one end a connecting portion and at the other end a tube-receiving portion, said tube-receiving portion having an axial abutment surface means and several tube-receiving sections including in a direction toward the free end of the tube-receiving portion a first substantially cylindrical section having an external diametric dimension corresponding at least approximately to the internal diametric dimension of a tube to be connected and a second, outwardly flaring clamping surface of increasing diametric dimension in the direction of the free end of the tube-receiving portion, the sleeve means having a first section with an internal diametric dimension slightly greater than the maximum diametric dimension defined by said flaring clamping surface of the tube-receiving nipple portion so that the sleeve means can be slipped over the tube-receiving nipple portion,



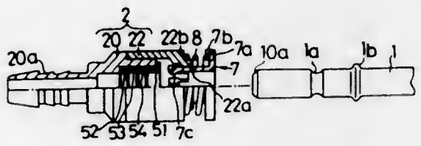
said sleeve means including a second section with an outwardly flaring clamping surface whose internal dimensions increase from the internal diametric dimension of the sleeve first section in a direction toward the free end of the tube-receiving nipple portion so that a tube mounted over the tube-receiving nipple portion is adapted to be compressed and clamped fast between the two outwardly flaring surfaces as the sleeve means is axially displaced in the direction toward the free end of the tube-receiving nipple portion from its non-clamping position into its clamping position, and further means for holding said sleeve means in its clamping position relative to said tube-receiving nipple portion after substantially only axial displacement of the sleeve means.

5,284,369

QUICK CONNECTOR

Hirokazu Kitamura, Kasugai, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Aug. 16, 1991, Ser. No. 745,849
Claims priority, application Japan, Aug. 24, 1990, 2-223401; Nov. 22, 1990, 2-318219
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—322 **34 Claims**



1. A quick connector, comprising:

a tubular-shaped male member including an engager formed at an end on an outer peripheral surface thereof, the engager extending therearound in a ring shape;

a tubular-shaped female member including a tubular-shaped socket disposed at an end thereof, said tubular-shaped socket including a receiver opening adapted for receiving said end of said male member therein, a ring-shaped inner peripheral surface formed inward with respect to the receiver opening and having an inside diameter which is larger than an outside diameter of said male member, and a ring-shaped releaser inner peripheral surface formed further inside with respect to the receiver opening and adjacent to the inner peripheral surface and having an inside diameter which is larger than the inside diameter of the inner peripheral surface;

an engager claw member held relatively movably in an axial direction with respect to said socket of said female member, said engager claw member including a flange opposing said receiver opening of said socket, said flange including a central hole which is adapted for disposing said end of said male member therein, an arm projecting from an inner peripheral surface of the flange in an axial direction, a free end of the arm extending to said inner peripheral surface of said socket, an engager claw disposed at the free end of said arm, projecting radially inward and adapted for engaging with said engager of said male member, and a projection projecting from the engager claw radially outward and adapted for engaging with said inner peripheral surface of said socket so as to inhibit the arm from disengaging from said socket in an axial direction and so as to inhibit the arm from deforming in a radial direction; and

an urging member interposed between said socket of said female member and the flange of the engager claw member, and urging said engager claw member in a direction in which the engager claw member comes out of said receiver opening of said socket, thereby engaging said projection of said engager claw member with said inner peripheral surface of said socket while engaging said engager claw of said engager claw member with said engager of said male member,

said socket of said female member further including a seating surface,

said urging member being a coil spring which is interposed between said flange of said engager claw member and the seating surface of said socket in a compressed manner and which is disposed coaxially with said female member substantially,

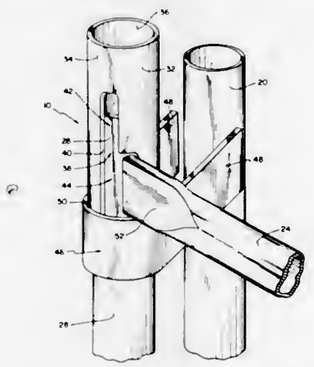
said flange of said engager claw member further including a ring-shaped projection which covers an outer peripheral surface of an end of the coil spring.

5,284,370

GATE LATCH

James A. Dunn, Angola, Ind., assignor to Vestil Manufacturing Company, Angola, Ind.

Filed Jan. 6, 1993, Ser. No. 1,034
Int. Cl.[5] E05C *5/02*
U.S. Cl. 292—68 **16 Claims**



1. A gate latch for securing a pivoting gate onto a stationary member, said gate latch comprising:

a hollow tube slidingly received on an elongate shaft, said tube adapted for both longitudinal and radial movement on said shaft;

an opening through said tube having a contact edge and having a first section with a first width and a second section with a second width, said second section width being larger than said first section width;

a stop member extending through said elongate opening and adapted to contact said edge of said opening and limit said longitudinal and radial movement of said hollow tube, said radial movement of said hollow tube being greater when said stop member contacts said edge of said second width section than when said stop member contacts said edge of said first width section;

means extending from said hollow tube for selectively engaging the stationary member and retaining the gate closed when said stop member is located in said first section of said opening and for selectively disengaging the stationary member and opening and closing the gate by longitudinally sliding said hollow tube and locating said stop member in said second section of said opening, and;

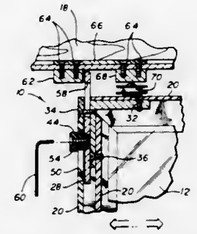
wherein said means for engaging includes a U-shaped bar received around and affixed to said tube, said U-shaped bar forming two arms extending from said tube for selectively receiving the stationary member therebetween.

5,284,371

SLIDING DOOR LOCK

Richard J. Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Oct. 9, 1992, Ser. No. 988,301
Int. Cl.[5] E05C *1/04*
U.S. Cl. 292—149 **17 Claims**



1. A locking device for use with a frame slidably mounted in a supporting structure comprising:

a corner piece having two legs mounted inside said frame;

a latch plate slidably engaging one of said legs of said corner piece; and

means engaged to said latch plate for releasably holding said latch plate in an upward position.

5,284,372

LOCKING MECHANISM OF A LATCH BOLT

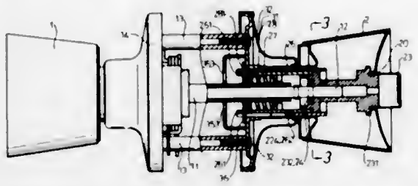
Jui-Chang Lin, No. 55-10, Been-Chou Rd., Kangshan, Kaohsiung Hsien, Taiwan

Filed Apr. 29, 1993, Ser. No. 53,854
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—336.3 **3 Claims**

1. A latch bolt comprising an outer knob including an axle extended therefrom, a lever extended outward from said axle, an inner cap including a hub formed therein, an inner knob including a stub rotatably engaged in said hub of said inner cap and including at least one bulge extended inwards thereof, a plate secured to said inner cap and disposed between said outer knob and said inner cap and including an opening and two notches formed in a middle portion thereof, a tube engaged in said stub of said inner knob and including a gap longitudinally

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formed therein for engaging with said bulge of said stub such that said tube is movable longitudinally in said stub and is prevented from rotating in said stub, said tube including an orifice and a mouth formed therein, a button including a first end slidably engaged in said tube and a second end extendible outward of said inner knob, a channel formed in said button, a retainer engaged in said channel and including a tapered end portion engageable with said orifice of said tube, said retainer being engaged with said axle and rotated in concert with said axle, means for biasing said tapered end portion of said retainer to engage with said orifice of said tube, a barrel rotatably received in said tube and engaged with said button and including a pair of legs extended toward said outer knob and including a protrusion extended radially outward therefrom for



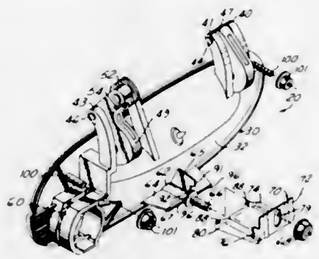
engaging with said mouth of said tube, a follower engaged on said axle and slidably engaged with said legs of said barrel, means biased between said follower and said barrel for biasing said barrel and said button toward said inner knob; said legs of said barrel being engaged with said notches of said plate and said tapered end portion of said retainer being biased to engage with said orifice of said tube when said button is depressed inward of said inner knob such that said axle is locked and may not be rotated by said outer knob, and said retainer being caused to move inwards of said tube due to said tapered end portion thereof when tube is rotated relative to said button by said inner knob, said barrel and said button being biased toward said inner knob when said retainer moves inward of said tube, whereby, said legs of said barrel are disengaged from said notches of said plate.

5,284,373

VEHICLE DOOR HANDLE ATTACHING ARRANGEMENT

Earl L. Watson, Walled Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 12, 1993, Ser. No. 44,685
Int. Cl.[5] E05C *21/00*
U.S. Cl. 292—347 **5 Claims**



1. In an arrangement for mounting a handle assembly in an automotive vehicle body panel aperture formed with a flanged border, said handle assembly mounting arrangement comprising:

a handle housing formed with a central body portion having a terminal flange presenting a backside thereof, said housing adapted for mounting within the panel aperture with its terminal flange backside adapted to seat on the panel flanged border, and bracket means on said housing pivotally supporting a release handle;

upper fastener means on said housing adapted for securing an upper portion of said terminal flange on the panel aperture flanged border;

said housing body portion having central support means projecting inboard therefrom adapted to guide a retaining clip thereon between a first pre-installed elevated position and a second gravity induced lower installed position;

said clip being generally L-shaped in vertical section comprising an upstanding head panel and a base panel extending outboard from a lower end of said head panel, said support means having a threaded stem projecting inboard therefrom with its free end extending through a vertical slot in said clip head panel, a nut on said threaded stem having an initial torqued setting retaining said clip in said first pre-installed position;

said clip base panel free end terminating in a transverse edge having a pair of fingers projecting outboard therefrom, said base panel formed with downturned side rails each terminating at its outboard end in a vertically disposed bearing edge;

said housing being initially inserted in said aperture from the exterior of said panel with said upper fastening means being received in associated slots means in said panel flanged border;

upon said clip retaining nut being loosened said clip descending under the influence of gravity from its initial pre-installed position to a predetermined position wherein each said finger rests on a lower edge portion of said panel flanged border; and

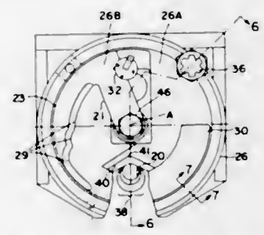
whereby upon said retaining nut being tightened on said threaded stem said clip is advanced outboard to its installed position wherein said pair of side rail bearing edges being urged into contact with an opposed portion of the panel flanged border releasably locking said housing in said panel aperture.

5,284,374

APPARATUS FOR REMOTELY HANDLING COMPONENTS

Gregory A. Szkrybalo, Jefferson Boro, Pa., and Donald L. Griffin, West Blackfoot, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 15, 1992, Ser. No. 883,750
Int. Cl.[5] B66C *1/62*; G21C *19/00*
U.S. Cl. 294—86.4 **2 Claims**



1. An apparatus for remotely handling bar-like components defining a longitudinal direction, comprising:

gripper means for gripping the component including first and second gripper members longitudinally fixedly spaced from each other and oriented parallel to each other in planes transverse to the longitudinal direction, each gripper member including a jaw plate having at least one groove with opposing surfaces intersecting at a base and extending radially relative to the longitudinal direction for receiving the component in an open end between the opposing surfaces, the grooves on the jaw plates of the first and second gripper members being aligned in the longitudinal direction to support the component at two locations; and wherein each of said first and second gripper members further comprises jaw means rotatably mounted on each of the jaw plates of the first and second gripper members for selectively assuming a retracted mode in which the open end of the groove is unobstructed and an active mode in which the jaw means spans the open end of the groove in the first and second gripper members, the jaw means having a locking surface for contacting the component in the active mode to secure the component between the locking surface of the jaw means and the opposing surface of the groove, the locking surface having a plurality of stepped portions each defining a progressively decreasing radial distance between the base of the groove and the stepped portion opposing the base; and

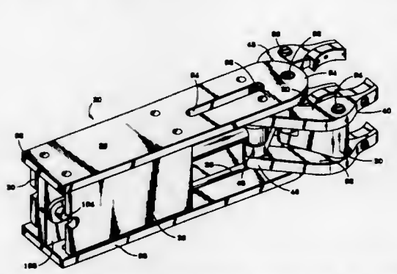
roller means for rotatably supporting the first and second gripper members, the roller means allowing rotation of the gripper members about an axis parallel to the longitudinal direction.

5,284,375

SINGLE ACTUATION ROD GRIPPING MECHANISM

J. George Land, III, Roanoke, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 12, 1993, Ser. No. 30,519
Int. Cl.[5] E21B *19/14*
U.S. Cl. 294—88 **11 Claims**



1. A drill rod gripping mechanism for a drill rig comprising:

a. a housing extending longitudinally between an inner end and an outer end;

b. a pair of opposed gripper arms pivotally connected to each other around a first pivot axis adjacent an inner end of said gripper arms, said first pivot axis being longitudinally movable in said housing;

c. a pair of link arms pivotally connected to each other around a second pivot axis adjacent an inner end of said link arms, said second pivot axis being fixed in said housing, each link arm being pivotally connected at an outer end to an adjacent gripper arm at a third and fourth pivot axis, respectively;

d. said fixed pivot axis, said movable pivot axis, said third pivot axis and said fourth pivot axis being parallel to each other and extending vertically perpendicular to said housing;

e. means for longitudinally moving said first pivot axis and said gripper arms forward and back in said housing, whereby said gripper arms first open away from each other and thereafter close toward each other as said first pivot axis is moved forward; and

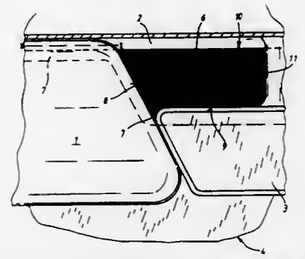
f. means for pivotally mounting said housing on a drill rig.

5,284,376

MOTOR VEHICLE WINDSCREEN HAVING STRIP-SHAPED OPAQUE DOT PATTERN

Gernard Zweigart, Aidlingen, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 779,252
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033188
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—96.19 **4 Claims**



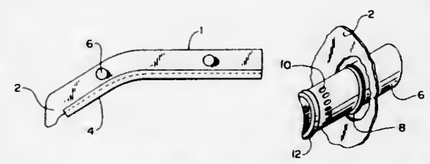
1. A motor vehicle windscreen comprising an opaque strip provided at an upper edge of the windscreen, a strip-shaped dot pattern adjoining the opaque strip and comprising opaque dots having a diameter reduced increasingly towards a center portion of the windscreen, hinged sun visors on an inside of the windscreen, and a further shade being provided in a region between the sun visors when folded down, which region is bounded at a bottom by a projection of a top edge of a rear-view mirror, wherein the further shade is an evenly distributed dot pattern with mutual dot spacing dimensioned such that, relative to the region covered by the evenly distributed dot pattern, a total free viewing area is about 10%.

5,284,377

SECURITY WINDOW WIND DEFLECTOR

Russell C. Krenciprock, 1852 James B Dr., McDonald, Obio 44437

Filed Jun. 30, 1992, Ser. No. 906,478
Int. Cl.[5] B60J *1/20*
U.S. Cl. 296—154 **5 Claims**



4. A window wind deflector having a cigarette ash tray, said deflector having an aperture and said being ashtray in slidable connection with said aperture, said ashtray comprising: a cylindrical element having an open end and a closed end so that a cigarette may be rested in said open end, said closed end having holes for venting, an abutment means in connection with said cylindrical element and located between said open end and said vent holes for preventing said tray from coming out of said aperture.

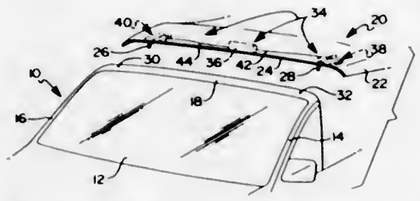
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5,284,378

SELF-STORING CONVERTIBLE TOP LATCH SYSTEM

Robert H. Sautter, Jr., Brooklyn, Mich., assignor to Wickes Manufacturing Company, Charlotte, N.C.

Filed Nov. 16, 1992, Ser. No. 977,096
Int. Cl.[5] B60J 7/185
U.S. Cl. 296—224 15 Claims



1. In a vehicle having a windshield including a header and a convertible top including a header, a latch mechanism for latching the headers together, comprising

a latch hook receiver mounted on the windshield header,

a movable latch member having a free end mounting a hook,

mounting means mounting the latch member on the top header for movement in a compound curvilinear path between an unlatched position, stored within the top header, and a latched position, extending from the top header with the hook engaging the receiver to clamp the headers together, and

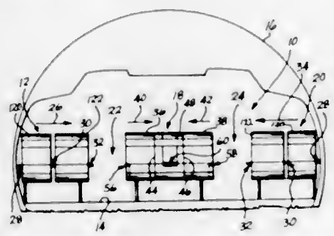
operating means for moving the latch member between positions.

5,284,379

CONVERTIBLE AIRCRAFT PASSENGER SEATS

Peter J. Arnold, and Lek H. Thixton, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 4, 1991, Ser. No. 754,944
Int. Cl.[5] A47C 13/00
U.S. Cl. 297—113 12 Claims



1. An improved, convertible aircraft seating arrangement, for converting two side-by-side aircraft seats from a narrower to a wider seating space configuration, and vice versa, comprising:

a main frame mountable to a floor of an aircraft cabin, in a manner so as to transversely extend across at least a portion of said cabin;

a first armrest assembly fixedly positioned relative to one end of said main frame;

first and second side-by-side aircraft seat frames, movably mounted to said main frame, said seat frames being movable in unison as a pair along said main frame for adjusting said seat frames spatially relative to said first armrest assembly;

a second armrest assembly positioned adjacent to and movably mounted on an opposite end of said main frame; said second armrest assembly being movable transversely relative to said main frame and relative to an adjacent one of said seat frames, for adjusting said second armrest assembly spatially relative to said seat frames and said first armrest assembly; and

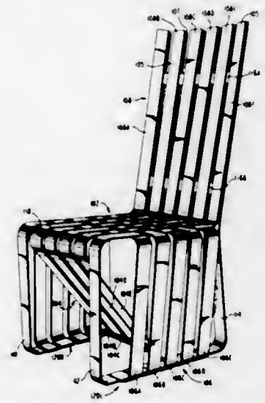
a center armrest assembly positioned generally intermediately of said seat frames, said center armrest assembly being movably mounted to said main frame, to move along said main frame in unison with said seat frames.

5,284,380

FURNITURE COMPRISING LAMINATED SLATS AND METHODS OF MANUFACTURING SUCH FURNITURE

Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 588,115, Sep. 24, 1990, Pat. No. 5,154,486. This application Mar. 27, 1992, Ser. No. 858,705
Int. Cl.[5] A47C 5/14
U.S. Cl. 297—445 13 Claims



13. A chair having a seat and a support base for the seat, said chair comprising:

a plurality of first elongated slats extending in a first direction and arranged next to each other to define a portion of the chair seat; and

a plurality of second elongated slats extending in a second direction different from said first direction and arranged next to each other in a woven lattice with said first elongated slats to define the remaining portion of the chair seat, said first and second slats extending downwardly away from said seat so that in said support base then at least one of said plurality of first slats is in surface contact with at least one of said plurality of second slats.

5,284,381

STRUCTURE OF SEAT CUSHION FRAME IN AUTOMOTIVE SEAT

Akira Aoki, and Yoshihiro Mizushima, both of Akishima, Japan, assignors to Tachi-S Co. Ltd., Akishima, Japan

Filed Nov. 19, 1991, Ser. No. 794,431
Int. Cl.[5] A47C 7/02
U.S. Cl. 297—452.18 5 Claims

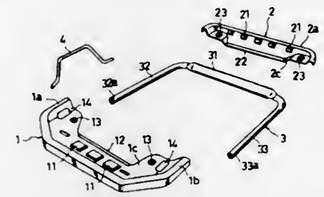
1. A structure of a seat cushion bottom frame in an automotive seat, comprising:

a forward frame member made of a metallic plate;

a rearward frame member made of a metallic plate;

a generally U-shaped main frame member made of a tubular material, said main frame being so interposed between said forward and rearward frame members that said forward and rearward frame members are connected together by said main frame member, said main frame member having a pair of lateral vertical frame sections and a horizontal frame section defined intermediate said pair of lateral frame sections; and

said forward frame member having a pair of lateral side portions, each of which is provided with a means for receiving respective free ends of said pair of lateral vertical frame sections and further provided with an opening which makes it accessible to said free ends of said two lateral vertical frame sections of said pair of lateral side



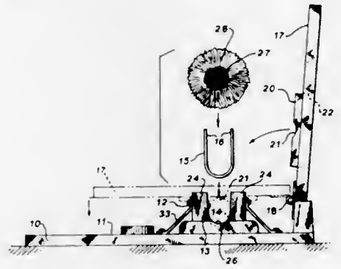
portions of said forward frame member, wherein said opening is disposed at a position corresponding to said means for receiving respective free ends of said two lateral vertical frame sections of said main frame member, and further wherein said horizontal frame section of said main frame member is formed flat, and wherein said rearward frame member is formed with a rear horizontal flange part to which thus-formed flat section of said main frame member is welded.

5,284,382

BROOM MAKING APPARATUS

Joe Klumpjan, 1334 Sunset Dr., Rte. 3, Campbellsport, Wis. 53010

Filed Apr. 13, 1993, Ser. No. 47,147
Int. Cl.[5] A46D 7/00
U.S. Cl. 300—12 2 Claims



1. A broom making apparatus for securing the gathered cut ends of a bunch of branches together to form the brush portion of a broom, said device comprising:

a base plate adapted to lie flat on a supporting surface;

an upwardly opening U-shaped holder attached to the base plate and having a U-shaped surface;

a continuous groove formed in said U-shaped surface and dimensioned to receive therein a U-shaped tie wire having legs ext 6 upwardly beyond the upper ends of the U-shaped holder;

a lever arm hingedly attached at one end to the base plate with a hinge pivot axis parallel to said U-shaped surface, said lever arm adapted to pivot downwardly to an operative position along and generally parallel to the base plate and to overlie the U-shaped holder;

a forming block attached to the lever arm to face downwardly in the operative position, said forming block having a semicylindrical forming surface disposed to open downwardly in said operative position;

an open slot extending through the forming block and lever arm to divide the forming surface in two surface halves, such that the upper ends of the U-shaped holder and upper ends of a tie wire pass through said open slot, and the forming surface halves straddle said holder, when the lever arm is pivoted to the operative position;

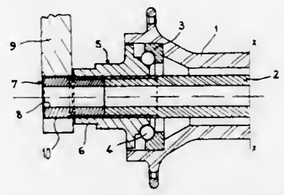
whereby the gathered cut ends of the bunch of branches are laid across the U-shaped surface and within the U-shaped tie wire, the lever arm pivoted to the operative position to compress the ends of the branches between the U-shaped surface and the forming surface, and the upper ends of the tie wire twisted together within said slot to secure the compressed branch ends around the handle.

5,284,383

ADJUSTING AND LOCKING DEVICE FOR MOUNTING A CYCLE WHEEL HUB

Claude Lehanneur, 8, rue Camille Saulnier, 78110 Le Vesinet, France

PCT No. PCT/FR90/00732, § 371 Date Apr. 10, 1992, § 102(e) Date Apr. 10, 1992, PCT Pub. No. WO91/05694, PCT Pub. Date May 2, 1991
PCT Filed Oct. 12, 1990, Ser. No. 839,768
Claims priority, application France, Oct. 13, 1989, 89 13401
Int. Cl.[5] B60B 27/06
U.S. Cl. 301—110.5 3 Claims



1. In an adjusting and locking device for mounting a cycle wheel hub of the type comprising a tubular body (1) supported in a rotating manner on an internal traversing shaft (2) by the intermediary of two rolling bearings, and a clearance adjusting nut (5) abutting the bearings and axially screwed on the shaft (2), each bearing being positioned at one end part of the body and having a clearance which is adjustable by said clearance adjusting nut (5), the improvement which comprises a locking pressure tubular screw (7) axially screwed into the clearance adjusting nut (5) and abutting an end of the internal traversing shaft (2).

5,284,384

SPRING BRAKE VALVE

C. Roy Herring, La Habre Heights, Calif., assignor to Sealco Air Controls, Inc., Phoenix, Ariz.

Filed Apr. 17, 1992, Ser. No. 870,478
Int. Cl.[5] B60T 13/00
U.S. Cl. 303—28 9 Claims

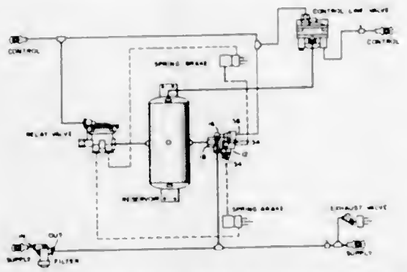
1. A valve for use in a truck-trailer pneumatic system having a source of air under pressure, a reservoir, at least one air release brake unit and a brake service line, said valve comprising a housing having an inlet for interconnection with the source of air under pressure, said housing including first, second and third chambers in communication with said inlet of said housing via first, second and third flow paths respectively, said first chamber having an outlet in communication with the reservoir, said second chamber having a first outlet in communication with said air release brake unit and a second outlet in communication with atmosphere and said third chamber being in communication with the brake service line, said valve further including:

(a) first valve means disposed within said first chamber for blocking a flow of air through said first chamber outlet toward the reservoir, said first valve means being respon-

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sive to air under a predetermined pressure to permit air flow between said first flow path and said first chamber outlet;

(b) second valve means disposed within said second chamber for permitting air flow through said first outlet in a direction toward the air release brake and for blocking air flow in an opposite direction, said second valve means further



including means for selectively blocking air flow through sad second outlet of said second chamber; and

(c) third valve means disposed within said third chamber for normally blocking air flow in a direction from said brake service line toward said second valve means, said third valve means being responsive to air under pressure flowing from the brake service line toward said housing to permit air flow toward said second valve means.

5,284,385

ABS CONTROL WITH REAR PRESSURE RATE REDUCTION WHEN FRONT PRESSURE AND TIME CONDITIONS ARE MET

Elmar Müller, Markgroöningen, Fed. Rep. of Germany, and Werner Müller, Yokohama, Japan, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

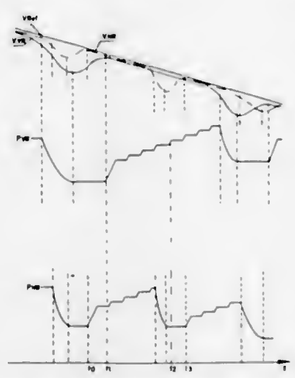
PCT No. PCT/EP90/00204, § 371 Date Sep. 4, 1991, § 102(e) Date Sep. 4, 1991, PCT Pub. No. WO90/11916, PCT Pub. Date Oct. 18, 1990

PCT Filed Feb. 9, 1990, Ser. No. 752,555

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910209

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.5 **10 Claims**



1. An anti-lock braking system for a vehicle having a front axle with two wheels and a rear axle with two wheels, said system comprising

means for controlling brake pressure at the front axle in control cycles each comprising a pressure reduction followed by a build-up of the brake pressure in pulses having holding phases therebetween,

means for controlling brake pressure at the rear axle in control cycles each comprising a pressure reduction followed by a build-up of the brake pressure in pulses having holding phases therebetween,

means for determining if the build-up of brake pressure at the front axle exceeds a first predetermined time and

means for reducing the rate of build-up of brake pressure at the rear axle when said build-up at said front axle and said first predetermined time has been exceeded.

5,284,386

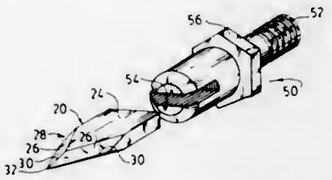
MULTI FACET TRACTION DEVICE

Edward R. Rubel, 66 School St., Victor, N.Y. 14564

Filed Jul. 15, 1991, Ser. No. 729,924

Int. Cl.[5] B62D *55/26*

U.S. Cl. 305—54 **16 Claims**



16. A traction device having a penetrating surface comprising a plurality of quadrilateral facets, wherein the number of quadrilateral facets equals the number of edges formed by the quadrilateral facets.

5,284,387

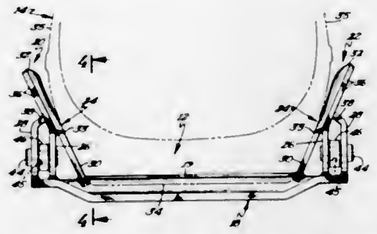
REMOVABLE FLEXIBLE TRACK BELT AND TRACK SECTION THEREFORE

George A. Loegering, 15970 35th St., Casselton, N. Dak. 58012

Filed Aug. 28, 1992, Ser. No. 937,498

Int. Cl.[5] B62D *55/18*

U.S. Cl. 305—56 **17 Claims**



1. A track section adapted to be linked to a plurality of similar track sections to form a flexible track belt for wrap-around mounting on a vehicle tire, each said track section comprising:

a rigid, ground engaging base pad of elongated shape, said elongated shape defining a longitudinal direction of extent;

a pair of spaced apart sidewall structures projecting upwardly from the opposite longitudinal ends of said base pad in its ground engaging position, whereby said base pad serves as a crossbar connecting said sidewall structures, each of said sidewall structures including:

inner and outer longitudinally spaced apart support segments defining a slot therebetween, each support segment having top and bottom ends with said bottom end engaging said base pad;

a side plate, said side plate having an outwardly inclined, elongate configuration comprising upper and lower portions, said upper portion being bent inwardly, said side plate having a bottom end engaging said base pad, an outer surface and an inwardly curved tire engaging inner surface, said outer surface engaging said inner and outer support segments, whereby each said side plate is angularly supported by said base pad and said inner and outer support segments; and

means for connecting adjacent base pads to form said flexible track belt.

5,284,388

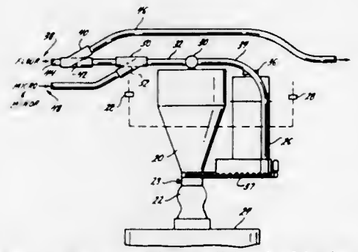
RECEIVER WITH DUST COLLECTOR FOR BULK DRY INGREDIENTS

Benjamin L. Volk, and Joseph A. Volk, Jr., both of Creve Coeur, Mo., assignors to Beta Raven Inc., Earth City, Mo.

Filed Oct. 9, 1991, Ser. No. 774,695

Int. Cl.[5] B01F *15/04*

U.S. Cl. 366—141 **28 Claims**



1. A receiver for pre-mixing a bulk batch of dry ingredients for a foodstuff in a food preparation process, a bulk transfer means for transporting a bulk quantity of a first dry ingredient thereinto, said bulk transfer means being adapted for transporting said ingredient to a plurality of said receivers in a continuous loop configuration, means for collecting the dust of said ingredient created as it is transported to at least one of said receivers, a second bulk transfer means for separately transporting other dry ingredients to said receiver, said dust collection means having means for collecting the dust of said other ingredients created as they are transported to said receiver, and means for dumping said ingredients from said receiver and said dust collection means into a mixer.

5,284,389

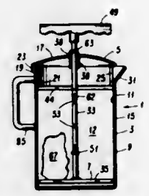
JUICE CONCENTRATE MIXING AND DISPENSING APPARATUS

Karen J. Lumsden, 3415 - 25th Ave., Marion, Iowa 52302

Filed Jun. 1, 1993, Ser. No. 69,530

Int. Cl.[5] B01F *11/00*

U.S. Cl. 366—256 **8 Claims**



1. A device for mixing and dispensing liquids, comprising:

(a) a container having a substantially rectangularly shaped horizontal cross-section, said container having a cavity for containing the liquid such that the liquid has a free upper surface; said cavity having an open upper end; said cavity having a generally uniform, non-circularly shaped, horizontal cross-section; said container constructed of translucent material; said container having indicia adapted to indicate the quantity of liquid contained in said cavity;

(b) a spout connected to said container;

(c) a cap adapted to close said upper end of said cavity; said cap having a centrally spaced shaft opening; said cap having a skirt spaced adjacently to said upper end of said cavity as said cap is connected to said container; said skirt having a first pour opening adapted to be selectively spaced adjacently to said spout such that ice contained in the liquid can be poured from the container; said skirt having a second pour opening adapted to be selectively spaced adjacently to said spout such that ice contained in the liquid is retained in the container as the liquid is poured therefrom; said first pour opening and said second pour opening adapted to be jointly and selectively spaced non-adjacently to said spout such that ambient atmospheric oxidation of the liquid is minimized;

(d) a mixing element having an elongate shaft with a proximal end and a distal end; said shaft adapted to be reciprocally and axially displaced relative to said shaft opening; said mixing element having a handle connected to said proximal end of said shaft; said mixing element having a mixing head connected to said distal end of said shaft such that said mixing head is submerged in the juice contained in the container as said cap is connected to said container; said mixing head extending generally transversely outwardly from said shaft; said mixing head having cutouts adapted to displace the liquid substantially radially inwardly, outwardly, and non-circularly relative to said shaft as said shaft is axially and reciprocally displaced; said mixing head adapted to displace the liquid only moderately axially relative to said shaft as said shaft is axially and reciprocally displaced;

(e) an upstop connected to said shaft such that, as said shaft is axially and reciprocally displaced, displacement of said mixing head is limited to total submersion in the liquid contained in said container; said upstop adapted to be selectively spaced along said shaft; and

(f) a down stop connected to said shaft such that downward displacement of said mixing head within said cavity is limited.

5,284,390

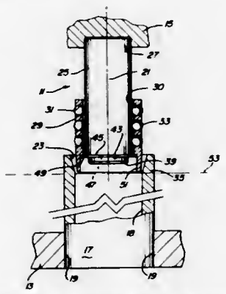
GUIDE POST, GUIDE SLEEVE AND MODIFIED BALL BEARING ASSEMBLY

Ronald L. Hanaway, 30210 E. Eight Mile Rd., Farmington Hills, Mich. 48236

Filed Dec. 5, 1991, Ser. No. 802,730

Int. Cl.[5] F16C *31/04*

U.S. Cl. 384—49 **12 Claims**



1. In combination a guidepost having a longitudinal axis;

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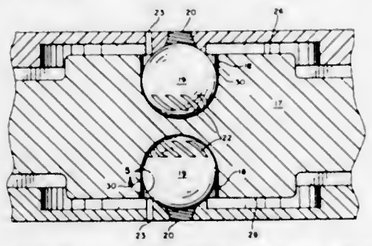
a cylindrical ball bearing cage having a coaxial longitudinal bore and adjacent one end a counter bore defining an interior annular stop;
said bores adjustably receiving said guidepost and said cage being mounted upon said guidepost for relative longitudinal and rotary movements thereon;
said cage mounting a plurality of spaced circularly arranged ball bearings projecting inwardly and outwardly thereof respectfully for operative engagement with said guidepost;
a resilient snap ring removably mounted upon said post inwardly of one end thereof retainingly engageable with said stop and for limiting relative longitudinal movements of said post and cage, said cage being rotatable relative to said guidepost around said axis;
the mounting of said snap ring including an annular groove within said guidepost inwardly of one end thereof; and
said snap ring having a pair of adjacent free ends; there being a transverse bore through each of said ends, adapted to receive a spanner type tool for expanding said snap ring for assembling said snap ring into and out from said groove.

5,284,391

APPARATUS FOR ADJUSTMENT OF A HYDRODYNAMIC SPINDLE BEARING ASSEMBLY

Mark Diel, Boulder, and Forrest D. Titcomb, Colorado Springs, both of Colo., assignors to Maxtor Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 881,739, May 6, 1992. This application Nov. 6, 1992, Ser. No. 973,063
Int. Cl.[5] F16C *32/06*; G11B *5/016*
U.S. Cl. 384—108 **6 Claims**



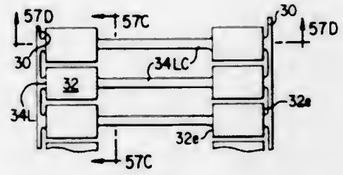
1. A hydrodynamic bearing assembly for a rigid-disk recording unit comprising:
a base;
a cover secured to said base creating a cavity therebetween;
a hub disposed within said cavity supporting an annular rigid-disk, said rigid-disk providing a recording medium for storage of information thereon;
a bearing permitting rotational movement of said hub within said cavity along a longitudinal axis, said bearing comprising a pair of balls disposed within a pair of sockets aligned with said longitudinal axis on opposite sides of said hub, said sockets having a spherical section for receiving a hemisphere of said balls and a cylindrical section extending beyond said hemisphere, either of said pair of sockets or said pair of balls being affixed to said hub, with the other of said pair being respectively affixed to said base and said cover;
said assembly further comprising a space disposed between each socket and its associated ball, said space being filled with a liquid lubricant such that a meniscus is formed between each of said balls and said cylindrical section of each of said sockets; and
means for adjusting said space comprising a screw connected to at least one of said sockets or balls, said screw being threadably affixed to either said base or said cover.

5,284,392

BEARINGS HAVING SPACED PADS AND METHODS OF MAKING THE SAME

Russell D. Ide, 122 Ridge Dr., Exeter, R.I. 02822

Continuation-in-part of Ser. No. 685,148, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, which is a continuation-in-part of Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned. This application Oct. 2, 1992, Ser. No. 956,038
Int. Cl.[5] F16C *17/03*
U.S. Cl. 384—117 **13 Claims**



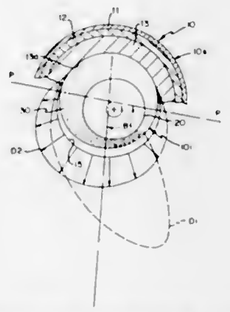
1. A hydrodynamic bearing for supporting a rotating shaft, the bearing comprising a plurality of spaced bearing pads and a support structure for supporting the bearing pads, each of the bearing pads having a pad surface facing the rotating shaft, a support surface facing the support structure, a leading edge, a trailing edge and two side edges, the support structure being connected to at least one of the side edges of each of the bearing pads at a center region thereof, and the support surface of each of the bearing pads being tapered toward the leading edge such that the leading edge of the bearing pad is thinner than the center region of the bearing pad.

5,284,393

SLIDING BEARING

Durval Duarte, Jr.; Manfred Kaufmann, Jr.; Mario Sergio Praca, and Walter Zottin, all of São Paulo, Brazil, assignors to Metal Leve S.A. Industria E Comercio, San Paulo, Brazil

Filed Feb. 21, 1992, Ser. No. 840,919
Claims priority, application Brazil, Feb. 25, 1991, 9100852
Int. Cl.[5] F16C *33/10*
U.S. Cl. 384—291 **11 Claims**



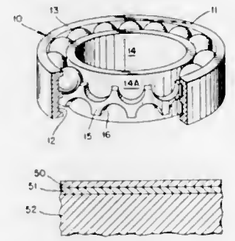
1. Sliding oil lubricated circular bearing for internal combustion engines, comprising:
a backing layer and at least one sliding layer having an inner surface for bearing a rotating shaft between which there is an oil film, between the sliding layer and the rotating shaft,
at least one recess formed on said inner surface extending along a portion of the axial direction of the shaft at a region of said inner surface of the bearing which is subjected to an oil film pressure higher than a first predetermined maximum value and/or placed up to 45 degrees upstream in the rotation direction of the shaft in one region of said inner surface where the minimum oil film thickness is lower than a second predetermined value,
each recess having a maximum radial depth E and a circumferential range α, which vary according to construction and operational characteristics of the bearing which dimensions E and α are defined to maintain the oil pressure and the oil film thickness values within respective first and second predetermined values.

5,284,394

BALL AND ROLLER BEARINGS AND BEARING COMPONENTS

Jerome Lemelson, P.O. Box 5076, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 489,664, Mar. 7, 1990, Pat. No. 5,067,826. This application Nov. 21, 1991, Ser. No. 795,812
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] F16C *33/32*
U.S. Cl. 384—463 **20 Claims**



1. A ball bearing assembly comprising in combination:
a) a cylindrical outer ring-shaped race made of hard material and having an inner cylindrical surface,
b) a cylindrically shaped inner race made of hard wear-resistant material and forming an assembly with said outer race,
c) said inner race having an outer cylindrical surface spaced apart from said inner surface of said outer race,
d) a plurality of composite spherically shaped balls contained between said outer and inner races and sized for rolling movement therebetween against portions of said cylindrically shaped inner and outer surfaces of said outer and inner races,
e) each of said composite spherically shaped balls being formed of a spherical core made of hard load supporting material,
f) each of said spherical ball cores having a coating of synthetic diamond material formed in situ on and completely covering its spherical outer surface defining a spherically shaped shell of sufficient thickness to protect the surface stratum of the spherical core from developing surface occlusions such as surface cracks and from the spread of surface defects due to impact loads applied to said ball bearing during its operation while rotationally supporting a plurality of machine elements.

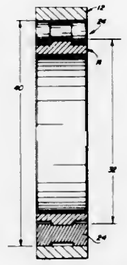
5,284,395

PROPORTIONALLY DIMENSIONED ROLLER BEARING

Ivan Stemberger, APP Carreo 870, Maracaibo, Venezuela

Filed Sep. 10, 1992, Ser. No. 942,901
Int. Cl.[5] F16C *33/34*
U.S. Cl. 384—565 **4 Claims**

1. A roller bearing comprising a pair of rings having a common axis including:
an outer annular ring having an inside working surface of a common first diameter,
an inner annular ring having an outside working surface of a common second diameter less than said first diameter,
said working surfaces of said inner and outer rings defining an annular gap therebetween,
a plurality of equally spaced rollers of circular cross-section captivated in the gap, each of said rollers being of a common size and shape and each having an axis parallel to the axis of said rings, said rollers having
a central portion of common outside diameter, said common outside diameter being less than spaced roller diameter portions and defining a working surface in close adjacent



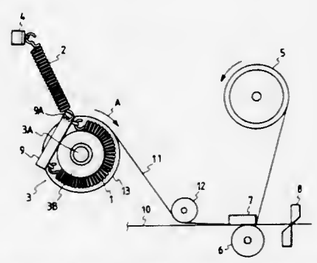
working relation to said working surface of said inner ring,
a pair of said spaced roller portions of common outside diameter extending oppositely from said central portion and defining a pair of outer portion working surfaces each in close adjacent working relation to the working inside surface of said outer ring, said outer diameter of said pair of outer portions being greater than said diameter of said central portion, and
said central portion outside diameter dimension relative to said second diameter being equally proportional to the outside diameter of said pair of outer portions relative to said first diameter.

5,284,396

RIBBON FEEDER FOR A PRINTER HAVING A TENSION MECHANISM

Yosinobu Masumura; Takayasu Hongo, and Setsuo Sasabe, all of Amagasaki, Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 918,617
Claims priority, application Japan, Jul. 29, 1991, 3-212835
Int. Cl.[5] B41J *33/14*
U.S. Cl. 400—234 **2 Claims**



1. A ribbon feeder for a thermal printer, comprising:
a ribbon feed spool having a friction collar;
a biasing element applying a frictional force to the friction

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collar to resist rotation of the friction collar relative to the biasing element;

a first spring being arranged about the friction collar and having first and second ends being connected by the biasing element, the first spring providing a biasing force to the biasing element, such that relative rotation of the friction collar and the biasing element is resisted;

a second spring having first and second ends, the first end being fixed relative to the printer head, the second end being connected to the biasing element;

a ribbon pulling means for providing a pulling force on the ribbon for pulling the ribbon from the ribbon feed spool into the printer head, such that when tension is applied to the ribbon, the ribbon feed spool, friction collar, first spring and biasing element rotate about an axis of the ribbon feed spool until a tensile force in the second spring becomes equal to a frictional force between the biasing element and first spring and the friction collar.

5,284,397

JOINT APPARATUS

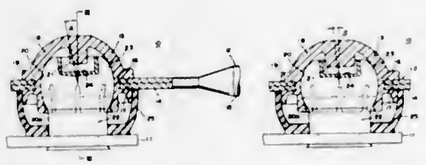
Akira Hayashi, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gumma, Japan

Filed Mar. 24, 1992, Ser. No. 856,500

Claims priority, application Japan, Mar. 25, 1991, 3-025709[U]

Int. Cl.[5] F16C *11/00*

U.S. Cl. 403—114 **8 Claims**



1. A joint apparatus connecting a rotatable member to a rod, having a central axis, for oscillation of said rod, comprising:

a spherical bearing member formed of resin, said spherical bearing member defining an interior spherical bearing surface and an aperture opening to said interior spherical bearing surface, said rod being connected to said spherical bearing member;

a substantially cylindrical shaft including a spherical surface, said cylindrical shaft extending through said aperture with said spherical shaft surface being positioned in contact with said spherical bearing surface over a portion thereof;

a substantially circular concave portion formed as a recess provided at a top of said cylindrical shaft; and

a convex portion formed projecting from said spherical bearing surface, said convex portion being inserted into said concave portion, said convex portion having a larger diameter perpendicular to said central axis of said rod and also perpendicular to a central axis of said convex portion than a diameter parallel to said central axis of said rod.

5,284,398

PILLOW BALL JOINT AND METHOD OF MAKING THE JOINT

Motohiro Sakai, Aichi, Japan, assignor to TRW Steering & Industrial Products (Japan) Co., Ltd., Minato, Japan

Filed Feb. 18, 1992, Ser. No. 837,063

Claims priority, application Japan, Mar. 19, 1991, 3-54889

Int. Cl.[5] F16C *11/10*

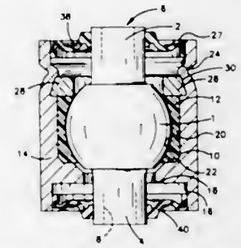
U.S. Cl. 403—135 **20 Claims**

1. A joint comprising:

a pillow ball having an exterior spherical portion;

a bearing surrounding said spherical portion of said pillow ball and having an inner surface matingly engaging said spherical portion and allowing at least rotation of said spherical portion relative to said bearing;

a housing having an aperture which includes a first attaching bore, an intermediate bore and a housing bore sequentially arranged therein, said attaching bore being located adjacent a first end of said aperture and having a smooth annular inner surface with an inner diameter dimensioned to receive a dustproof cover, said attaching bore being contiguous with said intermediate bore, said intermediate bore having an upper portion adjacent to said attaching bore and a lower portion adjacent to said housing bore, said upper portion having a smooth annular inner surface with an inner diameter, said lower portion having an inner surface with an inner diameter which is less than the diameter of the respective inner surface of said upper portion and said attaching bore, said intermediate bore being contiguous with said housing bore and being separated therefrom via a step shoulder, said housing bore having an inner diameter less than the diameter of each respective inner surface of said upper portion and said attaching bore, said inner surface of said lower portion tapering radially inward from said step shoulder, said bearing being located in said housing bore, and a bearing engaging shoulder located adjacent a portion of said housing bore remote from the first end; and



a substantially annular plug member located in said intermediate bore, adjacent said lower portion, for retaining said bearing in said housing bore, said plug member having a planar surface engaging said step shoulder and said bearing, said plug member having a conical external surface which radially tapers outward to said planar surface and which engages said tapering inner surface of said lower portion, said plug member being trapped between said step should and said tapering inner surface of said lower portion to prevent movement of said plug member.

5,284,399

CONNECTING FITTING

Klaus Brüstle, Höchst, and Andreas Töfferl, Hard, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Division of Ser. No. 694,945, May 2, 1991, Pat. No. 5,207,526. This application Nov. 30, 1992, Ser. No. 983,132

Claims priority, application Austria, May 7, 1990, 1021/90

Int. Cl.[5] F16B *12/26*

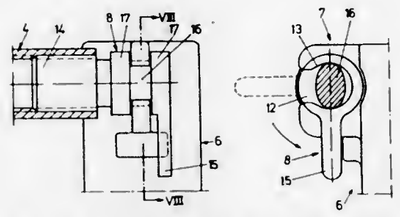
U.S. Cl. 403—199 **8 Claims**

1. A connecting fitting for fastening a rear end of a rail of a drawer to a rear wall or side wall of the drawer, said fitting comprising:

a supporting member to be fastened to the rear wall or side wall of the drawer, said supporting member having therethrough a receiving opening and an open-ended slot, said receiving opening being substantially circular in cross section, said slot opening into said receiving opening and having a width smaller than the size of said receiving opening, such that said slot widens into said receiving opening;

a securing element for connecting the rear end of the rail to said supporting member, said securing element including a first portion to be fastened to the rear end of the rail and a second portion dimensioned to fit in said slot, such that said second portion may be inserted through said slot into said receiving opening to thereby suspend said securing element from said supporting member;

said second portion of said securing element having a non-circular cross section frictionally engaging said supporting element internally of said receiving opening, such that rotation of said second portion within said receiving opening locks said second portion therein due to frictional contact between a surface of said second portion against a surface defining said receiving opening, thereby releasably retaining said second portion of said securing element with said receiving opening; and



said securing element further including a pair of flanges at respective opposite ends of said second portion, and a lever integrally extending from one of said flanges, by which said securing element may be rotated to thereby rotate said second portion within said receiving opening.

5,284,400

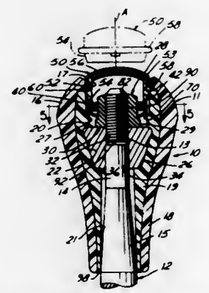
GEARSHIFT KNOB ATTACHING ARRANGEMENT

Robert M. Thomas, South Lyon, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 7, 1992, Ser. No. 986,416

Int. Cl.[5] G05G *1/06, 9/12*

U.S. Cl. 403—243 **3 Claims**



1. In a fastening arrangement for attaching a handgrip assembly to a gearshift lever rod comprising:

a handgrip knob having an axially extending through passage concentrically disposed about a vertical knob axis of symmetry, said through passage comprising an upper cylindrical cavity portion, an intermediate cavity portion, and a lower lead-in cavity portion;

an insert fixedly received in said intermediate cavity portion separating said upper and lower cavity portions, said insert having an upper end establishing a transverse bottom wall of said upper cavity portion, said insert having an internally threaded through bore terminating at its lower end in a smooth counterbore portion aligned on said knob axis and divided by an internal flat circular insert stop shoulder;

a shift lever rod having a cylindrical shank section terminating at its upper end in a threaded stem section formed with a frusto-conical pilot section on the upper end thereof, an external rod stop shoulder dividing said shank section from said stem section, said rod stop shoulder being flat and circular and having a diameter substantially equal to the diameter of said insert stop shoulder;

said upper cavity portion formed with a plastic serrated portion concentrically disposed about said knob axis, said serrated portion having an interior diameter of a predetermined dimension; a flexible metal drive washer having a circular peripheral edge and a central aperture formed with internal rib means;

said interior diameter of said serrated portion being less than the diameter of said flexible metal drive washer in its substantially planar relaxed state;

a locknut formed with an upper crown portion and a radial flange at its lower end, said locknut having an internally threaded central bore and a planar undersurface, said locknut crown portion having axially extending external rib means slidably intermeshed with said drive washer central aperture internal rib means forming a splined assemblage;

whereby upon said assemblage being inserted in said knob upper cavity said drive washer outer peripheral edge engages said plastic serrated portion such that said washer flexes convexly downwardly urging its peripheral edge into resilient biting engagement with said plastic serrated portion establishing a frictional press-fit connection therewith, whereby said locknut is captured in said upper cavity allowing limited axial movement whereby said locknut planer undersurface is positioned by gravity on said upper cavity bottom wall;

whereby upon said knob lower cavity portion receiving said rod pilot section said knob lower cavity slides thereon causing said stem section to be telescoped into said insert counterbore facilitating threaded engagement of said stem with said insert axial bore, such that upon rotation of said knob said insert being threaded downwardly wherein said pilot section is axially advanced above said upper cavity bottom wall and threadably engage said locknut bore, providing an initial drive torque of first magnitude; and

whereby continued rotation of said knob causes said rod external stop shoulder to clamp and create a first anti-rotation lock against said insert internal stop shoulder, such that continued rotation of said locknut causes said drive washer peripheral edge to overcome said frictional connection with said serrated portion to provide a final prevailing drive torque of second magnitude, causing said locknut undersurface to clamp and create a second anti-rotational lock against said upper cavity bottom wall.

5,284,401

FASTENING DEVICES

David N. Harley, Bournemouth, United Kingdom, assignor to Titus International Limited, Buckinghamshire, England

PCT No. PCT/GB91/01175, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO92/02733, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 16, 1991, Ser. No. 860,495

Claims priority, application United Kingdom, Aug. 7, 1990, 9017313

Int. Cl.[5] F16B *12/00*

U.S. Cl. 403—409.1 **12 Claims**

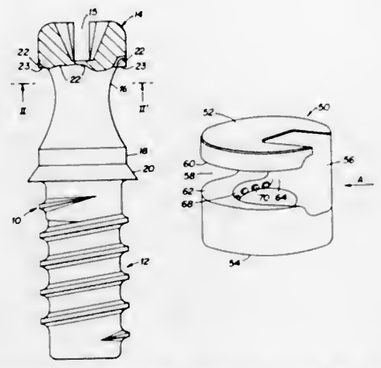
1. A fastening device for joining two panels together comprising:

an elongate pin member adapted to be secured in a first one of said panels, the pin member including a head portion arranged to protrude from said first panel; and

a rotatable drum member adapted for insertion in a recess in a major surface of the other panel and arranged to receive

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said head portion of the pin member, the drum member being provided with at least one camming surface arranged to pull the head of the pin member inwardly into the drum member when said drum member is rotated and thereby fasten the panels,



wherein the head of the pin member is provided with protrusions or depressions arranged to engage respective depressions or protrusions provided in a cooperatively disposed surface of the drum member to facilitate locking engagement of the fastening device.

5,284,402

SYSTEM FOR THE MANUFACTURE AND INSTALLATION OF SELECTIVE INTAKE TOWERS IN RESERVOIRS

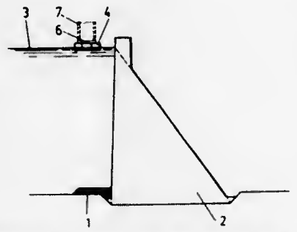
Antonio C. Del Villar, Pedro Rico, 31- 28029 Madrid, Spain

Continuation of Ser. No. 898,913, Jun. 12, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 18,461

Claims priority, application Spain, Jun. 12, 1991, 9101405

Int. Cl.[5] E02B *7/32*

U.S. Cl. 405—127 **11 Claims**



1. A method for constructing and installing a reservoir intake tower in a reservoir, the tower being constructed proximate a dam, while maintaining the operability of the reservoir, comprising the steps of

a) providing a platform having an adjustable buoyancy;

b) constructing a footing having an outer wall on the platform, the footing and outer wall forming a hollow tower with a water-tight bottom at the point where the footing meets the outer wall such that the tower and platform float;

c) adjusting the buoyancy of the tower to submerge the platform and a portion of the tower;

d) lengthening the unsubmerged portion of the outer wall to a height such that the tower can float of its own accord without the benefit of the platform;

e) separating the tower from the platform;

f) adding water to the interior of the tower to maintain the center of gravity of the tower below its midpoint and increase the length of the submerged portion of the tower;

g) further extending the outer wall of the unsubmerged portion of the tower to a final predetermined height; and

h) positioning and securing the tower to fix it in a position relative to the dam.

5,284,403

CONTROL METHOD AND CONTROL EQUIPMENT FOR DRILLING APPARATUS

Valto Ilomäki, Lollantie 8, SF-33470 Ylöjärvi, Finland

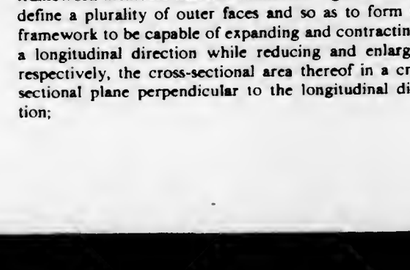
PCT No. PCT/FI90/00232, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/05138, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 27, 1990, Ser. No. 838,793

Claims priority, application Finland, Sep. 27, 1989, 894558

Int. Cl.[5] E21D *9/00*

U.S. Cl. 405—141 **16 Claims**



1. A method for controlling advancement of a drilling apparatus comprising a drill head and at least one conveying tube comprising the steps of:

applying a driving force to the apparatus from a rear end of a conveying tube positioned near the entrance of a tunnel by means of a power unit, said power unit remaining substantially immobile, to drive the drilling apparatus into ground;

mounting additional conveying tubes successively at the rear end of the apparatus to increase a length of said apparatus as the apparatus is driven into ground, said driving force being transmitted through said conveying tubes to said drill head;

adjusting driving force in accordance with the length of the apparatus;

measuring changes in pressure in the drill head or the conveying tubes to access forces acting on said drill head;

transmitting said measured changes in pressure to control equipment used for controlling said power unit;

adjusting said driving force as a function of said changes in pressure, whereby damage to said drill head is prevented.

5,284,404

MOVING STEEL FORM SYSTEM

Ming C. Hu, No. 1, Lane 109, Ta Kuang Road, Sec. 2, Pan Chiao City, Taipei Hsien, Taiwan

Filed Mar. 31, 1992, Ser. No. 861,279

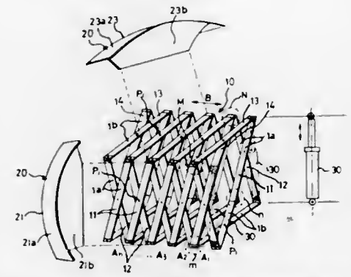
Int. Cl.[5] E21D *9/00*

U.S. Cl. 405—142 **10 Claims**

1. A travelling form system, comprising:

a three dimensional framework made up of a plurality of framework members that are connected together so as to define a plurality of outer faces and so as to form said framework to be capable of expanding and contracting in a longitudinal direction while reducing and enlarging, respectively, the cross-sectional area thereof in a cross-sectional plane perpendicular to the longitudinal direction;

form panels fixed to at least one said outer face of said three dimensional framework such that, when said three dimensional framework is contracted in the longitudinal direction so that the cross-section thereof is enlarged, said form panels are together to form a predetermined shape, and such that, when said three dimensional framework is expanded in the longitudinal direction so that the cross-section thereof is reduced, said form panels move apart



from one another and change from said predetermined shape; and

driving means mounted on said three dimensional framework for expanding said three dimensional framework in the longitudinal direction to reduce the cross-sectional area thereof and for contracting said three dimensional framework in the longitudinal direction to enlarge the cross-sectional area thereof.

5,284,405

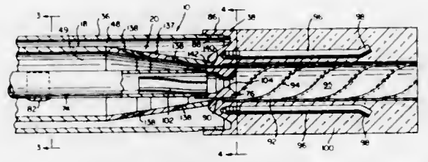
METHOD AND APPARATUS FOR INJECTING SLUDGE INTO A KILN

Keith H. Carpenter, Centerville, Ohio, assignor to Systech Environmental Corporation, Xenia, Ohio

Continuation-in-part of Ser. No. 554,053, Jul. 13, 1990, Pat. No. 5,076,179. This application Dec. 27, 1991, Ser. No. 814,358

Int. Cl.[5] B65G *53/52*

U.S. Cl. 406—194 **21 Claims**



1. An apparatus for injecting sludge into a kiln comprising:

an outer conduit;

an inner conduit having an open end, said inner conduit extending within said outer conduit and forming a cylindrical air manifold therewith;

said inner conduit including an attrition portion having a plurality of nested segments positioned at said open end, each of said segments having a plurality of channels formed in an outer surface thereof, said channels extending between an overlapping portion of each of said segments, thereby an overlapping portion of each of said segments, thereby providing a passageway from said manifold to an interior volume of said inner conduit;

means for supplying pressurized fluid to said manifold for forming jets of said fluid through said passageways; said jets penetrate and thereby attrite sludge from said inner conduit; and

means for forcing sludge from along said inner conduit to said attrition portion.

5,284,406

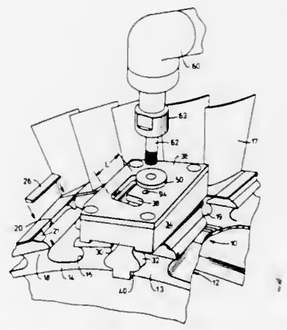
FIXTURE AND METHOD FOR MACHINING ROTORS

Peter W. Mueller, Morrow; Dewey D. Dunkman, Cincinnati; Joseph T. Stevenson, Amelia, and Elbert Stonom, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 613,340, Nov. 14, 1990, Pat. No. 5,101,557. This application Mar. 6, 1992, Ser. No. 825,350

Int. Cl.[5] B23C *1/20*

U.S. Cl. 409—110 **3 Claims**



1. A fixture for machining a gas turbine rotor having rotor blade slots and a rim having a forward face, said fixture comprising:

a root removably insertable into the blade slots, said root shaped to conform to the rotor blade slot, said root further including a tang to butt up against the forward face of the rim, thereby axially fixing the position of the root;

a base attached to said root;

a machining guide connected to said base;

a C-shaped tool guide slot extending through said machining guide, said base and said root; and

a means to removably mount said root to the rotor in a fixed position relative to the rotor.

5,284,407

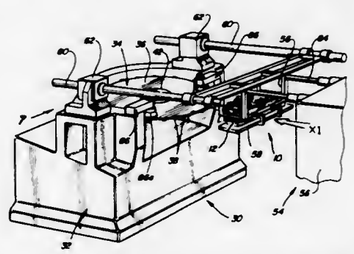
SAW MILL APPARATUS FOR CASTINGS AND METHOD

Walter W. Wawrzyniak, 34452 Jefferson, #C-39, Mt. Clemens, Mich. 48045

Filed Jul. 22, 1991, Ser. No. 733,890

Int. Cl.[5] B23C *3/00;* **B23D** *45/00*

U.S. Cl. 409—132 **64 Claims**



1. Apparatus for machining castings for use as engine blocks, cylinder heads, cam carriers, transmission housings and the like and for simultaneously removing casting risers from the cast-

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ing and forming a substantially finished surface at the plane of removal of the riser, said apparatus for simultaneously removing such riser and forming such finished surface comprising:

a saw mill cutter,

said saw mill cutter having a cutter body having a generally circular shape,

a plurality of removable cutter inserts located circumferentially about the periphery of said cutter body,

at least some of said cutter inserts having a first cutting edge adapted to extend axially relative to said cutter body for cutting the casting riser from the casting to form a rough cut surface,

at least some of said cutter inserts having a second cutting edge adapted to extend radially relative to said cutter body for milling the rough cut surface to provide a cast body with the finished surface along a preselected plane,

central support means for centrally supporting said saw mill cutter for rotation about a preselected axis,

fixture means for holding the casting,

feed means operatively connected with said central support means and said fixture means for controlling the relative movement between said saw mill cutter and the casting in a direction transverse to said preselected axis for cutting the rough cut surface to remove the riser and simultaneously milling the rough cut surface to provide the finished surface along said preselected plane.

5,284,408

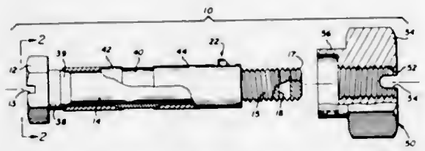
ADJUSTABLE DIAMETER BOLT ASSEMBLY

John A. Duran, Glendora; Robert De Leon, and Gordon Bussard, both of Burbank, all of Calif., assignors to Avibank Mfg., Inc., Burbank, Calif.

Continuation-in-part of Ser. No. 816,654, Jan. 3, 1992, Pat. No. 5,224,806. This application Mar. 25, 1993, Ser. No. 36,900

Int. Cl.[5] F16B *13/04, 13/06, 35/02*

U.S. Cl. 411—33 **33 Claims**



1. In a self-retaining bolt assembly including a bolt having an enlarged head at one end, a threaded section at the other end and a shank portion between the head and the threaded section, the bolt being adapted to be inserted through aligned apertures in a pair of abutting panels with the head on the access side of said panels, the shank portion including a pawl disposed in a hole in the shank portion movable from a first position into said hole to a second position abutting against the blind side of the panels in which the bolt may be inserted to hold the bolt in a hold-out position with respect to the panels, the pawl being adapted to be disengaged from abutment with the panels whereby the bolt can be removed from the aligned apertures, the threaded section being adapted to be threaded to a nut on the blind side of said panels, the improvement which comprises:

bushing means encircling the shank portion of said bolt, one of said bushing means including a first bushing segment disposed adjacent said threaded section and having a hole therethrough receiving said pawl therethrough and another of said bushing means including a bushing portion adjacent said head integral with said shank portion some of said bushing means comprising male-type bushing means adapted to contract against the shank portion of said bolt when said nut is tightened onto the threaded section of said bolt, and other of said bushing means comprising female-type bushing means adapted to expand outwardly from said shank portion t the walls of said apertures when said nut is tightened onto the threaded section of said bolt; and

said nut having a main threaded body portion and a generally cylindrical skirt portion extending toward said threaded section and tightened thereon forcing said one of said bushing means toward said bolt head whereby said bushing means are adapted to fill the spacing between said bolt shank portion and the walls of said aligned apertures.

5,284,409

EXPANSION ANCHOR FOR ENGAGEMENT IN A HOLE

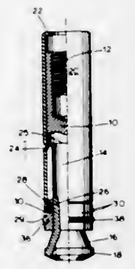
Masaaki Miyanaga, Ashiya, Japan, assignor to Kabushiki Kaisha Miyanaga, Miki, Japan

Filed Aug. 7, 1992, Ser. No. 926,456

Claims priority, application Japan, Aug. 20, 1991, 3-065775; Aug. 20, 1991, 3-065776; Apr. 27, 1992, 4-027563

Int. Cl.[5] F16B *13/06*

U.S. Cl. 411—55 **6 Claims**



1. An anchor comprising:

a core including first and second ends and a cylindrical portion between said ends, said first end including means for engaging with a body to be anchored, and said second end terminating in a portion which is enlarged gradually;

a sleeve engaging telescopically around said cylindrical portion for moving said core with said sleeve when said sleeve is moved in the direction of said first end of said core;

expanders normally forming an annulus when positioned together, said annulus engaging slidably with said cylindrical portion, each of said expanders having an engaging and which abuts on and engages with said end of the sleeve, each of said expanders including an inner cylindrical wall for engagement with said portion which is enlarged gradually and including an outer cylindrical wall for engagement with an undercut portion of a hole; and

means on said expanders for at least provisionally binding them around said core.

5,284,410

DEVICE FOR CARRYING LARGE SHEET MATERIAL

Ante Sare, 24-32 21st St. #5C, Astoria, N.Y. 11102, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Sep. 24, 1992, Ser. No. 949,981

Int. Cl.[5] B60P *1/00*

U.S. Cl. 414—11 **2 Claims**

1. A dolly for carrying sheet material which comprises:

a) an elongated substantially U-shaped frame having a pair of spaced side walls projecting upwardly from a base, so as to receive part of one edge of the sheet material therein;

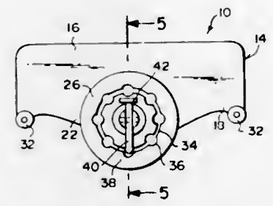
b) a boss integrally formed with said base of said frame and depending centrally therefrom;

c) a shaft mounted in said boss with outer ends projecting outwardly on opposite sides of said boss;

d) a pair of wheels, each journalled for rotation on each end of said shaft, so that a person can grip and push the sheet material to transport it along a flat surface in combination with a step- on stop mechanism wherein

e) one of said wheels has an outer surface with an annular track having a plurality of spaced apart position location areas formed into said outer surface; and

f) a lever having a step tread pivotally mounted about an axle affixed transversely to said shaft wherein said lever has



means for engaging a selected one of said areas so that when a foot of the person presses down on said step tread, said lever means will pivot transversely towards said wheel outer surface to contact one of said areas in said annular track to retain said dolly in a stationary position for allowing the sheet material to be loaded and unloaded therefrom by the person.

5,284,411

CONVEYOR FOR CONVEYING WORKPIECES IN A VACUUM CHAMBER

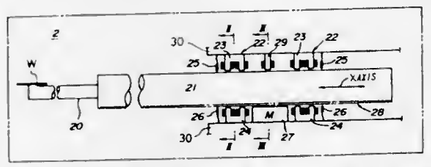
Yoshihiro Enomoto, and Yoshimasa Oda, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Mar. 16, 1992, Ser. No. 851,835

Claims priority, application Japan, Mar. 18, 1991, 3-52687

Int. Cl.[5] B65G *49/00*

U.S. Cl. 414—217 **13 Claims**



1. A conveyor for conveying a workpiece in a vacuum chamber, comprising:

a floating body having a conveying rod with a workpiece supporting portion;

a plurality of magnetic bearings disposed in axially spaced relation along an axial movement direction of said floating body for supporting said floating body in a radial direction by magnetic forces; and

a non-contact driving motor for directly reciprocating said floating body, the driving motor having a motor main body disposed adjacent to said floating body for generating a magnetic field, and a cog portion facing said motor main body and extending along an axial direction of the outer peripheral surface of said floating body and linearly driveable by the magnetic filed generated by said motor main body.

5,284,412

STOCK UNIT FOR STORING CARRIERS

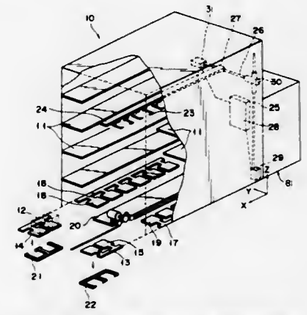
Hirotsugu Shiraiwa, Hino, and Takashi Tanahashi, Machida, both of Japan, assignors to Tokyo Electron Sagami Limited, Kanagawa, Japan

Filed Aug. 5, 1991, Ser. No. 740,136

Claims priority, application Japan, Aug. 17, 1990, 2-216911; Aug. 17, 1990, 2-216912; Aug. 17, 1990, 2-216913

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—277 **8 Claims**



1. A stock unit for storing carriers comprising:

a stock unit body;

a plurality of carrier mounting shelves provided in a side wall of said stock unit body at predetermined spaces in a vertical direction;

at least two carrier stations, provided in a lower portion of said stock unit body, for mounting a plurality of carriers;

carrier moving means for moving said carriers from a carrier port to said carrier stations;

carrier transport means, provided in the lower portion of said stock unit body, for transporting said carriers from an inside of said stock unit body to wafer transfer means provided in an outside of said stock unit body; and

a carrier arm mechanism for gripping at least one carrier and for receiving an sending said carrier between said carrier stations and said carrier transport means and between said carrier mounting shelves and said carrier transport means.

5,284,413

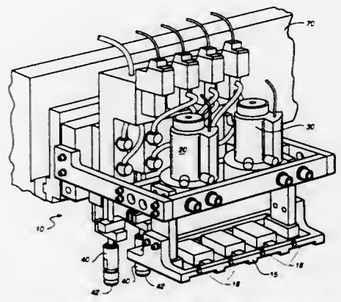
APPARATUS FOR LOADING AND UNLOADING THIN INTEGRATED CIRCUITS INTO AND FROM CARRIERS

David Wilkinson, Danville, and Donald Becker, Milpitas, both of Calif., assignors to Intelmatec Corporation, Fremont, Calif.

Filed Aug. 5, 1992, Ser. No. 925,078

Int. Cl.[5] H01L *21/68;* **G01R** *31/00*

U.S. Cl. 414—416 **9 Claims**



1. In combination with a robotic system which includes a

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mechanism for controllably moving an object three-dimensionally and a control device for controlling operations of motors and vacuum pumps, an apparatus for loading and unloading thin integrated circuits into or from individual carriers, each of said carriers comprising a frame-like housing with two elastically bendable holding pieces extending inwardly from said housing to hold one of said integrated circuits therebetween inside said housing, said apparatus comprising:

a transfer station having seats for individually depositing thereon a plurality of said thin integrated circuits; and

a pick-up unit supported and controlled by said robotic system, said pick-up unit including gripping means for controllably gripping and releasing a specified number of said carriers, unlatching means for controllably bending said holding pieces of said carriers gripped by said gripping means, and suction means for controllably picking up said thin integrated circuits by suction by applying negative pressure to one side thereof.

5,284,414

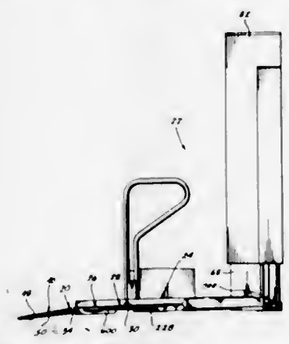
WHEELCHAIR LIFT WITH LINKAGE ASSEMBLY AND HINGED CONNECTION JOINT

Dale Kempf, Modesto, Calif., assignor to Hogan Mfg., Inc., Escalon, Calif.

Filed May 15, 1991, Ser. No. 701,143

Int. Cl.[5] B60P *1/46*

U.S. Cl. 414—545 **18 Claims**



1. A wheelchair lift, comprising:

a platform movable between a raised position and a lowered position, said platform having top and bottom surfaces, an outer edge, and an aperture extending through said platform adjacent said outer edge;

a ramp having an upper surface and a lower surface, said ramp being pivotally attached to said platform adjacent said outer edge so as to be rotatable about a pivot axis through an arc between (1) a retracted position in which said upper surface of said ramp confronts and extends substantially parallel to said top surface of said platform, (2) an intermediate position in which said ramp projects vertically from said platform, and (3) an extended position in which said ramp projects from said platform and said upper surface is substantially coplanar with said top surface;

actuator means adjacent said bottom surface of said platform, for providing extension force when said ramp is to be moved toward said extended position and retraction force when said ramp is to be moved toward said retracted position; and

a linkage assembly that cooperates with said actuator means to transmit said extension force from said actuator means to said ramp so as to cause said ramp to move from said retracted position toward said extended position and to transmit said retraction force from said actuator means to said ramp so as to cause said ramp to move from said extended position toward said retracted position wherein said linkage assembly transmits force to said ramp such that (1) when said ramp is in said intermediate position said ramp acts as a safety barrier to prevent a wheelchair passenger on said platform from rolling off said platform and (2) when said ramp downwardly approaches said extended position said ramp is unlikely to injure a bystander who inadvertently may be in the path of travel of said ramp, said linkage assembly being operatively connected to said actuator means and said ramp and no part of said linkage assembly projecting more than 0.25 inch above said top surface of said platform and said upper surface of said ramp when said ramp is in said extended position whereby said linkage assembly is unlikely to interfere with passenger access to said platform and said ramp.

5,284,415

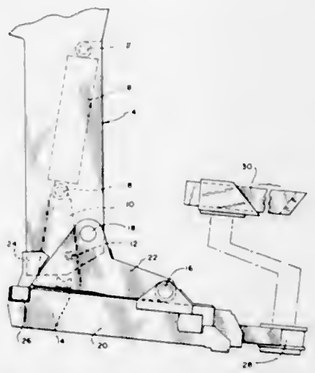
SINGLE-POWERED UNDERLIFT TOWING APPARATUS

John M. Cullum, and Hans G. Ogren, both of Germantown, Tenn., assignors to Vulcan International, Inc., Olive Branch, Miss.

Filed Jun. 3, 1992, Ser. No. 893,105

Int. Cl.[5] B60P *3/06*

U.S. Cl. 414—563 **8 Claims**



1. A vehicle-transporting apparatus comprising:

a supporting member mountable onto a transporting vehicle;

a boom having first and second boom sections, said boom extending rom said supporting member and having a distal end on said second section adapted for lifting a vehicle to be transported;

a single power-actuated means for rotating said boom about first and second axes of rotation with respect to said supporting member;

said first boom section being rotatably mounted at said first axis of rotation and said second boom section being rotatably mounted at said second axis of rotation, said boom being capable of movement by said single power-actuated means to:

(i) a lowered load-lifting position by rotating said boom about said first axis of rotation; and

(ii) a generally upright stored position by rotating said boom about said second axis of rotation; and

cooperating first and second abutment means, said single power-actuated means operatively associated with said first boom section to:

(i) rotate said first boom section about said first axis when said first and second abutment means are disengaged; and

(ii) rotate said first and second boom sections about said second axis when said abutment means are engaged.

5,284,416

VACUUM LIFTER

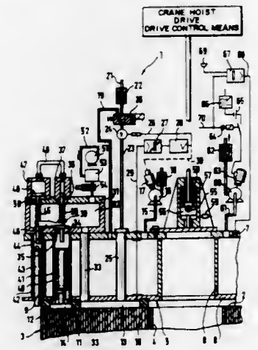
Adolf Schmidt, Munsterweg 24, D-5160 Duren, and Karl-Heinz Rechener, Wagnerstr. 18, D-5014 Kerpen-Sindorf, both of Fed. Rep. of Germany

Filed Sep. 25, 1991, Ser. No. 764,683

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 9013529[U]

Int. Cl.[5] B66C *1/02*

U.S. Cl. 414—627 **19 Claims**



1. A lifter system, comprising:

a) a crane hoist, including a drive having an operably associated vertically displaceable member;

b) a fitting connected to said member and displaceable therewith;

c) means operably associated with said fitting for guiding said fitting vertically in response to displacement of said member between vertically spaced first and second positions;

d) a suction head secured to said fitting and displaceable therewith, at least a first annular seal projecting from said head for defining therewith a vacuum chamber;

e) a vacuum source communicating with said chamber for applying a vacuum thereto;

f) a valve interposed between said source and said chamber which can be switched between a suction position wherein a vacuum is applied to said chamber and a venting position wherein said chamber is vented;

g) detection means operably associated with said guiding means for determining whether said fitting has attained said second position, said second position indicative of a load carried by said suction head having been set down; and

h) control means operably associated with said detection means, said valve, and said drive for shutting said drive off and causing said valve to vent said chamber when said fitting has attained said second position.

5,284,417

AUTOMOTIVE FUEL PUMP WITH REGENERATIVE TURBINE AND LONG CURVED VAPOR CHANNEL

Dequan Yu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1993, Ser. No. 72,018

Int. Cl.[5] F04D *9/00*

U.S. Cl. 415—55.1 **8 Claims**

1. A pump for supplying gasoline to fuel injectors of an automotive engine, comprising:

a pump case;

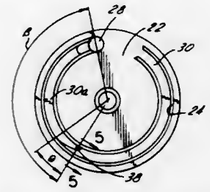
an upper pump housing mounted within said case and having an upper race of an annular pumping channel, with a pump outlet extending therethrough;

a lower pump housing mounted within said case and having a lower race of an annular pumping channel with a pump inlet and a bottom portion, with said upper and lower pump housings cooperating to form a complete pumping channel for a rotary pumping element;

a motor mounted within the case and having a shaft extending therefrom;

a rotary pumping element mounted to said motor shaft and housed between said upper and lower pump housings; and

purge mans for expelling gasoline vapor from said pumping



channel, with said purge means comprising a vapor channel extending along an axially enlarged section of the bottom portion of said pumping channel from the pump inlet to a purge orifice extending axially through said lower pump housing from a radially inward portion of the pumping channel, with said vapor channel terminating in a transition section in which the vapor channel is reduced from the full width of the bottom portion of the pumping channel to a width approximating the diameter of the purge orifice.

5,284,418

ELECTRIC PITCH CONTROL APPARATUS FOR VARIABLE PITCH PROPELLER CAPABLE OF CONTROLLING THE PITCH ANGLE BASED INSTANTANEOUS OPERATIONAL CONDITIONS OF THE PROPELLER

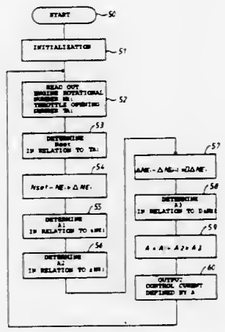
Yoshihito Moriya, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1992, Ser. No. 921,196

Claims priority, application Japan, Jul. 29, 1991, 3-212710; Aug. 6, 1991, 3-222053

Int. Cl.[5] B64C *11/44*

U.S. Cl. 416—35 **4 Claims**



1. An electric pitch control apparatus for a variable-pitch propeller of an aircraft equipped with a pitch control mechanism having an electrically controlled actuator for controlling a pitch angle of a blade of the propeller in accordance with a control current applied thereto, comprising:

an engine rotation sensor for detecting an actual rotational number of a prime engine of the aircraft;

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a throttle sensor for detecting the degree to which a throttle of the prime engine is open;

first means for determining a target rotational number of the prime engine in relation to the degree to which said throttle is open;

second means for calculating a difference between the target and actual rotational numbers of the prime engine;

third means for determining a standard control value in relation to the calculated difference in rotational number; and

fourth means for producing a control current defined by the standard control value and for applying the control current to said pitch control mechanism so that the pitch angle of the propeller blade is varied by operation of said actuator to coincide the actual rotational number of the prime engine with the target rotational number;

wherein said electric pitch control apparatus further comprises means for determining a first correction value in relation to the calculated difference in rotational number, means for determining a second correction value in relation to the rate of change of the calculated difference in rotational number, and means for correcting the standard control value based on the first and second correction values.

5,284,419

PROPELLER WITH BLADES WHICH CAN BE TWISTED

Ferdinand Lutz, 534 Bad Honnef, Frankenweg 24, Fed. Rep. of Germany

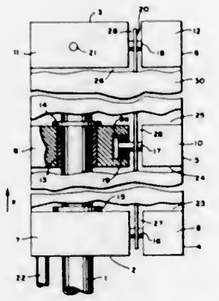
PCT No. PCT/EP91/00612, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO91/15399, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 1, 1991, Ser. No. 927,388

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010211

Int. Cl.[5] F03D *3/06*

U.S. Cl. 416—132 R **31 Claims**



1. Propeller with blades which can be twisted, comprising a spar on which ribs are arranged which can be rotated with respect to one another around the axis of the spar by means of an adjusting device, and having at least one rod element running parallel to the spar which also forcibly adjusts the other ribs, as a coupling means, when the two ribs are rotated with respect to one another by the adjusting device, characterised in that the rod element is designed to be comparatively soft in bending in the plane fixed by the spar and the rod element, and comparatively stiff in bending in the plane at right angles thereto, and couples at least three ribs to one another in such a manner that the at least one rod element deforms about the spar along a helical line when two ribs are rotated with respect to one another, and takes the further ribs with it on the helical line.

5,284,420

PLASTICS MULTI-BLADE VARIABLE-PITCH ROTOR

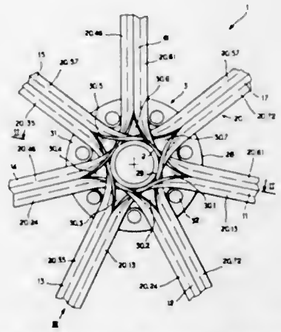
Bruno Guimbal, Les Milles, France, assignor to Aerospatiale Nationale Insustrielle, Paris, France

Filed Oct. 14, 1992, Ser. No. 960,906

Claims priority, application France, Oct. 16, 1991, 9112731

Int. Cl.[5] B64C *27/48*

U.S. Cl. 416—134 A **8 Claims**



1. A multi-blade rotor (1) especially for a helicopter rear anti-couple propeller, comprising a hub body (3) to which are radially connected twistable blade retention blades (11 to 17), equal in number to the number of straps, each formed by two bundles (20) of high-mechanical-strength fibers agglomerated by a hardened synthetic resin, each of the said bundles having a flattened cross section and forming at least two halves of different straps, wherein each of the bundles (20) is twisted and curved in the region of its passage in proximity to the circular central area of the hub body (3) in such a way as to be tangential to the circumference of the said central area of the hub along the greater dimension of its cross section.

5,284,421

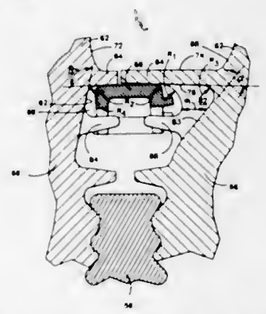
ROTOR BLADE WITH PLATFORM SUPPORT AND DAMPER POSITIONING MEANS

Wieslaw A. Chlus, Wethersfield, and David P. Houston, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1992, Ser. No. 980,848

Int. Cl.[5] F01D *5/10*

U.S. Cl. 416—248 **10 Claims**



1. A blade assembly for an axial flow turbine engine, the turbine engine having an annular flow path disposed about a longitudinal axis, the blade assembly adapted to rotate about the longitudinal axis during operation of the turbine engine, the blade assembly including:

a plurality of blades circumferentially spaced about the longitudinal axis, each blade including an airfoil portion, a platform, and a root portion, the airfoil portion extending through the flow path and having a pressure surface and a suction surface, the platform disposed radially inward of the airfoil portion, extending laterally about the blade, and including a radially inward facing surface, the root portion disposed radially inward of the platform and the airfoil portion, the root portion having a neck disposed at the radially outward end of the root portion, the neck including a pressure surface side and a pair of gussets axially spaced and extending from the pressure surface side of the neck, each gusset extending from the neck to the radially inward facing surface of the platform and having a lateral surface with a radius of curvature R_1 at the juncture of the gusset and the platform, the gussets adapted to provide radial support of the pressure side platform during rotation of the blade assembly; and

a plurality of dampers, each damper disposed circumferentially between adjacent root portions, engaged with the radially inner facing surface of the platforms during rotation of the blade assembly about the longitudinal axis, and each damper having a lateral edge with a radius of curvature R^2,

wherein rotation of the blade assembly urges the damper radially outward and into engagement with the radially inward facing surface of the platform, wherein upon sufficient relative lateral movement between the damper and the adjacent pressure side neck the damper engages the lateral surface of the gusset, and wherein $R_1 > R_2$ such that engagement of the damper with the gusset during rotation of the blade assembly encourages the damper to move radially outward and laterally away from the pressure side neck surface.

5,284,422

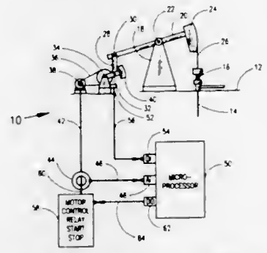
METHOD OF MONITORING AND CONTROLLING A WELL PUMP APPARATUS

John M. Turner, 3860 N. Butler, Apartment 3, Farmington, N. Mex. 87401; Jan L. Nethers, P.O. Box 3521, Farmington, N. Mex. 87499, and Robert M. Knight, Box 2659, Santa Fe, N. Mex. 87504

Filed Oct. 19, 1992, Ser. No. 963,452

Int. Cl.[5] F04B *49/06*

U.S. Cl. 417—18 **16 Claims**



1. A method of monitoring and controlling a well pump apparatus having an electric motor that rotates a crank arm having a counterweight thereon, a pivoted walking beam oscillated by said crank arm which reciprocates a sucker rod and a pump between an upstroke and a downstroke, which method comprises:

a. measuring electric current from said motor periodically between the peak upstroke motor current and the peak downstroke current, and integrating the results to deduce an analysis current per period;

b. calculating the mean of a number of sequential samples of said analysis current per period and thereafter calculating the standard deviation;

c. determining that the last said sample is within two standard deviations of said mean in order to proceed with the process; and

d. stopping said well pump apparatus if a selected number of consecutive analysis current per period samples fall below a preselected arbitrary threshold.

5,284,423

COMPUTER CONTROLLED POSITIVE DISPLACEMENT PUMP FOR PHYSIOLOGICAL FLOW SIMULATION

David Holdsworth; Daniel W. Rickey; Maria Dranova; John Miller, and Aaron Fenster, all of London, Canada, assignors to University Hospital (London) Development Corporation, Ontario, Canada

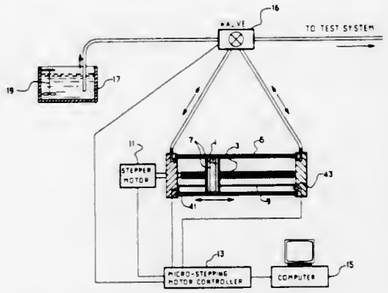
PCT No. PCT/CA92/00081, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15979, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 26, 1992, Ser. No. 940,897

Claims priority, application United Kingdom, Feb. 27, 1991, 9104097

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—28 **19 Claims**



1. A positive displacement pump, comprising:

a) a reservoir for storing fluid;

b) cylinder means comprising a single tube for receiving and discharging fluid from opposite ends thereof;

c) piston means within said cylinder means for forcing said fluid into and out of said opposite ends of said cylinder means;

d) a four-way valve having an inlet port connected to said reservoir, a pair of bidirectional ports connected to said opposite ends of said cylinder means, and an outlet port; and

e) means for receiving a user flow waveform expressed in terms of a predetermined flow rate as a function of time and in response moving said piston and configuring said four-way valve to provide fluid flow from said reservoir through said valve into one of said opposite ends of said cylinder means, and from the other one of said opposite ends of said cylinder means through said valve to said outlet port in accordance with said user flow waveform.

5,284,424

OSMOTIC WATER PURIFICATION PUMPING SYSTEM WITH FLUSH VALVE

Fredrik Dellby, Enskede; Per A. Fonser, Stockholm, and Peter H. Haggvist, Älvsjö, all of Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Dec. 30, 1992, Ser. No. 998,431

Claims priority, application Sweden, Jan. 16, 1992, 9200120-5

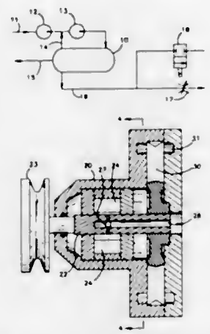
Int. Cl.[5] F04B *23/14*

U.S. Cl. 417—201 **3 Claims**

1. Pump arrangement, especially for the operation of an osmotic water purifier comprising a filter housing (10) having

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a raw water inlet (**11**), a filtrate outlet (**15**), a reject outlet (**16**), and a flush valve (**18**) adapted to be opened for flushing raw water through the filter housing, said pump arrangement comprising a high pressure pump (**12**) for supplying raw water at a pressure required for an osmotic process, and a circulation pump (**13**) which during normal operation recirculates a relatively large flow through the filter housing, characterized in that the high pressure pump (**12**) is a sliding vane pump of the



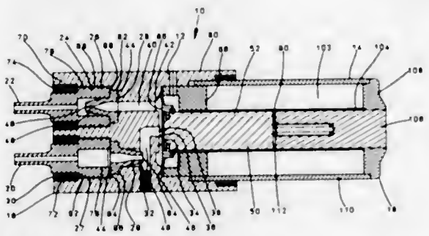
type in which the vanes (**24**) are caused to sealingly engage a surrounding wall of the pump chamber by a hydraulic pressure supplied from a pressure side of the high pressure pump, an inlet of said high pressure pump being connected to a pressurized water supply line, whereby, when said flush value (**18**) is opened said hydraulic pressure ceases, said vanes are moved radially inwards and the high pressure pump is opened for allowing a through flow exeeding its normal capacity.

5,284,425

FLUID METERING PUMP

Ludwig K. Holtermann, Old Saybrook; Jodie D. Haupt, North Guilford, and Samuel R. Hanford, Ivoryton, all of Conn., assignors to The Lee Company, Westbrook, Conn.

Filed Nov. 18, 1992, Ser. No. 978,346
Int. Cl.[5] F04B *45/00*
U.S. Cl. 417—395 **15 Claims**



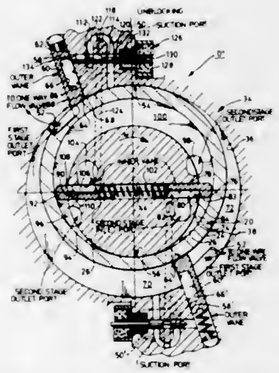
1. A pump comprising:
(a) An inlet port and an outlet port with a pump chamber there between, said pump chamber comprising a fixed wall and a diaphragm formed of elastomeric material;
(b) A first valve means for allowing a fluid media to enter the pump by flowing into the pump chamber from the inlet port while preventing the fluid media from exiting the pump by flowing from the pump chamber into the inlet port;
(c) A second valve means for allowing fluid media to exit the pump by flowing into the outlet port from the pump chamber and preventing fluid flow into the pump chamber from the outlet port;
(d) Means for alternately increasing and decreasing pressure within the pump chamber by moving the diaphragm alternately toward and away from the fixed wall of the pump chamber; and
(e) an opening in the pump chamber wall communicating with the inlet port, which opening is surrounded by an annular valve seat raised above the surface of the pump chamber wall towards the interior of the pump chamber.

5,284,426

ROTARY COMPRESSOR WITH MULTIPLE COMPRESSOR STAGES AND PUMPING CAPACITY CONTROL

Guntis V. Strikis, Belleville, and Vipen K. Khetarpal, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1993, Ser. No. 31,510
Int. Cl.[5] F01C *1/30*
U.S. Cl. 418—6 **5 Claims**



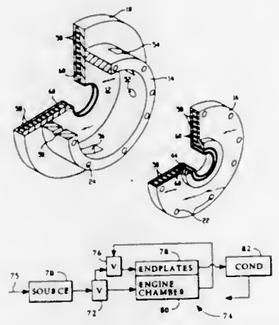
1. A two-stage rotary gas compressor comprising:
a housing, a compressor cavity in said housing having an internal cylindrical surface with a first axis;
a post substantially coaxial with said first axis and having a cylindrical surface spaced radially from said internal surface, a transverse slot in said post;
an orbital ring piston mounted for rotary movement about a second axis displaced radially from said first axis, said ring piston being located in said cavity between said internal surface and said post, said piston having an outer cylindrical surface in contact with said internal surface and an inner cylindrical surface in contact with said port;
a vane slot in said housing, an outer vane mounted for movement in said slot into contact with said outer cylindrical surface of said piston;
an inner vane mounted in said transverse slot for movement into contact with said inner cylindrical surface;
a first stage inlet passage adapted to be opened and closed by movement of said outer vane in said housing slot;
a second stage inlet passage adapted to be opened and closed by movement of said inner vane in said transverse slot;
a first stage discharge port in said housing communicating with said second stage inlet passage;
means for disabling said outer vane to prevent its movement into contact with said outer cylindrical surface whereby the capacity of said compressor can be reduced with an accompanying reduction in torque required to drive said piston;
said housing vane slot and said outer vane having cooperating valve lands whereby flow of gas to said compressor cavity is interrupted when said outer vane is moved radially outward from said second axis;
said inner vane and said transverse slot having cooperating valve lands whereby flow of gas through said second stages inlet port is interrupted when said inner vane is moved radially inward in said transverse slot.

5,284,427

PREHEATING AND COOLING SYSTEM FOR A ROTARY ENGINE

Roland W. Wacker, 36 Hollywood Ave., Los Gatos, Calif. 95032

Filed May 5, 1993, Ser. No. 59,977
Int. Cl.[5] F01C *21/04*
U.S. Cl. 418—83 **17 Claims**



1. A pressurized fluid-driven engine comprising:
a housing having an engine chamber;
inlet means for directing a pressurized drive fluid into said engine chamber;
rotary means disposed within said engine chamber for rotating in response to force of said pressurized drive fluid from said inlet means;
outlet means for exhausting pressurized drive fluid from said engine chamber; and
a plate coupled to said housing to define a wall of said engine chamber, said plate having a channel formed therein for the flow of temperature-regulating fluid, said channel having an inlet opening coupled to receive said pressurized drive fluid, wherein said drive fluid provides driving force for said rotary means and provides temperature-regulation;
said channel of said plate being in fluid communication with said outlet means to receive drive fluid exhausted from said engine chamber, thereby providing cooling for said housing, said channel being further in communication with said inlet means to receive pressurized drive fluid for heating said housing.

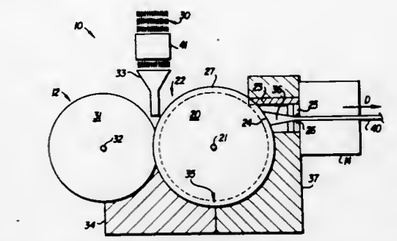
5,284,428

APPARATUS FOR CONFORM EXTRUSION OF POWDER FEED

Uday K. Sinha, and Ronald D. Adams, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Dec. 27, 1991, Ser. No. 813,728
Int. Cl.[5] B21C *23/01*; B22F *3/02*
U.S. Cl. 425—79 **24 Claims**

12. In combination, a particulated material extrusion apparatus having movable passageway defining surfaces which cooperate with a stationary shoe to form a passageway through which the particulated material is frictionally forced to an extrusion die, and means for compressing the particulated material until it coalesces into a compacted extrusion feedstock prior to its being fed into said passageway so as to facilitate its conveyance therethrough, wherein said means for compressing cooperates with said shoe and said surfaces to substantially exclude oxygen from said passageway.

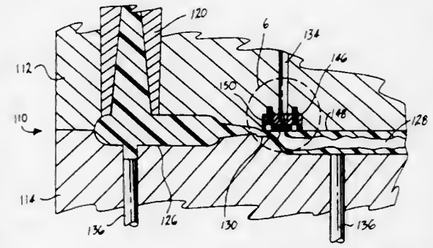


5,284,429

GAS-ASSISTED INJECTION MOLDING APPARATUS

David R. Schneider, Grand Rapids; Robert W. Russell, Kentwood, and Brett S. Sorola, Bay City, all of Mich., assignors to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed May 7, 1992, Ser. No. 879,605
Int. Cl.[5] B29C *45/03, 45/34*
U.S. Cl. 425—130 **20 Claims**



1. A mold for use in the gas-assisted injection molding of a thermoplastic article, the mold comprising:
a cavity defining the shape of a thermoplastic article;
at least one thermoplastic entry aperture which is adapted to receive molten thermoplastic resin from a nozzle of an injection molding machine;
a thermoplastic flow path including a sprue passageway and runner in fluid communication with the thermoplastic entry aperture and with the cavity;
a fluid flow passageway extending from an exterior surface of the mold to the thermoplastic flow path for communicating a low viscosity fluid to the thermoplastic flow path, said fluid flow passageway being spaced from said entry aperture and intersecting said flow path transversely thereof;
a source of low viscosity fluid under pressure connected to the fluid flow passageway to supply a low viscosity fluid under pressure to the mold cavity through the fluid flow passageway;
a plug disposed in an end portion of the fluid flow passageway adjacent the thermoplastic flow path, the plug comprising a porous core which is adapted to permit the flow of low viscosity fluid therethrough but prevent the passage of molten thermoplastic therethrough.

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5,284,430

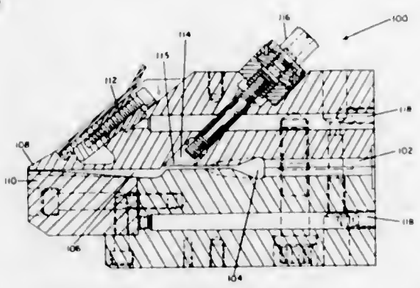
APPARATUS FOR MANUFACTURE OF INTEGRAL RECLOSABLE BAG

Mladomir Tomic, and Wayne M. Wegner, both of Appleton, Wis., assignors to Reynolds Consumer Products, Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 750,348, Aug. 27, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 21,967

Int. Cl.[5] B29C *47/16*

U.S. Cl. 425—133.5 **9 Claims**



1. An apparatus for making a plastic extruded film with at least one integral closure element, comprising:

a die having a rear channel, a manifold connected to the rear channel and disposed downstream of the rear channel, and a slot connected to the manifold and disposed downstream of the manifold, the manifold and the slot extending laterally across the die;

a choker bar protruding into the manifold and extending laterally across the manifold;

an upper die lip having a substantially flat lower surface and extending laterally across the die; and

a lower die lip, extending laterally across the die, having a substantially flat upper surface facing the lower surface of the upper die lip and at least one groove formed in the upper surface, the groove being in the shape of a closure element;

wherein a surface of the choker bar adjacent the manifold has at least one gap located at a lateral position corresponding to the location of the at least one groove, so that more extrudate flows to the at least one groove; and

wherein the slot extends to an extrusion orifice formed between the upper die lip and the lower die lip.

5,284,431

FILLING APPARATUS FOR FILLING FOAMED PARTICLES OF A THERMOPLASTIC RESIN INTO A MOLD

Hideki Kuwabara; Hidehiro Sasaki, and Satoru Shioya, all of Utsunomiya, Japan, assignors to JSP Corporation, Tokyo, Japan

Division of Ser. No. 750,636, Aug. 27, 1991. This application Apr. 1, 1992, Ser. No. 861,906

Claims priority, application Japan, Aug. 28, 1990, 2-225533; Sep. 28, 1990, 2-259574

Int. Cl.[5] B29C *31/02*

U.S. Cl. 425—148 **5 Claims**

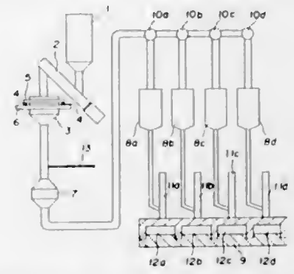
1. A filling apparatus for filling foamed particles of a thermoplastic resin into a multi-cavity mold, comprising:

a weigh hopper adapted to contain a predetermined weight of foamed particles of a thermoplastic resin, said weigh hopper equipped with a weighing means for weighing foamed particles contained within said weigh hopper;

a foamed particle feeder, operatively connected to said weigh hopper, for feeding said predetermined weight of foamed particles of a thermoplastic resin into said weigh hopper, said foamed particle feeder adapted to control the rate at which foamed particles of the thermoplastic resin are fed to the weigh hopper according to the weight of the foamed particles contained in the weigh hopper;

a particle feed hopper, operatively connected to said weigh hopper, for receiving and temporarily holding said predetermined weight of the foamed particles which have been weighed in the weigh hopper;

a plurality of holding hoppers, each holding hopper corresponding to a respective cavity of said multi-cavity mold, for holding said predetermined weight of foamed particles



of a thermoplastic resin, each said holding hopper further comprising a pressurizing means for applying gas pressure to particles contained therein;

transport means, operatively connecting said particle feed hopper and said plurality of holding hoppers, for selectively transferring said predetermined weight of foamed particles of a thermoplastic resin from said particle feed hopper to one of said plurality of holding hoppers; and

filling machine means for filling a respective cavity of said multi-cavity mold with the foamed particles from the corresponding holding hopper.

5,284,432

PLASTICS PROCESSING MACHINE AND PROCESS FOR RAPID CHANGE-OVER

Ernst Wurzer, Konigswinter, Fed. Rep. of Germany, assignor to Mauser-Werke GmbH, Bruehl, Fed. Rep. of Germany

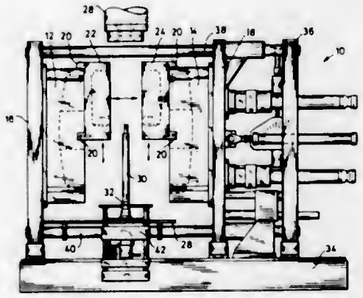
PCT No. PCT/EP91/01081, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/05936, PCT Pub. Date Apr. 16, 1992

PCT Filed Jun. 8, 1991, Ser. No. 853,699

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1990, 4030925

Int. Cl.[5] B29C *49/28*

U.S. Cl. 425—195 **9 Claims**



3. In a plastics processing machine having a first product mould divided into two mould halves (**12, 14**) having first moulding surfaces for moulding a first product, said two mould halves being secured to two mould clamping plates (**16, 18**) for movement toward and into a closed position with respect to each other for moulding said first product, and away from each other to define a space therebetween for removal of the first product from the first product mould; the improvement for rapid change-over from the first product mould to a second product mould for producing a second product, comprising a second product mould divided into two mould halves (**22, 24**) and having second moulding surfaces, separate from and spaced from said first moulding surfaces, for moulding said second product independently of said first moulding surfaces; and securing means (**20**) for detachably securing the two mould halves (**22, 24**) of the second product mould to the machine in said space between the two mould halves of the first product mould for movement with the mould clamping plates (**16, 18**) toward and away from each other while maintaining the mould halves (**12, 14**) of the first product mould secured to the mould claiming plates (**16, 18**).

5,284,433

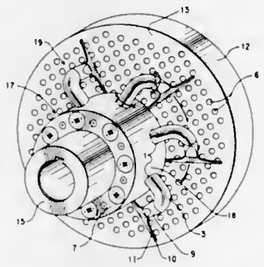
SPRING-LOADED SELF-ADJUSTING MELT CUTTER

Allen A. Cates, and Donald R. McMullen, both of Orange, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1993, Ser. No. 22,209

Int. Cl.[5] B29B *9/06*

U.S. Cl. 425—313 **3 Claims**



1. An improved rotary cutter apparatus for continuously cutting into pellets one or more molten extruded strands emerging continuously from holes in the face of an extruder die, the apparatus adapted to be driven by a rotating drive-shaft, the apparatus having

a head attachable in axial alignment to the rotating drive-shaft, so that the head rotates with and acts as an extension of the drive-shaft, and

a plurality of knife-assemblies attached to the head, so that they continuously rotate with the continuous rotation of the head, each knife-assembly having a curved or angled drive-rod portion having a first and a second end, the first end connected to the head radially with respect to the axis of the head, and having a first rotational ability about its axis, and a knife-holder portion axially aligned with and connected to the second end of the drive-rod portion so that the knife-holder portion has a limited but unconstrained axial second rotational ability, the knife-holder portion having a knife-blade with an elongated cutting-edge attached to it, wherein the improvement comprises:

a plurality of spring means housed within the head, one for each knife-assembly, operating independently in conjunction with each knife-assembly, to urge rotational movement, allowed by the first rotational ability, in a direction whereby near-zero clearance between each knife-blade cutting-edge and the die-face is continuously maintained;

the second rotational ability providing additional conformity of the knife-blade cutting-edge to the die-face;

the knife-blade movements possible as a result of the two rotational abilities allowing continuous smooth cutting of the molten strand and limiting the wear of the die-face and knife-blade cutting-edge.

5,284,434

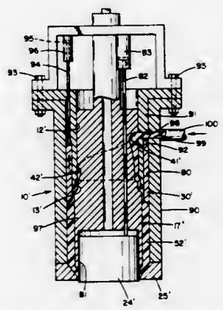
BLOW MOLDING EXTRUSION HEAD

James L. Throne, Hinckley; Christopher I. Beal, Avon Lake, and Michael M. Balasko, Parma, all of Ohio, assignors to The Geon Company, Independence, Ohio

Filed Apr. 2, 1993, Ser. No. 42,213

Int. Cl.[5] B29C *47/22, 49/04*

U.S. Cl. 425—380 **4 Claims**



1. In an extrusion head for use in a blow molding machine having an extruder for uniformly delivering polymer melt to said extrusion head; said extrusion head having a cylindrical support means with a longitudinally extending central bore and an annular recess with coincident axes; said central bore having an outlet bore portion; a die member mounted at said outlet bore portion; said cylindrical support means having an inlet bore for receiving melt for processing; a distributor head located in the upper portion of said central bore and fixedly secured to said cylindrical support means; said distributor head having a central opening coaxial with said central bore; a plunger journaled in said annular recess; power means connected to said plunger operable to reciprocate said plunger to and from said die member for expressing melt through said die member; said distributor head having a lower circumferentially extending bottom portion; said distributor head having a melt flow channel that extends circumferentially around thereof; said channel having an inlet portion that communicates with said inlet bore of said cylindrical support means; said channel having a terminal end portion diametrically opposite said inlet bore; said channel having an upper curved portion in cross section that merges with a lower linear portion to define a curvilinear channel in cross section; said lower linear portion of said channel terminates at said circumferentially extending bottom portion of said distributor head; said channel is circumferentially extending and descending from said inlet portion to said terminal end portion to direct melt from said channel to that portion of said central bore at the bottom of said plunger to move said plunger away from said die member to accumulate melt therebetween; a gap is formed between said curvilinear channel and the opposite circumferentially extending wall of said central bore; and said gap being dimensioned to provide a uniform radial spiral flow path for melt entering said inlet portion that flows along said distributor head to said lower circumferentially extending bottom portion.

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5,284,435

APPARATUS FOR MANUFACTURING A DISC-SHAPED INFORMATION CARRIER

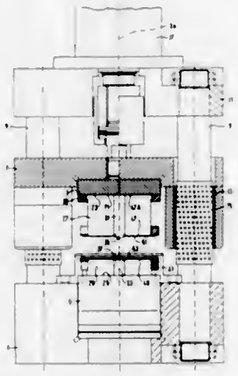
Pieter W. J. M. Nuij, Farum, Denmark; Peter P. W. L. van den Bekerom, Eindhoven, and Evert-Jan Mulder, 's Hertogenbosch, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 839,016, Feb. 18, 1992. This application Nov. 23, 1992, Ser. No. 959,817

Claims priority, application Netherlands, Feb. 28, 1991, 9100366

Int. Cl.[5] B29C *59/02*

U.S. Cl. 425—385 12 Claims



1. In an apparatus for manufacturing an object having a surface structure by pressing a first element which has a relief on a surface against a second element to provide the second element with a microstructure by cold deformation said apparatus comprising said first element and two pressure members having pressure surfaces facing each other and opposing said elements, the pressure members being movable relative to each other in directions of movement transverse to the pressure surfaces, the improvement wherein a pressure body is secured to the pressure surface of at least one of the pressure members, said pressure body having a contact surface for cooperation with one of the elements and said pressure body being made of a material whose quotient of its Poisson's ratio to its modulus of elasticity differs less from the corresponding quotient of the material of the element cooperating with said contact surface in operation than from the corresponding quotient of the material of the pressure member to which the pressure body is secured.

5,284,436

INJECTION MOLDING TORPEDO WITH SHAFT HAVING CERAMIC CENTRAL PORTION

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

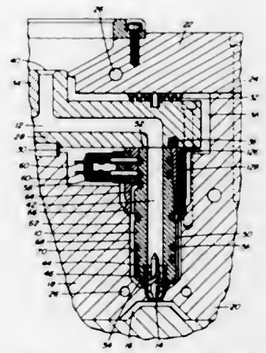
Filed Apr. 29, 1993, Ser. No. 53,496

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 13 Claims

1. In an injection molding apparatus comprising a heated nozzle seated in a well in a mold and a torpedo to convey melt to a gate, the nozzle having a rear end, a front end, a melt bore extending longitudinally therethrough from the rear end to the front end in alignment with the gate, and a seat extending around the melt bore at the front end of the nozzle, the torpedo having an outer collar, an elongated shaft extending centrally through the outer collar with an opening extending through the torpedo between the central shaft and the outer collar, and at least one support member extending across the opening between the central shaft and the outer collar, the outer collar being removably received in the seat at the front end of the nozzle with the opening through the torpedo aligned with the melt bore through the nozzle and the central shaft of the torpedo aligned with the gate, the improvement wherein;

the elongated central shaft of the torpedo has an elongated central portion extending through an outer sleeve, the at



least one support member extends outwardly from the outer sleeve to the outer collar, the central portion is secured in the outer sleeve to extend from the melt bore in alignment with the gate, and the central portion of the elongated shaft of the torpedo is formed of a thermally conductive engineered ceramic material.

5,284,437

METHOD OF MINIMIZING THE NO_x EMISSIONS FROM A COMBUSTION

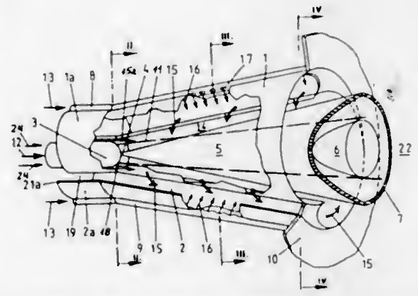
Manfred Aigner, Wettingen, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Oct. 24, 1991, Ser. No. 782,326

Claims priority, application Switzerland, Nov. 2, 1990, 3487/90

Int. Cl.[5] F23J *7/00*

U.S. Cl. 431—4 9 Claims



1. A method for minimizing NO_x emissions in combustion in a premix burner of the type comprising at least two hollow bodies each having a cylindrical initial part and a conical part extending from the cylindrical part in a direction of flow, the bodies being placed upon one another to form a conical cavity, the bodies being radially offset to form two longitudinal inlet slots at opposing sides of the conical cavity for introducing combustion air into the cavity in tangential flow, a nozzle extending into the initial cylindrical part in the direction of flow with an end face at the conical part, a fuel injector port in the end face and directed in the flow direction, and at least one water injector port on the end face directed in the flow direction, each water injector port arranged to produce a compact jet of water that bursts open after a selected length of travel, the method comprising the steps of:

introducing a tangential inflow of combustion air into the conical cavity;

injecting a fuel into the conical cavity;

allowing the fuel and air to mix in the conical cavity;

igniting the fuel and air mixture to form a flame having a flame front and flame body at an outlet end of the premix burner;

introducing a compact jet of water from each water injector port through the flame front to an interior of the flame body without disturbing the flame front, wherein said jets of water are arranged to burst open in the interior of the flame body after passing through the flame front.

5,284,438

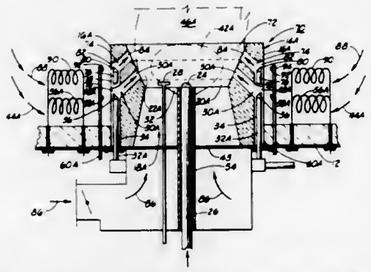
MULTIPLE PURPOSE BURNER PROCESS AND APPARATUS

Eugene C. McGill, Skiatook; Lee R. Massey, Tulsa; William C. Gibson, Tulsa, and David W. Schmitt, Tulsa, all of Okla., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Filed Jan. 7, 1992, Ser. No. 817,877

Int. Cl.[5] F23L *9/00*

U.S. Cl. 431—9 29 Claims



1. A combustion process wherein a burner assembly is disposed in a furnace, the burner assembly having a burner member with a burner throat extending therethrough, the process comprising:

injecting an ignition fuel gas stream into an ignition zone formed in said burner throat;

combining a primary fuel gas stream with diluent gas to form a first fuel/diluent gas stream by injecting said primary fuel gas stream into at least one meter channel through said burner member communicating with a first mixing zone in said burner throat adjacent to and downstream of said ignition zone and with a source of said diluent gas so that said diluent gas is mixed with said primary fuel gas stream;

passing said first fuel/diluent gas stream to said first mixing zone formed in said burner throat adjacent to and downstream of said ignition zone;

combining a secondary fuel gas stream with diluent gas to form a second fuel/diluent gas stream;

passing said second fuel/diluent gas stream to a second mixing zone in said burner throat which is adjacent to and downstream of said first mixing zone; and

passing the total air stream required to support combustion of said ignition fuel gas stream, said first fuel/diluent gas stream and said second fuel/diluent gas stream through said burner throat to said ignition zone so that a portion of said air stream supports combustion of said ignition fuel gas stream to produce a continuous ignition flame in said ignition zone and so that said first and second fuel/diluent gas streams are mixed with the remaining air stream whereby ignition of the mixture of said first and second fuel/diluent gas streams and the remaining air stream is commenced in said first and second mixing zones by said ignition flame.

5,284,439

IGNITING DEVICE

Tsutomu Shike; Toshihiko Eguchi, and Masaki Saito, all of Subashiri, Oyama-cho, Suuto-gun, Shizuoka-ken, Japan

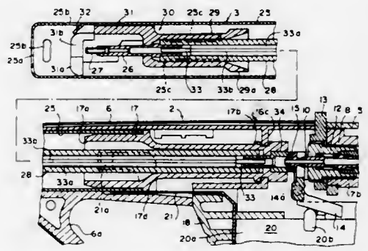
PCT No. PCT/JP91/01667, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO92/09853, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 910,163

Claims priority, application Japan, Nov. 30, 1990, 2-130577; Nov. 30, 1990, 2-130578; Nov. 30, 1990, 2-130579; Nov. 25, 1991, 3-96547; Nov. 25, 1991, 3-96548

Int. Cl.[5] F23Q *7/08*

U.S. Cl. 431—263 1 Claim



1. An igniting device comprising a gas reservoir for storing therein fuel gas, a valve mechanism which controls fuel supply from the gas reservoir, a piezoelectric unit, a gas injection nozzle provided on a tip of a rod-like portion projecting from the valve mechanism and a discharge electrode which is disposed in the vicinity of the gas injection nozzle and produces a discharge spark to ignite the fuel gas discharged from the nozzle, wherein the improvement comprises a nozzle cover made of non-conductive material and provided around the gas injection nozzle, the nozzle cover having a front end face disposed in front of the nozzle at a distance therefrom, the front end face being cut away at a portion opposed to the gas injection nozzle, and having a portion opposed to the discharge electrode to form an opening and a tubular member substantially surrounding and engaging the nozzle cover in the region of the gas injection nozzle and having a flame port spaced forwardly from the front end face of the nozzle cover and having lateral air intake ports disposed both forwardly of the front end face of the nozzle cover and rearwardly thereof and of the gas injection nozzle.

5,284,440

WATER-COOLED, WORKPIECE-SUPPORTING MEMBERS FOR A HEATING FURNACE

Frank Campbell, Jr., Houston, Tex., and Hugh J. Harding, McMurray, Pa., assignors to SSE International Corporation, Bridgeville, Pa.

Filed Jun. 29, 1992, Ser. No. 905,303

Int. Cl.[5] F27D *3/00*

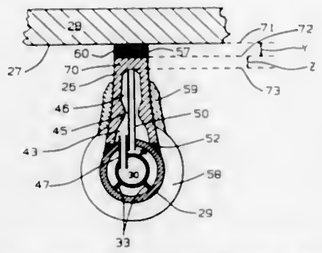
U.S. Cl. 432—127 8 Claims

1. In a heating furnace for steel workpieces having generally horizontal, lengthwise support skids comprising a pipe with water flowing therethrough, and a plurality of spaced-apart workpiece-supporting members comprising riders or buttons secured to said pipe, the improvement comprising:

each of said workpiece-supporting members having a fluid-flow passageway therein, and means to transfer water to and from said fluid-flow passageway; said pipe having a water manifold conduit therein, said water manifold conduit having a first opening for receiving water an having

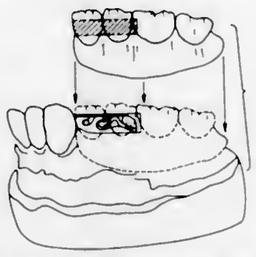
VOL 1159 ISS 2 FE 8 1994 UMI

multiple second openings, an annular flow passageway between said water manifold conduit and said pipe, a water-delivery tube extending through the outer wall of said pipe and connecting each of said second openings to said fluid-flow passageway of a workpiece-supporting



member; a water recovery tube extending through the outer wall of said pipe from said fluid-flow passageway of said workpiece-supporting member to communicate with said annular flow passageway and means to introduce water into and to recover water from said annular flow passageway.

5,284,441
PRECISION DEVICE FOR ATTACHING REMOVABLE DENTAL PROSTHESIS
Luis A. De Siqueira, Rua Lauro Muller, 66 apto. 402, Botafogo, 22290-Rio de Janeiro, Brazil
PCT No. PCT/BR91/00012, § 371 Date Apr. 28, 1992, § 102(e) Date Apr. 28, 1992, PCT Pub. No. WO92/00704, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 838,211
Claims priority, application Brazil, Jul. 9, 1990, PI/9003271
Int. Cl.[5] A61C *13/12*
U.S. Cl. 433—181 **11 Claims**



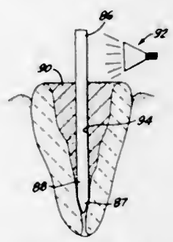
1. A device for precisely attaching removable dental prothesis for upper and lower dental arch free ends comprising:
a male member; and
a female member;
one of said male and female members being fastened to at least one retaining tooth, the member not fastened to the support tooth being fastened to the prothesis,
one of said male and female members including a damping member for dampening chewing forces exerted on the prothesis and said retaining tooth when said male member is coupled to said female member, said dampening member having means for distributing all chewing forces over the mucosa surface of the mouth.

5,284,442
TOOTH CAPS AND ARTIFICIAL TEETH AND THE METHOD OF FORMING SAME
Ken N. Peterson, P.O. Box 18102, Reno, Nev. 89511
Filed May 20, 1992, Ser. No. 886,025
Int. Cl.[5] A61C *5/10*
U.S. Cl. 433—223 **4 Claims**



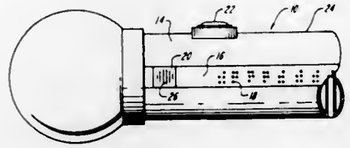
1. The method of forming an artificial tooth or crown for a tooth utilizing a metal coping as a base wherein, after being formed, the metal coping is heated to a temperature of approximately 1975 degrees fahrenheit; the coping is then cooled; a metal surface sealer is applied to the cooled coping; the coping with the metal sealer thereon is then heated to approximately 1925 degrees fahrenheit under vacuum and held at this temperature for two and one half minutes; the metal coping with its sealing agent is allowed to cool.

5,284,443
METHOD OF FORMING DENTAL RESTORATIONS
Eberhard Weil, Bad Nauheim, Fed. Rep. of Germany, assignor to Coltene/Whaledent, Inc., Mahwah, N.J.
Filed Aug. 28, 1992, Ser. No. 938,020
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] A61C *5/02*
U.S. Cl. 433—224 **10 Claims**



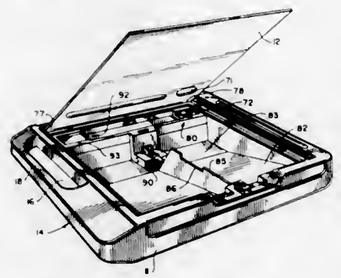
1. A method of forming a lining in the canal of a tooth stub, the method comprising the steps of:
reaming the canal to a desired size and depth;
positioning a mandrel in the canal with the lower end of the mandrel in the reamed out section of the canal; the mandrel being made of a light transmitting material;
filling the canal in the tooth stub around the mandrel with a light curable composite; and
shining light on the mandrel to cause the composite to cure to form a lining.

5,284,444
HANDRAIL SYSTEM FOR GUIDING VISUALLY IMPAIRED HAVING BRAILLE AND AUDIO MESSAGE INDICATORS
Coco Raynes, 11-13 Remington St., Cambridge, Mass. 02138
Filed Sep. 9, 1992, Ser. No. 942,302
Int. Cl.[5] G09B *21/00*
U.S. Cl. 434—113 **1 Claim**



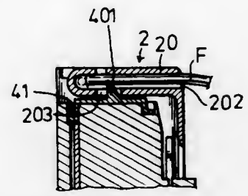
1. A system for guiding visually impaired persons in a building comprising
a series of consecutive handrails mounted in the building, and extending throughout the building, and
braille message indicators imprinted on said handrails, said braille message indicators indicating at least one of
(a) location of the handrail,
(b) location of nearby departments, facilities, offices and rooms,
(c) location of interruptions of the handrail,
(d) slopes, steps, wall openings, obstructions and turns, and
(e) other information about the building in which at least one handrail includes in addition an audio message means for audio description of locations in the building and message initiation means operatively connected to said audio message means for initiating said message said message initiation means being operable by a visually impaired person.

5,284,445
PORTABLE DRAWING SURFACE WITH INTERCHANGEABLE COMPONENTS
Charles W. Dietterich, Brodheadsville, Pa., and Richard A. Tarozzi, Gales Ferry, Conn., assignors to Binney & Smith Inc., Easton, Pa.
Continuation-in-part of Ser. No. 948,811, Sep. 17, 1992. This application Jan. 5, 1993, Ser. No. 670
Int. Cl.[5] B43L *1/00*
U.S. Cl. 434—419 **40 Claims**



1. A portable drawing surface for drawing or tracing comprising:
a base structure;
an accessory unit removably connected to said base structure; and
a working surface connected to said base structure or said accessory unit whereby said working surface is removable by lifting and pulling away from said base structure or said accessory unit.

5,284,446
SOCKET ASSEMBLY
Kuang-Shih Yu, 10F, No. 546, Min-Chuan E. Rd., Taipei City, Taiwan
Filed Mar. 31, 1992, Ser. No. 40,476
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—409 **1 Claim**



1. A socket assembly, including
a screwshell for holding an electric lamp bulb,
an insulating plate positioned on top of said screwshell,
a positive terminal member which is disposed in said screwshell and which extends through a top end of said screwshell,
a non-conductive body provided with an L-shaped recess in a middle portion and connected fixedly to said screwshell at a lower end, said recess extending from a top end to one side of said non-conductive body,
first and second conducting pieces disposed on said non-conductive body, each of said first and second conducting pieces having a piercing terminal portion connected electrically to a respective one of said screwshell and said positive terminal member, said first conducting piece having a bottom end which is secured to said non-conductive body by a rivet, and
an L-shaped coupling member which is connected pivotally to said non-conductive body and which conforms with said recess so as to make close engagement therewith, said coupling member having an accommodating means therein for receiving two electrical cords while permitting said electrical cords to be exposed in registry with said conducting pieces, said coupling member being rotatable to press said electrical cords against said conductive pieces so that said piercing terminal portions of said conducting pieces may be inserted into said electrical cords to achieve electrical connection,
wherein the improvement comprises:
said recess having a bottom which is formed with two spaced insert holes at said top end of said non-conducting body, and said second conducting piece having a first end formed with a resilient U-shaped insert portion and a second end formed with an L-shaped bend;
said U-shaped insert portion being fitted in one of said insert holes, and said second end of said second conducting piece being pressed downward so as to pivot about said U-shaped insert portion and permit insertion of said L-shaped bend in a remaining one of said insert holes when mounting said second conducting piece on said non-conductive body.

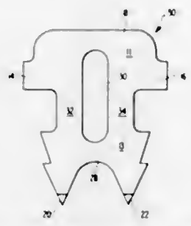
5,284,447
CONTACT TERMINAL FOR MODULAR PLUG
Ralph Kristiansen, Roanoke, Va., assignor to Virginia Plastics Company, Inc., Roanoke, Va.
Filed Mar. 29, 1993, Ser. No. 38,020
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—425 **16 Claims**

1. A contact terminal for use in combination with a modular telephone-style plug, comprising:
a substantially planar blade having upper, middle and lower body portions and a central portion;

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said middle body portion being of reduced width compared to said upper and lower body portions;

said upper portion having a pair of shoulders extending laterally from both sides thereof for seating said blade in said plug, and an upper surface for making electrical contact with a spring contact of a mating modular jack;



said lower portion including a pair of tangs for piercing the insulation of an electrical wire located in said plug; and

an opening formed in the central part of said blade and extending from said upper portion through said middle portion toward said lower portion.

5,284,448

ELECTRICAL DEVICE, IN PARTICULAR A SWITCHING AND CONTROL UNIT FOR MOTOR VEHICLES

Dieter Hussmann, Steinheim; Thomas Jessberger, Eberdingen/-Hochdorf; Dieter Karr, Tiefenbronn, and Gerhard Klein, Gifhorn-Gamsen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

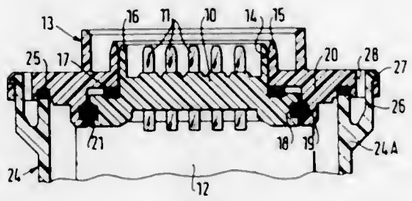
PCT No. PCT/DE91/00446, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO91/20177, PCT Pub. Date Dec. 26, 1991

PCT Filed May 27, 1991, Ser. No. 956,888

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1990, 4019570

Int. Cl.[5] H01R *13/74*

U.S. Cl. 439—544 **4 Claims**



1. An electrical device, particularly a switching and control unit for a motor vehicle, comprising a housing having a front plate provided with an aperture; and a plug body having a front face and a plurality of plug parts arranged on the front face and insulated from each other, the plug body projecting through the aperture in the front plate and being fixed to the front plate; and cam means for fixing the plug body to the front plate, the front plate and the plug body being provided with opposing grooves for receiving the cam means, wherein the cam means and the opposing grooves are structured and positioned so that said cam means is insertable into the opposing grooves to fix the plug body to the front plate and the front plate and the plug body are insertable into the housing with the cam means in a fully inserted position in the opposing grooves and, when the front plate and the plug body so connected with the cam means in the fully inserted position are inserted in the housing, the locking cam is secured in the opposing grooves by the housing.

5,284,449

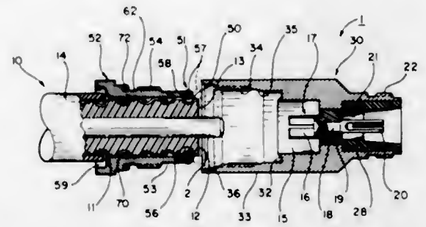
CONNECTOR FOR A CONDUIT WITH AN ANNULARLY CORRUGATED OUTER CASING

Ronald A. Vaccaro, Oxford, Conn., assignor to Amphenol Corporation, Wallingford, Conn.

Filed May 13, 1993, Ser. No. 60,912

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—583 **25 Claims**



1. A connector assembly for a conduit having an annularly corrugated outer casing, comprising:

a clamping member which includes a pressing surface;

a housing having a bevelled clamping surface positioned to engage an end of a last corrugation of said conduit;

a split ring positioned adjacent the last corrugation; and

means on said housing and said clamping member for releasably securing said housing to said clamping member,

wherein when the clamping member is secured to the housing by said releasably securing means, the pressing surface presses said split ring against said last corrugation, whereupon the last corrugation is caused to engage the bevelled clamping surface, and the last corrugation is thereby clamped between the split ring and the bevelled clamping surface.

5,284,450

ELECTRICAL CONNECTOR FOR A CAMERA

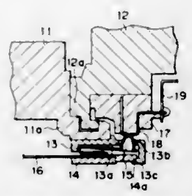
Kunihiro Fukino, Fujisawa; Toru Takayama, Kawasaki, and Nobuyoshi Nasu, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,318

Claims priority, application Japan, Jun. 22, 1992, 4-162578

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—629 **8 Claims**



1. An electrical connector for a camera provided on a camera body, an interchangeable lens and accessories for the electrical connection thereof, including:

an upper contact holding member having an engagement portion and/or a fitting portion;

a lower contact holding member having an engagement portion and/or a fitting portion corresponding to said engagement portion and/or said fitting portion of said upper contact holding member;

a plurality of contact springs; and

a flexible print distributing panel having a pattern for conduction on the surface of contact thereof with said contact springs;

said plurality of contact springs and said flexible print distributing panel being appropriately disposed between said upper contact holding member and said lower contact holding member;

said engagement portion and/or said fitting portion of said upper contact holding member being engaged with and/or fitted to said engagement portion and/or said fitting portion of said lower contact holding member.

5,284,451

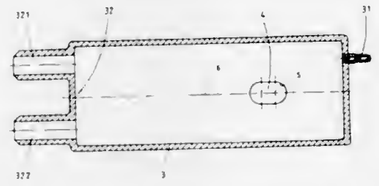
DISCHARGE DEVICE FOR A WATER-COOLED ENGINE

Yu-Mei Chiu, 1F, No. 312, Derhsing East Rd., Taipei, Taiwan

Filed Sep. 10, 1992, Ser. No. 942,848

Int. Cl.[5] B63H *21/38*

U.S. Cl. 440—89 **2 Claims**



1. A discharge device for a water-cooled engine for receiving and discharging spent cooling water from a water pumping mechanism and exhaust gas from an exhaust manifold, the improvement comprising: a compartment including a longitudinal axis and provided with a first inlet for receiving spent cooling water from a water pumping mechanism, a second inlet for receiving exhaust gas from an exhaust manifold, an outlet defined by an upper pipe for discharging exhaust gas and a lower pipe for discharging spent cooling water from the compartment, and the upper and lower pipes defining discharge paths parallel to the longitudinal axis of the compartment.

5,284,452

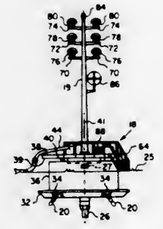
MOORING BUOY WITH HAWSER TENSION INDICATOR SYSTEM

Emilio N. Corona, Farmers Branch, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 15, 1993, Ser. No. 4,826

Int. Cl.[5] B63B *45/00*

U.S. Cl. 441—3 **7 Claims**



1. An offshore mooring buoy for mooring a ship such as a bulk liquid carrier, said buoy comprising:

a buoyancy member operable to be anchored in a predetermined position for mooring said ship, a mooring platform supported on said buoyancy member and operable to pivot about an axis with respect to said buoyancy member to change the bearing of said ship with respect to said buoy when said ship is moored thereto;

means on said mooring platform for connecting a mooring hawser between said ship and said buoy, said means including a hawser tension sensing member;

a control circuit operably connected to said tension sensing member for generating signals related to the mooring tension on said buoy exerted by said ship; and

an array of visual signal indicators mounted on said buoy and positioned to project visual mooring force indicating signals toward said ship.

5,284,453

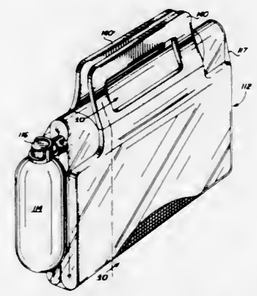
RESCUE PACKAGE COMPOSED OF A LIFE RAFT CONNECTED TO A CANISTER OF MATERIALS TO INFLATE THE RAFT

Steve I. Kun, 3385 S. U.S. Highway 17-92, #2370, Casselberry, Fla. 32707

Filed Feb. 5, 1992, Ser. No. 831,556

Int. Cl.[5] B63H *11/113*

U.S. Cl. 441—42 **1 Claim**



1. A portable rescue package comprising, in combination, a folded, normally deflated, life raft, a canister of pressurized contents normally connected to said life raft in fluid flow relation, and valve means on said canister to release the pressurized contents in said canister to inflate said life raft after being carried to an emergency scene,

said folded, normally deflated life raft including an inflatable, generally oval-shaped body as seen in plan when unfolded and inflated, said oval-shaped body including an upper generally semi-annular section and a lower generally semi-annular section, said semi-annular sections being integrally formed with one another along an outwardly facing surface and being interconnected to one another by seam means disposed along an inwardly facing surface, thereby defining a continuous inner cavity between said semi-annular sections,

said life raft including a net means having a peripheral zone, said net means spanning said life raft when inflated and being sized to support a person in a prone attitude, said peripheral zone being captured in said seam means between said upper generally semi-annular section and said lower generally semi-annular section,

said life raft further including a forward rigid handle means and a rearward rigid handle means, said handle means being structured and disposed to be gripped by a hand of a user for towing said life raft,

a first normally closed port means disposed in said life raft, said first normally closed port means being structured and disposed to receive a charge of gas from said canister therethrough into said continuous inner cavity so as to inflate said life raft,

said canister having an interior chamber with a charge of sufficient volume when released to gaseously inflate said continuous inner cavity,

said canister further including a second port means and an exterior operator means to open said valve means on said canister,

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said first and said second port means being mutually intercooperable to mate with one another and define a fluid passageway through said first and said second port means to permit gas flow therethrough from said canister into said inner continuous cavity so as to inflate said oval-shaped body when said valve means is opened by said exterior operator means,

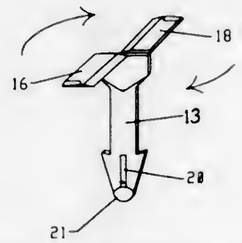
said second port means including hose means, said hose means having a threaded distal end structured and disposed for threaded interconnection with a threaded distal end of said first port means,

said folded, normally deflated life raft being substantially encapsulated within a shrink wrap plastic film, said film being specifically structured and disposed to maintain said life raft in a folded position and to break away from said life raft during inflation thereof thereby facilitating unfolding of said life raft,

said handles being disposed at corresponding opposite distal ends of said life raft such that said handles are disposed in adjacent relation to one another on said folded, normally deflated life raft, when in said folded position, thereby facilitating carrying of the package, and

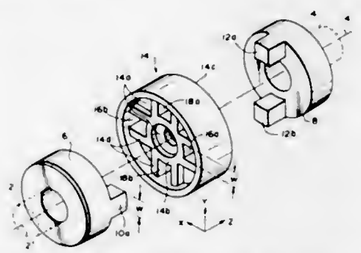
said canister being releasably connected to said life raft so as to be positioned and disposed along a side thereof and facilitate disconnection from said life raft for inspection or replacement thereof.

5,284,454
TOY HELICOPTER
George B. Randolph, 8553 Sleepy Hollow, Warren, Ohio 44484
Filed Aug. 20, 1992, Ser. No. 932,716
Int. Cl.[5] A63H *27/01, 27/28, 27/133*
U.S. Cl. 446—45 **2 Claims**



1. A toy helicopter device capable of a projected nose up ascent and a helicopter nose down descent comprises; an elongated generally flat main body having a top end, a weighted nose on said top end, and a hook means thereon, said nose portion contiguous at its bottom end with a narrow elongated stem portion, the bottom of said stem portion contiguous with a wider tail portion having a tail portion cut plane, the tail portion of which a front side is hingedly connected to a right hand helicopter blade, and a back side is hingedly connected to a left hand helicopter blade, both said blades of which are symmetrical and adjacent to each other, both of said blades are offset symmetrically about a center line axis of said main body and both of said blades having trailing edges, angles and outer tips, a compressible resilient means between each helicopter blade and said tail portion on the tail cut plane, said compressible resilient means may be dimensionally adjustable in thickness by various means including stretching, tension releasing and twisting said resilient means.

5,284,455
SHAFT COUPLING HAVING MULTIPLE RIB CONNECTORS
Sadatomo Kuribayashi, Tokyo, Japan, assignor to Kay Seven Co., Ltd., Tokyo, Japan
Filed Nov. 2, 1992, Ser. No. 970,099
Claims priority, application Japan, Aug. 21, 1992, 4-063909[U]
Int. Cl.[5] F16D *3/04*
U.S. Cl. 464—105 **3 Claims**



1. A shaft coupling for coupling the end portion of a driving shaft and the end portion of a driven shaft, which are opposed to each other, wherein:

a driving side mount member attachable to the end portion of the driving shaft is provided with a driving side slide member having a pair of first outer slide surfaces running parallel to a plane of first direction passing through a rotational axis of the driving shaft and extending toward the driven side;

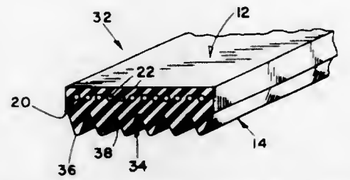
a driven side mount member attachable to the end portion of the driven shaft is provided with a driven side slide member having a pair of second outer slide surfaces running parallel to a plane of second direction passing through a rotational axis of the driven shaft and extending toward the driving side;

a torque transmitting member is disposed between said driving side mount member and said driven side mount member, said transmitting member comprising a disk portion intersecting at a substantially right angle with the rotational axis of the driving shaft and driven shaft, an inner circumferential rib, an outer circumferential rib and an intermediate rib extending between the inner and outer circumferential ribs, the inner and outer circumferential ribs and the intermediate rib being attached to said disk portion and protruding from said disk portion toward the driving side and the driven side, said transmitting member having a pair of first inner slide surfaces slidable to said first outer slide surfaces of the driving side slide member, and a pair of second inner slide surfaces slidable to said second outer slide surfaces of the driven side slide member, said first inner slide surfaces and said second inner slide surfaces each facing an opening in said disk portion and comprising a lateral surface of the intermediate rib; and

said driving side slide member and said driven side slide member are each made of metal, and said transmitting member is made of plastic.

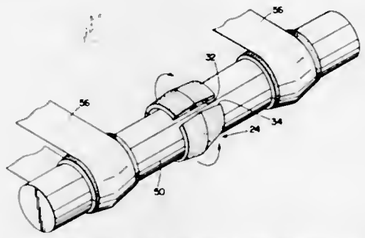
5,284,456
POWER TRANSMISSION BELT
John E. Connell, Littleton; Vicki C. Copeland, Lakewood, and Herbert H. Frost, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed Jul. 23, 1992, Ser. No. 919,430
Int. Cl.[5] F16H *57/04*
U.S. Cl. 474—91 **18 Claims**

1. In an endless power transmission belt having rubber elastomeric body portion, load carrying members embedded in said body portion and a power-transmitting surface integral with said body portion, the improvement wherein said elastomeric body portion further comprises means to stabilize the



coefficient of friction and reduce pilling at said power-transmitting surface said means comprising the presence of a siloxane having a viscosity of about 2 to about 100 centistokes in the body portion at said power-transmitting surface.

5,284,457
BELT GUIDE PULLEY
Roland W. Gerstenberger, Asheville, and William R. Joyce, Fairview, both of N.C., assignors to R. G. Technical Associates, Inc., Arden, N.C.
Filed Aug. 18, 1992, Ser. No. 931,844
Int. Cl.[5] F16H *55/12*
U.S. Cl. 474—95 **19 Claims**



1. A belt guide pulley for guiding a belt adapted to be attached to a shaft comprising:

a unitary clam shell shaped member; said member including first and second curved halves; each half having an inner curved surface and an outer curved surface; said outer surface contacting the belt; said outer surface shaped so as to prevent the belt from slipping from said member; each half having a free end;

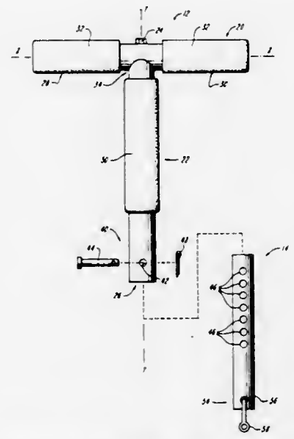
a weakened section on said member and located between said free ends; said weakened section connecting said first curved shaft to said second curved half; said weakened section enabling said free ends to be moved relative to one another whereby said member may be readily placed on the shaft.

5,284,458
EXERCISE DEVICE
Deborah A. Perry, 7 Hillcrest Rd., Woburn, Mass. 01801, and Donald L. Gammon, 115 Abbot St., Andover, Mass. 01810
Filed Feb. 5, 1992, Ser. No. 831,500
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—49 **8 Claims**

1. An exercise device useful for the exercise of the muscle groups of the upper body comprising:

a. a handle means having a first portion extending longitudinally along a first axis affixed to a first end of a second portion, said second portion having a second tubular end extending longitudinally along a second axis, said second tubular end having a hollow interior portion sized and shaped to receive a means for connecting said handle means to a bias means, said second portion being affixed to said first portion such that said first and second portions each provide a means for grasping said exercise device, said grasping means being configured so that said first portion of said handle means can be fixably held in position to provide an axis for pivotal movement of said exercise device, said axis for pivotal movement being substantially coaxial with said longitudinal axis of said first portion, said first axis of said first portion of said handle means and said second axis of said second end of said second portion of said handle means being substantially perpendicular to each other;

b. said connecting means being telescopically positioned within said hollow interior of said second tubular end of said second portion of said handle means, said connecting means having a portion proximal to said handle means and a portion distal to said handle means, said portion of said connecting means that is proximal to said handle means when said connecting means is positioned in said handle means including a first securing means for securing said connecting means at a selected position relative to said handle means, said portion of said connecting means that is distal to said handle means when said connecting means



is positioned in said handle means including a second securing means for securing said connecting means to said bias means and providing a third means for grasping said exercise device, said connecting means being extensible and retractable within said hollow interior of said second tubular end of said second portion of said handle means such that a distance between said handle means and said means for securing said connecting means to said bias means can be adjusted; and

c. said bias means configured such that one end of said bias means is operatively connectable and disconnectable to an immobile platform and an opposite end of said bias means is operatively connectable and disconnectable to and from said connecting means, said bias means providing a resistive force when said bias means is connected to said immobile platform and said connecting means and said second portion of said handle means and said connecting means are pivoted from a first position to a second position about said axis for pivotal movement of said first portion of said handle means, said second portion of said handle means and said connecting means being in closer proximity to said immobile platform when said in first position than when in said second position.

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5,284,459

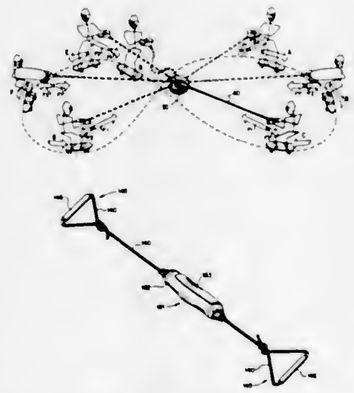
RECREATIONAL APPARATUS FOR PROPELLING TWO PERSONS

George O. Podd, III, 70 W. Burton Pl., Apt. 2408, Chicago, Ill. 60610

Continuation-in-part of Ser. No. 833,349, Feb. 10, 1992, Pat. No. 5,152,728, which is a continuation-in-part of Ser. No. 383,932, Jul. 21, 1989, Pat. No. 5,087,035. This application Oct. 6, 1992, Ser. No. 957,237

Int. Cl.[5] A63B *22/00, 71/00*

U.S. Cl. 482—51 8 Claims



1. A recreational apparatus comprising:

an extendable link capable of stretching outward upon application of a tension force and capable of returning to a rest position upon release of said tension force;

grasping means for attaching a limb with respect to said extendable link, said grasping means secured to said extendable link at opposite ends of said extendable link; and

storage means for storing at least one of said grasping means and accessories, said storage means comprising a storage container mounted on said extendable link between said opposite ends, and said storage container comprising a piece of material forming a pouch with an opening and a closeable lid for covering said opening.

5,284,460

SKATE TRAINING EXERCISE APPARATUS AND METHOD

Kenneth Miller, New York, and Edward Trainor, Brentwood, both of N.Y., assignors to Town Sports International, New York, N.Y.

Filed Jan. 29, 1993, Ser. No. 10,925

Int. Cl.[5] A63B *22/08, 22/20*

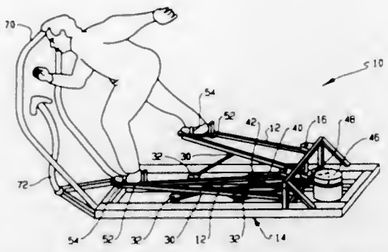
U.S. Cl. 482—51 17 Claims

1. A method for skate training exercise, comprising:

guiding a user's first foot along an arcuate path having a center point disposed behind the user, said arcuate path having a radius at least about the length of the user's leg and lying in a plane substantially perpendicular to the user's body during exercise;

resisting force applied by the user along said arcuate path in a direction away from the user's body;

stopping movement along said arcuate path at a predetermined position; and



returning the user's foot to a first position along said arcuate path.

5,284,461

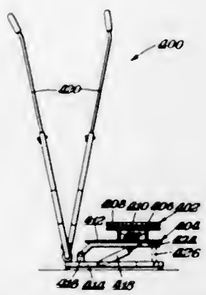
COMBINATION TWISTER AND STEPPER EXERCISE DEVICE

William T. Wilkinson, Severnside Farm, 300 Kyle Rd., Crownsville, Md. 21032-0572, and John J. Nelson, Levitown, Pa., assignors to William T. Wilkinson, Crownsville, Md.

Continuation-in-part of Ser. No. 945,373, Sep. 16, 1992, Pat. No. 5,207,622, and a continuation-in-part of Ser. No. 986,487, Dec. 7, 1992. This application May 5, 1993, Ser. No. 56,930

Int. Cl.[5] A63B *69/18, 23/04*

U.S. Cl. 482—53 11 Claims



1. A combination exercise device comprising a twist exercise unit and a stepper unit; said twist exercise unit including a base member, and a disk rotatably mounted to and above said base member whereby a user may stand on said disk and perform a twisting exercise; said stepper unit including a support, a pair of steps mounted to said support, resistance means reacting against said steps to urge said steps upwardly whereby a user must overcome the force of said resistance means to sequentially move said steps downwardly in a stepping exercise; a pair of poles located at one end of said steps, each of said poles being pivotally mounted; and said twist exercise unit and said stepper unit and said poles being structurally united by being mounted to a common structural assembly; wherein said twist exercise unit is detachably mounted on said stepper unit.

5,284,462

BODY EXERCISING APPARATUS

Brad Olschansky; Scott Olschansky, both of 2077 Lake Park Dr., Apt. C, Smyrna, Ga. 30080, and Raymond H. Lee, Jr., 11737 Greenspring Ave., Lutherville, Md. 21093

Continuation-in-part of Ser. No. 679,958, Apr. 3, 1991, Pat. No. 5,145,479. This application Sep. 4, 1992, Ser. No. 941,237

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—62 18 Claims



1. A body exercising apparatus comprising:

(a) a frame including a central frame member having an inverted substantially U-shaped contour, said frame having opposingly and longitudinally displaced front and rear sections;

(b) means for supporting the body of a user, said means coupled to an upper surface of said frame adjacent said rear section of said frame;

(c) means for positioning said user's feet adjacent said front section of said frame in longitudinally spaced relation with respect to said seat means; and,

(d) means for exercising an upper body portion of said user, said means for exercising said upper body portion being positionally located adjacent said rear section of said frame substantially beneath said means for supporting said body of said user, said upper body exercising means including (1) independent hand actuated rotary crank means for rotation in either of two opposite rotary directions responsive to a rotary displacement of said user's arms for providing a rotary exercise motion of said user's arms independent of any motion of said user's lower body, said hand actuated rotary crank means including a pair of hand actuated rotary shafts having a substantially Z-shaped contour and extending from opposing transverse sides of said frame, and (2) upper body resistance means coupled to said hand actuated rotary crank means for providing a selectively adjustable force resistive to rotation of said hand actuated rotary crank means.

5,284,463

WEIGHT LIFTING APPARATUS

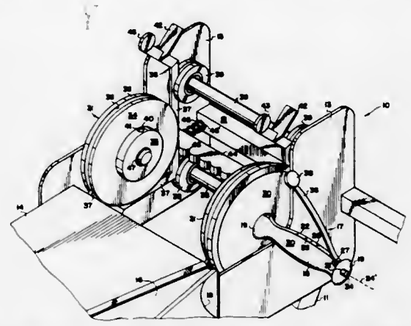
William D. Shields, 1814 Holly Oaks Lake Rd., E., Jacksonville, Fla. 32225

Continuation of Ser. No. 816,576, Jan. 3, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,562

Int. Cl.[5] A63B *21/072*

U.S. Cl. 482—107 36 Claims

1. In a weight lifting apparatus comprising an elongated lifting bar having a longitudinal axis and opposite end portions, a plurality of weights each having opposite sides adjacent each said opposite end portion and each weight being attachable to an adjacent said weight, each said weight including selection means for selectively attaching one said weight to said adjacent weight, and locking means for detachable securing a first said weight to one said end portion of said bar and for locking said first weight to one said end portion of said bar and for locking said first weight to an adjacent said weight of a selected series of said adjacent weights attached to each other by said selection means, said selection means including a movably mounted attachment means being movable laterally of said axis on one said side of each said weight and engagement means on another said side of said weight cooperating with said attachment means of adjacent said weight, said attachment means of one said weight having a first position wherein a portion of said attachment means is to engage said engagement means of an adjacent said weight for attaching said one weight to said adjacent weight and a second position wherein said portion of



said attachment means is removed from engagement with said engagement means of an adjacent said weight for detaching said one weight from aid weight, said sides of said weights being formed in a manner to cooperate when one said weight is attached to said adjacent weight to contain said selection means between adjacent said sides of said weight and said adjacent weight to inhibit movement of respective said attachment means and said engagement means except by operation of said locking means.

5,284,464

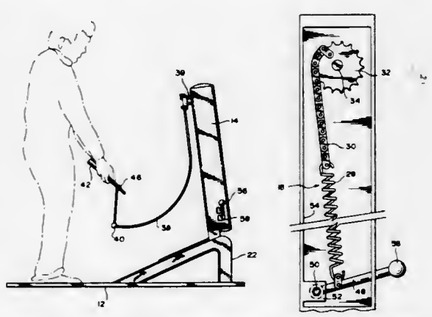
SWING TRAINING AND EXERCISING APPARATUS

George P. Lee, III, 640 Oak Ter., Norcross, Ga. 30071, and David B. Leadbetter, 9606 Tavistock Rd., Orlando, Fla. 32827

Filed Jun. 30, 1992, Ser. No. 906,475

Int. Cl.[5] A63B *69/36*

U.S. Cl. 482—121 6 Claims



1. A golf swing training and exercise apparatus for simulating the proper swing path and for exercising the golf swing muscles, comprising:

a base for supporting a user;

a housing connected to the base and extending upwardly from the base;

a resistance means and a linkage means supported in said housing, the linkage means being operably connected to the resistance means;

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a swing arm having a proximal end rotatably attached to said linkage means;

said linkage means being moveable in either a clockwise or counterclockwise direction against said resistance, thereby resisting the movement of said swing arm; said linkage means being formed of a sprocket rigidly attached to a rotatable shaft, said sprocket having a plurality of teeth formed around the peripheral edge thereof; said linkage means further including a chain operably connected to said sprocket, and arranged to the wound around said sprocket upon rotation in either a clockwise or a counterclockwise direction, said chain being connected to said resistance means whereby movement of aid chain around said sprocket expands said resistance, providing rotational resistance to the rotational movement of the shaft; and,

grip means connected to a distal end of said swing arm whereby movement of the grip means in either a clockwise or counterclockwise direction, simulating a backswing or downswing movement by a golfer creates resistance to exercise the golf muscles of the golfer.

5,284,465

APPARATUS FOR USE IN DOING SQUAT EXERCISES

Paul T. Homan, Jr., 7311 E. 89th Pl. South, Tulsa, Okla. 74133

Continuation of Ser. No. 826,861, Jan. 28, 1992, abandoned. This application Jan. 28, 1993, Ser. No. 10,475

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—148 **17 Claims**



1. Apparatus adapted to be supported on a floor surface and arranged to position a user's body in a less strenuous state during execution of the squat exercise that emphasizes substantially the full range of upper leg muscle groups while alleviating the pressure that concentrates in the lower back or for strengthening and stretching the lower leg muscles and Achilles Tendon, comprising:

an inclined elongated platform having a bottom surface supported on the floor surface and an upper surface, the upper surface being supported above and in close proximity to the bottom surface at a fixed acute angle to the bottom surface in the range of about 11 to 21 degrees, the platform having a length sufficient to permit a user to place at least a portion of both feet thereon with the user's legs spaced apart, and the upper surface having a width sufficient for the user placing at least a portion of both feet thereon, said inclined platform being constructed of a single flat sheet of material folded in a short radius arc along a rigid fold line to form a unitary horizontal lower portion and an integral inclined upper portion, the lower portion having a bottom surface forming said platform bottom surface for resting on the floor surface and the upper portion having an upper surface forming said platform upper surface in a fixed plane above the floor surface.

5,284,466

METHOD AND APPARATUS FOR FASTENING SHEETS OF PAPER TOGETHER WITH THE AID OF STAPLES

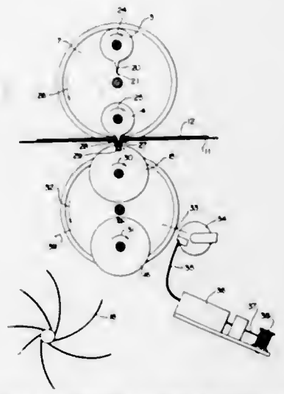
Bengt Magnusson, Ekero, Sweden, and Roland Johnsen, Toms River, N.J., assignors to Motterstitch Company, Lanoka Harbor, N.J.

Filed Jun. 26, 1992, Ser. No. 904,880

Claims priority, application Sweden, Jun. 26, 1991, 9101974

Int. Cl.[5] B27F *7/23;* **B65H** *45/16;* **B41F** *13/62, 13/66*

U.S. Cl. 493—385 **11 Claims**



1. Apparatus for fastening a sheet signature comprising a plurality of sheets of paper laid one on top of the other with staples, said apparatus comprising:

a stitching unit for carrying staple blanks and inserting the staple blanks into the sheet signature, said stitching unit having seats for receiving the staple blanks in a collecting position and positioning each of the staple blanks for insertion into the sheet signature, said seats being disposed in a groove of an outer face of the stitching unit, said seats and said groove being movable repetitively to and from a stitching position at which a staple blank is inserted through he sheet signature;

a folding knife for folding the sheet signature, said folding knife having an edge which is repetitively movable to and from the stitching position and is coordinated to arrive at the stitching position at the same time as the seats and groove, said edge folding the sheet signature and pushing the sheet signature toward the groove for insertion of the staple blank;

a die positioned on the edge of the folding knife for bending the inserted staple blank to secure the staple blank to the sheet signature when said edge is inserted into said groove, whereby the sheet signature is substantially simultaneously fastened and folded;

grippers disposed in the groove of the stitching unit for gripping the fastened and folded sheet signature and carrying it to a discharge position away from the stitching position as the stitching unit groove moves away from the stitching position; and

a planetary gear and planet wheel assembly for supporting and moving the stitching unit to and from the stitching position, said stitching unit being rigidly connected to the planet wheel.

5,284,467

SHEET STOPPING SYSTEM FOR A HIGH SPEED FOLDING MACHINE FOR A CONTINUOUS PAPER BOND

Luciano Meschi, Livorno, Italy, assignor to Industria Grafica Meschi SRL, Livorno, Italy

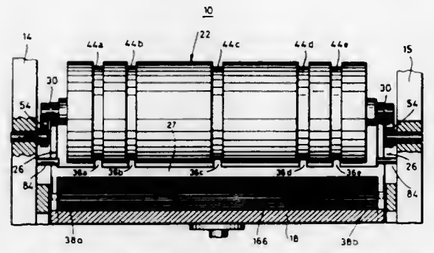
PCT No. PCT/EP91/01905, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO92/06032, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 2, 1991, Ser. No. 848,954

Claims priority, application Italy, Oct. 3, 1990, 21874 B/90

Int. Cl.[5] B65H *45/101, 45/16*

U.S. Cl. 493—412 **19 Claims**



1. In a folding machine for the folding of a sheet in a form of a continuous band in a zig-zag like manner, an improved sheet stopping system therefor, in which the folding machine comprises a supporting plane (**18**) having means for the gradual lowering thereof and means associated with said supporting plane for feeding and alternately guiding the sheet in the form of the continuous band to said supporting plane and to have it impinge alternately against a first and a second hindering means (**24, 26**) each limiting one of the two opposite sides of said supporting plane (**18**), said improved sheet stopping system comprising:

said supporting plane (**18**); and

pairs of vertically slidable fingers (**38***a*, **38***b*) projecting downwardly from each said hindering means (**26**) and, placed at the ends thereof for engaging said supporting plane (**18**) to prevent the introduction and entering of a sheet starting portion forming part of the continuous band into an area between said hindering means (**26**) and said supporting plane (**18**).

5,284,468

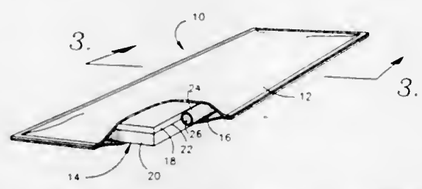
ORTHOPEDIC SPLINTING ARTICLE

Thomas W. Nelson, Lenexa, Kans., assignor to M-Pact Worldwide Management Corporation, Eudora, Kans.

Filed Aug. 19, 1991, Ser. No. 746,909

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—5 **18 Claims**



1. A packaged splint for use in forming a hard structure about a body portion, said packaged splint comprising:

a layer of polyvinyl acetal sponge made from a polyvinyl alcohol having a molecular weight within the range of approximately 85,000 to approximately 186,000;

softening agent vapors associated with said sponge for softening the sponge to permit placement thereof about said body portion; and

a package sealingly enclosing said sponge to maintain the softening agent in association with the sponge, said package being constructed to permit removal of the softened sponge from the package for placement about said body portion, whereupon said sponge sets to a hardened state having a modulus of elasticity within the range of 132,000 to 172,000 psi to form said structure as the softening agent vapors disassociate from the sponge.

5,284,469

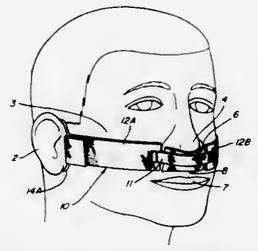
NASAL DRESSING HOLDER

Marianne Jasen, Amherst, and Suzanne Lewandowski, DePew, both of N.Y., assignors to Dale Medical Products, Inc., Plainville, Mass.

Filed Nov. 8, 1991, Ser. No. 790,589

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—17 **19 Claims**



1. A nasal dressing holder for releasable attachment to a patient comprising:

an elongated central elastic band having opposing ends, the band being of a first width sized to fit beneath a patient's nose and hold a dressing against the nostrils without engaging the patient's upper lip;

a pair of substantially inelastic support straps having first ends attached to the opposing ends of the central band and adapted to lie against the patient's cheeks;

a pair of elastic ear loops, one attached to a second end of each support strap and adapted to encircle a different one of the patient's ears for releasably attaching the holder to the patient's head; and

releasable strap-length adjusting means permitting release of the central band from beneath the patient's nose to change a dressing and to adjust the length of each support strap to vary the amount of tension applied by the band for holding the nasal dressing in place.

5,284,470

WEARABLE, PORTABLE, LIGHT-WEIGHT ARTIFICIAL KIDNEY

Alex D. Beltz, 956 Notre Dame St., Upland, Calif. 91786

Filed Nov. 2, 1992, Ser. No. 970,041

Int. Cl.[5] A61F *2/14, 2/12;* **B01D** *11/00, 61/00*

U.S. Cl. 604—4 **29 Claims**

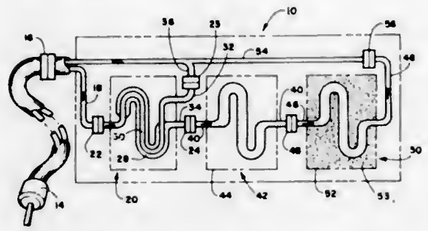
1. A wearable, portable, light-weight artificial kidney comprising:

a first means for transmitting impure whole blood from a body of a patient to an artificial kidney;

a separator means configured to separate a predetermined amount of plasma from said whole blood and a second whole means for returning a remainder of said blood with some of the plasma removed back to the patient's body;

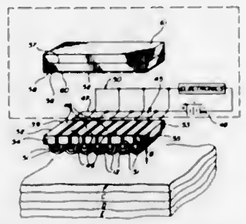
VOL 1159 ISS 2 FE 8 1994 UMI

a means configured to chemically treat and cleanse the plasma that has been separated from the whole blood;
a means configured to remove water from the plasma that has been separated from the whole blood;



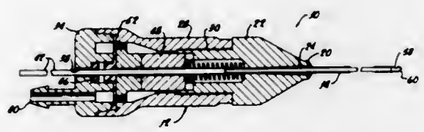
a third means configured to return the cleansed plasma to the patient's body; and
wherein said artificial kidney is shaped and sized to be completely worn daily on the body of the patient and weighs less than 15 pounds.

5,284,471
ELECTRODE AND METHOD USED FOR IONTOPHORESIS
Burton H. Sage, Jr., Raleigh, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Division of Ser. No. 412,056, Sep. 25, 1989, Pat. No. 4,950,229. This application Jun. 28, 1990, Ser. No. 545,214
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **16 Claims**



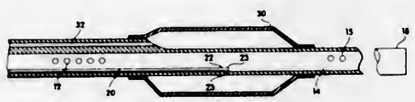
12. An iontophoresis electrode comprising:
a plurality of first ionic conductors electrically connected in parallel for connection to a first output of a source of electrical power, each of the first conductors having an elongate configuration including a plurality of elongate sides and made of a material to readily pass ions thereacross;
a plurality of second ionic conductors electrically connected in parallel for connection to a second output of the source of electrical power, each of the second conductors having an elongate configuration including a plurality of elongate sides and made of a material to readily pass ions thereacross;
a plurality of insulators of electrically non-conductive material, each of the insulators having an elongate configuration including a plurality of elongate sides and made of a material which resists the passage of ions thereacross, the insulators each interposed between said first and second conductors for forming a sandwich construction; and
a support having a plurality of first contacts positioned thereon on a face thereof and in spaced apart relation, the first contacts electrically connected in a first parallel circuit with one elongate side of each of the first conductors, the support having a plurality of second contacts positioned thereon on the face thereof and in spaced apart relation, the second contacts electrically connected in a second parallel circuit with one elongate side of each of the second conductors, the support including means for engaging a source of electrical power to said first and second parallel circuits.

5,284,472
VITREOUS CUTTER
Glenn Sussman, Lake Forest, and Edward Zaleski, Santa Ana, both of Calif., assignors to Allergan, Inc., Irvine, Calif.
Filed Oct. 30, 1992, Ser. No. 969,745
Int. Cl.[5] A61B *17/32*
U.S. Cl. 604—22 **1 Claim**



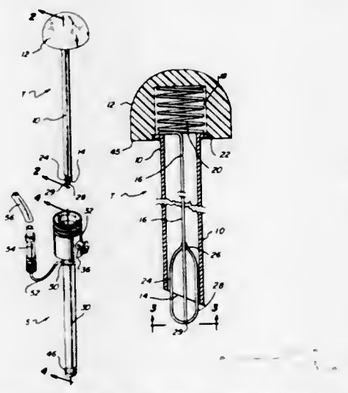
1. A vitreous-cutting surgical device comprising:
a tubular sleeve having means for defining a port in a side wall thereof proximate a closed distal end of said tubular sleeve;
vacuum means for drawing a portion of vitreous to be cut from a body of vitreous into said opening;
means for cutting the vitreous portion from the body of vitreous, said means for cutting vitreous comprising a cutter sleeve slidably disposed within said tubular sleeve, said cutter sleeve comprising opposite facing cutting surfaces formed into a distal end of the cutter sleeve, a first of said opposite facing cutting surfaces being disposed on the cutter sleeve distal end on a portion of a cutter sleeve circumference facing the tubular sleeve port and a second of said opposite facing cutting surfaces being disposed on a perimeter of the window formed into the cutting sleeve;
means for maintaining vacuum on said body of vitreous during cutting of the vitreous portion, said means for maintaining vacuum comprises a window formed into the cutting sleeve proximate the distal end thereof, said window facing the tubular sleeve port, said window being in vacuum communication through the cutting sleeve with the vacuum means, the tubular sleeve port and the cutter sleeve window being of equal area for enabling substantially constant vacuum to be drawn on said body and vitreous during cutting of the vitreous portion; and
driver assembly means for supporting said tubular sleeve at a proximal end thereof and piston means, disposed in said driver assembly means and attached to said cutter sleeve, for causing reciprocal movement of the cutter sleeve within the tubular sleeve.

5,284,473
PERFUSION CATHETER WITH FLOW AMPLIFIER
Mark A. Calabria, Plymouth, Minn., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Jul. 16, 1991, Ser. No. 730,644
Int. Cl.[5] A01M *29/02*
U.S. Cl. 604—53 **4 Claims**



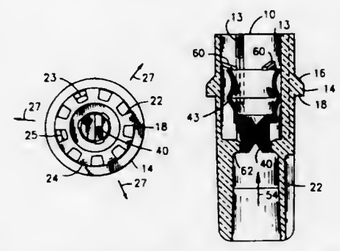
1. A cardiovascular catheter comprising:
an elongate flexible tubular shaft having a proximal end, a distal end and a main lumen extending from the proximal end to an outlet orifice at the distal end of the shaft;
at least one side inlet port formed in a wall of the tubular shaft at a location proximally of the distal end, the side port being in communication with the main lumen, and
means for developing a low-pressure region in the main lumen distally of said at least one side inlet port to amplify the rate of fluid flow drawn into said inlet port and through the main lumen of the catheter;
said means for inducing a low pressure region comprising an elongate flexible tube having a proximal end and a distal end, the proximal end of said tube extending proximally of said catheter shaft, and the distal end of said tube is located between the outlet orifice of the catheter and distally of the side port; and
a balloon located on the distal end of the shaft distally from said at least one side port.

5,284,474
TROCHAR SYSTEM FOR LAPAROSCOPY
Edwin L. Adair, 99 Inverness Dr. East, Englewood, Colo. 80112
Continuation of Ser. No. 896,461, Jun. 8, 1992, which is a continuation of Ser. No. 625,413, Dec. 11, 1990. This application Sep. 30, 1992, Ser. No. 954,655
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **7 Claims**



1. A disposable trochar in the form of a gas insufflation needle for insertion through an abdominal wall into a body cavity for the simultaneous introduction of CO_2 gas and medical instruments into the body cavity for diagnosis and/or treatment, said trochar comprising:
a rigid cannula having a first outside diameter, a cutting edge of the distal end thereof for cutting through the abdominal wall and an enlarged head at the proximate end having a cavity therein in communication with said cannula;
a coil spring mounted in said cavity;
a rod mounted for longitudinal movement between a retracted position and an extended position within said cannula, said rod having a proximate end formed integrally with said spring and a distal end, said distal end being received within said distal end of said cannula when said rod is in said retracted position and extending beyond said distal end of said cannula when said rod is in said extended position and having an integral loop formed at said distal end of said rod;
an outer sheath having a tubular body with a proximate end and a distal end for receiving said cannula and having a length less than that of said cannula so that said distal end of said cannula extends beyond said distal end of said sheath, said outer sheath having a second inside diameter sufficiently greater than said first outside diameter of said cannula to allow passage of CO_2 gas therearound;
an inlet port through said sheath at said proximate end thereof to introduce CO_2 gas through said sheath and around said cannula to the body cavity to expand it with said cannula in place within said sheath; and
a spring biased closure within said sheath between said inlet port and said proximate end of said sheath to close said proximate end thereof when said cannula is withdrawn from said sheath to minimize escape of the CO_2 gas therethrough.

5,284,475
LUER VALVE ADAPTER WITH EXPANDABLE END
Glenn H. Mackal, 2586 25th Ave., No. St. Petersburg, Fla. 33713
Continuation-in-part of Ser. No. 918,346, Jul. 21, 1992. This application Jul. 15, 1993, Ser. No. 92,629
Int. Cl.[5] A61M *5/00;* **F16K** *51/00*
U.S. Cl. 604—247 **4 Claims**



1. An adapter having utility in connection with Luer fittings and similar fittings, comprising:
a tubular base member having a first generally tubular part adapted for substantially non-retractable slide fit engagement within a catheter, and a second generally tubular part adapted to slide fittingly receive a rigid, cylindrical-in-configuration fitting member;
said first and second parts being integrally formed with one another, being made of an elastomeric material, and having a common longitudinal axis of symmetry;
said second part having cylindrical side walls of predetermined thickness;
a plurality of longitudinally extending grooves of predetermined depth being formed in said second part;
each of said grooves having a common predetermined circumferential extent and a common depth, said grooves being circumferentially and substantially equidistantly spaced about said second part, and said second part having a predetermined thickness, where each groove is formed therein, that is less than said predetermined thickness of said cylindrical side walls;
a plurality of substantially equidistantly spaced ungrooved areas of said second part being defined between said grooves, said grooves and ungrooved areas alternating about the circumference of said second part, said ungrooved areas having a common circumferential extent that is substantially equal to the common circumferential extent of said grooves, and said ungrooved areas having a thickness substantially greater than the thickness of said grooved parts so that said ungrooved areas do not expand as do said grooved parts upon insertion of a fitting into said second part;
a slidably mounted check valve being disposed within said base member;
said alternating ungrooved areas being substantially non-expandable and thus countering the expendability of said grooves so that a tight fit is maintained even when said grooves are expanded;

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said second part expanding radially outwardly as a whole upon insertion thereinto of a fitting due to said alternating arrangement of grooves and ungrooved areas of common circumferential extent about the circumferential extent of said second part;

whereby said grooves enable radially outward expansion of said second part when a fitting member is inserted therein, said second part having a greater circumference when expanded radially outward relative to its circumference when in repose.

5,284,476

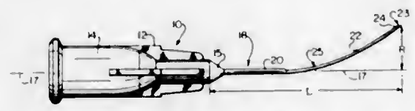
NUCLEAR HYDROLYSIS CANNULA

Paul S. Koch, 15 Red Oak Rd., East Greenwich, R.I. 02818

Filed Mar. 20, 1992, Ser. No. 854,701

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—274 **26 Claims**



1. A nuclear hydrolysis cannula for use in removing cataracts during the phases of hydrodissection and hydrodelamination/hydrodelineation/hydrodemarcation, comprising:

a hub portion having a proximal end, a distal end, and a centrally disposed longitudinal axis;

a one-piece needle having a straight first section a curved second section, a first end at said first section, and a second end at said second section, said first end being mounted in said distal end of said hub portion with said needle extending forwardly beyond said distal end, said first section being coaxial with said longitudinal axis of said hub, said second section extending away from said longitudinal axis and terminating at said second end without curving inwardly towards said longitudinal axis, and said second end being truncated to define a beveled surface and having a sharpened edge with a rounded tip.

5,284,477

DEVICE FOR CORRECTING THE SHAPE OF AN OBJECT BY LASER TREATMENT

Khalil Hanna, Paris; Louis Asfar, Le Chesnay, both of France, and Jean-Claude Chastang, Mahopac, N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.

Continuation of Ser. No. 570,981, Aug. 23, 1990, abandoned, which is a continuation of Ser. No. 211,055, Jun. 24, 1988, abandoned. This application Apr. 27, 1992, Ser. No. 874,204

Claims priority, application France, Jun. 25, 1987, 87 08963

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—5 **15 Claims**

1. Device for shaping the shape of an object by laser ablation of a surface of said object according to an ablation function A (X,Y), where said object has dimensions in X and Y directions, said X and Y directions are orthogonal directions, values of X and Y are less than the dimension of said object in said X and Y directions, that is to say the thickness to be removed at point of X, Y coordinates on reference axes OX, OY of said surface, O being the center of said object, said ablation function being written as:

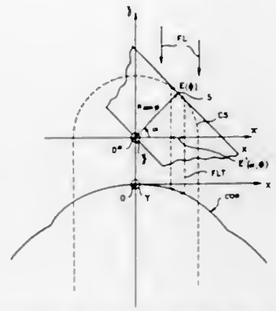
$$A(X,Y) = A_X(X) + A_Y(Y)$$

where A_X (X) and A_Y (Y) represent the respective ablation functions on said reference axes OX and OY, said device comprising:

means for generating a pulses laser beam having pulses and a stable energy density;

means for assuring homogeneity of said energy density;

first slit means for limiting laser radiation passing therethrough, said slit means having at least one slit oriented in



the X direction and intercepting said laser beam, said slit having a profile function E (X) given by:

$$E(X) = \frac{\Delta X_Y}{\bar{a}(e)} \cdot A_X(X)$$

where ΔX_Y is a non-zero translation displacement increment in the Y direction and $\bar{a}$ (e) represents the average thickness removed by irradiation of each laser pulse;

second slit means for limiting laser radiation passing therethrough, said slit means having at least one slit oriented in the Y direction and intercepting said laser beam, said slit having a profile function E (Y) given by:

$$E(Y) = \frac{\Delta Y_X}{\bar{a}(e)} \cdot A_Y(Y)$$

where ΔY_X is a non-zero translation displacement increment in the X direction;

means for forming an image of said slits onto an area of said surface of said object;

means for displacing said image of said first slit means slit over said area in the Y direction by steps of increment ΔX_Y, corresponding to elementary discrete ablations of said surface of said object;

means for displacing said image of said second slit means slit over said area in the X direction by steps of increment ΔY_X, corresponding to elementary discrete ablations of said surface of said object; and

means for synchronizing said increments, said pulses and said energy density, so that the total ablation resulting from the summation of said elementary discrete ablations meets said ablation function A (X,Y).

5,284,478

DETACHABLE TIP OPTICAL VALVULOTOME

Anthony A. Nobles, 8686 Tern St., Fountain Valley, Calif. 92708, and Donald Cohen, 17512 Luther, Irvine, Calif. 92714

Filed Jun. 8, 1992, Ser. No. 895,090

Int. Cl.[5] A61B *17/32*

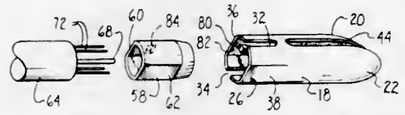
U.S. Cl. 606—159 **12 Claims**

9. An apparatus for the in-situ cutting of venous valves, comprising:

a catheter having axial strength sufficient for pushing the catheter through a vein, the catheter having an optical fiber disposed therein;

a cutting head having a pair of cutting blades and a light passageway therebetween, the cutting head defining a longitudinal axis and having two slots opposed to each other on the cutting head and extending generally parallel to the longitudinal axis of the cutting head to establish first and second portions of the proximal segment of the cutting head, the cutting head also having an inside surface with a detent formed thereon; and

an anchor having an opening and being attached to the catheter for releasably holding the cutting head onto the catheter, the optical fiber being in light communication with the light passageway for collecting light therefrom and directing the light to a display apparatus for displaying a video image of at least a portion of the light passageway;



wherein the cutting head is biased toward an operating configuration, wherein the first and second portions of the cutting head closely engage the anchor and the detent is engaged with the opening, the blades of the cutting head being movable toward each other to establish a replacement configuration of the cutting head, wherein the first and second portions are spaced from each other relative to the operating configuration and the detent is distanced from the opening to permit disengaging the cutting head from the anchor.

5,284,479

IMPLANTER

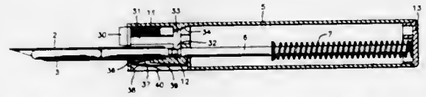
Hendrik J. de Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Continuation of Ser. No. 573,566, Aug. 28, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 911,389

Claims priority, application Netherlands, Aug. 30, 1989, 8902186

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—60 **19 Claims**



11. An implanter for implanting an implant in an animate being, comprising:

a housing having a forward end and a rearward end;

a hollow injection needle projecting from said forward end of said housing and having an inner end portion mounted in said forward end of said housing and a tip end remote from said housing, said needle being adapted to contain an implant in sliding relationship therein and to facilitate ejecting the implant from said needle;

a plunger movably mounted in said housing and having a forward end engageable through said inner end portion of said hollow needle for abutting relationship against an implant in said needle;

plunger spring means in said housing for resiliently urging at least the forward end of said plunger through at least part of said hollow needle; and

releasable locking means comprising a locking groove in said plunger, an elongate locking arm movable in said housing, a first projection on said locking arm engageable with said locking groove for releasably retaining said plunger against the force of said plunger spring means in a locking position where said plunger extends in said inner end of said hollow needle for a predetermined distance, a second projection on said elongate locking arm projecting in a direction opposite to said first projection, a projection surface in said housing extending obliquely inwardly in the direction of said forward end of said housing and engageable with said second projection for urging said first projection into engagement with said locking groove when said plunger is in said locking position, and release means on said forward end of said housing comprising a pressure member movable parallel to the longitudinal direction of said needle and connected with said elongate locking arm, said pressure member being engageable in abutting relationship with a body of said animate being when said injection needle has been injected in said body to a predetermined depth for automatically releasing said second projection from a locking position with said projection surface and said first projection from said locking groove so that said plunger is urged by said plunger spring means against an implant in said injection needle for retaining said implant in said body at said predetermined depth when said injection needle is retracted from said body.

5,284,480

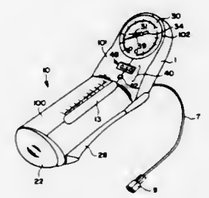
INFLATION/DEFLATION SYRINGE WITH THREADED PLUNGER

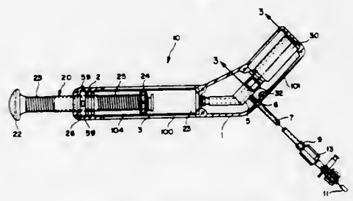
William M. Porter, Carlsbad, and Susan L. Stout, Del Mar, both of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 612,043, Nov. 9, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 8,049

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—97 **9 Claims**





1. A device for inflating the balloon of a balloon catheter comprising:

a longitudinally-extending housing defining a fluid-receiving reservoir and having a proximal and a distal end,

means for connecting the housing to the catheter so that the reservoir is in fluid communication with the balloon of the catheter;

a piston movable within the reservoir to eject fluid from the reservoir into the catheter;

a plunger attached to the proximal end of the piston, the plunger having a threaded portion;

threaded means for engaging the threaded portion of the plunger, said means moveable between an engaged and a disengaged position;

an arm having a proximal and distal end and extending longitudinally with respect to the housing, said arm rotatably attached to the housing at its distal end and attached to the threaded means at the proximal end, so that move-

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ment of the proximal end of the arm moves the threaded means between an engaged and a disengaged position; and

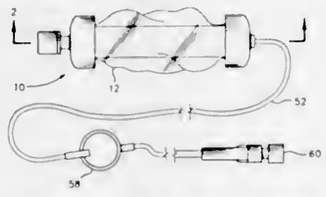
a biasing means for biasing the threaded means into engaged position.

5,284,481

COMPACT COLLAPSIBLE INFUSION APPARATUS

Emil H. Soika, Poway, and Steven R. Payne, San Diego, both of Calif., assignors to Block Medical, Inc., Carlsbad, Calif.

Filed Dec. 2, 1992, Ser. No. 984,899
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—132 **28 Claims**



1. A compact portable apparatus for dispensing a liquid under pressure at a substantially constant flow rate over a period of time comprising:

an elongated generally cylindrical support member;

elongated elastic sleeve means mounted and sealingly secured at fixed spaced longitudinal positions on said support member for defining a substantially zero non-pressurized volume pressure reservoir for holding a liquid in a pressurized state for dispensing therefrom;

housing means comprising collapsible non-stretchable housing means for containing said support member and said pressure reservoir for enabling said pressure reservoir to expand naturally and for confining said reservoir to fill concentrically about said support member;

inlet means for introducing a liquid into said elastic pressure reservoir; and

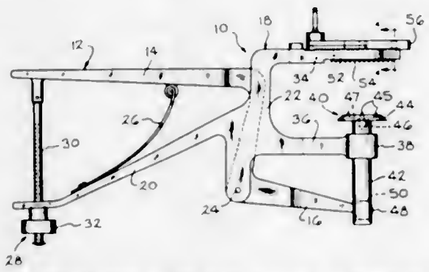
outlet means for dispensing liquid from said pressure reservoir to a selected site.

5,284,482

UNIVERSAL PATELLAR CLAMP

W. E. Michael Mikhail, 4302 Shamley Green, Toledo, Ohio 43623

Continuation-in-part of Ser. No. 652,882, Feb. 8, 1991, Pat. No. 5,180,384. This application Oct. 18, 1991, Ser. No. 779,352
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—86 **13 Claims**



1. A patellar clamp for use in the procedure of implanting a patellar prosthesis in a human patella comprising, in combination:

an articular surface clamping member having a central aperture of a generally circular shape defining a centerline axis;

an anterior surface clamping member positioned proximate said articular surface clamping member and adapted for movement along such centerline axis, said anterior surface clamping member including a patella engagement member supported by a shaft member, said patella engagement member including an aperture centered on such centerline axis;

centering means for retaining said anterior surface clamping member oriented on such centerline axis;

a first grip member fixed to said articular surface clamping member and second grip member engaged with said anterior surface clamping member, said first and second grip members being affixed together such that movement of said second grip member towards and away from said first grip member creates concomitant movement of said anterior surface clamping member towards and away from said articular surface clamping member; and,

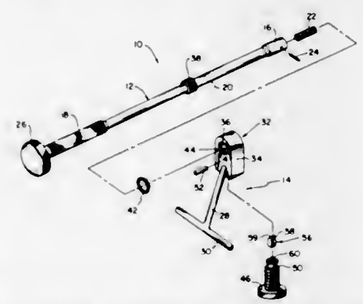
guide means positioned on said articular surface clamping member for providing centerline axis orientation for a reaming tool guidewire and drill used in such implanting procedure, said guide means being movable about such centerline axis orientation to expose said central aperture for access by a cannulated reamer.

5,284,483

ACETABULAR CUP INSERTING INSTRUMENT

Erin M. Johnson, Warsaw, Ind., and Leroy C. Bayliss, Sherwood, Ohio, assignors to Zimmer, Inc., Warsaw, Ind.

Filed Sep. 16, 1992, Ser. No. 945,558
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—86 **6 Claims**



1. An acetabular cup inserting instrument comprising:

a first elongated handle having a proximal end, a distal end and an interconnecting intermediate section therebetween, said handle having means on the distal end thereof for holding an acetabular cup,

a second handle extending from the intermediate section and rotatable about said first handle,

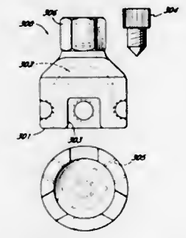
a ratchet means for yieldably retaining said second handle in a plurality of discrete angular positions as said second handle rotates about said first handle, and wherein said ratchet means includes a housing attached to said second handle, a control knob rotatable within said housing, and a spring biased pawl in said housing biased into engagement with a plurality of notches carried by the first handle, and wherein said pawl is regulated by said control knob, and wherein the housing further includes means for limiting the range of travel of the knob within the housing, thus providing an upper unlocked limit and a lower locked limit, such that when the control knob is rotated to the lower locked limit, the pawl becomes locked to one of said notches, thereby locking said second handle to said first handle at a desired angular position, and when the control knob is rotated to the upper unlocked limit, the pawl remains continuously biased into engagement with the notches of the ratchet means, such that the pawl positively engages the notches of the ratchet means as the second handle is rotated about the first handle, thus enabling the second handle to be yieldably retained at a desired angular position relative to the first handle, yet easily moved when rotation force is applied to the second handle to overcome the mechanical and frictional engagement between the pawl and the notches.

5,284,484

APPARATUS FOR IMPLANTATION AND EXTRACTION OF OSTEAL PROSTHESES

Larry L. Hood, Laguna Hills; Robert C. Klapper, Los Angeles, and James T. Caillouette, Newport Beach, all of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.

Division of Ser. No. 475,492, Feb. 6, 1990, Pat. No. 5,045,054. This application May 29, 1991, Ser. No. 706,786
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—99 **30 Claims**



1. An adaptor for connecting an ultrasonic device to a prosthesis including a lower portion and a ball having a given diameter at an exposed end thereof, said adaptor comprising:

a base portion having an external circumference, said base portion being provided with a first recess having a diameter closely matching the diameter of the ball, said external circumference of said base portion being provided with at least a second recess to provide clearance for the lower portion of the prosthesis;

a plurality of cap screws provided in corresponding apertures in said base portion for causing a high compression interface between an upper portion of the ball of the prosthesis and an internal surface of said first recess, a face of each of said cap screw contacting the lower edge of the ball at a point below a mid-point of the diameter of the ball; and

a connector coupled to said base portion and adapted to connect said adapter to the ultrasonic device.

5,284,485

ENDOSCOPIC KNOTTING DEVICE

Gene W. Kammerer, East Brunswick, N.J., and John N. Semertzides, Cincinnati, Ohio, assignors to Ethicon, Inc., Somerville, N.J.

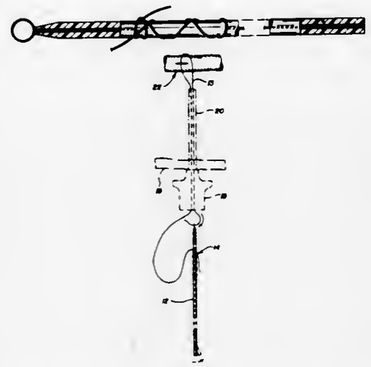
Filed Sep. 16, 1992, Ser. No. 946,197
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **13 Claims**

1. An improved endoscopic device of the type having a surgical needle; a hollow tube; and a filamentary strand attached at its distal end to the surgical needle, and slidable engaged at its proximal end about said tube with a partially tightened slip knot;

wherein the improvement comprises means for pulling the filamentary strand through the hollow tube proximally when the surgical needle is detached from the strand,

wherein said means for pulling comprises:

a) a wire-like member extending through said hollow tube, said wire-like member attached at its proximal end to the proximal end of said hollow tube, and said wire-like member having a deformable distal loop thereon for receiving at least a portion of said filamentary strand, said deformable distal loop protruding from the distal end of said hollow tube; and



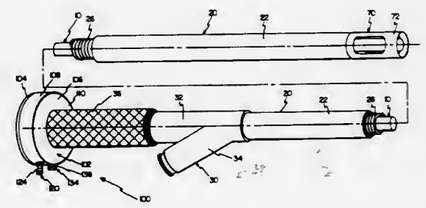
b) a frangible proximal end portion on said hollow tube.

5,284,486

SELF-CENTERING MECHANICAL MEDICAL DEVICE

Frank Kotula, Maple Grove, and Timothy Claude, Coon Rapids, both of Minn., assignors to Microvena Corporation, Vadnais Heights, Minn.

Filed Jun. 11, 1991, Ser. No. 713,384
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **23 Claims**



1. A self-centering medical device comprising:

a. an elongate, flexible shaft having proximal and distal ends, the shaft being adapted to be guided along a vascular path and being rotatable within a vascular channel having a vascular wall;

b. a rotor affixed to the shaft adjacent the distal end thereof for rotation therewith;

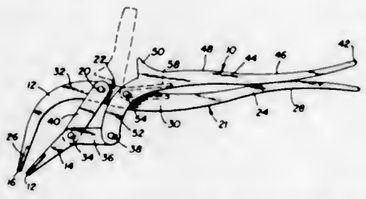
c. drive means for rapidly rotating the shaft;

d. a rotor housing carried about the rotor and within which the rotor rotates, the housing comprising a generally cylindrical wall substantially surrounding the rotor and having at least three ports formed therein, the ports being spaced substantially equiangularly about the circumference of the housing such that when a fluid is ejected through the ports within a vascular channel, the housing will tend to remain centered within the vascular channel; and

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e. an elongate, generally tubular shaft casing bearing a rotor housing at its distal end and extending along and enclosing substantially the entire length of the shaft between the drive means and the housing, the shaft casing including an elongate, tubular outer sleeve and an elongate, free-floating helical coil, the coil being disposed between the shaft and the outer sleeve.

5,284,487
SURGICAL COMPRESSION FORCEPS
Ruben J. Hartmeister, 1034 6th St., Golden, Colo. 80403
Filed Jul. 31, 1992, Ser. No. 923,131
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—205 **8 Claims**



1. A compression forceps of the type having a stationary handle and jaw connected by a shank area; a moveable jaw; a moveable handle having the approximate shape of a bell crank with major and minor arms; and a connecting link member having first and second opposite ends; together defining an improved four bar linkage having a first pivot connecting the approximate intersection of the major and minor arms of the moveable handle to the rear end of said shank area of the stationary handle and jaw; a second pivot connecting the free end of said minor arm to a rear end of said moveable jaw; a third pivot connecting a first end of said link to the front end of the shank area of the stationary handle and jaw; and a fourth pivot connecting the second end of the link to a middle area of the moveable jaw; wherein the improvement comprises:
an unequal linear spacing between first and second pivots, the first and third pivots, the third and forth pivots, and the second and forth pivots such that the four pivots define therebetween four mutually unequal linkage bars forming a compound linkage capable of operating the jaws with an increase of the relative inside angle between the jaws as the jaws close.

5,284,488
ADJUSTABLE DEVICES FOR THE OCCLUSION OF CARDIAC DEFECTS
Eleftherios B. Sideris, 1600 Coulter, Ste. 200 B, Amarillo, Tex. 79106
Filed Dec. 23, 1992, Ser. No. 995,817
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—213 **4 Claims**

1. An intracardiac percutaneously deliverable device for the repair of heart defects comprising:
a) an occluder, said occluder including:
i) a foldable foam resin disk,
ii) a coated wire skeleton in the form of an X sutured to the foam disk,
iii) an adjustable loop sutured to the center of the wire skeleton,
b) said adjustable loop is formed by
i) a first loop, connected to said wire skeleton
ii) a middle loop, connected to said first loop
iii) a terminal small loop, connected to said middle loop, and
iv) a radiopaque button attached between two of the loops of said adjustable loop
c) a counter-occluder
d) a loading wire, wherein said loading wire is a fluorocarbon resin coated hollow wire,
e) a long double thread going through the terminal small loop, into one end and through the hollow wire, and tied at the other end of the hollow wire;



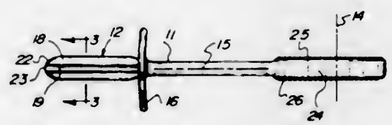
wherein the counter-occluder may be pushed along the loading wire toward the occluder and stop at a distance adjusted according the length or thickness of the occluded structure.

5,284,489
FILAMENT FABRICATED FROM A BLEND OF IONOMER RESIN AND NONIONIC THERMOPLASTIC RESIN
Cheng-Kung Liu, Norwalk, and John C. Brewer, Bristol, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Aug. 19, 1992, Ser. No. 932,377
Int. Cl.[5] A61L *17/00*
U.S. Cl. 606—228 **33 Claims**



1. A medical device comprising a filament fabricated from a biologically acceptable resin blend comprising ionomer resin and nonionic thermoplastic resin.

5,284,490
INFANT TEETHING ARRANGEMENT
Alicia J. Green, 308 Gina Dr., Carson, Calif. 90745
Filed Dec. 31, 1992, Ser. No. 999,266
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—235 **5 Claims**

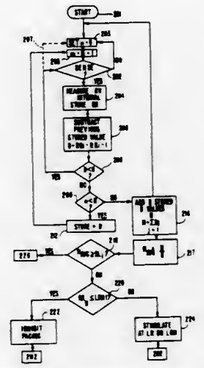


1. An infant teething arrangement, comprising,
an elongate handle symmetrically oriented about a handle axis, with the handle having a first end and a second end, and
a first teething member fixedly mounted to the first end longitudinally aligned with the handle and the handle axis, and

a resilient abutment flange orthogonally oriented relative to the handle axis fixedly mounted to the first end at an interface of the handle and the first teething member, and
the second end having a second teething member, with the second teething member of a cylindrical construction symmetrically oriented about a second teething member axis, with the second teething member axis orthogonally oriented relative to the handle axis, with the first teething member and the second teething member formed of resilient shape retentive materials, and
the first teething member includes a first resilient plate orthogonally bisecting a second resilient plate, and the first resilient plate and the second resilient plate are longitudinally aligned with and bisected by the handle axis, and the first resilient plate includes spaced arcuate first side walls and an arcuate first end wall, and the second resilient plate includes spaced arcuate second side walls and an arcuate second end wall.

5,284,491
CARDIAC PACEMAKER WITH HYSTERESIS BEHAVIOR
Richard Sutton, London, England, and Ivan Bourgeois, Verviers, Belgium, assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 27, 1992, Ser. No. 842,818
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—17 **22 Claims**

1. In a pacemaker having a programmable lower rate and upper rate, a programmable lower rate hysteresis (LRH) corresponding to a lower rate hysteresis interval (LRHI), and a programmable intermediate pacing rate (IR) the improvement comprising:
A. means for measuring rate of change M_{AVG} of successive cardiac intrinsic escape intervals;
B. means for comparing M_{AVG} to a first predefined limit SL_1;
C. means for comparing the last intrinsic escape interval to the lower rate hysteresis interval (LRHI); and



D. means for stimulating a heart at the lower rate hysteresis (LRH) and for gradually incrementing a pacing rate until the pacing ratio reaches the intermediate pacing rate (IR) if the last intrinsic escape interval is longer than the lower rate hysteresis interval (LRHI) and if said M_{AVG} is greater than SL_1.

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5,284,492

ENHANCED LUBRICITY FUEL OIL EMULSIONS

Leonard Dubin, Skokie, Ill., assignor to Nalco Fuel Tech, Naperville, Ill.

Continuation-in-part of Ser. No. 770,979, Oct. 1, 1991. This application Oct. 8, 1992, Ser. No. 958,567

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—301 **25 Claims**

1. An improved lubricity water and fuel oil emulsion for use as fuel for an electric power generating turbine, comprising a lubricity additive selected from the group consisting of dimer acids, trimer acids, sulfurized castor oil, and mixtures thereof.

5,284,493

MULTIFUNCTIONAL ADDITIVES TO IMPROVE THE LOW-TEMPERATURE PROPERTIES OF DISTILLATE FUELS AND COMPOSITIONS CONTAINING SAME

David J. Baillargeon, Cherry Hill; Angeline B. Cardis, Florence; Dale B. Heck, West Deptford, and Susan W. Johnson, Marmora, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 627,790, Dec. 14, 1990. This application Nov. 16, 1992, Ser. No. 976,702

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[5] C10L *1/14*

U.S. Cl. 44—331 **34 Claims**

11. A fuel composition comprising a major proportion of a liquid hydrocarbon fuel and a minor low temperature improving amount of the reaction product of a hydrocarbyl carboxylic anhydride-containing or carboxylic acid-containing group having three reactive carboxylic groups with another group selected from the combination of an aminoalcohol or mixture of aminoalcohols and a secondary amine said reactants being reacted in substantially molar, less than molar or more than molar amounts at temperatures varying from about 85° to about 250° C. or reflux under pressures varying from about ambient or autogenous to slightly higher for a time sufficient to obtain the desired ester/amide additive product of reaction.

5,284,494

OLIGOMERIC/POLYMERIC MULTIFUNCTIONAL ADDITIVES TO IMPROVE THE LOW-TEMPERATURE PROPERTIES OF DISTILLATE FUELS

David J. Baillargeon, Cherry Hill; Angeline B. Cardis, Florence; Dale B. Heck, West Deptford, all of N.J., and Susan W. Johnson, Centreville, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 17, 1992, Ser. No. 946,216

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—386 **23 Claims**

1. A multifunctional low-temperature-modifying distillate fuel additive consisting of a polymeric and/or oligomeric ester additive product of reaction consisting of epoxide cross-linked or anhydride cross-linked oligomers/polymers prepared by polymerizing or oligomerizing a suitable combination of monomers selected from the group consisting of (1) one or more long-chain epoxides or diol equivalents, (2) one or more anhydrides or diacid equivalents, (3) one or more crosslinking agents selected from the group consisting of (a) polyepoxides or polydiol equivalents or (b) one or more polyanhydrides or diacid equivalents, and (4) optionally a suitable reactive material selected from the group consisting of epoxy halides, diepoxides, dianhydrides, in varying molar ratios under suitable conditions of time, temperature and pressure wherein the molar ratios of reactants vary form equimolar to more than molar to less than molar, at temperatures varying from about 50 to about 250 C. and the pressure is autogenous or varies from atmospheric to about 100 psi for times varying from about an hour to about 48 hours thereby producing the desired ester additive product said product containing polymeric structures having ester functions and long-chain hydrocarbyl groups independently and regularly spaced along the polymer backbone and wherein hydrocarbyl is selected from the group consisting of alkyl alkenyl, aryl, alkaryl, aralkyl and wherein said additive product is (5) optionally post reacted with suitable amines or alcohols or a mixture of such amines and alcohols.

5,284,495

OLIGOMERIC/POLYMERIC MULTIFUNCTIONAL ADDITIVES TO IMPROVE THE LOW-TEMPERATURE PROPERTIES OF DISTILLATE FUELS

David J. Baillargeon, Cherry Hill; Angeline B. Cardis, Florence; Dale B. Heck, West Deptford, all of N.J., and Susan W. Johnson, Centreville, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 17, 1992, Ser. No. 946,220

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—386 **23 Claims**

1. A multifunctional low-temperature-modifying distillate fuel additive consisting of a polymeric and/or oligomeric ester additive product of reaction prepared by polymerizing or oligomerizing a suitable combination of monomers selected from the group consisting of (1) one or more aminodiols, diaminodiols or amidodiols, said diols containing at least one or more long-chain hydrocarbyl groups and (2) one or more anhydrides or diacid equivalents, and (3) optionally a suitable reactive material selected from the group consisting of isocyanates, diisocyanates, epoxy halides, carbamates, diepoxides, dianhydrides or polyols, in varying molar ratios under suitable conditions of time, temperature and pressure wherein the molar ratios of reactants vary from equimolar to more than molar to less than molar, at temperatures varying from about 50° to about 250° C. and with pressures varying from atmospheric to slightly higher for times varying from about an hour to 48 hours thereby producing the desired ester additive products said products containing polymeric structures having ester functions and long-chain hydrocarbyl groups independently and regularly spaced along the polymer backbone and wherein hydrocarbyl is selected from the group consisting of alkyl, alkenyl, aryl, alkaryl, aralkyl, which may be cyclic or polycyclic and wherein said ester additive product is (4) optionally post reacted with suitable reactive amines, alcohols or a mixture of such amines and alcohols.

5,284,496

OLIGOMERIC/POLYMERIC MULTIFUNCTIONAL ADDITIVES TO IMPROVE THE LOW-TEMPERATURE PROPERTIES OF DISTILLATE FUELS

David J. Baillargeon, Cherry Hill; Angeline B. Cardis, Florence; Dale B. Heck, West Deptford, all of N.J., and Susan W. Johnson, Centreville, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 17, 1992, Ser. No. 946,218

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—393 **23 Claims**

1. A multifunctional low-temperature-modifying distillate fuel additive comprised of a polymeric and/or oligomeric ester additive product of reaction consisting of hydroxyl promoted polyester materials and ester promoted polyester materials prepared by poylymerizing or oligomerizing a suitable combination of monomers selected from the group consisting of (1) one or more long-chain epoxides or diol equivalents, (2) one or more anhydrides or acid equivalents, and either (a) one or more epoxidized fatty esters or (b) one or more polyalcohols, and optionally (3) a suitable reactive material under suitable conditions of time, temperature and pressure comprising molar ratios varying from equimolar to more than molar to less than molar, at temperatures varying from about 50° to about 250° C., pressures varying from atmospheric to about 100 psi, for times varying from about an hour to about 48 hours thereby

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producing the desired ester additive product said product containing polymeric structures having ester functions and long-chain hydrocarbyl groups independently and regularly spaced along the polymer backbone.

5,284,497

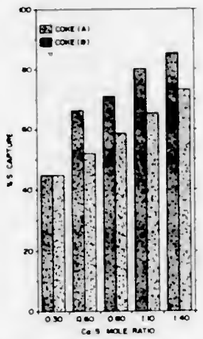
DESULFURIZATION OF SOLID CARBONACEOUS FUELS BY COAGGLOMERATION WITH SULFUR SORBENTS

Nosa O. Egiebor, Edmonton, and Joshua U. Otaigbe, Grande Prairie, both of Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Continuation-in-part of Ser. No. 597,800, Oct. 10, 1990, abandoned. This application Feb. 21, 1992, Ser. No. 838,916

Int. Cl.[5] **C10L** *9/10, 9/00*

U.S. Cl. 44—561 **14 Claims**



1. A solid carbonaceous fuel having reduced sulfur dioxide emission upon combustion which comprises a coagglomerate formed of particulate coke or coal, a silica-enhanced sulfur sorbent comprising $CaSiO_3H_2O$ and $Ca_3Al_2(SiO_4)(OH)_8$ and a hydrocarbon binder.

5,284,498

CYLINDRICAL FILTERS IN A TUBE SHEET FOR CLEANING HIGH TEMPERATURE GASES

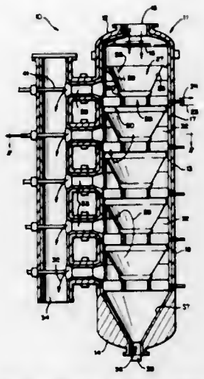
Charles M. Davis; Reijo Kuivalainen; Karukkampalayam M. Sellakumar, all of San Diego, Calif.; Folke Engstrom, Kotka, Finland; Juhani Isaksson, and Juha Tiensuu, both of Karhula, Finland, assignors to A. Ahlstrom Corporation, Karhula, Finland

Filed Nov. 12, 1992, Ser. No. 974,414

Int. Cl.[5] **B01D** *29/13*

U.S. Cl. 55—269 **31 Claims**

1. A filter assembly for high temperature gases, comprising:
a generally upright vessel having a top, a bottom, and a side wall;
a high temperature gas inlet adjacent the vessel top;
a plurality of filter supporting elements extending generally horizontally within said vessel;
a plurality of hollow flow directing elements each defining a generally conical or pyramidal shaped flow directing surface, disposed within said vessel and having a large upper opening, and a smaller bottom opening, each of said flow directing elements terminating in or adjacent a filter supporting element;
a plurality of filter elements mounted by each of said filter supporting elements disposed exteriorly of said smaller bottom opening of an associated flow directing element, with said smaller bottom opening of an associated flow directing element extending through its associated filter supporting element;



a cleaned gas outlet disposed in said vessel between at least some of said filter supporting elements; and
a particle discharge adjacent the bottom of said vessel.

5,284,499

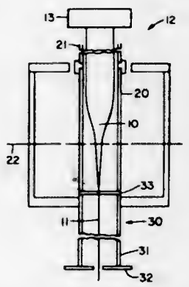
METHOD AND APPARATUS FOR DRAWING OPTICAL FIBERS

Jill A. Harvey; Daniel W. Hawtof, both of Wilmington, and Henry A. Spicer, Wrightsville Beach, all of N.C., assignors to Corning Incorporated, Corning, N.Y.

Filed May 1, 1992, Ser. No. 877,626

Int. Cl.[5] **C03B** *37/027*

U.S. Cl. 65—3.110 **14 Claims**



11. A method for drawing an optical waveguide fiber from an optical waveguide preform, comprising the steps of:
a. heating, in a furnace, one end of said preform to its softening temperature;
b. exposing said heated preform to a gas in the furnace;
c. drawing a fiber from the softened end of the preform into a cooling chamber attached to the furnace and out a fiber outlet of said cooling chamber, said cooling chamber fluidly communicating with the furnace;
d. utilizing the gas flow between the furnace and said cooling chamber to symmetrically cool the fiber to a temperature at which the viscosity of the cladding layer of the fiber is high enough to substantially prevent differential stresses in the cladding layer of the fiber; and
e. isolating the atmosphere of said cooling chamber from the ambient atmosphere by constricting the opening at the fiber outlet of said cooling chamber and by utilizing the gas flow between the furnace and the cooling chamber.

5,284,500

PROCESS FOR FABRICATING AN OPTICAL FIBER PREFORM

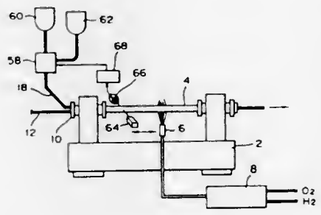
Kouji Okamura, and Tadao Arima, both of Shimotsuga, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 687,869, Jun. 4, 1991, abandoned. This application May 19, 1993, Ser. No. 63,046

Claims priority, application Japan, Oct. 31, 1989, 1-281843; Nov. 8, 1989, 1-288732; Nov. 8, 1989, 1-288733; Nov. 8, 1989, 1-288734

Int. Cl.[5] **C03B** *37/023*

U.S. Cl. 65—3.12 **6 Claims**



1. A process for producing an optical fiber preform comprising the steps of:
(a) forming a soot-type core glass by heating fine powder of an oxide glass deposited by a vapor phase reaction in a quartz reaction tube;
(b) transmitting a laser beam through the quartz reaction tube in which the soot-type core glass has been formed, thereby measuring a quantity of transmitted light;
(c) charging a solution of a compound of a rare earth element used as a solute into the quartz reaction tube in a controlled amount depending on the quantity of the transmitted light, thereby permitting the solution to be impregnated in the soot-type core glass;
(d) heating the solute-containing soot-type core glass until the glass is vitrified; and
(e) heating the quartz reaction tube for collapsing.

5,284,501

METHOD OF MANUFACTURING GLASS OPTICAL ELEMENT

Hideto Monji, Katano; Kiyoshi Kuribayashi, Neyagawa; Makoto Umetani, Hirakata, and Noriyuki Kawata, Omiya, all of Japan, assignors to Sumita Optical Glass, Inc., Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of Japan

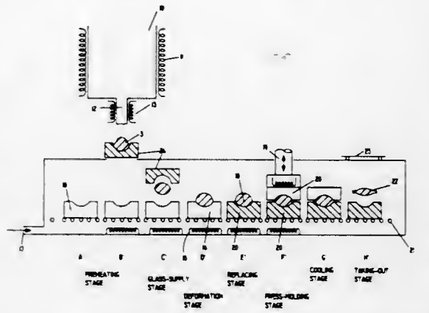
Division of Ser. No. 866,265, Apr. 10, 1992, Pat. No. 5,171,347, which is a continuation of Ser. No. 460,554, Jan. 3, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,228

Claims priority, application Japan, Jan. 13, 1989, 1-7249; Feb. 28, 1989, 1-47629; Mar. 30, 1989, 1-80371

Int. Cl.[5] **C03B** *11/00*

U.S. Cl. 65—32.5 **2 Claims**

1. A method of manufacturing a glass optical lens preform comprising the steps of:
placing glass in the form of a gob or lump on a surface of a thermal processing mold in a non-oxidizing atmosphere, said surface being a mirror surface coated with a chemically stable think film; and
heating the thermal processing mold in the non-oxidizing atmosphere so that said glass is thermally deformed into a shape which has a transcribed surface transcribed from said mirror surface at a portion contacting said mirror surface and a free surface formed by surface tension of the thermally deformed glass at a portion not contacting said mirror surface; and
cooling the thermally deformed glass in the non-oxidizing atmosphere to obtain an optical glass preform having said transcribed surface at the portion contacting said mirror



surface and said free surface at the portion not contacting said mirror surface.

5,284,502

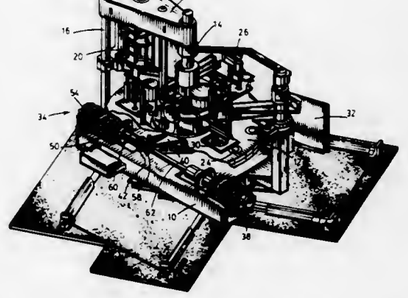
ROTARY GLASS-MOLDING PRESS WITH CUSHIONED, TRUNNION MOUNTED HYDRAULIC DRIVE

Kenneth R. Hileman, Climax, and Nile Limbaugh, Bainbridge, both of Ga., assignors to Lynch Machinery - Miller Hydro, Cambridge, Ga.

Filed Oct. 13, 1992, Ser. No. 960,136

Int. Cl.[5] **G03B** *11/02*

U.S. Cl. 65—160 **6 Claims**



1. An automatic, rotary, glass-making press, the press comprising a base, a rotary table mounted for rotation on the base, and glass-forming mechanisms on the table and base, for formation of glass articles at work stations around the press, the press further comprising a rotator mounted on the base for rotation, a drive pin means mounted to the rotator for driving the table, a drive pin advancing and retracting means for advancing and retracting the drive pin means into engagement and out of engagement with the table and mounted to the rotator for movement with the rotator, a rotator drive means for driving the rotator in reciprocating rotation, the rotator drive means including a first rod means for extending and retracting a first rod mounted between the base and the rotator, the first rod advancing the rotator during the extending of the first rod, and a second rod means for extending a second rod mounted between the base and the rotator, the second rod retracting the rotator during extending of the second rod, the first and second rod means mounted to the base and rotator for arcuate movements of the first and second rods as the rotator moves in reciprocating rotation about the base, and control means for

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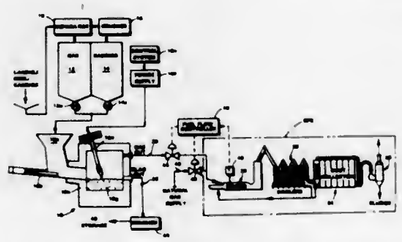
controlling the drive pin advancing and retracting means and the rotator drive means such that the first rod means advances the rotator while the drive pin means is in engagement with the table, thereby advancing the table, and the second rod means retracts the rotator while the drive pin means is out of engagement with the table, whereby the table is rotated forward in increments.

5,284,503

PROCESS FOR REMEDIATION OF LEAD-CONTAMINATED SOIL AND WASTE BATTERY

John A. Bitler, Deaver, and John P. Baranski, Sinking Spring, both of Pa., assignors to Exide Corporation, Reading, Pa.

Filed Nov. 10, 1992, Ser. No. 973,236
Int. Cl.[5] C22B *7/04*
U.S. Cl. 75—10.19 **17 Claims**



1. A process for the remediation of lead-contaminated soil and waste lead-acid battery casings comprising the steps of:
(a) feeding a mixture of lead-contaminated soil and waste lead-acid battery casings into a plasma arc furnace;
(b) pyrolyzing the mixture in the plasma arc furnace by bringing the mixture into contact with a plasma arc torch at a temperature between about 4,000° to about 8,000° C. for a time sufficient to (i) convert the battery casings into a combustible gas, (ii) volatilize substantially all lead contaminants which are present in said mixture and entrain said volatilized lead contaminants as a vapor in said combustible gas, and (iii) vitrify the soil, whereby lead contaminants that were present in said mixture are substantially removed therefrom;
(c) transferring the combustible gas and vaporized lead contaminants entrained therewithin from the plasma arc furnace to a combustion/lead-recovery apparatus, and then
(d) combusting the combustible gas in the combustion apparatus and recovering the lead contaminants entrained therewithin.

5,284,504

POWDERED DESULFURIZING REAGENT AND PROCESS OF USE

Bruce J. Barker; Brian M. Kinsman, and Ian A. Cameron, all of Ontario, Canada, assignors to The Carbide/Graphite Group, Inc., Pittsburgh, Pa.

Filed Oct. 26, 1992, Ser. No. 966,223
Claims priority, application Canada, Oct. 25, 1991, 2,054,244-6
Int. Cl.[5] C21C *7/02*
U.S. Cl. 75—312 **24 Claims**

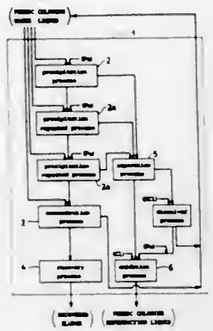
1. An agent for the desulfurization of molten iron which is based on one of calcium carbide and lime and which is added fluidized form into an iron melt, said agent comprising one of calcium carbide and lime and an asphaltite.

5,284,505

METHOD FOR RECOVERING METALLIC NICKEL FROM FERRIC CHLORIDE WASTE LIQUID

Keiichi Tachibana, Higashiosaka, and Ryoichi Tachibana, Daito, both of Japan, assignors to Hakima Kasaku Kogyo Kabushiki Kaisha, Hyogo, Japan

Filed Dec. 31, 1992, Ser. No. 999,158
Int. Cl.[5] C22B *3/46*
U.S. Cl. 75—738 **11 Claims**



1. A method for recovering metallic nickel from a waste liquid from an etching solution for metallic plates, which liquid comprises ferric chloride and nickel ions, which method comprises the steps of:
(a) adding metallic iron to the waste liquid;
(b) heating and stirring the waste liquid from step (a) to reduce and precipitate the nickel irons as metallic nickel and to reduce the ferric chloride to ferrous chloride;
(c) separating out a sludge comprising the metallic nickel and metallic iron;
(d) adding a fresh waste liquid comprising ferric chloride and nickel ions to the sludge from step (c) to obtain a diluted sludge;
(e) dissolving iron constituents of the diluted sludge by heating and stirring and precipitating nickel ions to metallic nickel to obtain a concentrated metallic nickel sludge and a ferrous chloride suspension; and
(f) separating the concentrated metallic nickel sludge from the ferrous chloride suspension.

5,284,506

FAST RESPONSE HIGH PURITY MEMBRANE NITROGEN GENERATOR

Christian Barbe, Fontenay aux Roses, France, assignor to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 26, 1992, Ser. No. 935,296
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—23 **19 Claims**



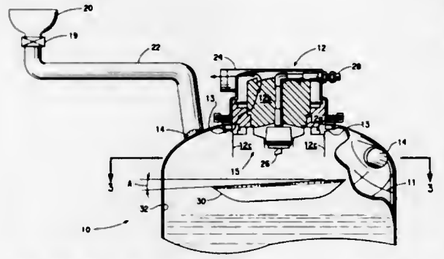
1. A process for generating a nitrogen-enriched gas from a feed stream of atmospheric air or a mixture of nitrogen and oxygen, which is not continuously supplied to a membrane system, which membrane system, comprises at least one membrane having a non-permeate side and a permeate side, and being more permeable to oxygen than nitrogen, which process comprises feeding the feed stream to the non-permeate side of said at least one membrane, and recovering an oxygen-enriched gas on the permeate side of the membrane system while a nitrogen-enriched gas is recovered from the non-permeate side of the membrane, wherein a feedback of nitrogen gas or nitrogen-containing gas having an oxygen gas concentration lower than 21% by volume is supplied by the non-permeate side of the membrane during at least a part of the period of time when the feed stream is not supplied to the membrane system, in an amount equal to at least about 1/100,000 of nominal production, with the flow thereof being substantially evenly distributed among the at least one membrane, thereby avoiding any substantial retrodiffusion of oxygen through the membrane system from the permeate side to the non-permeate side of the at least one membrane during those periods of time where the feed stream is not supplied to the membrane system.

5,284,507

WASTE TANK FOR VACUUM SEWAGE SYSTEM

Larry J. Ashton, Mapleton, Utah, and John F. Sollinger, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1992, Ser. No. 967,034
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—195 **2 Claims**



1. A waste tank for a vacuum sewage system for serving the sanitation needs of aircraft passengers and crew, said tank having a continuous side wall, a top, a bottom, an inlet for admitting air and sewage tangentially through the side wall of the tank, and an outlet for exhausting air from the top of the tank, said inlet and outlet being above the maximum liquid filling level in the tank, and a shelf attached to and extending from said side wall, said shelf extending partially around said side wall and being directed downwardly from said inlet said shelf being located above said filling level and below said inlet whereby interaction between air being admitted through said inlet and the liquid in the tank is reduced said waste tank including a rotary spray nozzle centrally mounted to said top of said tank through which spray liquid is force and which rotates by the reactive force of the liquid spray ejected from the nozzle, said nozzle being directed toward said side walls and waste tank including a means for separating entrained liquid from air located in the top of the tank said tank being formed of a filament wound graphite ribbed structure impregnated with epoxy resin, there being an abrasion resistant fluorocarbon resin coating the inside surfaces of said tank.

5,284,508

COATING COMPOSITION FOR GLASS CONTAINERS

Masatoshi Shibata, Yokohama; Teruto Isonage, Kashiwa; Eiji Kamiryo, Nabari, and Kiyoshi Shinohara, Hirakata, all of Japan, assignors to Kirin Brewery Company Ltd. and Riken Vitamin Co., Ltd., both of Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 723,979
Claims priority, application Japan, Jul. 5, 1990, 2-177826; Jul. 5, 1990, 2-177827; Nov. 13, 1990, 2-306731
Int. Cl.[5] C09D *191/00*
U.S. Cl. 106—267 **2 Claims**

1. A scratch masking composition for glass containers comprising squalane and at least one member selected from the group consisting of medium chain C_8–C_{12} fatty acid triglycerides and long chain C_{16}–C_{22} unsaturated fatty acid triglycerides.

5,284,509

METHOD FOR PRODUCING SUPERIOR QUALITY PAVING ASPHALT AND PRODUCT PREPARED THEREFROM

Nabil I. Kamel, Mississauga, and Laverne J. Miller, Georgetown, both of Canada, assignors to Petro-Canada Inc., Mississauga, Canada

Continuation of Ser. No. 530,531, May 30, 1990, abandoned. This application Apr. 15, 1992, Ser. No. 870,164
Int. Cl.[5] C09D *195/00*; C08L *95/00*
U.S. Cl. 106—273.1 **26 Claims**

1. A paving asphalt cement for use in preparing a paving asphalt exhibiting decreased rutting and increased traffic loading characteristics wherein the paving asphalt cement consists essentially of a blend of a first asphalt precursor which has been oxidized with a catalyst having a penetration value ranging from about 5 to 100 as measured by ASTM D5 at 25° C. and an unoxidized second asphalt precursor having a penetration value ranging from about 60 to 600 as measured by ASTM D5 at 25° C. in an amount such that the resulting paving asphalt cement has a penetration value ranging from about 40–400 as measured by ASTM D5 at 25° C.

5,284,510

ORGANIC SOLVENT BASED LIQUID COMPOSITION FOR ENHANCING ADHERENCE OF COATINGS TO SUBSTRATES

Maurice Levy, Garges les Gonesse, France, assignor to Paris Laque Service, Aubervilliers, France

Filed May 16, 1990, Ser. No. 523,810
Claims priority, application France, May 16, 1989, 89 06366
Int. Cl.[5] C09D *183/12*
U.S. Cl. 106—287.14 **3 Claims**

1. A liquid composition to enhance adherence of coatings to rigid or semi-rigid substrates, comprising a mixture of organic solvents in the following proportions by weight:
from 17 to 36% of xylene;
from 4 to 14% of ethylbenzene;
from 55 to 75% of white spirit; and
from 0.05 to 3% of a methylpolysiloxane modified by a polyether.

5,284,511

CONDITIONING PROCESS FOR PHTHALOCYANINE PIGMENTS

Meinhard Rolf, Leverkusen, Fed. Rep. of Germany, and Abdul Sattar, Mt. Pleasant, S.C., assignors to Miles Inc., Pittsburgh, Pa. and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 12, 1993, Ser. No. 50,686
Int. Cl.[5] C09B *47/04*
U.S. Cl. 106—410 **16 Claims**

1. A process for preparing a beta-phase metal phthalocyanine pigment comprising
(a) dry milling a crude metal phthalocyanine having an aver-

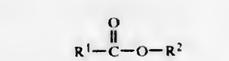
VOL 1159 ISS 2 FE 8 1994 UMI

age particle size of 10 to 200 μm until the average particle size is reduced to 0.01 to 0.5 μm;

(b) finishing the milled metal phthalocyanine by thoroughly mixing said metal phthalocyanine with at least 4 parts by weight, relative to the metal phthalocyanine, of a finishing solvent comprising a mixture of

(i) 5 to 100 percent by weight, based on the total amount of finishing solvent, of an ester selected from the group consisting of

(1) a monocarboxylic acid monoester having the formula

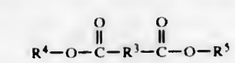


wherein

R^1 is C_1-C_{23} alkyl, C_2-C_{23} alkenyl, C_4-C_8 cycloalkyl optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, C_4-C_8 cycloalkenyl optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, or a group represented hy R^1-R^b-wherein R^a is C_4-C_8 cycloalkyl optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl or C_4-C_8 cycloalkenyl optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl and R^b is C_1-C_8 alkylene or C_2-C_8alkenylene, and

R^2 is C_3-C_8 alkyl

(2) a dicarboxylic acid diester having the formula

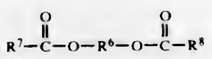


wherein

R^3 is a direct single bond, C_1-C_{22} alkylene, C_2-C_{22} alkenylene, C_4-C_8 cycloalkylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, C_4-C_8 cycloalkenylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, or a group represented by -R^c-R^d-R^e-wherein R^c and R^3 are independently C_1-C_8 alkylene or C_2-C_8 alkenylene and R^d is C_4-C_8 cycloalkylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl or C_4-C_8cycloalkenylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, and

R^4 and R^5 are independently C_1-C_8 alkyl;

(3) a diol diester having the formula

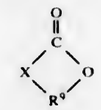


wherein

R^6 is C_2-C_{22} alkylene, C_2-C_{22} alkenylene, C_4-C_8 cycloalkylene optionally substituted with C_1-C_8 alkyl or C_2-C_8alkenyl, C_4-C_8 cycloalkenylene optionally substituted with C_1-C_8 alkyl or C_2-c_8 alkenyl, or a group represented by -R^f-R^g-R^h-wherein R^f and R^h are independently C_1-C_8 alkylene or C_2-C_8 alkenylene and R^g is C_4-C_8cycloalkylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl or C_4-C_8 cycloalkenylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, and

R^7 and R^8 are independently C_1-C_8 alkyl;

(4) a lactone or cyclic carbonate having the formula



wherein

R^9 is C_2-C_6 alkylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl or C_2-C_6 alkenylene optionally substituted with C_1-C_8 alkyl or C_2-C_8 alkenyl, and

X is 0 or a direct single bond; and

(5) mixtures thereof; and

(ii) 0 to 95 percent by weight, based on the total amount of finishing solvent, of water;

(c) hydrolyzing the ester used in step (b); and

(d) collecting the beta-phase metal phthalocyanine pigment.

5,284,512

POLYASPARTIC ACID AND ITS SALTS FOR DISPERSING SUSPENDED SOLIDS

Larry P. Koskan, Orland Park, and Kim C. Low, Alsip, both of Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Continuation-in-part of Ser. No. 927,257, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 665,101, Mar. 6, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,008

Int. Cl.[5] C08L *77/04;* **C08K** *5/17;* **B01F** *17/28*

U.S. Cl. 106—416 **17 Claims**

1. An aqueous suspension of finely divided solid particles which are maintained in suspension by a suspension stabilizing amount of a water soluble salt of polyaspartic acid in which at least 50 percent of the amino acid residue linkages are beta-linkages and having a weight average molecular weight of about 1000 to about 5,000.

5,284,513

CEMENT SLURRY AND CEMENT COMPOSITIONS

Kenneth M. Cowan, 1019 Sugardale Ct., Sugar Land, Tex. 77478, and Arthur H. Hale, 7135 Hendon La., Houston, Tex. 77074

Filed Oct. 22, 1992, Ser. No. 964,975

Int. Cl.[5] C04B *7/147, 7/153*

U.S. Cl. 106—790 **20 Claims**

1. An aqueous cementitious slurry comprising:

20–600 lbs/bbl of said slurry of blast furnace slag having a 30–40 wt percent SiO_2 content;

a drilling fluid comprising an aqueous phase and clay; and salt;

wherein said drilling fluid is present in said slurry in an amount sufficient to provide an amount of clay effective to act as a fluid loss control agent in said slurry;

wherein said salt is present in said slurry in an amount sufficient to give a weight ratio of said blast furnace slag to said salt in said slurry within the range of 70:1 to 1:10; and

wherein water is present in an amount sufficient to produce said aqueous cementitious slurry.

5,284,514

APPARATUS FOR COATING FOOD WITH BREAD CRUMBS

Sybil M. Griffiths, Winsford, England, assignor to Eurotaste Limited, England

Filed Feb. 6, 1992, Ser. No. 828,660

Claims priority, application United Kingdom, Feb. 6, 1991, 9102545

Int. Cl.[5] B05B *5/00*

U.S. Cl. 118—23 **10 Claims**

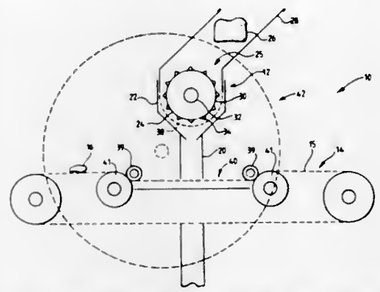
1. An apparatus for coating food with breadcrumbs which comprises

a crumbing apparatus for converting unground bread into breadcrumbs, which crumbing apparatus comprises a casing which houses a rotatable drum with an outer cylindrical drum surface from which a plurality of teeth project and a plurality of spaced apart rods arranged to provide a platform for bread closely spaced above the drum surface, such that teeth project between pairs of adjacent rods;

a coating station adjacent said apparatus for receiving freshly made crumbs from the crumbing apparatus;

conveyor means arranged to transport substrate food to the coating station for coating with the freshly made crumbs and to transport coated food away from the coating station.

9. Crumbing apparatus for producing crumbs from bread, said apparatus comparing a casing which houses a rotatable



drum with a cylindrical drum surface from which a plurality of teeth project; and a plurality of spaced apart rods arranged to provide a platform for bread closely spaced above the drum surface such that teeth project between pairs of adjacent rods in order to bite off small crumbs from the bread.

5,284,515

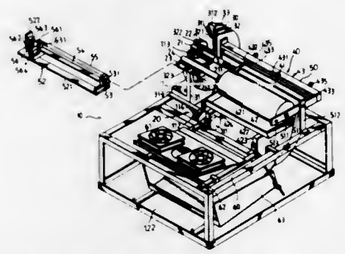
COATING MACHINE FOR WATERPROOF OF PAPER BASED ARTICLES

Tsung-Yen Chang, Suite 1, 11F, 95-8 Chang Ping Road Sec. 1, Taichung, Taiwan

Filed Apr. 17, 1992, Ser. No. 870,289

Int. Cl.[5] B05C *1/12*

U.S. Cl. 118—64 **1 Claim**



1. A coating machine for applying a waterproof coating material to paper based articles, comprising:

a main frame;

a first shaft and a second shaft;

a disk including first means for rotatably mounting said first shaft in a center portion thereof and second means for rotatably mounting said second shaft at a location spaced from said center portion, said first and second shafts being mounted parallel to one another and extending perpendicularly from said disk;

an L-shaped member including a leg and an arm, wherein said leg extends parallel to said first and second shafts and said arm extends parallel to said disk, wherein a free end of said leg is fixedly attached to said disk adjacent said first shaft at a point one hundred and eighty degrees from said second shaft relative to said center portion;

first support means for rotatably mounting said disc to a first side of said main frame, wherein said first support means rotatably engages a periphery of said disk, said first support means including means for selectively locking said disk against rotation;

second support means for rotatably mounting said arm to a second side of said frame, wherein the axis of rotation of said disk and said second support means are coaxial;

said first shaft having first and second gears fixedly attached proximate one end thereof;

a guide roller;

means for rotatably mounting said guide roller in parallel spaced relation with said leg;

means for flexibly coupling the other end of said first shaft to one end of said guide roller;

said second shaft having a third gear fixedly attached at one end thereof and a second roller coaxially and fixedly attached adjacent the other end of said shaft;

wherein a portion of said first shaft intermediate said second gear and means for flexibly coupling is rotatably mounted to said disk via said first means for rotatably mounting;

wherein a portion of said second shaft intermediate said third gear and said second roller is rotatably mounted to said disk via said second means for rotatably mounting;

means for rotatably mounting the other end of said guide roller to said arm;

wherein said second gear and said third gear intermesh and said guide roller and said second cylindrical roller are parallel to one another;

wherein said means for rotatably mounting said guide roller includes means for adjusting a spacing between said guide roller and said second cylindrical roller;

a sink for containing a supply of said coating material;

means for mounting said sink such that said second cylindrical roller may be positioned partially within said sink by rotation of said disk and said arm;

plate means mounted adjacent said second roller for controlling a thickness of said coating material on said second roller;

a collection chamber;

duct means communicating proximate said space between said guide roller and said second roller for directing said articles from said spacing to a collection chamber;

means for directing hot air into said collection chamber; and drive means for driving said first shaft via said first gear.

5,284,516

DOCTORING APPARATUS WITH FLEXIBLE BLADE MOUNTING

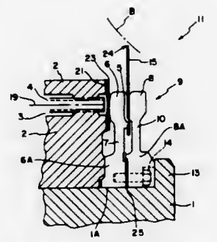
Ralf Sieberth, Appleton, Wis., assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 926,917

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, G9109785[U]

Int. Cl.[5] B05C *11/04*

U.S. Cl. 118—123 **16 Claims**



1. A doctoring apparatus, comprising:

a doctor blade, said doctor blade defining a width and thickness;

a support beam, said support beam supporting said doctor blade;

a blade mounting, said blade mounting including two clamping parts for clamping said doctor blade, each said clamping part generally disposed on opposite sides of said doctor blade, each said clamping part, in one of an immediate

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clamping area of the blade an in an area adjacent to the blade, including a flexible section having a thinned cross sectional thickness transverse to said doctor blade, said flexible section providing flexibility in said clamping parts in a direction transverse to said doctor blade and rigidity in said clamping parts in a direction corresponding to said doctor blade width; and

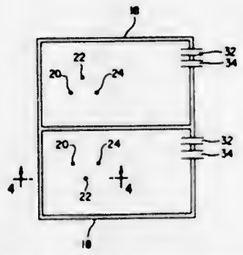
an adjustment means disposed adjacent one of said clamping parts for deforming said blade and said clamping parts.

5,284,517

FLEXIBLE BLANKET SYSTEM FOR TREATING ASBESTOS CONTAINING MATERIALS

John W. Ratzesberger, 2400 16th St., Altoona, Pa. 16601

Filed Mar. 27, 1992, Ser. No. 859,093
Int. Cl.[5] B05B *7/00*
U.S. Cl. 118—315 **18 Claims**



1. A system for establishing a safe environment for removing dangerous, hazardous fibrous materials in situ over a substrate, said system comprising:

flexible film means, said flexible film means comprising multiple layers sealed to form separate chambers containing fluid and gas for providing a continuous misting of fluid to initially wet said materials, substantially surrounding said materials and having perforations therein to permit said misting therethrough;

means for continuing the misting of fluid intermittently to achieve saturation of said materials to said substrate; and means for curing said materials to substantially eliminate the generation of airborne fibers during removal of said materials.

5,284,518

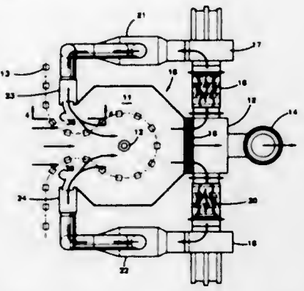
RECIRCULATION VENTILATION SYSTEM FOR A SPRAY BOOTH

Michael T. Kohn, Belding, Mich., assignor to Belco Industries, Inc., Belding, Mich.

Filed Jul. 7, 1992, Ser. No. 909,610
Int. Cl.[5] B05B *13/02, 15/12*
U.S. Cl. 118—324 **6 Claims**

1. In combination with a spray booth installation including a vertically elongated housing defining a space having at least one relatively narrow opening extending over substantially the full height of said housing, said installation also including conveyor means adapted to bring suspended and closely spaced elongated workpieces along a path through said opening adjacent the top thereof while allowing swinging of the workpieces in the presence of gas flow, said installation further including blower and duct means adapted to establish a reduced pressure in said space, and to exhaust a portion of the gaseous contents of said space and to recirculate the remaining portion thereof:

means forming a pressurized outlet duct communicating with said blower and duct means, and disposed along at least one side of said narrow opening, and adapted to project recirculated gases into said space at said at least one opening at a vertically equalized velocity sufficiently low to prevent said suspended workpieces from swinging into collision with each other adjacent said at least one opening.



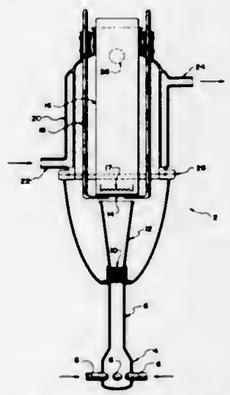
4. A ventilation system as defined in claim 1 wherein said housing has a single opening and said conveyor means is adapted to bring workpieces into and out of said space through said single opening.

5,284,519

INVERTED DIFFUSER STAGNATION POINT FLOW REACTOR FOR VAPOR DEPOSITION OF THIN FILMS

Prasad N. Gadgil, Burnaby, Canada, assignor to Simon Fraser University, Canada

Filed May 16, 1991, Ser. No. 701,525
Claims priority, application Canada, May 16, 1990, 2016970
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 **17 Claims**



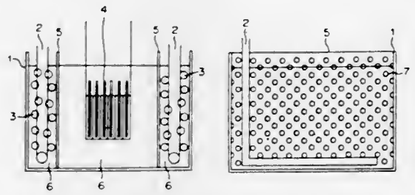
1. A metal organic chemical vapor deposition reactor comprising a gas mixing chamber with gas entry ports into the mixing chamber; a substrate for deposition thereon of a thin solid film; and a gas outlet for conveying gas away from the substrate, characterized by a gas mixing chamber wherein gas is introduced into the chamber through at least two inlet ports in a tangential manner so as to impart a vortex mixing action to the gas, a capillary plug positioned above the mixing chamber and below the substrate, the capillary plug having therein a plurality of vertically extending and parallel capillary tubes which serve to streamline and evenly distribute the upward flow of gas to the substrate, an upwardly expanding vertically aligned conical diffuser chamber having a lower narrow end and an upper broad end positioned above the top of the capillary plug, the upwardly expanding conical diffuser chamber being designed to streamline the flow of gas from the capillary plug to the substrate, the substrate being positioned above the capillary plug and within the broad end of the upwardly expanding conical diffuser chamber.

5,284,520

ELECTROLESS PLATING DEVICE

Atsushi Tanaka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,586
Claims priority, application Japan, Aug. 2, 1991, 3-194080
Int. Cl.[5] B05C *3/00*
U.S. Cl. 118—600 **4 Claims**



1. An electroless plating device which comprises:

an electroless plating tank for accommodating an electroless plating solution; a workpiece holder for holding an object of plating;

a draft pipe provided in the electroless plating tank for blowing air into the electroless plating solution to form bubbles; and

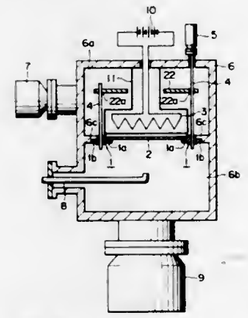
a shield plate having perforations provided between the object of plating and the bubbles blown out from the draft pipe, a size of each of said perforations being of dimensions whereby the bubbles can not pass through the perforations.

5,284,521

VACUUM FILM FORMING APPARATUS

Ken-ichi Aketagawa; Junro Sakai; Shun-ichi Murakami; Hiroyoshi Murota, all of Fuchu, and Toru Tatsumi, Tokyo, all of Japan, assignors to Anelva Corporation and NEC Corporation, both of Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,522
Claims priority, application Japan, Sep. 21, 1990, 2-253191
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 **10 Claims**



1. A vacuum film forming apparatus for depositing a semiconductor film on a film forming surface of a substrate, comprising

a vacuum vessel having an inner wall surface, said vacuum vessel being divided into first and second vertically separated vacuum chamber portions and being provided with an isolation member on said inner wall surface between said first and second vacuum chamber portions;

first and second evacuating means communicated with said first and second vacuum chamber portions respectively;

a substrate heater located within said first vacuum chamber portion;

gas supply means for supplying gas to said second vacuum chamber portion; and

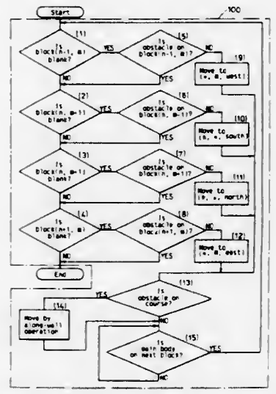
a substrate holder engageable with said isolation member, said substrate being affixed to said substrate holder by only its own weight with the film forming surface thereof facing said second vacuum chamber portion and an opposing surface thereof receiving heat directly from said substrate heater, said substrate separating and isolating said first and second vacuum chamber portions from each other thereby preventing gas from passing between said chamber portions.

5,284,522

SELF-RUNNING CLEANING CONTROL METHOD

Yasumichi Kobayashi, Toyonaka; Hidetaka Yabuuchi, Takarazuka; Osamu Eguchi, Katano; Shinji Kondoh, Kawanishi, and Haruo Terai, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 544,952, Jun. 28, 1990, Pat. No. 5,109,566.
This application Jan. 31, 1992, Ser. No. 828,753
Int. Cl.[5] B08B *7/04*
U.S. Cl. 134—18 **13 Claims**



1. A control method, using digital processing means, for automatically operating a self-running cleaning apparatus comprising the steps of:

preparing a block-map of an area to be cleaned by said self-cleaning apparatus, said block-map including a plurality of blocks, wherein said apparatus is initially located on one of said blocks and moves from block to block, cleaning each block said apparatus is on;

storing said block-map;

analyzing, using said digital processing means, a status of said blocks which are positioned to the west, the north, the south and the east of said apparatus;

starting said automatic operation of said apparatus by deciding a moving direction on the basis of a predetermined priority order of directions, said directions corresponding to blocks which are west, north, south and east of said apparatus;

determining blank of a block (n−1, m), when each block in a line and a row of said subdivided area is designated by a combination of one of sequential numbers n−1, n, n+1, and one of sequential numbers m−1, m, m+1;

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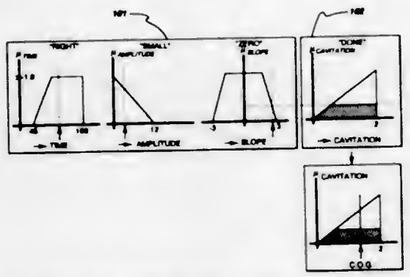
determining a presence of an obstacle on said block (n−1, m), when said block (n−1, m) is determined to be blank;
determining blank of a block (n, m−1), when said block (n−1, m) is not blank or an obstacle is on said block (n−1, m);
moving to the direction of a block having a first priority, when there is no obstacle on said block (n−1, m);
determining a presence of an obstacle on said block (n, m−1), when said block (n, m−1) is determined to be blank;
moving to the direction of a block having a second priority, when there is no obstacle on said block (n, m−1);
determining blank of a block (n, m+1), when said block (n, m−1) is not blank or an obstacle is on said block (n, m−1);
determining a presence of an obstacle on said block (n, m+1), when said block (n, m+1) is determined to be blank;
moving to the direction of a block having a third priority, when there is no obstacle on said block (n, m+1);
determining blank of a block (n+1, m) when said block (n, m+1) is not blank or an obstacle is on said block (n, m+1);
determining a presence of an obstacle on said block (n+1, m) when said block (n+1, m) is determined to be blank;
moving to the direction of a block having a fourth priority, when there is no obstacle on said block (n+1, m); and
moving said apparatus along a wall of said obstacle when said apparatus cannot run through centers of said blocks due to said obstacle being located on said blocks.

5,284,523

FUZZY LOGIC CONTROL METHOD FOR REDUCING WATER CONSUMPTION IN A MACHINE FOR WASHING ARTICLES

Vivek V. Badami, and Mark E. Dausch, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 1, 1992, Ser. No. 877,301
Int. Cl.[5] B08B *7/04*
U.S. Cl. 134—18 **4 Claims**



1. A method for reducing water consumption in a machine for washing articles, said machine including a pump, said method comprising the steps of:
determining, using fuzzy logic, when said pump has stopped surging during a fill operation by calculating a fuzzy time, a fuzzy current oscillation amplitude and a fuzzy slope of average current; and
terminating said fill operation when said pump has stopped surging.

5,284,524

METHOD AND APPARATUS FOR ENHANCING SURFACE TREATMENT OF PERFORATED MATERIALS

Steven P. DeCoux, Long Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 3, 1991, Ser. No. 770,253
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—22.18 **15 Claims**

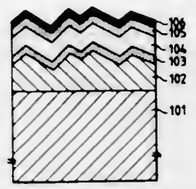
1. A method of preventing clogging of perforations in a perforated workpiece during a treatment of one surface thereof, said method comprising:
supporting a perforated region of said workpiece atop a laminated backing member,
said member having a first layer adapted for absorptive and expulsive interaction with a fluid used during said treatment and a second layer for initiating alternative expulsion and absorption of said fluid from said first layer in response to corresponding applications and withdrawals of pressure to said first layer during the carrying out of said treatment, and
applying pressure to said perforated region to expel fluid from said first layer through said perforations and withdrawing pressure to cause said fluid to pass through said perforations into said first layer.

5,284,525

SOLAR CELL

Keishi Saito; Tatsuyuki Aoike; Yasushi Fujioka; Mitsuyuki Niwa; Toshimitsu Kariya, and Yuzo Kohda, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1991, Ser. No. 806,347
Claims priority, application Japan, Dec. 13, 1990, 2-401929; Dec. 13, 1990, 2-401930; Dec. 13, 1990, 2-401931; Dec. 13, 1990, 2-401934; Dec. 13, 1990, 2-401935; Dec. 13, 1990, 2-401936
Int. Cl.[5] H01L *31/075, 31/0236*
U.S. Cl. 136—256 **6 Claims**



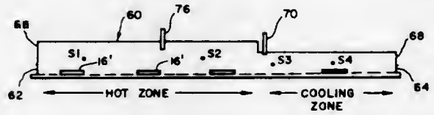
1. A solar cell comprising a conductive substrate and a semiconductor laminate on said conductive substrate, said semiconductor laminate comprising a p-type layer composed of a non-single crystal Si material, an wherein a diamond layer having an uneven surface and containing a valence electron controlling agent is interposed between said conductive substrate and said semiconductor laminate, said diamond layer having polycrystallinity with a smooth polyhedral surface having an average radius of 0.05 to 5 μm, a thickness in the range of 0.1 to 5 μm, surface uneveness of 0.05 to 1S, 1-5 atomic % hydrogen content and a dark conductivity of 0.15/cm or more.

5,284,526

INTEGRATED PROCESS FOR PRODUCING ATMOSPHERES SUITABLE FOR HEAT TREATING FROM NON-CRYOGENICALLY GENERATED NITROGEN

Diwakar Garg, Macungie; Brian B. Bonner, Nesqueboning, and Donald P. Eichelberger, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1992, Ser. No. 995,625
Int. Cl.[5] C21D *11/00*; F27D *23/00*
U.S. Cl. 148—208 **12 Claims**



1. A method for generating a controlled atmosphere inside a continuous heat treating furnace for maintaining or affecting the surface characteristics of parts exposed to said atmosphere comprising the steps of:
mixing non-cryogenically produced nitrogen containing up to three percent by volume residual oxygen with hydrogen;
passing said mixture through a bed of a precious metal catalyst to form an effluent gas containing nitrogen, unreacted hydrogen and water vapor;
mixing said effluent with a predetermined amount of a hydrocarbon gas; and
introducing said mixture of said effluent and hydrocarbon gas into the heating zone of said furnace in order to permit conversion in-situ of moisture in the furnace atmosphere to a mixture of carbon monoxide and hydrogen by reaction with said hydrocarbon gas via water gas shift reaction.

5,284,527

METHOD OF MAKING SILVER-METAL OXIDE MATERIALS AND ELECTRICAL CONTACTS

John G. Smeggil, Simsbury, Conn., and Norman J. Becker, East Detroit, Mich., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 21, 1992, Ser. No. 823,277
Int. Cl.[5] B22F *3/24*; C23C *8/12*
U.S. Cl. 148—281 **13 Claims**

1. A method of making silver-metal oxide materials suitable for use in electrical contacts, comprising:
oxidizing an alloy that comprises silver and a solute metal in an oxidizing atmosphere that has a sufficient amount of halide to inhibit the formation of a protective oxide scale around the alloy, thereby forming a silver-metal oxide material.

5,284,528

METALLIC GLASSES HAVING A COMBINATION OF HIGH PERMEABILITY, LOW COERCIVITY, LOW AC CORE LOSS, LOW EXCITING POWER AND HIGH THERMAL STABILITY

Ryusuke Hasegawa, Morristown, and Gordon Fish, Lake Hiawatha, both of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Continuation of Ser. No. 624,485, Dec. 6, 1990, Pat. No. 5,110,378, which is a continuation-in-part of Ser. No. 497,391, May 23, 1983, abandoned. This application Dec. 13, 1991, Ser. No. 807,308
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—304 **4 Claims**

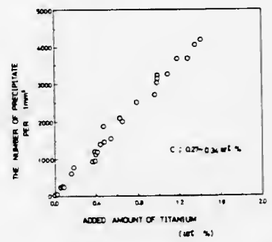
1. A metallic alloy having a dc coercivity not exceeding 4.1 A/m and an ac core loss, at 0.1 T and 60 Hz, not exceeding 5.9 mW/kg, said alloy being substantially completely glassy and consisting essentially of from 0.5 to 3 atom percent Cr, from 13 to 21 atom percent B, from 2 to 6 atom percent Si, the balance being Fe, and wherein the sum of B+Si is from 17 to 23.

5,284,529

ABRASION-RESISTANT STEEL

Nobuo Shikanai; Yasunobu Kunisada; Tetsuya Sanpei; Kazunori Yako, and Kenji Hirabe, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 847,723, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 621,587, Dec. 3, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 23,865
Claims priority, application Japan, Jun. 6, 1990, 1-48400
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] C22C *38/14*
U.S. Cl. 148—328 **39 Claims**



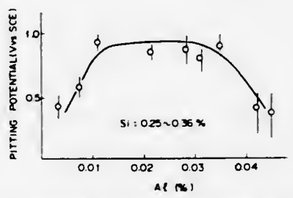
1. An abrasion-resistant steel consisting essentially of 0.05 to 0.45 wt. % C, 0.01 to 1 wt. % Si, 0.1 to 2 wt. % Mn, 0.05 to 1.5 wt. % Ti and the balance being Fe and inevitable impurities, said steel including at least 200 of precipitates of 1 μm or more in average particle size per 1 mm² and said precipitates containing Ti.

5,284,530

DUPLEX STAINLESS STEEL HAVING IMPROVED CORROSION RESISTANCE

Shigeki Azuma, Kobe; Takeo Kudo, Nishinomiya, and Tadashi Fukuda, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Sep. 29, 1992, Ser. No. 953,095
Claims priority, application Japan, Sep. 30, 1991, 3-251858
Int. Cl.[5] C22C *38/44*
U.S. Cl. 148—325 **10 Claims**



1. A duplex stainless steel having excellent corrosion resistance as well as improved toughness and workability, said steel having a chemical composition which consists essentially, on a weight basis, of:

C: 0.03% or less,	Si: 0.4% or less,
Mn: 2.0% or less,	Cr: 26.0–30.0%,
Ni: 5.0–9.0%,	Mo: 3.0–4.5%,

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-continued

N: 0.25–0.35%,	Al: 0.01–0.04%,

one or both of Cu and W in a total amount of 0 –3.0%,
one or more elements selected from the group consisting of Ca, B and Ce in a total amount of 0 –0.01%, and
a balance of Fe and incidental impurities in which the P, S, and oxygen contents as impurities are P: 0.03% or less, S: 0.004% or less, and oxygen: 0.015% or less, said composition satisfying the following inequality (1):

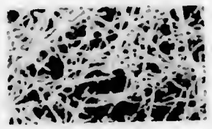
$$-1.5 \leqq PBI \leqq 1.5 \quad (1)$$

where $PBI = 14 \times (Ni_{eq} - 0.61 \times Cr_{eq} + 2.8)/(Cr_{eq} - 6)$

$$Ni_{eq}(\%) = Ni + 0.5 \times Mn + 30 \times (C + N) \{ + Cu \}$$

$$Cr_{eq}(\%) = Cr + 1.5 \times Si + Mo \{ + 0.5 \times W \}.$$

5,284,531
CYLINDRICAL METAL FIBERS MADE FROM TANTALUM, COLUMBIUM, AND ALLOYS THEREOF
James A. Fife, Douglassville, Pa., assignor to Cabot Corporation, Boston, Mass.
Division of Ser. No. 923,402, Jul. 31, 1992. This application Mar. 10, 1993, Ser. No. 31,254
Int. Cl.[5] B22F *1/00*
U.S. Cl. 148—513 **16 Claims**



10. A method of making cylindrical metal fibers consisting essentially of tantalum, columnbium, or alloys thereof comprising heating said fibers at a temperature and for a period of time sufficient to produce fibers having a substantially circular cross-section.

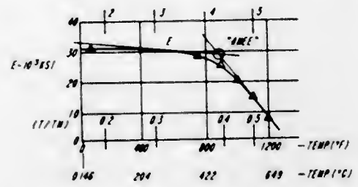
5,284,532
ELEVATED TEMPERATURE STRENGTH OF ALUMINUM BASED ALLOYS BY THE ADDITION OF RARE EARTH ELEMENTS
David J. Skinner, Long Valley, N.J., assignor to Allied Signal Inc., Morristown, N.J.
Continuation of Ser. No. 835,814, Feb. 18, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,471
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—549 **11 Claims**

2. A method for making an aluminum based alloy, comprising the steps of:
(a) forming a melt of said alloy in a protective environment, said alloy consisting essentially of the formula $Al_{bal}Fe_aM_bSi_cR_d$, wherein M is at least one element selected from the group consisting of V, Mo, Cr, Mn, Nb, Ta and W; R is Er; "a" ranges from 3.0 to 7.1 atom %; "b" ranges from 0.25 to 1.25 atom %; "c" ranges from 1.0 to 3.0 atom %; "d" ranges from 0.02 to 0.3 atom % and the balance is aluminum plus incidental impurities, with the provisos that (i) the ratio [Fe+M]:Si ranges from about 2.0:1 to 5.0:1, and (ii) the ratio of Fe:M ranges from about 16:1 to 5:1; and
(b) quenching said melt in said protective environment at a rate of at least about 10^5°Cs^{-1} by directing said melt into contact with a rapidly moving quench surface to form thereby a rapidly solidified ribbon or sheet of said alloy having an aluminum solid solution phase wherein each R group element is in solid solution and about 100 percent of dispersed intermetallic precipitates are of approximate composition $Al_{13}(Fe,M)_3Si$ and are substantially uniformly distributed.

5,284,533
METHOD FOR THE PREPARATION OF REFERENCE SAMPLES FOR SPECTROGRAPHIC ANALYSIS
Michel Courbiere, Tullins, and Hubert Dieudonne, Courbievie, both of France, assignors to Pechiney Recherche, Courbevoie, France
Filed Apr. 17, 1992, Ser. No. 870,470
Claims priority, application France, Apr. 26, 1991, 91 05768
Int. Cl.[5] C22F *1/04*; G01J *3/40*
U.S. Cl. 148—550 **11 Claims**

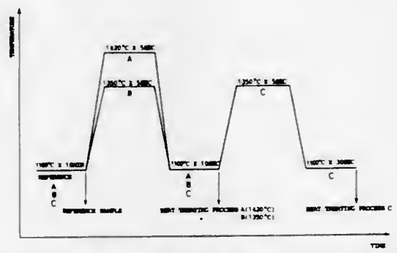
1. In a method for spectrographic analysis of an alloy comprising preparing a reference sample of the alloy and exposing said reference sample to analysis excitation,
the improvement comprising spray depositing a blank of said alloy with an oxygen content less than 200 μg/g, consolidating said blank in the form of a bar, and cutting a reference sample from said bar.

5,284,534
THERMOMECHANICAL METHODS FOR IMPROVING THE FATIGUE CHARACTERISTICS OF METALLIC MATERIALS
Carlos A. T. Mendes, Rua Nicolau Barreto #287, Sao Paulo, Sao Paulo, Brazil CEP 04583
Filed Nov. 8, 1991, Ser. No. 790,661
Int. Cl.[5] C21D *8/06*
U.S. Cl. 148—595 **20 Claims**



1. A method for improving the fatigue characteristics of a metallic material, said method comprising the steps of:
heating said material to a temperature in a range extending from about 0.35 to 0.65 the homologous temperature of said material;
while the temperature of said material is in said range, applying a force system comprising a tensile force, a couple, or both a tensile force and a couple to said material to produce in at least the region of said material to be treated a tensile stress level not less than the yield point of said material at said temperature in said range, said force system being applied for a period of time sufficiently long to produce plastic strain in said region;
cooling said material while continuing to apply said force system to said material and maintaining said tensile stress level in said region above said yield point during at least a portion of said cooling; and
removing said force system when the plastic strain in said region is not greater than about 1%,
whereby the fatigue life of said material is increased by at least two-fold as compared to an untreated said material.

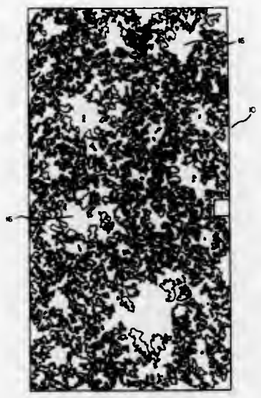
5,284,535
METHOD OF MANUFACTURING AN AUSTENITIC STAINLESS STEEL SHEET AND A MANUFACTURING SYSTEM FOR CARRYING OUT THE SAME
Yoshiyuki Ueshima, Kawasaki; Kenichi Miyazawa; Toshiaki Mizoguchi, both of Kimitsu, and Masayuki Abe, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/US90/01665, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/09144, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 20, 1990, Ser. No. 743,366
Claims priority, application Japan, Dec. 20, 1989, 1-328261; Dec. 20, 1989, 1-328263
Int. Cl.[5] C21D *8/02*
U.S. Cl. 148—610 **6 Claims**



1. A method of manufacturing an austenitic stainless steel sheet comprising:
(a) a casting process of casting a molten austenitic (γ) stainless steel into a thin cast plate by a twin-roll thin plate casting method employing a pair of cooled rolls;
(b) a cooling process of cooling the thin cast plate in a single-phase state of the γ phase;
(c) a heat-treating process of heating and holding the thin cast plate in a dual phase state of the δ and γ phase or a single phase state of the δ phase and then cooling the thin cast plate to restore the single phase state of the γ phase; and
(d) a cold-rolling process of cold-rolling the thus heat-treated thin cast plate.

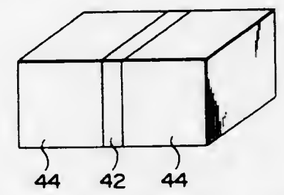
5,284,536
THREE DIMENSIONAL MODEL TREE BY LASER CUTTING
Michael I. Gruber, 914 1/2 S. Mansfield Ave., Los Angeles, Calif. 90036
Filed Aug. 13, 1991, Ser. No. 744,336
Int. Cl.[5] B44C *3/00*
U.S. Cl. 156—58 **25 Claims**

1. A method of fabricating a model for decorating a diorama comprising the steps of:
obtaining a reverse image of a silhouette of a figure, such reverse image defined by a light area bordered by a dark area;
transferring the reverse image to a template having borders defined by the light and dark areas;
overlaying the template on a veneer;



laser cutting around the template to carve out a pattern from the veneer that duplicates the silhouette; and
separating the pattern from the veneer.

5,284,537
METHOD OF MANUFACTURING ALUMINUM NITRIDE STRUCTURE WITH ANISOTROPIC PROPERTIES
Mitsuo Kasori; Akihiro Horiguchi, both of Kawasaki; Yoshiko Goto, Tokyo, and Fumio Ueno, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 545,691, Jun. 29, 1990, Pat. No. 5,204,080. This application Dec. 10, 1992, Ser. No. 988,666
Claims priority, application Japan, Jun. 30, 1989, 1-166875
Int. Cl.[5] C04B *37/00*
U.S. Cl. 156—89 **6 Claims**



1. A method of manufacturing an aluminum nitride structure exhibiting anisotropic thermal conductivity, comprising the steps of:
sintering and forming a first member of aluminum nitride ceramic;
sintering and forming a second member of aluminum nitride ceramic, said first and second members differing in a property selected from the group consisting of concentration of solution oxygen, transition element content, and porosity;
combining the first and second members, thereby forming an intermediate structure; and
sintering the intermediate structure so as to integrate the first and second members and form the aluminum nitride structure.

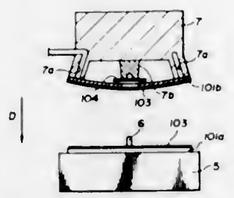
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,538

OPTICAL DISC HAVING SIGNAL RECORDING LAYER ON EACH SIDE AND METHOD FOR PRODUCING SAME

Akira Suzuki, and Daiki Kobayashi, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1991, Ser. No. 659,517
Claims priority, application Japan, Feb. 22, 1990, 2-41707
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—154 **3 Claims**



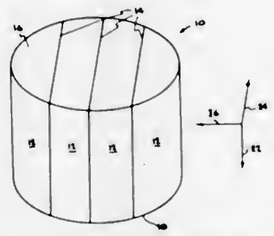
1. A process for producing a double-side optical disc comprising the steps of:
applying an adhesive in a single direction to a planar surface of each of a first disc half and a second disc half;
deforming the first disc half to swell the middle section of the first disc half;
rotating at least one of the first and second disc halves a predetermined angle in a plane parallel to the planar surface of the second disc half;
applying a pressure to one of the first and second disc halves to bring into intimate contact the adhesive applied to the first disc half and the adhesive applied to the second disc half, the intimate contact initially at a middle section of the first disc half and a middle section of the second disc half, the intimate contact further proceeding toward the outer peripheries of the first and second disc halves; and
machining an outer periphery of each of the adhered first and second disc halves.

5,284,539

METHOD OF MAKING SEGMENTED PYROLYTIC GRAPHITE SPUTTERING TARGETS

Mark A. McKernan, Livermore; Craig S. Alford, Tracy; Daniel M. Makowiecki, and Chih-Wen Chen, both of Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Apr. 5, 1993, Ser. No. 42,668
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—154 **5 Claims**



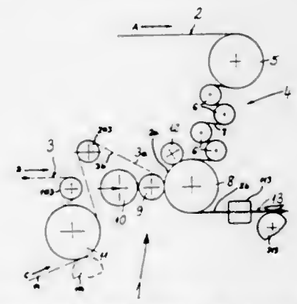
1. A method of fabricating segmented pyrolytic graphite sputtering targets comprising the steps of:
providing at least two pyrolytic graphite wafer segments having a sputtering surface, an opposed back surface, and at least one bonding surface, wherein the number of edges of high thermal conductivity planes in the graphite is maximized along said back surface of the wafer segments;
attaching said pyrolytic graphite wafer segments together along said bonding surfaces to form a segmented pyrolytic graphite sputtering target;
machining said segmented pyrolytic graphite sputter target to a desired geometry.

5,284,540

METHOD OF MAKING LAMINATES FROM POLYETHYLENE FOILS AND THE LIKE

Roland Roth, Teningen-Nimburg; Henning Schick, Heitersheim, both of Fed. Rep. of Germany; Johann Bloo, Seewalchen, and Franz Zacek, Vöcklabruck, both of Austria, assignors to Spohn Verpackungswerke GmbH & Co., Freiburg, Fed. Rep. of Germany; Lenzing AG, Lenzing, Austria and Spohn Verpackungswerke GmbH & Co., Freiburg, Fed. Rep. of Germany

Filed Jan. 9, 1991, Ser. No. 639,482
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1990, 4000495
Int. Cl.[5] B29C *31/00*
U.S. Cl. 156—160 **8 Claims**



1. A method of making a laminate from a plurality of foils, comprising the steps of introducing an unstretched first foil into and moving the first foil in a predetermined direction along a first path; preheating the moving foil in a first portion of said path; stretching the moving foil in said direction in the presence of heat in a second portion of said path downstream of said first portion; moving the stretched foil at a predetermined speed; tempering the stretched foil in a third portion of said path downstream of said second portion; introducing an unstretched second foil into and moving the second foil at said predetermined speed along a second path which merges into said first path downstream of said second portion, said foils consisting of a material which is selected from the group consisting of polyethylene and copolymers of polyethylene and each having a top and a bottom surface; heating the unstretched second foil along said second path upstream of where said second path merges with said first path; pressing the stretched first and the unstretched second foils against each other in the first path in the presence of heat which is applied prior to said stretching step and in the absence of an adhesive; maintaining one of said surfaces of said unstretched second foil free of contact with any machine parts between said heating and pressing steps; and continuously moving the resulting laminate along said first path.

5,284,541

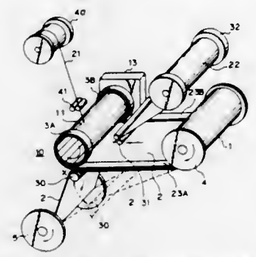
INSULATING TAPE FOR WINDING COILS

Kenji Kambara, Otsu, Japan, assignor to Toray Engineering Co., Ltd., Osaka and Fuji Electrochemical Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 611,781, Nov. 13, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 839,688
Int. Cl.[5] B65H *65/00*; H01F *41/00*; H01B *19/00*
U.S. Cl. 156—192 **4 Claims**

1. A method of producing a winding coil comprising the steps of:

providing an insulating narrow strip guiding tape wound on a reel, said insulating narrow strip guiding tape including a guide sheet and a plurality of insulating narrow strips provided on the guide sheet, said insulating narrow strips being provided with adhesive on opposite surfaces thereof;
winding the insulating narrow strips from the reel onto a first bobbin to adhere the insulating narrow strips on the



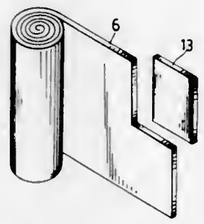
bobbin and form first ridge portions while also winding the guide sheet on a second bobbin;
ceasing winding of the insulating narrow strips on the first bobbin after a predetermined length of the insulating narrow strips have been wound on the first bobbin, and cutting the insulating narrow strips; and
winding siring material on the first bobbin between the first ridge portions.

5,284,542

COVERING PANEL MAKING PROCESS

Leif Lee, No. 5-5, San Yuan Village, Chung Chuang Tsun, Ta An Haiang, Taichung Hsien, Taiwan

Filed Jan. 4, 1993, Ser. No. 22
Int. Cl.[5] B32B *31/06*
U.S. Cl. 156—242 **1 Claim**



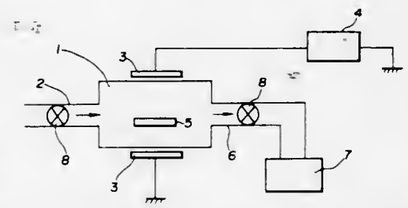
1. A process for making a covering panel comprised of a layer of foamed EVA covered with a face layer and a lining on two opposite sides thereof and a layer of polyethylene between said layer of foamed EVA and said face layer, the method comprising steps of:
a) preparing a base sheet by adhering a lining to one side of a sheet of foamed EVA by an adhesive agent, then cutting the base sheet thus obtained into base panels having the desired sizes;
b) placing a layer of polyethylene over each base panel, on a side opposite to said lining, and a face layer over the layer of polyethylene and then putting said panel, polethylene layer and face layer in a hydraulic press for pressing and heating under a temperature of 120° C. and a pressure of 20 KGs per square inch for about 15 seconds for permitting the layer of polyethylene to be melted to bond the respective base panel and the respective face layer into a respective material panel;
c) before cooling, putting the material panel thus obtained from step b) in a die, and then pressing it into the desired shape, and then trimming the shaped material panel to remove burrs.

5,284,543

METHOD FOR PREPARING A RUBBER-BASED COMPOSITE MATERIAL

Yukihiro Kusano, Tokorozawa; Masato Yoshikawa, Kodaira, and Kazuo Naito, Kawasaki, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 21, 1991, Ser. No. 658,668
Claims priority, application Japan, Mar. 14, 1990, 2-63530
Int. Cl.[5] B32B *31/00*; B05D *3/06*
U.S. Cl. 156—272.6 **18 Claims**



1. A method of making a rubber-based composite material which comprises:
forming a polymerized film having unsaturated bonds therein on the surface of a base material by polymerizing at least one monomer selected from the group consisting of saturated hydrocarbons, unsaturated hydrocarbons, and halogen-substituted derivatives thereof, by a low-pressure glow discharge plasma polymerization technique; and
bonding a rubber composition directly to said polymerized film without the use of an adhesive by heat pressure bonding such that said rubber composition is internally cross-linked and cross-linking exists between said rubber composition and said unsaturated bonds contained in said polymerized film to thereby form said rubber-based composition material;
wherein said base material is selected from the group consisting of plastics, rubbers, metals and ceramics.

4. A method of making a rubber-based composite material, which comprises:
forming a polymerized film having unsaturated bonds therein on the surface of a base material by polymerizing at least one monomer by a low-pressure glow discharge plasma polymerization technique, and
bonding a rubber composition directly to said polymerized film without the use of an adhesive by heat pressure bonding such that said rubber composition is internally cross-linked and cross-linking exists between said rubber composition and said unsaturated bonds contained in said polymerized film to thereby form said rubber-based composite material;
wherein said base material is selected from the group consisting of plastics, rubbers, metals and ceramics.

5,284,544

APPARATUS FOR AND METHOD OF SURFACE TREATMENT FOR MICROELECTRONIC DEVICES

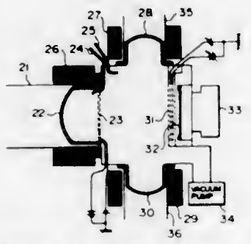
Tatsumi Mizutani, Koganei, and Takashi Yanogami, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1990, Ser. No. 599,018
Claims priority, application Japan, Feb. 23, 1990, 2-041004
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **53 Claims**

35. An apparatus for treating a surface of an object in a vessel at a pressure below atmospheric pressure, said apparatus comprising:

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waveguide means within the vessel and having a duplex structure portion;
first plasma generating means for producing an ion beam;
ion beam extracting means;
means arranging said first plasma generating means and said ion beam extracting means near one end of an internal waveguide of said duplex structure portion;
second plasma generating means for producing radicals;
means arranging said second plasma generating means near one end of an external waveguide of said duplex structure portion;



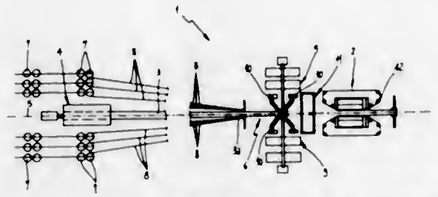
means for passing the ion beam through a gas within the vessel to neutralize part of the charged particles of the ion beam and convert the ion beam to a mixed beam of an ion beam and a neutral beam; and
means for radiating the neutral beam onto an object, with charged particles in the mixed beam being substantially prevented from impinging on the object, and for supplying, among the radicals, substantially only neutral radicals to the surface of the object.

5,284,545

EQUIPMENT FOR PRODUCING INDUSTRIAL-USE TAPERING POLES FOR LIGHTING AND SIMILAR APPLICATIONS

Luca Panzeri, Vimercate, and Alfonso Branca, Milan, both of Italy, assignors to P.C.R. S.r.l., Milan, Italy

Filed Dec. 1, 1992, Ser. No. 983,838
Claims priority, application Italy, Jan. 17, 1992, MI92 A 000080
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—425 **11 Claims**



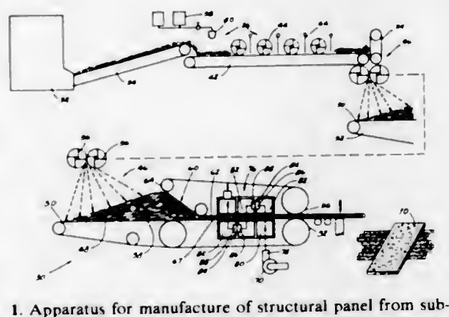
1. An equipment for producing industrial-use tapering poles for lighting comprising:
a die having a section of varying sizes corresponding to the longitudinal and sequential lengths of a tapering pole to be produced,
a former substantially corresponding to a longitudinal cavity of said tapering pole to be produced,
drive means for moving said formed in a longitudinal direction at least through said die, and
devices for winding fiber materials on said former and impregnating the fiber materials with resins, said devices (6) being disposed upstream of said die, said die having
a bearing structure
a shell-like mould of varying conformation, adapted to continuously define and outer surface of the longitudinal and sequential lengths of said tapering pole, and
a plurality of pusher elements engaged to said bearing structure and simultaneously active on an external part of said shell-like mould, in timed relationship with an advance movement of said former through the shell-like mould itself, so as to achieve continuous production of each longitudinal length of said pole to a predetermined moulding pressure.

5,284,546

APPARATUS FOR MANUFACTURE OF STRUCTURAL PANEL

Sydney E. Tilby, 4688 Boulderwood Drive, Victoria, B.C., Canada V8Y 2P8

Filed Jan. 4, 1991, Ser. No. 637,346
Int. Cl.[5] B30B *5/04, 15/34*
U.S. Cl. 156—583.5 **7 Claims**



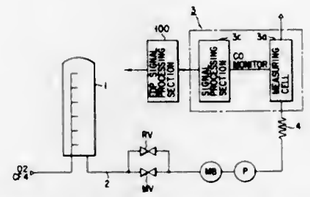
1. Apparatus for manufacture of structural panel from substantially stiff substantially straight elongated fiber-bundle strands of the rinds of grass selected from the group consisting of surgarcane and sweet sorghum, the strands of length such that most have a stalk node thereon, comprising:
means for coating the strands with an uncured binder;
a perforated belt conveyor extending away from the coating means, the conveyor having opposite receiving and discharge ends;
means between the coating means and the receiving end to deposit the coated strands onto the receiving end in a substantially compressible loose pile with the strands oriented in random directions in substantially parallel planes;
a perforated belt press extending along a portion of, spaced from, and movable with the conveyor, the press having an upstream end downstream of the receiving end of the conveyor and converging with the conveyor in a downstream direction to press the pile to a final thickness with the strands still randomly oriented in substantially parallel planes and with substantial voids to allow air flow therethrough; and
curing means entirely downstream of the converging portions of the perforated belt press and conveyor which move air substantially freely through the press and conveyor and the pile therebetween at said final pile thickness thereby to interconnect each strand with other strands at a multiplicity of contact points along its length;
whereby structural panel with substantial open voids throughout and density no greater than about 0.25 g/cc may be produced.

5,284,547

PLASMA-PROCESS SYSTEM WITH BATCH SCHEME

Masahide Watanabe, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Jan. 9, 1992, Ser. No. 818,524
Claims priority, application Japan, Jan. 22, 1991, 3-22770
Int. Cl.[5] B01J *19/00*; B01L *5/00*
U.S. Cl. 156—626 **15 Claims**



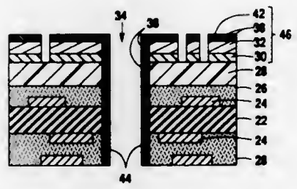
1. A plasma-process method, comprising the steps of:
generating a gas plasma by causing a predetermined gas and a predetermined high-frequency electric field to react with each of the in a processing chamber for housing an object to be processed;
discharging a gas from said processing chamber while executing plasma processing of the object to be processed by the gas plasma;
monitoring a concentration of a specific gas component, of gas components contained in the gas discharged from said processing chamber, which is generated by plasma processing of the object to be processed;
pre-measuring the concentration of the specific gas component unique to a plasma-process apparatus including said processing chamber by executing the generating and discharging steps without housing the object to be processed in said processing chamber; and
checking a state of said plasma-process apparatus in accordance with a measurement result obtained by executing the pre-measuring step.

5,284,548

PROCESS FOR PRODUCING ELECTRICAL CIRCUITS WITH PRECISION SURFACE FEATURES

David H. Carey, Austin, Tex., and David J. Burger, St. Paul, Minn., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex. and Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1993, Ser. No. 25,550
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—630 **41 Claims**



1. A process for producing electrical circuits, comprising the steps of:
providing a substrate containing a patterned conductor, a dielectric, and reflowable adhesive;
vacuum depositing a first conductor on the top surface of a dielectric base;
disposing said dielectric base on said substrate;
laminating said substrate with said first conductor thereon so as to reflow said adhesive;
forming a through-hole in the top surface of said substrate at least partially through said substrate;
providing a plating seed on the sidewalls of said through-hole;
depositing a conductive metal on said sidewalls;
depositing a second conductor on said first conductor; and
forming spaced features on said dielectric base wherein said spaced features comprise said first and second conductors and at least one of said spaced features is electrically connected to said metal in said through-hole.

5,284,549

SELECTIVE FLUOROCARBON-BASED RIE PROCESS UTILIZING A NITROGEN ADDITIVE

Michael S. Barnes, Mahopac; Melanie M. Chow; John C. Forster, both of Poughkeepsie; Michael A. Fury, Fishkill; Chang-Ching Kin, Poughkeepsie; Harris C. Jones, Stormville; John H. Keller, Ponghkeepsie, and James A. O'Neill, New City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1992, Ser. No. 816,190
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—662 **6 Claims**

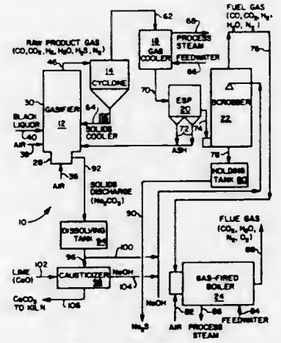
1. A method for selectively reactive ion etching SiO_2 over an aluminum oxide etch stop material on a workpiece in an etching chamber, comprising the steps of:
introducing a gas mixture including CHF_3 and a nitrogen containing molecule into said chamber at flow rates of between 40 sccm and about 60 sccm; and
maintaining said gas mixture at a pressure in the range of 500 to 1,000 mtorr.

5,284,550

BLACK LIQUIER GASIFICATION PROCESS OPERATING AT LOW PRESSURES USING A CIRCULATING FLUIDIZED BED

Michael C. Tanca, Tariffville, Conn.; Erik G. A. Dahlquist, and Sune Flink, both of Vasteras, Sweden, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 18, 1992, Ser. No. 900,351
Int. Cl.[5] D21C *11/12*
U.S. Cl. 162—31 **8 Claims**



PROCESS FLOW DIAGRAM

1. A black liquor gasification process, utilizing a circulating fluidized bed having a first portion and a second portion to produce from the combustion of black liquor dry recoverable salts and a low calorific gas, comprising the steps of:
a. injecting into the first portion of the circulating fluidized bed as the sole source of circulating solids therewithin black liquor containing both solids and fluids;
b. injecting into the second portion of the circulating fluid-

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ized bed in the form of fluidizing air a first supply of air sufficient in quantity to effect the fluidizing therewith of the solids contained in the black liquor as well as to effect the carbon gasification of the solids contained in the black liquor;

c. injecting into the first portion of the circulating fluidized bed in the form of reaction air a second supply of air sufficient both in quantity to establish a reducing atmosphere in the first portion of the circulating fluidized bed suitable for generating a low calorific gas therewithin and to enable control of the temperature within the first portion of the circulating fluidized bed to be effected with the reaction air;

d. recovering within the circulating fluidized bed chemicals from the black liquor;

e. discharging as dry solids from the second portion f the circulating fluidized bed the chemicals recovered within the circulating fluidized bed from the black liquor;

f. combusting within the circulating refluidized bed the organic compounds of the black liquor to generate as a consequence of such combustion thereof a low calorific gas containing H_2S and having coarse solids and fine dust entrained therein;

g. discharging from the first portion of the circulating fluidized bed to a single mechanical separation device the low calorific gas containing H_2S and having coarse solids and fine dust entrained therein;

h. removing the coarse solids from the low calorific gas containing H_2S and having coarse solids and fine dust entrained therein during the passage through the single mechanical separation device of the low calorific gas containing H_2S and having coarse solids and the fine dust entrained therein;

i. discharging the coarse solids from the single mechanical separation device and recycling these coarse solids from the single mechanical separation device to the first portion of the circulating device to the first portion of the circulating fluidized bed;

j. discharging the low calorific gas containing H_2S and having fine dust entrained therein but now minus coarse solids from the single mechanical separation device to a filter device;

k. removing the fine dust from the low calorific gas containing H_2S and having fine dust entrained therein during the passage through the filter device of the low calorific gas containing H_2S and having fine dust entrained therein;

l. discharging the fine dust from the filter device and recycling this fine dust from the filter device to the first portion of the circulating fluidized bed;

m. discharging the low calorific gas containing H_2S but now minus fine dust from the filter device to a H_2S removal device;

n. removing the H_2S from the low calorific gas containing H_2S during the passage through the H_2S removal device of the low calorific gas containing H_2S;

o. discharging the H_2S from the H_2S removal device; and

p. discharging the low calorific gas now minus H_2S from the H_2S removal device to a gas-fired device for burning therewithin.

5,284,551

PAPER MACHINE DECKLE BLADE CONSTRUCTION

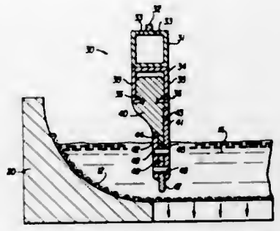
Robert L. Beran; Stephen Nicholson, and Mark A. Taylor, all of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,007

Int. Cl.[5] D21F *1/56*

U.S. Cl. 162—353 **6 Claims**

1. In a paper machine having a forming screen, a paper machine deckle blade comprising an elongated, polymer support body, said support body having an elongated channel formed by a pair of plates separated by a spacing tongue of said support body, said support body having a pair of stepped areas to receive a respective corresponding area of said plates so as to form an exterior surface flush with said support body, said plates are operatively attached to a blade edge which is constructed of a polytetrafluoroethylene compound and is pro-



jected from said channel to noninjuriously engage said paper machine forming screen such that said blade edge acts as a partial fluid seal between said support body and said forming screen.

5,284,552

METHOD FOR REFINING METHYLNAPHTHALENE-CONTAINING OIL

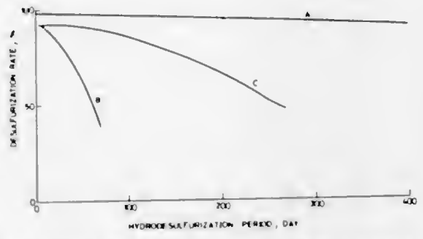
Toshihide Suzuki; Yoshinori Takagi, and Tatsuya Nobusawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Jun. 5, 1992, Ser. No. 893,779

Claims priority, application Japan, Jun. 11, 1991, 3-139026; Mar. 13, 1992, 4-054817

Int. Cl.[5] B01D *3/36*

U.S. Cl. 203—64 **2 Claims**



1. A method for refining methylnaphthalene-containing oil comprising the steps of

azeotropically distilling the methylnaphthalene-containing oil with ethylene glycol to produce a methylnaphthalene fraction having not more than 500 ppm of nitrogen compounds selected from the group consisting of quinoline, isoquinoline and indole, and

hydrodesulfurizing the methylnaphthalene fraction in the presence of a catalyst having at least one member selected from the group consisting of molybdenum, cobalt and nickel on a support at atmospheric pressure to a pressure of 9.9 kg/cm^{2}G.

5,284,553

CHLORINE DIOXIDE GENERATION FROM CHLORIC ACID

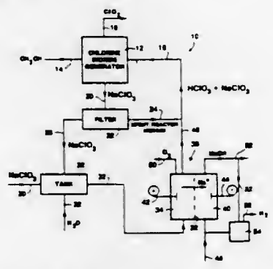
Marek Lipsztajn, Rexdale; Maurice C. J. Fredette; Zbigniew Twardowski, both of Mississauga, and Edward J. Bechberger, Etobicoke, all of Canada, assignors to Sterling Canada, Inc., Islington, Canada

Filed Apr. 6, 1993, Ser. No. 42,784

The portion of the term of this pateot subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] C25B *1/26*

U.S. Cl. 204—95 **53 Claims**



1. A continuous method for the production of chlorine dioxide, which comprises:

forming an aqueous acid reaction medium in a chlorine dioxide generation zone,

effecting reduction of chloric acid to form chlorine dioxide in said aqueous acid reaction medium in a reaction zone having a total acid normality of up to about 7 normal in the substantial absence of sulfate ion and in the presence of a sufficient dead load of alkali metal chlorate to permit said chlorine dioxide formation to be effected,

removing said dead load alkali metal chlorate from said chlorine dioxide generating zone,

forwarding said removed dead load alkali metal chlorate to an electrolysis zone in which an alkali metal chlorate feed solution, which includes said removed dead load alkali metal chlorate and added alkali metal chlorate to make up for chloric acid consumed in said reduction, is electrochemically acidified to produce an acidified solution while alkali metal ions are electrochemically removed from said alkali metal chlorate feed solution, and

forwarding said acidified solution containing chloric acid and said dead load alkali metal chlorate to said chlorine dioxide generation zone to provide a feed of chloric acid and dead load alkali metal chlorate to said aqueous acid reaction zone, whereby said dead load of alkali metal chlorate is added to and subsequently removed from said aqueous acid reaction medium.

5,284,554

ELECTROCHEMICAL MICROMACHINING TOOL AND PROCESS FOR THROUGH-MASK PATTERNING OF THIN METALLIC FILMS SUPPORTED BY NON-CONDUCTING OR POORLY CONDUCTING SURFACES

Madhav Datta, Yorktown Heights, and Lubomyr T. Romankiw, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1992, Ser. No. 819,310

Int. Cl.[5] B23H *3/10, 9/06, 7/32*

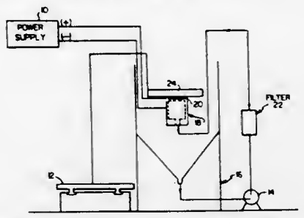
U.S. Cl. 204—129.5 **31 Claims**

7. A method for electrochemical micromachining of a sample comprising the steps of:

(a) mounting a sample on a plate means facing towards a cathode assembly;

(b) making the sample and said cathode assembly respectively an anode and cathode in an electrical circuit;

(c) adjusting the interelectrode spacing between the sample and said cathode assembly to a distance effective to keep the anode and cathode from interfering with one another while also maintaining a charge therebetween;



(d) providing relative lateral movement between said sample and said cathode assembly;

(e) continuously conducting an electric current through the electrical circuit; and

(f) continuously circulating an electrolytic solution through said cathode assembly so that the electrolytic solution impinges against the sample as an electrolytic shower to effectively etch the sample.

5,284,555

PROCESS FOR PREPARING ORGANOPHOSPHINES

Peter A. T. Hoye, Stourbridge, and James W. Ellis, Woodloes Park, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Jul. 24, 1992, Ser. No. 919,730

Claims priority, application United Kingdom, Aug. 15, 1991, 9117603

Int. Cl.[5] C07F *9/00*

U.S. Cl. 204—157.6 **16 Claims**

1. A process for the preparation of organophosphines comprising reacting

(i) a phosphine gas with

(ii) an ethylenically-unsaturated compound selected from the group consisting of alicyclic hydrocarbons, aliphatic hydrocarbon alcohols and vinyl phosphonic acid esters,

in the presence of a free-radical intiator and at ambient pressure, said process carried out by the following steps:

(a) passing said phosphine gas into a solution of said compound (ii) in an amount effective to saturate said solution with said phosphine gas;

(b) adding said free-radical initiator to said solution;

(c) initiating the reaction of said phosphine gas with said compound (ii) and

(d) continuing to pass further amounts of said phosphine gas into said solution to complete the reaction.

5,284,556

EXHAUST TREATMENT SYSTEM AND METHOD

Stanley R. Rich, Grantham, N.H., assignor to PlasMachines, Inc., Natick, Mass.

Filed May 1, 1991, Ser. No. 694,090

Int. Cl.[5] B01J *19/08; H05F 3/04*

U.S. Cl. 204—164 **70 Claims**

1. A method for reducing pollutants including NOx compounds in a moving fluid produced by a combustion source, said method comprising the steps of:

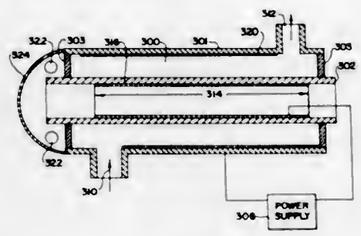
providing a closed treatment chamber having a length and an input and output and a substantially open interior portion for flow of said moving fluid and comprised of a conductive material sufficient to make said treatment chamber a first electrode;

providing a dielectric insulating element within said treatment chamber:

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placing within said dielectric insulating element conductive material sufficient to create a second electrode;

generating an alternating current electric field between said first and second electrodes in the interior portion of said treatment chamber;



directing said moving fluid through the interior portion of said treatment chamber and said electric field; and

adjusting the frequency and strength of said electric field so that a dielectric discharge occurs while said field strength remains low enough that the temperature of said moving fluid remains in a temperature range of lower than about 1800° F. where the heat of formation of said NOx compounds is negative.

5,284,557

METHOD FOR DESULFURIZING EXHAUST SMOKE

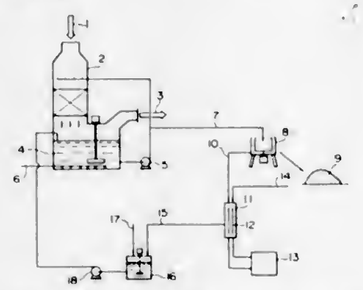
Naohiko Ukawa; Susumu Okino; Toru Takashina; Masakazu Onizuka, and Kenji Inoue, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,621

Claims priority, application Japan, Jun. 25, 1990, 164021

Int. Cl.[5] C25B *1/00*

U.S. Cl. 204—130 **5 Claims**



1. A method of removing a member selected from the group consisting of hydroxyamine monosulfonate, hydroxyamine disulfonate and hydroxyamine trisulfonate from a limestone filtrate containing same, which comprises subjecting the filtrate to electrolysis in the presence of chlorine ions or in the presence of a hypoclorite.

5. A method of desulfurizing an exhaust gas containing SO_2 and NO_x by treating said gas with a wet lime procedure in an absorbing tower so as to produce an absorbing slurry whereby at least one kind of N-S compound selected from the group of hydroxyamine monosulfonate, hydroxyamine disulfonate and hydroxyamine trisulfonate is removed from the absorbing slurry, comprising the steps of drawing part of said absorbing slurry from said absorbing tower; solid-liquid separating said drawn absorbing slurry so as to obtain a filtrate; after adjusting the pH of the filtrate thus obtained to 3–4, mixing hypochlorite in said pH adjusted filtrate; adding lime to the resulting mixture so as to prepare a lime slurry and re-feeding said lime slurry to said absorbing tower.

5,284,558

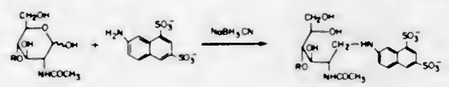
ELECTROPHORESIS-BASED SEQUENCING OF OLIGOSACCHARIDES

Robert J. Linhardt; Kyung-Bok Lee; Ali Al-Hakim, all of Iowa City, Iowa, and Duraikkannu Loganathan, Ann Anbor, Mich., assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Jul. 27, 1990, Ser. No. 558,708

Int. Cl.[5] G01N *27/447, 27/26, 33/48;* **C12Q** *1/34*

U.S. Cl. 204—182.8 **19 Claims**



Scheme R=H, β-D-Gal-(1→4)-, or β-D-Gal-(1→4)-β-D-Gal-(1→4)-

1. A method for determining the monosaccharide sequence of a neutral or weakly acidic oligosaccharide species of interest, comprising:

a) coupling a labeling compound to the reducing end of the species of interest, the labeling compound bearing a charged group selected from the group consisting of sulfate, sulfonate, phosphate or quatenary ammonium groups to produce a charged oligosaccharide species of interest having size X, wherein X is the number of monosaccharide units in the species of interest;

b) treating individual samples of the charged oligosaccharide species of interest with exoglycosidases, each sample of the derivatized species of interest being treated with a single exoglycosidase;

c) resolving the reaction products of step b) in an electrophoretic medium to identify the exoglycosidase which cleaves a single monosaccharide unit from the non-reducing end of the charged oligosaccharide species of interest to produce a charged oligosaccharide species of interest having size X−1;

d) correlating cleavage data with known exoglycosidase specificities to determine the identity of the monosaccharide cleaved from the non-reducing terminus;

e)isolating the charged oligosaccharide species of interest having size X−1; and

f) determining the complete sequence of monosaccharides in the charged oligosaccharide species of interest by sequentially repeating steps b)–e) to determine the monosaccharide unit present at the non-reducing terminus of progressively shorter oligosaccharide units, each progressively shorter oligosaccharide unit differing from its parent by a single monosaccharide unit.

5,284,559

PREPARATIVE ELECTROPHORESIS DEVICE AND METHOD

Yow-Pin Lim, Providence, and Douglas C. Hixson, Barrington, both of R.I., assignors to Rhode Island Hospital, Providence, R.I.

Filed Jun. 16, 1992, Ser. No. 899,460

Int. Cl.[5] G01N *27/26, 27/447*

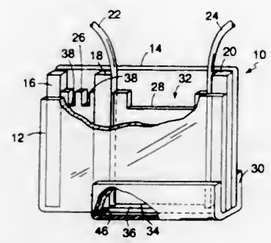
U.S. Cl. 204—182.8 **45 Claims**

1. A preparative electrophoresis device comprising:

a pair of spaced apart plates having a sample-receiving region and gel region therebetween, said sample-receiving region being near first ends of said plates, said plates having second ends on the opposite side of said gel region from said first ends,

an electrophoretic gel in said gel region between said plates, said gel ending short of said second ends and having a gel bottom surface, and

a semipermeable membrane sealably connected to said second ends, [wherein] said membrane being wrapped [wraps] around said second ends and attached to outside surfaces of said plates,



said semipermeable membrane defining with said plates and said gel bottom surface a collection channel between said plates and along said second ends of said plates for receiving molecules traveling through said gel from said sample-receiving region.

5,284,560

ACID DYE STAINING METHOD

Naoyuki Kouno, and Jun Suzuoki, both of Amagasaki, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 902,626

Claims priority, application Japan, Jun. 24, 1991, 3-178788

Int. Cl.[5] G01N *27/26, 27/447, 33, 48, 21/75*

U.S. Cl. 204—182.8 **9 Claims**

1. An acid dye staining method for electrophoretically separated fractions on a supporting matrix which comprises fixing the supporting matrix after electrophoresis with an aqueous solution containing a lower alcohol having 1 to 4 carbon atoms and an organic acid, and

staining the supporting matrix with an acid dye solution containing at least one acid selected from the group consisting of dicarboxylic acids, amino acids, hydroxy acids, sulfonic acids and kojic acid.

5,284,561

METHOD AND APPARATUS FOR SPUTTER COATING EMPLOYING MACHINE READABLE INDICIA CARRIED BY TARGET ASSEMBLY

Frank M. Shinneman, Ridgewood, and Steven Hurwitt, Park Ridge, both of N.J., assignors to Materials Research Corporation, Orangeburg, N.Y.

Filed Nov. 13, 1991, Ser. No. 791,415

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.13 **23 Claims**

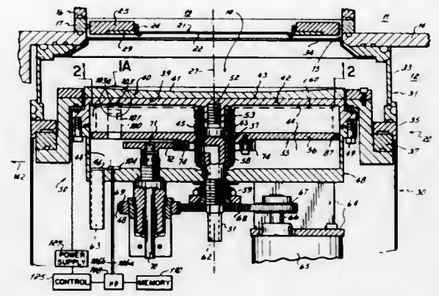
1. An expendable target of sputter coating material, having carried thereby to be removable therewith from a sputter coating apparatus, a storage medium having recorded thereon, in machine readable indicia, information relating to a characteristic of the target, and having a target support having the sputter coating material secured thereto, the medium being carried by the support.

15. A method of manufacturing a sputter coated article comprising the steps of:

installing in a sputter coating chamber of a sputter coating apparatus a target of sputter coating material having a medium carrying machine readable information carried thereby;

reading with a reader carried by the apparatus information from the medium; and

performing a sputter coating process through the use of the target to deposit a coating of the sputter coating material on an article; and



storing in a memory information regarding the use of the target, the information including information read from the medium.

5,284,562

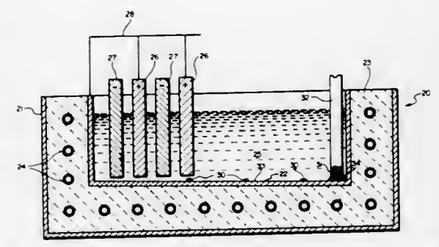
NON-CONSUMABLE ANODE AND LINING FOR ALUMINUM ELECTROLYTIC REDUCTION CELL

Theodore R. Beck, and Richard J. Brooks, both of Seattle, Wash., assignors to Electrochemical Technology Corp. and Brooks Rand, Ltd., both of Seattle, Wash.

Filed Apr. 17, 1992, Ser. No. 870,672

Int. Cl.[5] C25C *3/08, 3/12*

U.S. Cl. 204—243 R **31 Claims**



1. An oxidation-resistant, non-consumable anode for use in an electrolytic reduction cell for aluminum, said anode having a composition throughout the anode consisting essentially of, in wt.%, about:

copper	25–70
nickel	15–60
iron	1–30.

8. In combination with the anode of any of claims 1 to 3, a cell for the electrolytic reduction of alumina to aluminum, said cell comprising:

a vessel having a bottom and walls extending upwardly from said bottom;

a plurality of anodes vertically disposed within said vessel, each anode having a composition in accordance with the anode of any of claims 1 to 3;

a plurality of cathodes vertically disposed within said vessel, said cathodes being arranged in close, alternating spaced relation with said vertically disposed anodes;

said vessel having an external shell and an interior metal lining;

a refractory layer located between said external shell and

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said metal lining for thermally insulating the bottom and walls of said vessel;

said metal lining being electrically connected to said anodes, having essentially the same composition as said anodes and having a relatively high density at that part of the lining which is exposed to air.

5,284,563

ELECTRODE CATALYST FOR ELECTROLYTIC REDUCTION OF CARBON DIOXIDE GAS

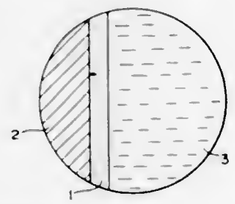
Masamichi Fujihira, Minami-kosugayajutaku 3-404 No. 2000-10, Kosugaya-cho, Sakae-ku, Yokohama City, Kanagawa Pref.; Yoshiki Hirata; Kosaku Suga, both of Tokyo; Uichi Akiba, Yamato, and Yasuo Nakamura, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd. and Masamichi Fujihira, both of Yokohama, Japan

Filed Apr. 24, 1991, Ser. No. 690,832

Claims priority, application Japan, May 2, 1990, 2-115283

Int. Cl.[5] C25B *11/06*

U.S. Cl. 204—252 **19 Claims**



18. An apparatus for electrolytic reduction of carbon dioxide comprising:

container means in which an aqueous electrolyte solution is contained;

an electrode dipped in said aqueous electrolyte solution;

an electrocatalyst in contact with a surface of said electrode, said electrocatalyst being expressed by the following formula:



where each of R_1, R_2, R_3, R_4, R_5, and R_6 is selected from the group consisting of a hydrogen atom and an aliphatic saturated hydrocarbon group expressed by the formula of C_nH_{2n+1}; in which n is a number ranging from 1 to 22, with the proviso that at least one of R_1-R_6 is an aliphatic saturated hydrocarbon group having an n value of greater than or equal to about 6.

5,284,564

MAGNETRON SPUTTERING CATHODE FOR VACUUM COATING APPARATUS

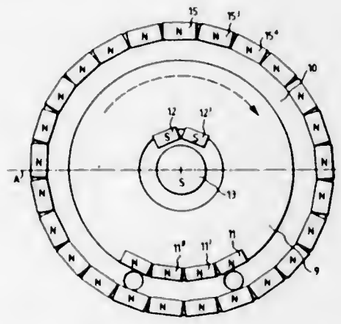
Wolfram Maass, Erlensee, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 768,012

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1991, 4125110

Int. Cl.[5] C23C *14/35*

U.S. Cl. 204—298.2 **4 Claims**



1. Magnetron sputtering cathode for vacuum coating apparatus with a circular target plate made of the material to be sputtered, with a plurality of magnet arrangements disposed in back of the target plate and comprising at least a first magnet arrangement including a continuous row of permanent magnets on a first yoke plate having a circular border, the magnets of this continuous row all having the same polarity, at least one magnet on a second yoke plate having a circular border, the at least one magnet being of a second magnet arrangement having the opposite polarity, such that over the target plate at least one tunnel is formed of magnetic lines of force issuing from the first magnet arrangement and returning to the second magnet arrangement or vice versa, and with a driving means for the continuous rotation of the second magnet arrangement about the central axis (A) of the target plate, characterized in that

a) the first magnet arrangement is fixedly disposed at the radial outer marginal area of the target plate for the production of a magnetic tunnel section substantially concentric with the axis of rotation A, and that

b) between the axis of rotation A and the first magnet arrangement the second magnet arrangement is provided offset eccentrically and radially inwardly, the second magnet arrangement being formed of a single permanent magnet or a group of individual magnets,

with the second magnet arrangement surrounded by the first magnet arrangement formed of a continuous row of magnets there is associated a third arrangement of permanent magnets in the radially outer area of a rotatable annular yoke plate bearing the second and third arrangement of magnets, which extends approximately over a quarter-circle, a central, fourth magnet arrangement whose polarity corresponds to that of the second magnet arrangement being disposed stationarily and surrounded by the rotatable yoke plate,

such that when the second magnet arrangement rotates about the axis of rotation (A) the surface elements of the target plate are exposed to the product of intensity and dwell time such that the target plate is eroded more uniformly and, at the margin, more strongly, so that a substrate field mounted opposite the target plate becomes uniformly coated.

5,284,565

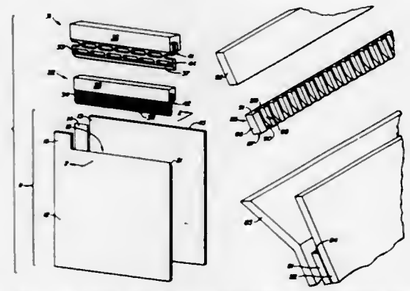
SAMPLE WELL INSERT WITH WEDGE-SHAPED PROFILE FOR ULTRA-THIN SLAB GELS IN ELECTROPHORESIS

Daniel Y. Chu, San Francisco, and Elaine R. Mardis, Hercules, both of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Dec. 23, 1992, Ser. No. 995,495

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—299 R **8 Claims**



1. A combination slab gel enclosure and liquid sample holder for use in electrophoretic separations of samples in slab gels having a thickness of less than about 0.005 inch, said combination comprising:

a slab gel enclosure comprised of a pair of plates joined at two opposing edges by spacing means to define a slab-shaped gel space, and open at a third edge, said plates shaped along said third edge to form an expanded opening communicating with said slab-shaped gel space, said expanded opening being wedge-shaped along a cross section perpendicular to said slab-shaped gel space; and

a liquid sample holder comprised of a member with an elongated edge of wedge-shaped cross section complementary to said cross section of said expanded opening, said elongated edge being notched to form regularly spaced sharp points and grooved between said sharp points to form discrete wells for liquid sample retention when said elongated edge is inserted in said expanded opening.

5,284,566

ELECTROCHEMICAL GAS SENSOR WITH WRAPAROUND REFERENCE ELECTRODE

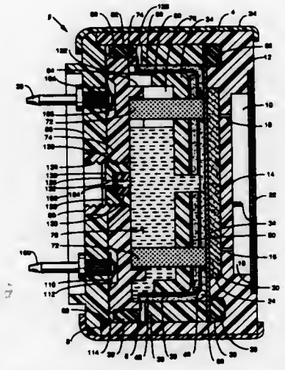
Carlo E. Caomo, Verona; Alfred Kutschker, Baden; Peter M. Noble, Valencia, and Robert L. Novack, Evans, all of Pa., assignors to Bacharach, Inc., Pittsburgh, Pa.

Filed Jan. 4, 1993, Ser. No. 182

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—412 **20 Claims**

1. An electrochemical sensor for gas detection comprising an impervious, nonconductive sensor body having a first cavity extending therein from a first end thereof, said first cavity having a plurality of sensor elements stacked therein including a sensing electrode positioned at an inner end of said first cavity and against said sensor body, a first mat positioned against said sensing electrode, a reference electrode positioned against said first mat, a second mat positioned against said reference electrode, and a counter electrode positioned against said second mat, said sensor also including a support means within said first cavity for holding said electrodes and mats in contact with each other and at the inner end of said first cavity, contact means for making electrical contact with said sensing, counter and reference electrodes, cap means for covering an open end of said first cavity and holding said support means therein, said support means and cap means defining an electrolyte chamber therebetween, with said electrolyte chamber being at least partially filled with a liquid electrolyte, said sensor having gas passage means through said body for permitting gas to reach said sensing electrode, and electrolyte flow means for directing said liquid electrolyte to said mats and electrodes, with said reference electrode having a central



portion disposed between said sensing and counter electrodes and having at least one extension attached thereto at an outer edge of said central portion and extending around said counter electrode and said support means and into contact with the electrolyte in said electrolyte chamber.

5,284,567

SAMPLING SYSTEM AND ANALYSIS CELL FOR STRIPPING VOLTAMMETRY

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 929,702, Aug. 12, 1992. This application Mar. 5, 1993, Ser. No. 26,975

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.12 **3 Claims**

1. In a method of testing a blood sample for lead levels, the improvement wherein said blood is introduced, undiluted, directly into an electrochemical testing cell, and subjected to anodic stripping voltammetry analysis in the presence of a dried in place reagent.

5,284,568

DISPOSABLE CARTRIDGE FOR ION SELECTIVE ELECTRODE SENSORS

Salvatore J. Pace, Wilmington, Del., and James D. Hamerslag, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 17, 1992, Ser. No. 916,231

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—403 **17 Claims**

1. A disposable sensor assembly for use in an analyzer, said assembly comprising:

a substrate having a face with a reference element and plural sensor elements formed thereon,

an electrical contact positioned on the substrate face for each element,

a flow channel member having first and second opposed faces, the first face defining a pair of grooves positioned respectively over the substrate reference and sensor elements and joined together at one end of each groove, thereby defining liquid flow channels,

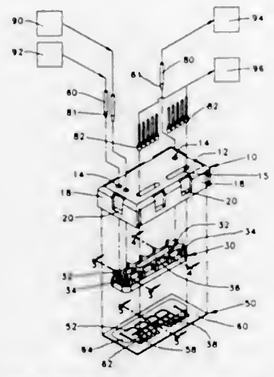
the flow channel member defining orifices interconnecting the opposed faces at the one groove end and at each other groove end, and

a housing having a wall and means for holding the substrate relative to the wall to compress the flow channel member

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therebetween, whereby the liquid flow channels are leak-free,

the wall defining ports for providing access to the flow channel member orifices and the substrate electrical contacts,



said analyzer having a receptacle to removably receive the assembly, electrical connectors to operatively engage the substrate electrical contacts, and liquid connectors adapted to operatively engage and apply liquids to and from the flow channel member orifices.

5,284,569

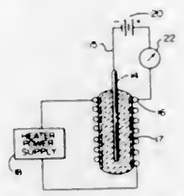
MINIATURE GAS SENSOR

Tony C. Lee, Syracuse, and Thomas A. Schmitkons, Baldwinsville, both of N.Y., assignors to Leybold Inficon Inc., East Syracuse, N.Y.

Continuation-in-part of Ser. No. 600,481, Oct. 18, 1990, Pat. No. 5,104,513. This application Oct. 21, 1991, Ser. No. 781,079

Int. Cl.[5] G01N *27/407*

U.S. Cl. 204—425 **9 Claims**



1. A solid state electrochemical sensor for detecting the presence of a halogenated gas contained within an atmosphere, said device comprising:

an anode, comprising an electrically conductive wire between about 1 mil to 5 mils in diameter;

a cathode, comprising an electrically conductive wire between about 1 mil to 5 mils in diameter;

a ceramic, comprising a mixture of potassium silicate and a compound selected from the group consisting of silicon dioxide and aluminum oxide, interposed between said anode and said cathode and having a depletion layer formed therein, said ceramic being selectively reactive with fluorine containing gas in the presence of a gas containing a halogen other than fluorine when said device is operated at a temperature of at least about 750° C., said anode and said cathode being separated by a distance not exceeding about 0.0075 inches; and

heating means for raising the temperature of said ceramic to a desired level.

5,284,570

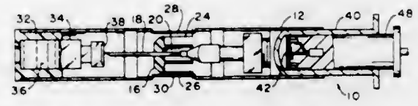
FLUID SAMPLE ANALYTE COLLECTOR AND CALIBRATION ASSEMBLY

Douglas R. Savage, Del Mar; Ronald E. Betts, La Jolla; Richard J. Koerner, San Diego, and Douglas R. Hillier, San Juan Capistrano, all of Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 26, 1991, Ser. No. 721,028

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—422 **39 Claims**



1. A fluid collection, sensing and calibrating apparatus, comprising:

calibrator having a base and holder portion adapted to hold at least one container containing calibration fluid,

calibration container securely held in the holder of the calibrator, wherein the container is sealed to contain calibration fluid,

fluid collection means adapted for fluid communication with the container but removable from the calibrator for fluid collection where the collector has a body portion defining a chamber at one end and has an actuating means slidable within the body portion at the other end to provide a variable volume for the chamber and having at the end of the chamber opposite the actuating means a connecting means for fluid engagement with means for withdrawing calibration fluid, and

at least one sensing means attached to the collector for fluid communication with the container and in fluid communication with the collection means so that when calibration fluid is withdrawn from the container by the actuating means of the collector and into the chamber the fluid contacts the sensor, and

means for withdrawing calibration fluid by puncturing the seal of the container when the means is attached to the connecting means of the collector.

5,284,571

METHOD OF MAKING ELECTRODES FOR ELECTROCHEMICAL CELLS AND ELECTRODES MADE THEREBY

Mark W. Verbrugge, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1992, Ser. No. 941,018

Int. Cl.[5] C25D *5/02*

U.S. Cl. 205—118 **20 Claims**

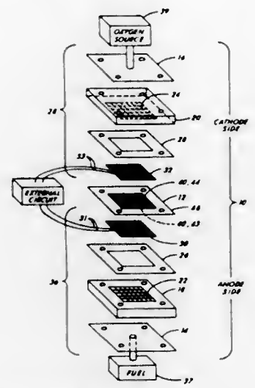
1. A process for making an electrode for an electrochemical cell, comprising:

a) forming a substrate having a region comprising proton conductive material intermingled with electrically conductive material, the proton conductive material having a plurality of acid groups each having a replaceable cation;

b) making the substrate a cathode in an electrochemical cell opposite a counter-electrode, said cell containing an aqueous electrolyte solution consisting essentially of platinum-ammine complex cations and anions corresponding to said platinum-ammine cations, wherein the molar concentration of said platinum-ammine cations in said solution is less than the molar concentration of said replaceable cation in said proton conductive material, but sufficient to preclude electrolysis of the H_2O in said aqueous solution; and

c) impressing a current across the cell at a potential sufficient

to deposit platinum catalyst particles primarily at each of a plurality of sites where the proton conductive material is



in contact with the electrically conductive material in the region to render the region catalytically active.

5,284,572

METHOD OF PRODUCING A THIN-FILM MAGNETIC HEAD UTILIZING ELECTROPLATING

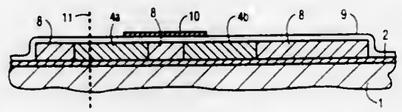
Gerardus H. J. Somers, and Antonius B. Voermans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1991, Ser. No. 664,164

Claims priority, application Netherlands, Mar. 9, 1990, 9000546

Int. Cl.[5] C25D *5/02*; G11B *5/39*

U.S. Cl. 205—119 **4 Claims**



1. A method of producing a thin film magnetic head including the steps of depositing an electrically conductive non-magnetic plating base (2) on a magnetic carrier (1),

depositing magnetic layer portions comprising spatially separated flux conductors (*4a*, *4b*) on said plating base by electroplating,

depositing a non-magnetic layer (8) between said flux conductors on said plating-base by electroplating to thereby isolate said flux conductors one from another,

depositing an electrically insulating layer (9) on said non-magnetic layer and said flux conductors

and depositing a magnetic resistance layer (10) on said electrically insulating layer.

5,284,573

SIMULTANEOUS CATALYTIC HYDROCRACKING AND HYDRODEWAXING OF HYDROCARBON OILS WITH ZEOLITE BETA

Rene B. LaPierre, Medford, and Randall D. Partridge, Princeton, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 675,124, Mar. 25, 1991, Pat. No. 5,128,024, which is a continuation of Ser. No. 544,792, Jun. 29, 1990, abandoned, which is a continuation of Ser. No. 383,700, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 379,421, May 18, 1982, abandoned. This application Jul. 2, 1991, Ser. No. 907,971

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.[5] C10G *45/62, 45/64, 47/18, 47/20*

U.S. Cl. 208—89 **8 Claims**

1. A process for hydrocracking and dewaxing a heavy hydrocarbon vacuum gas oil having an initial boiling point above 650° F. comprising high molecular weight long chain, waxy paraffins and high molecular weight aromatics including fused ring aromatics,

which process comprises contacting the oil with a catalyst comprising (i) zeolite beta as an acidic component and (ii) a hydrogenation component at a temperature of 230° C. to 500° C. and in the presence of hydrogen gas at a total pressure of 500 to 20,000 kPa, a space velocity of 0.1 to 10 LHSV and a hydrogen circulation rate of 10 to 3500 n.l.l.$^{-1}$ to bring about a bulk conversion including hydrocracking of aromatic components simultaneously with a conversion of the long chain waxy paraffins present in the feed and produced by the hydrocracking reactions to effect a dewaxing of the feed simultaneously with the hydrocracking so that the pour point of the fraction of the product boiling above 650° F. is reduced relative to the pour point of the feed.

5,284,574

INTEGRATED COKING-GASIFICATION PROCESS WITH MITIGATION OF SLAGGING

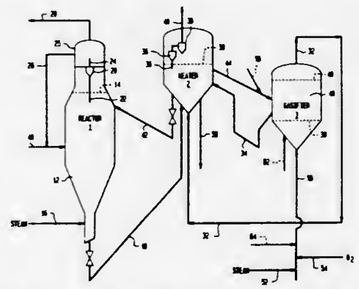
Tan-Jen Chen; Paul E. Eberly, Jr., and Francis X. Mayer, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 591,334, Oct. 1, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 851,037

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] C10G *9/28*

U.S. Cl. 208—127 **15 Claims**



1. In a fluid coking-gasification process for converting heavy hydrocarbonaceous materials to lower boiling products, which process comprises:

(a) introducing a heavy hydrocarbonaceous chargestock into a coking zone comprised of a bed of fluidized solids maintained at fluid coking conditions, including a temper-

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ature from about 850° to 1200° F. and a total pressure of up to about 150 psig, to produce a vapor phase product including normally liquid hydrocarbons, and coke, the coke depositing on the fluidized solids;

(b) introducing a portion of said solids with coke deposited thereon into a heating zone comprised of a fluidized bed of solid particles and operated at a temperature greater than said coking zone; and

(c) recycling a portion of said heated solids from said heating zone to said coking zone;

(d) introducing a second portion of said heated solids from the heating zone to a gasification zone comprised of a fluidized bed of solid particles and maintained at a temperature greater than the heating zone; and

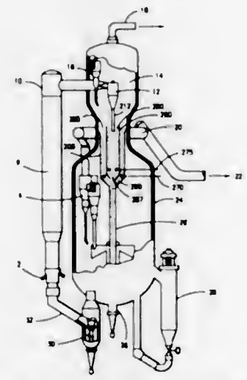
(e) reacting said second portion of heated solids in said gasification zone with steam and an oxygen-containing gas, the improvement consisting essentially of using as an additive an effective amount of an inorganic metal composition, which metal is selected from the alkaline-earth metals, the rare earths, and zirconium to prevent slagging in the gasifier, wherein the inorganic metal composition is introduced into the process by : (i) adding it directly into the gasification zone through the bottom of the gasifier; or (ii) mixing it with the portion of heated solids passing from the heating zone to the gasification zone.

5,284,575

PROCESS FOR FAST FLUIDIZED BED CATALYST STRIPPING

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 24, 1992, Ser. No. 949,925
Int. Cl.[5] C10G *11/18, 35/14*
U.S. Cl. 208—161 **19 Claims**



10. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons having a boiling point above about 650° F. is catalytically cracked to lighter products by contact with a fluidizable catalytic cracking catalyst consisting of particles having a size ranging from about 20 to about 100 microns, and fines and cracked catalyst particles having a smaller particle size, comprising:

a. catalytically cracking said feed in a riser catalytic cracking reactor operating at catalytic cracking conditions by contacting feed with a source of regenerated catalyst in the base of said riser reactor and discharging from a top portion of said riser reactor cracked products and spent catalyst containing coke and strippable hydrocarbons into a riser cyclone separation means within a vessel and connective with said riser outlet;

b. separating said effluent mixture in said riser cyclone means into a cracked product rich vapor phase and a solids rich phase comprising spent catalyst and strippable hydrocarbons which is discharged down via a cyclone dipleg means sealed by immersion within a fast fluidized bed stripping means;

c. fast fluidized bed (FFB) stripping of said spent catalyst and strippable hydrocarbons discharged from said riser cyclone dipleg means in a FFB stripping means within said vessel and beneath said riser cyclone means and encompassing said riser cyclone dipleg means, at FFB stripping conditions including sufficient stripping steam to generate a superficial vapor velocity above 3.0 fps, and sufficient to both strip spent catalyst and displace at lest 50 wt % of the spent catalyst discharged via said dipleg means from said FFB stripping means up and over from said FFB stripping means into a bubbling bed stripping means alongside of said FFB stripping means to produce:

a FFB stripper vapor phase which is discharged up from said FFB stripping means with said displaced, stripped catalyst, at a superficial vapor velocity at a top portion of said FFB stripper of at least 3.0 fps;

a FFB stripped catalyst product, consisting of at least 50 wt % of said spent catalyst, which is discharged up from said FFB stripping means and which overflows into said bubbling bed stripping means;

d. bubbling bed stripping of stripped catalyst discharged up from said FFB stripping means at bubbling bed stripping conditions including a superficial vapor velocity below 2.5 fps to produce a stream of catalyst which has been stripped at both FFB stripping conditions and at bubbling bed stripping conditions, which is discharged down from said bubbling bed stripping means via a bubbling bed stripper lower outlet;

e. combining in a shared vapor region above said FFB stripping means and said bubbling bed stripping means vapors from said stripping means and passing said combined stripper vapors through an enlarged region of said vessel above said stripping means, having an increased cross sectional area for flow sufficient to reduce the superficial vapor velocity of the combined streams to below 2.0 fps, and combining in said upper portion of said vessel stripper vapors and cracked product vapor;

f. regenerating stripped catalyst removed from the bottom of said bubbling bed stripper in a catalyst regeneration means to produce regenerated catalyst; and

g. recycling said regenerated catalyst to said catalytic cracking reactor.

5,284,576

METHOD OF SCAVENGING HYDROGEN SULFIDE FROM HYDROCARBONS

Jerry J. Weers, Ballwin, and Timothy J. O'Brien, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 388,210, Aug. 1, 1989, abandoned. This application Mar. 12, 1993, Ser. No. 31,062
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] C10G *29/20*
U.S. Cl. 208—236 **7 Claims**

1. A process for scavenging hydrogen sulfide from a hydrocarbon containing hydrogen sulfide which comprises bringing said hydrocarbon into intimate mixture with a hydrogen sulfide scavenging amount of a hydrogen sulfide scavenger prepared by reacting an alkylenepolyamine and formaldehyde wherein the alkylenepolyamine is represented by the formula

$$H_2NRNH\frac{}{}RNH\frac{}{}_xH$$

wherein each R is independently an alkylene radical having 2 to about 20 carbon atoms and x is 0 to about 15 thereby scavenging hydrogen sulfide in the hydrocarbon.

5,284,577

DEMETALIZATION PROCESS UTILIZING A CATALYST COMPRISING A NON-PILLARED, DELAMINATED LAYERED SILICATE

Stuart S. Shih, Cherry Hill, N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 848,597, Mar. 9, 1992, Pat. No. 5,236,882, which is a continuation-in-part of Ser. No. 644,149, Jan. 22, 1991, Pat. No. 5,137,861. This application Feb. 22, 1993, Ser. No. 20,953
Int. Cl.[5] C10G *45/04*
U.S. Cl. 208—251 H **6 Claims**

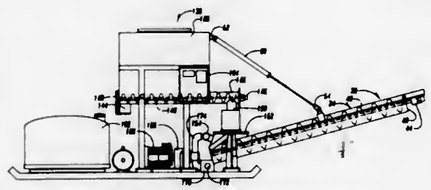
1. A process for demetalizing a petroleum feedstock, said process comprising contacting said petroleum feedstock with a catalyst under sufficient demetallation conditions, said catalyst comprising at least one hydrogenation metal supported on a non-pillared, delaminated layered silicate lacking octahedrally coordinated sheets of clays.

5,284,578

APPARATUS FOR TREATING SLUDGE

Hugh J. Tobler, 1100 N. 14th St., and Larry G. Lepper, 1411 E. Euclid, both of Indianola, Iowa 50125

Division of Ser. No. 961,516, Oct. 15, 1992, which is a division of Ser. No. 629,275, Dec. 18, 1990, abandoned, which is a division of Ser. No. 435,257, Nov. 13, 1989, Pat. No. 4,981,600. This application Dec. 3, 1992, Ser. No. 963,070
The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.
Int. Cl.[5] C02F *11/14*
U.S. Cl. 210—87 **11 Claims**



1. Apparatus for treating waste sludge comprising:

a support frame;

a source of waste sludge;

an elongated mixer housing having an inlet opening and an outlet opening and forming an elongated mixing chamber therebetween;

elongated mixing means movably mounted within said mixing chamber and extending between said inlet opening and said outlet opening;

sludge conveyor means connected to said source of waste sludge for introducing said waste sludge to said inlet opening of said mixer housing;

an additive hopper for containing an additive material to be introduced to said inlet opening of said mixer housing;

an additive conveyor means for conveying said additive from said additive hopper to said inlet opening of said mixer housing;

first variable speed power means drivingly connected to said additive conveyor means;

second variable speed power means drivingly connected to said sludge conveyor means;

third power means drivingly connected to said mixing means;

control means connected to said first, second, and third power means for actuating said first, second, and third power means, whereby said first and second power means will cause said additive conveyor means and said sludge conveyor means to introduce said additive material and said sludge into aid inlet opening of said mixer housing, and said third power means will cause said mixer means to move within said mixer housing, thereby mixing said additive material and said sludge together and conveying said additive material and said sludge toward and outwardly through said outlet end of said housing;

said mixer housing being pivotally mounted to said support frame for pivotal movement about a horizontal axis to a plurality of positions wherein said outlet opening is positioned above said inlet opening; and

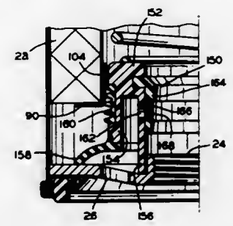
fourth power means connected to said mixer housing for selectively causing said mixer housing to pivot to said plurality of positions.

5,284,579

ONE-PIECE ANTI-DRAINBACK AND RELIEF VALVE

Edward A. Covington, Gastonia, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 31, 1992, Ser. No. 938,430
Int. Cl.[5] B01D *27/10*
U.S. Cl. 210—130 **11 Claims**



1. A fluid filter comprising:

a. an outer container having a central axis, a closed end and an open end;

b. an end plate secured within the open end of said container, said end plate having a central fluid outlet port and plural fluid inlet ports disposed around the outlet port;

c. a hollow, cylindrical filter element enclosed within said container and said end plate;

d. a one-piece, combination anti-drainback and relief valve including:

i. a cylindrical sleeve movable along the central axis of said container with respect to said end plate, one end thereof being disposed within said filter element, and the other end thereof terminating in a pair of radially spaced, inner and outer tubular extensions, the distal end of said outer extension being spaced from said end plate and the distal end of said inner extension normally engaging said end plate at a position radially inwardly of said inlet ports, said inner extension including a plurality of radially oriented, circumferentially spaced relief ports in communication with said fluid outlet port, wherein said relief ports are normally blocked by an annular, resilient internal lip seal secured to the inner surface of said sleeve, so that when the pressure at said inlet ports exceeds a predetermined amount, said internal lip seal will be deformed radially inwardly, allowing the flow of fluid through said relief ports and exiting through said outlet port; and

ii. a resilient annular lip extending from the outer extension of said sleeve to normally engage the end plate radially outwardly of said inlet ports; and

e. biasing means disposed within said filter element for normally urging the cylindrical sleeve of said valve into engagement with said end plate.

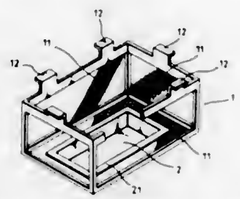
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,580

REFUSE COLLECTING FRAME FOR SEWER

Shyh-Yuan Shyh, 6F, No. 352, Fu Hsing S. Rd., Sec. 1, Taipei, Taiwan

Filed Aug. 4, 1992, Ser. No. 924,443
Int. Cl.[5] B01D *29/35, 29/37;* **E03F** *5/06;* **F03C** *1/26*
U.S. Cl. 210—163 **6 Claims**



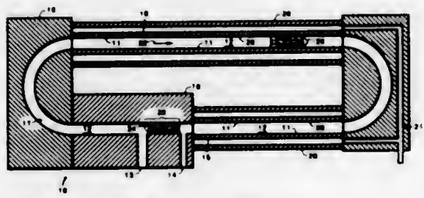
1. A refuse collecting frame adapted to be placed in a drainage sewer having an opening provided with stepped portions along its edges comprising:
a frame body having lateral sides, a bottom and an open top, said lateral sides having an upper edge, adjacent said open top;
a plurality of hangers extending from the upper edge of said lateral sides, said plurality of hangers being adapted to engage said stepped portions provided along edges of an opening of a drainage sewer and thereby supporting said frame body therefrom;
porous refuse filtering means formed at the lateral sides and bottom of said frame body, said porous refuse filtering means being formed with a hole substantially, centrally located in the bottom of said frame body; and
an imperforate collecting basin having a rimmed upper edge, said refuse collecting basin being received in the hole located in the bottom of said frame body with said rimmed upper edge of said refuse collecting basin being seated upon a first portion of said porous refuse filtering means located on the bottom of said frame with a second portion of said porous refuse filtering means extending from said rimmed upper edge to the lateral sides.

5,284,581

PROCESSING APPARATUS WITH WALL CONDITIONING SHUTTLES

Robert A. Benson, 13 Commonwealth Ave., Boston, Mass. 02116

Filed Dec. 17, 1992, Ser. No. 997,283
Int. Cl.[5] B01D *29/23, 35/00*
U.S. Cl. 210—194 **6 Claims**



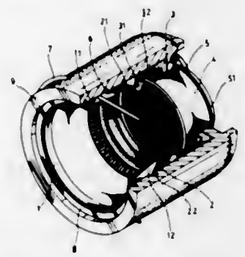
1. Processing apparatus comprising
structure defining a continuous re-entrant lumen, said lumen having a wall
an entrance port communicating with said lumen and an exit port communicating with said lumen, said ports being disposed asymmetrically around the length of the lumen so that a first path and a second path from the entrance port to the exit port through the lumen are defined, said first path being longer than said second path,
a shuttle return section situated around said second path,
said lumen wall including processing wall on which material accumulates during operation of said apparatus, said processing wall being situated along said first path,
at least two wall conditioning shuttles situated within the lumen and unconnected to each other and to the lumen wall, each of said shuttles comprising
a forward bumper,
a rear bumper,
a wall conditioning element effective when the shuttle passes through said first path to dislodge accumulated material from said lumen wall,
a plug effective when the shuttle is in said second path of said lumen in blocking said second path from flow therethrough.

5,284,582

FAST CONNECTION JOINT OF FITTING OUTLET

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Taipei Hsien, Taiwan

Filed Apr. 3, 1992, Ser. No. 863,072
Int. Cl.[5] B01D *24/08, 29/03, 35/02, 35/30*
U.S. Cl. 210—232 **1 Claim**



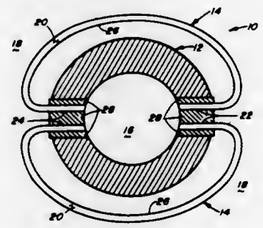
1. A fast connection joint for a fitting outlet comprising:
a) a hollow conduit connection joint housing having a first flow inlet end and a second flow outlet end, said housing having an inner surface;
b) a swing check valve means pivotally mounted adjacent said first end of said housing for blocking flow into said housing when not biased into an open position;
c) a filter ring with water filtration material internally packed therein, said filter ring is slideably mounted to the inner surface of said connection joint housing and abutting the swing check valve means and adapted to be moved by contact with an insertion pipe inserted into the connection joint through said second end, such movement opening the check valve means upon insertion of the pipe and allowing the closing of the swing check valve means upon withdrawal of the pipe;
d) a snake tail ring having an annular configuration placed between an outer surface of the filter ring and the inner wall of the connection joint housing and having a rolling-ball-shaped ball ring defining a pass hole and having an internal surface defining a plurality of annular slots so that internal and external surface are non-uniformly stressed such that the ball ring will curl inward when contacted by an insertion pipe entering the pass hole of ball ring;
e) a claw check ring engaging the inner surface of the connection joint housing adjacent to the snake tail ring toward the second end and front tip notched to form claw ring's teeth which are directed toward said first end and said teeth defining a pass hole formed by the teeth tips adapted to elastically clamp an insertion pipe's outside diameter and a tail foil means connected to front tips for engaging the inner surface of the connection joint housing to prevent movement of the claw check ring toward said first end and allow movement of the claw check ring toward said second end;
f) an open-ended, hollow, generally frustoconical shaped expansion ring having an annular base portion abutting the inner surface of the housing near said second end and having an inwardly tapered top portion directed toward said first end and said top portion extending adjacent to the claw ring teeth of the claw check ring, the top portion of the expansion ring defining a pass hole so that an insertion pipe can pass through the expansion ring, whereby the top portion will open the claw ring teeth when the claw check ring is moved toward said second end;
g) a U shaped ring extending into the connection joint housing and into an annular area defined between the tapered top portion of the expansion ring and the housing inner surface and located adjacent to where the claw ring engages the inner surface of the housing; and
h) a snap ring means attached to the connection joint housing and abutting the base of the expansion ring adjacent to the second end of the housing for preventing movement of the expansion ring toward said second end.

5,284,583

FIBER MEMBRANE ELEMENTS AND MODULES AND METHODS OF FABRICATION FOR FLUID SEPARATION

Jan Rogut, Boulder, Colo., assignor to Transfair Corporation, Wheatridge, Colo., a part interest

Continuation-in-part of Ser. No. 961,140, Oct. 13, 1992. This application May 17, 1993, Ser. No. 62,574
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] B01D *63/02*
U.S. Cl. 210—321.8 **71 Claims**



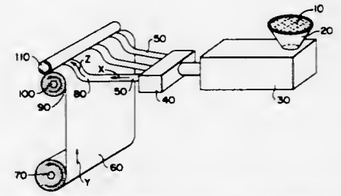
1. A membrane element for separating a fluid mixture into permeate and retentate portions, said membrane element comprising:
(a) a support substrate including at least one elongated hollow pressure-resistant non-permeable tubular transport artery having an interior and an exterior;
(b) a plurality of flexible hollow fibers of semipermeable membrane material defining flow channels therethrough and being capable of separating a raw fluid mixture into permeate and retentate portions, each of said hollow fibers having a pair of spaced opposite end portions and an elongated portion extending between and interconnecting said opposite end portions, at least one of said opposite end portions being open, each of said hollow fibers having a ratio of permeability (P) to total wall thickness (l) falling within the range of from 1×10^{-6} to 1×10^{-2} where the ratio P/l is in ($cm^3/s\ cm^2$ cm Hg), each of said hollow fibers also having an effective length falling within the range of from about 0.2 to 100 centimeters; and
(c) means for attaching said at least one open opposite end portion of each of said hollow fibers to said transport artery so as to provide flow communication between said channels of said hollow fibers and one of said interior or exterior of said transport artery.

5,284,584

HOLLOW FIBER MEMBRANE FABRIC - CONTAINING CARTRIDGES AND MODULES HAVING SOLVENT-RESISTANT THERMOPLASTIC TUBE SHEETS, AND METHODS FOR MAKING THE SAME

Xiaoyan Huang, Charlotte, N.C.; J. Clift Delozier, Fort Mill, S.C.; Ravi Prasad; Charles J. Runkle, both of Charlotte, N.C., and Harry F. Shuey, San Dimas, Calif., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 31, 1992, Ser. No. 999,054
Int. Cl.[5] B32B *31/02*
U.S. Cl. 210—321.61 **17 Claims**



1. A method of fabricating a spiral-type hollow fiber membrane fabric-containing cartridge including tube sheets having improved solvent resistance and mechanical durability, comprising the following steps:
a. forming a plurality of hollow fiber membranes each having a lumen, into a fabric-like array having a warp and a weft, in which the hollow fibers substantially are mutually-parallel and constitute the fabric weft, and are held in spaced-apart relationship by filaments constituting the fabric warp; then
b. winding the array upon an axis which is substantially parallel to the hollow fibers into a spirally-Wound membrane bundle having two bundle ends and a cylindrical exterior surface; and
c. simultaneously with step (b.), extruding in molten form a high-strength, solvent resistant thermoplastic resin having a melting point at least about 10° Centigrade below the melting point of the hollow fibers, and having a melt flow index between about 0.01 to about 150 grams/10 minutes; and directing said resin onto each of the two bundle ends to thereby pot each of the two bundle ends in said resin, serving to seal the bundle end into an adjacent monolithic tube sheet, a portion of the bundle between the two tube sheets being free from resin to form a shell-side region; and then
d. exposing the lumen ends of the hollow fibers constituting at least a first one of the bundle ends to communicate with the exterior of the bundle.

5,284,585

APPARATUS FOR RE-HOMOGENIZING A GAS/LIQUID MIXTURE

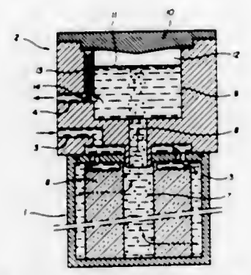
Jean-Marc Paquet, and Jean-Pierre Chicherie, both of Annecy le Vieux, France, assignors to Alcatel Cit, Paris, France

Filed Dec. 2, 1992, Ser. No. 984,444
Claims priority, application France, Dec. 10, 1991, 91 15283
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—436 **2 Claims**

1. Apparatus for re-homogenizing a gas/liquid mixture passing through a duct in which a filter device is interposed, said apparatus comprising a filter device and a collecting enclosure; said filter device having an essentially vertical outlet duct; said outlet duct opening out into the collecting enclosure; the collecting enclosure being placed above the filter device; the collecting enclosure including a side outlet duct disposed below the level of liquid collected in the collecting enclosure, a jet having an inlet and an outlet orifice, and a top portion collecting the gas given off above the level of liquid; said top portion communicating with the inlet of said jet; said outlet

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orifice opening out into said side outlet duct of the collecting enclosure; so as to reinject the gas collected in the top portion



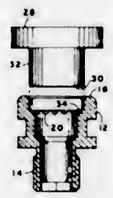
of the collecting enclosure into the outlet flow and form a homogeneous gas/liquid stream.

5,284,586

FLUID FLOW FILTER AND METHOD OF MAKING SAME

Thomas E. DeSalvo, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 19, 1993, Ser. No. 49,219
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—448 **6 Claims**



1. A method of installing a fluid flow filter screen comprising:

(a) providing an annular mounting member formed of metallic material and forming an annular planar surface thereon;

(b) providing a flat disc of woven screen material and disposing said disc on said planar surface;

(c) piercing a ring of said metallic material about the periphery of said planar surface; and,

(d) deforming said ring radially over the periphery of said disc and securing said disc on said planar surface.

5,284,587

BACTERIA-CONTAINING POLYMER GEL FOR WASTE WATER TREATMENT

John M. Wong; Thomas J. Lowe, both of Lakewood, and Therese J. Schleiden, Richfield, all of Ohio, assignors to General Environmental Science, Ohio

Filed Dec. 20, 1991, Ser. No. 811,539
Int. Cl.[5] C02F *3/00, 3/02;* **C12N** *11/00, 11/10*
U.S. Cl. 210—606 **16 Claims**

1. A solubilizing system for producing activated bacteria and enzymes for solubilizing particulate or colloidal materials in wastewater treatment, comprising:

a bacteria-containing two component polymer gel including a minor amount of a polymer component that is difficult to solubilize by bacteria in the gel and which component provides structural integrity to the gel and a major amount of a polymer component that is easier to solubilize by bacteria in the gel, said gel containing bacteria which can produce extracellular enzymes which solubilize particulate and colloidal organic materials,

at least one bacteria which solubilizes the gel,

nutrients which support the growth of said bacteria, and

a water soluble reversible bacteria inhibitor of sufficiently low molecular weight that it can easily diffuse out of the gel at a gel-water interface while preventing an interior region of said gel from prematurely dissolving; and

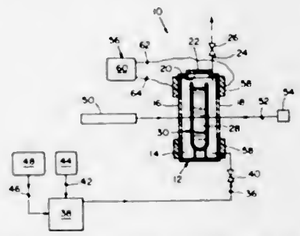
a housing which provides an aerobic and aqueous environment for said bacteria-containing gel so as to induce production and release of activated bacteria and extracellular enzymes for solubilizing particulate and colloidal materials in wastewater.

5,284,588

METHOD AND SYSTEM FOR ALLOWING INCREASED MIGRATION ACROSS A LIPID BILAYER

Lee C. Makowski, West Newton, and Hoshang F. Batliwala, Boston, both of Mass., assignors to Trustees of Boston University, Boston, Mass. and General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1992, Ser. No. 818,240
Int. Cl.[5] B01D *61/38*
U.S. Cl. 210—638 **26 Claims**



23. A method for delivering a molecule to a living cell, comprising the steps of:

a) disposing a living cell and a vesicle in an aqueous solvent medium, the vesicle containing a molecule which is to be delivered to the living cell;

b) exposing the aqueous solvent medium, containing the living cell and the vesicle, to a solute which is a hydrophobic gas at about normal temperature and pressure, and which, at sufficient partial pressure of the solute, dissolves in the aqueous solvent medium and migrates to the hydrophobic fatty acyl portions of the lipid bilayers of both the living cell and the vesicle, thereby causing migration of the molecule from the vesicle to the living cell; and

c) exposing the aqueous solvent medium, containing the living cell and the vesicle, to a sufficient partial pressure of the solute to cause the solute to dissolve in the aqueous solvent medium and to migrate to the hydrophobic fatty acyl portion of the lipid bilayers of both the living cell and the vesicle, whereby cell membranes of the living cell and the vesicle fuse with each other, thereby delivering the molecule to the living cell.

5,284,589

PROCESS FOR THE TREATMENT OF EFFLUENT

Dietrich Tegtmeyer, Koeln; Friedrich-Wilhelm Baumann, St. Margarethen, and Günter Stephan, Marne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,199
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130334
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—641 **7 Claims**

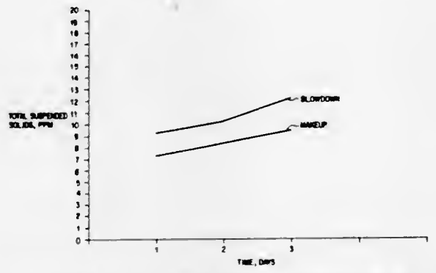
1. A process for the working-up of effluents and disposal of the loads present therein, in which the effluent is concentrated in a first stage by a membrane process which consists of a combination of at least two pressure permeation membrane processes in series which are selected from the group consisting of micro-, ultra- and nano-filtration, and the resulting concentrate is evaporated in a second stage, and incinerated in a third stage by gas phase oxidation.

5,284,590

METHOD FOR CONTROLLING FOULING IN COOLING TOWER FILL

John F. Kohlhofer, Homestead, Fla., and Patrick H. Gill, Zelienople, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 19, 1991, Ser. No. 717,758
Int. Cl.[5] C02F *5/12*
U.S. Cl. 210—701 **3 Claims**



1. A method for controlling fouling, including biofouling, in natural draft hyperbolic cooling towers containing plastic cooling tower fill comprising adding the cooling water having a tendency to foul said plastic cooling tower fill an effective amount for the purpose of a watersoluble polymer comprising:

a) acrylic acid or methacrylic acid; and

b) 2-acrylamido-2-methylpropyl sulfonic acid or 2-methacrylamido-2-methylpropyl sulfonic acid; wherein the weight ratio of a):b), on an active basis, ranges from about 4:1 to about 1:1; and wherein the molecular weight of said polymer ranges from about 1,000 to about 12,000.

5,284,591

FUNCTIONAL FLUID WITH BORATED EPOXIDES, CARBOXYLIC SOLUBILIZERS, ZINC SALTS, CALCIUM COMPLEXES AND SULFURIZED COMPOSITIONS

Frederick L. Bayles, Jr., Sugar Land, Tex.; Reed H. Walsh, Mentor, Ohio; Craig D. Tipton, Perry, Ohio, and John V. Stuffa, North Olmsted, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 700,681, May 15, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 991,781
The portion of the term of this patent subsequent to Nov. 5, 2008, has been disclaimed.
Int. Cl.[5] C10M *141/12*
U.S. Cl. 252—33 **12 Claims**

1. A functional fluid comprising:

a major amount of a hydrocarbon oil and a minor amount, sufficient to improve characteristics of the fluid, of an additive comprising:

a calcium salt in the form of a calcium sulfonate complex which has been overbased with a calcium compound;

an EP/antiwear agent in the form of a zinc salt of a dialkylphosphorodithioic acid;

a borated epoxide;

a carboxylic solubilizer in the form of an ester-salt reaction product of an acylating agent containing a substituted hydrocarbyl-based substituent containing about 12 to about 500 carbon atoms and an lakanol tertiary monoamine; and

a sulfurized composition in the form of a cosulfurzied mixture of 2 o more reactants selected from the group consisting of at least one fatty acid ester of a polyhydric alcohol, at least one olefin and at least one fatty acid.

5,284,592

(POLY) SULFURIZED CARBOXYLIC COMPOUNDS, THEIR PREPARATION AND THEIR USE AS PETROLEUM ADDITIVES FOR LUBRICATING OILS

Ourida Aberkane, Fameck; Maurice Born, Nanterre; Jean-Luc Mieloszynski, Montigny les Metz; Daniel Paquer, Vandoeuvre, and Guy Parc, Rueil Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Apr. 22, 1992, Ser. No. 872,196
Claims priority, application France, Apr. 23, 1991, 91 05091
Int. Cl.[5] C10M *135/26*
U.S. Cl. 252—48.006 **22 Claims**

1. A carboxylic compound of the formula

$$[R^3—OC(O)—]_qR^2\{—C(O)O—(CH_2)_m—CH_3--_z\{—(CH_2)_n—S_xR^1]_z\}_p$$

wherein

R^1 represents a saturated or unsaturated monovalent aliphatic radical with 1 to 30 carbon atoms;

x is a number greater than 1;

z equals 1 or 2; when z equals 1, n is an integer from 0 to 5, m is an integer from 0 to 5, and m+n is an integer from 1 to 10; when z equals 2, n is an integer from 1 to 5, m is an integer from 0 to 5, and m+n is an integer from 1 t 10;

R^2 is a hydrocarbon radical with 1 to 51 carbon atoms and a valency of p+q;

R^3 is a hydrogen atom or a monovalent aliphatic radical with 1 to 30 carbon atoms;

p is an integer from 1 to 4; and

q is an integer from 0 to 3, with p+q being an integer from 1 to 4.

5,284,593

NONCHELATING METAL FINISHING COMPOUNDS

Melvin M. Baevsky, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 515,091, Apr. 26, 1990, abandoned. This application Sep. 4, 1990, Ser. No. 577,694
Int. Cl.[5] C10M *173/02, 105/56;* **C09K** *13/00*
U.S. Cl. 252—49.3 **75 Claims**

1. A lubricating agent for a burnishing component comprising an aqueous solvent, an effective amount of an alkyl betaine that is soluble in the aqueous solvent, and a nonchelating acid that is soluble in the aqueous solvent wherein the alkyl betaine is of the formula:



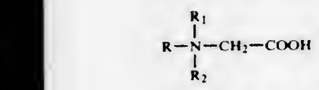
wherein R, R_1 and R_2 are organic radicals that are the same or different, said lubricating agent being free of effective amounts of chelating agents.

37. A composition for lubricating media utilized in a burnishing operation comprising a sufficient amount of a nonchelating acid to inhibit the formation of metal hydroxides and a sufficient amount of an alkyl betaine to lubricate the media and to increase the lustre and brightness of articles burnished therewith, said composition being free of effective amounts of chelating agents.

51. A method for burnishing manufactured parts comprising the steps of:

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placing the manufactured parts in a burnishing zone in a mass finishing apparatus;
adding a burnishing media of suitable size, shape and composition to the burnishing zone;
providing to the burnishing zone at an appropriate rate a supply of a composition for lubricating the media; and
rotating the burnishing zone for a time sufficient to impart a bright, polished and lustrous appearance to the parts;
wherein the lubricating composition is free of effective amounts of chelating agents and comprises an effective amount of an alkyl betaine having the formula:



wherein R, R_1 and R_2 are organic radicals that are the same or different.

5,284,594

DIALKYLAMINE COMPLEXES OF BORATED ALKYL CATECHOLS AND LUBRICATING OIL COMPOSITIONS CONTAINING THE SAME

Vernon R. Small, Jr., Rodeo; Thomas V. Liston, San Rafael, and Anatoli Onopchenko, Concord, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

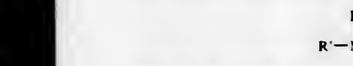
Continuation of Ser. No. 407,833, Sep. 15, 1989, abandoned. This application Feb. 24, 1992, Ser. No. 841,257

The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.

Int. Cl.[5] C10M *139/00*

U.S. Cl. 252—49.6 **25 Claims**

1. A composition comprising a complex of a borated alkyl catechol and an amount to hydrolytically stabilize the borated alkyl catechol of a secondary amine having the formula:



where R' is selected from the group consisting of (1) $—CH_2—R'''$ where R''' is selected from the group consisting of phenyl and an aliphatic hydrocarbon radical having from 2 to 9 carbon atoms; (2) a 5-membered alicyclic ring; and (3) a 6-membered alicyclic ring; and R'' is selected from the group consisting of (1); $—CH_2—R''''$ where R''''is selected from the group consisting of hydrogen, phenyl, and an aliphatic radical having from 1 to 9 carbon atoms; (2) a 5-membered alicyclic ring; (3) a 6-membered alicyclic ring; and wherein the total number of carbon atoms in R' plus R'' is no more than 18 and wherein said borated alkyl catechol has a molar ratio of alkyl catechol to boron of about 1:1, about 3:2, or a mixture thereof and further wherein said borated alkyl catechol has at least one alkyl group which contains from 10 to 30 carbon atoms.

5,284,595

BORATED ETHYLENE α-OLEFIN POLYMER SUBSTITUTED AMINE DISPERSANT ADDITIVES

Jacob Emert, Brooklyn, N.Y.; Alan M. Schilowitz, London, United Kingdom; Antonio Gutierrez, Mercerville, and Won R. Song, Short Hills, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 473,580, Feb. 1, 1990, Pat. No. 5,225,092. This application Jan. 26, 1993, Ser. No. 9,494

Int. Cl.[5] C10H *155/04*

U.S. Cl. 252—49.006 **23 Claims**

1. An additive useful in oleaginous compositions which comprises an ethylene alpha-olefin polymer substituted with at least one amine compound, wherein said amine compound is directly attached to the backbone of the polymer, wherein said polymer comprises monomer units derived from ethylene and at least one alpha-olefin of the formula $H_2=CHT^1$ wherein T^1 is an alkyl group of from 1 to 18 carbon atoms, wherein said polymer has a number average molecular weight of from about 300 to 20,000 and an average of at least about 30% of said polymer chains contain terminal ethenylidene unsaturation prior to being substituted with said amine compound, and wherein said additive is characterized by a VR value of less than about 4.1; and wherein said dispersant adduct is borated to provide from about 0.05 to 2.0 weight percent boron in said borated dispersant adduct.

5,284,596

SUBSTANTIALLY CONSTANT BOILING COMPOSITIONS OF 1,1,1,2-TETRA-FLUOROETHANE AND DIMETHYL ETHER

Donald B. Bivens, Kennett Square, Pa., and Akimichi Yokozeki, Greenville, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 492,963, Mar. 12, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 798,607

Int. Cl.[5] C09K *5/04, 3/30*; C08J *9/14*

U.S. Cl. 252—67 **5 Claims**

1. A substantially constant boiling composition consisting essentially of about 45–55 weight percent 1,1,1,2-tetrafluoroethane and about 45–55 weight percent dimethyl ether, said composition having a boiling point of about −23° C. at about atmospheric pressure.

5,284,597

AQUEOUS ALKALINE SOFT-SURFACE CLEANING COMPOSITIONS COMPRISING TERTIARY ALKYL HYDROPEROXIDES

Wayne M. Rees, Cincinnati, Ohio, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Dec. 23, 1992, Ser. No. 995,857

Int. Cl.[5] C11D *3/39, 3/395, 17/08*; D06L *3/02*

U.S. Cl. 252—103 **2 Claims**

1. An aqueous alkaline soft-surface cleaning composition comprising:
a. an aqueous base composition comprising:
i. from about 2.5 to about 10 parts by weight of 3,5-dimethyl-1-hexyn-3-ol per 1000 parts of base composition;
ii. from about 4.52 to about 6.0 parts by weight of sodium lauryl sulfate per 1000 parts of base composition; and
b. a tertiary alkyl hydroperoxide added to said base to form a composition containing from about 0.1 to about 5.0 by weight of the hydroperoxide relative to the weight of the total composition.

2. The composition of claim 1 therefor the tertiary alkyl hydroperoxide is selected from the group consisting of t-butyl hydroperoxide and 2,5-dimethylhexane-2,5-dihydroperoxide.

5,284,598

PROCESS FOR MAKING MILD, DETERGENT-SOAP, TOILET BARS AND THE BAR RESULTING THEREFROM

Ravi Subramanyam, North Brunswick; Liem D. Vu, Orange, and Ben Gu, East Brunswick, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

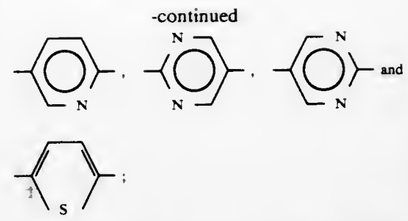
Filed Dec. 4, 1991, Ser. No. 802,160

Int. Cl.[5] C11D *9/32, 17/00, 1/12*

U.S. Cl. 252—121 **8 Claims**

1. An improved process for making a mild, detergent-soap, toilet bar containing, by weight, from 45% to 70% of sodium or potassium C6–C18 acyl isethionate, about 10% to 40% of C12–C20 fatty acids as a plasticizer and superfatting agent, about 3% to 25% of a water soluble C8–C20 soap and about 2% to 10% water which comprises the step of forming a liquid mixture of said acyl isethionate, fatty acids and soap by mixing said acyl isethionate, fatty acids, and soap at a temperature in the range of about 85° C. to 105° C. in the presence of about 0.5% to 2.5% by weight of a vegetable oil, said weight being based upon the toilet bar, processing said liquid mixture on a chill roll to form particles, processing said particles to yield said toilet bar, said liquid mixture having a reduced viscosity and being readily pumpable as compared to a liquid mixture prepared in the absence of said vegetable oil.

-continued



5,284,599

MESOMORPHIC COMPOUND, LIQUID CRYSTAL COMPOSITION CONTAINING SAME, LIQUID CRYSTAL DEVICE USING SAME DISPLAY APPARATUS

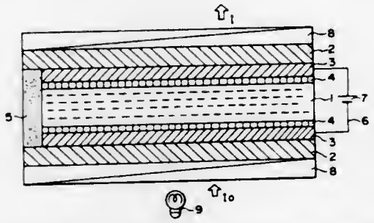
Takashi Iwaki, Machida; Takao Takiguchi, Tokyo; Takeshi Togano, Yokohama; Yoko Yamada, and Shinichi Nakamura, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 643,377, Jan. 22, 1991, Pat. No. 5,236,619. This application Jul. 20, 1992, Ser. No. 915,888

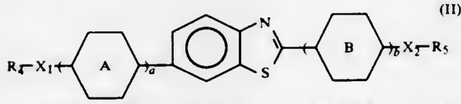
Claims priority, application Japan, Jan. 22, 1990, 2-012065; Jan. 30, 1990, 2-019725; Nov. 29, 1990, 2-332694

Int. Cl.[5] C09K *19/34*; C07D *277/62, 239/02, 211/70*

U.S. Cl. 252—299.61 **14 Claims**

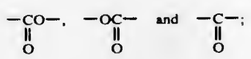


1. An optically active mesomorphic compound represented by the following formula (II):



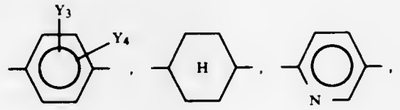
(II)

wherein R_4 and R_5 independently denote an alkyl group having 1–18 carbon atoms optionally substituted with an alkoxy group, at least one of R_4 and R_5 has an asymmetric carbon atom connected to halogen; X_1 and X_2 independently denote a single bond, —O—,





independently denote



Y_3 and Y_4 independently denote hydrogen, fluorine, chlorine, bromine, $—CH_3$, —CN and $—CF_3$; and a and b independently denote 0 or 1.

5,284,600

RADICAL CATION SALTS OF TETRATHIOTETRACENE AND COPPER CHLORIDE, THEIR PREPARATION AND THE USE THEREOF

Bruno Hilti, Basel; Ernst Minder, Sissach; Carl W. Mayer, Riehen, all of Switzerland, and Bernd Klingert, Inzlingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

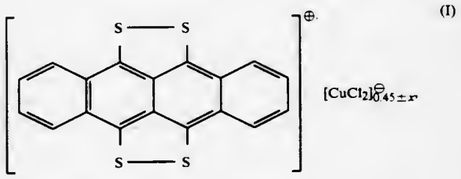
Filed Jun. 29, 1992, Ser. No. 906,074

Claims priority, application Switzerland, Jui. 2, 1991, 1952/91

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—518 **5 Claims**

1. A radical cation salt having the composition of formula I



(I)

wherein x has a value from −0.1 to +0.2.

5,284,601

ACTIVE MASS FOR AN ELECTRODE OF AN ELECTROCHEMICAL CELL, THE ACTIVE MASS HAVING A THREE-DIMENSIONAL POROUS SUPPORT

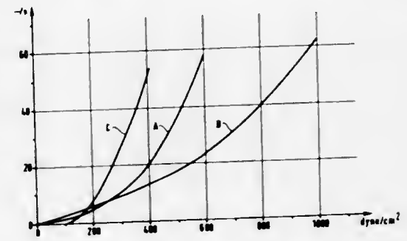
Jacques Bouet, Paris; Bernard Crochepierre, St Medard-en-Jalles, and Bernadette Pichon, Velizy Villacoublay, all of France, assignors to SAFT, Romainville, France

Filed Jul. 8, 1992, Ser. No. 910,391

Claims priority, application France, Jul. 9, 1991, 91 08590

Int. Cl.[5] H01B *1/06*; C25B *11/04*; H01M *4/60*

U.S. Cl. 252—518 **3 Claims**



1. A paste for impregnating a three-dimensional metal

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sponge porous support, which impregnated porous support is dried to provide an electrode for an electrochemical cell, said paste comprising (i) an electrochemically active material selected from the group consisting of a metal hydride and a metal hydroxide in an amount of from 40% to 60% of the weight of the paste, and (ii) a gel containing xanthan in an amount of from 0.5% to 2% of the weight of the gel, said paste having a yield point greater than the shear stress due to gravity so that the paste does not flow out of the impregnated support.

5,284,602

N-(N'-LONG CHAIN ACYL-β-ALANYL)-β-ALANINE OR ITS SALT AND DETERGENT COMPOSITION CONTAINING THE SAME

Osamu Tachizawa; Masayo Kawaguchi, and Kohshiro Sotoya, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

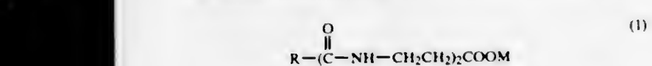
Filed Aug. 24, 1992, Ser. No. 933,698

Claims priority, application Japan, Aug. 26, 1991, 3-213808; Sep. 25, 1991, 3-246162

Int. Cl.[5] **C11D** *3/26;* **C07C** *229/00*

U.S. Cl. 252—546 **4 Claims**

1. An N-(N'-long chain acyl-β-alanyl)-β-alanine or its salt represented by formula (1):



(1)

wherein R represents a straight-chain or branched-chain alkyl or alkenyl group having from 7 to 23 carbon atoms; and M represents a hydrogen atom, an alkali metal, an ammonium, an alkylammonium, an alkanolammonium or a basic amino acid.

5,284,603

GELLED DETERGENT COMPOSITION HAVING IMPROVED SKIN SENSITIVITY

Stephen T. Repinec, Jr., Flemington; Gilbert S. Gomes, Somerset, both of N.J., and Rita Frilli, Rocourt, Belgium, assignors to Colgate Palmolive Co., New York, N.Y.

Continuation-in-part of Ser. No. 893,138, Jun. 3, 1992, abandoned. This application May 10, 1993, Ser. No. 59,865

Int. Cl.[5] **C11D** *1/831, 1/84*

U.S. Cl. 252—546 **9 Claims**

1. A high foaming, gelled, light duty, liquid detergent composition comprising approximately, by weight,

(a) 16% to 24% of a water soluble nonionic surfactant selected from the group consisting of C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{20} alkanol with a heteric mixture of ethylene oxide and propylene oxides having a weight ratio of ethylene oxide to propylene oxide from 2.5:1 to 4:1 and a total alkylene oxide content of 60% of 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri- C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;

(b) 5% to 9% of a water-soluble or dispersible anionic detergent selected from the group consisting of C_8–C_{18} alkyl sulfates, C_8–C_{16} alkylbenzene sulfonates, C_{10}–C_{20} paraffin sulfonates, C_{10}–C_{24} alpha olefin sulfonates and C_8–C_{18} alkyl sulfosuccinate esters, C_8–C_{18} acyl isethionates and C_8–C_{18} acyl taurates;

(c) 5% to 9% of a water-soluble betaine; and

(d) balance being water in which said nonionic surfactant, said anionic detergent and said betaine are gelled in said water, wherein the ratio of B to C is about 1.2:1 to about 1:1.2 and said gelled detergent composition having a melting temperature of at least 32° C. a G; value at 25° C. of at least about 4,000 N/m^2 and a G'' value at 25° C. of at least about 1,000 N/m^2 and said composition does not contain any anionic alkyl ether polyethenoxy sulfate detergent, amine oxide, fatty acid alkanolamide, clay, abrasive, silica, polymeric thickeners, alkali metal carbonate, or more than 3 wt. % of a fatty acid or its salt.

5,284,604

FLAME RETARDED THERMOPLASTIC COMPOSITION

Setuo Nishibori, Ohtsu; Hideto Kondo, and Toshikazu Nabeshima, both of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

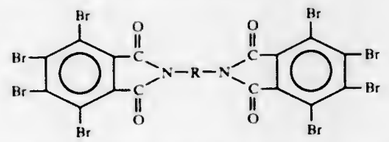
Filed May 8, 1992, Ser. No. 880,259

Claims priority, application Japan, May 9, 1991, 3-135547

Int. Cl.[5] **C08K** *5/3465, 5/3417, 3/22;* **C08L** *63/02;* **C09K** *21/10, 21/14*

U.S. Cl. 252—609 **7 Claims**

1. A flame retardant additive composition for incorporating to inflammable synthetic thermoplastic resins consisting essentially of from 6 to 14 parts by weight of 2,4,6-tris(2,4,6-tribromophenoxy)-1,3,5-triazine having a melting point ranging between 225°–235° C., from 5.5 to 10 parts by weight of a bistetrabromophthalimide of the formula:



wherein R is an alkylene, haloalkylene, arylene or haloarylene bridge, from 0 to 7 parts by weight of a brominecontaining epoxy polymer having a molecular weight ranging between 1,000 to 50,000 and from 5.5 to 8 parts by weight of antimony trioxide.

5,284,605

METHOD OF TREATING GAS BASED ON ELECTROLYTIC FLUORINE CONTAINING URANIUM COMPOUNDS

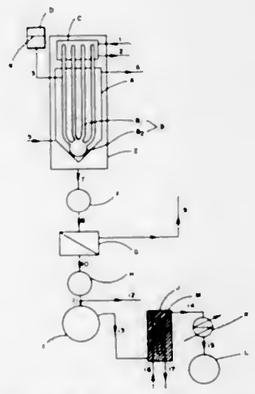
Francois Nicolas, Orange, France, assignor to Comurhex Society Pour la Conversion, Courbevoie, France

Filed Mar. 13, 1992, Ser. No. 850,883

Claims priority, application France, Mar. 27, 1991, 91 04451

Int. Cl.[5] **G21F** *9/02*

U.S. Cl. 252—630 **11 Claims**



1. A method of treating gas based on fluorine containing hydrofluoric acid, which optionally contains gaseous condens-

able uranium compounds, other gaseous condensable compounds and non-condensable gases, comprising the steps of:

refrigerating the gas at a temperature sufficient to condense HF in liquid form and any other condensable compounds present, in order to obtain separately, (1) fluorine gas and non-condensable gases which are evacuated and, (2) liquid condensed hydrofluoric acid containing any other condensed compounds present in solution and/or suspension;

filtering the liquid condensed hydrofluoric acid to separate any solid condensates from a solution based on anhydrous liquid HF.

7. The method of claim 1 or 2, wherein the liquid hydrofluoric acid recovered in filtration contains UF_6 and is purified by placing in gaseous form, passing the gaseous through a bed of activated carbon, which adsorbs HF and fixes UF_6, desorbing the HF from the activated carbon bed in gaseous form and condensing to obtain purified HF acid.

5,284,606

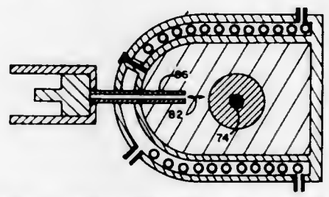
SPHERE PRODUCTION PROCESS AT ZERO GRAVITY

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 947,405, Dec. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 620,688, Jun. 14, 1984, abandoned. This application Sep. 30, 1991, Ser. No. 768,175

Int. Cl.[5] **B29D** *22/00;* **C01B** *31/00*

U.S. Cl. 264—29.1 **10 Claims**



1. A method to form hollow spheres without using a mold comprising the steps of:

immersing a molten globule of resin material to be formed into a sphere in a medium maintained at the melting temperature of said material within a chamber at zero gravity;

engulfing a non-active gas-generating pellet within said globule of material;

activating said gas-generating pellet;

generating a gas from said gas-generating pellet;

expanding said globule by said pressure of said generated gas; and

forming a hollow sphere from said globule by said increasing volume of expansion by said gas.

5,284,607

PROCESS FOR FORMING POWDER-FREE MEDICAL GLOVES

Mao-Ching Chen, Arlington, Tex., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Nov. 22, 1991, Ser. No. 797,517

Int. Cl.[5] **B29C** *41/14, 41/22*

U.S. Cl. 264—37 **18 Claims**

1. A process for making a powder-free medical glove comprising the steps of:

a) forming the glove by

(i) dip-coating a first layer onto a glove form, the first layer comprising a coagulant with a first acid-soluble powder dispersed throughout,

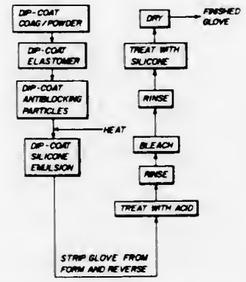
(ii) dip-coating over the first layer a second layer of an elastomer,

(iii) dip-coating over the elastomer layer a third layer that comprises an antiblocking composition with particles distributed throughout, the majority of particles having a size greater than the thickness of the antiblocking composition in the third layer,

(iv) heating the layers to cross-link the elastomer and to bond the elastomer layer to the antiblocking layer, and

(v) dip-coating a silicone emulsion over the underlying layers;

(b) removing the glove from the form and reversing the glove, so that the first layer is on the outside of the glove;



(c) treating the glove with an acid to dissolve the acid-soluble powder;

(d) rinsing the glove with a first aqueous liquid;

(e) treating the glove with a bleach to reduce blocking;

(f) rinsing the glove with a second aqueous liquid;

(g) treating the glove with a silicone emulsion; and

(h) drying the glove.

5,284,608

PROCESS FOR MOULDING COMPOSITE PLASTIC MATERIAL

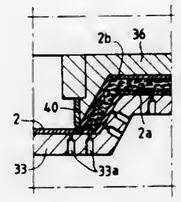
Mario Vismara, Casatenovo, Italy, assignor to DEVI S.p.A., Besana Brianza, Italy

Filed Dec. 16, 1992, Ser. No. 991,256

Claims priority, application Italy, Dec. 16, 1991, MI91A003358

Int. Cl.[5] **B29C** *67/20*

U.S. Cl. 264—37 **11 Claims**



1. Process for moulding composite plastic material, in particular foamed plastic material in combination with rigid plastic material, in which the rigid material is first preformed and the foamed plastic material is moulded with the rigid material by means of steam applied according to pulse steps, wherein a portion of rigid material to be preformed is separated from the rigid material used as a starting material at a preforming station, inside a preforming half-mould, the preformed material is moulded with foamed plastic material at the moulding station to form moulded material and after moulding the moulded material is brought back to the preforming station wherein atop the moulded material a further portion of rigid plastic material is submitted to preforming, with said further portion of rigid plastic material being simultaneously separated from the rigid starting material, said further portion being subsequently coupled, while hot, with the foamed plastic material,

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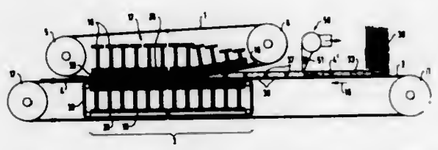
wherein scrap material resulting from the preforming steps is delivered, at each preforming step, to a recovery station before the preforming half-mould is moved back to the preforming station.

5,284,609

METHOD AND APPARATUS FOR THE MANUFACTURE OF WOOD CHIP BOARDS AND SIMILAR BOARD MATERIALS

André V. Avenne, Oostrozebeke, Fed. Rep. of Germany, assignor to Eduard Küsters Maschinenfabrik GmbH & Co Kg, Krefeld, Belgium

PCT No. PCT/EP90/00206, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO90/09263, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 9, 1990, Ser. No. 654,604
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3904982
Int. Cl.[5] B27N *3/24*; B30B *3/06*
U.S. Cl. 264—101 9 Claims



1. A method for continuously manufacturing wood chip boards and similar board materials composed of particles bonded by a binder, which together form a main filling cured under heat and pressure in a double-belt press having a pressing zone formed between a metal bottom belt for forming the bottom surface of the board material and a metal top belt for forming the top surface of the board material, and a support structure for pressing the belts together wherein the bottom and top metal forming belts rotate in opposite direction to carry particles fed into the double-belt press through the pressing zone, said method comprising the steps of:
   a. spreading the main filling on a horizontal portion of the bottom forming belt;
   b. intermittently vacuuming off longitudinal sections of the edges of the main filling, leaving tabs in place; and
   c. transmitting the necessary heat and pressure from the support structure through the bottom and top forming belts to cure the main filling and form a web from which the board materials are made by compressing the main filling, with the tabs, between the support structure and the bottom and top forming belts.

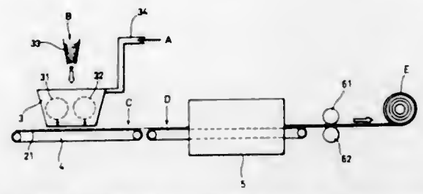
9. A double belt press for the continuous manufacture of wood chip boards and similar board materials composed of particles bonded by a binder, which together are cured under heat pressure in the press to form the board materials, said press comprising:
   a. a top metal, rotatable belt for forming a top surface of the board material;
   b. a bottom, metal rotatable belt for forming a bottom surface of the board material, said bottom belt being disposed beneath said top belt to form a pressing zone therebetween in which a pourable material may be conducted for forming a web from which the board materials are made, said bottom belt being adapted to carry the pourable material into the pressing zone;
   c. means for spreading a main filling of particles and binder onto a horizontal portion of the bottom belt; and
   d. means for intermittently vacuuming narrow sections of the main filling from the edges of the main filling.

5,284,610

HIGH MOLECULAR ABSORBENT SHEET MANUFACTURING PROCESS AND THE RELATED EQUIPMENT

Hua-Hsi Tai, Tainan, Taiwan, assignor to Kang Na Hsiung Enterprise Co., Ltd., Tainan, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,222
Int. Cl.[5] D04H *1/72*
U.S. Cl. 264—112 10 Claims



1. A high molecular absorbent sheet material manufacturing process comprising steps of:
   a) feeding a paper pulp to a mixing trough having two wired cylinders through a feed pipe;
   b) feeding a high molecular absorbent compound to said mixing trough through a hopper;
   c) turning said wired cylinders to mix the paper pulp and the high molecular absorbent compound into a mixture and spread the mixture over a conveyer system;
   d) carrying the mixture obtained from said step c) to a dryer for drying; and
   e) transferring the dried mixture obtained from said step d) through the pitch between two matched hot impression cylinders for squeezing into a roll of high molecular absorbent sheet.

9. An equipment for a high molecular absorbent sheet material manufacturing process comprising a conveyer system, two wired cylinders fastened in a trough above said conveyer system and turned by a power unit, a feed pipe for delivering a paper pulp to said wired cylinders, a hopper for carrying a high molecular absorbent compound to said wired cylinders, a dryer for drying the mixture mixed and spread over said conveyer system by said wired cylinders, and two hot impression cylinders for squeezing the dried mixture delivered from said dryer into a roll of high molecular absorbent sheet.

5,284,611

FLUOROELASTOMER COMPOSITION WITH IMPROVED BONDING PROPERTIES

Werner M. A. Grootaert, Oakdale; Robert E. Kolb, St. Paul, and George H. Millet, Grant Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 608,216, Nov. 2, 1990, abandoned, which is a division of Ser. No. 369,754, Jun. 22, 1989, abandoned. This application May 18, 1993, Ser. No. 63,116
Int. Cl.[5] B32B *5/26*
U.S. Cl. 264—135 17 Claims

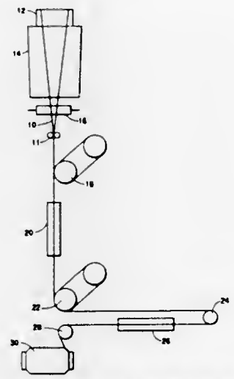
1. A method of improving the adhesion between a substrate having an inorganic surface and a cured, fluoroelastomeric composition, comprising the steps of:
   (A) providing a curable composition comprising:
      (1) fluoroelastomer gum comprising interpolymerized, repeating units derived from vinylidene fluoride, tetrafluoroethylene and copolymerizable hydrocarbon olefin,
      (2) polyhydroxy compound,
      (3) organo-onium compound,
      (4) fluoroaliphatic sulfonyl compound having at least one $-SO_2NH-$ or SO_2CH- moiety wherein the sulfur atom of said $-SO_2NH-$ or $-SO_2CH-$ moiety is also bonded directly to a carbon atom substituted with at least one strongly electronegative or electron withdrawing group, and
      (5) acid acceptor,
   (B) preparing a primer composition comprising aminosilane compound,
   (C) applying the primer composition to the inorganic surface of the substrate,
   (D) placing the coated substrate from step (C) in a mold,
   (E) filling the mold with the mixture prepared in step (A),
   (F) curing the mixture, and
   (G) removing the resulting molded article from the mold, wherein the amount of fluoroaliphatic sulfonyl compound used to prepare the composition in step (A) is sufficient to result in a bond between the substrate and the cured fluoroelastomeric composition.

5,284,612

STEAM DRAW-JET PROCESS FOR MAKING PARTIALLY-ORIENTED POLYAMIDE YARNS

Lin-Fa Lee, Chattanooga, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 23, 1992, Ser. No. 977,687
Int. Cl.[5] B29C *47/88*; D01D *5/12, 10/02*; D02J *1/22*
U.S. Cl. 264—210.8 8 Claims



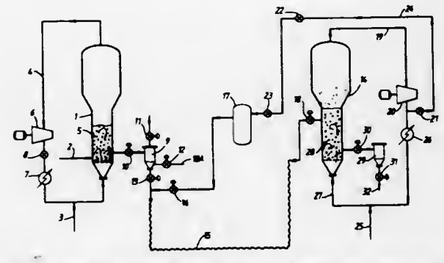
1. In a coupled process for making partially-oriented polyamide yarn by melt-spinning polyamide polymer at a withdrawal speed sufficient to produce a spun yarn having an elongation less than 175% and subsequently subjecting said spun yarn to a drawing step in a draw zone to reduce the elongation to the range of 50 to 100% to form said partially-oriented polyamide yarn, the improvement which comprises:
   passing said yarn in said draw zone through an enclosure and impinging a gaseous fluid jet on said yarn in said enclosure in an intersecting relationship to the path of yarn travel through said enclosure, said gaseous fluid having a temperature of at least about 190° C.

5,284,613

PRODUCING BLOWN FILM AND BLENDS FROM BIMODAL HIGH DENSITY HIGH MOLECULAR WEIGHT FILM RESIN USING MAGNESIUM OXIDE-SUPPORTED ZIEGLER CATALYST

Ahmed H. Ali, Somerset; John T. T. Hsieh, Warren, both of N.J.; Keith J. Kauffman, Houston, Tex.; Yury V. Kissin, East Brunswick; S. Christine Ong, Warren, both of N.J.; Giyarpuram N. Prasad, Melbourne, Australia; Ann L. Pruden, Bellemead, and Sandra D. Schregenberger, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 4, 1992, Ser. No. 941,344
Int. Cl.[5] B29C *55/28*
U.S. Cl. 264—566 14 Claims



1. A process for in situ blending of a resin for blown film production, comprising
   providing a low melt index component in the form of particles comprising MgO and a polymeric component, said particles having an average particle size of about 127 to about 1270 microns; said polymeric component having a flow index (Fl or I_{21}, measured at 190° C. in accordance with ASTM D-1238, Condition F) of about 0.05 to 5, and a density in the range of about 0.890 to 0.960, and formed in a first gas phase comprising contacting a gaseous feed, with a catalyst composition, under ethylene polymerization conditions including a temperature of polymerization in the first gas phase of about 60° to 130° C.,
   wherein the gaseous feed is selected from the group consisting of ethylene, hydrogen, at least one alpha-olefin of 4 to 10 carbon atoms, and admixtures thereof;
   wherein the catalyst comprises an MgO support and titanium wherein the titanium comprises 0.5 to 2.0 millimoles per gram of catalyst, wherein the MgO support is treated, prior to admixture with said titanium, with an organic acid selected from the group consisting of acetic acid and octanoic acid in an amount such that the molar ratio of organic acid to MgO is from 0.001 to 0.5;
   wherein a source of said titanium is a reaction product of an alkanol of 5 to 12 carbon atoms in a mole ratio of about 0.5 to 1.5 of the alkanol per mole of tetravalent titanium;
   wherein an admixture of said MgO and source of titanium is treated with 0.25 to 1 millimole/gram catalyst of a reagent selected from the group consisting of triethylaluminum, tri-n-hexylaluminum, diisobutylaluminum hydride, and trimethylaluminum to form a precursor;
   wherein said precursor is contacted with a cocatalyst wherein the cocatalyst is present in an amount which ranges from 0.5 to 2.0 millimoles per gram of catalyst, wherein, in the first gas phase, the hydrogen/ethylene molar ratio (H_2/C_2 ratio) is up to about 0.3 and the ethylene partial pressure is up to about 100 psia, and
   blending the particles with a high load melt index polymer of ethylene containing at least 80 weight percent of ethylene units, wherein the high load melt index polymer is formed at a temperature in the range of about 80° to 130° C., wherein the temperature of formation of the high load melt index polymer is higher than that in the first gas phase; and

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producing a high density bimodal blend.

13. A process for blown film production by in situ blending of a resin for blown film production, comprising

providing a low melt index component in the form of particles comprising MgO and a polymeric component, said particles having an average particle size of about 127 to about 1270 microns; said polymeric component having a flow index (FI or I_{21}, measured at 190° C. in accordance with ASTM D-1238, Condition F) of about 0.05 to 5, and a density in the range of about 0.890 to 0.960, and formed in a first gas phase comprising contacting a gaseous monomeric feed, with a catalyst composition, under ethylene polymerization conditions including a temperature of polymerization in the first gas phase of about 60° to 130° C.,

wherein the gaseous feed is selected from the group consisting of ethylene, hydrogen, at least one alpha-olefin of 4 to 10 carbon atoms, and admixtures thereof;

wherein the catalyst comprises an MgO support and titanium wherein the titanium comprises 0.5 to 2.0 millimoles per gram of catalyst, wherein the MgO support is treated, prior to admixture with said titanium, with an organic acid selected from the group consisting of acetic acid and octanoic acid in an amount such that the molar ratio of organic acid to MgO is from 0.001 to 0.5;

wherein a source of said titanium is a reaction product of an alkanol of 5 to 12 carbon atoms in a mole ratio of about 0.5 to 1.5 of the alkanol per mole of tetravalent titanium;

wherein an admixture of said MgO and source of titanium is treated with 0.25 to 1 millimole/gram catalyst of a reagent selected from the group consisting of triethylaluminum, tri-n-hexylaluminum, diisobutylaluminum hydride, and trimethylaluminum to form a precursor;

wherein said precursor is contacted with a cocatalyst wherein the cocatalyst is present in an amount which ranges from 0.5 to 2.0 millimoles per gram of catalyst, wherein, in the first gas phase, the hydrogen/ethylene molar ratio (H_2/C_2 ratio) is up to about 0.3 and the ethylene partial pressure is up to about 100 psia, and

blending the particles with a high load melt index polymer of ethylene containing at least 80 weight percent of ethylene units, wherein the high load melt index polymer is formed at a temperature in the range of about 80° to 130° C., wherein the temperature of formation of the high load melt index polymer is higher than that in the first gas phase;

wherein said blending is undertaken in a fluidized bed in a second gas phase at a temperature in the range of about 80° to 130° C., and feeding into said second gas phase, hydrogen and a gaseous monomeric composition comprising a major proportion of ethylene, wherein the hydrogen/ethylene provide a H_2/C_2 molar ratio of at least about 0.9 which is at least about 8.0 times greater than a H_2/C_2 molar ratio in said first reaction zone, and an ethylene partial pressure of at least 1.7 times that in said first reaction zone, to increase the average bulk density of the particles; and

recovering a final granular bimodal molecular weight polymer from the second reactor which has a weight fraction of said polymeric component of about 0.35 to 0.75, a flow index in the range of about 3 to 200, and a density of about 0.938 to 0.97 g/cc;

extruding said final granular bimodal molecular weight polymer from the second reactor through an annular die to form an extruded tube of molten material and

cooling the extruded tube while drawing the tube so cooled at a rate of at least 250 ft/minute;

flowing a cooling gas in contact with the outer surface of said tube

from an annular zone about said extruded tube spaced along the axis thereof and having a diameter sufficient to provide a tube diameter which is substantially the annular die diameter;

wherein said cooling gas is passed in contact with the outer surface of said tube to produce a positive gas pressure zone between said surface and said film material;

withdrawing said cooling gas from said contact; and

expanding the tube to attenuate the walls thereof by introducing a gas to the interior of the tube; and recovering said film.

5,284,614

METHOD OF FORMING FINE DISPERSION OF CERIA IN TUNGSTEN

Li-Chyong Chen, Schenectady; Stephen L. Dole, Burnt Hills, and Ronald H. Arendt, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,116

Int. Cl.[5] B22F *9/24*

U.S. Cl. 419—20 **10 Claims**

6. A method for forming an elongate body of tungsten with a fine dispersion of metal oxide particles wherein the metal is at least one of zirconium, hafnium, lanthanum, yttrium, or a rare earth, the method comprising;

forming a mixture of a salt solution comprised of a soluble salt of the metal, and a tungsten blue oxide powder,

admixing a hydroxide precipitating solution to the mixture to form a hydroxide precipitate of the metal on the tungsten blue oxide powder,

heating in a reducing atmosphere to reduce the tungsten blue oxide powder and hydroxide precipitate, and form the tungsten powder having the dispersion of metal oxide particles, and

pressing the tungsten powder to form a compact, sintering the compact to form a bar, and reducing the bar to form the elongate body.

5,284,615

METHOD FOR MAKING INJECTION MOLDED SOFT MAGNETIC MATERIAL

Koshiro Ueda; Mutsumi Moribayashi, and Tohru Kohno, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 914,854

Claims priority, applicatioo Japan, Jul. 15, 1991, 3-200112

Int. Cl.[5] B22F *3/16*

U.S. Cl. 419—37 **1 Claim**

1. A method for making injection molded component parts having properties suitable for soft magnetic applications in small electrical and electronic equipment, said method comprising the steps of:

(a) hot mixing a ferrous powder with a thermoplastic binder at a concentration between 8–15 weight % to product a powder mix;

(b) cooling said powder mix to room temperature and subjecting said powder mix to a granulation process to produce a feed particle mix for injection molding;

(c) injection molding said feed particle mix to produce molded parts;

(d) dewaxing said molded parts of step (c) at a temperature between 680°–750° C. to produce presintered parts containing not more than 0.05 weight % carbon produced from said binder;

(e) subjecting said presintered component parts of step (d) to final sintering at a temperature of between 870°–910° C.; and

(f) subjecting said component parts of step (e) to a conversion sintering step at a temperature of 1050°–1350° C. to impart soft magnetic properties to said component part;

thereby producing injected molded parts having soft magnetic properties.

5,284,616

METHOD FOR ISOSTATIC OR PSEUDO-ISOSTATIC PRESSING EMPLOYING A SURROUNDING CASING OF GLASS

Bertil Mattsson; Jan Nilsson, both of Robertsfors, and Marianne Collin, Enskede, all of Sweden, assignors to ABB Cerama AB and Sandvik AB, Sweden

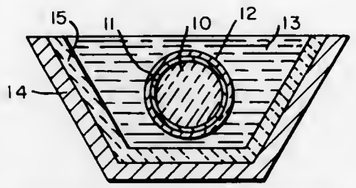
PCT No. PCT/SE91/00854, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO92/11107, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 12, 1991, Ser. No. 828,952

Claims priority, application Sweden, Dec. 21, 1990, 9004134-4

Int. Cl.[5] B22F *3/14*; C04B *35/00, 35/64*

U.S. Cl. 419—44 **19 Claims**



1. A method for the manufacture of objects from powdered material by isostatic or pseudo-isostatic pressing, wherein

a porous body, with open pores, is preformed from a powdered material;

at least one layer of a powdered material is applied on the external surface of the preformed porous body by dipcoating;

whereupon the preformed porous body is covered with a casing of glass, or a material forming glass upon heating, arranged outside and surrounding said layer;

the casing is made impenetrable to the pressure medium, by heating, and

the preformed body with surrounding casing is compacted and consolidated into an essentially dense body by isostatic or pseudo-isostatic pressing and sintering, wherein

the pore system of the preformed porous body is evacuated by applying a sub-atmospheric pressure,

the sub-atmospheric pressure is applied by means of at least one suction cup, wherein said suction cup is applied onto one or more of the external surfaces to be coated, and that

the sub-atmospheric pressure is applied in connection with and during the dipping of the body into a slurry of powdered materials included in the layer.

5,284,617

PROCESS FOR DEALUMINIZING MOLTEN CAST IRON

Basant L. Tiwari, Sterling Heights, and Seymour Katz, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1992, Ser. No. 941,288

Int. Cl.[5] C22C *33/00*

U.S. Cl. 420—33 **6 Claims**

1. A method for substantially dealuminizing cast iron containing a deleterious amount of aluminum, comprising the steps of heating the cast iron to a temperature sufficient to melt said iron, disposing a mass of free-flowing flux particles atop said iron, heating said mass such that each of said particles comprises a core of solid silica and a molten shell encapsulating said core, said flux comprising silica and about 1% to about 5% by weight calcium fluoride, and stirring said iron and said flux so as to cause said particles to intimately mix with said iron such that said molten shell reacts with said aluminum so as to form an oxide thereof and to release silicon into the iron, dissolving the aluminum oxide in said shell, and continuing the foregoing process for a sufficient time to reduce the aluminum content of said iron to below said deleterious amount.

5,284,618

NIOBIUM AND TITANIUM BASED ALLOYS RESISTANT TO OXIDATION AT HIGH TEMPERATURES

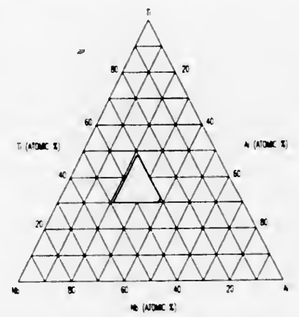
Michel L. Allouard, Paris; Yves C. Bienvenu, Evry; Christophe Delaunay, Paris; Christian A. B. Ducrocq, Taverny; Gérard Lemaitre, Colombes; Michel Marty, Buc, and André Walder, l'Hay les Roses, all of France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels "A.R.M.I.N.E.S." and Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", both of Paris, France

Filed Mar. 20, 1992, Ser. No. 854,895

Claims priority, application France, Mar. 20, 1991, 91 03373

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—426 **5 Claims**



2. A niobium and titanium based alloy having a density of less than 6.5 and possessing a high resistance to oxidation at high temperature, particularly in the vicinity of 900° C., wherein said alloy has the following chemical composition, in atomic percentages:

more than 30% Nb

from 30 to 48% Ti

from 21 to 38% Al

and from 1% to 8% Zr.

5,284,619

HYDROGEN ABSORBING ELECTRODE FOR USE IN NICKEL-METAL HYDRIDE SECONDARY BATTERIES

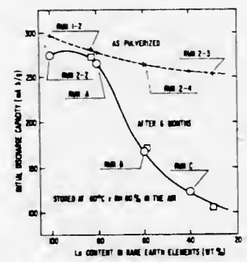
Tokuichi Hazama, Kyoto, Japan, assignor to Japan Storage Battery Company, Limited, Kyoto, Japan

Filed Mar. 21, 1991, Ser. No. 672,996

Claims priority, application Japan, Mar. 24, 1990, 2-74629; Mar. 24, 1990, 2-74630; Mar. 24, 1990, 2-74631

Int. Cl.[5] H01M *4/24*

U.S. Cl. 420—455 **6 Claims**



1. A hydrogen absorbing electrode comprising an alloy that is represented by the formula containing 75 to 90 wt % La, with the balance being other rare earth elements, and X, A, and

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B are defined by the relationships $4.9 \leqq X \leqq 5.1$, $1.2 \leqq A+B \leqq 2.0$, $0.7 \leqq A \leqq 1.6$, and $0.3 \leqq B \leqq 0.6$.

5,284,620

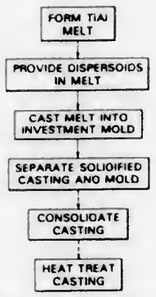
INVESTMENT CASTING A TITANIUM ALUMINIDE ARTICLE HAVING NET OR NEAR-NET SHAPE

Donald E. Larsen, Jr., North Muskegon, Mich., assignor to Howmet Corporation, Greenwich, Conn.

Filed Dec. 11, 1990, Ser. No. 696,184

Int. Cl.[5] **C22C** *14/00*

U.S. Cl. 420—590 **17 Claims**



1. A method of investment casting a titanium aluminide alloy article having improved strength and a net or near-net shape for intended service application, comprising the steps of:

a) forming a titanium-aluminum melt, said melt comprising titanium in an amount of about 40 to about 52 atomic %, aluminum in an amount of about 44 to about 52 atomic %, and one or more of Cr, C, Ga, Mo, Mn, Nb, Ni, Si, Ta, V, and W each in an amount of about 0.05 to about 8 atomic %,

b) providing boride dispersoids in the melt in an amount of at least about 0.5 volume % of said melt,

c) providing a melt superheat prior to casting of about 25° to 200° F. above the melting point of said alloy to avoid growth of said boride dispersoids to a size harmful to article ductility,

d) casting the melt into a mold cavity of a preheated ceramic investment mold, said mold cavity being configured in the net or near-net shape for the intended service application, and

e) solidifying the melt in the mold cavity to form a crack-free, solidified article, said solidified article having a titanium aluminide-containing matrix with said boride dispersoids uniformly distributed throughout the matrix without dispersoid segregation at grain boundaries thereof, said matrix having a grain size of about 10 to about 250 microns as a result of the presence of said dispersoids in said melt.

5,284,621

WASTE FLUID DISPOSAL AID

Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Continuation of Ser. No. 215,370, Jul. 5, 1988, abandoned, Continuation-in-part of Ser. No. 105,875, Oct. 7, 1987, abandoned. This application Sep. 10, 1992, Ser. No. 943,119

Int. Cl.[5] **A61L** *9/00*

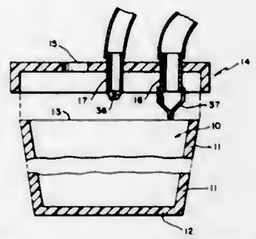
U.S. Cl. 422—32 **17 Claims**

1. A medical waste fluid kit for preparing for disposal waste fluid collected from a patient comprising:

a substantially rigid, fixed shaped vessel having and being closed by a rigid cap having waste fluid inlet means for introducing a waste fluid into said vessel, and outlet means extending from and through said rigid cap;

a composition comprising at least one hydrophilic xerogel in the form of a powder which includes at least one water-insoluble hydrophilic polymer for immobilizing the waste fluid;

a container, having a surface area, containing said at least one hydrophilic xerogel for placement in said vessel for disposal of said waste fluid collected in said vessel, and the surface area of said container comprising a material which



breaks up when brought into contact with the waste fluid for releasing the at least one hydrophilic xerogel into said vessel for admixing with the waste fluid, thereby immobilizing said solidifying same within said vessel and minimizing the hazards of handling said waste fluid which may be infectious.

5,284,622

TEST CARRIER FOR THE ANALYSIS OF FLUIDS

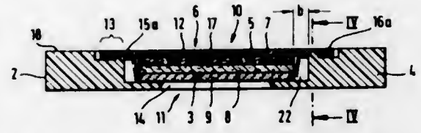
Manfred Krause, Viernheim, and Gerd K. P. Schafer, Ludwigshafen, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 953,050

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 4132743

Int. Cl.[5] **G01N** *31/00, 33/03, 23/00*

U.S. Cl. 422—60 **8 Claims**



1. A test carrier for the analysis of fluids, comprising:

a flat body formed of a plastic material, said base body having a trough-shaped depression disposed in one of its faces:

a test field disposed in said depression, said test field having a sample application surface thereon, for the application of a sample fluid; and

a retaining net formed of a plastic material spanning said depression and said test field disposed therein.

5,284,623

DIVISION DIRECTING DEVICE FOR BLOOD TESTING

Toshio Yamori, Kyoto, and Ryuko Kayagaki, Tokyo, both of Japan, assignors to Falco Biosystems, Inc., Kyoto, Japan

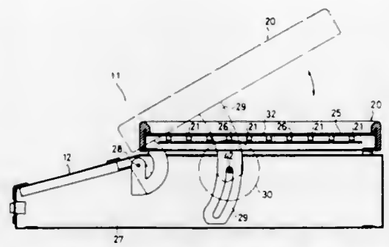
Filed Feb. 12, 1992, Ser. No. 834,464

Claims priority, application Japan, Jun. 25, 1991, 3-178864

Int. Cl.[5] **G01N** *21/01;* **B01L** *9/06*

U.S. Cl. 422—99 **10 Claims**

1. In a test tube rack holder for use in clinical laboratories comprising a test tube rack equipped with a plurality of holes for holding test tubes containing test samples, means providing a rack plate for receiving and supporting said test tube rack said rack plate having arranged thereon a plurality of indicator lamps corresponding to the test tube holding holes on the rack, means for selectively illuminating said indicator lamps to identify particular test tubes to an operator, and base means for supporting said rack plate from a surface, the improvement comprising hinge means connecting said rack plate to said base means while allowing said rack plate to be adjusted through a



range of inclinations relative to said base means, and means for selectably locking said rack plate at multiple different inclinations within said range, whereby the conditions for observation of the illumination emitted by said lamps can be optimized for different operator positions.

5,284,624

METHOD OF, AND APPAPARATUS FOR, TESTING AND MEASURING BLOOD CLOTTING TIME

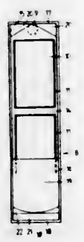
Holger Behnk, Holitzberg 61, D-2000 Hamburg 62, Fed. Rep. of Germany

Division of Ser. No. 428,358, Oct. 27, 1989. This application Aug. 31, 1992, Ser. No. 938,210

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837078.6

Int. Cl.[5] **B01L** *3/00;* **G01N** *15/05*

U.S. Cl. 422—102 **13 Claims**



1. Measuring cuvette into which blood or blood plasma and a reagent are introduced for testing and measuring blood clotting time, comprising a bottom wall having a flat, substantially horizontal, elongated internal surface having a cross sectional area comprising a first portion and a second portion for accepting liquid plasma and liquid reagent, a pair of opposite, generally parallel elongated side walls, opposite first and second end walls including first and second internal end surfaces each having a substantially smaller cross sectional area than the elongated internal surface, an upper wall connected to the second end wall and the elongated side walls, the upper wall having an opening formed therein for receiving plasma on said first portion of said elongated internal surface and reagent on said second portion of said elongated internal surface, means formed on the elongated internal surface for preventing the plasma on the first portion and the reagent on the second portion from flowing together until the cuvette is pivoted, and a magnetically attracted stirring element disposed in the cuvette for promoting mixing of the plasma and reagent when the cuvette is pivoted.

5,284,625

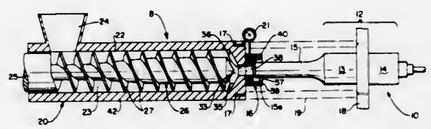
CONTINUOUS ULTRASONIC DEVULCANIZATION OF VULCANIZED ELASTOMERS

Avraam Isayev, and Jianhua Chen, both of Akron, Ohio, assignors to The University of Akron, Akron, Ohio

Continuation-in-part of Ser. No. 902,074, Jun. 22, 1992, Pat. No. 5,258,413. This application Jun. 16, 1993, Ser. No. 78,519

Int. Cl.[5] **B06B** *1/00;* **C08F** *2/56*

U.S. Cl. 422—128 **14 Claims**



1. An ultrasonic reactor comprising:

(a) a reactor having at least one reactor exit bore capable of continuously feeding vulcanized or crosslinked elastomeric particles under pressure to the reactor exit bore;

(b) at least one ultrasonic horn;

(c) at least one attachment means for attaching each ultrasonic horn to the reactor and in a linear relationship to a longitudinal axis of the reactor exit bore;

(d) an ultrasonic wave generator at one end of each ultrasonic horn, a diameter of the wave generator being larger than the diameter of the reactor exit bore, the ultrasonic wave generator additionally being positioned at a clearance distance as measured along a longitudinal axis between a transverse plane demarking a termination of the reactor exit bore and a transverse plane demarking a tip of the ultrasonic wave generator, sufficient to effect devulcanization or decrosslinking of the elastomer.

5,284,626

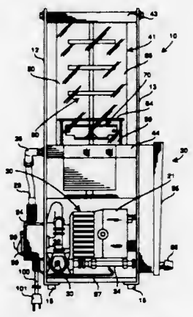
POLYMER ACTIVATION APPARATUS

Carl L. Brazelton, Kankakee; Troy C. Litherland, Bradley, both of Ill., and Derek J. Green, Wellington, England, assignors to Stranco, Inc., Bradley, Ill.

Continuation of Ser. No. 657,829, Feb. 19, 1991, Pat. No. 5,252,635, which is a division of Ser. No. 595,313, Oct. 10, 1990, Pat. No. 5,061,456, which is a division of Ser. No. 89,344, Aug. 25, 1987, abandoned. This application Jul. 9, 1992, Ser. No. 911,172

Int. Cl.[5] **C08F** *6/06;* **C08J** *3/03*

U.S. Cl. 422—135 **10 Claims**



1. Apparatus for receiving a polymer and water and activating and dissolving the polymer comprising:

a mixing vessel defining a first processing zone and a second processing zone, said mixing vessel including baffle means for isolating said first processing zone from said second

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processing zone, said baffle means forming an outlet, said second processing zone being in communication with said first processing zone through said outlet,

means for supplying a polymer to said first processing zone of said mixing vessel,

means for supplying water to said first processing zone of said mixing vessel,

means for retaining the polymer in said first processing zone for a first contact time,

means for subjecting the polymer in said first processing zone to a first shear rate while it is retained in said first processing zone by rotating a first impeller means in said first processing zone to initiate dissolution and activation of the polymer in the water by moving the polymer in a direction away from said outlet,

means for moving the polymer through said first processing zone and said outlet, and into said second processing zone of said mixing vessel,

means for retaining the polymer in said second processing zone for a second contact time, the second contact time being greater than the first contact time,

means for subjecting the polymer in said second processing zone to a second shear rate while it is retained in said second processing zone by rotating a second impeller means in said second processing zone said second shear rate further dissolving and activating the polymer to form an active polymer solution, said second shear rate being lower than said first shear rate

means for discharging the active polymer solution from said second processing zone.

5,284,627

POLYMER ACTIVATION APPARATUS

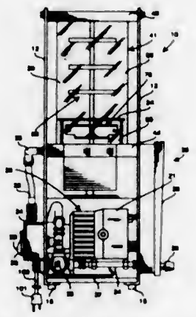
Carl L. Brazelton, Kankakee; Troy C. Litherland, Bradley, both of Ill.; J. Derek Green, Wellington, England, and Yong H. Kim, Flossmoor, Ill., assignors to Stranco, Inc., Bradley, Ill.

Division of Ser. No. 370,375, Jun. 22, 1989, Pat. No. 5,164,429, which is a continuation-in-part of Ser. No. 89,344, Aug. 25, 1987, abandoned. This application Aug. 19, 1992, Ser. No. 932,351

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] **C08F** *2/02*

U.S. Cl. 422—135 **11 Claims**



1. Apparatus for receiving a polymer emulsion and water and activating and diluting the polymer emulsion comprising:

a mixing vessel forming a first mixing zone and a second mixing zone;

baffle means for isolating said first mixing zone from said second mixing zone, said baffle means including outlet means for allowing transfer of a diluted solution of polymer emulsion and water from said first mixing zone to said second mixing zone, said first mixing zone being in communication with said second mixing zone through said outlet means;

means for placing a polymer emulsion and water in said first mixing zone of said mixing vessel to form the diluted polymer solution;

means for agitating the solution in said first mixing zone to create a first mean shear rate in water of between about 1,200/sec. and 9,000/sec. for between about 6 and 120 seconds;

first impeller means for applying said first mean shear rate in said first mixing zone;

second impeller means for agitating the solution in said second mixing zone to create at least one additional mean shear rate of between about 18% and 40% of said first mean shear rate for between about 150% and 400% of the time the solution is subjected to said first mean shear rate;

whereby the solution reaches substantially its maximum viscosity in less than about 15 minutes of aging time, without excessively damaging the polymer structures in said solution.

5,284,628

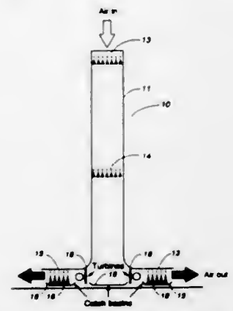
CONVECTION TOWERS

Melvin L. Prueitt, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 9, 1992, Ser. No. 942,490

Int. Cl.[5] **B01D** *50/00, 53/34, 47/06;* **F03G** *7/04*

U.S. Cl. 422—168 **4 Claims**



1. A convection tower for cleaning polluted air and generating electrical power comprising:

a structure having a tower section integral with a skirt section, said skirt section being formed into individual tunnels;

one or more first water sprayer means disposed in said tower section for providing fine mist water droplets for evaporative cooling of air in said tower section of said structure to create a flow of said air downward through said structure and for removing pollution from said air;

a plurality of turbine generator means in said individual tunnels of said skirt section of said structure for generating electrical power from said flow of said air through said structure; and

a plurality of second water sprayer means disposed in said individual tunnels of said skirt section of said structure for removing any remaining pollutants and said fine mist water droplets from said flow of air through said structure.

5,284,629

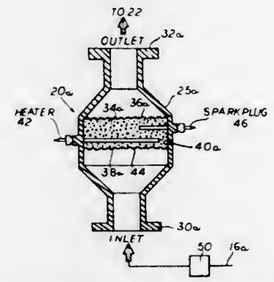
OIL VAPOR EXTRACTION SYSTEM

Charles A. Henderson, 1415 S. Gables Blvd., Wheaton, Ill. 60187, and Terry D. Henderson, 1100 Queens Ct., Naperville, Ill. 60540

Division of Ser. No. 636,769, Jan. 2, 1991, Pat. No. 5,182,086, which is a continuation-in-part of Ser. No. 408,439, Sep. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 223,706, Jul. 22, 1988, abandoned, which is a continuation of Ser. No. 26,955, Mar. 17, 1987, abandoned, which is a division of Ser. No. 857,712, Apr. 30, 1986, abandoned. This applicatioo Oct. 14, 1992, Ser. No. 960,727

Int. Cl.[5] **B01D** *50/00*

U.S. Cl. 422—171 **11 Claims**



1. A method for removing compressor oil from a stream of compressed air for use in a compressor air supply and delivery system of the type wherein a supply of compressed air is provided by an air compressor, the method comprising: delivering a stream of compressed air from a discharge outlet of an air compressor to a catalytic oxidation system comprising a high-activity catalyst effective at an operating temperature below about 500° F. (260° C.); and passing said compressed air from said air compressor discharge outlet through said catalytic oxidation system for oxidizing said oil into carbon dioxide and water to thereby substantially remove said oil from the compressed air stream, prior to said compressor air reaching downstream portions of a delivery system and any connected utilization apparatus.

5,284,630

APPARATUS FOR PRODUCTION OF ACETYLENE

James W. Bunger; Hoil Ryu, and Prasad A. V. Devineni, all of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Division of Ser. No. 704,713, May 17, 1991, Pat. No. 5,082,644, which is a continuation of Ser. No. 434,270, Oct. 30, 1989, abandoned. This application Oct. 11, 1991, Ser. No. 775,214

Int. Cl.[5] **B01J** *10/00;* **B03B** *5/28;* **C10H** *15/00, 21/16*

U.S. Cl. 422—189 **14 Claims**

1. An apparatus for the production of acetylene which comprises;

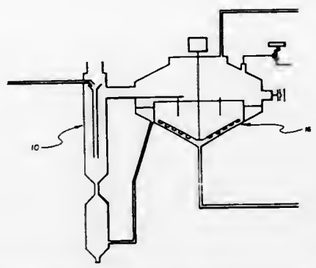
(a) an entrained flow primary reactor for reacting particulate calcium carbide with water by contacting the particulate calcium carbide with water in an upward flow of water of sufficient velocity to entrain calcium hydroxide reaction product and partially reacted particles of calcium carbide in the upward flow of water,

(b) means for continuously charging particulate calcium carbide to the primary reactor,

(c) a secondary reactor which provides an essentially plug-flow reaction environment between calcium carbide and water,

(d) means for continuously conveying the calcium hydroxide reaction product and partially reacted particulate calcium carbide entrained in the upward flow of water in the primary reactor to the secondary reactor,

(e) means for conveying acetylene gas from the primary reactor and the secondary reactor, and



(g) means for removing calcium hydroxide from the secondary reactor.

5,284,631

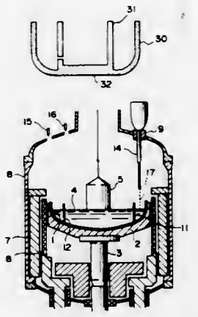
CRUCIBLE FOR MANUFACTURING SINGLE CRYSTALS

Takeshi Kaneto; Akio Fujibayashi; Yoshinobu Shima, and Kenji Araki, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 816,814, Jan. 3, 1992, abandoned. This application Jan. 7, 1993, Ser. No. 2,126

Int. Cl.[5] **C30B** *35/00*

U.S. Cl. 422—248 **4 Claims**



1. A silicon single crystal manufacturing apparatus comprising a crucible containing molten silicon and a partition member arranged inside said crucible in contact with a bottom portion of said crucible for forming a single crystal growing section from which a single crystal is pulled, said bottom portion of said crucible having a thickness which is not less than 1.3 times and not greater than 4 times the thickness of said partition member and a porosity, at least where said bottom portion is in contact with molten silicon, of greater than the porosity of said partition member with said partition member having a porosity of not greater than 0.2% and at least one hole in a lower part thereof.

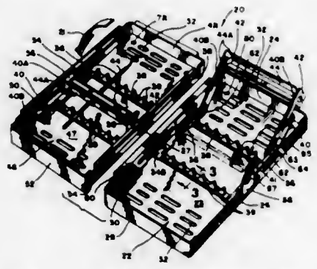
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,632

TWO-TIERED STERILIZATION AND STORAGE CASSETTE

James M. Kudla, Mount Prospect, and Roy E. Rilhimaki, Libertyville, both of Ill., assignors to Hu-Friedy Mfg. Co., Inc., Chicago, Ill.

Continuation of Ser. No. 731,422, Jul. 17, 1991, Pat. No. 5,215,726. This application Dec. 24, 1992, Ser. No. 996,679
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] A61L 2/06
U.S. Cl. 422—297 20 Claims



1. A sterilization and storage cassette comprising:
first and second trays connectable with each other, wherein each of said trays has at least one instrument locating rail, wherein each of said at least one rail has first and second ends, and first and second rotatable clamping members wherein each of said members is affixed to a said respective tray at first and second pivot points adjacent to said ends and wherein each of said rotatable clamping members is independently rotatable relative to its respective tray about an axis that extends parallel to said at least one rail from a secured position to an open position.

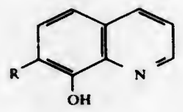
5,284,633

SOLVENT EXTRACTION OF PRECIOUS METALS WITH HYDROXYQUINOLINE AND STRIPPING WITH ACIDIFIED THIOUREA

David L. Gefvert, Dublin, Ohio, assignor to Sherex Chemical Co., Inc., Dublin, Ohio

Filed Nov. 12, 1992, Ser. No. 975,504
Int. Cl.[5] C01G 55/00; C22B 11/00; B01D 11/00
U.S. Cl. 423—22 12 Claims

1. In the extraction and separation of one or more precious metals from a dilute aqueous chloride feed solution thereof which also contains contaminant metal values, by contacting said feed solution with a liquid ion exchange reagent to load said one or more precious metals and contaminant metal values and stripping said one or more precious metals from the reagent, the improvement comprising:
a) extracting the one or more precious metals with a single solvent extraction reagent under conditions effective to form a chelate between said reagent and said one or more precious metals wherein said single solvent extraction reagent comprises a 7-substituted-8-hydroxyquinoline compound or derivative thereof having the formula:



wherein R is a linear, branched or cyclic alkyl, alkenyl, vinyl, aryl, cycloalkyl, or cycloalkenyl group, containing from about 6 to about 20 carbon atoms;
b) scrubbing said contaminant metal values from the precious metal loaded reagent; and
c) stripping the single solvent extraction reagent with acidified thiourea solution to recover one or more precious metals.

5,284,634

PURIFICATION OF BAYER PROCESS LIQUORS USING CATIONIC POLYMERIC QUATERNARY AMMONIUM SALTS

Michael G. Stromloger, Dekalb, and John T. Malito, Oswego, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jan. 14, 1993, Ser. No. 4,354
Int. Cl.[5] B01D 21/01
U.S. Cl. 423—130 8 Claims

1. A method for removing humate organic impurities from a Bayer process liquor and Bayer process slurries containing dispersed solids, said solids generated either by the Bayer process or added thereto, the method comprises the steps of adding to the liquor a water-soluble, vinylic cationic polymer including diallyl dimethyl ammonium salt monomer having and Intrinsic Viscosity of from 1.5 to 4.0 in an amount of from 1 to about 500 parts per million, whereby, the polymer, the solids, and humate-type organic impurities precipitate from the liquor, and removing the precipitate from the liquor.

5,284,635

PROCESS FOR THE ELIMINATION OF HYDROGEN SULFIDE BY USING WATER-IN-OIL EMULSIONS

Frédéric Mabire, Arcueil, France, assignor to Societe Francaise Hoechst, Puteaux, France

Division of Ser. No. 577,669, Sep. 5, 1990, Pat. No. 5,223,175. This application Jan. 25, 1993, Ser. No. 8,463
Claims priority, application France, Sep. 5, 1989, 89 11586
Int. Cl.[5] C01B 17/16
U.S. Cl. 423—226 15 Claims

1. A process for the removal of hydrogen sulphide present in a composition comprising treating said composition with a water-in-oil emulsion,
wherein said emulsion comprises about:
20–80% by weight of a dispersed aqueous solution comprising about 20 to 70% by weight of an aldehyde selected from the group consisting glyoxal, formaldehyde, glutaraldehyde, glycolaldehyde and glyoxylic acid, and about 80 to 30% by weight of water and at least one of acetic acid or sodium acetate in a quantity sufficient to provide a buffered pH of 5.5±1.5 and,
80 to 20% by weight of a continuous oil phase comprising about 90 to 99% by weight of one or more saturated and liquid C_6–C_{16} hydrocarbons, and about 10 to 1% by weight of an emulsifying system comprising one or more water-in-oil emulsifying agents.

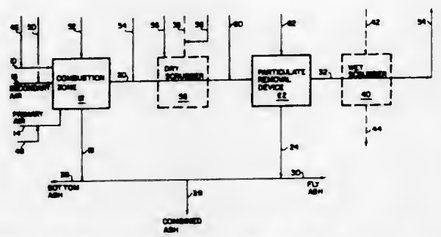
5,284,636

METHOD OF STABILIZING HEAVY METALS IN ASH RESIDUES FROM COMBUSTION DEVICES BY ADDITION OF ELEMENTAL PHOSPHORUS

Stephen P. Goff, Orefield; John J. Lewnard, Emmaus, and Shoou-I Wang, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 25, 1992, Ser. No. 857,363
Int. Cl.[5] C01B 21/00, 17/00
U.S. Cl. 423—235 16 Claims

1. A process for the stabilization of heavy metals n ash produced in a combustion system having a combustion zone in which a combustible material and an oxygen-containing material are combusted to produce at least a gaseous combustion product containing solid particulate material and a downstream particulate separation zone for removing at least a portion of such solid particulate material from the gaseous combustion product, which process comprises introducing into the system at a point no further downstream than the particulate separation zone a phosphorous oxide specie which is formed in situ by adding elemental yellow phosphorus to a point in the system such that the elemental phosphorus will be



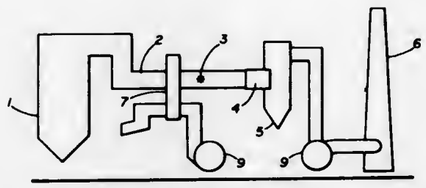
subject to a temperature greater than about 60° F. while in the presence of a gaseous mixture having an oxygen concentration of at least about one per cent by volume for a period of time greater than about one second and then subjecting the gaseous combustion product to particulate separation to remove particulate material.

5,284,637

DRY SORBENT REACTIVATION PROCESS

Randy L. Merritt, Birmingham; Larry G. Felix, Pelham, and John P. Gooch, Birmingham, all of Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Sep. 26, 1991, Ser. No. 765,958
Int. Cl.[5] B01J 8/00; C01B 17/00
U.S. Cl. 423—244.07 8 Claims



1. A dry scrubbing flue gas desulfurization process, wherein the flue gas comprises sulfur oxides, comprising the steps of:
(a) injecting a slurry into the flue gas to form particles of slurry solids wherein the slurry comprises effective amounts of water and a calcium-based sorbent in a stoichiometric ratio of sorbent to sulfur of from about 0.5 to 1.0 to about 3.0 to 1.0, wherein the injection of the slurry causes evaporative cooling of the flue gas;
(b) cooling the flue gas to between about 0° F. and about 45° F. above the adiabatic saturation temperature of the flue gas in a secondary cooling step after most of the water in the injected slurry has evaporated;
(c) passing the flue gas through a filter; and
(d) discharging the flue gas to the atmosphere.

5,284,638

SYSTEM AND METHOD FOR REMOVING HYDROCARBONS FROM GASEOUS MIXTURES USING MULTIPLE ADSORBING AGENTS

William Hertl; Irwin M. Lachman, and Mallanagonda D. Patil, all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 5, 1992, Ser. No. 925,026
Int. Cl.[5] B01D 53/02
U.S. Cl. 423—245.1 5 Claims

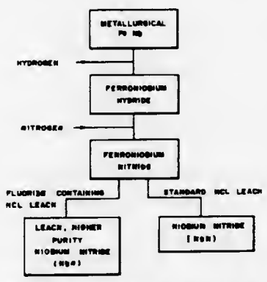
1. A method for removing low molecular weight hydrocarbons from a gaseous mixture, the method comprising:
a) selecting a plurality of agents which are effective for adsorbing said hydrocarbons in the temperature range of maximum adsorption rates for said hydrocarbons within said temperature range, wherein for at least two of said adsorbing agents, the temperatures at which the maximum adsorption rates for said hydrocarbons occur, are different from one another, wherein one adsorbing agent is a first temperature adsorbing agent having a maximum adsorption rate which occurs at a first temperature of room temperature to about 160° C., the first temperature adsorbing agent being selected from the group consisting of ZSM-5 zeolite, beta zeolite, and combinations thereof, wherein one adsorbing agent is a second temperature adsorbing agent having a maximum adsorption rate which occurs at a second temperature of about 90° C. to about 175° C., the second temperature adsorbing agent being ultra stable Y zeolite, and wherein one absorbing agent is a third temperature adsorbing agent having a maximum adsorption rate which occurs at a third temperature of at least about 110° C., the third temperature adsorbing agent being mordenite; and
b) contacting said adsorbing agents with said gaseous mixture at said temperature range to cause adsorption of said hydrocarbons.

5,284,639

METHOD FOR THE PREPARATION OF NIOBIUM NITRIDE

James H. Sommers, Albany, and Lloyd J. Fenwick, Corvallis, both of Oreg., assignors to Teledyne Industries, Inc., Albany, Oreg.

Continuation of Ser. No. 721,887, Jun. 27, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 908,797
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C01B 21/068, 21/076, 21/06
U.S. Cl. 423—344 10 Claims



1. A process for the preparation of metal nitrides wherein the metal for forming said nitrides is contained in an alloy selected from the group consisting of ferro alloys and nickel alloys comprising the steps of:
a) reacting said alloy with hydrogen containing gas in the absence of oxygen, at a sufficient temperature and a pressure up to about 15 psig and for a sufficiently long period of time to form a friable hydrided product,

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b) reacting the hydrided product from step a) in a nitrogen-containing gas atmosphere in the absence of oxygen at a sufficiently high temperature and a sufficiently high pressure, for a sufficiently long period of time to form iron or nickel nitride and alloy metal nitride compounds,

c) separating the iron or nickel nitrides formed from the metal nitride composition formed to recover the metal nitride.

5,284,640

GRAPHITE CHUCK HAVING A HYDROGEN IMPERVIOUS OUTER COATING LAYER

Michael F. Jernegan, Ritzville, and Lyle C. Winterton, Moses Lake, both of Wash., assignors to Advanced Silicon Materials, Inc., Moses Lake, Wash.

Continuation of Ser. No. 456,730, Dec. 26, 1989, abandoned. This application Sep. 17, 1992, Ser. No. 947,882

Int. Cl.[5] C01B *33/03*

U.S. Cl. 423—349 **22 Claims**



1. A method for making substantially carbon-free polycrystalline silicon which comprises pyrolyzing a gaseous silicon compound on a heated starter filament that consists essentially of silicon, tungsten, or tantalum, and that is mounted on a graphite chuck, said heated starter filament being maintained at a temperature sufficient to effect decomposition of the gaseous silicon compound to form polycrystalline silicon which is deposited thereon and by-product hydrogen, wherein the said graphite chuck is provided with a hydrogen impervious outer coating layer to prevent the by-product hydrogen from reacting with the graphite to form methane which decomposes as carbon on the deposited polycrystalline silicon.

5,284,641

METHOD OF PRODUCING SILICON USING AN ELECTRI ARC LOW SHAFT FURNACE

Gert-Wilhelm Lask, Berus, Fed. Rep. of Germany, assignor to Applied Industrial Materials Corporation, Deerfield, Ill.

Filed Jul. 27, 1992, Ser. No. 923,183

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126254; Aug. 8, 1991, 4126255

Int. Cl.[5] C01B *33/02*

U.S. Cl. 423—350 **2 Claims**

1. In a method of producing silicon by reduction of quartz in an electric-arc low shaft furnace which comprises the steps of:

(a) forming raw material compacts which comprise fine grained quartz and a stoichiometric excess of fine grained carbon carrier;

(b) charging a low shaft electric arc furnace with said compacts in admixture with pieces of quartz;

(c) effecting a two stage reaction in said furnace whereby in a first process stage at an upper portion of said shaft furnace, quartz in said compacts undergoes reduction to form silicon carbide to produce a coke-like structure with open quartz comprising the silicon carbide and unreacted fine grained carbon carrier, and in a second process stage at a lower portion of said furnace said silicon carbide reduces molten quartz to silicon while silicon monoxide is formed by reduction of the molten quartz with the unreacted carbon carrier and rises in the charge of said furnace:

the improvement wherein carbide-forming magnesium silicate is added in the first process stage to said compacts, said magnesium silicate being reduced by the fine grained carbon carrier to form magnesium carbide and silicon monoxide at a temperature below the melting temperature of magnesium silicate within said compacts in the upper portion of said shaft furnace, following which the magnesium carbide reacts with the silicon monoxide to form elemental silicon which reacts with unreacted fine grained carbon carrier to form silicon carbide for use in the second process stage to form silicon; and

wherein the amount of said magnesium silicate is so selected that the silicon yield is increased by at least 5% by weight over a process operating without said magnesium silicate.

5,284,642

ALKALI OR ALKALINE EARTH METAL FERRATES, THEIR PREPARATION AND THEIR INDUSTRIAL APPLICATIONS

Omer J. Evrard, 13, Avenue du Vieux Chateau, 54500 Van Doeuvre; Rene A. Gerardin, Villers-les-Nancy; Nathalie Schmitt, Nancy, and Jean-Luc Evrard, Strasbourg, all of France, assignors to Centre International de l'Eau de Nancy (NAN.C.I.E.) and Omer Evrard, both of Vandoeuvre-les-Nancy, France

PCT No. PCT/FR90/00775, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO91/07352, PCT Pub. Date May 30, 1991

PCT Filed Oct. 26, 1990, Ser. No. 855,706

Claims priority, application France, Nov. 8, 1989, 89 14658

Int. Cl.[5] C01G *49/02*

U.S. Cl. 423—594 **1 Claim**

1. Ferrates in solid state having the formula

$$M\,(Fe,\,X)O_4$$

in which M designates two atoms of Na or K or one atom of Ca or Ba, and X is an atom selected from the group consisting of Al, Si, P, S, Cl, Cr, Mo, Mn and a mixture thereof, said ferrates being isomorphs of ferrates of the formula $M\,FeO_4$, in which M has the same definition as above, wherein the ratio $Fe/(X+Fe)$ (number of atoms of iron over that of the atoms of $(X+Fe)$ is between 0.5 and 0.9.

5,284,643

GALLIUM-CONTAINING ZEOLITE MCM-22

Roger A. Morrison, Lambertville, N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 10, 1992, Ser. No. 988,583

Int. Cl.[5] C01B *33/20*

U.S. Cl. 423—705 **5 Claims**

1. A gallium-containing MCM-22 zeolite having a composition comprising the molar relationship

$$X_2O_3:(n)YO_2$$

where n is at least about 10, X is at least one trivalent element, and Y is at least one tetravalent element, wherein X comprises gallium.

5,284,644

FUNCTIONALIZED POLYAMINE CHELANTS AND RHODIUM COMPLEXES THEREOF FOR CONJUGATION TO ANTIBODIES

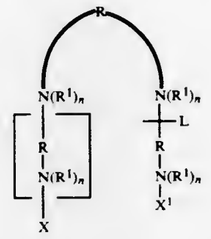
William J. Kruper, Jr., 230 Barden Rd., Sandford, Mich. 48657; William A. Fordyce, 4103 E. Washington St., Midland, Mich. 48640; Douglas K. Pollock, 4526 James Dr., Midland, Mich. 48640; Michael J. Fazio, 4617 Forestview Dr., Midland, Mich. 48640; Muthiah N. Inbaskaran, 5800 Lamplighter La., Midland, Mich. 48640, and Ramaiah Muthyala, 699 Apache La., Mendota Hts., Minn. 55120

Continuation-in-part of Ser. No. 65,739, Jun. 24, 1987, Pat. No. 4,994,560. This application Nov. 28, 1990, Ser. No. 619,153

Int. Cl.[5] A61K *43/00, 49/00, 39/00*

U.S. Cl. 424—1.53 **10 Claims**

1. A rhodium chelate/antibody composition comprising a rhodium complex, in which at least a portion of the rhodium is radioactive rhodium, with a compound of the formula:



wherein

each R independently represents a straight-chained or branched alkylene group of 2 to 10 carbon atoms inclusive, with the proviso that for any two adjacent nitrogens connected by an R group the R group must provide at least three single bonds between the nitrogens it connects;

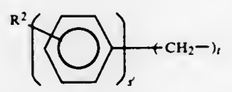
each R^1 independently represents hydrogen or a straight-chained or branched alkylene group of 1 to 10 carbon atoms inclusive;

X and X^1 represent H, or X and X^1 taken together complete a bridging straight-chained or branched alkylene group of 2 to 10 carbon atoms inclusive or a bridging aralkylene group wherein the alkylene is a straight-chained or branched alkylene group of 2 to 10 carbon atoms inclusive, with the proviso that when X and X^1 are taken together the group it represents must provide at least three single bonds between the adjacent nitrogens it connects;

n is an integer of 0 or 1, provided that when the L group is bonded to the same nitrogen atom, n must be 0, otherwise n must be 1;

y is an integer of 1 through 3 inclusive; and

L is a linker/spacer group covalently bonded to, and replaces one hydrogen atom of, any one of the nitrogen or carbon atoms, said linker/spacer group being represented by the formula



wherein

s' represents an integer of 0 or 1;

t represents an integer of 0 through 20 inclusive;

R^2 represents an electrophilic or nucleophilic moiety which allows for covalent attachment to an antibody or fragment thereof, or a synthetic linker which can be attached to an antibody or fragment thereof;

wherein R^2 is covalently attached to an antibody or antibody fragment; and a pharmaceutically acceptable carrier.

5,284,645

FLUOROCARBON EMULSIONS CONTAINING AMINO ACID BASED ANTI-INFLAMATORY AGENTS AND BUFFER SYSTEMS

David M. Long, Jr., El Cajon, Calif., assignor to Alliance Pharmaceutical Corp., San Diego, Calif.

Continuation-in-part of Ser. No. 82,846, Aug. 5, 1987, Pat. No. 4,987,154. This application Oct. 4, 1989, Ser. No. 417,796

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] A61K *49/04, 31/40, 31/415, 31/435*

U.S. Cl. 424—5 **21 Claims**

1. A fluorocarbon emulsion suitable for use in the tissues, organs and cavities of the body, comprising:

an aqueous phase;

a effective amount of a fluorocarbon;

an emulsifying agent; and

at least one anti-inflammatory agent which is imidazole, a drug having a chemical structure which includes an imidazolyl group, or combinations thereof.

5,284,646

HEPATOCYTE SPECIFIC RECEPTOR MEDIATED ENDOCYTOSIS TYPE MAGNETIC RESONANCE IMAGING CONTRAST AGENTS

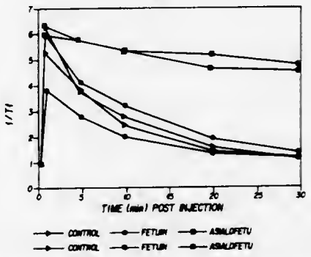
Edward T. Menz, Quincy, Mass.; Jeffrey M. Rothenberg, Gary, Ind.; Ernest V. Groman, Brookline, Mass., and Lee Josephson, Arlington, Mass., assignors to Advanced Magnetics Inc., Cambridge, Mass.

Continuation of Ser. No. 384,991, Jul. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 228,640, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 67,586, Jun. 26, 1987, Pat. No. 4,827,945, which is a continuation-in-part of Ser. No. 882,044, Jul. 3, 1986, Pat. No. 4,770,183. This application Oct. 3, 1991, Ser. No. 771,876

The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.

Int. Cl.[5] G01N *24/08*; A61K *37/10*

U.S. Cl. 424—9 **27 Claims**



1. A method for obtaining an enhanced MR image of an organ or tissue of an animal or human subject which comprises:

(a) administering to such a subject an effective amount of a colloidal biodegradable superparamagnetic contrast agent in a physiologically acceptable medium such that an image-enhancing amount of such contrast agent can be internalized by hepatocytes of the liver by receptor mediated endocytosis, said contrast agent comprising (1) biodegradable superparamagnetic metal oxide particles, physically or chemically joined with (2) a ligand,

wherein such metal oxide particles;

comprise one or more individual biodegradable superparamagnetic metal oxide crystals, and are capable of being biodegraded in such subject, as evidenced by a return of proton relaxation rates of the liver to preadministration levels, within 30 days of administration; and

wherein such ligand:

comprises a terminal galactose moiety,

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is recognized and internalized, thereby permitting said metal oxide particles to be internalized, by hepatocytes of the liver by receptor mediated endocytosis, and

is selected from the group consisting of (i) a glycoprotein and (ii) a macromolecular species conjugate, which macromolecular species conjugate comprises two macromolecular species, a first macromolecular species which is a glycoprotein and a second macromolecular species which is physically or chemically joined with the metal oxide particles and conjugated to the first macromolecular species; and

(b) recording such MR image.

5,284,647

MESOTETRAPHENYLPORPHYRIN COMPLEX COMPOUNDS, PROCESS FOR THEIR PRODUCTION AND PHARMACEUTICAL AGENTS CONTAINING THEM

Ulrich Niedballa; Hanns-Joachim Weinmann; Heinz Gries; Jürgen Conrad; Sabina Hofmann, and Ulrich Speck, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 325,324, Mar. 17, 1989, abandoned. This application Jan. 9, 1992, Ser. No. 817,892

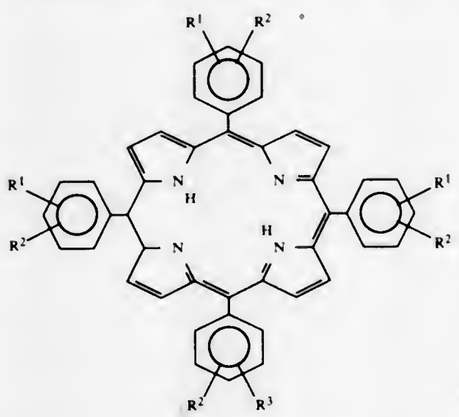
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809671.4

Int. Cl.[5] **A61K** *31/555, 31/40;* **G01N** *24/08*

U.S. Cl. 424—81 **33 Claims**

1. In a diagnostic method of conducting magnetic resonance imaging wherein a patient is subjected to said imaging, the improvement comprising administering to said patient a pharmaceutical composition containing a pharmaceutically acceptable carrier and at least one porphyrin compound comprising:

(a) a mesotetraphenylporphyrin ligand of formula I



in which

R^1 is CO—A, SO_2—A, OR^5, R^5, W or NH—W;

A is OH, OR^4, NR^5R^6 or $—(NH)_x—\{Q—(NH)_y\}_w—W$;

R^4 is C_1-C_6-alkyl or benzyl;

R^5 and R^6 are, independent of one another, hydrogen, saturated, unsaturated, straight-chain, branched-chain or cyclic C_{1-16}-hydrocarbon radical optionally substituted by one or more hydroxy or lower alkoxy groups, or when R^6 is hydrogen, R^5 can be C_{6-10}-aryl or C_{6-10}-aryl-C_{1-6}-alkyl, each optionally substituted by one or more di-C_1-C_6-alkylamino groups or by one or more C_1-C_6-alkoxy groups, or

R^5 and R^6, together with the nitrogen atom, can form a saturated or unsaturated 5- or 6-membered ring that optionally contains another nitrogen, oxygen, or sulfur atom or a carbonyl group, and that is optionally substituted by one or more of C_1-C_6-alkyl, C_1-C_5-hydroxyalkyl, optionally hydroxylated or C_1-C_6-alkoxylated C_2-C_6-alkanoyl, hydroxy, carbamoyl, carbamoyl-C_1-C_6-alkyl, carbamoyl substituted at the carbamoyl-nitrogen by one or two C_1-C_6-alkyl groups which can also be linked to form a ring optionally containing an oxygen atom, C_1-C_6-alkanoylamino, or C_1-C_6-alkylamino;

x and y each independently is 0, 1 or 2;

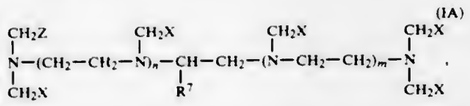
w is 0 or 1;

Q is C_1-C_{20}-alkylene;

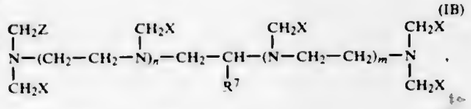
W is hydrogen or V—K;

V is a single bond or a straight-chain, branched-chain, cyclic, aliphatic, aromatic or arylaliphatic hydrocarbon radical having up to 20 C atoms optionally containing —NH—, —O—, —S—, —N—, —CO—O—, —O—CO—, $(O—CH_2CH_2—)_{poly}$, —NH—CO—, —CO—NH—, —NH—NH—, $—C_6H_4—NH—$, $—C_6H_4—O—$ or $—C_6H_4—$ and optionally substituted by hydroxy, mercapto, imino, epoxy, oxo, thioxo and/or amino group(s);

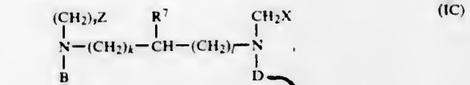
K is hydrogen or a complexing structure of formula IA, IB, IC or ID



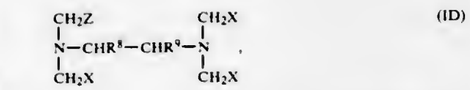
(IA)



(IB)



(IC)



(ID)

n and m each independently is 0, 1, 2, 3, or 4, and n and m together add to no more than 4;

k is 1, 2, 3, 4 or 5;

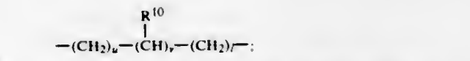
l is 0, 1, 2, 3, 4 or 5;

q is 0, 1 or 2;

s is 0 or 1;

X is —COOH;

B, D and E, which are the same or different, each are



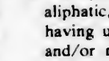
R^{10} is hydrogen or straight-chain, branched-chain, cyclic, aliphatic, aromatic or arylaliphatic hydrocarbon radical having up to 20 C atoms optionally containing oxygen and/or nitrogen atom(s) and optionally substituted by hydroxy and/or amino group(s);

u is 0, 1, 2, 3, 4 or 5;

v is 0 or 1; and

B, D and E each contain at least 2 and at most 5 carbon atoms in their chain;

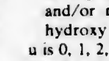
Z is



or X;

R^7 is a direct bond or hydrogen;

R^8 and R^9 together form dimethylene- or trimethylene-methine, optionally substituted by 1-2 hydroxy or 1-3 C_1-C_4-alkyl groups, provided that Z is



only when R^7 simultaneously is hydrogen and that Z is X only when R^7 simultaneously is a direct bond and s is 1;

R^2 is hydrogen, fluorine, chlorine, bromine, iodine atom(s), or an R^1, R^4 or OR^4 group;

R^3 is one of the groups defined for R^1;

wherein said mesotetraphenylporphyrin ligand contains at least one complexing structure K of formulae IA-ID; and wherein a portion of the COOH groups can optionally be present in the ester and/or amide form;

(b) at least one ion of an element of atomic numbers 21-29, 42, 44, or 58-70 which is chelated by a complexing structure K of formulae IA-ID or the porphyrin ring, with the proviso that the porphyrin ring does not chelate a metal ion other than Mn ion; and

(c) optionally a cation of a pharmacologically acceptable inorganic and/or organic base, an amino acid, or an amino acid amide.

5,284,648

ALCOHOL-FREE, ORAL RINSE AND PRE-RINSE EMULSIONS METHOD OF PREPRATION AND METHOD OF USE

Robert D. White, 65 Glen Grey Ct., Oakland, N.J. 07436, and Ira D. Hill, Clay Ct., Locust, N.J. 07760

Continuation-in-part of Ser. No. 324,894, Mar. 17, 1989, abandoned, and a continuation-in-part of Ser. No. 325,216, Mar. 17, 1989, abandoned, and a continuation-in-part of Ser. No. 326,179, Mar. 17, 1989, abandoned. This application Oct. 15, 1991, Ser. No. 776,055

Int. Cl.[5] **A61K** *7/16, 7/18, 7/22, 7/26*

U.S. Cl. 424—49 **41 Claims**

1. A substantially clear, freeze-thaw and elevated temperature stable, alcohol-free, oral rinse composition consisting essentially of water and an emulsion of a surfactant and a mouth conditioner, which is:

non-irritating,

alcohol-free

low-foaming, and

microbiologically stable, having:

a. a pH from between about 4 and about 7

b. a viscosity greater than about 1 cps, and

c. an oral cavity residence factor from between about 12 and about 20,

containing:

a. a surfactant in a concentration sufficient to achieve a plaque matrix disrupting effect without altering appreciably the critically balanced microflora of the oral cavity, and

b. a mouth conditioner emulsified in said surfactant;

wherein

a. the concentration of surfactant is from between about 1 and about 5% by weight,

b. the concentration of mouth conditioner is from between about 0.001 and about 0.8% by weight, and

c. the ratio of surfactant to conditioner is from between about 1000:1 and about 10.1;

and wherein:

the surfactant is selected from the group consisting of polyethylene glycol stearate, polyethylene glycol monostearate, coconut monoglyceride sulfonates, block copolymers of polyoxyethylene and polyoxybutylene, allylpolyglycol ether carboxylates, polyethylene derivatives of sorbitan esters, propoxylated cetyl alcohol, block copolymers comprising a congeneric mixture of conjugated polyoxybutylene and polyoxylethylene compounds having as a hysdrophobe a polyoxybutylene polymer of at least 1200 molecular weight, and mixtures thereof; the mouth conditioner emulsified in said surfactant is selected from the group consisting of: silicones, silicone glycol co-polymers, polydimethyl siloxanes, long chain hydrocarbons, normal paraffins having a chain length of 16 carbon atoms or greater, paraffins with several loci of branching and unsaturation and carbowaxes, such that said alcohol-free oral rinse fights plaque via a non-invasive, plaque disrupting mechanism.

5,284,649

DEODORANT GEL STICKS CONTAINING 1-HYDROXY PYRIDINETHIONE ACTIVE

Prem S. Juneja, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 29, 1992, Ser. No. 953,635

Int. Cl.[5] **A61K** *7/32, 7/36*

U.S. Cl. 424—67 **20 Claims**

1. A stable gel stick deodorant composition, essentially free of water, comprising:

(a) an effective amount of a heavy metal salt of 1-hydroxypyridinethione as the deodorant active;

(b) from about 3% to about 20% of a gelling agent selected from the group consisting of sodium and potassium salts of C_{12}-C_{18} fatty acids, and mixtures thereof; and

(c) from about 7% to about 95% of a polar solvent system.

5,284,650

PROCESS FOR MAKING HIGH SOLIDS FABRIC SOFTENERS USING LOW AMOUNTS OF SOLVENTS AND ELIMINATING SIDE REACTIONS

David E. Whittlinger, Janesville, Wis., assignor to Sherex Chemical Co., Inc., Dublin, Ohio

Division of Ser. No. 790,131, Nov. 7, 1991, Pat. No. 5,223,628, which is a continuation of Ser. No. 474,347, Feb. 2, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 972,434

Int. Cl.[5] **A61K** *7/06*

U.S. Cl. 424—70 **18 Claims**

1. A method for manufacturing a cleaning composition with a quaternary ammonium compound, comprising making a mixture of a quaternary ammonium compound and a fatty acid which is substantially free of solvents, fatty acid esters and amine salts by reacting an amine and a quaternizing agent in the presence of a relatively small amount of a solvent based on an alcohol and water to obtain a first mixture of a quaternary ammonium compound, said alcohol and sad water, adding a fatty acid to said first mixture to obtain a second mixture that is relatively fluid and removing said alcohol and said water as a vapor to thereby obtain said mixture of said quaternary ammonium compound and said fatty acid that is substantially free of solvents, fatty acid esters and amine salts

wherein said amine is present in a slight stoichiometric excess based on said quaternizing agent, said alcohol is present in an amount from about 0.1 to about 5% by weight, said water is present in an amount from about 0.25 to about 5% by weight, said amounts of alcohol and water being based on the total amount of amine, quaternizing agent, alcohol, water and fatty acid, said amine and quaternizing agent being reacted in amounts sufficient to provide said quaternary ammonium compound in an amount from about 10% to about 90% by weight, said fatty acid being added in an amount to be present in an amount from about 90% to about 10% by weight, the weight percents of said quaternary ammonium compound and said fatty acid being based on the total amount of quaternary ammonium compound and fatty acid, said

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alcohol and water being sufficiently removed so that a mixture of quaternary ammonium compound and fatty acid is obtained having from about 95% to about 100% of said quaternary ammonium compound and fatty acid,

wherein said amine has the formula:

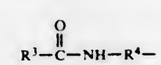


where R, R^1 and R^2 are any of:

(1) a linear or branched chain aliphatic saturated or unsaturated hydrocarbon group having up to about 22 carbon atoms;

(2) a hydroxy lower alkyl group;

(3) an alkyl amino alkylene group of the formula;



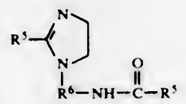
where R^4 is lower alkylene and R^3 is any of a linear or branched chain aliphatic saturated or unsaturated hydrocarbon group having up to about 22 carbon atoms, a hydroxy lower alkyl group, a lower alkoxy group, or a poly(oxyloweralkylene) group;

(4) a lower alkoxy group; or

(5) a poly(oxyloweralkylene) group;

so that at least one of R, R^1 or R^2 is one of said hydrocarbon groups or one of said hydroxy lower alkyl groups;

or said amine is an imidazoline of the formula;

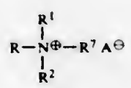


where R^5 is a linear or branched chain aliphatic saturated or unsaturated hydrocarbon group having up to about 22 carbon atoms and R^6 is a lower alkylene group,

said quaternizing agent having the formula $R_{(a-b)}{}^7A$;

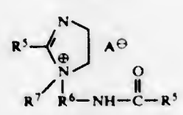
said fatty acid is a linear or branched chain saturated or unsaturated fatty acid having from about 12 to 22 carbon atoms;

said quaternary ammonium compound having the formula:



(I)

or



(II)

where R^7 is a lower alkyl group, cyclo lower alkyl group, benzyl, cyclohexylmethyl, tolyl, xylyl, or napthylmethyl; A is chlorine, iodine, bromine, sulfate, methyl sulfate, carbonate, phosphate, or borate group; a is equal to the valence of A; and b is from 1 to the valence of A; and

combining said mixture with a detergent.

5,284,651

HUMINATES, PROCESS AND USES

Urs N. Riede, Freiburg, and Bernhard Seubert, Edingen, both of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Oct. 14, 1992, Ser. No. 960,898

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134379

Int. Cl.[5] A61K *31/74;* **C08G** *65/38;* **C07G** *17/00*

U.S. Cl. 424—78.06 **5 Claims**

1. In a process for the production of physiologically active, non-toxic, non-teratogenic and non-mutagenic huminates by oxidation of polyvalent phenols in alkaline, aqueous medium at a reaction temperature under 40° C. and subsequent isolation, the improvement comprising the pH of the reaction medium is always over 9.0 during the oxidation and the supply of the oxidant is proportioned so that the content of the formed quinones corresponding to the polyvalent phenol is always less than 0.5% based on the polyvalent phenols used, and that the oxidation reaction is stopped when despite the supply of oxidant, the quinone concentration decreases, the aqueous solutions of the huminate show no Tyndall effect and do not fluoresce.

5,284,652

DERMATOPHYTE VACCINE

Allan C. Pier, P.O. Box 3806, Laramie, Wyo. 82071

Filed Oct. 26, 1990, Ser. No. 603,555

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] A61K *39/00;* **C12N** *1/14*

U.S. Cl. 424—88 **6 Claims**

1. A vaccine for the prophylaxis of *T. equinum* in horses which provides detectable cross-immunity to other equine dermatophyte pathogens and which poses minimum risk of infection to man and other animals exposed to the vaccine comprising a suspension of two strains of killed dermatophytes of *T. equinum* in an effective amount combined with an adjuvant.

5,284,653

FISH VACCINE COMPRISING AN AVIRULENT, INVASIVE BACTERIUM

Hans Wolf-Watz; Anders Norquist, both of Umeå, and Åke Hagström, Hörnefors, all of Sweden, assignors to Symbicom Aktiebolag, Umeå, Sweden

PCT No. PCT/DK89/00075, § 371 Date Oct. 31, 1990, § 102(e) Date Oct. 31, 1990, PCT Pub. No. WO89/09616, PCT Pub. Date Oct. 19, 1989

PCT Flied Apr. 6, 1989, Ser. No. 601,688

Claims priority, application Denmark, Apr. 7, 1988, 1897/88

Int. Cl.[5] A61K *39/02;* **C12P** *21/06;* **C12N** *1/21*

U.S. Cl. 424—92 **31 Claims**

1. A live fish vaccine comprising an avirulent, invasive and immunogenic mutant strain of a fish bacterium selected from the group consisting of a Vibrio species or an Aeromonas species in isolated form, wherein said fish bacterium carries at least one antibiotic-selectable marker and said fish bacterium grows in the presence of an iron chelator, said fish vaccine conferring on fish immunized therewith protection against diseases caused by homologous and heterologous Vibrio and Aeromonas fish pathogens.

5,284,654

METHOD FOR THE TREATMENT OF PARKINSON'S DISEASE

Richard J. Weber, Silver Spring; Robert J. Plunkett, Gaithersburg, both of Md., and Scott E. Ewing, Chicago, Ill., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 401,141, Aug. 31, 1989, abandoned. This application Jun. 3, 1992, Ser. No. 892,485

Int. Cl.[5] A61K *35/14*

U.S. Cl. 424—93 V **3 Claims**

1. A method for treating the dopaminergic neurodegenerative disorder Parkinson's Disease by administering to a locus of a lesion of a patient suffering from said disorder an anti-neurodegenerative effective amount of in vitro activated leukocytes.

5,284,655

SWOLLEN DEMINERALIZED BONE PARTICLES, FLOWABLE OSTEOGENIC COMPOSITION CONTAINING SAME AND USE OF THE COMPOSITION IN THE REPAIR OF OSSEOUS DEFECTS

Simon Bogdansky, Marlboro, and Robert K. O'Leary, Spring Lake, both of N.J., assignors to Osteotech, Inc., Shrewsbury, N.J.

Continuation-in-part of Ser. No. 573,458, Aug. 27, 1990, which is a continuation-in-part of Ser. No. 410,596, Sep. 21, 1989, Pat. No. 5,073,373. This application Feb. 4, 1992, Ser. No. 830,942

Int. Cl.[5] A61K *35/32, 47/26, 47/36*

U.S. Cl. 424—422 **18 Claims**

1. A flowable osteogenic composition which comprises from about 5 to about 90 weight percent swollen demineralized autogenous or allogenic bone particles exhibiting an average increase in volume and/or weight of at least about 10 percent following contact of the unswollen demineralized bone particles with a demineralized bone particle swelling agent and from about 10 to about 95 weight percent of a biocompatible fluid carrier selected from a member of the group consisting of liquid polyhydroxy compound, liquid ester of a polyhydroxy compound, liquid solution of a solid polyhydroxy compound, liquid solution of a solid ester of a polyhydroxy compound and mixtures thereof,

wherein the polyhydroxy compound is selected from the group consisting of acyclic polyhydric alcohols, polyalkylene glycols, non-reducing sugars, sugar alcohols, sugar acids, monosaccharides, disaccharides, water-soluble or water dispersible oligosaccharides, polysaccharides and mixtures thereof.

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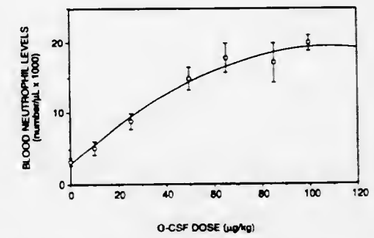
PULMONARY ADMINISTRATION OF GRANULOCYTE COLONY STIMULATING FACTOR

Robert M. Platz, Half Moon Bay; Mark A. Winters, Mountain View, and Colin G. Pitt, Thousand Oaks, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 669,792, Mar. 15, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,208

Int. Cl.[5] A61K *9/14, 45/05;* **C07K** *17/10, 15/14*

U.S. Cl. 424—435 **21 Claims**



1. A method for the pulmonary administration of G-CSF to a mammal, comprising directing a neutrophil stimulating amount of G-CSF into the oral cavity of the mammal while the mammal is inhaling for those is need thereof.

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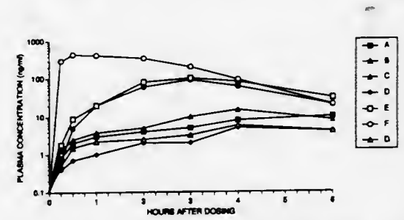
COMPOSITIONS AND METHODS FOR THE SUBLINGUAL OR BUCCAL ADMINISTRATION OF THERAPEUTIC AGENTS

Mou-Ying F. Lu, Lake Bluff, and Thomas L. Reiland, Gages Lake, both of Ill., assignors to Abbott Laboratories, Abott Park, Ill.

Continuation of Ser. No. 750,843, Aug. 26, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,111

Int. Cl.[5] A61K *37/54*

U.S. Cl. 424—435 **11 Claims**



1. A pharmaceutical formulation for the sublingual or buccal administration of 5-oxoPro-His-Trp-Ser-Tyr-D-Leu-Arg-Pro-N-ethylamide Sequence ID No. 2) or pharmaceutically acceptable salt thereof comprising

a) between 1 mg/ml and 100 mg/ml of said 5-oxoPro-His-Trp-Ser-Tyr-D-Leu-Arg-Pro-N-ethylamide or pharmaceutically acceptable salt thereof, and

b) a pharmaceutically acceptable carrier comprising a cosolvent system comprising

from about 50 percent w/v to about 95% w/v of an alcohol selected from the group consisting of ethanol, isopropanol, stearyl alcohol, propylene glycol and polyethylene glycol having a molecular weight of less than about 650 daltons, and

from about 0.5 percent w/v to about 50 percent w/v of an oral mucosal membrane transport enhancing agent selected from the group consisting of peppermint oil, spearmint oil, menthol, pepper oil, eucalyptus oil, cinnamon oil,

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ginger oil, fennel oil, dill oil, hydrochloric acid, phosphoric acid, acetic acid, citric acid, lactic acid, oleic acid, linoleic acid, palmitic acid, benzoic acid, and salicylic acid;

said percentages based upon the total volume of the carrier.

5,284,658

MEANS FOR CONSTRAINING A RUMEN DRUG DELIVERY DEVICE IN A ROLLED CONFIGURATION

Gautam R. Ranade, East Lyme, and Alan C. Curtiss, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 253,018, Oct. 4, 1988, Pat. No. 5,141,810. This application Jan. 9, 1992, Ser. No. 895,959

Int. Cl.[5] **A23K** *1/18*

U.S. Cl. 424—438 **4 Claims**

1. A device for controlled and prolonged release of anthelmintic in a ruminant comprising a resilient and flexible ethylene-vinyl acetate copolymer core sheet sandwiched between a pair of coextensive resilient films of said copolymer, said core sheet containing from about 10 to 75% by weight of a water-soluble morantel salt dispersed therein, said device having one or a plurality of circular macroperforations about 0.5 to 10 mm in diameter symmetrically distributed across the face of said device and extending through said films and said core sheet, the diameter and arrangement of said macroperforations in relation to the thickness of said core sheet being selected to expose sufficient interior edge area of said sheet to afford the desired morantel release rate, said device being constrained in rolled configuration by constraining means releasable in the rumen of an animal, said constraining means being a laminate comprising a water-permeable material having a low friction surface in the presence of water, said material being bonded by means of a water dispersible pressure sensitive adhesive to a first surface of a repulpable tape having first and second surfaces, said tape having a second layer of said water dispersible pressure sensitive adhesive on its second surface.

5,284,659

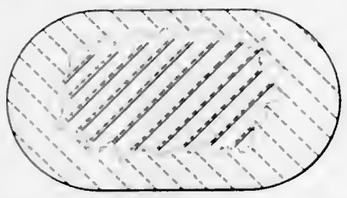
ENCAPSULATED FLAVOR WITH BIOADHESIVE CHARACTER IN PRESSED MINTS AND CONFECTIONS

Subraman R. Cherukuri, 10 Jean Dr., Towaco, N.J. 07082; Krishna P. Raman, 5 Marre Dr., Randolph, N.J. 07869; Gul Mansukhani, 97 Petrus Ave., Staten Island, N.Y. 10312, and Angel M. Orama, 19 Elizabeth Ave., Stanhope, N.J. 07874

Filed Mar. 30, 1990, Ser. No. 502,464

Int. Cl.[5] **A61K** *9/20, 9/28*

U.S. Cl. 424—441 **24 Claims**



1. A two phase system in a single compressed confection tablet for delivering at least one active ingredient in a timed release manner through the buccal route or through releasing a first ingredient into the oral cavity, wherein said phases define separate regions within said compressed confection tablet comprising:

(a) at least 82% by weight of a hydrophilic component comprising a flavor and a matrix selected from the group consisting of polymer systems, gums, gelatin, starches, modified starches and film forming compounds; and

(b) up to 18% by weight of a separate hydrophobic component comprising:

(i) said active ingredient;

(ii) said first ingredient;

(iii) a bioadhesive compound; and

(iv) a hydrophobic encapsulation medium, wherein said first ingredient is selected from the group consisting of flavors, sweeteners and mixtures thereof.

5,284,660

DELAYED ONSET TRANSDERMAL DELIVERY DEVICE

Eun Soo Lee, Redwood City; Felix Theeuwes, Los Altos; Patrick S. L. Wong, Palo Alto; Su Il Yum; Robert M. Gale, both of Los Altos, and Alejandro Zaffaroni, Atherton, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 271,122, Nov. 14, 1988, Pat. No. 5,141,750, which is a continuation of Ser. No. 874,263, Jun. 13, 1986, abandoned. This application Aug. 21, 1992, Ser. No. 933,423

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] **A61F** *13/00*

U.S. Cl. 424—449 **27 Claims**



1. A controlled release dispensing device for delivering a drug to skin or mucosa and adapted to delay the onset of drug delivery at a therapeutically effective rate for a predetermined time after placement of said device in drug-transferring relationship to the skin or mucosa, said device comprising, in combination:

a drug-containing reservoir having a surface through which said drug is released to the skin or mucosa, said drug being selected form the group consisting of nicotine and melatonin; and

a drug release delay membrane comprised of hydrophilic or semihydrophilic polymer disposed between the skin or mucosa and the releasing surface of said reservoir, said delay membrane being substantially free of undissolved drug and being impermeable to said drug in a dry state and permeable thereto in a hydrated state;

whereby said drug must pass through said delay membrane to reach the skin or mucosa and whereby release of said drug from said reservoir to the skin or mucosa at said therapeutically effective rate is delayed until the delay membrane is converted from its dry state to its hydrated state.

5,284,661

FUSED THIOPHENE DERIVATIVES, THEIR PRODUCTION AND USE

Akira Morimoto, Osaka; Kohei Nishikawa, Kyoto, and Takehiko Naka, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

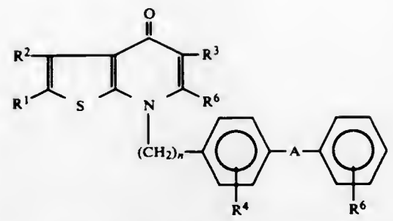
Continuation of Ser. No. 657,051, Feb. 19, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,368

Claims priority, application Japan, Feb. 22, 1990, 2-42125; Jan. 17, 1991, 3-3958

Int. Cl.[5] **A61K** *9/20;* **C07D** *495/04*

U.S. Cl. 424—464 **13 Claims**

1. A compound of the formula (Ia):



wherein R^1 and R^2 which may be the same or different, are each independently hydrogen, halogen, cyano, nitro, a group having the formula: R^8CONH— wherein R^8 is hydrogen, lower alkyl of 1 to 8 carbon atoms, lower alkenyl of 2 to 8 carbon atoms, lower alkynyl of 2 to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, or an aromatic hydrocarbon having 6 to 12 carbon atoms, which may be substituted with hydroxyl, lower (C_{1-4}) alkoxy, lower (C_{1-4}) alkyl, halogen, nitro, amino, methyl amino, dimethylamino, phenylamino, benzylamino, morpholino, piperidino, piperazino, N-phenylpiperazino, acyloxy, optionally substituted phenyl, or a group having the formula: —COD' wherein D' is hydroxy, lower (C_{1-4}) alkoxy, amino, methyl amino, dimethylamino, phenylamino, benzylamino, morpholino, piperidino, piperazino, or N-phenylpiperazino, or a hydrocarbon residue selected from the group consisting of lower alkyl of 1 to 8 carbon atoms, lower alkenyl of 2 to 8 carbon atoms, lower alkynyl of 2 to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, and an aromatic hydrocarbon having 6 to 12 carbon atoms, which may be substituted with hydroxyl, lower (C_{1-4}) alkoxy, lower (C_{1-4}) alkyl, halogen, nitro amino, methyl amino, dimethylamino, phenylamino, benzylamino, morpholino, piperidino, piperazino, N-phenylpiperazino, acyloxy, optionally substituted phenyl, or a group having the formula: —COD' wherein D' is hydroxy, lower (C_{1-4}) alkoxy, amino, methyl amino, dimethylamino, phenylamino, benzylamino, morpholino, piperidino, piperazino, or N-phenylpiperazino;

R^3 is hydrogen, lower alkyl of 1 to 8 carbon atoms or lower alkenyl of 2 to 8 carbon atoms which may be straight or branched and may be optionally substituted with hydroxyl, amino, N-lower (C_{1-4}) alkyl amino, N,N-dilower (C_{1-4}) alkyl amino, halogen, lower (C_{1-4}) alkoxy, or —COD'' wherein D'' is lower (C_{1-4}) alkoxy, hydroxy, halogen, amino, N-lower (C_{1-4}) alkyl amino, N,N-dilower (C_{1-4}) alkyl amino, phenylamino, napthylamino, benzylamino, napthylmethylamino, morpholino, piperidino, piperazino, or N-phenylpiperazino, or —COD wherein D is hydrogen, lower (C_{1-4}) alkoxy, hydroxy, halogen, amino, N-lower (C_{1-4}) alkyl amino, N,N-dilower (C_{1-4}) alkyl amino, phenylamino, benzylamino, napthylmethylamino, morpholino, piperidino, piperazino, piperidylmethyl, N-(p-fluorophenyl)piperazino, or N-phenylpiperazino;

R^4 is hydrogen, halogen or nitro;

R^5 is carboxyl, lower (C_{1-4}) alkoxycarbonyl, cyano, tetrazolyl, trifluoromethanesulfonic amide, phosphoric acid, or sulfonic acid;

R^6 is hydrogen, lower alkyl of 1 to 8 carbon atoms or lower alkenyl of 2 to 8 carbon atoms which may be straight or branched and may be optionally substituted with hydroxyl, amino, N-lower (C_{1-4}) alkyl amino, N,N-dilower (C_{1-4}) alkyl amino, halogen, lower (C_{1-4}) alkoxy, or —COD'' wherein D'' is lower (C_{1-4}) alkoxy, hydroxy, halogen, N-lower (C_{1-4}) alkyl amino, N,N-dilower (C_{1-4}) alkyl amino, phenylamino, napthylamino, benzylamino, napthylmethylamino, morpholino, piperidino, piperazino, or N-phenylpiperazino;

A is a direct bond, lower (C_{1-4}) alkylene, —C(=O)—, —O—, —S—, —NH—, —C(=O)—NH—, —O—CH_2—, —S—CH_2—, or —CH=CH—; and

n is an integer of 1 or 2;

(Ia) or a pharmaceutically acceptable salt thereof.

5,284,662

ORAL OSMOTIC SYSTEM FOR SLIGHTLY SOLUBLE ACTIVE AGENTS

Arun D. Koparkar, Westfield, and Shailesh B. Shah, Union, both of N.J., assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Continuation of Ser. No. 590,880, Oct. 1, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 809,026

Int. Cl.[5] **A61K** *9/24*

U.S. Cl. 424—473 **23 Claims**

1. An oral osmotic dosage delivery form adapted to deliver carbamazepine comprising

(a) core comprising

i. carbamazepine in an amount sufficient to deliver an effective amount thereof over the intended delivery time;

ii. an effective amount of a crystal habit modifier for said carbamazepine selected from the group consisting of C_{1-4}alkyl cellulose, hydroxypropyl cellulose, hydroxypropyl-C_{1-4}alkyl cellulose, sodium carboxymethyl cellulose, sodium carboxymethyl-C_{1-4}alkylcellulose, and gelatin;

iii. from about 2% to about 15% of the total core weight of a mixture of at least two different hydroxy-C_1–C_4alkyl celluloses which may be hydroxyalkyl celluloses having different alkyl groups or hydroxyalkyl celluloses having the same alkyl groups but are of different grades, wherein the ratio of the higher viscosity hydroxy-C_1–C_4alkyl cellulose to the lower viscosity hydroxy-C_1–C_4alkyl cellulose is about 2:1;

iv. a C_6 sugar alcohol;

v. a mono- or di-saccharide;

vi. from 0 to an effective amount of a tabletting lubricant; and

vii. from 0 to an effective amount of a wetting agent;

said C_6 sugar alcohol and said mono- or di-saccharide together comprising from about 15% to about 60% of the core total weight and the weight ratio of the C_6 sugar alcohol to said mono- or di saccharide is from about 1:9 to about 9:1;

(b) a semi-permeable wall around said core permeable to water or gastric fluid; and

(c) a hole through said semipermeable wall connecting said core with the external environment.

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SALT FILM ENCAPSULATED PERFLUOROCARBONS

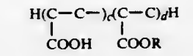
Tully J. Speaker, Philadephia, Pa., assignor to Temple University, Philadelphia, Pa.

Filed Jul. 23, 1991, Ser. No. 734,461

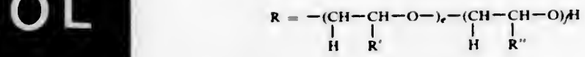
Int. Cl.[5] **A61K** *9/50*

U.S. Cl. 424—489 **12 Claims**

1. A Lewis acid-Lewis base salt film microcapsule having a microcapsule wall and perfluorocarbon as a core, wherein said Lewis acid is selected from the group consisting of arabic acid, acacia gum, carboxymethylcellulose, ghatti gum, guar gum and a polyoxyalkylene derivative of a polymeric acid having the structure



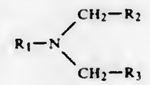
in which c- and d-type repeat units are randomly distributed within the polymers, c=70 to 3150, c-type repeat units consist essentially of from 50–90% of the total polymer, d=70–1750, the sum of c+d is in the range from about 140 to about 3500 and in which:



where

R' and R'' independently =H or CH_3 and e=7-75, f=7-75, and the sum of e+f=14 to 85, and

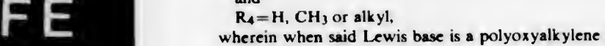
said Lewis base is a simple amine selected from the group consisting of n-hexylamine, 2,4-dimethylpentylamine, octadecylamine, ethylenediamine, piperazine, tetraethylenetriamine and polyethyleneimine and a polyoxyalkylene adduct of an amine having the structure



in which, independently,







and

R_4=H, CH_3 or alkyl,

wherein when said Lewis base is a polyoxyalkylene adduct of an amine said Lewis acid is selected from the group consisting of arabic acid, acacia gum, carboxymethylcellulose, ghatti gum and guar gum, and when said Lewis acid is a polyoxyalkylene derivative of a polymeric acid said Lewis base is selected from the group consisting of n-hexylamine, 2,4-dimethylpentylamine, octadecylamine, ethylenediamine, piperazine, tetraethylenetriamine and polyethyleneimine, and

wherein said Lewis acid is in a concentration of 1-10% weight by volume and said Lewis base is in a stoichiometric amount sufficient to form a neutral salt film.

5,284,664

METHOD OF TREATING THE SYMPTOMS OF ALZHEIMER'S DISEASE

Sudhakar S. Wagle, Mequon, Wis.; Thomas Steinbach, Houston, Tex.; Carl H. Lawyer, Mequon, Wis.; William J. Hermann, Sealy, Tex., and Ali A. S. Gawish, Mequon, Wis., assignors to Kremers-Urban Company, Mequon, Wis.

Continuation-in-part of Ser. No. 803,844, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 728,267, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 228,364, Aug. 4, 1988, Pat. No. 5,055,296. This application Feb. 5, 1992, Ser. No. 835,029

Int. Cl.[5] A61K *35/407*

U.S. Cl. 424—553 **5 Claims**

1. A method of treating the symptoms of Alzheimer's disease comprising administering a therapeutically effective amount of a mammalian liver extract which is referred herein as KU 10,001, wherein the extract is heat stable, insoluble in acetone and soluble in water.

5,284,665

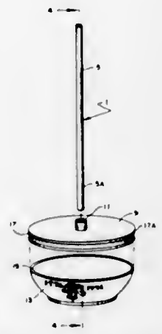
COTTON CANDY DEVICE

Todd L. Molland, 8607 Westwood Center Dr. (Double Feature), Vienna, Va. 22182

Filed Jul. 20, 1992, Ser. No. 916,950

Int. Cl.[5] A23G *3/00*

U.S. Cl. 426—87 **13 Claims**



1. In a cotton candy product wherein the product includes a filamentous cotton candy mass wrapped about an elongated stick, the improvement of which comprises a device for retainingly holding said cotton candy mass onto the device, said device comprising:

A) a receptacle which includes a brim defining an open end of the receptacle, and

B) a supportive base equipped with:

a. means for affixing the elongated stick onto the supportive base, and

b. retaining means for securing the receptacle onto the supportive base.

5,284,666

METHOD FOR PREPARING FLAVORED UNPOPPED POPCORN KERNELS

Ernst Graf, Cincinnati, Ohio, assignor to Tastemaker, Cincinnati, Ohio

Filed Apr. 22, 1993, Ser. No. 52,193

Int. Cl.[5] A23L *1/00*; **H05B** *6/00*

U.S. Cl. 426—242 **20 Claims**

1. A method for preparing flavored unpopped popcorn kernels comprising

dehydrating unpopped popcorn kernels for a period of time sufficient to produce partially dehydrated kernels having retained sufficient moisture for popping and having an increased tendency to absorb an aqueous flavor liquid, and

absorbing said aqueous flavor liquid into said partially dehydrated kernels to produce flavored unpopped popcorn kernels.

5,284,667

ROLLED FOOD ITEM FABRICATING METHODS

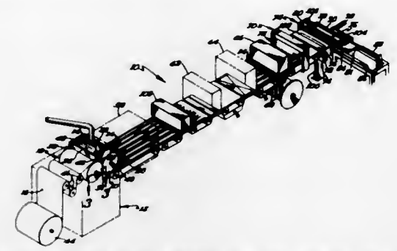
Craig E. Zimmermann, Waconia, and Rene K. Merle, Crystal, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 646,715, Mar. 4, 1991, Pat. No. 5,205,106. This application Feb. 16, 1993, Ser. No. 17,881

Int. Cl.[5] A23L *1/00*; **B65B** *35/00*

U.S. Cl. 426—420 **20 Claims**

1. A method for fabricating a rolled food item comprising the steps of: supplying a continuous sheet of support material; depositing continuous, multiple strips of food onto the continuous sheet of support material; cutting the continuous sheet of support material between the strips of food to form continuous, multiple strips of support material and food supported thereon; cutting the continuous, multiple strips of support material and



food into lengths having leading ends and trailing ends; and simultaneously rolling the lengths of multiple strips of support material and food into multiple, independent coils.

5,284,668

METHOD FOR MAKING TOASTED BREAD SLICES

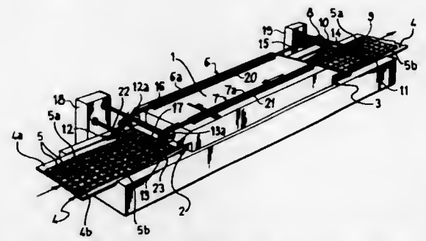
Roberto Seletti, Parma, Italy, assignor to Barilla G.E.R. L.LLI - Societa per Azioni, Parma, Italy

Division of Ser. No. 826,387, Jan. 27, 1992, Pat. No. 5,265,524. This application Nov. 2, 1992, Ser. No. 970,924

Claims priority, application Italy, Jan. 28, 1991, MI 91A 000200

Int. Cl.[5] A21D *8/00*

U.S. Cl. 426—466 **1 Claim**



1. A method for making toasted bread slices in a tunnel-type oven comprising:

laying bread slices in a plurality of side-by-side rows on a continuous conveyor moving through said oven with first and last rows being spaced from opposite sides of said conveyor;

placing a plurality of links of two endless chains on said conveyor adjacent opposite sides thereof with links of each chain being disposed in heat exchange relationship with slices in said first and last rows respectively along the oven length whereby excess toasting of the outward sides of said slices is prevented; and

moving the chains and conveyor at the same speed through said oven.

5,284,669

METHOD OF DRESSING A THIGH CUT OF POULTRY

Eugene D. Gagliardi, Jr., Wilmington, Del., assignor to Designer Foods, Inc., Chadds Ford, Pa.

Division of Ser. No. 685,324, Apr. 15, 1991, Pat. No. 5,250,309. This application Jun. 29, 1993, Ser. No. 84,391

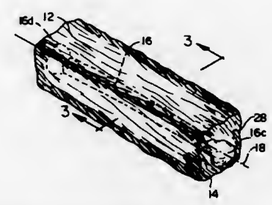
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] A23L *1/315*

U.S. Cl. 426—480 **5 Claims**

1. A method of dressing a thigh cut of poultry having an upper surface, a lower surface and an elongated thigh bone positioned therebetween, said thigh bone having an axis and a pair of longitudinal ends, said method comprising the steps of:

cutting generally perpendicular to said upper surface along a first cut line extending generally parallel to the axis of said bone to remove a first side portion of said thigh cut, said first cut line being spaced from a first side of said bone by a first predetermined distance for forming a first thigh portion having a generally planar surface; and



cutting generally perpendicular to said upper surface along a second cut line extending generally parallel to the axis of said bone to remove a second side portion of said thigh cut, said second cut line being spaced from a second side of said bone by a second predetermined distance for forming a second thigh portion having a generally planar surface whereby the remaining meat portion of said thigh cut is generally in the form of a parallelogram in cross section such that the width of the thigh cut is substantially the same throughout.

5,284,670

METHOD FOR STRETCHING DOUGH

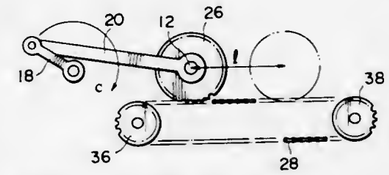
Torahiko Hayashi, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Continuation of Ser. No. 815,540, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 547,655, Jul. 3, 1990, abandoned. This application Jan. 12, 1993, Ser. No. 4,482

Claims priority, application Japan, Jul. 8, 1989, 1-176655

Int. Cl.[5] A21D *6/00*

U.S. Cl. 426—502 **2 Claims**



1. A method of stretching dough comprising:

conveying dough from an upstream conveyor to a downstream conveyor that is disposed serially with said upstream conveyor, the conveying speed of said downstream conveyor being higher than that of said upstream conveyor,

reciprocating a single roller such that the roller continuously contacts the surface of the dough being moved on said downstream conveyor, said roller being reciprocated to only contact with surface of the dough on said downstream conveyor, the reciprocating speed of the roller being higher than the conveying speed of said downstream conveyor, and

forcibly and directly rotating the roller about its axis at a speed equal to a difference between the conveying speed of the downstream conveyor and the reciprocating speed of the roller.

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5,284,671

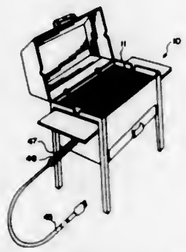
METHOD OF CHARCOAL COOKING FOOD IN AN ELECTRIC GRILL

James M. Stewart, Box 6161, Station B, Greenville, S.C. 29606

Division of Ser. No. 757,657, Sep. 6, 1991, Pat. No. 5,242,703, which is a continuation-in-part of Ser. No. 471,954, Jan. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,194, Jun. 30, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 83,061

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—523 1 Claim



1. A method of cooking food over a charcoal fire in an electric grill comprising the steps of:

providing an electric grill comprising;

a cooker bowl,

an enclosure for said cooker bowl,

means for supporting food in said cooker bowl comprising a plurality of support levels upon which a plurality of metal grates can be placed,

an electric heat source within said cooker bowl, and

a heat emitter positioned adjacently above said heat source;

placing a first metal grate low in said cooker bowl upon a support level above said heat source and said heat emitter;

distributing charcoal on said first grate low in said cooker bowl;

placing a second metal grate a distance above said first metal grate;

igniting said charcoal;

heating said heat emitter by said electric heat source to generate infrared radiation;

heating said charcoal by said infrared radiation; and

placing food on said second metal grate for cooking when said charcoal shows a desired color.

5,284,672

METHOD OF PRODUCING AN EDIBLE CONTAINER

Sadaharu Ito, 30-5, Saginomiya 1-chome, Nakano-ku, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,324

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] A21D *13/08*

U.S. Cl. 426—549 10 Claims

1. A method of producing an edible container comprising the steps of:

(a) preparing a dough by mixing raw ingredients comprised of wheat flour, sugar and oil and kneading the raw ingredient mixture with water;

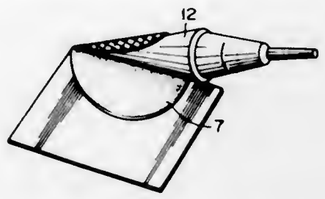
(b) sandwiching a portion of the dough portion between heating plates;

(c) heating and drying the dough portion between said heating plates for a time and at a temperature sufficient to alphatize flour starch in the dough and to evaporate moisture from the dough so as to obtain a baked sheet of heated and dried dough;

(d) removing the baked sheet from the heating plates and transferring the baked sheet to a moisturizing zone;

(e) moisturizing the baked sheet in the moisturizing zone;

(f) subjecting the moisturized baked sheet to final heating so as to again heat and dry the baked sheet and to soften the



baked sheet to allow a container to be formed therefrom; and thereafter

(g) forming the softened baked sheet into a container of desired shape.

5,284,673

PROCESS OF MAKING KONJAK-ADDED FOODSTUFFS

Hisashi Nozaki, and Seiya Sakurai, both of Saitama, Japan, assignors to Kabushikikaisha Kibun, Tokyo and Kabushikikaisha Kyowashokuhin, Saitama, both of Japan

Continuation of Ser. No. 426,242, Oct. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,174, Nov. 13, 1987, Pat. No. 4,963,383. This application Jan. 7, 1992, Ser. No. 817,558

Claims priority, application Japan, Oct. 31, 1988, 63-273171

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

Int. Cl.[5] A23L *1/05*

U.S. Cl. 426—573 9 Claims

1. A process for producing a konjak-added food or food material which comprises:

(a) forming a swollen konjak paste by mixing (i) konjak flour, (ii) an amount of water sufficient to cause the konjak flour to swell and dissolve, and (iii) a basic compound selected from the group consisting of a basic amino acid, a basic salt, and a mixture thereof; adjusting pH of the resulting mixture to a range of 9.0 to 10.3; and leaving the pH adjusted mixture to stand to cause the konjak flour to homogeneously swell and soften;

(b) incorporating the swollen konjak paste into a food material to provide a mixed foodstuff; and

(c) cooking the konjak-added mixed foodstuff.

5,284,674

POWDERED DAIRY CREAMER

Susan C. Fazio, P.O. Box 302, Oldwick, N.J. 08858

Filed May 11, 1992, Ser. No. 881,485

Int. Cl.[5] A23C *11/02*

U.S. Cl. 426—580 16 Claims

1. A powdered dairy creamer composition formed by drying an emulsion comprising:

from about 5% to about 45% by weight of an edible fat component comprising one or more edible fats;

from about 5% to about 75% by weight of nonfat dry milk solids;

from about 0.15% to about 1.5% by weight of an emulsifier system consisting essentially of a hydrophilic emulsifier and a lipophilic emulsifier, which are present in a ratio of about 2:1;

one or more first emulsion stabilizers, selected from the group consisting of dextrins, maltodextrins, modified food starches, corn syrup solids, lecithin, microcrystalline cellulose, carrageenan, rice starch, marine colloids, vegetable gums and whey demineralized 50% or greater, provided that the level of whey does not exceed about 15% by weight present in an amount effective to stabilize said emulsion without the presence of said stabilizer being perceptible with respect to the organoleptic properties of said composition; and

0.8% to 2.7% of a second emulsion stabilizer selected from the group consisting of caseinate salts, citrate salts, phosphate slats and mixtures thereof.

5,284,675

Patent Not Issued For This Number

5,284,676

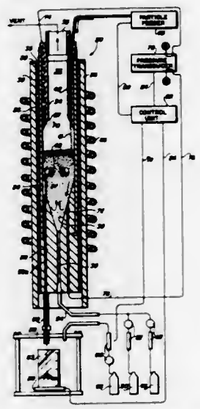
PYROLYTIC DEPOSITION IN A FLUIDIZED BED

James A. Accuntius, Georgetown, and David S. Wilde, Austin, both of Tex., assignors to Carbon Implants, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 569,087, Aug. 17, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 793,588

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—8 14 Claims



1. A method of carefully controlling the deposition of a substance onto a substrate while being levitated in a fluidized bed of particles, said deposition being carried out in an enclosure through which a gaseous atmosphere is caused to flow upward, which method comprises

establishing a bed of particles in fluidized condition in said enclosure with at least one substrate to be coated being levitated within said fluidized bed, said levitation being effected by the upward flow of said gaseous atmosphere,

heating said particles and said substrate to a desired temperature and including a pyrolytically decomposable component within said gaseous atmosphere such that pyrolysis of said component occurs to cause the desired pyrolytic substance to be deposited upon said substrate and upon said particles, both of which are being levitated,

withdrawing particles from said bed in a controlled manner,

adding feed particles to said bed in a controlled manner, which feed particles have an average size that is less than the average size of the particles being withdrawn,

monitoring the pressure at a predetermined location within or below said bed and the pressure above said bed to determine the difference in pressure therebetween, and

changing either the rate at which particles are withdrawn from said bed or the rate at which particles are fed to said bed or both in response to said determined pressure difference so as to precisely regulate deposition over an extended period of time and thereby produce a precise coating upon said substrate being coated.

5,284,677

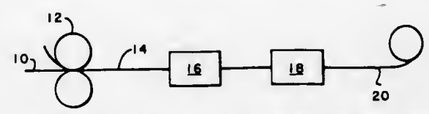
COATED TEXTILE FOR APPAREL

Thomas E. Coughlin, Tyngsboro, Mass., assignor to Worthen Industries, Inc., Nashua, N.H.

Filed Oct. 27, 1992, Ser. No. 968,040

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—176 4 Claims



1. A method of manufacturing a coated textile, the coating exhibiting a worn look when stressed comprising:

depositing a water-based resinous coating on said textile;

controlling the amount of coating on said textile such that the threads are coated but a thin film is not formed;

passing the coated textile through a first heat exchange zone to remove the water and dry the coating; and

passing the dry coated textile through a second heat exchange zone, the zone at a temperature sufficient to fuse the coating to said threads to obtain a clear coating on the threads whereby when said textile is stressed the coating fractures, importing a worn appearance to the stressed area of the textile.

5,284,678

METHOD AND APPARATUS FOR COATING PARTICLES AGITATED BY A ROTATABLE ROTOR

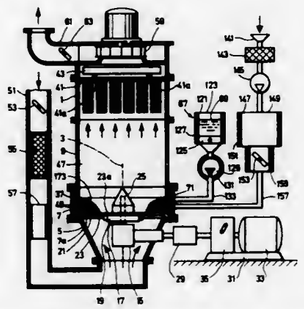
Peter F. F. Hirschfeld, Freiburg, and Manfred Weh, Istein, both of Fed. Rep. of Germany, assignors to Glatt GmbH, Binzen, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,440

Claims priority, application Switzerland, Jul. 11, 1991, 2068/91

Int. Cl.[5] B05D *1/02*; B05C *5/04*

U.S. Cl. 427—212 21 Claims



1. A method for coating particles which are introduced into a vessel having a wall and a rotor, the rotor being rotatable about a vertical axis, wherein the method comprises the steps of agitating the particles during the coating of the particles by rotating said rotor which is located under the particles so that the particles form a particle bed on the rotor, wherein during coating of the particles, a process gas is passed upward through an annular gap present between the wall and the rotor, wherein at least one atomizing member defining an atomizing member axis and having a coating material outlet, an atomizing gas outlet and an envelope gas outlet is provided, wherein the envelope gas outlet encompasses the atomizing gas outlet which in turn encompasses the coating material outlet when

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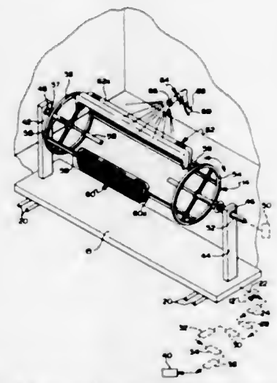
viewed in a direction parallel to the atomizing member axis, wherein the at least one atomizing member is disposed to protrude into the particle bed and said outlets are inside the particle bed, wherein at least a portion of a solid coating material is melted and then sprayed through said coating material outlet in the molten state onto particles present in the particle bed wherein the coating material forms, during spraying, a coating material jet emerging from the coating material outlet, and wherein atomizing gas emerges through said atomizing gas outlet and the coating material is atomized with the aid of the atomizing gas whose temperature is greater than the melting point of the molten coating material or of its molten part, and wherein an envelope gas jet emerging from the envelope gas outlet is produced such that the envelope gas jet is radially spaced from the coating material jet in a space region that is inside the particle bed and adjacent to said outlets and wherein the molten coating material sprayed onto the particles is then solidified by cooling.

5,284,679

METHOD FOR MAKING BRIGHT TRIM ARTICLES

Richard Eisfeller, Greenland, and Gerard Vachon, Somersworth, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Nov. 16, 1992, Ser. No. 977,219
Int. Cl.[5] B05B *3/02, 3/12*
U.S. Cl. 427—240 **12 Claims**



1. A method for manufacturing a bright trim part comprising the steps of:

providing a raw uncoated part;

supporting said raw uncoated part against rotation on its own axis and rotating it with respect to a substantially horizontal axis being spaced from its own axis and not intersecting said part;

spray coating a prime coat of dielectric urethane resinous material covering on said raw uncoated part as it is rotated with respect to the spaced axis;

baking the prime coat while fixing it against rotation on its own axis while continuing rotation of the prime coated part about the spaced axis;

maintaining the primed part against rotation on its own axis and spray coating a basecoat of dielectric urethane resinous material on said baked prime coat as the baked prime coated part is rotated about the spaced axis;

flashing the basecoat to remove solvents therefrom while continuing to rotate the basecoated part on an axis other than its own axis and thereafter cooling the basecoated part while continuing to rotate it on an axis other than its own axis thereby forming a basecoat surface having a smoothness of 100 DOI;

vacuum depositing a layer of corrosion prone metal material covering said basecoat with a plurality of discrete islands, the corrosion prone metal islands appearing visually as a continuous film of such metal and having a plurality of visually unobservable channels between the islands to maintain the film electrically non-conductive over the basecoat layer;

etching the channels while continuing to rotate the vacuum metallized part for clearing the channels for deposition of a top coat material therein; maintaining the etched metallized part against rotation on its own axis and spray coating a topcoat of dielectric urethane resinous material into said channels and across said islands while rotating the etched metallized part on an axis other than its own axis to form a clear top coat there-across; and

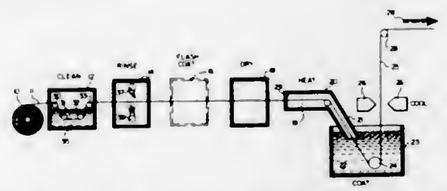
flashing the topcoat to remove solvents therefrom while continuing to rotate the topcoated part on an axis other than its own axis and thereafter cooling the topcoated part while continuing to rotate it on an axis other than its own axis thereby forming a topcoat surface having a smoothness of 100 DOI.

5,284,680

METHOD FOR PRODUCING A GALVANIZED ULTRA-HIGH STRENGTH STEEL STRIP

Yaz F. Bilimoria, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Apr. 27, 1992, Ser. No. 874,029
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—307 **32 Claims**



1. A method for producing an ultra high strength, galvanized steel strip comprising a plain carbon steel substrate having a microstructure consisting essentially of tempered martensite and an adherent coating consisting essentially of zinc or zinc alloy, said method comprising the steps of:

providing a plain carbon steel strip having an initial microstructure consisting essentially of untempered martensite;

cleaning said steel strip;

providing a bath of molten coating metal consisting essentially of zinc or zinc alloy;

passing said steel strip through said bath to coat said steel strip with said coating metal;

treating said steel, before said coating step, and after said cleaning step, so that an adherent coating will form on said strip when the strip is subjected to said coating step;

heating said steel strip, after said cleaning step, so that the steel strip is at an elevated temperature, as the strip exits said bath, above 600° F. and at which said untempered martensite will undergo transformation to tempered martensite;

cooling said coated steel strip, after said coating step, to a depressed temperature below 600° F. and at which said transformation will not occur;

controlling the temperature to which said steel strip is heated, and controlling the time at which said steel strip is at said elevated strip temperature at which said transformation occurs, to assure the presence in the steel substrate after said cooling step of a microstructure consisting essentially of tempered martensite comprising a martensitic matrix with iron carbide particles dispersed throughout.

5,284,681

SURFACE TREATMENT METHOD AND COATING METHOD OF POLYAMIDE RESIN MOLDED ARTICLES

Hideo Shinonaga; Kiyoshi Mitsui; Yasuro Suzuki, and Satoru Sogabe, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 968,043
Claims priority, application Japan, Oct. 30, 1991, 3-284652
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—316 **16 Claims**

4. A coating method of a, polyamide resin molded article, which comprises, after bringing the surface of a resin composition molded article into contact with water and drying in air, coating the surface with a coating composition, said polyamide resin composition molded article comprising (C) 100 parts by weight of a resin composition comprising (A) from 10 to 80% by weight of a polyamide resin and (B) from 20 to 90% by weight of another thermoplastic resin, having from 0 to 100 parts by weight of a rubber material and/or a modified rubber material and from 0.1 to 300 parts by weight of a filler blended therewith; and (D) from 0.01 to 20 parts by weight, based on 100 parts by weight of the blended composition, of at least one modifier selected from a carboxylic acid having at least 2 carboxyl groups in the molecule or a derivative thereof, an amine containing at least 2 nitrogen atoms in the molecular, urea or a derivative thereof, and a low-molecular weight polyamide.

5,284,682

COPPER/NICKEL EPOXY COATING AND APPLICATION PROCESS AS ANTIFOULING AGENT

A. John Martin, Seattle, Wash., assignor to American Marine Coatings, Inc., Seattle, Wash.

Filed Sep. 3, 1992, Ser. No. 940,314
Int. Cl.[5] C09D *5/14*
U.S. Cl. 427—386 **14 Claims**

1. A process for applying an exterior coating on a surface, comprising the steps of:

mixing an epoxy resin prepolymer, a hardener for the epoxy resin prepolymer, wherein the hardener comprises a polyamide, and at least three pounds of copper/nickel alloy particles per gallon of combined epoxy resin prepolymer and polyamide hardener;

applying the mixture of prepolymer, hardener and particles to the surface to form a layer of mixture so that the copper/nickel alloy particles are substantially isolated from each other in the combined epoxy resin prepolymer and polyamide hardener; and

curing the mixture to a hard state, whereby the layer of mixture forms a dielectric layer.

5,284,683

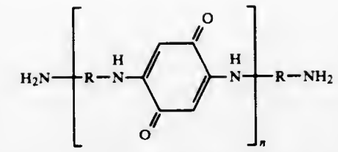
METHOD FOR METALLIZATION OF PLASTICS USING POLY-DIAMINE-QUINONE POLYMERS AS A BINDER

Semih Erhan, 2301 Cherry St., Apt. 12-B, Philadelphia, Pa. 19103

Filed Oct. 15, 1991, Ser. No. 776,616
Int. Cl.[5] B05D *1/30*
U.S. Cl. 427—404 **26 Claims**

1. A method of applying metal to a plastic substrate, comprising:

coating at least a portion of at least one surface of a plastic substrate with a poly-diamine-quinone polymer comprising the general formula:



wherein each R is independently selected from the group consisting of alkyl, monocyclic, cycloalkyl, monocyclic heterocyclic, aromatic, siloxyl, silyl and the alkyl, alkoxy, carboxyl and amino derivatives thereof, and n is about 70–700, thereby forming a poly-diamine-quinone coated plastic substrate;

applying a metal or metal alloy, not including alkali and alkaline earth metals and mercury, to the poly-diamine-quinone coated plastic substrate, thereby forming a metallized plastic substrate; and,

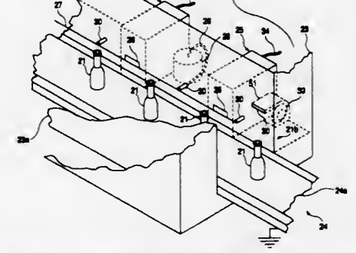
curing the poly-diamine quinone polymer of the metallized plastic substrate, whereby the metal or metal alloy adheres to the plastic substrate.

5,284,684

METHOD AND APPARATUS FOR COATING GLASSWARE

Addison B. Scholes, Muncie, Ind., assignor to Alltrista Corporation, Muncie, Ind.

Filed Mar. 3, 1992, Ser. No. 845,098
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—469 **43 Claims**



1. A method for coating glass containers comprising the steps:

providing a plurality of glass containers, each having an open top;

providing at least one coating zone adjacent to a grounded conveyor means;

providing at least one coating material charging electrode in the coating zone and connecting the charging electrode with a source of high voltage;

carrying said glass containers, while hot, through the coating zone by said conveyor means in an upright position;

establishing an electrostatic material charging and depositing field to the exterior surface of the containers in the coating zone;

providing coating material particles in the coating zone adjacent the containers; and

electrostatically charging and depositing the coating material particles substantially entirely onto the exterior of said containers.

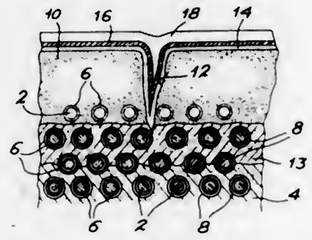
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,685

COMPOSITE MATERIAL WITH CARBON REINFORCED FIBERS AND ITS PRODUCTION

Gérard Rousseau, Saint Aubin de Medoc, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Continuation of Ser. No. 711,286, Jun. 1, 1991, abandoned which is a division of Ser. No. 394,020, Aug. 15, 1989, Pat. No. 5,051,300.
This application Jul. 7, 1992, Ser. No. 911,248
Claims priority, application France, Aug. 31, 1988, 88 11401
Int. Cl.[5] C23C 16/00
U.S. Cl. 427—574 15 Claims



3. A process for producing a composite material incorporating a carbon fiber substrate embedded in a matrix comprising the following steps:

(a) forming a deformable porous substrate constituted by carbon fibers,

(b) shaping the substrate to produce a fibrous preform,

(c) densifying the fibrous preform by impregnating spaces between fibers with a material to form a matrix having the fibers embedded therein and a substantially continuous surface on the densified preform,

(d) covering the surface of the densified preform with a silicon carbide layer,

(e) depositing on the silicon carbide layer of the densified preform an intermediate coating selected from the group consisting of HfC, TaC, ZrC, W_2C, NbC, ThC_2, ZrB_2, HfB_2, TiB_2, BN, HfN, ZrN, AlN, Pt, Ir, Os, Rh and Ru,

(f) covering the intermediate coating with an oxide coating selected from the group consisting of ThO_2, ZrO_2, HfO_2, La_2O_3, Y_2O_3 and Al_2O_3, said intermediate coating serving as a reaction barrier between the silicon carbide and the oxide coating.

5,284,686

COMPOSITE ARTIFICIAL LOG

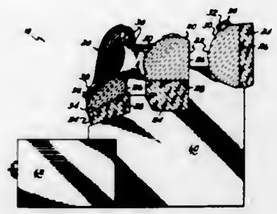
Ian Thow, St. Helens, England, assignor to Yale and Valor p.l.c., Birmingham, England

Continuation-in-part of Ser. No. 443,109, Nov. 28, 1989, Pat. No. 5,026,579. This application Feb. 27, 1991, Ser. No. 661,868
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] F24C 3/04
U.S. Cl. 428—15 9 Claims

1. A composite artificial log for use in gas-fired fireplace and stove assemblies comprising:

a ceramic concrete section having an exposed outer surface, said section molded to provide the appearance of a real log, and said section having a relatively high thermal conductivity for radiating heat to the surroundings when heated; and

at least one ceramic fiber section having at least one exposed outer surface, said ceramic fiber section secured to said ceramic concrete section and having a relatively low



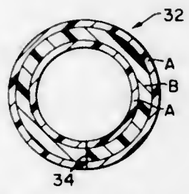
thermal conductivity such that said exposed outer surface thereof glows visibly when heated above about 1470° F.

5,284,687

COEXTRUSTION APPARATUS, METHODS, AND RELATED FILMS AND PACKAGES

Robert J. Blemberg, Appleton, Wis., assignor to American National Can Company, Chicago, Ill.

Continuation-in-part of Ser. No. 458,487, Dec. 28, 1989, Pat. No. 5,236,642, and a continuation-in-part of Ser. No. 458,488, Dec. 28, 1989, Pat. No. 5,143,677, and a continuation-in-part of Ser. No. 687,765, Apr. 18, 1991, Pat. No. 5,190,711, and a continuation-in-part of Ser. No. 140,096, Dec. 31, 1987, Pat. No. 4,944,972. This application Aug. 15, 1991, Ser. No. 746,130
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Int. Cl.[5] B32B 1/08, 27/30
U.S. Cl. 428—35.2 8 Claims



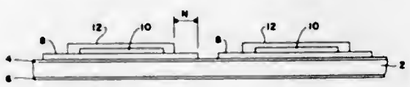
1. A tubular film comprising at least one layer comprising at least 25% wt. % vinylidene chloride copolymer and a second layer on one opposing surface of the first layer, a longitudinal weld line extending sequentially through said layers in a continuous path at an angle greater than 45 degrees to the surface of the first layer, said film being molecularly unoriented beyond that orientation which is sustained in a film-forming extrusion process, and having a circumference of at least 200 centimeters.

5,284,688

PRESSURE SENSITIVE ADHESIVE LABELS AND MANUFACTURE THEREOF

Norman A. Hiatt, Framingham, Mass., assignor to Unique Label Systems, Inc., Framingham, Mass.

Filed Apr. 16, 1992, Ser. No. 870,617
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—40 36 Claims



1. A dry-release label construction comprising:

(a) a carrier having first and second opposite sides and a release surface on said first side thereof; and

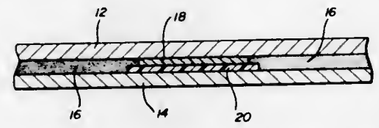
(b) at least one label releasably adhered to said release surface, said at least one label comprising a label face film overlying and releasably adhered to said release surface, said label face film being dry and non-tacky at room temperature and having heat-sealing properties, and a pressure-sensitive adhesive layer overlying said label face film, said label face film and said adhesive layer each having finite geometrical dimensions, with said label face film having an outer boundary and the adhesive layer terminating short of said outer boundary of the label face film.

5,284,689

PRODUCT LABEL ASSEMBLY

David F. Laurash, Bellbrook; Rajendra Mehta, Centerville, and Gary W. Doll, Englewood, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Sep. 14, 1992, Ser. No. 944,490
Int. Cl.[5] A61F 13/02; G09F 15/02
U.S. Cl. 428—40 10 Claims



1. A printable product label assembly having a selectably adhesive portion comprising a liner sheet, a printable face sheet overlying said liner sheet, a nontacky releasable adhesive securing a first portion of a surface of said face sheet to a first portion of a surface of said liner sheet such that the surfaces of said face sheet and said inner sheet are readily separable and nontacky upon the application of an effective delaminating force, a pressure sensitive adhesive securing a second portion of said surface of said face sheet to a second portion of said surface of said liner sheet, and wherein a portion of said surface of said inner sheet which is substantially coextensive with said pressure sensitive material includes a coating of a release material.

5,284,690

AQUEOUS RELEASE COATING COMPOSITION FOR PRESSURE SENSITIVE ADHESIVES

Martin M. Williams, Harrisburg, and Rodney J. Trahan, Jr., China Grove, both of N.C., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 3, 1992, Ser. No. 971,027
Int. Cl.[5] B32B 7/06
U.S. Cl. 428—40 12 Claims

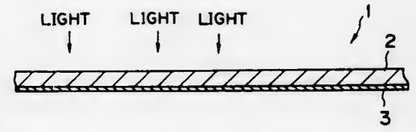
1. An article comprising a backing layer, at least one pressure sensitive adhesive layer, and an aqueous release coating layer, wherein said pressure sensitive adhesive layer is affixed to one side of said backing layer and said aqueous release coating layer is provided on the opposite side thereof, wherein said aqueous release coating layer comprises a polymer and an aqueous solution or dispersion of an organic compound having at least one fatty acid ester and at least one quaternary amine, wherein said polymer prevents the migration of said organic compound into the adhesive layer.

5,284,691

OPTICAL RECORDING MEDIUM AND METHOD OF REPRODUCING INFORMATION RECORD ON THE OPTICAL RECORDING MEDIUM

Hitoshi Taniguchi, and Fumio Matsui, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,358
Claims priority, application Japan, Mar. 10, 1992, 4-051541
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—64 3 Claims



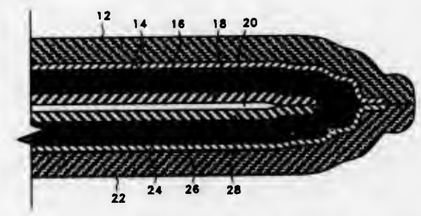
1. An optical recording medium having a recording film containing a photochromic material and a binder, wherein said photochromic material is acid anhydride of diarylethene derivative and said binder is polycarbonate.

5,284,692

ELECTROSTATIC EVACUATED INSULATING SHEET

Dennis J. Bell, Los Altos, Calif.

Filed Oct. 24, 1991, Ser. No. 782,302
Int. Cl.[5] B32B 3/12; E04B 1/74
U.S. Cl. 428—69 24 Claims



1. A lightweight evacuated thermal insulating structure, comprising:

two impermeable multilayered sheets, each of said sheet comprising an electrical compensation layer, an electrical insulation layer and an electrostatic force repulsive layer, said two impermeable sheets being arranged in a generally parallel, spaced relationship, said impermeable sheets having an evacuated space therebetween, the edges of said sheets being substantially sealed, said electrostatic force repulsive layers are changed with monopolar electrostatic charges said electrostatic charges being arranged so that each provides the same polarity of force facing into said evacuated space so that said same polarity of forces repel each other to force and maintain said impermeable sheets spaced apart,

said electrostatic charges being of sufficient magnitude so as to resist ambient pressure acting to collapse said evacuated space and thereby maintain the separation between said impermeable sheets.

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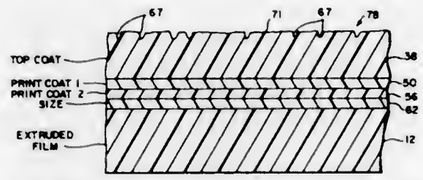
PROCESS FOR MANUFACTURING PLASTIC SIDING PANELS WITH OUTDOOR WEATHERABLE EMBOSSED SURFACES

Patrick L. Spain, Lowell, and Keith L. Truog, Crown Point, both of Ind., assignors to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 599,034, Oct. 17, 1990, Pat. No. 5,203,941, which is a continuation-in-part of Ser. No. 424,130, Oct. 19, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,554

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—172 30 Claims



1. An outdoor weatherable decorative clad plastic panel comprising a substrate panel containing a vinyl polymer, and a decorative and protective exterior coating bonded to and covering the surface area of the substrate panel and comprising a top coat formed as a continuous cast film on an underlying color coat formed as a continuous cast film and visible through the top coat, the top coat and color coat each comprising a polymer different from the substrate panel and containing a weatherable fluoropolymer resin, the color coat containing a sufficient amount of dispersed pigment to cover the surface area of the substrate panel and thereby retard UV degradation of the underlying substrate panel, the top coat having an exterior surface with a transferred microroughness providing a 75° gloss level of less than about 20 gloss units covering a major surface area of the top coat.

5,284,694

STRESS-WHITENING EMBOSSABLE FILM

Rochelle L. Lockridge, Maplewood, Minn.; Dennis L. Krueger, Hudson, Wis.; Philip G. Martin, White Bear Lake, Minn., and Gary W. Schlaeger, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 25, 1992, Ser. No. 935,518

Int. Cl.[5] B32B *3/30*

U.S. Cl. 428—137 16 Claims

1. An embossable sheet comprising at least one layer which exhibits stress-whitening upon the application of pressure consisting essentially of a blend of:

a) a polypropylene polymer,

b) at least one other polymeric material immiscible therewith, said polymeric material selected from the group consisting of acrylonitrile-butadiene-styrene copolymers, polymethylmethacrylate polymers, polystyrene polymers, polycarbonate polymers, and styrene acrylonitrile copolymers and

c) an effective amount of an antioxidant, said sheet exhibiting stress-whitening which is stable at 136° C. for at least about 7 days.

5,284,695

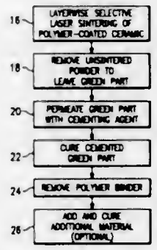
METHOD OF PRODUCING HIGH-TEMPERATURE PARTS BY WAY OF LOW-TEMPERATURE SINTERING

Joel W. Barlow, and Neal K. Vail, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 814,715, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 559,338, Jul. 30, 1990, Pat. No. 5,076,869, which is a continuation of Ser. No. 402,694, Sep. 5, 1989, Pat. No. 4,944,817. This application Mar. 20, 1992, Ser. No. 854,246

Int. Cl.[5] B32B *31/00*; B27N *3/00*; B23K *9/00*; B29C *67/00*

U.S. Cl. 428—206 21 Claims



14. A part produced by the process comprising the steps of:

forming a porous green part comprising particles of a first material bound by a second material, the second material having a lower melting point than said first material, and wherein surfaces of said first material are exposed within said porous green part;

applying a cementing agent to said porous green part to bind said exposed surfaces of said first material;

curing said cementing agent; and

removing said second material.

5,284,696

CONDUCTIVE PATTERN LAYER STRUCTURE AND METHOD OF PRODUCING THE CONDUCTIVE PATTERN LAYER STRUCTURE

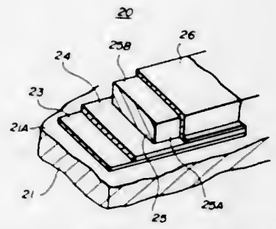
Kazuaki Satoh, and Kenji Iida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 4, 1992, Ser. No. 971,226

Claims priority, application Japan, Nov. 6, 1991, 3-289576

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 6 Claims



1. A conductive pattern layer structure comprising:

an insulating member comprising polyimide;

a patterned thin film formed on the insulating member;

a patterned conductive layer formed on the thin film, said patterned conductive layer comprising copper; and

a patterned barrier layer covering an upper surface and side surfaces of the patterned conductive layer and preventing copper from being diffused into another insulating layer formed around the patterned barrier layer.

5,284,697

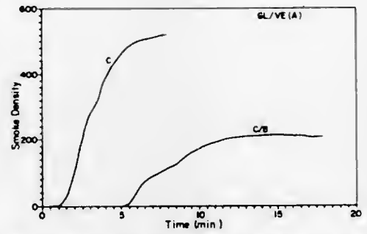
COMPOSITE STRUCTURES HAVING ORGANIC MATRICES AND DUPLEX ZINC/CERAMIC FIRE BARRIERS

Usman A. Sorathia, and Roger M. Crane, both of Arnold, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1992, Ser. No. 929,212

Int. Cl.[5] B32B *27/38*

U.S. Cl. 428—213 2 Claims



1. A fire-resistant composite structure containing an organic material and having a duplex coating on one surface as an exposed fire barrier, said organic matrix compound being selected from the group consisting of vinyl esters, epoxies bismaleimides, and phenols said duplex coating comprising a bonding and heat-diffusing metal coating attached to said on surface and a stabilized zirconia coating attached to said metal coating, said metal coating being formed of a thickness in the approximate range of 0.001–0.003 inches from a metal or metal alloy having a melting point within the approximate range of 450°–1250° F., and said stabilized zirconia coating being of a thickness in the approximate range of 0.005–0.007 inches.

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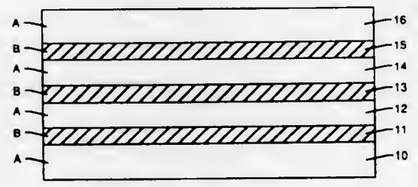
PARTIALLY STABILIZED ZRO_2-BASED LAMINAR CERAMIC COMPOSITES

David B. Marshall, Thousand Oaks; Frederick F. Lange, Santa Barbara, and Joseph J. Ratto, Newbury Park, all of Calif., assignors to Rockwell Int'l Corp., Seal Beach and Regents of the University of California, Oakland, both of Calif.

Filed Sep. 18, 1991, Ser. No. 761,581

Int. Cl.[5] B32B *18/00*

U.S. Cl. 428—216 9 Claims



1. A ZrO_2-based laminar composite, comprising:

at least two layers of ZrO_2-based ceramic material that undergoes stress-induced martensitic transformation from a tetragonal to a monoclinic structure;

a layer of a second ceramic material consolidated between said layers of ZrO_2-based material to form a barrier layer;

said second ceramic material undergoing stress-induced transformation, if any, less readily than said ZrO_2-based material.

5,284,699

BIAXIALLY ORIENTED POLYESTER FILM

Satoru Nishino, Otsu; Koichi Abe, Kyoto; Takeo Fukuyama, Hikone, and Hidehito Minamizawa, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 461,003, Jan. 4, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 996,851

Claims priority, application Japan, Jan. 11, 1989, 1-4131; Feb. 16, 1989, 1-35118; Apr. 28, 1989, 1-107333

Int. Cl.[5] B32B *7/02, 5/16*

U.S. Cl. 428—217 35 Claims

1. A biaxially oriented polyester film having excellent scratch resistance and excellent chipping resistance, said polyester film containing particles (A) having an average primary particle diameter of 5–300 nm, an average degree of aggregation of 10–50 and a Mohs' hardness of 6–10 and said particle (A) being present in the film in an amount of 0.01–5 wt. %.

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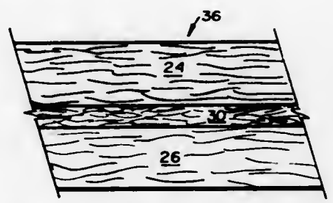
FIRE-RESISTANT MINERAL FIBERS, STRUCTURES EMPLOYING SUCH MINERAL FIBERS AND PROCESSES FOR FORMING SAME

Carl R. Strauss, Newark; Richard D. Godfrey, Granville; Steven D. Crothers, Newark; Beverly A. Goudy, Columbus; Kathryn L. Brandenburg, and Roy E. Shafer, both of Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 416,816, Oct. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 320,858, Mar. 8, 1989, abandoned, which is a continuation of Ser. No. 118,593, Nov. 9, 1987, abandoned. This application Jan. 17, 1992, Ser. No. 823,602

Int. Cl.[5] B27N *9/00*; B32B *5/16, 7/00, 5/06*

U.S. Cl. 428—240 17 Claims



1. A fire-resistant building insulation product consisting essentially of mineral wool and dicalcium phosphate in close proximity to said mineral wool, said dicalcium phosphate being present in an amount sufficient to form a high temperature coating on at least a portion of the mineral wool in close proximity thereto so that when the insulation product is exposed to elevated temperatures normally melting untreated mineral wool, the formed high temperature coating enables the mineral wool portion to withstand such elevated temperatures without melting, whereby the product is rendered fire-resistant.

5,284,701

CARBON FIBER REINFORCED COATINGS

Ray C. Hamon, Toledo, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 11, 1991, Ser. No. 653,558

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—246 7 Claims

1. A manufacture capable of presenting a light-colored surface, substantially free of carbon blacks comprising:

A. a first layer of air-drying or polymerization-curing coating material which is substantially non-conductive to electricity, said first layer having a thickness in the range from about 0.5 to 10 mils;

B. adhering to said first layer of coating material, a veil of

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carbon fibers being oriented in more than one direction so as to form a handleable matrix, said carbon fibers having a weight in the range of from about 0.1 to about 5 ounces per square yard (2.4 to 120 grams per square meter), and being comprised of carbon fibers having a diameter in the range of from about 3 to 20 microns, and a fiber length in the range of from about 1/10 to 3 inches;

C. a second coating layer of a same or different air dry or polymerization curing resin coating material which is substantially non-conductive to electricity applied over said veil to cover substantially all portions of said veil;



wherein both said first layer and said second coating layer comprise urethanes, epoxys, alkyds, polyethylene, acrylics, vinyls, vinyl acetates, esters, polyesters, sulfones, polysulfones, silicones, or polysilicones and has a thickness of about 1 to 50 mils; whereby either or both of said coating material layers can be pigmented and colored as desired, said second coating layer protects said carbon fibers from abrasion and deterioration; and said finished three-layer manufacture has an electrical conductivity in the range of from about 50 to 5 million ohms per square as measured at the exposed surface of said second coating layer.

5,284,702

LOW FUMING PHENOLIC RESIN PREPREG AND PROCESS FOR PRODUCING THE SAME

Yoshitaka Umemoto; Takayuki Tanaka, and Yasuo Furukawa, all of Shizuoka, Japan, assignors to Tobo Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1991, Ser. No. 745,302
Claims priority, application Japan, Aug. 17, 1990, 2-216723
Int. Cl.[5] B32B *7/00, 27/00, 17/02*
U.S. Cl. 428—272 **20 Claims**

1. A low fuming phenolic resin prepreg comprising a fibrous base impregnated with 20 to 60% by weight of a resin composition comprising (a) 100 parts by weight of a resol phenolic resin, (b) from 1.5 to 15 parts by weight of polyacrylamide, (c) from 1.5 to 25 parts by weight of an epoxy resin, and (d) from 1.5 to 15 parts by weight of an inorganic filler, wherein said epoxy resin is water-soluble or capable of forming an emulsion, and wherein said polyacrylamide has a molecular weight of 300,000 or more.

5,284,703

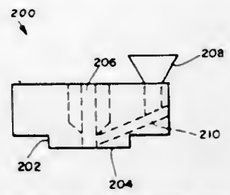
HIGH PULP CONTENT NONWOVEN COMPOSITE FABRIC

Cherie H. Everhart, Alpharetta, Ga.; Daniel O. Fischer, Knoxville, Tenn.; Fred R. Radwanski, and Henry Skoog, both of Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 633,594, Dec. 21, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 908
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—283 **17 Claims**

1. A high pulp content hydraulically entangled nonwoven composite fabric comprising:

from about 10 to about 25 percent, by weight, of a nonwoven continuous filament substrate component; and



more than about 70 percent, by weight, of a fibrous component consisting of pulp fibers.

5,284,704

NON-WOVEN TEXTILE ARTICLES COMPRISING BICOMPONENT FIBERS AND METHOD OF MANUFACTURE

Francis F. Kochesky, Newburgh, and Bryan F. Paschall, New Windsor, both of N.Y., assignors to American Felt & Filter Company, Newburgh, N.Y.

Filed Jan. 15, 1992, Ser. No. 821,488
Int. Cl.[5] B01D *39/16;* **D04H** *1/48, 1/54;* **H01M** *2/16*
U.S. Cl. 428—296 **19 Claims**

1. A method of forming a non-woven fabric from bicomponent fibers having a polyester core polymer surrounded by a polyester sheath polymer comprising the steps of forming a sheet from a mass of fibers comprising from 10 to 100% of said bicomponent polyester fibers, needling said sheet, and heating said needled sheet to a temperature between the softening point and the melting point of the sheath polymer for a period of time from 5 sec. to 5 min. at a pressure of 0 to 2000 psi until the fibers are bonded together.

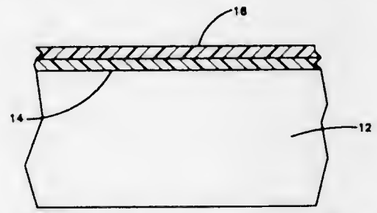
6. A non-woven fabric prepared by the method of claim 1, wherein the mass of fibers comprises a blend of the bicomponent polyester fibers and other fibers selected from the group consisting of rayon, nylon, acrylic and wool fibers.

5,284,705

ANTISTATIC COATING COMPRISING TIN-OXIDE-RICH PIGMENTS AND PROCESS AND COATED SUBSTRATE

Jonathan W. Cahill, Solon, Ohio, assignor to Garland Floor Co., Cleveland, Ohio

Filed Sep. 6, 1990, Ser. No. 578,898
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—328 **36 Claims**



1. An antistatic coating composition consisting essentially of a pigment portion dispersed in a binder portion, the binder portion containing a curable film-forming binder, the pigment portion containing tin oxide-rich electrically-conductive pigment blended with an electrical conductivity-enhancing proportion of hard impalpable, achromatic filler mineral, the proportion of said binder relative to the solids of said pigment portion being sufficiently high to provide a binder-continuous

film when said composition is deposited and cured as a film on a substrate.

5,284,706

SEALING GLASS COMPOSITE

Brien E. O'Donnelly, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 23, 1991, Ser. No. 812,300
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—330 **10 Claims**

1. A sealing glass composite, comprising

a glass matrix having a sealing temperature below about 450° C. and a coefficient of thermal expansion of from about 80×10^{-7} in/in/°C. to about 130×10^{-7} in/in/°C.; and

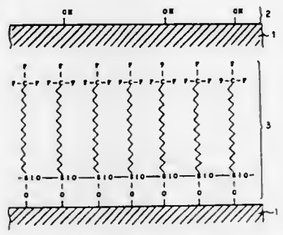
from 32 to about 85 weight percent based on the total composite of at least one substantially spherical particulate additive dispersed within said glass matrix, said particulate additive selected from the group consisting of calcium fluoride, barium fluoride, coated calcium fluoride, coated barium fluoride and mixtures thereof and having a diameter effective to limit the dissolution of said particulate additive in said glass matrix to less than 10 percent by weight during glass sealing without significantly affecting the flow of said sealing glass composite.

5,284,707

ANTI-CONTAMINATING ADSORBED FILM COVALENTLY BONDED TO A SUBSTRATE SURFACE THROUGH -SI- GROUPS

Kazufumi Ogawa, Hirakata; Norihisa Mino, Settu, and Mamoru Soga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 24, 1991, Ser. No. 812,820
Claims priority, application Japan, Dec. 25, 1990, 2-405754; Jan. 23, 1991, 3-024023
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—333 **3 Claims**



1. An anti-contaminating film being monomolecular film chemically adsorbed to a substrate surface, said film comprising —Si— groups, alkyl groups and CF_3 pendent groups in that order from the surface, wherein the said —Si— groups are directly bonded to the substrate surface with covalent bonds, the substrate being selected from the group consisting of pottery, porcelain, ceramics, enameled substrates, glass, stone and wood.

5,284,708

MODIFIED POLYTETRAFLUOROETHYLENE FINE POWDER AND PROCESS FOR PREPARING THE SAME

Tetsuo Shimizu, 2-27-104, Shinkoriyama, Ibaraki-shi, Osaka-fu; Kazutaka Hosokawa, 2-21-21, Hitotsuya, Settsu-shi, Osaka-fu; Masuo Kokumai, A-104, Kohpu Normura, 1-18-7, Higashiarioka, Itami-shi, Hyogo-ken, and Makoto Ono, 502-go, Shatoh Uchindai, 1-12-16, Uchindai-cho, Miyakojima-ku, Osaka-shi, Osaka-fu, all of Japan

Division of Ser. No. 715,029, Jun. 19, 1991, Pat. No. 5,176,958, which is a continuation of Ser. No. 566,865, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 445,937, Dec. 7, 1989, Pat. No. 5,005,335, which is a continuation of Ser. No. 210,348, Jun. 23, 1988, abandoned. This application Oct. 8, 1992, Ser. No. 957,895
Claims priority, application Japan, Jun. 24, 1987, 62-156875
Int. Cl.[5] B32B *5/16;* **C08F** *116/12*
U.S. Cl. 428—402 **7 Claims**

1. Modified polytetrafluoroethylene fine powder which comprises colloidal particles of a copolymer comprising repeating units of tetrafluoroethylene and 0.02 to 0.3% by weight of repeating units of a fluoroalkyl vinyl ether of the formula:

$$X(CF_2)_nOCF{=}CF_2 \quad (I)$$

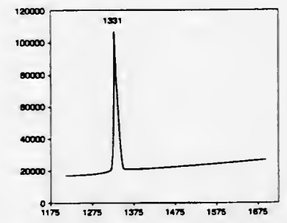
wherein X is a hydrogen, fluorine or chlorine atom and n is an integer of 1 to 6, wherein said colloidal particles have a number average particle size of 0.05 to 0.6 μm, wherein said copolymer has a specific melt viscosity of from 6×10^{10} to 30×10^{10} poise at 380° C. and a standard specific gravity of from 2.135 to 2.175 and wherein a paste extruded article of said copolymer has a green elongation of at least 400%.

5,284,709

DIAMOND MATERIALS WITH ENHANCED HEAT CONDUCTIVITY

John A. Herb, Palo Alto; John M. Pinneo, Redwood City, and Clayton F. Gardinier, San Francisco, all of Calif., assignors to Crystallume, Menlo Park, Calif.

Continuation-in-part of Ser. No. 704,997, May 24, 1991, which is a continuation of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 32,167, Mar. 30, 1987, Pat. No. 4,743,073. This application Nov. 8, 1991, Ser. No. 789,732
Int. Cl.[5] C30B *29/04*
U.S. Cl. 428—408 **3 Claims**



1. A high thermal conductivity CVD diamond film, substantially free of voids, having an average crystallite size greater than about 15 microns, said material having an intensity ratio of diamond-Raman-peak-to-photoluminescence background intensity greater than about 20, a maximum intensity of the diamond Raman peak in counts/sec divided by the intensity of photoluminescence at 1270 cm^{-1} greater than about 3, a Raman sp^3full width half maximum less than about 6 cm^{-1} and a diamond-to-graphite Raman ratio greater than about 25.

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5,284,710

FLUOROPOLYMER-ACRYLIC PLASTIC COMPOSITE AND COEXTRUSION METHOD

Jeffrey W. Hartley, Lancaster; Arthur F. Korney, Jr., Pickerington, and Earl H. Sexton, III, Columbus, all of Ohio, assignors to Crane Plastics Company, Columbus, Ohio

Filed Sep. 17, 1991, Ser. No. 761,277
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—421 10 Claims

1. A plastic composite comprising:

a) an outermost layer of at least one first polymeric substance comprising:

1) from about 30 to about 70 percent by weight of at least one acrylic material,

2) from about 30 to about 70 percent by weight of at least one fluoropolymer, and

3) at least one inorganic pigment in sufficient amount to render said first polymeric substance reflective to infrared light and opaque to light having a wavelength of about 350 to about 2500 nanometers; said outermost layer in contact with:

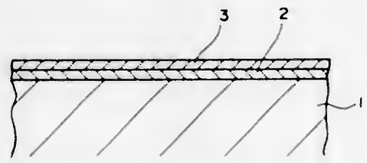
b) a layer of at least one second polymeric substance being of a chemical character so as to adhere to said at least one first polymeric substance in said extrusion product, said at least one second polymeric substance comprising a polymeric substance selected from the group consisting of polyvinylchlorides, chloropolyvinylchlorides, and other polymers which adhere to said first polymeric substance only through adhesion to said at least one acrylic material.

5,284,711

METHOD FOR FORMING A FLUORORESIN FILM AND ARTICLES HAVING A FLUORORESIN FILM FORMED BY THE METHOD

Kelsuke Ihara, Yokohama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 914,522
Claims priority, application Japan, Jul. 19, 1991, 3-203402
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—421 10 Claims



1. A method for forming a fluororesin film on a metallic substrate which comprises the steps of:

(A) forming a chromium oxide film on at least one side of a metallic substrate by alternatively effecting anodic and cathodic electrolytic treatments to the metallic substrate in the presence of a chromium compound solution containing 150 to 350 g/l of chromic acid, 300 to 500 g/l of sulfuric acid and a fluoride; and

(B) forming a fluororesin film on the resulting chromium oxide film, whereby said fluororesin film is a fixed to the at least one side of the metallic substrate through the chromium oxide film.

2. A metallic article which comprises a metallic substrate and a fluororesin film formed through a chromium oxide film in a manner as defined in claim 1.

5,284,712

CEMENT-CONTAINING CERAMIC ARTICLES AND METHOD FOR PRODUCTION THEREOF

Kazuyuki Kawai; Kazumasa Goto, and Takayuki Shirai, all of c/o Inax Corporation No. 6, Kolehonmachi 3-chome, Tokoname, Aichi, Japan

Continuation of Ser. No. 548,288, Jul. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 260,459, Oct. 20, 1988, abandoned. This application Sep. 25, 1992, Ser. No. 951,355
Claims priority, application Japan, Dec. 26, 1987, 62-331776
Int. Cl.[5] B28B *11/06*; C03C *1/00*; C04B *33/34, 35/00*
U.S. Cl. 428—454 26 Claims

1. A method for producing a high-strength ceramic article exhibiting about 3% or less surface efflorescence, comprising the steps of:

blending a mixture comprising 100 parts by weight of an inorganic hydraulic cement containing at least one of calcium silicate and calcium aluminate components, about 50–300 parts by weight of a heat-vitrifiable inorganic powder forming vitrified liquid-flowing substances at a firing temperature between about 1000° C. and about 1400° C., and about 20–400 parts by weight of a silicate mineral powder having reacting or sintering properties at said firing temperature and forming substantially no liquid-flowing substances at said firing temperature, said silicate mineral powder being selected from the group consisting of magnesium silicate minerals, aluminum silicate minerals and mixtures thereof,

combining said blended mixture with water to form a moldable composition,

molding said moldable composition to form a molded article,

preliminarily hardening said molded article by hydration to form a cement-based skeleton network in said article, and then

firing said hydrated article to said firing temperature to react or sinter said silicate mineral powder while forming substantially no liquid-flowing substances therefrom and to fuse said heat-vitrifiable powder into a liquid-flowing state which substantially permeates into said skeleton network to vitreously bond said article and thus form said high-strength ceramic article exhibiting about 3% or less surface efflorescence.

5,284,713

COMPOSITE MATERIAL OF METAL AND RUBBER

Kiyoshige Muraoka; Mamoru Uchida, and Takafumi Taguchi, all of Hyogo, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 538,715, Jun. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 266,580, Nov. 3, 1988, abandoned. This application May 18, 1992, Ser. No. 884,894
Claims priority, application Japan, Nov. 7, 1987, 62-281777; Dec. 4, 1987, 62-308093
Int. Cl.[5] B32B *15/06*
U.S. Cl. 428—462 4 Claims

1. A composite material which consists essentially of a rubber composition and a metal material, wherein said rubber composition contains, per 100 parts by weight of rubber, 3 to 6 parts by weight of sulfur, and N-oxy-diethylene-2-benzothiazolylsulfenamide or N-tert-butyl-2-benzothiazolylsulfenamide as a vulcanization accelerator, and wherein said metal material is provided with a plating of a ternary alloy consisting of 60 to 75% by weight copper, 4 to 10% by weight nickel, and the balance zinc;

with the proviso that said rubber composition is free of any adhesion promoter.

5,284,714

PHOTOGRAPHIC SUPPORT MATERIAL COMPRISING AN ANTISTATIC LAYER AND A HEAT-THICKENING BARRIER LAYER

Charles C. Anderson, Penfield; Wayne A. Bowman, Walworth, and Billy R. Dotson, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 980,416, Nov. 23, 1992, Pat. No. 5,221,598.
This application Feb. 22, 1993, Ser. No. 20,957
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—474.5 4 Claims

1. A method for preparing a base for a photographic element which comprises coating a support with a vanadium pentoxide antistatic layer and applying an aqueous solution of a heat-thickening polyacrylamide polymer having hydrophilic funtionality as a overlayer on the antistatic layer.

5,284,715

RUBBER SURFACE IDENTIFICATION COATING AND RUBBER PRODUCTS PREPARED THEREFROM

Bharat K. Kansupada, Mogadore; Larry L. Mersbon, Harville, and Christopher J. Koscho, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 3, 1992, Ser. No. 940,413
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—519 8 Claims

1. A method of making a rubber article which comprises the steps of (A) coating a surface of a sulfur curable, black colored diene rubber which contains carbon black and sulfur based curative(s) with a water-based coating composition comprised of a blend of polybutadiene rubber latex prepared by emulsion polymerization utilizing and containing a synthetic anionic emulsifier and aqueous dispersion of zinc stearate, (B) drying the applied coating composition on the rubber surface, and (C) co-curing the coating composition and rubber article in a suitable mold at an elevated temperature of about 120° C. to about 160° C., wherein said coating composition is comprised of 100 parts by weight of zinc stearate and about 20 to about 25 parts by weight of said polybutadiene rubber.

5,284,716

MAGNETIC RECORDING MEDIUM

Yasushi Nakano; Yoshitaka Yasufuku; Noboru Koyama; Masahiro Umemura; Takemasa Namiki; Seiichi Tobisawa; Shigetoshi Kawabe, and Takeshi Nakajima, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

PCT No. PCT/JP90/00060, § 371 Date Sep. 5, 1990, § 102(e) Date Sep. 5, 1990, PCT Pub. No. WO90/08380, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 19, 1990, Ser. No. 573,115
Claims priority, application Japan, Jan. 19, 1989, 1-10875; Mar. 14, 1989, 1-62683; Mar. 28, 1989, 1-77447
Int. Cl.[5] B32B *5/16*; G11B *5/66*
U.S. Cl. 428—694 BU 10 Claims

1. A magnetic recording medium comprising

a first magnetic layer on a non magnetic support, said first magnetic layer containing a binder and a first magnetic powder; and

a second magnetic layer on said first magnetic layer,

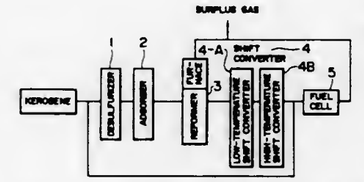
said second magnetic layer containing a binder and a second magnetic powder comprising a first element selected from the group consisting of AL, Si, and mixtures thereof, a resin having a functional group, carbon black having an average particle size of not less than 50 mμ, and said second magnetic layer having a thickness of not more than 1.0 μm.

5,284,717

METHOD FOR PRODUCING RAW MATERIALS FOR A REFORMER BY CRACKING AND DESULFURIZING PETROLEUM FUELS

Osamu Yamase; Tadayuki Miura, and Hajime Kubota, all of Tokyo, Japan, assignors to Petroleum Energy Center, Japan and Showa Shell Sekiyu Kabushiki Kaisha, Japan

Continuation of Ser. No. 634,571, Dec. 27, 1990, abandoned.
This application Feb. 25, 1993, Ser. No. 22,857
Claims priority, application Japan, Dec. 27, 1989, 1-336485
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—17 6 Claims



6. A method for producing raw materials from a steam reformer in a fuel cell electricity generation process which comprises:

providing, in combination, a desulfurizer, an adsorber, a steam reformer, a converter or gas separation membrane, and a fuel cell,

desulfurizing and cracking fuel comprising kerosene, naphtha or liquified petroleum gas in said desulfurizer in the presence of a metallosilicate catalyst having an atomic ratio Si/Me of 40-3200, wherein Me is a metal selected from the group consisting of Al, Ni, Co, Mo, W, Fe, Cr and Ga, at a temperature of 300°–600° C., a a pressure of 1–10 kg/cm^2, a H_2/oil ratio of 500–2000, and an SV of 0.5–4 hr^{-1} whereby the desulfurized product contains ≦ 1 ppm sulfur,

introducing said desulfurized product into said reformer wherein said product comprises C_3 to C_{20} hydrocarbon and has a specific gravity of 0.5 to 0.85,

steam reforming said product in said steam reformer wherein said product reacts with steam and is converted to product-gas comprising hydrogen, carbon monoxide, and carbon dioxide, and

reducing the carbon monoxide content of the product-gas from said steam reformer to ≦ 1 vol. %.

5,284,718

FUEL CELL MEMBRANE ELECTRODE AND SEAL ASSEMBLY

Clarence Y. Chow, Vancouver; David S. Watkins, Coquitlam; Kirk B. Washington, Richmond, and Shiraz Ramji, North Vancouver, all of Canada, assignors to Ballard Power Systems Inc., Canada

Filed Sep. 27, 1991, Ser. No. 766,745
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] H01M *8/04, 8/10*
U.S. Cl. 429—26 16 Claims

1. A membrane electrode and seal assembly for an electrochemical fuel cell comprising:

first and second layers of porous electrically conductive sheet material, each having a central portion;

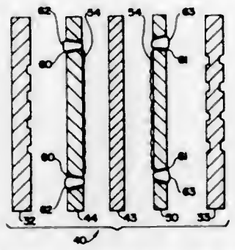
a membrane interposed between said first and second layers of sheet material; and

first and second preformed gaskets;

wherein said layers of sheet material cover and support substantially the entire surface of said membrane; said layers of sheet material and said membrane have openings formed therein to accommodate the passage of fluids through said assembly; each of said layers of sheet mate-

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rial having channels formed therein, said channels circumscribing said openings and said central portion; said first



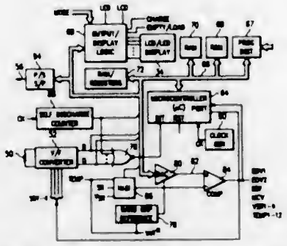
and second preformed gaskets being disposed in said channels.

5,284,719

METHOD AND APPARATUS FOR MONITORING BATTERY CAPACITY

John E. Landau, Dallas; Wallace E. Matthews, Richardson, and David L. Freeman, Plano, all of Tex., assignors to Benchmarq Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 8, 1992, Ser. No. 910,687
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—50 43 Claims



23. A method for monitoring the operating parameters of a rechargeable battery in a battery-pack, comprising the steps of:

generating a time base in the battery-pack;

sensing the temperature of the battery in the battery-pack;

processing the time base and sensed temperature of the battery in the battery-pack to generate a temperature history of the battery; and

storing the temperature history in a storage device such that it can be accessed at a later time.

5,284,720

VENT CAP WITH ELECTROLYTE DRAIN AND EXPLOSION ATTENUATION CAPABILITIES

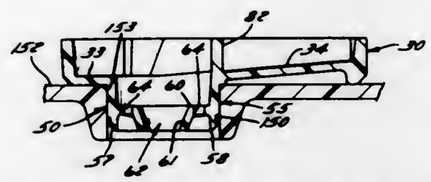
David A. Thuerk, Brookfield; Debra L. Smith, West Allis; Thomas J. Dougherty, Waukesha, and Randy K. Hulsebus, Plymouth, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed May 27, 1993, Ser. No. 68,415
Int. Cl.[5] H01M *2/12*
U.S. Cl. 429—87 14 Claims

1. A vent cap for a battery of the type which includes a battery cover having electrolyte fill holes and electrolyte which may, during use, spew, spill, evolve or be pumped from the fill holes, the cap comprising:

a chamber having a floor and plural barrels arranged linearly and extending from the floor and arranged to be inserted into the fill holes, the floor having a generally planar portion from which the barrels extend and an inclined portion arranged to facilitate drainage of any electrolyte entering the chamber to the planar portion; and

the chamber including a flame arrestor having an entrance



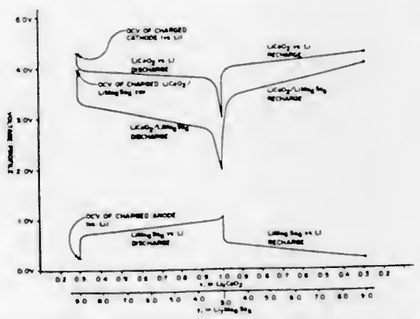
for gases which may enter the chamber through the barrels and an exhaust port, the entrance being located generally above a line extending through the centerline of the barrel openings.

5,284,721

HIGH ENERGY ELECTROCHEMICAL CELL EMPLOYING SOLID-STATE ANODE

Kirby W. Beard, Perkasie, Pa., assignor to Alliant Techsystems Inc., Edina, Minn.

Filed Aug. 1, 1990, Ser. No. 561,132
Int. Cl.[5] H01M *6/14*
U.S. Cl. 429—194 18 Claims



1. A high rate secondary electrochemical cell comprising:

an anode comprising a reversible lithium intercalation compound selected from one or more transition metal chalcogenides having a relatively high lithium intercalation ability and a relatively low molecular weight and having the general formula:

$$Li_xM_aX_b$$

where M is selected from transition metal(s); X is selected from O, S, Se, and Te; and

where x, a and b are numbers representing relative combining ratios and wherein the intercalation compound has properties including a potential of no more than 1.5 V versus a lithium reference electrode and >200 mAh/gm intercalation/deintercalation capacity (<133 gm/Faraday);

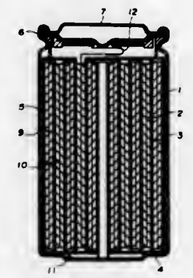
a compatible cathode having a cathode active material and a current collector; and an electrolyte system.

5,284,722

NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY

Naoyuki Sugeno, Fukushima, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,995
Claims priority, application Japan, Mar. 13, 1991, 3-072197
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—197 8 Claims



1. A non-aqueous electrolyte secondary battery comprising:

a positive electrode formed of Li_xMO_2, wherein M represents at least one of Cobalt, Nickel and Manganese and $0.5 \leqq x \leqq 1$;

a negative electrode formed of carbon; and

an organic solvent of an electrolyte, wherein the organic solvent is a mixture solvent of propylene carbonate and ester compound having a general formula R_1COOR_2, where both R_1 and R_2 are alkyl groups selected from the group consisting of CH_3, C_2H_5, C_3H_7 and C_4H_9.

5,284,723

ELECTROCHEMICAL ENERGY STORAGE DEVICES COMPRISING ELECTRICALLY CONDUCTIVE POLYMER AND THEIR USES

Etienne Hannecart, Tervuren; Elise Destryker, Sint-Pieters-Leeuw, both of Belgium; Jean Fauvarque, Paris, France; Anne de Guibert, Paris, France, and Xavier Andrieu, Bretigny/Orge, France, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium and Compagnie Generale d'Electricite (Societe Anonyme), Paris, France

Continuation of Ser. No. 564,064, Aug. 8, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,227
Claims priority, application France, Jul. 14, 1989, 89 10952
Int. Cl.[5] H01M *6/16, 6/18*
U.S. Cl. 429—213 27 Claims

1. An electrochemical supercapacitor for storing electrical energy comprising:

(a) an electrically conductive polymer selected from the group consisting of polypyrrole, substituted polypyrrole, and a mixture of polypyrrole and substituted polypyrrole;

(b) at least one ionic compound containing at least one R-sulphate or R-sulphonate group, with R denoting an alkyl or aryl radical; and

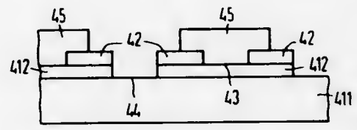
(c) at least one ionic compound which contains a chloride group.

5,284,724

PHASE MASK FOR PROJECTION LITHOGRAPHY AND METHOD FOR THE MANUFACTURE THEREOF COMPRISING A SELECTIVELY ETCHABLE PHASE SHIFT LAYER DIRECTLY ON SUBSTRATE

Christoph Noelscher, Munich, and Leonhard Mader, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 11, 1991, Ser. No. 667,264
Claims priority, application European Pat. Off., Apr. 9, 1990, 90106777.7
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 6 Claims



1. A projection lithography phase mask used with light having a wavelength λ and an exposure means having an imaging scale m and a numerical aperture NA, comprising:

a composite carrier comprised of a substrate formed of a light-transmissive first material and a carrier structure directly on the substrate of a light-transmissive second material having a refractive index n_2, and wherein the second material is selectively etchable with respect to the surface of the substrate in an anisotropic etching process;

the carrier structure having a mask pattern directly thereon with openings at selected first regions where a surface of the carrier structure is exposed, and the carrier structure having openings therein so as to expose the substrate at selected second regions; and

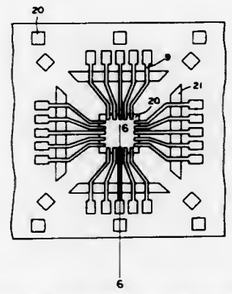
given exposure in a medium having a refractive index n_1, the substrate at said second region having an optical thickness which is lower by $d=\lambda(1 +/- \frac{1}{8})/(2 (n_2-n_1))$ than an optical thickness of said composite carrier formed of said carrier structure and substrate at said first regions.

5,284,725

PHOTO-MASK FOR MANUFACTURE OF TWO-LAYER TAB

Akio Takatsu, Ichikawashi, Japan, assignor to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,179
Claims priority, application Japan, Nov. 16, 1990, 2-311132
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 2 Claims



1. A combination of first and second photomasks for use in two exposure steps when forming a ground metal layer on the back surface of a substrate in the manufacture of a two-layer

VOL 1159 ISS 2 FE 8 1994 UMI

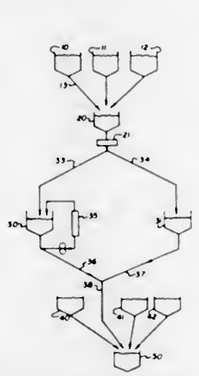
TAB in which a metal layer is formed on one surface or both surfaces of an insulating resin substrate without an adhesive, determined metal leads are formed on the top surfaces of the substrate, via holes are formed on the determined positions of the substrate, a ground metal layer is formed on the back surface of the substrate, and a part of the leads formed on the top surface of the substrate are electrically connected with the ground metal layer formed on the back surface of the same via the via holes; the first photomask used in the first exposure step for forming the via holes to the back surface of the substrate including means providing a plurality of alignment marks in the determined plural positions thereof and the second photomask used in the second exposure step for forming the ground metal layer on the back surface of the substrate including means providing a plurality of alignment marks in corresponding positions to the alignment marks in the first photomask.

5,284,726

METHOD TO DETERMINE SILVER LOSS IN A PHOTOGRAPHIC EMULSION MANUFACTURING PROCESS

William D. Munch, Penfield; Kamala E. Huron, Brockport, and Douglas A. Neusch, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,251
Int. Cl.[5] G03C 5/00, 1/005
U.S. Cl. 430—30 **10 Claims**



1. A method of determining silver loss in a batch photographic process operation in which a silver photographic emulsion is manufactured, the batch process including at least one kettle and processing equipment comprising sections of pipe, mixers and pumps, the method comprising:

a) adding water containing no silver to said kettle after said kettle has been emptied;

b) measuring the amount of water in said kettle and determining the amount of silver in said kettle;

c) circulating the water in said kettle through one of the processing equipment and returning this circulated water to said kettle;

d) flushing water containing no silver through one of the processing equipment from step (c) and adding this water to said kettle; and

e) repeating step (b) through (d) for each of the processing equipment.

5,284,727

ELECTROPHOTOGRAPHIC ELEMENT WITH ALUMITE LAYER

Takayuki Itakura, Moriguchi, and Youichi Takesawa, Suita, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1991, Ser. No. 810,852
Claims priority, application Japan, Dec. 21, 1990, 2-405224
Int. Cl.[5] G03G 5/14
U.S. Cl. 430—58 **16 Claims**

1. An organic photosensitive material for electrophotography comprising an aluminum substrate having an alumite layer and an organic photosensitive layer formed on said alumite layer, wherein said alumite layer has electric characteristics that satisfy equations,

$$300 \leqq Z2 \leqq 600$$

and

$$3 \leqq Z2/Z3 \leqq 7$$

wherein Z2 represents an impedance (kiloohms) when the below-mentioned cell is measured at a frequency of 100 Hz, and Z3 represents an impedance (kiloohms) when the below-mentioned cell is measured at a frequency of 1000 Hz,

as measured in the form of a cell in which gold is deposited on the surface of said aluminum substrate over an area of 1 cm^{-2}.

6. A photosensitive material according to claim 1, wherein the organic photosensitive layer consists of a laminate of a charge-generating layer formed on the alumite layer and a charge-transporting layer formed on said charge-generating layer.

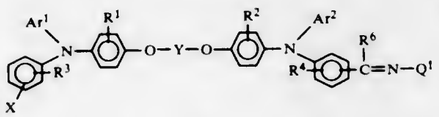
5,284,728

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING HYDRAZONE COMPOUNDS

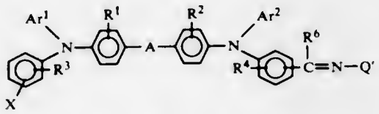
Tetsuo Murayama, Machida; Hitoshi Ono, Yokohama; Atsuo Saita, Machida, and Sumiko Watabe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,085
Claims priority, application Japan, Apr. 30, 1991, 3-99112; May 16, 1991, 3-111943; Jul. 12, 1991, 3-172791
Int. Cl.[5] G03G 5/047
U.S. Cl. 430—59 **13 Claims**

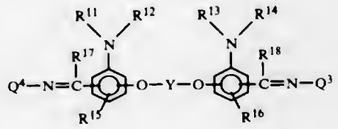
1. An electrophotographic photoreceptor comprising an electrically conductive support and a photosensitive layer formed thereon, wherein said photosensitive layer contains at least one member selected from the group consisting of hydrazone compounds of the formulas (I), (II) and (III):



(I)

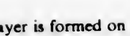


(II)



(III)

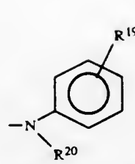
wherein X is a hydrogen atom or a group of the formula (IV):



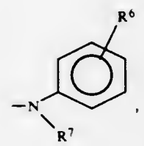
(IV)

Q^1 is a group of the formula (V), (VI), (VII), (VIII) or (IX); Q^2 is a group of the formula (VI), (VII), (VIII), (IX) or (X); each of Q^3 and Q^4 which may be the same or different, is a group of the formula (VI), (VII), (VIII), (IX) or (XI):

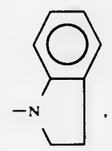
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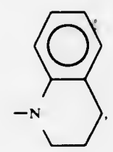
(XI)



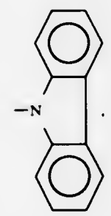
(V)



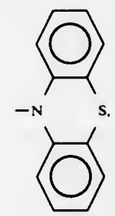
(VI)



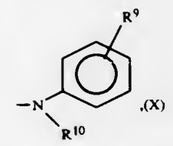
(VII)



(VIII)



(IX)



,(X)

Y is a bivalent hydrocarbon group which may have substituents, A is an aliphatic linking group which may have substituents, where the main chain of the linking group may contain an oxygen atom or a carbon-carbon double bond; in the case where the main chain of the linking group is composed of only carbon atoms, the constituting carbon number is from 3 to 5; and in the case where the oxygen atom is contained, the constituting carbon-carbon chain length has the carbon number of from 2 to 5; each of Ar^1 and Ar^2 which may be the same or different, is an aryl group which may have substituents or a heterocyclic group; each of R^1, R^2, R^3, R^4, R^5, R^9, R^{15}, R^{16} and R^{19} which may be the same or different, is a hydrogen atom, a lower alkyl group which may have substituents, a halogen atom or a lower alkoxy group which may have substituents; each of R^6, R^8, R^{17} and R^{18} which may be the same or different, is a hydrogen atom, a methyl group or a phenyl group which may have substituents; each of R^7 and R^{10} is an aryl group which may have substituents in the formula (I), or an aryl group which may have substituents or a heterocyclic group in the formula (II); each of R^{11}, R^{12}, R^{13} and R^{14} which may be the same or different, is an alkyl group which may have substituents, an aralkyl group which may have substituents; an aryl group which may have substituents, a vinyl group which may have substituents, or an allyl group; and R^{20} is an aryl group which may have substituents, or a heterocyclic group.

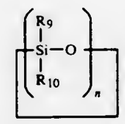
5,284,729

COATING COMPOSITION FOR ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND METHOD FOR FORMING ELECTROPHOTOGRAPHIC PHOTOSENSITIVE COATING FILM BY USE THEREOF

Shigemori Tanaka, Tokyo, and Takashi Tanaka, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1990, Ser. No. 549,124
Claims priority, application Japan, Jul. 14, 1989, 1-180229
Int. Cl.[5] G03G 5/14
U.S. Cl. 430—66 **19 Claims**

1. A coating composition for forming a coating film of an electrophotographic photosensitive member containing as a volatile, removable levelling agent a silicone oil having the general formula:



wherein R_9 and R_{10} are each a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted alkoxy group, and n is an integer, said volatile levelling agent being removed at least to an extent sufficient to prevent deterioration of electrophotographic characteristics of said coating film prior to formation of said coating film.

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5,284,730

ELECTROPHOTOGRAPHIC LIGHT-RECEIVING MEMBER

Tetsuya Takei, Nagahama; Shigeru Shirai, Hikone; Hirokazu Ohtoshi, Nagahama; Ryuji Okamura, Shiga; Yasuyoshi Takai, Nagahama, and Hiroyuki Katagiri, Shiga, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 780,780, Oct. 23, 1991. This application Aug. 6, 1992, Ser. No. 925,617

Claims priority, application Japan, Oct. 24, 1990, 2-287564; Oct. 24, 1990, 2-287565; Mar. 29, 1991, 3-89316; Aug. 30, 1991, 3-220385; Aug. 30, 1991, 3-220386; Sep. 20, 1991, 3-241751

Int. Cl.[5] **G03G** *5/14*

U.S. Cl. 430—66 **7 Claims**

1. An electrophotgraphic light-receiving member comprising a non single crystal layer comprising at least silicon, carbon, oxygen, hydrogen and fluorine atoms as an outermost surface layer, wherein the ratio of silicon atoms bonded to carbon atoms in said non-single crystal layer is 50 to 100 atomic % of the total number of silicon atoms therein, the ratio of silicon atoms bonded to oxygen atoms in said non-single crystal layer is 10 to 30 atomic % of the total number of silicon atoms therein, and said non-single crystal layer is substantially composed of a non-single crystal $(Si_xC_yO_z)_tH_uF_v$ wherein $0.1 \leqq x \leqq 0.4$, $0.4 \leqq y \leqq 0.7$, $0.05 \leqq z \leqq 0.2$, $x+y+z=1$, $0.299 \leqq t \leqq 0.589$, $0.41 \leqq u \leqq 0.7$, $0.001 \leqq v \leqq 0.1$ and $t+u+v=1$.

5,284,731

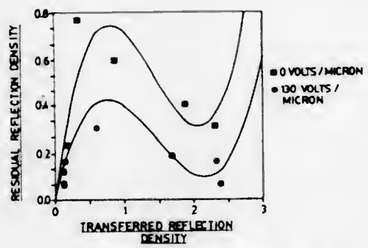
METHOD OF TRANSFER OF SMALL ELECTROSTATOGRAPHIC TONER PARTICLES

Dinesh Tyagi, Fairport, and Alec N. Mutz, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 890,892

Int. Cl.[5] **G03G** *13/14*

U.S. Cl. 430—126 **19 Claims**



1. A method of transferring electrostatically charged thermoplastic toner particles having a particle size less than 8 micrometers from an element having a surface to a receiver within a transfer zone, comprising:

heating said receiver;

contacting said heated receiver with said toner particles at a temperature sufficient to adhere said toner particles to one another at points of contact between said toner particles, but insufficient to cause said toner particles to flow into a single mass;

simultaneously establishing an electric field within said transfer zone tending to force said toner particles toward said receiver; and thereafter

separating said receiver from said element.

5,284,732

SILVER HALIDE PHOTOGRAPHIC MATERIAL

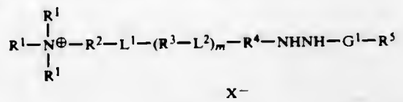
Kazumi Nii, and Toshihide Ezoe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Jun. 9, 1993, Ser. No. 73,571

Int. Cl.[5] **G03C** *1/06*

U.S. Cl. 430—264 **13 Claims**

1. A silver halide light-sensitive material comprising a support and a silver halide emulsion layer and containing a compound represented by formula (I):



(I)

wherein L^1 represents a single bond, —O—, —S—, —NR^6—, —CO—, SO_2—, —P(O) (G^2R^6)— or a combination thereof; L^2 represents —SO_2NR^6—, —$NR^6SO_2NR^6$—, —$CONR^6$—, —NR^6CONR^6— or —G^2R^6)NR^6—; G^1 represents —CO—, —SO_2—, —SO—, —COCO—, a thiocarbonyl group, an iminomethylene group or —P(O) (G^2R^6)—; G^2 represents a single bond, —O— or —NR^6—; R^1 represents an aliphatic group or an aromatic group; R^2, R^3, and R^4 each represent a divalent aliphatic group or a divalent aromatic group; R^5 represents a hydrogen atom, an aliphatic group, an aromatic group, an alkoxy group, an aryloxy group or an amino group; R^6 represents a hydrogen atom, an aliphatic group or an aromatic group; m represents 0 or 1; and X^- represents a counter anion or a counter anion moiety of an intramolecular salt.

5,284,733

HIGH-CONTRAST IMAGE FORMING PROCESS

Yasuhiko Kojima, Saitama; Naoki Obi, Tokyo; Yasuo Shigemitsu, Saitama, and Kiyoshi Suematsu, Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,285

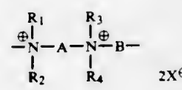
Claims priority, application Japan, Oct. 3, 1990, 2-263926; Apr. 11, 1991, 3-078991

Int. Cl.[5] **G03C** *1/04*

U.S. Cl. 430—265 **8 Claims**

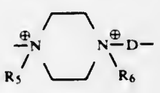
1. A process for forming a high-contrast negative image comprising:

a) providing a photographic material comprising one or more hydrophilic colloidal layers on a substrate, wherein at least one of the hydrophilic colloidal layers is a negative working silver halide emulsion layer comprising silver halide and a water soluble polymer or copolymer including at least one repeating unit selected from the group consisting of formulas (I) to (IV):



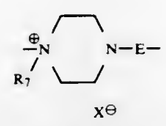
(I)

wherein A represents an alkylene group having from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, B represents an alkylene group having form 1 to 6 carbon atoms, a p-xylylene group, —CH_2—CH=CH—CH_2—, or —CH_2—C≡C—CH_2—; R_1, R_2, R_3, and R_4, each independently represents a lower alkyl group having from 1 to 4 carbon atoms; and X^- represents an anion,



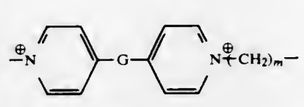
(II)

wherein D represents an alkylene group from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, R_5 and R_6 each independently represents a lower alkyl group having from 1 to 4 carbon atoms, provided that R_5 and R_6 may be combined with each other to form an ethylene group and X^- represents an anion,



(III)

wherein E represents an alkylene group having from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, R_7 represents a lower alkyl group having from 1 to 4 carbon atoms; and X^- represents an anion,



(IV)

wherein G represents an alkylene group having from 1 to 8 carbon atoms; R_8 represents a hydrogen atom or a methyl group; m represents an integer of from 1 to 4; n represents an integer of from 1 to 12; and X^- represents an anion;

b) exposing the photographic material; and thereafter

c) developing the exposed photographic material with an aqueous alkaline developer including a dihydroxybenzene derivative developing agent at a pH of at least 11.5.

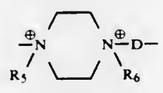
4. A process for forming a high-contrast negative image comprising:

a) providing a photographic material comprising one or more hydrophilic colloidal layers on a substrate, wherein at least one of the hydrophilic colloidal layers is a negative working silver halide emulsion layer comprising silver halide and a water soluble polymer or copolymer including at least one repeating unit selected from the group consisting of formulas (I) to (IV):



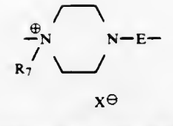
(I)

wherein A represents an alkylene group having from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, B represents an alkylene group having from 1 to 6 carbon atoms, a p-xylylene group, —CH_2—CH=CH—CH_2—, or —CH_2—C≡C—CH_2—; R_1, R_2, R_3, and R_4, each independently represents a lower alkyl group having from 1 to 4 carbon atoms; and X^- represents an anion,



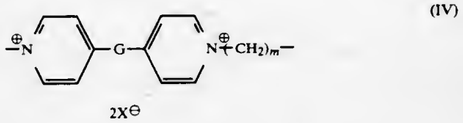
(II)

wherein D represents an alkylene group from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, R_5 and R_6 each independently represents a lower alkyl group having from 1 to 4 carbon atoms, provided that R_5 and R_6 may be combined with each other to form an ethylene group and X^- represents an anion,



(III)

wherein E represents an alkylene group having from 1 to 6 carbon atoms, —CH_2—CH=CH—CH_2—, or —CH-$_2$—C≡C—CH_2—, R_7 represents a lower alkyl group having from 1 to 4 carbon atoms; and X^- represents an anion,



(IV)

wherein G represents an alkylene group having from 1 to 8 carbon atoms; R_8 represents a hydrogen atom or a methyl group; m represents an integer of from 1 to 4; n represents an integer of from 1 to 12; and X^- represents an anion;

b) exposing the photographic material; and thereafter

c) developing the exposed photographic material with an aqueous alkaline developer including a dihydroxybenzene derivative developing agent with a reductone compound.

5,284,734

RADIATION-SENSITIVE MIXTURE AND USE THEREOF

Rainer Blum, Ludwigshafen; Gerd Rehmer, Beindersheim, and Hans Schupp, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 412,467

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833438

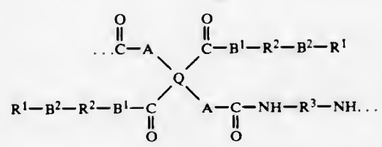
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[5] **G03C** *1/492*

U.S. Cl. 430—270 **21 Claims**

1. A radiation-sensitive mixture which is suitable for preparing a polyamide, a polyisoindoloquinazolinedione, a polyoxazinedione, a polyquinazolinedione or a polyquinazolone and which on irradiation with actinic light undergoes solubility differentiation, which mixture comprises

(a) one or more precursors having structural elements of the general formula (I)



(I)

where

A is —O—, —NH— or a single bond,

Q is an unsubstituted or halogen-substituted aromatic tetravalent radical, wherein two at a time of the valences are adjacent to each other,

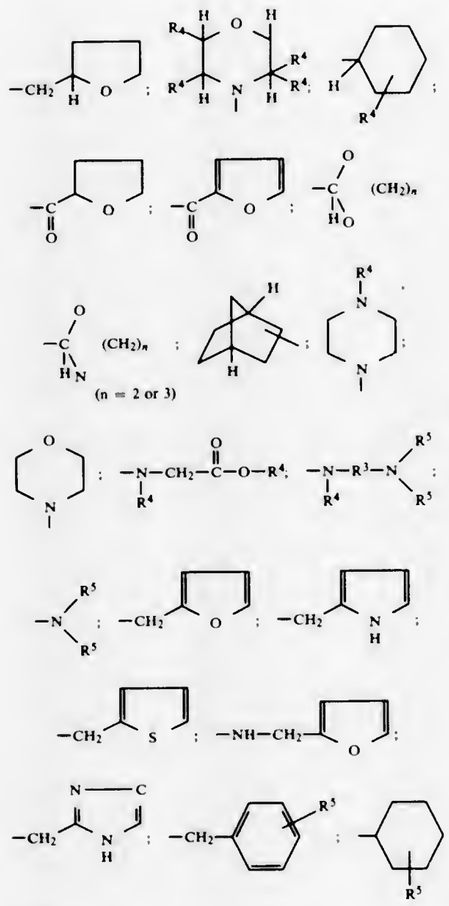
B^1 is —O— or —NR^4—,

B^2 is —NH—CO—NH—, —NH—CO—O—, —N-H—CO— or a single bond,

R^1 is H, alkyl, aryl, an ethylenically unsaturated radical or

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a readily hydrogen-donating radical selected from the group consisting of isoalkyls, aminoisoalkyls, and groups of the following general formulae:



where

n is 2 or 3,

R^2 is a bivalent aliphatic or aromatic radical or a single bond,

R^3 is a bivalent aliphatic, cycloaliphatic, aromatic radical which may be halogen-substituted,

R^4 is H or straight-chain or branched alkyl which may be halogen-substituted, and

R^5 is alkyl, aryl, halogen-substituted alkyl or halogen-substituted aryl,

with the proviso that at least one of Q and R^3 has a readily abstractable hydrogen atom,

(b) one or more aryl-containing carbonyl compounds which when excited by UV radiation are capable of hydrogen abstraction, and optionally

(c) one or more substances selected from the group consisting of a photoinitiator, a photosensitizer, a (leuco)dye and an aliphatic ketone.

5,284,735

PHOTOPOLYMERIZABLE COMPOSITION

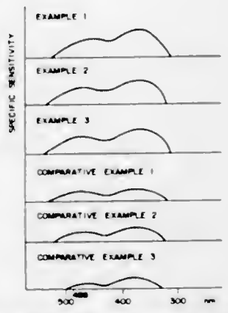
Hiroaki Okamoto, Warabi, Japan, assignor to Okamoto Chemical Industry Co., Ltd., Saitama, Japan

Filed Feb. 2, 1993, Ser. No. 12,218

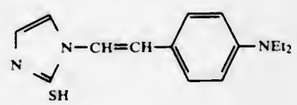
Claims priority, application Japan, Mar. 6, 1992, 4-049185

Int. Cl.[5] G03C *1/725*

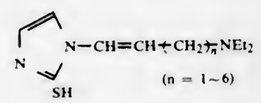
U.S. Cl. 430—281 **2 Claims**



1. A photopolymerizable composition which comprises a radical-polymerizable compound having two or more ethylenically unsaturated double bonds in the molecule, a photoinitiator, an organic high-molecular compound, and at least one substituted ethyene compound selected from those having the general formulas (I) and (II):



(I)



(II)

5,284,736

FLAME-RESISTANT PHOTO-CURABLE RESIN COMPOSITION

Kenji Kushi, and Ken-ichi Inukai, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,386

Claims priority, application Japan, Nov. 30, 1990, 2-335790; Oct. 11, 1991, 3-263770

Int. Cl.[5] C08F *2/50, 265/06;* **G03F** *7/033*

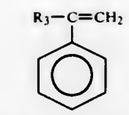
U.S. Cl. 430—283 **4 Claims**

1. A flame-resistant, photo-curable resin composition in the form of dry film resists, consisting essentially of:

(a) 35 to 65 parts by weight of an acrylic thermoplastic polymer, the acrylic thermoplastic polymer being prepared from a monomer combination consisting essentially of:

(i) 15 to 30% by weight of a first polymerizing component consisting of at least one α,β-unsaturated carboxyl group containing monomer;

(ii) 2 to 25% by weight of a second polymerizing component which is a member selected from the group consisting of a compound of the formula (II):



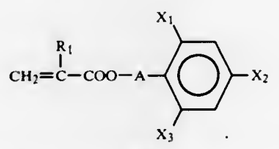
[II]

where in R_3 is hydrogen or $C_{1\text{-}6}$-alkyl and wherein hydrogen atoms of the phenyl group may be optionally substituted by functional groups;

(iii) 10 to 40% by weight of a third polymerizing component which is at least one alkyl acrylate, wherein the alkyl group has 1 to 8 carbon atoms; and

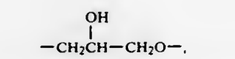
(iv) 30 to 65% by weight of a fourth polymerizing component which is at least one alkyl methacrylate whose alkyl group has 1 to 8 carbon atoms;

(b) 5 to 30 parts by weight of a bromine-substituted monomer of formula (I):



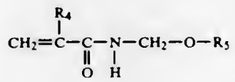
[I]

wherein R_1 is hydrogen of methyl, A is $-(R_2O)_n-$ or



wherein R_2 is an alkylene group containing 2 or 3 carbon atoms, and n is an integer of 1 to 4, and X_1, X_2 and X_3 are Br or hydrogen, under the condition that at least two of X_1, X_2 and X_3 are Br;

(c) 20 to 50 parts by weight of a vinyl monomer other than a monomer of formula (I), wherein vinyl monomer (c) is a mixture of at least one polyfunctional (meth)acrylate having plural unsaturated polymerizable bonds and at least one monofunctional vinyl monomer having one unsaturated polymerizable bond, the vinyl monomer (c) having at least 1.3 ethylenically unsaturated bonds per vinyl monomer molecule on the average, wherein the monofunctional vinyl monomer is an alkoxymethyl (meth-)acrylate of the formula (III):



(III)

wherein R_4 is hydrogen or methyl, and R_5 is an alkyl group having 8 or less carbon atoms or a cycloalkyl group having 8 or less carbon atoms, the content of alkoxymethyl (meth)acrylamide of formula (III) being 20 to 80% by weight of vinyl monomer (c); and

(d) 0.01 to 10 parts by weight of a photo-polymerizing initiator, wherein the total amount of components (a), (b), (c) and (d) is 100 parts by weight.

5,284,737

PROCESS OF DEVELOPING AN IMAGE UTILIZING POSITIVE-WORKING RADIATION SENSITIVE MIXTURES CONTAINING ALKALI-SOLUBLE BINDER, O-QUINONEDIAZIDE PHOTOACTIVE COMPOUND AND BLANKOPHOR FBW ACTINIC DYE

Tripunithura V. Jayaraman, East Greenwich, and David J. Brzozowy, Lincoln, both of R.I., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 891,011, Jun. 1, 1992. This application Aug. 19, 1993, Ser. No. 108,266

Int. Cl.[5] G03F *7/30, 7/023*

U.S. Cl. 430—326 **5 Claims**

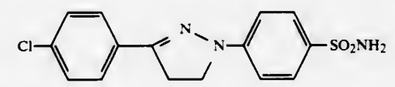
1. The process of developing an image-wise exposed photoresist-coated substrate comprising:

(1) coating said substrate with a radiation-sensitive composition useful as a photoresist, said composition comprising an admixture in a solvent of:

(a) at least one alkali-soluble binder resin;

(b) at least one photoactive o-quinonediazide compound; and

(c) an effective absorbence-increasing amount of an actinic dye having the formula (I):



(I)

the amount of said binder resin being about 60 to 95% by weight, the amount of said photoactive component being about 5% to about 40% by weight, based on the total solids content of said radiation-sensitive composition;

(2) subjecting said coating on said substrate to an image-wise exposure of radiant light energy at a wavelength of 365±10 nonometers; and

(3) subjecting said image-wise exposed coated substrate to a developing solution to form an image-wise pattern in the coating.

5,284,738

Patent Not Issued For This Number

5,284,739

PHOTOGRAPHIC SILVER HALIDE COLOR MATERIAL HAVING INCORPORATED THEREIN A BALLASTED HETEROCYCLIC-SULPHONHYDRAZIDE COLOR DEVELOPING AGENT

David Clarke, Watford; John D. Goddard, Pinner; Paul L. R. Stanley, Harrow, and Nigel E. Milner, Watford, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1992, Ser. No. 974,038

Claims priority, application United Kingdom, Dec. 3, 1991, 9125688

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—504 **4 Claims**

1. A color photographic material comprising at least two color-forming units sensitive to different regions of the spectrum each comprising a silver halide emulsion layer and, in or adjacent said layer, a photographic color coupler characterised in that the material contains incorporated therein in droplets of a high boiling solvent a ballasted heterocyclicsulphonhydrazide color developing agent.

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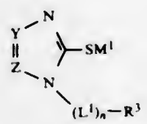
5,284,740

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

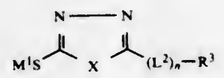
Keiji Mihayashi; Yoshihiro Fujita, and Masatoshi Goto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 467,470, Jan. 19, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 841,205
Claims priority, application Japan, Jan. 20, 1989, 1-11254; Jan. 20, 1989, 1-11255; Jan. 20, 1989, 1-11256
Int. Cl.[5] G03C 1/46
U.S. Cl. 430—505 24 Claims

1. A silver halide color photographic material comprising a support having provided thereon one or more red-sensitive silver halide emulsion layers, one or more green-sensitive silver halide emulsion layers and one or more blue-sensitive silver halide emulsion layers, wherein the average silver iodide content of silver halide in all the silver halide emulsion layers is not less than 10 mol% and the silver halide color photographic material contains a compound represented by the following general formula (II) or (III):



(II)



(III)

wherein Y and Z each represents a nitrogen atom or CR^4 (wherein R^4 represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group); R^3 represents $-SO_3M^2$ or $-COOM^2$ (wherein M^2 represents a hydrogen atom, an alkali metal, a quaternary ammonium or a quaternary phosphonium); L^1 represents a linking group selected from —S—, —O—,



—CO—, —SO— and $—SO_2—$; n represents 0 or 1; M^1 represents a hydrogen atom, an alkali metal, a quaternary ammonium or a quaternary phosphonium; X represents a sulfur atom, an oxygen atom or



(wherein R^5 represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group); L^2 represents $—CONR^6—$, $—NR^6CO—$, $—SO_2NR^6—$, $—NR^6SO_2—$, —OCO—, —COO—, —S—, $—NR^6—$, —CO—, —SO—, —OCOO—, $—NR^6CONR^7—$, $—NR^6COO—$, —OCONR⁶— or $—NR^6SO_2RN^7—$ (wherein R^6 and R^7 each represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group);

wherein the silver halide photographic material has a total coating amount of silver from 3.0 to 8.0 g/m².

5,284,741

ANTISTATIC LAYER

Noriki Tachibana, and Yoichi Saito, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 935,648, Aug. 26, 1992, abandoned, which is a continuation of Ser. No. 797,148, Nov. 22, 1991, abandoned, which is a continuation of Ser. No. 613,154, Nov. 9, 1990, abandoned. This application May 7, 1993, Ser. No. 59,881
Claims priority, application Japan, Dec. 11, 1989, 1-319770
Int. Cl.[5] G03C 1/25
U.S. Cl. 430—529 12 Claims

1. An antistatic layer formed on a plastic film to provide antistatic properties to the film, comprising:

a cured product of at least one kind of water-soluble conductive polymer obtained by curing said water-soluble conductive polymer with at least one curing agent, and wherein is contained (1) at least one kind of hydrophobic polymer particles having an amide group, and (2) at least one kind of salt of a strong acid and a weak base;

said conductive polymer having a styrene sulfonic acid group in an amount of 5% or more by weight, per molecule, of the conductive polymer,

said hydrophobic polymer particles being in an amount sufficient to increase transparency of said antistatic layer, and being formed of monomers including a monomer represented by

$$R—C(=CH_2)—(L)_a—CON(R_1)(R_2)$$

wherein
R is hydrogen or C_1–C_4 alkyl;
L is a divalent group;
a is 0 or 1;
R_1 is hydrogen or lower alkyl; and
R_2 is hydrogen or lower alkyl,

and at least one further monomer selected from the group consisting of styrene, styrene derivatives, alkyl acrylates, alkyl methacrylates, olefin derivatives, halogenated ethylene derivatives, acrylamide derivatives, methacrylamide derivatives, vinyl ester derivatives and acrylonitrile with the proviso that at least 30 mole % of the hydrophobic particles of the one further monomer is selected from the group consisting of said styrene derivatives, said alkyl acrylates and said alkyl methacrylates and wherein

the ratio, in terms of % by weight, of the conductive polymer to the hydrophobic polymer particles to the curing agent is 50–95 to 5–45 to 1–45 and the amount of said water-soluble conductive polymer is 0.01 to 10 g/m²; and the amount of said salt is 0.1 to 20% by weight per said conductive polymer.

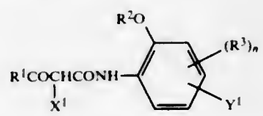
5,284,742

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Katsumasa Yamazaki, and Shigeto Hirabayashi, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

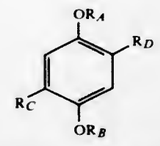
Filed Jun. 19, 1992, Ser. No. 901,126
Claims priority, application Japan, Jun. 28, 1991, 3-185113
Int. Cl.[5] G03C 1/34, 7/36
U.S. Cl. 430—551 10 Claims

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a yellow dye-forming coupler represented by the following Formula Y-I and a compound represented by the following Formula I:



(Y-I)

wherein R^1 is an alkyl group or a cycloalkyl group; R^2 is an alkyl group, cycloalkyl group, an acyl group or an aryl group; R^3 is a substituent; n is 0 or 1; X^1 is a substituent capable of splitting off upon coupling reaction with the oxidation product of a color developing agent; and Y^1 is an —NHCOR'₄ group, in which R'₄ is an organic group;



wherein R_A and R_B are independently an alkyl group, a cycloalkyl group or an alkenyl group; and R_C and R_D are independently a hydrogen atom, an alkyl group, a cycloalkyl group or an alkenyl group.

5,284,743

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Naoto Ohshima, and Masahiro Asami, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami ashigara, Japan

Filed Oct. 19, 1988, Ser. No. 261,447
Claims priority, application Japan, Oct. 19, 1987, 62-263318
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] G03C 1/035
U.S. Cl. 430—567 14 Claims

1. A silver halide photographic material comprising at least one photosensitive emulsion layer which contains silver halide grains on a support, wherein:

(1) said silver halide grains are prepared in the presence of iridium compounds,

(2) said silver halide grains consist of silver chlorobromide which is substantially free of silver iodide,

(3) at least 90 mol% of all silver halide from which said silver halide grains are made is silver chloride,

(4) said silver halide grains have a localized phase in which silver bromide content exceeds at least 90 mol%,

(5) said localized phase is precipitated together with at least 50% of all the iridium which is added during the preparation of said silver halide grains, and

(6) the surface of said silver halide grains is chemically sensitized to the extent that the grains are substantially of the surface latent image type.

5,284,744

NON-ULTRAVIOLET-ABSORBING PEPTIZER FOR SILVER HALIDE EMULSIONS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1992, Ser. No. 935,810
Int. Cl.[5] G03C 1/015
U.S. Cl. 430—569 8 Claims



1. A process for precipitating a silver halide emulsion comprising precipitating silver halide in the absence of gelatin or a gelatin derivative and in the presence of a peptizer consisting essentially of a water-soluble starch, said peptizer exhibiting an absorbance of less than 1.0 in the wavelength region of 200 to 400 nm when measured at a concentration of 2 g/L through a 1 cm transmission path.

5,284,745

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Naoto Ohshima, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 628,150, Dec. 17, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 961,550
Claims priority, application Japan, Dec. 18, 1989, 1-327713
Int. Cl.[5] G03C 1/015
U.S. Cl. 430—569 15 Claims

1. A method for producing a silver halide emulsion of silver chlorobromide, 95 mol % or more of which is made up of silver chloride, and which is substantially free from silver iodide, said method comprising forming, on or near the surfaces of silver halide grains, localized phases having a silver bromide content of at least 10 mol %, and then by chemically sensitizing the resulting surfaces, and ripening the silver chlorobromide emulsion at a pH of 6.5 or more during at least part of the formation stage of said localized phases, during at least part of the stage of chemical sensitization of the surfaces, or during both at least part of the formation stage of said localized phases and at least part of the stage of chemical sensitization of the surfaces.

5,284,746

METHODS OF PRODUCING HYBRID G PROTEIN-COUPLED RECEPTORS

Andrzej Z. Sledziewski, Seattle, and Paul O. Sheppard, Redmond, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Filed Feb. 8, 1990, Ser. No. 478,100
Int. Cl.[5] C12N 15/00, 5/00; C12Q 1/68; C12P 21/00
U.S. Cl. 435—6 10 Claims

1. A method for detecting the presence of ligand in a test sample, comprising the steps of:

a) exposing a culture of yeast host cells transformed with a DNA construct capable of directing the expression of a biologically active hybrid G protein-coupled receptor, wherein said receptor comprises a mammalian G protein coupled receptor having at least one domain other than the ligand-binding domain replaced with a corresponding domain of a yeast G protein-coupled receptor, and wherein said yeast host cells express the biologically active hybrid G proteincoupled receptor, to the test sample under suitable conditions to allow binding of ligand to the hybrid G protein-coupled receptor; and

b) detecting a biological response of the host cell and therefrom determining the presence of the ligand.

5,284,747

NUCLEIC ACID PROBES TO *COCCIDIOIDES IMMITIS*

Curt L. Milliman, St. Louis, Mo., assignor to Gen-Probe Incorporated, San Diego, Calif.

Filed Dec. 18, 1991, Ser. No. 811,052
Int. Cl.[5] C12Q 1/68; C07H 21/04
U.S. Cl. 435—6 4 Claims

1. A nucleotide polymer having the sequence of SEQ ID NO. 1 or SEQ ID NO. 6 able to hybridize at 60° C. in 0.1M lithium succinate buffer containing 10% lithium lauryl sulfate to rRNA or rDNA from *Coccidioides immitis* and not to rRNA or rDNA from *Auxarthron thaxteri, Blastomyces dermatitidis, Geotrichum candidum, Gymnoascus dugwayensis, Histoplasma capsulatum,* and *Malbranchea albolutea.*

VOL 1159 ISS 2 FE 8 1994 UMI

5,284,748

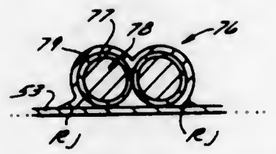
METHOD FOR ELECTRICAL DETECTION OF A BINDING REACTION

Susan J. Mroczkowski, Franklin; Kenneth A. Siegesmund, Brookfield, and Donald E. Yorde, Colgate, all of Wis., assignors to Immunotronics, Inc., Milwaukee, Wis.

Continuation of Ser. No. 590,599, Sep. 25, 1990, Pat. No. 5,137,827, which is a continuation of Ser. No. 269,971, Nov. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 843,982, Mar. 25, 1986, Pat. No. 4,794,089. This application Apr. 10, 1992, Ser. No. 867,045

Int. Cl.[5] G01N *27/04, 33/543, 33/53;* **C12Q** *1/68*

U.S. Cl. 435—6 **20 Claims**



1. A method of detecting a substance in a test sample, which substance is a first one of a pair of first and second substances that undergo a specific binding reaction with each other, including the steps of:

mixing the sample with particles under conditions effective to cause binding of the first substance, if present in the sample, to the surfaces of the particles;

contacting the particles having the first substance bound to the surfaces thereof with a layer of the second of the pair of substances, which layer forms a path between a pair of spaced-apart electrical conductors superposed on a substantially nonelectrically conductive base, the layer of the second substance being bound to the base, such that the binding reaction between the first and second substances causes the particles to be bound to the path in aggregates;

removing particles which are bound to the path as a result of non-specific binding and particles which are unbound to the path;

coating exposed outer surfaces of the aggregates with an electrically conductive substance that adheres selectively to the particles forming the aggregates but which does not adhere to the remainder of the path;

removing electrically conductive substances which remains unadhered to the aggregates;

connecting each of the conductors to an electrical circuit which includes a source of electrical energy, the conductors and the path therein; and

measuring a change in the electrical current flow through the circuit caused by formation of the coated aggregates on the path, the electrical change indicating the level of the substance to be detected in the test sample.

5,284,749

DIAMINE OXIDASE AND ASSAY FOR RUPTURE OF AMNIOTIC MEMBRANE IN PREGNANT MAMMALS

David M. Cowley; David J. Maguire, and Victor Vorotelink, all of Brisbane, Australia, assignors to Griffith University, Queensland, Australia

Filed Oct. 31, 1990, Ser. No. 623,168

Int. Cl.[5] G01N *33/53, 33/536, 33/543, 33/558*

U.S. Cl. 435—7.1 **11 Claims**

6. An assay suitable for diagnosis of rupture of an amniotic membrane in a pregnant woman or leakage of amniotic fluid, said assay comprising the steps of:

obtaining a sample of vaginal fluid from a pregnant woman;

reacting the sample with antibody derived from a purified form of amniotic fluid diamine oxidase which has the following physical properties:

(i) a subunit molecular weight of approximately 79,000 determined by SDA-PAGE with gels of different acrylamide concentrations;

(ii) a number of species of molecular weight 120,000; 160,000 and 480,000 daltons as revealed by a native molecular weight determination via gradient-PAGE or gel filtration chromatography;

(iii) a pattern characteristic of glycoproteins with the isoelectric points of the bands being generally below 5.0 as determined by isoelectric focusing;

(iv) multiple bands of activity different to the bands corresponding to maternal serum diamine oxidase when the purified enzyme is analyzed by electrophoresis on agarose gels and immunofixation with polyclonal antisera raised to amniotic fluid diamine oxidase; and

(v) removal of all reactivity to the maternal serum proteins when tested by immunofixation but reactivity being retained to amniotic fluid diamine oxidase upon immunoadsorption of the polyclonal antiserum raised to amniotic fluid diamine oxidase with maternal serum and purified maternal serum diamine oxidase; and

detecting the presence of amniotic fluid in the vaginal sample by detecting the reaction of amniotic fluid diamine oxidase in the amniotic fluid with an antibody raised to the amniotic fluid form of diamine oxidase which antibody does not react with maternal serum diamine oxidase.

5,284,750

SERUM PROTEINS RELATED TO AUTOIMMUNE DISEASE

Bruno Silvestrini, Rome, Italy, and Yan Cheng, Staten Island, N.Y., assignors to Azienade Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A, Rome, Italy

Division of Ser. No. 311,650, Feb. 15, 1989, Pat. No. 5,047,509. This application Jun. 24, 1991, Ser. No. 719,766

Claims priority, application European Pat. Off., Jan. 20, 1989, 89101000.1

Int. Cl.[5] C12Q *1/00;* **G01N** *33/53*

U.S. Cl. 435—7.9 **5 Claims**

1. A method for diagnosing a patient with an autoimmune disease comprising heating human sera from said patient at about 100° C., serially diluting said sera into sample wells, incubating said sera in said wells, rinsing said wells, adding monoclonal antibodies to antigenic determinants of the 54 kd, a_1-antitrypsin formed in autoimmune disease, quantitating the amount of the antigenic determinants of 54 kd protein present, wherein an elevated amount of the antigenic determinants indicates the presence of autoimmune disease.

5,284,751

ANTIBODIES THAT BIND TO A LIGAND-INDUCED BINDING SITE ON GPIIIA

Andrew L. Frelinger, III; Edward F. Plow, and Mark H. Ginsberg, all of San Diego, Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 175,342, Mar. 31, 1988, Pat. No. 5,114,842, which is a continuation-in-part of Ser. No. 70,953, Jul. 8, 1987, abandoned. This application Oct. 5, 1989, Ser. No. 417,565

Int. Cl.[5] G01N *33/567*

U.S. Cl. 435—7.21 **12 Claims**

1. A diagnostic system in kit form for assaying for the presence of a receptor-ligand complex in a vascular fluid sample, said complex containing a GPIIb-IIIa cell surface receptor and a ligand that are specifically bound, which system comprises:

a) a package containing, in an amount sufficient to perform at least one assay, a monoclonal antibody composition containing an antibody molecule produced by hybridoma HB10150 that immunoreacts with a ligand-induced binding site on GPIIIa in said receptor-ligand complex but does not immunoreact with the cell surface receptor or the ligand when either is in nonbound form, and

b) a label for indicating the presence of said antibody molecules in any immunoreaction product.

5,284,752

METHODS OF PREPARING A POLYMERIC LATEX COMPOSITION AND WATER-INSOLUBLE BIOLOGICAL REAGENT

Richard C. Sutton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 864,885, Apr. 3, 1992, Pat. No. 5,234,841, which is a continuation of Ser. No. 612,364, Nov. 14, 1990, abandoned, which is a division of Ser. No. 347,537, May 4, 1989, Pat. No. 5,053,443, which is a continuation-in-part of Ser. No. 136,214, Feb. 18, 1987, abandoned. This application May 3, 1993, Ser. No. 55,598

Int. Cl.[5] G01N *33/546*

U.S. Cl. 435—7.34 **9 Claims**

1. A method of preparing a water-insoluble biological reagent containing a detectable hydrophobe, said method comprising:

A. providing a stable loadable latex comprising a continuous aqueous phase and a dispersed phase comprising loadable polymeric particles having an average diameter of from about 0.01 having an average diameter of from about 0.01 to about 5 micrometers, said particles being prepared from one or more ethylenically unsaturated polymerizable monomers, at least one of said monomers having reactive groups which are capable of reacting with free amino or sulfhydryl groups of a biological compound,

B. providing a solution of a detectable hydrophobe dissolved in one or more water-miscible organic solvents, said hydrophobe being soluble in distilled water in an amount of less than about 0.5 weight percent at 25° C. and being soluble in a water-miscible organic solvent in an amount of at least about 0.2 weight percent, and said hydrophobe being selected from the group consisting of radio-labeled compounds, bioluminescent compounds, chemiluminescent compounds, chromogens, fluorescent compounds or dyes, photographic addenda, insecticides, herbicides, miticides, rodenticides, enzymes, hormones and vitamins,

C. heating said loadable latex to a temperature of from about 30° to about 95° C.,

D. gradually adding said hydrophobe solution to said heated loadable latex while retaining said hydrophobe in solution and said polymeric particles dispersed so that said polymeric particles and hydrophobe are brought into intimate association, and said water-miscible solvent is diluted with water to reduce the solubility of said hydrophobe in said continuous phase, whereby the equilibrium distribution of said hydrophobe is driven away from said continuous phase toward said polymeric particles of said dispersed phase to provide a latex of particles having said hydrophobe within the particles, said addition being accomplished with continuous stirring, but without vigorous agitation, of said loadable latex, and

E. reacting the reactive groups of said particles with a biological compound having free amino or sulfhydryl groups to form a biological reagent,

provided the either said loadable latex is provided free of surfactant and colloidal or polymeric dispersing agents, or any surfactant and dispersing agent present is removed prior to said reacting step E.

5,284,753

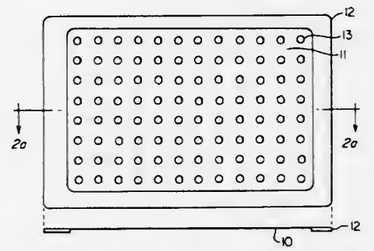
MULTIPLE-SITE CHEMOTACTIC TEST APPARATUS AND METHOD

Rchard H. Goodwin, Jr., Bethesda, Md., assignor to Neuro Probe, Inc., Cabin John, Md.

Continuation-in-part of Ser. No. 672,561, Mar. 20, 1991, Pat. No. 5,210,021. This application Jan. 15, 1993, Ser. No. 4,944 The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] C12Q *1/02, 1/24;* **C12M** *3/00*

U.S. Cl. 435—30 **40 Claims**



1. A method for performing chemotaxis tests, comprising:

(a) providing at least one bottom plate having a top side with a perimeter and a bottom side;

(b) placing drops of chemotactic factor at a first set of preselected locations on the top side of said at least one bottom plate;

(c) placing drops of controls at a second set of preselected locations on the top side of said at least one bottom plate;

(d) placing at least one framed membrane filter having a top side and a bottom side over the top side of said at least one bottom plate, such that the drops of chemotactic factor and the drops of controls contact the bottom side of said at least one framed membrane filter;

(e) placing drops of cell suspensions on the top side of said at least one framed membrane filter at preselected filter locations directly above the first and second sets of preselected locations on the top side of said at least one bottom plate;

(f) incubating said at least one framed membrane filter for a period of time at least sufficient to allow the surface tension forces to come into equilibrium with gravitational forces, thereby establishing a chemotactic factor concentration gradient; and

(g) determining the response of cell suspension to the chemotactic factor concentration gradient and the controls.

5,284,754

PROCESS FOR THE CONTINUOUS CONVERSION OF CEPHALOSPORIN DERIVATIVES INTO GLUTARYL-7-AMINOCEPHALOSPORANIC ACID DERIVATIVES

Thomas Bayer, and Klaus Sauber, both of Bad Soden am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 3, 1991, Ser. No. 754,000

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028119

Int. Cl.[5] C12P *35/00*

U.S. Cl. 435—47 **21 Claims**

1. A process for converting a cephalosporin into a glutaryl-7-aminocephalosporanic acid, which comprises continuously reacting the cephalosporin with oxygen in the present of a D-amino-acid oxidase containing catalyst.

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5,284,755

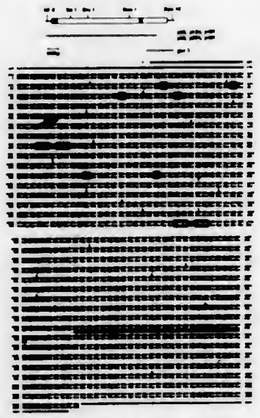
DNA ENCODING LEUKEMIA INHIBITORY FACTOR RECEPTORS

David P. Gearing, Seattle, and M. Patricia Beckmann, Poulsbo, both of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 670,608, Mar. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 626,725, Dec. 13, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 943,843

Int. Cl.[5] C12N *15/12, 15/63, 15/62*

U.S. Cl. 435—69.1 **16 Claims**



1. An isolated DNA selected from the group consisting of:

(a) an isolated DNA comprising a DNA sequence that encodes a LIF receptor (LIF-R), wherein said LIF-R comprises an amino acid sequence selected from the group consisting of amino acids 1-957 of SEQ ID NO: 1, amino acids 1-945 of SEQ ID NO: 1, amino acids 1-676 of SEQ ID NO: 3, and amino acids 1-1053 of SEQ ID NO: 5, and

(b) an isolated DNA capable of hybridizing to the complement of a DNA according to (a) above under moderately stringent hybridization conditions and which encodes a biologically active LIF-R protein capable of binding LIF.

5,284,756

HETERODIMERIC OSTEOGENIC FACTOR

Lynn Grinna, 1044 20th St., Santa Monica, Calif. 90403; Georgia Theofan, 3014 Sonoma St., Torrance, Calif. 90503, and Thomas F. Parsons, 270 Renoak Way, Arcadia, Calif. 91006

Continuation-in-part of Ser. No. 415,555, Oct. 4, 1989, Pat. No. 5,106,626, which is a continuation-in-part of Ser. No. 256,034, Oct. 11, 1988, abandoned. This application Jun. 20, 1991, Ser. No. 718,274

Int. Cl.[5] C12P *21/06*

U.S. Cl. 435—69.4 **10 Claims**

1. A method of producing an osteogenic protein preparation comprising a heterodimer of a first polypeptide subunit and a second polypeptide subunit comprising the step of culturing in a suitable culture media a cell line transformed with a first and a second nucleotide sequence, said first nucleotide sequence being selected from the group consisting of:

the nucleotide sequence as shown in SEQ ID NO: 3; and

a nucleotide sequence which encodes the same sequence of amino acids as encoded by the nucleotide sequence shown in SEQ ID NO: 3;

and said second nucleotide sequence being selected from the group consisting of:

the nucleotide sequence as shown in SEQ ID NO: 1; and

a nucleotide sequence which encodes the same sequence of amino acids as encoded by the nucleotide sequence shown in SEQ ID NO: 1;

to produce said heterodimer.

5,284,757

PROCESS FOR PRODUCING L-ARGININE BY FERMENTATION WITH BREVIBACTERIUM OR CORYNEBACTERIUM

Takayasu Tsuchida; Noboro Ohtsuka; Hiroshi Takeuchi, and Haruo Uchibori, all of Kawasaki, Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Continuation of Ser. No. 463,464, Jan. 11, 1990, abandoned. This application Apr. 23, 1993, Ser. No. 51,433

Claims priority, application Japan, Jan. 12, 1989, 64-5770

Int. Cl.[5] C12P *13/10*; **C12N** *1/00*

U.S. Cl. 435—114 **2 Claims**

1. A process for producing L-arginine comprising:

culturing *Brevibacterium flavum* FERM BP-2227 in a nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts under conditions to produce L-arginine, and recovering L-arginine.

5,284,758

PROCESS FOR FORMING CHOLESTEROL LOWERING COMPOUND USING PSEUDODIPLODIA SP.

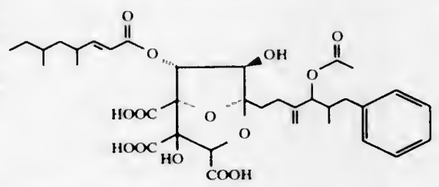
Gerald F. Bills, Roselle; Mary N. Omstead, Gladstone, both of N.J.; Wendy H. Clapp, New York, N.Y., and Fernando Pelaez, Camino Valderribas, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 14, 1992, Ser. No. 929,236

Int. Cl.[5] C12P *17/18*; **C12N** *1/14*; **A01N** *63/00*; **A61K** *37/00*

U.S. Cl. 435—119 **2 Claims**

1. A process for producing a compound of structure



(I)

comprising cultivating Pseudodiplodia sp. ATCC 74168 or a mutant thereof capable of producing said compound under conditions suitable for formation of the compound at a temperature range of 20° to 40° C. and a pH range of 3.55 to 8.5 and recovering the compound.

5,284,759

BIOLOGICAL PRODUCTION OF ACETAL OR KETAL SUBSTITUTED BENZENE COMPOUNDS

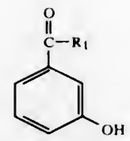
Roger A. Mader, Stillwater, and Kestutis J. Tautvydas, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 359,106, May 31, 1989, abandoned. This application Aug. 17, 1992, Ser. No. 931,017

Int. Cl.[5] C12P *17/06, 17/04, 7/26*; **C12N** *9/02*

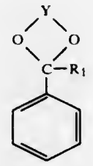
U.S. Cl. 435—125 **9 Claims**

1. A method for making a meta-substituted phenol of the formula

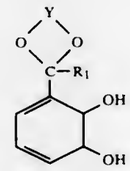


comprising the steps of:

(a) biotransforming a substrate of the formula



wherein R_1 is hydrogen or methyl and Y is $—CH_2CH_2—$, $CH_2CH_2CH_2$ — or $—CH(CH_2OH)—CH_2—$ with an arene-2,3-dioxygenase enzyme to form a cis -2,3-dihydrodiol of the formula



and

(b) dehydrating the cis-2,3-dihydrodiol in the presence of acid to form the meta-substituted phenol in a yield of about 95 wt % or more.

5,284,760

TECHNIQUES FOR PRODUCING SITE-DIRECTED MUTAGENESIS OF CLONED DNA

Stephen M. Feinstone, 3021 Cathedral Ave., NW., Washington, D.C. 20008; Czeslaw Wychowski, 10500 Montrose Ave. #2, Bethesda, Md. 20814; Jonathan E. Silver, 7516 Arrowood Rd., Bethesda, Md. 20817, and Suzanne U. Emerson, 14201 Woodcrest Dr., Rockville, Md. 20853

Continuation of Ser. No. 332,616, Apr. 3, 1989, abandoned. This application Sep. 23, 1991, Ser. No. 764,085

Int. Cl.[5] C12N *15/10*

U.S. Cl. 435—172.3 **3 Claims**

1. A method of incorporating a DNA or RNA sequence of at least 60 bases into an acceptor DNA at a specific site comprising the steps of:

i) producing a first primer wherein the 3′ end of said first primer is capable of annealing to the 3′ end of a DNA or RNA having said DNA or RNA sequence and the 5′ end of said first primer is capable of annealing to a first end of the insertion site of said acceptor DNA;

ii) producing a second primer wherein the 3′ end of said second primer is capable of annealing to the complement of the 5′ end of said DNA or RNA and the 5′ end of said second primer is capable of annealing to a second end of the insertion site of said acceptor DNA;

iii) amplifying said DNA or RNA sequence using said first primer and said second primer under conditions such that a single stranded molecule is produced wherein said molecule has a 3′ end which anneals to the first end of the insertion site of said acceptor DNA and 5′ end which anneals to the second end of the insertion site of said acceptor DNA;

iv) contacting said single stranded molecule with said acceptor DNA under conditions such that annealing occurs;

v) extending said annealed single stranded molecule such that a first double stranded heteroduplex molecule is obtained;

vi) separating the strands of said first double stranded molecule; and

vii) generating a second double stranded molecule wherein each strand contains said DNA or RNA sequence or complement thereof.

5,284,761

METHOD OF ENCAPSULATING CELLS IN A TUBULAR EXTRUDATE

Patrick Aebischer, Barrington, R.I., and Lars Wahlberg, Gävle, Sweden, assignors to Brown University Research Foundation, Providence, R.I.

Continuation of Ser. No. 461,999, Jan. 8, 1990, Pat. No. 5,158,881, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538. This application Feb. 26, 1992, Ser. No. 827,728

The portion of the term of this patent subsequent to Oct. 27, 2007, has been disclaimed.

Int. Cl.[5] C12N *11/04, 5/00*

U.S. Cl. 435—182 **16 Claims**

1. A method of encapsulating viable cells comprising

(i) co-extruding an aqueous cell suspension and a polymeric solution through a common extrusion port having at least two concentric bores to form a tubular extrudate having a polymeric outer coating which encapsulates said cell suspension, wherein said cell suspension is extruded though an inner bore and said polymeric solution is extruded though an outer bore and a pressure differential is maintained between said cell suspension and said polymeric solution during co-extrusion to impede solvent diffusion from said polymeric solution into said cell suspension and said polymeric solution and said cell suspension are chosen so that coagulation of said polymeric solution occurs as the polymeric solution and cell suspension are extruded through the extrusion port; and

(ii) sealing said tubular extrudate to form at least one isolated tubular cell compartment.

5,284,762

PEPTIDYL PROLYL-CIS.TRANS-ISOMERASE

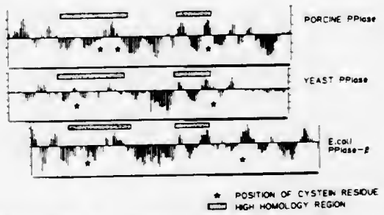
Toshiya Hayano; Setsuko Katou; Noboru Maki; Nobuhiro Takahashi, and Masanori Suzuki, all of Iruma, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 555,944

Claims priority, application Japan, Jul. 19, 1989, 1-184738; Oct. 6, 1989, 1-260244; Dec. 29, 1989, 1-344705

Int. Cl.[5] C12N *9/90, 15/61, 15/70*

U.S. Cl. 435—233 **6 Claims**



1. An isolated and purified *Escherichia coli* peptidyl prolyl cis-trans isomerase β possessing the characteristics:

(1) acting on and isomerizing an X_{aa}—Pro bond (wherein

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X_{aa} stands for any amino acid and Pro for L-proline) in a peptide chain,

(2) exhibiting a single molecular weight of about 20,000 daltons on sodium dodecyl sulfate-polyacrylamide concentration gradient gel electrophoresis,

(3) exhibiting a single isoelectric point of about 5.0 on isoelectric focusing, and

(4) not being inhibited by CsA.

5,284,763

NUCLEIC ACID ENCODING TGF-β AND ITS USES

Rik M. A. Deryak, So. San Francisco, and David V. Goeddel, Forestview, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 389,929, Aug. 4, 1989, Pat. No. 5,168,051, which is a continuation of Ser. No. 25,423, Mar. 13, 1987, Pat. No. 4,886,747, which is a continuation-in-part of Ser. No. 715,142, Mar. 22, 1985, abandoned. This application Mar. 4, 1992, Ser. No. 845,893

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] **C12N** *15/00, 15/16*

U.S. Cl. 435—240.1 **26 Claims**

1. Isolated nucleic acid encoding TGF-β.

5,284,764

CHIMERIC GLYCOPROTEINS CONTAINING IMMUNOGENIC SEGMENTS OF HUMAN PARAINFLUENZA VIRUS TYPE 3

Michael W. Wathen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 582,891, Oct. 5, 1990, Pat. No. 5,169,628, which is a continuation of Ser. No. 184,648, Apr. 22, 1988, abandoned. This application Sep. 4, 1992, Ser. No. 941,027

Int. Cl.[5] **C12N** *15/85, 5/16, 5/00*

U.S. Cl. 435—240.2 **9 Claims**

1. An expression system comprising a suitable host containing a DNA sequence capable of expressing a chimeric glycoprotein consisting essentially of the extracellular domain of parainfluenza virus type 3F protein linked to the extracellular domain of parainfluenza virus type 3 HN protein.

5,284,765

METHOD OF DIRECTIONALLY ORIENTING PLANT EMBRYOS

Curtis A. Bryan; William C. Carlson, both of Olympia, and Michael K. McKinnis, Chehalis, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 8, 1992, Ser. No. 865,390

Int. Cl.[5] **C12N** *5/00, 5/02;* **A01C** *1/00, 1/06*

U.S. Cl. 435—240.4 **23 Claims**

1. A method for directionally orienting a multiplicity of plant embryos, said embryos being bipolar with a cotyledon end and a radicle end, which comprises:

introducing said embryos into a low turbulence, non-phytotoxic fluid aqueous flotation medium of uniform density and of a higher density than that of the embryos to be oriented so that the embryos to be oriented will float, said flotation medium having a lower region and an upper region and being in a containment vessel, said embryos being introduced into the lower region of the flotation medium in the vessel;

retaining the embryos in the flotation medium for a sufficient time to permit the embryos to assume a cotyledon end upward orientation as said embryos float to the upper region of the flotation medium;

capturing and entraining the cotyledon end upward oriented embryos in the upper region of the flotation medium in a flowing transport medium of increased velocity so that the embryos are swept cotyledon end first into a conduit in order to remove them from the body of flotation medium;

transporting the oriented embryos in the flowing transport medium in the conduit to a delivery point while maintaining a cotyledon end first orientation; and

separating the embryos from the transport medium at the delivery point in a manner whereby the cotyledon end first orientation is maintained, so that the separated embryos can be further processed.

5,284,766

BED MATERIAL FOR CELL CULTURE

Teruo Okano, Ichikawa; Kazunori Katsoka, Kashiwa; Noriko Yamada, Itabashi; Yasuhisa Sakurai, Suginami; Takayuki Amiya, and Akira Mamada, both of Wakayama, all of Japan, assignors to Kao Corporation and Tokyo Women's Medical College, both of Tokyo, Japan

Continuation of Ser. No. 476,549, Feb. 7, 1990, abandoned. This application Jan. 7, 1992, Ser. No. 817,954

Claims priority, application Japan, Feb. 10, 1989, 1-31844

Int. Cl.[5] **C12N** *5/06, 5/00*

U.S. Cl. 435—240.23 **6 Claims**

1. A method for culturing cells, which comprises coating a support with a polymer or copolymer which has a lower or upper critical solution temperature to water within the range of 0° to 80° C., culturing cells attached to the surface thereof at a higher temperature than said lower critical solution temperature or at a lower temperature than said upper critical solution temperature on said coated surface having hydrophobic properties and detaching and collecting the cultured cells from said coated surface by changing the temperature to a lower temperature than said lower critical solution temperature or at a higher temperature than said upper critical solution temperature, thereby changing the properties of said coated surface from hydrophobic to hydrophilic.

5,284,767

MICROORGANISMS USEFUL FOR THE PRODUCTION OF HYDROXYLATED HETEROCYCLES

Andreas Kiener, Visp, Switzerland; Yvonne van Gameren, Ridderkerk, Netherlands, and Michael Bokel, Visp, Switzerland, assignors to Lonza Ltd., Gampel-Valais, Switzerland

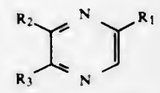
Division of Ser. No. 764,763, Sep. 24, 1991, Pat. No. 5,229,278. This application Jul. 27, 1992, Ser. No. 919,275

Claims priority, applicatioo Switzerland, Sep. 25, 1990, 3091/90

Int. Cl.[5] **C12R** *1/01, 1/06;* **C12P** *17/12;* **C12N** *1/20*

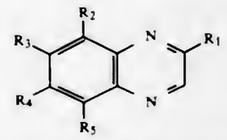
U.S. Cl. 435—252.1 **7 Claims**

1. Microorganisms, substantially in pure form, selected from the group consisting of (a) *Rhodococcus erythropolis* DSM 6138, (b) Arthrobacter sp. DSM 6137, (c) a descendant of microorganism (a), and (d) a descendant of microorganism (b), descendent (c) and descendant (d) each being capable of growing with 2,5-dimethylpyrazine as sole carbon, nitrogen and energy source, and being capable of converting a pyrazine of formula I as substrate:



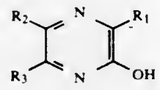
I

or a quinoxaline of general formula II as substrate:



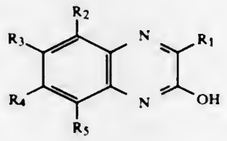
II

wherein R_1 is a C_1–C_4 alkyl group or a halogen atom and R_2, R_3, R_4 and R_5 are the same or different and each is a hydrogen atom, a C_1–C_4 alkyl group or a halogen atom, to a hydroxylated pyrazine of general formula III:



III

or to a hydroxylated quinoxaline of general formula IV:



IV

wherein R_1, R_2, R_3, R_4 and R_5 have the above-stated meaning, respectively and the hydroxylated pyrazine of formula III or hydroxylated quinoxaline of formula IV being accumulated in the growth medium.

5,284,768

SIGNAL PEPTIDE, DNA SEQUENCES CODING FOR THE LATTER, EXPRESSION VECTORS CARRYING ONE OF THESE SEQUENCES, GRAM-NEGATIVE BACTERIA TRANSFORMED BY THESE VECTORS, AND PROCESS FOR THE PERIPLASMIC PRODUCTION OF A POLYPEPTIDE

Richard Legoux, Caraman; Pascal Leplatois, Cuq Toulza; Evelyne Joseph-Liauzun, Saint Orens de Gameville; and Gérard Loison, Toulouse; Willem Roskam, deceased, late of Montgiscard, France, by Nicol Brunt, Montgiscard, France, Legal Representative, all of France

Continuation of Ser. No. 397,788, Aug. 24, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 825,080

Claims priority, application France, Aug. 24, 1988, 88 11188

Int. Cl.[5] **C12N** *15/09, 15/70, 1/21*

U.S. Cl. 435—252.33 **10 Claims**

1. A DNA sequence coding for a signal peptide of the formula

MXKSTLLLLFLLLCLPSWNAGA

in which:

A = Alanine	M = Methionine
C = Cysteine	N = Asparagine
F = Phenylalanine	P = Proline
G = Glycine	S = Serine
K = Lysine	T = Threonine
L = Leucine	W = Tryptophan

and X represents APSG or a direct bond between M and K.

5,284,769

PROCESS FOR PREPARING A SINGLE ENANTIOMER OF A LACTAM USING LACTAMASE

Christopher T. Evans, Heydon, and Stanley M. Roberts, Kenton, both of England, assignors to Chiros Ltd., Cambridge, United Kingdom

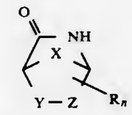
Continuation of Ser. No. 596,306, Oct. 15, 1990, abandoned. This application May 20, 1993, Ser. No. 63,392

Claims priority, application United Kingdom, Oct. 16, 1989, 8923278; Oct. 27, 1989, 8924209; Jan. 17, 1990, 9000995

Int. Cl.[5] **C07C** *7/00;* **C12N** *9/78*

U.S. Cl. 435—280 **20 Claims**

1. A process for preparing a single enantiomer, substantially free of other enantiomers, of a lactam of the formula

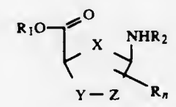


I

wherein X is $—CH_2—$, $—(CH_2)_2—$, $—CH_2—Q—$ $—Q—CH_2—$ and Q is a heteroatom (including NH); either Y and Z are independently selected from $—CH_2—$ and a heteroatom (including NH) or —Y—Z— is —CH=CH—, —CH=CH—, —CH=CH—; and R_n is absent or represents one or more independently-selected substituents which do not interfere with the lacatamase reaction at any available position(s) on the X,Y,Z-containing ring;

said process comprising the steps of:

(a) reacting a mixture of enantiomers of the lactam of formula I with either (1) a lactamase capable of stereoselective cleavage of one of said enantiomers, or (2) a microorganism which produces said lactamase, thereby forming a mixture of said single enantiomer of the lactam of formula I and an enantiomer, having the opposite stereochemical configuration, of the formula



II

wherein X, Y, Z and R_n are as defined above; R_1 is H or alkyl; and R_2 is H or a N-blocking group;

(b) isolating said single enantiomer of said lactam of formula I, and optionally isolating said enantiomer of opposite configuration of formula II.

5,284,770

METER VERIFICATION METHOD AND APPARATUS

Bradford C. Adrian, Anderson; Joe E. Anderson, Greenwood; Steven R. Arbuckle, Indianapolis; Timothy L. Beck, Middletown; William R. Boyd; Prafulla D. Goradia, both of Indianapolis, all of Ind.; Michael E. Grant, Sand Point, Id.; Russell T. Gray, Brownsburg, Ind.; Richard Riedel, Carmel, Ind.; Tyrie R. Robbins; Stephen D. Scopatz, both of Indianapolis, Ind.; Sandra E. Sowa, Fortville, Ind.; John W. Stoughton, and Robert C. Yates, both of Indianapolis, Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Continuation of Ser. No. 661,811, Feb. 27, 1991, abandoned. This application May 24, 1993, Ser. No. 66,620

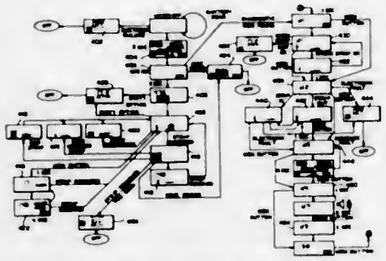
Int. Cl.[5] **G01N** *31/00, 21/00*

U.S. Cl. 436—8 **8 Claims**

1. A method for verifying the operating accuracy of an instrument for detecting the concentration of a medically significant component of a body fluid, the instrument operating by determining the remission of a reacted chemistry contained on a chemistry-bearing strip after the chemistry has reacted

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with the medically significant component of the body fluid, the method comprising the steps of providing an instrument including a port for receiving a user-insertable key having non-volatile memory containing data representative of instrument operating parameters, a display, a radiation source, a remission detector and a pathway from the radiation source to the chemistry and from the chemistry to the remission detector when the chemistry-bearing strip is properly inserted into the instrument, the remission of the chemistry determining the remission



detected by the remission detector, inserting into the port said user-insertable key having non-volatile instrument operating accuracy-verifying memory in which data representative of a known remission of a check strip is stored, inserting the check strip, energizing the radiation source, detecting the remission from the check strip, comparing the remission from the check strip to the known remission stored in the user-insertable key, and displaying an indication whether the remission detected by the remission detector is the same as the known remission on the user-insertable key.

5,284,771

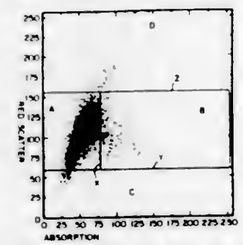
REAGENT COMPOSITIONS AND THEIR USE IN SPHERING CELLS

Sophie S. Fan, Millwood; Daniel Ben-David, Shrub Oak; Albert Cupo, Scarsdale, all of N.Y.; Gena Fischer, Harringtoo Park, N.J.; Grace E. Martin, Mount Kisco; Leonard Ornstein, White Plains, both of N.Y., and Gregory M. Colella, Bloomfield, N.J., assignors to Miles Inc., Tarrytown and The Mount Sinai School of Medicine, New York, both of N.Y.

Filed Dec. 5, 1991, Ser. No. 802,674

Int. Cl.[5] G01N *1/30*

U.S. Cl. 436—10 **7 Claims**



1. A method for treating mammalian red blood cells in a whole blood sample which can be subsequently effectively measured electrooptically which comprises treating an inticoagulated whole blood sample with a single reagent solution containing a zwitterionic sphering agent to eliminate orientational noise when said sample and reagent are subject to flow cytometric light measurements which shpering agent does not include added protein buffering or fixative and which is present at a concentration which provides substantial sphering of the mature erythrocytes and the reticulocytes in said whole blood sample.

5,284,772

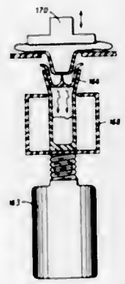
SPECIMEN COLLECTION AND ANALYSIS BAG

L. Thomas Oxley, Riverwoods, Ill., assignor to T Systems Inc., Riverwoods, Ill.

Continuation-in-part of Ser. No. 509,257, Apr. 13, 1990, Pat. No. 5,084,041, and a continuation-in-part of Ser. No. 534,446, Jun. 6, 1990, and a continuation-in-part of Ser. No. 550,641, Jul. 10, 1990, Pat. No. 5,160,329, and a continuation-in-part of Ser. No. 583,293, Sep. 17, 1990. This application Feb. 27, 1991, Ser. No. 662,612

Int. Cl.[5] G01N *35/02*

U.S. Cl. 436—47 **9 Claims**



8. An automated method of sampling and testing including a specimen sampling station for collecting a fluid specimen in a plastic container having at least one access port with an access port housing sealingly coupled to said container and an analysis station for analyzing said fluid specimen, said method comprising the steps of:

positioning said plastic container adjacent said specimen sampling station having a test receptacle;

moving a piercing element positioned on an opening top of said test receptacle with said sampling station and said test receptacle to puncture said access port housing while said piercing element is engaging with said access port housing;

draining the fluid specimen through said access port housing and said piercing element into said test receptacle;

transferring said piercing element from said sampling station to said plastic container;

resealing said access port housing using said piercing element; and

transporting the fluid specimen in said test receptacle to said analysis station.

5,284,773

DETERMINATION OF LIPOPROTEIN CONCENTRATION IN BLOOD BY CONTROLLED DISPERSION FLOW ANALYSIS

Krishnaji R. Kulkarni, and Jere P. Segrest, both of Birmingham, Ala., assignors to The UAB Research Foundatioo, Birmingham, Ala.

Filed Aug. 28, 1992, Ser. No. 937,529

Int. Cl.[5] G01N *35/08*

U.S. Cl. 436—52 **15 Claims**

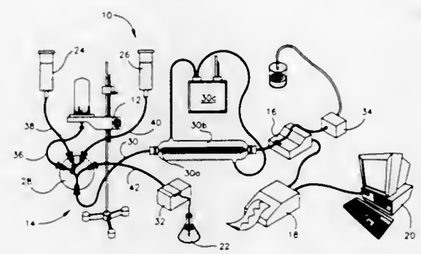
1. A flow analysis method for measuring, in a blood sample containing a plurality of lipoprotein classes, the distribution of cholesterol among said lipoprotein classes comprising:

a) separating the blood sample into two or more fractions representing different lipoprotein classes to form a gradient;

b) providing a continuous, non-segmented stream of reagent which continuously flows from a reagent source to a detector;

c) introducing each sample fraction in said gradient into the reagent stream in a continuous succession upstream from the detector;

d) reacting each sample fraction with the reagent as the sample fractions flow toward said detector to produce a measurable reaction signal indicative of the cholesterol



concentration in each sample fraction of the gradient while controlling dispersion of the sample fractions within the reagent stream;

e) continuously measuring each reaction signal at said detector before each reaction is completed and while each reaction signal is in a transient state; and

f) recording each reaction signal to produce a continuous cholesterol profile including each lipoprotein class.

5,284,774

ANTINEOPLASTIC, SYSTEM-L SPECIFIC AMINO ACID NITROGEN MUSTARDS

David T. Vistica, Damascus, Md., assignor to The United States of America as represented by the Secy. of the Dept. of Health & Human Resources, Washington, D.C.

Continuation of Ser. No. 221,613, Jul. 20, 1988, abandoned, which is a division of Ser. No. 17,701, Feb. 24, 1987, Pat. No. 4,772,632. This application Nov. 15, 1991, Ser. No. 793,322

Int. Cl.[5] G01N *33/543*

U.S. Cl. 436—63 **2 Claims**

1. A method for detecting the presence of the L-amino acid transport system comprising the steps of:

1) suspending a first fraction of cells from a growth medium in a buffer solution;

2) disrupting the first fraction of cells by sonication;

3) treating the sonicate of step 2) with DNAse and RNAse;

4) applying the product obtained in step 3) to a column followed by elution and collection of the void volume;

5) adding DL-2-amino-7-bis(2-chloroethyl)amino-1,2,3,4-tetrahydro-2-naphthoic acid to the product obtained in step 4);

6) applying the product of step 5) to a column, and eluting, and collecting the void volume in order to remove unreacted naphthoic acid;

7) monitoring fractions obtained in step 6) at A_{220} nM on a spectrophotometer;

8) repeating steps 1) through 7) with a second fraction of cells from said growth medium except that in step 5) the second cells are also treated with 2-aminobicyclo{2.2.1-}heptane-2-carboxylic acid and the eluant from said second fraction of step 6) is treated with 2-aminobicyclo-{2.2.1}heptane-2-carboxylic acid; and

9) detecting the presence of the L-amino acid transport system by determining if the first fraction of cells exhibits absorbance at 220 nM and the second fraction of cells does not exhibit absorbance at 220 nM.

5,284,775

GAS SENSING ELEMENT AND METHOD FOR MAKING SAME

Masao Yafuso, El Toro; Mark Z. Holody, Irvine; Thomas P. Maxwell, Santa Ana, and Thomas G. Hacker, Anaheim, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 496,560, Mar. 20, 1990, Pat. No. 5,175,016. This application Sep. 21, 1992, Ser. No. 949,771

Int. Cl.[5] G01N *33/50*

U.S. Cl. 436—68 **10 Claims**

5. A sensing composition comprising:

a gas permeable and light permeable polymeric material, a dispersed aqueous liquid including a sensing component dissolved therein, and a hydrophilic dispersing agent selected from the group consisting of hydroxyalkyl celluloses and mixtures thereof in an amount effective to facilitate maintaining aqueous liquid dispersed in a precursor of said sensing composition prior to forming said sensing composition, said precursor comprising a dispersed aqueous liquid including said sensing component dissolved therein, a polymer precursor and said hydrophilic dispersing agent.

5,284,776

AQUEOUS QUINOLONE CONCENTRATION ASSAY

James J. Napier, Lindenhurst; Mark R. Holst, Waukegan, and Bhi-Yung Cheng, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 17, 1993, Ser. No. 107,556

Int. Cl.[5] G01N *21/00, 21/75*

U.S. Cl. 436—764 **10 Claims**

1. A method of determining the concentration of a quinolone in an aqueous solution comprising:

(i) reacting said quinolone with an iron salt under conditions and for a time period sufficient to form a color change in said aqueous solution, and

(ii) comparing said resulting color change to a colored standard derived from aqueous solutions containing known concentrations of quinolones, thereby determining the concentration of quinolone in said aqueous solution.

5,284,777

COMBINED GLYCATED HEMOGLOBIN AND IMMUNOTURBIDOMETRIC GLYCATED ALBUMIN ASSAY FROM WHOLE BLOOD LYSATE

Murray A. Rosenthal, Copley, and David R. Hocking, Akron, both of Ohio, assignors to Isolab, Inc., Akron, Ohio

Filed Mar. 4, 1991, Ser. No. 664,401

Int. Cl.[5] G01N *33/53, 33/536, 33/68*

U.S. Cl. 436—518 **11 Claims**

1. A method of quantitating a glycated non-hemoglobin protein in a whole blood lysate, said method comprising the steps of:

(a) separating glycated proteins from non-glycated proteins by contacting said lysate with a boronated affinity column, to obtain an eluate containing glycated hemoglobin and at least one glycated non-hemoglobin protein;

(b) contacting said eluate with an antibody which specifically binds said non-hemoglobin protein, said antibody being in solution buffered to a Ph of from about 7.0 to 9.0, whereby turbidity is produced in said solution; and

(c) determining the amount of said non-hemoglobin protein in said turbid solution by measuring said turbidity.

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5,284,778

SENSITIVE BIOASSAY USING MONOCLONAL ANTIBODIES WHICH BIND TO HORMONE-RECEPTOR COMPLEXES

Robert E. Canfield, Cold Springs, N.Y.; E. Glenn Armstrong, San Diego, Calif.; William R. Moyle; Gordon J. MacDonald, both of Piscataway, N.J., and Donna M. Anderson, Muttenz, Switzerland, assignors to The Trustees of Columbia University in the City of New York, New York, N.Y. and The University of Medicine & Dentistry of New Jersey, Newark, N.J.

Continuation of Ser. No. 133,029, Dec. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 764,672, Aug. 12, 1985, abandoned. This application Sep. 12, 1991, Ser. No. 759,645

Int. Cl.[5] G01N *33/536*

U.S. Cl. 436—536 18 Claims

1. A quantitative assay for determining the amount of a biologically active ligand selected from the group consisting of human chorionic gonadotropin and luteinizing hormone present in a sample comprising contacting the sample with both: (i) a receptor, which is not an antibody or an immunoglobulin, and to which the ligand naturally binds in order to induce a physiological response; and (ii) a monoclonal antibody specifically directed to a determinant which is present on both free ligand on a complex of the receptor and the ligand and which remains exposed when the receptor binds to the ligand, the monoclonal antibody having higher affinity for the determinant when it is present on receptor-ligand complex than free ligand; so as to form a complex of the ligand, the receptor and the monoclonal antibody, either the receptor or the monoclonal antibody being labeled with a detectable marker; and determining (1) the amount of labeled receptor or of labeled monoclonal antibody bound to the ligand or (2) the amount of labeled receptor or of labeled monoclonal antibody not bound to the ligand; or (3) both such amounts and thereby determining the amount of biologically active ligand present in the sample.

5,284,779

METHOD OF FORMING ORGANIC CHARGE-TRANSFER THIN FILMS

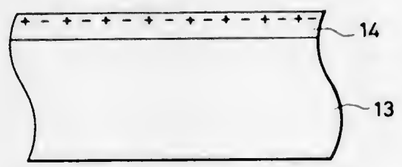
Akiharu Miyanaga, Atsugi, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 617,196, Nov. 23, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 915,395

Claims priority, application Japan, Nov. 24, 1989, 1-305889

Int. Cl.[5] H01L *29/78, 29/80*

U.S. Cl. 437—1 31 Claims



1. A method for forming an organic film comprising the steps of:

forming an organic buffer film on a substrate with the molecules of said film oriented by Langmuir-Blogett's technique;

forming a charge-transfer organic film on said buffer film by vapor depositions wherein said buffer film is stearic acid metallic salt.

5,284,780

METHOD FOR INCREASING THE ELECTRIC STRENGTH OF A MULTI-LAYER SEMICONDUCTOR COMPONENT

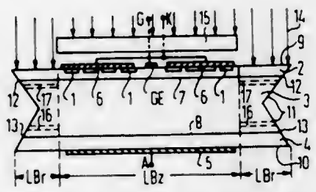
Hans-Joachim Schulze, Ottobrunn, and Heinz Mitlehner, Muaich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 584,170, Sep. 18, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,838

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1989, 3932489

Int. Cl.[5] H01L *49/00*

U.S. Cl. 437—6 5 Claims



1. A method for increasing electric strength of a thyristor formed of four successive layers of alternating conductivity types, specifically a first conductivity type emitter layer, a second conductivity type base layer, a first conductivity type base layer, and a second conductivity type emitter layer, the first conductivity type emitter layer having a cathode connection and the second conductivity type emitter layer having an anode connection, a first pn junction being formed between said first conductivity type base layer and second conductivity type base layer, and a second pn junction being formed between said first conductivity type base layer and second conductivity type emitter layer, comprising the steps of:

providing an irradiation mask opposite a central active region of the thyristor at at least one end of said thyristor at said cathode or at said anode; and

with a proton irradiation, providing a relatively narrow zone compared to a thickness of said first conductivity type base layer in said first conductivity type base layer at lateral regions thereof outside said mask and spaced from and between said second pn junction and said first pn junction, said relatively thin zone having reduced carrier life compared to a remainder of said first conductivity type base layer, and irradiation energy for said proton irradiation being selected so that said thin zone of reduced carrier life is in a region outside of a space-charge zone which builds up as a consequence of a blocking bias at the first pn junction.

5,284,781

METHOD OF FORMING LIGHT EMITTING DIODE BY LPE

Arumugam Satyanarayan, Mesa, Ariz.; Bonnie A. Swanson, St. Louis, Mo., and Frank M. Richie, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1993, Ser. No. 54,489

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—23 14 Claims

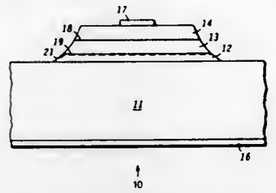
1. A method of forming an optical semiconductor device comprising:

creating an LPE melt having a first temperature and an oversaturated gallium arsenide concentration wherein the LPE melt is crated in an LPE boat;

converting a surface of a gallium arsenide substrate to a first P-type layer wherein the converting is performed in the LPE boat prior to covering the gallium arsenide substrate with the LPE melt;

covering the first P-type layer with the LPE melt;

forming an N-type layer on the first P-type layer by reducing the first temperature to a second temperature; and



forming a second P-type layer on the N-type layer by reducing the second temperature to a third temperature.

5,284,782

PROCESS FOR FORMATION OF DELTA-DOPED QUANTUM WELL FIELD EFFECT TRANSISTOR

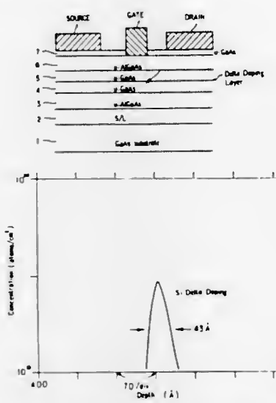
Yoon H. Jeong; Dong H. Jeong, and Kyeong S. Jang, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd. and Research Institute of Industrial Science & Technology, both of Kyong Sang Book-Do, Rep. of Korea

Filed Aug. 17, 1992, Ser. No. 931,577

Claims priority, application Rep. of Korea, Sep. 12, 1991, 91-15938

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—29 8 Claims



1. A process for forming a delta-doped quantum well field effect transistor including the steps of providing a substrate, and forming a super lattice, a buffer layer, quantum wells, a cap layer and an ohmic layer, all said layers being formed in the cited order; and the steps of forming a source, a drain and a gate on said cap layer and on said ohmic layer by applying metallization and lift-off processes,

the step of forming said quantum wells further comprising the steps of:

putting trimethyl gallium and arsine into a reaction vessel;

forming a first GaAs quantum well by carrying out a metal-organic chemical vapor deposition process;

doping an Si impurity into said first quantum well; and

forming a second quantum well by putting trimethyl gallium and arsine into said reaction vessel and by carrying out a metalorganic chemical vapor deposition process.

5,284,783

METHOD OF FABRICATING A HETEROJUNCTION BIPOLAR TRANSISTOR

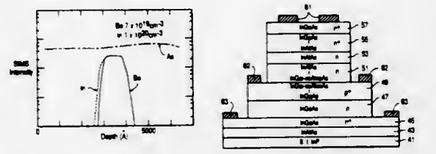
Hideaki Ishikawa, Hadano; Toshio Fujii, Atsugi, and Eizo Miyauchi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 426,042, Oct. 24, 1989, abandoned. This application Jul. 2, 1991, Ser. No. 724,935

Claims priority, application Japan, Oct. 27, 1988, 63-271345

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 16 Claims



1. A method of fabricating a semiconductor device comprising an epitaxial layer of a group III–V semiconductor material provided on an underlying crystal layer with a lattice matching therewith, said semiconductor material being doped to the p-type by addition of beryllium and selected from a group consisting of gallium aluminum arsenide and indium gallium aluminum arsenide, said method comprising the steps of:

growing said epitaxial layer on the underlying crystal layer;

adding beryllium to a concentration level of about 5×10^{19} atoms/cm^3 to about 5×10^{20} atoms/cm^3 to the semiconductor material; and

adding indium by an amount of about 0.5 mole percent to about 8 mole percent with respect to group III elements in said semiconductor material.

5,284,784

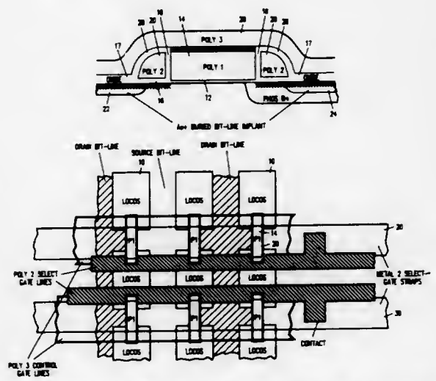
BURIED BIT-LINE SOURCE-SIDE INJECTION FLASH MEMORY CELL

Martin H. Manley, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 2, 1991, Ser. No. 769,973

Int. Cl.[5] H01L *29/06, 29/68, 29/76, 29/26*

U.S. Cl. 437—43 3 Claims



1. A method of fabricating a buried bit line, source-side injection flash EPROM cell array in a substrate of semiconductor material, the flash EPROM cell array defined by a matrix of a plurality of rows of flash EPROM cells extending in the X direction and a plurality of flash columns of EPROM cells

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extending in the Y direction, the fabrication method comprising the steps of:

forming an array of field oxide isolation regions in a surface of the semiconductor substrate to define active device regions in the substrate;

forming a layer of first dielectric material having a first thickness on the exposed surface of the active device regions;

forming a layer of first conductive material on the layer of first dielectric material;

forming a layer of second dielectric material on the layer of first conductive material;

etching the layer of second dielectric material and underlying layer of first conductive material to define floating gate electrodes of first conductive material that have second dielectric material formed thereon and that are separated from the semiconductor substrate by underlying first dielectric material, each floating gate electrode extending in the Y direction and terminating at its first and second ends on first and second field oxide isolation regions, respectively, and each floating gate electrode having a drain side and a source side;

removing first dielectric material not underlying the floating gate electrodes to expose regions of the semiconductor substrate;

simultaneously forming gate dielectric material having a second thickness on the exposed regions of the semiconductor substrate and sidewall dielectric material on the sidewalls of the floating gate electrodes;

introducing dopant of a conductivity type opposite the conductivity of the semiconductor substrate into the semiconductor substrate adjacent the drain side of each floating gate electrode to form buried bit lines in the Y direction in the EPROM array matrix;

for each row of flash EPROM cells in the flash EPROM array matrix, forming an EPROM cell spacer of second conductive material adjacent to the floating gate electrode of each flash EPROM cell in said row but separated from said floating gate electrode by the sidewall dielectric material formed on the sidewall of said floating gate electrode, and simultaneously forming a select gate line of second conductive material and running in the X direction and substantially parallel to the flow of current from the source to the drain of each flash EPROM cell in said row, said select gate line being in electrical contact with each EPROM cell spacer in said row;

introducing dopant into the semiconductor substrate adjacent both the drain side and the source side of each floating gate electrode to define source and drain regions of the EPROM cells;

forming control gate dielectric material over the floating gate electrodes and the EPROM cell spacers; and

for each row of flash EPROM cell in the flash EPROM array matrix, forming a control gate line of third conductive material running in the X direction and overlying the floating gate electrodes and the EPROM cell spacers in said row and separated therefrom by the control gate dielectric material.

5,284,785

DIFFUSIONLESS SOURCE/DRAIN CONDUCTOR ELECTRICALLY-ERASABLE, ELECTRICALLY-PROGRAMMABLE READ-ONLY MEMORY AND METHODS FOR MAKING AND USING THE SAME

Manzur Gill, Rosharon, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

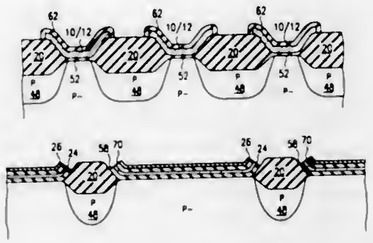
Division of Ser. No. 548,045, Jul. 5, 1990, Pat. No. 5,150,179. This application Feb. 27, 1992, Ser. No. 842,933

Int. Cl.[5] H01L *27/115*

U.S. Cl. 437—43 **18 Claims**

1. A method of fabricating a memory cell at a face of a semiconductor layer of a first conductivity type, comprising the steps of:

forming first and second conductors overlying and insulated from said face, said fist and second conductors being separated by a channel region in said face, said first conductor defining a first inversion region in said semiconductor layer beneath said first conductor and adjacent said channel region in response to an applied voltage, said



second conductor defining a second inversion region in said semiconductor layer beneath said second conductor and adjacent said channel region in response to an applied voltage;

forming a floating gate overlying and insulated from at least a portion of said channel region;

forming a control gate overlying and insulated from said floating gate and said channel region.

5,284,786

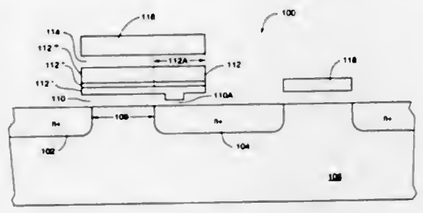
METHOD OF MAKING A SPLIT FLOATING GATE EEPROM CELL

Rakesh B. Sethi, Campbell, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 14, 1992, Ser. No. 930,311

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—43 **6 Claims**



1. A method of forming a split floating gate memory cell in a semiconductor substrate having a first conductivity type, the method comprising:

(a) forming source and drain buried diffusion regions having a second conductivity type opposite the first conductivity type in the semiconductor substrate, the source and drain diffusion regions being spaced apart to define a substrate channel region therebetween;

(b) forming a layer of floating gate dielectric material over the source and drain regions and the channel region, the floating gate dielectric material including a region of tunnel dielectric formed therein over the drain region such that the thickness of the tunnel dielectric is less than the thickness of the floating gate dielectric material;

(c) forming a floating gate on the floating gate dielectric material to extend over the channel region and including a portion that extends over the tunnel dielectric, the floating gate comprising a layer of first conductive material, a layer of first dielectric material formed on the layer of first conductive material, and a layer of second conductive formed on the layer of first dielectric material;

(d) forming a layer of second dielectric material on the floating gate; and

(e) forming a layer of third conductive material on the layer of second dielectric material.

5,284,787

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED ELECTRICAL CHARACTERISTICS

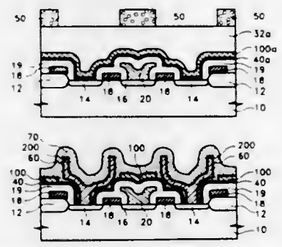
Ji-bong Ahn, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Dec. 31, 1991, Ser. No. 815,247

Claims priority, application Rep. of Korea, Mar. 27, 1991, 91-4793

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **27 Claims**



1. A method for manufacturing a memory device in which memory cells each comprising a transistor having a gate electrode, a drain and a source electrically connected to a capacitor having a storage electrode, a dielectric layer and a plate electrode, are formed on a semiconductor substrate in an orderly shape, comprising the steps of:

stacking an etch blocking layer, stacking a first polycrystal silicon layer and then stacking an insulating layer whose surface is planarized, over the entire surface of said semiconductor substrate on which said transistor is formed;

forming a photosensitive film pattern for forming said storage electrode on said insulating layer;

patterning said insulating layer and said first polycrystal silicon layer by using said photosensitive film pattern as a mask;

forming a spacer layer over the entire surface of the resultant substrate;

forming a spacer over the sidewalls of said patterned first polycrystal silicon layer and said insulating layer by etching said spacer layer;

forming a second polycrystal silicon layer over the entire surface of said semiconductor substrate on which said spacer is formed;

completing a storage electrode by partially etching said second polycrystal silicon layer to isolate each cell unit;

removing at least a portion of said patterned insulating layer and said spacer by etching;

forming a dielectric layer over the entire surface of the resultant semiconductor substrate; and

forming a third polycrystal silicon layer over the entire aurface of said dielectric layer, thereby, forming a plate electrode.

5,284,788

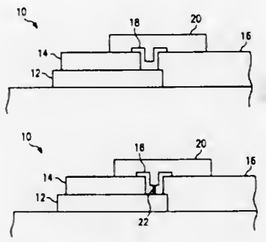
METHOD AND DEVICE FOR CONTROLLING CURRENT IN A CIRCUIT

David B. Spratt, and Kueing-Long Chen, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 25, 1992, Ser. No. 951,481

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **20 Claims**



7. A method of forming an antifuse between first and second conductors, comprising the steps of:

forming said first conductor;

depositing a mixture comprising microcrystalline silicon and a dopant on said first conductor; and

forming said second conductor on said mixture.

5,284,789

METHOD OF FORMING SILICON-BASED THIN FILM AND METHOD OF MANUFACTURING THIN FILM TRANSISTOR USING SILICON-BASED THIN FILM

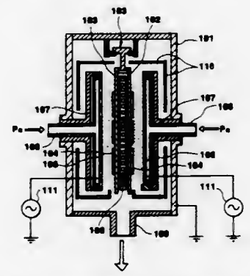
Hisatoshi Mori, Fussa; Syunichi Sato, Kawagoe, and Naohiro Konya, Hino, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 690,816

Claims priority, application Japan, Apr. 25, 1990, 2-107376; Apr. 25, 1990, 2-107377; Sep. 7, 1990, 2-235675; Sep. 12, 1990, 2-239940; Sep. 12, 1990, 2-239941; Sep. 14, 1990, 2-242576; Sep. 14, 1990, 2-242577

Int. Cl.[5] H01L *21/00, 21/02, 21/326*

U.S. Cl. 437—113 **18 Claims**



1. A method of forming a thin film consisting of a silicon-based material, comprising:

a first step of setting a substrate, on which the thin insulating film consisting of said silicon-based material is to be formed, in a chamber having high-frequency electrodes for receiving a high-frequency power when said substrate is maintained heated at a predetermined temperature;

a second step of supplying a carrier gas and a reaction gas into said chamber, including a first substep of supplying a carrier gas into said chamber, a second substep of adjusting an internal pressure and a temperature of said chamber to a predetermined pressure and a predetermined tempera-

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ture, respectively, a third substep of supplying a high-frequency power between said substrate and said high-frequency electrodes, and a fourth substep of supplying a main reaction gas to said chamber after an electric discharge occurs upon supply of the high-frequency power;

a third step of applying a high-frequency power having a discharge power density of 60 to 100 mW/cm^2 to said high-frequency electrodes to generate a plasma in said chamber;

a fourth step of maintaining said predetermined temperature of said substrate in the first step between 230° C. and 270° C., and of depositing an insulator consisting of a silicon-based material on said substrate to a predetermined thickness while gas is supplied in the second step and while the high-frequency power is supplied in the third step; and

a fifth step of cooling said substrate on which said insulating film is formed and unloading said substrate from said chamber.

5,284,790

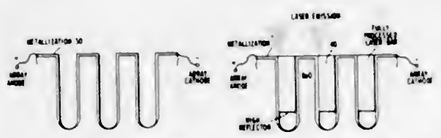
METHOD OF FABRICATING MONOLITHIC LASER DIODE ARRAY

Arthur A. Karpinski, Barker Rd., Jordan, N.Y. 13080

Continuation of Ser. No. 607,341, Oct. 31, 1990, abandoned, which is a division of Ser. No. 460,459, Jan. 3, 1990, Pat. No. 5,040,187. This application Jan. 30, 1992, Ser. No. 827,884

Int. Cl.^{5} H01L *21/20, 21/203, 21/205*

U.S. Cl. 437—129 **4 Claims**



1. A method of forming monolithic laser diode arrays, said method comprising:

providing a monolithic substrate;

forming at least one groove in a major surface of said substrate, said at least one groove having side walls formed vertically in said substrate;

depositing a metallization layer along said side walls of said at least one groove to form at least one metallized groove; and

setting a plurality of laser diodes in said at least one metallized groove, such that a radiation emitting surface of each of said plurality of laser diodes is parallel to said major surface of said substrate.

5,284,791

METHOD OF MAKING TUNABLE SEMICONDUCTOR LASER

Yasutaka Sakata; Masayuki Yamaguchi, and Tatsuya Sasaki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

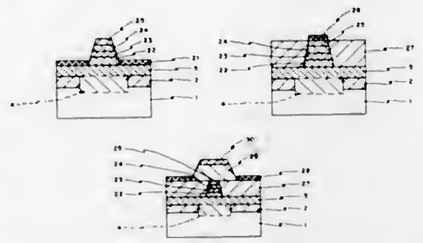
Filed Aug. 6, 1992, Ser. No. 926,240

Claims priority, application Japan, Aug. 9, 1991, 3-224763; Jan. 10, 1992, 4-022040

Int. Cl.^{5} H01L *21/20*

U.S. Cl. 437—129 **1 Claim**

1. A method of making a tunable twin guide semiconductor laser comprising: a step of preparing a semiconductor substrate provided at the surface thereof with a first semiconductor layer having a first conductivity type; a step of forming a diffraction grating on a surface of said first semiconductor layer; a step of forming a first mask on the surface of said first semiconductor layer, said first mask having a stripe-shaped window; a step of forming through said window a stripe-shaped multilayer ridge consisting of a tuning layer, a central layer having a second conductivity type, and an active layer by using selective epitaxy; a step of removing said first mask; a step of forming a second mask for preventing epitaxial growth on a surface of said multilayer ridge; a step of forming by epitaxy a compensating semiconductor layer having said second conductivity on the surface of said multilayer ridge exposed through said second mask; and a step of forming a cladding layer on a surface of said active layer and a neighboring surface of said compensating semiconductor layer.



5,284,792

FULL-WAFER PROCESSING OF LASER DIODES WITH CLEAVED FACETS

Theodor Forster, Thalwil; Christoph Harder, Zurich; Albertus Oosenbrug, Langnau am Albis, all of Switzerland, and Gary W. Rubloff, Waccabuc, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1993, Ser. No. 74,530

Claims priority, application European Pat. Off., Sep. 6, 1992, 92810438.9

Int. Cl.^{5} H01L *21/20*

U.S. Cl. 437—129 **21 Claims**

1. A method for processing a plurality of semiconductor laser diodes with cleaved facets, starting with a laser structure comprising a plurality of layers formed on top of a laser substrate, comprising the steps of:

a) defining the position of the facets to be cleaved by scribing a set of parallel scribed marks into the top surface of said plurality of layers, said scribed marks being substantially perpendicular to a predetermined optical axis of the lasers to be made, and having a predetermined laser length distance defining the length of a plurality of laser cavities of said laser diodes and a predetermined separation distance between the facets of neighboring laser diodes;

b) covering the uppermost portion of said layers with a protective etch mask that covers each laser diode to be made, extends over said scribed marks defining said laser length of each laser and includes a plurality of etch windows between said scribed marks defining the position of facets of neighboring lasers;

c) etching trenches at least into an upper portion of said laser structure through said plurality of etch windows, thereby leaving a lower portion including said substrate;

d) partly underetching said upper portion during a second etch step of said lower portion through said plurality of etch windows, whereby an undercut portion of a plurality of etch apertures extends under said upper portion past said scribed marks, so that said laser facets can be defined by cleaving said upper portion along said scribed marks without cleaving the whole laser structure;

e) cleaving said underetched upper portions along said scribed marks, thereby defining laser facets perpendicular to said layers and to said optical axis; and

f) separating said plurality of laser diodes by cleaving said lower portion between neighboring lasers.

5,284,793

METHOD OF MANUFACTURING RADIATION RESISTANT SEMICONDUCTOR DEVICE

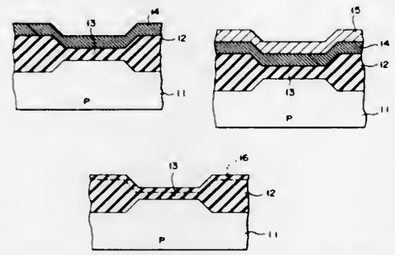
Kaoru Hama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 611,310, Nov. 9, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,662

Claims priority, application Japan, Nov. 10, 1989, 1-293495

Int. Cl.^{5} H01L *21/225*

U.S. Cl. 437—160 **6 Claims**



1. A method of manufacturing a radiation resistant semiconductor device, comprising the steps of:

forming an element isolation oxide film and a gate insulating oxide film on a semiconductor substrate;

depositing a film containing one of phosphorus and arsenic on said element isolation oxide film and said gate insulating oxide film, with said film being physically separated from said substrate; and

diffusing said one of phosphorus and arsenic from said film into said element isolation oxide film and the gate insulating oxide film by annealing without diffusing said one of phosphorus and arsenic into said substrate.

5,284,794

METHOD OF MAKING SEMICONDUCTOR DEVICE USING A TRIMMABLE THIN-FILM RESISTOR

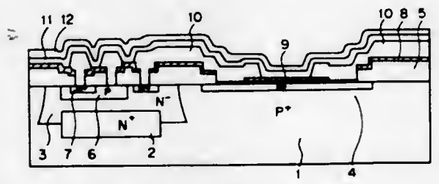
Yoshihiko Isobe, Toyoake; Makio Iida, Ichinomiya; Shoji Miura, Anjo; Keizou Kajiura, Nagoya; Mikimasa Suzuki, Toyohashi, and Masami Saito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 658,026, Feb. 21, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,298

Claims priority, application Japan, Feb. 21, 1990, 2-40008

Int. Cl.^{5} H01L *21/26*

U.S. Cl. 437—173 **9 Claims**



1. A method of producing a semiconductor device, comprising the steps of:

forming a first insulation film on the surface of a semiconductor substrate;

selectively removing the first insulation film and forming a second insulation film on the surface of the semiconductor substrate, the thickness of the second insulation film being thinner than that of the first insulation film;

forming a thin-film resistor on the surface of the second insulation film;

forming a passivation film on the surface of the thin-film resistor; and

trimming the thin-film resistor by laser, thereby setting a resistance value of the thin-film resistor.

5,284,795

THERMAL ANNEALING OF SEMICONDUCTOR DEVICES

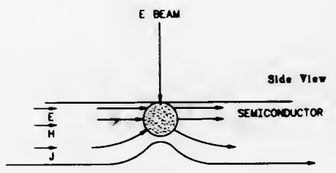
Henri Gay, Fonsegrives; Denis Griot, Tournefeuille, and Irenee Pages, Tolosane, all of France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1991, Ser. No. 803,808

Claims priority, application France, Dec. 20, 1990, 9016040

Int. Cl.^{5} H01L *21/326*

U.S. Cl. 437—174 **7 Claims**



MICROWAVES - ELECTRON BEAM INTERACTION MECHANISM

1. A method of processing a semiconductor device comprising the steps of:

generating a microwave field;

generating an electron or ion beam; and

applying the microwave field to surround a semiconductor device substrate and while said microwave field is applied, focusing said electron or ion beam on a portion of said semiconductor device substrate whereby the presence of the electron or ion beam creates a conductive region which increases the microwave field intensity in said region so that the intensified microwave field creates a local heating effect in said semiconductor device substrate to perform a local annealing action.

5,284,796

PROCESS FOR FLIP CHIP CONNECTING A SEMICONDUCTOR CHIP

Teru Nakanishi; Kazuaki Karasawa; Masayuki Ochiai, and Kaoru Hashimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 2, 1992, Ser. No. 939,695

Claims priority, application Japan, Sep. 10, 1991, 3-229266

Int. Cl.^{5} H01L *21/283, 21/58, 21/60*

U.S. Cl. 437—183 **6 Claims**

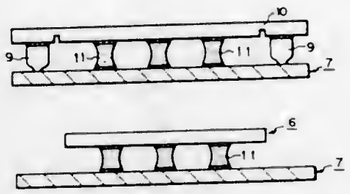
1. A process for flip chip connection of a semiconductor chip, in which solder bumps formed on the semiconductor chip in a matrix, arrangement are mated with a solder bumps formed on corresponding circuit board for flip chip connection, the process of said flip chip connection comprising the steps of:

forming a plurality of stud bumps on the semiconductor chip, on which a plurality of solder bumps are formed in the vicinity of the outer periphery thereof and the outer side of said solder bumps;

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providing a cutting groove between a plurality of said solder bumps and said stud bumps;

mating the solder bumps on said semiconductor chip and the corresponding solder bumps on said circuit board and heating for integration of the mating solder bumps; and



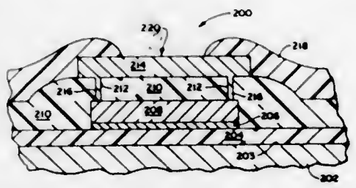
breaking away the outer peripheral portion of said semiconductor chip along said cutting groove after a flip chip connection in order to remove said stud bumps.

5,284,797

SEMICONDUCTOR BOND PADS

Dorothy A. Heim, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 947,854, Sep. 18, 1992, Pat. No. 5,248,903.
This application Nov. 30, 1992, Ser. No. 984,206
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—183 **18 Claims**



1. A method of making a composite bond pad, on a semiconductor die, of the type suitable for effecting making connections to the semiconductor die, said method comprising:

forming a lower bond pad element having a top surface on a surface of a semiconductor die, the top surface of the lower bond pad element having an area and a peripheral region of the area;

forming an insulating component over said top surface of said lower bond pad element;

forming at least one opening through said insulating component, said opening extending to said top surface of said lower bond pad element, wherein said opening is located above the peripheral region of the top surface of said lower bond pad;

filling said opening with conductive material; and

forming an upper bond pad element above said insulating component, wherein said upper bond pad element is electrically connected to said conductive material and said lower bond pad element;

wherein:

the upper bond pad element is disposed higher above the surface of the semiconductor die than the lower bond pad element;

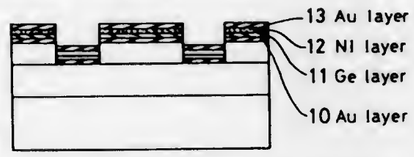
in aggregate, the upper bond pad element, the lower bond pad element, the insulating component and the conductive material comprise a composite bond pad suitable for effecting making connections to the semiconductor die.

5,284,798

METHOD FOR FORMING AN ELECTRODE FOR A COMPOUND SEMICONDUCTOR

Toshihiko Ibuka, and Masahiro Noguchi, both of Ushiku, Japan, assignors to Mitsubishi Kasei Polytec Co. and Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 573,756, Aug. 28, 1990, Pat. No. 5,192,994.
This application Oct. 26, 1992, Ser. No. 966,535
Claims priority, application Japan, Aug. 30, 1989, 1-225903
Int. Cl.[5] H01L *21/441, 21/324*
U.S. Cl. 437—184 **14 Claims**



1. A method of forming an ohmic electrode comprising:

providing a $Ga_{1-x}Al_xAs$ ($0 \leqq \times \leqq 1$) compound semiconductor having an n-type layer and a p-type layer;

forming a Au layer as a first layer on said n-type layer of said compound semiconductor;

forming a Ge layer as a second layer on said first layer;

forming a Ni layer as a third layer on said second layer;

forming a Au layer as a fourth layer on said third layer; and

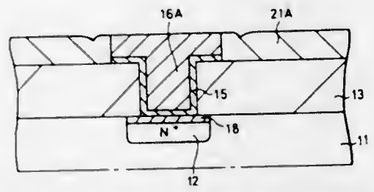
alloying said first, second, third and fourth layers by heat treatment.

5,284,799

METHOD OF MAKING A METAL PLUG

Junichi Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,653
Claims priority, application Japan, Mar. 27, 1991, 3-63463
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—189 **5 Claims**



1. A method of making a metal plug in a connection hole in an insulating film, comprising the steps of:

forming a connection hole in an insulating film;

depositing an adhesion layer on said insulating film and in said connection hole;

depositing a first metal layer on said adhesion layer;

etching away said first metal layer and said adhesion layer,, leaving a portion of said metal layer as a metal plug in said connection hole, said metal plug including a portion left on said insulating film in a size greater than the width of said connection hole;

depositing a second metal layer on said first metal layer and on said insulating film; and

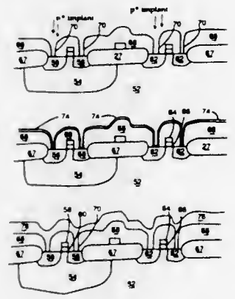
etching away said second metal layer where it overlies said first metal layer, whereby the outer surface of said second metal layer is flush with the outer surface of said first metal layer.

5,284,800

METHOD FOR PREVENTING THE EXPOSURE OF BOROPHOSPHOSILICATE GLASS TO THE AMBIENT AND STOPPING PHOSPHORUS IONS FROM INFILTRATING SILICON IN A SEMICONDUCTOR PROCESS

Chuen-Der Lien, Mountain View; Daniel Liao, Pleasanton, and Jowei Dun, San Jose, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Feb. 19, 1992, Ser. No. 838,538
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **5 Claims**



1. A semiconductor fabrication method for preventing the exposure of glass to the ambient, comprising the steps of:

depositing a glass layer after an annealing step and a contact opening step that opens up a plurality of contact holes in a semiconductor substrate;

ion implanting for a plurality of contacts through respective contact holes for at least one transistor disposed in said substrate;

depositing an oxide layer uniformly over said glass layer with a step coverage of approximately 50% on the walls and 60% on the bottom of said contact holes, wherein the depositing of said oxide layer on said glass protects said glass layer from the ambient environment, and wherein said oxide layer acts as a barrier to any phosphorous ions in said glass and prevents said ions from migrating into a silicon material and thus minimizes silicon oxidation; and

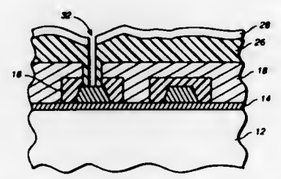
contact reflowing at an elevated temperature for a first time duration.

5,284,801

METHODS OF MOISTURE PROTECTION IN SEMICONDUCTOR DEVICES UTILIZING POLYIMIDES FOR INTER-METAL DIELECTRIC

Allen Page, and Anthony Sayka, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 22, 1992, Ser. No. 918,739
Int. Cl.[5] H01L *23/52*
U.S. Cl. 437—195 **6 Claims**



1. A method for retarding the corrosion of metallization lines in an integrated circuit comprising a silicon substrate having a passivation layer of silicon dioxide on the upper surface thereof, circuit elements located on the surface of the passivation layer, and multiple metallization lines placed on the substrate and are vertically spaced apart from each other by polyimide insulating layers which method comprises the steps of:

(a) placing first metallization line(s) onto the surface of the passivation layer so as to connect at least two of the circuit elements located on the substrate;

(b) placing a non-conductive moisture resistant layer of at least about 1000 Angstroms onto the substrate and over the first metallization line(s);

(c) placing a polyimide insulating layer onto the substrate formed in step (b) above;

(d) applying a photoresist layer over the polyimide layer formed in step (c) above except over predetermined circuit elements;

(e) etching the substrate to form via holes which expose the predetermined circuit elements;

(f) placing a non-conductive moisture resistant layer onto the substrate formed in step (e) above;

(g) applying a photoresist layer over all of the moisture resistant layer formed in step (f) above except over the predetermined circuit elements of step (d);

(h) etching the substrate to form via holes which expose the predetermined circuit elements the via holes being of a smaller diameter than the via holes formed in step (e) above;

(i) removing the photoresist layer;

(j) placing second metallization line(s) onto the substrate so as to connect at least two of the predetermined circuit elements;

(k) placing a non-conductive moisture resistant layer onto the substrate and over the second metallization line(s);

(l) placing a polyimide insulating layer onto the substrate formed in step (k) above; and

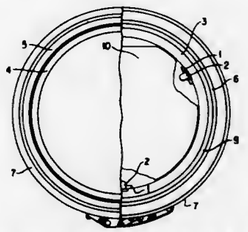
(m) repeat steps (d)–(l) until all of the metallization lines have been placed onto the substrate.

5,284,802

CONTAINER FOR SEMICONDUCTOR WAFER SAMPLE AND METHOD OF PREPARING SAMPLE

Hisashi Muraoka, Kanagawa, and Takeyoshi Kakizaki, Tokyo, both of Japan, assignors to Purex Co., Ltd., Kanagawa and Kakizaki Mfg. Co., Ltd., Tokyo, both of Japan

PCT No. PCT/JP91/00205, § 371 Date Oct. 16, 1991, § 102(e) Date Oct. 16, 1991, PCT Pub. No. WO91/12631, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 19, 1991, Ser. No. 768,190
Claims priority, application Japan, Feb. 19, 1990, 2-36029
Int. Cl.[5] H01L *21/00, 21/02, 21/66*
U.S. Cl. 437—225 **2 Claims**



2. A method for preparing a sample of a semiconductor wafer, comprising:

fabricating a receiving platelike member (3) and a cover (5) mounted over the platelike member out of a synthetic resin to form a container receiving the semiconductor wafer;

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receiving the sample of the wafer (10) in the platelike member (3);

airtightly fitting the cover (5) over the platelike member (3);

introducing a trace amount of a volatile acid into the container to dissolve away the film on the face of the sample of the wafer (10) and impurities adhering to it; and

fabricating the cover (5) with an inclined surface (4) in this surface thereof; fabricating the receiving platelike member with three or more tonguelike portions (2) extending steeply upwardly around the wafer (10), the tonguelike portions being circumferentially spaced from each other; and pushing the cover (5) against the platelike member (3) with a large force, whereby the tonguelike portions (2) are bent by the inclined surface (4) of the cover (5) in the direction in which the wafer (10) is urged to support it.

5,284,803

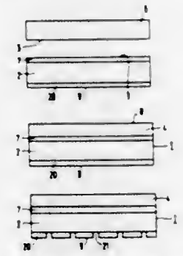
METOD OF MANUFACTURING A SEMICONDUCTOR BODY USING A CARRIER WAFER AND A MONOCRYSTALLINE SEMICONDUCTING TOP LAYER

Jan Haisma, and Franciscus J. H. M. Van Der Kruis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,691

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—225 **9 Claims**



1. A method of manufacturing a semiconductor body whereby a carrier wafer having an optically smooth main surface is provided with a semiconducting top layer in that the main surface is brought into contact with an optically smooth main surface of a monocrystalline semiconductor wafer so that a permanent bond is formed, after which the semiconductor wafer is made thin by means of a grinding process followed by a polishing process, characterized in that the semiconductor wafer is made thin in the polishing process in that the exposed surface of the carrier wafer is rendered wear-resistant and in that then the carrier wafer bonded to the semiconductor wafer is arranged between two flat polishing discs provided with a polishing liquid, upon which these polishing discs and the exposed surfaces of the semiconductor wafer and the carrier wafer are moved relative to one another.

5,284,804

GLOBAL PLANARIZATION PROCESS

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1991, Ser. No. 816,458

Int. Cl.[5] H01L *21/461*

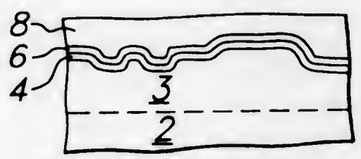
U.S. Cl. 437—228 **19 Claims**

1. A method of planarizing a structure lying on a substrate comprising:

depositing a disposable planarization layer which is in solid form at room temperature;

forming a liquid melt from said planarization layer over the substrate so as to form a planar liquid melt surface;

solidifying said melt so as to form a planar solid layer;



etching back said planar solid layer to a predetermined level on said structure.

5,284,805

RAPID-SWITCHING ROTATING DISK REACTOR

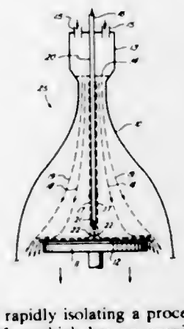
Franz T. Geyling, Austin, Tex., assignor to Sematech, Inc., Austin, Tex.

Division of Ser. No. 728,433, Jul. 11, 1991, Pat. No. 5,264,040.

This application Jan. 21, 1992, Ser. No. 823,488

Int. Cl.[5] B05C *5/00*

U.S. Cl. 437—231 **2 Claims**



1. A method of rapidly isolating a processing surface of a semiconductor wafer, which has no openings therethrough, from reactive fluid present in a chamber of a rotating disk reactor, comprising the steps of:

rotating said semiconductor at a rate of speed which provides for a uniform gas flow over said semiconductor wafer;

injecting a continuous flow of a nonreacting gas proximate to the center of said processing surface of said wafer from an injector disposed above said processing surface, wherein said nonreacting gas is injected from above said processing surface and flows from the center to periphery of said processing surface such that an inert boundary layer forms over said processing surface and is maintained due to a sufficient flow rate across said processing surface in order to inhibit said reactive fluid from reaching said processing surface of said wafer.

5,284,806

GLASS-DOPED CERAMIC MATRIX COMPOSITES

Kishor P. Gadkaree, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 289,834, Dec. 27, 1988, abandoned.

This application Jan. 7, 1993, Ser. No. 1,146

Int. Cl.[5] C03C *10/06, 14/00*

U.S. Cl. 501—8 **15 Claims**

1. A ceramic matrix composite article comprising:

a crystalline glass-ceramic matrix wherein alkaline earth aluminosilicate crystals constitute the principal crystal phase;

a fiber reinforcing phase composed of a multiplicity of inorganic fibers disposed within the glass-ceramic matrix; and

a borosilicate glass phase disposed as an intergranular glass within the glass-ceramic matrix; the borosilicate glass phase being present in a proportion constituting from 1–12% by weight of the total weight of the matrix.

5,284,807

GLASS FIBER FORMING COMPOSITION, GLASS FIBERS OBTAINED FROM THE COMPOSITION AND SUBSTRATE FOR CIRCUIT BOARD INCLUDING THE GLASS FIBERS AS REINFORCING MATERIAL

Klyotaka Komori, Kadoma; Seishiro Yamakawa, Hirakata; Shigeru Yamamoto, Kyoto; Juo Naka, Kyoto, and Tadashi Kukubo, Kyoto, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka and Nippon Electric Glass Co., Ltd., Shiga, both of Japan

Filed Feb. 7, 1992, Ser. No. 832,267

Claims priority, application Japan, Feb. 8, 1991, 3-017747; Jun. 13, 1991, 3-142163; Jun. 14, 1991, 3-143465; Jun. 18, 1991, 3-145901

Int. Cl.[5] C03L *13/02*

U.S. Cl. 501—35 **7 Claims**

2. A glass fiber obtained from a glass composition which consists essentially of 0 to 15 mol % of at least one oxide selected from the group consisting of $TaO_{2.5}$, $LaO_{1.5}$, CeO_2, ZnO, Li_2O, Na_2O, K_2O, MnO_2, and $BO_{1.5}$ and 85–100 mol % of an oxide mixture, said oxide mixture consisting essentially of:

40 to 65 mol % of SiO_2;

CaO, SrO and BaO in amounts which total 20 to 45 mol % of the oxide mixture;

TiO_2 and ZrO_2 in amounts which total 5 to 25 mol % of the oxide mixture;

0.5 to 15 mol % of $NbO_{5/2}$; and

0.5 to 15 mol % of $AlO_{3/2}$;

said composition having a dielectric constant ϵ_r of 9 or more at 1 MHz and 25° C.; and said composition being characterized to show a devitrification temperature which is lower than a spinning temperature at which said composition exhibits a viscosity of $10^{2.5}$ poise.

5,284,808

DRY REFRACTORY COMPOSITION

John Damiano; Julie A. Dody (nee Hebron), both of Easton, Pa., and Wilfred A. Martinez, Annandale, N.J., assignors to Minteq International Inc., New York, N.Y.

Continuation-in-part of Ser. No. 523,095, May 14, 1990, abandoned. This application May 4, 1992, Ser. No. 878,142

Int. Cl.[5] C04B *35/02*

U.S. Cl. 501—103 **15 Claims**

1. A refractory composition for forming a monolithic refractory in a dry state at a temperature of up to about 2500° F. comprising:

a refractory aggregate material selected from the group consisting of magnesia, alumina, calcia, silica, ziconia and mixtures thereof;

from about 1.0 to about 5.0 weight percent of a first bonding agent, actuatable at temperatures in a first range of from about 300° F. to about 1000° F. to cause interparticle bond formation between particles of said refractory aggregate, at temperatures in said first range wherein said first bonding agent is a phenolic resin;

from about 0.5 to about 10.0 weight percent of at least one second bonding agent actuatable at temperatures in a second range of from about 1000° F. to cause further interparticle bond formation between particles of said refractory aggregate, at temperatures in said second range wherein said second bonding agent is selected from the group consisting of a phosphate-containing compound having a sodium content of less than about 40.0 weight percent, and a mixture of an alkali metal silicate compound and a metal alloy powder wherein the alkali metal silicate and the metal alloy powder are present in a weight ratio of about 1.1; and

from about 0 to about 5.0 weight percent of a clay;

such that the balance of said composition to total 100.0 weight percent is said refractory aggregate material.

5,284,809

METHOD FOR THE PREPARATION OF ALPHA-ALUMINUM OXIDE POWDER

Franciscus Van Dijen, Dettighofen, Fed. Rep. of Germany, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Filed Nov. 18, 1992, Ser. No. 978,503

Claims priority, application Switzerland, Nov. 22, 1991, 3430/91

Int. Cl.[5] C04B *35/10;* **C01F** *7/02*

U.S. Cl. 501—127 **19 Claims**



1. A method for the preparation of very finely particulate α-aluminum oxide powder comprising:

(a) forming a suspension of a precursor of α-aluminum oxide and sufficient liquid to provide a solids content in the suspension of 10 to 40 weight percent, the precursor of α-aluminum oxide being aluminum hydroxide, $Al(OH)_3$;

(b) wet-milling and disagglomerating the suspension to disagglomerate agglomerates of the aluminum hydroxide;

(c) drying the disagglomerated suspension to provide a dried particulate material;

(d) calcining the dried particulate material at a temperature of from 1000° to 1300° C.; and

(e) milling and disagglomerating the calcined particulate material (d) to disagglomerate the calcined particulate material (d) to provide the very finely particulate α-aluminum oxide powder.

5,284,810

DIELECTRIC CERAMIC COMPOSITION

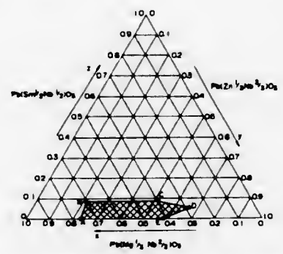
Nobuo Yokoe; Hitoshi Ohkoda, and Hiroshi Kikuyama, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jun. 26, 1992, Ser. No. 905,005

Claims priority, application Japan, Jun. 27, 1991, 3-156827

Int. Cl.[5] C04B *35/50*

U.S. Cl. 501—135 **3 Claims**



1. A dielectric ceramic composition comprising $Pb(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$ and $Pb(Sm_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, wherein when the ratio of these components is represented by

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$xPb(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3-yPb(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})O-zPb(Sm_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$

(wherein $x+y+z=1$) (1)

the values x, y and z lie inside the following coordinates A, B, C, D and E (but excluding the segment AE) in a triangular diagram of FIG. 1,

A (0.769, 0.231, 0),
B (0.706, 0.212, 0.082),
C (0.399, 0.517, 0.084),
D (0 282, 0.658, 0.060),
E (0.417, 0.583, 0)

5,284,811

POLYMERIZATION CATALYSTS AND PROCESSES

Donald R. Witt; Elizabeth A. Benham, and Max P. McDaniel, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 804,631, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 522,683, May 14, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 69,695

Int. Cl.[5] B01J *21/08, 23/02;* C08F *4/24*

U.S. Cl. 502—210 24 Claims

1. In a process for preparing a polymerization catalyst comprised of chromium oxide and a support containing one or more of silica, titania, thoria, alumina, zirconia or aluminophosphates and including a step of purifying said support to remove residual metal salt wherein said residual metal salt is selected from the group consisting of alkali metal salts, alkaline earth metal salts and mixtures thereof wherein said chromium oxide and support are combined to form the catalyst, the improvement comprising the steps of:

impregnating the formed catalyst with a metal salt selected from the group consisting of alkali metal salts, alkaline earth metal salts and mixtures thereof in an amount in the range of from about 50 to about 500 micromoles of metal salt per gram of catalyst sufficient to improve catalystic properties of said catalyst; and

activating the resulting salt-impregnated catalyst by calcining said catalyst.

5,284,812

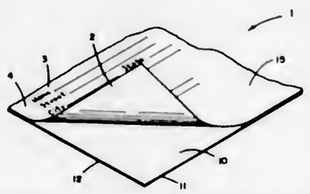
THIAZOLO[5,4-D]THIAZOLE COLOR-FORMERS

Nusrallah Jubran, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

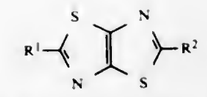
Filed Jan. 6, 1992, Ser. No. 817,386

Int. Cl.[5] B41M *5/136, 5/165*

U.S. Cl. 503—201 24 Claims



1. A microcapsule containing a composition capable of forming colored complexes with transition metal salts, said composition comprising a 2,5-bis-(substituted aryl)-thiazolo[5,4-d]thiazole compound carried in an organic cosolvent vehicle, said compound having the formula:



wherein R^1 is an ortho-hydroxy-substituted aryl group and R^2 is an aryl group of hydrogen.

5,284,813

FIRST SHEET FOR COPYSETS

Horst W. Heyer, Mönchengladbach, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/00928, § 371 Date Dec. 3, 1991, § 102(e) Date Dec. 3, 1991, PCT Pub. No. WO90/15719, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 13, 1990, Ser. No. 777,358

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1989, 3919736

Int. Cl.[5] B41M *5/124*

U.S. Cl. 503—209 7 Claims

1. In a first sheet for copysets of pressure-sensitive copy papers, said first sheet comprising a microsphere coating on the back and an imprintable coating on the front, said imprintable coating consisting essentially of non-reactive, natural or synthetic pigments, a binder, a moisture repellent agent, a dispersant and an optical brightener, wherein the improvement comprises providing the front surface imprintable coating with a non-reactive moisture repellant agent in an amount of 5 to 15% by weight, based on the dry content of said front surface coating.

5,284,814

THERMAL TRANSFER PRINTING METHOD AND PRINTING MEDIA EMPLOYED THEREFOR

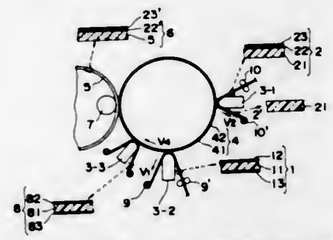
Nobuyoshi Taguchi; Akihiro Imai, both of Ikoma, and Yasuo Fukui, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1991, Ser. No. 769,851

Claims priority, application Japan, Oct. 2, 1990, 2-265641; Oct. 19, 1990, 2-282112; Oct. 19, 1990, 2-282113

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 9 Claims



1. A thermal transfer printing method which employs a dyeing layer transfer member having at least a dyeing layer on a base material, a dye transfer member having at least a dye layer on a base material, a recording intermediate member having a base material formed into a drum configuration and an elastic layer on its surface, and an image-receptor, said thermal transfer printing method comprising the steps of thermally transferring the dyeing layer of said dyeing layer transfer member onto the recording intermediate member, thermally transferring and recording the dye of said dye transfer member onto said transferred dyeing layer according to image signals, and further thermally transferring and fixing said recorded dyeing layer onto said image-receptor.

5,284,815

THERMAL DYE SUBLIMINATION TRANSFER RECEIVING ELEMENT

Herman J. Uytterhoeven, Bonheiden, and Emiel A. Verdonck, Berlaar, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 13, 1992, Ser. No. 867,987

Claims priority, application European Pat. Off., Apr. 15, 1991, 91200874.5

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 41 Claims

21. A process for making a dye transfer image comprising the steps of

placing a dye layer of a dye donor element in face-to-face relationship with a dye-image receiving layer of a dye-image receiving element, said dye image-receiving layer being in communication with a reaction product obtained by crosslinking and curing a non-polymeric compound containing two or more active hydrogen-containing radicals and a compound containing two or more isocyanate groups, and

image-wise heating said dye donor element from the back.

5,284,816

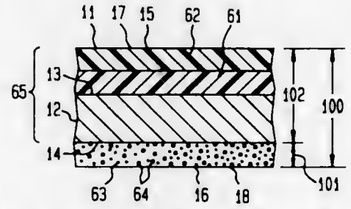
TWO-SIDED THERMAL PRINTING SYSTEM

Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,855

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 17 Claims



11. A coated sheet for two sided thermal printing comprising:

a thermally insulating substrate defining opposed first and second surfaces;

the first surface having a dye receiving, thermally insulating first coating for forming a dye transfer image thereon upon selective thermal transfer of heat flowable dye thereto from an extraneous dye transfer source by thermal printing means in a transfer printing step, the first coating defining a third surface;

the second surface having a second coating containing heat activated dye material for forming, in situ, a dye image upon selective applying of heat directly thereto by thermal printing means in an in situ printing step, the heat activated dye material being normally colorless and changing to a color state in situ upon heat activation, and the second coating defining a fourth surface remote from the third surface; and

the sheet defining in cross section a composite portion between the third surface and the second surface having a sufficient thickness and thermal resistance for inhibiting heat transfer therethrough from the third surface to the second surface during the transfer printing step to prevent activation of the dye material in the second coating;

wherein the second coating has a selective thickness and the composite portion has a thickness at least three to six times the second coating thickness, the heat activated dye material is activated at a given thermal activation temperature, the thermal resistance of the composite portion is the reciprocal of the corresponding mean thermal conductivity of the composite portion, and the thickness and thermal resistance of the composite portion are such that the product of the heat which is transferred through the composite portion from the third surface to the second surface during the transfer printing step, times the thickness of the composite portion, times the mean thermal conductivity of the composite portion, constitutes a value which is below the activation temperature of the heat activated dye material.

5,284,817

THERMAL DYE TRANSFER RECEIVER ELEMENT WITH ROUGHENED SURFACE

Stephen M. Neumann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,899

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 18 Claims



9. A process of forming a thermal dye transfer imaged element comprising

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer,

b) transferring portions of the dye layer to a dye-receiving element comprising a polymeric dye image-receiving section having a surface which has been roughened to provide an average surface roughness Ra of from about 0.03 to about 0.5 μm as determined by ANSI D-46.1 to form a transferred dye image said dye-receiving element further comprises an integral polymeric frame section extending around the periphery of the dye image-receiving section, the frame section being from about ½ to about 3 mm thick, said element being suitable for forming a slide for projection viewing, and

c) fusing the imaged dye-receiving element by exposure to heat or solvent vapor.

5,284,818

FORMULATIONS AND PROCESS FOR EXTENDING THE VASE LIFE OF CUT FLOWERS

Warren E. Shafer, Libertyville; Derek D. Woolard, Waukegan; Neyyan K. P. Samuel, Vernon Hills; Gregory D. Venburg, Deerfield; Balan N. Devisetty, Buffalo Grove, and Daniel F. Heiman, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 780,657, Oct. 18, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 26,920

Int. Cl.[5] A01N *3/02*

U.S. Cl. 504—115 8 Claims

1. A solid cut flower preservative formulation characterized by extended shelf life comprising

(a) from about 1 part by weight to about 99 parts by weight of a sugar, glycoside or mixture thereof,

(b) from about 0.05 part by weight to about 2 part by weight of an ACC synthase inhibitor selected from L-trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid and carboxymethoxylamine,

c) from about 0.5 part by weight to about 8 parts by weight of aluminum sulfate having between about 21 and about 27 percent by weight water of hydration, and

(d) from about 0.05 part by weight to about 5 parts by weight of an antimicrobial agent.

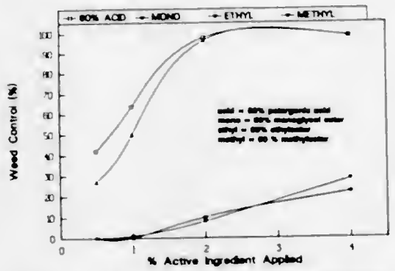
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,819

HERBICIDALLY-ACTIVE GLYCOL ESTERS OF FATTY ACIDS

Paul S. Zorner, La Costa, Calif.; Yasuko Tsujino, Kangawa, and Osamu Kamioka, Yokohama, both of Japan, assignors to Mycogen Corporation, San Diego, Calif.

Filed May 1, 1992, Ser. No. 877,331
Int. Cl.[5] A01N *37/12*
U.S. Cl. 504—127 **27 Claims**



1. A composition for controlling unwanted vegetation, said composition comprising a monoglycol ester of a monocarboxylic acid, wherein said monocarboxylic acid has about six to about twenty carbon atoms, in a suitable agricultural carrier.

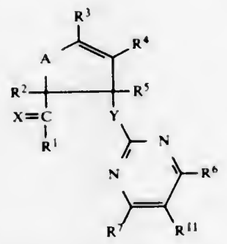
5,284,820

HERBICIDAL SUBSTITUTED CYCLOALKENES

Mark-Wilhelm Drewes; Peter Müller, both of Langenfeld; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,187
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1991, 4129876
Int. Cl.[5] A01N *43/54*; C07D *239/60, 239/52*
U.S. Cl. 504—243 **17 Claims**

1. A substituted cycloalkene of the formula


(I)

in which

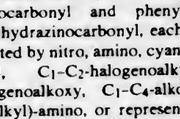
A represents straight-chain or branched alkanediyl which has 1 to 5 carbon atoms and which is optionally substituted by hydroxyl, amino, halogen, phenyl or C_1–C_5-alkoxy-carbonyl,

R^1 represents hydrogen, hydroxyl, amino, or a radical selected from the group consisting of C_1–C_5-alkyl, C_1–C_5-alkoxy, C_1–C_5-alkylthio, C_1–C_5-alkylamino or di-(C_1–C_5-alkyl)-amino, each of which is optionally substituted by halogen, C_1–C_5-alkoxy and oxiranyl,

R^2, R^3, R^4 and R^5 are identical or different and represent hydrogen, hydroxyl, amino, cyano, halogen, C_1–C_5-alkyl, C_1–C_5-alkoxy, C_1–C_5-alkylthio, phenyl or C_1–C_5-alkoxycarbonyl,

R^6 and R^7 are identical or different and represent hydrogen, halogen, or a radical selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino and di-(C_1–C_4-alkyl)-amino, each of which is optionally substituted by halogen or C_1–C_3-alkoxy,

X represents oxygen, sulphur or one of the groups



where

R^8 represents hydrogen, hydroxyl, amino, or a radical selected from the group consisting of C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-alkoxy, C_1–C_6-alkenyloxy, C_1–C_4-alkoxy-carbonyl-C_1–C_2-alkoxy, C_1–C_6-alkylamino, di-(C_1–C_2-alkyl)-amino, C_1–C_6-alkyl-carbonylamino, C_1–C_6-alkoxycarbonylamino, C_1–C_6-alkyl-sulphonylamino, each of which is optionally substituted by halogen, or represents a radical selected from the group consisting of phenyl, phenyl-C_1–C_4-alkyl, phenoxy, phenyl-C_1–C_4-alkoxy, phenylamino, phenyl-C_1–C_4-alkylamino, N-(C_1–C_4-alkyl)-N-phenylamino, pyridylamino, pyrimidylamino, pyridylcarbonylamino, phenylcarbonylamino, furylcarbonylamino, thienylcarbonylamino and phenylsulphonylamino, each of which is optionally substituted by nitro, amino, cyano, carboxyl, halogen, C_1–C_4-alkyl, C_1–C_2-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_2-halogenoalkoxy, C_1–C_4-alkylthio, C_1–C_2-halogenoalkylthio, C_1–C_4-alkoxycarbonyl and/or di-(C_1–C_2-alkyl)-amino,

R^9 represents hydrogen, halogen, cyano, carboxyl, C_1–C_6-alkoxycarbonyl, C_1–C_6-alkylcarbonylamino or di-(C_1–C_4-alkoxy)-phosphoryl, and

R^{10} represents formyl, cyano, carboxyl, hydroxymethyl, carbamoyl, or represents a radical selected from the group consisting of C_1–C_6-alkoxycarbonyl, C_5–C_6-cycloalkoxycarbonyl, C_1–C_6-alkylthio-carbonyl, alkylaminocarbonyl, C_5–C_6-cycloalkylaminocarbonyl, di-(C_1–C_2-alkyl)-aminocarbonyl, C_1–C_4-alkylaminocarbonyl-C_1–C_4-alkoxycarbonyl, di-(C_1–C_2-alkyl)-aminocarbonyl-C_1–C_4-alkoxycarbonyl, phenylaminocarbonyl-C_1–C_4-alkoxycarbonyl and N-methyl-N-phenylaminocarbonyl-C_1–C_4-alkoxycarbonyl, each of which is optionally substituted by halogen, carboxyl or C_1–C_4-alkoxycarbonyl, or represents a radical selected from the group consisting of pyrrolidinylcarbonyl, piperidinylcarbonyl, morpholinylcarbonyl and piperazinylcarbonyl, each of which is optionally substituted by methyl and/or ethyl, or represents a radical selected from the group consisting of phenoxycarbonyl, phenyl-C_1–C_4-alkoxycarbonyl, furylmethoxycarbonyl, thienylmethoxycarbonyl, phenylthiocarbonyl, phenyl-C_1–C_4-alkylthio-carbonyl, phenylaminocarbonyl phenyl-C_1–C_4-alkylaminocarbonyl, N-(C_1–C_4-alkyl)-N-phenylaminocarbonyl and phenylhydrazino-carbonyl, C_1–C_4-alkylhydrazinocarbonyl, each of which is optionally substituted by nitro, amino, cyano, carboxyl, halogen, C_1–C_4-alkyl, C_1–C_2-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_2-halogenoalkoxy, C_1–C_4-alkoxycarbonyl and/or di-(C_1–C_2-alkyl)-amino, or represents phthalimidoxycarbonyl, or together with R^9 stands for —CO—O—$(CH_2)_n$— where

n represents the numbers 1 to 4,

Y represents oxygen, sulphur, imino (NH) or methylimino (NCH_3) and

R^{11} represents hydrogen, fluorine, chlorine, methyl or methoxy.

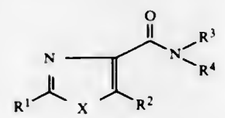
5,284,821

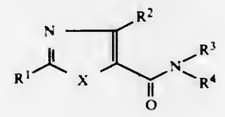
OXAZOLE- AND THIAZOLECARBOXAMIDES

Klaus Ditrich, Bad Durkheim; Volker Maywald, Ludwigshafen; Gerhard Hamprecht, Weinheim; Albrecht Harreus, Ludwigshafen; Bruno Wuerzer, Otterstadt, and Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 830,326, Dec. 26, 1991, Pat. No. 5,244,867.
This application Jul. 27, 1992, Ser. No. 919,457
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1989, 3932052
Int. Cl.[5] C07D *263/34*; A01N *43/76*
U.S. Cl. 504—270 **13 Claims**

1. An oxazole carboxamide of the formula Ia or Ib


Ia


Ib

where

X is oxygen

R^1 is hydrogen; halogen; C_1–C_6-alkyl which can carry from one to five halogen atoms and/or one or two of the following: C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio or cyano; benzyl which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_2–C_6-alkenyl which can carry from one to three of the following: halogen, C_1–C_3-alkoxy and/or one phenyl which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_2–C_6-alkynyl which can carry from one to three of the following: halogen, C_1–C_3-alkoxy and/or one phenyl which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_1–C_4-alkoxy; C_1–C_4-alkylthio; C_1–C_4-haloalkoxy; C_1–C_4-haloalkylthio; phenoxy or phenylthio, which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

R^2 is formyl, 4,5-dihydro-2-oxazolyl or —$COYR^5$;

Y is oxygen or sulfur;

R^5 is hydrogen; C_1–C_6-alkyl which can carry from one to five halogen atoms or hydroxyl groups and/or one of the following: C_1–C_4-alkoxy, C_2–C_4-alkoxy-C_1–C_4-alkoxy, cyano, trimethylsilyl, C_1–C_3-alkylthio, C_1–C_3-alkylamino, di-C_1–C_3-alkylamino, C_3–C_7-cycloalkylamino, C_1–C_3-alkylsulfinyl, C_1–C_3-alkylsulfonyl, carboxyl, C_1–C_3-alkoxycarbonyl, di-C_1–C_3-alkylaminocarbonyl, di-C_1–C_3-alkoxyphosphoryl, alkaneiminoxy, thienyl, furyl, tetrahydrofuryl, phthalimido, pyridyl, benzyloxy or benzoyl, it being possible for the cyclic radicals in turn to carry from one to three of the following: C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen; benzyl which can carry from one to three of the following: C_1–C_3-alkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkyl, halogen, nitro and cyano; C_3–C_8-cycloalkyl; phenyl, which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkoxycarbonyl, halogen, nitro and cyano; C_3–C_8-alkenyl, C_5–C_6-cycloalkenyl or C_3–C_8-alkynyl, it being possible for these radicals to carry one of the following: hydroxyl, C_1–C_4-alkoxy, halogen or a phenyl ring which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, halogen, nitro and cyano; a 5- to 6-membered heterocyclic radical containing one or two hetero atoms selected form the group consisting of oxygen, sulfur and nitrogen or a benzotriazolyl radical; phthalimido; tetrahydrophthalimido; succinimido; maleimido; one equivalent of a cation from the group comprising the alkali metals or alkaline earth metals, manganese, copper, iron ammonium and substituted ammonium; —N=CR^6R^7; wherein R^6 and R^7 are independently hydrogen; C_1–C_4-alkyl; C_3–C_6-cycloalkyl; phenyl or furyl, or together form a methylene chain —$(CH_2)_m$—with m=4 to 7;

R^3 is hydrogen; C_1–C_6-alkyl which can carry from one to three of the following: hydroxyl, halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio or di-C_1–C_3-alkylamino; C_3–C_8-cycloalkyl which can carry from one to three of the following: C_1–C_4-alkyl, halogen and C_1–C_4-haloalkyl;

R^4 is hydroxyl; C_1–C_4-alkoxy; C_1–C_6-alkyl which can carry from one to three of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, di-C_1–C_4-alkylamino, halogen, C_3–C_8-cycloalkyl or phenyl which in turn can carry from one to three of the following: halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; C_3–C_8-cycloalkyl which can carry from one to three of the following: C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, halogen, nitro or cyano; C_3–C_6-alkenyl or C_3–C_6-alkynyl, which can be substituted from once to three times by halogen and/or once by phenyl which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; a 5- to 6-membered heterocyclic radical which contains one or two hetero atoms selected from the group consisting of oxygen, sulfur and nitrogen, and which can carry from one to three of the following: C_1–C_4-alkyl or halogen; phenyl which can carry from one to four of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, nitro, cyano, formyl, C_1–C_4-alkanoyl, C_1–C_4-haloalkanoyl or C_1–C_4-alkoxycarbonyl.

5,284,822

OXIDE SUPERCONDUCTOR AND PROCESS FOR PRODUCING THE SAME

Takenobu Sakai, Aichi; Kozi Nishio, Kobe; Naoyuki Ogawa, Anjou; Izumi Hirabayashi, Nagoya, and Shoji Tanaka, Tokyo, all of Japan, assignors to International Superconductivity Technology Center; Toyota Jidosha Kabushiki Kaisha; Kawasaki Jukogyo Kabushiki Kaisha and NGK Insulators, Ltd., all of Japan

Filed May 7, 1991, Ser. No. 695,813
Claims priority, application Japan, May 8, 1990, 2-118363
Int. Cl.[5] H01L *39/00*
U.S. Cl. 505—1 **14 Claims**



1. An oxide superconductor comprising:

a melt textured base material phase formed of a barium-containing oxide superconducting material; and

precipitation phases dispersed in said base material phase, said precipitation phases being present in an amount of

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from 1 to 50% by volume of said base material phase, and which are decomposition-products of a decomposition reaction of said superconducting material, and which are reaction-products of a reaction between said decomposition-products and oxides of one or more metals selected from the group consisting of silicon, aluminum, zirconium, magnesium, titanium, tungsten, cobalt and vanadium.

5,284,823

SUPERPLASTIC FORMING OF $YBa_2Cu_3O_{7-x}$ CERAMIC SUPERCONDUCTORS WITH OR WITHOUT SILVER ADDITION

Ye T. Chou, Bethlehem; Martin P. Harmer, Allentown, and Jondo Yun, Whitehall, all of Pa., assignors to Lehigh University, Bethlehem, Pa.

Filed Sep. 3, 1991, Ser. No. 753,914
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—1 **20 Claims**



1. A process for forming and shaping a solid object including 123 superconductor, comprising the steps of:
preparing a solid object having grains of 123 superconductor that have an average grain size of less than 10 microns, wherein the step of preparing the solid object comprises the steps of preparing a powder mixture including submicron particles including 123 material,
compacting said powder mixture into a powder compact by applying pressure to said powder,
sintering the powder compact at between 800° and 900° C., thereby producing said solid object; and
superplastically deforming said solid object into a desired shape, by heating said solid object to between 500° and 1015° C. and simultaneously pressing said solid object into said desired shape by applying to said solid object stress which is less than the fracture strength of said solid object, thereby producing a strain rate in said solid object.

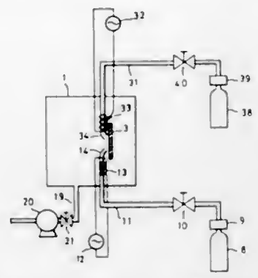
5,284,824

METHOD FOR MANUFACTURING AN OXIDE SUPERCONDUCTOR THIN FILM

Etsuo Noda, Fujisawa; Setsuo Suzaki, Yokohama; Osami Morimiya, and Kazuo Hayashi, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 439,388, Nov. 16, 1989, Pat. No. 5,158,931. This application Jun. 23, 1992, Ser. No. 888,627
Claims priority, application Japan, Mar. 16, 1988, 63-60308
Int. Cl.[5] B05D *3/06, 5/12*; C23C *16/00*
U.S. Cl. 505—1 **14 Claims**

1. A method for manufacturing an oxide superconductor film, comprising the steps of:
preparing a substrate;
depositing an oxide superconductor film on said substrate via chemical vapor deposition (CVD) and



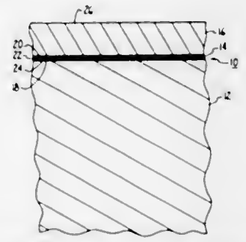
supplying excited oxygen to or near a film deposition site on said substrate during the deposition of said film.

5,284,825

CONTAMINANT DIFFUSION BARRIER FOR A CERAMIC OXIDE SUPERCONDUCTOR COATING ON A SUBSTRATE

Richard B. Stephens, Del Mar, and Frederick H. Elsner, Carlsbad, both of Calif., assignors to General Atomics, San Diego, Calif.

Division of Ser. No. 724,764, Jul. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 523,221, May 14, 1990, Pat. No. 5,149,681. This application Aug. 17, 1992, Ser. No. 901,546
Int. Cl.[5] B05D *3/02, 5/12*
U.S. Cl. 505—1 **11 Claims**



1. A method for inhibiting contamination of a ceramic oxide superconductor by a substrate supporting said superconductor, the method comprising:
coating the substrate with an inner layer of a first ceramic oxide composition;
coating said first ceramic oxide composition with an outer layer of a second ceramic oxide composition; and
heating said second ceramic oxide composition to its peritectic decomposition temperature, which transforms said second ceramic oxide composition to said ceramic oxide superconductor, wherein said first ceramic oxide composition remains essentially unchanged, said inner layer thereby providing a diffusion barrier to substantially inhibit contamination of said ceramic oxide superconductor by said substrate.

5,284,826

0-HYDROXYETHYL AND ACYLOXYETHYL DERIVATIVES OF [SER][8] CYCLOSPORINS

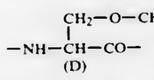
Marcel K. Eberle, Rieben, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 556,603, Jul. 20, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 936,695
Claims priority, application United Kingdom, Jul. 24, 1989, 8916901
Int. Cl.[5] A61K *37/02*; C07K *7/64*
U.S. Cl. 514—11 **12 Claims**

1. A cyclosporin of formula II

X-Y-Sar-MeLeu-Val-MeLeu-Ala-Q-MeLeu-MeLeu-MeVal
1 2 3 4 5 6 7 8 9 10 11

in which
X is MeBmt or dihydro-MeBmt,
Y is αAbu, Val, Thr, or Nva and
Q is a residue of formula I



(I)

(D)

wherein R is hydrogen or a physiologically hydrolysable and acceptable acyl residue.

8. A method of inducing immunosuppression in a subject in need of said treatment, which comprises administering to the subject an immunosuppression effective amount of a compound according to claim 1.

5,284,827

SYSTEMIC TREATMENT OF METASTATIC CANCER WITH PLATELET FACTOR 4

Theodore Maione, Wakefield, and Richard J. Sharpe, Newton, both of Mass., assignors to Repligen Corporation, Cambridge, Mass.

Division of Ser. No. 451,021, Dec. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 295,955, Jan. 10, 1989, abandoned. This application Oct. 19, 1990, Ser. No. 600,472
Int. Cl.[5] A61K *37/02, 35/14*
U.S. Cl. 514—12 **4 Claims**

1. A method of inhibiting tumor growth in a mammal having metastatic cancer wherein said method comprises the systemic injection, at a location other than the site of said metastatic cancer, of a composition comprising essentially pure rPF4 wherein said composition is injected at a rate which delivers an angiogenesis-inhibiting amount of rPF4 activity at the site of said metastatic cancer.

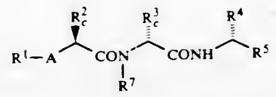
5,284,828

PEPTIDE COMPOUND AND ITS PREPARATION

Keiji Hemmi, Tsukuba; Masahiro Neya, Tsuchiura; Naoki Fukami, Yuuki; Masashi Hashimoto, Itabashi; Hirokazu Tanaka, Tsuchiura, and Hatsuko Kayakiri, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co. Ltd., Osaka, Japan

Filed May 7, 1991, Ser. No. 696,701
Claims priority, application Japan, May 14, 1990, 9010740; Dec. 3, 1990, 9026254; Feb. 27, 1991, 9104064
Int. Cl.[5] A61K *37/02*; C07K *5/08*
U.S. Cl. 514—18 **9 Claims**

1. A peptide compound of the formula (I")



(I")

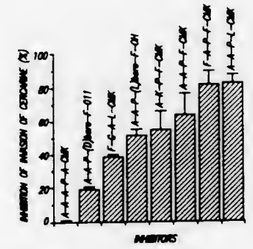
or a pharmaceutically acceptable salt thereof in which
R^1 is hydrogen or acyl,
R^2_c is lower alkyl,
R^3_c is an optionally N-substituted indolylmethyl,
R^4 is hydrogen, lower alkyl, C_{6-10} ar(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl, carboxy(lower)alkyl, protected carboxy(lower)alkyl or optionally substituted heterocyclic (lower)alkyl,
R^5 is carboxy, protected carboxy, carboxy(lower)alkyl or protected carboxy(lower)alkyl,
R^7 is hydrogen or lower alkyl, and
A is —O—, —NH—, lower alkylamino or lower alkylene.

5,284,829

SYNTHETIC TETRAPEPTIDES FOR THE PREVENTION OF SCHISTOSOME PARASITE INFECTION

James H. McKerrow, and Fred E. Cohen, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 26, 1991, Ser. No. 798,565
Int. Cl.[5] A61K *37/10, 37/02*
U.S. Cl. 514—18 **16 Claims**



1. A composition of matter comprising

BG-AA_A-AA_B-AA_C-AA_D-PI

wherein:
BG is a peptide blocking group;
AA_A-AA_B-AA_C-AA_D is selected from the group consisting of Phe-Ala-Pro-Leu and Phe-Ala-Pro-Phe; and
PI is a protease inhibitor selected from the group consisting of halo methyl ketones and boronic acid.

5,284,830

THYROID-DERIVED CHONDROCYTE-STIMULATING FACTOR

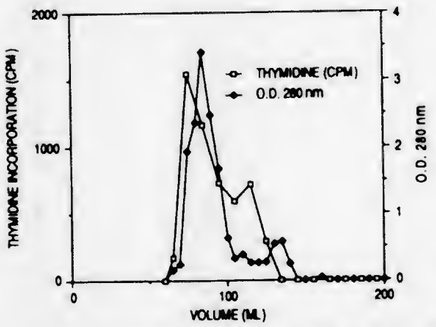
R. Lane Smith, Palo Alto, and Deryk G. Jones, Menlo Park, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 13, 1991, Ser. No. 654,965
Int. Cl.[5] A61K *37/36*; C07K *3/02, 15/06*
U.S. Cl. 514—21 **3 Claims**

1. Thyroid-derived chondrocyte stimulating factor (TDCSF) in isolated and purified form, which TDCSF is obtainable from mammalian thyroid tissue by a process which comprises
homogenizing thyroid tissue;
removing particles from the homogenate to obtain a particle-free first supernatant;

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treating the supernatant with ammonium sulfate at 40% saturation to obtain a first precipitate and a second supernatant;
recovering the second supernatant;
treating the second supernatant with 80% saturation of ammonium sulfate, pH 7.2, to obtain a second precipitate and a third supernatant;
redissolving said second precipitate and removing ammonium sulfate therefrom;
treating said redissolved and desalted second precipitate with heparin-Sepharose under conditions wherein said TDCSF is adsorbed to the heparin-Sepharose;
recovering the heparin-Sepharose containing the adsorbed TDCSF;
eluting a multiplicity of fractions from said heparin-Sepharose column;
recovering a fraction containing TDCSF as shown by the activity of stimulating the growth of adult chondrocytes and synovial fibroblasts under serum-free conditions;
applying said fraction to a Sephacryl S-300 column under conditions wherein said activity is present in the flow-through volume of said Sephacryl column;
recovering said flow-through volume;
subjecting said flow-through volume to polyacrylamide gel electrophoresis under nondenaturing conditions to obtain a multiplicity of fractions; and



recovering at least one faction from said gel which contains said TDCSF
to thus obtain said isolated and purified TDCSF;
wherein said conditions under which said fraction is subjected to in said Sephacryl S-300 column in order to retain said activity in said flow-through volume include equilibrating with 1/10 DPBS containing 1 mM β-mercaptoethanol;
wherein said TDCSF stimulates the growth of adult chondrocytes and synovial fibroblasts under serum-free conditions;
wherein said TDCSF is acidic, is sensitive to trypsin digestion, is inactivated by treating with 1M acetic acid for 1 hour at 4° C. and by treating at 100° C. for one hour, but is not inactivated by treating at 60° C. for one hour;
wherein said TDCSF elutes from heparin-Sepharose at 0.5M NaCl;
wherein said TDCSF is a proteinaceous complex or active subunit thereof; said complex or subunits having a molecular weight greater than 500 kd and said complex remaining active after treatment with and being at least partially dissociable into active subunits by 8M urea; and
wherein said TDCSF is stabilized in the presence of reagents capable of reducing disulfide linkages.

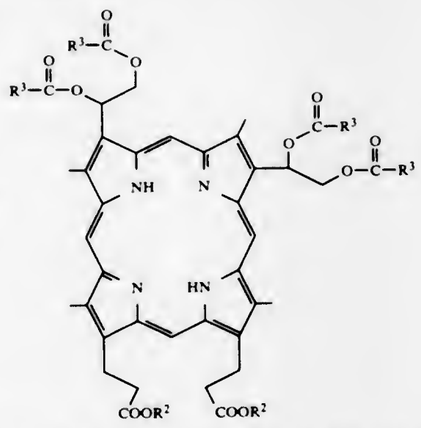
5,284,831

DRUG DELIVERY PORPHYRIN COMPOSITIONS AND METHODS

Stephen B. Kahl, Portola Valley, and Myoung-Seo Koo, San Francisco, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 616,679, Nov. 21, 1990, Pat. No. 5,149,801. This application Apr. 16, 1992, Ser. No. 869,611
Int. Cl.[5] A61K *31/40, 37/00;* **C07D** *487/22;* **C07K** *15/16*
U.S. Cl. 514—21 **12 Claims**

1. A composition, useful for delivery of boron atoms to cells, comprising:
a substantially non-toxic porphyrin compound having the structure



where R^3 is a closo-carborane and R^2 is an alkyl or an aryl having 1 to about 7 carbon atoms; and
at least one lipoprotein with which the porphyrin compound is complexed.

5,284,832

IRON COMPLEXES CONTAINING CONALBUMIN AND ITS DERIVATIVES

Gianni Ferrari, Milan; Pier G. Pagella, Frazione Catraglia, and Oscar Baiardo, Lainate, all of Italy, assignors to Mediolanum Farmaceutici S.p.A., Italy

Filed Oct. 14, 1992, Ser. No. 960,842
Claims priority, application Italy, Oct. 16, 1991, MI 91A002738
Int. Cl.[5] C07K *3/08, 3/04;* **A61K** *37/00*
U.S. Cl. 514—21 **14 Claims**

1. Iron complexes comprising iron and at least one of conalbumin and acetylconalbumin, with iron content ranging from 2 to 30% by weight.

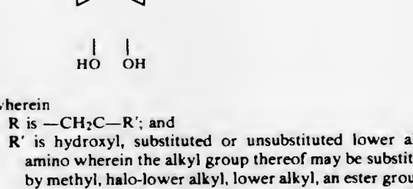
5,284,833

WOUND CLEANSER

Bill H. McAnalley, Grand Prairie, and D. Eric Moore, Richardson, both of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.

Continuation of Ser. No. 720,253, Jun. 24, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,893
Int. Cl.[5] A01N *43/04;* **A61K** *31/715, 37/12, 35/14*
U.S. Cl. 514—23 **50 Claims**

1. A physiologically compatible aqueous wound cleanser composition which passes both Draize eye irritation test and primary dermal irritation test, said composition comprising, on a weight percent basis:
from about 0.01 to about 50 percent of a surfactant to give said composition a surface tension of below about 30 dynes/cm;
from about 0.05 to about 10 percent of an osmotic adjuster to give said composition an osmolality of from about 200 to about 320 mOs/liter;



from about 0.05 percent to about 3 percent of a buffering agent to maintain a pH in a range of from about 6 to about 7.7 in said composition; and
a sufficient amount of water necessary to establish the foregoing properties.

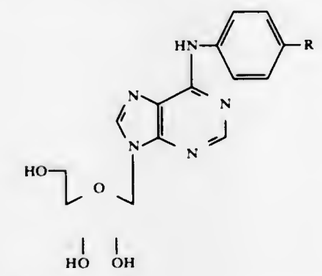
5,284,834

ADENOSINE FUNCTIONALIZED CONGENERS AS CARDIOVASCULAR TREATING AGENTS FOR ANIMALS AND METHODS FOR USING SAME

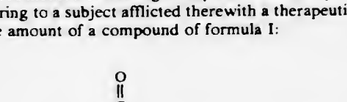
Kenneth A. Jacobson, Silver Spring; Kenneth L. Kirk, Bethesda, both of Md., and John W. Daly, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 346,257, May 1, 1989, abandoned, which is a continuation of Ser. No. 833,035, Feb. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 717,624, Mar. 29, 1985, abandoned. This application Aug. 6, 1992, Ser. No. 924,792
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/52;* **C07H** *17/00*
U.S. Cl. 514—46 **43 Claims**

24. A pharmaceutical composition, comprising: an effective amount of a compound having the formula



wherein
R is $—CH_2C—R'$; and
R′ is hydroxyl, substituted or unsubstituted lower alkylamino wherein the alkyl group thereof may be substituted by methyl, halo-lower alkyl, lower alkyl, an ester group or an amino group; substituted or unsubstituted monoarylamino wherein the aryl group thereof may be substituted by methyl, halo-lower alkyl, lower alkyl, an ester group, or amino group; or an oligopeptide of up to five amino acids in length in which the point of attachment is five amino acids in length in which the point of attachment is alkyl, an ester group, or amino group; or an oligopeptide of up to five amino acids in length in which the point of attachment is through an amide bond at the p-position of phenyl-alanine; or
R is



wherein R″ is alkoxy, lower alkylamino wherein the alkyl group thereof is unsubstituted or substituted by an amino or an acylamino group; or
R″ is $NH—(CH_2)_2NHR'''$ wherein R‴ is an acyl moiety selected from the group consisting of acetyl, p-hydroxyphenylpropionyl, d-biotinyl, α-bromoacetyl, methyl fumaryl, d-biotinyl-ε-aminocaproyl, an amino acid of the L-configuration and an amino acid of the D-configuration; or
R‴ is a monoaryl group; or
R‴ is $NH(CH)_2N{=}C{=}S$ and a pharmaceutical carrier therefor.

5,284,835

USE OF DILINOLEOYLPHOSPHATIDYLCHOLINE (DLPC) FOR TREATMENT AND PREVENTION OF CIRRHOSIS AND FIBROSIS IN THE LIVER

Charles S. Lieber, 6 Johnson Ave., Englewood Cliffs, N.J. 07632

Filed Jul. 31, 1992, Ser. No. 923,130
Int. Cl.[5] A61K *31/685*
U.S. Cl. 514—76 **3 Claims**

1. A method for preventing or treating cirrhosis of the liver in a mammal in need of cirrhosis prevention or treatment comprising administering an effective cirrhosis-preventing amount of dilinoleoylphosphatidylcholine (DLPC).

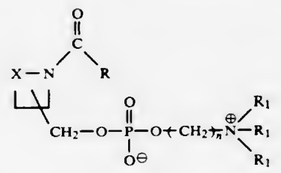
5,284,836

HETEROCYCLIC PHOSPHOLIPIDS USEFUL IN TREATING MULTIPLE SCLEROSIS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 752,739, Aug. 30, 1991, Pat. No. 5,182,271, which is a division of Ser. No. 533,246, Jun. 5, 1990, Pat. No. 5,064,816, which is a continuation-in-part of Ser. No. 489,578, Mar. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 423,323, Oct. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,187, Aug. 10, 1989, abandoned. This application Dec. 4, 1992, Ser. No. 985,994
Int. Cl.[5] A61K *31/685, 31/67*
U.S. Cl. 514—77 **10 Claims**

1. A method of treating multiple sclerosis comprising administering to a subject afflicted therewith a therapeutically effective amount of a compound of formula I:



I

where
R is n-C_{14}-C_{20}alkyl or O-n-C_{14}-C_{20}alkyl;
each R_1, independently, is methyl or ethyl;
n is an integer 2 to 6; and
X is $—(CH_2)_m$, where m is 2 to 4; CH_2CH_2O or CH_2CH_2S, with the proviso that when X is CH_2CH_2O or CH_2CH_2S, the nitrogen atom is attached to the β-carbon atom of said groups;

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or a corresponding hydrate thereof.

5,284,837

DERIVATIVES OF PURINE, PROCESS FOR THEIR PREPARATION AND A PHARMACEUTICAL PREPARATION

Björn G. Lindborg, Älvsjö, Sweden; Roelf Datema, Cheshire, Conn.; Karl N. G. Johansson, Enhörna, and Bo F. Öberg, Uppsala, both of Sweden, assignors to Medivir AB, Huddinge, Sweden

PCT No. PCT/SE89/00255, § 371 Date Dec. 26, 1990, § 102(e) Date Dec. 26, 1990, PCT Pub. No. WO89/10923, PCT Pub. Date Nov. 16, 1989

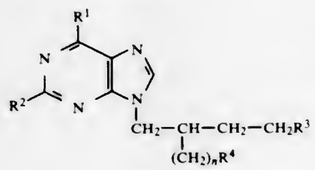
PCT Filed May 5, 1989, Ser. No. 601,693

Claims priority, application Sweden, May 6, 1988, 8801729-8

Int. Cl.[5] C07D *473/18, 473/32, 473/34*; A61K *31/52*

U.S. Cl. 514—81 **15 Claims**

1. A compound of the formula

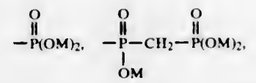


wherein:

R^1 is hydroxy, mercapto or amino;

R^2 is hydrogen, hydroxy, fluoro, or chloro;

R^3 and R^4 are independently selected from

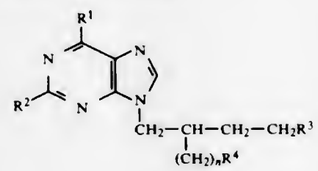


amino, hydroxyl, OR^5, wherein R^5 is $C_{1\text{-}6}$ alkyl, arylalkyl wherein said arylalkyl can be optionally substituted with one or more alkoxy, amino, nitrile sulfonamide groups or halogens; an ester residue of said hydroxyl group derived from R^6COOH, R^7OCOOH, $R^7CO_2CH(R^8)OCO_2H$, R^7SO_2OH, $R^7NHCOOH$ or a phosphoric acid wherein R^6 is hydrogen, $C_{1\text{-}17}$ alkyl, alkoxyalkyl, arylalkyl or aryl; R^7 is $C_{1\text{-}17}$ alkyl, arylalkyl or aryl, R^8 is hydrogen or $C_{1\text{-}3}$ alkyl; and wherein said aryl and arylalkyl groups in R^6 and R^7 can be optionally substituted with one or more alkyl, alkoxy, amino, nitrile, sulphonamide groups or halogen atoms, or R^3 together with R^4 is



M is hydrogen or a pharmaceutically acceptable counterion; and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

2. A compound of the formula

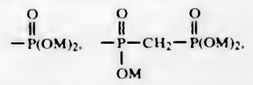


wherein:

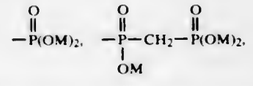
R^1 is hydroxyl, mercapto or amino;

R^2 is fluoro or chloro;

R^3 ahd R^4 are independently selected from

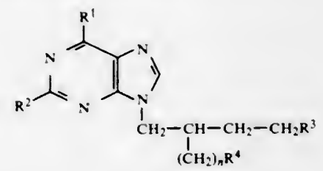


amino, hydroxyl, OR^5, wherein R^5 is $C_{1\text{-}6}$ alkyl, arylalkyl wherein said arylalkyl can be optionally substituted with one or more alkoxy, amino, nitrile sulfonamide groups or halogens; an ester residue of said hydroxyl group derived from R^6COOH, R^7OCOOH, $R^7CO_2CH(R^8)OCO_2H$, R^7SO_2OH, $R^7NHCOOH$ or a phosphoric acid wherein R^6 is hydrogen, $C_{1\text{-}17}$ alkyl, alkoxyalkyl, arylalkyl or aryl; R^7 is $C_{1\text{-}17}$ alkyl, arylalkyl or aryl, R^8 is hydrogen or $C_{1\text{-}3}$ alkyl; and wherein said aryl and arylalkyl groups in R^6 and R^7 can be optionally substituted with one or more alkyl, alkoxy, amino, nitrile, sulphonamide groups or halogen atoms, or R^3 together with R^4 is



M is hydrogen or a pharmaceutically acceptable counterion; and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

3. A compound of the formula

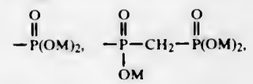


wherein:

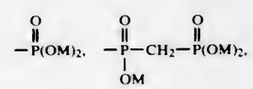
R^1 is hydrogen,

R^2 is hydroxyl,

R^3 and R^4 are independently selected from

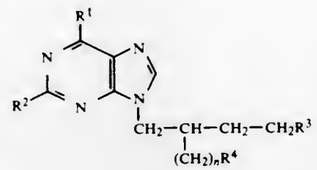


amino, hydroxyl, OR^5, wherein R^5 is $C_{1\text{-}6}$ alkyl, arylalkyl wherein said arylalkyl can be optionally substituted with one or more alkoxy, amino, nitrile sulfonamide groups or halogens; an ester residue of said hydroxyl group derived from R^6COOH, R^7OCOOH, $R^7CO_2CH(R^8)OCO_2H$, R^7SO_2OH, $R^7NHCOOH$ or a phosphoric acid wherein R^6 is hydrogen, $C_{1\text{-}17}$ alkyl, alkoxyalkyl, arylalkyl or aryl; R^7 is $C_{1\text{-}17}$ alkyl, arylalkyl or aryl, R^8 is hydrogen or $C_{1\text{-}3}$ alkyl; and wherein said aryl and arylalkyl groups in R^6 and R^7 can be optionally substituted with one or more alkyl, alkoxy, amino, nitrile, sulphonamide groups or halogen atoms, or R^3 together with R^4 is



M is hydrogen or a pharmaceutically acceptable counterion; and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

4. A compound of the formula

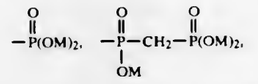


wherein:

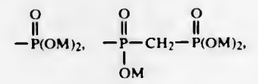
R^1 is hydroxyl, or amino;

R^2 is hydrogen, hydroxyl, fluoro, or chloro;

R^3 and R^4 are independently selected from

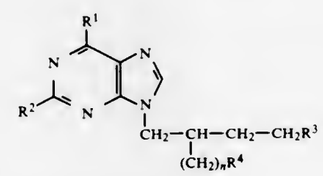


amino, hydroxyl, OR^5, wherein R^5 is $C_{1\text{-}6}$ alkyl, arylalkyl wherein said arylalkyl can be optionally substituted with one or more alkoxy, amino, nitrile sulfonamide groups or halogens; an ester residue of said hydroxyl group derived from R^6COOH, R^7OCOOH, $R^7CO_2CH(R^8)OCO_2H$, R^7SO_2OH, $R^7NHCOOH$ or a phosphoric acid wherein R^6 is hydrogen, $C_{1\text{-}17}$ alkyl, alkoxyalkyl, arylalkyl or aryl; R^7 is $C_{1\text{-}17}$ alkyl, arylalkyl or aryl, R^8 is hydrogen or $C_{1\text{-}3}$ alkyl; and wherein said aryl and arylalkyl groups in R^6 and R^7 can be optionally substituted with one or more alkyl, alkoxy, amino, nitrile, sulphonamide groups or halogen atoms, or R^3 together with R^4 is



M is hydrogen or a pharmaceutically acceptable counterion; and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

5. A compound of the formula

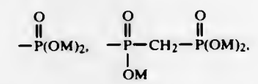


wherein:

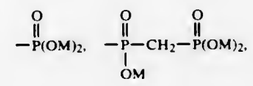
R^1 is hydroxyl or mercapto;

R^2 is hydrogen or hydroxyl;

R^3 and R^4 are independently selected from



amino, hydroxyl, OR^5, wherein R^5 is $C_{1\text{-}6}$ alkyl, arylalkyl wherein said arylalkyl can be optionally substituted with one or more alkoxy, amino, nitrile sulfonamide groups or halogens; an ester residue of said hydroxyl group derived from R^6COOH, R^7OCOOH, $R^7CO_2CH(R^8)OCO_2H$, R^7SO_2OH, $R^7NHCOOH$ or a phosphoric acid wherein R^6 is hydrogen, $C_{1\text{-}17}$ alkyl, alkoxyalkyl, arylalkyl or aryl; R^7 is $C_{1\text{-}17}$ alkyl, arylalkyl or aryl, R^8 is hydrogen or $C_{1\text{-}3}$ alkyl; and wherein said aryl and arylalkyl groups in R^6 and R^7 can be optionally substituted with one or more alkyl, alkoxy, amino, nitrile, sulphonamide groups or halogen atoms, or R^3 together with R^4 is



M is hydrogen or a pharmaceutically acceptable counterion; and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

5,284,838

USE OF 2,2-DIMETHYLCHROMAN-3-OL DERIVATIVES IN THE TREATMENT OF ASTHMA

Georges Garcia, Saint-Gely-du-Fesc; Richard Roux, Vailhauques; Dino Nisato, Saint-Georges d'Orques, and Patrick Gautier, Cournonterral, all of France, assignors to Elf Sanofi, Paris, France

Division of Ser. No. 708,194, May 31, 1991, abandoned, which is a continuation of Ser. No. 208,102, Jun. 17, 1988, abandoned. This application Feb. 18, 1993, Ser. No. 19,314

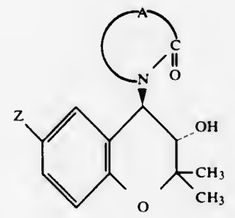
Claims priority, application France, Jun. 23, 1987, 87 08830; Jan. 12, 1988, 88 00278; Mar. 9, 1988, 88 03064

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—89 **2 Claims**

1. A method for the treatment of asthma comprising administering an effective amount to treat asthma of a compound of formula:

(I)



in which:

A, between N and CO, represents the group —CH=CH—-E=CH— R_1 R_2 R_3

Z represents a cyano, trifluoroacetyl, phosphono, dialkoxyphosphoryl or the alkoxy groups having from 1 to 3 carbon atoms;

E represents a group $C(R_4)$;

R_4 represents a hydrogen atom or a hydroxyl group except that Z is trifluoroacetyl only when R_4 is hydrogen;

and the pharmaceutically acceptable salts of the phosphono, together with a pharmaceutically acceptable excipient.

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5,284,839

USE OF INOSITOLTRISPHOSPHATE TO TREAT ABNORMAL GASTROINTESTINAL MOTILITY AND SECRETION

Matti Siren, Helsinki, Finland, and Lars Edvinsson, Lund, Sweden, assignors to Perstorp AB, Sweden

PCT No. PCT/SE91/00439, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/00079, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 19, 1991, Ser. No. 966,035

Claims priority, application Sweden, Jun. 28, 1990, 9002278-1

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—103 **14 Claims**

1. A method of preventing, alleviating or combatting diseases related to abnormal gastrointestinal motility and secretion in a mammal including man comprising administering to a mammal in need thereof a pharmaceutically effective amount of at least one isomer of inositoltriphosphate or a pharmaceutically acceptable salt thereof.

5,284,840

ALKYLIDENE MACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

Kathleen Rupprecht, and Robert Baker, both of Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

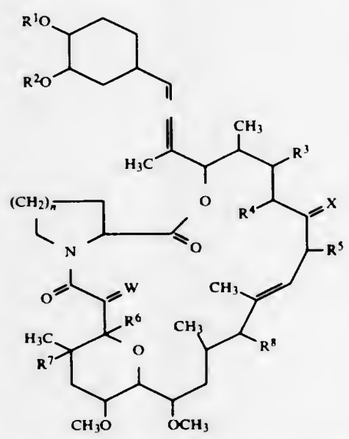
Filed Jun. 12, 1992, Ser. No. 897,738

Int. Cl.[5] A61K *31/395;* **C07D** *267/00*

U.S. Cl. 514—183 **8 Claims**

1. A compound of formula I:

I



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is selected from:
(1) hydrogen; and
(2) C_{1-4} alkanoyl;

R^2 is selected from:
(1) methyl; and
(2) hydrogen;

R^3 is hydrogen, hydroxy, or C_{1-6}alkoxy;

R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;

R^5 is selected from:
(1) methyl,
(2) ethyl
(3) propyl, and
(4) allyl;

R^6 is hydroxy or hydrogen;

R^7 is hydrogen, or R^6 and R^7 taken together from a double bond;

R^8 is hydrogen, hydroxy, or fluoro;

W and X are independently selected from:
(1) oxo,
(2) (H, OH),
(3) (OH, R^9), wherein R^9 is selected from:
(a) C_{1-6} alkyl,
(b) C_{2-6} alkenyl,
(c) $—CH_2—SO_m—C_{1-6}$ alkyl, wherein m is 0, 1 or 2,
(d) $—CH_2S(C_{1-6}\text{ alkyl})_2{}^+M^-$, wherein M^- is a negative counterion selected from: chloro, bromo, iodo,
(e) phenyl,
(f) furanyl,
(4) $=CR^{10}R^{11}$, wherein R^{10} and R^{11} are independently selected from:
(a) hydrogen,
(b) C_{1-6} alkyl,
(c) C_{2-6} alkenyl,
(d) $—SO_m—C_{1-6}$ alkyl, wherein m is as defined above;
with the proviso that W and X are not simultaneously oxo, (H, OH), or combinations thereof;

n is 1 or 2.

5,284,841

BENZO-FUSED LACTAMS PROMOTE RELEASE OF GROWTH HORMONE

Lin Chu, Waldwick; Michael H. Fisher, Ringoes; Helmut Mrozik, Matawan, and William R. Schoen, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

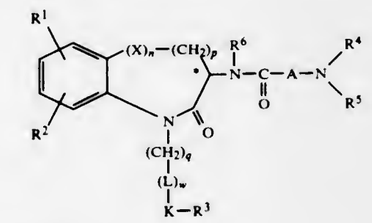
Filed Feb. 4, 1993, Ser. No. 13,448

Int. Cl.[5] A61K *31/55;* **C07D** *209/34, 215/227, 223/16*

U.S. Cl. 514—183 **8 Claims**

1. A compound having the formula:

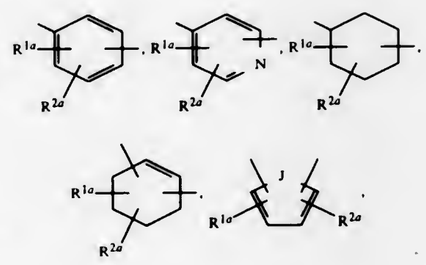
I



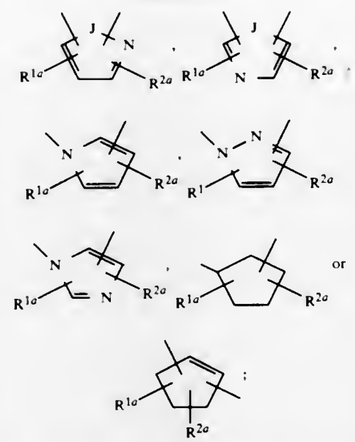
n is 0 or 1;
p is 0 to 3;
q is 0 to 4;
w is 0 or 1;
X is C═O or



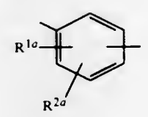
m is 0 to 2;
L and K are independently



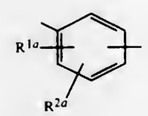
-continued



where J is O, S or N—R^{13} with the proviso that when w is 0, K is other than



and when w is 1, either L or K must be other than

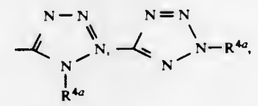


R^1, R^2, R^{1a}, and R^{2a} are independently hydrogen, halogen, C_1-C_7 alkyl, C_1-C_3 perfluoroalkyl, C_1-C_3 perfluoroalkoxy, $—S(O)_mR^{7a}$, cyano, nitro, $R^{7b}O(CH_2)_v—$, $R^{7b}COO(CH_2)_v—$, $R^{7b}OCO(CH_2)_v—$, $R^4R^5N(CH_2)_v—$, $R^{7b}CON(R^4)(CH_2)_v—$, $R^4R^5NCO(CH_2)_v—$, phenyl or substituted phenyl where the substituents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;

R^{7a} and R^{7b} are independently hydrogen, C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl, where the substituents are phenyl or substituted phenyl; phenyl or substituted phenyl where the phenyl substituents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy and v is 0 to 3;

R^3 is hydrogen, R^9, C_1-C_6 alkyl substituted with R^9, phenyl substituted with R^9 or phenoxy substituted with R^9;

R^9 is



$R^{7b}O(CH_2)_v—$, $R^{7b}COO(CH_2)_v—$, $R^{7b}OCO(CH_2)_v—$, $R^{7b}CO(CH_2)_v—$, $R^{7b}O(CH_2)_vCO—$, $R^4R^5N(CH_2)_v—$, $R^{7b}CON(R^4)(CH_2)_v—$, $R^4R^5NCO(CH_2)_v—$, $R^4R^5NCS(CH_2)_v—$, $R^4R^5NN(R^5)CO(CH_2)_v—$, $R^4R^5NN(R^5)CS(CH_2)_v—$, $R^{7b}CON(R^4)N(R^5)CO(CH_2)_v—$, $R^{7b}CON(R^4)N(R^5)CS(CH_2)_v—$, $R^4N(OR^{7b})CO(CH_2)_v—$, $R^{7a}CON(OR^{7b})CO(CH_2)_v—$, $R^{4b}R^{12a}NCON(R^{12b})(CH_2)_v—$, $R^{4b}R^{12a}NCSN(R^{12b})(CH_2)_v—$, $R^{4b}R^{12a}NN(R^{12b})CSN(R^{12c})(CH_2)_v—$, $R^{4b}R^{12a}NN(R^{12b})CON(R^{12c})(CH_2)_v—$, $R^{4b}R^{12a}NN(R^{12b})COO(CH_2)_v—$, $R^{4b}R^{12a}NCOO(CH_2)_v—$ or $R^{13}OCON(R^{12b})(CH_2)_v—$, where v is 0 to 3;

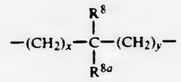
R^{12a}, R^{12b} and R^{12c} are independently R^{5a}, OR^{5a}, or COR^{5a}; R^{12a} and R^{12b}, or R^{12b} and R^{12c}, or R^{13} and R^{12b}, or R^{12a} and R^{4b} can be taken together to form $—(CH_2)_r—B—(CH_2)_s—$ where B is CHR^1, O, $S(O)_m$ or NR^{10}, m is 0, 1 or 2, r and s are independently 0 to 3 and R^1 and R^{10} are as defined;

R^{13} is C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl, where the substituents are hydroxy, $—NR^{10}R^{11}$, carboxy, phenyl or substituted phenyl; phenyl or substituted phenyl where the substituents on the phenyl are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy where R^{10} and R^{11} are independently hydrogen, C_1-C_6 alkyl, phenyl, phenyl C_1-C_6 alkyl, C_1-C_5-alkoxycarbonyl or C_1-C_5-alkanoyl-C_1-C_6 alkyl;

R^4, R^{4a}, R^{4b}, R^5 and R^{5a} are independently hydrogen, phenyl, substituted phenyl, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_3-C_{10} alkenyl, substituted C_3-C_{10} alkenyl, C_3-C_{10} alkynyl or substituted C_3-C_{10} alkynyl where the substituents on the phenyl, alkyl, alkenyl or alkynyl are from 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, R^1, R^2 independently disubstituted phenyl, C_1-C_{20} alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl or $—NR^{10}R^{11}$; or R^4 and R^5 can be taken together to form $—(CH_2)_rB(CH_2)_s—$ where B, r, s, R^1, R^2, R^{10} and R^{11} are as defined above;

R^6 is hydrogen, C_1-C_{10} alkyl, phenyl or phenyl C_1-C_{10} alkyl;

A is



where x and y are independently 0–3;

R^8 and R^{8a} are independently hydrogen, C_1-C_{10} alkyl, trifluoromethyl, phenyl, substituted C_1-C_{10} alkyl where the substituents are from 1 to 3 of imidazolyl, indolyl, hydroxy, fluoro, $S(O)_mR^{7a}$, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, R^1, R^2 independently disubstituted phenyl, C_1-C_5-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl or $—NR^{10}R^{11}$ where R^1, R^2, R^{10} and R^{11} are as defined above; or R^8 and R^{8a} can be taken together to form $—(CH_2)_t—$ where t is 2 to 6; and R^8 and R^{8a} can independently be joined to one or both of R^4 and R^5 to form alkylene bridges between the terminal nitrogen and the alkyl portion of the A group wherein the bridge contains from 1 to 5 carbon atoms;

and pharmaceutically acceptable salts thereof.

7. A method for increasing levels of endogenous growth hormone in a human or an animal which comprises administering to such human or animal an effective amount of a compound of claim 1.

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5,284,842

QUINOLONE- AND NAPHTHRIDONE CARBOXYLIC ACID DERIVATIVES, PROCESS FOR THEIR PRODUCTION, ANTIBACTERIAL COMPOSITIONS AND FEED ADDITIVES CONTAINING THEM

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Klaus Grohe; Michael Schriewer, both of Odenthal; Ingo Haller, Wuppertal; Karl G. Metzger, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

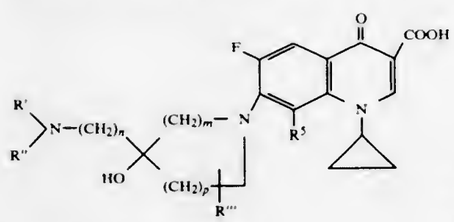
Division of Ser. No. 699,880, May 14, 1991, Pat. No. 5,173,484, which is a continuation-in-part of Ser. No. 298,459, Jan. 18, 1989, abandoned. This application Aug. 18, 1992, Ser. No. 931,746

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1988, 3803478; Apr. 29, 1988, 3814517

Int. Cl.[5] A61K *31/47;* **C07D** *401/04*

U.S. Cl. 514—187 **4 Claims**

1. A quinolonecarboxylic acid of the formula



in which

p stands for 1 or 2,

m stands for 1 or 2, where p + m together are 3,

n stands for 1 or 2,

R′ stands for hydrogen or C_1-C_3-alkyl,

R″ stands for hydrogen or C_1-C_3-alkyl,

R‴ stands for hydrogen or C_1-C_3-alkyl, and

R^5 stands for hydrogen or halogen,

or a pharmaceutically utilizable hydrate, acid addition salt, alkali metal salt, alkaline earth metal salt, silver salt or guanidinium salt thereof.

5,284,843

PHARMACOLOGICAL TREATMENT OF OCULAR DEVELOPMENT

Richard A. Stone, Havertown; Alan M. Laties, Philadelphia, both of Pa., and Paul M. Iuvone, DeKalb, Ga., assignors to Trustees of the University of Penna., Philadelphia, Pa. and Emory University, Atlanta, Ga.

Continuation of Ser. No. 342,942, Apr. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 202,220, Jun. 3, 1988, abandoned. This application Apr. 10, 1991, Ser. No. 687,847

Int. Cl.[5] A61K *31/55, 31/44*

U.S. Cl. 514—213 **14 Claims**

1. A method of controlling the abnormal postnatal growth of the eye of a maturing animal which comprises controlling the presence of a neurochemical, or its agonist, or its the concentration of which neurochemical is found to be changed under conditions during maturation ordinarily leading to abnormal axial length.

5,284,844

BIOCIDES FOR PROTECTING INDUSTRIAL MATERIALS AND WATER SYSTEMS

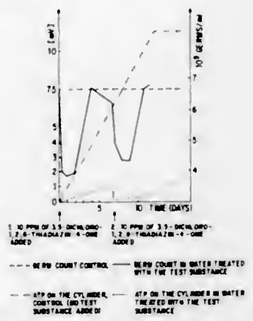
Joachim Lorenz; Reinhardt Grade, both of Bensheim, Fed. Rep. of Germany, and Peter Riebli, Buckten, Switzerland, assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 22, 1989, Ser. No. 411,335

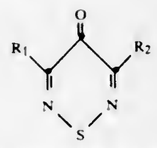
Claims priority, application Switzerland, Sep. 30, 1988, 3636/88

Int. Cl.[5] A01N *43/00*

U.S. Cl. 514—222.5 **25 Claims**



1. A process for protecting industrial materials and water systems from attack by harmful organisms or for controlling the latter on or in industrial materials and water systems, which comprises incorporating in or applying to the said materials or systems a 3,5-dihalogeno-1,2,6-thiadiazin-4-one of the formula I



(I)

in which R_1 and R_2 independently of one another are chlorine, fluorine or bromine.

5,284,845

USE OF ORAL DIAZOXIDE FOR THE TREATMENT OF DISORDERS IN GLUCOSE METABOLISM

Elsa P. Paulsen, 1115 Hilltop Rd., Charlottesville, Va. 22903

Continuation of Ser. No. 669,386, Mar. 14, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 936,867

Int. Cl.[5] A61K *31/54*

U.S. Cl. 514—223.2 **9 Claims**

1. A method for normalizing blood glucose and insulin levels as measured by an oral glucose tolerance test in an individual exhibiting normal fasting blood glucose and insulin levels and exhibiting in an oral glucose tolerance test elevated glucose levels and at least one insulin level abnormality selected from the group consisting of a delayed insulin peak, an exaggerated insulin peak and a secondary elevated insulin peak, said method comprising administering diazoxide to said individual before ingestion of a food source in an amount effective to normalize said blood glucose and insulin levels, wherein said diazoxide is administered in an amount from about 0.4 to about 0.8 mg/kg body weight before each meal.

5,284,846

Patent Not Issued For This Number

5,284,847

THIENO PYRAZINE DIONES, THEIR PREPARATION AND USE

Anker S. Jørgensen, Copenhagen; Peter Faarup, Vaerlose; Erling Guddal, Brøndby, and Lone Jeppesen, Virum, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

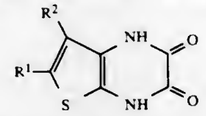
Filed Oct. 16, 1992, Ser. No. 962,958

Claims priority, application Denmark, Oct. 23, 1991, 1771/91

Int. Cl.[5] A61K *31/495;* **C07D** *495/04, 333/36, 333/040*

U.S. Cl. 514—249 **7 Claims**

1. A compound of formula (I) or a tautomeric form thereof



(I)

wherein

R^1 represents hydrogen, straight or branched C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{3-8}-cycloalkyl, halogen, nitro, cyano, phenyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio, carboxy, C_{1-6}-alkyloxycarbonyl, trifluoromethyl, C_{1-3}-dialkylamino, or C_{1-6}-alkyl substituted with cyano, carboxy, C_{1-3}-alkoxycarbonyl; and

R^2 represents hydrogen, straight or branched C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{3-8}-cycloalkyl, halogen, cyano, phenyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio, trifluoromethyl, or C_{1-6}-alkyl substituted with cyano, or a pharmaceutically acceptable salt thereof.

5,284,848

Patent Not Issued For This Number

5,284,849

RENIN INHIBITORS

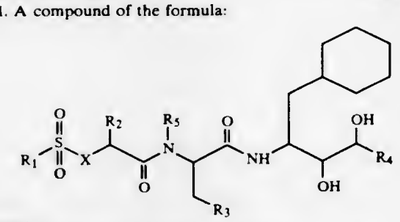
Saul H. Rosenberg, Libertyville, and Jon F. Denissen, McHenry, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 683,663, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 564,925, Aug. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 522,349, May 11, 1990, abandoned. This application Aug. 14, 1992, Ser. No. 928,190

Int. Cl.[5] A61K *31/495, 31/55;* **C07D** *403/00, 413/00*

U.S. Cl. 514—252 **28 Claims**

1. A compound of the formula:



wherein

R_1 is 4-piperazinyl, 1-methyl-4-piperazinyl, 1-methyl-1-oxo-4-piperazinyl, 2-oxo-4piperazinyl or 1-methyl-4-homopiperazinyl;

R_2 is benzyl, 2-phenylethyl, 1-naphthylmethyl or 2-naphthylmethyl;

R_3 is 4-thiazolyl, 2-amino-4-thiazolyl, 2-thiazolyl, 5-thiazolyl, 1-pyrazolyl, 3-pyrazolyl or 1-imidazolyl;

R_4 is isobutyl or cyclopropyl;

R_5 is hydrogen or loweralkyl; and

X is CH_2; or a pharmaceutically acceptable salt, ester or prodrug thereof.

5,284,850

TERPENE AMINO ALCOHOLS AND MEDICINAL USES THEREOF

Koichi Kanehira, Kurashiki; Katsushi Eziri, Okayama; Manzo Shiono; Yoshiji Fujita, both of Kurashiki, and Johji Yamahara, Otsu, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

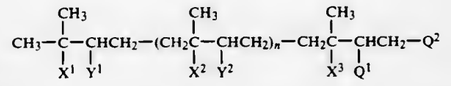
Division of Ser. No. 533,395, Jun. 4, 1990, Pat. No. 5,143,921, which is a division of Ser. No. 887,431, Jul. 21, 1986, Pat. No. 4,946,857. This application Jun. 5, 1992, Ser. No. 894,567

Claims priority, application Japan, Jul. 19, 1985, 60-160782; Mar. 7, 1986, 61-50784; Apr. 11, 1986, 61-84822

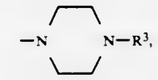
Int. Cl.[5] A61K *31/495;* **C07D** *295/084, 295/088*

U.S. Cl. 514—255 **7 Claims**

1. A terpene amino alcohol having the formula:



wherein X^1 is a hydrogen atom or a hydroxyl group and Y^1 is a hydrogen atom, or X^1 and Y^1 taken together represent a bond; X^2 is a hydrogen atom or a hydroxyl group and Y^2 is a hydrogen atom, or X^2 and Y^2 taken together represent a bond; Q^1 and Q^2 are such that either one is Y^3 with the other being



and X^3 is a hydrogen atom or a hydroxyl group; Y^3 is a hydroxyl group when X^3 is a hydrogen atom, or Y^3 is a hydrogen atom or a hydroxyl group when X^3 is a hydroxyl group; R^3 is a hydrogen atom, a lower alkyl group which may be substituted or an aryl group which may be substituted; and n is an integer of 0 to 2; or a pharmacologically acceptable ester or salt thereof.

5,284,851

1-ALKOXY-1,3-DIAZACYCLOALKANE DERIVATIVES AND THEIR USE AS PESTICIDES

Wolfgang Von Deyn, Neustadt; Albrecht Harreus, Ludwigshafen; Uwe Kardorff, Mannheim, and Christoph Kuenast, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

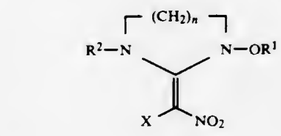
Filed Apr. 10, 1992, Ser. No. 866,591

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111923

Int. Cl.[5] A01N *43/50, 43/54;* **C07D** *233/02, 239/06*

U.S. Cl. 514—256 **12 Claims**

1. A 1-alkoxy-1,3-diazacycloalkane compound of the formula I



I

where

n is 0 or 1;

R^1 is unsubstituted C_1-C_{10}-alkyl, C_1-C_6-alkylcarbonyl, C_1-C_6-cycloalkylcarbonyl, C_3-C_6-alkenyl or C_3-C_6-alkynyl group;

X is hydrogen; halogen, C_1-C_4-alkoxy; C_1-C_4-alkylthio; C_1-C_6-alkylcarbonyl; C_1-C_6-haloalkylcarbonyl; C_1-C_6-alkoxycarbonyl; unsubstituted C_1-C_4-alkyl or C_1-C_4-

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alkyl substituted by from one to nine halogen atoms or from one to three of the following groups; hydroxyl, C_1-C_4-alkoxy, C_1-C_4-alkylthio, phenoxy and phenylthio; an unsubstituted phenyl, phenoxy, phenylthio, benzoyl or phenyloxy-carbonyl group, or one of said groups which the phenyl radicals are substituted by from one to five halogen atoms or from one to three of the following groups: cyano, nitro, C_1-C_4-alkyl; and C_1-C_4-alkoxy; and R^2 is hydrogen or C_1-C_4-alkyl.

5,284,852

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6-SUBSTITUTED QUINAZOLINONES

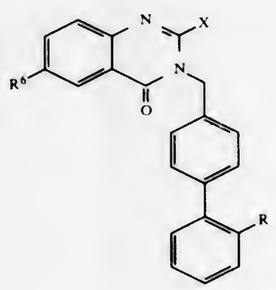
Jeremy I. Levin, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,941

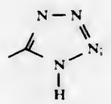
Int. Cl.[5] **A61K** *31/505*; **C07D** *239/91, 403/10, 401/14*

U.S. Cl. 514—259 **25 Claims**

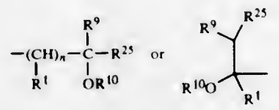
1. A quinazolinone compound having the formula:



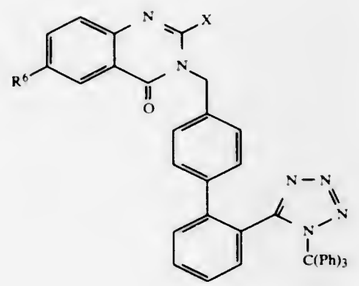
wherein:
R is



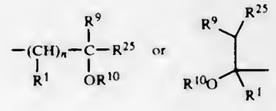
X is straight or branched chain lower alkyl of 3 to 5 carbon atoms;
n is 0 to 3;
R^6 is



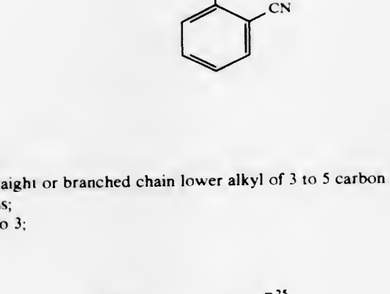
where R^1, R^9 and R^{25}, can be the same or different; R^1 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl., Br), pyridinyl, thienyl, or furyl; R^9 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br) pyridinyl, thienyl, or furyl;
R^{10} is phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, F, Cl, Br, nitro, or O-alkyl of 1 to 4 carbon atoms);
R^{25} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl;
R^6 is

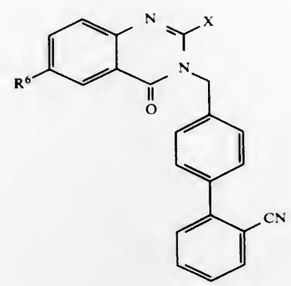


wherein:
X is straight or branched chain lower alkyl of 3 to 5 carbon atoms;
n is 0 to 3;
R^6 is



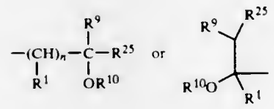
where R^1, R^9 and R^{25} are the same or different;
R^1 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl;
R^9 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl;
R^{10} is phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, F, Cl, Br, nitro, or O-alkyl of 1 to 4 carbon atoms);
R^{25} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl.
6. A quinazolinone compound having the formula:





Formula I

wherein:
X is straight or branched chain lower alkyl of 3 to 5 carbon atoms;
n is 0 to 3;
R^6 is



where R^1, R^9 and R^{25} can be the same or different;
R^1 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl., Br), pyridinyl, thienyl or furyl;
R^9 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl;
R^{10} is phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, F, Cl, Br, nitro, or O-alkyl of 1 to 4 carbon atoms);
R^{25} is straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-NH_2$, nitro, O-alkyl of 1 to 4 carbon atoms, F, Cl, Br), pyridinyl, thienyl or furyl.

5,284,853

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

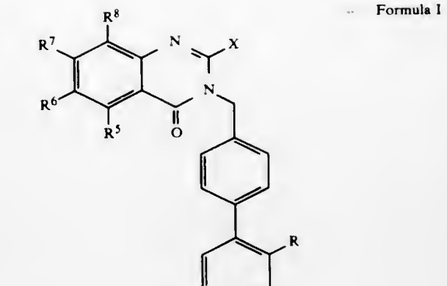
Jeremy I. Levin, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,943

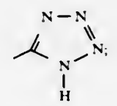
Int. Cl.[5] **A61K** *31/505*; **C07D** *413/10, 413/14*

U.S. Cl. 514—259 **21 Claims**

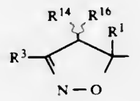
1. A quinazolinone compound having the formula:



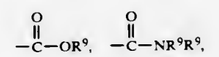
wherein:
R is



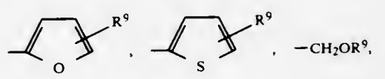
X is straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is



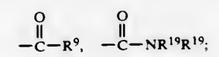
R^1 is H, straight chain lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-CN$,



phenyl, substituted phenyl (substitution selection from mono-lower alkyl of 1 to 3 carbon atoms, $-CP_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridinyl, thieneyl or furyl
R^3 is $-CO_2R^9$,

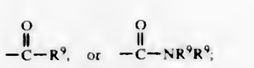


phenyl, substituted phenyl (substitution selection from mono-lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridinyl, $-CN$, alkyl(-C_1-C_6) straight or branched,



R^{14} and R^{16} are hydrogen, straight or branched chain lower alkyl of 1 to 4 carbon atoms, $-CO_2R^9$, $-CN$, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms) pyrdinyl, thienyl, furyl

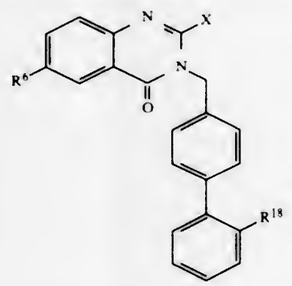
VOL 1159 ISS 2 FE 8 1994 UMI



R^{19} is straight or branched chain lower alkyl of 1 to 4 carbon atoms;

R^9 is hydrogen, straight chain or branched lower alkyl of 1 to 4 carbon atoms; or pharmaceutically acceptable salts thereof.

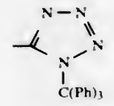
4. A quinazolinone compound having the formula:



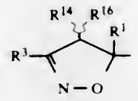
wherein:

X is straight or branched alkyl of 3 to 5 carbon atoms;

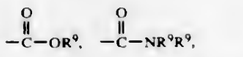
R^{18} is



R^6 is

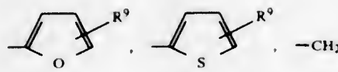


R^1 is H, straight chain lower alkyl of 1 to 4 carbon atoms, $-CF_3$, $-CN$,

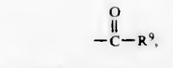


phenyl, substituted phenyl (substitution selection from mono-lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridinyl, thienyl or furyl;

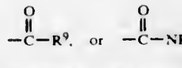
R^3 is $-CO_2R^9$,



phenyl, substituted phenyl (substitution selection from mono-lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridinyl, $-CN$, alkyl(C_1–C_6) straight or branched,



R^{14} and R^{16} are hydrogen, straight or branched lower alkyl of 1 to 4 carbon atoms, $-CO_2R^9$, $-CN$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms, NH_2), pyridinyl, thienyl, furyl



R^{19} is straight or branched chain lower alkyl of 1 to 4 carbon atoms;

R^9 is hydrogen, straight chain lower alkyl of 1 to 4 carbon atoms.

5,284,854

2-AMINOPYRIMIDINONE DERIVATIVES

Ludo E. J. Kennis, Turnhout; Jan Vandenberk, Beerse, and Jozef M. Boey, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

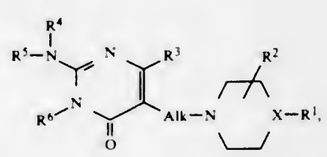
Division of Ser. No. 901,465, Jun. 19, 1992, which is a division of Ser. No. 643,867, Jan. 18, 1991, Pat. No. 5,140,029, which is a continuation-in-part of Ser. No. 456,319, Dec. 26, 1989, abandoned. This application Jun. 24, 1993, Ser. No. 82,225

Claims priority, application United Kingdom, Jan. 9, 1989, 9800382

Int. Cl.[5] **A61K** *31/505*; **C07D** *239/22, 487/04*

U.S. Cl. 514—272 **9 Claims**

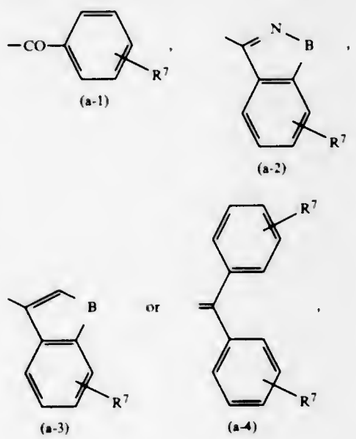
1. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt thereof, or a stereochemically isomeric form thereof, wherein:

R^1 is a radical of the formula:



(a-1) (a-2) (a-3) (a-4)

wherein:

R^7 is hydrogen, C_{1-4}alkyl or halo; and

B is O, S or NR^8 wherein R^8 is hydrogen, C_{1-4}alkyl or ArC_{1-4}alkyl;

X is CH when R^1 is a radical of formula (a-1), (a-2) or (a-3), X is C when R^1 is a radical of formula (a-4), or X may also be N when R^1 is a radical of formula (a-2);

R^2 is hydrogen or C_{1-6}alkyl;

Alk is C_{1-6}alkanediyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen, C_{1-6}alkyl optionally substituted with C_{1-6}alkyloxy, Ar, pyridinyl, furanyl or 5-methyl-2-furanyl; and

R^5 is hydrogen, C_{1-6}alkyl, C_{1-6}alkylaminocarbonyl, Ar-aminocarbonyl, C_{1-6}alkylcarbonyl or Ar-carbonyl;

R^6 is hydrogen, C_{1-6}alkyl or ArC_{1-6}alkyl; or

R^5 and R^6 taken together form a bivalent radical of the formula:

$—CH_2—CH_2—$ (b-1);

$—CH_2—CH_2—CH_2—$ (b-2);

$—CH=CH—$ (b-3);

$—CH=N—$ (b-4);

$—N=CH—$ (b-5); or

$—N=CH—CH_2—$ (b-6),

wherein one or where possible two hydrogen atoms of said radicals (b-1) to (b-6) each independently from one another may be replaced by C_{1-6}alkyl; or wherein one hydrogen atom of radical (b-3) may be replaced by phenyl;

wherein in the foregoing each Ar independently is phenyl or phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl,

PROVIDED that when R^1 is a radical of formula (a-1) or (a-4), then R^5 and R^6 taken together must form a bivalent radical of formula (b-1) to (b-6), and FURTHER PROVIDED that when R^1 is a radical of formula (a-2) or (a-3) and X is CH, then R^5 and R^6 taken together cannot form a bivalent radical of formula (b-1) to (b-6).

5,284,855

7-(2,7-DIAZABICYCLO[3.3.0]OCTYL)-3-QUINOLONE- AND-NAPHTHYRIDONECARBOXYLIC ACID DERIVATIVES

Uwe Petersen; Thomas Schenke, both of Leverkusen; Michael Schriewer, Odenthal; Klaus Grobe, Odenthal; Andreas Krebs, Odenthal; Ingo Haller, Wuppertal; Karl G. Metzger, Wuppertal; Klaus-Dieter Bremm, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

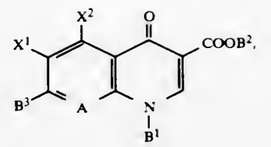
Division of Ser. No. 771,700, Oct. 3, 1991, Pat. No. 5,202,337. This application Nov. 12, 1992, Ser. No. 974,446

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1990, 4032560

Int. Cl.[5] **A61K** *31/505*; **C07D** *401/14*

U.S. Cl. 514—300 **6 Claims**

1. 7-(2,7-Diazabicyclo[3.3.0]octyl)-3-quinolone- and -naphthyridonecarboxylic acid derivatives of the formula (I)



(I)

in which

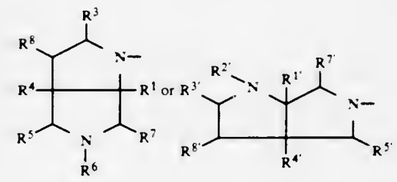
X^1 represents halogen,

X^2 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen or methyl,

B^1 represents alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, 2-hydroxyethyl, 2-fluoroethyl, methoxy, amino, methylamino, ethylamino, dimethylamino, or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

B^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

B^3 represents a radical of the structure



where

R^1, R^3, R^4, R^5, R^7 and R^8 are identical or different and in each case represent hydrogen or methyl substituted by halogen or hydroxyl, or represent C_1–C_3-alkoxycarbonyl or carboxyl,

R^4 and R^8 can additionally represent halogen, amino, hydroxyl or methoxy,

R^6 represents hydrogen, C_1–C_6-alkyl, benzyl, C_6–C_{12}-aryl, C_1–C_3-alkanoyl, benzoyl or C_1–C_5-alkoxycarbonyl,

$R^{1'}$, $R^{2'}$, $R^{3'}$, $R^{5'}$, $R^{7'}$ and $R^{8'}$ are identical or different and in each case represent hydrogen or methyl,

$R^{4'}$ represents halogen, amino, hydroxyl, methoxy or methyl substituted by halogen, amino, hydroxyl or methoxy, or represents hydrogen when

$R^{2'}$ and $R^{3'}$ together denote a C_2–C_4-alkylene bridge or a CH_2—S—CH_2 bridge which can optionally be monosubstituted or disubstituted by hydroxyl, methoxy, amino or methyl,

A represents N

and their hydrates and acid addition salts which can be used in pharmaceutics, as well as their alkali metal salts, alkaline earth metal salts, silver salts and guanidinium salts.

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5,284,856

ONCOGENE-ENCODED KINASES INHIBITION USING 4-H-1-BENZOPYRAN-4-ONE DERIVATIVES

Ramchandra G. Naik; Bansi Lal, both of Bombay, India; Richard H. Rupp, Königstein/Taunus, Fed. Rep. of Germany; Hans H. Sedlacek, Marburg, Fed. Rep. of Germany, and Gerhard Dickneite, Marburg, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

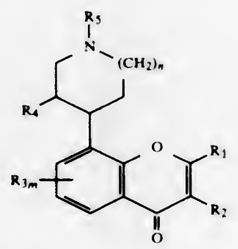
Continuation of Ser. No. 622,116, Dec. 6, 1990, abandoned, which is a continuation of Ser. No. 426,543, Oct. 26, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 924,595

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836676

Int. Cl.[5] **A61K** *31/445*

U.S. Cl. 514—320 **3 Claims**

1. A method of inhibiting oncogene-encoded kinases or growth factor receptor tyrosin kinases comprising administering to a patient an effective amount of a compound of the formula I



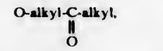
I

in which

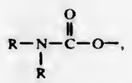
R_1 is hydrogen, alkyl having 1 to 6 carbon atoms, aryl-C_1–C_4-alkyl; C_1–C_6-alkyl substituted by halogen, hydroxy, or carboxy; C_3–C_6-cycloalkyl, pyridyl, thienyl, C_3–C_6-cycloalkyl-C_1–C_4-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl, phenyl; phenyl, mono- or polysubstituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, hydroxyl, carboxyl, COO-alkyl, $CONH_2$, CONH-alkyl, $CON(alkyl)_2$, nitro, trifluoromethyl, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, or phenyl; naphthyl, carboxyl, —CHO, COO—C_1–C_4-alkyl, a primary amino, alkylamino, aralkylamino, dialkylamino, amido, arylamino, diarylamino, or —CH_2O—C_1–C_4-alkyl;

R_2 is hydrogen, alkyl having 1 to 6 carbon atoms, aryl, nitro, amino, di-C_1–C_4-alkylamino, a halogen, hydroxyl, alkoxy, —COOH, —COO—C_1–C_4-alkyl, —CHO, —CH_2OH or —CH_2O—C_1–C_4-alkyl;

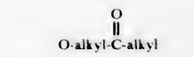
R_3 is hydrogen, C_1–C_4-alkyl; C_1–C_4-alkyl substituted by halogen, hydroxy, or carboxy; hydroxyl, carboxyl, nitro, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, halogen,



—CHO, —CH_2OH, —CH_2O—C_1–C_4-alkyl, or

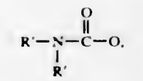


where R is H, C_1–C_6-alkyl, cycloalkyl,



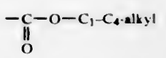
or aryl;

R_4 is hydrogen, hydroxyl, C_1–C_4-alkoxy, C_1–C_4-alkanoyloxy, C_1–C_4-alkoxycarbonyl, aryloxy, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, or



where R' is H, C_1–C_6-alkyl, cycloalkyl or aryl;

R_5 is hydrogen, C_1–C_6-alkyl, aryl-C_1–C_4-alkyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_4-alkyl, alkylamino, C_1–C_4-alkanoyl,



or aroyl, where the aryl group in R_1, R_2, R_3, R_4, and R_5 is unsubstituted phenyl or phenyl that is mono- or polysubstituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, hydroxyl, carboxyl, COO-alkyl, $CONH_2$, CONH-alkyl, $CON(alkyl)_2$, nitro, trifluoromethyl, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, or phenyl;

m is an integer between 0 and 3 and

n is 1,

or a pharmacologically acceptable acid addition salt thereof.

5,284,857

SUBSTITUTED THIENOPYRANS AS ANTIHYPERTENSIVE AGENTS

Jeffery B. Press, Penllyn, Pa.; Pauline Sanfilippo, Flemington, N.J.; James J. McNally, High Bridge, N.J., and Robert Falotico, Belle Mead, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

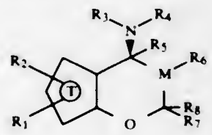
Continuation-in-part of Ser. No. 401,628, Sep. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,043, Sep. 23, 1988, Pat. No. 4,992,435. This application Dec. 21, 1990, Ser. No. 631,593

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

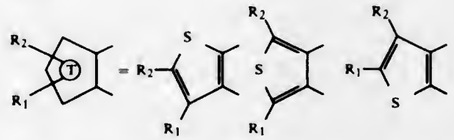
Int. Cl.[5] **A61K** *31/38*; **C07D** *497/04*

U.S. Cl. 514—321 **8 Claims**

1. A compound of the formula:



wherein



and R_1 and R_2 are selected from hydrogen, nitro, cyano, trifluoromethyl, halogen, lower alkyl (C_{1-4}), alkanoyl (C_{2-4}), substituted alkanoyl (C_{2-4}), wherein the substituent is halogen; benzoyl, substituted benzoyl, wherein the substituent is selected from bromo, chloro, iodo, alkyl (C_{1-4}), alkoxy (C_{1-4}), acyl (C_{2-4}), nitro, cyano and trifluoromethyl; acylamino (C_{2-4}), alkoxy carbonyl (C_{1-4}), CHO, COOH, $CONH_2$, $CON(R)_2$ and NHCOR wherein R is alkyl (C_{1-4}), alkoxy (C_{1-4}), phenyl or substituted phenyl wherein the substituent is selected bromo, chloro, iodo, lower alkyl, lower alkoxy, nitro, cyano, trifluoromethyl and acyl (C_{2-4}); R_3 and R_4 are selected from hydrogen, hydroxy, alkanoyl (C_{2-5}), alkyl (C_{1-4}), cycloalkyl (C_{3-6}), cycloalkyl carbonyl (C_{3-6}), pyridyl carbonyl, benzoyl, substituted benzoyl wherein the substituent is selected from brommo, chloro, iodo, alkyl (C_{1-4}), alkoxy (C_{1-4}), acyl (C_{2-4}), nitro, cyano and trifluoromethyl; or R_3R_4N together are a heterocyclic ring selected from a pyrrole, pyrrolidine or piperidine ring; a (C_{3-9}) lactam selected from the group consisting of isoindolone, pyrrolidinone, piperidinone, pyridinone, pyrazinone, and glycine anhydride; or substituted (C_{3-9}) lactam; R_5 is hydrogen or together with R_6 forms a double bond; m is CH or taken together with R_6 is carbonyl; R_6 is hydroxy, alkoxy (C_{1-6}), alkanoyloxy (C_{2-7}), benzoyloxy, substituted benzoyloxy; and R_7 and R_8 are hydrogen or alkyl (C_{1-4}) or together form a ring having 5–8 carbon atoms; and optical isomers thereof.

7. A method for treating hypertension in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

5,284,858

PROSTAGLANDINS E AND ANTI ULCERS CONTAINING SAME

Ryuzo Ueno, Nishinomiya; Ryuji Ueno, Kyoto; Ichie Kato, Kawanishi, and Tomio Oda, Itami, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

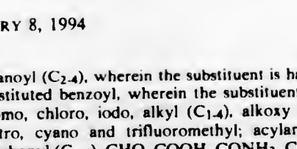
Division of Ser. No. 700,895, May 13, 1991, Pat. No. 5,166,174, which is a continuation of Ser. No. 406,830, Sep. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 149,445, Jan. 28, 1988, abandoned. This application Aug. 6, 1992, Ser. No. 925,220

Claims priority, application Japan, Jan. 28, 1987, 62-18820; Mar. 18, 1987, 62-65352

Int. Cl.[5] **C07G** *405/00*; **A61K** *31/557*

U.S. Cl. 514—530 **13 Claims**

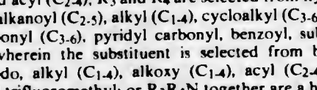
1. Prostaglandins E represented by a general formula:



(I)

in which

X represents:



R_1 represents: a hydrogen atom, a physiologically acceptable sat residue, or an ester residue selected from the group consisting of alkyl, benzyl, hydroxyalkyl, alkoxyalkyl, alkylsilyl and tetrahydropyranyl group;

R_2 represents: a hydrogen atom or a methyl group;

R_3 represents: a hydroxyl or hydroxymethyl group;

R_4 and R_5 each represents: a hydrogen atom, a methyl group or a halogen atom provided that at least one of R4 and R5 is a halogen atom; and

R_6 represents: a C_1–C_9 alkyl group which may have a branch or a double bond, or a C_1–C_9 alkyl group having an alkoxy substituent group, the C_2–C_3 bond being a single or double bond.

5,284,859

PIPERIDINE COMPOUNDS AND THEIR USE

Per Sauerberg, Valby, and Preben H. Olesen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

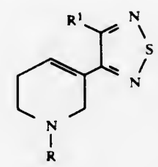
Continuation of Ser. No. 482,272, Feb. 20, 1990, Pat. No. 5,041,455, which is a continuation-in-part of Ser. No. 401,370, Aug. 31, 1989, Pat. No. 5,043,345. This application Aug. 15, 1991, Ser. No. 745,568

Claims priority, application Denmark, Feb. 22, 1989, 0825/89; May 12, 1989, 2315/89

Int. Cl.[5] **C07D** *419/04*; **A61K** *31/44*

U.S. Cl. 514—340 **11 Claims**

1. A compound of formula I



(I)

wherein

R is H, C_{1-3}-alkyl, C_{3-4}-cycloalkyl, C_{2-4}-alkenyl or C_{2-4}-alkynyl; and

R^1 is C_{1-15}-alkyl, C_{2-15}-alkenyl, C_{2-15}-alkynyl, C_{3-7}-cycloalkyl, C_{4-8}-(cycloalkylalkyl), phenoxy, benzyloxy, halogen, amino, C_{1-6}-acylamino, C_{1-15}-alkylamino, C_{1-15}-dialkylamino, C_{1-15}-alkoxyamino, —S—R^2 or —O—R^2 wherein R^2 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, —R^3—O—R^4, —R^3—NH—R^4, —R^3—S—R^4 or —R^3—O—R^4—O—R^5 wherein R^3, R^4 and R^5 independently are C_{1-15}-alkyl, C_{2-15}-alkenyl or C_{2-15}-alkynyl; or a pharmaceutically acceptable salt thereof.

5,284,860

TRIAZOLE DERIVATIVES AND INSECTICIDES

Masami Ozaki; Reijiro Honami; Takashi Yumita; Atsuhiko Ikeda, all of Iwata; Naokazu Mitooguchi; Norihiko Izawa, both of Ogasa, and Tadayoshi Hirano, Kakegawa, all of Japan, assignors to Kumiai Chemical Industry Co. Ltd. and Ihara Chemical Industry Co., Ltd., Tokyo, Japan

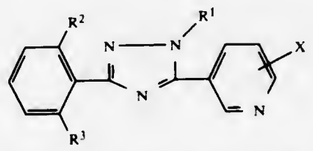
Filed Oct. 6, 1992, Ser. No. 956,980

Claims priority, application Japan, Mar. 4, 1992, 4-081412

Int. Cl.[5] **C07D** *401/04*; **A61K** *31/44*

U.S. Cl. 514—340 **4 Claims**

1. A triazole derivative having the following formula [I]:



[I]

wherein R^1 is a lower alkyl group, R^2 and R^3 are same or different halogen atoms and X is a chlorine atom located at 2- or 6-position).

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5,284,861

PHARMACEUTICAL COMPOSITION COMPRISING FLUPIRTINE AND ITS USE TO COMBAT PARKINSON DISORDERS

Michael Lobisch, Ober-Ramstadt; Ralph Venhaus, Heppenheim; Bernd Nickel, Mühltal; Istvan Szelenyi, Schwalg; Jürgen Engel, Alzenau, and Peter Emig, Niederdorfelden, all of Fed. Rep. of Germany, assignors to Asta Medica AG, Fed. Rep. of Germany

Division of Ser. No. 726,408, Jul. 10, 1991, Pat. No. 5,162,346. This application Jun. 1, 1992, Ser. No. 890,730

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1990, 4022442

Int. Cl.[5] **A61K** *31/44*

U.S. Cl. 514—356 **2 Claims**

1. A pharmaceutical composition comprising an effective amount of flupirtine and a compound effective for the treatment of parkinson disorders as indicated hy the reserpine-induced rigidity test, the ratio of flupirtine to said compound effective for the treatment of parkinson disorders being in the range 1:0.01 to 1:1.

5,284,862

DERIVATIVES OF 2-CARBOXYINDOLES HAVING PHARMACEUTICAL ACTIVITY

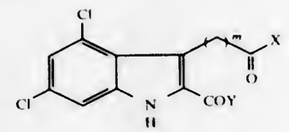
Christopher F. Bigge; Graham Johnson, and Po-Wai Yuen, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 670,860, Mar. 18, 1991, abandoned. This application Feb. 27, 1992, Ser. No. 839,109

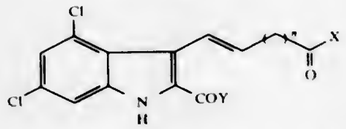
Int. Cl.[5] **C07D** *209/18, 405/12, 409/12;* **A61K** *31/405, 31/38*

U.S. Cl. 514—419 **14 Claims**

1. A compound of the formula



or



or a pharmaceutically acceptable base or acid addition salt thereof;

wherein m is an integer of one to three and n is an integer of zero or one;

(1) Y is OH; OR_{30} wherein R_{30} is lower alkyl, optionally substituted phenyl, or phenylalkyl wherein the alkyl is an alkylenyl of from one to four carbons and the phenyl is optionally substituted as defined below; $NR_{40}R_{50}$ wherein R_{40} and R_{50} are independently hydrogen or lower alkyl; or OCH_2OR_{30} wherein R_{30} is as defined above;

(2) X' is OH or X wherein

(3) X is $NHSO_2R^3$ or NHR^3 wherein

R^3 is

(i) hydrogen; (ii) alkyl of from one to twelve carbons; (iii) cycloalkyl or cycloalkyloweralkyl; (iv) alkenyl of from two to twelve carbons; (v) alkynyl of from two to twelve carbons; (vi) aryl which is phenyl unsubstituted or substituted by one to three of lower alkyl, halogen, trifluoromethyl, nitro, amino, mono- or di-lower alkylamino, azido, hydroxy, lower alkoxy, C(O)OH, or $NHCOR^5$ wherein R^5 is lower alkyl, lower alkenyl, aryl, arylloweralkyl, arylloweralkenyl, heteroaryl or heteroloweralkyl, in which heteroaryl is as defined below, $NHSO_2R^5$ wherein R^5 is as defined above, CN, $CONHR^8$ wherein R^8 is hydrogen or lower alkyl, $S(O)_{0-2}R$ wherein R is hydrogen or lower alkyl; (vii) aryl-loweralkyl; (viii) arylloweralkenyl; (ix) a heterocycle group selected from the group consisting of tetrahydropyranyl, tetrahydrofuranyl, and tetrahydrothienyl; (x) a heteroaryl selected from the group consisting of thienyl, benzothienyl, furanyl, and benzofuranyl, or (xi) $(CH_2)_qR^7$ wherein q is an integer of one to four and R^7 is (A) heterocycle as defined above, (B) heteroaryl as defined above, (C) SO_3R^8 wherein R^8 is as defined above, (D) PO_3R^8 wherein R^8 is as defined above, (E) CO_2R^8 wherein R^8 is as defined above, or (F) NR^9R^{10} wherein R^9 and R^{10} are independently hydrogen or alkyl; with the proviso that in a compound of the formula I, X cannot be amino, monoalkylamino, or dialkylamino.

5,284,863

HALOALKYLTHIO, -SULFINYL AND -SULFONYL ARYLPYRROLE FUNGICIDAL AGENTS

Keith D. Barnes, Newtown, Pa.; Victor M. Kamhi, Hamilton, N.J., and Robert E. Diehl, Yardley, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 4, 1991, Ser. No. 803,294

Int. Cl.[5] **A01N** *55/00, 57/60, 43/36*

U.S. Cl. 514—427 **9 Claims**

1. A method for protecting plants from the effects of plant pathogenic fungi which comprises applying to the foliage of the plant, the seed of the plant or the soil in which the plant grows or is to be grown a fungicidally effective amount of a compound having the structural formula



II

wherein

W is $S(O)_nCF_2R_1$;

R_1 is H, F, Cl, Br, CF_2H, CCl_2H, CClFH, CF_3 or CCl_3;

n is an integer of 0, 1 or 2;

X is phenyl optionally substituted with one to three halogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 alkylthio, C_1-C_3 alkylsulfinyl, C_1-C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3CO or NR_4R_5 groups;

B is $S(O)_n$ or O;

R_2 is H, F, CF_2H, CClFH or CF_3;

R_3 is C_1-C_3 alkyl, C_1-C_3 alkoxy or NR_4R_5;

R_4 is H or C_1-C_3 alkyl;

R_5 is H or C_1-C_3 alkyl or R_6CO;

R_6 is H or C_1-C_3 alkyl;

Y is H, halogen, CF_3, CN, NO_2, $S(O)_nCF_2R_1$ or phenyl optionally substituted with one to three halogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 alkylthio, C_1-C_3 alkylsulfinyl, C_1-C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3Co or NR_4R_5 groups;

Z is H, halogen or CF_3;

R is H,



C_1-C_6 alkyl optionally substituted with one to three halogen atoms,

one tri(C_1-C_4 alkyl)silyl,

one hydroxy,

one cyano,

one or two C_1-C_4 alkoxy groups optionally substituted with one to three halogen atoms,

one C_1-C_4 alkylthio,

one phenyl optionally substituted with one to three halogen atoms, one to three C_1-C_4 alkyl groups or one to three C_1-C_4 alkoxy groups,

one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1-C_4 alkyl groups or one to three C_1-C_4 alkoxy groups,

one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1-C_4 alkyl groups or one to three C_1-C_4 alkoxy groups,

one C_1-C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,

one C_2-C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,

one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1-C_4 alkyl groups or one to three C_1-C_4 alkoxy groups,

one C_1-C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1-C_4 alkoxy groups, or

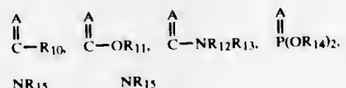
one benzylcarbonyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1-C_4 alkyl groups or one to three C_1-C_4 alkoxy groups,

C_3-C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group, or

C_3-C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group;

R_8 is hydrogen or C_1-C_4 alkyl;

R_9 is C_1-C_6 alkyl optionally substituted with one to three halogen atoms, or phenyl optionally substituted with one or two halogen, CN, NO_2, C_1-C_4 alkyl, C_1-C_4 alkoxy or CF_3 groups; Q is



CN, C_1-C_6 alkyl optionally substituted with one or more phenyl, CN or halogen groups or phenyl optionally substituted with one to three C_1-C_3 alkyl, C_1-C_3 alkoxy, halogen, CN, NO_2, CF_3 or $NR_{21}R_{22}$ groups;

A is O or S;

R_{10} is C_1-C_6 alkyl or phenyl;

R_{11} is C_1-C_6 alkyl;

R_{12} and R_{13} are each independently hydrogen or C_1-C_6 alkyl;

R_{14} is C_1-C_4 alkyl;

R_{15} is hydrogen or C_1-C_4 alkyl;

R_{16} and R_{17} are each independently hydrogen or C_1-C_4 alkyl;

R_{18} is C_1-C_4 alkyl; and

R_{21} and R_{22} are each independently hydrogen or C_1-C_3 alkyl.

5,284,864

BUTENYL SUBSTITUTED TAXANES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

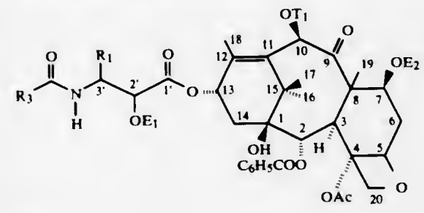
Robert A. Holton, and Hossain Nadizadeh, both of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Continuation-in-part of Ser. No. 949,107, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 863,849, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,955, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,705

Int. Cl.[5] **A61K** *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **6 Claims**

1. A taxane derivative of the formula



wherein

R_1 is butenyl,

R_3 is phenyl,

T_1 is hydrogen, hydroxyl protecting group, or —COT_2,

T_2 is H, C_1-C_6 aklyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl or monocylic aryl,

Ac is acetyl, and

E_1 and E_2 are independently selected from hydrogen and hydroxyl protecting groups.

5,284,865

CYCLOHEXYL SUBSTITUTED TAXANES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

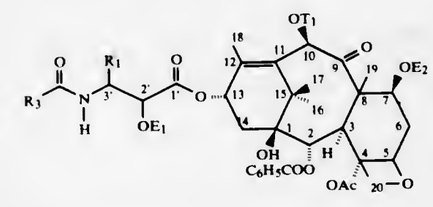
Robert A. Holton, and Hossain Nadizadeh, both of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Continuation-in-part of Ser. No. 949,107, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 863,849, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,955, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,331

Int. Cl.[5] **A61K** *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **6 Claims**

1. A taxane derivative of the formula



wherein

R_1 is cyclohexyl,

R_3 is phenyl,

T_1 is hydrogen, hydroxyl protecting group, or —COT_2,

T_2 is H, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl or monocylic aryl,

VOL 1159 ISS 2 FE 8 1994 UMI

Ac is acetyl, and
E_1 and E_2 are independently selected from hydrogen and hydroxyl protecting groups.

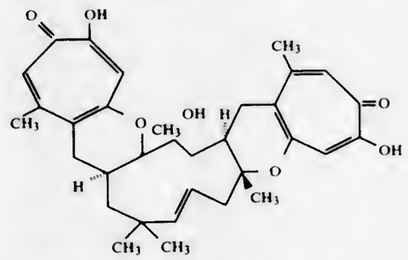
5,284,866

1H-CYCLOUNDECA[1,2-B:5,6-B']BISCYCLOHEPTA(B)-PYRANS USEFUL AS ANTITUMOR AGENTS

Friedrich Mayerl, Norwalk; Xiaohua Huang, Wallingford, and Qi Gao, Meriden, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Oct. 5, 1992, Ser. No. 956,710
Int. Cl.[5] A61K *31/35*; C07D *311/78*
U.S. Cl. 514—453 **3 Claims**

1. A compound isolated from *Eupenicillium brefeldianum* strain having the structure II:



(II)

or a pharmaceutically acceptable salt thereof.

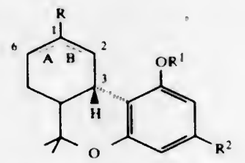
5,284,867

NMDA-BLOCKING PHARMACEUTICAL COMPOSITIONS

Yoel Kloog, Hertzlyia, Israel; Jeffrey J. Felgenbaum, Chicago, Ill.; Raphael Mechoulam, Jerusalem, Israel; Mordechai Sokolovsky, Tel Aviv, Israel, and Simon Benita, Mevasseret Zion, Israel, assignors to Yissum Research Development Company of the Hebrew University in Jerusalem, Jerusalem and Ramot University, Authority for Applied Research and Industrial Development Ltd., Tel Aviv, both of Israel

Continuation of Ser. No. 609,588, Nov. 6, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 865,088
Claims priority, application Israel, Nov. 7, 1989, 92238
Int. Cl.[5] A61K *31/35*
U.S. Cl. 514—454 **18 Claims**

1. A method for treating injuries to the central nervous system due to cerebral ischemia or head trauma by administering to a patient a therapeutically effective amount of a compound of the formula I:



(I)

wherein A—B designates a 1(2) or 6(1) double bond, R is [lower alkyl of 1–3 carbon atoms] CH_3 or CH_2OH, R^1 is hydrogen or a lower acyl group and R^2 is (a) a straight or branched C_6–C_{12} alkyl radical; (b) a group OR^3 in which R^3 is a straight or branched C_5–C_9 alkyl radical optionally substituted at the terminal carbon atom by a phenyl group, said formula having the (3S, 4S) configuration and being essentially free of the (3R, 4R) enantiomer.

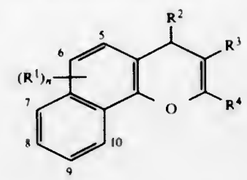
5,284,868

PHARMACEUTICAL COMPOUNDS

Colin P. Dell, Dorking, England; Jai P. Singh, Carmel, Ind., and Colin W. Smith, Bracknell, England, assignors to Eli Lilly and Company, Indianapolis, Ind. and Lilly Industries Limited, Basingstoke, England

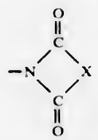
Filed Sep. 25, 1992, Ser. No. 951,629
Claims priority, application United Kingdom, Oct. 9, 1991, 9121358.7; Jun. 19, 1992, 9213058.2
Int. Cl.[5] C07D *311/92*; A61K *31/35*
U.S. Cl. 514—454 **15 Claims**

1. A compound of the formula



(I)

in which
n is 0, 1 or 2 and R^1 is attached at any of the positions 5, 6, 7, 8, 9 or 10, and each R^1 is halo, trifluoromethyl, C_{1-4} alkoxy, hydroxy, nitro, C_{1-4} alkyl, C_{1-4} alkylthio, hydroxy-C_{1-4} alkyl, hydroxy-C_{1-4} alkoxy, trifluoromethoxy, carboxy, —$COOR^5$ where R^5 is an ester group, —$CONR^6R^7$ or —NR^6R^7 where R^6 and R^7 are each hydrogen or C_{1-4} alkyl;
R^2 is phenyl, naphthyl or heteroaryl selected from thienyl, pyridyl, benzothienyl, quinolinyl, benzofuranyl or benzimidazolyl, said phenyl, naphthyl and heteroaryl groups being optionally substituted, or R^2 is furanyl optionally substituted with C_{1-4} alkyl;
R^3 is nitrile, carboxy, —$COOR^8$ where R^8 is an ester group, —$CONR^9R^{10}$ where R^9 and R^{10} are each hydrogen or C_{1-4} alkyl, or $R^{11}SO_2$— where R^{11} is C_{1-4} alkyl or optionally substituted phenyl; and
R^4 is —$NR^{12}R^{13}$, —$NHCOR^{12}$, —$N(COR^{12})_2$ or —N=$CHOR^{12}$ where R^{12} and R^{13} are each hydrogen or C_{1-4} alkyl optionally substituted with carboxy.



where X is C_{2-4} alkylene, or —$NHSO_2R^{14}$ where R^{14} is C_{1-4} alkyl or optionally substituted phenyl;
provided that when n is 0, R^3 is nitrile and R^4 is —NH_2, R^2 is not phenyl or phenyl substituted in the para-position with a single chloro, hydroxy or methoxy substituent;
or a salt thereof.

5,284,869

PHOTOPHORESIS METHODS FOR TREATING ATHEROSCLEROSIS AND FOR PREVENTING RESTENOSIS FOLLOWING ANGIOPLASTY

Emil Bisaccia, 4 Sunnybrook Rd., Basking Ridge, N.J. 07920, and Albert S. Klainer, 315 W. 70th St., New York, N.Y. 10023

Filed Dec. 17, 1991, Ser. No. 809,590
Int. Cl.[5] A01N *43/16*; A61K *31/35*
U.S. Cl. 514—455 **5 Claims**

1. A method for inhibiting the occurrence of restenosis following percutaneous transluminal angioplasty in a human patient, said method comprising:

a. administering to at least a portion of the patient's blood a psoralen compound which becomes activated when exposed to electromagnetic radiation of a prescribed activating spectrum, said psoralen compound being administered in an amount which is sufficient to obtain serum levels which are effective for inhibiting restenosis following percutaneous transluminal angioplasty;
b. activating the psoralen compound in vitro; and
c. presenting the resulting treated portion of the patient's blood to the patient's immune system to beneficially alter the patient's response to percutaneous transluminal angioplasty.

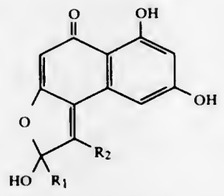
5,284,870

ALDOSE REDUCTASE INHIBITOR

Tadashi Yoshida, Osaka; Toshiyuki Kato, Kawanishi; Yoshimi Kawamura, Minoo; Koichi Matsumoto, Toyonaka, and Hiroshi Itazaki, Takarazuka, all of Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

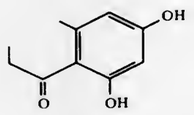
Filed Feb. 9, 1993, Ser. No. 15,356
Claims priority, application Japan, Feb. 26, 1992, 4-76140
Int. Cl.[5] A61 *31/34*; C07D *307/92, 307/77*; C12P *17/04*
U.S. Cl. 514—468 **3 Claims**

1. A compound of the formula (I):



(I)

wherein R_1 is $(CH_2)_2COOH$ and R_2 is phenyl or p-hydroxyphenyl, or R_1 and R_2 are combined together to form a group of the formula:



or the salt thereof.

5,284,871

OXYGEN REMOVAL

Ernst Graf, Coon Rapids, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 279,604, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 100,971, Sep. 25, 1987, abandoned. This application Nov. 8, 1990, Ser. No. 628,962
Int. Cl.[5] A23L *3/00*; A61K *31/30, 31/34*
U.S. Cl. 514—499 **18 Claims**

1. In the method of protecting an ingestible product from oxygen degradation comprising introducing the ingestible product into a substantially non oxygen-permeable package in conjunction with an oxygen scavenging composition which is also disposed within the package, the improvement wherein said oxygen scavenging composition comprises a solution of a reducing agent and a dissolved species of copper, wherein said oxygen scavenging composition is present in an amount so as to provide, with respect to the total product within the package, from about 1 to 7 parts per millions of copper.

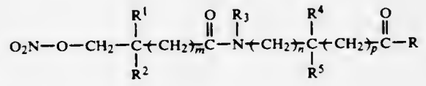
5,284,872

NITRATO ALKANOIC ACID DERIVATIVES, METHODS FOR THEIR PRODUCTION, PHARMACEUTICAL COMPOSITIONS CONTAINING THE DERIVATIVES AND MEDICINAL USES THEREOF

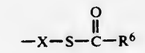
Klaus Sandrock, Langenfeld; Eike Noack, Neuss; Edgar Fritschi, Schwalmtal-Luttelforst; Ralf Kanzler, Leverkusen, and Martin Feelisch, Dusseldorf, all of Fed. Rep. of Germany, assignors to Schwarz Pharma AG, Monheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 406,165, Sep. 12, 1989, abandoned. This application Apr. 5, 1991, Ser. No. 681,876
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1990, 4011505
Int. Cl.[5] A61K *31/21, 31/16*
U.S. Cl. 514—509 **19 Claims**

1. A compound of the formula



wherein:
R is hydroxy or lower alkoxy,
R^1 is hydrogen or lower alkyl,
R^2 is hydrogen or lower alkyl,
R^3 is hydrogen or lower alkyl,
R^4 is hydrogen or lower alkyl
R^5 represents



wherein X represents a lower alkylene group and particularly —CH_2—, —CH_2CH_2— or



R^6 represents a residue or radical of an amino acid selected from the group consisting of glycine, N-acetylglycine, alanine, N-acetylalanine, arginine, N-acetylarginine, N-α-benzoylarginine, cysteine, N-acetylcysteine, N,S-dipivaloylcysteine, cystine, N,N-diacetylcystine, leucine, N-acetylleucine, lysine, N-α-acetyllysine, N-ε-acetyllysine, N-αε-diacetyllysine, proline, N-acetylproline, serine, N-acetylserine, O-acetylserine, N,O-diacetylserine, methionine, N-benzoylmethionine, phenylalanine, N-benzoylphenylalanine, N-acetylphenylalanine, asparagine, N-acetylasparagine, N-acetylasparagine monoethyl ester, glutamic acid and N-acetylglutamic acid monomethyl ester; and
m, n, and p represent 0 to 1.

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5,284,873

PHARMACEUTICAL COMPOSITIONS DERIVED FROM THE ACID FRACTION OF LIPID EXTRACTS OF SABAL SERRULATA, WITH ADRENERGIC ANTAGONIST ACTIVITY AND METHOD OF PREPARING SAID COMPOSITION

Miguel-Angel Salinero-Rodero, Peñaranda; Ma-Angeles Sevilla-Toral, Salamanca; José-Ma Miguel-del-Corral, Salamanca; Ma-José Montero-Gómez, Salamanca; Arturo San-Feliciano-Martin; Luis San-Román-del-Barrio, both of Santa Marta; José-Antonio Poch-Gabarró, and Antonio Mañes-Armengol, both of Barcelona, all of Spain, assignors to Laboratorios Madaus-Cerafarm, S.A., Barcelona, Spain

Filed Jul. 10, 1992, Ser. No. 911,613

Claims priority, application Spain, Jul. 11, 1991, P9101710

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—558 **9 Claims**

1. Pharmaceutical composition obtained by alkali hydrolysis of the lipid fraction of the extracts of the fruit of Sabal serrulata and separation of the total acid fraction (TAF), said composition comprising a mixture of fatty acids in the proportion, expressed as a weight percentage, in accordance with their gas chromatography analysis,

Caprylic	1.0–1.3%
Capric	1.0–2.0%
Lauric	21–25%
Myristic	11–12%
Palmitic	10–11%
Palmitoleic	0.1–0.3%
Stearic	1.5–2.5%
Oleic	38–43%
Linoleic	1.8–3%
Linolenic	0.5–1.0%
Arachic	0.05–0.20%
Eicosenoic	0.01–0.2%,

together with an amount of less than 0.5 wt % of unsaponifiables and less than 0.1 wt % of fatty acid ethers.

5,284,874

CHEMICAL PREVENTION OR REVERSAL OF CATARACT BY PHASE SEPARATION INHIBITORS

John I. Clark, Seattle, Wash., and George B. Benedek, Belmont, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 451,955, Dec. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 198,850, May 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,140, Jun. 4, 1987, abandoned. This application Sep. 9, 1992, Ser. No. 942,326

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/16*

U.S. Cl. 514—616 **1 Claim**

1. A method for inhibiting cataractogenesis in an animal in need thereof, comprising administering to the animal a therapeutically or prophylactically effective amount of pantetheine.

5,284,875

FORTIFIED QUARTERNARY AMMONIUM COMPOUND WITH DUAL SYNERGISTIC PHENOLS

Howard Martin, 1106 Spring St., Silver Spring, Md. 20910

Continuation-in-part of Ser. No. 243,088, Sep. 12, 1988, Pat. No. 4,983,635. This application Apr. 16, 1993, Ser. No. 47,947

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.[5] A61K *31/14, 31/045*

U.S. Cl. 514—643 **2 Claims**

1. A new formulation for disinfection and sanitization, comprising,

Dual chain quaternary ammonium chloride (N-alkyl dimethylethylbenzyl ammonium chloride) (N-alkyl dimethylbenzyl ammonium chloride)	50.00 to 0.50 grams
Para tertiary amyl phenol	1.00 to 0.08 grams
Ortho phenyl phenol	1.00 to 0.08 grams
Citric or acetic acid	0.50 to 0.05 grams
Sodium citrate	0.25 to 0.025 grams
Isopropyl or ethyl alcohol	14.00 to 1.40 grams
Triethanol amine-HCl	5.00 to 1.00 grams
Water	28.25 to 96.865 grams

5,284,876

METHOD OF TREATING TARDIVE DYSKINESIA USING DOPAMINERGIC AGENTS OF PRODRUGS OF THERAPEUTIC AGENTS

Victor E. Shashoua, Brookline, and Gary W. Hesse, Winchester, both of Mass., assignors to Neuromedica, Inc., Cambridge, Mass.

Continuation of Ser. No. 564,046, Aug. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 535,812, Jun. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 160,667, Feb. 26, 1988, Pat. No. 4,939,174, which is a continuation-in-part of Ser. No. 315,134, Feb. 24, 1989, Pat. No. 4,933,324. This application Jun. 11, 1992, Ser. No. 897,563

Int. Cl.[5] A61K *31/165, 37/02*

U.S. Cl. 514—549 **23 Claims**

1. A method for treating a subject for Tardive dyskinesia comprising,

administering to the subject a pharmaceutically effective amount of a prodrug comprising a dopaminergic agent coupled to a fatty acid for facilitating the delivery of the dopaminergic agent across the blood brain barrier.

5,284,877

ALKYL AND ALKENYL MACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

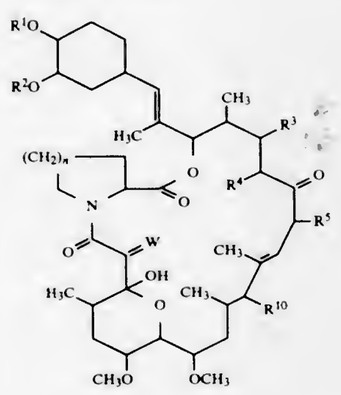
Helen M. Organ, Roselle Park; Mark A. Holmes, Edison; Judith M. Pisano, Cliffside Park, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 12, 1992, Ser. No. 897,711

Int. Cl.[5] A61K *31/395;* **C07D** *267/00*

U.S. Cl. 518—183 **8 Claims**

1. A compound of Formula I:



I

or a pharmaceutically acceptable salt thereof, wherein:

R^1 is selected from:

(1) hydrogen; and

(2) C_{1-4} alkanoyl;

R^2 is selected from:

(1) methyl; and

(2) hydrogen;

R^3 is hydrogen, hydroxy, or C_{1-6}alkoxy;

R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;

R^5 is selected from:

(1) C_{4-8} alkyl substituted with one or more substituents selected from:

(a) phenyl,

(b) hydroxy,

(c) halo,

(d) —CHO,

(e) $—CO_2H$,

(f) $—CO_2—C_{1-6}$alkyl;

(2) C_{3-8} alkenyl substituted with one or more substituents selected from:

(a) phenyl,

(b) hydroxy,

(c) halo,

(d) —CHO,

(e) $—CO_2H$,

(f) $—CO_2—C_{1-6}$alkyl;

R^{10} is hydrogen, hydroxy, or fluoro;

W is O or (H, OH);

n is 1 or 2.

5,284,878

LIQUID PHASE METHANOL PROCESS WITH CO-RICH RECYCLE

David W. Studer, Wescosville, and Elizabeth S. Schaub, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 831,150, Feb. 4, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 49,238

Int. Cl.[5] C07L *27/06*

U.S. Cl. 518—700 **9 Claims**

1. A method for the production of methanol and fuel gas comprising:

(a) reacting hydrogen and carbon oxides at an elevated pressure in a liquid phase reactor system in the presence of a methanol synthesis catalyst suspended in an inert liquid to yield methanol and unreacted synthesis gas, wherein said hydrogen and carbon oxides are supplied in a reactor feed synthesis gas comprising fresh feed synthesis gas and recycled synthesis gas; and

(b) separating said methanol from said unreacted synthesis gas, and dividing said unreacted synthesis gas into a fuel gas product and said recycled synthesis gas;

wherein each of said reactor feed synthesis gas, fresh feed synthesis gas, and recycled synthesis gas has a molar ratio R which is greater than 0.1 and less than 2.0, where R is defined as $(H_2-CO_2)/(CO+CO_2)$ based on molar concentrations of hydrogen and carbon oxides.

5,284,879

HIGH ION EXCHANGE CAPACITY POLYELECTROLYTES HAVING HIGH CROSSLINK DENSITIES AND CAUSTIC STABILITY

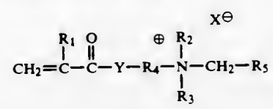
Russell B. Hodgdon, Concord; Russell J. MacDonald, Watertown, and Samuel S. Alexander, Concord, all of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 479,491, Feb. 13, 1990, Pat. No. 5,118,717. This application Mar. 26, 1992, Ser. No. 857,910

Int. Cl.[5] C08F *12/34*

U.S. Cl. 521—27 **3 Claims**

1. An ion exchange membrane having at least one dimension in excess of ¼ inch comprising a polymerizate of at least a quaternary ammonium salt having the formula:



where

R_1 is hydrogen or an alkyl moiety,

R_2 is an alkyl moiety,

R_3 is an alkyl moiety,

R_4 is an alkyl moiety,

R_5 is a moiety containing at least one polymerizable ethylenic group,

$X^\ominus$ is an anion,

Y is —O— or



and where R_6 is hydrogen or an alkyl group, the sum of the formula weights of R_2 and R_3 being less than 500 and the molecular weight of said quaternary ammonium salt being less than 800.

5,284,880

WATER-BLOWN POLYURETHANE INTEGRAL SKIN FOAM

Richard P. Harrison, Lincoln Park; Michael Scarpati, Trenton; Thirumurti Narayan, Grosse Ile, and Blair J. Zagata, Troy, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 48,444, Apr. 15, 1993. This application Sep. 20, 1993, Ser. No. 123,183

Int. Cl.[5] C08J *9/34*

U.S. Cl. 521—51 **6 Claims**

1. A water-blown polyurethane integral skin foam having an overall molded density from 25 pcf to 45 pcf and the following properties based on skin and core:

A) a tensile strength of 400 psi or more;

B) a split tear strength of 18 pi or more;

C) a Graves tear strength of 50 pi or more;

D) an elongation of 140 percent or more; and,

E) a compression set of about 30 percent or less.

5,284,881

COMPOSITE HOLLOW PARTICLES

Katsumi Mizuguchi, Ibaragi; Koichi Saito, and Shinichi Ishikura, both of Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 578,304, Sep. 5, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,017

Claims priority, application Japan, Sep. 6, 1989, 1-232375

Int. Cl.[5] C08J *9/224*

U.S. Cl. 521—57 **10 Claims**

1. A process for preparing composite hollow particles, comprising uniformly dispersing the following ingredients in an aqueous medium:

(a) an ethylenically unsaturated monomer having at least two radical polymerizable non-conjugated double bonds in one molecule,

(b) another polymerizable monomer which is different from the monomer (a),

(c) organic crosslinked particles having an average particle size of 0.01 to 5 micrometer,

(d) an initiator, and

(e) a dispersant, and then dispersion-polymerizing the monomers, wherein the weight ratio of components (a) / (b) is within the range of 0.5/99.5 to 60/40, the organic particles

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(c) are present in an amount of 1 to 50% by weight based on the total weight of components (a) and (b), and dispersant (e) is present in an amount of 1 to 20% by weight, based on the total weight of the components (a) and (b).

5,284,882

ENERGY ABSORBING, WATER BLOWN, RIGID POLYURETHANE FOAM

Richard C. Roasio, Troy; Mark A. Easterle, Rochester, and Michael L. Jackson, Allen Park, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 996,435, Dec. 24, 1992, Pat. No. 5,248,704. This application Sep. 24, 1993, Ser. No. 125,896

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] C08L *75/04*

U.S. Cl. 521—137 **9 Claims**

1. An energy absorbing polyurethane foam comprising the reaction product of:

A. compounds containing isocyanate reactive hydroxyl groups selected from the group consisting of aliphatic glycols, dihydroxyl aromatics, hydroxyl terminated polyether, polyesters, polyacetals, graft polymer dispersions and mixtures thereof, wherein said graft polymer dispersion is prepared by polymerizing in-situ ethylenically unsaturated monomers in an amount of from 25 weight percent to 60 weight percent based on the total weight of the graft polymer dispersion;

B. a polyisocyanate comprising 4,4'-diphenylmethane diisocyanate, polymethylene polyphenylene polyisocyanate, modified diphenylmethane diisocyanates, and mixtures thereof, wherein other organic isocyanates may be present in minor amounts;

C. a catalyst;

D. a blowing agent consisting essentially of water present in an amount sufficient to cause formation of a predominately open-celled foam without causing collapse;

E. a crosslinker;

F. optionally a surfactant;

wherein said energy absorbing foam has a molded density of from 2.0 pcf to about 4.5 pcf and a crush strength which remains relatively constant from about 10 percent to about 70 percent deflection at loads of less than 70 psi.

5,284,883

MOLDING OF URETHANE RESIN COMPOSITION

Keiji Ueno, Osaka, and Ikujiro Uda, Kanuma, both of Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Continuation of Ser. No. 700,324, May 9, 1991, abandoned, which is a continuation of Ser. No. 262,041, Oct. 24, 1988, abandoned, which is a continuation of Ser. No. 903,525, Sep. 4, 1986, abandoned. This application Dec. 8, 1992, Ser. No. 987,561

Claims priority, application Japan, Sep. 4, 1985, 60-196318; Oct. 17, 1985, 60-232461; Oct. 17, 1985, 60-232462

The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.

Int. Cl.[5] C08F *283/00*

U.S. Cl. 522—79 **7 Claims**

1. A water resistant radiation crosslinked molding of a urethane resin composition comprising a thermoplastic urethane resin having incorporated therein a polyfunctional monomer selected from the group consisting of trimethylolpropane triacrylate, trimethylolpropane trimethacrylate and triacrylformal.

5,284,884

ANTISTATIC RESIN-FORMING COMPOSITION AND PROTECTIVE LAYER OF OPTICAL RECORDING MEDIUM

Kenichi Ueyama, Ichikaimachi, Japan, assignor to Kao Corporation, Tokyo, Japan

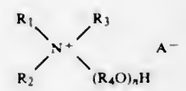
Filed Jun. 11, 1992, Ser. No. 897,116

Claims priority, application Japan, Jun. 14, 1991, 3-143132; Jun. 14, 1991, 3-143133

Int. Cl.[5] C08F *2/46*

U.S. Cl. 522—100 **26 Claims**

1. An antistatic resin-forming composition comprising (A) a radiation-curable compound which has at least one group selected from the group consisting of an acryloyl group, a methacryloyl group and an epoxy group and which further has an $-(OR)_m-$ chain in the molecule, wherein R represents an alkylene group having 1 to 3 carbon atoms and m is an integer of at least 4, and (B) not larger than 10 parts by weight, per 100 parts by weight of the radiation-curable compound, of a quaternary ammonium salt represented by the following formula (1):



(1)

wherein R_1, R_2 and R_3 independently represent an alkyl group having 1 to 20 carbon atoms, an alkenyl group having 2 to 20 carbon atoms, an acryloyl group or a methacryloyl group, R_4 represents an alkylene group having 1 to 3 carbon atoms, n is an integer of at least 4, and A^- is a counter ion.

5,284,885

AQUEOUS NITROCELLULOSE COMPOSITIONS

Samuel A. Nehra, Grosse Pointe Shores, Mich., assignor to Agri-Film, Inc., Grosse Pointe Shores, Mich.

Filed Sep. 29, 1992, Ser. No. 954,723

Int. Cl.[5] C08L *1/00;* **A61K** *7/04*

U.S. Cl. 524—31 **8 Claims**

1. A method for preparing an aqueous nitrocellulose composition comprising the following steps:

a) mixing water and nitrocellulose in a ratio of from about 2 parts by weight water per part by weight nitrocellulose to about 10 parts by weight water per part by weight nitrocellulose, thereby forming a water-nitrocellulose mixture;

b) heating the water-nitrocellulose mixture to from about 70° C. to about boiling;

c) adding a solvent to the water-nitrocellulose mixture in a ratio of from about 2 parts by weight solvent to about 10 parts by weight solvent per part by weight nitrocellulose present in the water-nitrocellulose mixture thereby forming a water-nitrocellulose solvent mixture;

d) heating the water-nitrocellulose solvent mixture to from about 70° C. to about boiling; and

e) mixing the water-nitrocellulose solvent mixture thereby forming an aqueous nitrocellulose composition.

5,284,886

NON-TOXIC POLYMERIC COMPOSITIONS STABILIZED WITH ORGANOSULFIDE ANTIOXIDANTS

James L. Reilly, Towamencin, and Joseph M. Bohen, Upper Merion, both of Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 429,899, Oct. 31, 1989, Pat. No. 5,070,124, Ser. No. 429,883, Oct. 31, 1989, Pat. No. 5,081,169, and Ser. No. 698,235, May 6, 1991, Pat. No. 5,096,947, which is a continuation of Ser. No. 429,682, Oct. 31, 1989, abandoned.

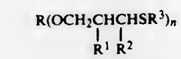
This application Jul. 24, 1991, Ser. No. 735,140

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

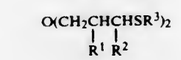
Int. Cl.[5] C08K *5/37*

U.S. Cl. 524—58 **34 Claims**

1. A non-toxic polymeric composition adapted for the handling and packaging of foods, beverages or pharmaceuticals, or for use in medical devices comprising a polyolefin resin and a food grade organosulfide antioxidant having no more than about 5 parts per million of free mercaptan groups, a LD_{50} of at least 1.0 g/kg when fed to rats, an extractability from the polyolefin resin with food simulating solvents whereby the concentration in the human diet is less than about 1 part per million and having the Formula I, II or III:



(I)



(II)



(III)

wherein:

m is 0 or 1;

n is an integer of 2 to 15;

R is a substituted or unsubstituted aliphatic group of 2 to 30 carbons, a substituted or unsubstituted alicyclic group of 5 to 20 carbons, a substituted or unsubstituted aliphatic group of 2 to 30 carbons where any of up to 6 carbon atoms are replaced with an O or S heteratom, a substituted or unsubstituted alicyclic group of 5 to 20 carbons where any of up to 6 carbon atoms are replaced with an O or S heteroatom, with the proviso that the heteroatom must be separated from each other and from the portion of the compound to which the R group is bonded by at least one carbon atom, the substituents for R being —OH, $-SR^4$ or $-OR^4$, wherein R^4 is an alkyl group of 1 to 30 carbons or a cycloalkyl group of 5 to 20 carbons;

R^1 and R^2 are independently H or an alkyl group of 1 to 4 carbons;

R^3 is an alkyl group of 1 to 24 carbons or a cycloalkyl group of 5 to 20 carbons;

R^5 is an alkyl group of 1 to 24 carbons;

R^6 is H or an alkyl group of 1 to 24 carbons, with the provisos that when m=0, R^6 is H or an alkyl group of 1 to 7 carbons and when m=1, R^6 is alkyl group of 1 to 24 carbons;

R^7 is a direct bond or an alkylene group of 1 to 4 carbons; and

R^8 is a monocyclic, bicyclic or tricyclic cycloalkyl group of 5 to 16 carbons.

5,284,887

COMPOSITION FOR COATING CONCRETE

Avraham Lavy, Ramat Gan, and Yuri Margulis, Ashdod, both of Israel, assignors to Aldema Ltd., Ashdod, Israel

Continuation-in-part of Ser. No. 631,326, Dec. 20, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 854,325

Claims priority, application Israel, Dec. 20, 1990, 92917

Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—62 **11 Claims**

1. A composition for application to a concrete asphalt substrate, so as to form an integral protective uppermost layer, consisting of:

A monomer or a monomer mixture selected from the group consisting of from about 10–20 weight-percent of methyl methacrylate, styrene and acrylate, and a combination thereof:

15–25 weight-percent of bitumen;

50–80 weight-percent of a mineral particulate filler;

0.1–1 weight-percent of a UV protective and formulation stabilizing agent.

1 to 3 weight-percent of a carboxylic acid or dibutyl phthalate as plasticizer.

5,284,888

CORROSION INHIBITING EMI/RFI SHIELDING COMPOSITION AND METHOD OF ITS USE

Noredin H. Morgan, Billerica, Mass., assignor to Chomerics, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 475,983, Dec. 28, 1989, Pat. No. 5,061,566. This application Oct. 28, 1991, Ser. No. 783,281

Int. Cl.[5] C08K *3/08, 3/10, 5/34*

U.S. Cl. 524—93 **25 Claims**

1. A corrosion inhibiting conductive composition comprising

(a) a polyurethane resin comprising

(i) a first polymer selected from the group consisting of polyisocyanurates; and

(ii) a second polymer selrcted from the group consisting of polymers having an amine functionality, polymers having a hydroxyl functionality, polymers having both amine and hydroxyl functionalities, and mixtures thereof;

(b) a stabilized conductive filler; and

(c) an azole.

5,284,889

ELECTRICALLY INSULATING FILM BACKING

Eumi Pyun, and Pamela S. Tucker, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 20, 1992, Ser. No. 979,620

Int. Cl.[5] C08K *5/3417, 5/06, 3/22*

U.S. Cl. 524—94 **15 Claims**

1. A low-halogen, electrically insulating film having a total halogen content of about 1% to about 8%, comprising a resin component containing:

a) from 0 to about 40 parts of a rubber selected from EP or EPDM rubber,

b) correspondingly, from about 60 to about 100 parts of an ethylene vinyl acetate polymer,

c) from about 20% to about 40% based on said resin component of a flame retardant system comprising

i) from about 5 to about 25% of a bromine containing flame retardant, and

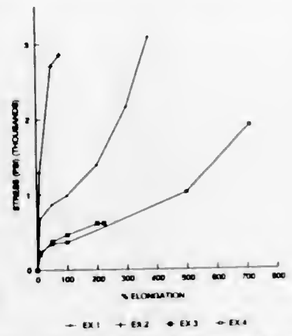
ii) from about 1.5% to about 10% of an antimony containing flame retardant, and

iii) from 1% to 20% of a flame retardant selected from granular metal oxide hydrates, wherein said flame retardant system has a ratio of metal oxide hydrate to bromine-containing flame retardant of no more than about 3;

said film being free of vinyl chloride, wherein a nonoriented

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film self-extinguishes in less than about 5 seconds, has an elongation at break of at least about 500%, a dielectric strength of



at least about 1200 V/Mil, and a stress-strain curve with a wholly positive slope.

5,284,890

SYNTHETIC RUBBER COMPOSITION

John C. Collyer, Nepean, and John R. Clark, Kanata, both of Canada, assignors to Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ontario, Canada

Filed Jan. 31, 1985, Ser. No. 716,543

Int. Cl.[5] C08L *15/02*

U.S. Cl. 524—203 **4 Claims**

1. A non-dermatitic, injection mouldable, low-temperature flexible synthetic rubber composition which provides twenty-four hour protection from penetration by H-agent, consisting of:

100: bromobutyl rubber

50: carbon black

1: a fatty acid cure promoter

5: a paraffinic plasticizer

10: a low-temperature plasticizer selected from the group consisting of dibutylsebacate and dicapryl phthalate

0.5: nickel dibutyldithiocarbamate as an antioxidant

1: a microcrystalline wax

0.25–0.75: zinc dimethyldithiocarbamate as a rubber accelerator

3–5: a metal oxide curing agent, and

0–0.35: magnesium oxide as a cure retarder,

wherein the proportions are expressed as parts by weight per one hundred parts of bromobutyl rubber.

5,284,891

TACKIFIERS AND THEIR USE IN PRESSURE SENSITIVE ADHESIVES

Guy Wouters, Brussels, and Lutz E. Jacob, Wezembeek-Oppem, both of Belgium, assignors to Exxon Research & Engg., Linden, N.J.

Continuation of Ser. No. 407,681, Sep. 14, 1989, abandoned, which is a continuation of Ser. No. 58,652, May 21, 1987, abandoned, which is a continuation of Ser. No. 843,909, Mar. 25, 1986, abandoned. This application Aug. 14, 1991, Ser. No. 744,980

Claims priority, application United Kingdom, Mar. 25, 1985, 8507679

The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.

Int. Cl.[5] C09J *133/04, 125/08;* **C08L** *33/04, 25/08*

U.S. Cl. 524—522 **4 Claims**

1. A pressure sensitive adhesive polyacrylate latex emulsion comprising form 30% to 85% by weight on a dry basis of a polyacrylate and from 15% to 70% by weight on a dry basis of a tackifier resin having a softening point from 10° C. to 120° C. and being a copolymer of a feed which is predominantly C_5 olefins and diolefins and one or more monovinyl aromatic compounds, said resin containing from 10 to 60 wt. % of the monovinyl aromatic compound.

5,284,892

ALDEHYDE SCAVENGING COMPOSITIONS AND METHODS RELATING THERETO

Vincent Brodie, III, Wilmington, Del., and Donna L. Visioli, Lower Gwynedd, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1992, Ser. No. 974,042

Int. Cl.[5] C08K *5/17*

U.S. Cl. 524—251 **11 Claims**

1. A composition comprising:

a) an olefinic homopolymer or copolymer capable of being extruded into a film or sheet and used in a packaging application; and

b) a polyalkylene imine ("PAI") having the following structure:

$$H-(CH_2-(CH_2)_n-NH-)_m-H$$

where m is at least 1 and n is in the range from 1 to about 4, and the molecular weight of the PAI (determined by light scattering) is greater than about 800, wherein the weight ratio of the PAI to olefinic polymer is in the range of about 0.001–30:100, and wherein the olefinic polymer is derived from:

i) olefinic monomer; and

ii) optionally, vinyl ester monomer, or an acid derivative of a vinyl ester monomer.

5,284,893

COATING COMPOSITION

Motonobu Kubo, Minoo; Hiroshi Inukai, Takatsuki, and Takahiro Kitahara, Suita, all of Japan, assignors to Daikin Industries, Ltd., Japan

Filed Oct. 12, 1990, Ser. No. 596,392

Claims priority, application Japan, Oct. 13, 1989, 1-267291

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—315 **11 Claims**

1. A coating composition prepared by dissolving a fluorine-containing copolymer in at least one ester having a boiling point of about 60° to about 250° C., the copolymer comprising:

i) about 70 to about 85 mole % of a structural unit represented by the formula a)

$$-CH_2-CF_2-$$

ii) about 10 to about 20 mole % of a structural unit represented by the formula b)

$$-CF_2-CF_2-$$

and

iii) about 5 to about 15 mole % of a structural unit represented by the formula c)

$$-CF_2-CFCl-.$$

5,284,894

LOW-FOAMING LATEXES FOR USE IN PRINTING INK FORMULATIONS

Basil Wasyliw, Newark; Edward Stone, Morris Plains, both of N.J., and John G. Pucknat, New York, N.Y., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 968,241, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 765,404, Sep. 24, 1991, abandoned, which is a continuation of Ser. No. 484,030, Feb. 22, 1990, abandoned. This application Jun. 21, 1993, Ser. No. 79,491

Int. Cl.[5] C08K *5/06;* **C08L** *33/02, 33/06, 37/00*

U.S. Cl. 524—377 **4 Claims**

1. A low foaming resin-fortified latex comprising a dispersed acrylic polymer, a polyelectrolyte resin with an acid number between 50 and 500, and having a weight average molecular weight of 5000–20000; a non-ionic emulsifier with an HLB of 13 or less.

5,284,895

AEROSOL FORMULATION FOR A PNEUMATIC TIRE PUNCTURE SEALER AND INFLATOR WHICH IS NON-FLAMMABLE, NON-EXPLOSIVE, NON-TOXIC, AND WITHOUT ANY OZONE DEPLETING CHEMICALS

Pradeep Y. Gupta, c/o IQ Holdings, Inc., 1800 W. Loop South, Suite 1250, Houston, Tex. 77027

Filed Feb. 19, 1991, Ser. No. 656,432

Int. Cl.[5] C08K *5/06*

U.S. Cl. 524—378 **7 Claims**

1. A nonflammable, nonexplosive pneumatic tire sealer and inflator formulation, in a pressurized aerosol container having a valve, comprising:

(a) 5 to 25 wt. % of a latex sealant composition;

(b) some water activated resin with sealant properties in a range from but not including 0 and up to and including 25 wt. %;

(c) 25 to 70 wt. % water;

(d) 2 to 55 wt. % dimethyl oxide to achieve a single phase liquid solution of dimethyl oxide in water to act as a solvent base for the latex sealant and resins;

(e) some carbon dioxide in a range from but not including 0 and up to and including 5 wt. % to achieve a non-explosive aerosol formulation by diluting the proportion concentration of dimethyl oxide and oxygen inside the tire after application;

(f) 0 to 5 wt. % nitrogen;

(g) 0 to 1.5 wt. % of at least on pH stabilizer;

(h) 0 to 16 wt. % of at least one non-toxic emulsion stabilizer;

(i) 0 to 16 wt. % of at least one non-toxic freeze point depressor;

(j) some of at least one non-toxic anti-foam agent in a range but not including 0 and up to and including 1 wt. % to blend the components of the formulation and packaging the formulation inside the pressurized container and to increase the amount of carbon dioxide and nitrogen to be injection filled through the valve,

(k) the pH is between 7.5 and 10.0; and

(i) solids content is in the range between 30 and 65 wt. %.

5,284,896

RUBBER COMPOSITION

Jun Shimada, Hiratsuka; Shigeru Shinoda, and Kazuhiro Yamada, both of Chigasaki, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 694,332, May 1, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,046

Claims priority, application Japan, May 2, 1990, 2-115254

Int. Cl.[5] C08K *3/10*

U.S. Cl. 524—435 **7 Claims**

1. A rubber composition comprising 100 parts by weight of natural rubber and from 0.001 to 1.5 parts by weight of a paraffin wax containing 50 percent by weight or more of a normal paraffin and having a carbon area ratio of not greater than 4.0 within a carbon number range of from 23 to 42 on an analysis graph in which the content of each paraffin in the wax within said range of carbon members is plotted against its carbon number, said ratio resulting from gas chromatographically counting a first paraffin content which is defined by the paraffin of maximum content in the wax and a second paraffin content which is defined by the paraffin of minimum content in the wax and subsequently dividing said first paraffin content by said second paraffin content.

5,284,897

THIXOTROPIC ADHESIVE GEL

Peter S. Columbus, Melville, N.Y.; John Anderson, Hilliard, and Yogeshbhai B. Patel, Gahana, both of Ohio, assignors to Borden, Inc., Columbus, Ohio

Filed Nov. 16, 1992, Ser. No. 976,553

Int. Cl.[5] C08K *3/04;* **C08L** *1/26*

U.S. Cl. 524—459 **13 Claims**

1. A clear, thixotropic adhesive gel consisting essentially of:

A. about 70% to 93% of water;

B. about 5% to 25% of partially hydrolyzed polyvinyl alcohol;

C. about 0.5% to 1.5% of a thickening agent polymer compatible with the polyvinyl alcohol selected from the group consisting of sodium carboxymethylcellulose, sodium alginate, and xanthan gum;

D. about 0.5% to 3% of a water-soluble plasticizer for the polyvinyl alcohol; and

E. about 0.05% to 0.35% of a water-soluble defoamer.

5,284,898

TIRE WITH NATURAL RUBBER BASED TREAD

Ghislain A. L. Thise, Wardin, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 2, 1992, Ser. No. 955,792

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—495 **1 Claim**

1. A pneumatic rubber tire having a rubber tread where said tread rubber is comprised of, based on 100 parts by weight of the tread rubber, (1) about 20 to about 60 parts by weight S-SBR rubber having a styrene content of about 15 to about 25 percent and a vinyl content of less than 15 percent based on its butadiene component; (2) about 20 to about 60 parts by weight cis 1,4-polyisoprene natural rubber; and (3) about 10 to about 30 parts by weight cis 1,4-polybutadiene rubber; wherein the rubber blend is also required to contain about 45 to about 55 phr of a carbon black characterized by having a DBP value in a range of about 120 to about 140 (ASTM No. D2414) and an iodine adsorption number in a range of about 120 to about 160 (ADTM D1510) and an ASTM designated number in a range of N100 to N199.

5,284,899

RESIN PASTE FOR TIGHT SEALING

Sueo Morishige; Kenichi Kaneda; Katsushi Terajima, all of Tokyo; Toshiro Takeda, Yokohama; Yushi Sakamoto, and Takashi Suzuki, both of Utsunomiya, all of Japan, assignors to Sumitomo Bakelite Company Limited and NEC Corporation, both of Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,489

Claims priority, application Japan, Sep. 9, 1991, 03-227561

Int. Cl.[5] C08K *3/10;* **C08G** *69/26*

U.S. Cl. 524—435 **11 Claims**

1. A resin paste for tight sealing, consisting essentially of

(A) at least one filler selected from the group consisting of Ag, Au, Cu, diamond, high-temperature-sintered graphite and beryllia,

(B) at least one metal filler selected from the group consisting of Al, Fe and Mg,

(C) a polyimide resin having an imidization degree of 80% or more, obtained by reacting 3,3',4,4'-benzophenonetetracarboxylic acid dianhydride or 3,3',4,4'-oxydiphthalic acid dianhydride with a diamine, and

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(D) an organic solvent, wherein the weight proportions of (A), (B) and (C) are

(A)/[(B)+(C)]=10/90 to 90/10

(B)/[(A)+(C)]=5/95 to 90/10

and the weight proportion of (D) is

(D)/[(A)+(B)+(C)]=0.01/100 to 50/100.

5,284,900

AQUEOUS CROSSLINKABLE RESIN DISPERSIONS, METHOD OF THEIR PRODUCTION AND USE THEREOF

Masuji Izubayashi, Nishinomiya; Masatoshi Yoshida, Osaka; Toshiaki Matsunaga, Suita; Kohei Hori, Takarazuka; Teruo Kikuta, Nagaokakyo; Shiro Nakano, Nichinan, and Hidetoshi Hatta, Yonago, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka and Oji Paper Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 257,746, Oct. 14, 1988, Pat. No. 5,087,603. This application May 31, 1991, Ser. No. 708,368

Claims priority, application Japan, Dec. 14, 1987, 62-314069; Dec. 14, 1987, 62-314071; Jan. 12, 1988, 63-3089; Feb. 9, 1988, 63-26674; Feb. 9, 1988, 63-26675; Feb. 29, 1988, 63-44337; Apr. 25, 1988, 63-103396; May 16, 1988, 63-117065

Int. Cl.[5] **C08K** *3/34*

U.S. Cl. 524—492 **45 Claims**

1. An aqueous crosslinkable resin dispersion characterized by its being obtained by emulsion-polymerizing in an aqueous medium a monomer composition I composed of 0.1–40% by weight of at least one polymerizable monomer (a) having, within its molecular structure, a polymerizable double bond and an epoxy, aziridine or oxazoline group and 60–99.9% by weight of one or more other polymerizable monomers (b) copolymerizable with the polymerizable monomer (a), the sum total of the polymerizable monomers (a) and (b) being 100% by weight, in the presence of a water-soluble or water-dispersible emulsifier or emulsifiers selected from either one or both of the groups (P) and (Q) below:

(P) polymers IIa having a terminal alkylthio group and an acid value of not less than 200 obtained by polymerizing a polymerizable monomer composition A containing an unsaturated carboxylic acid as an essential component thereof, in the presence of an alkylmercaptan B having 6–18 carbon atoms, or salts thereof;

(Q) polymers IIb having a terminal alkylthio group and an acid value of not less than 200 obtained by polymerizing a polymerizable monomer composition A containing an unsaturated carboxylic acid as an essential component thereof, in the presence of an alkylmercaptan B having 6–18 carbon atoms, and further reacting the resulting polymer with at least one polymerizable monomer (c) having, within its molecular structure, a group reactive with a carboxyl group, or salts thereof.

5,284,901

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE POLYMERS AND PROCESS FOR MAKING THEM

Robert C. Bening; James R. Erickson, both of Katy; Charles J. Stark, and David J. St. Clair, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 863,580, Apr. 3, 1992. This application Apr. 16, 1993, Ser. No. 49,687

Int. Cl.[5] **C08F** *8/00*

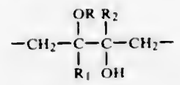
U.S. Cl. 524—505 **18 Claims**

1. A conjugated diene block polymer containing hydroxyl groups and having the formula

$$C_q—Y_p—(B_r—A)_t$$

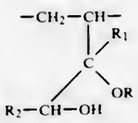
where B is a block comprising hydrogenated conjugated diene monomer and x is 0 or 1, and

where A is a polymer block comprising ether-alcohol units of the formula



(F)

or



(G)

wherein R is selected from the group consisting of alkyl radicals containing up to 10 carbon atoms, monohydric and dihydric alcohol groups and carbonate groups, R_1 and R_2 are hydrogen or alkyl radicals wherein in (G) only one of R_1 and R_2 may be hydrogen, and

where C is A, B and/or methacrylate or mixtures thereof, and

wherein Y is a coupling agent or coupling monomers or initiator, and

wherein from 0.1 to 15 Meq/g polymer of hydroxyl groups are present in the polymer, $r>0$, $q \geqq 0$, $r+q$ is from 1 to 100 and p i s 0 or 1.

5,284,902

FABRIC REPELLENT TREATMENT FROM HYDROCARBON SOLVENT SYSTEM

Charles D. Huber, Oakdale; Richard J. Grant, Maplewood, and Richard S. Smith, Mendota Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 3, 1992, Ser. No. 817,270

Int. Cl.[5] **C08F** *20/22, 222/18*

U.S. Cl. 524—544 **51 Claims**

1. A fluorochemical mixture comprising:

a. a composition comprising (1) at least one copolymer comprising at least one fluoroaliphatic radical-containing monomer and at least one non-fluorinated acrylate monomer and (2) at least one fluoraliphatic radical-containing ester; and

b. a hydrocarbon solvent system which is essentially non-halogenated and substantially free of ketones and esters wherein said composition is soluble in said solvent.

5,284,903

BLENDS OF POLYETHERIMIDE RESINS AND POLYESTER RESINS DERIVED FROM A CYCLOHEXANEDIMETHANOL AND A CARBOCYLIC ACID OR ESTER

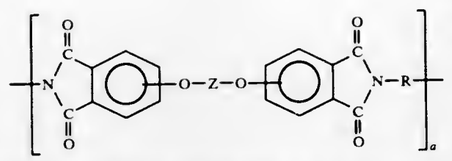
Michael G. Minnick, Coshocton, Ohio, assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 544,965, Jun. 28, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 996,364

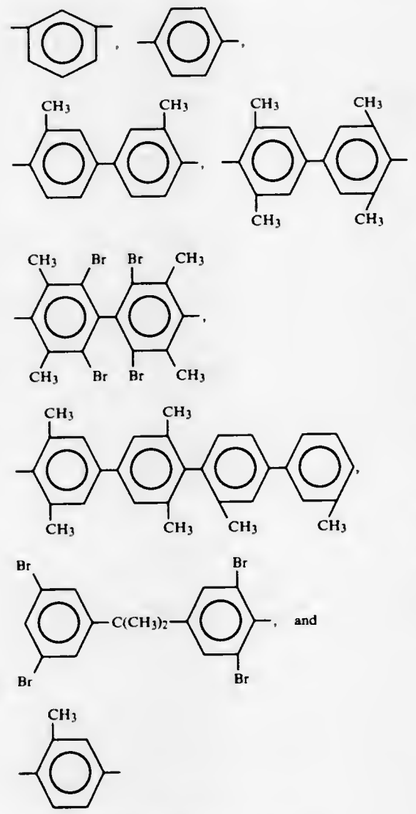
Int. Cl.[5] **C08L** *79/08*

U.S. Cl. 524—538 **14 Claims**

1. A composition comprising (a) a polyetherimide having repeating units of the formula:



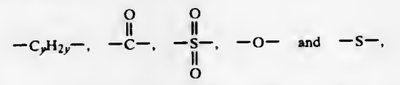
where "a" represents a whole number in excess of 1, Z is a member selected from the class consisting of (1):



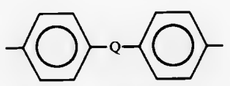
and (2) divalent organic radicals of the formula:

$$—(X)_q—$$

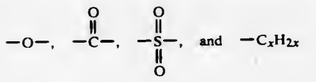
where X is a member selected from the class consisting of divalent radicals of the formulas,



where q is 0 or 1, y is a whole number from 1 to 5, and divalent bonds of the —O—Z—O-radical are in the 3,3', 3,4', 4,3', or the 4,4' positions, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, (2) alkylene radicals and cycloalkylene radicals having from about 2 to about 20 carbon atoms, C_2–C_8 alkylene terminated polydiorganosiloxane, and (3) divalent radicals of the formula:



where Q is a member selected from the class consisting of:



where x is a whole number from 1 to 5 inclusive; and (b) a polyester resin derived predominately from a cyclohexanedimethanol and a carbocyclic dicarboxylic acid.

5,284,904

LOW THERMAL EXPANSION POLYIMIDE COMPOSITIONS

Daniel E. George, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1993, Ser. No. 66,731

Int. Cl.[5] **C08G** *8/02, 12/00, 69/26*

U.S. Cl. 524—600 **8 Claims**

1. A polyimide composition consisting essentially of complemental quantities of about 25–65 parts by weight of at least one polyimide, about 25–45 parts by weight of graphite powder, and about 10–30 parts by weight of wollastonite.

5,284,905

PROCESS FOR PRODUCING STABLE LATEX

Sun-Lin Chen; Ramesh N. Gujarathi, and Susan M. Prentice, all of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 584,985, Sep. 20, 1990, Pat. No. 5,191,009. This application Feb. 12, 1993, Ser. No. 17,166

Int. Cl.[5] **C08K** *5/49, 5/52*

U.S. Cl. 524—710 **17 Claims**

1. A process for producing a neutralized latex that is useful in the manufacture of water reducible coatings which comprises:

(1) charging an initial quantity of monomers, at least one phosphate ester surfactant, at least one water insoluble nonionic surface active agent and water into a reaction zone; wherein the initial quantity of monomers is comprised of (a) about 45 to about 85 weight percent vinyl aromatic monomers, (b) about 15 to about 50 weight percent alkyl acrylate monomers, and (c) about 1 to 6 weight percent of at least one unsaturated carbonyl monomer, based on 100 weight percent monomers;

(2) initiating a free radical aqueous emulsion polymerization by charging at least one free radical initiator into said reaction zone;

(3) maintaining a temperature in the reaction zone within the range of about 52° C. to about 88° C.; maintaining a pH in the reaction zone which is within the range of about 2.0 to about 3.5 by the addition of ammonia; providing axial flow turbine agitation in the reaction zone at a tip speed of about 122 cm/sec. to 213 cm/sec.;

(4) after allowing the polymerization to proceed for about 30 minutes to about 60 minutes from initiation, charging a seed polymer latex into said reaction zone; wherein the seed polymer is comprised of repeat units which are derived from (a) about 45 to about 85 weight percent vinyl

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aromatic monomers, (b) about 15 to about 50 weight percent alkyl acrylate monomers, and (c) about 1 to 6 weight percent of at least one unsaturated carbonyl monomer, based upon 100 weight percent of the monomers in the seed polymer; and wherein from about 1 phm to about 15 phm of the seed polymer is charged into said reaction zone;

(5) continuously charging an additional quantity of monomers into the reaction zone over a period of 2.5 hours to 4 hours, wherein the additional quantity of monomers is comprised of (a) about 45 to about 85 weight percent vinyl aromatic monomers, (b) about 15 to about 50 weight percent alkyl acrylate monomers, and (c) about 1 to 6 weight percent of at least one unsaturated carbonyl monomer, based upon 100 weight percent monomers; and

(6) neutralizing the latex with ammonia to a pH which is within the range of about 7 to about 10.5 to produce the neutralized latex.

5,284,906

PROCESS FOR THE PREPARATION OF A RUBBER HAVING POLYMER BOUND FUNCTIONALITY

Gerald O. Schulz, Stow, and Dane K. Parker, Massillon, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 784,093, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 562,051, Aug. 2, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 49,385

Int. Cl.[5] C08K *5/49*

U.S. Cl. 524—710 **15 Claims**

1. A process for forming a rubber having polymer bound functionality comprising the emulsion polymerization at a temperature ranging from about 0° C. to 25° C. of:

(a) at least one functionalized monomer that contains a polymerizable vinyl group and has a moiety selected from the group consisting of antidegradants, metal deactivators, photosensitizers, pigments, synergists, catalysts, accelerators or combinations thereof; with

(b) at least one copolymerizable conjugated diene monomer selected from the group consisting of butadiene-1,3, 2-chlorobutadiene-1,3, isoprene, piperylene and conjugated hexadienes;

wherein the polymerization is conducted in the presence of (1) from 2 to 30 parts by weight of an ionic surfactant per 100 parts by weight of organic components and (2) from about 10 to about 70 parts by weight of a plasticizer based on 100 parts by weight of total monomers and said plasticizer functions as the sole solvent and dispersing agent for said functionalized monomer during the polymerization other than the water and ionic surfactant in the emulsion and said copolymerizable conjugated diene; said plasticizer being selected from:

(a) carboxylic acid esters selected from the group consisting of diesters of triethylene glycol, dibutoxy ethoxy ethyl formate, dialkyl diether glutarate, dibutoxyethyl adipate, dibutoxyethoxyethyl adipate, di.2.ethylhexyl adipate, tetraethylene glycol diheptanoate, propylene glycol dibenzoate, dipropylene glycol dibenzoate, triethylene glycol dibenzoate, butyl octyl phthalate, dimethyl phthalate, diethyl phthalate, dibutyl phthalate, dibutoxy ethyl phthalate, di.2.ethylhexyl phthalate, tetraethylene glycol dioctoate, polyethylene glycol dioctoate, triethylene glycol di.2.ethylhexanoate, tetraethylene glycol di-2-ethylhexanoate, triethylene glycol caprate-caprylate, triethylene glycol di(caprate-caprylate), triethylene glycol dipelargonate, dibutyl sebacate, dibutoxyethyl sebacate, di.2.ethylhexyl sebacate, dioctyl sebacate, diethylene glycol mono-laurate and butoxyethyl oleate or

(b) phosphates selected from the group consisting of 2.ethylhexyl diphenyl phosphate, iso-decyldiphenyl phosphate, tri-n-butyl phosphate, tri(2.ethylhexyl) phosphate, tributoxyethyl phosphate, tricresyl phosphate, trixylenyl phosphate and trixylyl phosphate; or

(c) formals selected from the group consisting of dibutoxyethoxy formal and di(butoxy-ethoxy-ethyl) formal; and

(d) N-butylbenzene sulfonamide.

5,284,907

PROCESS FOR THE PREPARATION OF A MASTERBATCH RUBBER HAVING POLYMER BOUND FUNCTIONALITY

Gerald O. Schulz, Stow, and Dane K. Parker, Massillon, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 784,091, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 562,062, Aug. 2, 1990, abandoned. This application Apr. 22, 1993, Ser. No. 51,514

Int. Cl.[5] C08K *5/49*

U.S. Cl. 524—710 **13 Claims**

1. A process for forming a masterbatch rubber having polymer bound functionality comprising the emulsion polymerization at a temperature ranging from about 40° C. to 100° C. of:

(a) at least one functionalized monomer that contains a polymerizable vinyl group and has a moiety selected from the group consisting of antidegradants, metal deactivators, photosensitizers, pigments, synergists, catalysts, accelerators, or combinations thereof; with

(b) at least one copolymerizable conjugated diene monomer selected from the group consisting of butadiene-1,3, 2-chlorobutadiene-1,3, isoprene, piperylene and conjugated hexadienes;

wherein the polymerization is conducted in the presence of (1) from 2 to 30 parts by weight of an ionic surfactant per 100 parts by weight of organic components and (2) from about 10 to about 70 parts by weight of a plasticizer based on 100 parts by weight of total monomers and said plasticizer functions as the sole solvent and dispersing agent for said functionalized monomer during the polymerization other than the water and ionic surfactant in the emulsion and said copolymerizable conjugated diene; said plasticizer being selected from:

(A) carboxylic acid esters selected from the group consisting of diesters of triethylene glycol, dibutoxy ethoxy ethyl formate, dialkyl diether glutarate, dibutoxyethyl adipate, dibutoxyethoxyethyl adipate, di-2-ethylhexyl adipate, tetraethylene glycol diheptanoate, propylene glycol dibenzoate, dipropylene glycol dibenzoate, triethylene glycol dibenzoate, butyl octyl phthalate, dimethyl phthalate, diethyl phthalate, dibutyl phthalate, dibutyoxy ethyl phthalate, di-2-ethylhexyl phthalate, tetraethylene glycol dioctoate, polyethylene glycol dioctoate, triethylene glycol di-2-ethylhexanoate, eteraethylene glycol di-2-ethylhexanoate, triethylene glycol caprate-caprylate, triethylene glycol di(caprate-caprylate), triethylene glycol dipelargonate, dibutyl sebacate, dibutoxyethyl sebacate, di-2-ethylhexyl sebacate, dioctyl sebacate, diethylene glycol mono-laurate and butoxyethyl oleate; or

(B) phosphates selected from the group consisting of 2-ethylhexyl diphenyl phosphate, iso-decyldiphenyl phosphate, tri-n-butyl phosphate, tri(2-ethylhexyl) phosphate, tributoxyethyl phosphate, tricresyl phosphate, trixylenyl phosphate and trixylyl phosphate; or

(C) formals selected from the group consisting of dibutoxyethoxy formal and di(butoxy-ethoxy-ethyl) formal; and

(D) N-butylbenzene sulfonamide.

5,284,908

PROCESS FOR PREPARING COPOLYMER LATEX AND USE OF COPOLYMER LATEX

Wataru Fujiwara; Junko Hyoda; Yasushi Toyoda, and Saburo Mishiba, all of Niihama, Japan, assignors to Sumitomo Dow Limited, Osaka, Japan

Filed Jan. 29, 1991, Ser. No. 647,039

Claims priority, application Japan, Feb. 2, 1990, 2-24653; Mar. 16, 1990, 2-67449; Mar. 16, 1990, 2-67450; Mar. 19, 1990, 2-71000; Mar. 20, 1990, 2-71436; Mar. 20, 1990, 2-71437; Oct. 3, 1990, 2-267171; Jan. 22, 1991, 3-22973

Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—718 **10 Claims**

1. A process for preparing a copolymer latex which comprises emulsion copolymerizing 10 to 80% by weight of an aliphatic conjugated diene monomer, 1 to 10% by weight of an ethylenically unsaturated carboxylic acid monomer and 10 to 89% by weight of at least one monoolefinic monomer in the presence of a chain transfer agent in an amount of 0.05 to 10 parts by weight per 100 parts by weight of the total amount of monomers and at least one compound having no copolymerizing reactivity selected from the group consisting of hydrocarbons having 5 to 12 carbon atoms, halogenated aromatic hydrocarbons, five or six membered ring heterocyclic compounds, aliphatic ethers and aliphatic esters in an amount of 1 to 100 parts by weight per 100 parts by weight of the total amount of the monomers.

5,284,909

AMPHOTERIC POLYELECTROLYTE, METHOD FOR PRODUCTION THEREOF, AND ORGANIC SLUDGE DEHYDRATER

Kazutomo Takahashi, Yokohama; Koichi Yamamoto, Tokyo; Kazuo Kodama, Yokohama; Seiichi Suzuki, Yokohama; Takashi Tazaki, Yokohama; Yutaka Morimoto, Yokohama, and Hideyuki Nishibayashi, Ibaraki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 483,830, Feb. 23, 1990, Pat. No. 5,194,515. This application Oct. 13, 1992, Ser. No. 959,804

Claims priority, application Japan, Feb. 23, 1989, 1-41647; Mar. 2, 1989, 1-48629; Aug. 23, 1989, 1-214941; Aug. 24, 1989, 1-216044; Oct. 3, 1989, 1-257087; Oct. 5, 1989, 1-258732; Jan. 9, 1990, 2-1036; Jan. 12, 1990, 2-3435

Int. Cl.[5] C08F *8/30*

U.S. Cl. 524—801 **6 Claims**

1. A method for the production of a water-in-oil form amphoteric polyelectrolyte emulsion comprising

(a) emulsifying either at least one anionic monomer (i) selected from the group consisting of acrylic acid and methacrylic acid or a mixture of said anionic monomer (i) with a nonionic monomer (ii) in water-in-oil form in the presence of water, a surfactant, and a hydrophobic organic solvent to obtain an emulsified monomer or monomer mixture, then

(b) polymerizing or copolymerizing the emulsified monomer or monomer mixture with a radical polymerization catalyst thereby forming a water-in-oil form vinylic carboxylic acid polymer (iii) in emulsion, then

(c) allowing the resultant vinylic carboxylic acid polymer (iii) to react with an alkylene imine thereby aminoalkylating said vinylic polymer (iii) in emulsion, and subsequently

(d) acidifying the aminoalkylated vinylic polymer (iii) emulsion with a monobasic acid to form an amphoteric polyelectrolyte emulsion containing an aminoalkyl group and a carboxyl group.

5,284,910

SURFACE-MODIFIED POLYACRYLONITRILE FIBROUS SUBSTRATES

Laurence W. Chang, Orange; Larry S. Anderson, Norwalk, and David A. Ley, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 552,724, Jul. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 348,454, May 8, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 911,543

Int. Cl.[5] C08F *8/00*

U.S. Cl. 515—54.1 **12 Claims**

1. A process for the recovery and/or isolation of biological material from solution comprising contacting said solution with a composition of matter comprising:

a) fibrillated fibers comprising polyacrylonitirle or a copolymer of acrylonitrile and at least one comonomer, and

b) a surface having evenly distributed thereon,

i) pendant bioactive ligand groups selected from the group consisting of carboxylic acids, sulfonic acids, tertiary amines, quaternary amines, peptides, hormones, enzyme cofactors, enzyme substrates, enzyme inhibitors, antigens, antibodies, ,dyes, pigments, complex metal ions, proteins, nuclei acids, p-aminobenzamidine, polysaccharides, lectins, non-proteinaceous toxins, and antiotoxins, said bioactive ligand groups being bound to said surface through linkages derived from the reaction of bioactive ligands and n-haloamide groups bound to said surface, and, optionally,

ii) nitrile and/or amide groups under conditions and for a time sufficient to effect the bonding of said composition and said biological material and recovering the resultant composition form said solution.

5,284,911

SURFACE-MODIFIED POLYACRYLONITRILE SUBSTRATES

Laurence W. Chang, Orange; Larry S. Anderson, Bethel, and David A. Ley, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 738,986, Jul. 1, 1991, Pat. No. 5,194,512, which is a division of Ser. No. 507,586, Apr. 13, 1990, Pat. No. 5,082,904, which is a continuation-in-part of Ser. No. 349,569, May 8, 1989, abandoned. This application Nov. 18, 1992, Ser. No. 977,989

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—54.1 **31 Claims**

1. A process for the preparation of surface-modified substrates useful in isolation of biological material, said process comprising:

a) contacting a substrate comprising polyacrylonitrile, or a copolymer of acrylonitrile and at least one comonomer with an alkaline catalyst and a peroxide, under reaction conditions and for a time sufficient to convert at least a portion of the nitrile groups distributed on the surface of the substrate to amide groups;

b) reacting said substrate with a halogenating reagent under conditions and for a time sufficient to convert at least a portion of the amide groups to N-haloamide groups;

c) reacting said N-haloamide group on said substrate with a bioactive ligand selected from the group consisting of carboxylic acids, sulfonic acids, tertiary amines, quaternary amines, peptides, hormones, enzyme cofactors, dyes, pigments, complex metal ions, proteins, nucleic acids, p-aminobenzamidine, polysaccharides, lectins, non-proteinaceous toxins, and anti toxins, under conditions and for a time sufficient to effect the bonding of said ligand to said substrate; and

d) recovering the resultant surface-modified substrate.

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5,284,912

THERMOSET RESIN WITH POLYUNSATURATED MONOMER-GRAFTED SEED PARTICLES

Hozumi Sato; Yasuhiro Yoshida, and Tatuaki Matunaga, all of Tokyo, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 744,920, Aug. 14, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,338

Claims priority, application Japan, Aug. 16, 1990, 216837

Int. Cl.[5] C08L *51/04, 63/02, 61/10, 61/28*

U.S. Cl. 525—65 **7 Claims**

1. A thermosetting resin composition comprising: (a) 100 parts by weight of a thermosetting resin and (b) 1–100 parts by weight of a rubbery copolymer, said rubbery copolymer comprising a plurality of seed particles and a covering copolymer covering said seed particles, said seed particles comprising at least one polymer having a glass transition point of 25° C. or lower, said rubbery copolymer being prepared from said seed particles and a monomer mixture to produce said covering copolymer having a glass transition point of −20° C. or lower, said monomer mixture comprising at least one crosslinking monomer having at least two unsaturated bonds and at least one conjugated diene, all rubbery copolymer having an average particle size of 0.2–1.0 μm, and said rubbery copolymer having a gel proportion of 50% by weight or more.

5,284,913

METHACRYLIMIDE-CONTAINING POLYMER AND THERMOPLASTIC RESIN COMPOSITION COMPRISING THIS POLYMER

Isao Sasaki, Otake; Kozi Nishida, Toyama, and Masaharu Fujimoto, Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

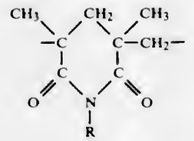
Division of Ser. No. 448,288, Dec. 11, 1989, Pat. No. 5,132,371. This application Jan. 21, 1992, Ser. No. 823,340

Claims priority, application Japan, Dec. 13, 1988, 63-312794

Int. Cl.[5] C08L *51/00;* **C08F** *265/04, 283/04*

U.S. Cl. 525—66 **11 Claims**

1. A thermoplastic resin composition comprising 1 to 99% by weight of a methacrylimide-containing polymer and 99 to 1% by weight of at least one other thermoplastic polymer, wherein the methacrylimide-containing polymer has been produced by graft-polymerizing at least one ethylenic monomer onto a polymer (A) comprised of 5 to 100% by weight of methacrylimide ring-containing structural units represented by the following formula (I):



wherein R represents a hydrogen atom or an aliphatic, aromatic or alicyclic hydrocarbon group having 1 to 20 carbon atoms, and 0 to 95% by weight of structural units derived from an ethylenic monomer, wherein the graft polymerization is carried out after said polymer (A) has been reacted with at least one compound having a functional group to form a thermoplastic polymer (B) having grafting active sites therein.

5,284,914

THERMOPLASTIC POLYESTER RESIN COMPOUND

Yutaka Toyooka; Masafumi Hongo, and Hideyuki Shigemitsu, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 418,798, Oct. 4, 1989, abandoned, which is a continuation of Ser. No. 189,246, Mar. 21, 1988, abandoned. This application Apr. 26, 1991, Ser. No. 692,782

Claims priority, application Japan, Dec. 8, 1986, 61-292052; Jul. 16, 1987, 62-177845

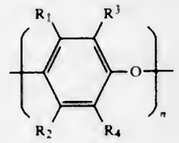
Int. Cl.[5] C08L *51/04, 67/03, 69/00, 71/12*

U.S. Cl. 525—67 **3 Claims**

1. A thermoplastic polyester resin composition comprising 30–70% by weight of a polyester resin (A) comprising a polyalkylene terephthalate in an amount effective to provide heat stability, said polyalkylene terephthalate comprising a polycarbonate resin (D) in an amount of 5–28% by weight based on the weight of said thermoplastic polyester resin composition;

5–35% by weight of a graft polymer (B) obtained by graft-polymerizing at least one selected from the group of an aromatic vinyl monomer in the presence of a butadiene homopolymer rubber, and a methacrylate monomer in the presence of a butadiene homopolymer rubber followed by graft-polymerizing an aromatic vinyl monomer;

10–45% by weight of a polyphenylene ether resin (C), said resin (C) being a homopolymer or copolymer having repeating units represented by the formula



wherein R_1, R_2, R_3 and R_4 are selected independently from the group consisting of hydrogen, an alkyl group, halogens, a nitro group, and an amino group; and

wherein n is a number greater than or equal to 30; and

wherein the weight % of said polyester resin (A) is greater than that of said polyphenylene ether resin (C) and the weight % of the rubbery polymer in the graft polymer (B) is from 30 to 80% by weight based on the weight of said graft polymer (B).

5,284,915

STYRENE-ISOPRENE BLOCK COPOLYMERS

Sergio Custro, Ravenna, and Alessandro Zazzetta, Cesena, both of Italy, assignors to Enichem Elastomeri S.p.A., Palermo, Italy

Continuation of Ser. No. 674,784, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 448,886, Dec. 12, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 873,403

Claims priority, application Italy, Dec. 23, 1988, 23088 A/88

Int. Cl.[5] G08F *257/02, 279/02*

U.S. Cl. 525—89 **2 Claims**

1. Polymeric composition comprising:

(a) from 40% to 90% by weight of a linear block copolymer having four alternating blocks, which is represented by the formula $B_1—A_1—B_2—T—A_2$, wherein:

A_1 and A_2 are polystyrene blocks;

B_1 and B_2 are polyisoprene blocks;

T is a copolymeric chain portion formed by random isoprene and styrene units, and

(b) from 10% to 60% by weight of a linear block copolymer, which is represented by the formula $B_3—A_3$, wherein:

A_3 is a polystyrene block, and

B_3 is a isoprene block wherein said linear block copolymer having four alternating blocks has a weight average molecular weight of from 50,000 to 300,000 and said linear block copolymer has a weight average molecular weight of 20,000 to 150,000 and the total amount of polystyrene units being from 60 to 90% by weight of the composition and the balance to 100% of said composition being isoprene units.

5,284,916

BLOCK COPOLYMERS CONTAINING POLYAROMATIC(ALKYL)METHACRYLATES AND THEIR BLENDS WITH POLYCARBONATES

Michael A. Drzewinski, Princeton, N.J., assignor to Istituto Guido Donegani S.P.A., Novara and Enichem S.P.A., Milan, both of Italy

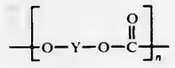
Filed Sep. 30, 1992, Ser. No. 953,707

Int. Cl.[5] C08L *69/00, 53/00*

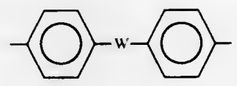
U.S. Cl. 525—92 **18 Claims**

1. A resin composition comprising a blend of:

(I) 99 to 1 wt % of a polycarbonate of formula

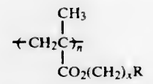


wherein Y is a divalent aromatic radical of formula



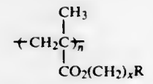
wherein W is C_1–C_6 straight or branched alkyl, carbonyl, sulfonyl, oxygen, sulfur or a single bond and m is a whole number between 10 and 30,000;

(II) 1 to 99 wt % of a block copolymer containing a block of polyaromatic(alkyl)methacrylate of formula



where n is an integer from 10 to 5,000; x is an integer from 0 to 4 and R is phenyl, naphthyl or phenyl substituted by C_1–C_6-alkyl, C_1–C_6-alkoxy, hydroxy, amino, carbonyl or C_1–C_6-alkoxycarbonyl and a block of rubbery polymer selected from the group consisting of poly-C_4–C_{10}-alkylacrylate, dienic rubber, siloxane elastomer polyburyl methacrylate and saturated hydrocarbon.

12. A block copolymer represented by the formula A-b-B, A-b-B-b-A, B-b-A-b-B or $(A\text{-}B)_n$; where A is a block of the formula



where n is an integer from 10 to 5,000; x is an integer from 0 to 4 and R is phenyl, naphthyl or phenyl substituted by halogen, phenyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, amino, carbonyl, or C_1–C_6 alkoxy carbonyl; B is a rubbery polymer selected from the group consisting of poly-C_4–C_{10}-alkylacrylate, dienic rubber, siloxane elastomer polylauryl methacrylate and saturated hydrocarbon; and "b" indicates a block structure.

5,284,917

THERMOPLASTIC RESIN COMPOSITION

Naoki Yamamoto; Hiroshi Mori, and Masaharu Fujimoto, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01525, § 371 Date Jul. 5, 1991, § 102(e) Date Jul. 5, 1991, PCT Pub. No. WO91/08261, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 22, 1990, Ser. No. 720,490

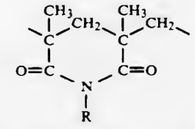
Claims priority, application Japan, Nov. 24, 1989, 1-305754; Nov. 24, 1989, 1-305755

Int. Cl.[5] C08L *63/00;* **C08F** *8/00*

U.S. Cl. 525—113 **5 Claims**

1. A thermoplastic resin composition comprising

(A) 1 to 99 parts by weight of a methacrylimide-containing polymer having at least 10% by weight of methacrylimide units represented by the formula



(1)

where R is a hydrogen atom or an aliphatic, aromatic or alicyclic hydrocarbon radical having 1 to 20 carbon atoms,

(B) 99 to 1 part by weight of at least one thermoplastic polymer selected from the group consisting of thermoplastic polyester (B-1) and a thermoplastic polyamide (B-2), the combined amount of components (A) and (B) being 100 parts by weight, and

(C) 0.05 to 10 parts by weight of at least one compound selected from the group consisting of polyepoxides, polyoxazolines, polyisocyanates.

5,284,918

ONE PACKAGE POLYURETHANE/THERMOPLAST PLASTISOL COMPOSITION

Truc-Chi T. Huynh-Tran, Bortonsville, Md.; Felek Jachimowicz, Brookline, Mass., and Alexander C. Paton, Bedford, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 1, 1991, Ser. No. 694,524

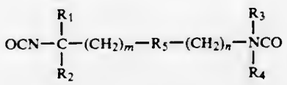
Int. Cl.[5] C08L *75/08;* **C08G** *18/80;* **B05D** *1/00*

U.S. Cl. 525—124 **29 Claims**

1. A reactive plastisol composition, comprising:

(a) a one component, solventless, storage stable, low temperature curable polyurethane composition, comprising:

(1) a blocked isocyanate prepolymer consisting essentially of the reaction product of a polytetramethylene oxide diol, a diisocyanate having the formula



wherein R_1–R_4 may be the same or different and are selected from the group consisting of C_1–C_6 alkyl which is linear or branched, R_5 is a phenylene or naphthalene ring which is unsubstituted or substituted by one or more C_1–C_{12} linear or branched chained alkyl groups or halo groups, and m and n are each integers from 0 to 6, and a ketoxime blocking agent; and

(2) a curing agent containing a cycloaliphatic diamine; and

(B) a thermoplast plastisol selected from the group consisting of plastisols of polyvinyl chloride, acrylic homo- and copolymers, and mixtures thereof.

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5,284,919

RESIN COMPOSITIONS AND A METHOD OF CURING THE SAME

Noboru Nakai, Hiratsuka; Osamu Isozaki, Yokohama, and Naozumi Iwasawa, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Division of Ser. No. 402,408, Sep. 5, 1989, Pat. No. 5,026,793.
This application Mar. 21, 1991, Ser. No. 672,792
Claims priority, application Japan, Sep. 9, 1988, 63-227093
Int. Cl.[5] C08G 77/04
U.S. Cl. 525—195 2 Claims

1. A resin composition comprising a first high molecular weight compound having a number average molecular weight of 3,000 to 2,000 and having an average of 2 or more hydroxyl groups per molecule as its reactant groups, a second high molecular weight compound having a number average molecular weight of 3,000 to 200,000 and having an average of 2 or more epoxy groups and an average of 1 or more functional groups selected from the groups consisting of alkoxysilane, silanol and acyloxysilane groups as its reactant groups, wherein the first and second high molecular weight compounds are different, and at least one metal chelate compound selected from the group consisting of aluminum chelate compounds, titanium chelate compounds and zirconium chelate compounds, said composition containing 5 to 95 weight percent of said first high molecular weight compound, 95 to 5 weight percent of said second high molecular weight compound, and 0.01 to 10 parts by weight of said metal chelate compound, based on the combined weights of said first and second high molecular weight compounds.

5,284,920

FLUORINATED THERMOPLASTIC ELASTOMERS WITH IMPROVED BASE STABILITY

Dana P. Carlson, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 488,096, Mar. 1, 1990, abandoned. This application May 11, 1992, Ser. No. 881,035
Int. Cl.[5] C08F 293/00
U.S. Cl. 525—276 10 Claims

1. A composition comprising a segmented thermoplastic elastomeric polymer having a sequence of three polymeric segments A-B-A wherein the sequence has an iodine group at each terminal carbon atom of the sequence and wherein the A segment is a crystallizable segment having a number average molecular weight of at least about 10,000 and which when crystallized has a melting range above about 150° C. and selected from the group consisting of homopolymerized units of tetrafluoroethylene (TFE); copolymerized units of TFE and ethylene, copolymerized units of TFE and perfluoro (alkylvinyl ether) (PAVE); copolymerized units of TFE and vinylidene fluoride; copolymerized units of TFE and hexafluoropropylene; and copolymerized units of TFE, ethylene, and a member selected from the group consisting of propylene, isobutylene, hexafluoropropylene, pentafluoropropylene, 2-trifluoromethyl-3,3,3-trifluoropropylene-1, perfluoroalkyl ethylene, and PAVE; and wherein the B segment is an elastomeric segment having a number average molecular weight of at least about 30,000 and a glass transition temperature, Tg, below about room temperature, and comprises a polymeric chain having TFE as one comonomer copolymerized with monomer units selected from the group consisting of (a) propylene (P), wherein the TFE/propylene mole ratio is 45–70/30–55, (b) propylene and vinylidene fluoride (VF_2) wherein the TFE/P/VF_2 mole ratio is 5–65/5–40/5–40, and (c) a C_{2-3} hydrocarbon olefin and a vinyl ether of the formula $CF_2{=}CFO(CF_2)_nCF_3$ where n is 0–5 and wherein the TFE/olefin/ether mole ratio is 32–60/10–40/20–40.

5,284,921

PREPARATION OF POLY(ARYLETHER/THIOETHER) SEGMENTED BLOCK COPOLYMERS

Michael J. Mullins, and Edmund P. Woo, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 713,539, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 248,080, Sep. 23, 1988, abandoned. This application Nov. 2, 1992, Ser. No. 970,523
Int. Cl.[5] C08L 71/12, 81/02
U.S. Cl. 525—390 17 Claims

1. A process for the preparation of block copolymers comprising repeat units of the formula:

$$+A{-}O'+ \quad \text{and} \quad +B{-}O'+$$

wherein A and B are different activated aromatic radicals having at least one electron withdrawing group located in a position ortho or para to O', and O' is oxygen or sulfur, the steps of the process comprising contacting at least one polymer comprising repeat units corresponding to the formula:

$$+A{-}O'+$$

with at least one polymer comprising repeat units corresponding to the formula:

$$+B{-}O'+$$

wherein A, B, and O' are as previously defined, in the presence of an effective amount of at least one exchange catalyst, at an elevated temperature and for a time, sufficient to prepare the block copolymer by an exchange reaction.

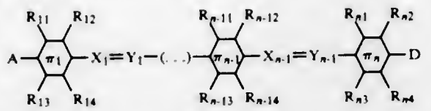
5,284,922

ORGANIC OPTICAL NONLINEAR MATERIAL AND OPTICAL NONLINEAR DEVICE

Michiyuki Amano; Yoshito Shuto, and Toshikuni Kajno, all of Ibaraki, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan

Continuation of Ser. No. 725,205, Jul. 3, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,568
Claims priority, application Japan, Jul. 6, 1990, 2-178700
Int. Cl.[5] C08F 220/54
U.S. Cl. 525—328.2 14 Claims

1. A second-order or third-order organic nonlinear optical material, wherein one of the compounds represented by the following formula (I) is bonded to a polymer:



(I)

wherein each of π_1 to π_n independently represents a cyclic compound of a π electron conjugate system, at least one of R_{11} to R_{n4} represents an alkyl group or alkyl group derivative and others represent hydrogen, each of X_1 to X_{n-1} and Y_1 to Y_{n-1} represents one member selected from the group consisting of CH, N, and N→O —A represents an electron acceptor group, D represents an electron donor group and n is an integer of 3 or 4.

5,284,923

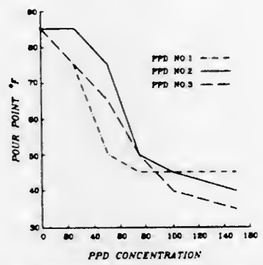
Patent Not Issued For This Number

5,284,924

PROCESS FOR THE PREPARATION OF POLYOLEFIN/ACRYLONITRILE COPLOYMERS AND POLYOLEFIN/ACRYLIC ACID OR SUBSTITUTED ACRYLIC ACID/ACRYLONITRILE TERPOLYMERS

Kenneth W. Pober, and Charles M. Starks, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 23, 1991, Ser. No. 781,791
Int. Cl.[5] C08F 8/30
U.S. Cl. 525—377 11 Claims



1. A pour point depressant composition comprising the total reaction mass obtained by combining a polyolefin/acrylic acid or substituted acrylic acid copolymer having a molecular weight of at least 2,000 with at least one nitrile selected from the group consisting of dinitriles having the formula NC—C_n—CN where n=2 to 4 and C is branched or straight chain alkyl, in the presence of a solvent inert with respect to the reaction, where the solvent boils above reaction temperature at the reaction pressure, to form a mixture and reacting the mixture at a temperature of at least 200° C. for a time sufficient to form a reaction product comprising polyolefin/acrylonitrile copolymer, solvent, cyclic imide and any unreacted dinitrile.

5,284,925

METHOD OF POLYMERIZING VINYL MONOMERS WITH USE OF A DEPOSIT SUPPRESSANT COMPOSITION FOR THE INTERNAL SURFACES OF A POLYMERIZATION REACTOR

Takeshi Sumino, and Tetsuyoshi Yano, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 23, 1992, Ser. No. 980,175
Claims priority, application Japan, Dec. 2, 1991, 3-317619
Int. Cl.[5] C08F 14/06
U.S. Cl. 526—62 20 Claims

1. A method of polymerizing a vinyl monomer wherein the vinyl monomer is polymerized using a deposit suppressant composition to prevent the formation of deposit on the internal surfaces of a polymerization reactor, which comprises applying to the internal surfaces of the polymerization reactor prior to polymerization a deposit suppressant composition comprising an 8-hydroxyquinoline sulfide compound.

5,284,926

CATALYST SYSTEM AND PROCESS

Elizabeth A. Benham; Joseph S. Shveima, and Max P. McDaniel, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 25, 1992, Ser. No. 950,536
Int. Cl.[5] C08F 4/78, 2/38
U.S. Cl. 526—98 41 Claims

1. A catalyst system produced by the process comprising:
(a) forming a composition that is substantially free of titania and that comprises:
(1) a fluorine compound selected from the group consisting of ammonium fluoride compounds, phosphorus fluoride compounds and mixtures of two or more said fluorine compounds;
(2) a chromium compound; and
(3) a catalyst support that consists essentially of silica;
(b) activating said composition formed in step (a) by contacting said composition with an oxygen-containing ambient thereby changing a portion of the nonhexavalent chromium to hexavalent chromium; and
(c) reducing said composition activated in step (b), by contacting said composition with an amount of carbon monoxide at a temperature in the range of about 200° C. to about 600° C. thereby changing a portion of said hexavalent chromium to divalent chromium.

5,284,927

PROCESS FOR PREPARING A RUBBERY TERPOLYMER OF STYRENE, ISOPRENE AND BUTADIENE

Wen-Liang Hsu, Copley, and Adel F. Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 787,490, Nov. 4, 1991, Pat. No. 5,137,998, which is a continuation-in-part of Ser. No. 601,102, Oct. 22, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 922,414
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] C08F 4/48, 236/10
U.S. Cl. 526—174 18 Claims

1. A process for preparing a rubbery terpolymer of styrene, isoprene, and butadiene having multiple glass transition temperatures and having an excellent combination of properties for use in making tire treads which comprises: terpolymerizing styrene, isoprene and 1,3-butadiene in an organic solvent at a temperature of no more than about 40° C. in the presence of (a) tripiperidino phosphine oxide, (b) an alkali metal alkoxide, and (c) an organolithium compound.

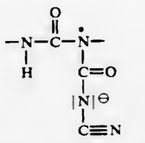
5,284,928

MODIFIED POLYUREAS CONTAINING N-CYANAMINOCARBONYL UREA GROUPS AND A PROCESS FOR THEIR PREPARATION

Thomas Münzmay, Dormagen, and Tillmann Hassel, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

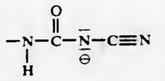
Filed Oct. 5, 1992, Ser. No. 956,518
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133572.4
Int. Cl.[5] C08G 18/77, 18/82
U.S. Cl. 528—52 11 Claims

1. A polyurea which contains anionic N-cyanaminocarbonyl urea groups corresponding to formula (I)



(I)

incorporated in the polymer chain and, optionally, terminal anionic cyanourea groups corresponding to formula (II)



(II)

wherein the ratio of incorporated groups (I) to terminal groups (II) is more than 1:1.

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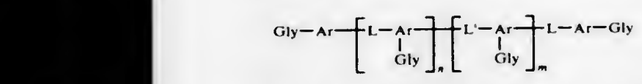
5,284,929

EPOXY RESINS WITH CYCLOHEXENENORBORNENE MOIETIES

Pen-Chung Wang, Houston, and Donald R. Kelsey, Fulshear, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 10, 1993, Ser. No. 29,192
Int. Cl.[5] C08G 59/04
U.S. Cl. 528—097 7 Claims

1. An epoxy resin of the formula



in which Gly is a glycidyl ether group, Ar is a C_{6-20} aromatic moiety, L is a divalent cyclohexanenorbornane linking moiety, L' is a divalent cycloaliphatic linking moiety, and each of m and n is a number within the range of 0 to about 10.

5,284,930

PROCESS FOR PURIFYING VINYLPHENOL POLYMERS FOR USE AS PHOTORESIST MATERIALS

Tadashi Matsumoto, Omiya, and Mitsuru Akaho, Kimitsu, both of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,303
Claims priority, application Japan, Nov. 28, 1991, 3-339728
Int. Cl.[5] C08F 6/08
U.S. Cl. 528—482 18 Claims

1. A process or purifying a vinylphenol polymer for use as a photoresist material characterized by dissolving the vinylphenol polymer into a solvent to make a solution, submitting said solution to a hydrotreatment step in which said solution is contacted with hydrogen in the presence of a Group VIII metal catalyst, and submitting said hydrogenated solution to a metal removing step in which said hydrogenated solution is contacted with a strongly acidic cation exchange resin.

5,284,931

INTERCELLULAR ADHESION MOLECULES, AND THEIR BINDING LIGANDS

Timothy A. Springer, Newton, Mass.; Robert Rothlein; Steven D. Marlin, both of Danbury, Conn., and Michael L. Dustin, University City, Mo., assignors to Dana Farber Cancer Institute, Boston, Mass.

Continuation-in-part of Ser. No. 456,647, Dec. 22, 1989, which is a continuation-in-part of Ser. No. 45,963, May 4, 1987, which is a continuation-in-part of Ser. No. 115,798, Nov. 2, 1987, which is a continuation-in-part of Ser. No. 155,943, Feb. 16, 1988, which is a continuation-in-part of Ser. No. 189,815, May 3, 1988, which is a continuation-in-part of Ser. No. 250,446, Sep. 28, 1988, which is a continuation-in-part of Ser. No. 324,481, Mar. 16, 1989, which is a continuation-in-part of Ser. No. 373,882, Jun. 30, 1989, which is a continuation-in-part of Ser. No. 456,647, Dec. 22, 1989. This application Apr. 27, 1990, Ser. No. 515,478
Int. Cl.[5] A61K 39/395
U.S. Cl. 424—85.8 11 Claims

1. A pharmaceutical composition comprising a pharmaceutically acceptable excipient, at least one immunosuppressive agent, and an anti-ICAM-1 antibody, or a fragment of said anti-ICAM-1 antibody, which is capable of binding to ICAM-1 and blocking the interaction of ICAM-1 with leukocytes in vivo.

5,284,932

PROCESS FOR PURIFYING AND CHARACTERIZING MYOTROPHIA, A NOVEL PEPTIDE THAT REGULATES MYOCARDIAL GROWTH

Shubha Sen, Solon, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed Sep. 7, 1990, Ser. No. 578,935
Int. Cl.[5] C07K 7/00
U.S. Cl. 530—324 1 Claim

1. The partial amino acid sequence of myotrophin selected from the group consisting of:

V Y V D A T K;
Y G G F M E V;
A D I T V I G P D G L T A L E A T D N E A I D (H);
L L L S I G A D I T V X G P X E V;
Y G G F K; and,
G A D K T V K G P (C) G L T A L A S I N Q A I (X) A L L,

wherein the partial amino acid sequence of is myotrophin determined by a process comprising the steps of:

a) providing myotrophin which has been purified to homogeneity;
b) reducing the purified myotrophin with dithiothreitol in a quanidine-HCL containing Tris-HCL buffer;
c) carboxymethylating the reduced myotrophin by adding iodoacetic acid to the reduced solution;
d) digesting the carboxymethylated myotrophin by adding trypsin to the carboxymethylated mixture;
e) separating the digested material by reverse phase HPLC; and,
f) sequencing the separated material.

5,284,933

AFFINITY PEPTIDES

Heinz Döbeli, Ziefen; Bernhard Eggimann, Basel, both of Switzerland; Reiner Gentz, Rheinfelden, Fed. Rep. of Germany; Erich Hochuli, Arisdorf, Switzerland, and Dietrich Stüber, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 22, 1988, Ser. No. 158,962
Claims priority, application Switzerland, Mar. 10, 1987, 895/87
Int. Cl.[5] C07K 13/00
U.S. Cl. 530—350 10 Claims

1. A fusion protein comprising a biologically active polypeptide or protein linked by its amino- and/or carboxyl-terminus to one or two affinity peptides, which affinity peptides have the formula

$$R^1—(His)_{2-6}—R^2,$$

wherein R^1 is hydrogen or a peptide chain formed from about 1 to about 30 amino acids; and R^2 is Q, Q-Ile-Glu-Gly-Arg- or Q-Asp-Asp-Asp-Asp-Lys, where Q is a peptide bond or a peptide chain formed from about 1 to about 30 amino acids.

5,284,934

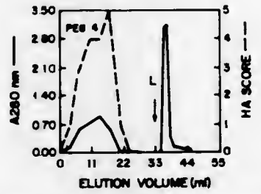
SYNTHESIS AND UTILIZATION OF CARBOHYDRATE-BINDING POLYMER-LECTIN CONJUGATES

Howard J. Allen, Jr., Tonawanda, N.Y., assignor to Health Research Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 690,641, Apr. 24, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 940,685
Int. Cl.[5] A61K 35/78
U.S. Cl. 530—370 10 Claims

1. A process for preparing a carbohydrate-binding lectin derivative comprising:

(a) isolating a lectin of plant, animal, or microbial origin from other molecules from said origin by utilizing the carbohydrate-binding affinity of said lectin;
(b) covalently coupling said lectin via amino groups of said lectin and in the presence of a carbohydrate for which the lectin has binding affinity, to a water soluble polymer selected from the group consisting of polyethylene glycol, polypropylene glycol and cyclodextrin having a molecular size of from about 1,000 to about 20,000 daltons;
(c) removing the carbohydrate from the polymer-lectin conjugate of step (b) by a process selected from the group consisting of dialysis and gel filtration;
(d) purifying the polymer-lectin conjugate from unconjugated lectin having immunogenic and toxic properties by chromatographic means which separates by differences in size, and charge;



(e) purifying the polymer-lectin conjugate having carbohydrate-binding activity from polymer-lectin conjugate lacking carbohydrate-binding activity by a means which separates by carbohydrate-binding activity comprising affinity chromatography with a carbohydrate for which the lectin has binding affinity, wherein after separation the polymer-lectin conjugate having binding activity is unbound from the carbohydrate by a process selected from the group consisting of dialysis and gel filtration;

said purified polymer-lectin conjugate being biocompatible and retaining carbohydrate-binding activity.

5,284,935

MHC-MEDIATED TOXIC CONJUGATES USEFUL IN AMELIORATING AUTOIMMUNITY

Brian R. Clark, Redwood City; Somesh D. Sharma, Los Altos, and L. Bernard Lerch, Menlo Park, all of Calif., assignors to Anergen, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 576,084, Aug. 30, 1990, Pat. No. 5,130,297, which is a continuation of Ser. No. 210,594, Jun. 23, 1988, abandoned, and a continuation-in-part of Ser. No. 367,751, Jun. 21, 1989, Pat. No. 5,194,425. This application Dec. 28, 1990, Ser. No. 635,840
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] C07K 1/10, 1/14, 1/04
U.S. Cl. 530—403 8 Claims

1. A method for preparing a pharmaceutical composition comprising a pharmaceutically acceptable excipient and a complex capable of binding a T cell receptor, the complex comprising an autoantigenic peptide and an isolated, soluble MHC Class II component having an antigen binding pocket, the method comprising:

isolating the soluble MHC Class II component from a cell capable of producing the component;
contacting the soluble MHC Class II component with the peptide such that the peptide is associated with the antigen binding pocket, thereby forming an MHC Class II-peptide complex;
removing excess peptide not associated with the antigen binding pocket; and
mixing the MHC Class II-peptide complex with the pharmaceutically acceptable excipient in a ratio suitable for therapeutic or diagnostic administration of the complex.

5,284,936

POLYAMINO ACID SUPERABSORBENTS

Julie Donachy, and C. Steven Sikes, both of Mobile, Ala., assignors to University of South Alabama, Mobile, Ala.

Continuation-in-part of Ser. No. 677,333, Mar. 29, 1991. This application Apr. 17, 1992, Ser. No. 870,241
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] A61F 13/15; B01J 20/26; C07K 15/00; C08L 77/04
U.S. Cl. 530—350 3 Claims

1. A substantially water-insoluble, crosslinked polypeptide, consisting essentially of 50 to 81.2 mole % of lysine and 18.8 to 50 mole % of glutamic acid, wherein said polypeptide has a gel volume of at least 5 as determined by the blue dextran assay.

5,284,937

PROCESS FOR THE EXTRACTION AND PURIFICATION OF HUMAN RECOMBINANT GAMMA INTERFERON

Otello Protasi, and Donatella Mannucci, both of Siena, Italy, assignors to Sclavo S.p.A., Siena, Italy

Filed Jul. 23, 1991, Ser. No. 734,778
Claims priority, application Italy, Jul. 25, 1990, 21051 A/90
Int. Cl.[5] A61K 37/66; C07K 3/12, 15/26
U.S. Cl. 530—351 10 Claims

1. Process for the extraction and purification of human gamma interferon from recombinant host cells producing the same in form of insoluble aggregates comprising:

a) suspending the recombinant host cells producing the human gamma interferon in form of insoluble aggregates in a buffer solution having pH comprised between 6.0 and 8.5, optionally complemented with an osmoprotector and disrupting the cells;
b) separating the supernatant comprising the insoluble aggregates from the cell debris obtained in stage (a);
c) separating the pellet containing the aggregates of recombinant human gamma interferon from the supernatant;
d) solubilizing the aggregates of recombinant human gamma interferon by one or more extractions of the pellet with a non-denaturing phosphate buffer having pH comprised between 6.5 and 8.5; and finally
e) purifying the solubilized recombinant human gamma interferon by means of one or more chromatographic techniques.

9. Human recombinant gamma-interferon obtained by the process according to claim 1, characterized by an isoelectric point lower than 8.

5,284,938

POLYSILOXANE MODIFIED THERMOSET COMPOSITIONS

Kailash C. B. Dangayach, and Ronald S. Bauer, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 915,773, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 683,204, Apr. 10, 1991, abandoned, which is a division of Ser. No. 485,670, Feb. 27, 1990, Pat. No. 5,037,898. This application Nov. 25, 1992, Ser. No. 982,262
Int. Cl.[5] C08J 5/00
U.S. Cl. 523—457 13 Claims

1. A process comprising:

(a) casting an electrical component with a composition comprising a solventless intimate mixture of an epoxy resin, a curing agent for the epoxy resin, at least about 55 weight percent, based on the weight of the composition, of a filler, and at least about 1 weight percent, based on the weight of the composition, of an AB or ABA block copolymer wherein B is a polysiloxane segment having greater than about 10 monomeric repeating units and having a solubility parameter of about 7 to about 8, A is a polylactone segment having a solubility parameter of about 9 to about 10, and the number average molecular

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weight ratio of total A to B is greater than or equal to 1, and

(b) subjecting the casting composition to conditions effective for curing the epoxy resin and hardening the casting composition around the electrical component.

5,284,939

PROCESS FOR THE PREPARATION OF HIGHLY CONCENTRATED SOLUTIONS OF CATIONIC AZO DYES

Alex Nicopoulos, Basel; Hanspeter Birri, Pratteln, both of Switzerland, and Gerhard Hanika, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 14, 1992, Ser. No. 882,981

Claims priority, application Switzerland, May 17, 1991, 1474/91

Int. Cl.[5] **C09B** *41/00, 67/34*

U.S. Cl. 534—582 **16 Claims**

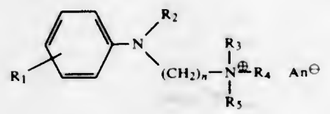
1. A process for the preparation of a highly concentrated aqueous solution of a salt of a cationic azo dye, virtually free of chlorides, which comprises

a) diazotising an amine of formula

$$D—NH_2 \quad (1)$$

wherein D is an unsubstituted or substituted radical of the benzene, thiazole, benzothiazole or thiadiazole series, in a solution which contains sulfuric acid, and subsequently

b) coupling the diazotised amine with a coupling component of formula



(2)

wherein

R_1 is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, halogen or C_1–C_4alkanoylamino,

R_2 is hydrogen or C_1–C_4alkyl,

n is an integer from 2 to 6,

R_3, R_4 and R_5 are each independently of one another unsubstituted or substituted alkyl or R_3 and R_4, together with the linking nitrogen atom, or R_3, R_4 and R_5, together with the linking nitrogen atom, form a heterocyclic radical, or R_3 and R_4 are each C_1–C_4alkyl and R_5 is amino, and $An^{\ominus}$ is an anion, at a pH below 1.5 in the temperature range from −10° to +30° C. and subsequently heating the reaction mixture for 0.5 to 3 hours at 50°–95° C. and then

c) washing the resultant azo dye with an aqueous solution of sulfuric acid which contains sodium sulfate,

d) treating the precipitated dye in the form of its hydrogen sulfate with a water-soluble bicarbonate, and

e) converting the dye bicarbonate with an organic acid into the dye salt of said acid.

5,284,940

PREPARATION FOR NUCLEIC ACID SAMPLES

Lily Lin, Berkeley; Stephen T. Isaacs, Orinda, and John E. Hearst, Berkeley, all of Calif., assignors to HRI Research, Inc., Concord, Calif.

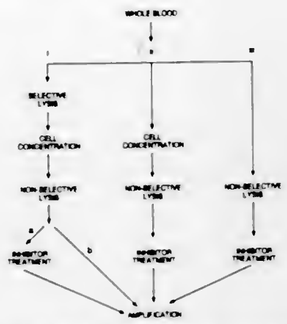
Filed Nov. 14, 1990, Ser. No. 614,921

Int. Cl.[5] **C07H** *23/00;* **C12Q** *1/68;* **C12N** *1/08*

U.S. Cl. 536—25.4 **7 Claims**

1. A method for preparing nucleic acid samples comprising the steps of:

a) providing nucleic acid suspecting of containing a polymerase inhibitor; and



b) adding transferrin to said nucleic acid to neutralize said polymerase inhibitor.

5,284,941

PROCESS FOR OBTAINING GLYCOLIPIDS AND PHOSPHOLIPIDS

Ladislas Colarow, Lausanne, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Oct. 2, 1989, Ser. No. 415,629

Claims priority, application Switzerland, Oct. 28, 1988, 4033/88

Int. Cl.[5] **C07H** *1/06;* **C07G** *17/00;* **A61K** *35/14, 31/70*

U.S. Cl. 536—127 **16 Claims**

1. A process for separating glycolipids from phospholipids comprising dissolving complex lipids in a solvent to form a solution and then passing the solution over a gel of copolymerized and crosslinked dihydroxyborylanilinomethacrylic acid and 1,4-butanediol dimethacrylate so that glycolipids are adsorbed on the gel and phospholipids pass through the gel.

5,284,942

PROCESS FOR THE PREPARATION OF PERI-DICHALCOGENO POLYCYCLIC AROMATIC COMPOUNDS

Kurt Hauenstein, Unterendingen, and Carl W. Mayer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 11, 1992, Ser. No. 849,556

Claims priority, application Switzerland, Mar. 15, 1991, 798/91

Int. Cl.[5] **C07D** *333/50, 333/78, 517/06, 517/00*

U.S. Cl. 540—1 **22 Claims**

1. A process for the preparation of a compound of the formula M_2X_2, wherein M is an alkali metal and X is a chalcogen selected from the group consisting of sulfur, selenium or tellurium, which process comprises reacting an alkali metal containing base with the elemental chalcogen, in an amidic solvent, at an elevated reaction temperature.

5,284,943

TATRAAZAPORPHIN, PROCESS FOR PRODUCING THE SAME, AS WELL AS OPTICAL RECORDING MEDIA USING THE SAME AND PRODUCTION PROCESSES THEREOF

Seiji Tai; Nobuyuki Hayashi; Koichi Kamijima; Mitsuo Katayose; Takayuki Akimoto, and Hideo Hagiwara, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Co., Tokyo, Japan

Continuation of Ser. No. 334,290, Apr. 6, 1989, Pat. No. 5,217,856. This application Jan. 22, 1992, Ser. No. 824,582

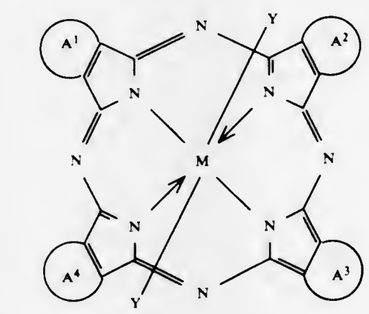
Claims priority, application Japan, Apr. 7, 1988, 63-85965; Jul. 4, 1988, 63-166349; Jul. 4, 1988, 63-166350; Jul. 14, 1988, 63-175381; Aug. 29, 1988, 63-214572; Nov. 2, 1988, 63-277969; Nov. 7, 1988, 63-280558; Nov. 7, 1988, 63-280559; Nov. 7, 1988, 63-280560; Dec. 6, 1988, 63-308545; Jan. 26, 1989, 1-17151; Jan. 26, 1989, 1-17152; Jan. 26, 1989, 1-17153; Jan. 26, 1989, 1-17154; Jan. 26, 1989, 1-17155; Jan. 26, 1989, 1-17156; Jan. 26, 1989, 1-17157; Jan. 26, 1989, 1-17158; Jan. 26, 1989, 1-17159

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *487/22;* **C09B** *47/00*

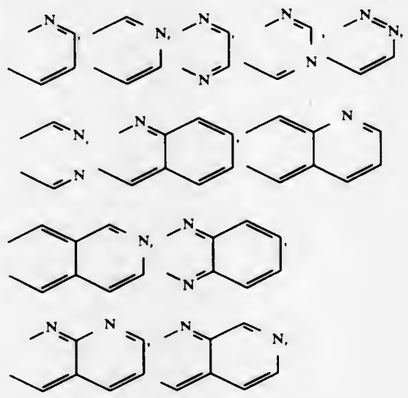
U.S. Cl. 540—121 **14 Claims**

1. A tetraazaporphin represented by the formula:

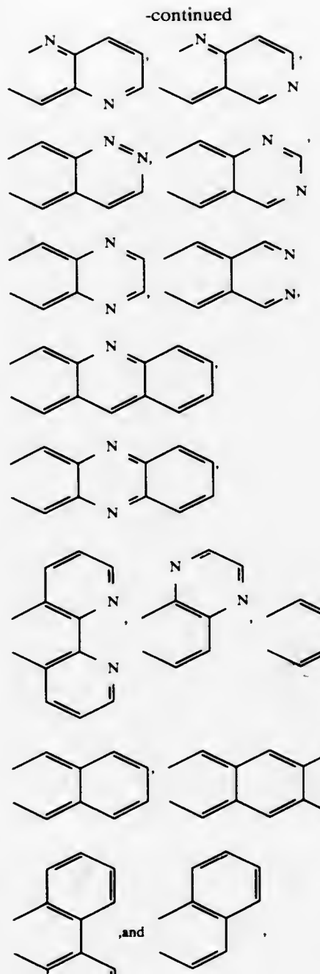


(1)

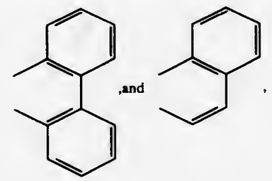
wherein M is Si, Ge or Sn; Y is an aryloxy group, an alkoxy group, a trialkylsiloxy group, a triarylsiloxy group, a trialkoxysiloxy group, a triaryloxysiloxy group, a trityloxy group or an acyloxy group, and two Y's may be the same or different; A^1, A^2, A^3 and A^4 are independently selected from the group consisting of



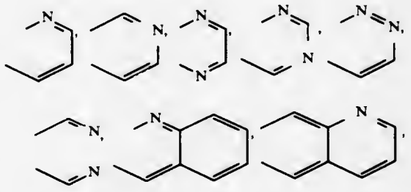
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,and

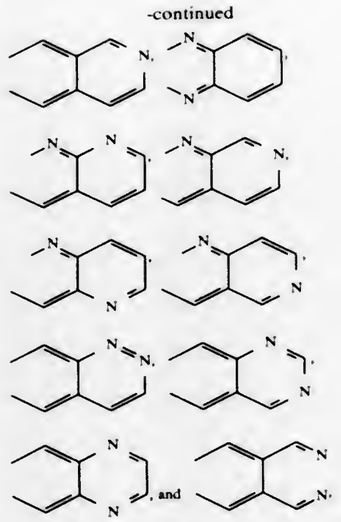


at least one of A^1, A^2, A^3 and A^4 is nitrogen-containing aromatic ring selected from the group consisting of



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and A^1, A^2, A^3 and A^4 may have independently one or more organic substituents selected from the group consisting of

$-R^1$,
$-OR^2$,
$-SiR^3R^4R^5$,
$-SO_2NR^6R^7$,
$-COR^8$,
$-COOR^9$,
$-OCOR^{10}$,
$-COHNR^{11}$,
$-NR^{12}R^{13}$,
$-SR^{14}$,
$-SO_2R^{15}$, and
$-X^1$,

wherein R^1 to R^{15} are independently a hydrogen atom, an alkyl group which may have one or more substituents, or an aryl group; and X^1 is a halogen atom.

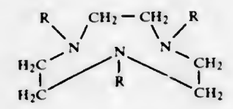
5,284,944

SYNTHESIS OF 1,4,7-TRIAZACYCLONONANE

Steven A. Madison, Valley Cottage, N.Y., and David J. Batal, Secaucus, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jan. 30, 1992, Ser. No. 906,782
Int. Cl.[5] C07D *255/02*
U.S. Cl. 540—474 **13 Claims**

1. A process for preparing a triazacyclononane of the structure:



wherein R is a radical selected from the group consisting of hydrogen, methyl, ethyl and propyl

the process comprising:

(i) reacting 1,4,7-diethylenetriamine with a compound of the formula R'-L wherein R' is selected from the group consisting of phenyl, benzyl and alkyl and L is a halosulfonyl group, with a base in water to form a sulfonamidated diethylenetriamine;

(ii) contacting the sulfonamidated diethylenetriamine held in a aqueous medium with an aprotic organic solvent to form a biphasic reaction medium in the presence of a cyclizing unit selected from the group consisting of ethylene glycol disulfonylate, ethylene dihalide and diacetyl glycol, and a further amount of a base to deprotonate the sulfonamidated diethylenetriamine to obtain a sulfonamidated cyclized triamine compound;

(iii) removing sulfonyl protecting groups from the cyclized sulfonamidated triamine compound to obtain a cyclized desulfonamidated traimine compound; and

(iv) converting said cyclized desulfonamidated triamine compound to said triazacyclononane.

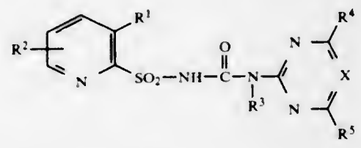
5,284,945

PROCESS FOR THE PREPARATION OF 2-PYRIDYLSULFONYLUREAS

Heinz Kehne, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 866,002, Apr. 9, 1992, Pat. No. 5,235,050. This application Feb. 26, 1993, Ser. No. 23,623
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111800
Int. Cl.[5] C07D *401/12*
U.S. Cl. 544—212 **6 Claims**

1. A process for the preparation of compounds of the formula (I)



(I)

in which

R^1 is $(C_1$-$C_4)$alkyl, which is unsubstituted or substituted by one or more radicals from the group comprising halogen, hydroxyl, $(C_1$-$C_4)$alkoxy, $(C_1$-$C_4)$haloalkoxy and $(C_2$-C_8-$)$alkoxyalkoxy, or is $-COR^6$, $(C_1$-$C_4)$alkylsulfonyl, halogen, NO_2, $-ER^7$, $-NR^8R^9$ or $-SO_2NR^{10}OR^{11}$,

R^2 is H, $(C_1$-$C_3)$alkyl which is unsubstituted or substituted by $(C_1$-$C_3)$alkoxy, hydroxyl, $(C_1$-$C_2)$alkylthio or CN, or is $(C_1$-$C_3)$haloalkyl, halogen, CN, NO_2, $(C_1$-$C_3)$alkoxy, $(C_1$-$C_3)$alkylthio, $(C_1$-$C_3)$haloalkoxy, $(C_1$-$C_3)$alkylamino, di$(C_1$-$C_3)$alkylamino or $(C_1$-$C_3)$alkylsulfonyl,

R^3 is H or CH_3,

R^4 and R^5 independently of one another are $(C_1$-$C_3)$alkyl, $(C_1$-$C_3)$alkoxy, $(C_1$-$C_3)$haloalkyl, $(C_1$-$C_3)$haloalkoxy, $(C_1$-$C_3)$alkylthio, halogen, $(C_2$-$C_5)$alkoxyalkyl or $(C_1$-C_3-$)$alkylamino,

X is CH or N,

R^6 is H, $-NR^{10}R^{11}$, $-ER^{12}$ or $(C_1$-$C_4)$alkyl which is unsubstituted or substituted by one or more radicals from the group comprising halogen, $(C_1$-$C_3)$alkoxy and $(C_1$-$C_3)$alkylthio,

E is an oxygen or sulfur atom,

R^7 is $(C_1$-$C_4)$alkyl which is unsubstituted or substituted by one or more radicals from the group comprising halogen, $(C_1$-$C_3)$alkoxy, $(C_3$-$C_4)$alkenyloxy, $(C_3$-$C_4)$alkynyloxy, $(C_1$-$C_3)$alkylthio and [$(C_1$-C_4-alkoxy]-carbonyl, or is $(C_3$-$C_4)$alkenyl or $(C_3$-$C_4)$alkynyl,

R^8 is $(C_1$-$C_4)$alkyl, $(C_1$-$C_4)$haloalkyl or $(C_2$-$C_6)$alkoxyalkyl,

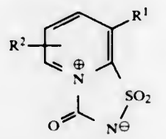
R^9 is $(C_1$-$C_4)$alkylsulfonyl which is unsubstituted or substituted by one or more radicals from the group comprising halogen and $(C_1$-$C_4)$alkoxy, or $(C_1$-$C_4)$-haloalkyl

R^{10} and R^{11} independently of one another are H, $(C_1$-$C_3)$alkyl, $(C_1$-$C_3)$haloalkyl, $(C_1$-$C_2)$alkoxy, $(C_3$-$C_4)$alkenyl or $(C_3$-$C_4)$alkynyl, or

R^{10} and R^{11} together are an alkylene bridge of the formula $-(CH_2)_n-$, in which n is 2, 3, 4 or 5, it being possible for the alkylene bridge to be interrupted by an oxygen atom, and

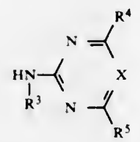
R^{12} is $(C_1$-$C_4)$alkyl which is unsubstituted or substituted by one or more radicals from the group comprising halogen, $(C_1$-$C_3)$alkoxy, $(C_3$-$C_4)$alkenyloxy, $(C_3$-$C_4)$alkynyloxy, phenoxy, $(C_1$-$C_3)$alkylthio or [$(C_1$-$C_4)$alkoxy]carbonyl, or is $(C_3$-$C_4)$alkenyl, $(C_3$-$C_4)$alkynyl or phenyl,

which comprises reacting a zwitterionic 1,1,3-trioxo-1,2,4-thiadiazolo[4,5-a]pyridine of the formula (II)



(II)

in which R^1 and R^2 have the same meaning as in formula (I), with an amino heterocycle of the formula (III)



(III)

in which R^3, R^4, R^5 and X have the same meaning as in formula (I).

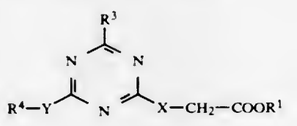
5,284,946

TRIAZINYL-SUBSTITUTED ACRYLIC ESTERS

Peter C. Knüppel, Ermelskirchen; Dieter Berg, Wuppertal; Stefan Dutzmann, Hilden; Heinz-Wilhelm Dehne, Monheim, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 846,321, Mar. 5, 1992, Pat. No. 5,238,934. This application Mar. 11, 1993, Ser. No. 29,489
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108029
Int. Cl.[5] C07D *401/12, 401/06, 251/16, 251/30*
U.S. Cl. 544—219 **1 Claim**

1. Acetic esters of the Formula II



(II)

in which

R^1 represents straight-chain or branched alkyl having 1 to 6 carbon atoms,

X represents oxygen, sulphur, or a radical



R^3 represents hydrogen, C_1-C_6-alkyl, or C_1-C_6-alkoxy,

R^4 represents aryl which has 6 to 10 carbon atoms or pyridyl, each of which is optionally monosubsituted or polysubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, cyclopentyl, cyclohexyl, methoxy, ethoxy, n- or i-propoxy methylthio, ethylthio, trifluoromethyl, trifluoromethyoxy, trifluoromethylthio, doixymethylene, dioxyethylene, tetrafluorodioxymethylene, difluorodioxymethylene, or phenyl, phenoxy, benzyl, phenylethyl, phenylethenyl, or phenylethinyl, each of which is optionally monosubsituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, methyl, methoxy, or trifluoromethyl,

R^6 represents hydrogen, straight-chain or branched alkyl having 1 to 6 carbon atoms, or represents aralkyl or aryl which has 1 to 6 carbon atoms in the straight-chain or branched-alkyl moiety and 6 to 10 carbon atoms in the respective aryl moiety, and each of which is optionally monosubstituted or polysubstituted in the aryl moiety by identical or different substituents selected from the group consisting of the substituents mentioned in the case of R^4, and

Y represents a direct bond, oxygen, or in each case one of the following groups $-CH_2$, $-CH-CH$, or $C\equiv C$.

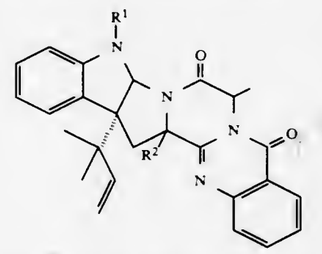
5,284,947

MULTIPLE DRUG RESISTANCE-ATTENUATING COMPOUNDS

Sunil K. Kadam, Kenosha, Wis.; Patrick E. Humphrey, Lindenhurst, Ill.; Jill Hochlowski, Green Oaks, Ill.; James B. McAlpine, Libertyville, Ill., and Marianna Jackson, Waukegan, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 15, 1992, Ser. No. 945,302
Int. Cl.[5] C07D *487/22*; A61K *31/495*
U.S. Cl. 544—245 **10 Claims**

1. A compound having the structural formula



or a pharmaceutically acceptable salts and prodrugs thereof, wherein R^1 is selected from the group consisting of hydrogen and loweracyl, and R^2 is selected from the group consisting of hydrogen, hydroxyl and methoxyl.

5,284,948

DRUG HAPTEN ANALOGUES FOR IMMUNOASSAYS

Ignazio S. Ponticello, Pittsford; Marsha D. B. Oenick; Susan J. Danielson, both of Rochester, and David A. Hilborn, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 712,329, Jun. 7, 1991, abandoned. This application Mar. 16, 1992, Ser. No. 851,435
Int. Cl.[5] C07D *403/00, 239/02, 233/72*
U.S. Cl. 544—295 **3 Claims**

1. A drug hapten analogue conforming to structure I:

VOL 1159 ISS 2 FE 8 1994 UMI

5,284,949

2-SUBSTITUTED AMINO-4,6-DI-TERTIARY-BUTYL-5-HYDROXY-1,3-PYRIMIDINES AS ANTIINFLAMMATORY AGENTS

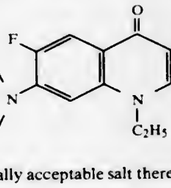
Thomas R. Belliotti, Ypsilanti; David T. Connor, Ann Arbor, and Catherine R. Kostlan, Saline, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 977,313, Nov. 16, 1992, Pat. No. 5,220,025, which is a division of Ser. No. 840,360, Feb. 24, 1992, Pat. No. 5,196,431. This application Mar. 10, 1993, Ser. No. 29,076

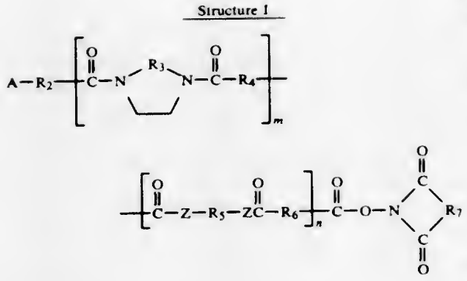
Int. Cl.[5] **C07D** *239/02; A61K 31/505*

U.S. Cl. 544—298 **1 Claim**

1. A method of using an aminooxazole of the formula



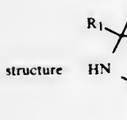
to prepare a compound of the formula I

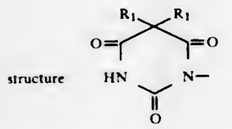


wherein

A represents a hydration nucleus of the



structure  ; or a barbituate nucleus of the



structure ; wherein

R^1 each independently represents hydrogen, alkyl of 1 to 10 carbon atoms, or phenyl;

R^2 represents C1 to C10 alkylene or such alkylene groups interrupted with at least one or more ester groups, amide groups, —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R^4, R^5, and R^6, each independently, represents phenylene, C_1 to C_{10} alkylene or such alkylene groups interrupted with ester groups, amide groups, —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R^3 represents C_1 to C_3 alkylene;

R^7 is an ethylene or o-phenylene;

Z represents —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

m is 0, 1, or 2;

n is 0, 1, or 2; and

the total number of atoms comprised in m, n and R^2 is 5 to 40;

and further provided that (i) at least one of the R^1 groups is phenyl; (ii) the bracketed components of structure 1 can appear therein in any order and (iii) the linking group is other than a derivative of a saturated or unsaturated monocarboxylic acid having from to 2 to 12 carbon atoms.

by reacting the aminooxazole with ammonium hydroxide at about 130° C. to about 190° C. in a closed vessel.

5,284,950

PROCESS FOR THE PREPARATION OF QUINOLINE CARBOXYOLIC ACIDS

István Hermecz; Géza Kereszturi; Lelle Vasvári née Debreczy; Ágnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Gábor Kovács, Budapest; Tamás Szüts, Budapest; Péter Ritli, Budapest; Judit Sipos, Budapest, and Anikó Pajor, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Division of Ser. No. 388,309, Jul. 28, 1989, abandoned, which is a continuation of Ser. No. 104,053, Oct. 8, 1987, abandoned. This application Apr. 25, 1991, Ser. No. 691,633

Claims priority, application Hungary, Dec. 9, 1985, 4694/85; Dec. 9, 1985, 4695/85; Dec. 9, 1986, PCT/HU86/00069

Int. Cl.[5] **C07D** *403/04*

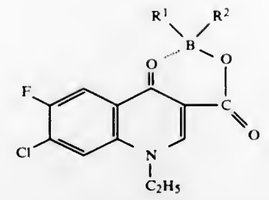
U.S. Cl. 544—363 **5 Claims**

1. A process for the preparation of a compound (I)

(I)

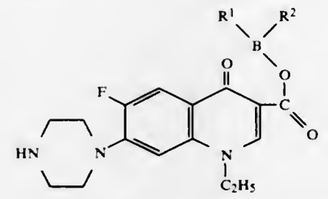
or a pharmaceutically acceptable salt thereof, which comprises the steps of:

(a) aminating a compound of the Formula (V)



(V)

or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 are each C_2 to C_6 aliphatic acyloxy, unsubstituted or substituted by halogen, or are each C_7 to C_{11} aromatic acyloxy, with piperazine or a pharmaceutically acceptable salt thereof in an inert organic solvent at a temperature of 0° to 110° C. for 1 to 3 hours to yield a compound of the Formula (VII)



(VII)

or a pharmaceutically acceptable salt thereof; and

(b) hydrolyzing the compound of the Formula (VII) or a pharmaceutically acceptable salt thereof, after or without isolation, to obtain a compound of the Formula (I), and if desired, converting the compound of the Formula (I) into a pharmaceutically acceptable salt thereof, or setting free the compound of the Formula (I) from its pharmaceutically acceptable salt.

5,284,951

HYDROLYTICALLY STABLE CHEMILUMINESCENT LABELS AND THEIR CONJUGATES, AND ASSAYS THEREFROM

Frank McCapra, Seaford, Great Britain, and Iraj Beheshti, Edina, Minn., assignors to London Diagnostics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 140,040, Dec. 31, 1987, abandoned, and Ser. No. 291,843, Dec. 29, 1988, abandoned, and Ser. No. 418,956, Oct. 10, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 859,956

Int. Cl.[5] **C07D** *219/04*

U.S. Cl. 546—107 **18 Claims**

1. A novel chemiluminescent compound comprising a aryl ester, thioester or amide of a carboxylic acid substituted heterocyclic ring that is susceptible to chemical attack to dissociate the heterocyclic ring to a transient compound, wherein the heterocyclic ring is ring carbon-bonded to the carbonyl of the ester, thioester or amide moiety and possesses a heteroatom in an oxidation state that allows chemiluminescence by dissociating a compound at the carbon bonded to the carbonyl that decays to produce chemiluminescence, the aryl is a ring or ring system that is ring carbon-bonded to the oxygen, sulfur or nitrogen of the ester, thioester or amide, as the case may be, and contains diortho electron donating substitution in conjunction with meta and/or para substituents that possess a σ_p value greater than 0 and less than 1.

5,284,952

SULFONYL SUBSTITUTED CHEMILUMINESCENT LABELS AND THEIR CONJUGATES, AND ASSAYS THEREFROM

Kastooriranganathan Ramakrishnan, Eden Prairie, Minn., assignor to London Diagnostics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 140,040, Dec. 31, 1987, abandoned, and a continuation-in-part of Ser. No. 291,843, Dec. 29, 1988, abandoned, and a continuation-in-part of Ser. No. 418,956, Oct. 10, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 859,995

Int. Cl.[5] **C07D** *219/04*

U.S. Cl. 546—104 **18 Claims**

1. A chemiluminescent aryl ester, thioester or amide of a carboxylic acid substituted heterocyclic ring that is susceptible to chemical attack to dissociate the heterocyclic ring to a transient compound, wherein the heterocyclic ring is ring carbon-bonded to the carbonyl of the ester, thioester or amide moiety and possesses a heteroatom in an oxidation state that allows chemiluminescence by dissociating a compound at the carbon bonded to the carbonyl that decays to produce chemiluminescence, the aryl is a ring or ring system that is ring carbon-bonded to the oxygen, sulfur or nitrogen of the ester, thioester or amide, as the case may be, and contains at least diortho substituents thereon and —SO_2 bonded directly by a sulfur to carbon bond at the meta or para position.

5,284,953

DIASTEREOMER SALT OF OPTICALLY ACTIVE QUINOLINEMEVALONIC ACID

Yoshio Ohara; Mikio Suzuki; Yoshinobu Yanagawa; Hiroshi Iwasaki, and Nobuhide Miyachi, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

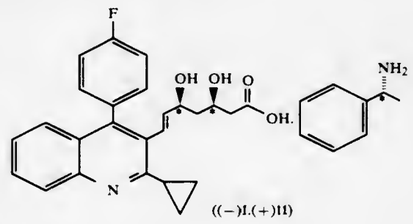
Filed Jun. 23, 1992, Ser. No. 902,863

Claims priority, application Japan, Jun. 24, 1991, 1-51810; May 20, 1992, 1-27277

Int. Cl.[5] **C07D** *405/06*

U.S. Cl. 546—173 **1 Claim**

1. A diastereomer salt of optically active quinolinemevalonic acid of the formula ((−)I.(+)II):



((−)I.(+)II)

5,284,954

PROCESS FOR THE PREPARATION OF TETRAZOLES

Steven J. Wittenberger; Bikshandar A. Narayanan, both of Mundelein; Anthony R. Haight, Park City, and David Scarpetti, Evanston, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

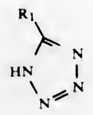
Continuation-in-part of Ser. No. 819,537, Jan. 10, 1992, Pat. No. 5,210,206, which is a continuation-in-part of Ser. No. 744,241, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,400, Sep. 10, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,645

Int. Cl.[5] **C07D** *401/10, 257/04*

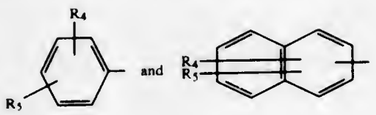
U.S. Cl. 546—276 **13 Claims**

1. A process for the preparation of a 5-aryltetrazole or a salt thereof of the formula:

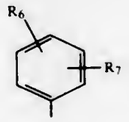
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wherein R_1 is selected from phenyl, naphthyl,

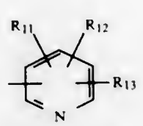


wherein R_4 is (1) loweralkyl, (2) halo, (3) alkoxy, (4) amino, (5) alkylamino, (6) dialkylamino, (7) alkoxycarbonyl, (8) alkoxycarbonylalkyl or



(9)

wherein R_6 is (i) loweralkyl, (ii) —CHO, (iii) $—CO_2R_8$ wherein R_8 is loweralkyl or a carboxy protecting group or (iv) loweralkyl substituted with $—N(R_9)(R_{10})$ wherein R_9 is hydrogen, loweralkyl, alkoxyalkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl and R_{10} is hydrogen, an nitrogen-protecting group or



wherein R_{11} is $—CO_2R_{14}$ wherein R_{14} is loweralkyl or a carboxy protecting group and R_{12} and R_{13} are independently selected from hydrogen, loweralkyl and halo and R_7 is hydrogen, loweralkyl, alkoxy, alkoxyalkyl or halo and R_5 is (1) hydrogen, (2) loweralkyl, (3) alkoxy or (4) halo comprising reacting R_1-CN wherein R_1 is defined as above with (a) $(R_2)_3SiN_3$ wherein R_2 at each occurrence is independently selected from loweralkyl and phenyl and (b) $(R_3)_2SnO$ wherein R_3 is independently selected at each occurrence from loweralkyl and phenyl or $(R_3)_2$ represents $—(CH_2)_n—$ wherein n is 4, 5 or 6.

5,284,955

SUBSTITUTED-2,3-DICARBOXYPYRIDINIUM NITRATES

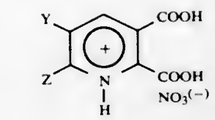
Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Oct. 28, 1992, Ser. No. 967,349

Int. Cl.[5] C07D *213/30*

U.S. Cl. 546—321 **9 Claims**

1. A substituted 2,3-pyridinium nitrate compound of formula I



(I)

wherein Y and Z are each independently hydrogen, C_1-C_6 alkyl optionally substituted with one or more C_1-C_4 alkoxy, halogen or sulfonyl groups, nitro, C_1-C_4 alkylcarbonyl, C_1-C_4 alkylsulfonyl or phenyl optionally substituted with C_1-C_4 alkyl, C_1-C_4 alkylsulfonyl, halogen, or haloalkyl groups with the proviso that one of Y or Z must be other than hydrogen.

5,284,956

LIQUID CRYSTALLINE MIXTURES CONTAINING 2-(2-FLUOROPHENYL) PYRIDINES

Richard Buchecker, Zurich, Switzerland; Assya I. Pavluchenko; Vladimir F. Petrov, both of Moscow, U.S.S.R.; Martin Schadt, Seltsberg, Switzerland; Natalia I. Smirnova, Dolgoprudny, Moscow Region, and Victor V. Titov, Moscow, both of U.S.S.R., assignors to Hoffmann-La Roche Inc., Nutley, N.J. and Niopic Moscow Research and Production Association

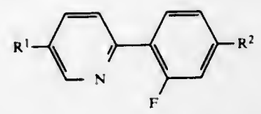
Continuation of Ser. No. 400,595, Aug. 29, 1989, abandoned. This application Mar. 25, 1992, Ser. No. 857,702

Claims priority, application Switzerland, Sep. 6, 1988, 3334/88

Int. Cl.[5] C07D *213/26, 213/30*

U.S. Cl. 546—339 **5 Claims**

1. A compound represented by the formula



I

wherein R^1 is C_1-C_{12}-alkyl or trans-4-(C_1-C_{18}-alkyl)-cyclohexyl; and R^2 is C_1-C_{12}-alkyl or C_1-C_{12}-alkoxy.

5,284,957

EXCITATORY AMINO ACID RECEPTOR ANTAGONISTS

Bret Huff, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 3, 1992, Ser. No. 939,780

Int. Cl.[5] C07D *257/04*

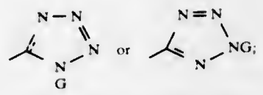
U.S. Cl. 548—112 **5 Claims**

1. A compound of the formula



wherein:

J is a group of the formula



G is trityl, benzyl, t-butyl, t-butyldimethylsilyl, triphenylsilyl, or hydrogen;

Q is $CHR^7P^+(Ph)_3X^-$ or $CHR^7PO(Ph)_2$;

R^7 is hydrogen, C_1-C_4 alkyl, phenyl, or substituted phenyl; and

X^- is bromide, chloride, iodide, tetrafluoroborate, or hexafluorophosphate.

5,284,958

PROCESS FOR PRODUCING A 1H-PYRAZOLO[5,1-C]-1,2,4-TRIAZOLE COMPOUND

Yuki Mizukawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 644,329, Jan. 22, 1991, Pat. No. 5,214,149. This application Jul. 23, 1992, Ser. No. 917,234

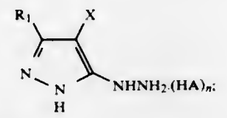
Claims priority, application Japan, Jan. 23, 1990, 2-11765

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] C07D *487/04*

U.S. Cl. 548—262.4 **13 Claims**

1. A method of producing a 1H-pyrazolo[5,1-c]-1,2,4-triazole compound which comprises causing a ring-formation reaction between a 5-hydrazine-1H-pyrazole compound represented by formula (III):



(III)

wherein

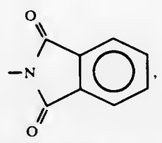
R_1 represents a hydrogen atom, an alkyl group, an aryl group wherein the aryl is a hydrocarbon, an alkoxy group, an aryloxy group wherein the aryl is a hydrocarbon, an alkylthio group, an arylthio group wherein the aryl is a hydrocarbon, an amino group, an anilino group, an acylamino group, a ureido group, a urethane group, an alkoxycarbonyl group, a sulfonamido group, a sulfamoyl group, a sulfonyl group, a cyano group, a nitro group, or a hydroxyl group, and wherein the groups of R_1 may have one or more substituents each substituent selected from the group of a halogen atom, a cyano group, a nitro group, a phenyl group, a naphthyl group, 1-pyrazolyl group, 1-imidazolyl group, an alkoxy group, a phenyloxy group, an alkylthio group, a phenylthio group, a naphthylthio group, an amino group, an acylamino group, a ureido group, a urethane group, an alkoxycarbonyl group, a sulfonamido group, a sulfamoyl group, or a sulfonyl group, X represents an alkoxycarbonyl group, a pyrazolyl group, an imidazolyl group, an aryloxy group wherein the aryl is a hydrocarbon, an alkoxy group, an alkylthio group, or an arylthio group wherein the aryl is a hydrocarbon, and wherein the groups of X may have one or more substituents each substituent selected from the group of a halogen atom, a cyano group, a nitro group, a phenyl group, a naphthyl group, 1-pyrazolyl group, 1-imidazolyl group, an alkoxy group, a phenyloxy group, an alkylthio group, a phenylthio group, a naphthylthio group, an amino group, an acylamino group, a ureido group, a urethane group, an alkoxycarbonyl group, a sulfonamido group, a sulfamoyl group, or a sulfonyl group, A represents a hydrochloride radical, a sulfate radical, a methanesulfonate radical and a para-toluenesulfonate radical, and n is 0 or 1; and

a carboxylic acid represented by formula (IV):

$$R_2—COOM \quad \text{(IV)};$$

wherein

R_2 represents a hydrogen atom, an alkyl group, an aryl group wherein the aryl is a hydrocarbon, or a heterocyclic group selected from 3-pyridyl, 4-pyridyl, and 5-nitro-3-pyridyl, and wherein R_2 may have one or more substituents each substituent selected from the group of a halogen atom, an alkoxy group, an aryloxy group wherein the aryl is a hydrocarbon, an aryl group wherein the aryl is a hydrocarbon, an alkylthio group, an arylthio group wherein the aryl is a hydrocarbon, an amino group, an alkoxycarbonyl group, an aryloxycarbonyl group wherein the aryl is a hydrocarbon, a sulfonamido group, a sulfonyl group, a cyano group,



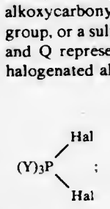
or a nitro group, and M represents a hydrogen atom or an alkali metal;

in the presence of a phosfolan compound or a phosphonium salt wherein the phosfolan compound is represented by the following formula (VII) and the phosphonium salt is represented by the following formula (VI):

$$((Y)_3P\text{-}Hal)^+Q^- \quad \text{(VI)};$$

wherein

Y represents an alkyl group, an aryl group wherein the aryl is a hydrocarbon, an alkoxy group, an aryloxy group wherein the aryl is a hydrocarbon, or an amino group, and wherein the groups of Y may have one or more substituents each substituent selected from the group of a halogen atom, a cyano group, a nitro group, a phenyl group, a naphthyl group, 1-pyrazolyl group, 1-imidazolyl group, an alkoxy group, a phenyloxy group, an alkylthio group, a phenylthio group, a naphthylthio group, an amino group, an acylamino group, a ureido group, a urethane group, an alkoxycarbonyl group, a sulfonamido group, a sulfamoyl group, or a sulfonyl group, Hal represents a halogen atom, and Q represents a halogen atom, an imido group or a halogenated alkyl group:



(VII)

wherein

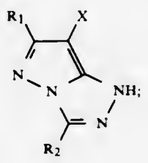
Y and Hal have the same meanings as defined above, said phosfolan compound or said phosphonium salt being formed from a tertiary phosphine and a halogenating agent represented by formula (V):

$$Hal\text{-}Q \quad \text{(V)};$$

wherein

Hal and Q have the same meanings as defined above;

to form the 1H-pyrazolo[5,1-c]-1,2,4-triazole compound which is represented by formula (II):



(II)

wherein

R_1, R_2 and X have the same meanings as defined above.

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5,284,959

SELECTED POLY(DIANHYDRIDE) COMPOUNDS TERMINATED WITH REACTIVE END GROUPS

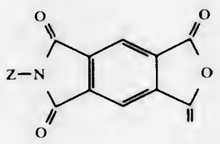
Bruce A. Marien, Woodbridge, and Keith O. Wilboarn, Manchester, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 980,058, Nov. 23, 1992, Pat. No. 5,239,049, which is a division of Ser. No. 808,141, Dec. 16, 1991, Pat. No. 5,206,335. This application Mar. 29, 1993, Ser. No. 37,843

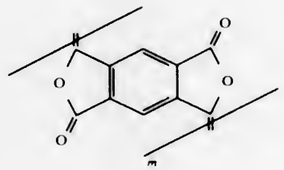
Int. Cl.[5] **C08G** *61/12, 63/00;* **C07D** *491/048*

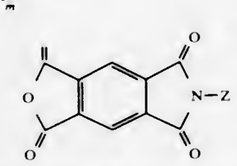
U.S. Cl. 548—431 **2 Claims**

1. Poly(dianhydride) compounds terminated with polymerizable end groups having formulae (III) and (IV):

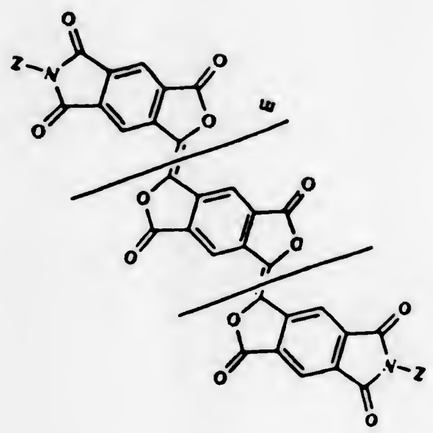


(III)

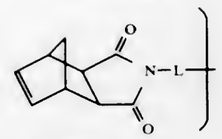




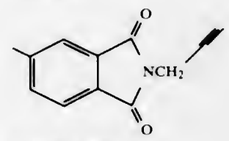
wherein m is 0–50 and Z is selected from the group consisting of



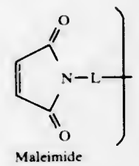
-continued



5-norbornene,2,3 dicarboxylic imide (NADIC)

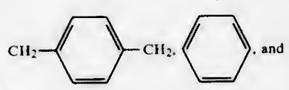


N-Propargylimide



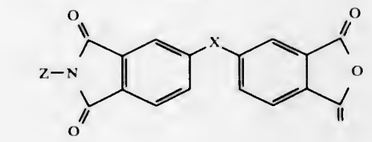
Maleimide

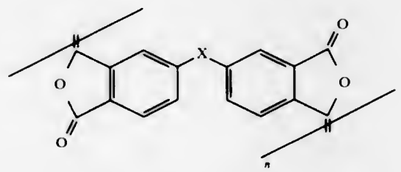
wherein L=CH_2, CH_2CH_2, dimethyl siloxane,

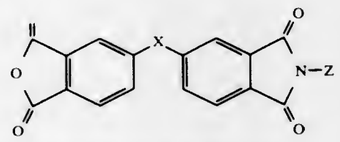


(IV)

, and







wherein n is 0–20, X is selected from the group consisting of a bond junction, an oxygen atom, SO_2, $C(CF_3)_2$, CO, $C(CH_3)_2$, S, CF_2—O—CF_2, CH_2, and CHOH, and Z is as defined above.

5,284,960

PROCESS FOR THE PRODUCTION OF 5-CHLOROXINDOLE

René Imwinkelried, Brig-Glis, and Felix Previdoli, Brig, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

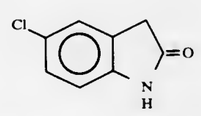
Filed May 7, 1993, Ser. No. 57,639

Claims priority, application Switzerland, May 13, 1992, 1528/92

Int. Cl.[5] **C07D** *209/34*

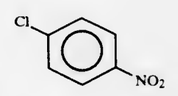
U.S. Cl. 548—486 **18 Claims**

1. A process for the production of 5-chloroxindole of formula:



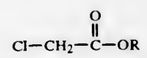
I

comparing, in a first step, converting chloronitrobenzene of formula:



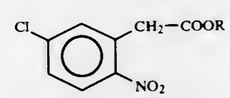
II

with a chloroacetic acid alkyl ester of formula:



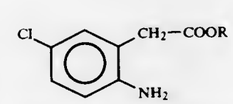
III

wherein R is a C_1-C_7-alkyl group, branched or unbranched, in the presence of a base to a chloronitrobenzene acetic acid alkyl ester of formula:



IV

wherein R has the above-mentioned meaning, in a second step, catalytically hydrogenating the chloronitrobenzene acetic acid alkyl ester of formula IV with hydrogen to the corresponding amine of formula:



V

wherein R has the above-mentioned meaning, and, in a third step, cyclizing the amine of formula V to the 5-chloroxindole of formula I in the presence of an acid.

5,284,961

PROCESS FOR THE PREPARATION OF 6-HYDROXY-2,5,7,8-TETRAALKYL-2-(4-AMINOPHENOXYMETHYL) CHROMANS

Josef Heveling, Naters, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company, Ltd., Tokyo, Japan

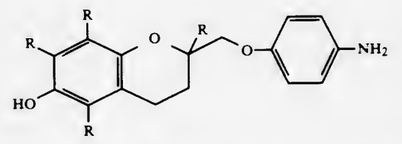
Filed Feb. 19, 1993, Ser. No. 19,587

Claims priority, application Switzerland, Feb. 21, 1992, 531/92

Int. Cl.[5] **C07D** *311/58*

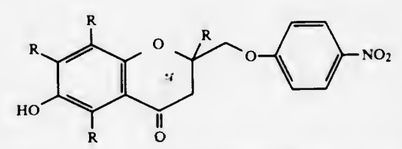
U.S. Cl. 549—407 **13 Claims**

1. A process for the preparation of a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-aminophenoxymethyl)chroman of the formula:



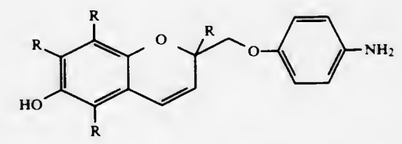
I

wherein R is a lower alkyl group having 1 to 4 C atoms, characterized in that a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-nitrophenoxymethyl)chroman-4-one of the formula:



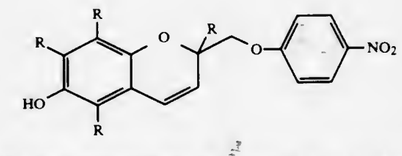
II

wherein R has the above-stated meaning, is reduced under pressure in the presence of a catalyst system of amorphous zirconium oxide/isopropanol to give a mixture of a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-aminophenylmethyl)-chrom-3-ene of the formula:



III

wherein R has the above-stated meaning, and a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-nitrophenoxymethyl)chrom-3-ene of the formula:



IV

and, in the subsequent step, said mixture is hydrogenated using hydrogen in the presence of a hydrogenation catalyst to give the final product.

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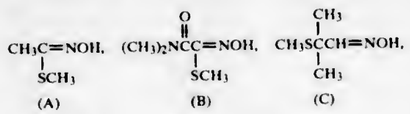
5,284,962

MULTISTAGE PROCESS FOR MAKING METHYL CARBAMATES

Terence A. Rensi, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

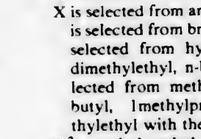
Filed Oct. 9, 1992, Ser. No. 958,629
Int. Cl.[5] C07D 317/64
U.S. Cl. 549—438 **12 Claims**

1. An improved continuous process for forming an N-methyl carbamate pesticide by reacting an oxime or phenol with methyl isocyanate, the oxime or phenol being selected from the group consisting of:

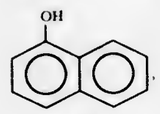


(A)

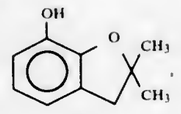
(B)



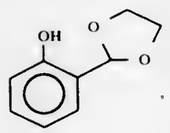
(C)



(D)

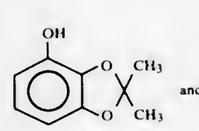


(E)

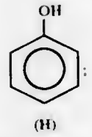


(F)

and



(G)



(H)

wherein the improvement comprises:

(i) conducting the reaction in water in the substantial absence of an organic solvent;

(ii) cocurrently introducing the reactants into a multiply staged reactor system;

(iii) attenuating the amount of methyl isocyanate available for reaction with the oxime or phenol in the first reactor stage, said methyl isocyanate being supplied as a vapor in a diluent gas,

(iv) transferring the reactants into a subsequent reactor stage before the reaction is complete, thereby minimizing formation of byproduct dimethylurea; and

(v) completing the reaction in the second or subsequent stage of the reactor.

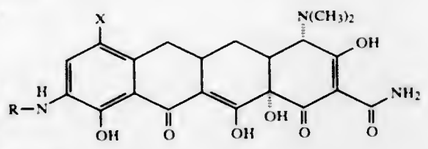
5,284,963

METHOD OF PRODUCING 7-(SUBSTITUTED)-9-[(SUBSTITUTED GLYCYL)-AMIDOL]-6-DEMETHYL-6-DEOXYTETRACYCLINES

Phaik-Eng Sum, Pomona, and Ving J. Lee, Monsey, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Aug. 13, 1992, Ser. No. 928,588
Int. Cl.[5] C07C 233/64, 235/32
U.S. Cl. 552—205 **11 Claims**

1. A process for producing 7-(substituted)-9-[(substituted glycyl)amido]-6-demethyl-6-deoxytetracyclines of the formula:



1

wherein:

X is selected from amino, —NR^1R^2, or halogen; the halogen is selected from bromine, chlorine, fluorine or iodine; R^1 is selected from hydrogen, methyl, ethyl, n-propyl, 1,1-dimethylethyl, n-butyl, or 1-methylpropyl and R^2 is selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1methylpropyl, 2-methylpropyl, or 1,1-dimethylethyl with the proviso that when R^1=hydrogen,

R^2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl and when R^1=methyl or ethyl,

R^2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1=n-propyl,

R^2=n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1=1-methylethyl,

R^2=n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1=n-butyl,

R^2=n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1=1-methylpropyl,

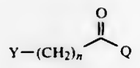
R^2=2-methylpropyl;

R is selected from $R^4(CH_2)_nCO$, n=0–4, R^4 is an α-amino(C_1–C_4)alkyl group selected from α-aminomethyl, α-aminoethyl, α-aminopropyl, α-aminobutyl or the enantiomers of said α-amino(C_1–C_4)alkyl group; an α-aralkylamino group selected from phenylglycyl or the enantiomers of said α-aralkylamino group; an amino group; a monosubstituted amino group with substitution selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl, 1,1-dimethylethyl, n-pentyl, 2-methylbutyl, n-pentyl, 2-methylbutyl, 1,1-dimethylpropyl, 2,2-dimethylpropyl, 2,2-dimethylbutyl, 3-methylpentyl, 1,2-dimethylbutyl, 1,3-dimethybutyl, 1-methyl-2-ethylpropyl, cyclopropyl, cyclobutyl, benzyl or phenyl; a disubstituted amino group selected from dimethylamino, diethylamino, methyl(butyl)amino, ethyl(1-methylethyl)amino, monomethylbenzylamino; or a carboxy (C_2–C_4)alkylamino group selected from aminoacetic acid, α-aminopropionic acid or the enantiomers of said carboxy (C_2–C_4)alkylaminogroup; with the proviso that and when n=0,

R^4 is an α-amino(C_1–C_4)alkyl group selected from α-aminomethyl, α-aminoethyl, α-aminopropyl, α-aminobutyl or the enantiomers of said α-amino(C_1–C_4)alkyl group; an α-aralkylamino group selected from phenylglycyl or the enantiomers of said α-aralkylamino group; and when n=1–4,

R^4 is an amino group; a monosubstituted amino group with substitution selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl, 1,1-dimethylethyl, n-pentyl, 2-methylbutyl, 1,1-dimethylpropyl, 2,2-dimethylpropyl, 3-methylbutyl, n-hexyl, 1-methylpentyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3-methylpentyl, 1,2-dimethylbutyl, 1,3-dimethybutyl 1-methyl-2-ethylpropyl, cyclopropyl, cyclobutyl, benzyl or phenyl; a disubstituted amino group selected from dimethylamino, diethylamino, methyl(butyl)amino, ethyl(1-methylethyl)amino, monomethylbenzylamino; or a carboxy(C_2–C_4)alkylamino group selected from aminoacetic acid, α-aminopropionic acid or the enantiomers of said carboxy(C_2–C_4)alkylamino group; which comprises

(a) mixing 9-amino-7-(substituted)-6-demethyl-6-deoxytetracycline or the pharmacologically acceptable salts thereof with a polar-aprotic solvent, an inert solvent, and a base and reacting with a straight or branched haloacyl halide of the formula:



wherein:

Q is a halogen selected from bromine, chlorine, fluorine or iodine; and n=0 to 4; and when n=0,

Y is a straight or branched α-halo (C_1–C_4)alkyl group selected from bromomethyl, chloromethyl, iodomethyl, α-bromoethyl, α-chloroethyl, α-bromobutyl or α-chloro-isobutyl; and when n=1,4,

Y is halogen selected from bromine, chlorine, iodine or fluorine; an O-toluenesulfonate, O-methylsulfonate or trifluoromethylsulfonate; for 0.5 to 5 hours at from room temperature to the reflux temperature of the reaction and recovering 9-[(haloacyl)amido]-7-(substituted)-6-demethyl-6-deoxyltetracycline or the pharmacologically acceptable salts thereof; and

(b) reacting the 9-[(haloacyl)amido]-7-(substituted)-6-demethyl-6-deoxytetracycline or the pharmacologically acceptable salts thereof, in a polar-aprotic solvent, under an inert atmosphere of helium, nitrogen or argon, with a nucleophile having the formula, R^4H, wherein R^4 is hereinabove defined; for from 0.5 to 2 hours at from room temperature to the reflux temperature of the reaction and isolating the compound of formula I or the pharmacologically acceptable salts thereof.

5,284,964

METHOD FOR MAKING AROMATIC CARBONATES

Eric J. Pressman, East Greenbush, and Joseph A. King, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 17, 1992, Ser. No. 929,862
Int. Cl.[5] C07C 68/04
U.S. Cl. 558—260 **4 Claims**

1. A method for making aromatic organic carbonate in a reactor at elevated conditions of temperature and pressure from aromatic organic hydroxy compound in the presence of a palladium catalyst exhibiting enhanced stability as a recycled carbonylation catalyst at elevated conditions of temperature and pressure following its exposure to ambient conditions at the termination of an earlier carbonylation reaction, where the carbonylation catalyst having such enhanced stability allows the recovery of aromatic organic carbonate from the reactor under ambient conditions and the reintroduction of make-up aromatic organic hydroxy compound to the reactor under ambient conditions to provide the production of additional aromatic organic carbonate, which method comprises,

(1) heating to a temperature between about 60° C. to about 150° C. at above atmospheric pressure, a mixture comprising aromatic organic hydroxy compound, carbon monoxide, oxygen and an effective amount of a palladium carbonylation catalyst comprising a quinone free mixture of,

(a) catalytically active palladium in the metallic or chemically combined state,

(b) an inorganic cocatalyst selected from the group consisting of divalent, cobalt, manganese and copper compounds, trivalent cobalt, manganese and copper compounds which compounds are selected from the group consisting of salts, complexes with diketones, and complexes with carbon monoxide,

(c) a terpyridine cocatalyst, and

(d) quaternary ammonium or quaternary phosphonium halide,

(2) recovering aromatic organic carbonate from the mixture of (1) at ambient conditions and,

(3) adding aromatic organic hydroxy compound to the resulting mixture of (2) under ambient conditions.

5,284,965

PROCESS FOR PREPARING AROMATIC CARBONATES

Hans-Josef Buysch; Norbert Schön, and Johann Rechner, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 3, 1993, Ser. No. 25,487
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1992, 4207853
Int. Cl.[5] C07C 69/96, 68/06
U.S. Cl. 558—270 **11 Claims**

1. A process for preparing an aromatic carbonate of the formula

$$R^1O—CO—OR^2$$

by transesterification of an aliphatic carbonate of the formula

$$R^3O—CO—OR^4$$

with a phenolic compound of the formula

$$R^1OH$$

in which the formulae

R^1 is phenyl or naphthyl, each of which may be mono- to tri-substituted by straight-chain or branched C_1–C_4-alkyl, straight-chain or branched C_1–C_4-alkoxy, fluorine, chlorine, bromine or cyano, different substituents from the aforementioned range of definitions also being permitted in the case of polysubstitution,

R^2 represents straight-chain or branched C_1–C_6-alkyl or, independently of R^1, represents the range of definitions of R^1,

R^3 is straight-chain or branched C_1–C_6-alkyl, and

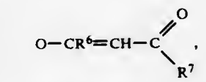
R^4, independently of R^2, has the range of definitions of R^2,

in the presence of a titanium compound of the formula

$$Ti(X^1, X^2, X^3, X^4)$$

in which

X^1, X^2, X^3 and X^4, independently of one another, are halogen, O—R^5 or O—CO—R^5, R^5 representing straight-chain or branched C_1–C_{18}-alkyl or the range of definitions mentioned under R^1, and in which furthermore X^3 and X^4 together may be



where R^6 and R^7, independently of one another, are methyl, ethyl or OR^5,

wherein, before work-up, the transesterification mixture is cooled to a temperature of below 120° C., during which the mixture must remain liquid, the titanium-containing precipitate which is deposited is separated off, and the aromatic carbonate is obtained by methods per se which are conventional.

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5,284,966

INTERMEDIATES FOR THE STEREOCHEMICAL INVERSION OF (2S, 3S)-2-AMINO-3-PHENYL-1,3-PROPANEDIOLS INTO THEIR (SR,3R) ENANTIOMERS

Marco Villa, Milan; Claudio Giordano, Monza; Silvia Cavicchioli, Bellinzago Lombardo, and Silvio Levi, Milan, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

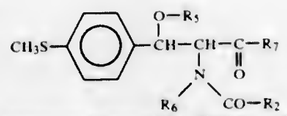
Continuation of Ser. No. 599,881, Oct. 19, 1990, Pat. No. 5,202,484. This application Dec. 18, 1992, Ser. No. 992,747

Claims priority, application Italy, Oct. 22, 1989, 22075 A/89

Int. Cl.[5] C07C *381/00, 323/00, 321/00*

U.S. Cl. 560—9 **3 Claims**

1. A compound of the formula



wherein R_2 represents a lower alkyl, dichloromethyl, phenyl, alkoxy or benzyloxy group; R_5 represents a lower alkyl or acyl group and R_6 a hydrogen atom, and R_7 represents a hydrogen atom.

5,284,967

PLEUROMUTILINS

Ingolf Macher, Wörgl, Austria, assignor to Biochemie Gesellschaft m.b.H., Tyrol, Austria

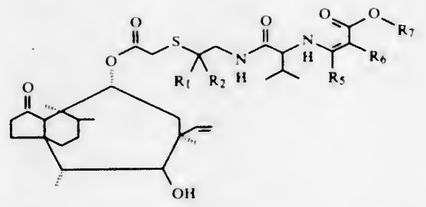
Division of Ser. No. 591,913, Oct. 2, 1990, Pat. No. 5,164,526. This application Sep. 16, 1992, Ser. No. 946,267

Claims priority, application Austria, Oct. 3, 1989, 2286/89; Oct. 3, 1989, 2287/89

Int. Cl.[5] C07C *323/23*

U.S. Cl. 560—153 **3 Claims**

1. A compound of formula II



where

R_1 and R_2 are the same or different and each represent hydrogen, alkyl, alkenyl, cycloalkyl, aryl, or aralkyl;

R_5 is alkyl;

R_6 is hydrogen or alkyl;

R_7 is alkyl.

5,284,968

PROCESS FOR PREPARING BIS (4-CYANATOPHENYL)-1,1-ETHANE

Wallace M. Craig, Jr., Louisville, Ky., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 581,778, Sep. 13, 1990, Pat. No. 5,162,574, which is a division of Ser. No. 340,526, Apr. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 210,175, Jun. 20, 1988, Pat. No. 4,839,442, which is a continuation of Ser. No. 934,189, Nov. 24, 1986, abandoned. This application Sep. 30, 1991, Ser. No. 769,356

Int. Cl.[5] C07C *261/02*; G08G *73/00*

U.S. Cl. 560—301 **7 Claims**

1. A process for preparing bis(4-cyanatophenyl)-1,1-ethane having a viscosity of less than 200 cps at 25° C., a reactivity at 110° C. of less than 0.3 percent trimerization per hour, and containing impurities of less than 50 ppm of tertiary amine and less than 1000 ppm of diethylcyanamide which comprises:

a) reacting

a1) a solution of cyanogen chloride which is prepared by (i) dissolving the cyanogen chloride in methylisobutylketone solvent at a concentration of about 5 weight percent up to about 50 weight percent based on the weight of the solution and (ii) cooling said solution to a temperature of about −10° C. to about −40° C.; with

a2) a solution of bis(4-hydroxyphenyl)-1,1-ethane and a tertiary amine which is prepared (i) by adding the tertiary amine slowly to a slurry of the bis(4-hydroxyphenyl)-1,1-ethane in methylisobutylketone solvent or (ii) by dissolving the bis(4-hydroxyphenyl)-1,1-ethane in methylisobutylketone solvent and then adding the tertiary amine;

said reaction being conducted at a temperature below about −10° C. for a time sufficient to complete the esterification reaction;

b) washing the resulting solution with aqueous acid, and

c) recovering the cyanate ester product, wherein the cyanogen chloride and the dihydric phenol are present in the amount of about 1.05 to about 1.25 equivalents of cyanogen chloride to one equivalent of dihydric phenol and wherein the tertiary amine is present in the amount of about 1.005 to about 1.05 equivalents per each equivalent of the dihydric phenol.

5,284,969

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES

Andreas Hauner, Cologne, and Hans-Joachim Hennig, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 6, 1992, Ser. No. 972,675

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137428

Int. Cl.[5] C07C *263/04*

U.S. Cl. 560—345 **6 Claims**

1. A process for the continuous catalyst-free production of polyisocyanates by thermal decomposition, comprising the steps of

a) heating a 5 to 90% by weight solution of carbamic acid esters which correspond to the polyisocyanates in a high boiler above the decomposition pressure to a temperature of 100° to 400° C. and above the melting point of the polyurethane, wherein said high boiler

1) is a solvent for the carbamic acid esters,

2) is inert to the carbamic acid esters and the decomposition products,

3) boils under the pressure and temperature conditions prevailing in the sump of the distillation column, and

4) has a boiling point under those pressure conditions which is at least 10° C. above the boiling point of the polyisocyanate formed,

b) subsequently, introducing said solution into a sump-heated distillation column as a sidestream, wherein said distillation column serves as a decomposition reactor,

c) maintaining a pressure of 0.001 to 5 bar and a temperature of 150° to 400° C. in the sump to ensure the high boiler continues to boil,

d) simultaneously condensing the decomposition products continuously and selectively at the head of the distillation column into two separate fractions,

e) subsequently separating said fractions into Fraction I which consists predominantly of the isocyanate component and into Fraction II which consists predominantly of the alcohol component of the carbamic acid ester, and

f) continuously removing the high boiler via the sump outlet in a quantity which substantially corresponds to the quantity of high boiler introduced into the column as a solvent for the carbamic acid ester.

5,284,970

2-AZABICYCLO[2.2.1]HEPT-5-ENE-2-ACETIC ACID, DERIVATIVES THEREOF AND RELATED COMPOUNDS, PROCESS FOR THE PREPARATION OF SAID COMPOUNDS AND N-PHOSPHONOMETHYLGLYCINE

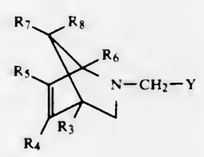
David A. Cortes, Fairless Hills, Pa., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 399,571, Aug. 31, 1989, Pat. No. 5,149,825, which is a continuation-in-part of Ser. No. 276,186, Nov. 23, 1988, Pat. No. 4,946,993. This application Jun. 26, 1992, Ser. No. 905,579

Int. Cl.[5] C07F *9/38*

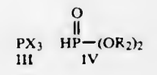
U.S. Cl. 562—18 **9 Claims**

1. A method for the preparation of N-phosphonomethylglycine which comprises reacting an azabicycloalkene compound of formula V



V

wherein R_3, R_4, R_5, R_6, R_7 and R_8 are each independently hydrogen, C_1-C_4 alkyl, C_6H_5 or NO_2; Y is COOR, $CON(R_1)_2$, or CN wherein R and R_1 are each independently hydrogen or C_1-C_4 alkyl with about from 1.0 and 5 molar equivalents of a phosphorous compound of formula III or IV



III IV

wherein X is Cl or Br; R_2 is H or C_1-C_4 alkyl in the presence of an acid and a solvent at a temperature of about 25° C. to 200° C . followed by either; in the case of IV, removing the solvent from said reaction mixture and treating said reaction mixture with an aqueous mineral acid or aqueous alkali metal base to yield the N-phosphonomethylglycine; or, in the case of III, cooling said reaction mixture to a temperature of about 15° C. to 25° C., mixing the cooled reaction mixture with water, filtering and hydrolyzing to yield the N-phosphonomethylglycine.

5,284,971

4-(3-CYCLOHEXYL-4-HYDROXY OR-METHOXY PHENYLSULFONYL) 3,5 DIBROMO PHENYL ACETIC THYROMIMETIC CHOLESTEROL-LOWERING AGENTS

Keith A. Walker, Los Altos Hills; Sharada S. Labadie, Sunnyvale; Denis J. Kertesz, Mountain View, and Craig W. Laughton, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 16, 1992, Ser. No. 914,837

Int. Cl.[5] A61K *31/50*

U.S. Cl. 562—429 **2 Claims**

1. 3,5-dibromo-4-(3-cyclohexyl-4-hydroxyphenylsulfonyl)-phenylacetic acid.

5,284,972

N-ACYL-N,N',N'-ETHYLENEDIAMINETRIACETIC ACID DERIVATIVES AND PROCESS OF PREPARING SAME

Brian A. Parker, Nashua, and Barry A. Cullen, Lyndeborough, both of N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Jun. 14, 1993, Ser. No. 76,446

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—565 **5 Claims**

1. N-acyl ethylenediaminetriacetic acid or salts thereof, wherein said acyl group is a straight or branched aliphatic or aromatic group containing from 1 to 40 carbon atoms.

5,284,973

METHOD OF PREPARING AN ACID ADDITIONAL SALT OF DELTA-AMINOLEVULINIC ACID

Takashi Ebata; Hiroshi Kawakami; Katsuya Matsumoto; Koshi Koseki, and Hajime Matsushita, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

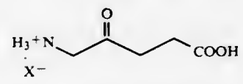
Continuation of Ser. No. 782,633, Oct. 25, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,613

Claims priority, application Japan, Oct. 29, 1990, 2-288481; Feb. 15, 1991, 3-22372

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—567 **13 Claims**

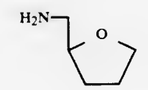
1. A method of preparing an acid additional salt (I) of δ-aminolevulinic acid of the following formula



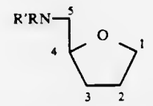
(I)

wherein X stands for a monovalent organic or inorganic acid radical, comprising:

(a) introducing an amino-protecting group onto an amino group of a tetrahydrofurfurylamine (IV) of the following formula, thereby obtaining a compound (III) of the following formula:



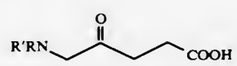
(IV)



(III)

wherein, R and R' respectively represent a common amino-protecting group or a hydrogen atom and at least one of R and R' is the amino-protecting group; when both R and R' are the amino-protecting groups as defined above, R and R' may be linked to each other to form a ring;

(b) oxidizing carbon atoms of the first- and fourth-positions of said compound (III) which is prepared in the above step (a), thereby obtaining a compound (II) of the following formula:



(II)

wherein R and R' are the same as described above; and

(c) deprotecting said amino-protecting group of said compound (II) which is prepared in said step (b), with an acid, thereby obtaining the compound (I).

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5,284,974

PROCESS FOR THE PREPARATION OF THIOACETAMIDE

Eric L. Williams, St. Ann, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 11, 1992, Ser. No. 927,997
Int. Cl.[5] C07C *327/00*
U.S. Cl. 564—74 **6 Claims**

1. A method for the production of thioacetamide comprising contacting acetonitrile with hydrogen sulfide in the presence of a catalytically effective amount of polymer-supported amine catalyst.

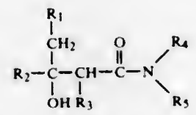
5,284,975

METHOD OF PREPARING α-D-PHENYLALKYLBENZYL CARBINOL

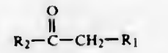
Jacob Mathew, Fenton, Mo., assignor to Mallinckrodt Specialty Chemicals Company, Chesterfield, Mo.

Filed Oct. 8, 1992, Ser. No. 958,390
Int. Cl.[5] C07C *235/06*
U.S. Cl. 564—171 **8 Claims**

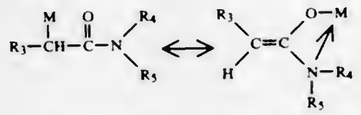
1. A method of preparing an aldol reaction product of the formula,



wherein R_1 and R_2 are independently unsubstituted phenyls or phenyls substituted with C_1 and C_4 lower alkyls, and R_3, R_4 and R_5 are independently lower alkyls of 1 to 4 carbons; comprising reacting a ketone of the formula,



with an alkali metal enolate of an amide of the formula,



and M is an alkali metal, to to form the aldol reaction product.

5,284,976

METHOD OF PRODUCING PRIMARY AMINES IN HIGH YIELDS

Herbert C. Brown, West Lafayette, Ind., assignor to Aldrich Chemical Company, Inc., Milwaukee, Wis.

Division of Ser. No. 498,858, Mar. 26, 1990, which is a division of Ser. No. 226,080, Jul. 29, 1988, Pat. No. 4,918,229. This application Jul. 19, 1993, Ser. No. 93,590
Int. Cl.[5] C07C *9/02, 204/00*
U.S. Cl. 564—445 **14 Claims**

1. A process for producing an optically active primary amine of essentially 100% ee represented by the formula R^*BNH_2 wherein R^* is a chiral organyl group attached to the nitrogen in high yields comprising the steps of treating a chiral boronic ester $R^*B(OR')_2$ with a methyl magnesium salt or trimethylaluminum wherein R^* is the same chiral organyl group and R' is alkyl to obtain a dimethylorganoborane R^*BMe_2 wherein R^* is as defined above; reacting said dimethylorganoborane in a suitable solvent with an aminating agent selected from the group consisting of NH_2X wherein X is halo, $NH_3 + NaOCl$ or $CaOCl_2$, $NH_3 + Cl_2$, chloroamine T, and O-hydroxylamine sulfonic acid, followed by hydrolysis with aqueous base to liberate the optically active primary amine.

5,284,977

PROCESS FOR PRODUCING HIGH-PURITY ORGANIC PHOSPHINE

Toru Imori; Takayuki Ninomiya; Kazuhiro Kondoh; Kouichi Nakamura, and Kouhei Ushiknbo, all of Toda, Japan, assignors to Nippon Mining Company Limited, Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 874,696
Claims priority, application Japan, Apr. 30, 1991, 3-126640; Jun. 5, 1991, 3-159866; Jun. 12, 1991, 3-166257; Oct. 29, 1991, 3-308307
Int. Cl.[5] C07F *9/02*
U.S. Cl. 568—8 **13 Claims**

1. A process for producing high-purity organic phosphines, which comprises washing at least one organic phosphine or an organic solvent solution of at least one organic phosphine with an alkaline aqueous solution to remove any silicon compounds which may be present with said organic phosphine.

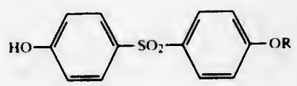
5,284,978

METHOD FOR PRODUCING DIPHENYL SULFONE COMPOUNDS

Ryoichi Kinishi, Fukuoka, and Yoshihiro Ozaki, Suzuka, both of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP91/00090, § 371 Date Sep. 11, 1991, § 102(e) Date Sep. 11, 1991, PCT Pub. No. WO91/11433, PCT Pub. Date Aug. 8, 1991
Continuation of Ser. No. 761,915, Sep. 11, 1991, abandoned. This PCT application Jan. 28, 1991, Ser. No. 35,486
Claims priority, application Japan, Jan. 29, 1990, 2-19685
Int. Cl.[5] C07C *315/04*
U.S. Cl. 568—33 **3 Claims**

1. A method of producing a diphenyl sulfone compound of the formula (I)



(I)

wherein R is an alkyl having 1 to 8 carbon atoms, comprising:
reacting 4,4'-dihydroxydiphenyl sulfone with 2–3.0 moles of alkali metal hydroxide per mole of the 4,4'-dihydroxydiphenyl sulfone in 0.3–1.5 parts by weight of an aqueous solvent per part by weight of the 4,4'-dihydroxydiphenyl sulfone, to obtain 4,4'-dihydroxydiphenyl sulfone dialkali metal salt; and
reacting the 4,4'-dihydroxydiphenyl sulfone dialkali metal salt with a compound of the formula (II)

(II)

wherein R is as defined above and X is a halogen atom.

5,284,979

PROCESS FOR THE PREPARTION OF 3-HYDROXYALKANALS

Thomas Haas, Main; Georg Böhme, Rodenbach, and Dietrich Arntz, Oberursel, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1992, Ser. No. 980,955
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138981
Int. Cl.[5] C07C *45/61, 45/64*
U.S. Cl. 568—491 **15 Claims**

1. A process for the preparation of 3-hydroxyalkanals having 3 to 12 carbon atoms, said process comprising hydrating a reaction mixture containing the corresponding 2-alkenals with water in a homogenous phase in the presence of an acid catalyst at a reaction temperature of from 20° C. to 120° C., a pressure of from 1 bar to 20 bar, and an initial concentration of the 2-alkenal in said reaction mixture of from 3 to 30% by weight, wherein said catalyst is a dissolved acid-base buffer comprising (a) a monobasic carboxylic acid and a soluble salt of said monobasic carboxylic acid or (b) a polybasic carboxylic acid or phosphoric acid, and as base a salt of said acid or a tertiary amine or a N-heteroaromatic compound, resulting in a pH of from 2 to 5 in said reaction mixture, said catalyst having an acid component and a corresponding base present in said reaction mixture in a total quantity of from 0.5 to 40% by weight.

5,284,980

BLOCK COPOLYETHERS VIA OXONIUM COUPLING OF POLY(TETRAMETHYLENE ETHER) GLYCOLS

Gerfried Pruckmayr, Media, Pa., and Robert B. Osborne, North Tonawanda, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 965,599
Int. Cl.[5] C07C *41/09*
U.S. Cl. 568—617 **5 Claims**

1. A process for preparing block copolymers comprising:
(a) treating a poly(tetramethylene ether) glycol having a number average molecular weight of 200 to 3,500 at a temperature of 90° to 150° C. for 0.5 to 8 hours with a catalytic amount of a strong acid and from 0.1 to 20 percent by weight, based on poly(tetramethylene ether) glycol, of a polyol containing 2 to 40 carbon atoms and 2 to 6 hydroxyl groups, while distilling off water and tetrahydrofuran,
(b) hydrolyzing any intermediate polyol esters present to the corresponding polyether polyols,
(c) separating the organic phase from the aqueous phase,
(d) neutralizing the polyol phase,
(e) recovering a polyether polyol comprising blocks of poly(tetramethylene ether) and blocks derived from said polyol.

5,284,981

ION EXCHANGERS MODIFIED WITH MERCAPTO AMINES

Udo Rudolph; Norbert Bachem, and Claus Wulff, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 122,322, Nov. 18, 1987, abandoned, which is a division of Ser. No. 55,292, May 29, 1987, abandoned. This application May 1, 1990, Ser. No. 517,435
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1986, 3619450
Int. Cl.[5] C07C *39/12*
U.S. Cl. 568—727 **3 Claims**

1. In the process for producing bisphenols by condensing a phenol with a carbonyl compound in the presence of the catalyst, the improvement comprises said catalyst being an anhydrous ion exchange resin with a total capacity of acid function of from 3.5 to 5 mval per 1 gram of dry ion exchange resin and which has been after drying partially neutralized with at least 0.3 mol of mercapto amines per mol of acid function in a anhydrous medium.

5,284,982

METHOD FOR THE CYCLOOLIGOMERIZATION OF 3-HYDROXY-1 ALKYNES

Friedrich-Wilhelm Küpper, Marl; Wolfgang Schröder, and Heinz-Werner Voges, both of Dorsten, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Feb. 4, 1993, Ser. No. 13,375
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1992, 4205115
Int. Cl.[5] C07C *33/26*
U.S. Cl. 568—811 **13 Claims**

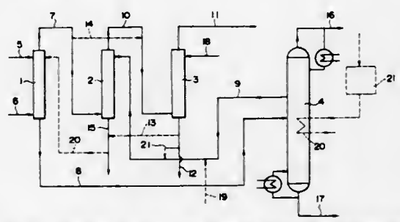
1. A process for the cyclooligomerization of 3-methyl-1-butene-3-ol into 1,3,5-tris(α-hydroxyisopropyl)-benzene comprising the steps of:
forming a nickel-containing catalyst solution by solubilizing a nickel compound, a phosphite of an ortho-substituted phenol and a compound selected from the group consisting of a) an organoaluminum compound of the formula $AlR_{(3-n)}X_n$ where R represents a C_{1-20} linear or branched alkyl group, X represents hydrogen or chlorine and n=0 or 1, b) a C_1–C_{40} alkyllithium compound and c) a C_{1-20} alkylmagnesium compound
in an aprotic diluent at between 0° and 50° C. and adding 3-methyl-1-butyne-3-ol to said catalyst solution at a temperature of from 0°–80°.

5,284,983

PROCESS FOR PURIFYING AQUEOUS CRUDE ETHANOL SOLUTION

Tsunehisa Muto; Futoshi Kanegae, both of Yamaguchi; Toru Takatsuka, Yokohama; Seiya Hirohama, Yokohama, and Masazumi Ojiro, Yokohama, all of Japan, assignors to Basic Industries Bureau of Ministry of International Trade and Industry, Japan

PCT No. PCT/JP92/00354, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/21638, PCT Pub. Date Dec. 10, 1992
PCT Filed Mar. 24, 1992, Ser. No. 965,288
Claims priority, application Japan, Jun. 7, 1991, 3-162406
Int. Cl.[5] C07C *29/86, 29/80, 31/08*
U.S. Cl. 568—918 **7 Claims**



1. A process for the purification of an aqueous crude ethanol solution, comprising: (a) a first extraction step wherein said aqueous crude ethanol solution is extracted with an extractant for removing lipophilic impurities, except for C_3–C_4 alcohols, contained in the aqueous crude ethanol solution by subjecting said aqueous crude ethanol solution to extraction with the extractant in a pressurized state, which comprises carbon dioxide in a liquidized state or carbon dioxide gas in a super-critical state; (b) a concentration-distillation step wherein a raffinate obtained in said first extraction step is fed to a distilling column to thereby obtain a highly concentrated aqueous ethanol solution from a top of the distilling column and withdraw a fraction containing C_3–C_4 alcohols from the distilling column as a side stream; (c) a second extraction step wherein the side stream is brought into contact with the extract in a pressurized state, obtained in said first extraction step, to thereby extract the C_3–C_4 alcohols contained in the side stream into the extract; and (d) a water washing step wherein the extract in a pressur-

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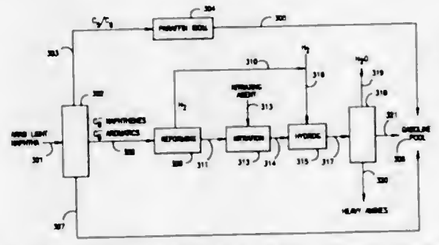
ized state, obtained in the second extraction step, is brought into countercurrent contact with water in a pressurized state under such a condition that a ratio of the weight of the water to the weight of the extract is set to 0.3 or less to thereby recover the ethanol contained in the extract into an aqueous phase.

5,284,984

GASOLINE UPGRADING BY AROMATICS AMINATION

Ralph M. Dessau, Edison; Quang N. Le, Cherry Hill; Samuel A. Tabak, and Robert T. Thomson, both of Voorhees, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 29, 1992, Ser. No. 998,807
Int. Cl.[5] C07C *5/02, 5/22*
U.S. Cl. 585—253 **10 Claims**



1. A method for upgrading an aromatics-containing charge composition boiling in the gasoline boiling range which comprises:

a) separating said charge composition into a light fraction containing saturated C5 and C6 hydrocarbons; a medium fraction containing C6–C8 aromatics and a heavy fraction containing C9+aromatics;

b) nitrating said medium fraction by contacting with a nitrating agent under nitrating conditions to form a product comprising nitrated aromatic;

c) hydrogenating the product of b) under conditions sufficient to substantially reduce the nitro group of said nitrated aromatics so as to form a product comprising aromatic amines, water and heavy amines; and

d) removing said water and heavy amines from the product of step c) so as to form a product boiling int eh gasoline boiling range which comprises aromatic amines.

5,284,985

PROCESS FOR THE SELECTIVE HYDROCRACKING OF DISTILLATES TO PRODUCE NAPHTA RANGE HIGH OCTANE ISOPARAFFINS

Michael J. Girgis, Lawrenceville, N.J., and Ying-Yen P. Tsao, Lahaska, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Oct. 5, 1992, Ser. No. 955,774
Int. Cl.[5] C07C *5/27*
U.S. Cl. 585—310 **17 Claims**

1. A process for producing high octane naphtha range isoparaffins from a hydrocarbon feed comprising normal and/or slightly branched paraffins having 2 or less alkyl substituents, which comprises

(i) hydroisomerizing the feed over a sulfided catalyst composition to convert said normal and/or slightly branched paraffins to high molecular weight multi-branched paraffins;

(ii) hydrocracking said high molecular weight multi-branched paraffins present in the effluent from the hydroisomerization step in the presence of an unsulfided catalyst composition to a product comprising high octane naphtha range isoparaffins.

5,284,986

UPGRADING OF NORMAL PENTANE TO CYCLOPENTENE

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 878,267, May 4, 1992, which is a continuation-in-part of Ser. No. 418,377, Oct. 6, 1989, Pat. No. 5,192,728, which is a division of Ser. No. 211,198, Jun. 24, 1988, Pat. No. 4,990,710. This application Oct. 26, 1992, Ser. No. 966,656
Int. Cl.[5] C07C *5/327*
U.S. Cl. 585—318 **27 Claims**

1. A process for converting n-pentane to cyclopentene comprising:

contacting n-pentane with a first-stage catalyst bed in which the first catalyst comprises a Group VIA or Group VIII metal and a non-acidic microporous material, wherein the amount of Group VIA or Group VIII metal in the first catalyst is in the range of from about 0.05 to 10 weight percent, at a temperature in the range of from about 300 to about 700° C. to form a first-stage product effluent;

passing the first-stage product effluent over a second-stage catalyst bed maintained under a second set of conditions in which the temperature is less than about 300° C., wherein the second-stage catalyst bed comprises a second catalyst which second catalyst comprises palladium and a non-acidic microporous material, wherein the amount of palladium in the second catalyst is in the range of from about 0.05 to about 10 weight percent; and

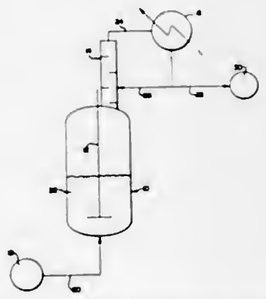
recovering a second-stage product which comprises cyclopentene.

5,284,987

PREPARATION OF A DIMETHYLTETRALIN IN A DISTILLATION REACTOR

David L. Sikkenga; Ian C. Zaenger, both of Wheaton, Ill., and Gregory S. Williams, Tampa, Fla., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 794,018, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 633,068, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 539,007, Jun. 15, 1990, Pat. No. 5,030,781, and Ser. No. 539,087, Jun. 15, 1990, Pat. No. 5,034,561, and Ser. No. 556,297, Jul. 20, 1990, Pat. No. 5,073,678. This application Feb. 5, 1992, Ser. No. 831,167
Int. Cl.[5] C07C *5/00*
U.S. Cl. 585—410 **8 Claims**



1. An improved method for preparing one or more dimethyltetralins from 5-(o-, m-, or p-tolyl)-pent-1- or -2-ene or 5-phenyl-hex-1- or -2-ene as the alkenylbenzene feedstock, comprising: contacting the feedstock in liquid form with an acidic cyclization catalyst in a suitable reaction zone at a temperature sufficient to provide for the cyclization of the feedstock thereby forming a liquid reaction mixture comprising the cyclization catalyst dispersed in the liquid reaction mixture, one or more dimethyltetralins and a heavy by-product produced during the cyclization reaction wherein (1) when the feedstock comprises 5-(o-tolyl)-pent-1- or -2-ene, at least 80 weight percent of the dimethyltetralin product formed is comprised of 1,5-, 1,6-, 2,5- or 2,6-dimethyltetralin, (2) when the feedstock comprises 5-(m-tolyl)-pent-1- or -2-ene, at least 80 weight percent of the dimethyltetralin product formed is comprised of 1,5-, 1,6-, 1,7-, 1,8-, 2,5-, 2,6-, 2,7- or 2,8-dimethyltetralin or a mixture thereof, (3) when the feedstock comprises 5-(p-tolyl)-pent-1- or -2-ene, at least 80 weight percent of the dimethyltetralin product formed is comprised of 1,7-, 1,8-, 2,7- or 2,8-dimethyltetralin or a mixture thereof, and (4) when feedstock comprises 5-phenyl-1- or -2-hexene, at least 80 weight percent of the dimethyltetralin product formed is comprised of 1,3-, 1,4-, 2,3-, 5,7-, 5,8- or 6,7-dimethyltetralin or a mixture thereof; and removing by distillation from the reaction mixture as overhead a lighter fraction comprising the dimethyltetralin product, wherein the distillation is conducted simultaneously with the addition of the feedstock to the reaction mixture.

5,284,988

PREPARATION OF SYNTHETIC OILS FROM VINYLIDENE OLEFINS AND ALPHA-OLEFINS

Robert A. Schaerfl, Jr.; Ali M. Dadgar, both of Baton Rouge, and Carroll W. Lanier, Baker, all of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 772,655, Oct. 7, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 938,566
Int. Cl.[5] C07C *2/08*
U.S. Cl. 585—525 **18 Claims**

1. A process for making a synthetic oil, said process comprising (a) isomerizing at least a portion of a vinylidene olefin feed to form an intermediate which contains at least 50 wt. percent tri-substituted olefin and (b) reacting said intermediate and a vinyl olefin in the presence of a catalyst to form a synthetic oil which comprises at least about 50 wt. percent of a co-dimer having a carbon number which is the sum of the carbon numbers of the vinylidene olefin and the vinyl olefin.

5,284,989

OLEFIN OLIGOMERIZATION WITH SURFACE MODIFIED ZEOLITE CATALYST

Minas R. Apelian, Vincetown, N.J.; James R. Boulton, Chalfont, and Anthony S. Fung, Chadds Ford, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 4, 1992, Ser. No. 971,112
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—533 **20 Claims**

1. A method for producing substantially linear hydrocarbons by oligomerizing/polymerizing a lower olefin at elevated temperature and pressure which comprises

contacting the lower olefin under oligomerization/polymerization conditions with a catalyst comprising a siliceous acidic zeolite having Brönsted acid activity, capable of sorbing 10 to 40 mg 3-methylpentane at 90° C., 90 torr, per g dry zeolite when in the hydrogen form, wherein said zeolite has acidic pore activity and wherein the zeolite surface is rendered substantially inactive for acidic reactions by having been contacted with dicarboxylic acid under conditions sufficient to effect a reduction of at least 20% in surface acidity of the zeolite as determined by tri-tertiarybutylbenzene conversion without substantially reducing the overall activity of the zeolite as indicated by alpha value.

5,284,990

METHOD FOR CONVERTING A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT

Jon R. Peterson, Lee's Summit, Mo., and John B. Scott, San Rafael, Calif., assignors to Stratco, Inc., Leawood, Kans.

Filed Jul. 16, 1992, Ser. No. 915,086
Int. Cl.[5] C07C *2/56, 2/58;* F28D *7/00*
U.S. Cl. 585—709 **21 Claims**

1. A method for converting a hydrogen fluoride alkylation unit which utilizes hydrogen fluoride as a reaction catalyst to a sulfuric acid alkylation unit; said hydrogen fluoride alkylation unit comprising a reactor, a hydrocarbon feed stream directing isobutane and light olefins to the reactor and an acid catalyst stream directing the reaction catalyst to the reactor; mixing means for producing a degree of mixing necessary to form in said reactor an HF reaction emulsion comprising the isobutane and light olefins dispersed in the hydrogen fluoride wherein said isobutane reacts with said light olefins in the presence of hydrogen fluoride in said HF reaction emulsion to produce alkylate, a settling section having internals wherein, during a settling period, said HF reaction emulsion is separated into an HF acid phase and a hydrocarbon phase; and a fractionation section wherein alkylate in the hydrocarbon phase is separated therefrom; said method comprising the steps of:

(a) substituting sulfuric acid for hydrogen fluoride as said reaction catalyst;

(b) retaining said reactor, said settling section and said fractionation section; and

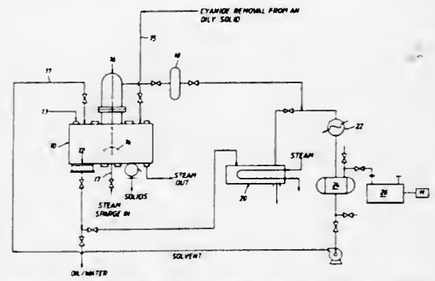
(c) modifying said HF alkylation unit by adding increased mixing means for producing a degree of mixing necessary to form a sulfuric acid reaction emulsion comprising isobutane and light olefins dispersed in sulfuric acid wherein said isobutane reacts with said light olefins in the presence of sulfuric acid to produce alkylate.

5,284,991

CYANIDE REMOVAL FROM OILY SOLID USING A SOLVENT EXTRACTION PROCESS

Humbert H. Chu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 18, 1992, Ser. No. 946,685
Int. Cl.[5] C07C *7/00;* B01D *37/00*
U.S. Cl. 585—802 **11 Claims**



1. A process for decontamination of cyanide-bearing, hydrocarbon-contaminated oily solids in a single processing zone which comprises:

a) reducing the particle size of the solids in the zone;

b) adjusting the pH of the solids to below 8;

c) dewatering or deoiling the solids in the zone by filtration;

d) drying the solids in the zone, thereby removing moisture and volatile organics;

e) extracting the solids in the zone under atmospheric conditions with an organic solvent boiling below about 150° C. at least one time to remove hydrocarbon contaminants from the solids;

f) separating the solvent containing the extracted hydrocar-

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bon contaminants from the solids by filtration and agitation; and

g) further drying the solids to remove residual moisture, volatile organics, residual cyanides, and solvent.

5,284,992

PROCESS AND APPARATUS FOR THE SEPARATION OF P-XYLENE IN C_8 AROMATIC HYDROCARBONS WITH A SIMULATED MOVING BED ABSORPTION AND A CRYSTALLIZATION

Gerard Hotier, Rueil Malmaison; Claude Roux Guerraz, and Than Nguyen Thanh, both of Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Sep. 4, 1992, Ser. No. 941,296

Claims priority, application France, Sep. 5, 1991, 91 11004; Jul. 6, 1992, 92 08497; Jul. 6, 1992, 92 08498

Int. Cl.[5] C07C *7/00, 7/12, 7/14*

U.S. Cl. 585—805 **21 Claims**

1. A process for the separation and recovery of p-xylene from a hydrocarbon charge containing C_8 aromatic hydrocarbons, the process comprising the following stages:

a) continuously contacting in at least one simulated moving bed adsorption zone, a charge containing m-xylene, p-xylene, ethyl benzene and optionally o-xylene with a zeolitic adsorbent bed in the presence of a desorption solvent having a flow rate compared with that of the charge of 1.2 to 2.5, under adsorption conditions such that a fist fraction is obtained containing the solvent, m-xylene, ethyl benzene and optionally o-xylene and a second fraction containing the solvent and p-xylene having a purity between 75 and 98%;

b) distilling the first fraction to separate the solvent from a mixture of m-xylene, ethyl benzene and optionally o-xylene;

c) isomerizing said mixture in the presence of hydrogen in an isomerization zone to provide an isomerizate comprising p-xylene, recycling said isomerizate to stage a);

d) distilling the second fraction to recover said solvent and a crude p-xylene having a purity of 75 to 98%;

e) crystallizing the crude p-xylene of stage d) in a crystallization zone at a temperature between +10° C. and −25° C. to obtain a mother liquor, and wet p-xylene crystals;

f) washing the wet p-xylene crystals with a washing solvent to recover p-xylene crystals; and

g) recycling said mother liquor to stage a).

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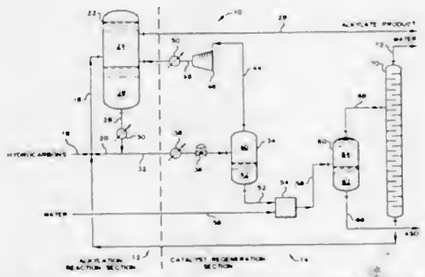
ALKYLATION CATALYST REGENERATION

Alan D. Eastman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 21, 1992, Ser. No. 947,611

Int. Cl.[5] C07C *7/04, 2/62*

U.S. Cl. 585—842 **24 Claims**



1. A process for removing acid soluble oil (hereinafter "ASO") from a mixture containing methanesulfonic acid, ASO, and a strong acid selected from the group consisting of fluorosulfonic acid and trifluoromethanesulfonic acid, comprising the steps of:

passing said mixture to a separation zone, which is maintained at such conditions so as to induce the flash separation of at least a portion of the strong acid component of said mixture and to provide an acid in vapor phase stream and a liquid phase stream, wherein said acid in vapor phase stream comprises said at least a portion of the strong acid component of said mixture and wherein said liquid phase stream comprises methanesulfonic acid and ASO; and

mixing water with said liquid phase stream to form a hydrous liquid phase stream wherein an amount of water is mixed with said liquid phase stream which is effective for causing the subsequent formation of an ASO phase and a methanesulfonic acid with water phase wherein said ASO phase comprises ASO and said methanesulfonic acid with water phase comprises methanesulfonic acid and water.

5,284,994

INJECTION OF ANTIFOULANTS INTO THERMAL CRACKING REACTORS

Ronald E. Brown; K. James Sasaki, and Larry E. Reed, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1993, Ser. No. 4,391

Int. Cl.[5] C07C *4/04*

U.S. Cl. 585—648 **22 Claims**

1. In a process for injecting a liquid tin-containing antifoulant composition into a metal-walled thermal cracking reactor tube concurrently with the flow of a gaseous stream through said reactor tube, the improvement which comprises injecting said antifoulant composition into said reactor tube through a nozzle being located at the end of a tubular injection quill which is positioned substantially parallel to the flow of said gaseous stream and which extends into the center region of said reactor tube at a distance equal to at least the diameter of said reactor tube.

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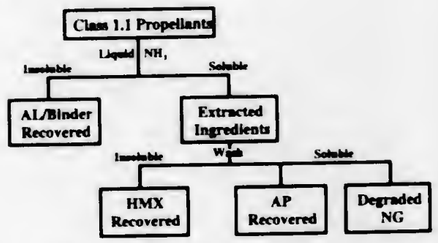
METHOD TO EXTRACT AND RECOVER NITRAMINE OXIDIZERS FROM SOLID PROPELLANTS USING LIQUID AMMONIA

William S. Melvin, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1993, Ser. No. 28,014

Int. Cl.[5] C06B *21/00*

U.S. Cl. 588—203 **3 Claims**



1. A method for extracting and recovering nitramine oxidizers from class 1.1 solid propellants using liquid ammonia solvent within a closed system provided with piping and valve means, and temperature and pressure monitoring means for said closed system for controlling demilitarization at a predetermined temperature and pressure wherein a class 1.1 solid propellant demilitarization cycle, as defined under (A) below, is employed in combination with a method for further separation and recovery of nitramine oxidizers and separation and recovery of ammonium perchlorate, when present, with degraded nitroglycerin and other plasticizers, as defined under (B) below, said class 1.1 solid propellant demilitarization cycle comprising a first, second, third, and fourth operation cycle,

(A) said class 1.1 propellant demilitarization cycle comprising:

(i) completing said first operation cycle to remove said class 1.1 solid propellant contained within a pressure vessel by ablating or machining to comminute said propellant to a suitable particle size to form a slurry of said liquid ammonia solvent and said propellant, said pressure vessel having an upper section and a lower section, said first operation cycle comprising:

(a) introducing liquid ammonia solvent through high pressure nozzles with sufficient pressure to ablate said class 1.1 solid propellant contained in said pressure vessel to comminute and achieve particle size reduction to about ¼ inch or less, as required, for efficient propellant ingredient extraction;

(b) continuously forming said propellant slurry in said pressure vessel; and,

(c) continuously transferring said propellant slurry to an extractor/separator vessel to achieve separation of said propellant ingredients of solubles in a liquid ammonia solvent phase and insolubles in a sediment solids portion;

(ii) completing said second operation cycle to solubilize and to extract liquid ammonia soluble class 1.1 solid propellant ingredients from said propellant slurry as a supernatant while monitoring and maintaining temperature control by venting ammonia vapor to achieve adiabatic cooling of said liquid ammonia solvent and while monitoring plasticizer degradation products employing liquid chromatography procedures and to retain liquid ammonia solvent insoluble class 1.1 solid propellant ingredients in a lower section of said pressure vessel as sediment solids, said second operation cycle comprising:

(a) removing said sediment solids comprised of binders, inert ballistic additives, and solid metal fuel ingredients from said lower section of said pressure vessel; and,

(b) transferring supernatant of liquid ammonia solvent containing said extracted liquid ammonia solvent soluble class 1.1 solid propellant ingredients to an evaporator for oxidizer recovery and ammonia solvent vapor recovery;

(iii) completing said third operation cycle by evaporation of said liquid ammonia solvent containing said extracted ammonia solvent soluble class 1.1 solid propellant ingredients, said third operation cycle comprising:

(a) recovering, filtering and drying said ammonia solvent vapor for compressing to liquid ammonia for reuse in said closed system by pressure pump(s);

(b) recovering all liquid ammonia solvent soluble class 1.1 solid propellant ingredients for further separation and recovery of said nitramine oxidizers, and for further separation and recovery of ammonium perchlorate, when present, from degraded nitroglycerin and other plasticizers, said recovered propellant ingredients consisting of mixtures of nitramine oxidizers, ammonium perchlorate when present in said class 1.1 solid propellant, energetic nitratoester plasticizers and their possible chemical degradation products, and chemical stabilizers; and

(iv) completing said fourth operation cycle by filtering, drying, and compression of said recovered ammonia solvent vapor for reuse, said fourth operation cycle comprising:

(a) compressing said recovered, filtered, and dried ammonia solvent vapor to liquid ammonia for solvent liquefaction and recycling; and,

(b) returning liquid ammonia with high pressure and low pressure pumps to said closed system for further use in said demilitarization cycle;

(B) said method for further separation and recovery of said nitramine oxidizers and separation and recovery of ammonium perchlorate when present from degraded nitroglycerin and other plasticizers comprising:

(i) treating said liquid ammonia soluble class 1.1 solid propellant ingredients recovered, as defined under 1(A), (iii), (b), by washing with an alcohol selected from the group consisting of methanol, ethanol, and isopropanol to recover said nitramine oxidizers and impurities as insolubles and retaining solubles in solution, said solubles in solution comprising degraded nitroglycerin, other plasticizers, and ammonium perchlorate when present and if desired to be separated and retained for performing additional steps defined under (B), (iv), and (v), hereinbelow;

(ii) adding acetone/water and/or cyclohexanone/water solution to said insolubles;

(iii) recrystallizing and recovering said nitramine oxidizers;

(iv) washing said solubles with said alcohol to achieve multiple solvating conditions for said solubles; and

(v) performing an optional separating procedure when ammonium perchlorate is present and desired to be recovered from said wash solubles, said optional separating procedures selected from Soxhlet extraction employing butanol and antisolvent procedure employing an aliphatic, cyclic or aromatic hydrocarbon as an antisolvent for recovering ammonium perchlorate.

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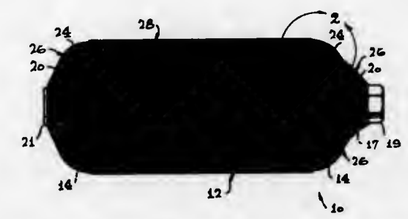
WASTE GAS STORAGE

Brian D. Vickers, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 28, 1992, Ser. No. 843,593

Int. Cl.[5] B09B *3/00*

U.S. Cl. 588—249 **12 Claims**

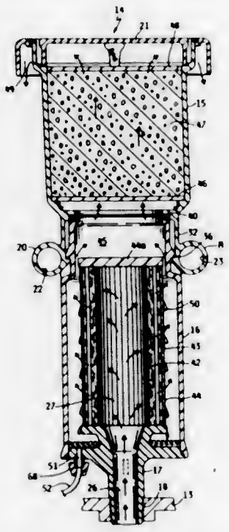


1. In a method for storing a gas mixture under pressure in a metal container, said gas mixture containing corrosive contaminants, said metal container being subject to stress corrosion cracking in the presence of said contaminant-containing waste gas mixture when said metal container is under substance tensile stresses generated by said pressurized gas mixture,

the improvement which comprises passing said pressurized gas mixture into a container formed of a metal liner and a composite overwrap, and storing said pressurized gas mixture in said container, said composite overwrap being stressed in tension and said metal liner being stressed in compression, thereby eliminating said tensile stresses and preventing stress corrosion cracking of said liner during storage of said pressurized gas mixture in said container.

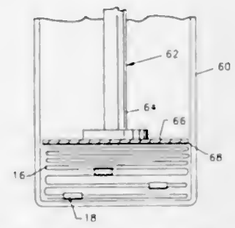
VOL 1159 ISS 2 FE 8 1994 UMI

5,284,997
TWO STEP FILTER AND PROCESS
Michael R. Spearman, White Bear; Eric C. Stender, Crystal, and Patrick R. Spearman, Shoreview, all of Minn., assignors to Porous Media Corporation, St. Paul, Minn.
Filed Sep. 14, 1992, Ser. No. 944,301
Int. Cl.[5] B09B *1/00*
U.S. Cl. 588—249 8 Claims



1. A two-stage capsule filter for separating contaminants including suspended paint droplets and hazardous paint solvent from a gaseous propellant located in an aerosol container comprising;
a first filter housing, said first filter housing having fastening means to connect to a container for receiving unseparated contents of the ruptured aerosol container;
a first stage coalescing filter in said first filter housing, said coalescing filter having a coalescing filter medium for separating out liquid paint droplets from the gaseous propellant of the ruptured aerosol container by coalescing the suspended paint droplets from the ruptured aerosol container into larger droplets that can be gravitationally drained away while permitting passage of the hazardous paint solvent and propellant therethrough;
inlet means in said first filter housing for directing the unseparated gaseous contents of the ruptured aerosol container directly into said coalescing filter;
a first fluid passage in said first filter housing for directing coalesced liquid from the contents of the aerosol container away from said first filter housing;
a second filter housing;
a second fluid passage in said first filter housing for directing the propellant and hazardous solvents of said ruptured aerosol container into the second filter housing;
a second stage filter located in said second filter housing for removing the hazardous solvent from the propellant of said aerosol container, said second stage filter normally clogging if simultaneously exposed to the suspended paint droplets and the hazardous paint solvent, said second filter housing removably attached to said first filter housing so that said second stage filter can be replaced without having to replace said first stage coalescing filter.

5,284,998
DRUM AND PROCESS FOR HANDLING DRUM LINERS
William Lima, Monmouth Beach; Earl V. Lind, Brick, and Philip D. Bartlett, Holmdel, all of N.J., assignors to Russell-Stanley Corporation, Red Bank, N.J.
Continuation of Ser. No. 655,757, Feb. 14, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 54,694
Int. Cl.[5] B09B *1/00*
U.S. Cl. 588—252 10 Claims



1. A process for discarding drum liners comprising the steps of:
a. collapsing the liner within the drum;
b. sealing the collapsed liner;
c. removing the sealed, collapsed liner from the drum; and
d. ecologically disposing of the sealed liner.

5,284,999
DNA ENCODING A PITUITARY-SPECIFIC THYROID HORMONE RECEPTOR
William W. Chin, Wellesley; Richard A. Hodin, Brookline, both of Mass., and Mitchell A. Lazar, Havertown, Pa., assignors to Brigham and Women's Hospital, Boston, Mass.
Continuation of Ser. No. 504,806, Apr. 5, 1990, abandoned. This application May 13, 1993, Ser. No. 69,643
Int. Cl.[5] C12N *15/12*
U.S. Cl. 435—252.3 6 Claims
1. A recombinant DNA molecule encoding the thyroid hormone receptor PSTHR.

5,285,000
COMPOSITION AND PROCESS FOR ORGANIC AND METAL CONTAMINANT FIXATION IN SOIL
Klaus Schwitzgebel, 7507 Chimney Corners, Austin, Tex. 78731
Filed Nov. 12, 1992, Ser. No. 975,516
Int. Cl.[5] B09B *3/00*; E02D *3/12*
U.S. Cl. 588—256 9 Claims
1. A composition for organic and metal contaminant fixation in soil comprising:
a) a first solution of a chromate reduction and heavy metal precipitation means comprising an aqueous solution containing from 200 to 10,000 ppm of a soluble ferric salt and a soluble ferrous salt in a minimum of a stoichometric amount to reduce chromium VI present in said soil;
b) and a second solution of an aqueous gel formation means comprising:
0.5 to 7.5% of silicon dioxide in sodium silicate
0 to 3% of alkaline aluminate
85 to 98% of water
said first solution being used first to essentially saturate said soil and said second solution being applied to resaturate said soil after a minimum of an eight hour drying period following saturation of said soil with said first solution.

5,285,001
INBRED CORN LINE LH163
Richard J. Miller, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa
Filed Oct. 3, 1990, Ser. No. 592,502
Int. Cl.[5] A01H *5/00, 4/00, 1/00*; C12N *5/04*
U.S. Cl. 800—200 9 Claims
1. Inbred corn seed designated LH163 having ATCC accession No. 40782.

5,285,002
FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF
Werner M. Grootaert, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 23, 1993, Ser. No. 36,073
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—222 7 Claims
1. A method for the preparation of fluorine-containing polymer comprising, polymerizing, under free-radical conditions, an aqueous emulsion or suspension of a polymerizable mixture comprising a fluoroaliphatic-radical containing sulfinate, and an oxidizing agent capable of oxidizing said sulfinate to a sulfonyl radical.

5,285,003
INBRED CORN LINE LH204
David C. Harper, II, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa
Continuation of Ser. No. 444,884, Dec. 4, 1989, abandoned. This application Oct. 25, 1991, Ser. No. 781,648
Int. Cl.[5] A01H *5/00, 4/00, /100*; C12N *5/04*
U.S. Cl. 800—200 10 Claims
1. Inbred corn seed designated LH204 having ATCC accession No. 40722.

5,285,004
INBRED CORN LINE PHBW8
William B. Ambrose, Urbandale, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa
Filed Feb. 3, 1992, Ser. No. 831,234
Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/04*
U.S. Cl. 800—200 10 Claims
1. Inbred corn seed designated PHBW8 having ATCC Accession No. 75548.

5,285,005
INBRED CORN LINE LH200
Terry J. Foley, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa
Filed Dec. 4, 1992, Ser. No. 985,978
Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/04*
U.S. Cl. 800—200 9 Claims
1. Inbred corn seed designated LH200 having ATCC accession No. 75366.

5,285,006
COMPRESSOR FOULING INHIBITION IN VINYL ACETATE PRODUCTION UNITS
Michael K. Poindexter, Sugar Land, and Vincent E. Lewis, Missouri City, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Jun. 26, 1992, Ser. No. 904,968
Int. Cl.[5] C07C *67/48*
U.S. Cl. 560—248 2 Claims
1. A method for treating a light ends stream of a vinyl acetate production system upstream of a compressor feed point so as to retard the loss of compressor efficiency with run time by reducing the fouling of said compressor comprising:
adding to said light ends stream a hindered phenol at a dosage of from about 1 ppm to about 500 ppm: and
wherein said hindered phenol is 2,6-di-tert-butyl-4-nonylphenol.

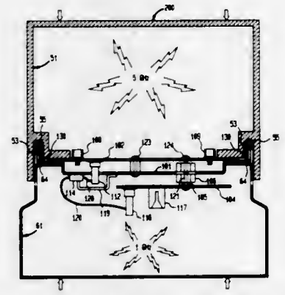
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5,285,007

SYSTEM FOR REDUCING THE EMISSION OF HIGH FREQUENCY ELECTROMAGNETIC WAVES FROM COMPUTER SYSTEMS

Alfred E. Deluca, Harvard; Jeffrey M. Lewis, Maynard; Cosmo L. Leo, Watertown; Thomas J. Orr, Sudbury; David T. Symmes, Danvers, and Robert A. Barker, Lunenburg, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 3, 1992, Ser. No. 829,649
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **20 Claims**



1. A containment system for reducing the emission of electromagnetic waves at predetermined frequencies, comprising:
a first electrical device emitting electromagnetic waves in a first frequency range;
a second electrical device emitting electromagnetic waves in a second frequency range, the second frequency range being lower than the first frequency range;
a first enclosure containing the first electrical device and the electromagnetic waves emitted therefrom;
a second enclosure containing the second electrical device and the electromagnetic waves emitted therefrom and reducing the emission of electromagnetic waves in the first frequency range from the containment system; and
a shield assembly disposed between the two enclosures to from with the first enclosure a first chamber containing the first device and with the second enclosure a second chamber containing the second device, the shield assembly having:
i. an electrical connection for connecting the electrical device in the first chamber to the electrical device in the second chamber, and
ii. means for filtering electromagnetic emissions associated with the electrical connection between the first and second chambers to reduce the emission of electromagnetic waves from the first chamber into the second chamber.

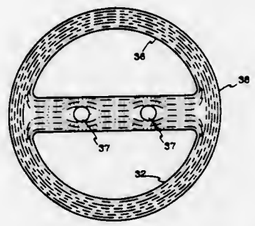
5,285,008

SPOOLABLE COMPOSITE TUBULAR MEMBER WITH INTEGRATED CONDUCTORS

Alex Sas-Jaworsky, Houston, Tex., and Jerry G. Williams, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 495,053, Mar. 15, 1990. This application Dec. 9, 1991, Ser. No. 804,306
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] F16L *11/12*
U.S. Cl. 174—47 **12 Claims**

1. A composite tubular member for use in well operations wherein the tubular member is in use stored on a spool at the surface of a well and is unspooled and spooled as it is lowered and raised respectively into and from the well, comprising;
an outer composite cylindrical member containing fibers oriented to resist internal pressure and provide low bending stiffness;
at least one composite web member symmetrically arranged with respect to a central longitudinal axis of said composite tubular member and containing fibers oriented to resist shear stress, said composite web member extending transversely through said central longitudinal axis and connecting integrally with opposite sides of said composite outer cylindrical member to form at least two separate cells between said web member and said outer cylindrical member; and
integral conductor means arranged within said web member for providing energy transmission paths for well operations.

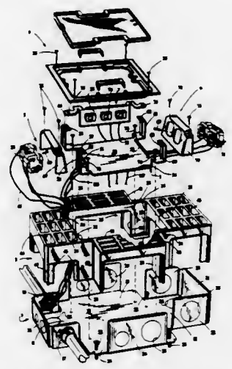


5,285,009

ELECTRICAL FLOOR BOX

Timothy S. Bowman, Parkersburg, and J. David Harmon, Vienna, both of W. Va., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Jun. 28, 1991, Ser. No. 722,872
Int. Cl.[5] H02G *3/12*
U.S. Cl. 174—48 **44 Claims**



1. An installer-friendly floor box comprising:
a metal base having a bottom and a plurality of side wall sections extending upwardly therefrom and forming a cavity;
a plastic housing configured to slide in and out of said cavity, the housing having a hollow interior and means cooperating with said side wall sections to form a plurality of wiring compartments each open to the hollow interior and the housing, when in said cavity, engaging said base;
a metal bracket configured to slide into out of said hollow interior and when in the hollow interior engaging the plastic housing for securing the plastic housing to said base, the bracket being formed with conductor blocking means which, when the bracket is in the hollow interior, is

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spaced from the bottom and extends adjacent each of said wiring compartments, the bottom and the conductor blocking means forming tunnel means for passage of electrical conductors between at least a pair of said wiring compartments;

said metal bracket having means to support an activation kit to extend over said hollow interior; and

the floor box being installer friendly by that said bracket and said housing can be completely removed from said base to provide for the base to be independently installed and for electrical conduit to be freely connected thereto and for electrical high tension receptacles and low tension jacks, when used, to be easily wired in place.

5,285,010

ELECTRICAL CONTROL DEVICE WITH METAL-COATED PLASTIC HOUSING

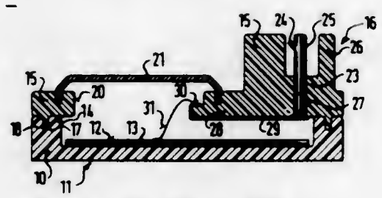
Elmar Huber, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 976,444

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142138

Int. Cl.[5] **H05K** *5/00; 1/14*

U.S. Cl. 174—52.1 **8 Claims**



1. An electrical control device (**11**) with

a base plate (**10**) adapted to support electrical components of an electrical circuit (**13**), and a housing (**15**) of plastic with a plug (**16**) integrated therewith, said base plate (**10**) and said housing (**15**) being interengaged (**17,18**) to define an interior space therebetween;

wherein said housing (**15**) has an interior wall or surface (**28**) adjacent said interior space and an exterior wall or surface, and is formed with an opening (**20**), along a peripheral edge of which said interior and exterior surfaces meet;

said housing(15) is formed with a plurality of through-bores (**23**) which receive respective plug connectors (**24**) of the plug (**16**);

an elongated metal deposit, having at least two ends, is applied on the interior wall (**28**) of the housing (**15**), thereby defining a strip conductor (**29**);

this deposit (**29**) is connected with the plug connectors (**24**);

and one of the ends of the metal deposit (**29**) extends across said peripheral edge of said opening (**20**), thereby defining an electrical contact area (**30**) on said exterior wall of said housing (**15**).

5,285,011

JOINT TERMINAL MOUNTING STRUCTURE FOR ELECTRIC JUNCTION BOX

Eiji Shimochi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 23, 1991, Ser. No. 734,664

Claims priority, application Japan, Aug. 6, 1990, 2-82764[U]

Int. Cl.[5] **H02G** *3/08*

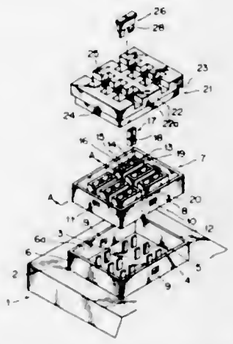
U.S. Cl. 174—52.1 **6 Claims**

1. A joint terminal mounting structure for an electric junction box, comprising:

a junction box body having at least one terminal portion extending therefrom;

a joint terminal accommodating box having at least one joint terminal accommodating cavity, said joint terminal accommodating box being connected to said junction box body so as to positionally align the terminal portion with the joint terminal accommodating cavity;

at least one joint terminal operatively located in the joint terminal accommodating cavity so as to electrically connect with the terminal portion through the joint terminal accommodating cavity; and



a cover having at least one insertion hole defined on a top surface thereof, said cover being adapted to cover said joint terminal accommodating box and positioned so as to connectively align said joint terminal in the joint terminal accommodating cavity with the insertion hole.

5,285,012

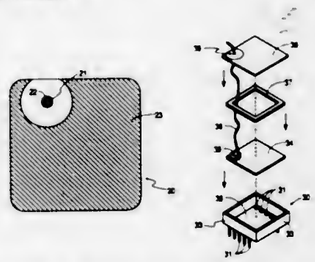
LOW NOISE INTEGRATED CIRCUIT PACKAGE

Richard R. Lobdill, San Luis Obispo, Calif., and Richard A. Levis, Chicago, Ill., assignors to Axon Instruments, Inc., Foster City, Calif.

Filed Feb. 18, 1992, Ser. No. 837,843

Int. Cl.[5] **H01L** *23/02*

U.S. Cl. 174—52.4 **8 Claims**



1. A package for electronic components comprising:

a housing having leads passing through a material of the housing for making electrical connections to electronic components which may be mounted within said housing;

a lid comprised of a material with lower dielectric noise than the material through which said leads of said housing pass; and

means for making electrical connection to an electronic component which may be mounted within said housing through said lid.

5,285,013

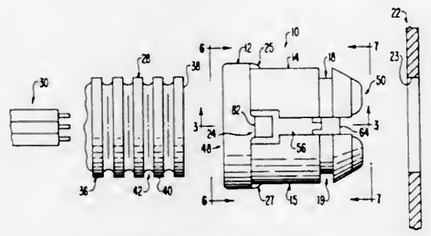
NON-METALLIC ELECTRICAL CONDUIT CONNECTOR

Kenneth R. Schnell, and Gregory J. Kesler, both of South Bend, Ind., assignors to Hubbell Incorporated, Orange, Conn.

Filed May 19, 1992, Ser. No. 885,663

Int. Cl.[5] **F16L** *5/00;* **H02G** *3/18*

U.S. Cl. 174—65 R **25 Claims**



1. A connector for attaching an electrical conduit to an enclosure comprising:

a ring having a first end and a second end;

a plurality of legs, each of said legs having a free end and a locking member thereon, said legs being spaced apart for defining a continuous slot between adjacent ones of said legs, each of said continuous slots extending from said second end of said ring to said free ends of said legs to completely separate adjacent ones of said legs;

means, coupled to said ring and said legs, for pivotally and resiliently coupling said legs to said ring at said second end; and

at least one retaining member coupled to said second end of said ring for retaining a conduit thereon;

said at least one retaining member being located in one of said slots and angled inwardly relative to said ring and extending away from said ring.

5,285,014

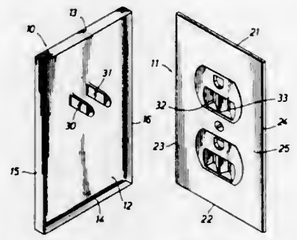
PAINT SHIELD FOR ELECTRICAL OUTLETS AND SWITCHES

Gayland Gilchrist, 1615 Warwickshire, Houston, Tex. 77072

Filed Dec. 11, 1991, Ser. No. 804,943

Int. Cl.[5] **B05C** *11/00*

U.S. Cl. 174—67 **9 Claims**



1. A paint shield for an electrical wall outlet or switch assembly to prevent paint from contacting the cover plate of the assembly or any other exposed surfaces thereof as the wall is painted, comprising: a generally rectangular front wall having a front surface and a rear surface; top, bottom and side walls projecting rearward of said front wall and having continuous outer edge portions; and rearwardly projecting means on said rear surface of said front wall adapted to engage said assembly and hold said shield in position thereon; said edge portions of said top, bottom and side walls engaging the corresponding side wall surfaces of the cover plate to entirely cover all front and side surfaces of said assembly, said top, bottom and side walls being formed with thin edge sections on the rear portions thereof, said thin edge sections having a degree of resilience which allows them to be force-fitted over the side surfaces of the cover plate.

5,285,015

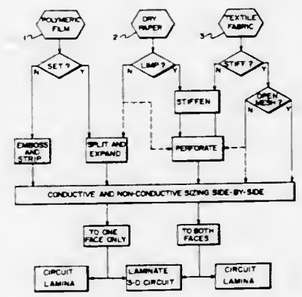
PATTERNED CIRCUITRY WITH FORAMINOUS SUBSTRATE AND METHOD OF MAKING

Frederick A. West, 507 Forrest Ct., Crestview, Fla. 32536

Continuation-in-part of Ser. No. 475,578, Feb. 6, 1990, Pat. No. 5,201,974. This application Mar. 18, 1993, Ser. No. 33,722

Int. Cl.[5] **H01B** *13/00*

U.S. Cl. 174—255 **20 Claims**



1. A method of providing patterned electrical laminar structures, comprising the steps of

providing a stiff strip of paper, textile, or polymeric film;

rendering the strip foraminous, by making a multiplicity of face-to-face openings therein substantially overall; and

sizing at least one face of the strip with bondable configured electrically conductive sizing material and bondable electrically non-conductive materials in side-by-side patterned configuration; and then

bonding the respective sizing materials in place and together on the sized strip.

5,285,016

WIRING BOARD PROVIDED WITH A HEAT BYPASS LAYER

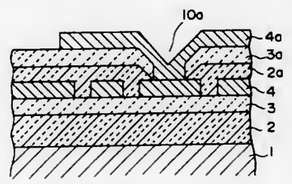
Yasunori Narizuka, Yokohama; Akihiro Kemmotsu, Fujisawa; Masakazu Ishino, and Eiji Matsuzaki, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1990, Ser. No. 618,407

Claims priority, application Japan, Nov. 27, 1989, 1-307232

Int. Cl.[5] **H05K** *1/00*

U.S. Cl. 174—252 **21 Claims**



1. A wiring board comprising:

a substrate, insulation layers formed on said substrate, a current-passing layer disposed between said insulation layers for an electrical current to flow therethrough, and a heat bypass layer provided at a position in proximity to at least a part of said current-passing layer and in contact with one of said insulation layers.

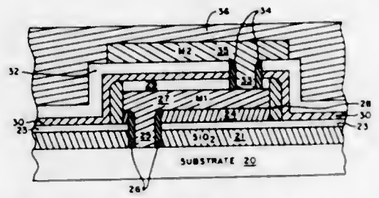
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5,285,017

EMBEDDED GROUND PLANE AND SHIELDING STRUCTURES USING SIDEWALL INSULATORS IN HIGH FREQUENCY CIRCUITS HAVING VIAS

Donald S. Gardner, Mountain View, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1991, Ser. No. 815,234
Int. Cl.[5] H05K 1/00
U.S. Cl. 174—261 68 Claims



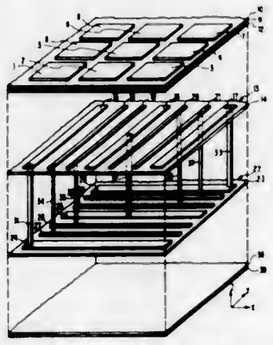
1. An embedded ground plane structure formed on a substrate, said substrate comprising an integrated circuit, said embedded ground plane structure comprising:
a first dielectric layer deposited upon said substrate;
a first electrically conductive layer deposited upon said first dielectric layer, said first electrically conductive layer comprising a first ground plane layer;
a second dielectric layer deposited upon said first electrically conductive layer; and,
at least one first opening formed in said first dielectric layer, said first electrically conductive layer and said second dielectric layer, said first opening having a sidewall, said sidewall having a third dielectric layer deposited thereon.

5,285,018

POWER AND SIGNAL DISTRIBUTION IN ELECTRONIC PACKAGING

William E. Pence, IV, Tarrytown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1992, Ser. No. 955,950
Int. Cl.[5] H01R 9/09
U.S. Cl. 174—261 13 Claims



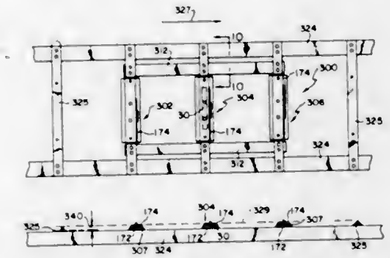
1. An integrated circuit packaging substrate comprising:
a plurality of dielectric layers,
electric conductor planes disposed between adjacent dielectric layers,
each said electric conductor plane electrically referenced to a ground plane through a dielectric layer, and,
each of said electric conductor planes having at least two power conductors and at least one signal conductor.

5,285,019

MODULAR IDLER STATION BELT SCALE APPARATUS

David Kempf, Nineveh, Ind., and Juergen Lauber, Karlsdorf, Fed. Rep. of Germany, assignors to Endress + Hauser Inc., Greenwood, Ind.

Continuation-in-part of Ser. No. 878,836, May 5, 1992. This application Sep. 16, 1992, Ser. No. 946,528
Int. Cl.[5] G01G 11/14
U.S. Cl. 177—16 24 Claims



1. A scale apparatus for weighing material moving in a downstream direction on a conveyor belt supported by a conveyor frame, the apparatus comprising:
a nonmeasuring upstream idler station;
a nonmeasuring downstream idler station;
a measuring idler station situated between the upstream idler station and the downstream idler station;
means for measuring the weight of material moving on the conveyor belt, the measuring means being coupled to the measuring idler station;
means for coupling the upstream idler station, the measuring idler station, and the downstream idler station together to form a scale unit, the upstream idler station, the measuring idler station, and the downstream idler station each having a top surface for supporting an idler assembly thereon, the means for coupling the upstream idler station, the measuring idler station, and the downstream idler station together to form the scale unit configured to align the top surface of the upstream idler station, the measuring idler station, and the downstream idler station substantially in a single plane; and
means for coupling the scale unit to the conveyor frame so that the conveyor belt passes over the upstream idler station, the measuring idler station, and the downstream idler station.

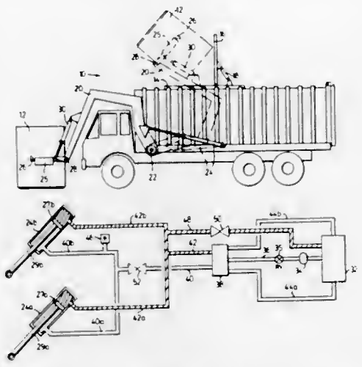
5,285,020

CONTROL SYSTEM FOR WEIGHING OF LOAD IN HYDRAULICALLY OPERATED LIFT ASSEMBLY

Zeljko T. Jurca, Etobicoke, Canada, assignor to Alert-O-Brake Systems, Inc., Mississauga, Canada

Filed Jul. 22, 1992, Ser. No. 916,665
Int. Cl.[5] G01G 19/08, 19/10
U.S. Cl. 177—139 8 Claims

1. In a loader of the kind having an hydraulically operated lift assembly including a load carrier, at least one arm associated therewith, a double-acting hydraulic cylinder operatively connected to said arm, a lift circuit and a lowering circuit for conveying hydraulic fluid under pressure respectively to a first end and to a second end of said double-acting hydraulic cylinder for respectively elevating and lowering said load carrier, and a control valve for switching the flow of hydraulic fluid under pressure between said lift and lowering circuits, and further including transducer means operatively connected to said lift circuit to provide a signal corresponding to the hydraulic pressure within said first end of said hydraulic cylinder, the improvement comprising:
a low-resistance by-pass circuit comprising a return line tapping off from said second end of said hydraulic cylinder and normally-closed remote control valve means in said return line, operable to be open when said at least one arm is being elevated with the load carrier to a predetermined reference weighing position so that pressure build-up in said lowering circuit is avoided and the load weight reading corresponding to the hydraulic pressure in the lifting circuit is representative of the load in said carrier.

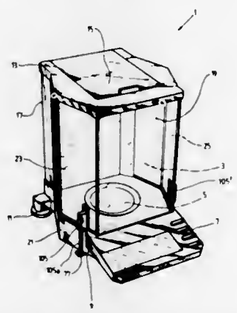


5,285,021

WEIGHING APPARATUS INCLUDING SIDE WALL OPERATION MEANS

Paul Luechinger, Uster, Switzerland, assignor to Mettler-Toledo AG, Greifensee, Switzerland

Filed Nov. 18, 1992, Ser. No. 978,387
Claims priority, application Switzerland, Dec. 17, 1991, 3733/91
Int. Cl.[5] G01G 21/30
U.S. Cl. 177—181 11 Claims



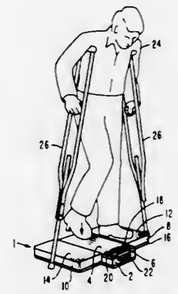
1. In a weighing apparatus of the windscreen type including a housing (1) having stationary vertical front (19) and rear (17) walls, stationary horizontal bottom (21) and top (13) walls, and a pair of movable side walls (23,25) cooperating with the other housing walls to define a weighing chamber (3) containing a weighing pan (5) that is connected for movement relative to said bottom wall, each of said side walls being connected with said housing for movement along a horizontal arcuate path (P) between chamber-open and chamber closed positions, respectively, relative to said housing, the improvement which comprises: means arranged beneath said bottom wall for shifting at least one of said side walls between said closed and open positions, said shifting means including:
(a) a pair of operating flat levers (77, 79) arranged generally end-to-end beneath and parallel with said bottom wall;
(b) lever connecting means connecting said levers at their adjacent one ends for movement relative to said bottom wall, said levers extending at their remote other ends outwardly beyond the opposed side edges of said bottom wall, respectively;
(c) coupling means connecting said levers for simultaneous movement relative to each other, said coupling means including a flat coupling plate (89) arranged below and parallel with said bottom wall; and
(d) side wall connecting means (105,107) connecting at least one of said movable side walls with the adjacent lever, respectively.

5,285,022

PARTIAL WEIGHT BEARING SCALE

Howard J. Antone, 12284 Adine Ct., Glen Ellen, Calif. 95442

Filed Aug. 17, 1992, Ser. No. 931,136
Int. Cl.[5] G01G 21/22, 23/18; A61B 5/103
U.S. Cl. 177—253 9 Claims



8. A partial weight bearing scale that allows a patient to measure the weight placed on a single foot or leg while providing a co-planar support platform for the patient's other foot, comprising:
(a) a scale having a planar weighing surface;
(b) support platform means providing planar support surfaces on opposite sides of the weighing surface;
(c) means for mounting said support platform means to said weighing scale to secure the platform means to the scale with the planar surfaces of the scale and platform means co-planar with each other wherein said weighing scale measures weight applied to said weighing scale surface excluding any weight applied to said support platform means; and,
(d) means for visually displaying weight applied to said weighing surface.

5,285,023

DOWNHOLE HYDRAULIC ROTARY SEISMIC SOURCE

Jack H. Cole, Ponca City, and Marvin E. Janda, Kildare, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 29, 1992, Ser. No. 954,831
Int. Cl.[5] G01V 1/40
U.S. Cl. 181—106 1 Claim

1. A downhole seismic source for the simultaneous generation of elliptically polarized shear wave seismic energy and compression wave seismic energy in a borehole comprising:
a substantially cylindrical housing having a central axis and two ends;
an orbital vibrating means disposed within said housing and energizable to impart an orbital motion for generating seismic shear wave energy and compression wave energy in said borehole, said orbital vibrating means including a mass located at each end of said cylindrical housing, at

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least two hydraulic drive motors providing rotational output, and at least two eccentric rotor assemblies receiving said rotational output, said rotor assemblies being aligned in parallel and radial alignment for synchronous eccentric rotation, said rotor assemblies further including a rotor housing, a bearing mounted, substantially cylindrical, rotor located within said rotor housing, said rotor having a central rotation axis slotted for receiving the input of rotation and having two parallel cavities perpendicular to said rotation axis which cavities are partially plugged, up to and in alignment with, the rotation axis, a synchronizing shaft interconnecting said rotors through said slotted rotation axis whereby said rotors rotate in



unison, and a built-in lubricant recirculating system intended to lubricate the bearings of said rotor;

a hydraulic power means for energizing said orbital vibrator means including a conversion means for converting said electrical power to hydraulic power, and a connection means to said orbital vibrating means through hydraulic hoses and electrical signal cables; and

a cable support means supporting said hydraulic power means and said orbital vibrating means at selected positions along said borehole, said cable support means including an electrical power conductor and signal conductors for controlling said hydraulic power means and said orbital vibrator means.

5,285,024

MICROPHONE

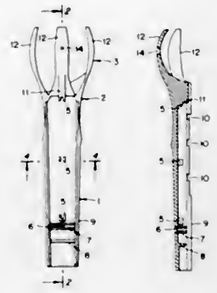
Hans R. Rosander, Rönneholmsgatan 18, S-262 63 Ängelholm, Sweden

Continuation of Ser. No. 363,168, Jun. 8, 1989, abandoned. This application Aug. 12, 1991, Ser. No. 746,086

Int. Cl.[5] **H04R** *1/04, 1/02, 1/08*

U.S. Cl. 181—158 **8 Claims**

1. A microphone capable of being carried by hand or attached to a stand, comprising: a handle part located at one end of the microphone, a head part located on an opposite end of the microphone, an intermediate part located between the handle part and the head part, and means for receiving and transmitting sound, the handle part of the microphone being comprised of two handle part halves arranged with respect to each other along a plane through a longitudinal axis of the handle, the entire first handle part half being symmetrical with respect to the entire second handle part half about said plane, said intermediate part and said head part each being comprised of two symmetrical halves arranged with respect to one an-



other along said plane, each symmetrical half of the head part comprising a plurality of semi-arch shaped arms.

5,285,025

LOUDSPEAKER HORN

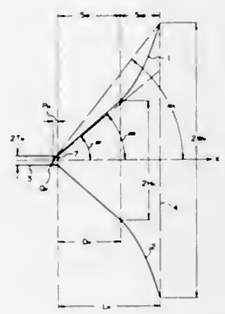
Tsutomu Yoshioka, Hyogo, Japan, assignor to Toa Corporation, Hyogo, Japan

Filed Apr. 26, 1990, Ser. No. 514,983

Claims priority, application Japan, Apr. 27, 1989, 1-111781

Int. Cl.[5] **G10K** *11/00, 13/00*

U.S. Cl. 181—192 **9 Claims**



1. A speaker horn having a central axis along which a sound wave propagates and including first and second pairs of opposing side walls substantially perpendicular to one another, wherein said first pair of opposing side walls has first and second sections between first and second ends, said second section being connected to said first section, said first end being coupled to a driver unit and said second end defining a mouth of said horn, said first and second sections having, in a plane including the central axis of said horn and perpendicular to said side walls of said first pair, differing exponential shapes, said second pair of opposing side walls having the same shape as said first pair of opposing side walls.

5,285,026

REACTIVE SOUND ATTENUATOR, IN PARTICULAR FOR AIR DUCTS IN PAPER MILLS

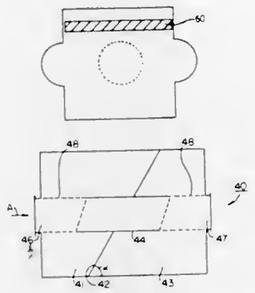
Markku Lemetyinen, Turku, Finland, assignor to Valmet Paper Machinery Inc., Finland

Filed Mar. 3, 1992, Ser. No. 844,839

Claims priority, application Finland, Mar. 18, 1991, 911305

Int. Cl.[5] **F04F** *17/04;* **F01N** *1/10, 1/08*

U.S. Cl. 181—224 **16 Claims**



1. The reactive sound attenuator for air-conditioning ducts, in particular for air ducts in paper mills, comprising

a partition wall separating said sound attenuator into first and second inner chambers, said first and second chambers each having an end opposite said partition wall, each of said ends and said partition wall provided with an opening, said sound attenuator arranged such that air flows through said end of said first chamber through said opening in said partition wall and through said end of said second chamber,

said partition wall having a main plane arranged at an acute angle in relation to a direction of air flow through said sound attenuator,

a central tube arranged in said opening of said partition wall, a length of said central tube being arranged parallel to the direction of air flow through said sound attenuator,

said central tube having a first end extending into said first chamber and a second end extending into said second chamber, said first and second ends of said central tube being structured such that planes parallel to said first and second ends of said central tube are arranged at an acute angle in relation to the direction of air flow through said sound attenuator, and

perforated tubes connected between said first and second ends of said central tube and said ends of said first and second chambers, respectively.

5,285,027

HYDRAULIC ELEVATOR AND A CONTROL METHOD THEREOF

Ichiro Nakamura, Katsuta; Haruo Watanabe, Chiyoda; Tsuyoshi Ogasawara, Ishioka; Katsuharu Shuto, Chiyoda, and Eiichi Sasaki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,163

Claims priority, application Japan, Feb. 28, 1991, 3-34042

Int. Cl.[5] **B66B** *1/04*

U.S. Cl. 187—29.2 **27 Claims**

1. A hydraulic elevator comprising:

a car;

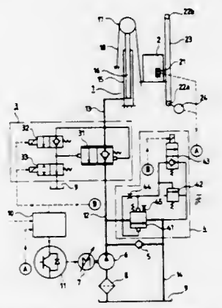
a hydraulic jack connected to said car to drive said car;

a hydraulic pump fluidly communicable with said hydraulic jack;

a control means for controlling a flow rate of fluid flowing to or from said hydraulic jack to thereby control movement of said car,

wherein said control means comprises:

a main valve provided in a fluid path between said hydraulic pump and said hydraulic jack and constructed so as to be hydraulically opened to allow fluid from said hydraulic pump to flow into said hydraulic jack when a pressure of the fluid in the fluid path between said hydraulic pump and said main valve is greater than a fluid pressure in the fluid path between said main valve and said hydraulic jack thereby to effect upward running of said car, and to check a fluid flow from said hydraulic jack to said hydraulic pump when fluid pressure in the fluid path between said hydraulic pump and said main valve is less than the fluid pressure in the fluid path between said main valve and said hydraulic jack;



valve control means for controlling, when the pressure of the fluid in the fluid path between said hydraulic pump and said main valve is less than the fluid pressure in the fluid path between said main valve and said hydraulic jack, said main valve to open and close, said valve control means including actuating means for actuating said main valve, and a plurality of pilot valves hydraulically connected to said actuating means and the fluid path between said main valve and said hydraulic jack for controlling fluid supply to and fluid discharge from said actuating means; and

means for controlling said plurality of pilot valves to control said actuating means so as to effect the closing operation of said main valve in at least two different closing rate patterns.

5,285,028

GROUP CONTROL METHOD AND APPARATUS FOR ELEVATORS FOR ASSIGNMENT OF COINCIDENT CALLS

Yasukazu Umeda; Shintaro Tsuji; Minoru Nakata; Koji Takeshima, and Hidenobu Nakashima, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,613

Claims priority, application Japan, Oct. 16, 1990, 2-275232

Int. Cl.[5] **B66B** *1/20*

U.S. Cl. 187—126 **4 Claims**

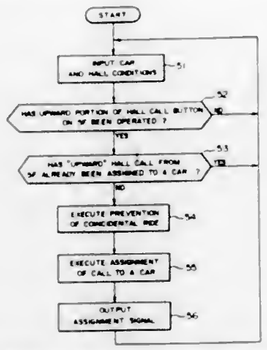
1. A group control apparatus for elevators including a plurality of cars for serving floors divided into a plurality of sectors, said apparatus comprising:

determination means for, when a first hall call has been issued from one of said floors, determining whether or not there is a car to; which a second hall call having the same destination sector as said first hall call has already been assigned; and

coincidental ride prevention means for, when said determination means has determined that there is no car to which

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said second hall call has been assigned assigning said first hall call to one of said plurality of cars in such a manner

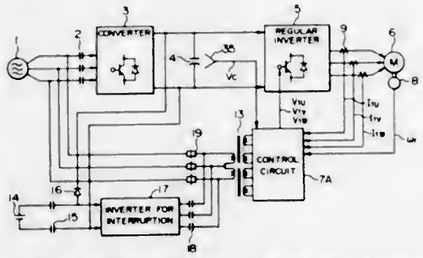


that passengers from different ones of said sectors will not ride on the same car.

5,285,029
DEVICE FOR DRIVING ELEVATOR AT SERVICE INTERRUPTION

Hiroshi Araki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,680
Claims priority, application Japan, Jun. 12, 1991, 3-139335; Aug. 29, 1991, 3-217769
Int. Cl.[5] H02J *9/06;* **H02M** *5/452, 7/758*
U.S. Cl. 187—114 **8 Claims**

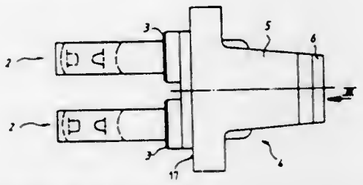


1. A device for driving an elevator at the time of a service interruption comprising:
an induction motor for driving an elevator,
a converter for converting the AC voltage supplied by a commercial power source into a DC voltage,
a capacitor for smoothing the DC voltage obtained by said converter,
a DC voltage detector for detecting the DC voltage across said capacitor,
a regular inverter for converting the DC voltage smoothed by said capacitor into an AC voltage to drive and control said induction motor,
a control circuit for generating an AC voltage command value and outputting it to said regular inverter,
a battery for supplying power to said regular inverter when the commercial power source is interrupted, and
a DC voltage suppression means for controlling the DC voltage command value generated by said control circuit by controlling the DC voltage across said capacitor detected by said DC voltage detector so that the DC voltage across said capacitor does not exceed a set value when the commercial power source is interrupted.

5,285,030
SWITCH MODULE

Bernd Schutzbach, Tuttlingen, and Bernd Hugger, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Fed. Rep. of Germany

Filed Nov. 18, 1991, Ser. No. 793,568
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037454
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—1 A **7 Claims**

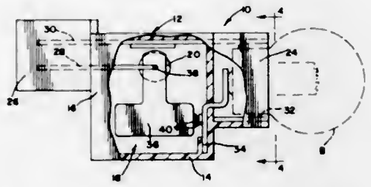


1. A switch module comprising
(a) a plurality of electric switches; each said switch including
(1) a switch base;
(2) interengaging connecting means mounted on each said switch base for coupling together adjoining switches in a side-by-side relationship in a single plane;
(3) switching contacts secured to said switch base; and
(b) a common module base encapsulating the switch bases in said side-by-side relationship; said module base being a plastic component injection-molded about said switch bases for immobilizing therein said switch bases for forming an inseparable bond between said switch bases.

5,285,031
PENDULUM-ACTIVATED SWITCH ASSEMBLY

Arthur R. Schueneman, Elgin, Ill., assignor to Elgin Die Mold Co., Elgin, Ill.

Filed Oct. 13, 1992, Ser. No. 959,683
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.48 **8 Claims**

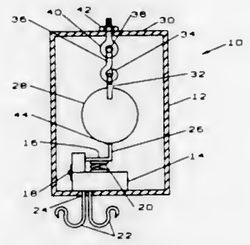


1. A pendulum-activated switch assembly, comprising:
a housing including first and second housing portions positioned in juxtaposed relationship to each other, and defining an interior cavity,
each of said first and second housing portions including an integral mounting boss, said bosses being disposed in generally confronting relationship with each other within said interior cavity,
electrode means mounted on said housing for connection to associated electrical circuitry, said electrode means comprising a pair of electrodes each having a portion disposed outside of said interior cavity for connection to said circuitry, a first one of said electrodes including a support portion disposed within said cavity and extending between said pair of mounting bosses, said electrode means further comprising a contact electrode having a portion positioned within said interior cavity; and
electrically conductive pendulum means pivotally mounted on said support portion of said first electrode within said interior cavity so that pivotal movement of said pendulum causes said pendulum to contact said contact electrode to electrically join said first electrode and said contact electrode to control flow of current through said electrode means.

5,285,032
BALL SWITCH

David H. Robinette, 6912 Senton Ave., Las Vegas, Nev. 89108

Filed Dec. 31, 1992, Ser. No. 999,748
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.48 **6 Claims**

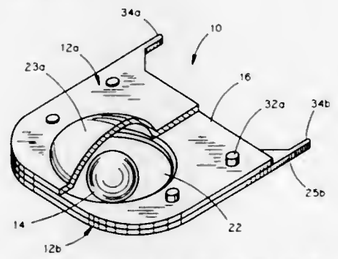


1. A switch comprising:
a levered contact arm movable between a lower open circuit position and a raised closed circuit position,
a tip projecting vertically upward from said arm,
resilient means urging said arm to its closed position, and
a rounded inertial means pendulously suspended to normally rest on said tip to normally retain said arm is its open circuit position.

5,285,033
TILT ACTION SWITCH

Ralph Ipcinski, Hollis, N.H., assignor to C&K Components Inc., Newton, N.H.

Continuation of Ser. No. 740,074, Aug. 5, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,490
Int. Cl.[5] H01H *35/02*
U.S. Cl. 200—62.52 **1 Claim**

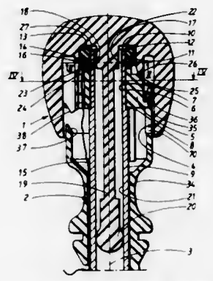


1. A tilt action switch having a ball bearing movable contact and a body portion, the body portion including an electrically conductive upper segment and an electrically conductive lower segment, the upper segment and lower segment each providing an arced portion, each of the arced portions having edges defining same, the upper segment having a first support portion extending from the edges of its arced portion in integral, right angle relation thereto and the lower segment having a second support portion extending from the edges of its arced portion in integral, right angle relation thereto, the upper segment and the lower segment being attached together with the arced portions in opposed relation to form a spherical cavity within which the ball bearing movable contact is positioned, the first support portion and second support portion including inner surfaces and the inner surfaces of the first and second support portions have a insulating spacer sandwiched therebetween, the upper and lower segments and each having an integral planar terminal extending outwardly from its segment.

5,285,034
GEARSHIFT LEVER SWITCH

Kenneth Skogward, Huskvarna, and Jan Stenevi, Mullsjö, both of Sweden, assignors to Scandmec Mecania AB, Sweden

PCT No. PCT/SE90/00544, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO91/02912, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 24, 1990, Ser. No. 835,921
Claims priority, application Sweden, Aug. 25, 1989, 8902828; Nov. 6, 1989, 8903702
Int. Cl.[5] H01H *9/06*
U.S. Cl. 200—61.88 **14 Claims**



1. A control lever comprising an elongated lever part extending along a longitudinal axis and a knob at one end thereof, with the other end of the lever part being connected to a mechanism that is to be operated, the knob being movable in different directions radially relative to said longitudinal axis and including a cavity presenting defined by an inner peripheral surface of the knob which surrounds an end part of said lever part with a radial clearance therebetween, the knob housing an electrical switch which comprises at least one ring-shaped movable electrical contact element affixed to the knob so that the movable contact element moves with the knob, housing therein an elastic ring-shaped centering element, the outer periphery of the centering element abutting against said peripheral surface of the knob and the inner periphery of the centering element abutting against said end part of the lever part, the centering element acting to center the movable contact element relative to the end part of the lever part so that in a neutral position for the knob there is an annular space between the movable contact element and said end part of the lever part, which end part comprises a stationary contact element, and that by manual radial movement of the knob relative to the longitudinal axis in any of said different directions, the movable contact element is displaced radially to one of several contact positions in contact with the stationary contact element.

5,285,035
DUST PROOF ELECTRICAL SWITCH

Ronald D. Williams, St. Charles, and William D. Crow, Maryland Heights, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 10, 1992, Ser. No. 972,984
Int. Cl.[5] H01H *35/10, 9/04*
U.S. Cl. 200—80 R **14 Claims**

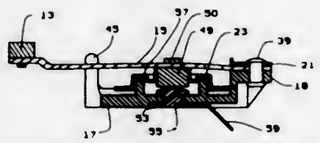
1. A switch assembly for a dynamoelectric machine comprising:

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a support means including an electrically non-conductive terminal board, said terminal board having a first side and a second side, said first side having a non-conductive cup formed therein;

a first electrical contact means mounted within said cup, said first electrical contact means including a connector means for connecting said first contact means to one of a source of electrical energy and said dynamoelectric machine;

an electrically conductive switch arm having a first end and a second end, means for attaching said switch arm to said terminal board at one end of said first and second ends, said attaching means holding said switch arm cantilevered above said terminal board and means for connecting said electrically conductive switch arm to an electrical terminal, said electrical terminal being electrically connected to



the other of said source of electrical energy and said dynamoelectric machine;

a second electrical contact mounted to said conductive switch arm;

means for enclosing said first and second electrical contacts to isolate the contacts from the environment in which the machine operates, said enclosing means including a non-conductive resilient, flexible means, said flexible means including a pliable non-conductive boot having a first and second opening, one opening of said boot being sized to permit said boot to be in snug contact with said cup and the other opening of said boot being in contact with said electrically conductive switch arm, said first and second contacts being aligned within said boot and positioned to permit electrical connection with said contacts when an external force is applied to one of said contacts.

5,285,036

GAS-DRIVEN POWER SWITCH WITH POWER-ASSISTED PISTON

Dieter Lorenz, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

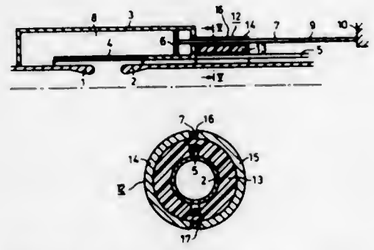
PCT No. PCT/DE91/00114, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/15025, PCT Pub. Date Oct. 3, 1991

PCT Filed Feb. 12, 1991, Ser. No. 927,475

Claims priority, applicatioo Fed. Rep. of Germany, Mar. 26, 1990, 4010007

Int. Cl.[5] H01H *33/88*

U.S. Cl. 200—148 A **8 Claims**



1. A gas-blast circuit-breaker comprising:

at least one stationary contact member and one moveable contact member;

a compression device including one actuated compression cylinder that is coupled to the one moveable contact member and one compression piston that is actuated during a breaking movement in the opposite direction to the compression cylinder, whereby the compression cylinder and the compression piston enclose a compression space;

a mechanical limit stop for restricting movement of the compression piston on a side of the compression piston facing away from the compression space;

a restoring device connected to the compression piston and pulling the piston rod of the compression piston nearer to the mechanical limit stop;

a device for reinforcing actuation through the magnetic effect of the breaking current;

a hollow-cylindrical body surrounding a portion of said at least one stationary contact member and said one moveable contact member, said hollow-cylindrical body having a portion consisting of ferromagnetic material, said ferromagnetic portion having at least one continuous slot that runs parallel to the direction of the breaking current; and

at least one rod consisting partly of ferromagnetic material which is introduced in the longitudinal direction into one of the slots;

wherein one of the compression cylinder and the compression piston is rigidly coupled to the hollow-cylindrical body and the other of the compression cylinder and the composition piston is rigidly coupled to said at least one rod.

5,285,037

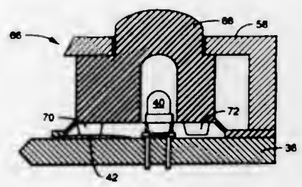
ILLUMINATED DOME SWITCH

Antoni S. Baranski, San Carlos; David N. Larkins, Fremont, both of Calif.; Thomas J. Heath, Fort Collins, and David W. Thompson, Loveland, both of Colo., assignors to Ampex Systems Corp., Redwood City, Calif. and Data Entry Products, Inc., Loveland, Colo.

Filed Apr. 10, 1992, Ser. No. 866,694

Int. Cl.[5] H01H *9/16*

U.S. Cl. 200—314 **13 Claims**



1. An illuminated dome switch, comprising:

(a) a light source;

(b) a dome located to one side of said light source, said dome being resiliently movable between a biased OFF position and a depressed ON position;

(c) means defining a base for supporting said light source and said dome; and

(d) a keycap supported directly over said light source and to one side of said dome for movement between a biased OFF position so as not to depress said dome and a depressed ON position for depressing said dome in order to move the latter to its ON position, whereby to turn on said light source by means of suitable power supply means and circuitry, said keycap having an upper portion thereof which is located over said light source and through which at least some light passes from said light source when the latter is turned on, said keycap including a downwardly facing actuating member positioned on one edge of the keycap directly over said dome so as to directly engage the dome and thereby directly depress the latter when the keycap is in its depressed position, and a second downwardly facing member on an edge of the keycap opposite said actuating member, said second member directly engaging an underlying section of said base when the keycap is in its depressed position so as to serve as a fulcrum for said actuating member.

5,285,038

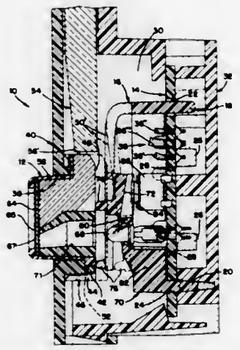
LIGHTED MOMENTARY PUSH-BUTTON SWITCH ASSEMBLY HAVING INTEGRAL SWITCH ACTUATOR AND LAMP LOCATOR

Michael A. Asher, Camarillo, Calif.; Charles E. Kidwell, Kokomo, and Robin L. Truesdell, Roseville, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 19, 1993, Ser. No. 6,357

Int. Cl.[5] H01H *9/18*

U.S. Cl. 200—314 **3 Claims**



1. A momentary push-button switch assembly, comprising:

a circuit board, a switch unit mounted in a central region of said circuit board and an indicator lamp mounted on said circuit board adjacent said switch unit, said switch unit having a plunger displaceable to alter an electrical state of said switch unit;

a push-button having a contact area disposed in axial alignment with the plunger of said switch unit, and a light transmissive passage disposed in substantial axial alignment with said indicator lamp; and

a unitary interface element disposed intermediate said circuit board and said push-button, said interface element including a sleeve having an inside diameter slightly larger than an outside diameter of said indicator lamp for surrounding and supporting said indicator lamp in relation to the light transmissive passage of said push-button, and cantilever means in resilient engagement with the contact area of said push-button, said cantilever means being deflectable upon depression of said push-button to engage and displace the plunger of said switch unit.

5,285,039

SEESAW TYPE SWITCH

Yukihiko Satoh, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,693

Claims priority, application Japan, Sep. 18, 1991, 3-083270[U]

Int. Cl.[5] H01H *15/02*

U.S. Cl. 200—563 **8 Claims**

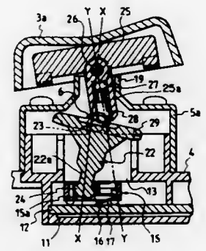
1. A seesaw type switch comprising:

a case having a bottom surface;

a stationary contact fixedly connected to said bottom surface;

a movable contact mounted on said bottom surface such that said movable contact is slidable along said bottom surface between and engaged position in which said movable contact electrically connects with said stationary contact, and a disengaged position in which said movable contact is electrically isolated from said stationary contact;

a first lever pivotally supported by said case, said first lever having a top surface and a first protrusion including an end, the end of said first protrusion engaging said movable contact such that when said first lever is in a first pivoted position, said moving contact is in said engaged position, and when said first lever is in a second pivoted position, said moving contact is in said disengaged position;



a cover fixedly connected to said case over said first lever; and

a second lever pivotally supported by said cover, said second lever having a second protrusion extending through said cover and engaging said top surface of said first lever such that when said second lever is in a third pivoted position, said first lever is in said first pivoted position, and when said second lever is in a fourth pivoted position, said first lever is in said second pivoted position.

5,285,040

MICROWAVE SUSCEPTOR WITH SEPARATE ATTENUATOR FOR HEAT CONTROL

Lawrence C. Brandberg, Edina; Jeffrey T. Watkins, Eden Prairie, and Sara J. Risch, Edina, all of Minn., assignors to Golden Valley Microwave Foods Inc., Edina, Minn.

Continuation-in-part of Ser. No. 601,451, Oct. 19, 1990, which is a continuation of Ser. No. 456,159, Dec. 22, 1989, Pat. No. 4,970,358. This application Sep. 1, 1992, Ser. No. 938,815

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—745 **6 Claims**



1. A laminate for microwave heating, toasting, browning or crisping foods comprising,

a paper backing,

a microwave susceptor material as a layer carried by the paper backing for producing heat when exposed to microwave energy, said susceptor layer including a sufficient amount of microwave interactive material for heating of said susceptor material through absorption of microwave energy during heating in a microwave oven,

a microwave attenuator separate from the microwave susceptor material,

said attenuator is incorporated into the composition of the paper as a part of the paper backing, and the microwave susceptor layer is applied to a surface of the paper as a coating thereon,

said attenuator within the paper being associated in heat

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conductive relationship with the microwave susceptor material layer,

said attenuator comprising electrically nonconductive, microwave noninteractive mineral particles present in an amount sufficient to absorb heat and to inhibit overheating of the microwave susceptor layer during heating in a microwave oven.

5,285,041

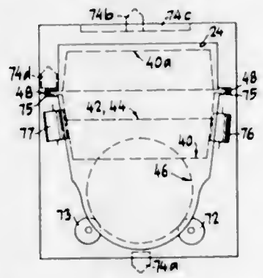
AUTOMATED FOOD VENDING SYSTEM

Christopher B. Wright, San Francisco, Calif., assignor to Wright Food Systems, Inc., San Francisco, Calif.

Division of Ser. No. 641,885, Jan. 16, 1991, Pat. No. 5,147,068. This application Sep. 14, 1992, Ser. No. 944,646

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—717 **8 Claims**



1. A microwave oven, for use in combination with food package units having a predetermined three-dimensional shape and a code for controlling the microwave oven printed in a predetermined position thereon, comprising:

an interior cavity having a shape which matches the predetermined three-dimensional package shape so that each package unit is held in a predetermined position in the oven cavity;

a door at a front portion of the microwave oven which is openable to allow insertion of a food package unit into the interior cavity of the oven, and

a code reader located in a predetermined position in the interior cavity such that the code printed on the food package unit is readable automatically by the code reader when the package unit is inserted in the oven cavity,

said interior cavity having interior walls defining its shape to correspond to the predetermined shape of the food package units such that the shaped interior cavity functions to constrain insertion of a correspondingly-shaped food package unit therein to substantially one degree of freedom of insertion movement, and said code reader being located in the predetermined position in the interior cavity so as to be positioned for reading a predetermined portion of the food package unit when it is inserted in the interior cavity constrained to the one degree of freedom of insertion movement.

5,285,042

GAS TUNGSTEN ARC WELDING TORCH APPARATUS

Thomas D. Erichsen, Los Altos; Gary L. Boerman, Santa Clara; Daniel J. Richard, San Jose, all of Calif., and Ian C. B. Gordon, East Whitburn, Scotland, assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 25, 1992, Ser. No. 981,621

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—75 **16 Claims**

1. An arc welding apparatus, comprising:

an electrical lead;

a gas feed pipe;

a housing adjacent to the gas feed pipe, wherein the housing has a first end and a second end and a linear length extending from the first end of the housing to the second end of the housing;

a angular support piece mechanically connected to the second end of the housing;

an electrode with a first end and a second end, wherein the first end of the electrode is electrically connected to the electrical lead and mechanically connected to the angular support piece at a fixed angle with respect to the housing, and wherein the electrode has a length from the first end



to the second end, and wherein the length of the housing and the length of the electrode form a reflex angle within the range from 282° to 320°;

a cup of electrically insulative material surrounding the electrode and mechanically connected to the angular support piece; and

a feed tube with a length adjacent to the housing and with a first end adjacent to the electrode, wherein the feed tube forms an arc greater than 282°.

5,285,043

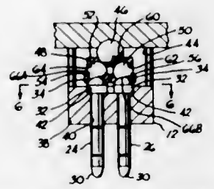
SELF-ADJUSTING SPOT WELDING ELECTRODE HOLDER

Robert L. Smith, 2129 - 10th St., Wyandotte, Mich. 48192

Filed May 12, 1993, Ser. No. 59,570

Int. Cl.[5] B23K *11/11, 11/31*

U.S. Cl. 219—87 **20 Claims**



1. In a multiple electrode spot welding apparatus for simultaneously spot welding a plurality of spaced areas with a substantially equal welding pressure, the combination comprising:

a holder;

a first electrode of an electrically-conductive material adapted to engage a workpiece;

a second electrode of an electrically-conductive material adapted to engage said workpiece;

first means on the holder for guiding the first electrode for reciprocal motion along a first path of motion;

second means on the holder for guiding the second electrode for reciprocal motion along a second path of motion;

ball means, and means on the holder for supporting said ball means in engagement with the first electrode and the second electrode such that a motion of the holder toward the workpiece, when the first electrode is engaged with the workpiece, urges the second electrode toward the workpiece until the pressure applied thereon by the first and second electrodes is substantially equal.

5,285,044

PROJECTION WELDING

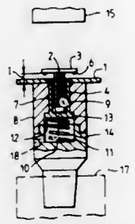
Yoshitaka Aoyama, 20-11, Makitsukadai 2-cho, Sakai-shi, Osaka 590-01, Japan

Filed Oct. 16, 1991, Ser. No. 776,047

Claims priority, application Japan, Oct. 19, 1990, 2-282944

Int. Cl.[5] B23K *11/00*

U.S. Cl. 219—93 **15 Claims**



1. A welding method comprising the steps of:

installing a hollow positioning guide pin upon an electrode to project through an aperture in a plate;

inserting a flanged elongate or slender part in said guide pin; and

pressing another electrode to said flange while withdrawing the guide pin from said aperture upon initiation of fusion welding contact between said flange and said plate.

5,285,045

LASER PROCESSING APPARATUS

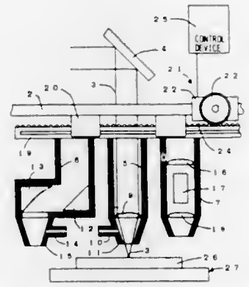
Susumu Ito; Hikoharu Aoki, both of Nagoya; Yuji Miwa, Chita, and Akihiko Oshima, Bisai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 31, 1992, Ser. No. 922,388

Claims priority, application Japan, Oct. 25, 1991, 3-279747

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.77 **20 Claims**



1. A laser processing apparatus comprising:

laser beam generating means for generating a laser beam;

a plurality of processing heads each of which has at least one optical element, said at least one optical element of each processing head being of a different type than the at least one optical element of the other processing heads;

mounting means for mounting said plurality of processing heads;

supporting means for movably supporting said mounting means;

driving means for moving said mounting means; and

control means for controlling said driving means to selectively position one of said plurality of processing heads at a processing position where the laser beam generated by said laser beam generating means is conducted to a selected one of said plurality of processing heads, whereby each of said plurality of processing heads can be positioned to receive the laser beam from the laser beam generating means.

5,285,046

APPARATUS FOR DEPOSITING PARTICULATE OR POWDER-LIKE MATERIAL ON THE SURFACE OF A SUBSTRATE

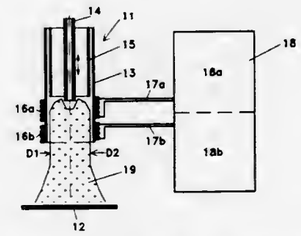
Bernard Hansz, Vert le Pett, France, assignor to Plasma-Technik AG, Wohlen, Switzerland

Filed Jul. 3, 1991, Ser. No. 725,693

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021182

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.47 **11 Claims**



1. An apparatus for depositing particulate or powder-like material on the surface of a substrate, said apparatus comprising:

a hollow tube-like member consisting of a heat-resistant material, said tube-like member having a first and a second end;

means for supplying solid particulate or powder-like material into said tube-like member at said first end;

means for supplying a plasma gas into said tube-like member at said first end;

means for generating a plasma in the interior of said hollow tube-like member including ignition means for the ignition of said plasma torch;

said means for generating a plasma torch comprising at least two induction coils located at the outer surface of said hollow tube-like member at said second end and a high frequency generator means having at least two generator sections, a first of said at least two generator sections generating energy with a first higher frequency and a second of said at least two generator sections generating energy with a second lower frequency;

one of said at least two induction coils being connected to said first generator section and another one of said at least two induction coils being connected to said second generator section.

5,285,047

METHOD AND APPARATUS FOR PREVENTING CARRY BACK IN A RAIL CAR USING AN ON-BOARD HEATING DEVICE

Michael S. Petrelli, 100 Rice Ave., Sheridan, Wyo. 82801

Filed Aug. 6, 1992, Ser. No. 925,211

Int. Cl.[5] B61D *3/00;* **H05B** *3/00*

U.S. Cl. 219—202 **5 Claims**

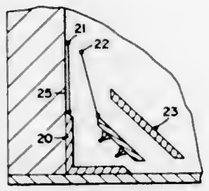
1. A rail car comprising at least one axle, said rail car further comprising means for preventing carry back in said rail car, said means for preventing carry back comprising:

power generating means operatively connected to said at least one axle for selectively generating a power signal under predetermined conditions when said rail car is in motion;

control means for controlling said power generating means

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according to said predetermined conditions, said control means comprising level detecting means for detecting whether the rail car is moving uphill or downhill and generating a first control signal when said rail car is moving uphill and a second control signal when said rail car is moving downhill; and



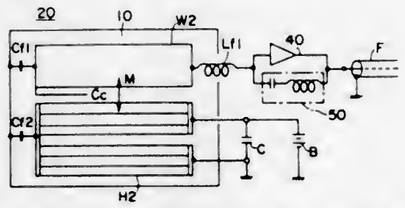
electrical resistance means, positioned at predetermined locations in said rail car, responsive to said first and second control signals for selectively receiving power from said power generating means in response to said second control signal and generating thermal energy at said predetermined locations to prevent carry back in said rail car.

5,285,048

AUTOMOBILE WINDSHIELD ANTENNA INCORPORATING WINDSHIELD HEATER

Kazuhiko Nakase, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1992, Ser. No. 831,183
Claims priority, application Japan, Feb. 5, 1991, 3-035436
Int. Cl.[5] H01Q *1/32, 1/02*
U.S. Cl. 219—203 **7 Claims**



1. An automobile windshield antenna for receiving a first reception frequency band and a second reception frequency band, said antenna comprising:

a defogging heater wire which resonates in said first reception frequency band but not in said second reception frequency band, a terminal of said heater wire being grounded in terms of high-frequency by a capacitor or insulated in terms of high-frequency from a power supply circuit by a choke coil for said first reception frequency band, and

a conductor which is installed in said window glass and has an output terminal, said conductor being resonant in said first reception frequency band but not in said second reception frequency band,

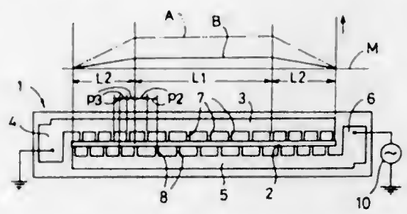
wherein said heater wire and conductor are installed in such a positional relationship that said heater wire and conductor are inductively and capacitively coupled together in said first reception frequency band, thus forming a state of double resonance, said heater wire and conductor are respectively capable of reception in said first reception frequency band, and said heater wire and conductor are electrically not coupled in said second reception frequency band so that reception of said second reception frequency band is accomplished only by said conductor.

5,285,049

HEATER FOR SHEET MATERIAL

Hiroshi Fukumoto; Shigeo Ota; Fumiaki Tagashira, and Shingo Ooyama, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 18, 1992, Ser. No. 904,044
Claims priority, application Japan, Jul. 25, 1991, 3-186351
Int. Cl.[5] H05B *3/16;* **H01C** *1/012, 1/14*
U.S. Cl. 219—216 **4 Claims**



1. A heater comprising an insulating substrate which carries a first conductor strip and a second conductor strip spaced transversely from the first conductor strip, the substrate further carrying at least one main resistor line extending between the first and second conductor strips for heating a sheet material, the first conductor strip having a plurality of electrode teeth spaced longitudinally of the main resistor line, the first conductor strip being always held in electric conduction with the main resistor line through all of the electrode teeth of the first conductor strip, the second conductor strip also having a plurality of electrode teeth spaced longitudinally of the main resistor line, the second conductor strip being always held in electric conduction with the main resistor line through all of the electrode teeth of the second conductor strip, wherein substantially the entire length of the main resistor line is simultaneously heated, wherein the electrode teeth of the second conductor strip are arranged in staggered relation to the electrode teeth of the first conductor strip,

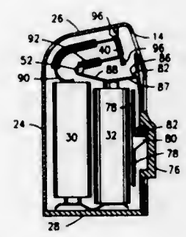
wherein those of the electrode teeth of the first and second conductor strips located adjacent to both ends of the resistor line are arranged at smaller pitch than the other electrode teeth.

5,285,050

BATTERY-OPERATED PORTABLE CIGARETTE LIGHTER WITH CLOSURE ACTUATED SWITCH

William G. Blackburn, Clearwater, Fla., assignor to Electra-Lite, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 817,564, Jan. 7, 1992. This application Aug. 4, 1992, Ser. No. 924,781
Int. Cl.[5] H05B *1/02;* **F23Q** *7/16*
U.S. Cl. 219—268 **3 Claims**



1. A lighter, comprising:

a hollow housing;

said hollow housing being formed of a plastic material and having a generally parallelepiped configuration including

a top wall, a bottom wall, a front wall, a rear wall, and a pair of side walls;

a battery means disposed within said housing;

said battery means including a first and a second battery, said first battery being positioned between said second battery and said front wall of said housing, said second battery being positioned between said first battery and said rear wall of said housing;

an electrical circuit disposed within said housing connected to and connected for energization by said battery means;

a switch means for opening and closing said electrical circuit;

a heating element forming part of said electrical circuit and being energized when said switch means is closed;

said heating element being generally oriented in a vertical plane and having a lowermost end and an uppermost end;

a cigarette-receiving circular opening of predetermined diameter being formed in said front wall of said housing;

a slidably mounted closure means on said front wall of said housing for selectively opening and closing said opening;

a slidably mounted switch actuator means on said front wall of said housing and having an exteriorly exposed manually engageable portion for operating the actuator means;

said closure means and said switch actuator means being fixedly secured to one another so that movement of said switch actuator means is simultaneously communicated to said closure means;

said circular opening and said heating element being spaced apart from one another so that access to said heating element can be obtained only through said circular opening, and said predetermined diameter of said circular opening being insufficient to receive a human finger to the extent necessary to contact said heating element;

said switch actuator means having a first position where said switch means is open and said closure means is disposed in closing relation to said opening;

said switch actuator means having a second position where said switch means is closed and said closure means is disposed in retracted relation to said opening;

said switch means including a first conductor disposed in selective electrical communication between said lowermost end of said heating element and said first battery;

said first conductor being formed of a flexible, resilient material and having a first end permanently secured to said lowermost end of said heating element and a free second end having a first, in repose, position where it is spaced apart from said first battery and a second position where it is in electrical communication with said first battery;

said circuit further including a second conductor having a first end in permanent engagement with the uppermost end of said heating element and a second end in permanent engagement with said second battery; and

a protuberance formed in said closure means on an interior side thereof, said protuberance specifically positioned near an uppermost end of said closure means and being adapted to abuttingly engage said free second end of said first conductor and to displace said free second end into electrical communication with said first battery when said switch actuator means is in its second position;

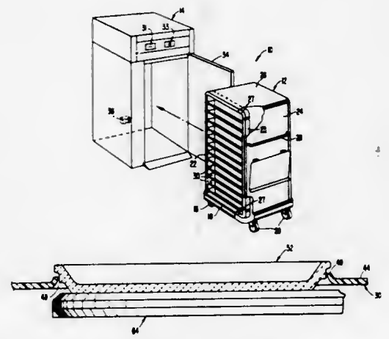
said first conductor returning to its first position under its own resiliency when said switch actuator is returned to its first position.

5,285,051

RETHERMALIZATION SYSTEM INCLUDING FOOD SERVICE DISH

Gary DeGrow, Antioch; Julia T. Wimpee, Smyrna; Kevin B. Cundiff, Brentwood, all of Tenn.; Royce A. Payton, Oakland, Mo.; Roger W. Pepper, Whitehouse, Tenn.; Leonard L. Mitchum, Jr., Huntsville, Ala., and Robert A. McCoy, Franklin, Tenn., assignors to Aladdin Synergetics, Inc., Nashville, Tenn.

Continuation of Ser. No. 471,483, Jan. 29, 1990, which is a division of Ser. No. 394,204, Aug. 15, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 794,630
Int. Cl.[5] A47J *39/00*
U.S. Cl. 219—386 **23 Claims**



1. A rethermalization system comprising:

(a) a food service tray including a hot dish through-opening, said through-opening having a through-opening top edge and an inner surface;

(b) a rethermalization cart including a cart frame, a plurality of heating pads supported within said cart frame, and a plurality of vertically spaced tray supports attached to said cart frame which supports said food service tray at a plurality of alternative vertically spaced shelf locations, and in a tray support position wherein said hot dish through-opening is disposed above one of said heating pads; and

(c) a food service dish positionable in said hot dish through-opening of said food service tray, said food service dish including a bottom surface which allows heat transfer to occur from said heating pad to food in said food service dish with said tray in the tray support position; characterized in that:

said food service dish includes an upwardly outwardly flaring side extending from said bottom surface, a generally vertical wall extending upwardly from said flaring side, and an upper lip projecting generally horizontal from said generally vertical wall;

said food service dish is positionable in a heating position when said tray is in the support position, the heating position including said bottom surface thereof being supported by said heating pad such that said upper lip of said food service dish is slightly raised and out of contact from said through-opening top edge in order to reduce heat transfer between said food service dish and said food service tray; and

said food service dish is positionable in a serving position when said tray is supported on a planar surface, the serving position including said food service dish being positioned relative to said through-opening such that said generally vertical wall is closely positioned horizontally adjacent to the inner surface of said through-opening with no intermediate member disposed therebetween in order to block excessive horizontal movement of said food

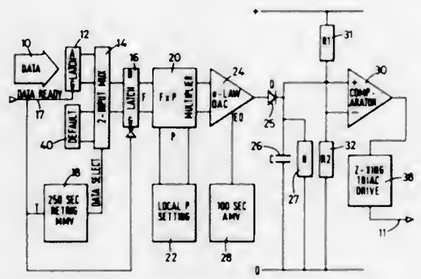
VOL 1159 ISS 2 FE 8 1994 UMI

service dish within said through-opening while the rethermalized food in said food service dish is being consumed.

5,285,052
CONTROL OF ELECTRICALLY OPERATED HEATING SYSTEMS

Paul Telco, Hatfield, United Kingdom, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB90/00177, § 371 Date Nov. 9, 1990, § 102(e) Date Nov. 9, 1990, PCT Pub. No. WO90/08995, PCT Pub. Date Aug. 9, 1990
PCT Filed Feb. 6, 1990, Ser. No. 602,274
Claims priority, application United Kingdom, Feb. 6, 1989, 8902580
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—483 **17 Claims**



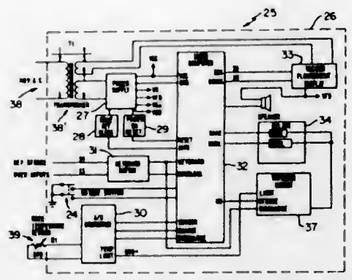
1. An electrically operable heating system comprising:
a plurality of heating units,
a plurality of control units for controlling operation of at least said heating units respectively,
each control unit including a device which provides an output based on two inputs one of which represents a preset maximum proportion of the power of the respective heating unit which can be made available at any time and the other of which represents the fraction of that proportion required at a particular time, and
means in each control unit responsive to the respective said output for regulating the heating ON time of the respective heating unit to the exclusion of the other said heating units.

5,285,053
CONTROL SYSTEM AND METHODS OF MAKING AND OPERATING THE SAME

Daniel L. Fowler, Kentwood, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 616,224, Nov. 20, 1990, Pat. No. 5,111,027, which is a division of Ser. No. 376,388, Jul. 6, 1989, Pat. No. 5,029,244. This application Dec. 30, 1991, Ser. No. 815,944
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—506 **6 Claims**

1. In a temperature regulating control unit for controlling the operation of a cooking apparatus that has an RTD temperature sensor means that is adapted to sense the temperature in the oven of the cooking apparatus, said control unit comprising applying means adapted to be operatively interconnected to said sensor means for applying a varying voltage across said sensor means and thereby providing a certain current level through said sensor means for each certain voltage value being applied across said sensor means while said sensor means is sensing a certain temperature, and microcomputer means adapted to be operatively interconnected to said sensor means and being operatively interconnected to said applying means for determining from the voltage being applied across said sensor means the actual temperature being sensed by said

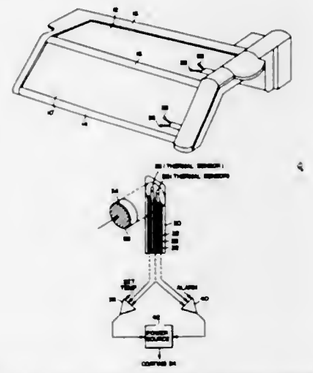


sensor means, the improvement wherein said applying means comprises a charge pump means.

5,285,054
THERMAL PROBE HAVING RESILIENTLY BIASED TEMPERATURE SENSOR FOR USE WITH HEATABLE PANELS

Barry E. Barsky, Huntingdon Valley, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.

Filed Mar. 6, 1992, Ser. No. 847,787
Int. Cl.[5] A61G *11/00*; H05B *3/34*; G01K *1/14*
U.S. Cl. 219—543 **6 Claims**



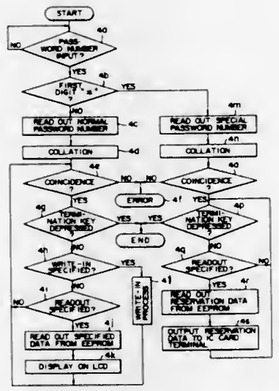
1. A thermal probe adapted for placement between first and second panels for measuring the temperature of one of the panels, said thermal probe comprising:
sensing means adapted to develop signals representative of the temperature of one of the panels;
a strip of dielectric material having conductive traces embedded therein and electrically connected to said sensing means and adapted for connection to a utilization circuit for conducting signals developed by said sensing means to said utilization circuit, said strip of dielectric material having a first surface adapted to bear against one of the panels and a second surface opposite from said first surface at which said sensing means are disposed;
and a resilient spacing member compressible along its length and:
(a) having a length in its uncompressed state which urges said sensing means into proximity with said one of said panels when said resilient spacing member and said sensing means are placed between the first and the second panels, and

(b) disposed to urge said first surface of the strip of dielectric material to bear against said one of said panels.

5,285,055
IC CARD AND READ/WRITE CONTROL METHOD FOR CONTROLLING DATA READOUT/DATA WRITE-IN WITH RESPECT TO DATA STORING MEANS CONTAINED IN IC CARD

Satoru Oonakahara; Tadashi Murayama, and Shouichi Ooshima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1991, Ser. No. 757,810
Claims priority, application Japan, Sep. 14, 1990, 2-245472
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 **6 Claims**

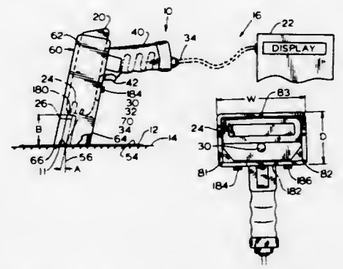


1. In a system including a host computer, a network, and a terminal unit having terminal input means and connected to said host computer via said network, an IC card selectively connected to said terminal unit and which comprises:
card input means by means of which an owner inputs data and personal password data;
data storing means for storing data input via said card input means;
password data storing means for storing a plurality of registered password data items which are previously registered, the registered password data items including at least one personal password data item and at least one specific password data item assigned to a third person;
password data receiving means for receiving one of an input password data input by the owner via said card input means and an input password data input by the third person via said terminal input means;
collating means for collating the input password data received by said password data receiving means with said plurality of required password data items; and
control means for allowing reading out of data from and writing of data into said data storing means when said collating means detects coincidence of the input password data with one of said plurality of registered password data items.

5,285,056
BAR CODE REFLECTANCE MEASUREMENT APPARATUS

Jack Tedesco, Manhattan Beach, and Donald R. Palmer, Fontana, both of Calif., assignors to RJS, Inc., Los Angeles, Calif.

Filed Jun. 17, 1992, Ser. No. 899,747
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **9 Claims**

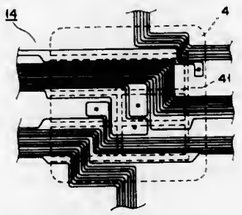


1. Apparatus for use with an operable hand-held bar code scanner arrangement that includes a hand-held scanner which, when operated, directs a scanning beam at a bar code and detects reflected light and enables said arrangement to provide a measurement, for testing reflectance of a marked surface region of a sheet, comprising:
a holder which has an upper portion for holding said scanner and a lower portion with a lower end for resting on said sheet, said lower portion having a plurality of contact sensing devices each lying at a location of said lower end, with said locations spaced about said lower end, each contact sensing device constructed to sense substantial contact of a corresponding one of said lower end locations with said surface;
a circuit connected to said plurality of contact sensing devices and constructed to enable operation of said bar code scanner apparatus to provide a reflection measurement, only when all of said plurality of sensing devices sense substantial contact.

5,285,057
IC CARD DEVICE

Masaru Murohara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1992, Ser. No. 826,137
Claims priority, application Japan, Mar. 22, 1991, 3-58480
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—492 **5 Claims**



4. An IC-card device comprising:
a substrate having conductor structures as a carrier for at least one electronic component;
a contact portion which is disposed on a surface of the substrate and which has multiple terminals for electrical connection to an external device and is provided with gap-like intermediate spaces between the terminals; and

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conductor tracks which are disposed on the side of the substrate opposite to the contact portion and which connect the contacts of the contact portion to the electronic component,

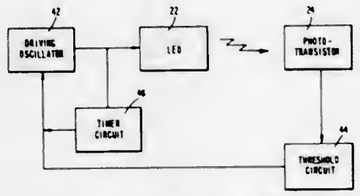
the intermediate spaces being bridged over on the side of the substrate opposite to the contact portion by portions of conductor tracks which are broader than the respective intermediate spaces.

5,285,058

OPTICAL SENSOR CONTROL INCLUDING THE SUSPENSION OF LIGHT RADIATION

R. Wendell Goodwin, Dunwoody, Ga., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Filed Jan. 14, 1993, Ser. No. 4,402
Int. Cl.[5] G01J *1/32*; G01D *5/34*
U.S. Cl. 250—205 **47 Claims**



1. An optical sensor for monitoring position of the movable means comprising:

light-emitting means for radiating light,

light-receiving means for sensing the light radiated by said light-emitting means and providing an output signal corresponding to received light, and

control means responsive to the output signal for causing said light-emitting means to suspend radiation of the light,

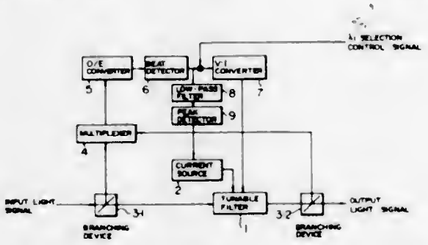
said movable means being positioned so as to provide incidence of the light radiated by said light-emitting means on said light-receiving means in at least one first time interval and to prevent, at least in part, the light radiated by said light-emitting means from falling on said light receiving means in at least one second time interval.

5,285,059

METHOD FOR CONTROLLING A TUNABLE FILTER AND AN APPARATUS THEREFOR

Tohru Nakata, Ebina, and Kenji Nakamura, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 967,530, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 784,268, Oct. 29, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,309
Claims priority, application Japan, Oct. 31, 1990, 2-294852; May 31, 1991, 3-155485
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **59 Claims**



1. A method for controlling a tunable filter, said method comprising the steps of:

generating a reference light whose wavelength is within a transmission wavelength band of the tunable filter;

detecting a signal generated due to a difference in wavelength between those of a desired component of an input light to be input into the tunable filter and the reference light; and

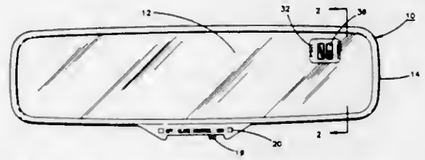
controlling the tunable filter based on the signal such that a center filtering wavelength of the transmission wavelength band of the tunable filter substantially coincides with a wavelength of the desire component.

5,285,060

DISPLAY FOR AUTOMATIC REARVIEW MIRROR

Mark L. Larson, Grand Haven; Niall R. Lynam, Holland, and Kenneth L. Schierbeek, Zeeland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Dec. 15, 1992, Ser. No. 990,517
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 AL **62 Claims**



1. A rearview mirror system for a vehicle comprising:

a reflective element including a reflectance surface and a variable light transmission element;

drive circuit means for supplying a drive signal to said reflective element in order to establish the light transmission level of said light transmission element;

an optical display device behind said reflective element that produces a display having an intensity that is adapted to be viewed through said light transmission element; and

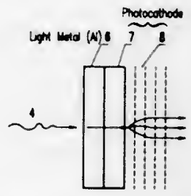
a control including a light sensing means that is responsive to light conditions in the vicinity of said vehicle for producing a continuously variable light signal and an intensity control circuit means that is responsive to said light signal for varying the intensity of said optical display device as a function of the light conditions in the vicinity of said vehicle.

5,285,061

AN X-RAY PHOTOCATHODE FOR A REAL TIME X-RAY IMAGE INTENSIFIER

Yongzheng She; Shizheng Chen, both of Shanghai, China; Weilou Cao, and Yanhua Shih, both of Ellicott City, Md., assignors to CSL Opto-Electronics Corp., Ellicott City, Md.

Filed Aug. 28, 1992, Ser. No. 937,213
Int. Cl.[5] H01J *40/14, 40/06*
U.S. Cl. 250—214 VT **9 Claims**



1. A direct conversion X-ray photocathode comprising:

a thin substrate of light metal having a thickness of approximately 50 μm;

a layer of heavy metal selected from the group consisting of tantalum, tungsten, lead, bismuth and gold, deposited on one surface of the light metal substrate to provide an X-ray absorber; and

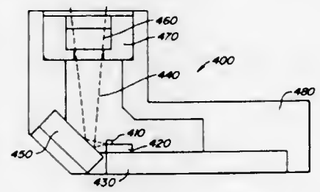
at least one layer of secondary emissive material deposited on the layer of heavy metal, the combination of the secondary emissive material and the heavy metal layer being an independent cathode for electron multiplication.

5,285,062

LASER/DETECTOR HYBRID WITH MIRROR SOURCE AND DIFFRACTED RETURN BEAM

Wai-Hon Lee, Cupertino, Calif., assignor to Hoetron, Inc., Sunnyvale, Calif.

Filed Apr. 14, 1992, Ser. No. 868,751
Int. Cl.[5] G11B *7/00*
U.S. Cl. 250—216 **11 Claims**



1. A hybrid laser and detector device for use in reading and/or writing on a media, said device comprising:

a housing having an opening;

a photodetector mounted in said housing;

a semiconductor laser mounted in said housing proximate said photodetector, said semiconductor laser emitting a laser beam in a first direction away from said opening in said housing;

a mirror mounted in said housing to redirect said laser beam along a second direction through said opening; and

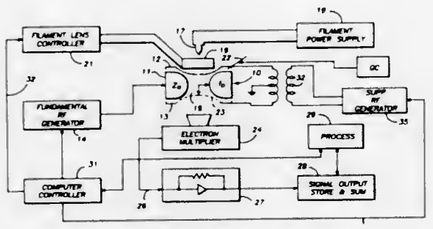
a diffraction grating, mounted in said opening, for diffracting a returned laser beam, reflected by said media, such that a diffracted laser beam is directed to said photodetector.

5,285,063

METHOD OF DETECTING IONS IN AN ION TRAP MASS SPECTROMETER

Jae C. Schwartz, and Joho N. Louris, both of Santa Clara County, Calif., assignors to Finnigan Corporation, San Jose, Calif.

Continuation of Ser. No. 889,824, May 29, 1992, abandoned. This application May 24, 1993, Ser. No. 67,161
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—282 **18 Claims**



1. The method of operating an ion trap mass spectrometer comprising the steps of

defining a trap volume with a three-dimensional substantially quadrupole field for trapping ions within a predetermined range of mass-to-charge ratio,

forming within or injecting ions into said trap volume such that those within said predetermined mass-to-charge ratio range are trapped,

applying a supplementary AC field superimposed on said three-dimensional quadrupole field to form combined fields,

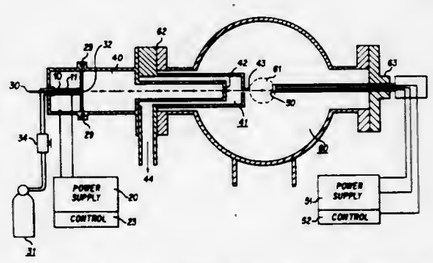
changing said combined fields to sequentially resonantly eject ions from said trap volume for detecting ejected ions and generating an output signal in which the output signal of said resonantly ejected ions has a frequency component at the frequency of said supplementary AC field.

5,285,064

METHOD AND APPARATUS FOR INTRODUCTION OF LIQUID EFFLUENT INTO MASS SPECTROMETER AND OTHER GAS-PHASE OR PARTICLE DETECTORS

Ross C. Willoughby, Pittsburgh, Pa., assignor to Extrel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 831,665, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 573,868, Aug. 28, 1990, abandoned, which is a continuation of Ser. No. 393,846, Aug. 14, 1989, Pat. No. 4,968,885, which is a continuation of Ser. No. 22,725, Mar. 6, 1987, abandoned. This application Mar. 30, 1993, Ser. No. 40,073
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—288 **8 Claims**



1. A method for generating and transporting highly dispersed aerosols from solutions containing low volatility solutes for sample introduction into detection devices, concentration of solute, or purification of solute, the method comprising the steps of:

a. introducing a concentric flow of liquid and gas streams so that the gas flows outside the liquid flow,

b. conducting heat to the inner liquid stream, via a highly conductive gaseous medium blanketing said liquid stream,

c. nebulizing said liquid stream by,

i. accelerating said liquid stream through a narrow tube to increase said stream's linear velocity and kinetic energy,

ii. introducing into said liquid stream thermal energy across a conductive gas medium, and

iii. introducing into said liquid stream mechanical energy from said conductive gas flow, so that the properties of the general aerosol can be changed by controlling the amount of each source of energy imparted to the liquid stream,

d. controlling the supply of energy directed toward the aerosol generation process by,

i. controlling the supply of heat to said conductive gas medium,

ii. controlling the flow of conductive gas onto the outer flow region, and

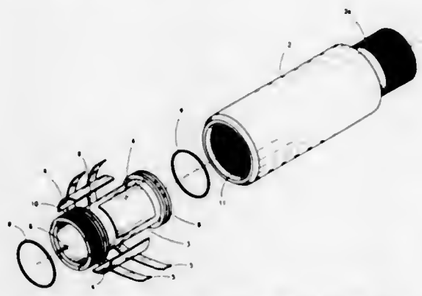
iii. controlling the flow rate of liquid into the nozzle of the aerosol generator, and

e. removing the solvent vapor from the aerosol by cryogenic trapping of the vapor at about at least atmospheric pres-

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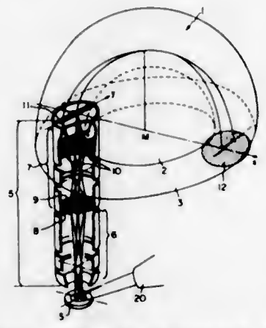
sure and passing dry solute particles for subsequent detection.

5,285,065
NATURAL GAMMA RAY LOGGING SUB
Robert A. Daigle, 108 Winbourne, Scott, La. 70583, and Dave M. Tumlin, 1037 Jolie Blonde Rd., Breaux Bridge, La. 70517
Filed Aug. 17, 1992, Ser. No. 930,333
Int. Cl.[5] G01N *23/00*
U.S. Cl. 250—303 **9 Claims**



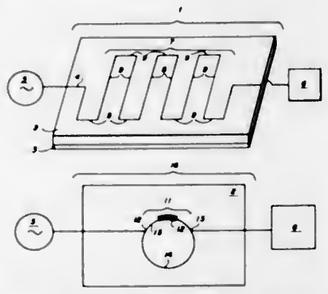
1. A natural gamma count emitting tag marking sub, comprising:
a) a threaded body, having a box end with internal tapered threads and a pin end with external tapered threads, for threadably coupling into a down-hole tubing string; and
a natural gamma emitting compound, having a gamma count between 200 and 1000 counts per second, contained within said threaded body.

5,285,066
IMAGING XPS SYSTEM
Tetsu Sekine; Minoru Shigematsu, and Toyohiko Tazawa, all of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan
Filed Jul. 1, 1992, Ser. No. 908,193
Claims priority, application Japan, Jul. 2, 1991, 1-61575
Int. Cl.[5] H01J *47/00*
U.S. Cl. 250—305 **1 Claim**



1. An imaging XPS (X-ray photoelectron spectrometry) system comprising:
means to irradiate a sample to eject photoelectrons having a distribution of energies;
a coaxial spherical sector electron energy analyzer having an input slit extending in a direction perpendicular to a radial direction of spherical sector electrodes included in the energy analyzer;
an input lens system including means for decelerating the photoelectrons ejected from the sample and for focusing an image representing the distribution of the energies of photoelectrons ejected from a sample onto the input slit of the energy analyzer;
a detector placed in the focal plane of the energy analyzer which analyzes only photoelectrons passed through the input slit, the detector consisting of a multichannel detector capable of detecting the distribution of the analyzed photoelectrons at least in a direction perpendicular to a radial direction of the spherical sector electrodes of the energy analyzer; and
deflecting means disposed between the sample and the input slit and mounted behind the decelerating means incorporated in the input lens system, said deflecting means being capable of deflecting the image representing the distribution of the energies of photoelectrons in a direction substantially perpendicular to the longitudinal direction of the input slit, whereby a two-dimensional photoelectron image of the sample is obtained.

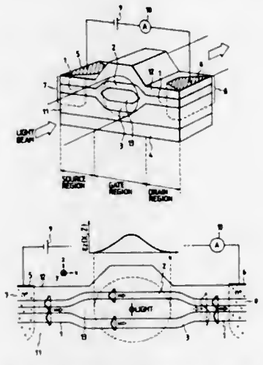
5,285,067
MICROWAVE DETECTION OF A SUPERCONDUCTING INFRARED SENSOR
James C. Culbertson; Harvey S. Newman; Jeffrey M. Pond, all of Alexandria, Va.; Stuart A. Wolf, Bowie, and Ulrich Strom, Hyattsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 5, 1992, Ser. No. 846,633
Int. Cl.[5] H01L *39/00*
U.S. Cl. 250—336.2 **13 Claims**



1. A sensor of infrared radiation comprising a microstrip transmission line, a microwave frequency source coupled to a first point on the transmission line, and a microwave detector coupled to a second point on the microstrip transmission line different from the first point, where the microstrip transmission line comprises a single flat metal or superconducting ground plane, a flat dielectric substrate on the ground plane, and a superconducting thin film path on the substrate, where the microstrip is an interferometer.

5,285,068
PHOTO-DETECTOR AND PHOTO-DETECTION METHOD USING THE SAME
Akira Shimizu, Inagi, and Kazuhito Fujii, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 25, 1991, Ser. No. 660,027
Claims priority, application Japan, Feb. 26, 1990, 2-45085
Int. Cl.[5] H01L *31/10, 27/14*; G01J *5/20*
U.S. Cl. 250—338.4 **35 Claims**

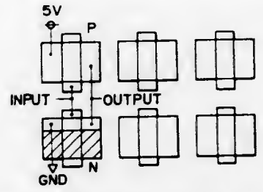
1. A method for detecting a light having a predetermined photon energy by a photo-detector including a semiconductor member having a source region, a gate region and a drain region, a first path for propagating an electron wave from the source region to the drain region through the gate region, and a second path for propagating an electron wave from the source region to the drain region through the gate region, the first path being of quantum well structure or quantum line structure and having a first electron energy level and a second electron energy level lighter than the first electron energy level, an energy difference between the first electron energy level and the second electron energy level being slightly less than the photon energy of the light to be detected, the second path being of quantum well structure or quantum line structure and having a third electron energy level and a fourth electron energy level higher than the third electron energy level, an energy difference between the third electron energy level and the fourth electron energy level being slightly larger than the



photon energy of the light to be detected, a wave function of the electron wave propagating through the second path being coupled to a wave function of the electron wave propagating through the first path in the source region and the drain region and being separated from the wave function of the electron wave propagating through the first path in the gate region, said method comprising the steps of:
applying a voltage across the source region and the drain region to cause a current to flow thereacross;
applying the light to be detected to the first and second paths to shift the electron levels by an optical Stark effect; and
detecting the current amount varied by a phase difference caused by the shift of the electron levels between the electron wave propagating through the first path and the electron wave propagating through the second path.

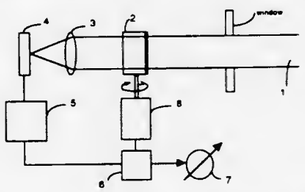
5,285,069
ARRAY OF FIELD EFFECT TRANSISTORS OF DIFFERENT THRESHOLD VOLTAGES IN SAME SEMICONDUCTOR INTEGRATED CIRCUIT
Mitsuo Kaibara, Minoo; Hiizu Okubo, Nishinomiya; Takako Maruyama, Ikeda; Seiji Yamanaka, Minoo, and Hideyuki Aota, Toyonaka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 21, 1991, Ser. No. 795,834
Claims priority, application Japan, Nov. 21, 1990, 2-319375; Jun. 14, 1991, 3-170633; Sep. 18, 1991, 3-268370
Int. Cl.[5] H01L *29/76, 27/10, 23/62, 27/11*
U.S. Cl. 257—392 **16 Claims**

7. A master slice type semiconductor integrated circuit apparatus comprising:
a basic cell region in which a plurality of basic cells are arranged, each of the basic cells including a plurality of MOS transistors, each of said plurality of MOS transistors having source and drain section diffusive regions formed on a semiconductor substrate and a gate electrode formed on a channel between said source and drain section diffusive regions through a gate insulating film;
wherein ions are implanted into a part of the channel of at least one of the plurality of MOS transistors included in a basic cell to change the effective channel width of said at



least one of the plurality of MOS transistors in such a manner that a threshold level of voltage of the implanted part is set at a voltage level in which said part of the channel does not operate within a normal operating voltage of a current source.

5,285,070
AIR TURBULENCE DETECTOR
Joseph J. Barrett, Morris Plains, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Apr. 2, 1992, Ser. No. 862,116
Int. Cl.[5] G01N *21/00*
U.S. Cl. 250—338.5 **6 Claims**



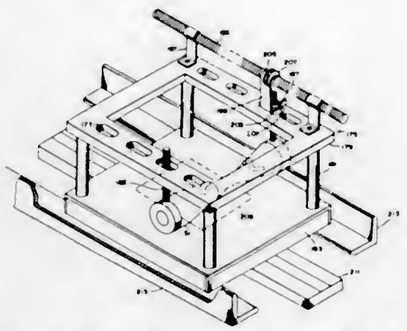
1. Apparatus for remotely sensing changes in the spatial temperature profile of a column of atmospheric air comprising, in combination:
(a) collecting means for receiving the thermal radiation from a column of atmospheric air, and for directing it to intensity sensing means;
(b) sensing means for sequentially sensing the intensity in said column of atmospheric air of at least two spectral regions in the 4.17 to 4.2 μm region of the CO_2 spectral emission band, said sensing means comprising an interference bandpass filter mounted for step-wise rotation around an axis in the plane of the filter in combination with means for stepped rotation of said filter adapted to center on said spectral regions; and
(c) detecting means for detecting temporal changes in the relative intensity of said spectral regions.

5,285,071
FLUID CELL SUBSTANCE ANALYSIS AND CALIBRATION METHODS
Robert B. LaCount, 403 Arbor Ct., Waynesburg, Pa. 15370
Continuation-in-part of Ser. No. 692,981, Apr. 29, 1991, Pat. No. 5,204,270. This application Mar. 11, 1992, Ser. No. 849,501
Int. Cl.[5] G01N *21/01*
U.S. Cl. 250—343 **16 Claims**

1. Gas test cell apparatus comprising plural cells, each connectable to a gas conduit, a frame for mounting the cells, a table for supporting the frame, slides connected to the frame and rods connected to the slides, wherein the cells are aligned parallel to each other and are mounted in holders connected to

VOL 1159 ISS 2 FE 8 1994 UMI

the rods, a motor mounted within the table and a platen along the table for moving the table transversely, and sequentially aligning the cells with an infrared light beam source for projecting an energy beam through the cells, and a detector



aligned with the source for receiving light projected from the source through the cells, the motor and platen cooperating for moving the table and frame and moving each cell into alignment and out of alignment with the infrared light beam source.

5,285,072

PROCESS FOR THE LOCALIZATION OF MULTIPLE SCINTILLATION EVENTS IN A GAMMA CAMERA

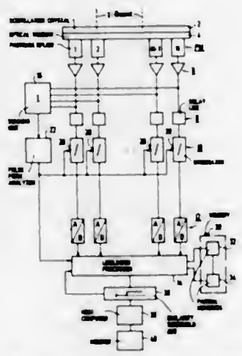
Klaus Klingenbeck-Regn, Nuremberg, and Bernhard Conrad, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 25, 1992, Ser. No. 934,934

Claims priority, application European Pat. Off., Aug. 28, 1991, 91114473.1; Fed. Rep. of Germany, Jul. 27, 1992, 4224794

Int. Cl.[5] G01T *1/164*

U.S. Cl. 250—369 **14 Claims**



1. A method for localizing multiple scintillation events in a gamma camera having a plurality of photomultipliers each of which generates an actual output signal, in response to scintillation events, upon the occurrence of a release signal, said method including a pattern recognition process comprising the steps of:

generating a plurality of different comparative signal sets, each signal set consisting of expected signal values which said photomultipliers would generate in the presence of scintillation events originating at known locations;

comparing the actual output signals of said photomultipliers with at least some of said comparative signal sets;

identifying one of said comparative signal sets, based on the comparison, having the greatest similarity to said actual output signals; and

registering the locations of the scintillation events in said one of said comparative signal sets as the locations of the scintillation events causing said actual output signals of said photomultipliers.

5,285,073

METHOD OF DETERMINING A DENSITY DISTRIBUTION OF POSITRONS IN HUMAN TISSUE

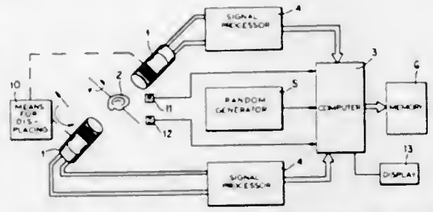
Jakob Schelten, Jüllich, and Richard Reinartz, Langerwehe, both of Fed. Rep. of Germany, assignors to Forschungsentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 963,577

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134435

Int. Cl.[5] G01T *1/172*

U.S. Cl. 250—394 **6 Claims**



1. A method of determining a density distribution of positrons decaying in human tissue into two oppositely traveling γ-quanta, comprising:

(a) disposing on two opposite sides of human tissue in which a positron density distribution is to be determined a pair of γ-detectors in the form of mutually parallel locally resolving photomultipliers outputting respective signals upon detection of respective γ-quanta;

(b) with a computer connected to said γ-detectors, registering each event corresponding to simultaneous detection of two γ-quanta deriving from decay of the same positron in said tissue;

(c) computing with said computer upon each registration of two γ-quanta deriving from decay of the same positron in said tissue the paths of the respective γ-quanta, thereby determining a location of the corresponding positron in the tissue, and storing information as to said location in said computer in a memory only at instances selected by a random-event generator;

(d) varying positions of said γ-detectors relative to said tissue and repeating steps (a) to (d) to accumulate in said computer information as to a multiplicity of said locations of positron decay, and automatically generating a distribution function of said locations;

(e) selecting the number of locations stored in response to said random-event generator to be a maximum permitted for on-line data storage without exceeding a capacity of said computer; and

(f) calculating from said distribution function a density distribution of said positrons in said tissue.

5,285,074

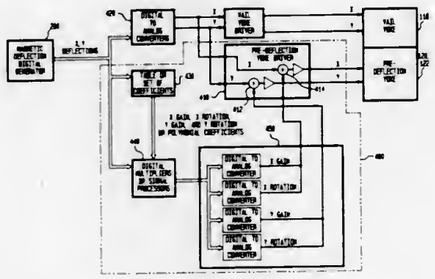
DYNAMIC COMPENSATION OF NON-LINEAR ELECTRON BEAM LANDING ANGLE IN VARIABLE AXIS LENSES

Don F. Haire, Verbank; Cecil T. Ho, Poughkeepsie; Guenther O. Langner, Glen, all of N.Y.; Werner Stickel, Ridgefield, Conn., and Edward V. Weber, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1992, Ser. No. 893,172

Int. Cl.[5] H01J *37/147*

U.S. Cl. 250—396 R **17 Claims**



1. A method for correcting deviations from telecentric deflection in an electron beam projection/deflection system, comprising the steps of

applying at least three deflection addresses to said electron beam deflection system,

developing deflection currents corresponding to each of said at least three addresses,

determining respective locations written corresponding to each of said at least three addresses,

computing values of coefficients A, B, and C in the equation:

$$\Delta I_{x,y}=(I_x^2+I_y^2)[Ax(I_y-I_x)-(I_x^2+I_y^2)(BI_{x,y}+-CI_{y,x})].$$

based on said addresses and currents, wherein $\Delta I_{x,y}$ is a correction current at address x, y and I_x and I_y, I_y, $I_{x,y}$ and $I_{y,x}$ are current values corresponding to x and y addresses,

determining correction values for deflection currents corresponding to a further address, corresponding to deflection currents at said further address and said values of A, B and C, and

correcting said corresponding deflection currents by the amount of said correction current values.

5,285,075

ELECTRON BEAM LITHOGRAPHY METHOD

Yoshinori Minamide, Katsuta; Genya Matsuoka, Tokyo, and Hiroyoshi Ando, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,049

Claims priority, application Japan, Oct. 21, 1991, 3-271667

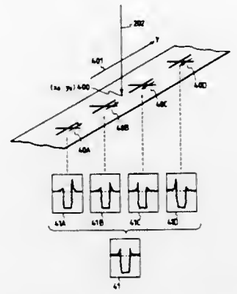
Int. Cl.[5] H01J *37/304*

U.S. Cl. 250—491.1 **8 Claims**

1. An electron beam lithography method for positioning a sample mounted on a sample stage by detecting positions of alignment marks on the sample through electron beam scanning and lithographing a plurality of patterns on the sample on the basis of the detected positions, comprising the steps of:

moving the alignment marks on the sample to positions symmetrical with respect to positional origin of the electron beam where the electron beam which is not deflected by applying deflector;

detecting the waveforms of signals reflected from the alignment marks by applying the electron beam to the alignment marks at each symmetric position; and



adding the detected waveforms so as to obtain a waveform reflected from the alignment mark at the positional origin.

5,285,076

OPTOELECTRONIC DEVICE, METAL MOLD FOR MANUFACTURING THE DEVICE AND MANUFACTURING METHOD OF THE DEVICE USING THE METAL MOLD

Kazuo Kusuda, Shiki, and Katsunori Makiya, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

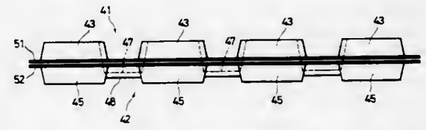
Division of Ser. No. 772,883, Oct. 8, 1991, Pat. No. 5,245,198.

This application May 20, 1993, Ser. No. 63,699

Claims priority, application Japan, Oct. 12, 1990, 2-107099; Oct. 12, 1990, 2-274459

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **5 Claims**



1. A metal mold used for molding inner packages of an optoelectronic device, the optoelectronic device comprising:

a plurality of light emitting elements for converting electric signals into optical signals;

light receiving elements, provided so as to respectively face the light emitting elements, for reconverting the optical signals into electric signals;

a lead, made of a thin metal plate, whereon the light receiving elements are fixed, the lead being connected by wires to ground electrodes provided on the light receiving elements;

a plurality of ground terminals common to the light receiving elements, the plurality of ground terminals being integrated with the lead; and

the inner packages made of translucid resin, the inner packages separately sealing each pair of the facing light emitting elements and the light receiving elements, the metal mold comprising:

an upper mold, having as many cavity sections as there are light receiving elements, for molding an upper section of each of the inner packages;

a lower mold, having as many cavity sections as there are cavity sections in the upper mold, for molding a lower section of each of the inner packages,

as many cavities as there are light receiving elements being formed when the upper mold and the lower mold are

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brought together, the cavities having the shape of the inner packages.

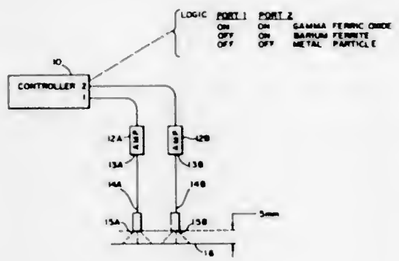
5,285,077

MAGNETIC RECORDING MEDIA DIFFERENTIATION SYSTEM AND METHOD WITH COLOR SENSORS

Ronald F. Hales, Roy, Utah, assignor to Iomega Corporation, Roy, Utah

Filed Mar. 2, 1993, Ser. No. 25,561
Int. Cl.[5] G01N *21/86;* G01J *3/50;* G11B *5/82*
U.S. Cl. 250—559 7 Claims

6. A method for operating a system to differentiate magnetic recording media, the system comprising a controller comprising first and second input ports, a first photoelectric sensor operatively coupled to said first input port, and a second photoelectric sensor operatively coupled to said second input port, the method comprising the steps of:



(a) adjusting the sensitivity of said first photoelectric sensor such that said first sensor will detect a first category of recording media but not second and third categories of recording media;

(b) adjusting the sensitivity of said second photoelectric sensor such that said second sensor will detect said first and second categories of recording media but not said third category of recording media;

(c) placing a recording medium in one of said first, second, and third categories in a field of view of said first and second sensors; and

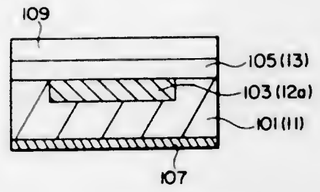
(d) identifying the type of recording medium in said field of view on the basis of signals generated by said first and second sensors.

5,285,078

LIGHT EMITTING ELEMENT WITH EMPLOYMENT OF POROUS SILICON AND OPTICAL DEVICE UTILIZING LIGHT EMITTING ELEMENT

Hidenori Mimura; Toshiro Futagi, both of Kawasaki, and Takahiro Matsumoto, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 8,566
Claims priority, application Japan, Jan. 24, 1992, 4-034507; Mar. 27, 1992, 4-102045; Sep. 14, 1992, 4-270831; Sep. 14, 1992, 4-270832; Sep. 14, 1992, 4-270833; Sep. 14, 1992, 4-270834; Sep. 14, 1992, 4-270835; Sep. 14, 1992, 4-270836; Sep. 14, 1992, 4-270837; Oct. 16, 1992, 4-304838
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—3 38 Claims



1. A charge injection type light emitting element comprising:

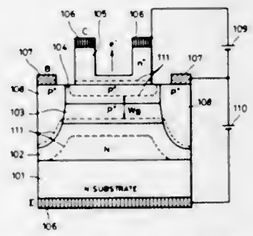
a pn junction constructed of porous silicon and a semiconductor having a conductivity type different from that of said porous silicon.

5,285,079

ELECTRON EMITTING DEVICE, ELECTRON EMITTING APPARATUS AND ELECTRON BEAM DRAWING APPARATUS

Takeo Tsukamoto, Atsugi; Nobuo Watanabe, Gotenba, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 665,582, Mar. 6, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 48,946
Claims priority, application Japan, Mar. 16, 1990, 2-063970; Feb. 15, 1991, 3-078679
Int. Cl.[5] H01L *29/161, 29/205, 29/225;* H01J *1/14*
U.S. Cl. 257—10 14 Claims



1. An electron emitting device, comprising:

a first semiconductor region having a first bandgap;

a second semiconductor region for injecting electrons into said first semiconductor region, said second semiconductor region having a different conductivity type from said first semiconductor region and having said first bandgap disposed on said first semiconductor region;

a third semiconductor region having the same conductivity type as said second semiconductor region and having a second bandgap disposed on said second semiconductor region, said second bandgap being narrower than said first bandgap; and

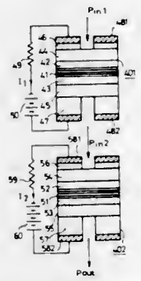
a fourth semiconductor region having an electron emitting surface disposed on said third semiconductor region.

5,285,080

METHOD OF SELECTIVE LIGHT DETECTION

Yuji Abe, and Yasunori Tokuda, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 853,085
Claims priority, application Japan, Mar. 29, 1991, 3-066408
Int. Cl.[5] H01L *29/161*
U.S. Cl. 257—23 9 Claims



1. A method of selective light detection comprising:

providing a first p-i-n diode having p-type, intrinsic, and n-type layers, the intrinsic layer including a multiple quantum well structure;

connecting a first external resistor and a first voltage supply in series with the first p-i-n diode to apply a reverse bias voltage to the first p-i-n diode;

selecting at least one of the resistance of the first external resistor and the reverse bias voltage applied by the first voltage supply to produce first and second stable photocurrents flowing through the first p-i-n diode at different wavelengths of light serially incident on the p-type, intrinsic, and n-type layers of the first p-i-n diode;

providing a second p-i-n diode in optically serial disposition with the first diode, the second p-i-n diode having p-type, intrinsic, and n-type layers, the intrinsic layer including a multiple quantum well structure;

connecting a second external resistor and a second voltage supply in series with the second p-i-n diode to apply a reverse bias voltage to the second p-i-n diode;

selecting at least one of the resistance of the second external resistor and the reverse bias voltage applied by the second voltage supply to produce third and fourth stable photocurrents flowing through the second p-i-n diode at different wavelengths of light serially incident on the p-type, intrinsic, and n-type layers of the second p-i-n diode, the third and fourth photocurrents having magnitudes that depend upon the intensity of the light incident serially on the p-type, intrinsic, and n-type layers of the second p-i-n diode; and

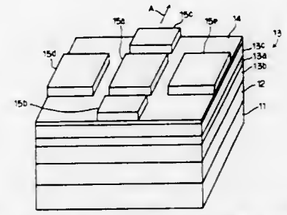
directing light incident on and transmitted through the first p-i-n diode onto the second p-i-n diode to produce a response characteristic in the second p-i-n diode having four stable photocurrents at respective wavelengths of light incident on the first p-i-n diode.

5,285,081

FIELD EFFECT TRANSISTOR HAVING QUASI ONE-DIMENSIONAL ELECTRON GAS CONFINED UNDER ELECTRON RESONANCE

Yuji Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,695
Claims priority, application Japan, Dec. 9, 1991, 3-323502
Int. Cl.[5] H01L *27/12*
U.S. Cl. 257—24 36 Claims



1. A field effect transistor fabricated on a semi-insulating substrate, comprising:

a) a quantum well structure formed over said semi-insulating substrate, and having a quantum well layer of first compound semiconductor material sandwiched between first and second potential barrier layers of respective second and third compound semiconductor materials, said second and third compound semiconductor materials being smaller in electron affinity than said first compound semiconductor material, said second potential barrier layer allowing electrons to tunnel therethrough;

b) a cap layer of n-type fourth compound semiconductor material covering said second potential barrier layer;

c) source and drain electrodes formed on said cap layer for forming ohmic contacts, and spaced apart from one another in a first predetermined direction;

d) a gate electrode formed on said cap layer between said source and drain electrodes, and forming a first Schottky barrier with said fourth compound semiconductor material, and

e) control electrodes formed on said cap layer for forming second and third Schottky barriers with said fourth compound semiconductor material, and spaced apart from said gate electrode in a second predetermined direction perpendicular to said first predetermined direction, said gate electrode and said control electrodes being biased in such a manner as to produce a quasi one-dimensional electron gas in said quantum well layer under electron resonance between electron energy in said cap layer and the ground energy level in said quantum well layer for allowing current to flow between said source and drain electrodes.

5,285,082

INTEGRATED TEST CIRCUITS HAVING PADS PROVIDED ALONG SCRIBE LINES

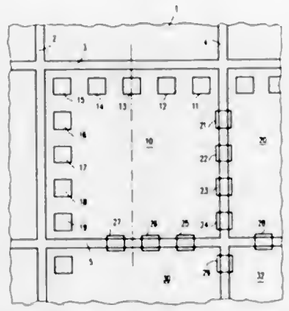
Klaus Axer, Lubeck, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 610,600, Nov. 8, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 8,047
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1989, 3937187
Int. Cl.[5] H01L *21/66, 27/04;* G01R *31/26*
U.S. Cl. 257—48 3 Claims

1. An integrated circuit which is manufactured on a semiconductor slice jointly with a number of similar adjoining circuits and then separated from these by cutting, each circuit being provided at its rim with a plurality of connection pads, a selected number of which are used exclusively for testing at least the first-mentioned circuit before it is separated from the adjoining circuits, wherein all connection pads used only for

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testing are arranged at and in physical contact with at least one side of said first-mentioned circuit, are shared with and in physical contact with another circuit adjoining said at least one side on the semiconductor slice during manufacture and are connected to both circuits adjoining said at least one side, said



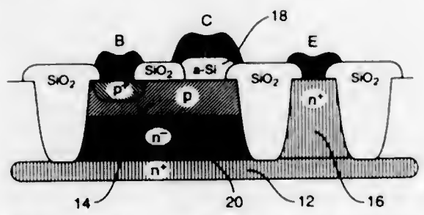
first-mentioned circuit and said another circuit have arrangements which are the mirror images of each other about an axis extending along the side at which the connection pads which are shared are arranged, and the cut for separating the first-mentioned circuit from the adjoining circuits runs through said connection pads used only for testing.

5,285,083

INVERTED HETEROJUNCTION BIPOLAR DEVICE HAVING UNDOPED AMORPHOUS SILICON LAYER

David L. Pulfrey; David D. Shulman, both of Vancouver, Canada; Vladimir Samuilov, Byelorus, U.S.S.R.; Elena Bondarionok, Byelorus, U.S.S.R.; Vasilii Krasnitski, Byelorus, U.S.S.R.; Nickolai Poklonski, Byelorus, U.S.S.R., and Vintcheslav Stelmakh, Byelorus, U.S.S.R., assignors to The University of British Columbia, Vancouver, Canada

Filed Apr. 27, 1992, Ser. No. 874,467
Int. Cl.[5] H01L *29/161*
U.S. Cl. 257—52 **4 Claims**



1. A memory device comprising a single heterojunction bipolar transistor reversibly switchable between stable first and second states, said transistor comprising:

(a) a crystalline silicon substrate;

(b) a base region in said substrate;

(c) an emitter region in said substrate;

(d) an undoped amorphous silicon collector region formed on said substrate;

(e) a p-n junction formed in said substrate beneath said collector region; and,

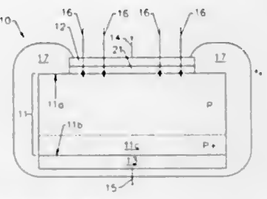
(f) collector supply voltage means for applying a voltage of about 8 volts to about 10 volts to said collector.

5,285,084

DIAMOND SCHOTTKY DIODES AND GAS SENSORS FABRICATED THEREFROM

Jesko von Windheim, and Vasudev Venkatesan, both of Raleigh, N.C., assignors to Kobe Steel USA, Research Triangle Park, N.C.

Filed Sep. 2, 1992, Ser. No. 939,446
Int. Cl.[5] H01L *29/66*
U.S. Cl. 257—77 **26 Claims**



1. A gas sensor comprising:

a diamond layer having first and second opposing faces;

a first contact on said first face, wherein said first contact forms a Schottky barrier of predetermined Schottky barrier height between said first contact and said first face, and wherein said first contact allows gas to interact with said first face and alter said predetermined Schottky barrier height; and

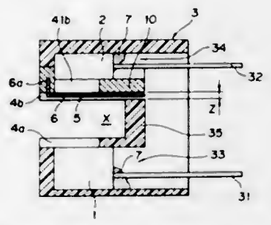
a second contact on said second face, wherein said diamond layer includes a highly doped region adjacent said second contact, said highly doped region being doped at a concentration of at least 10^{20} atoms per cubic centimeter, and wherein said second contact forms an ohmic contact with said highly doped region.

5,285,085

PHOTO-COUPLING DEVICE WITH IMPROVED LIGHT SHADING PLATE HOLDING MEANS

Minoru Onishi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1992, Ser. No. 851,658
Claims priority, application Japan, Oct. 5, 1990, 2-105449[U]; Mar. 19, 1991, 3-16310[U]; Aug. 30, 1991, 3-69524[U]
Int. Cl.[5] H01L *31/12, 31/16*
U.S. Cl. 257—82 **8 Claims**



1. A photo-coupling device comprising:

a light emitting section provided with a light emitting device;

a light receiving section for receiving the light projected from the light emitting device of said light emitting section;

an opaque case made for housing the light emitting section and the light receiving section opposed with respect to an object moving path intervening therebetween, said light emitting section and said light receiving section being provided with a light-projecting window and a light-gathering window on their opposite opaque case-wall-surfaces, respectively; and

a light shading plate having a slit provided on one of opposite surfaces of the light-projecting window and the light-gathering window, further comprising:

means for holding one of the light emitting section and the light receiving section, said means for holding being arranged between one of the light emitting section and the light-projecting window or between the light receiving section and the light-gathering window, said light shading plate being fixed to the holding means; and

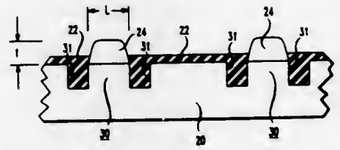
means, attached to said case, for positioning the holding means with respect to the case and with the aid of contact between the holding means and the case.

5,285,086

SEMICONDUCTOR DEVICES WITH LOW DISLOCATION DEFECTS

Eugene A. Fitzgerald, Jr., Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 561,744, Aug. 2, 1990, Pat. No. 5,158,907.
This application Jun. 18, 1992, Ser. No. 900,359
Int. Cl.[5] H01L *27/14, 33/00, 29/06*
U.S. Cl. 257—85 **9 Claims**



1. A semiconductor device having one or more limited area regions with reduced defect density semiconductor surfaces comprising:

a monocrystalline semiconductor substrate;

disposed on said substrate one or more epitaxially grown limited area regions of semiconductor material having an area in the range between 25 and 10,000 square microns, a maximum lateral dimension L and a thickness in excess of about

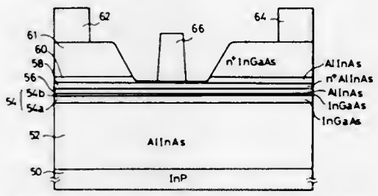
$$\frac{\sqrt{3}}{3} L.$$

5,285,087

HETEROJUNCTION FIELD EFFECT TRANSISTOR

Koichi Narita; Kazuo Hayashi, and Takuji Sonoda, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1991, Ser. No. 719,196
Claims priority, application Japan, Oct. 25, 1990, 2-290462
Int. Cl.[5] H01L *31/072, 31/109, 31/0328, 31/0336*
U.S. Cl. 257—192 **1 Claim**



1. A heterojunction field effect transistor comprising:

a semi-insulating indium phosphide crystalline layer;

a pseudomorphic channel layer having a bandgap energy and disposed on said semi-insulating crystalline layer;

an AlInAs buffer layer disposed between and contacting said semi-insulating indium phosphide layer and said pseudomorphic channel layer;

an electron supply layer; and

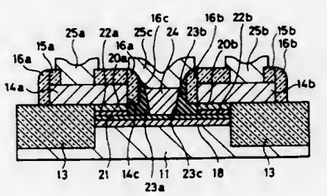
a spacer layer of AlInAs interposed between and contacting said pseudomorphic channel layer and said electron supply layer, said pseudomorphic channel layer being $In_wGa_{1-w}As$ adjacent to said electron supply layer, where w is within a range of 0.50 to 0.70, the band gap energy of said pseudomorphic channel layer increasing to a maximum adjacent to said semi-insulating crystalline layer, and said pseudomorphic channel layer being $In_{0.47}Ga_{0.53}As$ adjacent to said semi-insulating crystalline layer.

5,285,088

HIGH ELECTRON MOBILITY TRANSISTOR

Fumihiko Sato, and Tsutomu Tashiro, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,500
Claims priority, application Japan, Sep. 17, 1991, 3-235790
Int. Cl.[5] H01L *31/072, 31/109, 29/06, 31/117*
U.S. Cl. 257—192 **15 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate of a first conductive-type;

an active area formed on the surface of said substrate by a field insulating film provided thereon;

a first pair of semiconductor layers of a second conductive-type opposite in conductive polarity to said first conductive-type for source and drain electrodes formed on said field insulating layer so as to have respective one parts projected over said active area, the first pair of semiconductor layers having a space between the confrontingly projected ends thereof over said active area;

a first semiconductor layer formed on said active area and a second semiconductor layer formed on said first semiconductor layer, said first and second semiconductor layers being epitaxial layers extending between said first pair of semiconductor layers and making a heterojunction and having a channel formed at an interface therebetween by a two-dimensional carrier gas;

a third semiconductor layer of said first conductive-type for a gate electrode formed over said active area and electrically connected through said space provided between said confrontingly projected ends of said first pair of semiconductor layers to said second semiconductor layer;

a second pair of semiconductor layers of said second conductive-type for source and drain electrode connections formed over said active area between said first pair of semiconductor layers and said second semiconductor layer for providing respective electrical connections therebetween, said second pair of semiconductor layers being disposed under said first pair of semiconductor layers, respectively; and

a pair of insulating films formed between said third semiconductor layer and said second pair of semiconductor layers for providing respective electrical insulations therebetween.

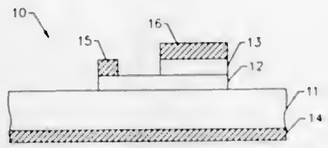
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,089

DIAMOND AND SILICON CARBIDE HETEROJUNCTION BIPOLAR TRANSISTOR

Kalyankumar Das, Raleigh, N.C., assignor to Kobe Steel U.S.A., Inc., Research Triangle Park, N.C.

Filed Dec. 2, 1992, Ser. No. 985,180
Int. Cl.[5] H01L *31/072, 31/109, 29/04, 29/12*
U.S. Cl. 257—197 **20 Claims**



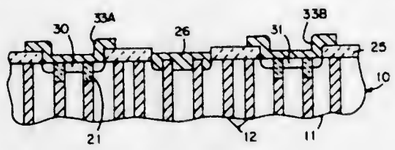
1. A heterojunction bipolar transistor comprising:
a collector comprising a layer of p-type semiconducting diamond;
a base on said collector, said base comprising a layer of n-type semiconducting silicon carbide; and
an emitter on said base, said emitter comprising a layer of p-type semiconducting diamond.

5,285,090

CONTACTS TO ROD SHAPED SCHOTTKY GATE FETS

Brian M. Ditchek, Milford, and Marvin Tabasky, Peabody, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 610,472, Nov. 7, 1990, Pat. No. 5,098,862. This application Feb. 6, 1992, Ser. No. 832,159
Int. Cl.[5] H01L *29/812*
U.S. Cl. 257—281 **19 Claims**



1. A semiconductor device comprising
a body including a matrix of semiconductor material having disposed therein an array of individual rods of conductive material forming rectifying barriers at the interfaces of the rods and the semiconductor material;
a first conductive contact member in ohmic contact with a first plurality of said rods at one end of each of the rods of said first plurality at a surface of said body; and
a second conductive contact member in ohmic contact with the semiconductor material of said matrix at said surface;
a second plurality of said rods underlying said conductive contact member, the rods of said second plurality being recessed below said surface with insulating material interposed between the rods of said second plurality and the second conductive contact member.

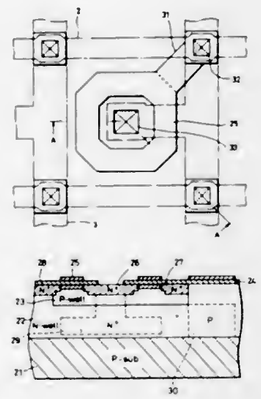
5,285,091

SOLID STATE IMAGE SENSING DEVICE

Masaharu Hamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,487
Claims priority, application Japan, Apr. 10, 1991, 1-06667
Int. Cl.[5] H01L *31/06, 27/14*
U.S. Cl. 257—292 **10 Claims**

1. A solid state image sensing device, comprising:
a plurality of photo-sensing elements arranged in a two-dimensional fashion at respective pixel units in horizontal and vertical directions, each of said plurality of photo-sensing elements being formed of a vertical selection transistor whose gate electrode is connected to a horizontal selection line and whose source region is connected to a vertical signal line, and a photo-electric conversion element being provided at a channel region of said vertical selection transistor, said photo-electric conversion element creating a charge by photo-electric conversion when light is applied thereto;
impurity region means of high concentration in a relatively lower concentration region, said impurity region means



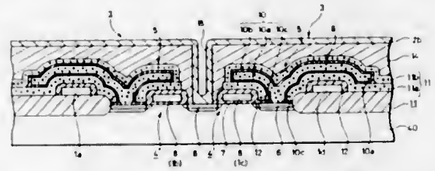
being buried beneath and connected to said source region and also buried beneath said channel region for draining said charge from said photo-electric conversion element to a location under said drain region when a voltage is applied to said source region, the impurity region means being connected to said source region by an upwardly extending high concentration impurity region; and
said charge comprising holes at a p-n junction of said photo-electric conversion element at a bottom of said channel region.

5,285,092

SEMICONDUCTOR MEMORY DEVICE HAVING A STACKED TYPE CAPACITOR AND MANUFACTURING METHOD THEREFOR

Masahiro Yoneda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 446,744, Dec. 6, 1989, Pat. No. 5,177,574. This application Jul. 24, 1992, Ser. No. 918,098
Claims priority, application Japan, Dec. 8, 1988, 63-312420
Int. Cl.[5] H01L *29/68*
U.S. Cl. 257—306 **7 Claims**



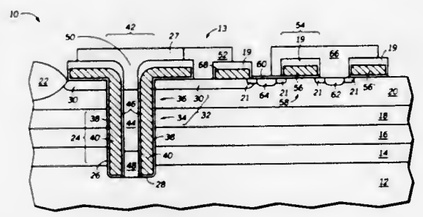
1. A semiconductor memory device comprising:
a semiconductor substrate of a first conductivity type having an insulating film for isolating elements formed on a prescribed region of a main surface of said semiconductor substrate;
a pair of impurity regions of a second conductivity type formed spaced apart from each other by a prescribed distance on the main surface of said semiconductor substrate;
a first conductive layer formed on the main surface of said semiconductor substrate positioned between said pair of impurity regions with a first insulating film positioned between said first conductive layer and said semiconductor substrate;
a second conductive layer formed on and passing over the surface of said insulating film for isolating elements;
second and third insulating films covering outer surfaces of said first and second conductive layers, respectively;
a first electrode layer connected to one of said pair of impurity regions extending from a position above said second insulating film covering said first conductive layer to a position above said third insulating film covering said second conductive layer;
a dielectric layer including a first portion covering a rear surface of the first electrode layer, a second portion covering upper and side surfaces of the first electrode layer, and a third portion covering a surface of an impurity region to which the first electrode layer is connected; and
a second electrode layer covering the surfaces of the first, second and third portions of said dielectric layer forming a capacitor structure comprising said second electrode, said third portion and said impurity region, wherein said second electrode layer and said third dielectric layer portion are fully separated from said first electrode layer by said first dielectric layer portion formed in contact with the surface of the impurity region, and wherein said third portion of the dielectric layer is fully separated from said third insulating film and formed in contact with the surface of said impurity region.

5,285,093

SEMICONDUCTOR MEMORY CELL HAVING A TRENCH STRUCTURE

Craig S. Lage, and Richard D. Sivan, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1992, Ser. No. 955,781
Int. Cl.[5] H01L *29/10, 29/78, 27/02*
U.S. Cl. 257—332 **15 Claims**



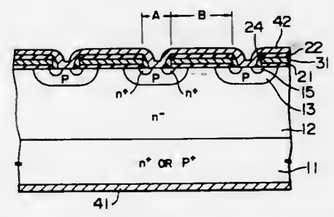
1. A semiconductor memory device comprising:
a substrate having a surface;
a well region in the substrate;
a trench in the substrate, the trench having a bottom surface and a wall surface and a central region;
an inverter in the trench, the inverter having a first channel region of a first conductivity type in the wall surface, a second channel region of a second conductivity type in the central region extending from the bottom surface to substrate surface, and a toroidal shared-gate electrode intermediate to the first and second channel regions;
a first buried layer in the substrate electrically coupled to the second channel region at the bottom surface of the trench; and
a second buried layer in the substrate intermediate to the well region and the first buried layer and electrically coupled to the first channel region,
wherein the first buried layer provides a first logic signal to the first channel region and the second buried layer provides a second logic signal to the second channel region.

5,285,094

VERTICAL INSULATED GATE SEMICONDUCTOR DEVICE WITH LESS INFLUENCE FROM THE PARASITIC BIPOLAR EFFECT

Mutsuhiro Mori; Tomoyuki Tanaka; Yasumichi Yasuda, and Yasunori Nakano, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

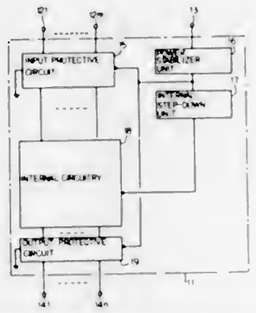
Division of Ser. No. 683,695, Apr. 11, 1991, Pat. No. 5,179,034, which is a continuation of Ser. No. 233,007, Aug. 17, 1988, Pat. No. 5,032,532. This application Jul. 29, 1992, Ser. No. 921,226
Claims priority, application Japan, Aug. 24, 1987, 62-208123
Int. Cl.[5] H01L *29/76, 29/94, 31/062*
U.S. Cl. 257—341 **7 Claims**



3. An insulated gate semiconductor device, comprising:
(a) a semiconductor substrate having
a pair of main surfaces,
a first semiconductor region of a first conductivity type, forming one of the pair of main surfaces,
a second semiconductor region of a second conductivity type adjacent to said first semiconductor region and forming the other of the pair of main surfaces,
a plurality of third semiconductor regions of the first conductivity type extending from the other of the pair of main surfaces into said second semiconductor region, and
two fourth semiconductor regions, of the second conductivity type, extending from the other of the pair of main surfaces into each of said third semiconductor regions;
(b) a first main electrode connected to said first semiconductor region at one of the pair of main surfaces of the semiconductor substrate;
(c) a second main electrode connected to said third semiconductor regions and said fourth semiconductor regions at the other of the pair of the main surfaces of the semiconductor substrate; and
(d) a plurality of insulating gates formed on the other of the pair of the main surfaces,
each of which is formed on said second semiconductor region, two of said third semiconductor regions adjacent to said second semiconductor layer and said fourth semiconductor regions, and
each of which has a gate oxide film on the other of the main surfaces of said semiconductor substrate, a gate electrode formed on said gate oxide film, and an insulating film formed on said gate electrode, said third semiconductor regions and said fourth semiconductor regions both being aligned with a same side of a same insulating gate; and said insulating film formed on the gate electrode includes an insulating film portion formed on sides of the gate electrode, said insulating film portion extending to said other of the pair of main surfaces, and wherein said insulating film portion contains an impurity contained in said fourth semiconductor regions; and
(e) wherein a length of each of said insulating gates, from one side to an opposed side of each insulating gate, is longer than a distance between adjacent sides of adjacent insulating gates.

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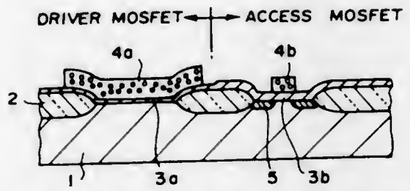
5,285,095
SEMICONDUCTOR INTEGRATED CIRCUIT WITH INPUT PROTECTIVE TRANSISTOR EFFECTIVE AGAINST ELECTRIC SURGE
Shuji Toyoda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 10, 1992, Ser. No. 896,668
Claims priority, application Japan, Jun. 13, 1991, 3-140567
Int. Cl.[5] H01L *23/62*
U.S. Cl. 257—360 **3 Claims**



1. A semiconductor integrated circuit fabricated on a single semiconductor chip, comprising:
a) an internal circuitry having at least one component field effect transistor, said at least one component field effect transistor having a - 1) source and drain regions formed in an active area of said single semiconductor chip, and spaced apart from each other by a first channel forming region, a - 2) a first gate insulating film covering said first channel forming regions, and adjusted to first predetermined thickness, and a - 3) a gate electrode formed on said first gate insulating film, and supplied with a step down voltage level produced from a power voltage level; and
b) an input protective circuit coupled between a plurality of signal pins and said internal circuitry, and having at least one input protective field effect transistor, said at least one input protective field effect transistor having b - 1) source and drain regions formed in another active area of said single semiconductor chip, and spaced apart from each other by a second channel forming region, b - 2) a second gate insulating film covering said second channel forming region, and adjusted to second predetermined thickness larger than said first predetermined thickness, and b - 3) a gate electrode formed on said second gate insulating film, and supplied with said power voltage level.

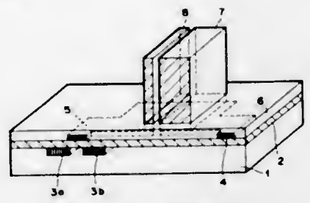
5,285,096
HIGH STABILITY STATIC MEMORY DEVICE HAVING METAL-OXIDE SEMICONDUCTOR FIELD-EFFECT TRANSISTORS
Manabu Ando, and Hiroshi Furuta, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 11, 1992, Ser. No. 944,117
Claims priority, application Japan, Sep. 13, 1991, 3-262842
Int. Cl.[5] H01L *27/02, 27/10, 27/15*
U.S. Cl. 257—379 **4 Claims**

1. A static memory device having a plurality of memory cells each comprising
a pair of driver MOSFETs whose gates and drains are cross-connected;
two load elements one of which is connected between a power source and the drain of one of said driver MOSFETs and the other of which is connected between a power source and the drain of the other of said driver MOSFETs; and
two access MOSFETs one of which is connected between the drain of one of said driver MOSFETs and one of a pair of bit lines and the other of which is connected between the drain of the other of said driver MOSFETs and the other of said pair of bit lines and whose gates are connected to a word line,
said driver and access MOSFETs being arranged such that a width/length aspect ratio of each gate of said



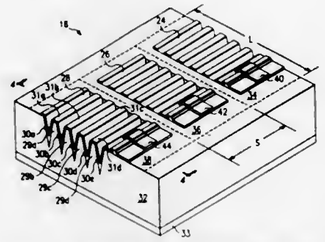
driver MOSFETs is greater than that of each gate of said access MOSFETs, and that a ratio between a gain coefficient of each of said driver MOSFETs and a gain coefficient of each of said access MOSFETs is greater than a ratio between the aspect ratio of each gate of said driver MOSFETs and the aspect ratio of each gate of said access MOSFETs.

5,285,097
SEMICONDUCTOR SENSOR OF ELECTROSTATIC CAPACITANCE TYPE
Yutaka Hirai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 21, 1992, Ser. No. 838,891
Claims priority, application Japan, Feb. 25, 1991, 3-30394
Int. Cl.[5] H01L *29/84*
U.S. Cl. 257—417 **11 Claims**



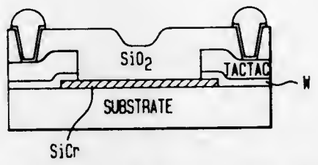
1. A semiconductor sensor comprising:
a substrate having a surface that is one of conductive and semiconductive and an insulative surface;
a pair of conductive members provided on said conductive/-semiconductive surface; and
a semiconductor functional element for sensing an electrostatic capacitance between said pair of conductive members, and being electrically connected with at least one of said conductive members,
wherein at least one of said conductive members can be deformed and the electrostatic capacitance between said conductive members varies in accordance with the deformation of said at least one conductive member, and
wherein said conductive members and said semiconductor functional element are integrally formed on said substrate.

5,285,098
STRUCTURE AND METHOD INTERNAL PHOTOEMISSION DETECTION
Sebastian R. Borrello, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 30, 1992, Ser. No. 877,433
Int. Cl.[5] H01L *29/44, 29/48, 31/06*
U.S. Cl. 257—466 **25 Claims**



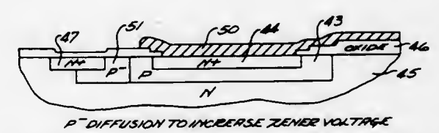
1. A structure for internal photoemission detection, comprising:
a semiconductor layer having front and back sides, said front side having at least one groove formed therein, wherein said groove has a depth to width ratio of at least eight to one;
a silicide film formed in each said groove over said semiconductor layer; and
a metal contact region electrically coupled to said silicide film such that a voltage at said metal contact region indicates an intensity of radiation incident on the structure.

5,285,099
SICR MICROFUSES
Roy A. Carruthers, Stormville; Fernand J. Dorleans, Wappinger Falls; John A. Fitzsimmons; Richard Flitsch, both of Poughkeepsie; James A. Jubinsky, Clinton Corners; Gerald R. Larsen, Cornwall; Geraldine C. Schwartz; Paul J. Tsang, both of Poughkeepsie, and Robert W. Zielinski, Wappinger Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 15, 1992, Ser. No. 990,679
Int. Cl.[5] H01L *27/02, 23052844651, 29/46*
U.S. Cl. 257—529 **4 Claims**



1. A microfuse structure fabricated within an integrated circuit (IC) which is deletable by either a low voltage electrical pulse or a laser pulse comprising:
a substrate with a SiCr fuse deposited thereon having a target composition of approximately 28% Cr and 72% Si, said SiCr fuse being etched to a defined size and shape;
a first layer of tungsten, W, having a thickness of between 50–200 nm and a layer of an aluminum (Al) alloy deposited over said SiCr fuse said W layer and Al alloy layer being etched to expose the SiCr fuse surface;
a passivation layer deposited over the microfuse structure to a thickness of about 3.0 to 4.0 μm; and electrical contacts provided through said passivation layer to said Al alloy layer.

5,285,100
SEMICONDUCTOR SWITCHING DEVICE
Stephen Byatt, Bromham, England, assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 719,888, Jun. 21, 1991, abandoned, which is a continuation of Ser. No. 379,506, Jul. 13, 1989, abandoned. This application Dec. 4, 1992, Ser. No. 985,543
Claims priority, application United Kingdom, Jul. 22, 1988, 88 17574
Int. Cl.[5] H01L *29/90, 29/74*
U.S. Cl. 257—566 **8 Claims**



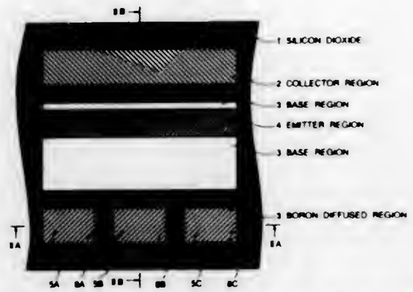
1. In a circuit system having a supply line to an apparatus and having a remote isolation device to disconnect the apparatus in response to a remote command, the improvement in which the remote isolation device comprises a semiconductor switching device comprising a PNP transistor having a P-type emitter region, an N-type base region, and a P-type collector region, an NPN transistor having an N-type emitter region, a P-type base region, and an N-type collector region, and a reverse breakdown PN diode having a P-type region and an N-type region, wherein the respective emitter regions of the transistors are connected in series in the supply line to serve as terminals of the semiconductor switching device, the collector region of the NPN transistor is connected to the base region of the PNP transistor and to the N-type region of the reverse breakdown PN diode, and the collector region of the PNP transistor is connected to the base region of the NPN transistor and to the P-type region of the reverse breakdown PN diode, the semiconductor switching device comprising a P-type semiconductor body that is both the base region of the NPN transistor and the collector region of the PNP transistor, an N-type island, at a surface of the P-type body, that is both the base region of the PNP transistor and the collector region of the NPN transistor, a P^+-type island, in the N-type island, that is the emitter region of the PNP transistor, an N-type island, at the surface of the P-type body, that is the emitter region of the NPN transistor, and conductive contact regions providing respective terminals for the P^+-type island and the N-type island, the semiconductor switching device including a further P^+-type island that extends across the junction between the N-type island and the P-type body, which further P^+-type island provides a part of the reverse breakdown diode and has a N^--type region in the P-type body immediately adjacent to the further P^+-type island.

5,285,101
SEMICONDUCTOR DEVICE
Hiroaki Kikuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 28, 1991, Ser. No. 751,113
Claims priority, application Japan, Aug. 28, 1990, 2-226132
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—593 **6 Claims**

1. A semiconductor device, comprising; an active region which constitutes a collector region of a bipolar transistor or a

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contact region to a substrate, said active region being formed of an impurity diffused region which is divided into a plurality



of impurity diffused regions separated from each other but electrically coupled to each other.

5,285,102

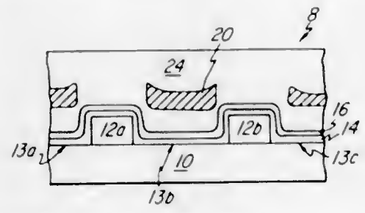
METHOD OF FORMING A PLANARIZED INSULATION LAYER

Peter S. Ying, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 735,504, Jul. 25, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 988,386

Int. Cl.[5] **H01L** *29/34, 29/04*

U.S. Cl. 257—638 **14 Claims**



1. A semiconductor device comprising:
a semiconductor layer;
a trench region formed in a surface of said semiconductor layer;
an insulating layer formed on said surface of said semiconductor layer;
a substantially planar borophosphosilicate glass (BPSG) layer formed over said insulating layer, said BPSG layer having a first material region formed within said BPSG layer, said first material region creating an internal stress within said in said BPSG layer to substantially planarize said BPSG layer.

5,285,103

STRUCTURE AND METHOD FOR CONTACTS IN CMOS DEVICES

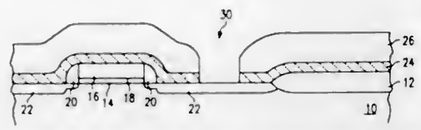
Fusen Chen, Dallas; Frank R. Bryant, Denton, and Girish Dixit, Dallas, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 719,791, Jun. 24, 1991. This application Apr. 7, 1992, Ser. No. 864,502

Int. Cl.[5] **H01L** *29/34, 29/78*

U.S. Cl. 257—644 **6 Claims**

1. A structure consisting of a portion of a semiconductor integrated circuit, comprising:
a substrate;
an active region formed in a portion of the substrate;
a field oxide region formed at a surface of the substrate;
a gate electrode overlying a portion of the active region, and defining a channel region therebeneath;
a metal oxide layer overlying, and in contact with, the active region, the gate electrode, and the field oxide region, the



metal oxide layer having a first opening therein to expose a portion of the active region; and,
an insulating layer disposed over the metal oxide layer and having a second opening aligned with the first opening, the insulating layer having rounded corners.

5,285,104

ENCAPSULATED SEMICONDUCTOR DEVICE WITH BRIDGE SEALED LEAD FRAME

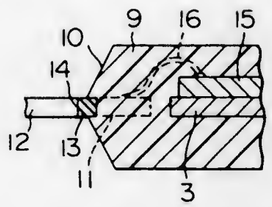
Mitsuhiro Kondo, and Osamu Watanabe, both of Oogaki, Japan, assignors to Ibiden Co., Ltd., Oogaki, Japan

Filed Sep. 29, 1992, Ser. No. 953,048

Claims priority, application Japan, Oct. 2, 1991, 3-255516

Int. Cl.[5] **H01L** *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 **16 Claims**



1. A lead frame for use in encapsulating a semiconductor integrated circuit within a mold resin formed by a mold die, comprising:
an electrically conductive frame portion having an opening;
an electrically conductive island portion disposed within said opening of said frame portion for mounting the semiconductor integrated circuit thereon;
a support pin portion connected between said island portion and said frame portion for supporting said island portion in place relative to said frame portion;
a plurality of electrically conductive lead portions each having an outer end connected to said frame portion and an inner end extending from said frame portion toward said island portion and spaced apart from said island portion, said lead portions being spaced apart from each other to define a plurality of spaces therebetween, and each of said lead portions including an inner lead portion for encapsulation by the mold resin, an outer lead portion for projecting from an outer surface of the mold resin and a boundary between said inner lead portion and said outer lead portion; and
a bridge member made of an electrically insulating and heat-resisting resin material extending between said lead portions at a position corresponding to said outer surface of said mold resin and having a thickness at least equal to the thickness of said lead portions, said bridge member extending outwardly from said boundary by a predetermined distance along said outer lead portions, and inwardly across said boundary by a predetermined distance along said inner lead portions,

whereby said bridge member seals said spaces defined between said lead portions when the mold die is applied on said lead frame and reinforces said outer lead portions where said bridge member extends.

5,285,105

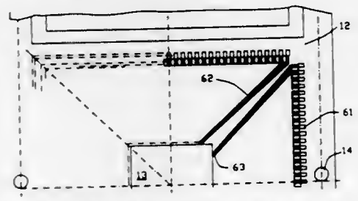
SEMICONDUCTOR DIE PACKAGES HAVING LEAD SUPPORT FRAME

Earl S. Cain, Napa, Calif., assignor to Tribotech, Napa, Calif.

Division of Ser. No. 609,088, Oct. 31, 1990, Pat. No. 5,184,207, which is a continuation of Ser. No. 281,016, Dec. 7, 1988, abandoned. This application Jul. 9, 1992, Ser. No. 912,030

Int. Cl.[5] **H01L** *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—672 **2 Claims**



1. A reusable lead pack transport tape comprising:
an elongated metal tape;
a layer of insulating material bonded to one face of said tape;
windows in said metal tape and insulating layer spaced along said tape for receiving a lead pack of the type having outwardly extending leads;
a plurality of thin test pads bonded to and carried by said insulating layer spaced outwardly away from said windows and spaced in relation to one another; and
a plurality of thin spaced leads bonded to and carried on said insulating layer, spaced in relation to one another and splayed outwardly away from the edge of said windows to the test pads, the window to receive the lead pack with the outwardly extending lead pack leads with the lead pack leads connected to the window end of said thin spaced leads.

5,285,106

SEMICONDUCTOR DEVICE PARTS

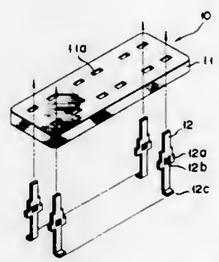
Toshikazu Deie, Aloi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 642,435, Jan. 17, 1991, abandoned. This application Apr. 27, 1992, Ser. No. 873,984

Claims priority, application Japan, Jan. 18, 1990, 2-9162

Int. Cl.[5] **G06K** *19/00;* **H01L** *23/12*

U.S. Cl. 257—678 **4 Claims**



1. A semiconductor device, with a plastic package, comprising:
plastic terminal supporting means, having through holes, for serving as a portion of the plastic package of the semiconductor device; and
external electrode terminal means, inserted in said through holes, for connecting internal electrodes of said semiconductor device to an external device, each of said external electrode terminal means having a stopper portion which engages with one of said through holes to position said external electrode terminal means in said plastic terminal supporting means and a spring portion which abuts against an inner wall of one of said through holes to fix said external electrode terminal means in said plastic terminal supporting means.

5,285,107

HYBRID INTEGRATED CIRCUIT DEVICE

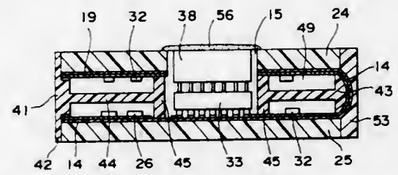
Akira Kazami, Ashikaga; Osamu Nakamoto, Ohta; Hisashi Shimizu, Ohta; Katsumi Ohkawa, Ohta; Yasuhiro Koike, Gunma; Koji Nagahama, Ohta; Masao Kaneko, Maebashi; Masakazu Ueno, Ohta, and Yasuo Saitou, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 18, 1990, Ser. No. 510,467

Claims priority, application Japan, Apr. 20, 1989, 1-100785; Apr. 20, 1989, 1-100786; May 12, 1989, 1-119109; May 12, 1989, 1-119110; May 12, 1989, 1-119113; May 15, 1989, 1-120901; May 15, 1989, 1-120906; May 16, 1989, 1-122356; May 16, 1989, 1-122357; May 17, 1989, 1-123903; May 17, 1989, 1-123904; May 18, 1989, 1-124912; May 18, 1989, 1-124913; May 19, 1989, 1-127310

Int. Cl.[5] **A01L** *23/02, 23/12*

U.S. Cl. 257—680 **17 Claims**



1. A hybrid integrated circuit device comprising:
a pair of integrated circuit substrates each having a main surface, and conductive paths formed on said main surfaces, one of said substrates being provided with an insertion hole;
a non-volatile memory sealed in resin, a socket mounted on the other one of said substrates in line with said insertion hole, and a microcomputer and its peripheral circuit elements, said socket, said microcomputer and said peripheral circuit elements being connected with said conductive paths and said non-volatile memory being inserted in said socket and being connected to said conductive paths via said socket; and
a casing having upper and lower internal surfaces, with each of said integrated circuit substrates being secured to a respective one of said upper and lower internal surfaces so that said main surfaces of said substrates are spaced apart from, and face, one another;
wherein said substrates and said casing form a sealed space in which said microcomputer and its circuit elements are disposed, said microcomputer and its peripheral circuit elements are mounted on said main surfaces of said substrates, and said main surface of each said substrate carries at least one of said microcomputer and a said peripheral circuit element.

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5,285,108

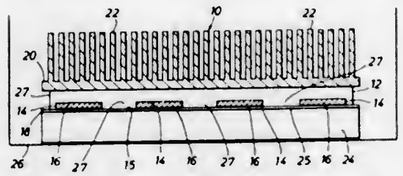
COOLING SYSTEM FOR INTEGRATED CIRCUITS

Robert J. Hastings, and Carl E. Davis, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 719,249, Jun. 21, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 933,881

Int. Cl.[5] F28F *7/00*

U.S. Cl. 257—712 **10 Claims**



1. Apparatus adapted for use with an integrated circuit body having an exterior surface including top and side surfaces and metal leads from the integrated circuit body extending generally adjacent to the sides of the integrated circuit body, the metal leads being electrically connected to a printed circuit board, the apparatus comprising,

a cooling member body made from a flexible, thermally conductive material removably press-fittable over the integrated circuit body, said cooling member body having a recess therein for receiving and enveloping the integrated circuit body, and

said recess defined by walls configured to contact the top and side surfaces of the integrated circuit body and the metal leads extending from the integrated circuit body including a substantial length of the portion of the leads which are electrically connected to the printed circuit board.

5,285,109

OHMIC CONTACT ELECTRODES FOR N-TYPE SEMICONDUCTOR CUBIC BORON NITRIDE

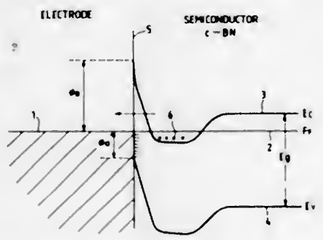
Tadashi Tomikawa; Tunenobu Kimoto, and Nobuhiko Fujita, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 24, 1991, Ser. No. 705,594

Claims priority, application Japan, May 24, 1990, 2-134720; May 24, 1990, 2-134721; May 24, 1990, 2-134722; May 24, 1990, 2-134723

Int. Cl.[5] H01L *29/48, 29/46, 29/62, 29/64*

U.S. Cl. 257—741 **4 Claims**



1. An ohmic electrode for an n-type semiconductor cubic boron nitride comprising at least one layer of a material selected from the group consisting of CrSi, WrSi, MnSi, CoSi, NiSi, PtSi, AgSi, ZnSi, WCSi, MnZnSi, Ni_2BSi, PtPdSi, AgAlSi, CrS, WrS, MnS, CoS, NiS, PtS, AgS, ZnS, WCS, MnZnS, Ni_2BS, PtPds, and AgAlS.

5,285,110

INTERCONNECTION STRUCTURE IN SEMICONDUCTOR DEVICE

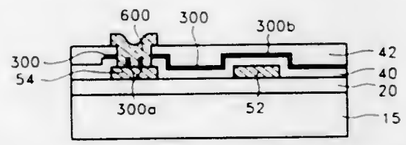
Dong-joo Bae, Seoul, and Sung-nam Chang, Kyunggi, both of Rep. of Korea, assignors to Samsung Electronicw Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Aug. 8, 1991, Ser. No. 741,991

Claims priority, application Rep. of Korea, Mar. 20, 1991, 91-4393

Int. Cl.[5] H01L *23/48, 29/46, 29/54*

U.S. Cl. 257—774 **6 Claims**



1. An interconnection structure of semiconductor device for electrically connecting a thin conductive layer and a metallization comprising:

a semiconductor substrate;

an insulating layer coated on said substrate;

a thick conductive layer formed on a certain portion of said insulating layer;

a first interlaid insulating layer covering said thick conductive layer;

a first contact hole formed through said first interlaid insulating layer on said thick conductive layer to expose a surface of the thick conductive layer;

a thin conductive layer consisting of vertical wall structure formed in said first contact hole and horizontal structure formed on said first interlaid insulating layer,

a second interlaid insulating layer covering said thin conductive layer;

a second contact hole formed within said first and second interlaid insulating layer and crossing said first contact hole; and

a metallization filling said second contact hole and formed on said second interlaid insulting layer,

whereby contact area between said metallization and thin conductive layer is increased.

5,285,111

INTEGRATED HYBRID TRANSMISSION WITH INERTIA ASSISTED LAUNCH

James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1993, Ser. No. 54,799

Int. Cl.[5] B60L *11/14;* **F16H** *37/06*

U.S. Cl. 290—4 C **14 Claims**

14. A power transmission for a vehicle having an internal combustion engine, a motor/generator and a drive ratio selection transmission, said power transmission comprising:

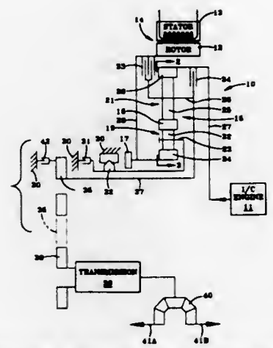
compounded first and second planetary gear sets, each having first gear means, second gear means and a plurality of planetary gears mounted on first and second carriers operatively to connect said first and second gear means of the respective first and second planetary gear sets;

a common gear member serving not only as the second gear for said first planetary gear set but also as the first gear for said second planetary gear set;

the internal combustion engine adapted selectively to provide torque to one gear means carrier of said second planetary gear set;

means selectively to transfer torque between the motor/generator and said one gear means of said first planetary gear set and said second carrier;

means selectively to transfer torque to and from the drive ratio selection transmission and the internal combustion engine, said one gear means of the second planetary gear set and the motor/generator through said second carrier; said first carrier being selectively connected to ground; and,



means selectively connecting said drive ratio selection transmission to ground.

5,285,112

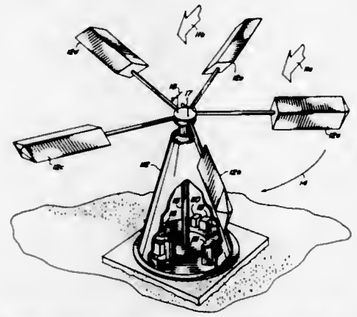
FLUID ENERGY COLLECTION SYSTEM

Michael J. Mann, Tucson, Ariz., assignor to Star Energy Company, L.L.C., Tucson, Ariz.

Filed Sep. 21, 1992, Ser. No. 948,397

Int. Cl.[5] F03D *7/00, 3/00*

U.S. Cl. 290—44 **20 Claims**



1. A fluid energy collection apparatus comprising:

a) a hub rotatable about an axis;

b) a plurality of arms attached to said hub and extending outward from said hub;

c) at least one energy collection means attached to each of said arms, said energy collection means having a low drag configuration and a high drag configuration and wherein a cross section profile of said energy collection means changes between said low drag configuration and said high drag configuration, said arms and said energy collection means rotating in a fluid stream, each rotation having a downstream portion and an upstream portion; and,

d) drag change means for selectively changing said energy collection means to said high drag configuration during rotation through said downstream portion of said rotation and to said low drag configuration during rotation through said upstream portion of said rotation.

5,285,113

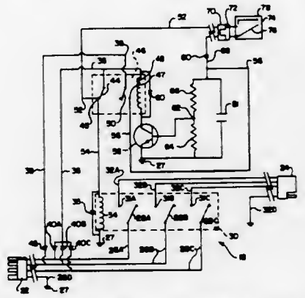
CIRCUIT CONTROL APPARATUS FOR BOAT TRAILERS

Anthony C. Schlich, Duluth, Ga., assignor to Remarkable Products, Inc., Duluth, Ga.

Filed Jun. 17, 1991, Ser. No. 716,532

Int. Cl.[5] B60L *1/00*

U.S. Cl. 307—9.1 **10 Claims**



1. Apparatus for controlling the application of current from the electrical circuitry of a towing vehicle to the electrical circuitry of a trailer upon entrance and exit of said trailer into and from a body of water, said apparatus comprising;

a) input means for receiving current from the towing vehicle and for providing an operating voltage;

b) output means for conducting current to the trailer;

c) first switch means responsive to the operating voltage for connecting and disconnecting the input and output means; and

d) subcircuit means for removing the operating voltage from the first switch means as the trailer enters the body of water and for delaying the application of the operating voltage to the first switch means for an interval of time after the trailer exits the body of water.

5,285,114

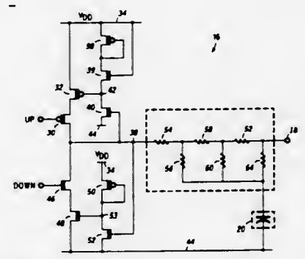
PHASE LOCK LOOP CHARGE PUMP WITH SYMMETRICAL CHARGE AND DISCHARGE CURRENTS

Ahmad H. Atriss, Chandler, and Benjamin C. Peterson, Tempe, both of Ariz., assignors to Codex Corp., Mansfield, Mass.

Filed Aug. 17, 1992, Ser. No. 930,943

Int. Cl.[5] H03K *17/687, 5/13*

U.S. Cl. 307—264 **8 Claims**



1. A circuit, comprising:

a first transistor having a gate, a drain and a source, said gate receiving a first control signal, said drain being coupled to an output of circuit;

a second transistor having a gate, a drain and a source, said source being coupled to a first power supply conductor, said drain being coupled to said source of said first transistor;

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a third transistor having a gate, a drain and a source, said gate being coupled to said output of the circuit, said drain being coupled to said first power supply conductor and to said gate of said second transistor, said source being coupled to a second power supply conductor;

a fourth transistor having a gate, a drain and a source, said source being coupled to said drain of said third transistor, said gate being coupled to said first power supply conductor; and

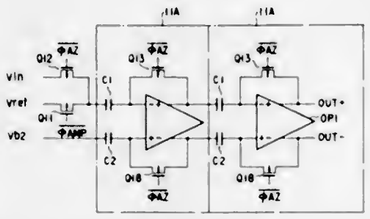
a fifth transistor having a gate, a drain and a source, said gate and drain being coupled together to said drain of said fourth transistor, said source being coupled to said first power supply conductor.

5,285,115

COMPARATOR DEVICE FOR COMPARING ANALOG VOLTAGES

Kazuhiro Tsuji, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1992, Ser. No. 827,648
Claims priority, application Japan, Jan. 31, 1991, 3-10660
Int. Cl.[5] H03K *5/153;* **G11C** *7/06*
U.S. Cl. 307—362 **12 Claims**



1. A comparator device, comprising:

a first comparator having an inverting output terminal, and a non-inverting output terminal, said first comparator including:

a differential amplifier having an inverting input terminal a non-inverting input terminal, an inverting output terminal connected to said inverting output terminal of said first comparator, and a non-inverting output terminal connected to said non-inverting output terminal of said first comparator;

a first switch circuit controlled in accordance with a first control signal and having a current path, to a first end of which an input voltage is applied;

a second switch circuit controlled in accordance with a second control signal and having a current path, to a first end of which a reference voltage is applied;

a first capacitor connected between said inverting input terminal of said differential amplifier, on the one hand, and a second end of the current path of said first switch circuit and a second end of the current path of said second switch circuit, on the other hand;

a second capacitor connected between a constant voltage and said non-inverting input terminal of said differential amplifier;

a third switch circuit controlled in accordance with the first control signal and connected between said inverting input terminal of said differential amplifier and said non-inverting output terminal of said differential amplifier; and

a fourth switch circuit controlled in accordance with the first control signal and connected between said inverting input terminal of said differential amplifier and said inverting output terminal of said differential amplifier, wherein said first comparator outputs a first inverted voltage and a first non-inverted voltage from said inverting output terminal of said first comparator and said non-inverting output terminal of said first comparator, respectively;

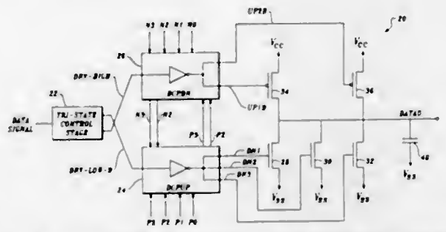
a second comparator of positive-feedback type having an inverting input terminal, an non-inverting input terminal, an inverting output terminal, and a non-inverting output terminal, for comparing the first inverted voltage with the first non-inverted voltage to generate a second inverted voltage and a second non-inverted voltage, and for outputting the second inverted voltage and the second non-inverted voltage from said inverting output terminal of said second comparator and said non-inverting output terminal of said second comparator, respectively, wherein said second comparator starts comparing the first inverted voltage with the first non-inverted output by said first comparator immediately before said first comparator finishes comparing the input voltage with the reference voltage.

5,285,116

LOW-NOISE HIGH-SPEED OUTPUT BUFFER AND METHOD FOR CONTROLLING SAME

Albert Thaik, Cupertino, Calif., assignor to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed Aug. 28, 1990, Ser. No. 573,926
Int. Cl.[5] H03K *19/017*
U.S. Cl. 307—443 **19 Claims**



1. An output buffer for receiving a data signal and generating a responsive output signal, a response to a transition in the data signal occurring after a controllable switching delay time so that the output signal response is available within a prescribed delay time, the prescribed delay time being referenced to a clock cycle, the output buffer comprising:

a first transitive means for driving the output signal;

means receiving said data signal for predriving said first transitive means in response to a transition in the data signal, said predriving means receiving a plurality of digital control signals for determining the switching delay time of the output buffer with reference to a clock cycle; and wherein said switching delay time is referenced to approximately 0.75 T, where T equals one clock cycle period.

5,285,117

OUTPUT CIRCUIT WITH OUTPUT ENABLING INPUTS

Kiyohiro Furutani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

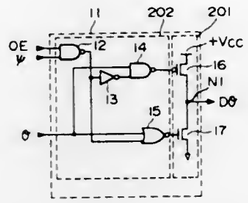
Filed Oct. 6, 1992, Ser. No. 957,403
Claims priority, application Japan, Oct. 9, 1991, 3-261675
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—443 **13 Claims**

1. An output circuit for a semiconductor integrated circuit comprising:

output means for providing an output signal in accordance with an input signal;

said input signal having one of a first and a second state; and

control means, receiving a reference signal and a control signal delayed relative to said reference signal, for controlling a timing of occurrence of said output signal and an output impedance of said output means in accordance with combinations of said control signal and said reference signal.

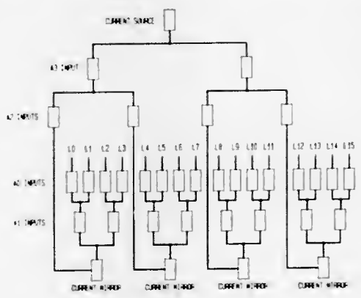


5,285,118

COMPLEMENTARY CURRENT TREE DECODER

Fred A. Montegari, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,830
Int. Cl.[5] H03K *19/013*
U.S. Cl. 307—463 **7 Claims**



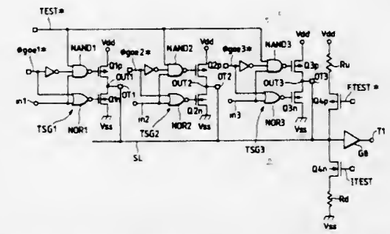
1. A complementary current tree decoder comprising a current tree connected across a voltage supply and having n branching levels, each level receiving a respective binary address A_i, i=1, 2, . . . , n, and a highest branching level driving outputs L_j, j=1, 2, . . . , 2^n, said binary address steering current through the branches of the tree to a corresponding output, said current tree being divided into two groups of branching levels, a first one of said groups comprising a current source and lower branching levels and having transistors of a first conductivity type, a second one of said groups comprising higher branching levels having transistors of a second conductivity type complementary to said first conductivity type, current from said first one of said groups being folded over by current mirrors to said second one of said groups, the flow of current through said current tree being extended over a greater total voltage range than the supply voltage and power dissipation being low due to current flowing in only one branch of the tree at a time.

5,285,119

SEMICONDUCTOR INTEGRATED TRI-STATE CIRCUITRY WITH TEST MEANS

Toshiro Takahashi, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1992, Ser. No. 867,475
Claims priority, application Japan, Apr. 24, 1991, 3-119080
Int. Cl.[5] H03K *19/00*
U.S. Cl. 307—473 **9 Claims**



1. A semiconductor integrated circuit for testing, said semiconductor integrated circuit comprising:

a first terminal to which a first voltage level is supplied; p1 a second terminal to which a second voltage level is supplied;

output test means coupled to said first terminal and for outputting said first voltage level;

a signal line which is coupled with said output means to receive said first voltage level; and

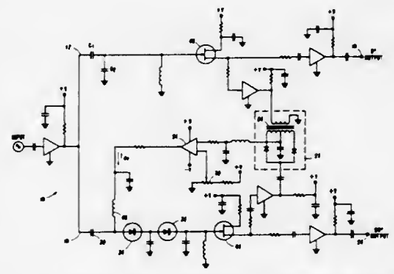
a plurality of tristate circuits, each tristate circuit having (i) first and second control signal inputs which selectively receive corresponding first and second control signals, (ii) electrical connections to the first and second terminals, and (iii) a tristate circuit output connected with the signal line, each tristate circuit electrically couples one of said first and second terminals to the tristate output and the signal line in response to said first control signal, and each tristate circuit selectively couples the second voltage level to the tristate output and said signal line in response to said second control signal.

5,285,120

BROADBAND PHASE SPLITTER

Harvey L. Landt, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 15, 1988, Ser. No. 246,122
Int. Cl.[5] H02K *5/13;* **H03L** *7/00*
U.S. Cl. 307—513 **14 Claims**



6. A broadband phase splitter for providing two output signals derived from a common input signal, comprising:

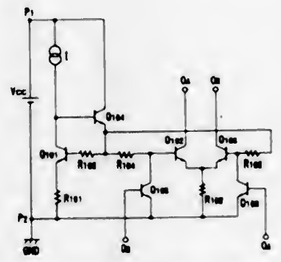
a fixed attenuator for receiving the input signal and providing a first output signal;

a low-pass RC filter for receiving the input signal and pro-

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viding a second output signal that is phase shifted with respect to said first output signal;
a wide-band rf transformer functioning as a phase detector and output signals, said transformer functioning as a phase detector and generating an error signal; and
an operational amplifier for receiving said error signal and providing a control signal to said low-pass RC filter.

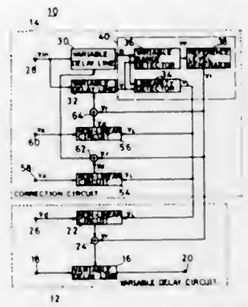
5,285,121
CURRENT SWITCHING CIRCUIT
Mitsutoshi Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 29, 1993, Ser. No. 11,184
Claims priority, application Japan, Feb. 3, 1992, 17398
Int. Cl.[5] H03F *3/04, 3/193*
U.S. Cl. 307—570 **9 Claims**



1. A current switching circuit comprising:
a power supply having two terminals;
a constant current source, connected to one terminal of said power supply, for supplying a constant current;
a biasing circuit, connected between said constant current source and one terminal of said power supply;
first and second transistors rendered conductive in response to the bias voltage from said biasing circuit to bases of said first and second transistors, collector currents of said first and second transistors being output to respective output terminals;
first and second selecting means for complementarily applying the bias voltage to the bases of said first and second transistors; and
a first resistor connected between the other terminal of the power supply and a common connection point of emitters of said first and second transistors.

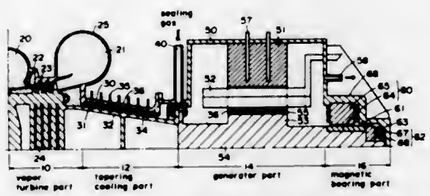
5,285,122
VARIABLE DELAY DEVICE
Fumiaki Hoeda, Takatsuki, and Nobukazu Hosoya, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Jun. 26, 1992, Ser. No. 904,689
Claims priority, application Japan, Jun. 28, 1991, 3-158983
Int. Cl.[5] H03K *5/15*
U.S. Cl. 307—603 **3 Claims**

1. A variable delay device wherein:
a variable delay circuit including a first variable delay line which is constructed by utilizing a c-MOS inverter and delays an input signal and outputs a delay signal; and
a correction circuit which applies first and second outputs for respectively controlling a linearity and a variable range of a control characteristic of said first delay line; and
said variable delay circuit includes a first non-linear circuit for modifying a first control signal according to said first output, and a first adder for adding an output of said first



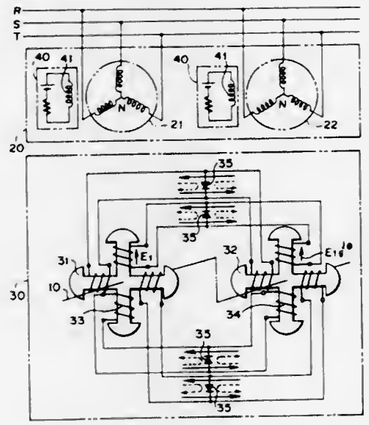
non-linear circuit and said second output to each other and applies a control signal to said first variable delay line.

5,285,123
TURBO-GENERATOR
Hajime Kataoka, Ibaraki, and Kazuo Haga, Kamakura, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan
Filed Apr. 5, 1993, Ser. No. 43,213
Claims priority, application Japan, Apr. 6, 1992, 4-113022
Int. Cl.[5] H02K *5/124, 7/09, 9/10, 7/18*
U.S. Cl. 310—88 **12 Claims**



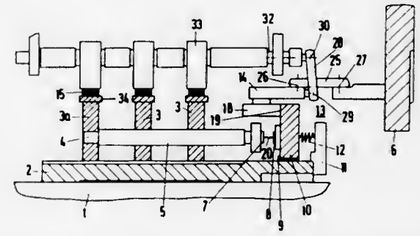
1. A turbo-generator comprising: a vapor turbine; a generator; a tapering cooling section interposed between said vapor turbine and said generator; said vapor turbine, said cooling section and said generator having casings integrated together to form a sealed single-boundary structure; said vapor turbine also having a turbine shaft, said cooling section also having a rotary shaft and said generator also having a generator shaft, said shafts being integral; bearing parts at ends of said boundary structure and supporting the integral shafts of said vapor turbine, said generator and said cooling section in such a way that the integral shafts do not pass from said single-boundary structure; said tapering cooling section having a smaller diameter at a part thereof adjacent said generator than at a part thereof adjacent said vapor turbine; said cooling section having a plurality of annular weirs at the inner circumferential surface of said casing thereof; and said rotary shaft of said cooling section having a plurality of annular projections at the outer circumferential surface thereof, said annular projections being positioned among said weirs so as to form a labyrinth structure therewith.

5,285,124
BRUSHLESS INDUCTION SYNCHRONOUS MOTOR WITH TWO STATORS
Toshihiko Satake, Higashihiroshima, and Yukio Onogi, Hiroshima, both of Japan, assignors to Satake Corporation, Tokyo, Japan
Filed Aug. 11, 1992, Ser. No. 928,057
Claims priority, application Japan, Aug. 28, 1991, 3-244632
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[5] H02K *16/00, 23/62*
U.S. Cl. 310—114 **2 Claims**



1. An induction synchronous motor comprising:
a unitary rotor having a first and a second salient pole type rotor core both being fixedly mounted on a common rotor axis with a predetermined space being provided therebetween; first and second rotor windings being wound on the first and second rotor cores, respectively, the adjacent ones along an axial direction of the first rotor windings and the second rotor windings being connected in series; a plurality of diodes each being connected in parallel between series-connection nodes of the first and second rotor windings; a plurality of rotor conductors being provided on peripheries of and extending through the first and second rotor cores; and a pair of short-circuit rings short-circuiting both ends of the plurality of rotor conductors;
a first and a second stator being provided surroundingly to face the first and second salient pole type rotor cores, respectively, and having the same number of poles as that of the first and second rotor cores;
a voltage phase shifting means which selectively produces a phase difference of 0° for starting and accelerating operation and 180° for synchronous operation, between a phase of a rotating magnetic field produced around the first salient pole type rotor core that is faced by the first stator and a phase of a rotating magnetic field produced around the second salient pole type rotor core that is faced by the second stator; and
DC magnetic excitation circuits being provided to face the first and second salient pole type rotor cores, and having a different number of poles from that of the first and second stators, the DC magnetic excitation circuits being for magnetizing at the synchronous operation the adjacent ones along the axial direction of the first rotor windings and the second rotor windings to opposite polarities.

5,285,125
SHORT-CIRCUITING AND BRUSH-LIFTING DEVICE FOR ASYNCHRONOUS MOTORS EQUIPPED WITH A SLIP-RING ROTOR
Karl Lang, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
PCT No. PCT/DE91/00074, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/15050, PCT Pub. Date Oct. 3, 1991
PCT Filed Jan. 23, 1991, Ser. No. 934,699
Int. Cl.[5] H02K *13/00;* **H01R** *39/42*
U.S. Cl. 310—240 **18 Claims**



1. A short-circuiting, brush-lifting device coupled within an asynchronous motor that includes a slip-ring rotor having a central axis and a plurality of slip rings, said short-circuiting, brush-lifting device comprising:
a plurality of short-circuit contacts statically mounted to said slip rings of said slip-ring rotor;
a short-circuiting ring having a central axis substantially coincident to the central axis of said slip-ring rotor, said short circuiting ring coupled around said slip-ring rotor and capable of movement in an axial direction, said short-circuiting ring capable of being electrically coupled to said short-circuit contacts;
means for triggering an axial displacement of said short-circuiting ring into electrical contact with said short-circuit contacts, such that electrical contact between said short-circuit contacts and said short-circuiting ring causes said slip rings of said slip-ring rotor to become short-circuited;
a rotatably supported actuating ring having a central axis substantially coincident to that of said slip-ring rotor, said actuating ring coupled around said slip-ring rotor and capable of rotational movement from a starting position to an operating position in a circumferential direction around the central axis of said actuating ring, said actuating ring also capable of movement in an axial direction from said starting position to said operating position;
a plurality of brush-actuating guide rods, each being substantially equal in length and including a first articulated joint and a movable articulated joint, each brush-actuating guide rod coupled to said actuating ring via said first articulated joint;
a plurality of brushes capable of being coupled to said slip rings of said slip-ring rotor;
a plurality of holder studs coupled to said plurality of brushes;
a plurality of levers coupled between said plurality of holder studs and the first articulated joints of said brush-actuating guide rods, such that movement of said brush-actuating guide rods is capable of causing said holder studs to rotate and said brushes to become lifted and disconnected from said slip rings when said slip rings have been short circuited, such that when said actuating ring is moved from said starting position to said operating position said short-circuit contacts electrically contact said short-circuiting ring and said brushes are disconnected from the slip rings of said slip-ring rotor;
a plurality of axially aligned axial guide rods, each being

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substantially equal in length and each including a fixed articulated joint and a movable articulated joint, each movable articulated joint of said axial guide rods being coupled to and uniformly distributed over an outer circumferential surface of said actuating ring, said brush-actuating guide rods being aligned perpendicularly to said axial guide rods;

a plurality of rollers, each having a radial axis and being uniformly distributed over an inner surface of said actuating ring, a surface area of each roller abutting against an end face of said short-circuiting ring that faces said slip rings on said slip-ring rotor in said starting position;

a plurality of springs coupled to said short-circuiting ring, said springs urging said short-circuiting ring towards said rollers and said short-circuit contacts;

such that the movable articulated joints of said brush-actuating guide rods are capable of being deflected to a first point of maximum excursion where the movable articulated joints of said brush-actuating guide rods are at a maximum distance from said actuating ring;

such that the movable articulated joints of said axial guide rods are capable of being deflected to a second point of maximum excursion where said actuating ring is at a maximum displacement in an axial direction from said starting position;

such that said brush-actuating guide rods and said axial guide rods are positioned such that the movable articulated joints of said brush-actuating guide rods are deflected through said first point of maximum excursion before the movable articulated joints of said axial guide rods are deflected through said second point of maximum excusion; and

such that an axial displacement of said actuating ring in said operating position is larger in magnitude than a displacement between said short-circuit contacts and the end face of said short-circuiting ring in said starting position.

5,285,126

COLLECTOR SHOE AND METHOD FOR PRODUCING IT

Peter Hoffmann, Steeg, and Johann Hoell, Hallstatt, both of Austria, assignors to Hoffmann & Co. Elektrokohle KG, Steeg, Austria

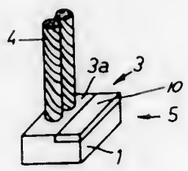
PCT No. PCT/EP89/01579, § 371 Date Jun. 18, 1991, § 102(e) Date Jun. 18, 1991, PCT Pub. No. WO90/07211, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 20, 1989, Ser. No. 690,996

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1988, 8815801[U]

Int. Cl.[5] H02K *13/00*

U.S. Cl. 310—249 **4 Claims**



1. A collector shoe comprising a main body having a plurality of transverse sides made by press-molding a first carbon powder material; at least one electrical lead embedded in said main body and extending over a portion of one of said sides; and a surface layer made of a second carbon material covering another portion of said one of said sides of the main body spaced from the portion of said one of said sides from which the lead extends; said surface layer being connected to the main body by press-bonding.

5,285,127

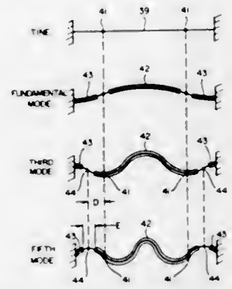
SINGLE MODE RESONATOR AND METHOD

Bert D. Egley, Tacoma, Wash.; Piyush K. Gupta, Antioch, and G. Richard Newell, Alamo, both of Calif., assignors to New SD, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 443,917, Nov. 30, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 787,486

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—366 **11 Claims**



1. In a quartz crystal resonator displaying a Z-cut crystal orientation and including opposite end portions, a pair of laterally spaced apart tines extending lengthwise between and integrally formed with said end portions, each of said tines displaying two points along its length where the second derivative of its lateral displacement with respect to length changes polarity, and a set of three of electrodes including a center electrode and a pair of end electrodes mounted lengthwise in adjacent end-to-end relationship to one another on each one of selected surfaces of said tines so as to cause said tines to oscillate in their fundamental modes upon energizing said electrodes with AC voltage which is applied to the electrodes of each set with alternating polarity, the improvement wherein:

the center electrode in each set extends beyond the two points where the second derivative changes polarity to locations selected so that each tine oscillates substantially only in its fundamental mode and oscillation in any overtone modes is minimized.

5,285,128

LOW-PRESSURE DISCHARGE LAMP

György Horváth; Tamás Palotai; József Fülöp, and Miklós Hargitai, all of Budapest, Hungary, assignors to Tungsram Részvénytársaság, Budapest, Hungary

Filed Jan. 29, 1992, Ser. No. 827,396

Claims priority, application Hungary, Jan. 29, 1991, 297/91

Int. Cl.[5] H01J *61/36*

U.S. Cl. 313—318 **8 Claims**

1. A discharge lamp comprising

(a) a gas-filled, sealed discharge tube having an end;

(b) an electrode disposed in said discharge tube and having an electrode lead passing through said end and terminating exteriorly of said discharge tube;

(c) a cap affixed to said discharge tube about said end; said cap including a base having an opening; said base being spaced from said end; said cap defining an inner space bounded by said end;

(d) a contact component including

(1) a first portion accommodated and held in said base;

(2) a second portion accessible externally of said discharge tube and said cap for connection to a power supply; and

(3) a connecting extension projecting from said base into said inner space; and



(e) a joint binding said electrode lead to said connecting extension; said joint being located in said inner space at a distance from said base.

5,285,129

SEGMENTED ELECTRON EMISSION DEVICE

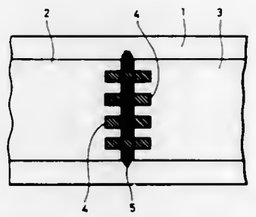
Toshihiko Takeda, Funabashi; Ichiro Nomura, Yamato; Tetsuya Kaneko, Yokobama, and Yoshikazu Banno, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,166, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 357,283, May 26, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 804,532

Claims priority, application Japan, May 31, 1988, 63-131567

Int. Cl.[5] H01J *19/06*

U.S. Cl. 313—346 R **8 Claims**



1. A multiple electron emission device comprising:

a substrate,

a pair of opposed electrodes disposed on a surface of said substrate, and

a non-separated electron emission section formed between said electrodes,

wherein a coating material is applied on a surface of said electron emission section so as to divide said electron emission section formed between said electrodes into a plurality of separated electron emitting segments, and

wherein said electrodes apply a voltage to said electron emission section.

5,285,130

ELECTRON GUN WITH BI-POTENTIAL FOCUSING LENS AND ELECTROSTATIC DEFLECTION PLATES

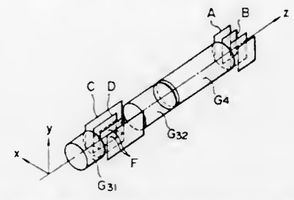
Shigehiko Takayama, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 668,102

Claims priority, application Japan, Mar. 12, 1990, 2-057967

Int. Cl.[5] H01J *29/74*

U.S. Cl. 313—414 **8 Claims**



1. An electron gun targeting on a screen comprising:

a triode part controlling an electron source generating a plurality of electron beams and emission of the electron beams generated by said electron source;

a main electron lens of a bi-potential focusing type comprising not less than two cylindrical electrodes focusing said plurality of electron beams emitted by said triode part;

first electrostatic deflection plates disposed on an electron source side of said main electron lens; and

second electrostatic deflection plates disposed on a screen side of said main electron lens.

5,285,131

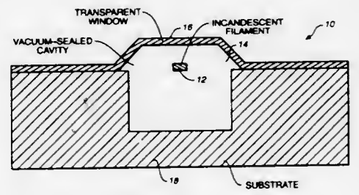
VACUUM-SEALED SILICON INCANDESCENT LIGHT

Richard S. Muller, Kensington, and Carlos H. Mastrangelo, Oakland, both of Calif., assignors to University of California - Berkeley, Oakland, Calif.

Filed Dec. 3, 1990, Ser. No. 621,678

Int. Cl.[5] H01K *1/02, 1/28, 1/50*

U.S. Cl. 313—578 **12 Claims**



1. A microlamp, comprising:

a substrate;

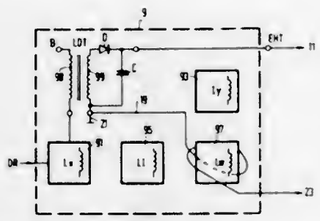
a cavity formed in said substrate;

a polysilicon filament coated with a protective layer disposed in said cavity; and

a window means for vacuum sealing said cavity wherein radiation emitted by said filament is visible through said window means.

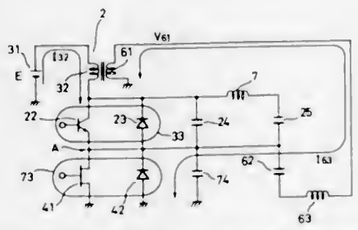
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,132
DISPLAY DEVICE
George Yang, Tainan, Taiwan, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 11, 1993, Ser. No. 60,321
Claims priority, application European Pat. Off., Jun. 25, 1992, 92201871.8
Int. Cl.[5] H01J *29/56*
U.S. Cl. 315—370 4 Claims



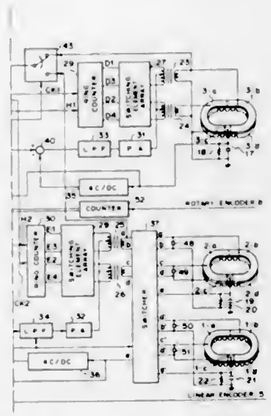
1. A display device comprising
a display tube having at least one control electrode for generating an electron beam, a display screen for displaying a video signal and an inner coating at the inside of the display tube and an outer coating at the outside of the display tube, a deflection unit for deflecting the electron beam across the display screen, said deflection unit comprising at least a line deflection coil and a field deflection coil and a line output transformer having a primary winding coupled to a line deflection section of the deflection unit and a secondary winding having a first connector coupled to a ground terminal and a second connector coupled to the inner coating of the display tube for generating a high DC voltage, characterized in that, the first connector of the secondary winding is coupled to the outer coating of the display tube by means of a conductor which has at least one turn around one of the coils of the deflection unit.

5,285,133
DEFLECTION CURRENT GENERATING CIRCUITS
Toshiyuki Ogura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 3, 1992, Ser. No. 939,797
Claims priority, application Japan, Sep. 6, 1991, 3-254490
Int. Cl.[5] G09G *1/04*; H01J *29/70*
U.S. Cl. 315—371 4 Claims



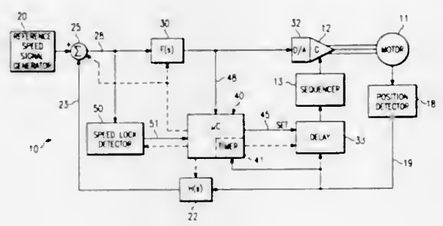
1. A deflection current generating circuit, comprising:
a first switching element for switching in synchronization with a horizontal deflection period;
a retrace pulse generating coil for generating a retrace pulse in association with the switching operation of said first switching element;
a resonant circuit for resonating in association with the switching operation of said first switching element;
a second switching element for switching in synchronization with both the horizontal deflection period and a vertical deflection period;
an adjust pulse generating circuit, which is connected to said resonant circuit, for generating an adjust pulse in association with the switching operation of said second switching element;
a transformer which has a primary winding and a secondary winding, and wherein said primary winding includes said retrace pulse generating coil; and
a sub-resonant circuit connected between said secondary winding of said transformer and said adjust pulse generating circuit.

5,285,134
CONTROL DEVICE FOR VIBRATION TYPE MOTOR
Kenichi Kataoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 666,605, Mar. 8, 1991. This application Nov. 18, 1992, Ser. No. 978,047
Claims priority, application Japan, Mar. 9, 1990, 2-058510
Int. Cl.[5] H01L *41/08*
U.S. Cl. 318—116 8 Claims



1. A control device for controlling plural vibration type motors, said device comprising:
a drive circuit having a periodic signal forming circuit for supplying electromechanical energy transducer elements, provided on respective vibration members constituting said vibration type motors, with periodic signals of different phases thereby driving said motors, and a state detecting unit for effecting drive state control of said motors by receiving monitor signals from said motors;
a selection circuit for selecting at least one of said motors and for transmitting a monitor signal from said at least one selected motor to said state detecting unit of said drive circuit, thereby using said state detecting unit commonly for said selected motors; and
a switching circuit for switching the control gain of said state detecting unit according to the motor selected by said selection circuit.

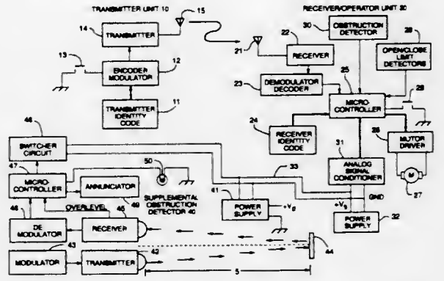
5,285,135
AUTOMATIC ADJUSTMENT OF COMMUTATION DELAY FOR BRUSHLESS DC MOTOR FOR IMPROVED EFFICIENCY
Francesco Carobolante, San Jose, Calif.; Ermanno Pace, Phoenix, and Mark E. Rohrbaugh, Scottsdale, both of Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Sep. 23, 1992, Ser. No. 949,732
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 17 Claims



1. A circuit for automatically adjusting a commutation delay from events indicating a position of a polyphase dc motor, comprising:
a driver to supply drive current to selected stator coils of said motor;
a sequencer connected to control the driver to apply drive current to the selected motor coils to rotate the motor;
motor position detecting circuitry connected to detect the events indicating the position of the motor;
a commutation delay circuit connected to increment the sequencer in response to the detection of the events indicating the position of the motor detected by the motor position detecting circuitry;
a circuit for adjusting the delay of said commutation delay circuit between each event and each sequencer commutation to provide optimum motor commutation for maximum power efficiency, said circuit for adjusting the delay of said commutation delay circuit comprising a feedback circuit between said motor position detecting circuitry and said driver, said feedback circuit providing a transfer function of H(s) to provide a desired modification signal for adjusting said delay.

12. A method for automatically adjusting a commutation delay from events indicating a position of a polyphase dc motor, comprising the steps of:
supplying drive current to selected stator coils of said motor in predetermined commutated sequences to rotate the motor;
detecting events indicating the position of the motor;
automatically adjusting a delay between each position indicating event and each commutation sequence to provide optimum motor commutation for maximum power efficiency;
providing a reference signal;
generating a motor position indicating signal from said detected events indicating the position of the motor;
determining a difference between said reference signal and said position indicating signal;
modifying the motor position indicating signal by a transfer function of H(s) to provide a signal for determination of said difference;
and adjusting the drive current to the motor to minimize the difference.

5,285,136
CONTINUOUSLY MONITORED SUPPLEMENTAL OBSTRUCTION DETECTOR FOR GARAGE DOOR OPERATOR
Dean C. Duhame, Roseville, Mich., assignor to Stanley Home Automation, Novi, Mich.
Continuation-in-part of Ser. No. 750,102, Aug. 26, 1991, Pat. No. 5,191,268. This application Feb. 22, 1993, Ser. No. 20,387
Int. Cl.[5] E05F *15/16*; H02H *7/085*
U.S. Cl. 318—266 12 Claims



1. In an automatic door operator having a motor coupled for moving a door between an open and a closed position covering an opening in response to command signals and for reacting to a door obstruction, the improvement comprising:
an obstruction sensor attached to the leading edge of the door, the obstruction sensor comprising a compressible element having first and second ends and at least a pair of conductors extending between the first and second ends, the conductors having a conducive relationship subject to change in response to compression of the compressible element by an obstruction;
a controller controlling operation of the motor corresponding to the command signals;
an electrical coupling between the controller and at least one of the conductors at the first end of the obstruction sensor for supplying electrical power to the conductors;
an oscillator coupled to the conductors at the second end of the obstruction sensor for receiving power from the conductors in the absence of the obstruction and for imparting an oscillating signal to the conductors, whereby the oscillating signal is fed by the electrical coupling to the controller in the absence of the obstruction and the oscillating signal is no fed to the controller when the conducive relationship is changed in response to compression of the compressible element by the obstruction;
the controller being responsive to the oscillating signal for responding to the command signals during the presence of the oscillating signal and for at least stopping the motor to stop the door in the absence of the oscillating signal when the motor is closing the door.

10. An obstruction sensor for a door edge for use in an automatic door system comprising:
a compressible tube having first and second ends and sealed at both ends, the tube being subject to compression upon contact with an obstruction;
means for attaching the tube to a door edge;
conductor means sealed within the tube and extending between the first and second ends;
the conductor means comprising at least two conductors normally spaced when the tube is not compressed and arranged to make contact when the tube is compressed;
terminal conductors connected to the conductor means and extending through a wall of the tube proximate the first end for energizing the conductor means; and
an active modulator sealed within the tube at the second end and electrically connected to the conductor means for

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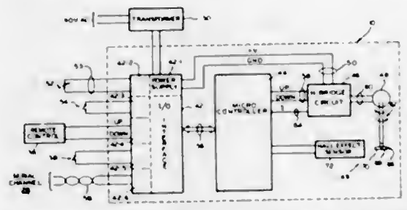
generating a signal when the conductor means is energized and the tube is not compressed.

5,285,137

USER SELECTED CONTROLLER FOR A WINDOW OPERATOR

Thomas J. Midas, and Scott D. McMillan, both of Owatonna, Minn., assignors to Truth Division of SPX Corporation, Owatonna, Minn.

Filed Aug. 30, 1991, Ser. No. 753,186
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—280 **5 Claims**



1. A control for a window operator having an electrically controlled drive for moving a window sash relative to a window frame between open and closed positions, comprising:

first interface circuit means for connection to a user control device which commands movement of the drive to move the window between the open and closed positions and develops a command signal in response thereto receivable by the first interface circuit;

second interface circuit means for connection to a similar second interface circuit means of another control for selectively receiving or transmitting a command to move the same or another window, respectively, between the open and closed positions; and

a controller coupled to said first and second interface circuit means and including input receive means for determining if a command is received from one of said first and second interface circuit means, output drive means coupled to said drive for developing an electrical signal to control said drive responsive to a command being received, and output transmit means for transmitting a command to said second interface circuit means for transmission to such other control incident to the command being received from said first interface circuit means.

5,285,138

WINDSHIELD WIPER CONTROL WITH TIME SEQUENTIAL INDEXING OF WIPER POSITION

Kazukiyo Okada, Kosai, Japan, assignor to ASMO Co., Ltd., Shizuoka, Japan

Filed Aug. 7, 1992, Ser. No. 926,976
Claims priority, application Japan, Aug. 9, 1991, 3-200968
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—280 **7 Claims**

1. A wiper control system for controlling the movement of a wiper, comprising:

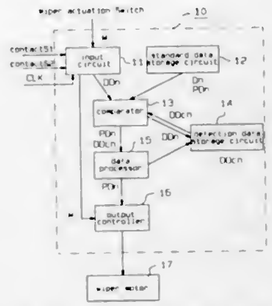
(a) a motor having an output shaft selectively drivable in one of a normal and reverse direction, for driving the wiper;

(b) a wiper position detector, including a plurality of detector contacts, for providing output detection signals indicative of the position of the wiper;

(c) storage means for inputting said output detection signals and storing combinations of said output detection signals in a time-sequential order;

(d) data generation means for generating and storing basic data formed of predetermined time-sequential combinations of said output detection signals to be detected; and

(e) indexing means for comparing said combinations of said output detection signals stored in said storage means with combinations in said basic data which correspond to said combinations of said output detection signals, and for



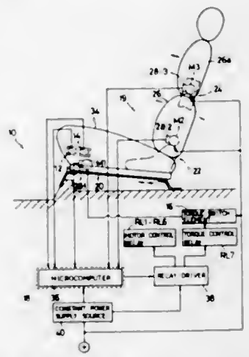
indexing the relative positions of the wiper resulting from the comparison.

5,285,139

METHOD AND DEVICE FOR CONTROLLING MOTOR IN A POWERED SEAT

Hiromitsu Ogasawara, Tokyo, Japan, assignor to Tachi-S-Co. Ltd., Akishima, Japan

Filed May 22, 1992, Ser. No. 888,555
Int. Cl.[5] G05D *3/12*; H02P *3/12*
U.S. Cl. 318—466 **7 Claims**



6. A device for controlling a motor in a powered seat, in which said seat includes a seating posture adjusting device, said device comprising:

a manual switch for causing a manual control of said motor to adjustably actuate said seating posture adjusting device;

an automatic switch for causing an automatic control of said motor to automatically actuate said seating posture adjusting device to a preset seat posture;

a motor torque switch means, by which a predetermined resistor means is selectively brought in electrical connection with a terminal of said motor so as to change a torque of said motor; and

a central processing unit which processes an input data according to a predetermined program, so as to control at least a drive of said motor and an actuation of said motor torque switch means;

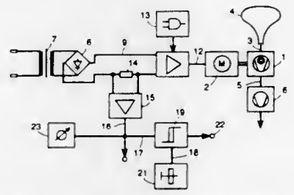
wherein one of normal and reverse drive signals from said manual and automatic switches is detected by said central processing unit, which in turn provides a first period of time defined between one point when said motor starts to drive in normal direction and another point when the normal drive of said motor is stopped, and a second period of time define din reverse direction and another point when the reverse drive of said motor is stopped, and then, said motor torque switch means brings said resistor means in electrical connection, in series, with said motor terminal, only during at least one of said first and second periods of time.

5,285,140

GAS FRICTION PUMP

Anno Schoroth, Königswinter, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Nov. 29, 1990, Ser. No. 620,361
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 8915199
Int. Cl.[5] G01R *19/00*
U.S. Cl. 318—490 **2 Claims**



1. Gas friction pump circuit for the evacuation of a receptacle (4) to a specific pressure comprising:

a gas friction pump (1) with rotor and stator;

a motor (2) for driving the rotor, and

a circuit serving as a power supply for the motor, including a mains portion (7), (8), as well as an output stage (11) that is in connection with the motor and which together form an intermediate circuit (9), for the production of an electrical signal upon a drop below a specific pressure, the intermediate circuit including a current sensor (14), the power supply circuit including an amplifier (15) having an output for supplying output analog signals and having inputs connected through the current sensor to the intermediate circuit, the power supply circuit also including a comparator (19), having a first input connected to the amplifier output and having a second input, the power supply circuit also including a stage (21) serving for the setting of a threshold value connected to a second input of the comparator, the comparator (19) having an output which supplies an electrical signal whenever the current in the intermediate circuit (9) falls below a value corresponding to the set threshold value.

5,285,141

CIRCUIT FOR PREVENTING ABNORMAL ROTATION OF A SPINDLE MOTOR

Yong-ha Hwang, Seoul, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1991, Ser. No. 814,613
Claims priority, application Rep. of Korea, Jan. 25, 1991, 91-1296
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—608 **19 Claims**

1. A circuit for preventing an abnormal rotation of a spindle motor in a spindle motor driving mechanism for rotating an optical disk, comprising:

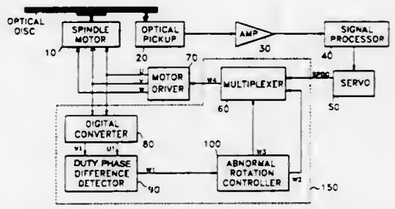
optical pickup means for reading out data from said optical disk to generate a radio frequency signal;

amplifier means for amplifying said radio frequency signal to generate an amplified signal;

signal processor means for comparing said amplified signal and a predetermined reference clock, and for calculating variations in frequencies and phases of said amplified signal;

servo means for combining said variations calculated in said signal processor to generate a spindle motor control signal; and

motor driver means for generating a plurality of phase current signals with respect to said spindle motor control signal and a first control signal, in order to drive the spindle motor;



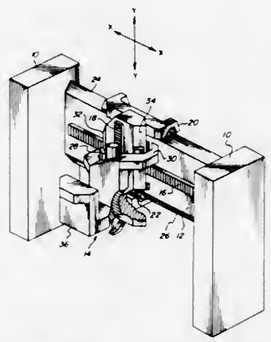
rotational velocity controller means for selecting two of said plurality of phase current signals, and for measuring a duty value of a phase difference between said two of said plurality of phase current signals, and for detecting a rotational velocity of said spindle motor based on said duty value, and for generating said first control signal in response to said detection of the rotational velocity, to enable said motor driver means to forcibly control said rotational velocity so as not to deviate from a predetermined range, thereby preventing abnormal rotation of the spindle motor.

5,285,142

WAFER STAGE WITH REFERENCE SURFACE

Daniel N. Galburt, Wilton, and Geoffrey O'Connor, Fairfield, both of Conn., assignors to SVG Lithography Systems, Inc., Wilton, Conn.

Filed Feb. 9, 1993, Ser. No. 15,520
Int. Cl.[5] G05B *11/00*
U.S. Cl. 318—640 **11 Claims**



1. An electromagnetic alignment apparatus comprising:

a base;

a sub-stage riding on said base;

motor means, associated with said sub-stage, for controlling the position of said sub-stage;

a monolithic stage;

a reference surface beneath said monolithic stage;

a bracket attached to said sub-stage at one end and said monolithic stage at the other end;

suspension means, mounted on the said monolithic stage, for

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suspending and positioning said monolithic stage over said reference surface;

stop means, associated with said monolithic stage and said reference surface, for keeping said monolithic stage within a predetermined distance from said reference surface;

sensing means, associated with said monolithic stage, for sensing the position of said monolithic stage; and

follow control means, associated with said sub-stage, said monolithic stage, and said sending means, for controlling the position of said sub-stage to follow the approximate position of said monolithic stage.

5,285,143

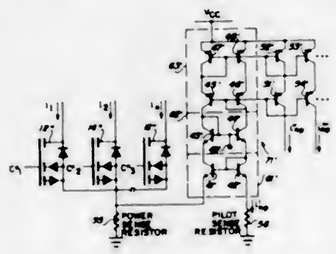
MEASUREMENT OF LOAD CURRENT IN A MULTI-PHASE POWER AMPLIFIER

Allen A. Bahr, and Tony R. Larson, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 740,833, Aug. 6, 1991. This application Jul. 26, 1993, Ser. No. 96,863

Int. Cl.[5] H02P 5/28; H03F 3/04

U.S. Cl. 318—805 **26 Claims**



1. A sensing circuit for monitoring a load current, comprising:

first sense means coupled to a load device for receiving a load current therefrom and providing a load voltage, the first sense means having a first characteristic value;

a voltage follower coupled to the first sense means for receiving the load voltage and providing a sense voltage which follows the load voltage; and

second sense means coupled to the voltage follower for receiving the sense voltage therefrom and providing a sense current, the second sense means having a second characteristic value being a predetermined portion of the first characteristic value wherein the sense current bears the same relationship to the load current as the second characteristic value bears to the first characteristic value.

5,285,144

GENERATION OF MULTI-PHASE MULTIPLE-ORDER HARMONICS OF A FUNDAMENTAL FREQUENCY SOURCE WITH ADJUSTABLE PHASE ANGLE CAPABILITY

John S. Hsu, Round Rock, and Amr M. A. Amin, Austin, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 241,025, Sep. 2, 1988, abandoned. This application Aug. 27, 1990, Ser. No. 574,397

Int. Cl.[5] H02P 7/00

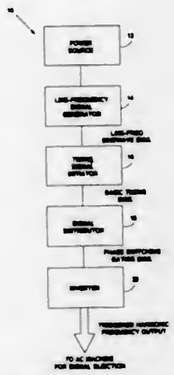
U.S. Cl. 318—807 **10 Claims**

1. A method for generating multi-phase, multiple harmonic order signals of a fundamental frequency signal, said signals having a phase order M and a harmonic order N, said method comprising the steps of:

generating M sets of line-frequency signals, each of said M sets consisting of N line-frequency signals, said line-frequency signals being centered about a reference level and disposed at a predefined equidistant phase angle relative to each other,

said phase angle being adjustable relative to the phase of the fundamental frequency signal so as to provide a different predetermined equidistant phase angle for each of said M sets of line-frequency signals,

detecting, for each set of line-frequency signals, the points at which each of said line-frequency signals crosses said reference level,



using said detected reference level crossing points to generate, for each set of line-frequency signals, a gating signal representing the conditions of common polarity for successive ones of said line-frequency signals in the set, and

using, in combination, said gating signals generated in correspondence to said M sets of line-frequency signals as gate timing signals for generating corresponding phases of the desired signals harmonic.

5,285,145

CURRENT-LIMIT SYSTEM FOR VOLTAGE-TYPE INVERTER

Hirofumi Minowa; Masaru Yamazoe; Takao Yanase; Shin'ichi Ishii, and Yoshinobu Nagao, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP89/00889, § 371 Date Apr. 24, 1990, § 102(e) Date Apr. 24, 1990, PCT Pub. No. WO90/02442, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 30, 1989, Ser. No. 474,051

Claims priority, application Japan, Aug. 30, 1988, 63-215585; Dec. 12, 1988, 63-313497; Dec. 19, 1988, 63-320118; Mar. 6, 1989, 1-53521; May 29, 1989, 1-135045; Jun. 23, 1989, 1-162270

Int. Cl.[5] H02P 5/40

U.S. Cl. 318—808 **2 Claims**

1. A current limit system for use in a voltage-type inverter comprising:

first means for detecting the magnitude of an output current vector of the voltage-type inverter to determine if the magnitude exceeds a predetermined limit value, said first means including:

detecting means for detecting the output currents of said voltage-type inverter; and

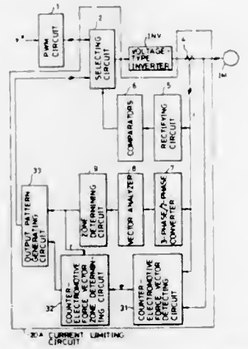
comparator means for comparing said output currents detected by said detecting means with said predetermined limit value;

second mans for determining the location of said output current vector;

sixth means for determining the location of the counterelectromotive force vector of a load of said voltage-type inverter according to the output current and output voltage of said voltage-type inverter; and

seventh means for selecting a voltage vector which reduces said output current in such a way that the rate of reduction of said output current is minimized on the basis of the locations of said output current vector and counter electromotive force vector, and for enabling said voltage-type inverter to produce said selected voltage vector as the output, when the magnitude of said output current vector exceeds its limit value, said seventh means including:

determination means for determining the location of said output current vector and for providing a rotation angle signal that specifies the amount of rotation necessary for the counter-electromotive force vector to rotate with



regard to the determined location of said output current vector;

counter-electromotive force vector determination means for determining the location of said counter-electromotive force vector according to said counter-electromotive force vector provided by said sixth means and said rotation angle signal provided by said determining means; and

output pattern generating means for producing one of the predetermined switching patterns in response to said rotation angle signal and said determination output from said counter-electromotive force vector determination means.

5,285,146

REGULATOR CIRCUIT FOR THE VOLTAGE FOR CHARGING A BATTERY BY AN ALTERNATOR

Jean-Marie Pierret, and Raymond Rechdan, both of Paris, France, assignors to Valeo Equipements Electriques Moteur, Creteil, France

Filed Jul. 16, 1992, Ser. No. 915,055

Claims priority, application France, Jul. 25, 1991, 91 09445

Int. Cl.[5] H02J 7/14

U.S. Cl. 322—25 **9 Claims**

1. A regulator circuit for regulating the voltage delivered by an alternator for charging a battery, comprising;

divider means for generating a predetermined fraction of the voltage delivered by the alternator;

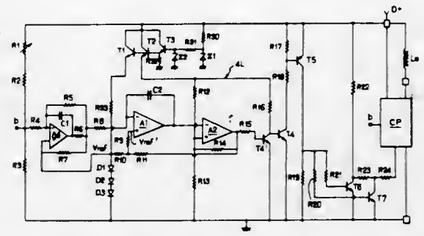
processing an comparing means receiving said predetermined voltage fraction and generating a control signal,

power switching means comprising a first transistor in series with an excitation winding of the alternator and controlled by said control signal so as to regulate said voltage delivered by the alternator,

said processing and comparing means being constructed so as to inherently cause the mean regulated voltage to vary monotonically as a function of the load of the alternator,

semi-conductor correction means comprising a second transistor associated with said first transistor in such a way as to be traversed by a small current equal to a predetermined fraction of the current in said first transistor, current mirror means for recopying said small current, and

offset generation means provided at said divider means for receiving said recopied small current and generating therefrom an offset of said predetermined voltage fraction, said offset varying monotonically with the intensity



of the current in said first transistor and therefore with the load of the alternator, whereby said monotonic variation of the mean regulated voltage is compensated and the mean value of the charging voltage is essentially constant over the whole operating range of the alternator.

5,285,147

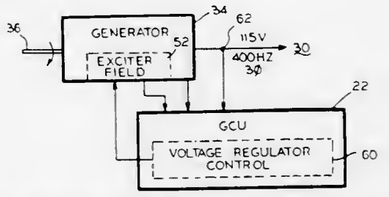
DIGITAL VOLTAGE REGULATOR

Abdul Rasbid, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 430,818, Nov. 2, 1989, abandoned. This application Jun. 19, 1991, Ser. No. 723,720

Int. Cl.[5] H02P 9/00, 9/30

U.S. Cl. 322—28 **12 Claims**



1. In an electrical power generating system having a generator, sensing means for sensing generator system conditions, and means responsive to a control signal for varying generator output power, a voltage regulator comprising:

a digital control circuit comprising a single VLSI digital chip including an input circuit operatively connected to said sensing means and a processor having a memory circuit and an output circuit developing said control signal which comprises a pulse width modulated signal, said processor being responsive to system condition inputs for establishing a duty cycle of the control signal in accordance with an algorithm, which algorithm includes a control loop determining a difference between the sensed system conditions and desired system conditions to determine an error and a gain and compensation function responsive to such error for developing said duty cycle of the pulse width modulated control signal to maintain generator output power at a desired voltage level, and said memory circuit storing said algorithm and coefficients for said gain and compensation function.

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5,285,148

CURRENT-REGULATING CIRCUIT HAVING PARALLEL CONTROL PATHS

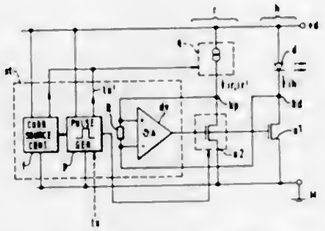
Arnold Uhlenhoff, Emmendingen, and Ulrich Theus, Gundelfingen, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,475

Claims priority, application United Kingdom, Aug. 23, 1991, 91114120

Int. Cl.[5] **G05F** *1/613*

U.S. Cl. 323—272 **20 Claims**



1. A current-regulating circuit, comprising:

a main current path between a first point of reference potential and ground, wherein said main current path includes a first control path in series with an impedance load;

a reference current path between said first point of reference potential and ground, wherein said reference current path includes a second control path in series with a current source; and

a control means for regulating the current in said main current path by controlling said first and second control paths in parallel, wherein said control means includes an operational amplifier having an inverting input coupled to said first control path and noninverting input coupled to said second control path.

5,285,149

METHOD FOR LOADING AN ADAPTER FOR A DEVICE FOR TESTING PRINTED CIRCUIT BOARDS

Heimo Galdik, Dornstaqtdt-Temmenhausen; Hans-Hermann Higgen, Stadthagen; Ruediger Dehmel, Wunstorf, and Martin Maelzer, c/o Martin Maelzer and Erich Luther, Hagenburger Strasse 26, D-3050 Wunstorf, all of Fed. Rep. of Germany, assignors to Martin Maelzer and Erich Luther, Wunstorf, Fed. Rep. of Germany

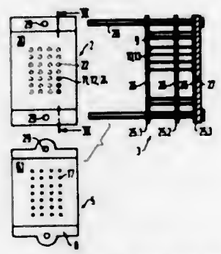
PCT No. PCT/EP90/02324, § 371 Date Oct. 8, 1991, § 102(e) Date Oct. 8, 1991, PCT Pub. No. WO91/12532, PCT Pub. Date Aug. 22, 1991

PCT Filed Dec. 28, 1990, Ser. No. 768,857

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004933; Nov. 12, 1990, 4035978

Int. Cl.[5] **G01R** *1/06*; **H05K** *3/00*

U.S. Cl. 324—158 F **12 Claims**



1. A method for loading an adapter for a printed circuit board testing device with adapter pins having heads and contact ends, said method comprising the steps of first transferring said adapter pins from at least one main magazine in which they can hang by their heads in one orientation of the main magazine while extending through main magazine holes, into an intermediate magazine having holes for such adapter pins, such adapter pins being introduced into the intermediate magazine holes by way of their gravity while the main magazine is inverted from said one orientation, and thereafter transferring said pins rom the intermediate magazine into the adapter with the contact ends of said pins first, the introduction of the adapter pins into the adapter also being effected by way of their gravity, the main magazine and the intermediate magazine being assembled during said first transferring such that the holes for such pins in each magazine are in alignment with one another and the adapter pins are transferred with their heads first from the main magazine into the intermediate magazine by means of their gravity.

5,285,150

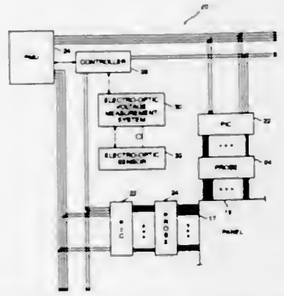
METHOD AND APPARATUS FOR TESTING LCD PANEL ARRAY

Francois J. Henley, Los Gatos, and Michael J. Miller, Sunnyvale, both of Calif., assignors to Photon Dynamics, Inc., Milpitas, Calif.

Filed Nov. 26, 1990, Ser. No. 618,183

Int. Cl.[5] **G01R** *31/02, 31/26*

U.S. Cl. 324—158 R **5 Claims**



1. A method for testing a panel array of circuit elements, each element coupled to a pair formed by a drive line and a gate line, each of the drive lines being coupled to one of two opposing first boundaries of the panel and each of the gate lines being coupled to second boundaries of the panel which are adjacent and generally orthogonal to said first boundaries, the panel being logically configurable into to test zones, the method comprising the steps of:

isolating the test zones having a cross short defect, each one of said test zones having a set of drive lines coupled to the first boundaries and a set of said gate lines coupled to the second orthogonal boundaries; and thereafter

inspecting without establishing individual physical connections to each circuit element within said zone, one of said isolated test zones to identify the location of said cross short defect within said isolated zone by inputting a first voltage signal to said set of drive lines for the isolated zone and a second voltage signal, distinguishable from the first voltage signal, to said set of gate lines, for said isolated zone; thereupon

for each drive line of said set of drive lines, electo-optically sampling voltage magnitude along each one of said drive lines by means of voltage imaging, wherein a difference between said sampled voltage and said first voltage signal signifies the presence of a defect along the electro-optically sampled drive line; and

for each gate line of said set of gate lines, electro-optically sampling a voltage along each one of said gate lines, wherein a difference between said sampled voltage and said second voltage signal signifies presence of a defect along the electro-optically sampled gate line.

5,285,151

METHOD AND APPARATUS FOR MEASURING THE BREAKDOWN VOLTAGE OF SEMICONDUCTOR DEVICES

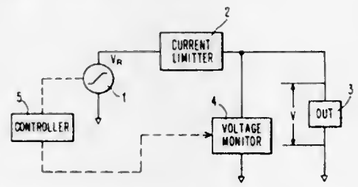
Hideo Akama, and Hiroshi Nada, botb of Tokyo, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 20, 1992, Ser. No. 854,205

Claims priority, application Japan, Mar. 22, 1991, 3-83554

Int. Cl.[5] **G01R** *31/20*

U.S. Cl. 324—158 R **8 Claims**



5. An apparatus for measuring a breakdown voltage of a device under test (DUT), comprising:

(a) source means for applying a voltage and a current to said DUT;

(b) monitor means for monitoring the voltage across said DUT; and

(c) controller means for controlling said source means so as to effect the application to said DUT of an increasing voltage characterized by a gradient, and controlling said monitor means to effect the detection of an initial value of said gradient before the breakdown of said DUT and the determination of a first instant of time (t_1) when said gradient is reduced to a prescribed fraction of said initial value, and to effect the measurement of the breakdown voltage of said DUT at a second instant of time (t_2) that bears a predefined relation to said first instant of time.

5,285,152

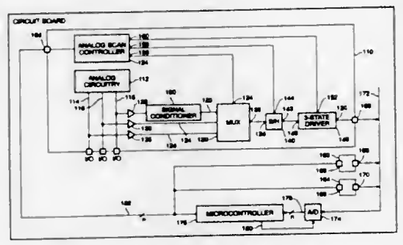
APPARATUS AND METHODS FOR TESTING CIRCUIT BOARD INTERCONNECT INTEGRITY

Paul W. Hunter, San Jose, Calif., assignor to MiniStar Peripherals International Limited, San Jose, Calif.

Filed Mar. 23, 1992, Ser. No. 855,437

Int. Cl.[5] **G01R** *15/12*

U.S. Cl. 324—158 R **7 Claims**



5. A diagnostic architecture for analyzing the functioning of a plurality of analog integrated circuits, said architecture comprising:

a test access port including input and output pins;

a plurality of analog integrated circuits, each of said analog integrated circuits having: at least one analog function circuit disposed in a circuit portion of one of the analog integrated circuits, said analog function circuit including at least one circuit node, said circuit node characterized by the presence of a characteristic analog voltage signal when said function circuit is properly connected and operating,

an analog multiplexer having a plurality of analog inputs, an analog output, and at least one control input, each of said analog inputs connected to a different one of said circuit nodes through a buffer,

a sample/hold amplifier having a sample input connected to the output of said analog multiplexer, an output, and a control input,

a three-state buffer amplifier having an input connected to said output of said sample/hold amplifier, an output operatively connected to one of said test access port output pins, and a three-state control input, and

an analog scan controller having at least one input, and having a first output connected to said control input of said analog multiplexer, a second output connected to said control input of said sample/hold amplifier, and a third output connected to said three-state control input of said three-state buffer amplifier, said analog scan controller responsive to test command signals applied to said test access port for controlling said analog multiplexer, said sample/hold amplifier, and said three-state buffer amplifier;

a common analog signal line connected to said outputs of said three-state buffer amplifiers of the analog integrated circuits;

an A/D converter having an analog input connected to said common analog signal line, and a digital output bus for communicating digital output data representing said characteristic analog voltage signals;

microcontroller means, operatively connected to the plurality of analog integrated circuits and to said A/D converter, for providing said test command signals to each of the analog integrated circuits, for obtaining digital output data from said A/D converter, and for comparing said digital output data with predetermined values.

5,285,153

APPARATUS FOR FACILITATING SCAN TESTING OF ASYNCHRONOUS LOGIC CIRCUITRY

Bahram Ahanin, Cupertino; Craig S. Lytle, Palo Alto, and Ricky W. Ho, Sunnyvale, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Division of Ser. No. 611,974, Nov. 13, 1990, Pat. No. 5,166,604.

This application Sep. 21, 1992, Ser. No. 947,729

Int. Cl.[5] **G01R** *31/28*

U.S. Cl. 324—158 R **6 Claims**

4. Scan testing logic circuitry for facilitating testing of asynchronous logic, comprising:

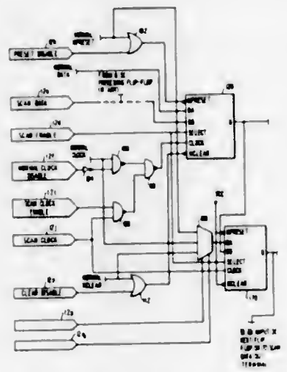
a plurality of registers (**20-1, 20-2, 20-n, 120**) each having at least one control input terminal (NPRESET, CLOCK, NCLEAR) selected from the group consisting of a preset input terminal (NPRESET), a clock input terminal (CLOCK), and a clear input terminal (NCLEAR);

a plurality of logic gate means (**102, (106, 108, 110), 112**) each having a first logic gate means input terminal (NORMAL NPRESET, NORMAL CLOCK, NORMAL NCLEAR), a second logic gate means input terminal (**12*h*, 12*j*, 12*k***), and a logic gate means output terminal (NPRESET, CLOCK, NCLEAR), wherein each logic gate means output terminal is connected to a respective one of the control input terminals (NPRESET, CLOCK, NCLEAR), wherein each first logic gate means input terminal receives a normal asynchronous control signal (NORMAL NPRESET, NORMAL CLOCK, NORMAL NCLEAR) generated by the asynchronous logic, each normal asynchronous control signal being selected from the group consisting of a normal preset input signal

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(NORMAL NPRESET), a normal clock input signal (NORMAL CLOCK), and a normal clear input signal (NORMAL NCLEAR), and wherein each second logic gate means input terminal receives a gate control signal (PRESET DISABLE, NORMAL CLOCK DISABLE, CLEAR DISABLE) for selectively (a) enabling the logic gate means to direct the normal asynchronous control signal at the first logic gate means input terminal to the logic gate means output terminal when it is desired to allow normal operation of the asynchronous logic and (b) gating off the normal asynchronous control signal at the first logic gate means input terminal when it is desired to perform scan testing of the asynchronous logic;

means (170) for storing each normal asynchronous control signal (NORMAL NPRESET, NORMAL CLOCK, NORMAL NCLEAR) that is gated off during scan testing, the means (170) for storing having a means for storing



data input terminal (DA) for receiving the normal asynchronous control signals; and

a multiplexer (160) having a multiplexer output terminal (DA) connected to the means for storing data input terminal (DA) and having a plurality of multiplexer input terminals (NORMAL NPRESET, NORMAL CLOCK, NORMAL NCLEAR) each receiving one of the normal asynchronous control signals (NORMAL NPRESET, NORMAL CLOCK, NORMAL NCLEAR) that are gated off during scan testing, wherein the multiplexer (160) has a multiplexer control input terminal (12*p*, 12*q*) for receiving multiplexer control signals, the multiplexer directing a selected one of the normal asynchronous control signals present at the multiplexer input terminals to the multiplexer output terminal in response to the multiplexer control signals, so that the selected one of the normal asynchronous control signals is stored by the means (170) for storing.

5,285,154

SATURABLE CORE PROXIMITY SENSOR ALIGNED PERPENDICULAR TO A MAGNET TARGET HAVING A PLATE AND A NON-MAGNETIC METAL HOUSING

Bernard J. Burreson, Seattle, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Oct. 15, 1991, Ser. No. 777,663

Int. Cl.[5] G01B *7/14*

U.S. Cl. 324—207.16 **17 Claims**

1. A saturable core proximity sensor comprising:

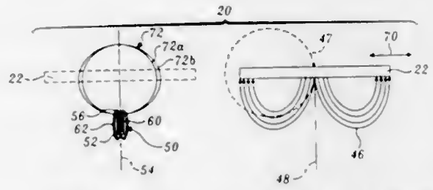
a magnetic target that includes:

a magnet having a front face and a back face that produces a magnetic field in front of, in back of, and to the sides of the magnet;

a plate positioned adjacent the magnet for reducing the magnetic field in the back of and at the sides of the magnet and for increasing the distance at which the magnetic field extends in a direction perpendicular to the front face of the magnet;

sensor means for detecting said magnetic field and for indicating when said sensor means is positioned within a predetermined proximity of said target means, said sensor means including;

a core having a longitudinal axis that is aligned substantially perpendicular to the front face of the magnet, wherein said core has a cross-sectional area in a plane perpendicular to the longitudinal axis that is substantially smaller than a cross-sectional area of the core along the longitudinal axis so that the core magnetically saturates when exposed to magnetic fields of a predetermined flux density that extend along the longitudinal axis of the core but does not saturate when exposed to



magnetic fields of the predetermined flux density that extend in a direction other than along the longitudinal axis of the core; and

an inductive element surrounding said core, wherein the inductive element produces a second magnetic field that flows through the core and through an airgap that exists between the ends of the core, wherein said core and inductive element have an inductance that is less than a predetermined value when said core is saturated by the magnetic field produced by the magnet and an inductance that is greater than said predetermined value when said core is not saturated by the magnetic field produced by the magnet; and

cancellation means associated with said magnetic target for canceling electromagnetic fields created by currents generated by a source external to said sensor such that said fields substantially do not intercept said magnetic target.

5,285,155

METHOD AND APPARATUS FOR MAGNETIC FLUX LOCKING BASED UPON A HISTORY OF PLURAL COMPARISONS OF THE SQUID OUTPUT SIGNAL AND A PREDETERMINED SIGNAL

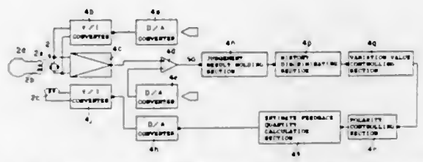
Tomoaki Ueda, Kyoto; Yasuto Yanagida, and Masahiro Tanaka, both of Shiga, all of Japan, assignors to Daikin Industries, Ltd., Japan

Filed Sep. 27, 1991, Ser. No. 766,101

Claims priority, application Japan, Sep. 30, 1990, 2-262018

Int. Cl.[5] G01R *33/02, 33/035*

U.S. Cl. 324—248 **4 Claims**



1. A magnetic flux locking method which maintains a magnetic flux guided to a superconductive loop of a SQUID at a constant magnetic flux by supplying a feedback signal to a feedback coil of said SQUID for compensation for variations in the magnetic flux guided to said superconductive loop by an input coil, said SQUID being housed in a casing which is refrigerated to a temperature below a critical temperature for superconductivity, said method comprising the steps of:

judging whether or not an output signal output from opposite ends of said superconductive loop of said SQUID is greater than a predetermined signal to obtain a judgement result representative of a shifting of direction of said output signal with respect to said predetermined signal, said SQUID being supplied with a predetermined bias and said predetermined signal corresponding to a point in a monotonously varying portion of a magnetic flux-voltage conversion coefficient function of said SQUID;

holding a plurality of judgement results obtained from said judging of output signals from said superconductive loop relative to said predetermined signal in a time sequential manner to obtain a history of said judgement results;

varying a variation value component of said feedback signal based upon said history of said judgement results to obtain a varied variation value component, said step of varying a variation value including the steps of incrementing said variation value as said judgement results continue to be the same, and decrementing said variation value as different judgement results are obtained alternately;

providing a signal having a value determined based upon a most recent judgement result and said varied variation value component; and

supplying said signal having said determined value to said feedback coil of said SQUID as said feedback signal.

5,285,156

MEASUREMENT OF CROSS-RELAXATION RATES BETWEEN SELECTED PAIRS OF NUCLEI

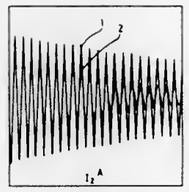
Geoffrey Bodenhausen, Pully; Irene Burghardt, Renens; Robert Konrat, Morges, and Sebastien Vincent, Lausanne, all of Switzerland, assignors to Spectrospin AG, Switzerland

Filed May 28, 1992, Ser. No. 891,156

Claims priority, application European Pat. Off., May 30, 1991, 91 108878.9

Int. Cl.[5] G01R *33/00*

U.S. Cl. 324—307 **25 Claims**



1. Method for measuring cross-relation rates in a sample using high resolution nuclear magnetic resonance (NMR) spectroscopy in which a homogeneous static magnetic field B_0, in a direction of a Z-axis, causes alignment of longitudinal components I_Z^A, I_Z^X of magnetization vectors I^A, I^X of nuclei A, X during a time interval τ_m, said A, X nuclei having different chemical shifts Ω_A and Ω_X, said method comprising the steps of:

irradiating the sample with a composed radio-frequency (rf) field comprising at least two weak, selective component fields with frequencies selected in order to cause the magnetization vectors I^A and I^X to nutate in a synchronous fashion, remaining spins of the sample substance being substantially unaffected; and

subjecting the sample to a rf-pulse sequence in order to transfer longitudinal magnetization into a transverse magnetization and create a rf-signal for reception by a detector.

5,285,157

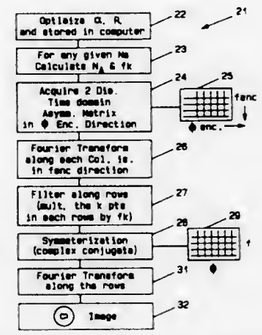
REDUCTION OF TRUNCATION CAUSED ARTIFACTS

Yuval Zur, Haifa, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Apr. 27, 1992, Ser. No. 874,103

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **11 Claims**



1. A method for improving an acquired magnetic resonance image (MRI) of an object by reducing overshoot in the image which is visible as a ringing artifact, said overshoot being caused by Fourier transforming, for a finite amount of time, data obtained by sampling a signal in the time domain at a number of sampling points, said signal containing frequency and phase information of said imaged object; said method comprising the steps of:

a) choosing a filter having filter coefficients;

b) analytically determining an optimized value of a which controls a filter characteristics, such as the shape of the filter, and an optimized value of R which is an asymmetrical sampling ratio in order to reduce the overshoot while maintaining the spatial resolution and signal-to-noise ratio (SNR) of the image without changing the number of sampling points, where R is equal to:

$$R=(N_A-N_S)/N_A=(N2/2)/N_A$$

wherein N_A=total number of sampling points after complex conjugation to cause symmetrical sampling, and N_S=total number of sampling points in asymmetrical sampling;

c) asymmetrically sampling said acquired signals to obtain a two dimensional time domain matrix of data containing rows and columns;

d) Fourier transforming the obtained data matrix along the column direction;

e) filtering by multiplying said transformed data matrix by said filter coefficients in the row direction in order to provide filtered transformed data, that: (1) reduces the overshoot; (2) degrades the resolution; and (3) increases the signal-to-noise ratio;

f) obtaining symmetrical data by complex conjugation of the filtered data matrix along the row direction which: (1) increases the amount of data and consequently improves the resolution, (2) compresses the overshoot causing the ringing artifacts, and (3) decreases the signal-to-noise ratio;

g) Fourier transforming the symmetrical data in the row direction to obtain the image data; and

h) processing the image data to obtain an image over the same number of scanned points in a comparable scan and processing time with reduced ringing artifacts and with relative resolution and relative signal-to-noise substantially equal to unity.

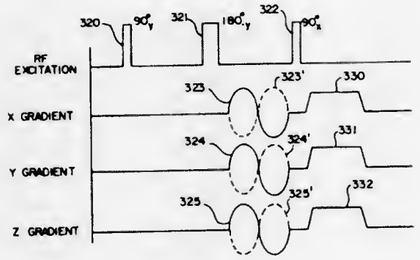
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5,285,158

NMR ANGIOGRAPHY USING FAST PULSE SEQUENCES WITH PREPARATORY PULSES

Charles A. Mistretta; Frank R. Korosec, both of Madison; David M. Weber, Middleton, and Thomas M. Grist, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Aug. 6, 1992, Ser. No. 926,658
Int. Cl.[5] G01R *33/70*
U.S. Cl. 324—309 8 Claims



1. A method for producing an angiogram using fast NMR pulse sequences, the steps comprising:

a) applying a polarizing magnetic field to spins located in a region of interest;

b) performing a first data acquisition comprised of a preparatory pulse sequence followed by a set of fast NMR pulse sequences, each fast NMR pulse sequence including:

applying an RF pulse to the spins in the region of interest,

applying a phase encoding gradient pulse to the spins in the region of interest to define a view which is different for each fast NMR pulse sequence in said set; and

acquiring an NMR signal;

and said preparatory pulse sequence including:

applying a first 90° RF pulse to the spins in the region of interest;

applying a 180° RF pulse to the spins in the region of interest;

applying a second 90° RF pulse to the spins in the region of interest; and

applying a bipolar motion encoding magnetic field gradient to the spins in the region of interest prior to the application of said second 90° RF pulse, said bipolar motion encoding magnetic field gradient having a selected first moment;

applying a dephasing gradient pulse to the spins in the region of interest after the application of said second 90° RF pulse;

c) performing a second data acquisition comprised of said preparatory pulse sequence followed by said set of fast NMR pulse sequences, wherein the bipolar motion encoding magnetic field gradient in the second data acquisition has a different first moment;

d) subtracting the set of NMR signals in one of said data acquisitions from the corresponding NMR signal in the other of said data acquisitions to produce a set of difference data; and

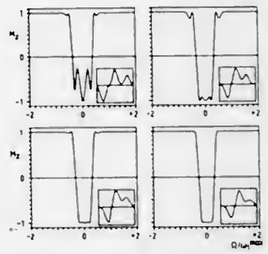
e) producing an angiogram from the difference data.

5,285,159

RF PULSE CASCADE FOR THE GENERATION OF NMR SPECTRA

Geoffrey Bodenhausen, Pully, and Lyndon Emsley, Lausanne, both of Switzerland, assignors to Spectrospin AG, Ind., Fallanden and Bruker Analytische Messtechnik GmbH, Rheinstetten

PCT No. PCT/EP90/01681, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/09322, PCT Pub. Date Jun. 27, 1991
PCT Filed Oct. 6, 1990, Ser. No. 852,235
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1989, 3940633
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—314 18 Claims



1. A method for generating a spectrum of nuclear magnetic resonance signals comprising the steps of:

a) selecting a pulse sequence with a number n of at least 2 but not more than 10 amplitude modulated bell shaped RF pulses, each RF pulse comprising an amplitude w_k^{max}, an extremum position t_k^{max}, and a width a_k;

b) varying the amplitude, extremum position, and width of each pulse to minimize a deviation of a signal response frequency space envelop from a rectangular function:

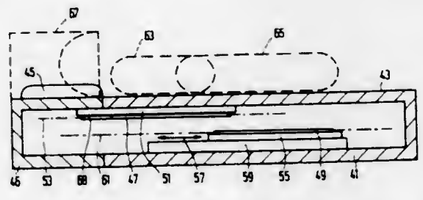
c) radiating the pulse sequence onto a sample located in a homogeneous static magnetic field to produce a nuclear magnetic resonance signal response with an approximately rectangular frequency space envelope.

5,285,160

MAGNETIC RESONANCE APPARATUS COMPRISING ADJACENTLY ARRANGED RF COILS SYSTEMS

Albertus L. J. G. M. Loos; Otto R. A. M. Selder, and Teunis R. Van Heelsbergen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,575
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 20 Claims



1. A magnetic resonance apparatus, comprising a magnet system (1) for generating a steady magnetic field, a magnet system (3) for generating gradient fields, an RF transmitter coil (9) and an RF receiver coil system (13) comprising first and second RF coil systems (47, 49) for the detection of resonance signals generated in first and second regions of an object to be

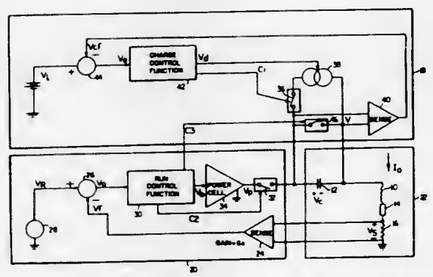
arranged on a supporting face (43), which regions are adjacently situated in a first direction (57), each of said first and second RF coil systems comprising at least a surface coil, characterized in that the first RF coil system (47) is arranged in a predetermined stationary position relative to the supporting face (43) and the second RF coil system (49) is carried by means for displacing the position of said second RF coil system (49) in the first direction relative to the first RF coil system (43) in order to enable adjustment of the location of the second RF coil system relative to the first RF coil system to accommodate an actual distance in the first direction between the first and second regions in the object.

5,285,161

CIRCUITRY FOR DRIVING FIELD-GENERATING COIL OF MAGNETIC RESONANCE IMAGING SYSTEM

Richard Rzedzian, Lexington, and Stephen Crump, Newton Center, both of Mass., assignors to Advanced NMR Systems, Inc., Wilmington, Mass.

Continuation of Ser. No. 537,380, Jun. 13, 1990, abandoned.
This application Jun. 1, 1993, Ser. No. 70,639
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—322 22 Claims



1. Circuitry for generating a magnetic field in a magnetic resonance imaging system by driving a magnetic-field-generating coil with a sinusoidal waveform of a selected amplitude and selected frequency, the circuitry comprising:

a current-carrying coil for generating a magnetic field;

a capacitive element connected in series with the coil, said coil and capacitive element forming a series resonant circuit having said selected frequency as its resonant frequency;

a first switch circuit connected in series with said capacitive element, said first switch circuit having an open position in which current through the coil and capacitive element is interrupted and a closed position in which current is permitted to flow;

a power source connected in series with said coil, capacitive element and said first switch circuit, said power source being configured to drive said series connected capacitive element and coil with a sinusoidal signal at said selected frequency when said first switch circuit is in the closed position; and

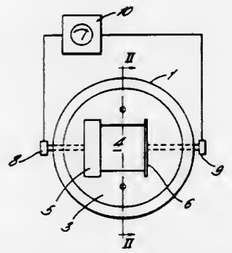
a precharging circuit connected to said capacitive element for storing energy in said capacitive element in an amount sufficient to cause said series connected capacitive element and coil to resonant at said selected frequency and selected amplitude when said first switch is initially closed.

5,285,162

GALVANIC CURRENT MEASURING METHOD AND APPARATUS FOR MONITORING BUILD-UP OF BIOLOGICAL DEPOSITS ON SURFACES OF DISSIMILAR METAL ELECTRODES IMMERSED IN WATER

James O. Davies, Gravesend, United Kingdom, assignor to National Power Plc, Swindon, England

PCT No. PCT/GB89/01522, § 371 Date Jun. 24, 1991, § 102(e) Date Jun. 24, 1991, PCT Pub. No. WO90/07710, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 20, 1989, Ser. No. 720,525
Claims priority, application United Kingdom, Dec. 23, 1988, 8830161
Int. Cl.[5] G01N *27/42;* C12M *1/34*
U.S. Cl. 324—425 11 Claims



2. Apparatus for monitoring the build-up of biological deposits on surfaces immersed in water, comprising:

a housing;

a pair of opposed plate members of dissimilar metals within said housing, defining a passage for the water to flow therebetween as the water flow through said housing forming electrodes; and

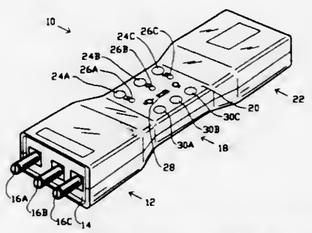
means for monitoring galvanic current developed between the plate electrodes to indicate the build-up of biological deposits on said plate electrodes.

5,285,163

ELECTRICAL CABLE CONTINUITY AND VOLTAGE TESTER

William A. Liotta, 27520 N. Sierra Hwy., Apt. A206, Canyon Country, Calif. 91351

Filed May 7, 1992, Ser. No. 879,271
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—508 13 Claims



1. A hand-held electrical tester for testing electrical extension cables and energized power outlets, comprising:

an insulated elongated housing having a plug end portion, a central portion, and a socket end portion opposite the plug end portion;

an electrical plug, disposed in the plug end portion, having a plurality of male contact members;

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an electrical socket, disposed in the socket end portion, having a plurality of female contact members;

a plurality of like user-operable test switches each in a plug circuit branch having a first node connected to a corresponding one of said male contact members;

a plurality of visual indicators each in a socket circuit branch having a first node connected to a corresponding one of the female contact members;

a battery, contained in said housing;

cable test circuit means interconnecting the male contact members, said test switches, said battery, said visual indicators and the female contact members in a manner such that, when a correctly wired cable is connected to said plug and said socket, actuation of any one of said test switches is caused to energize a corresponding one of said visual indicators so as to indicate correct wiring the cable, said plug circuit branches each having a second node connected in common to a first node of a cable test circuit branch, said socket circuit branches each having a second node connected in common to a second node of the cable test circuit branch, and said battery being provided with battery connection means for connecting said battery in series in the cable test circuit branch; and

a plurality of visual voltage-indicating devices each connected between a different pair of the male contact members, whereby correct powering of an electrical outlet under test by engagement with said plug is indicated by illumination of only predetermined ones of said voltage-indicating devices.

5,285,164

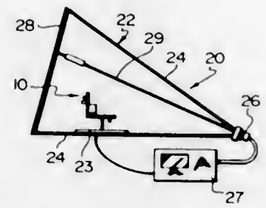
ELECTROMAGNETIC RADIATION MEASUREMENT APPARATUS

Larry K. Wong, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 30, 1992, Ser. No. 921,671

Int. Cl.[5] H01Q *17/00*; G01R *31/00*

U.S. Cl. 324—628 **9 Claims**



1. Apparatus for use in measuring electromagnetic radiation from an electronic component comprising a transverse electromagnetic cell having a station for location of the component to be tested, an electromagnetic radiation receiver spaced from the location station for passing signals to signal receiving equipment, the signals dependent upon electromagnetic radiation from the component, a septum electrically connected to the receiver and extending across the cell with one major surface of the septum facing towards the location station, the septum electrically connected to wall means of the cell, said wall means remote from and directed towards the receiver, and radiation absorbent means provided by said wall means, the radiation absorbent means comprising a non-porous substantially flat surface layer facing towards the receiver, the layer containing a lossy substance to absorb electromagnetic radiation received upon the wall means.

5,285,165

NOISE ELIMINATION METHOD

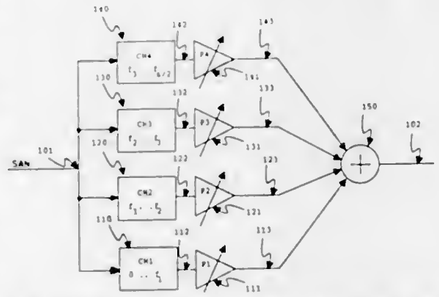
Markku K. Renfors, Oraskatu 7, Tampre, Finland SF-33800 ; Yrjö A. O. Neuvo, Parkanonkatu 3, Tampere, Finland SF-33720 ; Jorma J. Mäkinen, Orivendenkatu 8E109, Tampere, Finland SF-33720 ; Aarne H. K. Tenhunen, Lindforsinkatu 10B23, Tampere, Finland SF-33720 , and Juha Rapeli, Kosteperänkatu 2B34, Oulu, Finland SF-90100

Continuation-in-part of Ser. No. 349,160, May 9, 1989, abandoned. This application Jul. 14, 1992, Ser. No. 913,675

Claims priority, application Finland, May 26, 1989, 882494

Int. Cl.[5] H03B *1/00*; H04B *1/10*

U.S. Cl. 328—167 **10 Claims**



1. An improved method to attenuate noise from a noisy input signal in order to generate a noise attenuated output signal, comprising the steps of:

(a) dividing the noisy input signal into a plurality of channels with respect to signal frequency;

(b) estimating a noise component in each channel separately by

i) determining if the divided signal has a constant value over a predetermined period of time, indicating noise, as compared to a continually changing value, indicating the presence of desired signal, said constant value being a reference level, and

ii) detecting an amount by which the divided signal exceeds the reference level;

(c) adjusting gain separately for each channel in inverse proportion to the amount of detected excess to create gain adjusted signals; and

(d) combining said gain adjusted signals from each channel to construct the noise attenuated output signal.

5,285,166

METHOD OF EXTRACTING CHARGED PARTICLES FROM ACCELERATOR, AND ACCELERATOR CAPABLE OF CARRYING OUT THE METHOD, BY SHIFTING PARTICLE ORBIT

Kazuo Hiramoto, Hitachiota; Masatsugu Nishi, Katsuta, and Akifumi Itano, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Director General of National Institute of Radiological Sciences, Chiba, both of Japan

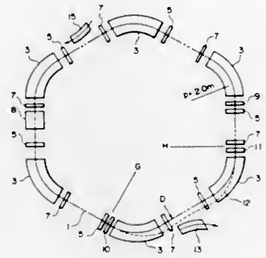
Filed Mar. 26, 1992, Ser. No. 857,660

Claims priority, application Japan, Oct. 16, 1991, 3-267351

Int. Cl.[5] H05H *7/00, 11/00*

U.S. Cl. 328—233 **30 Claims**

1. A method of extracting a charged particle beam from an accelerator by exciting a betatron oscillation of charged particles to a specified resonance, comprising a step of changing a resonant state of the betatron oscillation by shifting an equilibrium orbit of the charged particles in one of a bending magnet and a magnet having multipole components greater than six poles, the magnets being included in the accelerator.



5,285,167

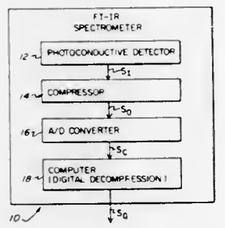
METHOD AND APPARATUS FOR SIGNAL COMPRESSION

Robert M. Carangelo, Glastonbury, Conn., assignor to On-Line Technologies, Inc., East Hartford, Conn.

Filed Jul. 22, 1992, Ser. No. 917,859

Int. Cl.[5] H03F *3/38*; H01J *40/14*; G01B *9/02*

U.S. Cl. 330—10 **20 Claims**



18. A system for producing a digitized analog signal, comprising:

a Fourier transform spectrometer providing means for generating an input analog A.C. electrical signal representing an interferogram and having a time-varying amplitude feature, and providing a photoconductive detector and a digital computer, said signal oscillating about zero and having a small peak region;

apparatus for effecting the compression of said input signal, so as to produce a compressed output signal; and

convertor means for converting said output signal to digital form, said digital computer providing means for effecting digital decompression of said output signal so as to produce a signal that emulates said input signal.

5,285,168

OPERATIONAL AMPLIFIER FOR STABLY DRIVING A LOW IMPEDANCE LOAD OF LOW POWER CONSUMPTION

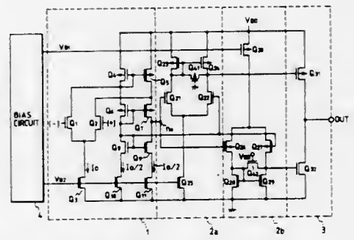
Takashi Tomatsu, Fuchu, and Takaaki Noda, Higashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyo and Akita Electronics Co., Ltd., Akita, both of Japan

Filed Sep. 15, 1992, Ser. No. 944,921

Claims priority, application Japan, Sep. 18, 1991, 3-267247; Aug. 10, 1992, 4-212753

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—253 **8 Claims**



1. An operational amplifier comprising:

a differential input stage;

a push-pull type output stage; and

level shifting means for level-shifting the output of said differential input stage to transmit the level-shifted output to said push-pull type output stage,

wherein said level shifting means includes: a first differential amplifier having a current mirror type load including a pair of P-channel type MOSFETs; and a second differential amplifier having a current mirror type load including a pair of N-channel type MOSFETs, and wherein a resistance element is connected between the drain terminals of each of said pairs of MOSFETs.

5,285,169

MONOLITHIC INTEGRATED DIFFERENTIAL AMPLIFIER WITH DIGITAL GAIN SETTING

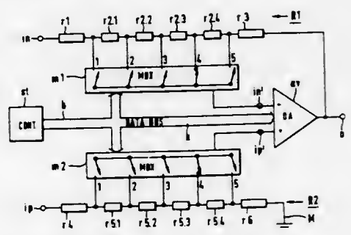
Ulrich Theus, Gundelfingen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 929,608

Claims priority, application European Pat. Off., Aug. 24, 1991, 91114232.1

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—254 **18 Claims**



8. A differential amplifier having means for adjusting the gain over a wide bandwidth, comprising:

an operational amplifier having an input terminal and an output terminal, wherein said operational amplifier includes:

a first transconductance amplifier as an input stage, said

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first transconductance amplifier further including a differential stage comprising a first p-channel transistor and a second p-channel transistor coupled to said first p-channel transistor by a common source terminal, wherein said common source terminal is supplied with a first source current, said first p-channel transistor and said second p-channel transistor have fixed channel lengths and fixed channel widths, wherein the transconductance of said first transconductance amplifier is variable in steps by means of at least one paralleling stage which is identical in design to said differential stage of said first transconductance amplifier;

a second transconductance amplifier as an output stage, said second transconductance amplifier including an input terminal and an output terminal, said second transconductance amplifier being coupled to said first transconductance amplifier; and

a negative feedback network coupled between said input terminal and said output terminal of said second transconductance amplifier, wherein said negative feedback network determines the frequency response of said operational amplifier;

a switching means coupled to said input terminal of said operational amplifier for varying the resistance appearing at said input terminal of said operational amplifier; and

an adjusting means coupled to said switching means for varying the gainbandwidth product of said operational amplifier according to the input resistance selected by said switching means.

5,285,170

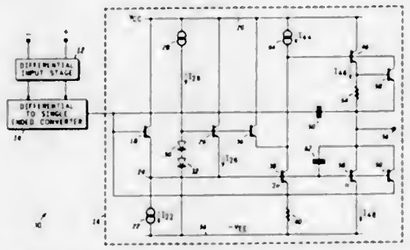
OPERATIONAL AMPLIFIER WITH ALL NPN TRANSISTOR OUTPUT STAGE

Troy L. Stockstad, Phoenix; Robert L. Vyne, and Thomas D. Petty, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1992, Ser. No. 983,357

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—255 **14 Claims**



10. An output stage of an operational amplifier, comprising:

a first NPN transistor having a base, an emitter and a collector, said collector being coupled to a first power supply conductor, said emitter being coupled to an output of the output stage;

a second NPN transistor having a base, an emitter and a collector, said emitter being coupled to a second power supply conductor, said collector being coupled to said output of the output stage;

a third NPN transistor having a base, an emitter and a collector, said base receiving an input signal, said collector being coupled to said first power supply conductor, said emitter being coupled to said base of said second NPN transistor at a first node;

first current supply means having an output coupled to said first node for sinking a predetermined current;

a fourth NPN transistor having a base, an emitter and a collector, said base being coupled to said first node, said collector being coupled to said base of said first NPN transistor, said emitter being coupled to said second power supply conductor;

second current supply means having an output coupled to said collector of said fourth NPN transistor for sinking a predetermined current;

a fifth NPN transistor having a base, an emitter and a collector, said emitter being coupled to said first node;

third current supply means having an output for providing a predetermined current;

a first diode having an anode and a cathode, said anode being coupled to said output of said third current supply means and to said base of said fifth NPN transistor; and

a second diode having an anode coupled to said cathode of said first diode and having a cathode coupled to said second power supply conductor.

5,285,171

HIGH OUTPUT IMPEDANCE AMPLIFIER

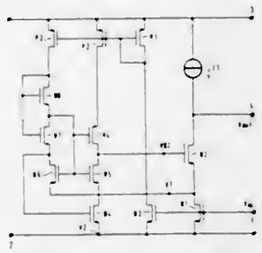
Klaas Bult, and Godefridus J. G. M. Geelen, both of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,300

Claims priority, application European Pat. Off., Jul. 30, 1991, 91201969.2

Int. Cl.[5] H03K *3/16*

U.S. Cl. 330—277 **23 Claims**



1. An amplifier arrangement comprising: a first transistor having a control electrode coupled to an input terminal for receiving an input signal (Vin), having a first main electrode coupled to a first supply-voltage terminal, and having a second main electrode, a second transistor having a control electrode, having a first main electrode coupled to the second main electrode of the first transistor, and having a second main electrode coupled to an output terminal for supplying an output signal (Vout), and a control amplifier having an inverting input (V1) coupled to the second main electrode of the first transistor, and having an output (VO) coupled to the control electrode of the second transistor, and a correction means for correcting a first potential on the second main electrode of the first transistor depending upon a second potential on the control electrode of the first transistor in a manner such that in operation the first transistor is kept at a desired point of saturation.

5,285,172

CURRENT MIRROR POWER AMPLIFIER WITH GAIN CONTROLLED BY RESISTOR-CAPACITOR NETWORK

Taiwa Okanobu, Tokyo, and Hitoshi Tomiyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,601

Claims priority, application Japan, Sep. 5, 1991, 3-254795

Int. Cl.[5] H03F *3/21*

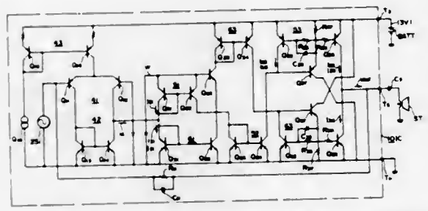
U.S. Cl. 330—288 **2 Claims**

1. An amplifier comprising:

a current mirror circuit having a transistor on an input side and a transistor on an output side, a base-emitter junction area of said transistor on the output side being N (N>1) times as large as a base-emitter junction area of said transistor on the input side;

a parallel circuit formed of a first resistor and a capacitor connected between a base connection of said transistor on the input side and a source of bias for said transistor on the input side; and

a second resistor connected between a base of said transistor on the output side and said source of bias, a resistance value of said first resistor being set to be substantially N



times as large as a resistance value of said second resistor; whereby

when an input current is supplied to said transistor on the input side, an output current amplified by a factor N is obtained from said transistor on the output side, and

when the frequency of the input current and the output current is high, the output current is held lower than N times the input current by a decrease in impedance of said capacitor.

5,285,173

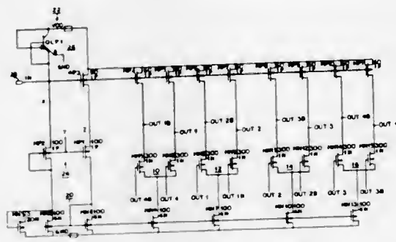
SIGNAL-CONTROLLED RING OSCILLATOR WITH DELAY CELLS HAVING CONSTANT GAIN WITH CHANGE IN FREQUENCY

David C. Reynolds, Georgetown, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jul. 13, 1992, Ser. No. 912,550

Int. Cl.[5] H03B *5/00;* **H03K** *3/354*

U.S. Cl. 331—57 **10 Claims**



1. A signal-controlled oscillator comprising:

a plurality of delay cells each having an input and an output;

means connecting said delay cells in a ring configuration to produce oscillations at a frequency determined by the delay of said cells;

said delay cells comprising means responsive to current flow therethrough to vary the delay with changes in current;

a plurality of current source means supplying current to said delay cells respectively and responsive to a first control signal for setting the level of current through said delay cells;

a plurality of load means comprising MOS devices in series with said delay cells respectively and responsive to a second control signal for setting the magnitude of load;

bias means to provide operation of said MOS devices in their linear region; and

circuit means responsive to an input signal for developing said first and second control signals to vary each cell delay while correspondingly altering the load so as to tend to maintain the overall gain constant.

5,285,174

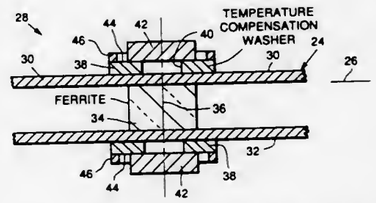
TEMPERATURE-COMPENSATED WAVEGUIDE ISOLATOR

Omar M. Al-Bundak, Los Angeles, and Antonio Luna, Pomona, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 23, 1992, Ser. No. 996,206

Int. Cl.[5] H01P *1/39*

U.S. Cl. 333—1.1 **18 Claims**



1. A temperature-compensated junction isolator for use at a waveguide junction in a microwave waveguide system having parallel top and bottom waveguide walls, comprising:

a ferrite cylinder within the waveguide walls at a junction, the ferrite cylinder having a cylindrical axis perpendicular to the waveguide walls;

a pair of temperature-compensation washers aligned with the cylindrical axis of the ferrite cylinder and external to the waveguide walls, each washer having a central opening smaller in diameter than the diameter of the ferrite cylinder and being made of a material whose permeability decreases with increasing temperature; and

a pair of magnets aligned with the cylindrical axis of the ferrite cylinder, one magnet being located exterior to each of the temperature-compensation washers.

5,285,175

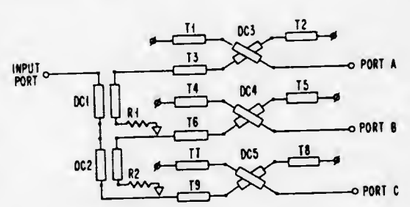
TRI-PHASE COMBINER/SPLITTER SYSTEM

Richard C. Edwards, Cedar Rapids, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Sep. 3, 1992, Ser. No. 939,783

Int. Cl.[5] H01P *6/12, 5/18*

U.S. Cl. 333—109 **4 Claims**



1. A tri-phase combiner splitter comprising:

a first and second directional coupler means serially coupled providing three output signals;

first second and third phase equalizer means coupled to the first second and third output signals respectively;

first, second and third quadrature couplers each having an input from one of the phase equalizers;

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paired transmission line load means coupled to each of said quadrature couplers; and

first, second and third output ports from quadrature couplers;

wherein phase error over a given bandwidth is approximately one degree.

5,285,176

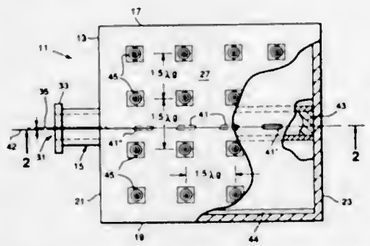
FLAT CAVITY RF POWER DIVIDER

Harry Wong, Monterey Park; Gary A. Hill, El Segundo; Gregory D. Kroupa, and Mon N. Wong, both of Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 695,845, May 6, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 957,070

Int. Cl.[5] H01P *5/12*

U.S. Cl. 333—137 **12 Claims**



1. A flat cavity RF power divider for coupling RF energy applied thereto, said power divider comprising:

a flat cavity structure having first and second spaced apart parallel cavity broadwalls, and upper, lower, left and right narrow end walls joining said cavity broadwalls at edges thereof to enclose a flat cavity;

an input rectangular waveguide structure having first and second spaced apart waveguide broadwalls and sidewalls joined at edges thereof, an input port disposed at one end of said waveguide structure, said waveguide structure having a longitudinal centerline, a portion of one of said waveguide broadwalls being shared with a portion of one of said cavity broadwalls to constitute a common broadwall portion, and said longitudinal centerline of said waveguide structure being generally parallel to and centrally aligned between said upper and lower end walls of said flat cavity structure;

a plurality of longitudinal shunt slots disposed through said common broadwall portion for coupling the applied RF energy between said waveguide structure and said cavity structure, said longitudinal shunt slots being disposed along a longitudinal slot centerline parallel to and offset from said waveguide structure longitudinal centerline;

curved waveguide short circuit means disposed in said waveguide structure for creating a relatively high standing-wave in response to the RF energy applied thereto along said waveguide structure and for providing a maximum E-field to excite each of said slots thereby exciting an transverse axis column of said flat cavity structure;

a plurality of output ports disposed in the other broadwall of said cavity structure, each of said output ports having a respective probe penetrating into the flat cavity structure to couple out the RF energy; and

whereby the RF energy applied to said waveguide structure is coupled through said slots and probes and divided among said output ports.

5,285,177

ANTENNA SHARING DEVICE USING MUTUALLY COUPLED RESONANT CIRCUITS

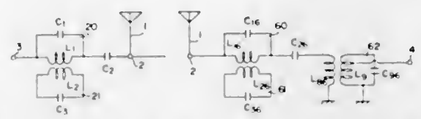
Masahiro Norose, Tsurugashima, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,271

Claims priority, application Japan, Sep. 13, 1991, 3-262986; Feb. 24, 1992, 4-72891

Int. Cl.[5] H03H *7/00*

U.S. Cl. 333—176 **12 Claims**



1. An antenna sharing device having a transmission filter connectable between a branch node of an antenna and a transmitter, and a reception filter connectable between the branch node and a receiver, wherein at least one of the transmission filter and said reception filter comprises:

a first parallel resonance circuit having a capacitor and a coil connected in parallel;

a second parallel resonance circuit magnetically coupled to said first parallel resonance circuit; and

a capacitor serially connected to said first parallel resonance circuit,

wherein one of said first and second parallel resonance circuits has a first resonance frequency, the other of said first and second parallel resonance circuits has one of said first resonance frequency and a second resonance frequency, and a combination of said first and second parallel resonance circuits and said capacitor forms an equivalent circuit providing a small insertion impedance at a third resonance frequency.

5,285,178

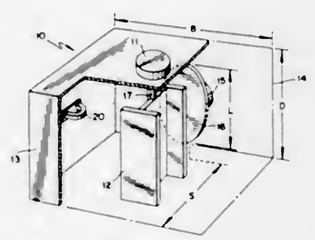
COMBINER RESONATOR HAVING AN I-BEAM SHAPED ELEMENT DISPOSED WITHIN ITS CAVITY

Christer M. Ahlberg, Vasteras, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 7, 1992, Ser. No. 957,383

Int. Cl.[5] H01P *7/04*

U.S. Cl. 333—224 **10 Claims**



1. A coaxial resonator, comprising:

a cavity;

a conductive element, having a predetermined shaped plate, which is disposed within the cavity and connected to the cavity to provide a fundamental frequency for the coaxial resonator;

an I-beam shaped element disposed within the cavity between the plate and an opposing cavity wall, said plate and opposing cavity wall forming a capacitance, said I-beam shaped element being provided to tune the coaxial resonator; and

means for rotating the I-beam shaped element within the cavity.

5,285,179

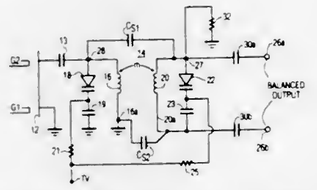
DOUBLE TUNED CIRCUIT WITH BALANCED OUTPUT AND IMAGE TRAP

Leroy S. Wignot, Indianapolis, and Michael A. Pugel, Noblesville, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 28, 1992, Ser. No. 938,193

Int. Cl.[5] H03J *3/18*

U.S. Cl. 334—15 **5 Claims**



1. In a television signal processing apparatus, tuning apparatus, comprising:

means for amplifying RF signals and having an output coupled to a signal node with respect to a reference potential,

a first tuned circuit including a first varactor diode responsive to a first tuning voltage and a first inductance element coupled from the signal node to a point of reference potential for selecting one of said amplified RF signals in response to the first tuning voltage,

a second tuned circuit including a second varactor diode responsive to a second tuning voltage and a second inductance element for further selecting said one of said amplified RF signals in response to the second tuning voltage,

said first and second tuned circuits forming a double tuned circuit, said first and second inductance elements being inductively coupled,

the second inductance element having a pair of output terminals balanced with respect to the reference potential,

a first trap capacitor coupled between one output terminal of the second inductance element and the signal node, and

a second trap capacitor coupled between the other output terminal of the second inductance element and the reference potential,

the first and second trap capacitors providing a notch frequency for the tuned RF signal at each of the pair of output terminals.

5,285,180

CIRCUIT BREAKER

Willard J. Rezac; Thomas A. Edds, both of Lincoln; Lowell D. Smith, Crete, all of Nebr.; James Early, Ballinasloe, Ireland; Martin Donnellan, Ballinasloe, Ireland, and Dermot Hurst, Ballinasloe, Ireland, assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 508,861, Apr. 12, 1990, abandoned, and a continuation-in-part of Ser. No. 373,380, Jun. 29, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 800,181

Int. Cl.[5] H01H *9/02*

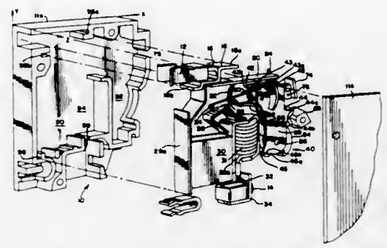
U.S. Cl. 335—202 **3 Claims**

1. A circuit breaker comprising:

a housing including a base and a cover;

a unitary circuit breaker assembly containing movable parts including a contact mechanism for moving electrical contacts between an open and a closed position, means providing electrical connection to said contact mechanism, an operating handle and a trip mechanism;

a module operably supporting the movable parts of said circuit breaker assembly, said module being adapted to provide adjustment and testing of the movable parts before installation in said housing; and



means in said base for supporting said module therein without attachments.

5,285,181

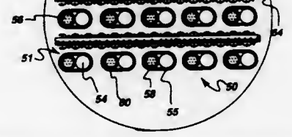
SUPERCONDUCTING WINDING AND SUPPORT STRUCTURE

Evangelos T. Laskaris, Schenectady, and Ahmed K. Kalafala, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,682

Int. Cl.[5] H01F *1/00*

U.S. Cl. 335—216 **9 Claims**



1. A superconducting winding and demountable coil form for a superconducting winding, wherein said winding is comprised of:

a coil form;

at least two superconductors wound substantially on said coil form and located at a predetermined distance away from each other;

an insulation material located substantially between said superconductors;

an array of axial metal straps located substantially within said insulation material;

an overwrap wire substantially surrounding said superconductive winding, insulation and said array; and

an epoxy-like material which substantially surrounds said superconductor, said insulation material, said array, and said overwrap wire.

5,285,182

DESENSITIZING APPARATUS FOR ELECTROMAGNETIC ARTICLE SURVEILLANCE SYSTEM

Peter J. Zarembo, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 3, 1992, Ser. No. 940,007

Int. Cl.[5] H01F *7/20*

U.S. Cl. 335—284 **24 Claims**

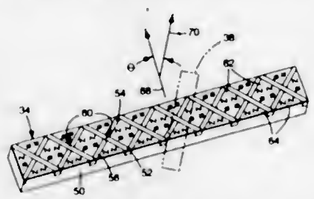
1. A desensitizing apparatus for magnetizing a desensitizable

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marker used with an electromagnetic article surveillance system, including:

a housing having a surface adapted to support an article as a marker secured thereto is moved past the apparatus, wherein the surface is further adapted to constrain said an article along a direction of travel over the housing; and

an elongated, high density magnet positioned in a plane proximate to and substantially parallel with the surface of the housing adapted to support said an article, wherein the length of the magnet is substantially perpendicular to said



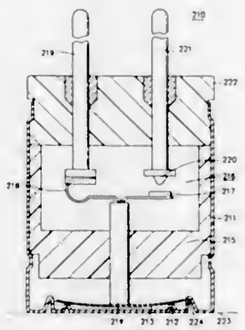
a direction of travel of said a marker to be moved past the apparatus, wherein the magnet provides a magnetic field aligned substantially normal to its length, wherein the strength of the magnetic field decreases by about $1/r^2$, for r greater than 1 mm, where r is a distance above the magnet, thereby enabling the marker to be remanently magnetized without altering the magnetic state of the article to which the marker is affixed, and wherein the magnetic field is sufficiently strong to magnetize the marker but does not subject the marker to a back field which would partially resensitize the marker.

5,285,183

TEMPERATURE SWITCH

Isamu Asada, Kiyose, Japan, assignor to Nihon Seiken Kabushiki Kaisha, Saitama, Japan

Filed Feb. 10, 1993, Ser. No. 15,830
Claims priority, application Japan, May 7, 1992, 4-158484
Int. Cl.[5] H01H *37/04, 37/52*
U.S. Cl. 337—372 **1 Claim**



1. A temperature switch comprising:

a casing for covering said temperature switch; and

a himetal disc disposed at a lower position of said casing,

wherein said himetal disc is inversely deformed between a concave shape and a convex shape according to a temperature change, a switch portion being driven according to a displacement of a center portion of said himetal disc, and

wherein the outer surface of a bottom portion of said casing including the outer periphery thereof is in a plane shape, the bottom portion having a protruding line disposed at an inner position of the outer periphery thereof, said protruding line upwardly protruding and being in a ring shape, the bottom portion and said protruding line being integrally formed, said protruding line being adapted to support the outer periphery of said bimetal disc, and further

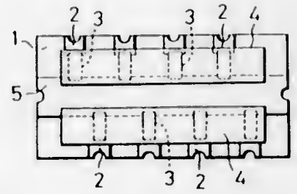
said casing has a holding protruding line disposed at an outer position of the protruding line on the inner surface of the bottom portion of said casing, said holding protruding line upwardly protruding, said holding protruding line and the bottom portion of said casing being integrally formed, said holding protruding line embracing the outer end of said bimetal disc so as to hold thereof.

5,285,184

CHIP-TYPE NETWORK RESISTOR

Hisao Hatta, 131-19 Kitada, Wakuya-cho, Touda-gun, Miyagiken; Kunio Kurihara, 6-7-1 Minaminaruse, Machida-shi, Tokyo-to, and Saburo Inagaki, 1-5-1-1008 Utsukushigaoka, Midori-ku, Yokohama-shi, Kanagawa-ken, all of Japan

Filed Jun. 20, 1991, Ser. No. 718,131
Claims priority, application Japan, Jul. 3, 1990, 2-70354[U]
Int. Cl.[5] H01C *1/012, 3/12, 1/14*
U.S. Cl. 338—313 **3 Claims**



1. A chip-type network resistor comprising:

an insulative substrate;

a common electrode disposed on said insulative substrate;

a plurality of separate electrodes disposed on said insulative substrate adjacent said common electrode;

a plurality of resistance layers, each of said plurality of resistance layers being disposed to electrically connect said common electrode and one of said plurality of separate electrodes;

an overcoat layer disposed to cover said plurality of resistance layers and a first portion of said common electrode;

a second portion of said common electrode remaining uncovered by said overcoat layer, whereby said second portion remains exposed for subsequent processes;

a conductive plating layer disposed to cover at least said second portion of said common electrode; and

said conductive plating layer reducing an impedance of said common electrode, whereby a noise in said network resistor is reduced.

5,285,185

DUAL-CODED DATA COMPARATOR

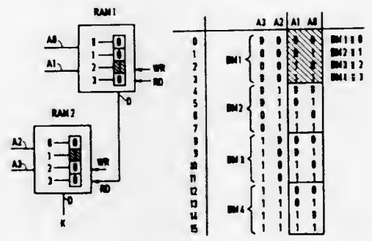
Hermann-Josef Wiegand, Baiersdorf, and Klaus Haken, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 29, 1991, Ser. No. 784,547
Claims priority, application European Pat. Off., Oct. 30, 1990, 90120804.1
Int. Cl.[5] G06F *7/02, 1/035*
U.S. Cl. 340—146.2 **18 Claims**

2. A comparator for comparing dual-coded data, comprising:

a) a plurality of address lines; and

b) a plurality of memories coupled to said plurality of address lines such that said plurality of address lines are distributed evenly in groups among said plurality of memories, thereby forming a hierarchy of address line groups, each memory having a read command input and a data output, wherein a characteristic data item is stored in each of the plurality of memories at a specific address mapping a reference data item and said data output of each of the plurality of memories is coupled to the read command input of a memory of the plurality of memories assigned to



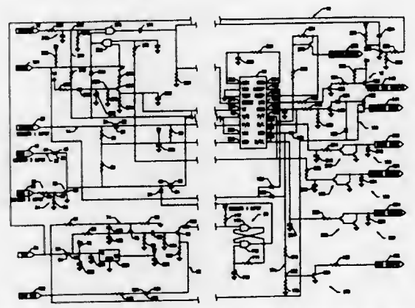
a next higher address line group, except for a data output of a memory assigned to a highest address line group, which data output represents a final comparison output, whereby the plurality of memories is addressable by a second data item to be compared with said reference data item.

5,285,186

VEHICLE SECURITY SYSTEM

Michael Chen, Taipei, Taiwan, China, assignor to Magnadyne Corporation, Compton, Calif.

Filed Mar. 14, 1991, Ser. No. 669,053
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—428 **35 Claims**



31. A vehicle security system for a vehicle having an ignition circuit which may selectively be on or off, said vehicle security system comprising:

means responsive to an unauthorized tampering of said vehicle for developing a sensor tripped signal;

a controller including means responsive to an externally developed arm/disarm signal for transitioning said controller between each of an armed state and a disarmed state upon each occurrence of said arm/disarm signal, means responsive to said sensor tripped signal for developing an output triggered signal when said controller is in said armed state and means responsive to said ignition circuit being on for disabling said output triggered signal developing means even if said controller received said tripped signal when in said arm state; and

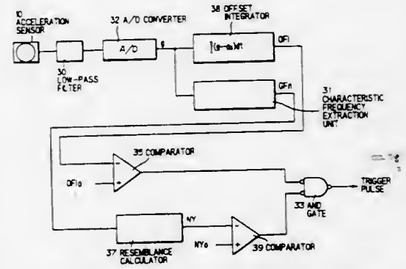
means responsive to said triggered signal for developing either one of an audible alarm and visible alarm.

5,285,187

VEHICLE COLLISION DETECTING APPARATUS

Manabu Hirao; Masahiro Miyamori, and Noriaki Kataoka, all of Osaka, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 828,455
Claims priority, application Japan, Jan. 31, 1991, 3-31736; Feb. 14, 1991, 3-42535
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—436 **5 Claims**



1. A vehicle collision detecting apparatus, comprising:

means for detecting acceleration of a vehicle;

means for integrating an output signal of said acceleration detecting means;

a first comparator for comparing an output signal of said integrating means with a predetermined threshold value;

means for extracting a signal in a predetermined frequency band from said output signal of said acceleration detecting means;

a second comparator for comparing an output signal of said extracting means with a predetermined threshold value; and

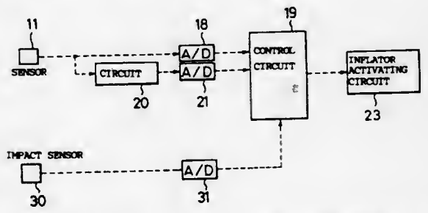
means for detecting a collision in accordance with output signals of said first and second comparators.

5,285,188

VEHICLE COLLISION DETECTING SYSTEM

Ryouichi Yoshida, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,119
Claims priority, application Japan, Jun. 7, 1991, 3-136567
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—436 **5 Claims**



1. A vehicle collision detecting system, comprising:

an impact detecting sensor provided at the front portion of a vehicle, said impact detecting sensor outputting a signal immediately after detecting an initial impact caused by collision of the vehicle; and

a vehicle collision predicting unit for predicting a collision from a rate of change of a distance to an obstacle from said vehicle, said vehicle collision predicting unit comprising:

detecting means for detecting said distance to the obstacle;

differentiating means connected to said detecting means for

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finding said rate of change of said distance by differentiating said distance by time;

computing means connected to said detecting means and said differentiating means for computing a distance D(t) after a time t as a function of time based on said distance and said rate of change, said computing means outputting a collision unavoidable signal when said distance D(t) is zero within a predetermined time T; and

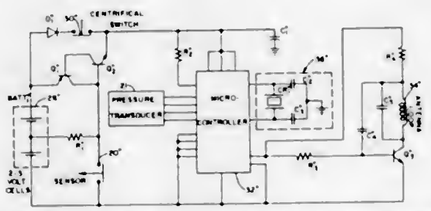
an AND gate connected to said vehicle collision predicting unit and said impact detecting sensor, said AND gate outputting a collision signal to an air bag system only when and immediately after said impact detecting sensor detects the initial impact after said vehicle collision predicting unit outputs a collision unavoidable signal to said AND gate.

5,285,189

ABNORMAL TIRE CONDITION WARNING SYSTEM

Donald V. Nowicki, Lorain, and Christopher A. Munroe, Norwalk, both of Ohio, assignors to Epic Technologies, Inc., Norwalk, Ohio

Filed May 14, 1991, Ser. No. 699,758
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—447 **10 Claims**



1. A device for sensing a condition of a pneumatic tire comprising:

a housing;

means for mounting said housing within said tire;

sensing means associated with said housing for monitoring a condition within the tire;

circuit means associated with said housing including:

a radio transmitter circuit operatively connected to said sensing means for controlling and generating radio signals indicative of said tire condition; and,

a microcontroller having a low power mode during operation of the device, means for monitoring device parameters and means for periodically generating said radio signals in an absence of an abnormal tire condition, thereby providing for self-checking of the device in operation;

power supply means associated with said housing operatively connected to said circuit means to power the circuit means and to enable the generation of the radio signals, said power supply means including a battery adapted to be contained within said tire and a centrifugal switch means adapted with said battery to render the circuit means de-energized in a first stationary and low tire rotation mode and energized in a second high tire rotation mode; and,

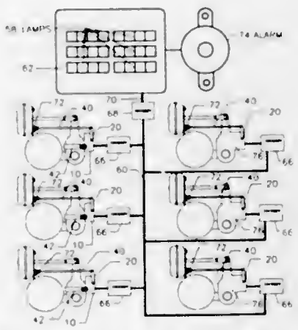
means for receiving said radio signals.

5,285,190

AUTOMATIC SLACK ADJUSTER WITH OPERATION AND ADJUSTMENT MONITOR

Roger E. Humphreys, and Steven B. Humphreys, both of Bonita, Calif., assignors to Onboard Systems Limited, Las Vegas, Nev.

Filed Nov. 4, 1991, Ser. No. 787,561
Int. Cl.[5] B60Q *1/00*; **F16D** *66/00*
U.S. Cl. 340—453 **3 Claims**



1. An improved system for automatically adjusting and concurrently monitoring the operation and adjustment of a vehicle's brakes providing a display indication indicative of a position of each brake's push rod as said brake's push rod relates to the operation and adjustment of said vehicle's brakes, said system comprising:

a plurality of segmented switch assemblies, directly attached to said brake push rod, said switch assemblies providing an electrical output signal which corresponds directly to the position of said brake's push rod;

a brake slack adjusting device controlled by a switch attached to one of said segmented switch assemblies for automatically adjusting said brakes in response to said brake push rod movement exceeding a predetermined length of travel;

groups of visual indicators corresponding to the position of said brake push rod as monitored by said segmented switch assemblies to provide a visual display as to the operation and adjustment of said brakes on said vehicle; and

an audible alarm warning means located in said vehicle and sounds whenever any of said brake's push rod movement exceeds a predetermined length of travel indicative of dangerous brake condition.

5,285,191

LC MARKER CONSTRUCTION USEFUL AS AN ELECTROMAGNETICALLY INTERROGATABLE TRANSPONDER MEANS

Max E. Reeb, Mozartstr. 29, D-7320 Göppingen, Fed. Rep. of Germany

Continuation of Ser. No. 650,935, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 135,547, Dec. 18, 1987, Pat. No. 4,990,891, which is a continuation of Ser. No. 28,893, Mar. 23, 1987, abandoned, which is a division of Ser. No. 513,970, Jun. 29, 1983, Pat. No. 4,694,283. This application May 7, 1992, Ser. No. 883,249

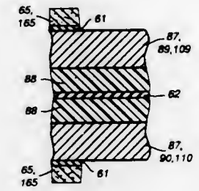
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143208

Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—572 **99 Claims**

1. An LC marker construction useful as an electromagnetically interrogatable transponder means in electronic security systems, comprising:

an inductive element (**103, 104**) formed of planar conductor paths (**47** to **54, 83, 84, 86; 87** of **89** and **90; 87** of **109** and **110**) and a capacitive element (**105, 106**) formed of mutually superposed conductor paths (**37, 39; 47** to **54, 83, 84, 86; 87** of **89** and **90; 87** of **109** and **110**) and at least one dielectric layer (**38; 40, 41, 42; 45, 46; 81; 88, 93**) and at least one adhesive layer (**62**) spaced therebetween, said capacitive element and said inductive element forming a resonant circuit,

said conductor paths (**47** to **54, 83, 84, 86; 87** of **89** and **90; 87**



of **109** and **110**) being so arranged as to constitute a stripline construction (**37, 38, 39**), wherein conductor paths (**37, 39, 47** to **54, 83, 84, 86; 87** of **89** and **90; 87** of **109** and **110**) forming the capacitive element (**105, 106**) at least in part are identical with conductor paths (**37, 39; 47** to **54, 83, 84, 86; 87** of **89** and **90; 87** of **109** and **110**) forming the inductive element (**103, 104**), and wherein

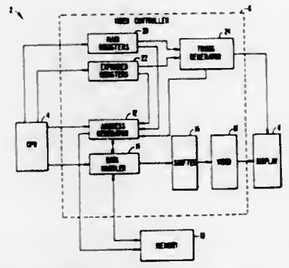
said at least one adhesive layer is a an integral working element of said stripline construction which, by virtue of its dielectric permittivity and thickness, codetermines the resonant response of the LC marker construction.

5,285,192

COMPENSATION METHOD AND CIRCUITRY FOR FLAT PANEL DISPLAY

Arun Johary, and Tetsuji Oguchi, both of San Jose, assignors to Chips and Technologies, Inc., San Jose, Calif. and ASCII Corporation, Tokyo, Japan

Continuation of Ser. No. 617,483, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 245,866, Sep. 16, 1988, abandoned. This application Dec. 30, 1991, Ser. No. 815,840
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—3 **7 Claims**



1. In a data processing system having a computer means for processing information, a memory means for storing information, and a video display system for generating and displaying video display information, wherein the video display information is displayed on one of at least two predetermined types of video display means, the video display system comprising:

display means;

means, coupled to the display means, for determining a size of said display means;

display indicating means coupled to the display means for indicating which type of display means is capable of displaying video display information;

a first set of register means containing video display configuration information for a first type of predetermined display means, the video configuration information enabling the first type of display means to display the video display information in any one of a predefined set of display modes;

a second set of register means containing video display modification information for a second predetermined display type, the video display modification information used for modifying the video display configuration information stored in the first set of register means to enable the display means to display the video display information for a second predetermined display type in any one of the same predefined set of display modes;

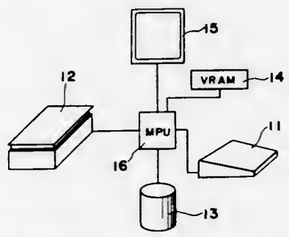
controller means coupled to the display means, the display size determining means, the display indicating means, the first set of register means, the second set of register means, the computer means and the memory means, the controller using the video display configuration information in the first set of register means to convert the information in the computer and memory into video display information for the display means when the display means of the first predetermined type is capable of displaying video display information and the controller using the video display configuration information in the first set of register means and the modification information in the second set of register means to convert the information in the computer and memory into video display information for the display means when the display means of the second predetermined type is capable of displaying video display information and the size of the display means of the first predetermined type is different from the size of the display means of the second predetermined type.

5,285,193

DATA BASE SYSTEM

Keisuke Iwasaki, Tenri; Masaki Takakura, Higashiosaka; Yasukuni Yamane, and Noritoshi Kako, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 542,792, Jun. 25, 1990, abandoned, which is a continuation of Ser. No. 144,532, Jan. 15, 1988, abandoned. This application Nov. 21, 1991, Ser. No. 798,353
Claims priority, application Japan, Jan. 16, 1987, 62-8546; Jan. 16, 1987, 62-8547
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—133 **10 Claims**



1. An image designating system which utilizes a plurality of previously stored categorized variations of image data parts to allow a user to create an optimal new image design, comprising:

memory means including a first area for storing each of a plurality of basic image data elements;

said memory means including a second area for storing a plurality of identification numbers for each of a plurality of categories, one corresponding to each of said basic image data elements, each corresponding to a variation of

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basic image elements in each category, so as to categorize a plurality of variations for each category;

said memory means including a third area for storing positional information of a display means corresponding to each of said plurality of categories, wherein each basic image data element in the same category is designated by a common position;

input means, operatively connected to said memory means, for selecting one basic image data element of each of said plurality of categories by inputting an identification number corresponding to a basic image data element for each of said plurality of categories;

access means for sequentially and automatically accessing each basic image data element corresponding to each input identification number, the category corresponding to the accessed basic image data element and the positional information corresponding to the accessed category;

display means for displaying a combination of selected basic image data elements, each basic image data elements displayed in accordance with the corresponding accessed positional information, in response to said input means;

said memory means storing said selected and displayed combination of basic image data elements and assigning and storing an identification number to said stored combination, in response to said display means;

said input means subsequently selecting a previously stored identification number to access a previously stored combination;

said display means displaying said previously stored selected combination in response to said input means;

said input means selecting a different basic image data element, different from that basic image data element displayed for at least one of the plurality of categories as part of said previously stored selected combination, to thereby form a new combination with the different selected basic image data element replacing the previous basic image element based on the stored position information corresponding to said at least one of the plurality of categories, in said new combination;

said display means immediately displaying said new combination, with each basic image data element displayed at its predetermined display position; and

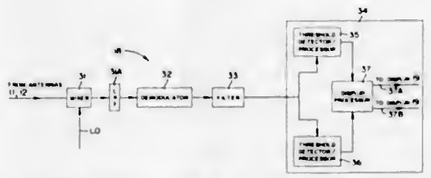
said memory means storing said new combination and a corresponding new identification number in response to said display means, while maintaining said previously stored combination and previous identification number.

5,285,194

ELECTRONIC ARTICLE SURVEILLANCE SYSTEM WITH TRANSITION ZONE TAG MONITORING

David B. Ferguson, Delray Beach, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Nov. 16, 1992, Ser. No. 976,547
Int. Cl.[5] G08B *13/18, 13/24*
U.S. Cl. 340—572 **38 Claims**



1. An EAS system for sensing the presence of EAS tags in a zone including a protection zone and a transition zone outward of said protection zone, said EAS system comprising:

means for transmitting a signal into said zone so as to reach at least said protection zone,

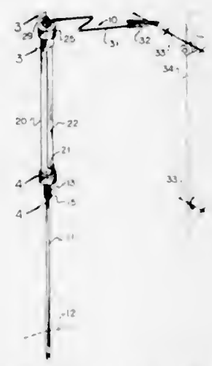
means for receiving and processing signals received from said zone, said receiving and processing means processing said received signals in accordance with first and second different criteria, said first criteria, if satisfied, resulting in the generation of a first signal which can be used to indicate the presence of a tag in said protection zone, and said second criteria, if satisfied, resulting in the generation of a second signal which can be used to indicate the presence of a tag in said transition zone.

5,285,195

ELECTRIC FENCE MONITORING APPARATUS INDICATING ELECTRICAL ENERGIZATION

George D. Way, and Kathy L. Way, both of 850 Anne Rd., Windsor, N.Y. 13865

Filed Oct. 19, 1992, Ser. No. 962,904
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—654 **4 Claims**



1. An electrical fence monitoring apparatus, comprising,

an elongate grounding rod of electrically conducting material having a rod first end for projection within a grounding surface, and a rod second end, the rod second end including a coupler assembly mounted thereto, and

fastener means mounted to the grounding rod in contiguous communication with the coupler assembly for fixedly positioning the coupler assembly relative to the grounding rod, and

the coupler assembly including a first insulative plug member mounted in contiguous communication with the coupler assembly coaxially aligned with the coupler assembly and the grounding rod, and the first plug member including a first sleeve receiving the plug member in a spaced relationship relative to the coupler assembly, and

the sleeve having a first electrically conductive contact plate positioned within the sleeve in adjacency to the first plug member, with the first contact plate orthogonally oriented relative to the grounding rod, and

a first electrically conductive plate rod extending through the first electrical contact plate to effect electrical communication between the first electrical contact plate and the coupler assembly as the first plate rod is received within the coupler assembly extending through the first plug member, and

a fluorescent tube light having a tube light first end in contiguous communication with the first contact plate, and

a tube second end spaced from the tube first end, and

a second sleeve, the second sleeve having a second electrically conductive contact plate, wherein the second contact plate is in contiguous communication with the tube light second end, and

a second plug member positioned within the second sleeve, and

a second plate rod in electrical communication with the second contact plate, the second plate rod extending through the second plug member coaxially aligned relative to the tube light and the grounding rod, and

an electrical contact strip mounted to the second plate rod exteriorly of the second sleeve, and

a fastener cap mounted to the second plate rod, with the contact strip oriented between the fastener cap and the second plug member, and

an electrical cable in electrical communication with the contact strip, with the electrical cable having a cable free end spaced from the contact strip, and

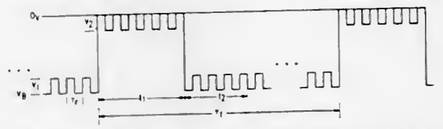
a cable clamp attached to said free end, the cable clamp arranged for securement to an electrical fence line.

5,285,196

BISTABLE DMD ADDRESSING METHOD

Richard O. Gale, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1992, Ser. No. 961,997
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—108 **18 Claims**



1. A method of addressing an array of electromechanical pixels wherein each of said pixels assume one of two or more selected stable states according to a set of selective address voltages, said method comprising the steps of:

a) electromechanically latching, by applying a bias voltage with an AC and a DC component to said array of pixels, each of said pixels in one of said selected stable states;

b) applying a new set of selective address voltages to all said pixels in said array;

c) electromechanically unlatching, by removing said bias voltage from said array, said pixels from their previously addressed state;

d) allowing said array of pixels to assume a new state in accordance with the new set of selective address voltages; and

e) electromechanically latching, by reestablishing said bias voltage, each of said pixels.

5,285,197

METHOD AND APPARATUS FOR AUTOMATIC SELECTION OF SCAN RATES FOR ENHANCED VGA-COMPATIBLE MONITORS

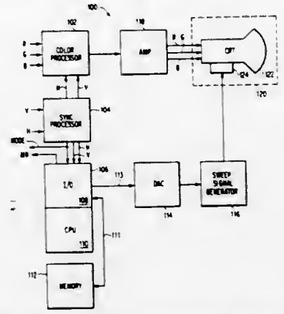
Thomas J. Schmidt, Milford, N.H.; Richard Atanus, Chicago, Ill.; James F. Murray, Litchfield, N.H., and Arnold J. Smith, Lawrence, Mass., assignors to NEC Technologies, Inc., Boxborough, Mass.

Filed Aug. 28, 1991, Ser. No. 750,996
Int. Cl.[5] G09G *5/12*
U.S. Cl. 345—213 **4 Claims**

1. In a computer system having a video display monitor connected to circuitry adapted to provide a video signal having a plurality of video signal characteristics including an analog video frequency, a horizontal sync frequency and a vertical sync frequency, a method for determining the video signal characteristics which the monitor will support comprising the steps of:

generating a first signal corresponding to the maximum video signal characteristics supported by the video display monitor in response to reception of a second signal corresponding to a video display monitor identification command; and

sensing the first signal so as to permit determination of the maximum video display signal characteristics, wherein



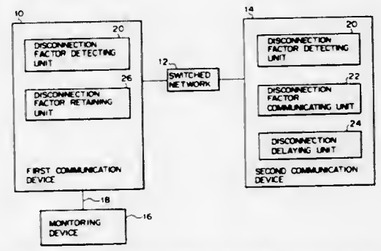
said second signal is a signal corresponding to a video mode change, wherein said first signal has a predetermined pulse width and wherein said sensing step comprises determining said pulse width of said first signal.

5,285,198

METHOD OF COMMUNICATING MONITOR/MANAGEMENT INFORMATION AND COMMUNICATION DEVICES IN NETWORK INCLUDING COMMUNICATION DEVICES CONNECTED THROUGH SWITCHED NETWORK

Takeshi Asahina, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1991, Ser. No. 747,703
Claims priority, application Japan, Aug. 20, 1990, 2-218531; Nov. 14, 1990, 2-308371
Int. Cl.[5] G05B *23/02*; H04M *11/00, 11/06*; H04J *1/14*
U.S. Cl. 340—825.15 **8 Claims**



1. A method of communicating a disconnection factor in a communication network including a first communication device, a second communication device connected through a switched network to the first communication device, and a monitoring device connected through a line to the first communication device, comprising the steps of:

detecting the disconnection factor requiring a disconnection of a user communication maintained through the switched network between the first and the second communication devices in the second communication device to obtain a first detected disconnection factor;

transmitting the first detected disconnection factor from the second communication device to the first communication device, without affecting the user communication;

receiving the first detected disconnection factor in the first communication device;

disconnecting the user communication after the transmission of the first detected disconnection factor is completed;

retaining the first detected disconnection factor in the first communication device; and

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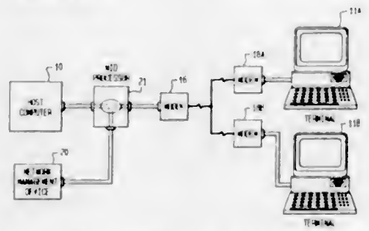
transmitting the first detected disconnection factor from the first communication device through the line to the monitoring device.

5,285,199

METHOD AND APPARATUS FOR IN-BAND DATA TRANSMISSION

Slobodan Pocek, 129-H Gaither Dr., Mount Laurel, N.J. 08054

Filed Jan. 28, 1991, Ser. No. 646,194
Int. Cl.[5] H04Q *3/00*; H04B *3/46*
U.S. Cl. 340—825.03 **22 Claims**



1. A method of in-band data transmission between a first data terminal device and a second data terminal device where messages are inserted to and deleted from a communication line connecting the first and second data terminal devices, the method comprising the steps of:

monitoring protocols in a data stream flowing from the first data terminal device to the second data terminal device which is present in the communication line to determine when the data stream contains protocols having polling messages;

deleting the polling messages from the data stream;

temporarily inhibiting transmission of the data stream from the first data terminal device after the polling messages have been deleted;

inserting an independent system message generated by an independent system message generator into the communication line between the first data terminal device and a local transmission device and directing the independent system message downstream towards a remote transmission device and the second data terminal device;

deleting the independent system message from the communication line after the independent system messages has been received by the remote transmission device and before the independent system messages reaches the second data terminal device;

generating a response message to the independent system message after the function requested by the independent system message has been performed and directing the response message upstream toward the first data terminal device;

deleting the response message from the communication line after the response message has reached the local transmission device but before the response message reaches the first data terminal device, and;

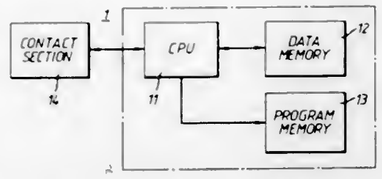
resuming transmission of the data stream after the response message has been deleted.

5,285,200

PORTABLE ELECTRONIC DEVICE AND A METHOD FOR PROCESSING DATA THEREFORE

Rynuichi Kuriyama, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 798,174, Nov. 26, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 5,190
Claims priority, application Japan, Nov. 29, 1990, 2-325263
Int. Cl.[5] H04B *1/00*
U.S. Cl. 340—825.34 **7 Claims**



1. A portable electronic device comprising:

first memory means for storing a plurality of identification number data;

means for receiving a plurality of instruction data including an identification number verifying instruction data and identification number data from an external device;

means for verifying the identification number data received by the receiving means with the identification number data stored in the first memory means when the receiving means receives identification number data and identification number verifying instruction data;

second memory means for storing verification results;

third memory means for storing control data corresponding to the instruction data and representing a plurality of identifiers each indicating whether or not identification number verification is required and further indicating whether complete or partial identification number verification is required;

first means for referring to the partial verification results stored in the second memory means when the control data stored in the third memory means indicates the partial identification number is required after instruction data other than identification number verifying instruction data has been received by the receiving means; and

second means for referring to the complete verification results stored in the second memory means when the control data stored in the third memory means indicates the complete identification number verification is required; and

means for executing the instruction data in response to the results of the first and second referring means and the control data.

5,285,201

Patent Not Issued For This Number

5,285,202

BROADBAND SWITCH USING DEACTIVATED CROSSPOINTS FOR ESTABLISHING SWITCHING PATHS

Michael Cooperman, Framingham; Richard W. Sieber, Attleboro, and Arnold Paige, Natick, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 347,370, May 4, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 808,032
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.8 **24 Claims**

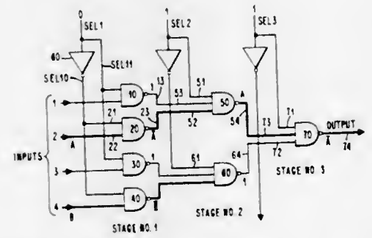
1. A switch for receiving a plurality of input data signals through input ports and providing one of said signals as an output signal through an output port, comprising:

a plurality of NAND gates arranged into a multi-stage tree-multiplexer, said tree-multiplexer being coupled at a first stage to the input ports and coupled at a last stage to the output port;

each of said stages having a respective select means associated therewith for receiving a select signal and providing as control signals on respective select lines an inverting and non-inverting version of said select signal;

wherein the NAND gates in said first stage each having a control line coupled to one of the select lines of the select means associated with said first stage, an input line connected to a corresponding one of said input ports, and an output line;

wherein each NAND gate in the stages after the first stage and before the last stage having a control line coupled to one of the select lines of the select means associated with said stage, a first and second input line each connected to a different NAND gate output line from the preceding state, and an output line driving a respective input line of a NAND gate in a next stage; and



wherein the last stage includes a single NAND gate having a control line coupled to one of the select lines of the select means associated with said last stage, a first and second input line each connected to a different NAND gate output line from the preceding stage, and an output line coupled to said output port;

said switch being operable in response to an appropriate combination of select signals to establish a desired switching path through said switch by rendering each NAND gate in said desired path operable to undergo switching;

whereby each particular NAND gate not in said switching path whose respective output drives, in a next stage, a NAND gate in said desired path is forced to a logical steady-state HIGH output.

5,285,203

MESSAGE TRANSMISSION DEVICE, AND A MESSAGE TRANSMISSION SYSTEM AND A MESSAGE TRANSMISSION STATUS ADVISING SYSTEM USING THE MESSAGE TRANSMISSION DEVICE

Yoshio Nakano, Osaka, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan

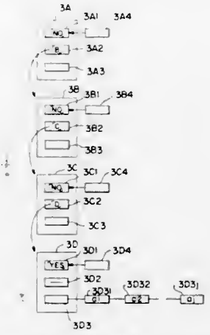
Filed Jun. 5, 1991, Ser. No. 710,333
Claims priority, application Japan, Jun. 5, 1990, 2-148244; Sep. 17, 1990, 2-247837; Apr. 16, 1991, 3-083913
Int. Cl.[5] H04B *3/38*
U.S. Cl. 340—827 **9 Claims**

1. A message transmission system comprising:

electronic message means for inputting electronic messages;

a plurality of electronic message processing devices each allocated to one message operator, each of said electronic message processing devices having an acceptability indicator showing whether an electronic message, when transmitted thereto, can be processed by each said message operator by yes or no, and each of said electronic message processing devices additionally having a deputy operator specifier designating a deputy operator by whom said electronic message is to be processed instead of said message operator; and

a transmission controller having functions to check said acceptability indicator within said electronic message processing devices each allocated to each said message operator, then to transmit said electronic message to one of said electronic message processing devices allocated to said message operator when said acceptability indicator is yes or when said acceptability indicator is no and a deputy confirmor fails to be designated by said deputy operator



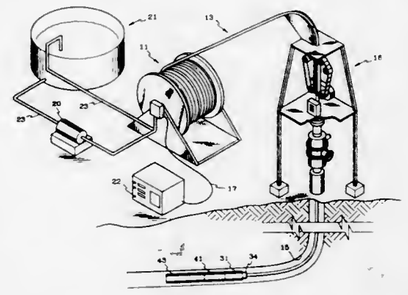
specifier and to transmit said electron message to one of said electron message processing devices allocated to said deputy operator designated by said deputy operator specifier when said acceptability indicator is no and a deputy operator is designated by said deputy operator specifier.

5,285,204

COIL TUBING STRING AND DOWNHOLE GENERATOR

Alex Sas-Jaworsky, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 23, 1992, Ser. No. 918,967
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—854.9 **19 Claims**



1. A borehole logging system for gathering downhole data and including a downhole electrical power generator, comprising:

a unitary spoolable coiled tubing member arranged to be run into and out of the borehole and thereby selectively extended from the earths surface downhole location, said coiled tubing member comprised of nonmetallic structural materials and having a hollow centrally located core portion divided into a plurality symmetrical longitudinal cells for forming separated flow paths from the surface to the downhole location through said tubular member when extended into a wellbore; and

generator means mounted on said coiled tubing member and operable in response to fluids being conducted through said isolated cells for generating electrical power at said downhole location.

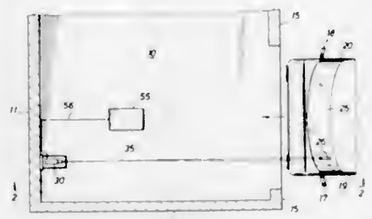
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5,285,205

LASER GUIDED VEHICLE POSITIONING SYSTEM AND METHOD

Bernard H. White, 3304 Grennoch, Houston, Tex. 77025

Filed Jul. 16, 1990, Ser. No. 553,185
Int. Cl.[5] B60Q *1/48*
U.S. Cl. 340—932.2 **25 Claims**



1. A guidance and positioning system for use in guiding a vehicle having a windshield to a selected position in a confined space which system comprises:

(a) a laser capable of emitting a beam of light in the visible light spectrum when in operation, said laser mounted on a stationary support located apart from said vehicle such that, when said laser is in operation, said laser beam is directed between about 1° and about 25° downwardly from a path parallel to the surface over which said vehicle is guided; and

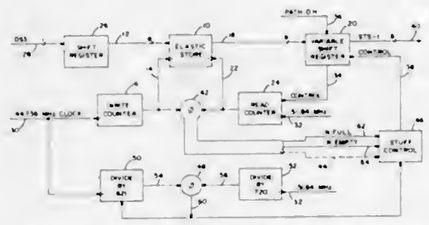
(b) target means on the windshield of said vehicle upon which said laser beam impinges when said laser is in operation and said vehicle is positioned to enter said confined space, wherein said target means is located on said windshield such that (1) said beam continuously impinges on said target means for a period of time from just before said vehicle enters said confined space until said vehicle reaches said selected position and (2) the continuous impingement of said beam is observable by the operator of said vehicle during said period of time.

5,285,206

PHASE DETECTOR FOR ELASTIC STORE

Richard W. Peters, Raleigh, and William H. Weeber, Apex, both of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Aug. 25, 1992, Ser. No. 935,009
Int. Cl.[5] H03M *9/00*
U.S. Cl. 341—100 **5 Claims**



1. A mapping circuit for mapping a lower-speed serial signal (**28**) to a higher-speed parallel signal (**40**) organized in frames having plural rows of bits mapped from the lower-speed signal, the mapping circuit comprising:

a shift register (**26**), responsive to the lower-speed serial signal (**28**) for providing the lower-speed signal as a converted parallel signal (**12**);

a parallel elastic store (**10**), responsive to the converted parallel signal (**12**), for providing a high-speed signal in parallel (**18**);

a bit stuffer (**20**), responsive to the high-speed signal (**18**) in parallel from the elastic store and responsive to a control signal (**38**), for controlling use of a stuff bit opportunity appearing at least once per row;

a first divider (**50**), responsive to a bit clock (**32**) related to the lower-speed signal (**28**), for providing a first divided signal (**54**);

a second divider (**52**), responsive to a bit clock (**30**) related to the higher-speed signal (**40**), for providing a second divided signal (**56**),

a phase detector (**48**), responsive to the first and second divided signals (**54, 56**), for comparing their phases and for providing a stuff bit enable signal (**60**) in the presence of zero-phase difference therebetween; and

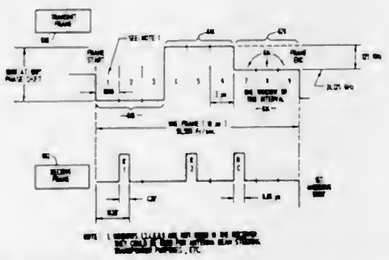
a stuff control (**46**), responsive to the stuff bit enable signal (**60**), a near-full signal (**62**) and a near-empty signal (**64**), for providing the control signal (**38**) and wherein the bit stuffer (**20**) is responsive tot he control signal (**38**) for providing a stuff bit or a data bit in the higher-speed parallel signal (**40**) output therefrom.

5,285,207

MULTI-FREQUENCY AUTOMATIC RADAR SYSTEM

Jimmie Asbury, San Diego, and John W. Davis, Encinitas, both of Calif., assignors to IVHS Technologies, Inc., San Diego, Calif.

Continuation of Ser. No. 756,176, Sep. 6, 1991, Pat. No. 5,189,426, which is a continuation-in-part of Ser. No. 695,951, May 6, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,600
Int. Cl.[5] G01S *13/93, 13/62*
U.S. Cl. 342—129 **12 Claims**



1. A vehicle radar system comprising:

(a) means for successively transmitting a radar signal at a plurality of different frequencies, and operative to continuously transmit the radar signal through a succession of transmit time frames, each of which comprises at least (1) a first portion during which the radar signal is transmitted at a reference frequency, and (2) a second portion during which the radar signal is transmitted at a frequency different from the reference frequency, each such portion being further divided into a plurality of transmit time interval windows;

(b) means for receiving the transmitted radar signals at the plurality of different frequencies as reflected back to the radar system by a target, and operative to receive the reflected radar signals during receive time interval windows, each such receive time interval window corresponding to a transmit time interval window of the transmit time frames of the means for successively transmitting;

(c) means, coupled to the means for receiving, responsive to the rate of phase shift in a received signal received during a selected one of the receive time interval windows, for determining opening or closing rate of the target reflecting back the radar signals;

(d) means, coupled to the means for receiving, responsive to phase shift differences between signals received during a first selected time interval window associated with a first transmit frequency and a second selected time interval window associated with a second transmit frequency, for determining range of the target reflecting back the radar signals; and

(d) means, coupled to the means for receiving and the means for successively transmitting, for identifying transmit and receive time interval windows which are not utilized in connection with receipt of transmitted radar signals;

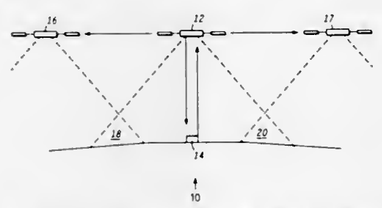
whereby each receive time interval window which is not utilized in connection with receipt of transmitted radar signals is available to perform functions other than determining opening or closing rate of the target reflecting back the radar signals, and determining range of the target reflecting back the radar signals.

5,285,208

POWER MANAGEMENT SYSTEM FOR A WORLDWIDE MULTIPLE SATELLITE COMMUNICATIONS SYSTEM

Bary R. Bertiger, Scottsdale, Ariz.; Raymond J. Leopold, Colorado Springs, Colo., and Kenneth M. Peterson, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 770,754, Oct. 4, 1991, abandoned, continuation-in-part of Ser. No. 607,218, Nov. 2, 1990, abandoned, continuation-in-part of Ser. No. 402,743, Sep. 5, 1989, abandoned. This application Aug. 18, 1992, Ser. No. 915,393
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—352 **12 Claims**



1. A power management system for use in a worldwide low-earth orbit multiple satellite system wherein satellites comprising the satellite system form an overlapping orbiting constellation, each satellite adapted to project a plurality of antenna beams on the earth's surface, each beam having a first area of coverage of the earth's surface or "cell", the total sum of the cells for each satellite forming a second area of coverage of the earth's surface larger than said first area, the satellites each comprising a power source, a plurality of antennas and an RF source providing the antenna beams and said RF source coupled to the antennas, the power management system comprising:

means for determining the quantity of power relayed from the power source to each of the plurality of antennas, said power source coupled to said plurality of antennas;

said means for determining transmitting a signal indicating the quantity of power to be transmitted by each of the satellites to the RF source for the antennas, said means for determining being RF coupled to each said satellite;

a plurality of means for controlling the power from the RF source to each of the plurality of antennas of the satellite, said means for controlling coupled to said means for determining, to said power source and to said RF source; and

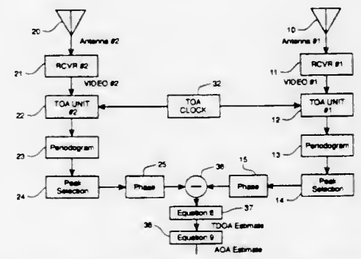
each of said plurality of means for controlling the coupling of the power source of each of the satellites to the respective plurality of antennas and said means for controlling decoupling the power supplied to the antennas in order to turn off selected ones of the antenna beams which overlap with others of the antenna beams.

5,285,209

ANGLE-OF-ARRIVAL MEASUREMENT VIA SPECTRAL ESTIMATION OF RADAR TIME-OF-ARRIVAL PERIODICITIES

David L. Sharpin, Springfield; James B. Y. Tsui, Dayton, and Rudy L. Shaw, Huber Heights, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 29, 1993, Ser. No. 53,758
Int. Cl.[5] G01S *5/02, 5/04*
U.S. Cl. 342—424 **1 Claim**



1. A method to perform angle-of-arrival measurements (AOA) of radar signals using a first antenna and a second antenna separated by a distance d, wherein Time-Of-Arrival (TOA) values of the radar signals at the first and second antennas have been time tagged using Electronic Warfare (EW) receiver means and a TOA clock having a resolution T; the TOA values for the signals from the first and second antennas being represented respectively as

$$TOA_1(i)=\delta(n_i)$$

$$TOA_2(i)=\delta(n_i-mT)$$

where k represents the discrete frequency components, the n_i are the individual Time-Of-Arrival (TOA) data values and N is the last TOA value collected, and m =(0,1,2,. . .);
wherein said method comprises:

determining the Pulse Repetition Intervals using a Discrete Fourier Transform (DFT) $X_1(k)$ for signals from the first antenna and $X_2(k)$ for signals from the second antenna as

$$X_1(k)=\sum_{n_i} e^{\frac{-j2\pi n_i k}{N}}$$

$$X_2(k)=\sum_{n_i} e^{\frac{-j2\pi(n_i+mT)}{N}}$$

$$= e^{\frac{-j2\pi kmT}{N}} \sum_{n_i} e^{\frac{-j2\pi kn_i}{N}}$$

where k represents the discrete frequency components, the n_i are the individual Time-Of-Arrival (TOA) data values and N is the last TOA value collected;

selecting peak values of k corresponding to the peaks of the modulus of the DFTs representing Pulse Repetition Frequency (PRF) for signals from the first and the second antennas;

taking the phase values ϕ_1 and ϕ_2 respectively from the DFTs for the signals from the two antennas as

$$\phi_1=\frac{2\pi n_i k}{N}$$

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-continued

$$\phi_2 = \frac{2\pi k(n_1 + mT}{N}$$

determining the difference between the phase values ϕ_1 and ϕ_2 for a peak value of k as

$$\Delta\phi_{peak} = \frac{2\pi k_{peak} mT}{N}$$

estimating a value for TDOA as:

$$TDOA = \frac{\Delta\phi_{peak} N}{2\pi k}$$

determining the angle-of-arrival AOA as

$$\theta = \cos^{-1}\left[\frac{cTDOA}{d}\right]$$

5,285,210

DOUBLE LOOP ANTENNA WITH REACTANCE ELEMENTS

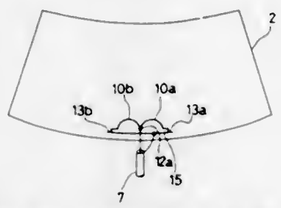
Gentei Sato, Urawa, and Haruo Kawakami, Yokohama, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 694,472, May 1, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,593

Claims priority, application Japan, May 8, 1990, 2-117918

Int. Cl.[5] H01Q *1/32, 1/38*

U.S. Cl. 343—713 **7 Claims**



1. A double semi-loop antenna for transmission and reception of a mobile telephone, comprising:

juxtaposed semicircular conductors so as to form a loop on a window glass of a vehicle, any two of said juxtaposed semicircular conductors having at least one common first end connected to each other to provide power feed point means;

L-shaped reactance element conductors, each provided on said window glass and one end of each of said L-shaped reactance element conductors connected to a second end of one of said semicircular juxtaposed conductors; and

a ground conductor connected to another end of said L-shaped reactance element conductors.

5,285,211

COAXIAL COLLINEAR ELEMENT ARRAY ANTENNA

John C. Herper, Glen Cove; Anthony M. Bucceri, Jr., Larchmont, and John E. Arthur, III, Island Park, all of N.Y., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 2, 1992, Ser. No. 939,260

Int. Cl.[5] H01Q *1/16*

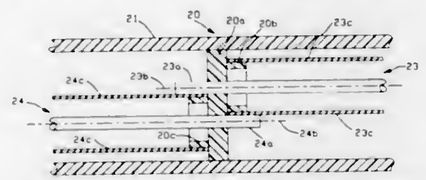
U.S. Cl. 343—791 **6 Claims**

1. An antenna comprising:

a plurality of coaxial transmission lines each having an inner conductor having an outer diameter and an outer conductor having an inner diameter, said inner conductor of each coaxial transmission line being soldered to said outer conductor of a next adjacent coaxial transmission line;

coupler means positioned between each coaxial transmission line and said next adjacent coaxial transmission line for supporting said inner and outer conductors of said each coaxial transmission line and said next adjacent transmission line in a manner that maintains concentricity of inner and outer conductors of adjacent transmission lines;

said coupler means including a dielectric coupler constructed of dielectric material comprising a central disk



having a predetermined diameter and offset outer conductor supports positioned on opposite sides of said central disk, said outer conductor supports having outer diameters substantially equal to said inner diameter of each outer conductor and concentric with an inner conductor through-passage in said central disk having a diameter substantially equal to said outer diameter of each inner conductor, said offset of said outer conductor supports is established so that said inner conductor of a coaxial transmission line passed through said inner conductor through-passage is in substantial contact with said outer conductor of said next adjacent coaxial transmission line.

5,285,212

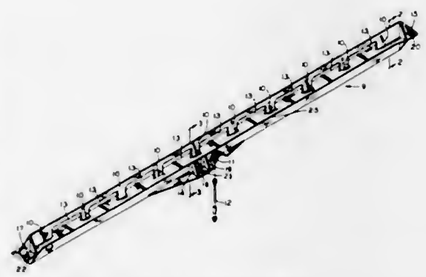
SELF-SUPPORTING COLUMNAR ANTENNA ARRAY

Robert K. McNiece, Centreville, Va., assignor to Radiation Systems, Inc., Sterling, Va.

Filed Sep. 18, 1992, Ser. No. 946,071

Int. Cl.[5] H01Q *9/28*

U.S. Cl. 343—795 **9 Claims**



1. A columnar antenna array comprising:

a printed circuit board having on one side thereof a plurality of dipoles formed in a linear array, each dipole including first and second in line dipole elements connected to first and second conductors of a feedline, and wherein said circuit board includes a plurality of open portions between each dipole feedline, and having a feed network for supplying a radio frequently signal to each dipole feedline;

a connector connected to an edge of said printed circuit board in contact with said feed network; and,

an encapsulating compound surrounding said printed circuit board exposing said connector, and forming at first and second ends of said printed circuit board first and second mounting supports for said antenna array.

5,285,213

ELECTROMAGNETIC RADIATION REFLECTOR

Klaus N. Tusch, London, England, assignor to Colebrand Limited, London, England

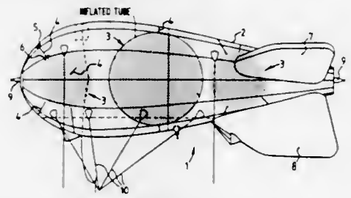
PCT No. PCT/GB91/00581, § 371 Date Jan. 21, 1992, § 102(e) Date Jan. 21, 1992, PCT Pub. No. WO91/16735, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 778,138

Claims priority, application United Kingdom, May 2, 1990, 9009937; May 11, 1990, 9010604; Aug. 21, 1990, 9018306; Apr. 12, 1991, 9008401

Int. Cl.[5] H01Q *15/20, 15/18*

U.S. Cl. 343—915 **6 Claims**



1. A reflector for reflecting incident electromagnetic energy, comprising a hollow housing adapted to fly in ambient air and, interiorly thereof, a reflector device for reflecting incident electromagnetic radiation, said reflector device comprising an inflatable envelope and reflecting means within said envelope, and wherein the housing is inflatable with a suitable gas.

5,285,214

APPARATUS AND METHOD FOR DRIVING A FERROELECTRIC LIQUID CRYSTAL DEVICE

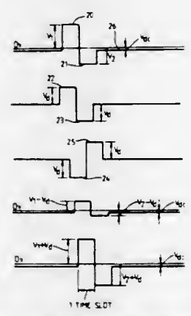
Carolyn Bowry, Birmingham, England, assignor to The General Electric Company, p.l.c., United Kingdom

Continuation of Ser. No. 340,296, Apr. 5, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 865,697

Claims priority, application United Kingdom, Aug. 12, 1987, 8719078

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—97 **9 Claims**



1. A method of driving a ferroelectric liquid crystal device matrix in a time-division multiplex mode, comprising the steps of: applying strobing signals cyclically to strobe lines coupled to two-state liquid crystal elements of the display; and applying data signals selectively to data lines coupled to the elements; wherein each strobing signal comprises, during each frame period, only two strobe pulse periods, during which there are a first pule of one polarity followed by a second pulse of the opposite polarity and of different amplitude and/or duration from the first pule, each strobing signal including, between successive frame periods, a dc voltage which is effective during a period between the end of the second strobe pulse of a said strobing signal and the beginning of the first strobe pulse of the next strobing signal applied to the same strobe line to substantially cancel a dc voltage level resulting from the difference between the amplitudes and/or durations of the first and second strobe pulses, and which dc voltage will not switch the liquid crystal elements during said period; wherein the data signals comprise selectively a first data signal or a second data signal, said first data signal being operative in combination with the strobing signal to set a selected liquid crystal element in a first one of its states, and said second data signal being operative in combination with the strobing signal to set the selected liquid crystal element in the other of its states; and wherein one or each of the first and second data signals comprises two consecutive pulses of opposite polarities, there being only two data pulse periods in a frame period, said data pulse periods being substantially coincident with the strobe pulse periods.

5,285,215

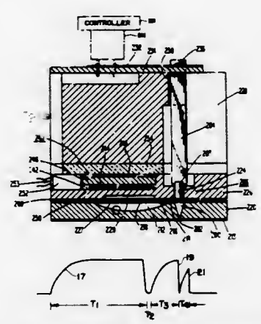
INK JET APPARATUS AND METHOD OF OPERATION

Stephen J. Liker, Danbury, Conn., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 857,517, Apr. 22, 1986, abandoned, which is a continuation of Ser. No. 453,295, Dec. 27, 1982, abandoned. This application Oct. 27, 1987, Ser. No. 117,351

Int. Cl.[5] B41J *2/045*

U.S. Cl. 346—1.1 **9 Claims**



1. In a drop on demand ink jet printer including a print head having a plurality of orifices, a plurality of ink chambers each associated with a particular one of said orifices, respectively, and a plurality of transducer means each associated with a particular one of said ink chambers, respectively, said plurality of transducer means each being selectively operable for producing a pressure disturbance within a respective associated ink chamber, for ejecting an ink droplet from an associated orifice, the method comprising the steps of:

(1) operating a selected one of said plurality of transducer means in an iterative manner, for producing a plurality of successive pressure disturbances within an associated ink chamber, for causing a predetermined respective plurality of successively higher velocity ink droplets to all be successively ejected from an associated orifice along the same trajectory, within a time period permitting said droplets to merge while air-borne, thereby controlling the size of the "ink spot" produced by the merged droplets upon striking a print medium, whereupon predetermined relative movement between said print head and said print medium a plurality of "ink spots" are so printed upon said print medium for printing desired images of predetermined boldness.

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5,285,216

THERMAL HEAD

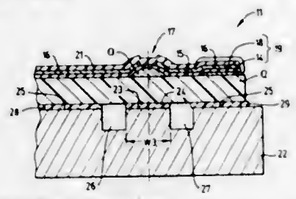
Shigenori Ota, Aira; Tsuyoshi Yasutomi, Kokubu, and Akihiro Kawata, Aira, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 26, 1990, Ser. No. 589,392

Claims priority, application Japan, Sep. 27, 1989, 1-113953[U]; Sep. 21, 1990, 2-99561[U]

Int. Cl.[5] B41J *2/325*

U.S. Cl. 346—76 PH **13 Claims**



1. A thermal head comprising:

a heat resistant substrate member having front and rear major surfaces, said rear major surface having first and second regions spaced from one another in a first direction, and heating elements mounted on said front major surface in line with said first region;

a cooling member disposed adjacent said rear major surface of said substrate member, said cooling member having a major surface with a first portion facing said first region of said rear major surface of said substrate member and a second portion facing said second region of said rear major surface of said substrate member;

an elastic material having a high heat conductivity disposed between said first region of said rear major surface of said substrate member and said first portion of said cooling member major surface; and

an adhesive disposed between said second region of said rear major surface in said second region of said substrate member and said second portion of said cooling member major surface, wherein

said cooling member is provided with at least one groove in said major surface of said cooling member said groove being located between said first and second regions for separating said elastic material from said adhesive.

5,285,217

LED EXPOSURE HEAD

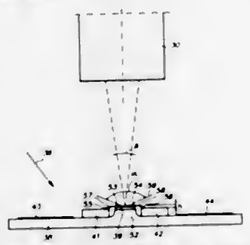
Kris P. Avonts, Bouwel, Belgium, assignor to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Mar. 6, 1992, Ser. No. 846,918

Claims priority, application European Pat. Off., Apr. 4, 1991, 91200785.3

Int. Cl.[5] G01D *15/14*

U.S. Cl. 346—107 R **6 Claims**



1. In a light-emitting diode (LED) exposure head for use in a recording device for linewise recording information on an image plane of a light-sensitive support, said exposure head comprising a metal base plate, said base plate having an elongated central region on which is mounted a row of LED chips each emitting an inverted cone of light having an axis generally perpendicular to said base plate and a generally flat body region on which is mounted at least one row of integrated circuit chips and at least one printed circuit board, each said row of circuit chips being arranged along a side of said row of LED chips and each said printed circuit board being disposed on a side of said at least one row of circuit chips remote from said row of LED chips and electrically connecting said circuit chips to electrical connectors, each of said LED chips and each of said circuit chips having a face thereof opposite said base plate on which is provided a bonding pad for attachment of an electrical connecting wire, said faces of said LED chips opposite said base plate lying in a generally common plane and said faces of said circuit chips opposite said base plate lying in a generally common plane which is different from the common plane of the faces of said LED chips, and electrical connecting wires attached between the bonding pads of the LED chips and the bonding pads of the circuit chips, whereby each of the LED chips is electrically connected to a corresponding one of said circuit chips, and optical imaging means for focusing an image forming a portion of said cone of light emitted by each of said LED chips onto the image plane of said light-sensitive support, said optical imaging means being held in spaced relation to said LED chips opposite said base plate, in combination, the improvement wherein said LED chips have a dimension perpendicular to the faces thereof opposite said base plate that is less than a dimension of said circuit chips perpendicular to the faces of said circuit chips opposite to said base plate, said central region of said base plate is constituted by an elongated rib elevated above the flat body region of the plate, the elevation of said elevated rib above said body region being such that the plane of the faces of said LED chips opposite said base plate lies higher above said flat body region of said base plate than does the plane of the faces of said circuit chips opposite said base plate, and said electrical wires connecting between the bonding pads of said LED chips and circuit chips extend along paths displaced outside the light cones emitted by said LED chips.

5,285,218

AUTOMATIC LEAD FEED APPARATUS IN AN AUTOMATIC DRAFTING APPARATUS

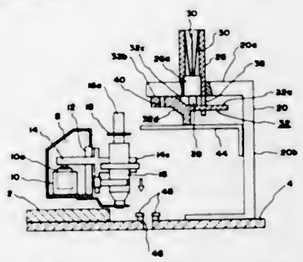
Kuniaki Tanaka, Tokyo, Japan, assignor to Mutoh Industries, Ltd., Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,023

Claims priority, application Japan, Nov. 30, 1989, 1-311905; Nov. 30, 1989, 1-311906; Nov. 30, 1989, 1-311907

Int. Cl.[5] G01D *15/16*; **B43L** *13/00*

U.S. Cl. 346—139 R **7 Claims**



1. A lead feed apparatus in an automatic drafting machine having a drawing board, said lead feed apparatus comprising:

a writing instrument removably mounted on a pen holding arm, said pen holding arm cooperating with an elevational drive apparatus in a pen head that is movably mounted on the drawing board for elevational movement of said pen holding arm, and said writing instrument having a lead chuck mechanism including a chuck portion and a knock mechanism for opening said chuck portion;

a lead reservoir having a lower hole;

a shutter mechanism below said lead reservoir having a through hole therein, said shutter mechanism being movable from a closed position wherein said lower hole of said lead reservoir is closed by said shutter mechanism to an open position wherein said lower hole is aligned with said through hole of said shutter mechanism by engagement of said shutter mechanism by said writing instrument so as to drop one lead from said lead reservoir into said writing instrument; and

a knocking arm on the drafting machine for engaging said knock mechanism when said knock mechanism is elevated by said elevational drive apparatus elevating said pen holding arm and said writing instrument to feed lead to said writing instrument.

5,285,219

Patent Not Issued For This Number

5,285,220

IMAGE RECORDING APPARATUS WITH TONE CORRECTION FOR INDIVIDUAL RECORDING HEADS

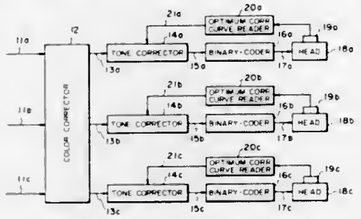
Akio Suzuki; Nobuhiko Takekoshi, both of Yokohama, and Toshimitsu Danzuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 617,217, Nov. 23, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 902,807

Claims priority, application Japan, Nov. 22, 1989, 1-301964; Nov. 22, 1989, 1-301966; Mar. 1, 1990, 2-047163

Int. Cl.[5] B41J *2/05*; **H04N** *1/23*

U.S. Cl. 346—140 R **53 Claims**



1. An image recording apparatus for recording an image using a plurality of recording heads, each recording head being capable of recording an image, having particular tone characteristics, in response to an image signal supplied to the recording head, the apparatus comprising:

a plurality of tone correcting means for correcting the image signal to be supplied to a corresponding recording head in accordance with tone correcting information associated with that recording head; and

tone correcting information setting means for setting the tone correcting information for each recording head in accordance with the particular tone characteristics associated with that recording head.

5,285,221

COLOR IMAGE ELECTROPHOTOGRAPHIC APPARATUS HAVING PHOTOSENSITIVE BODY AND INTERMEDIATE TRANSFER BODY

Michio Sumiyoshi; Akira Sasaki; Isamu Terashima, and Hiroyuki Tadokoro, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,186

Claims priority, application Japan, Apr. 18, 1991, 3-086531

Int. Cl.[5] G03G *15/01*; **G01D** *9/42, 15/14*

U.S. Cl. 346—157 **9 Claims**

1. A color image electrophotographic apparatus having a photosensitive body and an intermediate transfer body comprising:

an image data generating means for generating an image data as a video signal;

a control means for lighting on or lighting off a laser beam which is modulated according to said video signal generated from said image data generating means;

an exposure means for deflecting and scanning said laser beam toward a width direction of a recording medium by a rotary polygon mirror;

a light detection means for generating a printing synchronizing signal by detecting said scanning laser beam which passes through a predetermined position;

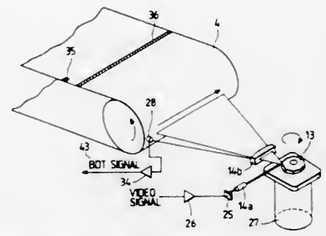
a photosensitive body in which an electrostatic latent image is formed by exposing said exposure means;

a set of development means for forming a toner image on a surface of said photosensitive body by developing said electrostatic latent image formed on said photosensitive body;

a recording medium transporting means for transporting said recording medium;

an intermediate transfer body for transferring once said toner image; and

a control means for controlling each of the above stated means, said control means controls said above stated means in which by repeatedly rotating a plural time said photosensitive body and by controlling said exposure means in accordance with said image data given by said image data generating means said electrostatic latent image for forming repeatedly said toner image having a different color each on said photosensitive body, said



toner image having said different color is formed according to developing said electrostatic latent image, said toner image is repeatedly transferred on said intermediate transfer body, a color image is formed on said intermediate transfer body, and after that said color image is transferred collectively on said recording medium;

wherein said color image electrophotographic apparatus comprises further:

a passing-through detection means for detecting a specific portion of said photosensitive body; and

an image data requirement signal generating means for controlling a generating timing of an image requirement signal for forming said toner image,

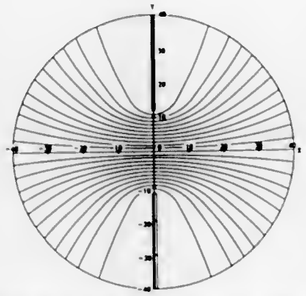
wherein an outer peripheral length of said intermediate transfer body is such that a number of times a printing synchronizing signal is produced during one rotation of said intermediate transfer body is an integer multiple of a number of faces of said rotary polygon mirror,

said passing-through detection means is provided at a predetermined position on said photosensitive body, and

said image data requirement signal generating means controls said generating timing of said image requirement signal in accordance with a passing-through detection signal obtained by said passing-through detection means and a selected number of times said printing synchronizing signal has been produced, thereby enabling a position of said toner image on said intermediate transfer body to be controlled by specifying said selected number of times said printing synchronizing signal has been produced.

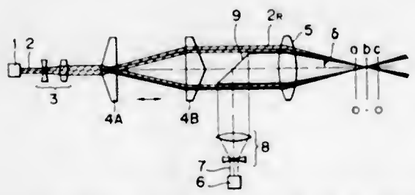
VOL 1159 ISS 2 FEB 8 1994 UMI

5,285,222
PROGRESSIVE LENS SERIES
Richard P. Waldo, West Hartford, Conn., assignor to Gentex Optics, Inc., Carbondale, Pa.
Filed Nov. 20, 1992, Ser. No. 979,628
Int. Cl.[5] G02C *7/06*
U.S. Cl. 351—169 24 Claims



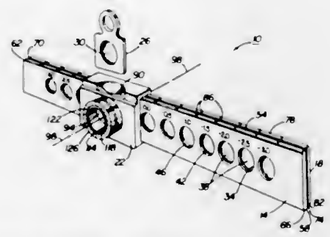
1. A progressive power ophthalmic lens comprising a lens body with a progressive power surface having a first vision portion and a second vision portion, the power of one of said portions being different from the other in accordance with a power curve which lies entirely in the y-z plane of a Cartesian coordinate system and which is the umbilical portion of the principal meridian of said progressive surface, the curvature of said surface in at least one of said vision portions spreading away from said power curve in accordance with a spreading function defined by the intersection of nested non-bipolar conic sections with the x-y plane of said coordinate system.

5,285,223
OPHTHALMIC OPTICAL APPARATUS HAVING AN ALIGNMENT OPTICAL SYSTEM
Yasunori Ueno, Kawasaki, and Masanobu Kaneko, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Aug. 21, 1992, Ser. No. 933,096
Claims priority, application Japan, Aug. 30, 1991, 3-244233
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—208 11 Claims



1. An ophthalmic optical apparatus having an alignment optical system, comprising:
means for generating a treatment laser light beam;
means for generating an alignment light beam having a different wavelength than that of the treatment light beam;
a focusing optical system for focusing the treatment light beam and the alignment light beam onto an object plane of an eye to be treated; and
cone lens means having two conical planes for expanding the alignment light beam to a collimated light beam having a ring-shaped cross section along a periphery of the treatment light beam;
said cone lens means including a first conical plane arranged on the alignment optical axis for refracting the alignment light beam and expanding the same to a conical light beam centered on the optical axis, and a second conical plane for refracting the conical light beam, forming the same into a ring-shaped collimated light beam parallel to the optical axis and directly the same to said focusing optical system; whereby the alignment light beam is formed into a small light spot pattern in an in-focus state and into a ring-shaped light pattern centered on the optical axis in a defocus state.

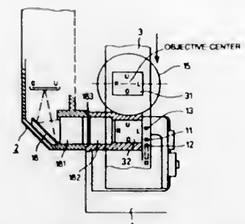
5,285,224
METHODS AND APPARATUS FOR DETERMINING REFRACTIVE ERROR
Clinton N. Sims, 3432 West Riverside Dr., Ft. Myers, Fla. 33901
Continuation-in-part of Ser. No. 526,395, May 21, 1990, Pat. No. 5,120,124, which is a continuation-in-part of Ser. No. 427,724, Oct. 27, 1989, Pat. No. 5,104,214, which is a continuation-in-part of Ser. No. 310,334, Feb. 13, 1989, Pat. No. 4,943,162, which is a continuation-in-part of Ser. No. 116,322, Nov. 2, 1987, Pat. No. 4,840,479, which is a continuation-in-part of Ser. No. 23,980, Mar. 16, 1987, Pat. No. 4,820,040, which is a continuation of Ser. No. 670,398, Nov. 9, 1984, abandoned.
This application Jun. 3, 1992, Ser. No. 893,245
Int. Cl.[5] A61B *3/02*; G02B *27/02*
U.S. Cl. 351—235 12 Claims



1. Optical apparatus comprising.
a. a first bar defining (1) a longitudinal axis, (2) a track parallel to the longitudinal axis, and (3) a plurality of apertures;
b. a lens (1) positioned within each aperture and along the longitudinal axis of the first bar and (2) defining an axis of rotation perpendicular to the longitudinal axis of the first bar; and
c. a collar, defining (1) a recess adapted to be engaged by the track of the first bar for movement along the first bar and (2) an aperture for alignment with any selected lens of the first bar.

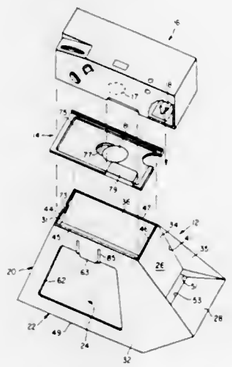
5,285,225
MOTION PICTURE CAMERA WITH COMPLETE OR PARTIAL FRAME SUPERIMPOSITION
Otto Blaschek, Aschheim; Karl-Heinz Schwank, and Thomas Popp, both of Munich, all of Fed. Rep. of Germany, assignors to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG, Munich, Fed. Rep. of Germany
PCT No. PCT/DE89/00476, § 371 Date May 20, 1991, § 102(e) Date May 20, 1991, PCT Pub. No. WO90/00758, PCT Pub. Date Jan. 25, 1990
PCT Filed Jul. 14, 1989, Ser. No. 491,743
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1988, 3824049
Int. Cl.[5] G03B *19/18*
U.S. Cl. 352—93 11 Claims

1. A motion-picture camera comprising taking optics for projecting frames onto a motion-picture film, a film transport mechanism for moving said film along a film path, and a frame projection device disposed in the vicinity of the film path, said frame projection device being located directly in front of or behind said taking optics a distance essentially corresponding to the format of frames for optional projection of at least a



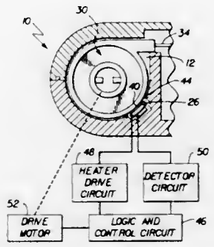
partial frame spaced directly in front of or behind the frame to be projected by said taking optics onto said motion-picture film.

5,285,226
PHOTOGRAPHIC COPY STAND AND BASE THEREFOR
Peter A. Frosig, Rochester, and William L. Burnham, LeRoy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 22, 1993, Ser. No. 7,687
Int. Cl.[5] G03B *15/03, 27/54*
U.S. Cl. 354—81 10 Claims



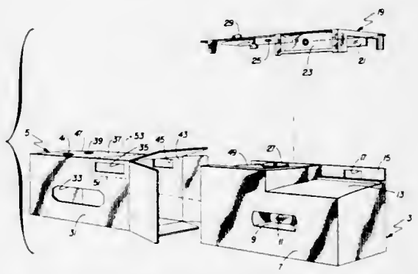
1 A copy stand for locating a camera relative to a subject to be copied, the camera having an objective and a flash device, said copy stand comprising:
a nest for receiving the camera with the objective and flash device in predetermined positions relative to the nest;
paper board folded and coupled to itself to form a generally tubular section, said generally tubular section extending from one end coupled to said nest to an opposite end for surrounding the subject and establishing the position of the subject relative to the camera objective;
said generally tubular section including a baffle extending from adjacent the one end for blocking the flash device from directly illuminating the subject;
said generally tubular section including a diffuse reflecting panel extending from adjacent the opposite end and beyond the baffle for defining with said baffle an opening in said generally tubular section and for directing illumination indirectly around the baffle from the flash device toward the subject.

5,285,227
PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE WITH DOUBLE EXPOSURE PREVENTION
Joel S. Lawther, and Russell J. Cope, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 16, 1993, Ser. No. 33,665
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 9 Claims



1. Double exposure prevention apparatus for a photographic camera comprising:
a heat generating element so positioned in the camera as to be in heat transfer relationship with a thermally responsive phase change medium in a predetermined region on the surface of a film cartridge placed in the camera; and
control means for activating the heat generating element when at least one image frame has been exposed on film from said cartridge to create an indicium on said phase change medium to visually indicate said film in the cartridge has been exposed.

5,285,228
PHOTOGRAPHIC FILM PACKAGE WITH ANTI-REFLECTION SUBSTANCE FOR VIEWFINDER
Alan V. VanDeMoere, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 19, 1993, Ser. No. 4,870
Int. Cl.[5] G03B *13/02*
U.S. Cl. 354—219 9 Claims



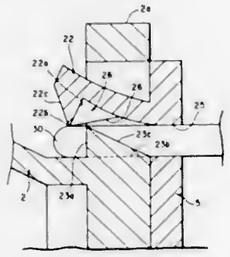
1. A photographic film package comprising a camera preloaded with a roll film and including a non-opaque body section having an integral front finder lens for viewing a subject to be photographed, and an outer opaque packaging tightly encasing said camera and having a front opening for said front finder lens, is characterized in that:
said outer packaging is coated with a light-absorbent substance at a location along its inside surface, which is sufficiently absorbent to prevent ambient light transmitted through said front finder lens to said location from being reflected off said inside surface at least to the front finder lens.

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5,285,229
LENS-FITTED PHOTOGRAPHIC FILM PACKAGE

Kazuo Kamata, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 8, 1993, Ser. No. 44,038
Claims priority, application Japan, Apr. 9, 1992, 4-89029; Apr. 15, 1992, 4-95488
Int. Cl.[5] G03B *17/02;* **B65D** *17/52, 41/16*
U.S. Cl. 354—288 **14 Claims**

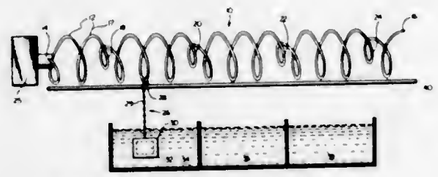


1. A lens-fitted photographic film package which is preloaded with film and has an exposure mechanism said lens-fitted photographic film package comprising:
- a hook having a first engaging surface, said hook being formed integrally on a first part of said lens-fitted photographic film package and extending substantially parallel to first direction, and said first engaging surface extending substantially perpendicular to said first direction;
- an engaging portion formed on a second part of said package, said engaging portion having a second engaging surface which engages with said first engaging surface when said first part is joined to said second part by pushing said first part toward said second part in said first direction;
- a hole formed in said first part at a root of said hook in a position overlying said first engaging surface; and
- a projection formed on said hook, said projection having a sloping surface which extends from said root of said hook toward said first engaging surface to occupy a space behind said hole;
- whereby said first engaging surface can be disengaged from said second engaging surface by inserting a tool in said hole and by pushing said tool along said sloping surface in said first direction.

5,285,230
PROCESSING DEVICE

Joseph R. Ceisel, 1939 Linneman St., Glenview, Ill. 60025

Continuation-in-part of Ser. No. 638,126, Jan. 7, 1991, Pat. No. 5,132,717. This application Jun. 1, 1992, Ser. No. 891,806
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—322 **14 Claims**



1. A device for processing objects comprising:

a series of processing stations;

coil means for transporting objects comprising a rigid generally helical coil from which an object to be processed may be suspended wherein the central axis of said coil is vertically disposed above each of said series of processing stations; and

means for rotating said coil about its central axis wherein, when said coil is rotated, an object which is suspended from said coil is capable of being transported in the axial direction of the coil;

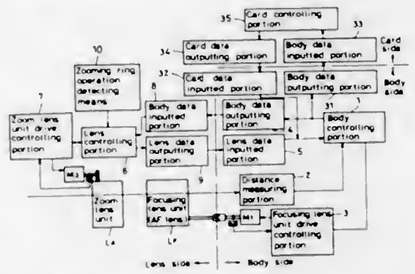
said coil transport means further comprising one or more deviations in its shape capable of vertically displacing an object suspended from said coil from its axial direction of travel when said coil is rotated;

wherein the shape of the coil and its deviations are selected such that an object suspended from said coil is capable of being successively transported to and lowered into one or more of said processor stations.

5,285,231
CAMERA HAVING LEARNING FUNCTION

Masataka Hamada, Osakasayama; Masayuki Ueyama, Toyonaka; Kenji Ishibashi, and Hiroshi Ootsuka, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 797,960
Claims priority, application Japan, Nov. 29, 1990, 2-334414; Nov. 29, 1990, 2-334415; Nov. 29, 1990, 2-334416
Int. Cl.[5] G03B *5/00, 17/18*
U.S. Cl. 354—400 **3 Claims**



1. A camera comprising:

storing means where automatic control data is stored;

automatic setting means for determining an automatic control value based on said automatic control data;

manual setting means for determining a manual control value according to a manual operation;

changing means for changing the automatic control data stored in said storing means according to the automatic control data stored in said storing means and said manual control value; and

reset means for changing said automatic control data to a predetermined initial data.

5,285,232
RED-EYE PHENOMENON PREVENTING DEVICE

Hidenori Taniguchi; Kazuo Ikawa; Masayoshi Kiuchi, and Michio Hirohata, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 628,489, Dec. 17, 1990, abandoned. This application Sep. 22, 1992, Ser. No. 951,306
Claims priority, application Japan, Dec. 21, 1989, 1-331741; Dec. 21, 1989, 1-331742
Int. Cl.[5] G03B *15/05*
U.S. Cl. 354—415 **61 Claims**

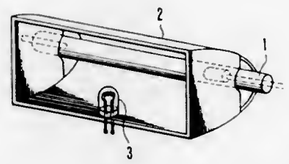
1. A red-eye phenomenon preventing device comprising:

a) a flash tube for flash photography;

b) a light emitting element for preventing the red-eye phenomenon;

c) a reflection shade arranged to surround said flash tube for flash photography and said light emitting element for preventing the red-eye phenomenon, said flash tube and said light emitting element being arranged at different positions relative to said reflection shade;

d) a protector disposed in front of said flash tube for flash



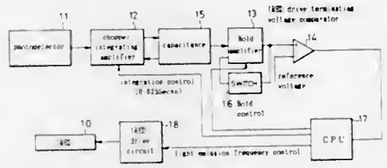
photography and said light emitting element for preventing the red-eye phenomenon; and

e) control means including first means for excitation of said light emitting element for preventing the red-eye phenomenon for a predetermined time period and providing output indication of the expiration of said predetermined time period and second means responsive to said output indication for initiating excitation of said flash tube for flash photography.

5,285,233
EXTRINSIC LIGHT ELIMINATOR FOR AUTOFOCUSING CIRCUIT

Hideo Yoshida, and Minoru Ishiguro, both of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Oct. 6, 1992, Ser. No. 957,617
Claims priority, application Japan, Oct. 9, 1991, 3-290874; Oct. 9, 1991, 3-290875; Oct. 9, 1991, 3-290877
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **8 Claims**



1. An extrinsic light eliminator for an autofocusing circuit comprising:

a light emitter for projecting a signal light;

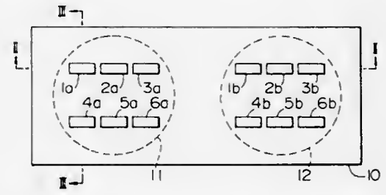
a photodetector for detecting light reflected on an object to be photographed as the corresponding photocurrent for determining the distance to the object; and

extrinsic light eliminator means comprising a chopper integrating circuit incorporated in the autofocusing circuit for converting the photocurrent to a corresponding voltage and simultaneously amplifying this voltage before it is outputted therefrom, said extrinsic light eliminator means further including a hold circuit coupled to said chopper integrating circuit to hold the output voltage of said chopper integrating circuit, and wherein a capacitor is selectively coupled in said chopper integrating circuit and said hold circuit whereby said capacitor serves both as the integrating capacitance for the chopper integrating circuit and the voltage holding capacitance for the hold circuit;

5,285,234
PHASE DIFFERENCE DETECTING TYPE AUTOFOCUSING DEVICE INCLUDING AN OPTICAL SYSTEM HAVING FIRST AND SECOND LENSES

Jun Hasegawa, and Takashi Miida, both of Ashigarakami, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1992, Ser. No. 904,327
Claims priority, application Japan, Jun. 26, 1991, 3-154678
Int. Cl.[5] C03B *13/36*
U.S. Cl. 354—408 **5 Claims**



1. A phase difference detecting type autofocusing device comprising:
- an optical system having first and second lenses, said first and second lenses having the same focal length and disposed on a first plane with the optical axes of said lenses being set in parallel;
- a plurality of first photosensors, having photosensitive regions and being disposed on a second plane in parallel with said first plane, for converting information of images focused by said first lens into electric signals; and
- a plurality of second photosensors, having photosensitive regions and being disposed on said second plane at positions covered by said second lens, for converting information of images focused by said second lens into electric signals, each of said second photosensors being spaced apart in the same direction by an equal distance from a corresponding one of said plurality of first photosensors,
- wherein said first and second photosensors are disposed two-dimensionally in a matrix shape and are formed on a single, rectangular semiconductor chip linearly along two opposite sides of said chip, and correlation calculation circuits and a multiplexer are formed on said chip at an area intermediate of said first and second photosensors, so that said photosensitive regions of said first photosensors are spaced apart by a substantial distance from said photosensitive regions of said second photosensors on said single, rectangular semiconductor chip.

5,285,235
PHOTOGRAPHIC COPYING APPARATUS AND OPERATING PROCESS

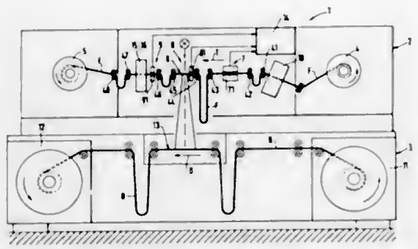
Beat Frick, Buchs, Switzerland, assignor to Gretag Imaging AG, Althardstrasse, Switzerland

Filed Sep. 25, 1992, Ser. No. 950,670
Claims priority, application European Pat. Off., Sep. 26, 1991, 91810758.2
Int. Cl.[5] G03B *27/46, 27/50*
U.S. Cl. 355—41 **18 Claims**

1. A photographic copying apparatus for processing photographic film comprising: a measuring station; at least one processing station for the film which station is separated spatially from the measuring station in the direction of film transport and downstream of the measuring station in a film path; a calculating and evaluation unit that is connected to the measuring station and to the processing station; and scanning units for the film in the measuring station and in the processing station, which units are likewise connected to the calculating and evaluation unit to examine the film for specific predetermined criteria; to thereby detect events on the film and to establish their occurrence on the film such that events in the measuring

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station and in the processing station can be associated and any necessary correction of the film positioning in the processing station derived therefrom, wherein the scanning units for the film provided in the measuring station further comprise at least



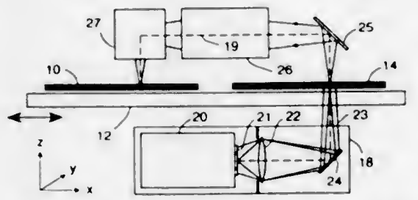
one detector for perforations in the film and a splice-detector, and the scanning units in the processing station further comprise at least one detector for the perforations in the film and a splice-detector.

5,285,236

LARGE-AREA, HIGH-THROUGHPUT, HIGH-RESOLUTION PROJECTION IMAGING SYSTEM

Kanti Jain, 18 Algonquian Trail, Briarcliff Manor, N.Y. 10510

Filed Sep. 30, 1992, Ser. No. 954,662
Int. Cl.[5] G03B *27/53*
U.S. Cl. 355—53 **28 Claims**



1. A large-area, high-throughput, high-resolution, scan-and-repeat projection imaging system for replicating patterns present on a mask onto a substrate, characterized by

(a) a stage subsystem (**11/12**) comprising mask locking means and substrate locking means providing fixed juxtaposition of the mask (**14**) relative to the substrate (**10**); said stage subsystem being capable of scanning in one dimension, and when not scanning in that dimension, capable of moving laterally in a direction perpendicular to the scan direction so as to position itself for another scan; said stage subsystem thus being capable of exposing the full substrate by breaking up the substrate area into a certain number of parallel strips, and exposing each of said strips by scanning the length of the strip across a fixed illumination region;

(b) an illumination subsystem (**18**) having the wavelength and intensity distribution characteristics suited for exposure of said substrate (**10**), having an effective source plane of a predetermined shape, and capable of illuminating on said mask (**14**) a region of said predetermined shape;

(c) a projection subsystem (**26,27/30**) for imaging said illuminated region of said predetermined shape on the mask onto the substrate, having an object-to-image magnification ratio of unity, having the desired imaging resolution, having means (**27/33**) to render the image in the same orientation as the object, and having an image field of said predetermined shape and of an area smaller than the substrate area; and

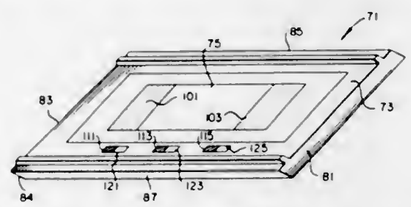
(d) control means to operatively interrelate said stage subsystem (**11/12**), said illumination subsystem (**18**) and said projection subsystem (**26,27/30**) to provide additive illumination in certain overlap regions of areas exposed by adjacent scans such that the effect of the exposure dose delivered in said overlap regions is seamless and the effect of the exposure dose delivered across the entire substrate is uniform.

5,285,237

PHOTOPRINT RETAINING PLATEN FOR DIGITIZING IMAGE SCANNER

Kenneth A. Parulski; Richard F. Manley, and Alan G. Reddig, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 16, 1991, Ser. No. 760,437
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 **26 Claims**



1. An article of manufacture for securely retaining thereon a sheet of photographic recording material comprising a platen having a first, generally flat mounting surface upon which said sheet of photographic recording material is attachable, said platen also having first and second end edges and first and second side edges, and a plurality of stand-off elements extending above said first surface by a height greater than the thickness of a sheet of photographic recording material, so that multiple platens may be stacked together without a sheet of photographic recording material attached to the mounting surface area of a platen contacting an adjacent platen, said platen further comprising one or more regions, located adjacent to said photographic mounting surface area, for storing machine readable photograph parameter information representative of one or more characteristics of the image on a sheet of photographic recording material that is mountable on said photographic mounting surface area, wherein said machine readable photograph parameter information is alterable.

5,285,238

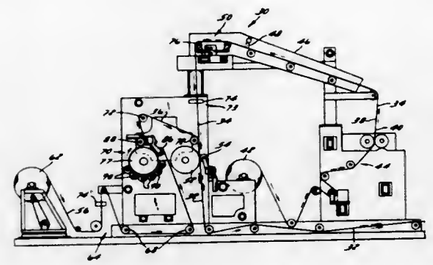
METHOD FOR FORMING A GRAPHIC IMAGE WEB

Thomas A. Quadracci, Brookfield, and Thomas R. Wickert, Butler, both of Wis., assignors to Quad/Tech, Inc., Sussex, Wis.

Continuation-in-part of Ser. No. 929,154, Aug. 12, 1992. This application May 10, 1993, Ser. No. 60,020
Int. Cl.[5] G03B *27/32, 35/14*
U.S. Cl. 355—77 **15 Claims**

1. A method for forming a graphic image having the image of three-dimensionality by joining a precursor image with a superimposed lenticular film through which said precursor image is to be viewed, the improvement comprising the step of applying a lenticular coating having a plurality of lenticules to a precursor image web having a plurality of image elements to produce a graphic image web in which the perceptible image

possesses photographically acceptable quality, wherein said image elements of said precursor image web are printed at an



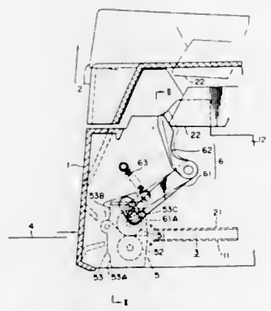
angle which corresponds to the pitch of said lenticules in said lenticular coating.

5,285,239

MECHANISM FOR MOVING A PAIR OF SHEET DUST BRUSHES

Ikuo Negoro, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1990, Ser. No. 514,593
Claims priority, application Japan, Apr. 27, 1989, 1-50010; Mar. 12, 1990, 2-60675
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—200 **9 Claims**



1. An opening and closing mechanism for a sheet printing device comprising:

a pair of sheet dust brushes;

a brush housing including a pair of brush housing portions, said pair of sheet dust brushes each being located in one of said brush housing portions, said pair of brush housing portions being movable between a first position in which said pair of sheet dust brushes are in contact with each other, and a second position in which said pair of sheet dust brushes are separated from each other; and

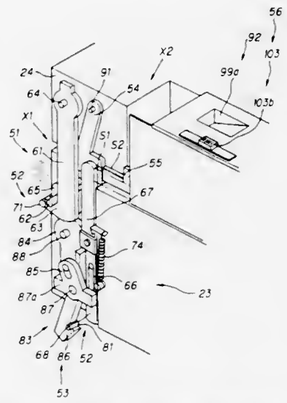
at least one of said brush housing portions being coupled to a predetermined portion of said printing device so as to be movable with respect to said predetermined portion, said predetermined portion being movable between and opened and closed position, said at least one of said brush housing portions being movable to said second position when said predetermined portion is moved to said opened position.

5,285,240

IMAGE FORMING MACHINE COMPRISING THREE SEPARABLE FRAMES WITH OPENING/CLOSING MECHANISMS BETWEEN EACH FRAME

Yoshiya Kinoshita, Ikoma, and Kouichi Yamauchi, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1992, Ser. No. 885,487
Claims priority, application Japan, May 20, 1991, 3-115010
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **2 Claims**



1. An image formation apparatus comprising an image formation apparatus body including:

a lower frame having a transfer paper carrying route and a removable fixing unit;

an upper frame pivotably supported about a spindle to open and close with respect to said lower frame; and

an intermediate frame pivotably supported about the spindle between said upper frame and said transfer paper carrying route, and having removable image formation units; said image formation apparatus further comprising:

a first opening/closing mechanism for opening and closing said upper frame with respect to said intermediate frame; and

a second opening/closing mechanism for opening and closing said intermediate frame with respect to said lower frame;

said first opening/closing mechanism including an upper coupling strip for coupling said upper frame with said intermediate frame, and an upper releasing means for releasing said upper frame from said intermediate frame in response to contact with said upper coupling strip;

said second opening/closing mechanism including a lower coupling means for coupling said lower frame with said intermediate frame, and a lower releasing means for releasing said lower frame from said intermediate frame in response to contact with said lower coupling strip;

said upper releasing means and said lower releasing strip horizontally disposed in parallel with each other;

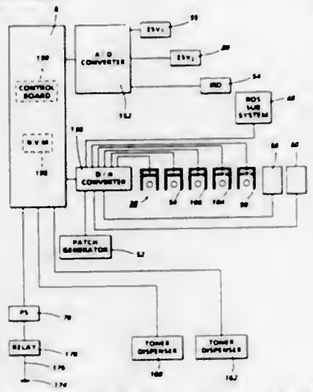
said upper frame having a shared pressing strip actuating said upper releasing means and lower releasing strip;

said pressing strip movably mounted in a direction to actuate said respective opening/closing mechanisms, and being switchable between a first press position to press said upper releasing means and a second press position to press said lower releasing strip; and

a switch mechanism for switching said press strip to one of two positions.

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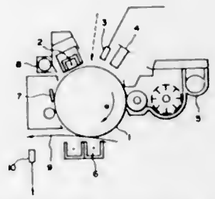
5,285,241
MAINTAINING PRECISE ELECTROSTATIC CONTROL USING TWO ESVS
Mark A. Scheuer, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 7, 1982, Ser. No. 986,400
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **16 Claims**



9. Apparatus for creating tri-level images on a charge retentive surface during operation of a tri-level imaging apparatus, said apparatus comprising:
means for moving said charge retentive surface past a plurality of process stations including a charging station where said charge retentive surface is uniformly charged, a plurality of developer structures for developing latent images and an illumination station for discharging said charge retentive surface;
means for applying electrical bias voltages to said developer structures;
means for applying a reference voltage to a relatively uncharged portion of said charge retentive surface;
first sensor means for sensing a voltage level of said relatively uncharged portion of said charge retentive surface after said reference voltage is applied and generating a first signal representative of said voltage level;
second sensor means for sensing said voltage level of said relatively uncharged portion of said charge retentive surface and generating a second signal representative of said voltage level;
means for adjusting a zero offset of one of said sensors to achieve the same voltage reading as the other one of said sensors and generating a signal representative of an amount of adjustment;
means for storing said signal representative of said amount of adjustment stored in memory; and
means for adjusting the electrical bias voltages applied to said developer structures by an amount equal to a voltage difference between said reference voltage applied to said uncharged charge retentive surface and the voltage sensed by said second sensor.

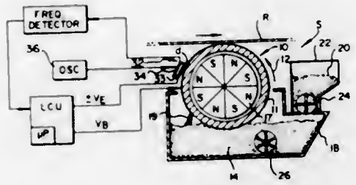
5,285,242
IMAGE FORMING APPARATUS CONTROLLED ACCORDING TO CHANGING SENSITIVITY OF PHOTOCONDUCTOR
Akio Kotani, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Mar. 30, 1993, Ser. No. 39,876
Claims priority, application Japan, Mar. 31, 1992, 4-108710
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **14 Claims**

1. An image forming apparatus comprising:
an image bearing member;
image forming means for forming an image by forming an electrostatic latent image on said image bearing member and developing the electrostatic latent image in accordance with an image forming condition;
counting means for counting the number of images formed by said image forming means;
correcting means for correcting the image forming condition in accordance with a correction value whenever a predetermined number is counted by said counting means;



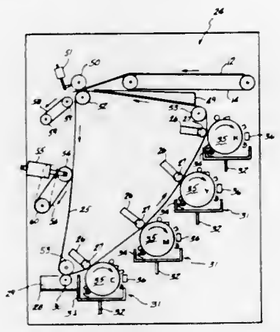
regulating means for manually regulating the image forming condition corrected by said correcting means;
memory means for storing the image forming condition regulated by said regulating means; and
revising means for revising the correction value in accordance with the image forming condition stored by said memory means, so that the following correction of image forming condition by said correcting means is executed in accordance with the correction value revised by said revising means.

5,285,243
METHOD AND APPARATUS FOR DETERMINING TONER DEVELOPMENT RATE
Donald S. Rimai, Webster; Mark C. Zaretsky, Rochester; Bruno Primerano, Webster, and David D. Almeter, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 12, 1992, Ser. No. 896,866
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **4 Claims**



1. In an electrostatographic recording apparatus in which latent electrostatic images on an image-recording element are developed by a toner applicator which operates to apply a mass of electrostatically charged toner particles to the image-bearing surface of the image-recording element, said toner applicator being electrically biased to a predetermined potential, apparatus for determining the rate at which toner particles are applied to the image recording element, said apparatus comprising:
(a) a piezo device positioned adjacent said toner applicator to contact said mass of toner particles;
(b) means for selectively biasing said piezo device to a predetermined potential to cause no more than a monolayer of toner particles to be deposited on a surface of said piezo device; and
(c) means for selectively sensing the time rate of change of toner deposition on the surface of said piezo device by sensing the change in frequency of said piezo device.

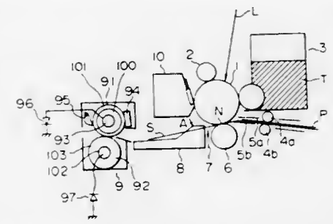
5,285,244
ELECTROSTATIC COLOR PRINTING SYSTEM UTILIZING AN IMAGE TRANSFER BELT
David P. Bujese, Southington, Conn., assignor to Olin Hunt Specialty Products, Inc., West Paterson, N.J.
Division of Ser. No. 605,065, Oct. 29, 1990, Pat. No. 5,158,846.
This application Nov. 4, 1991, Ser. No. 787,846
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 **6 Claims**



1. An apparatus for printing a full color image onto a receiving substrate comprising:
means for forming a plurality of separate liquid toner color images including nonpolar insulating solvent which when combined in superimposed relationship will provide said full color image;
a conductive intermediate transfer surface arranged for movement in a desired direction about a predetermined path within said apparatus;
means for transferring to said intermediate transfer surface said plurality of separate liquid toner color images in superimposed fashion to form said full color image;
progressive heating means spaced from said intermediate transfer surface, said heating means being arranged progressively closer to said intermediate transfer surface in said direction of movement, said heating means providing progressive ramping up of the heat, in said direction of moment, to progressively and gradually extract said nonpolar insulating solvent from the superimposed toner images; and
means arranged following said heating means for transferring said color image to a receiving surface.

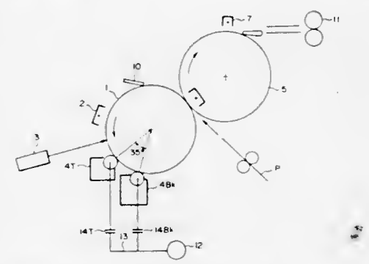
5,285,245
ELECTROSTATIC TRANSFER TYPE IMAGE FORMING APPARATUS WITH RECORDING MATERIAL GUIDE FOR CHANGING DIRECTION OF RECORDING MATERIAL SEPARATION FROM IMAGE TRANSFER POSITION
Masahiro Goto; Takahiro Inoue, both of Yokohama; Koichi Hiroshima, Kawasaki; Koichi Suwa; Tatsunori Ishiyama, both of Yokohama, and Manabu Takano, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 903,129
Claims priority, application Japan, Jun. 28, 1991, 3-158481
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—271 **10 Claims**

1. An image forming apparatus comprising:
an image supporting member on which a toner image is formed using toner;
a transfer rotating member forming a nip with said image supporting member, said transfer rotating member for electrostatically transferring a toner image formed on said image supporting member to a recording material;
fixing means for fixing said toner image to said recording material, said fixing means having a fixing rotating member which contacts said toner image on said recording material and to which a bias voltage with a same polarity as that of said toner is applied, and a pressure rotating member in pressure contact with said fixing rotating member to hold said recording material between said fixing rotating member and said pressure rotating member; and
a guide member, having a top portion, for guiding said recording material so that an angle between a direction of separation of said recording material from said transfer



rotating member, which is defined by a line connecting the center of said nip with an edge of the top portion of said guide member that is farthest from said image supporting member, and a line defined by a tangent of said image supporting member at the center of said nip is at least 2°, with the line defining the direction of separation being closer to said image supporting member than the line defined by said tangent, wherein the distance between said nip and said top portion edge is smaller than a length of the recording material.

5,285,246
IMAGE FORMING METHOD AND APPARATUS THAT MAINTAINS UNIFORM IMAGE GLOSSINESS
Toshimitsu Danzuka, Tokyo; Takashi Kawai, Yokohama; Takahiro Kubo, Tokyo, and Tetsuya Atsumi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 31, 1992, Ser. No. 937,167
Claims priority, application Japan, Aug. 30, 1991, 3-245248; Oct. 30, 1991, 3-311796
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **11 Claims**



1. An image forming method, comprising:
a first toner image formation step for forming a first color image of magnetic toner;
a first image transfer step for transferring the first color image of the magnetic toner onto a transfer material;
a second toner image formation step for forming a second color image of a non-magnetic toner;
a second image transfer step for transferring the second color image of non-magnetic toner on the first color image of the magnetic toner on the same transfer material subsequently to the transfer of the first color image;

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an image fixing step for simultaneously heating and fixing the first color image of the magnetic toner and the second color image of the non-magnetic toner on the transfer material;

wherein a glossiness of the magnetic toner for the first color image is lower than that of the non-magnetic toner for the second color image.

5,285,247

LINEAR PRINT HEAD IMAGE FORMING APPARATUS WITH MAGNIFICATION ADJUSTMENT

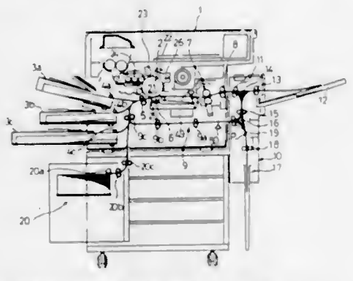
Tetsuya Itoh, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Continuation of Ser. No. 434,918, Nov. 9, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 950,748

Claims priority, application Japan, Nov. 9, 1988, 63-283491; Oct. 5, 1989, 1-261787

Int. Cl.[5] G03G *15/00, 15/20, 21/00*

U.S. Cl. 355—282 **14 Claims**



1. An image forming apparatus, comprising:

a photoconductor;

a linear print head for exposing the photoconductor so as to form a line image including a plurality of printing dots;

a driving means for correlatively moving the photoconductor and the linear print head in a direction perpendicularly intersecting a longitudinal direction of the print head;

an oscillator for generating a shift clock signal;

a programmable counter for receiving the shift clock signal, for generating a main scan synchronization signal based on said shift clock signal, said main scan synchronization signal having a cycle rate, and for generating a secondary scan synchronization signal based on said shift signal, said secondary scan synchronization signal being set to a first value to signal an exposure of the photoconductor and a second value when the photoconductor is not being exposed; and

a generating means for generating a strobe signal based on the main scan synchronization signal, while the secondary scan synchronization signal is set to said first value;

an input means for inputting an image signal to said linear print head, said linear print head exposing the photoconductor according to the image signal in response to the generation of the strobe signal after one line of the image signal is inputted, said input means only being active while said secondary scan synchronization signal is set to said first value;

an image forming section for forming an image formed on the photoconductor onto a sheet;

wherein the programmable counter changes the main scan synchronization rate and the period during which the secondary scan synchronization is set to said first value to change the magnification of the image to be formed.

5,285,248

FIXING DEVICE HAVING SILICONE RUBBER SPRAYED WITH PHENYL TYPE SILICONE OIL

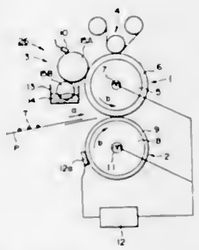
Takeshi Menjo, Tokyo; Masaaki Sakurai, Yokohama, and Tatsuo Takeuchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1990, Ser. No. 619,402

Claims priority, application Japan, Nov. 29, 1989, 1-309960; Nov. 29, 1989, 1-309961

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—284 **13 Claims**



1. A fixing device comprising:

a heat rotatable member having a surface layer comprising a silicone rubber;

a heating source for heating said heat rotatable member; and

oil application means for applying silicone oil onto a surface of said heat rotatable member;

wherein said silicone oil is phenyl silicone oil and the silicone rubber is impregnated with a dimethylsilicone oil.

5,285,249

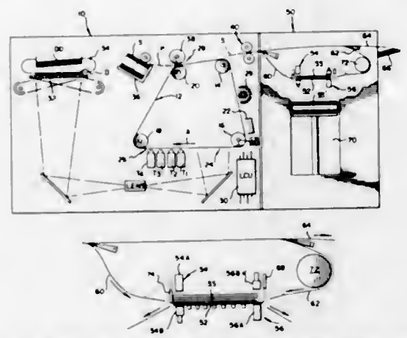
FINISHING APPARATUS FOR STAPLING SHEETS STACKED FIRST-TO-LAST OR LAST-TO-FIRST

Gregory P. Mahoney, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,094

Int. Cl.[5] G03G *21/00;* **B42B** *2/00*

U.S. Cl. 355—324 **9 Claims**



1. A finishing apparatus for use with a host reproduction apparatus, the finishing apparatus comprising:

(a) means for supporting a set of copy sheets;

(b) means for feeding copy sheets seriatim into a stack on said supporting means;

(c) a first stapling unit associated with said supporting means for stapling an edge of a stack of copy sheets on said supporting means, said first stapling unit having a first stapler head on a first side of said supporting means, a first clincher head on a second and opposite side of said supporting means; and

(d) a second stapling unit associated with said supporting means for stapling an edge of a stack of copy sheets on said supporting means, said second stapling unit having a second stapler head located on said second side of said supporting means, and a second clincher head located on said first side of said supporting means.

5,285,250

WASTE TONER COLLECTING DEVICE FOR ELECTROPHOTOGRAPHIC EQUIPMENT

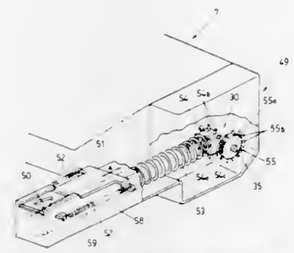
Satoru Yoshioka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 734,484, Jul. 23, 1991, abandoned. This application May 10, 1993, Ser. No. 59,194

Claims priority, application Japan, Jul. 24, 1990, 2-78432[U]

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—298 **3 Claims**



1. A device incorporated in electrophotographic equipment for collecting a waste toner which is removed from a photoconductive element after a toner image formed on said photoconductive element has been transferred to a recording medium, said device comprising:

receptacle means for receiving and storing the waste toner, said receptacle means comprising a first section having an opening for receiving the waste toner and a second section for storing the waste toner;

a rotary auger means extending from the first section to the second section of said receptacle means for transporting said waste toner from the first section to the second section of said receptacle means;

drive means for driving said rotary auger means, said drive means extending from the electrophotographic equipment and to a position inside said second section of said receptacle means; and

a drive transmission mechanism disposed inside the second section of said receptacle means for transmitting a driving force of said drive means to said rotary auger means;

said drive transmission mechanism comprising a first pin gear mounted on one end of said rotary auger means and located inside the second section of said receptacle means, and a second pin gear mounted on one end of said drive means inside the second section of said receptacle means and meshing with said first pin gear, such that said first and second pin gears transmit said driving force of said drive means to said rotary auger means and prevent said waste toner stored in the second section of said receptacle means from adhering to said first and second pin gears.

5,285,251

APPARATUS AND METHODS FOR OPTICAL EMISSION SPECTROSCOPY

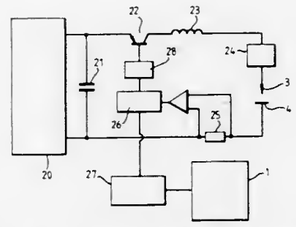
Francis Pilloud, Clarens, and Wilfried Vogel, Cully, both of Switzerland, assignors to Fisons plc, England

Filed Apr. 23, 1990, Ser. No. 512,792

Claims priority, application United Kingdom, Apr. 29, 1989, 89/09920; Apr. 29, 1989, 89/09921; Apr. 29, 1989, 89/09922; Apr. 29, 1989, 89/09923

Int. Cl.[5] G01J *3/30;* **G01N** *21/67*

U.S. Cl. 356—313 **17 Claims**



1. A spark generator suitable for use in an optical emission spectrometer comprising:

means for generating in a spark gap formed between an electrode and a sample to be analyzed a spark of a duration which extends over a series of discrete time intervals and which results in the flow of a current of programmable amplitude;

means for measuring said current during at least one of said discrete time intervals;

means for comparing said measured current with a reference current; and

means for adjusting said measured current to a predetermined value dependent on said reference current.

5,285,252

OPTICAL METHOD AND OPTICAL DEVICE FOR DISTANCE MEASUREMENT AND THEIR APPLICATION TO THE RELATIVE POSITIONING OF PARTS

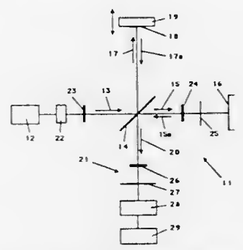
Aime Vareille, Echirolles; Andre Schiltz, Saint-Ismier, and Jean C. Hauiiy, Crolles, all of France, assignors to France Telecom, France

Filed Dec. 28, 1992, Ser. No. 997,608

Claims priority, application France, Dec. 27, 1991, 91 16260

Int. Cl.[5] G01C *3/08;* **G01B** *9/02*

U.S. Cl. 356—4 **24 Claims**



1. An optical method for distance measurement, which method comprises the steps of:

emitting an incident light beam comprising at least two waves of differing wavelengths (λ1 and λ2);

separating this beam into a reference beam and a measurement beam which are reflected on, respectively, a refer-

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ence reflector and a zone of a part of which it is desired to measure the position in the direction of the measurement beam;

recombining the reflected reference beam and the reflected measurement beam into a resultant beam in which said waves exhibit conditions of polarization, the principal components of which rotate when the optical path of the aforementioned measurement beam varies and which determine, in the direction of the measurement beam, adjacent length ranges at the ends of each one of which the angular positions of two corresponding principal components of these conditions of polarization, relative to a predetermined angular position, are substantially identical;

determining, in the resultant beam, the angular positions ($\alpha 1$ and $\alpha 2$) of two corresponding principal components of said conditions of polarization of said waves;

and computing, as a function of said angular positions, the distance separating the aformentioned zone of said part from a reference position.

5,285,253

CUVETTE FOR HOLDING SUBSTANCES TO BE ANALYZED BY OPTICAL MEANS

Bernd Kloth, Müssenredder 8, D-2000 Hamburg 65, Fed. Rep. of Germany

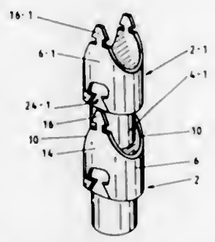
PCT No. PCT/EP91/01564, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO92/11527, PCT Pub. Date Jul. 9, 1992

PCT Filed Aug. 16, 1991, Ser. No. 920,297

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 9016832[U]

Int. Cl.[5] G01N *1/10*; B01L *9/00*

U.S. Cl. 356—246 **30 Claims**



1. A cuvette for holding substances to be analyzed by optical means, and more particularly for the analysis of chromogenic substances, solutions or substrates, comprising:

a measuring section, having a top and a bottom, and being closed at the bottom for holding the substance; and

an extension section extending the cuvette and adjoining the measuring section, the extension section forming a detachable plug-in connection with the measuring section of a second cuvette.

5,285,254

RAPID-SCANNING MONOCHROMATOR WITH MOVING INTERMEDIATE SLIT

Richard J. De Sa, 1540 Ethridge Rd., Jefferson, Calif. 30549

Continuation-in-part of Ser. No. 674,185, Mar. 25, 1991, abandoned. This application Mar. 27, 1992, Ser. No. 858,899

Int. Cl.[5] G01J *3/06, 3/32*

U.S. Cl. 356—308 **12 Claims**

1. A rapid-scanning subtractive double grating monochromator for producing a light beam which rapidly and repetitively varies in wavelength comprising, in combination:

a fixed entrance slit;

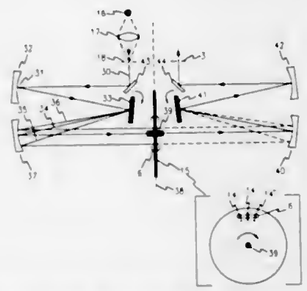
an entering light beam disposed to pass through said entrance slit and for defining an optical axis;

a first plane mirror means to turn said light beam 90°;

a first concave mirror means for collimating said light beam, after passing through said entrance slit and being turned 90° by said plane mirror, and reflecting said collimated light beam to a first diffraction grating means for dispersing said collimated beam into dispersed beams having axes in accordance with wavelength about a fanning point on said optical axis;

a second concave mirror means disposed to receive and focus said dispersed beams to form intermediate images of said entrance slit in a plane, said intermediate images forming a spectrum;

an intermediate slit comprising an opaque scanning disk having one radiation transparent slit which is spaced from the rotation axis of said disk with said rotation axis disposed in a plane parallel to the plane of said optical axis so that said spectral image is focused in the plane of said slit



and is coincident with the circular centerline of said slit in a manner whereby said slit undergoes lateral scanning movement across said spectral image during rotation of said disk;

a means for driving said disk in rotation;

a concave mirror means to receive said radiation passed by said slit and to direct said radiation to a second diffraction grating means oriented with respect to said first diffraction grating means whereby radiation is de-dispersed or recombined to a single beam irrespective of the wavelength of said radiation;

a concave mirror means to receive said recombined (de-dispersed) beam and focus said recombined beam in an image plane;

a second plane mirror means to turn said recombined beam 90°;

a fixed exit slit disposed on said optical axis in said image plane whereby radiation of a particular wavelength exits from the monochromator, said wavelength being determined by the position of said moving intermediate slit.

5,285,255

OPTICAL SYSTEM FOR SPECTRAL ANALYSIS

Andre Baranne, Cabriès, France, and Francis Pilloud, Clarens, Switzerland, assignors to Fisons plc, England

Filed Jun. 14, 1990, Ser. No. 538,118

Claims priority, application United Kingdom, Jun. 16, 1989, 8913897; France, Dec. 11, 1989, 89 16347

Int. Cl.[5] G01J *3/28*; G01N *21/00*

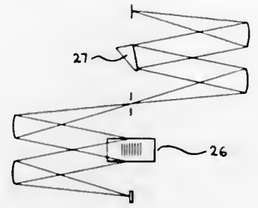
U.S. Cl. 356—328 **10 Claims**

1. An optical device for the spectral analysis of a light source which comprises

a) a spectrograph assembly including a fixed dispersive element, and

b) a classical collimator,

wherein the spectrograph assembly supplies a complete intermediate spectrum at the object focus of the classical



collimator and the classical collimator reforms, at its image focus, an image of the dispersive element.

5,285,256

REAR-LOOKING APPARATUS AND METHOD FOR DETECTING CONTRAILS

Loren D. Nelson, Evergreen, and David C. MacPherson, Conifer, both of Colo., assignors to Ophir Corporation, Littleton, Colo.

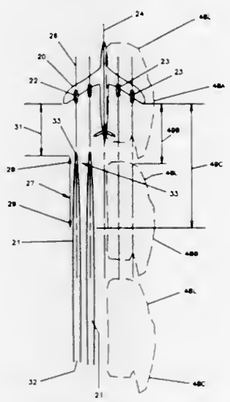
Filed Jul. 28, 1992, Ser. No. 921,502

Int. Cl.[5] G01C *3/00*

U.S. Cl. 356—342 **26 Claims**

MICROFICHE APPENDIX INCLUDED

(21 Microfiche, 1 Pages)



1. An airborne system for indicating that a contrail is forming at a distance behind an aircraft, said contrail having an onset which normally occurs within a predetermined contrail onset range behind the aircraft, said system comprising:

means carried by the aircraft for directing a lidar signal behind the aircraft into intersection with at least the onset of a contrail which has formed behind the aircraft, the onset of the contrail being within the contrail onset range, said lidar signal being scattered back toward the aircraft by the contrail to form a return signal having an amplitude related to said distance at which the contrail forms behind the aircraft, said directing means modulating the lidar signal according to a pseudorandom pattern, the return signal having a pattern related to said pseudorandom pattern; and

means carried by the aircraft for cross correlating said pattern of the return signal and the lidar signal to generate a profile of the amplitude of the return signal according to said distance from the aircraft, said profile having a peak within the onset range and corresponding to said distance of the onset behind the aircraft for indicating that the contrail is being formed behind the aircraft.

5,285,257

OPTIC ROTATION SENSING APPARATUS AND RELATED METHOD INCLUDING PROVIDING SYNCHRONOUS DETECTION AT A PHASE AT WHICH THE AM NOISE IS MINIMIZED

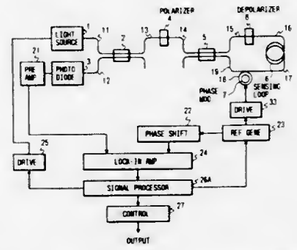
Hidehiko Negishi, Kawasaki; Yoshinori Takeuchi; Yuko Takei, both of Tokyo, and Yoshihiko Honjoya, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 735,725, Jul. 25, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 29,281

Claims priority, application Japan, Mar. 1, 1991, 3-035886; May 22, 1991, 3-117275; Jun. 26, 1991, 3-154261; Jun. 26, 1991, 3-154420

Int. Cl.[5] G01C *19/72*

U.S. Cl. 356—350 **30 Claims**



1. An optic rotation sensing apparatus comprising:

a light source emitting light;

a sensing loop;

means for transmitting the light from the light source to the sensing loop;

a photodetector;

means for transmitting light from the sensing loop to the photodetector;

means for modulating a phase of light propagating in the sensing loop; and

signal controlling/processing means for controlling an output signal of the photodetector at a phase at which an AM noise component of the output signal of the photodetector is minimized;

the signal controlling/processing means comprising sync detection means for sync-detecting the output signal of the photodetector, a reference signal generator for generating a signal containing a reference signal used in the sync detecting, and control means for varying a phase of the signal generated by the reference signal generator on the basis of the phase at a phase at which the AM noise component of the output signal of the photodetector is minimized so that a signal component of the output signal of the photodetector can be detected by sync detection at a phase at which the AM noise component of the output signal of the photodetector is minimized.

5,285,258

METHOD OF AND AN APPARATUS FOR DETECTING ALIGNMENT MARKS

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,846

Claims priority, application Japan, Apr. 9, 1992, 4-088473

Int. Cl.[5] G01B *11/00*

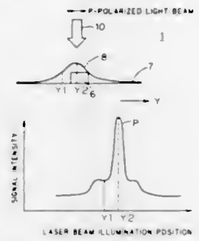
U.S. Cl. 356—375 **11 Claims**

1. A method of detecting an alignment mark of a semicon-

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ductor wafer by measuring the light intensity of a diffractive light beam from a diffractive grating array which is formed on said semiconductor wafer and which extends in a first direction, said method comprising the steps of:

(a) irradiating said semiconductor wafer with a polarized light beam while relatively moving said semiconductor wafer and said polarized light beam, said polarized light



beam consisting of a polarized component which vibrates in a second direction substantially perpendicular to the first direction;

(b) receiving a diffractive light beam from said semiconductor wafer; and

(c) detecting said diffractive grating array on the basis of said light intensity of the received diffractive light beam.

5,285,259

POSITION DETECTING METHOD

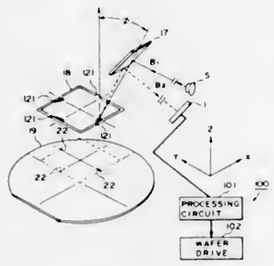
Kenji Saitoh, Ynkohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1991, Ser. No. 733,829

Claims priority, application Japan, Jul. 23, 1990, 2-195337

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—401 **29 Claims**



1. A position detecting method, wherein a radiation beam is projected to a grating pattern on a substrate, a diffraction beam from the pattern and a reflectively scattered beam from an edge of a peripheral portion of the pattern advancing in substantially the same direction as the diffraction beam from the pattern are received by a sensor array and the position of the substrate is determined on the basis of a signal from the sensor array, said method comprising:

substantially separating the diffraction beam and the reflectively scattered beam from each other on the sensor array;

processing a signal produced by the sensor array to extract a signal corresponding to the diffraction beam; and

determining the position of the substrate on the basis of the extracted signal.

5,285,260

SPECTROSCOPIC IMAGING SYSTEM WITH ULTRASONIC DETECTION OF ABSORPTION OF MODULATED ELECTROMAGNETIC RADIATION

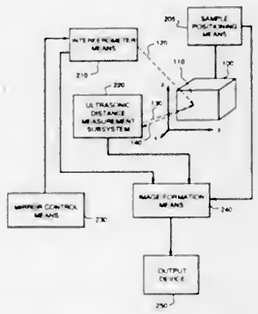
Charles L. Dumoulin, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1992, Ser. No. 909,275

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] G01J *3/52*

U.S. Cl. 356—432 **10 Claims**



1. A system for creating images of chemical composition of a sample surface based upon the electromagnetic absorption spectra comprising:

a) interferometer means for irradiating a portion of a sample surface with a time modulated sample excitation beam having a plurality of frequencies, each frequency having an amplitude varying with time inversely according to its frequency;

b) ultrasonic distance measurement means for detecting changes in distance over time between the irradiated portion of said sample surface and the ultrasonic distance measurement means responsive to absorption by the sample of the broadband sample excitation radiation beam generated by the interferometer means; and

c) image formation means for calculation of absorption spectra of the portion of said sample surface from the detected changes in distance versus time between said sample surface and the ultrasonic distance measurement subsystem for creating absorption spectra for portions of said sample surface from the detected changes in distance indicating chemical composition of said sample surface, and creating an image indicating chemical composition over the portions of said sample surface.

5,285,261

DUAL INTERFEROMETER SPECTROSCOPIC IMAGING SYSTEM

Charles L. Dumoulin, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1992, Ser. No. 909,277

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] G01N *21/00*; **G01B** *11/00*

U.S. Cl. 356—432 **12 Claims**

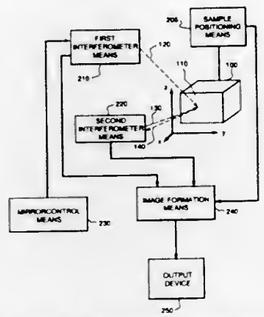
1. A system for creating images representing chemical composition of a sample surface based upon the electromagnetic absorption spectra thereof comprising:

a) a first interferometer means for irradiating a portion of a sample surface with a time modulated sample excitation beam having a plurality of frequencies, each frequency having an amplitude varying with time inversely according to its frequency;

b) a second interferometer means for detecting changes in

distance over time between said sample surface and the second interferometer responsive to absorption by the sample of the broadband radiation beam generated by the first interferometer; and

c) image formation means for calculation of absorption spectra of the portion of said sample surface from the



detected changes in distance versus time between said sample surface and the second interferometer, for creating absorption spectra for portions of said sample surface from the detected changes in distance indicating chemical composition of said sample surface, and creating an image indicating chemical composition over the portions of said sample surface.

5,285,262

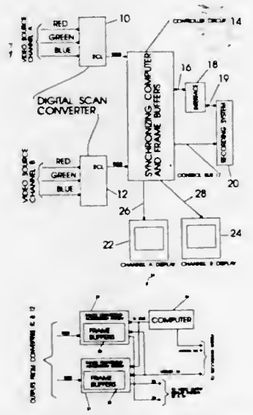
HIGH RESOLUTION VIDEO ACQUISITION SYSTEM

S. Richard F. Sims, Huntsville, and Billy J. Walker, Madison, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1992, Ser. No. 888,081

Int. Cl.[5] H04N *11/20*

U.S. Cl. 348—441 **5 Claims**



1. A high resolution video acquisition system comprising: first and second digital scan converters each having multiple analog signal inputs and digital signal outputs; a controller circuit coupled to receive said digital signal outputs from the first and second converters; said controller circuit providing a multiplexed digital signal output of the inputs received from the first and second converters, and providing first and second separate outputs of the respective first and second converter outputs; said multiple analog signal inputs of each of said converters being receptive to multiple frequency or color input signals for coupling multiple input channel data, and said controller circuit multiplexed digital signal output providing signal data thereon for extended time recording and said controller circuit first and second outputs having signal data thereon for real time viewing in response to analog signal inputs on said digital scan converters.

5. In a video acquisition system wherein first and second video sources each provide first, second, and third video frequency analog signal channels as output data which are processed for recording for subsequent playback, the improvement comprising: first and second converters each having plural data inputs for receiving said first, second, and third video frequency analog signal channels and having plural emitter coupled logic (ECL) outputs for coupling first, second, and third signal channel data out of said converters in digital ECL data format that is representative of said video frequency analog signals; first and second frame buffers having plural inputs coupled to respective converter digital ECL outputs for receiving first, second and third signal channel data outputs in digital ECL data format and having buffer outputs coupled to provide multiplexed output of the digital ECL data; recording means coupled to respective buffer outputs to receive the multiplexed output of digital ECL data for recording; and a computer coupled to said frame buffers for controlling the multiplexing of the ECL data output.

5,285,263

SAMPLE RATE CONVERTER FOR DIGITAL VIDEO SIGNALS HAVING REDUCED PHASE ERROR AND SYNC POINT COINCIDENCE

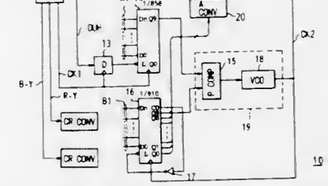
Tadao Fujita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,857

Claims priority, application Japan, Nov. 20, 1991, 3-332544

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—441 **5 Claims**



1. In a digital video signal processing device for converting a first digital video signal having a first format and a first sampling rate into a second digital video signal having a second format and a second sampling rate, in which said first and second digital video signals have respective sync points, a rate converting apparatus comprising:

means receiving said first digital video signal for obtaining a first clock signal therefrom;

clock synchronizing means receiving said first clock signal for generating a second clock signal therefrom such that a first predetermined timing interval of said first clock signal coincides with a second predetermined timing interval of said second clock signal; and

sampling rate converting means receiving said second clock signal for converting said first sampling rate of said first digital video signal into said second sampling rate of said second digital video signal, said sampling rate converting means including means for coinciding sync points in said first digital video signal with sync points in said second digital video signal.

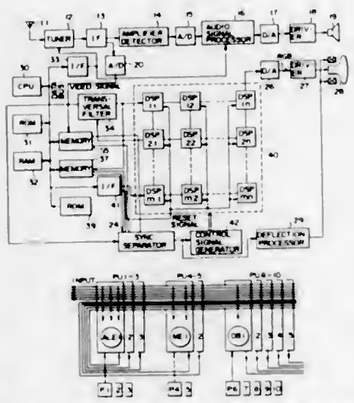
VOL 1159 ISS 2 FEB 8 1994 UMI

5,285,264

IMAGE REPRODUCTION APPARATUS WITH PLURAL PROGRAM PROCESSING

Akira Matsushita, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 670,015, Mar. 15, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 895,237
Claims priority, application Japan, Mar. 30, 1990, 2-84628
Int. Cl.[5] H04N 9/64, 5/14, 5/213
U.S. Cl. 348—571 4 Claims



1. An image reproduction apparatus for converting an input video signal into a digital signal and performing a plurality of systems of signal processing operations of the digital video signal, comprising:

a DSP signal processor constituted by combining a plurality of DSPs each incorporating a program memory which stores a plurality of programs corresponding to the plurality of systems of signal processing operations in independent areas;

switching means for addressing said areas of said program memory incorporated in each of said plurality of DSPs of said DSP signal processor to time-divisionally switch the programs to be supplied to said plurality of DSPs on the basis of a transmission timing of the video signal, wherein said switching means selects first and second programs corresponding to different systems of signal processing operations during a video period and a blanking period, respectively, of the video signal from said program memory of each of said DSPs, and

wherein said first and second programs correspond to luminance signal processing and chrominance signal processing, respectively.

5,285,265

DISPLAY APPARATUS INFORMING OF PROGRAMMED RECORDING

Seung L. Choi, Suweon, Rep. of Korea, assignor to SamSung Electronics, Co. Ltd., Kyungki, Rep. of Korea

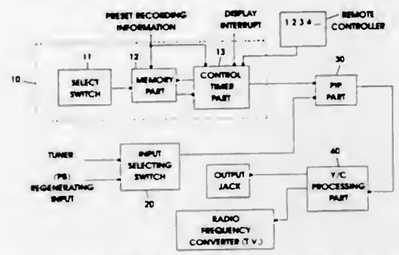
Filed Oct. 21, 1991, Ser. No. 779,989
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1990, 90-20718
Int. Cl.[5] H04N 5/278
U.S. Cl. 348—565 12 Claims

9. A method for controlling change-over to a pre-programmed recording operation in a video tape recorder in response to a user programmed record start time, said method comprising:

enabling user entry of said record start time;

comparing said record start time to a current time to provide record imminent signals at a predetermined time period before said programmed recording time will correspond to said current time; and

displaying a visual indication to inform a user that change-over to said pre-programmed recording operation is imminent on a display device in response to said record imminent signals, said visual indication including a display of a length of time before said programmed recording time corresponds to said current time.

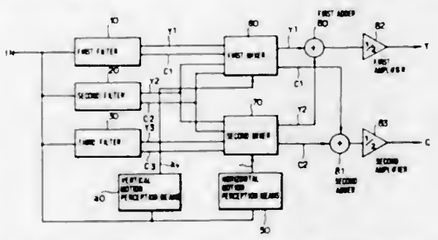


5,285,266

MOTION-ADAPTIVE LUMINANCE/CHROMINANCE SEPARATOR

Hyun-Duk Jo, Kyonggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jul. 20, 1992, Ser. No. 915,502
Claims priority, application Rep. of Korea, Jul. 19, 1991, 91-12380
Int. Cl.[5] H04N 9/78
U.S. Cl. 348—665 9 Claims



1. A motion-adaptive type luminance/chrominance (Y/C) separator, comprising:

filtering means, receiving an input composite image signal, for filtering said composite image signal horizontally, vertically, and temporally, and outputting luminance and chrominance signals accordingly;

motion detection means, receiving said input composite image signal, for detecting vertical and horizontal motion of said composite image signal and outputting vertical and horizontal detection coefficients accordingly;

mixing means, receiving said luminance and chrominance signals outputted from said filtering means, and responsive to said vertical and horizontal detection coefficients of said motion detection means, for outputting first and second mixed luminance signals and first and second mixed chrominance signals;

a first adder for adding said first and second mixed luminance signals and providing an additive luminance signal accordingly;

a second adder for adding said first and second mixed chrominance signals and providing an additive chrominance signal accordingly; and

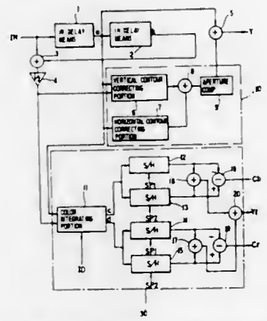
amplifying means for respectively amplifying said additive luminance signal and said additive chrominance signal to provide output luminance and chrominance signals accordingly.

5,285,267

CIRCUIT FOR COLOR SEPARATION AND CONTOUR CORRECTION

Jong-Gyun Lim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Feb. 19, 1993, Ser. No. 20,833
Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2761
Int. Cl.[5] H04N 9/78, 9/77
U.S. Cl. 348—663 6 Claims



1. A circuit for color separation and contour correction, comprising:

delay means for receiving and delaying an input chrominance signal and for outputting 1H delayed and 2H delayed chrominance signals delayed by one and two horizontal periods, respectively;

first adding means for adding said 2H delayed chrominance signal to a non-delayed input chrominance signal;

amplifying means for decreasing by one-half an output of said first adding means; and

chrominance signal separation means for separating red and blue components of a chrominance signal output from said amplifying means and red and blue components of the 1H delayed chrominance signal output from said delay means, the chrominance signal output from said amplifying means and the 1H delayed chrominance signal output from said delay means being used to produce a contour corrected output signal.

5,285,268

PROJECTION TYPE DISPLAY DEVICE HAVING A MASK FOR CUTTING OFF UNNECESSARY LIGHT PARTS OF DISPLAYED PICTURE

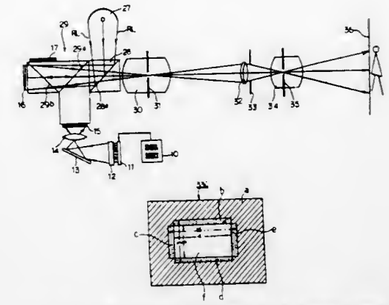
Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, Yokosuka; Hiroyuki Bonde, Yokohama, and Tsutomu Matsumura, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 913,445, Jul. 14, 1992. This application Dec. 9, 1992, Ser. No. 988,208
Claims priority, application Japan, Dec. 10, 1991, 3-350115
Int. Cl.[5] H04N 5/72, 9/31
U.S. Cl. 348—760 4 Claims

4. A projection type display device, wherein an image information written in spatial light modulation means is read out as an optical image in a form of light beam by means of a light source and said light beam is projected out of said display device through lens groups for forming a projected image, said display device comprising:

an imaginary image formation plane arranged in a vicinity of one of said lens groups, said light beam forming an image on said imaginary image formation plane by other one of said lens groups;

mask means disposed in a proximity of said imaginary image formation plane, said mask means having a variable light shielding configuration for cutting off unnecessary light component of said light beam carrying said optical image, said variable light shielding configuration being square and an aspect ratio thereof being changed correspondingly with said image.



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Patent Not Issued For This Number

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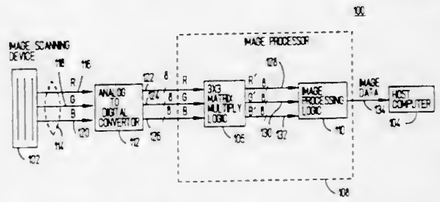
Patent Not Issued For This Number

5,285,271

DIGITAL COLOR MATRIXING CIRCUIT

Kenneth D. Gennetten, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 14, 1991, Ser. No. 700,008
Int. Cl.[5] H04N 1/46
U.S. Cl. 358—500 6 Claims



1. A digital coloring matrixing circuit, comprising:

a digital image sensing device operable to scan red, green and blue colors simultaneously from one location on a document and produce red, green and blue digitized intensity signals as a function of said scan;

a first bus for transporting said digitized intensity signals;

a second bus for transporting predetermined coefficient signals;

a digital multiplier circuit, coupled to said digital image sensing device operable to perform three multiplications for each of said digitized intensity signals by multiplying a digitized intensity signal with a coefficient signal, said digital multiplier circuit comprising:

a first adder having input terminals A_{1a} coupled to said first bus and A_{1b} coupled to said second bus, operable to produce a partial sum signal at an output terminal of said first adder;

a second adder having input terminals A_{2a} coupled to said first bus and A_{2b} coupled to said second bus, operable to produce a partial sum signal at an output terminal of said second adder;

a third adder having input terminals A_{3a} coupled to said first bus and A_{3b} coupled to said second bus, operable to pro-

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duce a partial sum signal at an output terminal of said third adder;

a fourth adder having an input terminal A_{4a} coupled to said first bus, operable to produce a partial sum signal at an output terminal of said fourth adder;

where the bit widths of the adder input terminals have the following relationships:

$$A_{1a} \geq A_{1b} > A_{2a} > A_{2b} > A_{3a} > A_{3b} > A_{4a},$$

a fifth adder, coupled to said first and second adders, operable to receive said partial sum signals from said first and second adders and produce a partial sum at an output terminal of said fifth adder;

a sixth adder, coupled to said third and fourth adders, operable to receive said partial sum signals from said third and fourth adders and produce a partial sum at an output terminal of said sixth adder; and

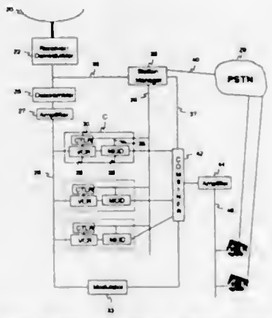
a final sum adder, coupled to said fifth and sixth adders, operable to receive said partial sum signals of said fifth and sixth adders and produce a final sum at an output terminal of said final sum adder.

5,285,272

VIDEO STORE AND FORWARD ON DEMAND APPARATUS AND METHOD

Graham C. Bradley; Everett L. Florence; Gordon R. Reed, and Darrin W. Bitter, all of Regina, Canada, assignors to SaskTel, Canada

Filed Feb. 26, 1991, Ser. No. 661,521
Int. Cl.[5] H04N *7/10, 1/00*
U.S. Cl. 348—6 **9 Claims**



1. A television signal distribution system comprising:

means for producing a television signal having at least one receive station control information encoded into the vertical blanking interval thereof;

first transmission means for transmitting said television signal;

at least one receive station for receiving said television signal transmitted over said first transmission means and for producing a multichannel television signal; and

each of said at least one receive station having:

second transmission means for transmitting said multichannel television signal to a plurality of terminations;

at least one storage means for storing said television signal received over said first transmission means;

storage control means responsive to said at least one receive station control information encoded into the vertical blanking interval of said television signal received over said first transmission means for activating a desired one of said at least one of storage means to store said television signal therein and for deactivating said desired one of said at least one of storage means at the end of said received television signal;

playback control means for selectively activating a desired one of said at least one storage means to output a television signal stored therein; and

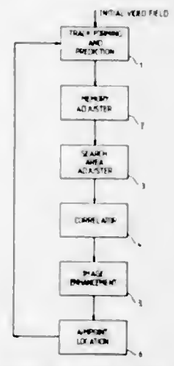
means for combining said multichannel television signal and the output of a desired one of said at least one storage means into a combined multichannel television signal and transmitting said combined multichannel television signal over said second transmission means to said plurality of terminations.

5,285,273

TRACKING SYSTEM

Enoch James, and Raymond J. P. Stafford, both of Stevenage, United Kingdom, assignors to British Aerospace Public Limited Company, London, United Kingdom

Filed Feb. 19, 1988, Ser. No. 167,480
Claims priority, application United Kingdom, Feb. 19, 1987, 8703931
Int. Cl.[5] H04N *5/225;* **F41G** *5/06;* **G01J** *1/20;* **G06K** *9/32*
U.S. Cl. 348—169 **3 Claims**



1. An automatic target tracking system comprising:

imaging means for forming a video signal representative of successive images of a viewed scene;

target tracking means, coupled to the imaging means, for locating a target within one of said images and for predicting the likely position of said target within a subsequent image;

correlation means for correlating features of said one of said images with a previous one of said images;

image decomposition means for selecting the correlating features which relate to the target, and for enhancing these features; and

aim point location means for determining an aimpoint for the target by analysis of the enhanced correlating features and for updating the target position predicted by the target tracking means.

5,285,274

OPTICAL WAVEGUIDE RECORDING MEDIUM AND APPARATUS FOR PLAYING THE SAME

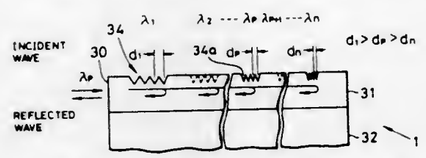
Naohiro Tanno, Yamagata; Teruo Toma, and Kiyofumi Chikuma, both of Tsurugashima, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,087
Claims priority, application Japan, Apr. 26, 1991, 3-97649
Int. Cl.[5] G02B *6/10;* **G11B** *7/00;* **G01D** *15/10*
U.S. Cl. 385—129 **14 Claims**

1. An optical waveguide recording medium comprising:

an optical waveguide comprising a photocoupler for receiving a light beam; and

a plurality of refractive index-discontinuous portions aligned on the optical waveguide, each portion having shapes and relative positions corresponding to the information to be recorded, at least one of the refractive index-discontinuous portions comprising a diffraction grating having one or more sets of grooves extending approximately perpendicular to a lengthwise direction of the optical waveguide, wherein the grooves of each set are spaced at equal intervals, and the intervals for each set gradually become narrower or wider as a distance of that set from the photocoupler increases.

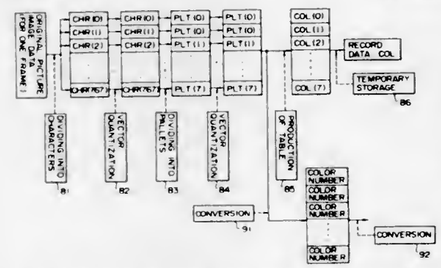


5,285,275

DECODING METHOD OF PICTURE IMAGE DATA AND DECODING CIRCUIT THEREFORE

Tomomi Abe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,630
Claims priority, application Japan, Mar. 25, 1991, 3-084626
Int. Cl.[5] H04N *7/13*
U.S. Cl. 348—384 **4 Claims**



1. A method of decoding input compressed picture image data, comprising the steps of:

receiving input compressed picture image data;

checking whether or not a buffer memory having a capacity greater than an amount of such input compressed picture image data for one frame has an empty space into which such input compressed picture image data for one frame can be written;

writing, when the checking proves that said buffer memory has such empty space, the input compressed picture image data for one frame into said buffer memory; and

decoding the picture image data in said buffer memory into original picture image data; but

abandoning, when the checking proves that said buffer memory has no such empty space, the input compressed picture image data for one frame.

5,285,276

BI-RATE HIGH DEFINITION TELEVISION SIGNAL TRANSMISSION SYSTEM

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Continuation of Ser. No. 872,211, Apr. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 667,836, Mar. 12, 1991, abandoned. This application May 25, 1993, Ser. No. 67,408
Int. Cl.[5] H09N *7/12. 7/04. 7/00*
U.S. Cl. 368—409 **45 Claims**

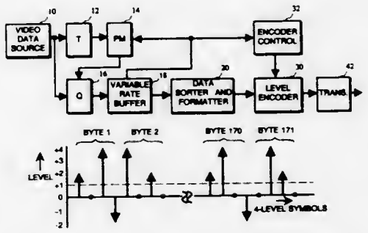
1. A system for transmitting a video data signal comprising:

means for variably compressing said video data signal;

means for formatting said compressed signal into a plurality of data frames, each including a plurality of data segments;

means for encoding a first group of the data segments of each of said frames in the form of a plurality of N-level symbols characterized by a constant symbol rate and for encoding the remaining data segments of each respective frame in the form of a plurality of M-level symbols characterized by said constant symbol rate, where M is greater than N, whereby each of said M-level symbols represents a greater number of data bits than each of said N-level symbols, said first group of data segments including a control signal identifying the data segments comprising said first group of data segments and the data segments comprising said remaining data segments; and

means for transmitting said M and N-level symbols.

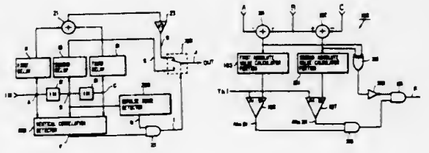


5,285,277

IMPULSE NOISE REDUCTION METHOD AND CIRCUIT

Byong-Min Min, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jun. 2, 1992, Ser. No. 892,130
Claims priority, application Rep. of Korea, Jun. 3, 1991, 91-9169
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—607 **13 Claims**



1. An impulse noise reduction method comprising:

(a) a horizontal line delay step for delaying by 1 horizontal line an input brightness signal;

(b) a vertical correlation determination step for determining impulse noise on the basis of a vertical correlation between the 1 horizontal line (1H)-delayed line at the step (a) and upper and lower horizontal lines thereof;

(c) a noise signal detection step for detecting impulse noise from the 1H-delayed signal at the delay step (a) and outputting a noise detection signal;

(d) a correction signal produce step for producing a correction signal by using upper and lower horizontal lines positioned above and below the impulse noise-detected line, respectively; and

(e) an output step for outputting the correction signal produced at the correction signal produce step (d) when the impulse noise is detected at the noise signal detection step (c) and the impulse noise determined at the determination step (b).

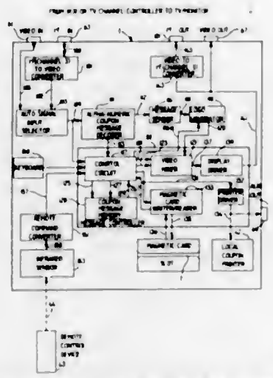
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,278

ELECTRONIC REDEEMABLE COUPON SYSTEM VIA TELEVISION

Michael J. Holman, 45 Ranch View Rd., Rolling Hills Estates, Calif. 90274

Filed May 21, 1992, Ser. No. 887,450
Int. Cl.[5] H04N *7/08*
U.S. Cl. 358—142 **37 Claims**



1. An apparatus for decoding and storing messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, the video component of said television picture transmission being displayed as a picture on a video screen, said apparatus comprising:

decoding means for receiving said message component, and for decoding said encoded messages contained therein to produce a message signal containing said messages;

a logo generator for generating a logo signal to create a visible logo on the display of a video screen, said logo generator synchronized with said video component of said television picture transmission signal;

a video mixer receiving said video component of said television picture transmission signal, and receiving output from said logo generator for mixing said logo signal with said video component so as to superimpose said logo on said picture as viewed on the video screen;

means coupled to said decoding means for sensing the existence of a message signal, and enabling the coupling of said logo signal to said video mixer only during the time a message exists;

means coupled to the output of said decoding means for passing selected ones of said message signals to said video mixer for mixing said message signal with said video component so as to superimpose said selected message on said video component as viewed on the video screen;

storage means capable of storing at least a part of each message selected;

means for manually selecting ones of said displayed messages for storage in said storage means; and

means for storing said selected message in said storage means.

5,285,279

GHOST CANCELLER USING FUZZY CONTROL

Toshiyuki Sakamoto, Fujisawa; Tsutomu Noda, Yokohama, and Keiro Shinkawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

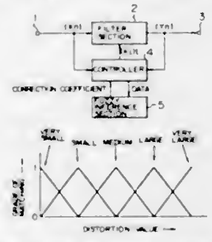
Filed Aug. 29, 1991, Ser. No. 751,777
Claims priority, application Japan, Aug. 29, 1990, 2-225052
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—614 **26 Claims**

1. A ghost canceller for eliminating signal distortion components, such as ghost superimposed on a TV signal, of a signal transmission path, said ghost canceller including:

a filter section comprising transversal filter means for receiving the TV signal and having controllable tap coefficients for suppressing the signal distortion components such as ghost possibly contained in the TV signal in order to produce a filtered output signal;

a controller for controlling said tap coefficients of said filter section, said controller storing a predetermined reference signal for comparing therewith thee filtered output signal from said filter section in order to produce possible suppression error data therebetween; and

a fuzzy inference section for receiving said error data from said controller and producing a signal of tap coefficient correction by a fuzzy inference on the received error data,



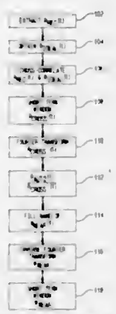
thereby enabling said controller to control said tap coefficients of said filter section in response to said signal of tap coefficient correction.

5,285,280

DIVISION METHOD AND SYSTEM FOR GHOST CANCELLATION

Chich-Yeuan Teng, Tainan, and Ching-Shyang Lo, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 19, 1993, Ser. No. 33,400
Int. Cl.[5] H04N *5/21*
U.S. Cl. 368—614 **18 Claims**



18. A process for cancelling ghosts in a video signal received at a receiver from a multipath channel comprising

extracting a received ghost-cancelling reference (GCR) signal $R_{rec}(t)$ from a video signal received from a multipath channel in an extraction circuit,

receiving said received GCR signal $R_{rec}(t)$ and an ideal GCR signal $R_{ideal}(t)$ at a signal processor,

using said signal processor, electronically generating tap coefficients according to the formula,

$$W_{near}(f) = \frac{R_{auto}(f)}{R_{cross}'(f)}$$

where $R_{auto}(f)$ is the autocorrelation of said ideal GCR signal $R_{ideal}(t)$, in the frequency domain and $R_{cross}'(f)$ is the cross-correlation of $R_{ideal}(t)$ and $R_{rec}(t)$, windowed for cancelling nearby ghosts, in the frequency domain,

using said signal processor, electronically correcting said tap coefficient signal $W_{near}(f)$ by inserting a constant non-zero value in a frequency band of $W_{near}(f)$ above the upper cutoff frequency of said received video signal, and

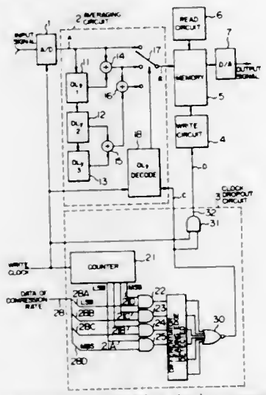
filtering said receiving video signal with said tap coefficients in a transversal filter.

5,285,281

IMAGE PROCESSING APPARATUS FOR COMPRESSING IMAGE DATA AT A SELECTED COMPRESSION RATE

Sigeharu Kawamoto, and Masahiro Nakanishi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,681
Claims priority, application Japan, Aug. 5, 1991, 3-195164
Int. Cl.[5] H04N *1/353*
U.S. Cl. 348—578 **6 Claims**



1. A pictorial image compression device comprising:

analog/digital converter means for converting a pictorial image input signal into digital image data in synchronism with a first write clock having first pulses;

compression clock generating means for generating a compression write clock which includes second pulses and which corresponds to said first write clock except that during at least one predetermined time period, a number of said second pulses is less than a number of said first pulses, according to a selected compression rate;

averaging means for averaging the image data according to the compression write clock;

writing means for outputting a write instruction signal conforming to the compression write clock;

memory means for storing the output data from said averaging means in response to the write instruction signal;

reading means for reading out the image data stored in said memory means; and

digital/analog converter means for converting the image data read out by said reading means into an analog signal.

5,285,282

VERTICAL ZOOM AND PANNING FOR TELEVISION

Enrique R. Cavazos, Indianapolis, and Robert D. Altmanshofer, Carmel, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

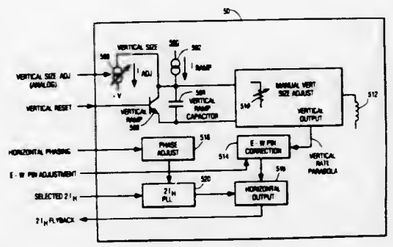
PCT No. PCT/US91/03822, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992
PCT Filed May 30, 1991, Ser. No. 945,641
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326
Int. Cl.[5] H04N *3/223, 5/262*
U.S. Cl. 348—561 **8 Claims**

1. A display system, comprising:

video display means;

means for mapping on said video display means an adjustable picture display area represented in a video signal having a synchronizing component;

means for selectively enlarging said picture display area to be greater than said video display means in at least one dimension; and,



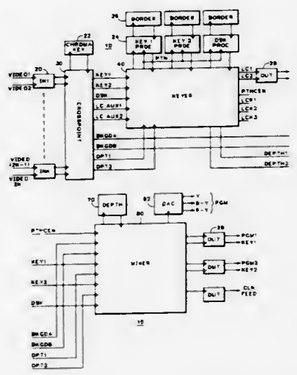
means for controlling in phase a blanking interval relative to said synchronizing component to control which portion of said enlarged picture area is displayed and which portion is not displayed.

5,285,283

DEPTH SIGNAL PROCESSING IN A VIDEO SWITCHER

Jon A. Fairhurst; Jay S. Baker, both of Grass Valley, and Mark M. Baldassari, Penn Valley, all of Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Jun. 25, 1992, Ser. No. 904,404
Int. Cl.[5] H04N *5/268*
U.S. Cl. 348—705 **16 Claims**



1. A video switcher for producing an output video signal from a plurality of input video signals of the type having means for selectively routing the input video signals to a plurality of internal video buses, means coupled to the internal video buses for generating key signals for selected ones of the input video signals, and means for combining the input video signals with associated key signals as a function of a priority signal to produce the output signal further comprising means for generating the priority signal as a function of depth signals associated with the video signals.

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5,285,284

TELEVISION RECEIVER WITH A DUAL TUNER SYSTEM

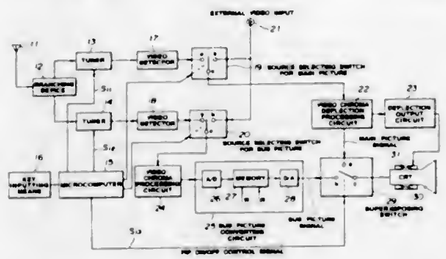
Tadoa Takashima, and Takayuki Sudoh, both of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 9, 1992, Ser. No. 972,027

Claims priority, application Japan, Nov. 15, 1991, 3-300413

Int. Cl.[5] H04N *5/445*

U.S. Cl. 348—731 **6 Claims**



1. A television receiver comprising:

first and second tuners able to receive signals in a predetermined frequency band, respectively;

displaying means able to simultaneously display the signals received by said first and second tuners;

key inputting means able to generate a first indicating signal for simultaneously displaying the signals received by said first and second tuners and a second indicating signal for displaying only the signal received by said first tuner; and

control means for controlling said first and second tuners in response to said first and second indicating signals, the control means setting frequencies received by said first and second tuners within said frequency band when said first indicating signal is generated, and said control means setting a frequency received by said first tuner within said frequency band and setting a frequency received by said second tuner outside said frequency band when said second indicating signal is generated.

5,285,285

METHOD OF CONTROLLING FIRST ITEMS THAT REQUIRE PRIOR CRT DISPLAY AND SECOND ITEMS THAT REQUIRE NO PRIOR DISPLAY

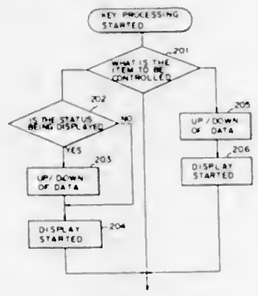
Hisafumi Yamada, Tokyo; Mitsumasa Saitoh; Shigeyuki Sano, both of Kanagawa, and Takao Itabashi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,396

Claims priority, application Japan, Apr. 30, 1991, 3-126676

Int. Cl.[5] H04N *5/44, 5/445*

U.S. Cl. 348—570 **3 Claims**



1. A method for displaying a controlled status in a system including manipulation means for adjusting a plurality of items to be controlled, control means coupled to said manipulation means for generating a control signal for adjustment, signal processing means responsive to said control signal for controlling a video signal or an audio signal, and display means for simultaneously displaying a video signal from said signal processing means and an adjusting value of said control signal on a screen, comprising the steps of:

receiving an instruction signal relating to an item of said plurality of items which is to be controlled from said manipulation means and, in response to said instruction signal:

identifying the item to be controlled; and

classifying said item to be controlled as being of a first type, for which a user needs confirmation of current status, or a second type, for which a user need not confirm the current status; and then,

if said item to be controlled is classified as being of said first type, confirming that a current controlled value is displayed on said display means, and thereafter permitting adjustment by said instruction signal to produce a new controlled value and displaying the new controlled value on said display means; and

if said item to be controlled is classified as being of said second type, permitting adjustment by said instruction signal to produce a new controlled value without prior display of a current controlled value and then displaying the new controlled value on said display means.

5,285,286

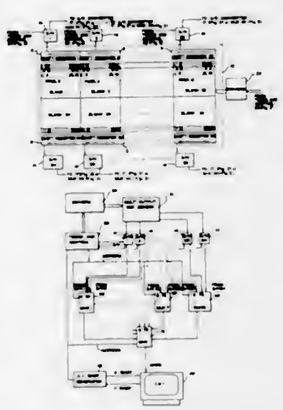
APPARATUS FOR TESTING IMAGE SENSORS THAT SIMULTANEOUSLY OUTPUT MULTIPLE IMAGE BLOCKS

Ram Kannegundla, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1992, Ser. No. 825,224

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—187 **4 Claims**



1. Apparatus for producing an image from a predetermined pattern of blocks of image data stored in a multi-output image sensor on a display without using a frame store in order to determine defects in such image sensor, the image sensor having a plurality of analog shift registers each associated with a corresponding block of image data, for serially shifting out its corresponding block of image data, image line by image line, to an output of the analog shift registers, wherein each block of image data is simultaneously serially shifted out of the multi-output image sensor comprising:

(a) a plurality of first addressable analog multiplexers, each such first analog multiplexer having inputs coupled to the outputs of a plurality of the analog shift registers;

(b) a second addressable multiplexer having inputs coupled to outputs of the first analog multiplexers; and

(c) timing and control means for sequentially addressing the first multiplexers and the second multiplexers so that the output of each shift register is coupled to the display and each block of image data is sequentially coupled to the display at a rate selected so that an image of the pattern provided by the blocks of image data is effectively produced on the display for visual analysis.

5,285,287

PROJECTING METHOD FOR PICTURE DISPLAY APPARATUS

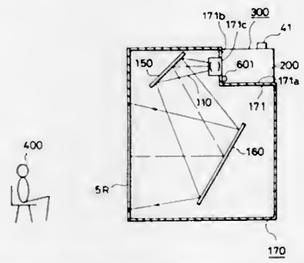
Shinsuke Shikama, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,286

Claims priority, application Japan, Jun. 14, 1991, 3-143170; Aug. 7, 1991, 3-197690

Int. Cl.[5] H04N *5/74, 9/31*

U.S. Cl. 348—745 **89 Claims**



1. A projection display device capable of selectively operating in a front projection mode and a rear projection mode, comprising:

a projector for emitting image rays;

a cabinet including a rear projection screen for receiving image rays on a first surface facing the interior of the cabinet for display on an opposite, second surface in said rear projection mode; and

a front projection screen disposed outside said cabinet, for receiving the image rays on a third surface and for displaying the image on said third surface in said front projection mode;

said cabinet having a mounting section formed at a part of said cabinet and for setting said projector at a predetermined position such that when said projector is set in said predetermined position the image rays from said projector travel within said cabinet to the first surface of said rear projection screen;

wherein said mounting section is formed on the exterior of said cabinet, and said cabinet has an aperture through which the image rays from said projector are passed into the cabinet.

5,285,288

VIDEO SIGNAL REPRODUCING APPARATUS WITH TIME BASE CORRECTOR

Takao Takahashi, and Hiroshi Okada, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 21, 1990, Ser. No. 570,431

Claims priority, application Japan, Aug. 25, 1989, 1-219815

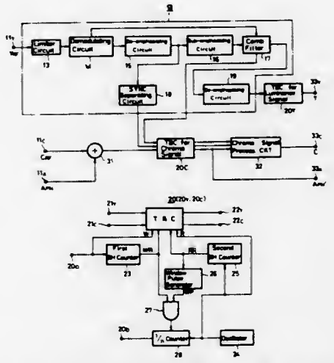
Int. Cl.[5] H04N *9/89*

U.S. Cl. 358—320 **11 Claims**

1. In an apparatus for processing a video signal reproduced from a record medium and including a reproduced FM-modulated luminance signal and a reproduced down-converted chroma signal down-converted from an original frequency band, the combination of:

means for demodulating said reproduced FM-modulated luminance signal;

correcting means for correcting time-bases of the demodulated luminance signal and said reproduced down-converted chroma signal, said correcting means including a memory having a predetermined capacity of substantially less than one field and into which the demodulated luminance signal and the down-converted chroma signal are written at a rate influenced by time-base errors in the reproduced video signal and from which time-base corrected luminance and chroma signals are read at a constant rate;



means for generating a first signal when the amount written into said memory reaches said predetermined capacity;

means for generating a second signal when the amount read from said memory reaches said predetermined capacity;

means for generating a phase difference signal when a phase difference between said first and said second signals exceeds a predetermined amount;

reproducing servo means responsive to said phase difference signal for changing the rate of writing into said memory; and

means for up-converting the time-base corrected chroma signal to said original frequency band.

5,285,289

RECORDING AND REPRODUCING INFORMATION APPARATUS FOR SELECTIVELY RECORDING A PCM AUDIO SIGNAL OR A DIGITAL SIGNAL IN PLACED THEREOF

Yuji Hatanaka, Yokohama; Shinichi Obata, Fujisawa, and Toshifumi Takeuchi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,191

Claims priority, application Japan, Apr. 1, 1991, 3-092633

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—343 **20 Claims**

1. A recording and reproducing information apparatus capable of making up a data frame on a recording medium and recording and reproducing a digital signal on and from said data frame, comprising:

a digital signal processing circuit having a memory with a predetermined volume;

a control circuit for changing a number of digital signals in said data frame depending on a difference between a number of data pieces of said digital signal input to said digital signal processing circuit and a number of data pieces output to said recording medium;

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wherein the number of said digital signals in said data frame is selected as a variable or a fixed value;

means for, when recording a PCM audio signal as said digital signal, making variable the number of said digital signals in said data frame and means for, when recording the digital signal except for said PCM audio signal, making fixed the number of said digital signals in said data frame.

5,285,290

IMAGE STORING WITH DATA COMPRESSION TO ACCOMMODATE MEMORY CAPACITY

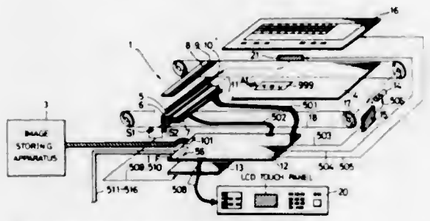
Masanori Sakai, Yokohama; Toshihiro Kadowaki, Kawasaki; Toshio Honma, Kawasaki, and Takayuki Komine, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1989, Ser. No. 385,383

Claims priority, application Japan, Jul. 28, 1988, 63-187004; Jul. 28, 1988, 63-187005; Jul. 28, 1988, 63-187007

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—404 **6 Claims**



1. An image storing apparatus comprising:

memory means for storing input image information;

comparing means for comparing a number of picture elements of the input image information with the number of picture elements of said memory means;

generating means for generating a number of picture elements of said memory means; and

means for determining a compression ratio of the input image information in accordance with the result of comparison in said comparing means before compression of the input image information.

5,285,291

METHODS OF ASSIGNING PIXELS TO CELLS OF A HALFTONE GRID

Stephen N. Schiller, Menlo Park, Calif., assignor to Adobe Systems Incorporated, Mountain View, Calif.

Filed Feb. 8, 1991, Ser. No. 652,927

Int. Cl.[5] H04N *1/387*

U.S. Cl. 358—453 **21 Claims**



1. A method for dividing pixels in a supertile made up of a plurality of pixels into digital halftone cells which approximate ideal halftone cells, comprising:

superimposing a halftone grid made up of ideal halftone cells on said supertile;

assigning to said digital halftone cell a first group of pixels of said supertile, each of which is located entirely within a single ideal halftone cell;

assigning to said digital halftone cell a second group of pixels of said supertile, a portion of each of which lies in said ideal halftone cell and a portion of which lies in at least one other ideal halftone cell;

said assignments being made in a manner so that the area of said digital halftone cell, which contains the assigned first and second groups of pixels, will closely approximate the area of said ideal halftone cell.

5,285,292

DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH FLASH WRITE MODE CARRYING OUT FOR SELECTED MEMORY CELL ARRAYS

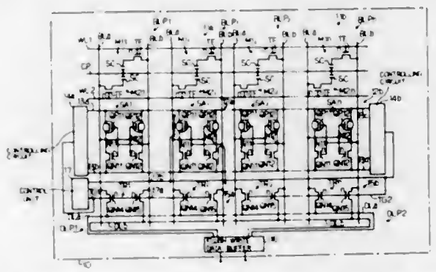
Kazuhiko Matsuki, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,841

Claims priority, application Japan, Feb. 22, 1991, 3-050501

Int. Cl.[5] G11C *7/00, 11/34*

U.S. Cl. 358—456 **5 Claims**



1. A dynamic random access memory device with a flush write-in mode of operation, comprising:

a) a plurality of memory cells respectively storing data bits, and arranged in rows and columns, said columns being divided into a plurality of memory cell groups for selectively carrying out said flush write-in mode of operation;

b) a plurality of word lines respectively associated with said rows, and selectively driven to an active level for allowing data bits to be read out from the associated memory cells;

c) a plurality of bit line pairs respectively associated with said columns, and respectively coupled with said plurality of memory cells of said associated columns for propagating differential voltage levels each indicative of a data bit;

d) a plurality of sense amplifier circuits respectively coupled with said plurality of bit line pairs, and operative to develop differential voltage levels on said plurality of bit line pairs, said plurality of sense amplifier circuits being divided into sense amplifier circuit groups respectively associated with said memory cell groups;

e) a plurality of flush write data line pairs respectively associated with said sense amplifier circuit groups, and respectively propagating differential voltage levels respectively indicative of flush write data bits;

f) a plurality of transfer units respectively coupled between said sense amplifier groups and said plurality of flush write data line pairs, and responsive to transfer signals for selectively transferring said flush write data bits to said associated sense amplifier circuit groups in said flush write-in mode of operation; and

g) a plurality of controlling circuits respectively associated with said sense amplifier circuit groups, and producing activating signals respectively supplied to said sense amplifier circuit groups in such a manner that time delay is introduced between activation of sense amplifier circuits supplied with said flush write data bits and activation of the other sense amplifier-circuits prohibited from said flush write data bits in said flush write-in mode of operation.

5,285,293

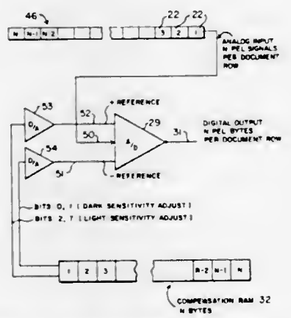
METHOD AND APPARATUS FOR PROVIDING SENSOR COMPENSATION

Steven L. Webb; Edward S. Beeman, both of Loveland; Kenneth D. Gennetten, Fort Collins, all of Colo., and Craig L. Miller, Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 470,292, Jan. 25, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,256

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—471 **9 Claims**



1. Document scanner apparatus comprising,

platen means for supporting a document to be scanned,

light source means for illuminating a document on said platen means,

light sensitive array means, associated with said platen means and arranged for movement relative to a document, for receiving light from a document being scanned, said array means comprising a plurality of individual sensor cells, each of which provides an analog output signal in response to light received from a document during a scan thereof,

target means, positioned relative to said sensor array means so as to be illuminated by said light source means, for providing a surface of substantially uniform reflectivity,

first means for determining the dark response analog output signal of each of said sensor cells when said array means views said target means in a nonilluminated state, and for providing a dark response digital output signal for each sensor cell as a result thereof, said first means including means responsive to said dark response analog output signal for calculating said dark response digital output signal as first compensation data bits for each of said sensor cells, said first compensation data bits being representative of said dark response analog output signal,

second means for determining the light response analog output signal of each of said sensor cells when said array means views said target means in an illuminated state, and for providing a light response digital output signal as a result thereof, said second means including means responsive to said light response analog output signal for calculating said light response digital output signal as second compensation data bits for each of said sensor cells, said second compensation data bits being representative of said light response analog output signal,

data storage means, comprising a random access memory (RAM),

means for supplying said first and second compensation bits to said data storage means to thereby store a compensation word for each of said sensor cells, and

signal processing means, comprising:

(a) analog to digital convertor means comprising control input means for receiving from said data storage means compensation words corresponding to each of said sensor cells and signal input means for receiving analog output signals from said sensor cells, said control input means comprising negative and positive reference terminals respectively coupled to outputs of first and second digital to analog (D/A) convertors, said first and second D/A convertors arranged in parallel to receive said first and second compensation bits representative of said dark and light responses and output to said negative and positive reference terminals analog versions thereof; and

(b) means for controlling a transfer function of said analog to digital convertor means in accordance with said analog versions of said compensation bits such that: (i) in response to receiving via said signal input means an analog signal substantially equal in value to or less than said dark response, said analog to digital convertor means will output a digital signal of a first prescribed value, (ii) in response to receiving via said signal input means an analog signal substantially equal in value to or greater than said light response, said analog to digital convertor means will output a digital signal of a second prescribed value, and (iii) in response to receiving via said signal input means an analog signal having a value between said dark and light responses, said analog to digital convertor means will output a digital signal of a value between said first and second prescribed values.

5,285,294

IMAGE INPUT APPARATUS AND METHOD HAVING READING DENSITY CONTROL MEANS

Yukitoshi Takeuchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,482

Claims priority, application Japan, Apr. 20, 1990, 2-105623

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—474 **34 Claims**

31. A method of inputting image data into an apparatus, comprising the steps of:

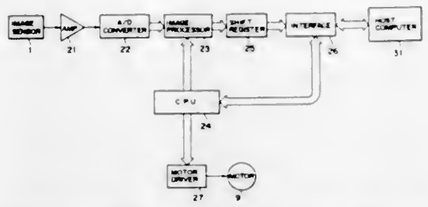
driving, with a drive means, a scanner which reads an image;

inputting, with input means, a character size;

discriminating, with discriminating means, whether a read-

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ing density of the scanner is adequate for the input character size; and



changing, with changing means, the reading density when said discriminating step discriminates that the reading density is inadequate for the input character size.

5,285,295

LINE IMAGE SENSOR

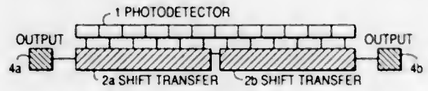
Tsutomu Kai, and Takeshi Shimamoto, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 3, 1991, Ser. No. 709,224

Claims priority, application Japan, Jun. 5, 1990, 2-148243

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—482 **5 Claims**



1. A line image sensor comprising:

a light receiving portion arranged in a line in a major scanning direction;

a plurality of light receiving elements for converting a projected light into an electrical signal;

two transfer portions each divided in two and located in one line in said major scanning direction for transferring said electrical signal of said receiving elements; and

two output portions for outputting an electrical signal of said two transfer portions, said two output portions being connected to an end plane which is facing away from said two transfer portions, whereby said two transfer portions transfer a detected signal toward said two output portions.

5,285,296

CONVERSION OF COLOR DISPLAY DATA TO COLOR PRINT DATA

Haruo Komooka, Fujisawa; Toshifumi Matsuyama, and Masao Mizuno, both of Yokohama, all of Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 15, 1991, Ser. No. 776,116

Claims priority, application Japan, Oct. 15, 1990, 2-273508

Int. Cl.[5] H04N *1/46;* **G06F** *15/72*

U.S. Cl. 358—518 **8 Claims**

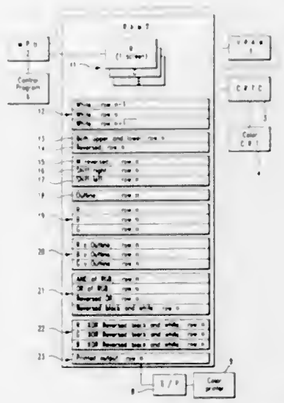
1. An image processor, comprising in combination:

means for storing an original color image, said original color image comprising a multiplicity of pixels, some pixels having a first color and others having a second color;

means for identifying a first group of pixels, said first group comprising the pixels in said original color image that are interior first color pixels, wherein an interior first color pixel is a first color pixel that is surrounded by other first color pixels;

means for converting said original color image to an intermediate color image, wherein the first group of pixels in said original color image are converted to second color pixels in said intermediate color image;

means for identifying a second group of pixels, said second group comprising the pixels in said original color image that are first color pixels;



means for converting said intermediate color image to a final color image, wherein the pixels in said intermediate color image are converted such that first color pixels are converted to the second color and second color pixels are converted to the first color.

5,285,297

APPARATUS AND METHOD FOR COLOR CALIBRATION

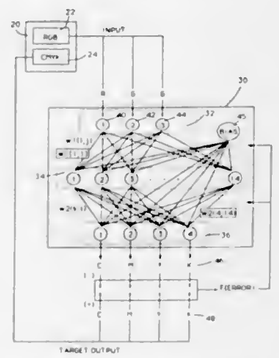
Oded Rose, Herzliya, and Tal Grossman, Rishon Lezion, both of Israel, assignors to Scitex Corporation Ltd., Herzliya, Israel

Continuation-in-part of Ser. No. 734,310, Jul. 19, 1991, Pat. No. 5,200,816. This application Aug. 19, 1992, Ser. No. 931,846

Claims priority, application Israel, Jun. 25, 1991, 98622

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—518 **12 Claims**



1. A method for modifying a neural network, operative to transform first color values from a first set of color values to second color values from a second set of color values, to fit at least one pair of first and second color values, the method comprising the steps of:

superimposing, on the neural network, a local transformation from the first set of color values to the second set of color values characterized in that the local transformation, superimposed on the neural network, is operative to transform the first color value in the pair to the second color value in the pair without substantially affecting the operation of the neural network on first color values which are distant from the first color value in the pair.

5,285,298

COLOR DISPLAY APPARATUS

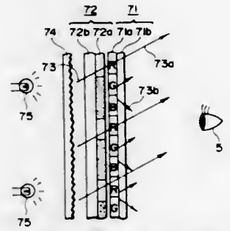
Shuzo Kaneko, Yokohama; Kazuo Yoshinaga, Machida; Kazuo Isaka, Tokyo; Takashi Kai, Hadano, and Yomishi Toshida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 385,151, Jul. 26, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 914,633

Claims priority, application Japan, Jul. 29, 1988, 63-187983; Jul. 30, 1988, 63-189663; Jul. 30, 1988, 63-189665; Jul. 30, 1988, 63-189668; Apr. 26, 1989, 1-104493

Int. Cl.[5] G02F *1/01;* **G02B** *5/23*

U.S. Cl. 359—43 **30 Claims**



1. A color image display apparatus, comprising:

an image recording medium forming a written image with different degrees of light-scattering characteristic, said image recording medium comprising

(a) a recording layer which comprises a material capable of selectively forming in the absence of an applied electric field a light-scattering state and a transparent state depending on thermal conditions applied thereto, and

(b) a color filter having a pattern of plural color segments of a plurality (n) of colors operatively associated with the recording layer;

a light source; and

direction means for directing light from the light source to be incident on the recording layer in a direction that is not normal to said recording layer so as to display an image in light scattered from a set of color segments of the plurality (n) of colors in association with the recording layer, wherein the scattered light is of a color which is a mixture of a number (m) of said plurality of colors, wherein $1 \leqq m < n$.

5,285,299

ENCAPSULATED LIQUID CRYSTAL APPARATUS HAVING LOW OFF-AXIS HAZE, OPERABLE BY A SINE-WAVE POWER SOURCE AND INCLUDING A DYE

Paul S. Drzaic, and Peter H. van Konynenburg, both of Palo Alto, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

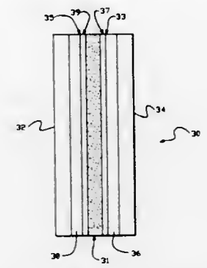
Continuation-in-part of Ser. No. 382,862, Jul. 20, 1989, Pat. No. 5,156,452. This application Sep. 26, 1991, Ser. No. 766,419

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—52 **10 Claims**

1. A liquid crystal apparatus comprising: an encapsulated liquid crystal material in a containment medium, said liquid crystal material containing a dye that conforms to the structure of the liquid crystal material, and having an extraordinary index of refraction and an ordinary index of refraction wherein the difference between said extraordinary index of refraction



and said ordinary index of refraction is between about 0.050 and 0.115, and wherein the containment medium has an index of refraction greater than said ordinary index of refraction.

5,285,300

LIQUID CRYSTAL DEVICE

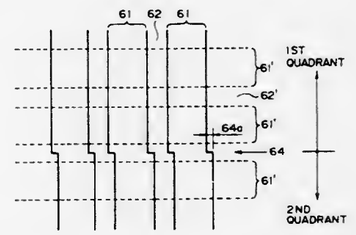
Masaaki Suzuki, Yokohama; Yuichi Masaki, Kawasaki; Toshifumi Yoshioka, Hadano, and Mutsuo Mitsui, Hachiohji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,299

Claims priority, application Japan, Oct. 7, 1991, 2-85436; Oct. 14, 1991, 2-91884; Oct. 14, 1991, 2-91885

Int. Cl.[5] G02F *1/1343, 1/1335*

U.S. Cl. 359—54 **8 Claims**



1. A liquid crystal device comprising a pair of spaced substrates each having on a surface stripe electrodes disposed to intersect with those disposed on the other substrate, and a liquid crystal disposed between the substrates so as to be driven by a voltage applied through the stripe electrodes; wherein said stripe electrodes on at least one of the pair of substrates are formed through a lithographic step including dividing the stripe electrodes into at least two divisions at a line perpendicular to the extension of the stripe electrodes, and repeating a pattern exposure for each division of the stripe electrodes so as to dispose a joint between the divisions of the stripe electrodes at a part in alignment with a non-display part.

5. A liquid crystal device comprising a pair of spaced substrates each having on a surface a stripe electrodes disposed to intersect with those disposed on the other substrate, and a liquid crystal disposed between the substrates so as to be driven by a voltage applied through the stripe electrodes; wherein said stripe electrodes on at least one of the pair of substrates are formed through a lithographic step including dividing the stripe electrodes into at least two divisions at a line parallel to the extension of the stripe electrodes, and repeating a pattern exposure for each division of the stripe electrodes so as to

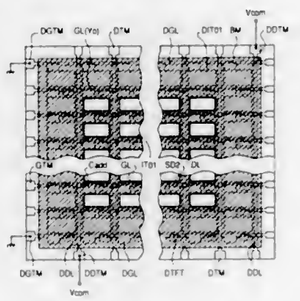
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dispose a joint between the divisions of the stripe electrodes at a part in alignment with a non-display part.

5,285,301
LIQUID CRYSTAL DISPLAY DEVICE HAVING PERIPHERAL DUMMY LINES

Kazuo Shirahashi; Yuka Matsukawa, both of Mobara; Akira Sasano, Tokyo; Hideaki Taniguchi, Mobara; Hideaki Yamamoto, Tokorozawa, and Haruo Matsumaru, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1992, Ser. No. 851,925
Claims priority, application Japan, Mar. 15, 1991, 3-051619
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—59 **22 Claims**



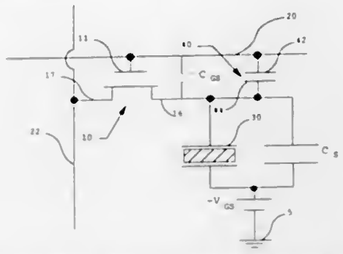
1. A liquid crystal display device comprising:
a first substrate and a second substrate;
a liquid crystal layer formed between said first and second substrates;
a plurality of thin-film transistors formed between said first substrate and said liquid crystal layer, each including a gate electrode, a semiconductor film, a gate insulating film formed between said semiconductor film and said gate electrode and a pair of source/drain electrodes formed apart from each other;
a plurality of pixel electrodes each electrically connected with one of said pair of source/drain electrodes of an associated one of said transistors;
a plurality of row conducting lines each electrically connected with gate electrodes of associated transistors;
a plurality of column conducting lines each electrically connected with the other of said pair of source/drain electrodes of associated transistors; and
a dummy line disposed outside of an outermost one of said column conducting lines.

5,285,302
TFT MATRIX LIQUID CRYSTAL DISPLAY WITH COMPENSATION CAPACITANCE PLUS TFT STRAY CAPACITANCE CONSTANT IRRESPECTIVE OF MASK MISALIGNMENT DURING PATTERNING

Hiing-Seng Wu, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 30, 1992, Ser. No. 860,430
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—59 **10 Claims**

1. An active matrix display system comprising:
a transparent insulating substrate;
a plurality of parallel scan bus lines formed on said insulating substrate;
a plurality of data bus lines formed on said insulating substrate crossing orthogonally but insulated from said scan bus lines;
a plurality of picture elements (pixels) formed on said insulating substrate, each pixel including.
a switching device,
a picture electrode,
and a compensation capacitor,
said switching device having an input electrode connected to one of said data bus lines, an output electrode connected to said picture electrode, a control electrode connected to one of said scan bus lines for turning on said switching device, and a stray capacitance between said output electrode and said control electrode,



said compensation capacitor connected in parallel with said stray capacitance and having a capacitance complementary to said stray capacitance so that the sum of said stray capacitance and the capacitance of the compensation capacitor is constant regardless of the misalignment error of the mask for patterning said control electrode with respect to the mask for patterning said output electrode during photo-lithography.

5,285,303
PHASE RETARDER AND PROCESS FOR PRODUCING THE SAME

Toynkazu Okada; Kazuaki Sakakura; Koji Higashi, and Akiko Shimizu, all of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 24, 1991, Ser. No. 705,203
Claims priority, application Japan, May 25, 1990, 2-135830
Int. Cl.[5] G02B *1/04, 5/30*
U.S. Cl. 359—73 **3 Claims**

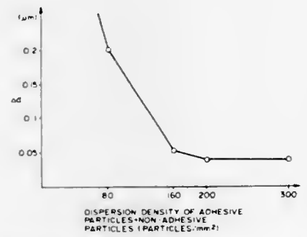


1. A phase retarder obtained by shrinking a uniaxially stretched thermoplastic high polymer film in the direction perpendicular to the stretching direction at a lengthwise shrink of at least 2%, said phase retarder having a ratio of a retardation value R_{30} measured with the phase retarder inclined at an angle of 30° with respect to the orientation axis as an axis of rotation, to a retardation value R_0 measured with the phase retarder inclined at an angle of 0° with respect to the orientation axis, R_{30}/R_0, of not more than 1.10, wherein the thermoplastic high polymer film comprises at least one member selected from the group consisting of a polycarbonate resin, a polysulfone, a polyether sulfone, a polyarylate resin, a polystyrene resin, and a cellulose resin, and wherein said retardation values R_{30} and R_0 are each measured with a polarizing microscope.

5,285,304
FERROELECTRIC LIQUID CRYSTAL DEVICE HAVING SPACERS INCLUDING THE THERMOSETTING ADHESIVE PARTICLES AND THE THERMOPLASTIC POLYMER PARTICLES

Yoshio Hotta; Yukio Hanyu, both of Atsugi; Tadashi Mihara, Isehara; Yasuto Kodera, Fujisawa, and Katsutoshi Nakamura, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,543
Claims priority, application Japan, Jan. 24, 1992, 3-032865; Jan. 27, 1992, 3-034029
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—81 **11 Claims**

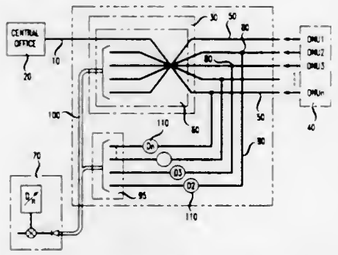


1. A ferroelectric liquid crystal device, comprising: a pair of substrates each having thereon a group of electrodes for liquid crystal drive, and a layer of ferroelectric liquid crystal disposed between the substrates, wherein thermosetting adhesive particles and thermoplastic polymer particles respectively having a diameter which is 1.5–5 times the liquid crystal layer thickness are dispersed and pressed between the substrates. g

5,285,305
OPTICAL COMMUNICATION NETWORK WITH PASSIVE MONITORING

Leonard G. Cohen, Berkeley Heights, and Jack H. Winters, Middletown, both of N.J., assignors to AT & T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 12, 1991, Ser. No. 806,561
Int. Cl.[5] H04B *10/08, 10/12*; H04J *14/02*
U.S. Cl. 359—110 **27 Claims**

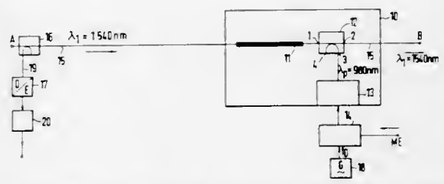


1. An optical communication network which comprises at least a first single-mode optical fiber, to be referred to as a primary fiber, for at least unidirectional transmission, at least at one signal wavelength, to be denoted λ_s, from a first distribution node to a central office;
a first multiplicity of optical network units, to be referred to as the first ONUs, located remotely from the central office, each ONU capable of transmitting and receiving data at least at the wavelength λ_s, and each ONU comprising means for synchronizing the ONU transmissions such that a time-division-multiplexed signal is received at the central office;
a first multiplicity of single-mode optical fibers, to be referred to as distribution fibers, for at least unidirectional transmission from the first ONUs to the first distribution node such that each ONU sends data via a respective one of the first distribution fibers; and
first coupling means, located at the first distribution node, for passively combining transmissions from the first ONUs into the first primary fiber; CHARACTERIZED IN THAT:
a) the first coupling means comprise a first coupler, to be referred to as a first Stage-1 coupler, which has a proximal end which includes at least one proximal port and a distal end which includes a plurality of distal ports;
b) each first distribution fiber is optically coupled to one of the distal ports, and the first primary fiber is optically coupled to the proximal port of said coupler;
c) the network further comprises a monitor;
d) the network further comprises a first plurality of bypass lines, each said bypass line comprising an optical fiber having proximal and distal ends, the distal end optically coupled to a corresponding one of the first distribution fibers and the proximal end optically coupled to the monitor such that portions of at least some transmissions are received by the monitor without passing through the first Stage-1 coupler;
e) the monitor comprises means for discriminating received transmissions based on a variable selection criterion; and
f) the network further comprises passive optical means, optically coupled to the monitor and to one or more first bypass lines, for conforming transmissions in said bypass line or lines to a given value of the selection criterion.

5,285,306
OPTICAL COMMUNICATION SYSTEM WITH A FIBER OPTIC AMPLIFIER

Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N.V., Netherlands

Filed Nov. 14, 1991, Ser. No. 791,370
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, P4036327
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—160 **10 Claims**



1. System for transmitting a first optical signal through two parts of an optical waveguide interconnected by a fiber-optic amplifier which includes an amplifying length of fiber connected at a first end to a selected one of the two parts of the optical waveguide, a wavelength-selective fiber-optic coupler interconnected between a second end of the amplifying length of fiber and the other one of the two parts of the optical waveguide, and a pump source for providing a pump light signal to the coupler, wherein the coupler is for coupling the pump light signal to the amplifying length of fiber, wherein in order to provide an additional information signal through the selected one of the two parts of the optical waveguide,
a modulator is connected to the pump source for providing a modulating signal containing the additional information signal for modulating the pump light signal,
at a point remote from the first end of the amplifying length of fiber of the fiber-optic amplifier, the selected one of the

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two parts of the optical waveguide has a second wavelength-selective fiber-optic coupler interconnected therein which couples the pump light signal received from the fiber-optic amplifier through the optical waveguide, and

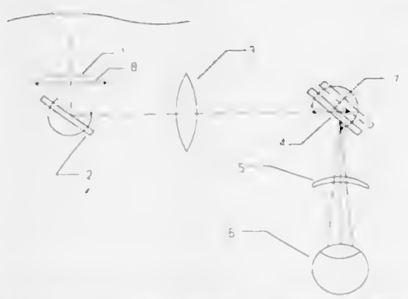
an optical receiver connected to the second wavelength-selective fiber-optic coupler and responsive to the pump light signal for receiving the additional information signal contained in the pump light signal.

5,285,307

VISUAL FIELD EXPANDING SYSTEM

Jaroslaw Pekar, 705 Williams Cir., Chapel Hill, N.C. 27516, and Robert L. Beadles, 5435 Lakeview Dr., Durham, N.C. 27712

Filed Mar. 20, 1992, Ser. No. 854,886
Int. Cl.[5] G02B *26/08, 26/02*
U.S. Cl. 359—201 **7 Claims**



1. An imaging apparatus employing a translating slit through which pass successive partial image signals of a scene to be viewed, said apparatus further including

a first mirror optically coupled to said translating slit and rotating in concert with translation of said slit for reflecting said partial image signals along an optical axis during translation of said slit,

a second mirror optically coupled along said optical axis to said first mirror and rotating and translating in concert with translation of said slit for further reflecting said partial image signals onto a predetermined location,

a first relay lens that provides said optical coupling between first and second mirrors, and

a second relay lens placed between said second mirror and said predetermined location to focus said reflected partial image signals onto said predetermined location.

5,285,308

SPATIAL LIGHT MODULATORS FOR INCOHERENT/COHERENT MULTIPLEXED HOLOGRAPHIC RECORDING AND READOUT

B. Keith Jenkins, Long Beach, and Armand R. Tanguay, Jr., Fullerton, both of Calif., assignors to University of Southern California, Calif.

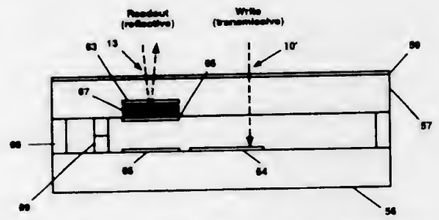
Division of Ser. No. 505,790, Apr. 6, 1990, Pat. No. 5,121,231. This application Feb. 13, 1992, Ser. No. 835,218
Int. Cl.[5] G02F *1/01, 1/03;* **G03H** *1/12*
U.S. Cl. 359—260 **36 Claims**

1. An optically addressed spatial light modulator comprising a plurality of pisels on at least two substrates, at least a first substrate and a second substrate, each said pixel comprising:

(a) modulator means to modulate, in at least one of transmission and reflection, at least one of phase and amplitude of incident light from at least one readout source, said modulator means situated on one surface of said first substrate;

(b) detector means to detect light from at least one write source, said detector means situated on at least one of said surface of said first substrate and one surface of said second substrate, and said detector means generating an input electrical signal; and

(c) electronic means comprising nonlinear analog integrated electronic signal processing circuitry, said electronic means situated on at least one of said surface of said first substrate and said surface of said second substrate, such that said second substrate has situated on it at least one of part of said detector means and part of said electronic means, with said electronic means implementing a prespecified input/output function, thereby generating an output electrical signal in response to said input electrical signal, said output electrical signal being suitable for driving said modulator means;



and at least a substantial subset of pixels further comprising:

(d) connecting means for electrically connecting and physically bonding said first substrate to said second substrate, said surface to said surface, said connecting means providing parallel electrical communication between the two said substrates, thereby enabling said modulator means to be controlled by said prespecified input/output function of said input electrical signal;

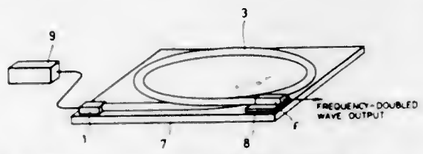
and at least one of said first substrate and said second substrate being substantially optically transparent to said light from at least one of said write sources and said read sources.

5,285,309

LASER LIGHT WAVELENGTH SHIFTER

Tetsuro Endoh, and Kiichiro Shinokura, both of Tendo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 28, 1991, Ser. No. 676,591
Claims priority, application Japan, Apr. 2, 1990, 2-87781
Int. Cl.[5] H03F *7/00*
U.S. Cl. 359—328 **2 Claims**



1. A laser light wavelength shifter comprising:

a semiconductor laser medium for emitting a laser light which serves as a fundamental wave;

a resonator means for producing a mode-locked resonating action of said semiconductor laser medium thereby to obtain a mode-lock resonated laser light; and

a wavelength shifting device for shortening the wavelength of said mode-lock resonated laser light from said resonator means, said wavelength shifting device being positioned outside of said resonator means,

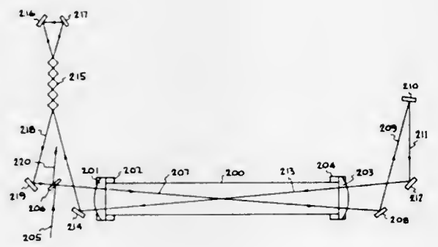
wherein the wavelength shifting device is formed of non-linear optical crystal having a propagation path in the 90° phase matched direction.

5,285,310

HIGH POWER REGENERATIVE LASER AMPLIFIER

John L. Miller; Lloyd A. Hackel, both of Livermore; Clifford B. Dane, Dublin, and Luis E. Zapata, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jan. 21, 1992, Ser. No. 822,763
Int. Cl.[5] H01S *3/05, 3/23*
U.S. Cl. 359—338 **21 Claims**



1. A laser amplifier, comprising:

a gain medium;

a source of pump energy coupled with the gain medium;

a controllable polarization rotator;

a plurality of reflectors configured to define an optical path through the gain medium and rotator, each transit of the optical path including at least one pass through the gain medium and only on pass through the rotator;

telescopic relay means, mounted in the optical path, for relaying an image in the near field of the gain medium to a location in the near field of the rotator;

input means for coupling an input pulse into the optical path to provide a captured pulse for regenerative amplification; and

output means for coupling an amplified pulse having a predetermined polarization out of the optical path; and

means, coupled with the polarization rotator, for controlling the rotator in timed relationship with the input pulse so that the captured pulse proceeds through at least one transit of the optical path, and then the rotator rotates the polarization of the pulse to the predetermined polarization, the captured pulse passes through the gain medium at least once more while having the predetermined polarization, and then is coupled out of the optical path by the output means to provide an amplified pulse, before passing through the rotator again.

5,285,311

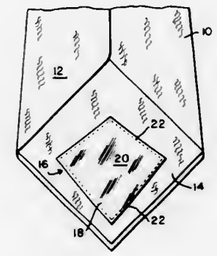
Patent Not Issued For This Number

5,285,312

IMAGE-REFLECTING MEANS, AND IN COMBINATION WITH AN ARTICLE OF APPAREL

J. Albert Mastro, 44 W. Valley Brook Rd., Long Valley, N.J. 07853

Filed Jan. 14, 1993, Ser. No. 4,309
Int. Cl.[5] G02B *5/12*
U.S. Cl. 359—516 **8 Claims**



8. In combination, an article of apparel with image-reflecting means, comprising:

an article of clothing; and

a flexible film of material having (a) a reflecting surface, and (b) an opposite, attaching surface; wherein

said article has (a) a first, frontal, normally-exposed surface, and (b) a second, rear, normally-unexposed surface; and

said film of material is sewn to said article of clothing with said attaching surface confronting said second surface.

5,285,313

IMAGE STABILIZING APPARATUS

Takashi Kobayashi, Mitaka; Shigeru Ogino, Tokyo, and Kazuhiro Noguchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 928,157, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 706,400, May 28, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 54,952
Claims priority, application Japan, May 29, 1990, 2-137187
Int. Cl.[5] G02B *27/64, 23/00*
U.S. Cl. 359—554 **14 Claims**

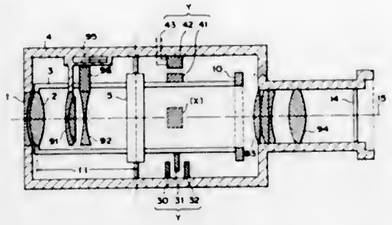
1. An image stabilizing apparatus for correcting a blur of image by using correcting optical means supported in a manner capable of relative displacement in relation to a lens-barrel in an operational range of displacement of said correcting optical means, said image stabilizing apparatus comprising:

(A) detection means for detecting the relative displacement of the correcting optical means in relation to the lens-barrel in said operational range of displacement;

(B) circuit means for processing the output of the detection means with different amplification degrees upon detection

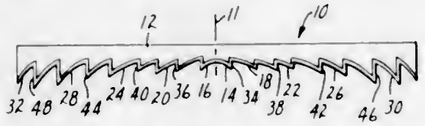
VOL 1159 ISS 2 FE 8 1994 UMI

by said detection means of respective different relative displacements in said operational range of displacement; and



(C) selection means for selecting applicable amplification degrees for said circuit means responsively to relative displacements detected by said detection means.

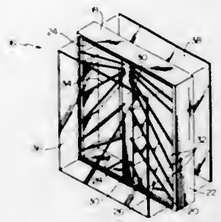
5,285,314
SUPERZONE HOLOGRAPHIC MIRROR
John A. Futhey, Petaluma, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Continuation of Ser. No. 695,269, May 3, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,339
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.[5] G02B *5/18, 27/44*
U.S. Cl. 359—565 **38 Claims**



1. A mirror having diffractive focusing power, said diffractive power being produced by a plurality of diffractive zones, said diffractive zones being terminated by optical steps, a first group of said diffractive zones having optical steps having heights equal to $j\lambda/2$ and a second group of said diffractive zones having optical steps having heights equal to $k\lambda/2$ where λ is a design wavelength of light of the mirror and j and k are unequal nonzero integers.

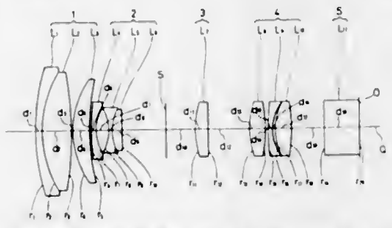
5,285,315
APPARATUS AND METHOD FOR OPTIMIZING USEFUL SUNLIGHT REFLECTED INTO A ROOM
Michael R. Stiles, Syracuse, N.Y., assignor to Synertech Systems Corporation, Syracuse, N.Y.
Filed Sep. 25, 1992, Ser. No. 950,960
Int. Cl.[5] G02B *17/00, 27/00*
U.S. Cl. 359—592 **52 Claims**

1. Apparatus for providing beam day-lighting to a room having an exterior envelope a portion of which faces in a compass direction to receive direct sunlight for at least a period during each day of at least a portion of the year, said apparatus comprising:
a) a member having a light-reflecting surface;
b) means defining an opening in said portion of said envelope; and
c) means supporting said member in said opening in an orientation wherein all directional components of a vector normal to said surface have values other than zero in all of three mutually perpendicular coordinate directions, of



which one is perpendicular to the plane of said opening and the other two are in the plane of said opening.

5,285,316
ZOOM LENS
Hitoshi Miyano, and Nobuyuki Shirie, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed Nov. 6, 1991, Ser. No. 788,463
Claims priority, application Japan, Nov. 8, 1990, 2-301075
Int. Cl.[5] G02B *15/14, 9/08*
U.S. Cl. 359—676 **3 Claims**



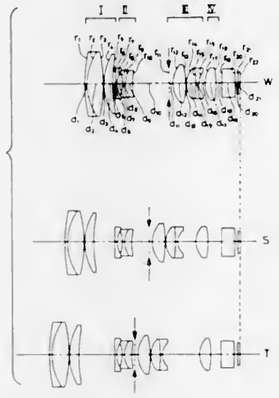
1. A zoom lens including from the object side a first lens group having positive refractive power, a second lens group having negative refractive power, a third lens group having positive refractive power, and a fourth lens group having positive refractive power, said first and third lens group being held stationary, said second lens group being movable along an optical axis for zooming operation, and said fourth lens group being movable to maintain a plane of focus in compensation for variations in subject distance and shifts of focal point by zooming operations, wherein said zoom lens comprises:
a stop provided between said second and third lens groups movably along the optical axis and arranged to be located closer to an imaging plane at the longest focal length of a zooming range than at the shortest focal length thereof;
wherein said stop is movable in the range of $\frac{1}{2}$ to $\frac{1}{4}$ of axial displacement of said second lens group.

5,285,317
ZOOM LENS SYSTEM
Tsutomu Uzawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 18, 1991, Ser. No. 793,112
Claims priority, application Japan, Nov. 22, 1990, 2-320262
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 **16 Claims**

1. A zoom lens system comprising in order from the object side a first lens unit having a positive refractive power, a second lens unit having a negative refractive power, a third lens unit having a positive refractive power and a fourth lens unit having a positive refractive power,
wherein said first and third lens units are movable toward the object side for zooming from the wide angle end to the telephoto end while said second lens unit remains fixed,
wherein said fourth lens unit is movable for correcting image position variations,
wherein said third lens unit includes at least one positive lens element and one negative lens element with the concave surface facing said fourth lens unit, and
wherein said zoom lens system satisfies the following conditions:

$$0.2 < r_{3R}/(n_{3R}-1)(f_W f_T)^{\frac{1}{2}} < 1.0 \quad (4)$$

$$0.2 < r_{4F}/(n_{4F}-1)(f_W f_T)^{\frac{1}{2}} < 2.0 \quad (5)$$

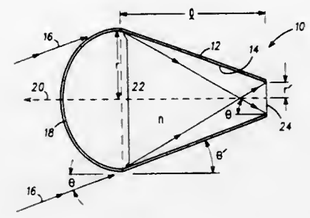


wherein:
r_{3R} is the radius of curvature of the image-side surface of a negative lens in the third lens unit,
n_{3R} is the refractive index of a negative lens in the third lens unit,
r_{4F} is the radius of curvature of the surface of the fourth lens unit that is proximate to the object side,
n_{4F} is the refractive index of the lens of the fourth lens unit that is proximate to the object size,
f_W is the focal length of the overall system at the wide angle end, and
f_T is the focal length of the overall system at the telephoto end.

5,285,318
ILLUMINATION SYSTEM HAVING AN ASPHERICAL LENS
Philip Gleckman, Oak Park, Ill., assignor to NiOptics Corporation, Evanston, Ill.
Filed Jun. 22, 1992, Ser. No. 901,896
Int. Cl.[5] G02B *3/02*
U.S. Cl. 359—709 **15 Claims**

1. A lens system, comprising:
a conical lens portion providing internal reflection of light rays present therein; and
an aspherical containing lens portion integrally coupled to said conical lens portion and said lens portions having a central longitudinal optical axis and said conical lens portion having an entrance and exit aperture with radii r and r', respectively, and said aspherical lens portion further having a surface shape causing light rays incident thereon with an angle of incidence θ less than about 24° to the central longitudinal optical axis to be imaged after reflection from said conical lens portion on said exit aperture at a minimum distance l in accordance with the expression,

$$l=(r+r')/(\tan\theta') \quad (1)$$

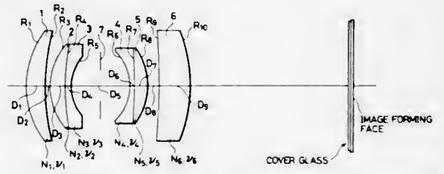


$r\sin\theta=(r'\sin\theta'')(n)$
θ''=output angle in medium

$$\theta' = \pi/2 - \theta - \sin^{-1}\frac{(\cos 2\theta)}{n} \quad (2)$$

n=index of refraction described above
and edge rays defining ray intercepts at said exit aperture plane such that the derivative of said ray intercept is a positive value.

5,285,319
SCANNER LENS FOR READING
Yuichiro Kanoshima, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 10, 1992, Ser. No. 866,355
Claims priority, application Japan, Apr. 11, 1991, 3-79068
Int. Cl.[5] G02B *9/08, 9/62*
U.S. Cl. 359—740 **1 Claim**



1. A scanner lens for reading, comprising first to fourth lens groups sequentially arranged from an object side to an image side;
said first lens group being constructed by a first lens composed of a positive meniscus lens having a convex face directed on the object side;
said second lens group being constructed by second and third lenses and having a negative focal length, said second lens being composed of a positive meniscus lens having a convex face directed on the object side, said third lens being composed of a negative meniscus lens which has a convex face directed on the object side and is joined onto an image side of said second lens;
said third lens group being constructed by fourth and fifth lenses and having a negative focal length, said fourth lens being composed of a negative meniscus lens having a concave face directed on the object side, said fifth lens being composed of a positive meniscus lens which has a concave face directed on the object side and is joined onto an image side of said fourth lens;
said fourth lens group being constructed by a sixth lens composed of a positive meniscus lens having a concave face directed on the object side;
said scanner lens further comprising a diaphragm arranged between said second and third lens groups;

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refractive indices N_g, N_F, N_d, and N_C at respective wavelengths on lines g, F, d, and C, an Abbe's number v on line d, and a partial dispersion ratio $\theta=(N_g-N_d)/(N_F-N_C)$ satisfying the following condition:

$$(-0.0020793\cdot v+1.3649)-\theta>0.004 \quad (1)$$

with respect to at least one of said third and fourth lenses adjacent to said diaphragm; and

a combined focal length f of an entire lens system and a focal length f_1 of said first lens group satisfying the following condition:

$$0.95<f_1/f<1.15. \quad (2)$$

5,285,320

MIRROR FOR CHANGING THE GEOMETRICAL FORM OF A LIGHT BEAM

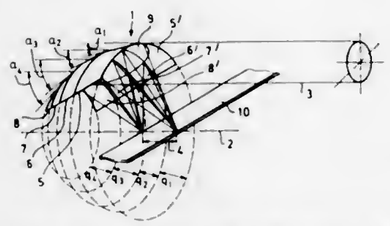
Gerhard Hohberg, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim

Continuation-in-part of Ser. No. 505,177, Apr. 5, 1990, abandoned. This application Nov. 7, 1991, Ser. No. 788,997

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912237

Int. Cl.[5] **G02B** *5/08*; **B23K** *26/00*

U.S. Cl. 359—853 **9 Claims**



1. A mirror for imparting a linear cross section to a light beam and reflecting the beam onto a line-like region of a workpiece, the mirror comprising:

a single mirror body having a plurality of rotational aspherical surface reflective segments formed thereon integral with said body;

said reflective segments being disposed one next to the other so as to define a continuous uninterrupted reflective surface;

said reflective segments having respective rotational axes superposed one upon the other on a line-like region of said workpiece;

said reflective segments having respective sizes selected so as to cause the light beam to impinge simultaneously upon several of said segments so as to reflect respective zones of said beam; and,

said reflective segments each being formed and aligned so as to cause the light of each one of said zones to be reflected only once by the surface segment corresponding thereto and be directed onto said line-like region of the workpiece with said zones of light being superposed on each other on said line-like region to provide an intensity distribution of said beam which is homogeneous in said line-like region.

5,285,321

DEVICE FOR OBSERVING INFANT IN REAR SEAT

Patricia Nolan-Brown, 27 Parker Rd., Wakefield, Mass. 01880

Filed Jan. 27, 1992, Ser. No. 826,104

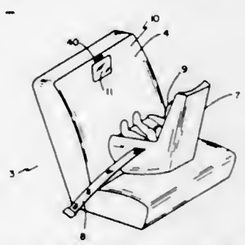
Int. Cl.[5] **B60R** *1/04*; **G02B** *5/08, 7/18*

U.S. Cl. 359—857 **6 Claims**

1. A device for observing an infant in a rear facing safety seat located in the rear seat of a motor vehicle using the rear view mirror of said vehicle comprising:

a generally rectangular, planar shaped mirror made out of a rigid, light weight material, and having a non-glass reflective coating on one of its planar sides and a non-reflecting surface on the obverse side, said mirror being adapted to being attached to the rear back seat of said vehicle;

a generally wedge-shaped holding element having a V-shaped cross-section centrally attached to said mirror's non-reflective planar side along the mirror's horizontal axis near to the mirror's bottom edge, said holding element having two principle components meeting and joining at a sharply acute angle each having uneven vertical lengths, each of said components having two faces, one defined as interior, and the other exterior, said exterior face of the vertically shorter of the two components being attached to the non-reflective side of the mirror, and the vertically longer of the two components extending freely upward away from the mirror's non-reflective side;



means for attaching said device to the rear back seat of said vehicle; and

means for adjusting the positioning of said device so that it reflects the image of the infant from said car safety seat to said rear view mirror.

5,285,322

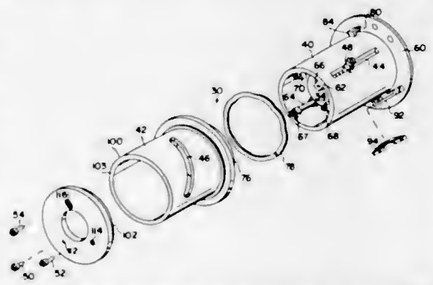
MECHANISMS FOR MOUNTING CAM BARRELS

Randy E. Horning; Peter A. Newman, both of Rochester, and James C. Crosley, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,821

Int. Cl.[5] **G02B** *7/04*

U.S. Cl. 359—826 **19 Claims**



1. A cam barrel mechanism mounting a lens group for focusing an image in an optical device, the mechanism comprising:

a base;

a first barrel of a selected outer diameter and selected length having first and second ends, the first barrel being fixed proximate the first end to the base and having the lens group therein mounted for axial movement with respect thereto;

a second barrel having first and second ends of a selected inner diameter substantially greater than said outer diameter of the first barrel, the second barrel being coaxially mounted on the first barrel;

an axially extending zero-clearance slot in the first barrel, an oblique slot in the second barrel and a pin extending from the lens group and received in the oblique slot wherein the lens group axially translates with respect to the barrels when the second barrel is rotated with respect to the first barrel;

axial stop means rigidly fixed to the first barrel for axially positioning the second barrel with respect to the first barrel;

radial stop means positioned in spaced relation with respect to the first barrel at a precise radial distance from the axis of the first barrel for radially positioning the second barrel with respect to the first barrel;

first spring means for urging the second barrel into abutment with the axial stop means; and

second spring means for urging the second barrel into abutment with the radial stop means.

5,285,323

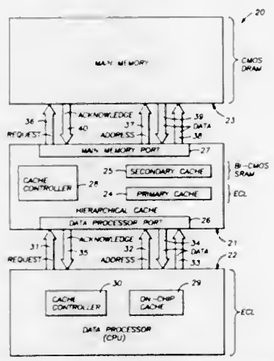
INTEGRATED CIRCUIT CHIP HAVING PRIMARY AND SECONDARY RANDOM ACCESS MEMORIES FOR A HIERARCHICAL CACHE

Ricky C. Hetherington, Northborough; Francis X. McKeen, Westborough; Joseph D. Marci, Boston; Tryggve Fossum, Northborough, and Joel S. Emer, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 593,763, Oct. 5, 1990, abandoned. This application May 13, 1993, Ser. No. 61,273

Int. Cl.[5] **G06F** *12/08*

U.S. Cl. 395—425 **16 Claims**



1. An integrated circuit chip for a hierarchical cache memory system, said integrated circuit chip comprising:

(a) a plurality of terminals for connecting said integrated circuit chip to external circuits external to said integrated circuit chip; said terminals including a plurality of input terminals for receiving signals from said external circuits, and a plurality of output terminals for transmitting signals from said integrated circuit chip to said external circuits; said input terminals including

(i) a first data input terminal, and

(ii) a second data input terminal,

and said output terminals including

(v) a first data out put terminal, and

(vi) a second data output terminal;

(b) a high-speed random access primary memory having a plurality of addressable multi-bit storage locations;

(c) a random access secondary memory having a speed lower than said primary memory, a plurality of addressable multi-bit storage locations, and a storage capacity greater than said primary memory;

(d) first means connected to said primary memory and said secondary memory for addressing a first multi-bit storage location in said secondary memory and addressing a corresponding second multi-bit storage location in said primary memory;

(e) second means connected to said primary memory and said first data output terminal for asserting on said first data output terminal a first bit of information read from a selected bit position of said second multi-bit storage location in said primary memory;

(f) third means connected to said primary memory and said first data output terminal for writing into a selected bit position of said second multi-bit storage location in said primary memory a second bit of information having been asserted on said first data input terminal by said external circuits;

(g) fourth means connected to said primary memory and said secondary memory for reading a first multi-bit word of data from said first multi-bit storage location in said secondary memory and writing said first multi-bit word of data read from said secondary memory into said second multi-bit storage location in said primary memory, wherein said fourth means includes a first multi-line bus having a line corresponding to each bit of said first multi-bit storage location for transferring said first multi-bit word read from said secondary memory to said primary memory;

(h) fifth means connected to said primary memory and said secondary memory for reading a second multi-bit word of data from said second multi-bit storage location in said primary memory and writing said second multi-bit word of data read from said primary memory into said first multi-bit storage location in said secondary memory, wherein said fifth means includes a second multi-line bus having a line corresponding to each bit of said second multi-bit storage location for transferring said second multi-bit word read from said primary memory to said secondary memory; and

(i) sixth means connected to said secondary memory and said second data input terminal and said second data output terminal for sequentially asserting on said second data output terminal multiple bits of a third multi-bit word read from said first multi-bit storage location in said secondary memory and writing into said second multi-bit storage location in said secondary memory a fourth multi-bit word including multiple bits having been sequentially asserted on said second data input terminal by said external circuits.

5,285,324

MAGNETIC HEAD-TO-RECORDING MEDIUM SUPPORT APPARATUS

John G. Weigand, Churchvill; Francis C. Long, and Robert J. Blackman, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 17, 1991, Ser. No. 701,727

Int. Cl.[5] **G03B** *31/00*

U.S. Cl. 360—3 **6 Claims**

1. A magnetic reading and/or recording apparatus comprising:

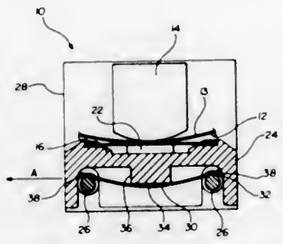
a plurality of magnetic reading and/or recording elements to read and/or record information from/on a flexible magnetic recording material;

a flexible plate having several cut-outs arranged to define individual flexible sections of said plate between respective pairs of said cut-outs; and

means for arranging said magnetic reading and/or recording elements and said flexible plate to position said flexible

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sections of said plate to support respective flexible sections of a flexible magnetic recording material substantially in contact with said magnetic reading and/or recording elements.



5,285,325

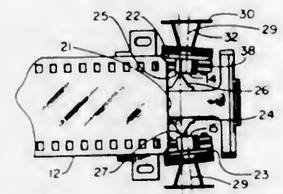
WEB GUIDING DEVICE FOR USE IN A MAGNETIC READING AND/OR RECORDING APPARATUS

Ronald H. Klesow, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1992, Ser. No. 837,052

Int. Cl.[5] **B65H** *23/32;* **G03B** *1/50, 31/00;* **G11B** *5/633*

U.S. Cl. 360—3 **3 Claims**



1. A web guiding device for use in a magnetic reading and/or recording apparatus, said web guiding device comprising:

means defining an entrance for accepting a web;

means for guiding a longitudinal edge of a web; and

means for supporting said guiding means to cause said guiding means to pivot about a point remote from a center point of said guiding means between a first position parallel to a longitudinal edge of a web and a second position angled towards said entrance when a leading edge of a web enters a magnetic reading and/or recording apparatus, said point about which said guiding means pivots being included in a plane which is perpendicular and transverse to said web, and which intersects said guiding means.

5,285,326

DIGITAL SIGNAL PROCESSOR FOR CONVERTING BETWEEN 4-CHANNEL PCM SIGNALS AND 2-CHANNEL PCM SIGNALS

Tadashi Fukami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 556,473, Jul. 24, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,226

Claims priority, application Japan, Jul. 29, 1989, 1-197828; Dec. 30, 1989, 1-340261

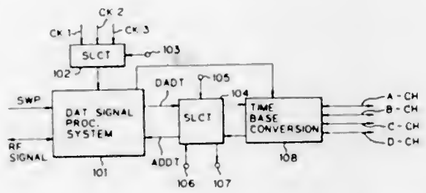
Int. Cl.[5] **G11B** *5/09, 15/14*

U.S. Cl. 360—32 **5 Claims**

1. A 4-channel PCM signal processing apparatus for processing, prior to recording, 4-channel PCM signals having a sampling frequency Fs and consisting of first, second, third, and fourth channels, said apparatus comprising:

means for compressing the time-base of the 4-channel PCM signals by one-half to form 2-channel time-base-compressed PCM signals in which said first and second channels are time-divided and multiplexed and said third and fourth channels are time-divided and multiplexed,

a signal processor having a signal processing period Td for performing signal processing and operating at a sampling frequency Fs, and



means for operating said signal processor with a sampling clock frequency of 2Fs and for changing said signal processing period to ½ Td when said time-base compressed PCM signals are supplied thereto from said means for compressing.

5,285,327

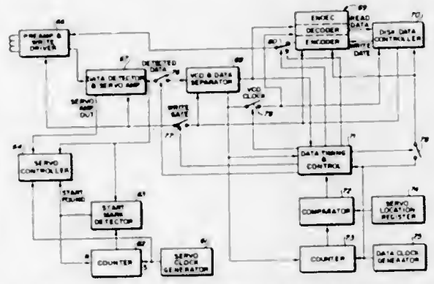
APPARATUS FOR CONTROLLING READING AND WRITING IN A DISK DRIVE

Steven R. Hetzler, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 466,194, Jan. 17, 1990, Pat. No. 5,210,660. This application May 5, 1993, Ser. No. 58,348

Int. Cl.[5] **G11B** *5/09, 5/596, 15/52, 20/10, 27/22*

U.S. Cl. 360—48 **9 Claims**



1. An apparatus for controlling the reading and writing of a data stream to and from the data fields of a sector-servo fixed-block-architecture disk drive having some servo located within data fields and splitting their associated data fields into at least two portions, the apparatus comprising:

means for storing a value representing the location of a servo sector within a data field;

a counter for counting the number of data clock cycles in the data stream;

means coupled to the counter and the servo sector location value storing means for comparing the count value with the stored servo sector location value;

means responsive to the comparing means for interrupting the data stream; and

means for updating the storing means with a value representing the location of the next servo sector.

5,285,328

PROCESS FOR EVALUATING BINARY DATA OF A MAGNETIC STORAGE CARD USING CURVE PATTERNS

Hubert Behr, Paderborn; Wolfgang Fick, Borchen, and Waldemar Jäger, Paderborn, all of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Fed. Rep. of Germany

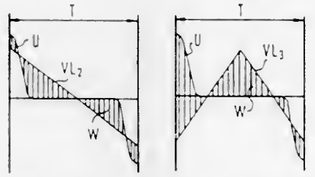
PCT No. PCT/EP91/00379, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO91/13436, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 1, 1991, Ser. No. 768,720

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006426

Int. Cl.[5] **G11B** *5/09, 25/04;* **G06K** *7/08*

U.S. Cl. 360—53 **7 Claims**



1. A method for evaluating binary information stored on a magnetic track of a magnetic storage card, in the form of flux changes in a two-frequency code in which the magnetic storage card is scanned by relative movement produced between the magnetic storage card and an electromagnetic transformer and a time varying output signal induced by the magnetic flux changes is generated by the electromagnetic transformer, the method comprising the steps of:

performing a calibration at the beginning of the scanning operation with constant preliminary information stored on the card and determining a calibrated time interval;

registering a time curve of the output signal in the calibrated time interval;

providing a plurality of curve patterns corresponding in length to a length of the calibrated interval;

comparing the registered time curve with at least two of the curve patterns;

determining deviation of the registered time curve from the at least two curve patterns; and

identifying a curve pattern showing least deviation from the registered time curve.

5,285,329

ROTARY HEAD TYPE RECORDING APPARATUS

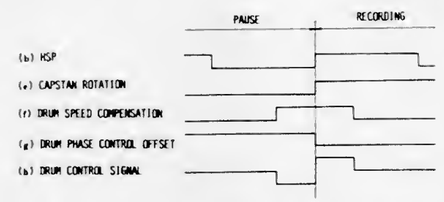
Nobutoshi Takayama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 586,700

Claims priority, application Japan, Sep. 29, 1989, 1-255528; Sep. 29, 1989, 1-255529; Sep. 29, 1989, 1-255530

Int. Cl.[5] **G11B** *15/18;* **C11B** *21/02*

U.S. Cl. 360—70 **9 Claims**



1. A rotary head type recording apparatus comprising:

a) a rotary head which records signals on a tape-shaped recording medium by tracing said medium;

b) transport means for transporting said tape-shaped recording medium in its longitudinal direction;

c) recording means for causing a recording signal to be recorded on said recording medium by supplying said recording signal to said rotary head;

d) driving means for rotating said rotary head;

e) recording control means for controlling a start timing for a recording action performed on said recording signal by said recording means;

f) transport control means for controlling a start timing for a transporting action on said tape-shaped recording medium by said transport means; and

g) drive control means for controlling said driving means such that said rotary head rotates at a lower speed in a predetermined period which includes the timing for the start of the recording action and the timing for the start of the transporting action than in periods immediately before and immediately after the predetermined period.

5,285,330

APPARATUS FOR CONTROLLING MOVING SPEED OF MAGNETIC HEAD

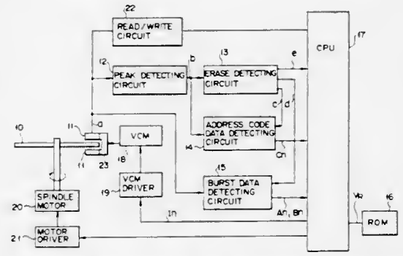
Hideo Masaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 29, 1991, Ser. No. 751,711

Claims priority, application Japan, Aug. 31, 1990, 2-230091; Aug. 31, 1990, 2-230092

Int. Cl.[5] **G11B** *21/08, 21/02, 5/596*

U.S. Cl. 360—77.08 **10 Claims**



1. A magnetic reproducing and recording apparatus having a servo system which controls the speed of a head according to servo data, comprising:

a recording medium on which the servo data including address code data and burst data is recorded, the address code data representing a cylinder number and the burst data being used in position control for positioning the head at a center of a target cylinder;

means for detecting the address code data from a signal reproduced by the head;

means for detecting a level value of the burst data from the signal reproduced by the head;

first means for generating an integer value representing a current position of the head in accordance with the detected address code data when the head is moved to the target cylinder using speed control;

second means for generating a decimal fraction value representing the current position of the head in accordance with the level value of the detected burst data when the head is moved to the target cylinder using speed control;

means for computing a remaining distance of movement of the head from the current position to the target cylinder, on the basis of the current position determined by the integer value and the decimal fraction value; and

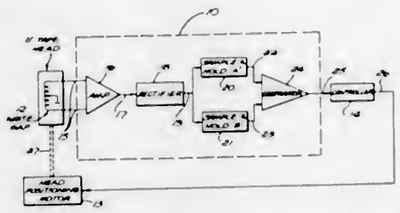
means for generating a target speed value corresponding to the computer remaining distance, the target speed value being used to control the speed of the head.

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5,285,331
SYSTEM FOR ALIGNING A READ HEAD GAP OVER A TRACK OF MAGNETIC DATA

Charles D. White, Simi Valley, Calif., assignor to Wangtek Incorporated, Simi Valley, Calif.

Continuation of Ser. No. 939,575, Sep. 3, 1992, abandoned, which is a continuation of Ser. No. 823,010, Jan. 15, 1992, abandoned, which is a continuation of Ser. No. 689,081, Apr. 19, 1991, abandoned, which is a continuation of Ser. No. 314,567, Feb. 23, 1989, abandoned. This application Mar. 19, 1993, Ser. No. 34,925
Int. Cl.[5] G11B *5/584, 5/596*
U.S. Cl. 360—77.120 **20 Claims**



19. In a system operable with a tape head having a read gap for reading a track of data and a write gap for writing a track of data, the write gap positioning the read gap with respect to a track of data recorded on a recording medium, a method of system operation comprising the steps of:

receiving data with the write gap from the track recorded on the recording medium; and

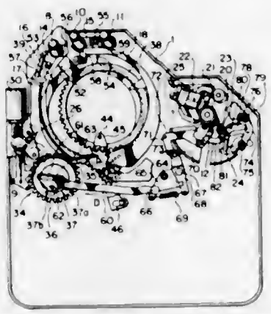
moving the read gap in a direction substantially perpendicular to the track of data in response to the data received from the write gap;

whereby the read gap is aligned with the track of data.

5,285,332
TAPE LOADING DEVICE WITH REDUCED TAPE RUNNING LOAD AND SIMPLIFIED CONSTRUCTION FOR MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Akio Konishi, Hirakata; Hideaki Yoshio, Moriguchi; Hiroshi Kurumatani, Osaka, and Yoshiyuki Saito, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1991, Ser. No. 763,602
Claims priority, application Japan, Sep. 28, 1990, 02-260794; Sep. 28, 1990, 02-260795; Sep. 28, 1990, 02-260796
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **2 Claims**



1. A magnetic recording and/or reproducing apparatus comprising:

a chassis base for receiving a tape cassette oriented parallel to the chassis base, said tape cassette containing a magnetic tape;

a rotary magnetic head cylinder having an axis oriented generally perpendicular to the chassis base and near a position at which the tape cassette is to be located;

a capstan drivable under contact with the magnetic tape to draw out the magnetic tape from the tape cassette; and

a series of tape guide posts for use in drawing out the magnetic tape from the tape cassette, for winding the tape around part of a circumferential surface of said rotary magnetic head cylinder and for causing the tape to leave the rotary magnetic head cylinder and move toward said capstan so as to form a tape running path of the magnetic ape from a supply reel of the tape cassette to a take-up reel of the tape cassette,

wherein:

(a) the tape running path includes a supply-side path from the supply reel to the rotary magnetic head cylinder and a take-up side path from the rotary magnetic head cylinder to the take-up reel,

(b) said series of tape guide posts comprises first and second perpendicular guide posts, perpendicular to a tape running plane defined as a plane perpendicular to the magnetic tape as it runs along said tape running path and parallel to a width-wise center line of the magnetic tape, by which the magnetic tape is drawn out from the tape cassette and wound around a part of a circumferential surface if the rotary magnetic head cylinder, and first and second inclined guide posts, which are not perpendicular to the tape running plane, arranged in the supply-side path and a third inclined guide post, which is not perpendicular to the tape running plane, arranged in the take-up side path,

(c) the magnetic tape runs through the tape running path when the magnetic tape is being wound around the rotary magnetic head cylinder such that the magnetic tape is drawn out from the supply reel in a direction parallel to the chassis base and is wound partially around the first inclined guide post,

(d) from the first inclined guide post the magnetic tape is elevated relatively from the chassis base toward the second inclined guide post so as to be wound partially around the second inclined guide post,

(e) from the second inclined guide post the magnetic tape is moved toward the first perpendicular guide post so as to be wound partially around the first perpendicular guide post while said tape running plane is maintained without any change,

(f) from the first perpendicular guide post the magnetic tape is moved toward the rotary magnetic head cylinder so as to be wound partially around the rotary magnetic head cylinder while said tape running plane is maintained without any change,

(g) from the rotary magnetic head cylinder the magnetic tape is moved toward the second perpendicular guide post so as to be wound partially around the second perpendicular guide post while said tape running plane is maintained without any change,

(h) from the second perpendicular guide post the magnetic tape proceeds toward the capstan so as to be brought into contact with the capstan while said tape running plane is maintained without any change,

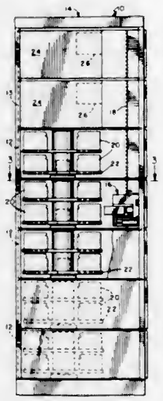
(i) from the capstan the magnetic tape is moved toward the third inclined guide post so as to be partially wound around the third inclined guide post, and

(j) from the third inclined guide post the magnetic tape runs in a direction parallel to a phantom reference horizontal plane defined as a plane which extends through said width-wise center line at locations where the magnetic tape is to be wound around the supply reel and the take-up reel, is moved toward the take-up reel so as to be wound around the take-up reel and the tape running path is again parallel to said phantom reference horizontal plane.

5,285,333
MASS STORAGE AND RETRIEVAL SYSTEM FOR MAGNETIC TAPE CARTRIDGES

Valerie H. Barr; Jeffrey S. McGee, both of San Diego, and Ronald L. Thomas, Escondido, all of Calif., assignors to Archive Corporation, Costa Mesa, Calif.

Filed Dec. 27, 1991, Ser. No. 815,132
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **10 Claims**



1. A storage and retrieval system for magnetic tape cartridges, comprising:

a rack for supporting a plurality of removable drive and storage modules wherein storage capacity can be readily increased or decreased by adding or removing storage modules;

at least one drive module supported in the rack including a tape drive for having a magnetic tape cartridge loaded therein;

at least one storage module supported in the rack including the drive module and including at least one carousel for removably receiving a plurality of magnetic tape cartridges in radially extending positions and means for rotating the carrousel to present a selected cartridge to a withdrawal and replacement position;

the drive module and the storage module each having integral track segments which are alignable in an end-to-end relation;

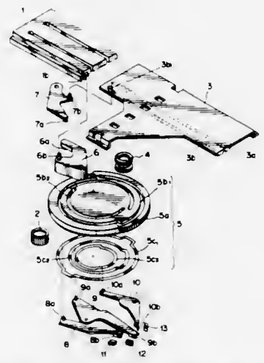
robot means for carrying the selected cartridge between the carrousel and the tape drive including a carriage mounted for traveling along aligned track segments, means for driving the carriage along the track segments, and extensible gripper means mounted to the carriage for gripping and releasing the selected cartridge, first actuator means for causing the gripper means to grip and release the selected cartridge and second actuator means for causing the gripper means to move between an extended position and a retracted position; and

control and sequencing circuit means for causing the carrousel to rotate to present the selected cartridge to the withdrawal and replacement position, for causing the carriage to travel to the replacement and withdrawal position, for causing the gripper means to move to its extended position, for causing the gripper means to grip the selected cartridge, for causing the gripper means to move to its retracted position, for causing the carriage to travel along the track segments to the drive module, and for causing the gripper means to move to its extended position to load the tape cartridge into the tape drive.

5,285,334
INTERMITTENTLY OPERATING DRIVING MECHANISM FOR RECORD MEDIUM SELECTING APPARATUS OF PLAYER

Tomoyuki Suzuki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 902,812
Claims priority, application Japan, Dec. 27, 1991, 3-347072
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **12 Claims**



1. An intermittently operating driving mechanism for a record medium selecting apparatus of player, comprising:

a plurality of record medium receiving members each for removably receiving a record medium thereon;

a first record medium carrying member carrying said record medium receiving members thereon and movable between a first position and a second position at which said record medium receiving members can selectively receive record media thereon, said first member having a toothed portion thereon;

means for selecting one of said record medium receiving members on said first member at the first position;

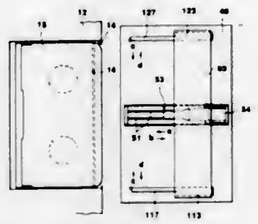
a second record medium carrying member movable from a first position to a second position to transport a selected one of said record medium receiving members to a playing position to allow the record medium on the selected record medium receiving member to by played by said player and back from the second position to the first position to return the record medium to the selected record medium receiving member, said second member having a toothed portion thereon;

a cam plate rotatable around a fixed axis and having a gear for selectively engaging with said toothed portion of a selected one of first and second members to move said selected one of said first and second members between its respective first and second position; and

first and second cam levers for cooperating with said cam plate to positively hold said selected one of said first and second members, when said selected one of said first and second members is positioned at its respective first position to prevent said selected one of said first and second members from moving from its respective first position.

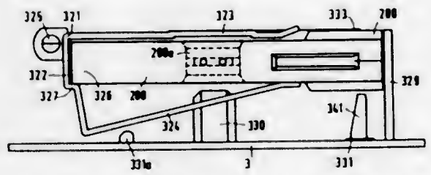
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,335
CASSETTE TRANSFER UNIT
Keiji Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 902,817
Claims priority, application Japan, Jun. 26, 1991, 3-154476
Int. Cl.[5] G11B 15/68
U.S. Cl. 360—92 18 Claims



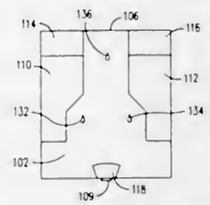
1. A cassette transfer unit associated with a cassette container having a cassette placed therein at a first position for transferring the cassette from and into said cassette container, said cassette transfer unit comprising:
a cassette chamber for receiving the cassette at a second position;
a carrying device provided in said cassette chamber for carrying the cassette from said cassette container into said cassette chamber and from said cassette chamber into said cassette container, said carrying device including first means slidable toward and away from said cassette container for retracting the cassette from the first position toward said cassette chamber to a third position, and a second means slidable toward and away from said cassette container for retracting the cassette away from said cassette container from the third position to the second position.

5,285,336
MAGNETIC-TAPE-CASSETTE APPARATUS
Norbert Kunze, Ehringshausen, and Georg Weber, Lohra, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 28, 1991, Ser. No. 724,557
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1990, 4022356; May 23, 1991, 4116838
Int. Cl.[5] G11B 5/008
U.S. Cl. 360—96.6 29 Claims



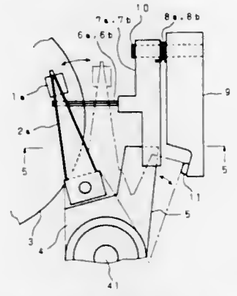
1. A magnetic tape cassette apparatus having a cassette support, winding spindles for driving reel hubs of the cassette, and a loading mechanism including a cassette holder for moving a magnetic tape cassette between a play position, in which the cassette contacts said cassette support and the winding spindles engage the cassette reel rubs, and an ejection position in which the cassette is insertable into and removable from the cassette holder, the cassette holder comprising a cross-sectionally U-shaped part with first and second holder plates and a transverse holder wall interconnecting said holder plates and extending in a longitudinal direction of said holder plates, the loading mechanism further including a spindle about which the cassette holder is pivotable, the cassette holder being pivotable about said spindle such that in the ejection position the first holder plate extends substantially parallel to the cassette support and the second holder plate does not and in the play position the second holder plate extends substantially parallel to the cassette support and the first holder plate does not, characterized in that:
the transverse holder wall includes guide means for guiding a lateral edge of the cassette during insertion of the cassette into and removal of the cassette from said holder in the longitudinal direction parallel to the transverse wall in the ejection position, the lateral edge of the inserted cassette resting on the guide means in the ejection position, and
the guide means is movable away from the cassette to allow the cassette to be moved off the guide means onto the cassette support during pivoting of the holder from the ejection position into the play position.

5,285,337
LIQUID-BEARING DATA RECORDING DISK FILE WITH TRANSDUCER CARRIER HAVING SUPPORT STRUTS
George L. Best, Morgan Hill; Moris M. Dovek, Pleasanton; John S. Foster, Morgan Hill; Luis P. Franco, Gilroy, and Andrew M. Homola, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 30, 1992, Ser. No. 876,843
Int. Cl.[5] G11B 5/60, 17/32
U.S. Cl. 360—97.02 8 Claims



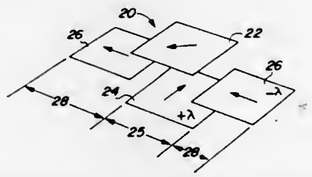
3. A transducer assembly for a data recording disk file which utilizes a liquid-bearing head-disk interface, the assembly comprising:
a transducer carrier having a disk side, a front end and a trailing end, the carrier comprising an air-bearing surface on the disk side near the front end, a liquid-bearing ski surface on the disk side near the trailing end, and at least three struts on the disk side and separated from the air-bearing surface for supporting the air-bearing surface and the ski surface off the disk when the disk is not rotating, two of said struts being located rearward of the center of mass of the carrier, whereby the ski surface is rotated into contact with the liquid film on the disk as the air-bearing surface is rotated away from the disk when operational speed of the disk file is approached, and;
a transducer located on the carrier near the carrier trailing end for reading data from or writing data to the disk.

5,285,338
LOADING/UNLOADING MECHANISM FOR READ AND/OR WRITE HEAD
Takamitsu Sugahara, and Junji Kawada, both of Kamakura, Japan, assignors to Mitsubisi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 592,133, Oct. 3, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 936,066
Claims priority, application Japan, Oct. 6, 1989, 1-262352
Int. Cl.[5] G11B 5/54, 21/22
U.S. Cl. 360—105 21 Claims



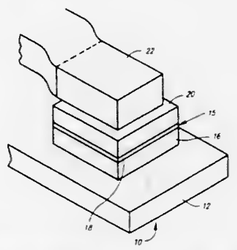
1. A loading/unloading mechanism for a read and/or write head which is supported by a suspension and moves above/on a magnetic disk, said mechanism comprising.
a lifter which is mounted to a support disposed in a fixed position outside of the circumferential periphery of the disk, the lifter including a lifter member extending from the lifter and interposed between the disk and the suspension, the lifter further including means for moving toward and away from the surface of said magnetic disk; and
driving means for mechanically engaging the lifter, said driving means being affixed to said suspension in a position that engages the lifter when the head is moved to a peripheral edge of said disk so as to cause the lifter to move away from the disk and thereby cause the lifter member to lift the suspension away from the disk.

5,285,339
MAGNETORESISTIVE READ TRANSDUCER HAVING IMPROVED BIAS PROFILE
Mao-Min Chen; Kochan Ju; Mohamad T. Krounbi, all of San Jose; Ching H. Tsang, Sunnyvale, and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 28, 1992, Ser. No. 843,702
Int. Cl.[5] G11B 5/127
U.S. Cl. 360—113 19 Claims



19. A magnetoresistive read transducer having passive end regions separated by a central active region comprising:
a magnetoresistive layer made from a material having a low magnetostriction coefficient, said magnetoresistive layer having a sensing edge extending over said central active region and said end regions; and
a soft magnetic bias layer in said central active region, adjacent to but spaced from said magnetoresistive layer, said soft magnetic bias layer made from a material having a high magnetic anisotropy in a direction normal to said sensing edge.

5,285,340
THIN FILM MAGNETIC HEAD WITH CONFORMABLE POLE TIPS
Kochan Ju, and Mohamad T. Krounbi, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 28, 1992, Ser. No. 843,676
Int. Cl.[5] G11B 5/187, 5/23, 5/33
U.S. Cl. 360—119 6 Claims



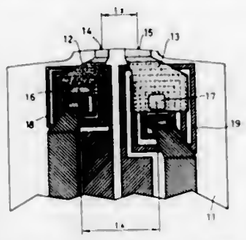
4. A thin film magnetic head having a magnetic circuit comprising:
a first magnetic yoke layer extending from a back gap region to a sensing edge of said magnetic head;
a second magnetic yoke layer contacting said first magnetic yoke layer at said back gap region and extending to said sensing edge in a position aligned with but spaced from said first magnetic yoke layer; and
a pole tip structure comprising a first pole tip layer, a gap forming layer and a second pole tip layer each having a substantially equal width, said pole tip structure disposed between said first and said second magnetic yoke layers at said sensing edge and extending from said sensing edge to a zero throat position, said zero throat position spaced from said sensing edge towards said backgap region, said first pole tip layer being in contact with said first magnetic yoke layer from said sensing edge to said zero throat position and said second pole tip layer being in contact with said second magnetic yoke layer from said sensing edge to said zero throat position, said first magnetic yoke layer having a width at said sensing edge greater than the width of said pole tip structure and said second magnetic yoke layer having a width at said sensing edge less than the width of said pole tip structure.

5,285,341
THIN FILM MAGNETIC HEAD
Takashi Suzuki; Toru Matsuda, both of Yokohama; Fujihiro Ito, Tsurugashima; Yutaka Kusano, Yokohama; Morimi Hashimoto, Wako, and Kenji Makino, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 12, 1991, Ser. No. 805,971
Claims priority, application Japan, Dec. 17, 1990, 2-402737; Dec. 17, 1990, 2-402738; Dec. 17, 1990, 2-402739
Int. Cl.[5] G11B 5/265, 5/17, 5/31
U.S. Cl. 360—121 12 Claims

1. A thin film magnetic head for use with a magnetic recording medium having a direction of movement, the head comprising:
a substrate; and
a plurality of magnetic read/write cores disposed on said substrate, at least a part of said read/write cores being formed of a magnetic thin film deposited on said substrate.

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each of said plurality of read/write cores including a magnetic gap disposed between the read/write core and said substrate and each magnetic gap is separated an identical distance from said substrate, said magnetic gaps being



aligned with each other in the same position relative to the direction of movement of the magnetic recording medium, and each of said plurality of read/write cores having a different width for forming a different width track on the magnetic recording medium.

5,285,342

CORE CHIP FOR MAGNETIC HEAD CORE SLIDER, HAVING MARKER INDICATING GRINDING DEPTH TO ESTABLISH NOMINAL DEPTH OF MAGNETIC GAP

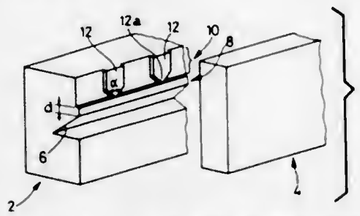
Soichiro Matsuzawa, Kuwana, and Nobuhiro Terada, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 6, 1992, Ser. No. 847,683

Claims priority, application Japan, Mar. 28, 1991, 3-91121

Int. Cl.[5] G11B *5/127*

U.S. Cl. 360—125 **5 Claims**



1. A core chip for a magnetic head core slider, comprising a first and a second core member which are butted and bonded together so as to define a coil-winding aperture and which cooperate to provide a gap-forming portion on one side of said coil-winding aperture, and a cut-off portion which is provided adjacent to said gap-forming portion and which provides a top surface of the core chip, said gap-forming portion defining a magnetic gap which extends from said aperture said first and second core members having a pair of width-defining grooves which extend therebetween so as to define a track whose width dimension determines a width dimension of said magnetic gap; and

a distance marker provided in said cut-off portion so as to extend from said top surface to said gap-forming portion, said distance marker having an end portion adjacent to said gap-forming portion, said end portion being shaped so as to indicate a distance between said top surface and said gap-forming portion when said cut-off portion is removed to provide a sliding surface of the core chip in which said magnetic gap is open and which determines a nominal depth dimension of the magnetic gap.

5,285,343

MAGNETIC DISK WITH SURFACE PROTECTIVE LAYER HAVING CONVEX PORTIONS AND MAGNETIC DISK APPARATUS INCLUDING SUCH A MAGNETIC DISK

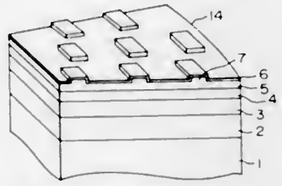
Hideaki Tanaka, Katsuta; Kenichi Gomi; Shoichi Sawahata, both of Hitachi; Maki Kondo, Sendai; Masaki Ohura, Odawara; Norikazu Tsumita, Hiratsuka; Katuo Uda, Kanagawa; Yoshiki Kato, Tokyo; Yoshihiko Miyake, Odawara; Toyoji Okuwaki, Tokyo; Noriaki Okamoto, Ibaraki, and Nobuo Nakagawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1990, Ser. No. 595,414

Claims priority, application Japan, Oct. 13, 1989, 1-264934; Mar. 2, 1990, 2-049281; Apr. 13, 1990, 2-096448

Int. Cl.[5] G11B *5/74, 5/82*

U.S. Cl. 360—131 **20 Claims**



1. A magnetic disk apparatus comprising:

a magnetic disk having a substantially flat magnetic layer and a surface protective layer having a plurality of protrusions disposed on a substrate;

a magnetic head which faces the magnetic disk in a rotating state with a spacing of 0.02 to 0.2 μm therebetween and is supported by a slider;

rotating means for rotating the magnetic disk; and

magnetic head positioning means for moving and positioning the magnetic head to a predetermined position on the magnetic disk, wherein

the protrusions each have a substantially flat surface and are formed in at least a region on the surface of the magnetic disk where a contact start/stop operation can be executed,

a percentage of the area of the magnetic disk occupied by the flat surfaces of the protrusions per 1 mm^2 lies within a range from 0.1 to 80%,

the protrusions all have substantially a same height lying within a range from 5 to 40 nm, and

a density of the protrusions on the magnetic disk is equal to or larger than 200/mm^2 and does not exceed 250,000/mm^2.

5,285,344

OVERVOLTAGE PROTECTION DEVICE

Wolfgang Heitzmann, Wasserburg, Fed. Rep. of Germany, assignor to SGS-Thomson Microelectronics GmbH, Grasbrunn, Fed. Rep. of Germany

Filed Dec. 6, 1991, Ser. No. 803,068

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1990, 4039404

Int. Cl.[5] H02H *7/09*

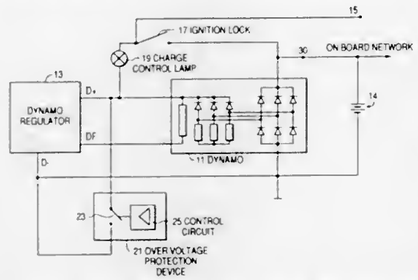
U.S. Cl. 361—22 **14 Claims**

1. An overvoltage protection device for protecting the electrical system of a vehicle against overvoltages, the vehicle having an on-board wiring network connected to an electrical generator and having electrical devices connected thereto, said protection device comprising:

controllable switching means for effectively short-circuiting the generator in case of an overvoltage condition, the switching means including a switching transistor means connected in parallel to the generator;

evaluation means, connected to receive the generator voltage, for issuing a first evaluation signal when a predetermined overvoltage threshold value is exceeded by the generator voltage and for issuing a second evaluation signal when the generator voltage subsequently falls below a predetermined low voltage threshold; and

memory means for receiving the evaluation signals and for controlling the switching transistor means, said memory means storing one of the received evaluation signals until



receipt of the other evaluation signal, wherein during storage of the first evaluation signal, said memory means outputs a signal for controlling the switching transistor means to effectively short-circuit the generator and, during storage of the second evaluation signal, said memory means outputs a signal for controlling the switching transistor means to assume a switching condition not effectively short-circuiting the generator.

5,285,345

MODULATOR SWITCHING SYSTEM HAVING AT LEAST ONE SEMICONDUCTOR SWITCH FOR ADAPTATION TO DIFFERENT LOAD RANGES AND PROTECTION THRESHOLDS

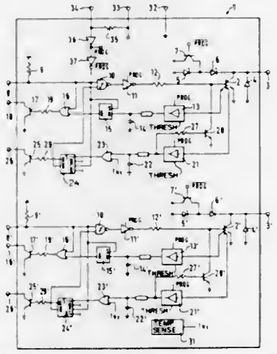
Thomas Blümel, Schmitten; Joachim Meicher, Hofheim; Bernhard Lukas, Raunheim, and Walter Kares, Frankfurt, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 785,528

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1990, 4034571

Int. Cl.[5] H02P *9/00*

U.S. Cl. 361—98 **14 Claims**



1. A switching arrangement, developed as a module, comprising

a switch input, at least one semiconductor switch for different load ranges;

a no-load monitoring circuit having a threshold circuit and an output terminal;

a short-circuit monitoring circuit having a threshold circuit and an output terminal, each of the threshold circuits having a control input, the semiconductor switch having a control electrode, wherein

the switch input of the module is connected with the control electrode of the semiconductor switch and to the control inputs of the threshold circuits for adaptation of circuitry of the switch and threshold values of the threshold circuits to a selected value of load range.

5,285,346

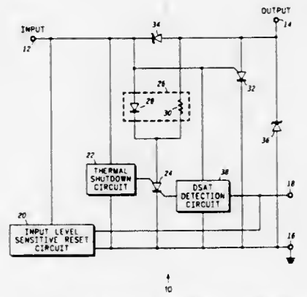
CURRENT DRIVEN CONTROL CIRCUIT FOR A POWER DEVICE

Robert B. Davies; David F. Mietus, both of Tempe, and Paul T. Bennett, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1991, Ser. No. 806,197

Int. Cl.[5] H01L *29/78*

U.S. Cl. 361—103 **11 Claims**



6. A control circuit having an input terminal, an output terminal and a common terminal, comprising:

input level sensitive circuit means being coupled between the input terminal and the common terminal, said input level sensitive circuit means having an output for providing an output signal when a current appearing at the input terminal exceeds a predetermined level;

thermal shutdown circuit means being coupled between the input terminal and the common terminal, said thermal shutdown circuit means providing an output signal when the temperature of the control circuit exceeds a predetermined threshold;

a detection circuit coupled between the input terminal and the common terminal, said detection circuit having an input responsive to an external signal and to said output signal of said input reset sensitive circuit means, said detection circuit providing an output signal when said external signal exceeds a predetermined voltage;

a first SCR having first and second control terminals and first and second terminals, said first control terminal of said first SCR being responsive to said output signal of said thermal shutdown circuit means, said second control terminal of said first SCR being responsive to said output signal of said detection circuit, said second terminal of said first SCR being coupled the common terminal;

a diode having an anode and a cathode, said anode being coupled to the input terminal, and said cathode being coupled to said first terminal of said first SCR;

a first resistor coupled between said first terminal of said first SCR and the output terminal; and

a second SCR having a first control terminal and first and second terminals, said first control terminal of said second SCR being coupled to the input terminal, said first terminal of said second SCR being coupled to the output termi-

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nal, said second terminal of said second SCR being coupled to the common terminal.

5,285,347

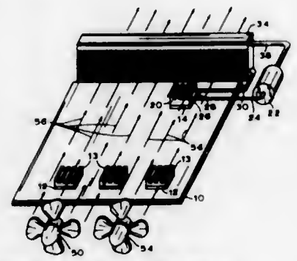
HYBIRD COOLING SYSTEM FOR ELECTRONIC COMPONENTS

Leslie Fox, Boxboro, and Paul C. Wade, Shirley, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 547,722, Jul. 2, 1990, abandoned. This application Feb. 6, 1992, Ser. No. 830,952

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—385 **12 Claims**



1. An electrical apparatus comprising:

a circuit board;

a heat generating electronic component mounted on said circuit board, said electronic component having a maximum operating temperature, said electronic component having a substantially planar surface; and

a heat sink composed of a thermally conductive material, said heat sink having:

a first exterior surface mounted on and in thermal contact with said substantially planar surface of said electronic component;

a second exterior surface opposite said first surface and comprising spaced apart heat dissipation members for thermal contact by a cooling gas; an internal cavity to conduct a flow of cooling liquid;

said heat sink providing conductive paths from said electronic component to said cooling gas and said cooling liquid;

means for containing and directing flow of said cooling liquid to and from said internal cavity of said heat sink sufficient to cool said electronic component to at least said maximum operating temperature;

means for circulating said cooling gas over said spaced apart heat dissipation members of said heat sink; and

said heat sink and said internal cavity being configured and dimensioned relative to the flow of said cooling gas for enabling said cooling gas, alone, to cool said electronic component at least to said maximum operating temperature.

5,285,348

CIRCUIT ASSEMBLY FOR DOWN CONVERTER FOR SATELLITE COMMUNICATIONS

Yukiro Kashima, Takatsuki; Akihito Deki, Amagasaki, and Hirotaka Fujisaki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01170, § 371 Date Apr. 14, 1992, § 102(e) Date Apr. 14, 1992, PCT Pub. No. WO92/04780, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 2, 1991, Ser. No. 847,981

Claims priority, application Japan, Sep. 3, 1990, 2-233495

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—736 **1 Claim**

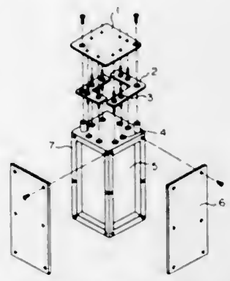
1. A circuit assembly for a down converter for satellite communications, said circuit assembly comprising:

a box shaped housing;

at least one first printed circuit board arranged on at least one first surface of said box shaped housing;

a power printed circuit board arranged on a second surface of said box shaped housing;

at least one feed-through capacitor fixed on said second surface of said box shaped housing and interconnecting said at least one first printed circuit board and said power



printed circuit board to supply power from said power printed circuit board to said at least one first printed circuit board; and

at least one fixing plate disposed on said second surface of said box shaped housing between said box shaped housing and said power printed circuit board, said at least one feed-through capacitor being mounted in said at least one fixing plate.

5,285,349

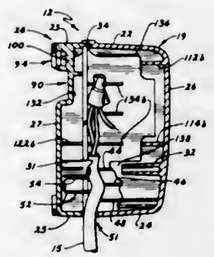
POWER BOX FOR A LOW VOLTAGE LIGHTING SYSTEM

Jeffrey E. Zander, Saint Louis Park, and Jay J. Kakuk, Plymouth, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Feb. 13, 1991, Ser. No. 654,870

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—641 **1 Claim**



1. A power box assembly for a low voltage lighting system, comprising:

(a) a 120 VAC cable;

(b) a plastic power box comprising a base, a cover and a plurality of screws for connecting the cover to the base; and

(c) tortuous path strain relief means for securing the 120 VAC cable to the power box, comprising:

i. a first plurality of spaced strain relief elements formed in the base, and engaging a first side of the 120 VAC cable; and

ii. a second plurality of spaced strain relief elements formed in the cover, for engaging a second side of the 120 VAC cable opposite the first side thereof, wherein the cover is connected to the base and the first and second pluralities

of strain relief elements interdigitate and engage the first and second sides of the 120 VAC cable in such a fashion that the 120 VAC cable is in a tortuous path configuration, wherein the 120 VAC cable weaves to and fro through and between opposing strain relief elements in serpentine fashion, and wherein as the screws are tightened during assembly of the cover to the base the opposing strain relief elements approach each other and automatically grip the 120 VAC cable in the tortuous path configuration.

5,285,350

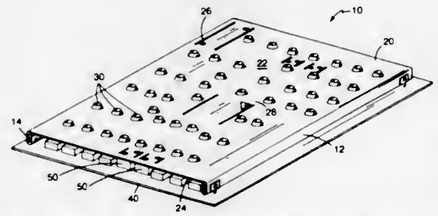
HEAT SINK PLATE FOR MULTIPLE SEMI-CONDUCTORS

Henry F. Villaume, Intervale, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

Filed Aug. 28, 1992, Ser. No. 937,470

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—690 **6 Claims**



1. A heat sink dissipating heat from one or more semiconductors on a printed circuit board comprising:

a plate having a top surface and a bottom surface,

said plate being made of heat conductive material and having said bottom surface contacting the semiconductors to be cooled,

said plate having at least one chimney means, each said chimney means including a tapered sidewall defining a first opening in said plate and a smaller second opening away from said plate, so as to convect heated air from the area adjacent to said bottom surface of said plate to the area adjacent to said top surface,

attachment means connecting said bottom surface of said plate to the semiconductors so that said plate conducts heat generated by the semiconductors when the semiconductors are in operation, and

connecting means connecting said plate to a printed circuit board.

5,285,351

COOLING STRUCTURE FOR INTEGRATED CIRCUITS

Hironobu Ikeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1992, Ser. No. 891,257

Claims priority, application Japan, May 30, 1991, 3-155634

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—699 **9 Claims**

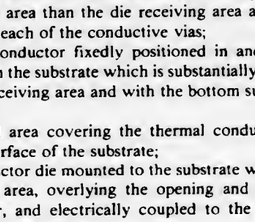
1. A cooling structure for an integrated circuit comprising:

a wiring substrate;

an integrated circuit mounted on said wiring substrate;

storage means for storing a liquid coolant, having an inlet and an outlet for said liquid coolant at the top thereof and an opening at the bottom thereof;

adhering means fastening together said bottom of said storage means to a heat radiating face of said integrated circuit; and



spraying means, in said storage means, for directly spraying said liquid coolant on said heat radiating face of said integrated circuit through said opening.

5,285,352

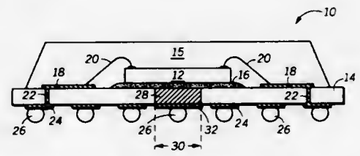
PAD ARRAY SEMICONDUCTOR DEVICE WITH THERMAL CONDUCTOR AND PROCESS FOR MAKING THE SAME

John R. Pastore, Leander; Victor K. Nomi, Round Rock, and Howard P. Wilson, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 15, 1992, Ser. No. 913,312

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—707 **32 Claims**



1. A semiconductor device comprising:

a circuitized substrate having a top surface, a bottom surface, a plurality of conductive traces formed on the top surface, a plurality of conductive vias extending through the substrate and electrically coupled to the plurality of conductive traces, and a die receiving area;

an opening in the substrate which extends from the die receiving area to the bottom surface, the opening being smaller in area than the die receiving area and larger in area than each of the conductive vias;

a thermal conductor fixedly positioned in and filling the opening in the substrate which is substantially planar with the die receiving area and with the bottom surface of the substrate;

a metallized area covering the thermal conductor on the bottom surface of the substrate;

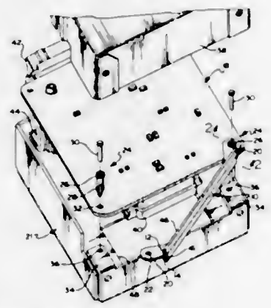
a semiconductor die mounted to the substrate within the die receiving area, overlying the opening and the thermal conductor, and electrically coupled to the plurality of conductive traces;

a plurality of terminals physically coupled to the bottom surface of the substrate and electrically coupled to the plurality of conductive vias; and

at least one terminal physically coupled to the metallized area and thermally coupled to the thermal conductor.

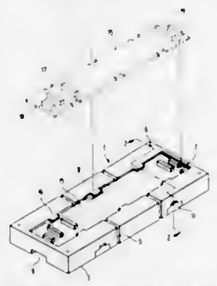
VOL 1159 ISS 2 FEB 8 1994 UMI

5,285,353
SUPPORT BAR FOR CIRCUIT BOARDS
Cecil L. Buck, Kokomo, Ind., and Ron C. Stevens, Santa Barbara, Calif., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Dec. 28, 1992, Ser. No. 997,004
Int. Cl.[5] H05K 5/00
U.S. Cl. 361—732 5 Claims



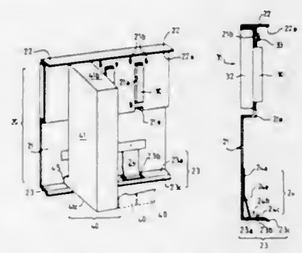
1. A product comprising:
a housing having a platform shoulder;
a circuit board having an electric circuit formed thereon including a socket device;
and a support bar;
the support bar comprises top and bottom, spaced apart, parallel substantially straight legs and a base connecting the legs so that the base and the legs form a U-shaped groove for receiving a portion of a side of the circuit board;
a means for securing the support bar to the housing platform for supporting the circuit board and support bar, said circuit board being firmly held by said support bar and housing so that deflection of the board by induced forces from replacement of said socket device is restricted sufficiently to prevent damage to the electrical circuit.

5,285,354
BASE UNIT FOR CONTROLLER
Osamu Ohsawa, and Noboru Takahashi, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Feb. 21, 1992, Ser. No. 838,840
Claims priority, application Japan, Feb. 28, 1991, 3-034334
Int. Cl.[5] H05K 5/00
U.S. Cl. 361—752 15 Claims



1. A controller base unit, including a printed circuit board having a longitudinal dimension and being printed with connection lines between at least two connectors disposed along said longitudinal dimension for integrally accommodating controller modules modularized on a function basis, comprising:
a chassis, comprising a first material with a first coefficient of thermal expansion, having a planar surface with a plurality of through holes formed therein; and
a mold base, comprising a second material which is moldable and has a coefficient of thermal expansion different from said first material, said mold base being integrally formed with said chassis by distribution of said second material around at least a portion of said chassis and within said through holes, and said mold base being formed with slits for thermally separating said base material into a plurality of segments.

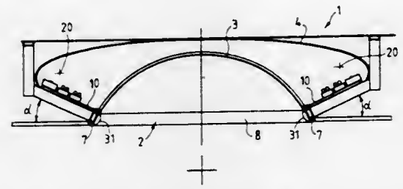
5,285,355
DEVICE FOR REMOVABLY FIXING AN ELECTRIC MODULE ON A SUPPORT
Jean-Marie Chabert, Valbonne, and André Goletto, Antibes, both of France, assignors to Telemecanique, France
Filed Nov. 13, 1992, Ser. No. 976,028
Claims priority, application France, Nov. 14, 1991, 91-13997
Int. Cl.[5] H05K 1/11
U.S. Cl. 361—784 10 Claims



1. A device for removably fixing at least one electronic module which comprises a housing containing a printed circuit board, on a support having a vertical web plate provided with connecting means located so as to cooperate with corresponding connecting means of said module, said support further having means for fixing by pivoting said module thereon, wherein said device comprises at a first end of said housing:
a fitting side cooperating with a horizontal bearing side situated at a first end of said support, and being horizontally moveable on said horizontal bearing side;
a stop applying frontally against a front part of said vertical web plate and remaining applied against said vertical web plate during pivoting of said electronic module;
a tightening spring placed between said housing and said support and cooperating with a bearing surface in such a way as to have stress gradually brought to bear upon it during pivoting of said electronic module.

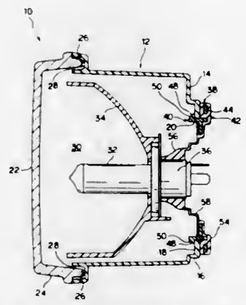
5,285,356
LIGHTING APPLIANCE, PARTICULARLY FOR ENVIRONMENTS WITHOUT NATURAL LIGHT
Douglas Skene, Ottawa, Canada; Piera Scuri, Milan, and Daniele Bedini, Montelupo Fiorentino, both of Italy, assignors to iGuzzini Illuminazione S.r.l., Recanati, Italy
Filed Nov. 23, 1992, Ser. No. 980,340
Claims priority, application Italy, Nov. 29, 1991, MI91-A-003197
Int. Cl.[5] F21V 13/04
U.S. Cl. 362—1 17 Claims

1. A lighting appliance (1) for environments without natural light, characterized by the following elements in combination:
a frame (2) rectangular in plan and totally surrounding a translucent screen (3);
a reflecting screen (4) side by side with said frame (2) and said translucent screen (3) said translucent screen being concave with the concavity being in the same direction as the concave reflecting screen (4);
light sources (5,6) positioned between said frame (2) and said reflecting screen (4) along the entire perimeter of said frame (2) so that emitted light beams from said light



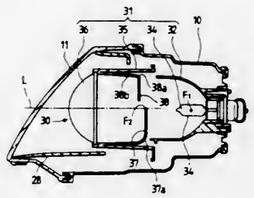
sources (5,6) are mixedly reflected by the reflecting screen (4) and conveyed from said lighting appliance (1) through the translucent screen (3), said light sources (5,6) being of different colour temperatures in terms of illumination and being electrically powerable separately in such a manner as to enable them to provide a luminous flux of variable intensity.

5,285,357
SEALING CAP FOR VEHICLE HEADLAMPS AND METHOD OF FABRICATION
Hiroyuki Makita, Shimizu, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 15, 1992, Ser. No. 898,971
Int. Cl.[5] F21M 3/00; F21V 31/02
U.S. Cl. 362—61 8 Claims



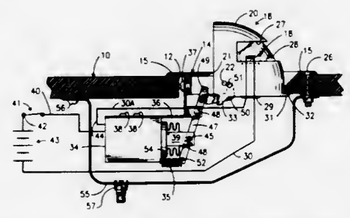
1. A sealing cap for an aimable vehicle headlamp of the type having a lamp housing with an access opening formed therein, and a bulb having a base and tiltably mounted within the lamp housing, the sealing cap comprising:
(A) a framing part comprising:
(a) a core of annular shape; and
(b) hook means formed in one piece with the core and coacting therewith to engage an edge of the lamp housing bounding the access opening; and
(B) a cap part comprising:
(a) a sheath of annular shape enveloping the core of the framing part
(b) a bulb holder of tubular shape to be sleeved upon the base of the bulb; and
(c) a flexible connective portion of annular shape integrally joining the sheath and the bulb holder;
(C) the framing part being made from a material more rigid than a material from which the cap part is made.

5,285,358
VEHICULAR HEADLAMP
Saburo Watanabe, and Hidehiko Nagasawa, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1992, Ser. No. 979,815
Claims priority, application Japan, Jan. 27, 1992, 4-12015
Int. Cl.[5] B60Q 1/14
U.S. Cl. 362—61 9 Claims



1. A vehicular headlamp comprising: first and second headlamp main bodies each including at least a light source and a reflector for reflecting light produced by the light source, said second headlamp main body forming a low beam and cooperating with said first headlamp main body in forming a high beam, said second headlamp main body comprising a light projection unit comprising a reflector formed in a substantially ellipsoidal shape having two distinct focal positions, a light source disposed at a first of said two focal positions of said reflector of said second headlamp main body, a projection lens disposed in front of said light source of said second headlamp main body for forwardly projecting and directing light reflected from said reflector of said second headlamp main body, a first shade disposed below said optical axis of said light projection unit at a focal position of said projection lens for forming a low beam, and a second shade disposed above said optical axis at a position offset from said focal position of said projection lens in a direction of an optical axis of said light projection unit and disposed on an opposite side of said optical axis from said first shade.

5,285,359
POWER OPERATED BOAT LIGHT
John Czipri, Clearwater, Fla., assignor to Accon Inc., Clearwater, Fla.
Filed Feb. 22, 1993, Ser. No. 20,979
Int. Cl.[5] B60Q 1/05
U.S. Cl. 362—61 5 Claims



1. A navigation light assembly having a flush position and a projecting position and being power operated between such positions, which assembly is for mounting in an opening formed through an exterior above-water surface of a boat comprising:
a) a base plate including an aperture and a flange, said flange surrounding the opening in the boat surface and further including a skirt portion extending into the opening;
b) an insert having a bulb mounted thereon pivotally mounted to said base plate for movement through the aperture in said base plate between an inoperative position

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where said insert is flush with said base plate and an operative position extending through and outwardly of said base plate;

c) means for moving said insert from said inoperative to said operative position including:

a bracket secured to said skirt portion and extending inwardly of the exterior boat surface;

a solenoid rigidly supported on said bracket and having an armature mounted therein for reciprocating movement;

a lever having a first end and a second end, said lever pivotally connected between said first and second ends to said bracket and adjacent said second end to said armature;

a U-shaped link having one leg pivotally connected to said insert and another leg pivotally connected to said first end of said lever;

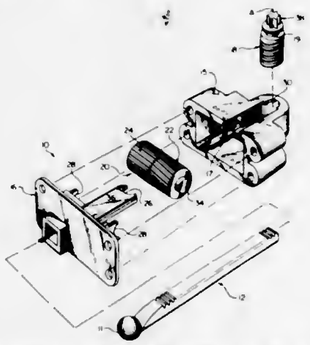
and circuit means including a switch for connecting said bulb and solenoid in a series circuit with an energy source, whereby when said switch is closed said solenoid and bulb are energized, said insert is moved from inoperative to operative position.

5,285,360

AUTOMOTIVE HEADLAMP ADJUSTER

Rowland W. Kanner, Guntersville, Ala., assignor to Textron Inc., Providence, R.I.

Filed Dec. 16, 1991, Ser. No. 808,097
Int. Cl.[5] B60Q *1/06*
U.S. Cl. 362—66 **17 Claims**



1. An adjusting mechanism particularly for use in alignment of a headlamp, comprising: gear means coupled to a translating rack having coupling means for securement to and for displacement of the headlamp, such that rotation of said gear means imparts linear movement to said rack for adjusting orientation of said headlamp.

5,285,361

BACKLIGHTING APPARATUS FOR FLAT PANEL DISPLAYS

Robert C. McKillip, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Aug. 25, 1992, Ser. No. 935,629
Int. Cl.[5] A47F *11/10*; F11S *5/00*
U.S. Cl. 362—125 **12 Claims**

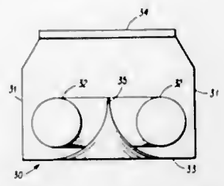
1. An apparatus for illuminating a flat panel display comprising:

a multi-walled encasement device having a bottom member and a plurality of vertical walls thereby forming a cavity within the multi-walled encasement device;

a lighting source of circular configuration supported by and contained within the multi-walled encasement device;

a flat panel display serving as a top member to the multi-walled encasement device; and

the bottom member having a cross sectional area circumscribed by the lighting source which is equal in size to an



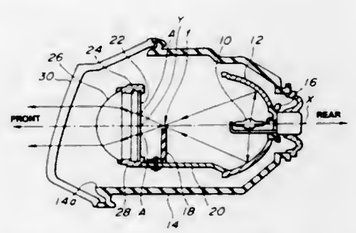
area defined by the perimeter of the bottom member and the outer edge of the lighting source.

5,285,362

DISCHARGE LAMP HAVING INTERFERENCE FILTER

Masao Sakata, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 8, 1992, Ser. No. 941,604
Claims priority, application Japan, Sep. 9, 1991, 3-227928
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—263 **11 Claims**



1. A metal halide lamp device comprising:

a discharge bulb containing therein mercury and at least one metal halide, said discharge bulb radiating light rays of a bluish color during a start-up period thereof, said light rays during the start-up period being predominantly emitted from said mercury and having a relative spectral distribution which is confined to discrete wavelengths of about 405 nm, about 436 nm, about 546 nm and about 578 nm; and

a light filter which is so constructed such that transmittance of about 436 nm wavelength light rays passing through said light filter and transmittance of about 546 nm wavelength light rays passing therethrough are made lower than transmittance of about 578 nm wavelength light rays passing therethrough, thereby transforming said bluish color into a substantially white color by passing said light rays through said light filter.

5,285,363

HEAT TRANSFER UNIT

Michael A. Meuse, San Marcos, Calif., assignor to Hughes-JVC Technology Corporation, Carlsbad, Calif.

Filed Jul. 31, 1992, Ser. No. 922,936
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—293 **15 Claims**

1. A high intensity light source comprising:

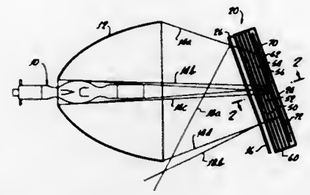
lamp means for projecting a high intensity beam in a first direction, said beam including light of visible and infrared wavelengths,

a cold mirror positioned in the path of said light and configured and arranged to transmit light of infrared wavelengths and to reflect light of visible wavelengths, and

a heat transfer unit positioned adjacent said mirror and

arranged to receive light of infrared wavelengths transmitted by said mirror, said heat transfer unit comprising:

a housing,



apertured sheet means in said housing, and

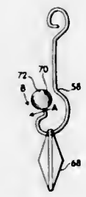
means for flowing a cooling gas through said housing and over said sheet means.

5,285,364

CHANDELIER TRIMMING INCLUDING SPRING-HOOK

Georg Bayer, Plattsburgh, N.Y., assignor to Schonbek Worlwide Lighting Inc., Plattsburgh, N.Y.

Filed Oct. 9, 1992, Ser. No. 958,693
Int. Cl.[5] F21S *1/06*
U.S. Cl. 362—405 **23 Claims**



1. A hook and ornament assembly for a chandelier comprising

a hook for the chandelier having a first end terminating in a straight end-segment with a free end,

a first ornament defining a straight bore positioned on the end-segment with the end-segment extending into the bore,

a first stop portion of the hook constructed and arranged to limit advancement of the first ornament further onto the hook,

a second stop portion of the hook constructed and arranged to limit advancement of the first ornament off of the free end of the end-segment, and

a second ornament defining a bore and positioned distally of the end-segment upon the hook, via the bore of the second ornament, the bore of the second ornament being constructed and arranged so that the second ornament can be advanced over the first stop distally from the straight end-segment.

5,285,365

POWER CONVERSION SYSTEM, METHOD FOR CONTROLLING THE SAME, AND UNINTERRUPTIBLE POWER SUPPLY USING THE SAME

Ikuo Yamato, and Norikazu Tokunaga, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,924
Claims priority, application Japan, Nov. 28, 1990, 2-323159
Int. Cl.[5] H02M *5/27*
U.S. Cl. 363—8 **15 Claims**

1. A power conversion method comprising the steps of:

(a) converting a d.c. voltage into a single-phase a.c. voltage having a first frequency with a single-phase inverter, the single-phase inverter including

a plurality of switching elements connected in a bridge configuration, and

a plurality of diodes, each of the diodes being connected in parallel with a respective one of the switching elements in an opposite polarity relationship therewith;

(b) producing an isolated single-phase a.c. voltage isolated from the single-phase a.c. voltage from the single-phase inverter with a transformer, the isolated single-phase a.c. voltage having the first frequency;

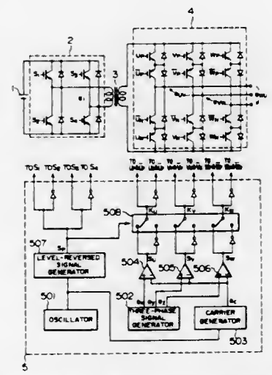
(c) converting the isolated single-phase a.c. voltage into a three-phase a.c. voltage having a second frequency lower than the first frequency with a three-phase cycloconverter, the three-phase cycloconverter including a plurality of switching elements;

(e) generating a signal having a fixed frequency with an oscillator;

(f) generating a level-reversed signal with a level-reversed signal generator based on the signal from the oscillator, the level-reversed signal having a level which alternately changes from "0" to "1" and from "1" and "0" at the frequency of the signal from the oscillator;

(g) generating a carrier signal with a carrier signal generator based on the signal from the oscillator;

(h) generating three-phase voltage command signals with a three-phase voltage command generator;



(i) comparing the three-phase voltage command signals with the carrier signal with comparing means, and generating three-phase pulse-width modulation (PWM) signals based on results of the comparing;

(j) selecting one of the three-phase PWM signals having a maximum pulse width among the three-phase PWM signals at any given time with first selecting means, and outputting the selected three-phase PWM signal as a width signal;

(k) operating the switching elements of the single-phase inverter with inverter operating means based on the level-reversed signal and the width signal such that the single-phase a.c. voltage produced by the single-phase inverter is zero for a non-zero period of time;

(l) reversing polarities of the three-phase PWM signals with polarity reversing means to generate polarity-reversed three-phase PWM signals;

(m) selecting the three-phase PWM signals or the polarity-reversed there-phase PWM signals with second selecting means based at least on the level-reversed signal, and outputting the selected signals as output three-phase PWM signals; and

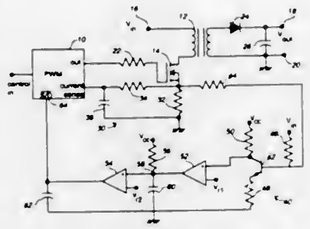
(n) operating the switching elements of the three-phase cycloconverter with cycloconverter operating means based on the output three-phase PWM signals.

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5,285,366
CURRENT LIMIT CIRCUIT IN CURRENT MODE POWER SUPPLIES

Boris Zaretsky, Norcross, Ga., assignor to Northern Telecom Limited, Quebec, Canada

Filed Sep. 24, 1992, Ser. No. 950,240
Int. Cl.[5] H02H *7/122, 3/335*
U.S. Cl. 363—56 **8 Claims**

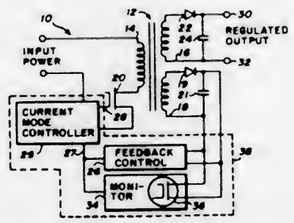


1. A current mode power supply, comprising:
a switching topology including a transformer having primary and secondary windings, a controllable switch connected between one side of the primary winding and a first reference potential input via current sensing means, a dc source input connected to the other side of the primary winding and a pulse width modulator having a current sensing input and a shut down input for operating the controllable switches to control the duty cycle of the power supply; and
current limit means, having inputs coupled to the current sensing means and the dc source input and an output connected to the control means, for shortening the duty cycle in dependence upon the sum of voltage signals from the current sensing means and the dc source input.

5,285,367
LINEAR LOAD CIRCUIT TO CONTROL SWITCHING POWER SUPPLIES UNDER MINIMUM LOAD CONDITIONS

Richard A. Keller, Palo Alto, Calif., assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Feb. 7, 1992, Ser. No. 832,233
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **5 Claims**

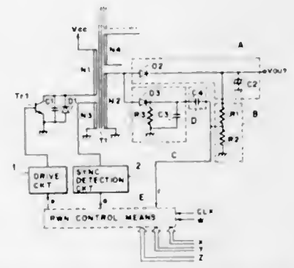


1. A switching power supply for maintaining a regulated voltage into a variable output load that can include a no load condition and where the power supply includes a transformer with a primary winding for receiving unregulated input power and a first secondary winding for driving a regulated voltage output and a second secondary winding for controlling a power transistor in series with said primary winding with a feedback loop, comprising:
a transistor linear regulator load connected as a load across said second secondary winding for proportionately shunting said second secondary winding;
a monitor having a summing junction connected to sense a current in said second secondary winding which is proportional to a power output level of said switching power supply; and
shunt control means connected to receive a signal from the monitor that represents said power output level and to produce a control signal to the transistor linear regulator load such that a predetermined minimum load on said power supply is maintained by the transistor linear regulator load despite said variable output load conditions that include no load, wherein a no-load or below minimum load condition of said regulated voltage output will be substantially fully compensated by a balancing load developed in said second secondary winding.

5,285,368
POWER SOURCE DEVICE RESPONSIVE TO SUPPLEMENTAL PLURAL OUTPUT VOLTAGES

Tadashi Ishikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,626
Claims priority, application Japan, Feb. 28, 1991, 3-033813; Mar. 20, 1991, 3-055217
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **21 Claims**



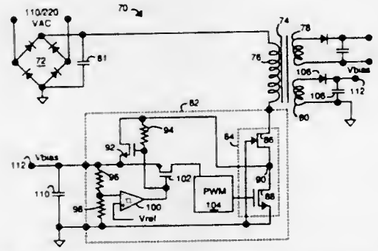
1. A power source device with a transformer, comprising:
a plurality of windings provided with a secondary of said transformer;
first and second smoothing means connected to a predetermined winding of said plurality of windings;
first voltage detection means for detecting a change of an output voltage from said first smoothing means;
means for superimposing an output from said first voltage detection means on an output from said second smoothing means; and
feedback means, which is structured with a digital processing circuit, for feeding back a superimposed value to a primary of said transformer.

5,285,369
SWITCHED MODE POWER SUPPLY INTEGRATED CIRCUIT WITH START-UP SELF-BIASING

Balu Balakrishnan, Saratoga, Calif., assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Sep. 1, 1992, Ser. No. 938,703
Int. Cl.[5] H02M *7/5375*
U.S. Cl. 363—49 **6 Claims**

5. A power supply, comprising:
rectifier means for producing a high voltage DC from an AC power input;
filter capacitor means connected to an output of the rectifier means for smoothing said high voltage DC from the rectifier means;
transformer means having a primary winding connected to the rectifier and filter capacitor means and at least one secondary winding connected to a power supply output and a bias supply output for producing an isolated DC output and chip bias voltages from said high voltage DC; and
integrated circuit means connected to said primary winding for switching said high voltage DC through said primary winding of the transformer means such that said isolated DC output and chip bias voltages are regulated in said secondary windings, the integrated circuit means including:
a junction field effect transistor (JFET) connected in series with said primary winding with a gate connected to a ground of the power supply such that a drain connected to said high voltage DC through said primary winding of the transformer means prevents a voltage equal to said high voltage DC from appearing at a source of said JFET;

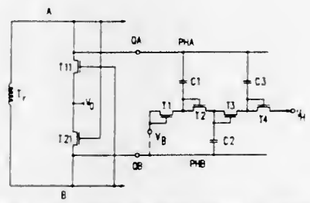


an insulated gate field effect transistor (IGFET) connected in series with said primary winding and said JFET with a gate, a source connected to said ground and a drain connected to said source of said JFET;
pulse width modulator (PWM) means having an output connected to said IGFET gate for driving said IGFET in response to a voltage sampled from said isolated DC output; and
first voltage regulator means having an input connected to said source of said JFET and an output connected to said PWM means for supplying an initial operating current to said PWM means from a voltage available at said source of said JFET until the transformer means operates to produce said chip bias voltages which thereafter supply power to said PWM means for continued operation.

5,285,370
CIRCUIT ARRANGEMENT FOR GENERATING A HIGH DC VOLTAGE

Klaus Axer, Lübeck, and Klaus Sickert, Bonningstedt, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1992, Ser. No. 816,905
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1991, 4100209
Int. Cl.[5] H02M *7/25*
U.S. Cl. 363—59 **20 Claims**

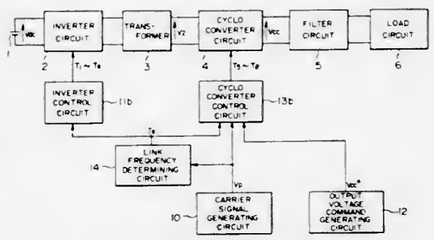


1. A circuit arrangement for generating a DC supply voltage which is high relative to a reference voltage, comprising; a chain of diode arrangements which are connected in series, one end of said chain delivering the high dc voltage, the junctions of the diode arrangements each being connected to a first terminal of a respective capacitor, the second terminals of the capacitors being connected alternately to first and second pulse outputs of a pulse generator which generates non-overlapping pulses at said pulse outputs, a source of ac voltage having two poles, each pulse output of the pulse generator being coupled to a respective pole of the ac voltage and being connected, via a respective first switch, directly to a reference voltage (V_O), each first switch being controlled by a voltage at a respective other pole of the ac voltage.

5,285,371
POWER CONVERSION APPARATUS

Kazunori Sanada, and Takao Kawabata, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,454
Claims priority, application Japan, Mar. 13, 1991, 3-047194
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] H02M *5/22*
U.S. Cl. 363—71 **11 Claims**



1. A power conversion apparatus comprising:
a reference signal generating circuit for generating a reference signal which has a first frequency;
a first power converter for converting D.C. power into A.C. power which has the first frequency;
a transformer connected to said first power converter;
a carrier signal generating circuit for generating a carrier signal which has a second frequency which is related to the first frequency by a factor of n, where n is greater than 2;
a second power converter having a plurality of switching means and converting the output from said transformer into A.C. power, an output signal from the second power converter having the second frequency;
a command signal generating circuit for generating a command signal for commanding the quantity of the output from said second power converter; and
a second power converter control circuit for generating a drive signal for driving a plurality of the switching means of said second power converter in such a manner that the drive signal is generated in response to the reference signal generated by said reference signal generating circuit and the command signal generated by said command signal generating circuit and in synchronization with the carrier signal generated by said carrier signal generating circuit.

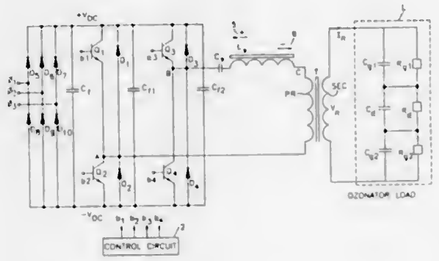
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,372

POWER SUPPLY FOR AN OZONE GENERATOR WITH A BRIDGE INVERTER

Anh N. Huynh, Cincinnati, Ohio, and Phovios D. Ziogas, Brossard, Canada, assignors to Henkel Corporation, Ambler, Pa.

Filed Oct. 23, 1991, Ser. No. 781,793
Int. Cl.[5] H02M 7/5387
U.S. Cl. 363—132 11 Claims



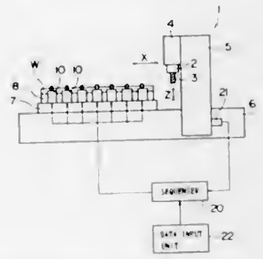
1. A power supply comprising:
a source of D.C. voltage having positive and negative outputs;
first and second unilateral current conducting switches connected in series in the order named between said positive and negative outputs, respectively, said first and second switches meeting at a first junction;
first and second unilateral current conducting devices respectively connected in anti-parallel with said first and second switches;
third and fourth unilateral current conducting switches connected in series in the order named between said positive and negative outputs, said third and fourth switches meeting at a second junction;
third and fourth unilateral current conducting devices respectively connected in anti-parallel with said third and fourth switches;
a transformer having primary and secondary windings;
means for coupling said primary winding between said first and second junctions, whereby current is permitted to flow only in one direction between said outputs when either of said first and fourth switches or said second and third switches are conducting, said means for coupling exhibiting series resonance at a given frequency when said secondary winding is coupled to a load;
control means for biasing both said first and fourth switches for conduction, and both said second and third switches for conduction only during respective alternate periods of time having intervals between them, the sum of two periods and two intervals being greater than a period of said given frequency; and
said control means biasing said third switch for conduction during intervals occurring immediately after the biasing of both said first and fourth switches for conduction ceases, and biasing said fourth switch for conduction during intervals occurring immediately after the biasing of both said second and third switches for conduction ceases.

5,285,373

APPARATUS FOR CONTROLLING THE OPENING AND CLOSING OF A WORK CLAMPING MECHANISM IN A NUMERICALLY CONTROLLED MACHINE TOOL

Chikara Watanabe; Masaaki Mituzono, and Hiroshi Ira, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,801
Claims priority, application Japan, Nov. 26, 1990, 2-323907
Int. Cl.[5] G05B 11/01
U.S. Cl. 364—140 14 Claims



1. A clamping apparatus comprising:
(a) a base structure;
(b) a plurality of clamping mechanisms for clamping a workpiece on said base structure;
(c) means for opening and closing said plurality of clamping mechanisms;
(d) an operating element movable along said base structure in a first direction;
(e) means for detecting a position of said operating element with respect to a predetermined origin position;
(f) means for detecting a moving speed of said operating element with respect to said base structure in said first direction;
(g) each of said plurality of clamping mechanisms being at a predetermined position with respect to said origin and having an unclamped interval extending about said predetermined position along said first direction, said unclamped interval being based on said moving speed of said main shaft and being determined for each of said plurality of clamping mechanisms;
(h) means for inputting said position of said operating element, said moving speed of said operating element, said position of each of said plurality of clamping mechanisms and said unclamped interval for each of said plurality of clamping mechanisms; and
(i) means, connected to said inputting means, for controlling the opening and closing of said plurality of clamping mechanisms such that each of said clamping mechanisms is opened when said position of said operating element is within said unclamped interval for each of said clamping mechanisms and is closed when said position of said operating element is outside of said unclamped interval for each of said clamping mechanisms.

5,285,374

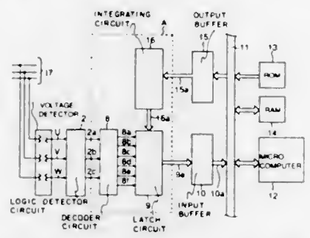
APPARATUS FOR GENERATING DIGITAL SIGNAL SYNCHRONIZED WITH PHASE OF POWER SUPPLY

Atsushi Iijima, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1991, Ser. No. 760,361
Claims priority, application Japan, Sep. 17, 1990, 2-246444
Int. Cl.[5] G05B 15/02; G01R 19/00
U.S. Cl. 364—140 7 Claims

1. An apparatus for generating a digital signal synchronized with a phase of a power supply comprising:
a voltage detector for detecting a voltage of each phase of an a.c. bus;

a logic detector circuit for transforming resulting phase-synchronized signals into logic signals synchronized with said phase-synchronized signals;
a decoder circuit for detecting a leading edge and a trailing edge of each of said logic signals;
operating means for obtaining a deviation of a phase-synchronized signal from a predetermined phase difference angle command value and for outputting a phase difference angle modifying value signal, said phase difference angle modifying value signal causing said deviation to be reduced to zero;



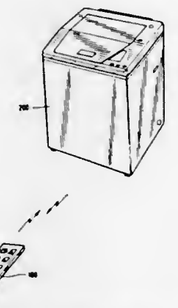
an integrating circuit for integrating said phase difference angle modifying value signal and clearing said value and re-starting the integrating operation each time an integrated value reaches a predetermined value; and
a latch circuit for latching said integrated value obtained by said integrating circuit at the leading edge and the trailing edge of each of said logic signals and outputting the latched integrated value as said phase-synchronized signal.

5,285,375

CONTROL APPARATUS AND CONTROL METHOD OF A WASHING MACHINE

Yong Man Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 1, 1992, Ser. No. 877,073
Claims priority, application Rep. of Korea, May 9, 1991, 91-7498
Int. Cl.[5] G05B 11/01, 9/02; H04B 1/06
U.S. Cl. 364—140 7 Claims



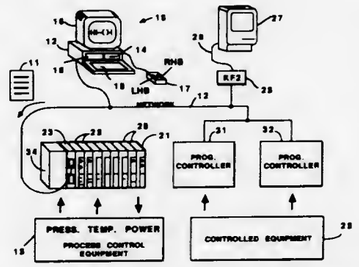
1. A control apparatus for washers having a main body and a remocon comprising:
first and second microcomputers;
first and second key parts which input into said first and second microcomputers data necessary for the operation of the washer main body and the remocon;
first and second display parts which indicate status of a washing process controlled by said first and second microcomputers;
an alarm part which gives off warning sound when malfunctions arise during the washing process;
first and second memories which store codes established for respective washers;
first and second radio transmitting parts which modulate into RF signals and output digital data coming from said first and second microcomputers;
first and second radio receiving parts which demodulate the RF signals outputted from said first and second radio transmitting parts, and then input said RF signals onto said first and second microcomputers;
power source adjusting part which controls a power supply of said second transmitting part and said second receiving part.

5,285,376

FUZZY LOGIC LADDER DIAGRAM PROGRAM FOR A MACHINE OR PROCESS CONTROLLER

Odo J. Struger, Chagrin Falls; Ernst Dummermuth, Chesterland, both of Ohio, and Greggory Cieslak, Greendale, Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Oct. 24, 1991, Ser. No. 782,851
Int. Cl.[5] G05B 9/02
U.S. Cl. 364—147 17 Claims



15. A method of entering a controller program based on fuzzy logic for a programmable controller that controls outputs in response to inputs on a controlled system, the method comprising:
in response to a plurality of user inputs to a programming computer, displaying on the screen of the programming computer a ladder diagram graphical display representing a programmable controller program based on fuzzy logic, wherein the displaying step further comprises
a) displaying a plurality of propositions, membership functions and input data variables for executing fuzzy logic operations;
b) displaying a plurality of inference instructions to generate a plurality of program outputs; and
c) displaying a plurality of defuzzification instructions for reducing the plurality of program outputs to a single resulting output; and
translating the programmable controller program based on fuzzy logic into first and second portions, the first portion comprising a coded program and the second portion comprising knowledge base tables which are executable by a microprocessor within a programmable controller processor.

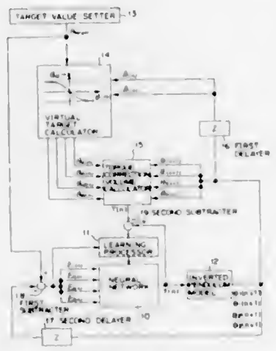
VOL 1159 ISS 2 FEB 8 1994 UMI

5,285,377

CONTROL APPARATUS STRUCTURING SYSTEM

Tamami Sugasaka; Minoru Sekiguchi, and Shigemi Nagata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 785,001
Claims priority, application Japan, Oct. 30, 1990, 2-292449
Int. Cl.[5] G06F *15/18*; G05B *23/02*
U.S. Cl. 364—148 **11 Claims**



9. A control apparatus comprising:

a virtual target controlling means for controlling at least a part of control variables expressed by a virtual target curve exhibiting an empirical rule in gaining a desired control state of a control object;

a plurality of controlling means for setting to a control object an input for realizing a virtual target value on said virtual target curve;

an operation correction volume calculating means for calculating a correction volume of an input signal to a control object by using a current output value from a control object and a virtual target value;

an operating means for forming an input signal to a new control object from a current input signal given to a control object and said correction volume of an input signal to said control object; and

a teacher for teaching said plural controlling means about an input/output relation between an input regarding current control state volume of a control object for realizing a virtual target value calculated by said virtual target controlling means and an output given to an input to said control subject.

5,285,378

APPARATUS FOR AND METHOD OF AUTOMATICALLY TUNING AND SETTING CONTROL PARAMETERS FOR A NUMERICAL CONTROL UNIT

Kouki Matsumoto, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,314
Claims priority, application Japan, Mar. 29, 1991, 3-066486
Int. Cl.[5] G05B *13/04*
U.S. Cl. 364—157 **10 Claims**

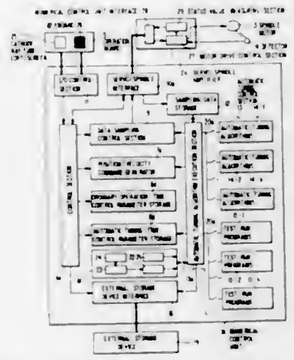
1. Apparatus for automatically tuning and setting control parameters, comprising:

automatic tuning means for automatically tuning control parameters of a servo or a spindle, said automatic tuning means including measuring means for measuring status value data of the servo or spindle indicative of its condition;

a data sampling control section for controlling setting and storage of the measured status value data as sampling data;

a plurality of automatic tuning programs and test run programs associated with the control parameters, wherein said tuning programs select said test run programs;

an automatic tuning system control section for selecting an automatic tuning program corresponding to a setting of a control parameter to be tuned; and



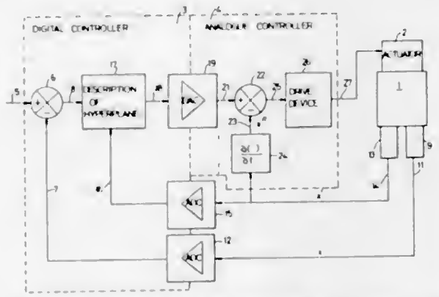
an automatic tuning control section for controlling the servo or spindle according to a test run program selected by said automatic tuning program, and for changing the sampling data into a desired control parameter based on said sampling data.

5,285,379

SLIDING MODE CONTROL SYSTEM

Jonathan B. Gamble, West Sussex, England, assignor to Vickers Systems Limited, United Kingdom

Filed Dec. 3, 1991, Ser. No. 802,147
Claims priority, application United Kingdom, Dec. 8, 1990, 9026735
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—160 **22 Claims**



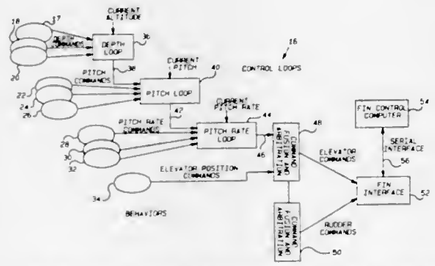
1. Control apparatus for a moveable control member with $n \geq 3$ observed states, characterised in that the apparatus incorporates a sliding mode control system, operable to maintain the state point of the moveable member on a predetermined non-linear hyperplane having $n-1$ dimensions, the hyperplane being such that if the state point is maintained thereon, the maximum rate of change of the highest order observed state does not exceed that of which the control apparatus is capable, in that the sliding mode control system comprises digital processor means operable to reference $n-1$ low order observed states to the predetermined hyperplane to establish a desired value of the highest order observed state, and in that the control system further comprises comparator means operable to compare said desired value with the observed highest order state, and means responsive to the comparator means and operable to implement the control action necessary to maintain the state point on the predetermined hyperplane.

5,285,380

SYSTEM AND METHOD FOR PROCESSING COMMANDS FROM A PLURALITY OF CONTROL SOURCES

David W. Payton, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 7, 1991, Ser. No. 741,880
Int. Cl.[5] G06F *9/44*
U.S. Cl. 364—174 **28 Claims**



1. A system for producing a single command for a controlled system from a plurality of control sources, said system comprising:

a plurality of control sources each responding to inputs to produce a command output represented as a piece-wise constant preference level profile covering a full continuous range of allowable command values;

means for representing the piece-wise constant preference level profiles in terms of attributes in order to easily combine and sort the preference level profiles to obtain a total profile within a bounded time period;

means for creating the total profile from the combination of individual preference level profiles of the plurality of control sources by adding the preference level profiles for each of the plurality of control sources;

means for determining a peak zone in said total profile having the largest preference level; and

means for producing a desired response in the controlled system to the command indicated by said peak zone.

5,285,381

MULTIPLE CONTROL-POINT CONTROL SYSTEM AND METHOD OF USE

Moenes Iskarous, and Kazuhiko Kawamura, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Sep. 9, 1992, Ser. No. 942,757
Int. Cl.[5] G05B *9/02*; G06F *11/00*
U.S. Cl. 364—187 **16 Claims**

1. A control system for rapid fault tolerant control of a multiple control-point apparatus, comprising:

a. a host subsystem acting as a user interface;

b. a plurality of control-point actuators, wherein the control-point actuators are located on or within the multiple control-point apparatus;

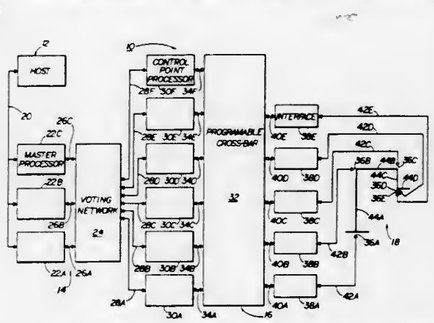
c. a master controller subsystem, which receives initialization data from the host subsystem and generates apparatus behavior commands;

d. a control-point controller subsystem, which receives apparatus behavior commands from the master controller subsystem and generates control-point actuator commands, comprising:

i) a plurality of control-point processors, wherein each control-point processor receives the behavior commands addressed to it and generates control-point actuator commands corresponding to the behavior commands;

ii) a plurality of control-point interfaces, which transmit control-point actuator commands generated by the plurality of control-point controllers to the plurality of control-point actuators and transmit control-point position information from the plurality of control-point actuators to the plurality of control-point controllers for use in generating control-point actuator commands; and

iii) a programmable crossbar switch capable of connecting any control-point processor to any control-point interface, so that if any one control-point processor develops a fault, the crossbar switch will connect another control-point processor to the control-point interface previously controlled by the faulty control-point processor.

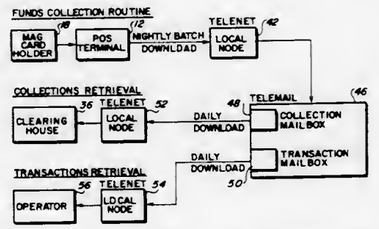


5,285,382

SYSTEM AND METHOD FOR PROCESSING CREDIT AND DEBIT CARD VALIDITY AND FUNDS TRANSACTIONS FROM VENDING MACHINES AND SIMILAR TERMINALS

Karl H. Muehlberger, and Gary W. Francis, both of Lakeland, Fla., assignors to Keyosk Corporation, Lakeland, Fla.

Filed Feb. 25, 1991, Ser. No. 660,722
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 **13 Claims**



1. A method for processing credit card transactions in a system having data processing means and memory storage, the system also having means for communicating with an electronic clearing facility for determining card validity and for initiating funds collection for each credit card transaction in the system, the method comprising the steps of:

generating a real-time communication between the system and the electronic clearing facility to determine card validity and to initiate funds collection for each transaction above a predetermined amount; and

generating a batch communication between the system and the clearing facility at a time when communication rates

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are reduced to initiate funds collection for all transactions in the system below the predetermined amount.

5,285,383

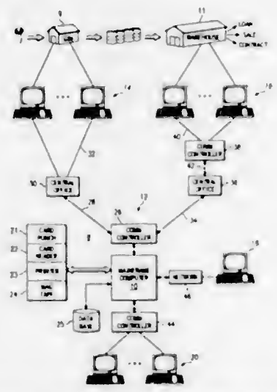
METHOD FOR CARRYING OUT TRANSACTIONS OF GOODS USING ELECTRONIC TITLE

James D. Lindsey; Charles D. Hutton; Joe W. Tubb; Carol L. Shipman, and Albert S. Kyle, III, all of Lubbock, Tex., assignors to Plains Cotton Cooperative Association, Lubbock, Tex.

Continuation-in-part of Ser. No. 582,551, Sep. 14, 1990, Pat. No. 5,063,507. This application Oct. 15, 1991, Ser. No. 777,681

Int. Cl.[5] G06F *15/20, 15/22*

U.S. Cl. 364—408 **27 Claims**



1. A method for carrying out computerized trading of goods, comprising the steps of:

storing in a centralized data base of a computer system information unique to at least one type of goods of a seller, the goods of the type each being distinct and different from each other and the information stored in the computer provides distinguishing characteristics of each of the individual goods of the seller;

in response to a command input into the system by a seller, visually displaying and making available to the seller of the goods a listing of the goods owned by an owner of the goods;

receiving an indication by the computer system of the identity of a subset of the listing, the subset defining the goods desired to be sold by the seller;

in response to a command input into the system by a buyer, visually displaying to the buyer a screen display of information that is unique to the goods of the subset identified by the seller as being for sale;

receiving an indication by the computer system of the identity of one or more of the goods of the subset desired to be purchased by the buyer;

preventing by the computer system the one or more goods of the subset identified by the buyer and agreed to be purchased from being shipped by the owner or made available for purchase by a second buyer to thereby prevent the identified goods from being sold twice; and

updating the data base to reflect a buyer ownership of the particular goods purchased by the buyer, said updating of the data base of new ownership being carried out after payment for the particular goods by the buyer.

5,285,384

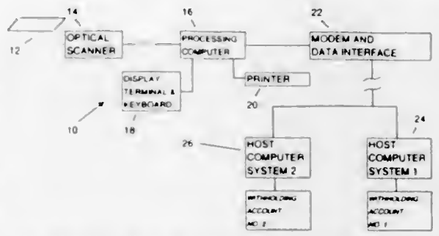
PAYROLL TRUST CHECK SYSTEM

Angelo J. Gineris, 6601 Coors Blvd. NW., Albuquerque, N. Mex. 87120-2733

Filed Feb. 18, 1993, Ser. No. 19,307

Int. Cl.[5] G06F *15/30*

U.S. Cl. 364—408 **8 Claims**



1. A method of automatically transferring payroll withholdings comprising the steps of:

printing a plurality of bank checks each having printed thereon spaces for amounts for each of a plurality of withholdings associated with corresponding withholding accounts, and bar codes printed thereon representing the particular withholding accounts corresponding to the spaces for the plurality of withholdings;

supplying a plurality of said bank checks to an employer;

filling out the bank check, including the amounts representing said plurality of withholdings;

processing checks endorsed by the payee including the steps of micro-coding the data on the face of the check including the plurality of withholdings;

optically scanning the checks to read the micro-codes and bar codes and converting the micro-codes and bar codes to digital data for processing by a computer;

processing the digital data to determine on the basis of the account number of the check, micro-codes and bar codes, the destination of a host system to which the withholding amounts for each withholding account are to be transferred;

converting the withholding amount and withholding account information into a data format acceptable to each host system to which the withholding amounts are to be transferred; and

electronically transferring the withholding amount and withholding account information to the appropriate host system.

5,285,385

SYSTEM FOR DISPLAYING AN ESTIMATED CURRENT SOURCE

Yutaka Igarashi, Yokohama; Takaki Shimura, Machida, and Takehiko Hayashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 16, 1990, Ser. No. 495,801

Claims priority, application Japan, Mar. 17, 1989, 1-67281

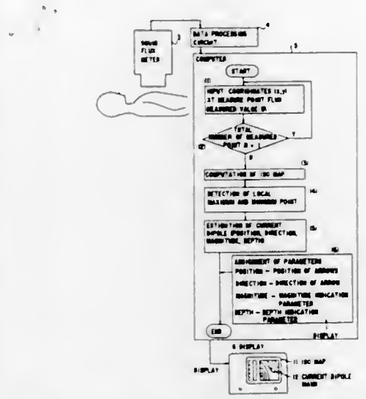
Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.13 **12 Claims**

1. A display system for displaying on a two-dimensional display an estimated current dipole for a measurement of biomagnetism, comprising:

display control means receiving information relating to a position, a direction, and a magnitude of the estimated current dipole below a surface of a body, for controlling the appearance of an image on the two-dimensional display; said display control means causing the two-dimensional display to indicate a position and direction of the estimated current dipole by controlling the position and the direction, respectively, of an arrow on the two-dimensional display;

said display control means indicating the magnitude of the estimated current dipole by controlling a length of the arrow on the two-dimensional display; and



said display control means indicating a depth from the body surface by controlling one of a group of display parameters thickness, shape, lightness, saturation or hue of the arrow on the two-dimensional display.

5,285,386

MACHINE TRANSLATION APPARATUS HAVING MEANS FOR TRANSLATING POLYSEMOUS WORDS USING DOMINATED CODES

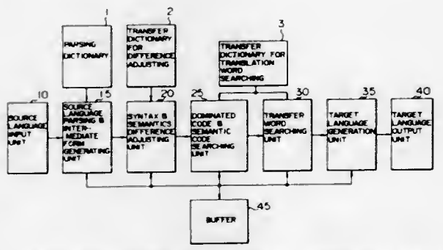
June-Jei Kuo, Taipei, Taiwan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 2, 1990, Ser. No. 546,940

Claims priority, application Japan, Dec. 29, 1989, 1-340674

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.02 **6 Claims**



1. A machine translation apparatus for translating a source language input sentence with a polysemous word into a target language sentence, the polysemous source language word in the input sentence having a plurality of possible translations in the target language, comprising:

a transfer dictionary for translation word searching, the transfer dictionary including means for storing a plurality of source language words, at least one semantic code for every source language word, and at least one target language word for every semantic code, wherein the source language words stored in the transfer dictionary include polysemous source language words, and wherein the transfer dictionary additionally includes means for storing semantic complex information for identifying the possible translations of the polysemous source language words, the semantic complex information including a plurality of dominated codes for each of the polysemous source language words;

a source language parsing and intermediate form generating unit means for parsing the input sentence to obtain an intermediate representation having a plurality of nodes which correspond to source language words in the input sentence, the nodes of the intermediate representation including a particular node which corresponds to the polysemous word in the input sentence and a neighboring node which corresponds to a word in the input sentence that is grammatically related to the polysemous word;

a dominated code and semantic code searching unit means for selecting a dominated code and semantic code for the polysemous word in the input sentence, the dominated code and semantic code searching unit means including means for comparing the dominated codes of the polysemous word which corresponds to the particular node of the intermediate representation with the at least one semantic code of the grammatically related word which corresponds to the neighboring node of the intermediate representation; and

a translation word searching unit means for determining appropriate target language words for the source language words corresponding to each node of the intermediate representation, the translation word searching unit means including means for using dominated codes selected by the dominated code and semantic code searching unit means as keys to search out appropriate target words from the transfer dictionary.

5,285,387

METHOD FOR LINKING AN APPLICATIONS PROGRAM AND A CONVERSION PROGRAM

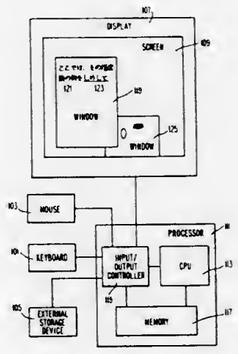
Yasuhiro Kurahara, Kobe; Toshihisa Aoki, Hyogo; Takumi Otani, Kobe; Masaaki Imai, Kobe, and Nobuhisa Takahashi, Kobe, all of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1990, Ser. No. 606,626

Claims priority, application Japan, Oct. 31, 1989, 1-283906

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.09 **14 Claims**



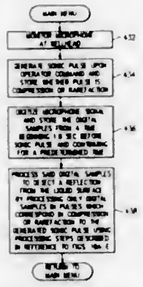
1. A method of providing a uniform interface between a phonetic-to-hieroglyphic conversion program and a text displaying applications program in a computer system comprising:

(a) sending a current position of a cursor of a first window under the control of the applications program from the applications program to the conversion program when the position of the cursor is changed, regardless of whether or not the phonetic-to-hieroglyphic conversion program is of the type that needs the current cursor position of the first window;

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(b) inputting the phonetic symbols;
(c) converting the inputted string of phonetic symbols in (b) to corresponding string of symbols comprising at least one of the hieroglyphic symbols and the phonetic symbols; the conversion being effected by the conversion program separate from the applications program;
(d) displaying the converted string of symbols under the control of the conversion program;
(e) selecting the displayed string of converted symbols;
(f) sending the selected string of the symbols in (e) from the conversion program to the applications programs; and
(g) displaying the received string in the first window.

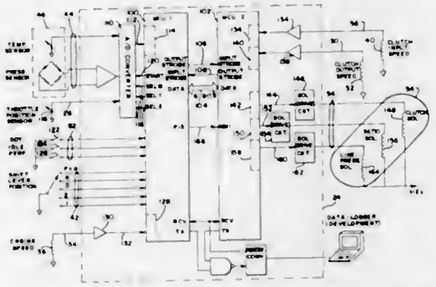
5,285,388
DETECTION OF FLUID REFLECTION FOR ECHO SOUNDING OPERATION
James N. McCoy, 2210 Midwestern Pkwy., Wichita Falls, Tex. 76308, and Kenneth L. Huddleston, Wichita Falls, Tex., assignors to James N. McCoy, Wichita Falls, Tex.
Filed Jul. 16, 1990, Ser. No. 552,545
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[5] G01V *1/00*
U.S. Cl. 364—422 **30 Claims**



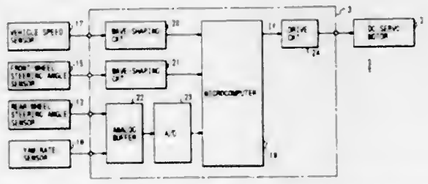
1. A method for detecting a liquid level reflection in an echo return signal produced by transmitting sonic energy down a fluid production well having an installed tubing string comprising interconnected tubing joints each having a collar, the method comprising the steps of,
generating sonic energy and transmitting said sonic energy down a borehole surrounding the tubing string to produce echoes of the sonic energy from reflectors in said borehole,
monitoring said echoes to produce a return signal,
digitizing said return signal to produce a set of digital amplitude samples representing said return signal,
storing said set of digital amplitude samples, and
comparing the amplitude of ones of said digital amplitude samples with a criteria amplitude derived from the amplitudes of previously occurring digital amplitude samples and flagging the digital amplitude samples that meet the criteria amplitude.

5,285,389
DUAL MICROPROCESSOR ARCHITECTURE FOR CONTROL OF A CONTINUOUSLY VARIABLE TRANSMISSION
Danny R. Taylor, Groton, N.Y., assignor to Borg-Warner Automotive Inc., Sterling Heights, Mich.
Continuation of Ser. No. 407,599, Sep. 15, 1989, abandoned. This application Apr. 9, 1991, Ser. No. 685,993
Int. Cl.[5] G06F *15/60*; B60K *41/00*
U.S. Cl. 364—424.1 **12 Claims**

1. A method for controlling a continuously variable transmission in a vehicle engine, the steps comprising:
receiving a first set of input signals in a first microcomputer means, said first set of input signals representing selected engine parameters;
receiving a second set of input signals in a second microcomputer means, said second set of input signals also representing selected engine parameters;
directly transferring a succession of data bytes in both directions via bidirectional communication means interconnecting said first microcomputer means and said second microcomputer means;
utilizing control programs stored in said first microcomputer and said second microcomputer to direct said first microcomputer to perform a first set of control tasks including the calculation of intermediate signals based on said first set of input signals, and transferring said intermediate signals to said second microcomputer means via said bidirectional communication means;
also utilizing said control programs to direct said second microcomputer to perform a second set of control tasks and calculate a set of output control signals based on said second set of input signals and said intermediate signals;
said output control signals being coupled to the continuously variable transmission so that said first microcomputer means, said second microcomputer means and said control programs combine to control the continuously variable transmission.



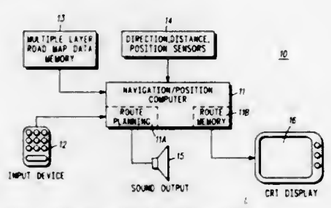
5,285,390
SIGNAL PROCESSING CIRCUIT FOR YAW-RATE SENSOR
Satoshi Haseda, Okazaki; Yoshihiko Tsuzuki, Toyota; Ichiro Akahori, Anjo; Hideo Inoue, Ashigarakami, and Osamu Takeda, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 4, 1991, Ser. No. 709,577
Claims priority, application Japan, Jun. 4, 1990, 2-146418
Int. Cl.[5] B62D *5/00*
U.S. Cl. 364—424.05 **11 Claims**



1. A signal processing circuit for removing a noise component from a detection signal of a yaw-rate sensor which detects a yaw rate generated in a motor vehicle, comprising:
means for obtaining a magnitude of variation of the detection signal of the yaw-rate sensor;

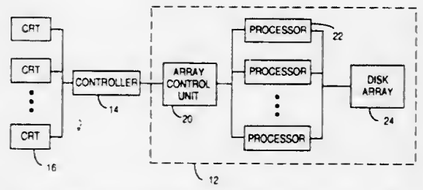
comparison means for comparing the magnitude of variation of the detection signal with a predetermined reference value; and
output means for outputting a limitation detection signal which limits the magnitude of variation to below said predetermined reference value when the magnitude of variation of the detection signal is determined to be greater than said predetermined reference value by the comparison means, and for generating a detection signal with its noise component removed based on the limitation detection signal.

5,285,391
MULTIPLE LAYER ROAD MEMORY STORAGE DEVICE AND ROUTE PLANNING SYSTEM
Bernard C. Smith, Jr., Arlington Heights, and Laura J. Link, Hanover Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1991, Ser. No. 740,347
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—443 **16 Claims**



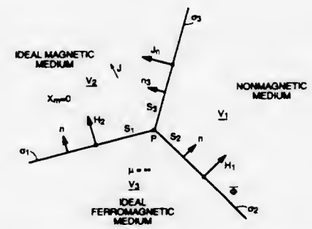
9. A route planning system comprising:
a road memory means for storing therein road data defining fixed roadways in a predetermined geographical area, and
a route planning computer means coupled to said road memory means for receiving said road data and using it to determine a desired route to a destination via said fixed roadways,
wherein said road data is hierarchically stored in said memory means and is stored as a first detailed layer designating a large number of first layer roadways of various categories and their intersections with each other, each stored first layer roadway is defined at least by individual stored first layer road segments which extend between stored first layer nodes that correspond to each of said first layer roadway intersections, and said road data is also stored in said memory means as a second higher level layer having data designating only some of said large number of first layer roadways as second layer roadways and data designating second layer roadway intersections between each of said second layer roadways, wherein said second layer of road data defines said second layer roadways by individual second layer road segments each of which represents a portion of one of said second layer roadways and each of which extends between intersections of roadways in said second layer with other roadways in said second layer regardless of intersections of first layer road segments corresponding to said portions of said roadways represented by said stored second layer road segments with roadways/road segments designated in said first layer but not in said second layer, and wherein said route planning computer uses at least said second layer road segments, as stored in said second layer, in determining said desired route, and wherein each of said stored second layer nodes, corresponding to an intersection of said stored second layer roadways, directly corresponds to one of said stored first layer nodes corresponding to an intersection of said stored first layer roadways,
wherein at least some of said road segments stored in said second layer and used by said route planning computer are equivalent to a combination of several of said road segments stored in said first layer, and wherein said some of said stored second layer road segments have a road segment length equivalent to a road segment length of said combination of said road segments in said first layer.

5,285,392
PARALLEL MANUFACTURING SYSTEM
Donald W. Kyle, Mansfield; Alan Bernstein, Moreland Hills, both of Ohio, and Karen E. Ammon, Downers Grove, Ill., assignors to McKinsey & Company, Inc., New York, N.Y.
Filed Nov. 27, 1991, Ser. No. 799,362
Int. Cl.[5] G06F *15/46, 15/16*
U.S. Cl. 364—468 **34 Claims**



16. A method for use in a manufacturing plant, said method comprising the steps of:
(a) generating manufacturing data representing the relationship between a product and number of components used in the manufacture of said product;
(b) distributing said manufacturing data generated in said step (a) among a plurality of parallel processors in a massively parallel computer; and
(c) using said manufacturing data to determine the number of said components that must be manufactured to produce a quantity of said product.

5,285,393
METHOD FOR DETERMINATION OF OPTIMUM FIELDS OF PERMANENT MAGNET STRUCTURES WITH LINEAR MAGNETIC CHARACTERISTICS
Manlio G. Abele, New York, and Henry Rusinek, Great Neck, both of N.Y., assignors to New York University, New York, N.Y.
Filed Nov. 19, 1991, Ser. No. 794,997
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **7 Claims**



1. A method for constructing a permanent magnetic structure with linear magnetic characteristics, comprising specifying dimensional parameters of a permanent magnetic structure having interfaces between magnetized regions, predetermined remanence and susceptibility characteristics, determining the surface charges σ at each interface of the magnetized regions, dividing the surface of the structure into a plurality of predetermined surface regions with each of said regions having a defined point, determining the distribution of said surface charges on all of the interfaces, computing the surface charges

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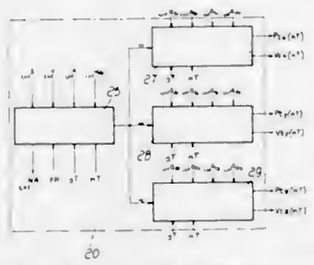
σ, then computing the field everywhere using the calculated surface charges, then repeating said steps of specifying dimensional parameters, determining surfaces charges, dividing, and determined the distribution of said surface charges until said computed field is a determined value, and then fabricating a permanent magnetic structure in accordance with the last specified dimensional parameters.

5,285,394

ELECTRONIC POLYNOMIAL INTERPOLATION DEVICE FOR NUMERIC CONTROLS OF MACHINE TOOLS, PARTICULARLY MILLING MACHINES FOR THE MACHINING OF DIES, AND MACHINE COMPRISING SAID DEVICE

Piera L. Montalcini, and Antonio Racciu, both of Turin, Italy, assignors to Advanced Data Processing ADP S.r.l., Turin, Italy

Filed Jun. 29, 1990, Ser. No. 545,730
Claims priority, application Italy, Jul. 5, 1989, 67551 A/89
Int. Cl.[5] G06F *15/46, 1/02*
U.S. Cl. 364—474.31 **16 Claims**



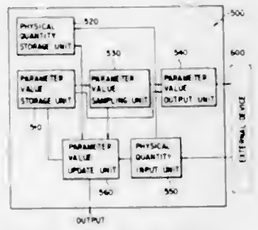
1. A polynomial interpolation device for the numeric control of machine tools, particularly milling machines for the machining of dies, comprising:
- a processor unit for generating polynomial coefficients along an operative trajectory arc of the machine tool;
- a first section which includes logic circuit means for generating a speed diagram of the machine tool along said operative trajectory arc and for calculating therefrom an instantaneous value of the curvilinear coordinates of said trajectory arc;
- a second section with a set of three digital polynomial generators, each of said digital polynomial generators receiving from said first section said instantaneous value of the curvilinear coordinates, and from said processor unit said polynomial coefficients, said digital polynomial generators of said second section comprising multiplier and adder means which are suitable for calculating from said polynomial coefficients and from said curvilinear coordinates a polynomial which represents the instantaneous position vector and the instantaneous speed vector of each point of said trajectory, the calculation being reduced to a recursive form of additions and multiplications of said polynomial coefficients and of said curvilinear coordinates.

5,285,395

DISTRIBUTION GENERATION SYSTEM, AND OPTIMIZATION SYSTEM THAT ADOPTS DISTRIBUTION GENERATION SYSTEM

Tnru Kamayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 14, 1992, Ser. No. 820,502
Claims priority, application Japan, Jan. 14, 1991, 3-014669; Jul. 31, 1991, 3-191872
Int. Cl.[5] H02J *3/00;* **G06F** *15/36*
U.S. Cl. 364—492 **15 Claims**



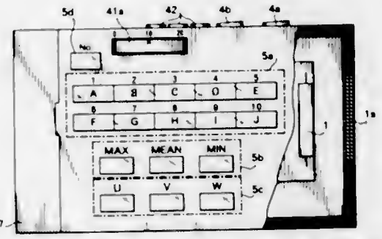
11. An optimization system comprising:
- distribution generation means for time-serially outputting random variable values having a predetermined distribution;
- parameter determination means for properly determining various parameters to be supplied to said distribution generation means; and
- searching means for holding a candidate of an optimized solution,
- said searching means including means for performing optimized solution searching while updating the candidate of the optimized solution on the basis of the random variable values output from said distribution generation means.

5,285,396

DEVICE FOR EVALUATING RACE HORSE PERFORMANCE BASED ON TEMPERATURE

Tadamasa Aoyama, Maison Takashima 403, 10-15 Daimachi, Kanagawa-ku, Yokohama, Kanagawa, Japan

Filed Nov. 21, 1991, Ser. No. 795,481
Claims priority, application Japan, Jan. 11, 1991, 3-12677
Int. Cl.[5] G01K *17/00;* **G01J** *5/00*
U.S. Cl. 364—557 **5 Claims**



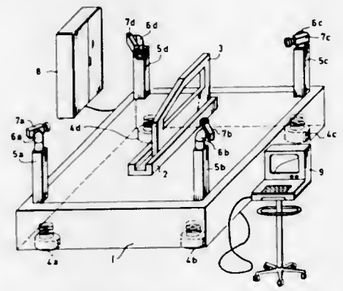
1. A device for remotely measuring the relative readiness of a plurality of race horses for a race comprising:
- an infrared sensor for remotely measuring a race horse's temperature by sensing infrared radiation from the horse without contacting the horse
- and for taking at least three temperature measurements of the horses that are to be in a race prior to the race;
- a memory for storing all of the measured temperatures;
- an arithmetic operator for (a) correcting the stored temperature measurements for the distance from which the temperature measurements were made,
- and (b) determining for each of the horses from which temperature measurements have been taken, the maximum, minimum and mean corrected temperature measurements; and
- a display for displaying for each of the horses from which measurements have been made, all of the corrected measured temperatures, and the maximum, minimum and mean corrected temperature measurements
- so that the displayed measurements can be visually compared to evaluate the horses' readiness for the race.

5,285,397

COORDINATE-MEASURING MACHINE FOR NON-CONTACT MEASUREMENT OF OBJECTS

Helmut Heier; Klaus-Peter Koch, both of Aalen, and Karl-Hermann Breyer, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Oberkochen

Filed Nov. 21, 1990, Ser. No. 616,627
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, 3941144
Int. Cl.[5] G01B *11/03*
U.S. Cl. 364—559 **25 Claims**



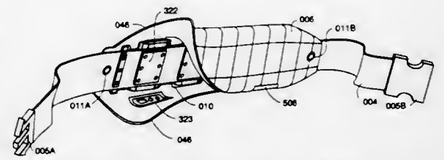
8. A computer-operated multiple-coordinate measuring machine for non-contact measurement of a workpiece comprising a stable rigid horizontal table with vibration-damping means for mounting said table in isolation from external mechanical shock, means on said table for mounting a workpiece to be measured, a plurality of articulating heads mounted to spaced locations on said table; each articulating head comprising (i) a first or base member fixedly mounted to said table and establishing a first generally vertical axis of rotation, (ii) a second or intermediate member mounted to said base member for motor-driven rotary positioning about said first and establishing a second axis of rotation that is orthogonal to said first axis and therefor contained in a generally horizontal plane, (iii) a third or article-chucking member mounted to said intermediate member for motor-driven rotary positioning about said second axis, and (iv) angle-measuring means associated with each axis of rotation for generating separate electrical signals indicative of instantaneous angular position (a) of said second member about said first axis and (b) of said third member about said second axis; a video camera chuck-mounted to each article-chucking member such that the optical axis of the camera is orthogonal to said second axis; and computer means connected to control motor-driven rotary positioning about said axes and to receive electrical signals from said angle-measuring means and from said video cameras for use of said signals to computer coordinates of triangulating video-camera sightings on measurement points of the workpiece, said computer means including an image-analysis device with associated storage means having capacity to store a plurality of images for each of said video cameras.

5,285,398

FLEXIBLE WEARABLE COMPUTER

Craig M. Janik, Palo Alto, Calif., assignor to Mobila Technology Inc., Palo Alto, Calif.

Filed May 15, 1992, Ser. No. 884,117
Int. Cl.[5] G06F *1/00;* **H05K** *5/00*
U.S. Cl. 364—708.1 **20 Claims**



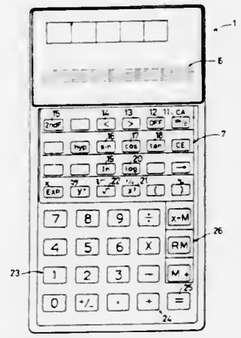
1. A flexible computer comprising, in combination,
- elements for computing comprising a plurality of mechanically disintegrated but functionally intact components of an otherwise integrated computer:
- a flexible signal relaying means operably connecting said elements for computing;
- a flexible nonstretchable wearable member;
- a mounting means for mounting said elements for computing and said flexible signal relaying means on said wearable member;
- a protective covering means mechanically connected to said flexible non-stretchable wearable member for enclosing said elements for computing and said flexible signal relaying means.

5,285,399

CALCULATOR WITH EASILY ENTERABLE CONSTANT CALCULATION MODE

Shinichi Nishiguchi, Yamatokoriyama, and Fumiaki Kawawaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1992, Ser. No. 862,498
Claims priority, application Japan, Apr. 5, 1991, 3-73193
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—709.12 **12 Claims**



1. A computer comprising:
- a display unit having a display screen of a plurality of digits;
- numeral keys for entering a numeric;
- operator keys each for entering an operator; and
- cursor keys for moving a cursor rightward and leftward, the cursor being indicative of an input position on the display screen,
- the computer displaying an entered expression on the display screen, and, when a predetermined key for indicating the

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completion of the entry of the expression and the initiation of a calculation is operated, computing the entered expression, wherein;

when, under a state that the cursor is positioned at the digit rightward subsequent to an entered expression and an operator is entered at the last digit of the expression, a rightward cursor key for moving the cursor in the right direction is operated,

an expression which has been entered before the operator is calculated, and the calculated result is stored as a constant,

the operator at the last digit is stored as an operator for a constant calculation, and

a constant calculation mode is set in which the constant is regard as a first operand, an entered numeric is regard as a second operand, and a calculation on the basis of the operator for the constant calculation is repeatedly executed every time a numeric is entered.

5,285,400

DATA PROCESSING SYSTEM WITH USER DEFINABLE MATHEMATICAL FUNCTIONS AND A METHOD FOR USING SAME

Robert J. Stent, Westford, and Pennie K. Locklear, Groton, both of Mass., assignors to Davox Corporation, Billerica, Mass.

Filed Nov. 26, 1991, Ser. No. 798,239

Int. Cl.[5] G06F *3/00*

U.S. Cl. 364—709.14 **13 Claims**



13. A method for providing and implementing at least one user definable mathematical function, said at least one user definable mathematical function executable on a data processing system including at least one data terminal presently displaying data generated independently of said at least one user definable mathematical function by at least one data processing application program currently operating on one of said data processing system and a coupled host processing system, said method comprising the steps of:

user defining at least one user definable mathematical function to be executed by said data processing system, said user definable mathematical function including a mathematical formula having at least one unspecified operand identifying at least one predetermined operand data source, said at least one predetermined operand data source providing an associated variable value to be retrieved and substituted for said at least one unspecified operand upon execution of said user definable mathematical function and serving as at lest one operand for said mathematical formula, said at least one predetermined operand data source including at least a first predetermined data terminal screen coordinate, said at least a first predetermined data terminal screen coordinate presently displaying data generated independently of and external to said at least one user definable mathematical function;

initiating execution of said user definable mathematical function on said data processing system upon selection of an associated data terminal selector device;

retrieving said variable value associated with said at least one predetermined data source identified by said at least one unspecified operand directly from said at least first predetermined data terminal screen coordinate;

substituting said retrieved variable value for said at least one unspecified operand in the mathematical formula of said user definable mathematical function;

executing said mathematical formula; and

providing a result of the execution of said user definable mathematical function by said data processing system to a second predetermined data terminal screen coordinate position while displaying at least said variable value at said first predetermined data terminal screen coordinate.

5,285,401

METHOD AND APPARATUS FOR CONVERTING SCANNING VALUES OF AN INPUT SCANNING SEQUENCE

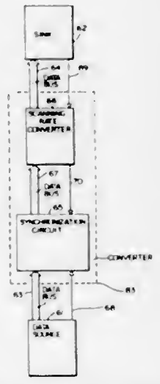
Daniele Pelloni, Zurich, Switzerland, assignor to Studer Revox Ag, Regensdorf, Switzerland

Continuation of Ser. No. 651,801, Feb. 7, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,890

Claims priority, application Switzerland, Feb. 7, 1990, CH00395/90-1

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.1 **28 Claims**



8. An apparatus for converting scanning values of an input scanning sequence which occurs with an input scanning frequency, into scanning values of an output scanning sequence which occurs with an output scanning frequency, comprising:

means for deriving a further scanning frequency from said input scanning frequency and said output scanning frequency;

first means for converting said scanning values of said input scanning sequence into scanning values of a further scanning sequence with said further scanning frequency; and

second means for converting said scanning values of said further scanning sequence into scanning values of said output scanning sequence, one of said first and second converting means comprising means for delaying one of said input scanning sequence or said further scanning sequence until said input scanning sequence and said further scanning sequence coincide with each other, and the other of said first sand second converting means comprising means for performing a scanning rate conversion with a predetermined ratio.

5,285,402

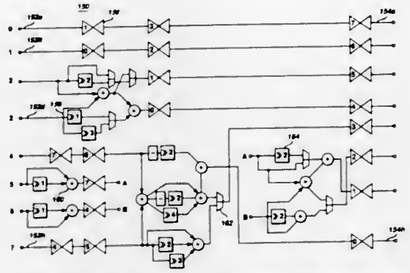
MULTIPLYLESS DISCRETE COSINE TRANSFORM

Michael Keith, Holland, Pa., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 22, 1991, Ser. No. 796,317

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—725 **20 Claims**



1. A method for performing a multiplyless discrete cosine transform operation upon a transform input signal to produce a discrete cosine transform output signal, in a system having a transform device including a shifter and a counter, said discrete cosine transform operation having a plurality of predetermined transform coefficients, comprising the steps of:

(a) determining by said counter a first limit N_1 independently of said transform input signal to provide a set of shift operations, said set of shift operations including only N_1 shift operations;

(b) determining by said counter a second limit N_2 independently of said transform input signal to provide a set of add operations, said set of add operations including only N_2 add operations; and,

(c) applying only said set of shift operations and said set of add operations to said transform input by said transform device to produce said discrete cosine transform output signal only in accordance with said transform input signal, said N_1 shift operations, and said N_2 add operations, to thereby provide said multiplyless discrete cosine transform operation.

5,285,403

ARITHMETIC PROCESSING MODULE TO BE ASSOCIATED WITH A MICROPROCESSOR CENTRAL PROCESSING UNIT

Jean-Jacques Quisquater, Brussels, Belgium; Jean-Pierre Bournas, Chaville, France, and Dominique De Waleffe, Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 628,276, Dec. 14, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,943

Claims priority, application France, Dec. 29, 1989, 89 17456

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—736 **20 Claims**

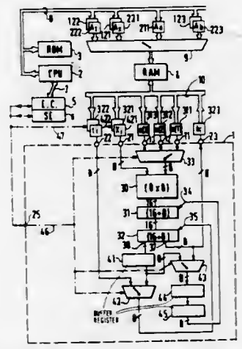
1. An arithmetic processing module for use in a microprocessor for calculating in k cycles a product B of binary operands a, X, T, according to $B=aX+T$, based on an n-bit format, each of said binary operands a, X, T having a format of greater than n-bits, each bit of each of said binary operands having a significance level relative to every other of said bits, said operand a separated into k portions, each of said k portions having said n-bit format, said module comprising:

data transfer means for communicating said product and operands within said module according to said n-bit format;

storage means having k sections for storing said operand a, each section of said storage means having said n-bit format;

selection means coupled to said storage means for cyclically selecting one of said k portions of operand a during each of said k cycles, said selection means cyclically selecting said portion of operand a according to increasing significance levels;

multiplier means for receiving in each cycle said portion of operand a selected by said selection means and a portion of operand X having said n-bit format and having the same significance level as said portion of operand a and outputting a product of said portion of said operand X and said portion of operand a;



adder means for adding a portion of operand T and said output of said multiplier means and outputting as a first output and a second output portions of said product B, said first output having a higher significance level than said second output;

recycling means for retaining said first output for k cycles and for retaining said second output for k−1 cycles and then retrocoupling said first output and said second output to said adder means in place of said portion of said operand T.

5,285,404

DEVICE FOR CHECKING DECIMAL DATA

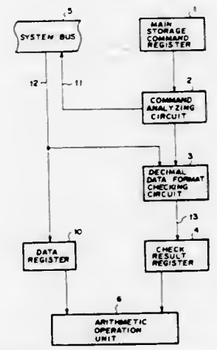
Yasuhiro Satou, Ibaragi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 77,736

Claims priority, application Japan, Jun. 18, 1992, 4-159022

Int. Cl.[5] G06F *11/00*

U.S. Cl. 364—737 **3 Claims**



1. A decimal data checking device used in a data processing system which handles decimal data, comprising:

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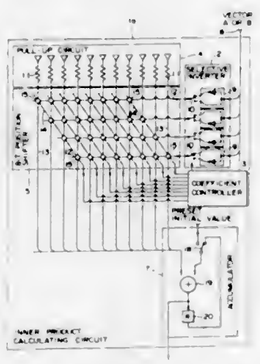
a main storage command register for storing information obtained from a main storage device;
a command analyzing circuit for analyzing the content of said main storage command register;
a decimal data format checking circuit for checking the decimal data format of the data read out from said main storage according to a decimal data check indication emitted from said command analyzing circuit;
a check result register for storing the output result of said decimal data format checking circuit;
a data register for simultaneously entering said data read from said main storage simultaneously with said decimal data format checking circuit for storage; and
an arithmetic operation unit for entering a data necessary for the arithmetic operation and for entering the decimal data formal check result from a check result register for arithmetic operation.

5,285,405

INNER PRODUCT CALCULATING CIRCUIT

Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,410
Claims priority, application Japan, Sep. 13, 1991, 3-261403
Int. Cl.[5] G06F *7/38, 7/52*
U.S. Cl. 364—750.5 **1 Claim**



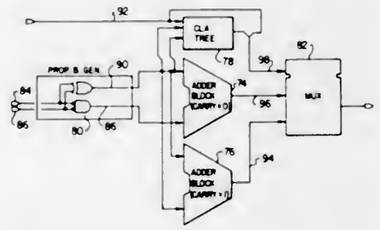
1. An inner product calculating circuit for executing a calculation of an inner product on the basis of one or more vector data and one or more coefficients, said circuit comprising:
a selective inverter for selectively inverting individual bits of said vector data;
a bit position shifter for shifting, in accordance with said coefficients, the bit positions of the vector data inverted selectively by said selective inverter;
a bit supplementer for supplementing, with either "1" or "0", any vacant bit of the vector data where the bit positions have been shifted by said bit position shifter; and
an accumulator for accumulating the initial values preset in conformity with the coefficients and the vector data supplemented with "1" or "0" in any vacant bit thereof by said bit supplementer.

5,285,406

HIGH SPEED MIXED RADIX ADDER

Thomas W. Lynch, and Steven D. McIntyre, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 840,622, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 746,290, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 503,818, Apr. 2, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 991,082
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—788 **18 Claims**



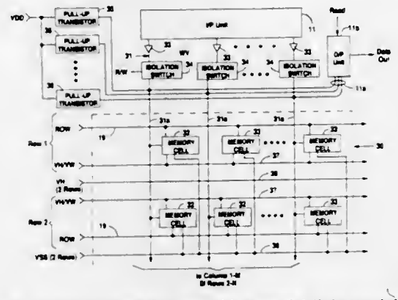
1. A high speed adder comprising:
at least one first independent adder, each of said at least one first independent adder having input means for receiving input operands and output means for outputting a first sum of said input operands, each of said at least one first independent adder assuming a carry in of one;
at least one second independent adder operable simultaneously with said at least one first independent adder, each of said at least one second independent adder having input means for receiving said input operands and output means for outputting a second sum of said input operands, each of said at least one second independent assuming a carry in of zero;
carry prediction logic circuitry, said carry prediction logic circuitry producing carries for said at least one first independent adder and said at least one second independent adder and having an output for outputting said produced carries, said carry prediction logic circuitry operable simultaneously with said at least one first independent adder and said at least one second independent adder; and
solitary sole adder multiplexer means for receiving said outputs of said carry prediction logic circuitry, said at least one first independent adder and said at least one second independent adder, said multiplexer means selecting the proper sums from said first sums produced by said at least one first adder and said second sums produced by said at least one second adder based upon said carries produced by said carry prediction logic circuitry;
wherein said carry prediction logic circuitry comprises:
a plurality of substantially similar subcircuits; each of said subcircuits having at least four input terminals, at least two output terminals, and an internal logic circuit; each of said subcircuits being connected in multi-stages to form a three level tree with at least fourteen subcircuits on a first level, four subcircuits on a second level, and two subcircuits on a third level; each of said subcircuits on said first level operable to produce block propagate and generate terms for four inputs on its input terminals; three of said subcircuits on said second level connected in circuit to receive the block propagate and generate terms produced by four subcircuits on said first level and to produce block propagate and generate terms therefrom; the fourth of said subcircuits on said second level connected in circuit to receive the block propagate and generate terms produced by at least two subcircuits on said first level; one of said subcircuits on said third level connected in circuit to receive the block propagate and generate terms produced by the subcircuits on said second level and to produce block propagate and generate terms therefrom; the other of said subcircuits on said third level connected in circuit to receive signals relating to carries from two of said subcircuits on said second level and to further make those signals available as output therefrom.

5,285,407

MEMORY CIRCUIT FOR SPATIAL LIGHT MODULATOR

Richard O. Gale, Richardson, and Benjamin Perrone, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1991, Ser. No. 815,441
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 **19 Claims**



1. A memory circuit for use with a spatial light modulator array of electrically addressable, micro-mechanical, elements, comprising:
an array of static memory cells, wherein each element of the spatial light modulator is in communication with at least one memory cell via address electrodes;
a two-level voltage supply input line in communication with each of said memory cells, for providing at least a first voltage level for writing to said cells and at least a second voltage level for operating said elements of said spatial light modulator;
a multiplexer for switching either said first voltage level or said second voltage level onto said two-level voltage supply input line on a row by row basis;
an access switch in communication with each of said memory cells for delivering data to said memory cell in accordance with the state of row select signal;
a data bit-line in communication with each of said access switches, wherein said data bit-line is common to all memory cells of a column of said memory cell array; and
a row select signal line in communication with each of said access switches.

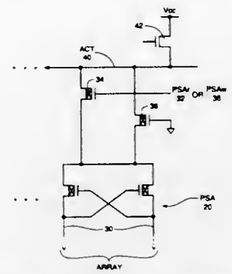
5,285,408

METHOD AND APPARATUS FOR PROVIDING A FASTER ONES VOLTAGE LEVEL RESTORE OPERATION IN A DRAM

Michael W. Starkweather, and Paul S. Zagar, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Sep. 15, 1992, Ser. No. 945,206
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 **2 Claims**

1. A method of operation for a DRAM device, comprising:
providing a digit line voltage pull-up amplifying circuitry (PSA **20**);
providing a supply voltage;
connecting the pull-up circuitry (**20**) to the supply voltage by at least a first (**34**) and second (**36**) current limiting circuit, said first circuit providing more current to the pull-up circuitry than the second circuit;
maintaining current to the pull-up circuitry (**20**) during a read operation through the first and second current limiting circuits;



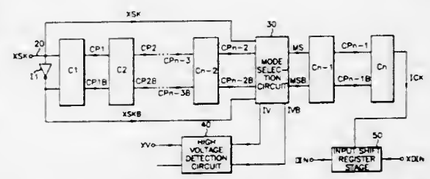
maintaining current to the pull-up circuitry (**20**) during a write operation exclusively through the second current limiting circuit (**36**);

5,285,409

SERIAL INPUT/OUTPUT MEMORY WITH A HIGH SPEED TEST DEVICE

Jun-sik Hwangbo, Seoul, and Jae-Yeong Do, Kyounggi, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

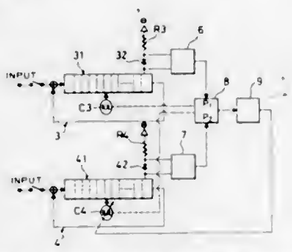
Filed Apr. 21, 1992, Ser. No. 871,733
Claims priority, application Rep. of Korea, Oct. 30, 1991, 19191-1991
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—189.12 **25 Claims**



1. A serial input/output memory device including a plurality of serially connected frequency conversion circuits, for generating a sequence of counter clock signals upon reception of system clock pulses of a given frequency to provide internal control clock signals, said memory comprising:
mode selector means interposed between a preceding one of two adjacent ones of said frequency conversion circuits, for generating mode selection signals having frequencies selected in response to sense signals by selectively enabling transmission of counter clock pulses from said preceding one of said frequency conversion circuits and said system clock pulses to a succeeding one of said two adjacent ones to said frequency conversion circuits; and
detector means for providing said sense signals to said mode selector means in dependence upon reception of an applied signal.

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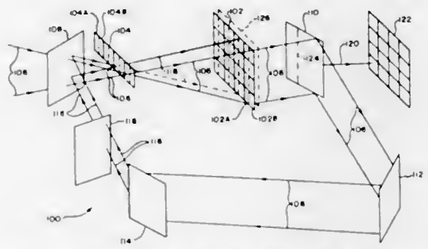
5,285,410
CIRCUIT FOR ADJUSTING ANALOG SIGNAL WAVEFORMS
Tomohiko Suzuki, Tokyo, Japan, assignor to Addams Systems Incorporated, Tokyo, Japan
Filed Oct. 25, 1991, Ser. No. 782,802
Claims priority, application Japan, Jan. 18, 1991, 3-4231
Int. Cl.[5] G11C *27/00*; H03M *1/12*
U.S. Cl. 365—45 **2 Claims**



1. A circuit for adjusting analog signal waveforms to equalize amplitudes of two analog signal waveforms including:
first and second analog dynamic memory circuits each comprising a closed loop in which a first or a second analog signal waveform circulates, said closed loop including an analog signal waveform delay element comprising a series of charge storing cells,
a first peak detector which comprises a first diode group having a plurality of diodes which are connected in the normal-biased direction between the charge storing cells of the delay element of said first analog dynamic memory circuit and a common output connected to a bias voltage supply for detecting the peak value of the first analogs signal waveform stored at the common output of the first analog dynamic memory circuit;
a second peak detector comprising a second diode group having a plurality of diodes which are connected in the normal-biased direction between the charge storing cells of the delay element of said second analog dynamic memory circuit and a common output connected to a bias voltage supply for detecting the peak value of the second analog signal waveform at the common output of the second analog dynamic memory circuit;
a comparator having a first input connected to the common output of the first peak detector, a second input connected to the common output of the second peak detector and an output for outputting a signal representing a ratio of or a difference between the peak values inputted from the first and the second inputs; and
a variable gain amplifier having an input connected to the output of said comparator and provided in the closed loop of the first or the second analog dynamic memory circuit, a gain of the variable gain amplifier being varied according to the signal representing the ratio or the difference, thereby amplifying or attenuating the amplitude of the first or the second signal waveform.

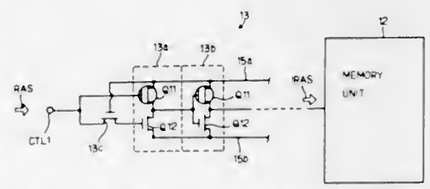
5,285,411
METHOD AND APPARATUS FOR OPERATING A BIT-SLICE KEYWORD ACCESS OPTICAL MEMORY
Alastair D. McAulay, Centerville, Ohio, assignor to Wright State University, Dayton, Ohio
Filed Jun. 17, 1991, Ser. No. 716,098
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 **24 Claims**

1. A method of operating an optical memory to perform bit-slice associative memory operations comprising the steps of:
storing a plurality of keywords in storage means for optically storing said plurality of keywords;
identifying a keyword to be retrieved from said storage means;
illuminating a first bit-slice of said storage means in response to a corresponding first bit of said keyword to be retrieved to retrieve a corresponding bit-slice of the keywords stored in said storage means;
optically shifting keyword bit-slices retrieved from said



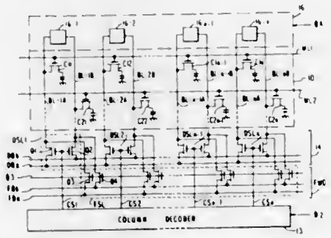
storage means and feeding the shifted bit-slices back to said storage means to iteratively illuminate all bit-slices of said optical storage means in response to illumination of said first bit-slice of said storage means; and
identifying one or more locations of said optical storage means which contain the keyword to be retrieved from the final bit-slice retrieved from said optical storage means.

5,285,412
SEMICONDUCTOR MEMORY DEVICE WITH STEP-DOWN TRANSISTOR FOR EXTERNAL SIGNAL
Tadahiko Sugibayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 13, 1991, Ser. No. 759,294
Claims priority, application Japan, Sep. 13, 1990, 2-243085
Int. Cl.[5] G11C *11/408*
U.S. Cl. 365—189.11 **6 Claims**



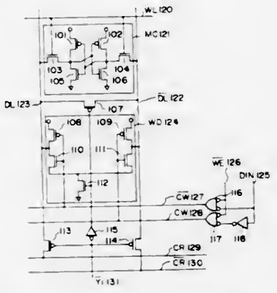
1. A semiconductor memory device fabricated on a single semiconductor chip, comprising:
a) a plurality of input terminals applied with external signals of a first voltage level;
b) external signal input means supplied with said external signals and producing internal signals;
c) a memory cell array supplied with said internal signals and other internal signals, and memorizing pieces of data information, said memory cell array being operative to produce a read-out data signal;
d) a step-down circuit supplied with an external power voltage and producing an internal power voltage smaller in magnitude than said external power voltage;
e) a first voltage line supplied with said internal power voltage; and
f) a second voltage line supplied with a constant voltage level different from said internal power voltage;
wherein said external signal input means further comprises:
b-1) a logic gate implemented by a NOR gate coupled between said first and second voltage lines and responsive to one of said external signals supplied at an input node thereof for producing one of said internal signals of a second voltage level smaller in magnitude than said first voltage level, and
b-2) a first field effect transistor coupled between one of said plurality of input terminals and said input node of said logic gate, and having a gate electrode coupled to said first voltage line so as to supply said one of said external signal decreased in magnitude to said logic gate,
wherein said NOR gate comprises a series combination of a first p-channel enhancement type field effect transistor, a second p-channel enhancement type field effect transistor, an output node of said NOR gate and a third n-channel enhancement type field effect transistor coupled between said first and second voltage lines, and a fourth n-channel enhancement type field effect transistor coupled between said output node of said NOR gate and said second voltage line, and
wherein said first field effect transistor provides a conductive channel between said one of said input terminals and the gate electrode of said fourth n-channel enhancement type field effect transistor, the gate electrode of said first p-channel enhancement type field effect transistor being directly coupled to said one of said input terminals, an enable signal being supplied to the gate electrode of said second p-channel enhancement type field effect transistor and the gate electrode of said third n-channel enhancement type field effect transistor, said first field effect transistor being of an n-channel type field effect transistor.

5,285,413
SEMICONDUCTOR MEMORY DEVICE HAVING SELECTIVE AND SIMULTANEOUS WRITE FUNCTION
Mayu Miyauchi, and Shotaro Kobayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 12, 1991, Ser. No. 667,984
Claims priority, application Japan, Mar. 12, 1990, 2-61409; Mar. 30, 1990, 2-84041
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 **10 Claims**



1. A semiconductor memory device comprising a plurality of word lines, a plurality of bit lines, and a plurality of memory cells each coupled to one of said word lines and one of said bit lines, a row decoder responding to row address information to select one of said word lines, a data bus receiving data to be written into a selected memory cell in a data write mode and data read out from a selected memory cell in a data read mode, a plurality of column switches each coupled between said data bus and a corresponding one of said bit lines, a column decoder responding to column address information to turn one of said column switches ON to electrically connect one of said bit lines to said data bus, a simultaneous-data bus receiving simultaneous data to be written simultaneously into plural ones of said memory cells, a plurality of transfer gates having respective first nodes connected in common to said simultaneous-data bus, respective second nodes connected to different ones of said bit lines and respective control nodes supplied in common with a control signal, each of said transfer gates being turned ON in response to an active level of said control signal to transfer said simultaneous data from said simultaneous-data bus to each of said bit lines simultaneously.

5,285,414
SEMICONDUCTOR MEMORY HAVING TRANSISTORS WHICH DRIVE DATA LINES IN ACCORDANCE WITH VALUES OF WRITE DATA AND COLUMN SELECT SIGNAL
Tatsumi Yamauchi; Masahiro Iwamura, both of Hitachi, and Kazutaka Mori, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 26, 1991, Ser. No. 765,838
Claims priority, application Japan, Sep. 26, 1990, 2-256401; Feb. 12, 1991, 3-018592
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.01 **13 Claims**



1. A semiconductor memory comprising:
a plurality of columns each including a plurality of memory cells and a logic circuit;
a column select line, associated with each of said plurality of columns, which delivers a column select signal for selecting one of said columns; and
a plurality of data lines each corresponding to a respective column,
wherein each of said plurality of data lines is selectively connected to an input/output node of one of the memory cells included in a corresponding one of said plurality of columns when the corresponding column is selected by said column select signal, and
wherein said logic circuit includes a first transistor for driving the corresponding data line to a "high" level, indicative of a logic "high" level write data written into a selected memory cell of the corresponding column, during a write mode, upon the corresponding column being selected by said column select signal, and a second transistor for driving the corresponding data line to a "low" level, indicative of a logic "low" level write data written into said memory cell, upon the corresponding column being selected by said column select signal, said first and second transistors of each said corresponding column functioning as bit loads of corresponding ones of said data lines when data is read out from said memory cell included in the corresponding column.

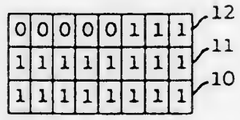
VOL 1159 ISS 2 FE 8 1994 UMI

5,285,415

DATA COUNTING MEMORY CARD AND READER

Eric Depret, Caen, and Laurent Sourgen, Aix en Provence, both of France, assignors to France Telecom, Paris and SGS-Thomson Microelectronics, S.A., Gentilly, both of France

Filed Jun. 22, 1992, Ser. No. 902,209
Claims priority, application France, Jun. 20, 1991, 91 08126
Int. Cl.[5] G06K *5/00*; G06F *15/30*
U.S. Cl. 365—189.01 **4 Claims**



1. A passive unit counting integrated circuit for a portable support comprising:

p memory levels for counting data containing corresponding numbers of memory cases $n_1 \ldots n_p$, a write operation being carried out for a case of an upper rank level when all cases of lower rank level have been enabled, said lower level cases being then disabled,

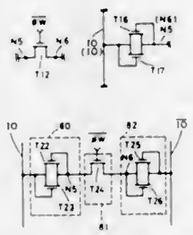
(p-1) ghost levels identical to the p-1 upper rank levels of the p memory levels for counting, the addressing logic of the ghost levels being such that the cases of said ghost levels are addressed in a write phase simultaneously with the respective cases of the corresponding counting levels and, after a write phase, are addressed in an erase phase simultaneously with the cases of the memory levels of lower rank than the rank that has just been enabled.

5,285,416

SEMICONDUCTOR MEMORY DEVICE WITH RESTRICTED POTENTIAL AMPLITUDE OF DATA LINES AND OPERATION METHOD THEREOF

Kenji Tokami, and Takahiro Komatsu, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 916,427
Claims priority, application Japan, Jul. 23, 1991, 3-182301
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—190 **20 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells each storing data, arranged in a plurality of columns and a plurality of rows;

row selecting means for selecting one of said plurality of rows;

column selecting means for selecting one of said plurality of columns;

first and second data lines for externally inputting and outputting data to said semiconductor memory device;

a plurality of bit line pairs provided corresponding to said plurality of columns, each including first and second bit lines;

means responsive to data stored in each memory cell of the row selected by said row selecting means at data reading for driving corresponding ones of said first and second bit lines to complementary potentials;

connecting means for electrically connecting, after said means for driving drives said first and second bit lines to complementary potentials, the first and second bit lines corresponding to the column selected by said column selecting means to said first and second data lines for a prescribed time period, respectively;

equalizing means for setting said first data line and said second data line to equal potential until said corresponding first and second bit lines are electrically connected to said first and second data lines by said connecting means;

control means for controlling difference between potentials of said first data line and said second data line while said corresponding first and second bit lines are electrically connected to said first and second data lines respectively, by said connecting means such that the difference is within a prescribed value; and

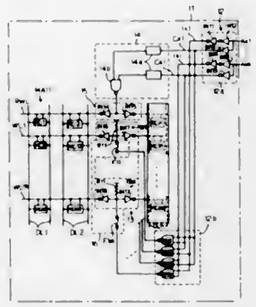
amplifying means for amplifying, after said prescribed time period from electrical connection of said corresponding first and second bit lines to said first and second data lines by said connecting means, potential difference between said first data line and said second data line so as to output a voltage the level of which corresponds to the data stored in each memory cell of the selected row.

5,285,417

SEMICONDUCTOR MEMORY DEVICE HAVING BREAKER ASSOCIATED WITH ADDRESS DECODER CIRCUIT FOR DEACTIVATING DEFECTIVE MEMORY CELL

Keita Maeda, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 723,158
Claims priority, application Japan, Jun. 29, 1990, 2-171474
Int. Cl.[5] G11C *7/00, 29/00*
U.S. Cl. 365—200 **5 Claims**



1. A semiconductor memory device fabricated on a single semiconductor ship, comprising:

a) a plurality of regular memory cells arranged in rows and columns and storing data bits, respectively;

b) a plurality of word lines respectively coupled to said rows of said regular memory cells and selectively driven to an active level so as to allow data bits to be read out from said regular memory cells of the associated row;

c) a word line designating unit responsive to external address bits and producing a decoded signal for designating one of said plurality of word lines;

d) a word line driving unit having a plurality of word line driving circuits associated with said word lines, respectively, and driving one of said plurality of word lines designated by said decoded signal to said active level, each of said word line driving circuits comprising d-1), a first inverter having an input node coupled through an associated breakable element to said word line designating unit, and an output node coupled to a first part of said associated word line, d-2) a second inverter having an input node coupled through said associated breakable element to said word line designating unit, and an output node coupled to a second part of said associated word line, and d-3) a resistive element coupled between a source of power voltage level and the input nodes of said first and second inverters;

e) at least one row of redundant memory cells coupled to a redundant word line and capable of storing data bits, respectively, one of said rows of said regular memory cells being replaced with said at least one row of redundant memory cells when said one of said rows of said regular memory cells contains a defective memory cell;

f) a programming unit operative to see whether or not said one of said rows of said regular memory cells is accessed, said programming unit producing a first controlling signal upon an access to said one of said rows of said regular memory cells;

g) a redundant word line driving unit responsive to said first controlling signal, and driving said redundant word line to said active level for allowing said data bits to be read out from at least one row of said redundant memory cells; and

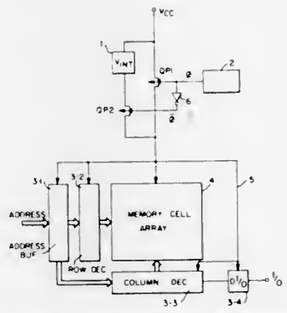
h) a breaker unit having a plurality of said breakable elements provided in association with said plurality of word line driving circuits, respectively, and coupled between said word line designating unit and said plurality of word line driving circuits, one of said breakable elements associated with said one of said rows of said regular memory cells being broken so as to electrically isolate said associated word line driving circuit from said word line designating unit.

5,285,418

SEMICONDUCTOR DEVICE HAVING A TEMPERATURE DETECTION CIRCUIT

Takashi Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,134
Claims priority, application Japan, Aug. 30, 1990, 2-29992
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **5 Claims**



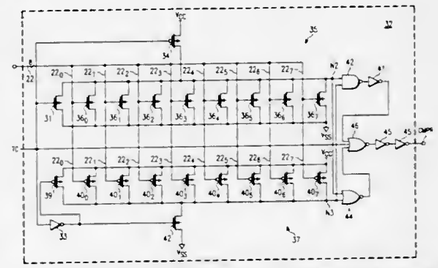
1. A semiconductor device comprising an internal circuit, an external voltage terminal for receiving an external supply voltage, a voltage reduction circuit having an input end coupled to said external voltage terminal and an output end for generating an internal voltage having a smaller value than said external supply voltage, a temperature detection circuit for generating a detection signal of a first level when an ambient temperature is below a predetermined value and a detection signal of a second level when the ambient temperature is at said predetermined value or more, and a selective switch circuit coupled to said external voltage terminal, said internal circuit, said voltage reduction circuit and said temperature detection circuit for providing a first current path between the output end of said voltage reduction circuit and said internal circuit when said detection signal is at said first level and providing a second current path between said external voltage terminal and said internal circuit to supply said external supply voltage to said internal circuit when said detection signal is at said second level.

5,285,419

READ/WRITE MEMORY WITH IMPROVED TEST MODE DATA COMPARE

Narasimhan Iyengar, Plano, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 17, 1991, Ser. No. 809,393
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **17 Claims**



1. In a memory having a parallel test mode in which a plurality of on-chip data lines are compared with one another, a data comparator circuit comprising:

a first logic function, having a first output node, comprising:

a first pull-up device coupled between the first output node and a first bias voltage corresponding to a first logic state, for biasing the first output node to the first bias voltage; and

a plurality of pull-down transistors, each having a conduction path coupled between the first output node and a second bias voltage corresponding to a second logic state, and each having a control terminal coupled to an associated one of said plurality of data lines;

a second logic function, having a second output node, comprising:

a pull-down device coupled between the second output node and the second bias voltage, for biasing the second output node to the second bias voltage; and

a plurality of pull-up transistors, each having a conduction path coupled between the second output node and the first bias voltage, and each having a control terminal coupled to an associated one of said plurality of data lines in such a manner that each of said plurality of data lines turns on either its associated pull-up transistor or its associated pull-down transistor with a digital data state communicated thereon; and

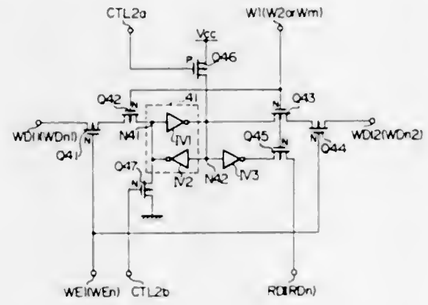
an output logic function, coupled to said first and second output nodes, for generating a pass signal responsive to said first and second output nodes being at the same logic state, and for generating a fail signal responsive to said first and second output nodes being at different logic states.

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5,285,420
SEMICONDUCTOR MEMORY DEVICE HAVING CONCURRENTLY RESETTABLE MEMORY CELLS

Yasuo Shibue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 26, 1990, Ser. No. 617,743
Claims priority, application Japan, Nov. 24, 1989, 1-305490
Int. Cl.[5] G11C *7/00, 5/00*
U.S. Cl. 365—218 4 Claims



1. A semiconductor memory device comprising:

a) a memory cell array having a plurality of static random access memory cells arranged in rows and columns and storing data bits each being of either first or second logic level in a rewritable manner, each of said memory cells including a storage circuit with first and second memory nodes, and first series combination of first and second switching transistors coupled between a first write-in node and said first memory node, a second series combination of third and fourth switching transistors coupled between a second write-in node and said second memory node, and a third series combination of an inverter circuit and a fifth switching transistor coupled between said second memory node and a read-out node, an input data signal and a complementary signal of the input data signal being supplied to said first and second write-in nodes, respectively;

b) a read-out unit operative to selectively read out said data bits from said memory cells;

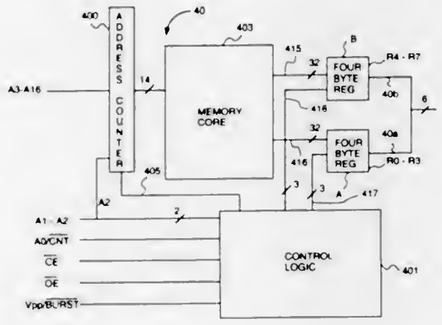
c) a write-in unit operative to selectively write data bits into said memory cells; and

d) a resetting unit operative to concurrently write resetting data bits into said memory cells and having a plurality of resetting circuits respectively coupled to said storage circuits, said resetting unit being responsive to an external reset controlling signal for causing said resetting circuits to concurrently supply said resetting data bits, said resetting unit further having a reset controlling circuit responsive to a reset signal indicative of said reset-mode of operation for driving a controlling signal line and another controlling signal line complementary to said controlling signal line, each of said resetting circuits having a sixth switching transistor of one channel conductivity type coupled between said second memory node and a source of first voltage level and gated by said controlling signal line, and a seventh switching transistor of the opposite channel conductivity type coupled between said first memory node and a source of second voltage level and gated by said another controlling signal line.

5,285,421
SCHEME FOR ELIMINATING PAGE BOUNDARY LIMITATION ON INITIAL ACCESS OF A SERIAL CONTIGUOUS ACCESS MEMORY

Elvan S. Young, Cupertino, and Philip L. Craine, Saratoga, both of Calif., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Continuation of Ser. No. 557,899, Jul. 25, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 865,812
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.04 3 Claims



1. A memory system capable of providing output data upon receiving a two-part address comprising row and column addresses, said memory system comprising:

a memory array having a plurality of memory cells organized into first and second portions of said memory array, each portion of said memory array having a plurality of word lines and a plurality of bit lines, wherein said row address selects one word line in each of said first and second portions of said memory array, wherein each column address selects a plurality of bit lines forming data words, and wherein word lines in said first portion of said memory array are activated independently from word lines in said second portion of said memory array;

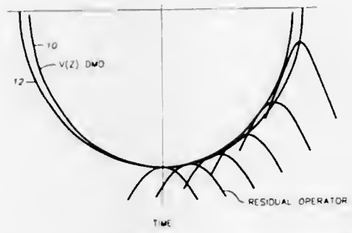
logic means for activating word lines and bit lines in said memory array such that a predetermined number of output data words corresponding to memory cells having contiguous addresses are provided from said memory array, wherein, when a subset of said number of output data words are stored in memory cells in said first portion of said memory array and the remaining of said number of output data words not in said subset are stored in memory cells of said second portion of said memory array, said logic means activates simultaneously in said first portion of said memory array a word line corresponding to said row address and in said second portion of said memory array a word line corresponding to said row address increased by one; and

an internal register for receiving the data words corresponding to contents of memory cells accessed by said word lines in said first and second portions of said memory array, said internal register providing said data words as output data of said memory system one data word at a time in contiguous address order, said internal register providing each data word, after a first data word, at a time interval substantially less than the time interval between said memory system receiving said two-part address and said internal register providing said first data word, regardless of the position of said first data word in said internal register.

5,285,422
METHOD FOR COMPENSATING 3D DMO FOR THE EFFECTS OF AN INHOMOGENEOUS EARTH

Alfonso Gonzalez, Sugar Land; Everett C. Mobley, and Ronald E. Chambers, both of Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 965,483, Oct. 23, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 29,294
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—53 4 Claims



1. A method for three-dimensional migration of seismic data to zero offset in the presence of an inhomogeneous earth, comprising the steps of:

sorting the seismic data into a combined common offset and common azimuth gather;

applying normal moveout to the sorted data gathers, said normal moveout being based upon the average RMS velocity to flat-lying beds corresponding to the recorded travel times;

forming an intermediate data set t_1 by applying a velocity-independent dip-moveout (DMO) operator to the normal-moveout-corrected data gathers;

defining a three-dimensional (3-D) residual DMO operator γ_6;

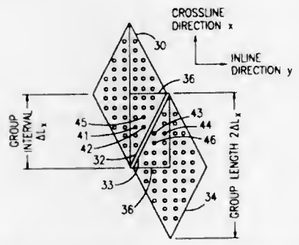
forming a zero-offset data set t_2 by applying said 3-D residual DMO operator to said intermediate data set; and

resorting said zero-offset data set to a common midpoint gather.

5,285,423
METHOD OF BROADLINE SEISMIC DATA ACQUISITION

Robert G. Zachariadis, Dallas, and Sam C. Ting, Carrollton, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 22, 1993, Ser. No. 6,546
Int. Cl.[5] G01V *1/00*
U.S. Cl. 367—56 15 Claims



1. A method of broadline seismic data acquisition, comprising the steps of:

a) positioning a plurality of equal sized areal arrays of seismic detectors along each of a plurality of parallel, broadline receiver lines along the surface of the earth such that array centers along an inline direction of each receiver line are staggered by one-half of an array interval from array centers along the inline direction of adjacent receiver lines,

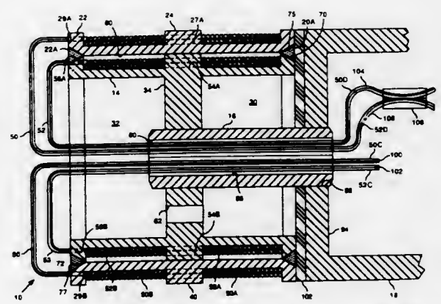
b) elongating each detector array of a receiver line in a cross-line direction to said receiver line to effect an areal array coverage between broadline centers of the adjacent receiver lines on opposite sides of said receiver line, and

c) connecting seismic detectors in each of said arrays in common to a recording means.

5,285,424
WIDE BANDWIDTH FIBER OPTIC HYDROPHONE

A. Douglas Meyer, West Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 28, 1992, Ser. No. 997,237
Int. Cl.[5] G01B *9/02*; H04R *23/00*; H04B *13/00*
U.S. Cl. 367—149 8 Claims



1. A wide bandwidth fiber optic hydrophone, comprising:

an inner mandrel formed generally as a hollow cylinder;

a first optical fiber having a portion formed in an inner fiber coil about the inner mandrel;

an outer mandrel formed generally as a hollow cylinder so that the inner mandrel fits within the outer mandrel;

means for spacing the inner mandrel apart from the outer mandrel to form a cavity between the inner and outer mandrels, the inner fiber coil being within the cavity;

a second optical fiber having a portion formed in an outer fiber coil about the outer mandrel;

means for forming water-tight seals between the inner and outer mandrels; and

a dual optical path fiber optic interferometer that includes the inner fiber coil in a first optical path and the outer fiber coil in a second optical path.

5,285,425
PARKING TIME DISPLAY DEVICE EQUIPPED IN A VEHICLE WITH A MOTOR

Nobuo Morisawa, Akashi, Japan, assignor to Morisawa & Co., Ltd., Osaka, Japan

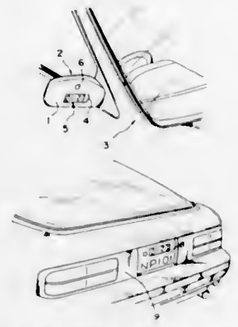
Filed May 20, 1991, Ser. No. 702,379
Claims priority, application Japan, Jul. 13, 1990, 2-185517
Int. Cl.[5] G04B *37/00*; G04F *8/00*
U.S. Cl. 368—10 10 Claims

1. In combination with a vehicle, a parking time display device for displaying the time during which the vehicle has been parked, said device comprising:

means for displaying a parking time of said vehicle at a location observable from a position outside of said vehicle, said display means comprising electronic digital means for displaying a numerical indication in a plane which is substantially flush with an exterior surface of said vehicle, said displaying means comprising a pilot lamp positioned on a body of said vehicle for indicating that said display device is in operation, means for automatically turning said pilot lamp ON when said vehicle is parked, said

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vehicle comprising a side mirror mount and said displaying means is positioned within an exterior surface of said side mirror mount, detecting means for detecting a parked state of said vehicle and for outputting a detection signal



when said parked state is detected, counting means for counting time, and control means for starting said counting means when said detection signal is output from said detection means, for enabling said displaying means to display the time counted by said counting means.

5,285,426

ROLLERBALL CONTROL ARRANGEMENT FOR A TIMEPIECE ADAPTED TO RECEIVE RADIO BROADCAST MESSAGES

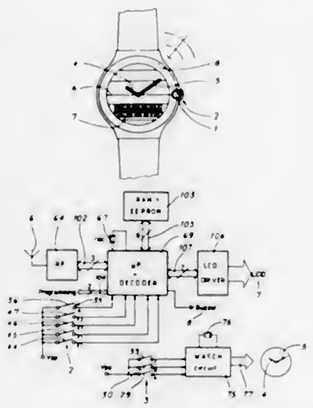
Viron Teodoridis, Hauterive, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Aug. 2, 1993, Ser. No. 100,240

Claims priority, application Switzerland, Aug. 3, 1992, 02431/92

Int. Cl.[5] G04B *47/00*; **G04C** *17/00*; **H04B** *7/00*

U.S. Cl. 368—10 **12 Claims**



1. A timepiece including a timekeeper for displaying at least the hour and the minute by means of hands, a receiver for radio broadcast messages made up of signs, a memory for storing said messages, a cell for displaying at least said messages, an acoustic transducer and a control arrangement, which at least includes a rollerball emerging partially from the caseband with which the timepiece is provided, said rollerball being adapted to be manually rolled in a first direction thanks to which at least the messages contained in the memory can be displayed one after the other, and in a second direction, substantially perpendicular to the first, thanks to which at least functions of turn-on, turn-off or entry into a special operating mode of the receiver can be chosen, said rollerball furthermore being adapted to be manually pressed against the return force of a spring in a third direction, perpendicular to the other two, thanks to which at least the displayed message can be erased or protected.

5,285,427

TIMEPIECE IN WHICH THE HOURS DISPLAY MAY BE INDEPENDENTLY MODIFIED, IN PARTICULAR WHEN PASSING TO ANOTHER TIME ZONE

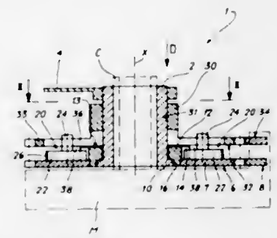
Frank Vaucher, Cormoret, Switzerland, assignor to Compagnie des Montres Longines, St. Imier, Switzerland

Filed May 21, 1993, Ser. No. 65,796

Claims priority, application Switzerland, May 21, 1992, 01 646/92-8

Int. Cl.[5] G04B *19/22*, *18/00*

U.S. Cl. 368—21 **8 Claims**



1. A timepiece including:

a first pipe, designated inner pipe, constituting the hours pipe and supporting a first outwardly toothed wheel, designated lower wheel,

a second pipe designated outer pipe, mounted on the first and supporting a second outwardly toothed wheel, designated upper wheel, arranged above the lower wheel,

a star exhibiting outer teeth and which is mounted on the hours pipe being fixed in rotation to the lower wheel supported by such pipe,

at least one driving roller cooperating with the teeth of the star and engaged in at least one radial slot formed in the upper wheel, and

elastic means formed so as to maintain and return the roller within the teeth of the star,

one of the two wheels constituting an hours wheel in mesh with a dial train while the other wheel forms a correction wheel capable of acting on the hours pipe so as to modify the hour displayed,

the lower wheel being mounted to be free in rotation relative to the inner hours pipe and constituting said hours wheel while the upper wheel forms said correction wheel.

5,285,428

SWIMMER'S LAP COUNTER

Eric Rosow, 42 Baldwin Ct., Newington, Conn. 06111, and Saunders Whittlesey, 89 Walbridge Rd., West Hartford, Conn. 06119

Filed Nov. 15, 1991, Ser. No. 792,933

Int. Cl.[5] G04B *19/24*; **G04F** *8/00*

U.S. Cl. 368—107 **14 Claims**

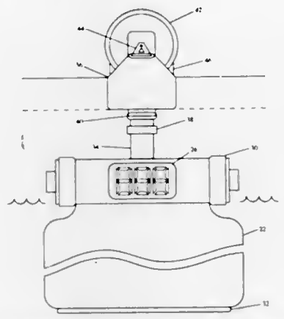
1. A portable device for registering the number of laps traversed by a swimmer in a pool, the device comprising:

a. a waterproof housing;

b. a counting circuit contained within said housing;

c. display means contained within the housing and electrically coupled to the counting circuit;

d. a rollable touch pad comprising a substantially planar sheet of piezoelectric material electrically coupled to the counting circuit, such that deformation of the touch pad



increments the counting circuit; and said pad and said housing forms a unitary waterproof device and

e. a flexible bracket adjustably coupled to the housing, the bracket being of sufficient dimension and rigidity to conform to pool-edge coping and to retain position by frictional engagement with the coping.

5,285,429

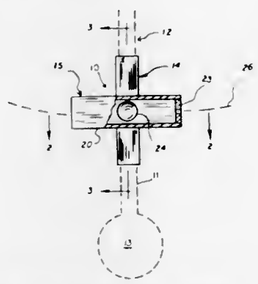
SOUND-PRODUCING ATTACHMENT FOR A CLOCK PENDULUM

Lloyd S. Shockley, 840 Apperson Dr., Salem, Va. 24153, and Norman S. Shockley, 1218 Grumman Dr., Richmond, Va. 23229

Filed Sep. 7, 1993, Ser. No. 116,576

Int. Cl.[5] G04B *17/02*; **G09F** *19/00*

U.S. Cl. 368—179 **7 Claims**



1. A sound producing device for use with a clock having a simulated pendulum, said device comprising:

a) elongated attachment means for securement to said pendulum, and having an exterior surface directed away from said pendulum,

b) a cage member elongated upon a center axis between opposed end extremities, and attached to said exterior surface at the midpoint between said extremities and in a manner disposing said axis orthogonally to the direction of elongation of said attachment means,

c) hard abutment closures disposed at each extremity of said cage member, and

d) a ball held within said cage and adapted to roll into contact with each abutment closure at the apogee of each swing of said pendulum.

5,285,430

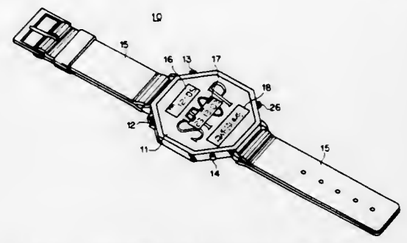
BEHAVIOR MODIFICATION WRISTWATCH

Neil W. Decker, 3635 N. Eagle Rd., Eagle, Id. 83616

Filed Dec. 28, 1992, Ser. No. 997,206

Int. Cl.[5] G04B *45/00*

U.S. Cl. 368—281 **3 Claims**



1. A behavior modification aid which comprises:

a wristwatch including a watch band and a watch body having an octagon shaped perimeter and being red in color and having the word STOP thereon to resemble a stop sign;

a first display means for displaying the time of day being fixed on the watch body;

a count-up display means for displaying elapsed time in terms of at least days being fixed on the watch body;

an electronic circuit for measuring the time of day being operably attached to the first display means to display the time of day thereon;

count-up counter means being operably attached to the circuit for counting elapsed time from a selected point in time;

the counter means further being operably attached to the count-up display means to display the time elapsed since the selected point in time; and

reset means being operably attached to the count-up counter means for resetting the elapsed time to zero and resetting the selected point in time a multi-character alpha display means being fixed to the watch body for displaying words of positive reinforcement; and means for generating words of positive reinforcement responsive to elapsed periods of time.

5,285,431

INFORMATION STORAGE DEVICE WITH HEAD POSITION DETECTION OUTSIDE A USER UTILIZABLE REGION AND AN OPTICAL DISK DRIVE DEVICE HAVING TARGET VELOCITY-CONTROLLED HEAD ACTUATION

Masaharu Ogawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1990, Ser. No. 582,647

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—32 **20 Claims**

1. An optical disk drive device comprising:

an optical head which forms a light spot on an optical disk with multiple tracks, and includes a photodetector which receives light reflected from said tracks and provides a photoelectric conversion signal, and a movable part including a lens for focusing said light spot on said optical disk;

a head actuator which is connected to said optical head and which, when said optical head accesses said tracks of said optical disk, moves said movable part in a radial direction of said optical disk;

a motion detection means which is connected to said optical head, and which receives said photoelectric conversion signal produced by said photodetector and produces as output a track-traverse motion signal representing the track-traverse motion of said light spot;

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an acceleration detecting means for detecting the acceleration of said head actuator and producing an output signal representative thereof;

a target velocity generating means connected to said acceleration detection means for generating a track-traversing target velocity determined by the output of acceleration detecting means and said photoelectric conversion signal;

a state-observer means which is connected to said acceleration detecting means and said motion detecting means, and which receives as input the output signals from said acceleration detecting means and said motion detecting means, and produces as output an estimated track-traverse velocity of said light spot; and

a head actuator drive circuit connected to said target velocity generation means and said state-observer means for controlling said head actuator such that the estimated velocity coincides with said target velocity.

5,285,432

TRACK JUMP CONTROL CIRCUIT

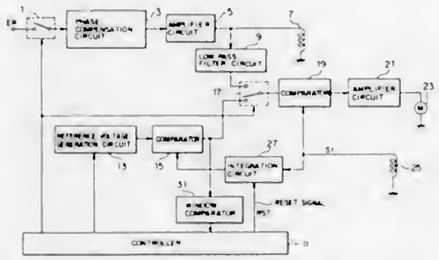
Hiroshi Nakane, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 604,466, Oct. 29, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,053

Claims priority, application Japan, Oct. 31, 1989, 1-285912

Int. Cl.[5] G11B *21/10*

U.S. Cl. 369—33 **31 Claims**



27. A track jump control circuit, comprising:

a pick-up for reading information stored on a disc;

moving means for moving said pick-up in a radial direction of said disc;

driving means for generating a driving signal and for driving said moving means according to said driving signal;

speed detecting means for detecting a moving speed of said pick-up and for outputting a speed signal;

moving amount computing means for generating a signal according to a moving amount of said pick-up;

means for generating a reference signal according to a distance over which said pick-up is moved in a track jump mode;

comparing means for comparing said reference signal with said signal according to said moving amount and for sending a continuously variable difference signal to said driving means;

addition means for adding said difference signal to said speed signal; and

stopping means for stopping sending said difference signal to said driving means when an output signal of said addition means is in a predetermined range.

5,285,433

APPARATUS WITH POSITION DETECTING MEANS FOR RECORDING AND/OR REPRODUCING DATA ON AND/OR FROM OPTICAL CARD

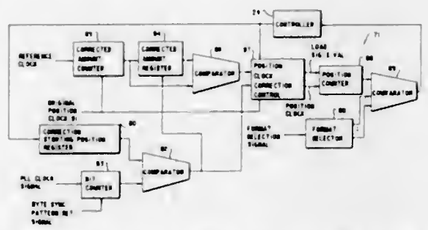
Mitsuo Oshiba, and Toshio Horiguchi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 654,803, Feb. 13, 1991, abandoned. This application Aug. 5, 1991, Ser. No. 740,553

Claims priority, application Japan, Aug. 6, 1990, 2-208382

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.26 **28 Claims**



1. An apparatus for recording and/or reproducing data on and/or from an optical card comprising:

an optical head including an objective lens for projecting a light beam onto the optical card;

driving means for moving the optical card or optical head relative to each other in a track direction in which tracks on the optical card extend;

position detecting means for detecting a relative position of the optical card and the optical head viewed in said track direction to derive a position signal indicating relative position at any location in the track direction without any need for pre-recorded sector marks; and

controlling means for receiving said position signal to derive a control signal which indicates a point of a unit area on the optical card for which the data recording and/or reproducing is to be begun.

5,285,434

OBJECTIVE LENS DRIVING APPARATUS FOR OPTICAL PICKUP

Chun-dong Kim; Yeong-Kuk Yun, and Hak-hyun Jang, all of Suwon, Rep. of Korea, assignors to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Apr. 7, 1992, Ser. No. 864,657

Claims priority, application Rep. of Korea, May 13, 1991, 91-7717

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.14 **18 Claims**

14. An objective lens driving apparatus for driving an objective in a first direction parallel an axis of rotation of an optical disk and a second direction parallel to a surface the optical disk, said objective lens driving apparatus comprising:

a lens holder, having four sides disposed in said first direction, for holding the objective lens;

a first permanent magnet located on a first side of said four sides of said lens holder;

a second permanent magnet located on a second side of said four sides of said lens holder, said second side of said lens holder being opposite said first side of said lens holder;

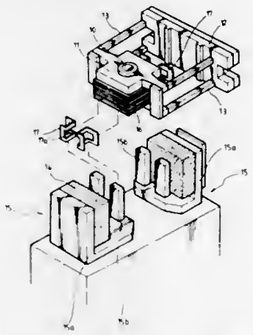
a first outer yoke for retaining said first permanent magnet;

a second outer yoke for retaining said second permanent magnet;

a first pair of inner yoke sections located between said first permanent magnet and said lens holder, each one of said first pair of inner yoke sections having a rectangular cross-section and four sides disposed in said first direction;

a second pair of inner yoke sections located between said second permanent magnet and said lens holder, each one of said second pair of inner yoke sections having a rectangular cross-section and four sides disposed in said first direction;

a focusing coil, wound around said four sides of said lens holder, for driving said lens holder in said first direction;



a first pair of tracking coils, each one of said first pair of tracking coils attached to said focusing coil on said first side of said lens holder, being spirally wound to form a rectangular shape, then twice bent at right angles, to wrap around a first, second and third side of said four sides of a corresponding one of said first pair of inner yoke sections; and

a second pair of tracking coils, each one of said second pair of tracking coils attached to said focusing coil on said second side of said lens holder, being spirally wound to form a rectangular shape, then twice bent at right angles, to wrap around a first, second and third side of said four sides of a corresponding one of said second pair of inner yoke sections.

5,285,435

CONTROLLING POSITIONING OF RECORDING/REPRODUCING HEAD BY COMBINING A POSITION DIFFERENTIATION AND A DRIVE CURRENT INTEGRATION

Masahiro Takasago, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,507

Claims priority, application Japan, Aug. 1, 1991, 03-214110

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—44.280 **10 Claims**

1. An information recording/reproducing device comprising:

a head for recording/reproducing information on/from a disk recording medium;

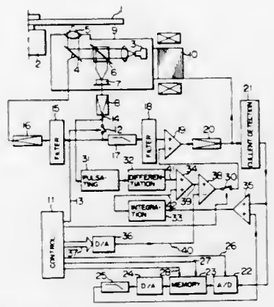
head driving means for positioning the head on a target track of the recording medium; and

speed control means including

means for storing data relative to track swing over at least one rotation section of the recording medium,

means for differentiating, in seeking, position information obtained when the head traverses a track on the recording medium thereby to introduce first head speed information for the track,

means for integrating, in seeking, the driving current for the head driving means thereby to introduce head speed information for a fixed component and correcting the introduced head speed information using the data relative to



the track swing to provide second head speed information for the track, and

means for composing the first and second speed information into third head speed information for the track, thereby controlling the head driving means so that the third head speed information coincides with a target speed signal.

5,285,436

METHOD OF AVOIDING MEDIUM DEFECTS IN RECORD/REPRODUCE APPARATUS

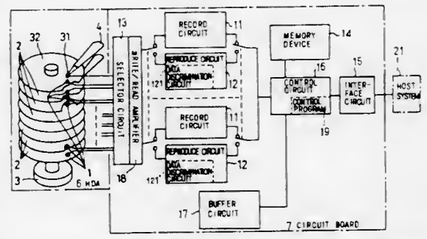
Yoshihiro Moribe, Chigasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 905,103

Claims priority, application Japan, Jun. 27, 1991, 3-157172

Int. Cl.[5] G11B *27/36*

U.S. Cl. 369—58 **12 Claims**



1. A record and reproduce apparatus comprising a plurality of disk type record media, rotation means for rotating said plurality of disk type record media in synchronism with one another, and a plurality of heads which are respectively disposed in correspondence with record surfaces of said plurality of disk type record media and which are simultaneously accessible to said record surfaces, wherein said record surfaces of said plurality of disk type record media include k (being a natural number) ordinary record surfaces and n (being a natural number) spare record surfaces to be substituted for said k ordinary record surfaces, each of said record surfaces has a plurality of record areas which are respectively specified by predetermined area numbers and the same area number is assigned to each of those record areas of said record surfaces which can be simultaneously accessed in parallel by said plurality of heads;

said record and reproduce apparatus including selection means, record and reproduce means, and control means

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for appointing k record surfaces for either of record or reproduce modes to said selection means and for appointing an area number of the record areas for the either mode in said k appointed record surfaces to said record and reproduce means;

said selection means connecting said record and reproduce means with k heads which correspond respectively to said k record surfaces appointed by said control means;

said record and reproduce means operating in said record mode to write data into those k record areas of said k record surfaces which have said area number appointed by said control means, in parallel by the use of said k heads connected thereto, and operating in said reproduce mode to read data from those k record areas of said k record surfaces which have said area number appointed by said control means, in parallel by the use of said k heads connected

said control means operating in said either mode to judge said area number of said record areas to-be-accessed, record areas having medium defects among those k record areas to-be-accessed of said k ordinary record surfaces which have said area number, and the number of the defective record areas;

whereupon on condition that none of said k record area is defective, said control means appoints said k ordinary record surfaces to said selection means, and it appoints the judged area number to said record and reproduce means;

on condition that m (being a natural number which satisfies $m>n$) record areas among said k record areas are defective, said control means appoints said k ordinary record surfaces to said selection means, and it alters said record areas to-be-accessed and then appoints area number of new record areas after the alteration to said record and reproduce means; and

on condition that j (being a natural number which satisfies $j \leq n$) record areas among said k record areas are defective, said control means appoints the nondefective ordinary record areas and j record areas among said n spare record areas to said selection means, and it appoints the judged area number to said record and reproduce means.

5,285,437

AUDIO DEVICE HAVING CONTROL FUNCTION WITH USE OF CARD

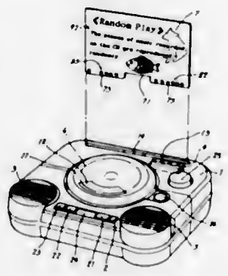
Tokuo Yokota, Neyagawa; Keimi Fukui, Sakai, and Katsuyuki Matsumoto, Shijonawate, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 11, 1991, Ser. No. 712,274

Claims priority, application Japan, Jan. 12, 1990, 2-154671; Dec. 12, 1990, 2-401669; Jan. 16, 1991, 3-3184

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—64 **14 Claims**



1. An audio device controllable with cards for reproducing a plurality of items of sound data, said audio device comprising:

a card having at a lower end thereof at least one operation identifying means related to a specific reproduction operation and said card bearing on respective surfaces first and second items of visual data in accordance with content of the reproduction operation;

a card inlet formed long and narrow on an upper side of a cabinet for inserting thereinto said lower end of said card;

card holding means, provided in said cabinet, for holding said card, inserted in said card inlet, in a standing position;

sensor means for detecting said operation identifying means of said card, inserted in said card inlet, to produce an identifying signal in accordance with results of the detection; and

control means for recognizing said specific reproduction operation identified by said operation identifying means based on said identifying signal from said sensor means and effecting control to realize said specific reproduction operation.

5,285,438

MOTIONLESS PARALLEL READOUT HEAD FOR AN OPTICAL DISK RECORDED WITH ARRAYED ONE-DIMENSIONAL HOLOGRAMS

Philippe J. Marchand, San Clemente; Ashok V. Krishnamoorthy, San Diego, both of Calif.; Pierre Ambs, Tolouse, France; Kristopher Urquhart, San Diego, Calif.; Sadik C. Esener, Solana Beach, Calif., and H. Sing Lee, Del Mar, Calif., assignors to Regents of the University of California, Alameda, Calif.

Filed Oct. 31, 1991, Ser. No. 785,742

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—103 **50 Claims**



1. A parallel readout optical disk system comprising:

an optical disk having an active surface encoded with a multiplicity of data blocks each of which is in the form of a mathematically one-dimensional hologram, each plurality of data blocks that in combination represent one word being positionally distributed, and positionally shifted one to the next, radially along the disk's active surface to fit a complete radius;

means for simultaneously illuminating the encoded optical disk along a radius within which the plurality of holographic data blocks constituting one word are fitted;

optical transform means responsive to the illuminated plurality of holographic data blocks for transforming the combined holographic images into a light beam upon which the word is encoded in parallel.

5,285,439

HIGH DENSITY CED DATA STORAGE

Jon K. Clemens, San Carlos, Calif., assignor to New Vision Technologies, Inc., Bloomington, Minn.

Filed Jun. 8, 1992, Ser. No. 894,813

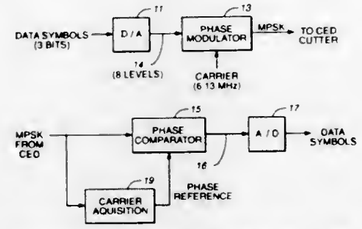
Int. Cl.[5] G11B *9/06*

U.S. Cl. 369—126 **22 Claims**

1. A method of recording digital data at high density on a disk, comprising the steps of:

encoding data s ls by assigning each data symbol a phase representation in terms of a carrier signal;

physically altering said disk in such a manner as to represent said carrier signal; and



at defined intervals, changing a phase angle of said carrier signal by one of M possible phase increments, where M equals two to the power of a number of data bits in said data symbols, whereby $\log_2 M$ data bits are recorded per each of said defined intervals.

5,285,440

MAGNETO-OPTIC DISK

Nobuhide Matsuda, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

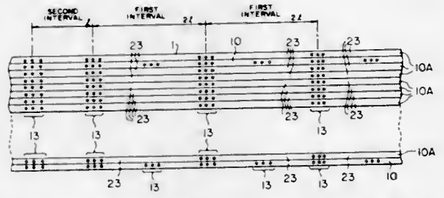
Continuation of Ser. No. 439,370, Nov. 13, 1989, abandoned.

This application Dec. 11, 1992, Ser. No. 945,859

Claims priority, application Japan, Mar. 18, 1988, 63-66618; Mar. 18, 1988, 63-66620

Int. Cl.[5] G11B *7/24, 13/04*

U.S. Cl. 369—275.3 **4 Claims**



1. A magneto-optic disk comprising: a substrate and a recording layer supported thereon and having a plurality of first tracks each having (a) a plurality of address information blocks recorded thereon, said address information blocks including track information and sector information, said plurality of address information blocks being arranged at equal first intervals at some portions of each of said tracks and at a second interval unequal to said first intervals at another portion of each of said tracks, and (b) a plurality of data portions located in areas between said address information blocks arranged at said first intervals.

5,285,441

ERRORLESS LINE PROTECTION SWITCHING IN ASYNCHRONOUS TRANSER MODE (ATM) COMMUNICATIONS SYSTEMS

Narendra K. Bansal, Londonderry, N.H.; Sid Chaudhuri, East Brunswick, N.J.; Shahrukb S. Merchant, Londonderry, N.H., and Donald J. Wemple, Plymouth, Vt., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 17, 1992, Ser. No. 852,604

Int. Cl.[5] H04L *1/22*

U.S. Cl. 370—16 **47 Claims**

1. An errorless line protection apparatus, comprising:

a means for receiving data from an active line;

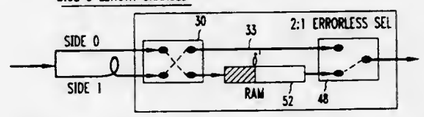
a means for receiving data from a standby line;

a means for determining whether the data on the active line leads or lags the data on the standby line;

a means for selecting one of the data on the active line or the data on the standby line for connecting that selected data to an output line;

a switching means responsive to the determining means for

(d) SWITCHED ERRORLESSLY FROM SIDE 1 TO SIDE 0 EVEN AFTER SIDE 0 LENGTH CHANGED



directing leading data to a lead channel between the switching means and the selection means, the lead channel containing a controllable amount of time delay up to the maximum amount that the leading data is expected to lead the lagging data and for directing lagging data to a lag channel directly connecting the switching means to the selecting means.

5,285,442

TRAFFIC SUPERVISORY METHOD AND TRAFFIC SUPERVISORY APPARATUS

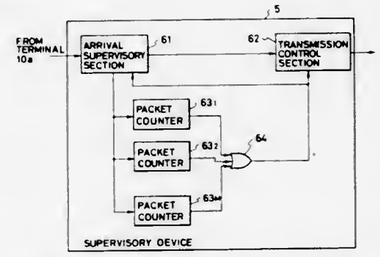
Kazuaki Iwamura, and Yasuhiro Katsube, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1991, Ser. No. 759,569

Claims priority, application Japan, Sep. 29, 1990, 2-258842

Int. Cl.[5] H04J *1/15, 3/14*

U.S. Cl. 370—17 **5 Claims**



1. A traffic supervisory method for supervising a group of packets generated in a terminal according to an assigned traffic characteristic in which a maximum number of packets which is generated within a regular period of time T is set at N, where N is a positive number, comprising the steps of:

defining a first set of parameters $\alpha_1, \alpha_2, \ldots \alpha_M$, for a number M, where $M>2$, where respective parameters of said first set are greater than one and arranged in an ascending order, and a second set of parameters $\beta_1, \beta_2, \ldots \beta_M$, said second set of parameters being arranged in a descending order so that a last one of the second set of parameters, β_M, equals zero;

respectively counting the number of packets which are generated within regular periods of time expressed by $\alpha_i T$, where $i=1, 2, \ldots, M$;

respectively calculating $\alpha_i(1+\beta_i)\cdot N$ where $i=1, 2, \ldots, M$;

evaluating whether the packets counted in the above counting step violate the assigned traffic characteristic whenever the packets generated within the regular period of time T exceed $\alpha_i(1+\beta_i)\cdot N$ within at least one regular period of time $\alpha_i T$;

transmitting the packets evaluated in the evaluating step as

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violating the traffic characteristic with an identification tag; and

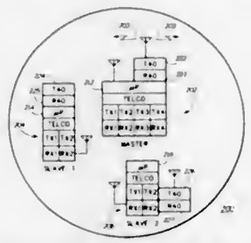
prioritizing rejection of the tagged packets.

5,285,443

METHOD AND APPARATUS FOR SYNCHRONIZING A TIME DIVISION DUPLEXING COMMUNICATION SYSTEM

Stelios J. Patsiokas, Plantation; Gary S. Lobel, and Craig A. Lee, both of Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 25, 1992, Ser. No. 935,073
Int. Cl.[5] H04B *7/26*; **H04M** *11/00*
U.S. Cl. 370—29 **17 Claims**



10. A telepoint communication system capable of synchronizing time division duplexing communication between a plurality of cordless telephone (CT) handsets and a plurality of base units geographically located within a defined coverage area, the telepoint communication system comprising:

a first base unit located within a defined coverage area, comprising:

first controlling means for controlling over-the-air time division duplexing communication for the first base unit, the over-the-air time division duplexing communication being synchronized to a synchronization timing signal at the first controlling means;

first transceiving means electrically coupled to the first controlling means for communicating over-the-air time division duplexing communication between the first base unit and at least one CT handset; and

first synchronization transceiving means capable of transmitting and receiving signals over-the-air with at least one other base unit of the plurality of base units within the defined coverage area, the first synchronization transceiving means being electrically coupled to the first controlling means for transmitting over-the-air the synchronization timing signal from the first base unit to at least one other base unit of the plurality of base units within the defined coverage area;

a second base unit located within the defined coverage area, comprising:

second controlling means for controlling over-the-air time division duplexing communication for the second base unit;

second transceiving means electrically coupled to the second controlling means for communicating over-the-air time division duplexing communication between the second base unit and at least one CT handset; and

second synchronization transceiving means capable of transmitting and receiving signals over-the-air with at least one other base unit of the plurality of base units respectively within the defined coverage area, the second synchronization transceiving means being electrically coupled to the second controlling means for receiving the synchronization timing signal transmitted over-the-air by the first synchronization transceiving means and coupling the synchronization timing signal to the second controlling means for synchronizing time division duplexing communication to the synchronization timing signal at the second controlling means, and

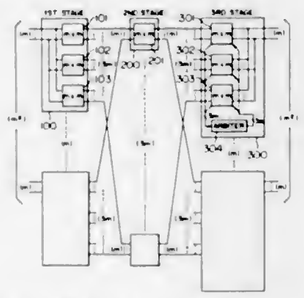
first and second CT handsets for communicating over-the-air time division duplexing communication with at least one of the plurality of base units within the defined coverage area, the first transceiving means communicating over-the-air with the first CT handset and the second transceiving means communicating over-the-air with the second CT handset, the time division duplexing communication between the first and second CT handsets and the first and second transceiving means, respectively, being synchronized to the synchronization timing signal.

5,285,444

MULTI-STAGE LINK SWITCH

Yoshito Sakurai, and Shinobu Gohara, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 569,026, Aug. 17, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,273
Claims priority, application Japan, Feb. 9, 1990, 2-030939
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **5 Claims**



1. A multi-stage link switch for switching between a plurality of first, second and third switch elements, each of said first, second and third switch elements having a first predetermined plurality of input terminals and a second predetermined plurality of output terminals, said switch elements being connected in multiple stages, wherein communication information is switched between a plurality of incoming highways and a plurality of outgoing highways by information included in each of a plurality of cells, each cell being of a fixed length and inputted from each of said incoming highways, said cell having a header portion and a data portion including said communication information, said information causing switching being included in the header portion of the cell, comprising:

a primary stage including a plurality of primary stage switch units each including a plurality of said first switch elements, said primary stage switch unit having a plurality of input terminals each connected to one of said incoming highways, each of said input terminals of said primary stage switch unit, being connected to one of said incoming highways, is further connected to one of said input terminals of each of said first switch elements of said primary stage switch unit, said output terminals of said plurality of said first switch elements being provided as output terminals of said primary stage switch unit;

an intermediate stage including said plurality of second switch elements, each of said input terminals of each of said plurality of second switch elements being connected to a corresponding one of said output terminals of a corresponding one of said plurality of said first switch elements of said primary stage switch units of said primary stage; and

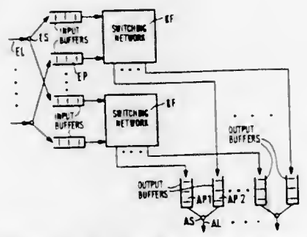
a last stage including a plurality of last stage switch units each including a plurality of said third switch elements, said last stage switch unit having a plurality of input terminals each being provided by one of said input terminals of said plurality of said third switch elements of said last stage switch unit, each of said input terminals of each of said plurality of said third switch elements of said last stage switch unit is connected to a corresponding one of the output terminals of a corresponding one of said plurality of second switch elements of said intermediate stage, said last stage switch unit having a plurality of output terminals each connected to one of said outgoing highways, each of said output terminals of said each of said plurality of said third switch elements is connected to one of said output terminals of said last switch unit, wherein each third switch element of each last stage switch unit of said last stage includes detection means for detecting whether or not a cell is to be outputted to an output terminal of said third switch element by determining whether said third switch element is in a queued state indicating that said third switch element has a cell to be output, and generating a detection signal for said output terminal of said third switch element, said last stage switch unit further comprising control means for responding to the detection signals from each of said detection means of said plurality of said third switch elements to control output of cells from said plurality of said third switch elements by indicating a third switch element of said plurality of said third switch elements from which a cell is to be output.

5,285,445

SWITCHING NETWORK AND SWITCHING NETWORK CONTROL FOR A SWITCHING NODE IN A WIDEBAND TRANSMISSION SYSTEM

Ralf Lehnert, Kalchreuth, and Wolfgang Kowalk, Nuremberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 762,032, Sep. 16, 1990, which is a continuation of Ser. No. 630,363, Dec. 18, 1990, which is a continuation of Ser. No. 282,084, Dec. 9, 1988. This application Nov. 24, 1992, Ser. No. 982,103
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1987, 3742748
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **9 Claims**



1. A switching node for use in a wideband transmission system which transfers messages through wideband transmission paths according to an asynchronous time-division multiplex method, the node comprising:

a) a plurality of input buffers functioning as queue buffers;

b) a switching network coupled with outputs of the input buffers; and

c) a plurality of incoming circuits, each incoming circuit

i) having a respective plurality of outputs for coupling with inputs of a subset of the input buffers, and

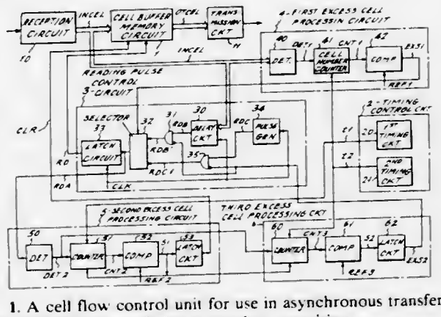
ii) being operative for demultiplexing and transferring blocks to its subset of input buffers.

5,285,446

CELL FLOW CONTROL UNIT AND METHOD FOR ASYNCHRONOUS TRANSFER MODE SWITCHING NETWORKS

Akifumi Yonehara, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 26, 1991, Ser. No. 798,111
Claims priority, application Japan, Nov. 27, 1990, 2-321196
Int. Cl.[5] H04L *12/26, 12/56*
U.S. Cl. 370—60.1 **10 Claims**



1. A cell flow control unit for use in asynchronous transfer mode (ATM) transmission networks, comprising:

first means for temporarily storing a plurality of ATM cells each of which has a predetermined number of bits and is transmitted at any time interval via at least one of an input virtual path and an input virtual channel in a sequence of transmission;

second means for generating first and second timing pulses to define respectively a first period of a predetermined length and a second period equal in length to an integral multiple of the predetermined length;

third means for generating a first pulse sequence to be fed to said first means to read said ATM cells out of said first means and transferring the ATM cells to an output virtual path and at least one of an output virtual channel and a self-routing switch, and a second pulse sequence indicating how many times said ATM cells have been read out of said first means;

fourth means responsive to said first timing pulse for counting the pulses of said second pulse sequence to generate a first count, comparing said first count and a first reference value corresponding to the maximum number of cells which can be transferred within said first period and, when the first count and the first reference value are found identical, initializing said first means;

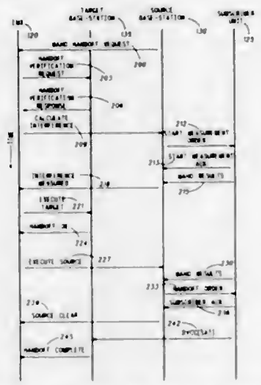
fifth means responsive to said second timing pulse for counting the number of said ATM cells to generate a second count, comparing said second count and a second reference value corresponding to the maximum number of cells which can be transferred within said second period, generating a first excess cell detection signal when the second count and the second reference value are found identical, supplying the first excess cell detection signal to said third means, and controlling said third means so as to cause said third means to be responsive to said first excess cell detection signal for generating said first and second pulse sequences at time intervals corresponding to the average for said first period of said maximum number of cells which can be transferred within said second period; and

sixth means responsive to said second timing pulse for counting the pulses of said second pulse sequence to generate a third count, comparing said third count and a third reference value corresponding to the maximum number of cells which can be transferred within said second period, generating a second excess cell detection signal when the third count and the third reference value are found identi-

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cal, and supplying the second excess cell detection signal to said third means to stop the generation of said first and second pulse sequences.

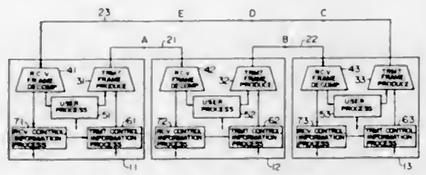
5,285,447
TARGET CHANNEL VERIFICATION IN A RADIOTELEPHONE SYSTEM
Thomas G. Hulsebosch, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 678,517, Apr. 1, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,593
Int. Cl.[5] H04B *7/26*
U.S. Cl. 370—69.1 **32 Claims**



1. A radiotelephone system having target channel verification before communication transfer, the radiotelephone system having a source base-station communicating with a subscriber unit on a source channel, the source base-station coupled to a plurality of target base-stations, the radiotelephone system comprising:
a plurality of target base-stations for transmitting on a plurality of signalling channels and for transmitting on a target channel;
a subscriber unit for measuring first signal quality values of said transmissions on said plurality of signalling channels and a second signal quality value of said transmission on said target channel; and
a source base-station for selecting one of said plurality of target base-stations to transmit on said target channel based on said first signal quality value measurement, and
for transferring communication of the subscriber unit from the source channel to the target channel when said second signal quality value is greater than a transfer threshold.

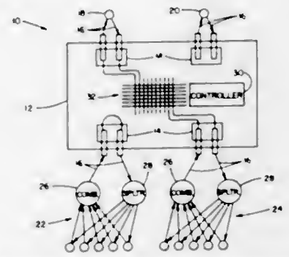
5,285,448
TRANSMISSION SYSTEM OF SYSTEM CONTROL INFORMATION IN A RING LAN SYSTEM
Haruyuki Nakayama; Fumio Sukegawa, both of Ebina, and Yoshihiro Takiyasu, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 25, 1991, Ser. No. 661,063
Claims priority, application Japan, Mar. 1, 1990, 2-50647
Int. Cl.[5] H04J *3/02, 3/12*
U.S. Cl. 370—85.15 **2 Claims**

1. A data transmission device for transmitting data frames on a transmission path during normal operation and during a failure on the transmission path, and adapted for connection in a ring LAN system having a plurality of data transmission devices connected to the transmission path, the data transmission device comprising:
means for receiving a first data transmission frame comprising first and second system control information and user information, the first and second system control information being required for controlling and using the ring LAN system, the first system control information not required to be relayed to an adjacent data transmission device and the second system control information required to be relayed to the adjacent data transmission device;
means for decomposing the first data transmission frame into the first and second system control information and the user information;



means for processing the user information;
means for processing the first system control information and the second system control information;
means for composing a second data transmission frame comprising the processed user information and the second system control information; and,
means for relaying the second data transmission frame to the adjacent data transmission device whereby the first system control information is not relayed to the adjacent data transmission device thus resulting in efficient use of the second data transmission frame.

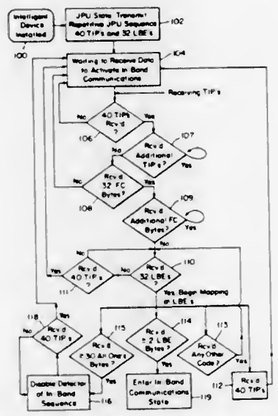
5,285,449
PROTOCOL FOR HYBRID LOCAL AREA NETWORKS
Christos J. Georgiou, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 3, 1991, Ser. No. 679,874
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.13 **39 Claims**



1. A local area network for providing non-blocking connectivity without data message store and forwarding comprising:
a. a switching element;
b. a plurality of ports interconnectable through said switching element, with each port having means for detecting collisions between data messages transmitted therethrough;
c. at least one subnetwork connected to one of said ports and having at least one computer equipment station served by the subnetwork, with each subnetwork being used to provide connections to a number of stations served by the subnetwork;
d. a switch controller means for controlling connections procided by said switching element so that data messages

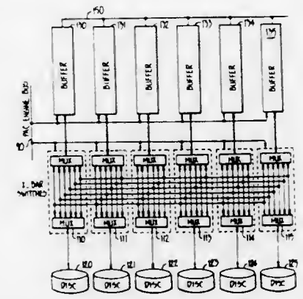
can be routed between said ports and within said subnetworks; and
e. further wherein each subnetwork has an optical coupler for transmitting data messages for stations for which it provides connections, each subnetwork optical coupler comprising an optical splitter for transmitting data messages from the port to the subnetwork devices, and an optical combiner for coupling all incoming data messages from the subnetwork devices.

5,285,450
INBAND COMMUNICATIONS IN A DIGITAL COMMUNICATIONS SYSTEM
Earl Emerson, Somerset, N.J., assignor to Integrated Network Corporation, Bridgewater, N.J.
Filed Mar. 27, 1992, Ser. No. 859,053
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **11 Claims**



10. A method for establishing inband digital communication between a controller and a selected unit of a time division multiplexed digital communication system to the exclusion of non-selected units using a communications time slot common to both the selected and non-selected units and wherein said units are connected in cascade via digital terminals and wherein more than one unit may have an identification code which is the same as an identification code of a unit in another terminal, comprising the steps of:
a) transmitting in said time slot a first sequence of X number of Transition in Progress bytes, each Transition in Progress byte having a bit sequence which resets a predetermined circuit in all said units;
b) transmitting in said time slot a second sequence of Y number of Function Code bytes, each Function Code byte having a bit sequence which corresponds to an identification code associated only with a particular selected unit with which inband communication is to be established, such that said particular selected unit enters an inband communication state;
c) transmitting in said time slot a third sequence of disable bytes for disabling each unit having the same identification code which is located between the controller and the particular selected unit while leaving the particular selected unit non-disabled;
d) transmitting in said time slot a third sequence of Z number of Loop Back Enable bytes, each Loop Back Enable byte having a bit sequence which is suppressed in normal digital communication, such that the non-disabled selected unit in the inband communications state, upon receipt of said fourth sequence, establishes inband communication in said time slot with the controller and wherein X, Y and Z are integers at least equal to 32 and the disable bytes comprise a series of at least 30 ONE bits and at least 32 Loop Back Enable bytes.

5,285,451
FAILURE-TOLERANT MASS STORAGE SYSTEM
Larry P. Henson, Santa Clara; Kumar Gajjar, San Jose; David T. Powers, Morgan Hill, and Thomas E. Idleman, Santa Clara, all of Calif., assignors to Micro Technology, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 505,622, Apr. 6, 1990, Pat. No. 5,134,619. This application Jul. 15, 1992, Ser. No. 914,662
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—11.1 **9 Claims**



1. An interface for connecting to a plurality of memory storage means comprising:
a plurality of output buffer means coupled to a first bus;
a plurality of cross-bar switches, each individual cross-bar switch being coupled to only a single one of said individual memory storage means by a bi-directional bus means and to an individual output buffer means by a bi-directional bus means, all of said cross-bar switches being coupled to each other each cross-bar switch providing a pair of data paths, a first one of said data paths having means for delaying data; and
control means coupled to each cross-bar switch for controlling the cross-bar switches to allow data both to flow from any selected output buffer means to any selected memory storage means and to flow from any selected memory storage means to any selected output buffer means, and to select between said data paths.

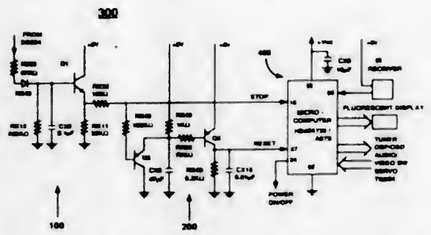
5,285,452
MICROCOMPUTER POWER FAILURE CONTROL CIRCUIT
Chow Sung Wee, and Chiew Mun Chang, both of Singapore, Singapore, assignors to Thomson Consumer Electronics S.A., Paris, France
Filed Mar. 19, 1992, Ser. No. 854,396
Claims priority, application United Kingdom, Mar. 26, 1991, 9106372
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—12 **10 Claims**

1. An apparatus comprising:
a source of AC voltage having repetitive alternating polarity excursions of a nominal frequency;
a power supply coupled to said source of AC voltage and having an output voltage which decays at a predetermined rate when said AC voltage is interrupted;
means coupled to said AC source and separate from said power supply for generating at a sense terminal, a potential generated by repetitive like polarity excursions of said source and having a magnitude which varies within a range said magnitude decays at a significantly faster rate

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than said predetermined rate when said AC voltage is interrupted;

a microcomputer system powered by said power supply, having a reset input and at least one other input, said other input being coupled to said sense terminal for detecting a reduction in said magnitude beyond said range, said detected reduction beyond said range causing said microcomputer to cease normal program execution; and



a reset pulse generator having an output coupled to said microcomputer reset input, and an input coupled to said sense terminal, said reset pulse generator generating a pulse for resetting said microcomputer system when said potential returns to said range upon termination of interruption of said AC voltage.

5,285,453

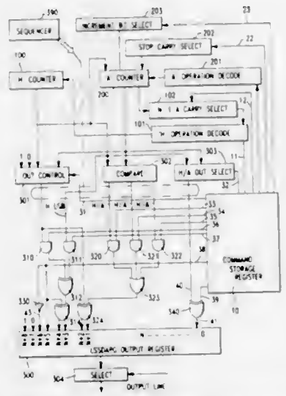
TEST PATTERN GENERATOR FOR TESTING EMBEDDED ARRAYS

Algirdas J. Gruodis, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1990, Ser. No. 636,035

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—27 **7 Claims**



1. A test pattern generator for testing embedded arrays in a device-under-test (DUT) designed in accord with level-sensitive-scan-design (LSSD) rules comprising:

a command storage circuit for generating binary test patterns and control signals related thereto;

at least two independent counters for operating in one of a plurality of functional states in response to said binary test patterns and producing data signals indicative thereof;

an output data circuit for producing output data in response to said data signals from said at least two counters and said control signals; and

selection circuitry for selecting said output data in a predetermined sequence corresponding to the LSSD of the embedded arrays contained in the DUT.

5,285,454

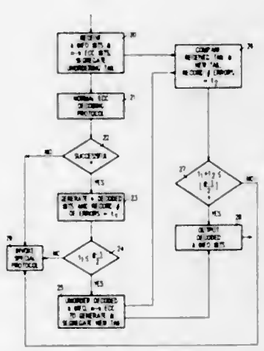
METHOD AND APPARATUS FOR ENCODING AND DECODING UNORDERED ERROR CORRECTING CODES

Miguel M. Blaum, San Jose, and Jehoshua Bruck, Palo Alto, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1991, Ser. No. 715,524

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.1 **8 Claims**



1. A method of decoding unordered codewords of an unordered error correcting code, each of which comprises k information bits, n−k ECC bits, and unordering tail bits, each arbitrary pair of n bits being at least a distance d apart, where $d \geqq (2t+1)$ and t is the maximum number of errors correctable by the code comprising the steps of:

segregating the unordering tail bits to produce a noisy received version of an ECC codeword;

decoding the noisy received version of the ECC codeword with the tail bits truncated and applying a

preselected error correcting algorithm to correct t_1 actual errors and produce a decoded ECC codeword;

generating a selected number of tail bits corresponding to the decoded ECC codeword;

comparing the segregated tail bits for the noisy received ECC codeword with the generated tail bits for the decoded ECC codeword for determining the number t_2 of errors actually detected; and

providing as an output the k information bits derived from the decoded ECC codeword when $(t_1+t_2) \leqq t$.

5,285,455

SERIAL DATA ENCODER

Po Tong, Fremont, and Peter A. Ruetz, Redwood City, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 829,655, Feb. 3, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 76,271

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—37.5 **8 Claims**

1. A serial Reed-Solomon data encoder for a code having n symbols including k message symbols and r redundant symbols, each symbol having m bits, comprising

an adder having two inputs and an output,

means for selectively applying m bits of a message symbol to one input of said adder,

register means for selectively storing an output from said adder,

a multiplier having two inputs and an output,

means for applying the contents of said register means as one input to said multiplier,

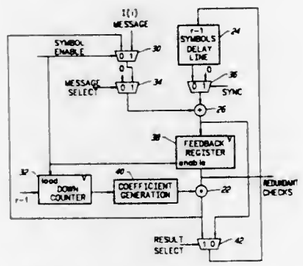
coefficient generator means for providing Reed-Solomon generator polynomial coefficients,

means for applying coefficients from said coefficient generator means as another input to said multiplier,

discrete time delay storage means for storing r−1 symbols and having an input and an output,

means for selectively applying the output of said multiplier to said input of said discrete time delay storage means,

means for applying said output of said discrete time delays storage means to the other input to said adder,



means for selectively applying the output of said multiplier to said one input of said adder,

means for selectively applying said output of said adder to said input to said discrete time delay storage means, and

output means for redundant checks connected to the output of said register means,

whereby an m bit message symbol is applied once every r clock cycles, and r additions and r multiplications are performed for every r clock cycles thereby serializing multiplications and additions in executing the Reed-Solomon code on each m bit message symbol.

5,285,456

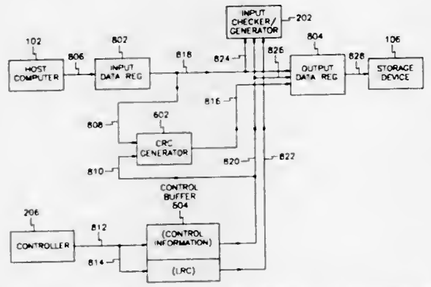
SYSTEM AND METHOD FOR IMPROVING THE INTEGRITY OF CONTROL INFORMATION

Dennis P. Cheney, Vestal; Richard C. Lang, Endwell; Andrew E. Petruski, Endicott; Mark J. Wolski, Vestal, and Robert J. Yagley, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1991, Ser. No. 700,737

Int. Cl.[5] G06F *11/10;* **H03M** *13/00*

U.S. Cl. 371—49.1 **23 Claims**



18. A method for maintaining the integrity of informational data passed between a host computer and a storage device, wherein the host computer generates and transmits a first control information and a first error detection code based upon the informational data, comprising the steps of:

(1) generating a second error detection code based upon a second control information within a controller;

(2) transferring said second control information and said second error detection code from said controller to a first control buffer;

(3) transferring the informational data received from the host computer to an error detection code generator and to an input checker/generator;

(4) determining the integrity of the informational data received from the host computer, using said input checker/generator;

(5) transferring said second control information from said first control buffer to said error detection code generator and to said input checker/generator;

(6) determining the integrity of said second control information, using said input checker/generator;

(7) generating a third error detection code based upon the informational data received from the host computer and said second control information generated by said controller; and

(8) transferring the informational data, said second control information and said third error detection code to the storage device.

5,285,457

APPARATUS FOR DETECTING AN ABNORMAL BEARING CONDITION OF A BLOWER UTILIZED FOR GAS LASER EQUIPMENT

Tsutomu Funakubo, Fujiyoshida, and Kenji Nakahara, Minamitsuru, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

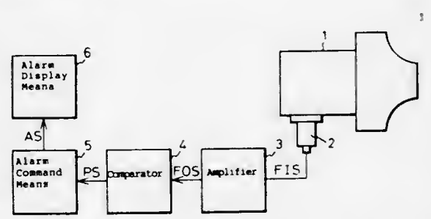
PCT No. PCT/JP92/00551, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO92/20126, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 27, 1992, Ser. No. 965,402

Claims priority, application Japan, Apr. 26, 1991, 3-125151

Int. Cl.[5] H01S *3/00, 3/22*

U.S. Cl. 372—38 **7 Claims**



1. An apparatus for detecting an abnormal bearing condition of a blower utilized for gas laser equipment is characterized in that it comprises,

a vibration sensor(2) that detects the vibration of said bearing mounted at said blower(1) and outputs a vibration detected signal FIS;

an amplifier(3) amplifies said vibration detected signal FIS received from said vibration sensor(2);

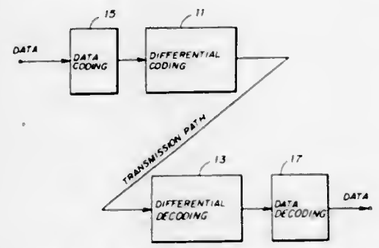
a comparator(4) discriminates whether an amplified vibration detected signal FOS exceeds a determined value or not, and outputs an abnormal signal PS when it exceeds said determined value;

an alarm command means(5) outputs an alarm command signal AS when the number of said abnormal signals PS output from said comparator(4) during a determined interval exceeds a determined number; and

an alarm display means(6) displays an alarm when said alarm command signal AS is sent from said alarm command means(5).

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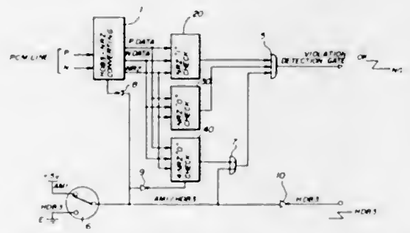
5,285,458
SYSTEM FOR SUPPRESSING SPREAD OF ERROR GENERATED IN DIFFERENTIAL CODING
Shoji Yoshida, Tochigi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 20, 1991, Ser. No. 672,681
Claims priority, application Japan, Mar. 20, 1990, 2-71223
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—42 **7 Claims**



1. An error suppression system for suppressing an error of a data sequence generated in a transmission path between a transmitting terminal and a receiving terminal, said error suppression system comprising:
data coding means in the transmitting terminal for inserting a known bit at a predetermined positioned of the data sequence and for carrying out a difference logic conversion with respect to the data sequence;
differential coding means in the transmitting terminal, coupled to said data coding means, for carrying out a sum logic conversion with respect to the data sequence which is received from said data coding means;
differential decoding means in the receiving terminal, coupled to said differential coding means via the transmission path, for carrying out a difference logic conversion with respect to the data sequence received from said differential coding means via the transmission path; and
data decoding means in the receiving terminal, coupled to said differential decoding means, for carrying out a sum logic conversion with respect to the data sequence received from said differential decoding means and for restoring the known bit at the predetermined position of the data sequence and wherein said differential decoding means includes a first frame bit inserting circuit for inserting a frame bit into the data sequence which is received from said data coding means, and a first circuit for carrying out the sum logic conversation with respect to the data sequence output from said frame bit inserting circuit, and said differential decoding means includes a second circuit for carrying out the difference logic conversion with respect to data sequence received from the transmission path, and a frame synchronizing circuit for carrying out a frame synchronization by detecting the frame bit inserted in the data sequence received from said second circuit.

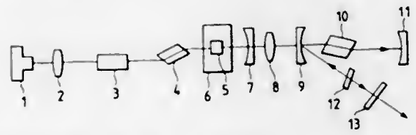
5,285,459
HDB3 CODE VIOLATION DETECTOR
Yuzo Okuyama; Kazuo Sato; Yamato Tachibana, all of Yokohama; Ryuhei Motono, Sapporo, and Kazuo Takeoka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 6, 1991, Ser. No. 755,761
Claims priority, application Japan, Sep. 7, 1990, 2-237887
Int. Cl.[5] G06F *11/00*; H03M *5/06, 13/00*
U.S. Cl. 371—57.1 **16 Claims**

1. An HDB3 code violation detector, comprising:
converting means for receiving positive polarity data and negative polarity data from a PCM line and for converting an HDB3 code received via the PCM line into an NRZ signal comprising one of an NRZ "1", a maximum of three consecutive NRZ "0"s, and at least four consecutive NRZ "0"s, said NRZ signal having a pattern;
first judging means, coupled to said converting means and receiving the positive polarity data, the negative polarity data and the NRZ signal, for determining whether the pattern of the NRZ signal received from said converting means exists when the NRZ signal is NRZ "1"and for outputting a first judgement result;
second judging means, coupled to said converting means and receiving the positive polarity data, the negative polarity data and the NRZ signal, for determining whether the pattern of the NRZ signal received from said converting means exists when the NRZ signal has the



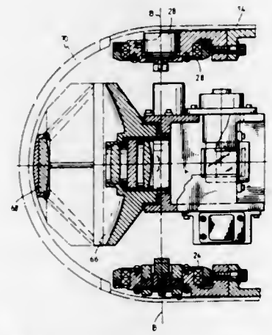
maximum of three consecutive NRZ "0"s and for outputting a second judgement;
third judging means, coupled to said converting means and receiving the positive polarity data, the negative polarity data and the NRZ signal, for determining whether the pattern of the NRZ signal received from said converting means exists when the NRZ signal has the at least four consecutive NRZ "0"s and for outputting a third judgement result, and
determining means, coupled to said first, second, and third judging means, for detecting a code violation of the HDB3 code based on the first, second and third judgement results of said first, second and third judging means, respectively.

5,285,460
TOTAL-SOLIDIFICATION TYPE TUNABLE PULSE LASER
Yoshifumi Ueda, Kochi, and Nobuhiro Kodama, Kanagawa, both of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan
Filed May 28, 1992, Ser. No. 889,389
Claims priority, application Japan, May 30, 1991, 3-153692
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **12 Claims**



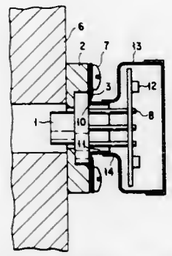
1. A tunable pulse laser, comprising:
an all-solid-state tunable laser oscillation section including a total-solidified titanium-doped sapphire single crystal; and
a pumping light source section including quasi-continuous semiconductor lasers, said semiconductor lasers pumping a neodymium-doped yttrium aluminum perovskite (Nd:YAP) crystal, said Nd:YAP crystal emitting a light beam produced by a transition of $^4F_{3/2} \rightarrow {}^4I_{11/2}$, said light beam passing through a Q-switching element, said Q-switching element converting said light beam into a Q-switching laser pulse, said Q-switching laser pulse passing through a $KTiOPO_4$ crystal, said $KTiOPO_4$ crystal performing 90° phase matching and doubling to thereby produce a pulse beam.

5,285,461
LASER RADAR TRANSCEIVER
Nicholas J. Krasutsky, Farmers Branch, and Lewis G. Minor, Arlington, both of Tex., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.
Continuation of Ser. No. 724,750, Jul. 2, 1991, Pat. No. 5,224,109. This application May 17, 1993, Ser. No. 62,932
Int. Cl.[5] H01S *3/093*
U.S. Cl. 372—29 **11 Claims**



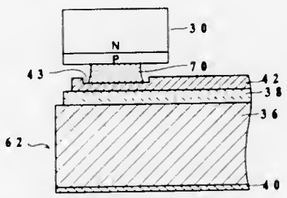
1. A laser radar transceiver comprising:
a sensor apparatus having a frame movable coupled to a housing;
a laser actuating device being located remote from said sensor apparatus;
a laser beam emitting device being disposed on said frame for movement therewith and being operatively coupled to said laser actuating device, said laser beam emitting device being adapted to emit a laser beam along a first optical path in response to receiving energy from said laser actuating device;
an optical system being disposed on said frame for movement therewith and being adapted to transmit said laser beam and to receive reflections of said transmitted laser beam, said optical system comprising:
a beam expander in the first optical path for expanding and collimating said laser beam;
a beam segmenter comprising a plurality of beam segmenter wedges for segmenting said laser beam into a plurality of laser beams, the beam segmenter having an output axis;
a device located along the output axis of the beam segmenter to direct the plurality of laser beams along a second optical path;
an apertured reflector device located along the second optical path and having an aperture positioned to permit the plurality of laser beams to pass therethrough;
a scanning device located along the second optical path, said scanning device being adapted to scan the plurality of laser beams in a pattern, to receive reflected laser light from a target, and to direct the reflected laser light onto the apertured reflector device along a third optical path; and
a signal processing circuit being located remote from said sensor apparatus and being operatively coupled to said optical system, said signal processing circuit being adapted to process said reflected laser light.

5,285,462
LASER BEAM EMITTING DEVICE
Akihiro Kasahara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 19, 1992, Ser. No. 853,658
Claims priority, application Japan, May 21, 1991, 3-116096
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—36 **10 Claims**



1. A laser beam emitting device comprising:
laser emitting means for emitting a laser beam;
a base having a mounting hole for guiding the laser beam emitted from said laser emitting means;
a mounting member for mounting said laser emitting means on said mounting hole; and
a pressing member for pressing said laser emitting means against said mounting member, to hold said laser emitting means between the pressing member and the mounting member, said pressing member including a plate member having a convex portion by which said laser emitting means is pressed against said mounting member.

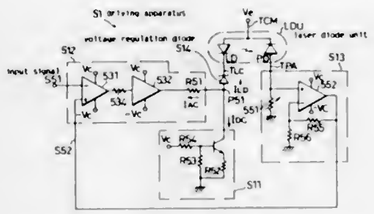
5,285,463
SEMICONDUCTOR DEVICE
Hiroaki Takuma, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Dec. 1, 1992, Ser. No. 983,956
Claims priority, application Japan, Dec. 3, 1991, 3-348166; Nov. 5, 1992, 4-296043
Int. Cl.[5] H01S *3/045*
U.S. Cl. 372—36 **20 Claims**



5. A semiconductor device comprising:
a) a conductive substrate,
b) an insulating layer applied on the conductive substrate,
c) a conductive layer having a concavity applied on the insulating layer,
d) a bonding connector, and
e) a semiconductor chip fixed on the concavity by the bonding connector.

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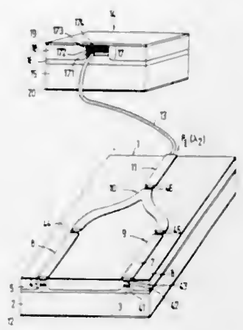
5,285,464
DRIVING APPARATUS OF A LASER DIODE
Shigeo Ogino, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 14, 1992, Ser No. 944,663
Claims priority, application Japan, Sep. 18, 1991, 3-268443
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **15 Claims**



1. A driving apparatus of a laser diode, comprising:
a light detection circuit serial-connected with a pin diode detecting the intensity of the emission of light from the laser diode, said light detection circuit producing a signal depending on the intensity of the emission detected by the pin diode;
a modulation circuit serial-connected with the laser diode the output current of said modulation circuit varying depending on the difference between an input signal and said signal outputted from the light detection circuit; and
constant voltage drop means disposed in the series circuit including the laser diode and the modulation circuit, the constant voltage drop means causing a voltage drop of a certain degree regardless of the strength of a current flowing thereto.

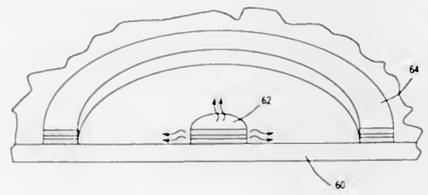
5,285,465
OPTICALLY CONTROLLABLE SEMICONDUCTOR LASER
Michael Schilling, Stuttgart; Wilfried Idler, Asperg; Dieter Baums, Ludwigsburg; Gert Laube, Stuttgart; Klaus Wünstel, Schwieberdingen, Fed. Rep. of Germany, and Olaf Hildebrand, Stuttgart, all of Fed. Rep. of Germany, assignors to Alcatel, N.V., Amsterdam, Netherlands
PCT No. PCT/EP92/01175, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/22111, PCT Pub. Date Dec. 10, 1992
PCT Filed May 26, 1992, Ser. No. 966,030
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117865; May 31, 1991, 4117868
Int. Cl.[5] H01S *3/19, 3/25*
U.S. Cl. 372—50 **20 Claims**

1. An optical device comprising:
a semiconductor laser monolithically integrated on a substrate and having a cavity extending above a plane that is coplanar with a base surface of the substrate and has a branched configuration, and



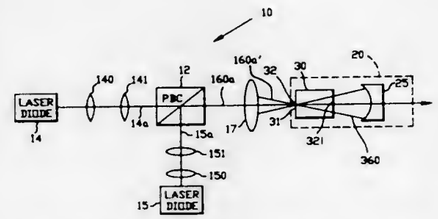
an adjustable optical power light source for radiating light into the cavity of the semiconductor laser thereby controlling the operation of the semiconductor laser optically.

5,285,466
FEEDBACK MECHANISM FOR VERTICAL CAVITY SURFACE EMITTING LASERS
Ned Tabatabaie, Maple Bluff, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed May 20, 1992, Ser. No. 885,124
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **5 Claims**



1. A vertical cavity surface emitting laser, VCSEL, and detector combination, comprising:
a semiconductor substrate;
a VCSEL diode integrated on said substrate and comprising a plurality of horizontal layers, one on top of another, in a vertical stack, including at least one p layer and at least one n layer, and emitting light in a vertical axial direction and in a horizontal lateral direction;
a detector integrated on said substrate laterally adjacent said VCSEL diode and receiving lateral light therefrom,
wherein said detector comprises a second plurality of horizontal layers, one on top of another, in a second vertical stack, including at least one p layer and at least one n layer, and said second stack is an annulus laterally surrounding said first stack.

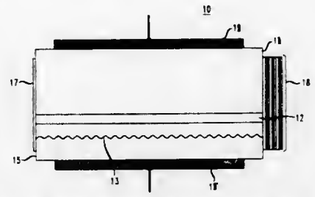
5,285,467
COMPACT, EFFICIENT, SCALABLE NEODYMIUM LASER CO-DOPED WITH ACTIVATOR IONS AND PUMPED BY VISIBLE LASER DIODES
Richard Scheps, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 718,316, Jun. 17, 1991, Pat. No. 5,200,972. This application Feb. 22, 1993, Ser. No. 21,948
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 **16 Claims**



1. A solid state laser for emitting at least one resonator mode wavelength in response to being pumped with a narrow width pumping beam within a preselected range of pumping wavelengths between 610 and 680 nm comprising:
a resonator for said at least one resonator mode wavelength arranged to define a nearly hemispherical resonator mode therein, said resonator including at least one highly reflective output coupler concave mirror and a laser crystal co-doped with Cr^{3+} ions and Nd^{3+} ions, said laser crystal being provided with a first face parallel to a second face with each face being flat and polished, said first face being provided with a dichroic coating being highly reflective to said resonator mode wavelength and being highly transmissive to said pumping beam within said preselected range of pumping wavelengths and said second face being provided with an anti-reflective coating being anti-reflective to said resonator mode wavelength and
at least one visible laser diode optically aligned to emit said pumping beam within said preselected range of pumping wavelengths between 610 and 680 nm to effect optical end pumping of said laser crystal in said nearly hemispherical resonator mode, said at least one visible laser diode emitting said pumping beam within a preselected range of pumping wavelengths optical emission of said resonator mode wavelength at an improved electrical to optical efficiency.

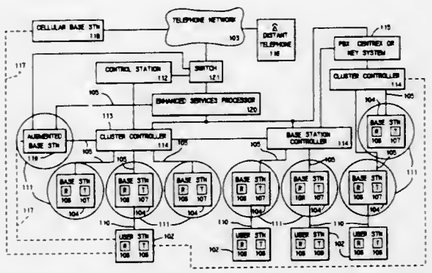
5,285,468
ANALOG OPTICAL FIBER COMMUNICATION SYSTEM, AND LASER ADAPTED FOR USE IN SUCH A SYSTEM
David A. Ackerman, Hopewell; Paul M. Nitzsche, Plainfield, both of N.J., and Paul W. Smith, Reading, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 17, 1992, Ser. No. 916,282
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 **8 Claims**

1. An article comprising a semiconductor laser comprising
a) a semiconductor body forming a radiation cavity defined by means that comprise a front facet and a back facet, associated with each of said facets being a reflectivity at a given wavelength λ, the front facet comprising an antireflection (AR) coating of relatively low reflectivity and the back facet comprising a high reflectivity (HR) coating of relatively high reflectivity;
b) a diffraction grating associated with the radiation cavity; and
c) contact means facilitating flowing an electrical current through the semiconductor body;
CHARACTERIZED IN THAT
d) said HR coating comprises at least one pair of layers, said layer pair consisting of a layer of first material and a layer



of second material, said layers selected such that said reflectivity at wavelength λ associated with the back facet is at least 80%.

5,285,469
SPREAD SPECTRUM WIRELESS TELEPHONE SYSTEM
Jeffrey S. Vanderpool, Colorado Springs, Colo., assignor to Omnipoint Data Corporation, Boston, Mass.
Continuation-in-part of Ser. No. 709,712, Jun. 3, 1991. This application Jun. 7, 1991, Ser. No. 712,239
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **6 Claims**



6. A wireless communication system, comprising a switch coupled to a telephone network;
a plurality of cluster controllers for controlling a set of base stations, at least one of said plurality of cluster controllers coupled to said switch;
a plurality of base stations, each one of said plurality of base stations associated with exactly one of said plurality of cluster controllers, each one of said plurality of base stations having means for initiating a call on said telephone network and means for receiving a call on said telephone network;
a user station having means for completing a spread-spectrum communication path with a first base station of said plurality of base stations, wherein said communication path is completed between said first base station and said user station when said user station initiates or receives a call on said telephone network;
means for breaking said communication path between said first base station and said user station and for completing a second communication path between a second base station of said plurality of base stations and said user station;
wherein said means for breaking and for completing comprises means for handing-off said user station from said first base station to said second base station when said user station terminates a call relating to a first cluster controller and initiates a call relating to a second cluster controller.

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5,285,470

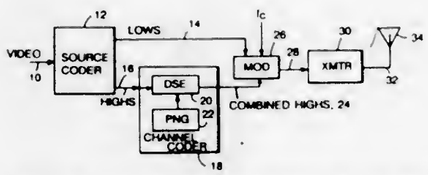
METHODS OF NOISE-REDUCED AND BANDWIDTH-REDUCED TELEVISION TRANSMISSION

William F. Schreiber, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 730,270, Jul. 12, 1991, Pat. No. 5,127,021. This application Jun. 15, 1992, Ser. No. 898,309

Int. Cl.[5] **H04L** *27/30*; **H04N** *5/38, 5/40, 5/44*

U.S. Cl. 375—1 **33 Claims**



12. A noise-reduced method of transmitting a video signal comprising:

separating the video signal into a plurality of frequency subbands, said plurality of frequency subbands representing a corresponding plurality of subband images, each of said plurality of subband images made up of a corresponding array of blocks of samples;

organizing said plurality of frequency subbands into more than one collection;

for each of said collections and for a preselected one of said subband images within that collection, measuring the busyness of each of the blocks of the preselected subband image in that collection;

for each of said preselected subband images, assigning each of the blocks of that selected subband image to one of a plurality of groups, said plurality of groups including a first group of blocks and a second group of blocks, said blocks in said first group being busier than said blocks in said second group.

for each of said preselected subband images, adaptively modulating the samples of that preselected subband image by multiplying that preselected subband image by a corresponding set of adaptive modulation factors, wherein a greater quantity of adaptive modulation factors is used for the blocks assigned to the first group of blocks as compared to the blocks assigned to the second group of blocks; and

transmitting the adaptively modulated preselected subband images along with the sets of adaptive modulation factors corresponding thereto.

5,285,471

SPREAD SPECTRUM RECEIVING DEVICE

Takao Kurihara, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 993,378

Claims priority, application Japan, Dec. 20, 1991, 3-355212; Feb. 21, 1992, 4-072315

Int. Cl.[5] **H04L** *27/30, 27/06*; **H03D** *3/18*

U.S. Cl. 375—1 **11 Claims**

1. A spread spectrum receiving device comprising:

dividing and converting means, which divides a received signal into two parts, which are converted into a COS component signal and a SIN component signal by using a first carrier signal having a same frequency as a modulation frequency for said received signal and a second carrier signal having the same frequency and a phase different by $\pi/2$ from that of said first carrier signal, respectively;

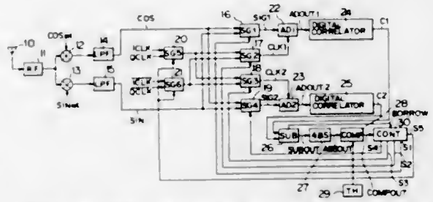
a first and a second filter for extracting a COS PN code chip signal and a SIN PN code chip signal from said COS component signal and said SIN component signal, respectively;

first and second A/D-converting means for outputting A/D-converted signals corresponding to said COS PN code chip signal and said SIN PN code chip signal, respectively;

a first digital correlator for correlating an output of said first A/D-converting means with a first reference signal;

a second digital correlator for correlating an output of said second A/D-converting means with a second reference signal;

steering gate means disposed between said first and said second filter on one side and said first and said second A/D-converting means on the other side, said steering gate means giving said first and said second A/D-converting means said COS PN code chip signal and said SIN PN



code chip signal, respectively, with a predetermined timing according to a control signal;

subtracting means for effecting a subtractraction between outputs of said first and said second digital correlator to output a signal corresponding to a result of the subtraction;

comparing means for judging whether said signal corresponding to the result of the subtraction is within a predetermined region or not to output a judgment signal; and

control means for controlling said steering gate means by controlling said control signal, based on a state of an output of said comparing means and said signal corresponding to the result of the subtraction.

5,285,472

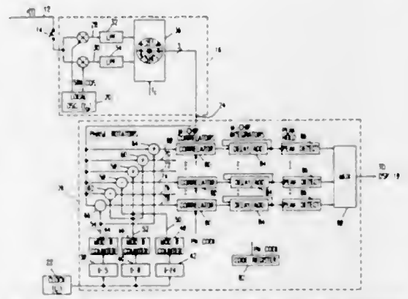
SYSTEM FOR DETERMINING THE ACQUISITION OF, AND FREQUENCY COMPENSATING, A PHASE MODULATED PSEUDONOISE SEQUENCE SIGNAL

Jay F. Leonard, Kinnelon, and Ronald Y. Paradise, Hillsdale, both of N.J., assignors to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed Feb. 24, 1993, Ser. No. 21,781

Int. Cl.[5] **H04K** *1/00*; **H04L** *27/30*

U.S. Cl. 375—1 **7 Claims**



1. In a system where a phase modulated pseudonoise sequence signal is received at a frequency which is within a range of frequencies centered around a nominal carrier frequency, and wherein code elements in the signal occur at a predetermined code chip rate, an arrangement for determining

acquisition of the received signal and approximating the received frequency within one of 2K substantially equal subdivisions of said range, where K is an integer, the arrangement comprising:

means for providing a reference signal at the nominal carrier frequency;

means for providing a clock signal at a clock frequency corresponding to the code chip rate;

means for deriving in-phase and quadrature components of the received signal relative to the reference signal;

means utilizing the clock signal and the in-phase and quadrature components for quantizing the phase of the received signal into 2^S sectors, where S is an integer, and providing an S-bit digital signal representative of the quantized phase at a rate corresponding to the clock frequency;

means for providing K signals each at a respective fixed detection frequency less than said clock frequency, the frequencies of the K signals being related to each other in the ratios of approximately $1, 3, \ldots, 2K-1$, wherein the K fixed detection frequencies are selected to satisfy the requirement that the range of frequencies within which said received signal appears is approximately 4K times the lowest frequency of said K signals;

means for providing said pseudonoise sequence in digital form as an ordered sequence of code elements;

a plurality of 2K correlation channels, each of said correlation channels including:

a) phase rotation means for providing a phase rotated received signal by changing the quantized phase sector of the received signal at a rate determined by a respective one of the K signals and in a respective one of the additive or subtractive directions, so that between all of the 2K correlation channels each of the K signals is used twice, once in an additive sense and once in a subtractive sense; and

b) digital correlation means utilizing the provided pseudonoise sequence and the phase rotated received signal for providing a measure of the correlation between the phase rotated received signal and the pseudonoise sequence; and

discrimination means coupled to receive the correlation measures from said 2K correlation channels for determining the acquisition of the received signal and selecting the correlation channel with the greatest correlation.

5,285,473

SYSTEM TO GENERATE SWITCHING CRITERIA AND EQUALIZE ADAPTIVELY IN DATA SPECTRUM

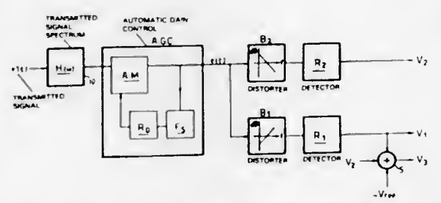
Adelio Conti, Montevecchia; Paolo Troyer, Sesto S. Giovanni, and Rocco Nobili, Cassina de Pecchi, all of Italy, assignors to Telettra S.p.A., Italy

Filed Oct. 26, 1990, Ser. No. 604,791

Claims priority, application Italy, Oct. 27, 1989, 22159 A/89; Oct. 27, 1989, 22160 A/89; Oct. 31, 1989, 22231 A/89

Int. Cl.[5] **H04B** *1/12*

U.S. Cl. 375—12 **7 Claims**



5. A device for detecting data spectrum distortion in transmitted digital signals having a frequency spectrum distributed symmetrically over a central frequency, in particular distortion due to selective fading, comprising:

(a) means for submitting the transmitted signal to two parallel distortions having substantially equal slopes, opposite signs and a common central frequency, each of which causes a variation in the average power across the frequency spectrum of the transmitted signal;

(b) means for measuring the two average powers resulting from the two parallel distortions; and

(c) means for comparing the two measured average powers; wherein the equivalence or difference between the two measured average powers indicates the absence or presence of fading, respectively, in the transmitted signal.

5,285,474

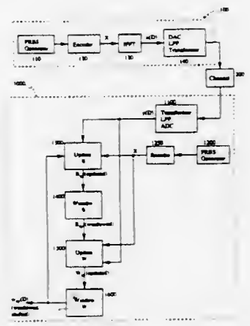
METHOD FOR EQUALIZING A MULTICARRIER SIGNAL IN A MULTICARRIER COMMUNICATION SYSTEM

Jacky Chow, Mountain View, and John M. Cioffi, Cupertino, both of Calif., assignors to The Board of Trustees of the Leland Stanford, Junior University, Stanford, Calif.

Filed Jun. 12, 1992, Ser. No. 898,104

Int. Cl.[5] **H04B** *1/38*; **H04L** *5/16*; **H03H** *7/30, 7/40*

U.S. Cl. 375—13 **13 Claims**



1. In a data communication system comprising a multicarrier transmitter which encodes and modulates input data onto a plurality of carriers, generates n samples of a transmit signal, and then appends to the front of the block of N samples a cyclic prefix of L samples before transmitting all (N+L) samples, a channel which severely distorts signals input to it by the transmitter, and a multicarrier receiver which includes an equalizer which partially equalizes the distorted signals it receives from the channel, and means for removing the L samples of the cyclic prefix, and then demodulating and decoding the remaining N samples, a method of calculating a set of M windowed time-domain equalizer parameters $w_w(D)$ of said equalizer, wherein L, M and N are positive integers, said method comprising the steps of:

(a) initializing said windowed time-domain equalizer parameters $w_w(D)$ and a set of windowed frequency-domain channel target response parameters B_w to some predetermined initial values,

(b) calculating, in said transmitter, a set of N frequency domain samples of a repetitive multicarrier signal X,

(c) encoding and transmitting said multicarrier signal X from said transmitter through said channel and into said receiver to produce a received signal y(D),

(d) generating, in said receiver, a set of N frequency domain samples of a local replica X' of said repetitive multicarrier signal,

(e) using said windowed time-domain equalizer parameters $w_w(D)$, the samples of said local replica X' and said received signal y(D) to update said frequency-domain channel target response parameters B_w,

(f) transforming said frequency-domain channel target response parameters B_w into the time domain to produce a

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set of time-domain channel target response parameters $b_d(D)$,

(g) windowing said time-domain channel target response parameters $b_d(D)$ by selecting L consecutive samples of $b_d(D)$ to produce a set of windowed time-domain channel target response parameters $b_w(D)$,

(h) transforming said windowed time-domain channel target response parameters $b_w(D)$ into the frequency domain to produce a set of windowed frequency-domain channel target response parameters B_w,

(i) using said windowed frequency-domain channel target response parameters B_w, the samples of said local replica X' and said received signal y(D) to update a set of frequency-domain equalizer parameters W_w,

(j) transforming said frequency-domain equalizer parameters W_w into the time domain to produce a set of time-domain equalizer parameters $W_w(D)$,

(k) windowing said time-domain equalizer parameters $w_w(D)$ by selecting M consecutive samples of $w_w(D)$ to produce a set of windowed time-domain equalizer parameters $w_w(D)$, and

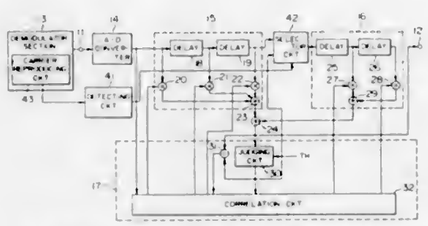
(l) repeating steps (c) through (k) until a predetermined convergence condition is determined.

5,285,475

DECISION-FEEDBACK EQUALIZER CAPABLE OF PRODUCING AN EQUALIZED SIGNAL AT HIGH SPEED

Yuzo Kurokami, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 19, 1992, Ser. No. 838,058
Claims priority, application Japan, Feb. 19, 1991, 3-045439
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—14 **5 Claims**



1. A decision-feedback equalizer connected to a demodulator section for demodulating a received signal into a demodulated signal, said decision-feedback equalizer comprising:

first filter means for filtering said demodulated signal into a first filtered signal in accordance with a plurality of main controllable tap gains, said first filter means producing a first local signal from said demodulated signal;

second filter means for filtering an input signal into a second filtered signal in accordance with a plurality of subsidiary controllable tap gains;

producing means for producing an equalized signal in response to said first and said second filtered signals;

control means for controlling said main controllable tap gains and said subsidiary controllable tap gains in accordance with said demodulated signal and said equalized signal;

detecting means for detecting whether or not said demodulator section is put in a synchronization state and producing a synchronization signal when said demodulator section is put in said synchronization state, said detecting means otherwise producing a nonsynchronization signal; and

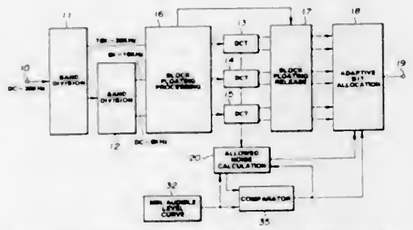
supplying means responsive to said synchronization signal for supplying said second filter means with said first local signal as said input signal, and said supplying means supplying said second filter means with a second local signal as said input signal on the basis of said equalized signal in response to said nonsynchronization signal.

5,285,476

CODING APPARATUS FOR DIGITAL SIGNAL

Kenzo Akagiri, and Kyoya Tsutsui, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,980
Claims priority, application Japan, Mar. 29, 1991, 3-091548; Mar. 30, 1991, 3-092741
Int. Cl.[5] H04B *14/04*
U.S. Cl. 375—25 **17 Claims**



1. A coding apparatus for an input digital signal, the apparatus comprising:

a band division filter means for dividing the input digital signal into plural frequency ranges to provide plural frequency range signals;

a block length decision means for determining a division of each of the plural frequency range signals in time into blocks in response to an index;

a block floating processing means for applying block floating processing to each block of each of the plural frequency range signals in response to the index;

an orthogonal transform means for orthogonally transforming each of the plural block floating processed frequency range signals to produce plural spectral coefficients, the orthogonal transform means transforming each of the plural block floating processed frequency range signals in blocks determined by the block length decision means; and

an adaptive bit allocation means for dividing the plural spectral coefficients from the orthogonal transform means into critical bands and for adaptively allocating numbers of quantizing bits to the spectral coefficients in each of the critical bands in response to an allowable noise level in each respective one of the critical bands.

5,285,477

BALANCED LINE DRIVER FOR LOCAL AREA NETWORKS OR THE LIKE

Robert H. Leonowich, Muhlenberg Township, Berks County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 18, 1991, Ser. No. 810,632
Int. Cl.[5] H04B *3/00*
U.S. Cl. 375—36 **4 Claims**

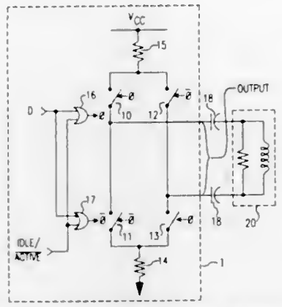
1. A differential line driver having two outputs, CHARACTERIZED BY:

a first pair of serially coupled switches having first, second and common outputs and two inputs controlling corresponding switches, the common output coupling to a first one of the two driver outputs;

a second pair of serially coupled switches having a first, second and common outputs and two inputs for controlling corresponding switches, the common output coupling to a second one of the two driver outputs;

a first resistor with two terminals, one terminal coupling to a first power source and the other terminal coupling to the first outputs of each of the pairs of switches;

a second resistor with two terminals, one terminal coupling to a second power source and the other terminal coupling to the second outputs of each of the pairs of switches; and,



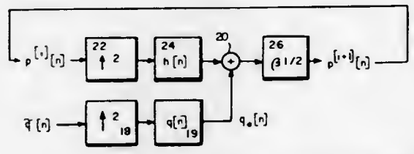
control means having a data input and an enable input and coupling to the inputs of the switches, for switching the switches in response to the data input when the enable is active and closing all switches when enable signal is inactive.

5,285,478

COMMUNICATION SYSTEM UTILIZING SELF-SIMILAR SIGNALS

Gregory W. Wornell, Brookline, and Alan V. Oppenheim, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 31, 1991, Ser. No. 786,003
Int. Cl.[5] H04L *27/00*
U.S. Cl. 375—37 **22 Claims**



1. A communication apparatus for communicating information over an arbitrary channel, comprising:

means for embedding said information into a first sequence of numbers; and

means for generating from said first sequence, a transmitted waveform having a, selected number of different frequency bands of differing bandwidths, each of said frequency bands having said information repeated therein at a certain rate, wherein said rate is directly proportional to the bandwidth of the frequency band.

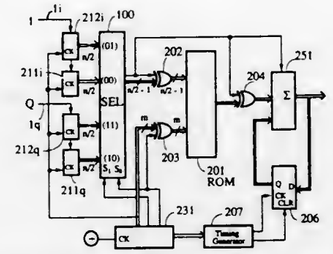
5,285,479

QUADRATURE MODULATION CIRCUIT

Yasushi Iwane, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,228
Claims priority, application Japan, Jan. 11, 1991, 3-12645
Int. Cl.[5] H04L *27/04, 27/12, 27/20*
U.S. Cl. 375—59 **14 Claims**

1. A quadrature modulation circuit including at least a low pass filter using ROM for limiting the frequency band-width of the in-phase channel and the quadrature channel, at least a D/A converter for converting the digital signal received from said low pass filter to an analog signal, at least a filter for suppressing the aliases outputted from said D/A converter, a quadrature modulator for modulating a carrier signal with the output from said filter:



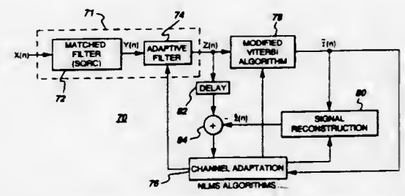
wherein said low pass filter includes time division process means for time division operation of said filter for the in-phase channel and the quadrature channel with the same band-width limiting characteristic for both the in-phase channel and the quadrature-phase channel.

5,285,480

ADAPTIVE MLSE-VA RECEIVER FOR DIGITAL CELLULAR RADIO

Sandeep Chennakeshu, Clifton Park; Anand Narasimhan, New York, and John B. Anderson, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1991, Ser. No. 753,578
Int. Cl.[5] H03K *5/159;* **H03D** *1/06*
U.S. Cl. 375—101 **15 Claims**



1. Apparatus for demodulating a time division multiple access (TDMA) signal having a plurality of symbols, said signal comprising at least a synchronizing portion and a data portion within a time slot, said apparatus comprising:

means for receiving the signal over a channel;

first filter means coupled to an output of the receiving means and comprising a fixed transversal filter having a characteristic selected for matching to a fixed signal pulse characteristic of the received signal for producing a filtered signal, said first filter means characteristic being selected for matching a square root raised cosine pulse characteristic of the received signal; and

second filter means coupled to an output of the first filter means and comprising an adaptive filter having a characteristic selected for adaptively compensating the filtered signal for a time varying impulse response of the channel.

5,285,481

RECEIVER CIRCUIT WITH SMART SQUELCH

Toan Van Tran, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 15, 1991, Ser. No. 775,741
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—103 **5 Claims**

1. A receiver for filtering an incoming data signal that in-

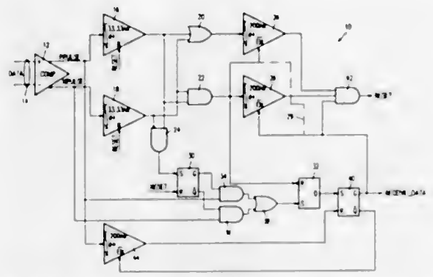
VOL 1159 ISS 2 FE 8 1994 UMI

cludes first and second differential inputs, the receiver circuit comprising:

(a) a comparator that responds to the differential inputs by generating a positive output pulse when the difference in signal level between the differential inputs exceeds a preselected positive threshold level and by generating a negative output pulse when the difference in signal level is less than a preselected negative threshold level;

(b) a first pulse width timer connected to receive positive output pulses from the comparator and that generates an active positive pulse output signal when a positive output pulse has a pulse width greater than a selected minimum pulse width;

(c) a second pulse width timer connected to receive negative output pulses from the comparator and that generates an active negative pulse output signal when a negative pulse has a pulse width greater than the selected minimum pulse width;



(d) first maximum pulse width timer means connected to the first and second pulse width timers for generating a first active long pulse output signal if a first received pulse, which may be either an active positive pulse output signal or active negative pulse output signal, has a pulse width less than a preselected maximum pulse width;

(e) second maximum pulse width timer means connected to the first and second pulse width timers for generating a second active long pulse output signal if a second received pulse, received subsequent to and of opposite polarity with respect to the first received pulse, has a pulse width less than the preselected maximum pulse width; and

(f) receive data trigger means responsive the first received pulse and to a third received pulse of the same polarity as the first received pulse for generating a receive data output signal.

5,285,482

TIMING RECOVERY DEVICE FOR RECEIVER INSTALLATION USING ADAPTIVE EQUALIZATION AND OVERSAMPLING ASSOCIATED WITH DIFFERENTIALLY COHERENT DEMODULATION

Philippe Sehier, Levallnis Perret, and Vérnnique Truelle, Paris, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Dec. 9, 1992, Ser. No. 988,330

Claims priority, application France, Dec. 19, 1991, 91 15802

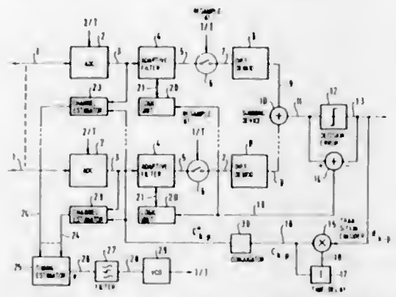
Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **5 Claims**

1. A timing recovery device for a receiver installation for recovering a clock timing from a received analog signal, said installation including oversampling means for generating digital samples by sampling said received analog signal in accordance with a sampling signal which is a multiple of a symbol frequency, means for adaptively equalizing said digital samples, and differentially coherent demodulation means for demodulating said digital samples, said receiver installation producing an output signal representative of decided symbols reconstituted at the symbol timing rate in accordance with a clock signal and in response to said received analog signals transmitted over a dispersive path and received on a plurality of diversity channels, which device comprises:

means responsive to said output signal to derive a transition coding signal,

a plurality of channel estimator means each connected to an output of the oversampling means in each diversity channel, each channel estimator means further receiving the transition coding signal to produce a channel estimate signal,



means responsive to said channel estimate signals to produce a symbol timing error signal, and

means responsive to said error signal to produce said clock signal having a predetermined relationship to the symbol timing rate.

5,285,483

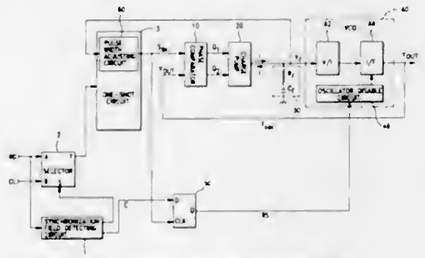
PHASE SYNCHRONIZATION CIRCUIT

Takao Ogawa, and Takeshi Kawasaki, both of Suwa, Japan, assignors to Seikn Epsnn Corporation, Tokyo, Japan

Continuation of Ser. No. 844,603, Apr. 7, 1992. This application Jun. 8, 1992, Ser. No. 896,083

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—120 **7 Claims**



1. A phase synchronization circuit comprising:

a) a one-shot circuit having two input terminals and one output terminal, for producing a pulse of controlled width from an incoming signal;

b) a phase comparison means for comparing a phase relationship between two signals, having two input terminals and two output terminals;

c) a charge pump having two input terminals and one output terminal;

d) a loop filter;

e) a voltage controlled oscillator (VCO) having two input terminals and one output terminal;

f) a two-to-one selector circuit, having a first data input terminal coupled to a read data signal, a second data input terminal coupled to a reference clock signal, a control input terminal coupled to a select control signal, and one output terminal, for selecting between a reference clock signal and read data signal; and

g) an oscillator control circuit having an input coupled to said one-shot circuit, and further having an oscillator disable signal output;

wherein said one-shot output terminal is coupled to a first one of said phase comparison means input terminals, said VCO output is coupled to a second one of said phase comparison means input terminals, said phase comparison output terminals are coupled to said charge pump input terminals, said charge pump output terminal is coupled to said loop filter, a first one of said VCO input terminals and a first one of said one-shot input terminals, said two-to-one selector circuit output terminal is coupled to a second one of said one-shot input terminals, and said oscillator disable signal is coupled to a second one of said VCO input terminals; and

wherein said VCO comprises a first ring oscillator further comprising inverters, and an oscillator disable circuit which enables and disables said first ring oscillator as directed by said oscillator disable signal, and said one-shot circuit comprises variable delay means for adjusting pulse width, said variable delay means comprising a second ring oscillator having a frequency that is controlled by the output of said charge pump.

5,285,484

REMOTE CONTROL APPARATUS FOR MAINTAINING IN-VESSEL COMPONENTS IN A STRUCTURE HAVING AN INNER TORUS SPACE

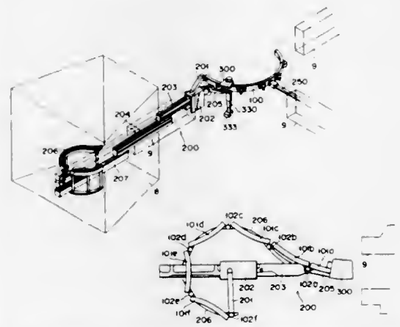
Kiyoshi Shibanuma, Tokyo; Shin Murakami, Hachioji; Tadashi Munakata, Tokyo, and Yoshinobu Ishikawa, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 654,056, Feb. 12, 1991, Pat. No. 5,173,248. This application Aug. 10, 1992, Ser. No. 926,293

Claims priority, application Japan, Feb. 14, 1990, 2-32729; Nov. 30, 1990, 2-340600; Nov. 30, 1990, 2-340601

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—260 **5 Claims**



1. A remote control apparatus for maintaining a tokamak type nuclear fusion reactor comprising a vessel having a torus space and a plurality of maintenance ports extending radially and communicating with the outside of said torus space, and in-vessel components arranged in said vessel, comprising:

a rail comprising a plurality of arcuated links to be arranged in a circumferential direction and a plurality of joints for pivotally connecting the adjacent arcuated links;

a vehicle running on said rail extended in a continuous circular form with a center substantially coinciding with a center of said torus space; and

a manipulator mounted on said vehicle, for handling said in-vessel components; said manipulator comprising:

(a) a circular fixed ring coaxial with an axis of said rail extended circularly and having a first side and a second side, said first side being fixed to said vehicle and having a cut-away which is set at a position at which said fixed ring does not interfere with said joints when the vehicle runs on said rail;

(b) a movable ring mounted on said second side of said fixed ring movably in a circumferential direction and having a cut-away; and

(c) driving means for moving said movable ring with respect to said fixed ring.

5,285,485

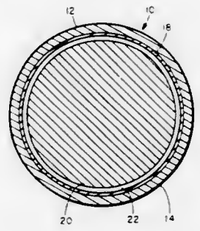
COMPOSITE NUCLEAR FUEL CONTAINER AND METHOD FOR PRODUCING SAME

Herman S. Rosenbaum; Ronald B. Adamson, both of Fremont, and Bo C. Cheng, Cupertino, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 1, 1993, Ser. No. 11,559

Int. Cl.[5] G21C *3/20*

U.S. Cl. 376—261 **10 Claims**



1. A method for producing composite nuclear fuel containers for service in water cooled nuclear fission reactors, comprising the steps of:

assembling a protective barrier internal liner consisting of zirconium metal alloyed with about 0.1 weight percent of iron and at least one metal selected from about 0.05 chromium and about 0.04 nickel weight percent in close fitting relationship within and metallurgically bonded to a tubular container consisting of an alloy of zirconium; and heating said assembly of the tubular container with the protective barrier internal liner therein up to a temperature of at least about 865° C. and thereby transforming the microcrystalline structure of the zirconium alloy tubular container to an alpha and beta phase while transforming the microcrystalline structure of the zirconium internal liner to a beta phase, followed by rapid cooling the tubular container down from the alpha plus beta phase field and the liner down from the beta phase field.

5,285,486

INTERNAL PASSIVE HYDROGEN PEROXIDE DECOMPOSER FOR A BOILING WATER REACTOR

Robert L. Cowan, II; Robert J. Law, both of Livermore, and James E. Charnley, Gilroy, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 982,176

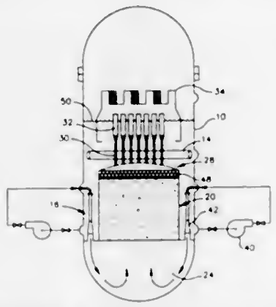
Int. Cl.[5] G21C *19/317*

U.S. Cl. 376—301 **14 Claims**

1. In a nuclear reactor comprising a core of nuclear fuel elements, a downcomer annulus between a pressure vessel and said core, means for feeding feedwater into said pressure vessel, means for forcing said feedwater to flow through said core to cool said fuel elements, and means for separating steam and water phases in the mixture exiting said core, said water phase flowing from said steam/water separating means to said down-

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comer annulus, the improvement wherein catalytic hydrogen peroxide decomposition means are arranged upstream of said steam/water separating means and downstream of said fuel elements, said catalytic hydrogen peroxide decomposition means comprising catalytic material arranged in an open structure which allows water and steam phases to flow therethrough, said catalytic hydrogen peroxide decomposition means being disposed so that substantially all of the water/steam mixture entering said steam/water separating means



flows therethrough, and said catalytic material having a surface area-to-volume ratio sufficiently high enough to ensure that substantially all of the water phase passing through said catalytic hydrogen peroxide decomposition means flows close enough to a surface of said catalytic material to enable said catalytic material to catalyze the decomposition of hydrogen peroxide molecules dissolved in said water phase entering said steam/water separating means into water and oxygen molecules.

5,285,487

SPACER FOR RETAINING FUEL RODS IN A NUCLEAR REACTOR FUEL ASSEMBLY

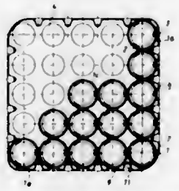
Ragnar Månsson; Olov Nylund, both of Västerås, Sweden, and Clas-Göran Wiktor, Dietlikon, Switzerland, assignors to ABB Atom AB, Västerås, Sweden

Filed Oct. 6, 1992, Ser. No. 957,022

Claims priority, application Sweden, Oct. 29, 1991, 9103157-5

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—438 **10 Claims**



1. A spacer for a nuclear reactor fuel assembly, said spacer comprising a cell-formed lattice-work for retaining parallel, elongated elements such as fuel rods into a bundle with substantially rectangular cross section, said cells being formed from tubular sleeves, each one of said sleeves offering a passage for one of said elements in order to mutually fix said elements, each spacer comprising two sub-spacers (5, 6) arranged in a certain spaced relationship to each other in a longitudinal direction of the bundle, a first one of said sub-spacers in a pair fixing elements lying substantially on one side of a diagonal through the bundle, a second one of said sub-spacers fixing the other elements such that elements passing through the sleeves of said first spacer pass, possibly with some exception, at the side of the sleeves in said second sub-spacer and vice versa.

5,285,488

EXPOSURE APPARATUS

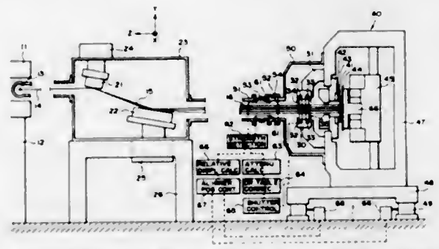
Yutaka Watanabe, Isehara; Ryuichi Ebinuma, Kawasaki; Nobutoshi Mizusawa, Yamato; Shunichi Uzawa, Tokyo, and Takao Kariya, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 591,769, Oct. 2, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,307

Claims priority, application Japan, Oct. 3, 1989, 1-257075; Oct. 3, 1989, 1-257076

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—34 **22 Claims**



9. A semiconductor device manufacturing method comprising the steps of:

projecting, through reflection by a mirror, a radiation beam containing X-rays from an SOR source along a beam projection path and onto a predetermined irradiation range that includes an exposure zone, the radiation beam passing through the exposure zone to be projected onto a mask to illuminate the mask;

controlling an exposure period corresponding to non-uniformness of the radiation beam in a one-dimensional direction so as to provide a uniform exposure amount over the exposure zone, by moving a movable shutter plate in accordance with predetermined drive-curve data corresponding to the non-uniformness of the radiation beam;

shifting the predetermined drive-curve data so as to reduce error attributable to a change in relative position of the exposure zone and the radiation beam; and

exposing the mask and a wafer with the radiation beam passing through the exposure zone to transfer a pattern of the mask onto the wafer.

5,285,489

K-EDGE FILTER AND AN X-RAY APPARATUS EMPLOYING SUCH A FILTER

Tetsuro Ohtsuchi, Osaka; Hiroshi Tsutsui, Yawata; Knichi Ohmori, Toyonaka, and Sueki Baba, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 18, 1992, Ser. No. 836,427

Claims priority, application Japan, Feb. 20, 1991, 3-26110

Int. Cl.[5] G21K *3/00*

U.S. Cl. 378—156 **9 Claims**

5. An X-ray apparatus comprising:

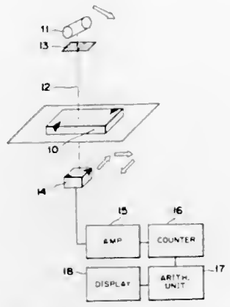
an X-ray generator;

a CdTe X-ray detector; and

a K-edge filter through which X-rays are passed so as to be subjected to energy separation into two energy regions;

said K-edge filter including a main portion functioning as a filter member;

said main portion having an effective thickness of at least 100 μm;



said K-edge filter being made of a material containing at least two kinds of elements whose K-absorption edges are different from each other in a range of from 5 to 10 keV.

5,285,490

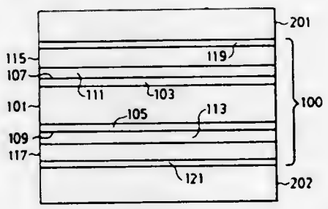
IMAGING COMBINATION FOR DETECTING SOFT TISSUE ANOMALIES

Phillip C. Bunch; Luther C. Roberts, both of Rochester; Kenneth E. Huff, Spencerport, and Robert E. Dickerson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 990,499, Dec. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 964,805, Oct. 22, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 14,930

Int. Cl.[5] G21K *3/00*

U.S. Cl. 378—156 **15 Claims**



1 An imaging combination for providing improved images of soft tissue anomalies exhibiting subject contrasts of less than 10 percent comprising:

means for providing a source of X-radiation exhibiting a peak emission in the range of from about to 60 keV with a 2 mm aluminum equivalent filtration.

a filter for the source radiation capable of being positioned between the source radiation and the soft tissue and containing at least one of tellurium and antimony,

an X-radiation imaging screen capable of (a) being positioned to receive X-radiation from the source means after at least a portion of the X-radiation has passed through the soft tissue to thereby provide an image to be detected, (b) absorbing X-radiation, and (c) emitting radiation at a wavelength in the range of about 300 to 700 nm.

5,285,491

DENTAL FILM PACKET

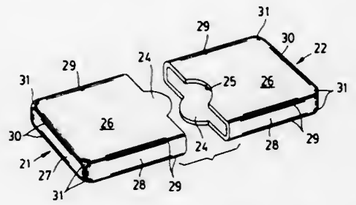
Wilfried Muylle, Schoten, and Guido Godden, Bornem, both of Belgium, assignors to Agfa-Gevaert N. V., Mortsel, Belgium

Filed Mar. 8, 1993, Ser. No. 27,793

Claims priority, application European Pat. Off., Apr. 1, 1992, 92200924

Int. Cl.[5] A61B *6/14*

U.S. Cl. 378—168 **6 Claims**



1. A dental film packet comprising an X-ray film pack (10) contained in a sealed envelope (20), characterized in that the envelope is formed of a pair of mating pockets (21, 22) formed by injection moulding and into each of which a part of the film pack (10) is inserted.

5,285,492

SAFETY DEVICE IN A RADIOLOGY MACHINE

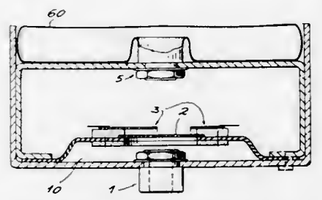
Serge Janouin, Moulineaux; Jacques Le Guen, Paris, and Bernard Pouzergues, Villemoisson sur Orge, all of France, assignors to General Electric CGR S.A., Moulineaux, France

Filed Jul. 30, 1992, Ser. No. 921,105

Claims priority, application France, Jul. 31, 1991, 91 09764

Int. Cl.[5] H05G *1/04*

U.S. Cl. 378—200 **9 Claims**



1. A safety device for an x-ray unit comprising:

an x-ray tube enclosed in a protective casing and cooled by a fluid coming from a cooling circuit and flowing between the tube and the internal wall of the casing;

said safety device being constituted by a rigid, hermetically sealed, vacuum-tight cavity connected to the cooling fluid circuit by a hydraulic connector with a high flow-rate; and

said cavity being openable mechanically and automatically under the effect of the fluid, by a fluid pressure that is above a predetermined pressure threshold;

wherein said cavity comprises a carbon sheet disposed inside said cavity facing said hydraulic connector to provide for the vacuum tightness of the cavity during the normal operation of the x-ray unit, the thickness of said carbon sheet being calibrated so that it is broken when the pressure of the cooling fluid is higher than the predetermined pressure threshold.

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5,285,493

RADIO TELE-COMMUNICATION DEVICE WITH RECEIVED MESSAGE DISPLAYING FEATURE

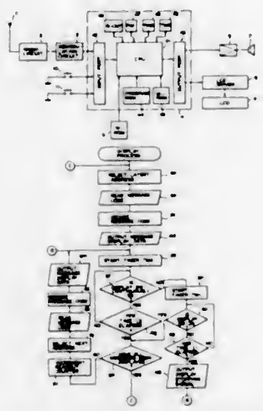
Kiyoshi Wagai; Tatsuaki Sekigawa, both of Hachioji; Shinya Sato, Hino; Mitsuji Shiono, Oome, and Haruhiko Sato, Hachioji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 467,509, Jan. 19, 1990, abandoned. This application Jun. 25, 1991, Ser. No. 719,071

Claims priority, application Japan, Jan. 19, 1989, 1-8708; Jan. 19, 1989, 1-8709

Int. Cl.[5] **H04M** *11/00*; **G09G** *1/02*; **G08B** *5/22*

U.S. Cl. 379—58 **6 Claims**



1. A radio telecommunication device comprising:

receiving means for receiving a signal containing a message;

storage means for storing a plurality of messages, each of which is obtained from a signal received by said receiving means;

display means for displaying at least one of the messages stored in said storage means;

a manually operable switch; and

display control means for controlling the display means so that the messages stored in said storage means are sequentially displayed on said display means in response to a first actuation of said manually operable switch, the displayed message is erased in response to a termination signal;

means for redisplaying the message erased lastly on said display means upon detection of a second actuation of said manually operable switch within a predetermined time period from the time when the message is erased in response to the termination signal, and means for displaying the message received lastly by the receiving means on said display means upon a detection of a second actuation of said manually operable switch.

5,285,494

NETWORK MANAGEMENT SYSTEM

Jerry W. Sprecher; Donald J. Winters, Jr., both of Danville; Amirali S. Rajwany; Michael W. Dodson, both of Walnut Creek; Gene R. Penning, Antioch; Darryl F. Harrington, Pittsburg, and Simon Chou, San Ramon, all of Calif., assignors to PacTel Corporation, Walnut Creek, Calif.

Filed Jul. 31, 1992, Ser. No. 922,856

Int. Cl.[5] **H04M** *11/00, 15/00*

U.S. Cl. 379—59 **20 Claims**

1. A system for managing and integrating data in a cellular telephone network comprising:

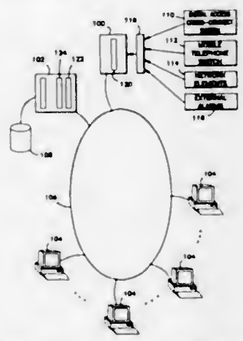
(a) a computer network including means for collecting real-time data and near real-time data from a plurality of telephone network elements, master server means for receiving and formatting the data, slave server means coupled to the master server means for parsing and reformatting the data;

(b) a plurality of modular task handlers running on the computer network for application by at least one user, the plurality of modular task handlers being easily integrated with future application programs, the modular task handlers including,

(i) means for processing the data,

(ii) on-line relational data base means for storing the data,

(iii) means for managing equipment inventory in response to the processing of the data,



(iv) means for providing customer service in response to the processing of the data.

(v) means for providing tactical surveillance in response to the processing of the data,

(vi) means for providing trend forecasting in response to the processing of the data,

(vii) means for modeling cell sites in response to the processing of the data; and

(c) a plurality of user workstations coupled together and to the master server means and slave server means through the computer network, for providing user access to the plurality of modular task handlers.

5,285,495

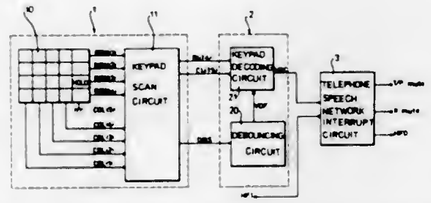
PUSH-BUTTON TELEPHONE DIALING DEVICE WITH TELEPHONE HOLD FUNCTION CIRCUIT

Jui-Kuang Wu, and Meng-Tsang Wu, both of Hsinchu, Taiwan, assignors to Winbond Electronic Corp., Hsinchu, Taiwan

Filed Aug. 27, 1991, Ser. No. 750,254

Int. Cl.[5] **H04M** *1/00*

U.S. Cl. 379—368 **4 Claims**



1. A push-button telephone dialing device for a telephone set having a speech network, comprising:

a telephone handset;

a handset status signal generating means to generate a hand-set off hook signal when said telephone handset is in an off hook state;

a push-button keypad having a plurality of keys which include a hold function key, said keys of said push-button keypad are arranged into N number of rows and M number of columns with N and M being positive integers;

a telephone dialing integrated circuit means including a key input signal generating means wired to said push-button keypad and producing an appropriate key input signal corresponding to a key pressed on said push-button keypad, said telephone dialing integrated circuit means being activated by said handset off hook signal to receive input signals from said push-button keypad;

said push-button keypad having N number of row status lines connected to said key input signal generating means, each of said row status lines corresponding to one of said rows, each of aid row status lines having a logic signal to indicate a pressed key condition on the corresponding one of said rows,

said push-button keypad further having M number of column status lines, each of said column status lines corresponding to one of said columns, first to (M−1)th ones of said column status lines being connected to said key input signal generating means, an Mth one of said column status lines being grounded, each of said first to (M−1)th ones of said column status lines having logic signal to indicate a pressed key condition on the corresponding one of said columns;

said key input signal generating means comprising a keypad scanning means being activated by said handset off hook signal and including a row scanning means to reflect the respective logic signal of said N number of row status lines as a corresponding N number of row scan signals, a column scanning means to reflect the respective logic signal of said first to (M−1)th ones of said column status lines as a corresponding (M−1) number of column scan signals, and a NAND logic gate means having said first to (M−1)th ones of said column status lines as inputs thereto, said NAND logic gate means generating an Mth column scan signal to indicate a pressed key condition on the corresponding one of said columns of the grounded said Mth one of said column status lines,

said key input signal generating means producing a hold function key input signal whenever said hold function key is pressed; and

a speech network interrupting means wired to said speech network and receiving said hold function key input signal from said key input signal generating means to control operation of said speech network.

5,285,496

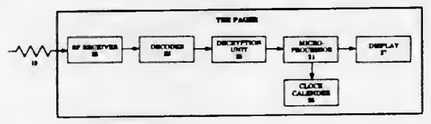
METHODS AND APPARATUS FOR PROVIDING A SECURE PAGING SYSTEM

Edward H. Frank, Portola Valley, and Donald C. Jackson, Monte Sereno, both of Calif., assignors to FirstPerson, Inc., Mountain View, Calif.

Filed Dec. 14, 1992, Ser. No. 990,596

Int. Cl.[5] **H04K** *1/02*

U.S. Cl. 380—9 **2 Claims**



1. A secured paging system, said secure paging system comprising the elements of:

message input means for inputting a message, said message comprising an address field and a message body, said address field specifying a particular pager;

encryption means, said encryption means receiving said message from said message input means, said encryption means encrypting said message to produce an encrypted message;

transmitting means, said transmitting means coupled to said encryption means for receiving said encrypted message and broadcasting said encrypted message on a radio frequency to a plurality of radio receivers, said transmitting means having

a computer for processing said encrypted message to generate a processed message,

an encoder for encoding said processed message to generate an encoded message, and

a radio frequency generator coupled to said encoder for broadcasting said encoded message on said radio frequency; and

a pager for receiving said encrypted message broadcast on said radio frequency, said pager having a pager address, said pager decrypting said encrypted message to obtain said address field and said message body, said pager comparing said address field with said pager address, said pager displaying said message body if said address field matches said pager address.

5,285,497

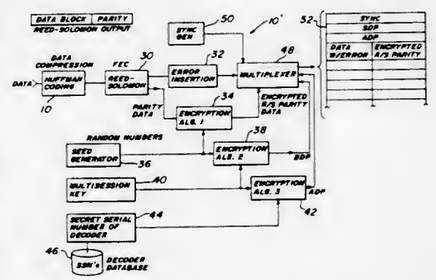
METHODS AND APPARATUS FOR SCRAMBLING AND UNSCRAMBLING COMPRESSED DATA STREAMS

William B. Thatcher, Jr., Atlanta, Ga., assignor to Scientific Atlanta, Norcross, Ga.

Filed Apr. 1, 1993, Ser. No. 41,727

Int. Cl.[5] **H04L** *9/00*

U.S. Cl. 380—49 **31 Claims**



1. A method for encoding data, comprising the steps of:

(a) compressing an incoming data stream into variable length codewords;

(b) generating error correction parity data for said codewords;

(c) introducing an error into said codewords;

(d) encrypting said parity data; and

(e) transmitting said codewords and encrypted parity data.

5,285,498

METHOD AND APPARATUS FOR CODING AUDIO SIGNALS BASED ON PERCEPTUAL MODEL

James D. Johnston, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 2, 1992, Ser. No. 844,804

Int. Cl.[5] **H04H** *5/00*

U.S. Cl. 381—2 **4 Claims**

1. A method for coding an input set of stereophonic audio signals comprising respective left channel and right channel sets of signals, said method comprising

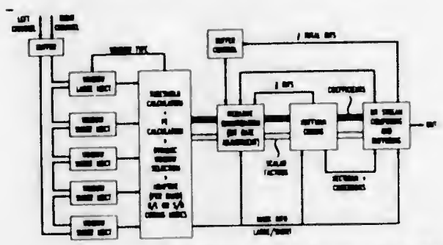
forming for each of said left channel and right channel sets of

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signals, a set of first signals representing the frequency content of said input set, said set of first signals comprising signals representing amplitude and phase information for each of a plurality of frequency bands,

forming sets of sum and difference channel signals corresponding, respectively, to the sum of, and difference between, corresponding ones of said set of first signals for said left channel and said set of first signals for said right channel,

determining a randomness metric for each of said plurality of frequency bands for each of said sets of first signals,



based on the distribution of power with frequency for each of said sets of first signals and on said randomness metrics for each of said sets of first signals, forming a tonality function as a function of frequency, and

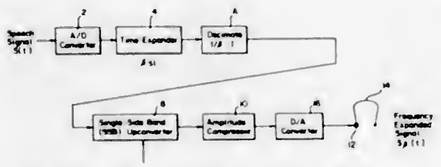
based on said randomness metric determining a first perceptual threshold for each of said left channel and right channel sets of signals and selecting between (i) said sum and difference channel signals, or (ii) said left channel and right channel signals, based on the determined threshold values for each of said plurality of frequency bands.

5,285,499

ULTRASONIC FREQUENCY EXPANSION PROCESSOR

Dorothy A. Shannon; John P. King, both of Ellicott City; Joseph T. DeWitte, Jr., Laurel, and James D. Orndorff, Baltimore, all of Md., assignors to Signal Science, Inc., Santa Clara, Calif.

Filed Apr. 27, 1993, Ser. No. 52,986
Int. Cl.[5] H04R *25/00*; A61B *7/04*
U.S. Cl. 381—68 **6 Claims**



1. A method for translating audiometric signals into the ultrasonic range, comprising the steps of

(a) expanding the audiometric signals in time by a factor $1/\beta$ where $\beta<1$ while generally maintaining the frequency content thereof;

(b) expanding the frequency of the time expanded signals by a factor $1/\beta$ while compressing the time scale to that of the original signal to produce a frequency expanded signal; and

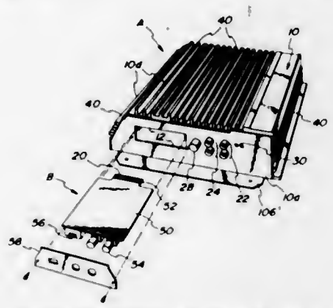
(c) processing said frequency expanded signal via a single-sideband upconverter to translate said frequency expanded signal into a single sideband signal in the ultrasonic range.

5,285,500

CAR AMPLIFIER WITH OPTIONAL PLUG-IN MODULES

Stephen Mantz, Northridge, Calif., assignor to Audio Products, Inc., Dothan, Ala.

Filed Apr. 13, 1992, Ser. No. 867,935
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—86 **16 Claims**



1. An amplifier unit adapted for use in a vehicle having a sound system and for enhancing output signals of the sound system, said amplifier unit comprising:

a) a housing provided with an opening for accessing the interior of said housing, said opening being designed to receive module units therethrough;

b) means for receiving a signal attached to said housing;

c) circuitry means, forming an operable amplifier with basic operating characteristics, for amplifying the received signal, said circuitry means being mounted within said housing;

d) connection means for optionally receiving module units having additional circuitry within said housing and for electrically connecting said additional circuitry with said circuitry means to modify the basic operating characteristics of the operable amplifier of said circuitry means;

e) means for outputting the amplified signal; and

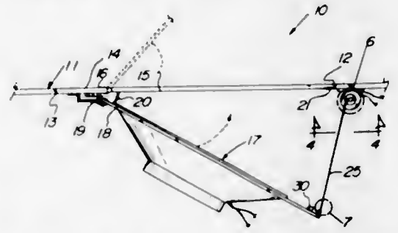
f) said amplifier unit can output amplified signals without a module unit being connected to said circuitry means.

5,285,501

VEHICULAR REAR SHELF SPEAKER APPARATUS WITH AUTOMATIC DEODERIZING FLUID DISPENSER

Harry A. Castillo, Call Box 2020 Ste. 119, Barceloneta, P.R. 00617

Filed Sep. 21, 1992, Ser. No. 948,107
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—86 **1 Claim**



1. A vehicular rear shelf speaker apparatus in combination with a vehicular rear shelf plate mounted within a vehicular passenger compartment, wherein the apparatus comprises,

a plate opening directed through the rear shelf plate, having a predetermined configuration, wherein the rear shelf plate includes a shelf plate bottom surface spaced from a rear shelf plate top surface, and

a cover plate mounted within the plate opening, the cover plate having a cover plate hinge mounted to the rear shelf plate, and

an audio speaker having an audio speaker hinge, wherein the audio speaker hinge is mounted to the shelf plate bottom surface, and

the audio speaker includes a peripheral flange, with the peripheral flange mounted to the speaker hinge, and

the audio speaker and the cover plate are oriented at an acute included angle therebetween, and

a bridge plate mounted between the cover plate and speaker peripheral flange, and

a reversible drive motor, the reversible drive motor mounted to the shelf plate bottom surface in adjacency to the plate opening, and the drive motor including a drive motor output shaft and a pulley mounted to the output shaft, and a cable, the cable having a first end and a second end, the first end mounted to the pulley, and the cable second end mounted to the peripheral flange in a diametrically opposed relationship relative to the speaker hinge, and

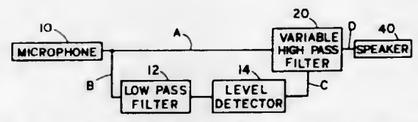
a deodorizing container mounted to the cover plate, wherein the deodorizing container includes a container side wall, and the deodorizing container includes a deodorizing fluid contained therewithin, and a plunger valve mounted to the container side wall, the plunger valve having a plunger valve conduit in fluid communication with the deodorizing fluid, and the plunger valve conduit having a conduit end wall, with the conduit end wall having a plunger reciprocatably mounted therewithin, the plunger including a plunger plate positioned within the plunger valve conduit, and a spring interposed between the plunger plate and the container side wall, with the plunger valve conduit having an ellipsoidal cross-sectional configuration, whereupon pivotal displacement of the cover plate relative to the shelf plate top surface effects engagement of the plunger relative to the shelf plate top surface and projection of the plunger plate within the plunger valve conduit.

5,285,502

AID TO HEARING SPEECH IN A NOISY ENVIRONMENT

Joseph P. Walton, Fairport; Kenneth R. Miller, Macedon; James C. Taylor, Rush; Lynn F. Fuller, Canandiagua, and Robert D. Frisina, Penfield, all of N.Y., assignors to Auditory System Technologies, Inc., Pittsford, N.Y.

Filed Mar. 31, 1992, Ser. No. 861,301
Int. Cl.[5] H04B *15/00*
U.S. Cl. 381—94 **48 Claims**



1. A signal processing circuit for suppressing noise while preserving distinctive features of speech comprising:

a detecting circuit for determining an energy level of a noise component of an audio signal;

a filtering circuit exhibiting a variable response curve expressible in decibels over a domain of audible frequencies;

a controlling circuit for varying a slope of a portion of the variable response curve as a continuous function of the energy level of the noise component of the audio signal for reducing the noise component of the audio signal without perceptively attenuating a range of frequencies that convey a majority of second formant transitions between consonants and vowels;

said portion of the variable response curve within which the slope is varied including frequencies between 250 hertz and 1000 hertz; and

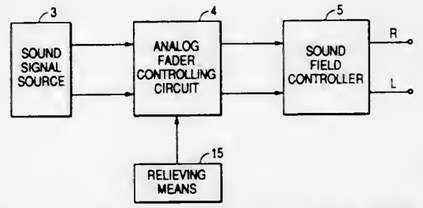
attenuation at 1000 hertz being no greater than 5 decibels when the slope of the response curve is at a maximum roll-off.

5,285,503

APPARATUS FOR REPRODUCING SOUND FIELD

Hirotoshi Satoh, and Toshihito Sawai, both of Kobe, Japan, assignors to Fujitsu Ten Limited, Kobe, Japan

PCT No. PCT/JP90/01737, § 371 Date Aug. 28, 1991, § 102(e) Date Aug. 28, 1991, PCT Pub. No. WO91/10335, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 28, 1990, Ser. No. 743,339
Claims priority, application Japan, Dec. 29, 1989, 1-153089[U]; Nov. 20, 1990, 2-312791; Nov. 30, 1990, 2-333672
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—109 **8 Claims**



1. An apparatus for reproducing a sound field having a sound signal source producing sound signals, a fader controlling circuit connected to the sound signal source, and including a fader manipulating part for separating the sound signals from the sound signal source into predetermined channel signals and separated sound signals to adjust a level of each of the separated sound signals depending on an amount of manipulation of the fader manipulating part, said fader-controlling circuit comprising constant resistors having an input terminals, and a variable resistor connected to the constant resistors at a point, outputting output signals, and having a terminal which is connected to ground, said fader controlling circuit dividing variably the output signals of the point connecting the constant resistors and the variable resistor, relieving means for automatically invalidating a separate adjustment for the sound signals of the sound signal source responsive to the manipulation of the fader manipulating part of the fader controlling circuit, and a sound field controller for forming a desired sound field inside a vehicle, which is attached additionally to said apparatus and connected to an output of the fader controlling circuit for performing a computing process of each of the separated sound signals received from the fader manipulating part invalidated by said relieving means while said sound field controller is operated.

5,285,504

PAGE SEGMENTATION WITH TILT COMPENSATION

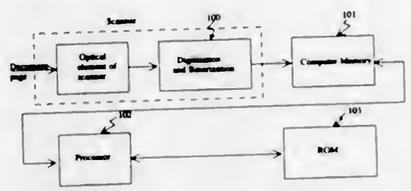
Theodosios Pavlidis, Setauket, and Jiangying Zhou, Stonybrook, both of N.Y., assignors to Research Foundation of the State University of New York, Albany, N.Y.

Filed Sep. 27, 1991, Ser. No. 767,029
Int. Cl.[5] G06K *9/34*
U.S. Cl. 382—9 **7 Claims**

1. A method of scanning and reproducing a page having more than one column of text or pictorial images with a column gap having substantially equal white spacings in between said columns, comprising the steps of:

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a. scanning said page and transforming the scanned images of the page into binary representations;
b. storing said binary representations in memory;
c. partitioning said binary representations into a plurality of scanline blocks, each block having a substantially equal number of scanlines arranged substantially in the same order in which they were scanned;
d. identifying the column gaps in each scanline block by obtaining a plurality of vertical projection profiles for each scanline block;



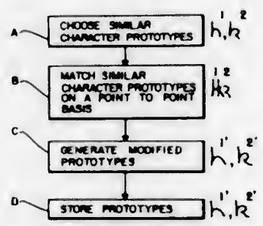
e. comparing the first scanline block with each of the subsequent scanline blocks and determining whether the identified column gaps in each block substantially match;
f. merging the scanline blocks into at least one column block where there are matches in column gaps;
g. estimating the skew angle in the merged column blocks by measuring the slope of the column gaps in the merged column blocks; and
h. generating a reconstructed image from the scanned images according to the column blocks.

5,285,505

METHOD AND APPARATUS FOR IMPROVING PROTOTYPES OF SIMILAR CHARACTERS IN ON-LINE HANDWRITING RECOGNITION

Joonki Kim, White Plains; George J. Leibman, Mount Kisco, and Charles C. Tappert, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1991, Ser. No. 667,917
Int. Cl.[5] G06K *9/62, 9/46, 9/50*
U.S. Cl. 382—13 **10 Claims**



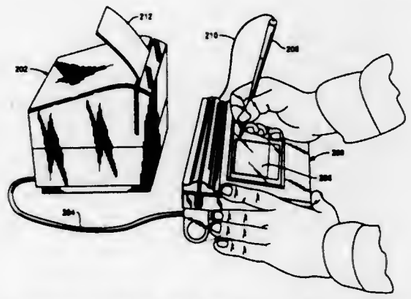
1. A method of providing character prototypes for use by a handwriting character recognition system, comprising the steps of:
selecting a first handwritten character prototype and a second handwritten character prototype, the first and the second handwritten character prototypes each being comprised of a plurality of points, the first and the second handwritten character prototypes being selected for representing similarly shaped handwritten characters;
matching, with a data processor means, corresponding points between the first character prototype and the second character prototype; and
processing, with the data processor means, pairs of matching points to separate one point of the pair from the other point of the pair by an amount proportional to an initial separation between the points of the pair, the step of processing operating to emphasize dissimilarities between the first character prototypes and the second character prototype.

5,285,506

METHOD OF RECORDING A HANDWRITTEN MESSAGE

John F. Crooks, and Robert L. Protheroe, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 30, 1991, Ser. No. 693,822
Int. Cl.[5] G09G *3/02;* **G06K** *9/00*
U.S. Cl. 382—13 **10 Claims**



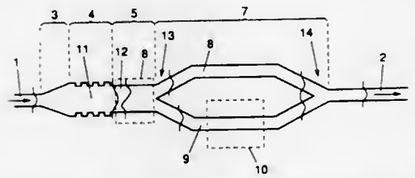
1. A method of recording a handwritten signature comprising the steps of:
causing said signature to be written by a hand-held stylus,
sensing the location of a series of signature points progressively traversed by said stylus during strokewise movement thereof,
generating a stream of digital position data indicating the location of said signature points,
storing said position data in an ordered arrangement corresponding to the sequence of said data within said stream,
retrieving said position data from storage in a sequence related to the storage order thereof,
designating one of said signature points as a start point,
designating another one of said signature points as a stop point,
using said position data to establish the positional relationship between a guide line extending through said start point and said stop point and other ones of said signature points which are strokewise intermediate said start point and said stop point,
when said intermediate signature points all meet a predetermined positional criterion relative to said guide line, then designating a new stop point which is strokewise advanced from said previously designated stop point and repeating said last recited step until a stop point is reached for which an intermediate signature point fails to meet said predetermined positional criterion,
designating one of said previously designated stop points as a new start point,
designating one of said signature points which is strokewise advanced from said new start point as yet another new stop point,
repeating said last six recited steps until all of said signature points have been designated as a stop point at least once, and
selectively returning to storage only that position data corresponding to those of said signature points which were found not to have met said predetermined positional criterion at least once.

5,285,507

CONTROLLABLE POLARISATION TRANSFORMER

Johannes J. G. M. Van der Tol, Zoetermeer, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Mar. 17, 1993, Ser. No. 32,614
Claims priority, application Netherlands, Mar. 27, 1992, 9200576
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—11 **9 Claims**



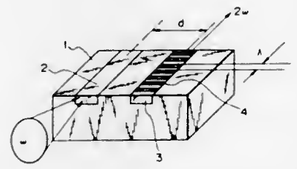
1. Optical device for controllably converting a light signal entering via a wave-guiding input channel and comprising, in an unknown ratio, a first signal component propagating in a first guide mode with a polarisation TX (TE or TM) and a second signal component propagating in a second guided mode with a polarisation TY (TM or TE) into a light signal issuing via a wave-guiding output channel and propagating with a predetermined polarisation TY, which device comprises:
polarisation conversion means for converting the first signal component into a third signal component having the polarisation TY, and
phase control means for controlling the phase between the second and the third signal component, characterised
in that the polarisation means comprise a TX→TY mode converter for converting the first signal component propagating in the first guided mode with the polarisation TX into the third signal component propagating in a third guided mode with a polarisation TY and in order different from the order of the first guided mode,
in that the phase control means comprise a controllable phase shifter provided with first control means for regulating the relative phase between the second signal component in the second guided mode and the third signal component in the third guided mode, and
in that, moreover, combination means are provided for combining the second and the third signal components to form the light signal issuing via the output channel.

5,285,508

OPTICAL WAVELENGTH CONVERTER

Kiyofumi Chikuma, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,242
Claims priority, application Japan, Jan. 14, 1992, 4-005056
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—30 **7 Claims**



1. An optical wavelength converter comprising: a substrate, a first waveguide formed in said substrate and allowing a fundamental wave to enter therein, and a second waveguide disposed parallel to said first waveguide at a predetermined distance spaced therefrom, and refractive index gratings formed in said second waveguide and arranged periodically in the extending direction thereof, each refractive index grating having an equivalent refractive index different from that of said second waveguide, wherein a cyclic period of said refractive index gratings Λ is given by

$$\Lambda \simeq 0.5\lambda/(N_{2(2\omega)}-N_{2(\omega)})$$

wherein λ represents a wavelength and ω a frequency of the fundamental wave, $N_{2(\omega)}$ represents an equivalent refractive index of said second waveguide to the fundamental wave, and $N_{2(2\omega)}$ represents an equivalent refractive index of said second waveguide to the second harmonic, and said first and second waveguides made of optical materials satisfying

$$N_{1(\omega)} \simeq N_{2(2\omega)}$$

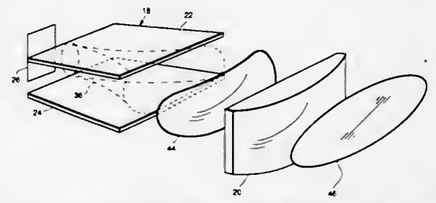
wherein $N_{1(107)}$ represents an equivalent refractive index of said first wavelength to the fundamental wave.

5,285,509

COUPLER FOR WAVEGUIDES OF DIFFERING CROSS SECTION

Robin A. Reeder, Hawthorne, and Gregory R. Sasaki, Long Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

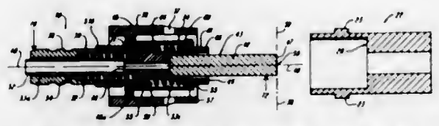
Filed Dec. 18, 1992, Ser. No. 992,399
Int. Cl.[5] G02B *6/32*
U.S. Cl. 385—33 **10 Claims**



1. A waveguide coupler for coupling electromagnetic power between a first waveguide and a second waveguide, each of said waveguides having a rectangular cross-section and terminating in a rectangular port extending transversely to a longitudinal axis of the waveguide, the port of said first waveguide having a height equal to a height of the port of said second waveguide, the port of said second waveguide having a width larger than the width of the port of said first waveguide, said coupler comprising:
an intermediate waveguide disposed between the port of said first waveguide and the port of said second waveguide, said intermediate waveguide being configured as a one-dimensional waveguide and having opposed spaced-apart top and bottom surfaces; and
a cylindrical lens disposed between the port of said second waveguide and said intermediate waveguide to provide a wavefront conversion between a planar wavefront and a cylindrical wavefront;
wherein said intermediate waveguide is spaced apart from the port of said first waveguide by a distance wherein a cross-sectional width of a beam propagating through the port of said first waveguide is equal to approximately 70 percent of a height of said intermediate waveguide.

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5,285,510
FIBER OPTIC CONNECTOR
Paul Slaney, Groton, Mass., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Dec. 15, 1992, Ser. No. 990,527
Int. Cl.[5] G02B *6/26, 6/38*
U.S. Cl. 385—78 **27 Claims**



1. In a fiber optic connector for optically coupling an end face of an optical fiber to a further optical device or fiber, the connector having a front end, a back end, and a captive element for mechanical coupling with the further optical device, and being arranged for supporting the optical fiber along an axis extending between the connector front and back ends, the improvement comprising

A) an inner body having axially spaced front and back ends and having an axially extending through passage for receiving and mounting the optical fiber with selected alignment,

B) an outer body

i) having axially spaced front and back ends, and having first and second sections in axial succession between said ends, with said second section forming said outer-body front end,

ii) said outer body having means for securing the captive element to said first section,

iii) said outer body having a first axially extending through channel for receiving said inner body for axial movement relative to said first section along the axis,

C) means forming first resiliently acting means for resiliently biasing said front end of said inner body axially forward relative to said back end of said outer body, and

D) means forming second resiliently acting means for resiliently biasing said front end of said outer body axially forward relative to said first section of said outer body, whereby

whereby said inner body can be displaced axially relative to said outer body first section in response to a compressive engagement on said inner-body front end.

5,285,511
OPTOELECTRONIC CABLE CONNECTOR
Kaushik S. Akkapeddi, Hanover Township, Morris County; Michael G. German, Secaucus; Constance R. Pallas, Parsippany Township, Morris County; William J. Parzygnat, Morris Township, Morris County, all of N.J., and David A. Snyder, Sprinfield, Pa., assignors to AT&T Laboratories, Murray Hill, N.J.
Filed Jan. 4, 1993, Ser. No. 44
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—89 **19 Claims**

15. A connector comprising:

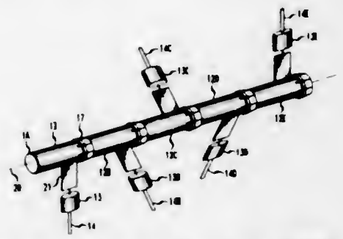
a plurality of hollow cylindrical coaxial conductive contacts, each of different diameter and each having a plug end and a socket end;

all of the contacts being of substantially the same axial length, being substantially coextensive, and surrounding a common axis;

an outer surface of each plug end being adapted to frictionally engage an inner surface of a socket end of a hollow cylindrical contact of another connector, and an inner surface of each socket end being adapted to frictionally engage an outer surface of a plug end of a hollow cylindrical contact of another connector;

a hollow cylindrical insulator separating successive coextensive coaxial contacts;

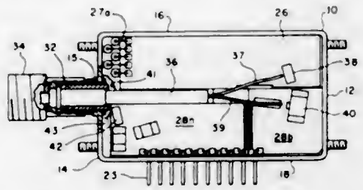
a housing surrounding an outermost one of said contacts, said housing having a first deflectable latch member at one end thereof and an inner circumferential detent on another end thereof, the first latch member being adapted to engage a circumferential detent of another connector, and said inner circumferential detent of the housing being adapted to engage a latch member of yet another connector;



a transverse conductor extending transversely with respect to said common axis from each of said coaxial contacts, said transverse conductors being adapted to be connected to another element;

means comprising said plug ends, said socket ends, said latch and said circumferential detent for allowing said connector to be axially connected to other connectors at opposite axial ends thereof, and to be rotatable through substantially three hundred sixty degrees with respect to such connectors to which it is connected.

5,285,512
FIBER OPTIC TRANSCEIVER WITH INTEGRATED COUPLER
Michael P. Duncan, Pulaski; Norris E. Lewis; Michael B. Miller, both of Christiansburg, and Robert T. Rogers, Sr., Blacksburg, all of Va., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Jun. 24, 1992, Ser. No. 903,278
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—94 **7 Claims**



1. A fiber optic transceiver assembly, comprising:

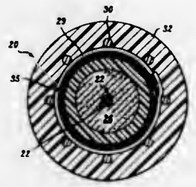
case means, the interior volume of which is divided into first and second chambers by a wall member carrying circuit portions of the transceiver on opposite sides thereof,

optical transmitter means for receiving electrical signals and producing corresponding optical output signals at an optical output terminal and mounted on one side of said wall in said first chamber,

optical receiver means for receiving optical signals and producing therefrom corresponding electrical output signals at electrical output terminals and mounted on said one side of said wall in said first chamber and spaced from said optical transmitter means, the remainder of the transceiver circuitry being mounted on the other side of said wall member, and

fiber optic coupler assembly means extending from the exterior through a first wall of said case means and carrying at least one optical fiber from an external optical circuit and having optical connections to said transmitter means and said receiver means.

5,285,513
OPTICAL FIBER CABLE PROVIDED WITH STABILIZED WATERBLOCKING MATERIAL
Stanley Kaufman, and Jim J. Sheu, both of Dunwoody, Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 30, 1992, Ser. No. 983,491
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—109 **12 Claims**



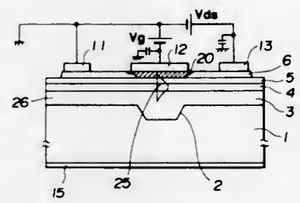
1. An optical fiber cable, which comprises:

a core comprising at least one optical fiber transmission medium;

a sheath system which is disposed about said core; and

a filling composition of matter which is disposed about the transmission medium in said core, said filling composition of matter comprising a hydrocarbon, a block copolymer, a colloidal filler and an antioxidant system which includes a hindered phenol sulfide in combination with a metal deactivator selected from the group consisting of dialkyldithiophosphates and diaryldithiophosphates.

5,285,514
WAVEGUIDE TYPE PHOTODETECTOR AND A METHOD OF FABRICATING THE SAME
Hidetoshi Nojiri, Hadano, and Tamayo Hirokio, Zama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1992, Ser. No. 887,806
Claims priority, application Japan, May 27, 1991, 3-151022
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—131 **24 Claims**



1. A waveguide type photodetector

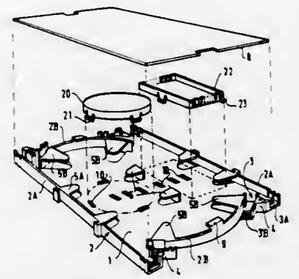
a semiconductor substrate having a groove formed at a position therein;

a waveguide layer formed on said semiconductor substrate such as to provide a three-dimensional waveguide at a position in said waveguide layer which position is determined by the position of said groove in said substrate;

a light absorbing layer for absorbing a light propagated through said waveguide, said light absorbing layer being formed on said waveguide layer; and

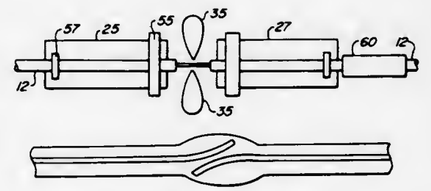
a carrier take-out electrode for detecting carriers generated by the light absorbed in said light absorbing layer, said electrode being formed on said light absorbing layer.

5,285,515
ADAPTABLE CASSETTE FOR COILING AND SPLICING OPTICAL FIBERS
Michel Milanowski, Anserville, and Alain Vincent, Juilly, both of France, assignors to Mars Actel, Vrigne Aux Bois, France
Filed Feb. 22, 1993, Ser. No. 21,477
Claims priority, application France, Feb. 21, 1992, 92 02028
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—135 **11 Claims**



1. An adaptable cassette for coiling and splicing optical fibers, said cassette including a bottom, a discontinuous rim substantially around the periphery of the bottom, retaining tabs on the rim, with the fibers being held underneath the tabs, holding means for holding optical fiber connections on the bottom, a closing cover attached to the rim, and optionally a cylinder on the bottom so that the fibers can be coiled around the cylinder and/or against the rim; wherein said bottom is plane and includes, at least on one side of a middle longitudinal axis, a first set of openings assigned to the optional removable fixing of said cylinder on said bottom, and, symmetrically on either side of said middle longitudinal axis, a plurality of openings co-operating to define a plurality of different second sets of openings, each set being assigned to the removable fixing of a connection support chosen from different supports, and selectively constituting said holding means, and wherein said cylinder is provided with a set of snap-fastening catches which fasten into said first set of openings, and each of said different supports is provided with its own set of snap-fastening catches which fasten into one of said second sets of openings.

5,285,516
FUSED FIBER OPTIC ATTENUATOR HAVING AXIALLY OVERLAPPING FIBER END PORTIONS
Ren-Sue Wong, Sunnyvale, Calif., assignor to Kaptron, Inc., Palo Alto, Calif.
Filed Mar. 18, 1992, Ser. No. 853,468
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—140 **20 Claims**



11. A fiber optic attenuator comprising:

first and second segments, each having respective first and second ends, a portion of each segment including the first end being referred to as a first end portion, said fiber

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segments being characterized by a fiber diameter and having respective cores having respective ends;

said respective first end portions being fused to each other with said ends of said cores completely encapsulated and overlapping each other in an overlap region by an axial distance that is greater than said fiber diameter, said respective second ends being located on longitudinally opposite sides of said overlap region.

5,285,517

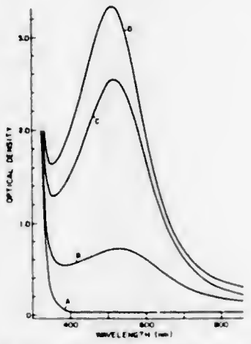
HIGH ENERGY BEAM SENSITIVE GLASSES

Che-Kuang Wu, Riverside, Calif., assignor to Canyon Materials, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 757,557, Sep. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 436,418, Nov. 14, 1989, Pat. No. 5,078,771, which is a continuation-in-part of Ser. No. 308,187, Feb. 7, 1989, abandoned, and a continuation-in-part of Ser. No. 57,349, Jun. 1, 1987, Pat. No. 4,894,303, which is a division of Ser. No. 619,809, Jun. 12, 1984, Pat. No. 4,670,366, which is a continuation-in-part of Ser. No. 507,681, Jun. 24, 1983, Pat. No. 4,567,104. This application Jun. 26, 1992, Ser. No. 906,277

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—142 **3 Claims**



3. A slab waveguide used in applications including single mode slab waveguides, multimode slab waveguides, channel waveguides, optical planar waveguide branching circuits, directional couplers and splitters, said slab waveguide comprising an integral ion-exchanged surface layer (IIES layer) of a predetermined thickness, having a refractive index that is substantially constant in the thickness dimension, and is higher in value than the refractive index of a parent glass article, said IIES layer composed of a glass layer of the parent glass article that has been ion-exchanged with an acidic aqueous solution containing soluble ionic silver to diffuse silver ions into said glass layer to a predetermined thickness, the glass composition of said parent glass article comprising of 3-30% total of alkali metal oxides selected from the group of Li_2O, Na_2O, K_2O, Cs_2O and Rb_2O, 2-35% total of photosensitivity inhibitor (PI agents), RS-Suppression agent (RSS agents) and acid-durability-and glass-network-strengthener (ADAGNS), and 50-95% SiO_2, said IIES layer having Ag+ ions therein containing silanol groups and/or water in the concentration range between about 0.01-12% by weight H_2O, the concentrations of alkali metal ions in said IIES layer being less with an increase in the concentration of Ag+ ions, the glass composition containing a sufficient amount of PI agents, RSS agent and/or ADAGNS to render the IIES layer a property of retaining the surface quality and surface figure of the parent glass article upon the aqueous ion exchange reactions.

5,285,518

FLUORIDE GLASSES AND METHODS FOR MAKING OPTICAL FIBERS FROM THE GLASSES

Abdessamad Elyamani, Eatontown, and Robert Pafchek, Piscataway, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Mar. 13, 1992, Ser. No. 850,747

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—142 **16 Claims**

1. An optical fiber having a glass core comprised of the fluorides of zirconium, barium, lanthanum, aluminum, sodium, and thorium, wherein the core has a Hruby factor of at least 0.9.

5,285,519

TRANSPARENT FILM RADIANT HEAT SOURCE FOR INCUBATORS HAVING HOOK RETAINING MEANS

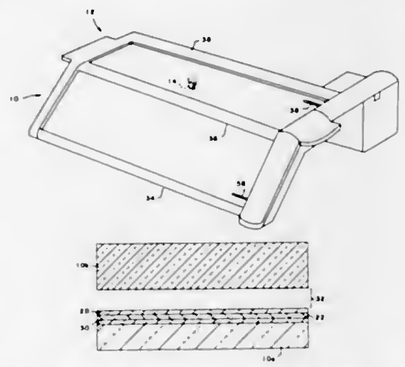
Barry E. Barsky, Huntingdon Valley; Joseph P. Bagnell, Southampton, and Jan F. Wenstrup, Doylestown, all of Pa., assignors to Air-Shields, Inc., Hatboro, Pa.

Continuation-in-part of Ser. No. 561,893, Aug. 2, 1990, Pat. No. 5,119,467. This application Mar. 6, 1992, Ser. No. 847,926

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] A61G *11/00*; **H05B** *3/34*

U.S. Cl. 392—439 **27 Claims**



1. A radiant heat source overlay for an incubator hood comprising:

an inclined section;

a horizontal section;

at least one of said inclined and said horizontal sections including:

(a) a first rigid, transparent sheet,

(b) a second rigid, transparent sheet,

(c) a film of transparent, plastic material having a transparent, electrically conductive coating on a surface thereof, said film disposed between said first and said second rigid, transparent sheets, and

(d) a set of conductor units electrically and mechanically connected to said transparent, electrically conductive coating with each of said conductor units having a free end adapted for connection to an electrical power source;

means for holding said inclined an horizontal sections in a fixed relationship to one another; and

retaining means adapted for engagement with an incubator hood on which said overlay is placed for restricting relative movement between said overlay and said incubator hood.

5,285,520

PREDICTIVE CODING APPARATUS

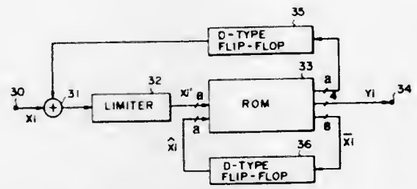
Shuichi Matsumoto, Fujimi, and Masahiro Saito, Higashiyamoto, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 312,032, Feb. 17, 1989, abandoned. This application Jun. 14, 1991, Ser. No. 715,918

Claims priority, application Japan, Mar. 2, 1988, 63-47620

Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2 **3 Claims**



1. A coding apparatus comprising:

input terminal means for receiving a sample value signal (xi) for each sampling time slot;

correction means for correcting, for each sampling time slot, the sample value signal by the use of a quantization error signal at a sampling time slot just succeeding to an instant sampling time slot to produce a corrected sample value signal (xi');

a memory having address signal input terminals to receive, for each sampling time slot, the corrected sample value signal (xi') and the corrected predictive value signal ($\hat{xi}$) as a set of address signals, for storing, for each set of said address signals, data indicative of an encoded code signal (yi) of the sample value signal (xi), a local decoded value signal ($\overline{xi}$) of the encoded code signal and the quantization error signal of the encoded code signal, and having output terminals for sending out, for each sampling time slot, the local decoded value signal and the quantization error signal, read out in response to each set of said address signals;

feedback means for feeding back the local decoded value signal ($\overline{xi}$) from one of said output terminals of the memory to one of the address signal input terminals thereof as the predictive value signal ($\hat{xi}$) at a sampling time slot just succeeding to an input sampling time slot; and

means for applying the quantization error signal from one of the output terminals of the memory to said correction means at the sampling time slot just succeeding to the instant sampling time slot.

5,285,521

AUDIBLE TECHNIQUES FOR THE PERCEPTION OF NONDESTRUCTIVE EVALUATION INFORMATION

Amos E. Holt; Kent D. Polk, and Richard A. Cervantes, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 1, 1991, Ser. No. 678,741

Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2.79 **12 Claims**

7. An apparatus for encoding information about characteristics of a material under analysis into auditory acoustic behavior capable of interpretation by the human auditory system, comprising:

means for sensing acoustic and/or electromagnetic conditions in said material, said conditions being indicative of said characteristics of said material;

means for creating an electrical signal indicative of said acoustic and/or electromagnetic conditions, said electrical signal having:

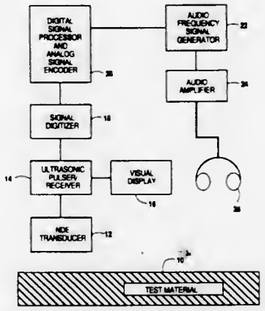
(a) a frequency proportional to frequency characteristics of said acoustic and/or electromagnetic conditions;

(b) an amplitude proportional to amplitude characteristics of said acoustic and/or electromagnetic conditions; and

(c) timing correlated to said acoustic and/or electromagnetic conditions;

means for measuring values of said frequency, amplitude, and timing of said electrical signal;

microprocessor means for storing said measured values for said frequency, amplitude, and timing of said electrical signal, and comparing said measured values to previously stored values of frequency, amplitude, and timing known to be produced by specific material characteristics, said microprocessor means further identifying and correlating patterns in said stored frequency, amplitude, and timing



values with similar patterns previously stored and known to be produced by specific material characteristics, said microprocessor means further storing information necessary for the creation of an acoustic signal to be selected from stored information for a plurality of acoustic signals, said stored acoustic signal information associated with said identified patterns of frequency, amplitude, and timing values;

means for creating an acoustic signal preselected to be associated with said identified patterns of frequency, amplitude, and timing values; and

means for transmitting said acoustic signal to a human listener, wherein said listener has been trained to associate said acoustic signal with said specific material characteristics.

5,285,522

NEURAL NETWORKS FOR ACOUSTICAL PATTERN RECOGNITION

Paul H. Mueller, King of Prussia, Pa., assignor to The Trustees of The University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 428,455, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 128,321, Dec. 3, 1987, abandoned. This application Oct. 8, 1991, Ser. No. 773,193

Int. Cl.[5] G10L *9/02*

U.S. Cl. 395—2.41 **25 Claims**

1. A method of recognizing a pattern in a received signal, comprising the steps of:

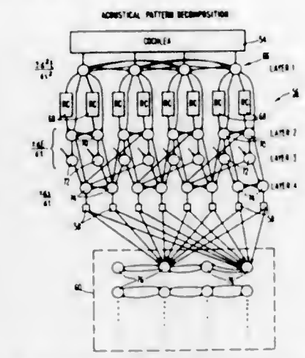
dividing said received signal into a plurality of frequency components;

determining primitives representing the respective differential relationships between energy, frequency and time characteristics of said plurality of frequency components using a first neural network comprising a plurality of interconnected electronic neurons; and

decoding said primitives into predetermined patterns using a second neural network comprising a plurality of interconnected electronic neurons, whereby each respective neuron of said second neural network is connected to said first

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neural network so as to receive those primitives which make up said respective neuron's predetermined pattern



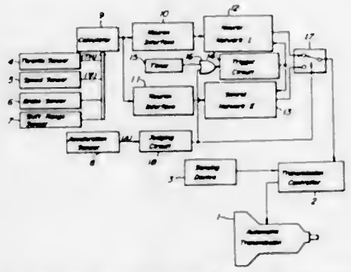
and is activated when said primitives making up said respective neuron's predetermined pattern are received.

5,285,523

APPARATUS FOR RECOGNIZING DRIVING ENVIRONMENT OF VEHICLE

Hiroshi Takahashi, Zushi, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Sep. 24, 1991, Ser. No. 764,735
Claims priority, application Japan, Sep. 25, 1990, 2-251794
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—22 **7 Claims**



1. An apparatus for recognizing driving environments of a vehicle comprising:

detecting means including a plurality of sensors for detecting parameters which represent operating conditions of the vehicle to produce a set of detected parameter values;

converting means including a plurality of neuron interfaces, each of which receives said set of detected parameter values and produces an input pattern of detected parameters;

recognizing means including a plurality of neural networks having different recognizing and learning faculties and different associating faculties, each of said neural networks comprising an input layer for receiving an input pattern of detected parameters produced by a corresponding neuron interface, an output layer for producing a recognition result, and a hidden layer for coupling said input and output layers with each other; and

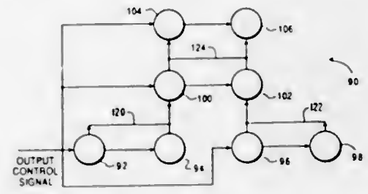
selecting means including sensing means for detecting driving conditions of the vehicle directly indicative of vehicle control apparatus positional information within the vehicle to produce a driving condition signal, a signal processing means for processing said driving condition signal to produce a switching signal, and switching means for selecting one of recognition results produced by said plurality of neural networks in accordance with said switching signal.

5,285,524

NEURAL NETWORK WITH DAISY CHAIN CONTROL

Ronald S. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 632,862, Dec. 24, 1990, Pat. No. 5,214,474.
This application Nov. 12, 1992, Ser. No. 974,773
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 **6 Claims**



1. A neural network, comprising:

first and second coupled neural node layers, said first layer comprising:

a first group of neural nodes, each node in said first group outputting to a first destination in said second layer;

a second group of neural nodes each node in said second group outputting to a second destination in said second layer different from the first destination;

a first channel connected between said first group in said first layer and the first destination in said second layer; and

a second channel different from said first channel and connected between said second group in said first layer and the second destination in said second layer.

5,285,525

INDUSTRIAL ROBOT CONTROL METHOD AND APPARATUS

Yoichi Nagao; Hideaki Ohta, both of Kakogawa; Kazuhiko Onoue, Nishinomiya, and Hisanori Nakamura, Toyota, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Feb. 13, 1991, Ser. No. 654,542
Claims priority, application Japan, Feb. 14, 1990, 2-34889
Int. Cl.[5] G05B *19/18*
U.S. Cl. 395—87 **2 Claims**

1. An industrial robot control method, comprising the steps of:

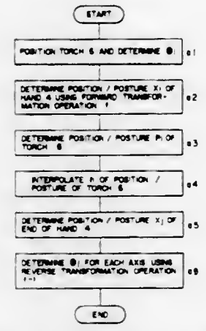
determining positional values θ_i corresponding to positions/postures of a plurality of axes of an industrial robot when a work mounted to an end portion of a hand of the robot is located at a position adjacent to an end portion of a tool separated from the robot;

determining positions/postures $\overline{X}_i$ in a reverse matrix representation, for the values θ_i, of a robot base of the robot with respect to a coordinate system of the end portion of the hand by means of a forward transformation operation by which positions/postures of the end portion of the hand with respect to the robot base are determined using the values θ_i;

determining positions/postures T_i in a matrix representation, for the positions/postures of the axes, of the end portion of the tool with respect to the coordinate system of the end portion of the hand, on the basis of the positions/postures $\overline{X}_i$ and predetermined positions/postures P in a matrix representation of the end portion of the tool with respect to the coordinate system of the robot base;

determining intermediate positions/postures T_j each between two of the positions/postures T_i, using an interpolation function;

determining positions/postures $\overline{X}_j$ in a reverse matrix representation of the robot base with respect to the coordinate



system of the end portion of the hand, on the basis of the positions/postures P and the positions/postures T_j;

determining positional values θ_j corresponding to positions/postures of the axes and to the positions/postures $\overline{X}_j$, using a reverse transformation operation of the forward transformation operation; and

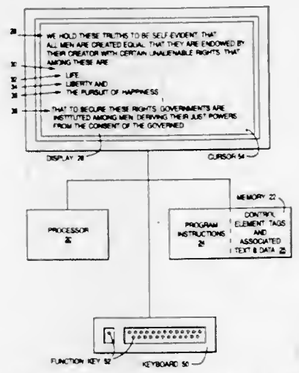
driving the robot using the values θ_j.

5,285,526

METHOD OF MANIPULATING ELEMENTS OF A STRUCTURED DOCUMENT, FUNCTION KEY OPERATION BEING DEPENDENT UPON CURRENT AND PRECEDING IMAGE ELEMENT TYPES

Clayton J. Bennett, III, Rockville, Md.; Davis A. Foulger, Wappinger Falls, N.Y.; Eric M. Hesse, Gaithersburg, Md., and David W. Walsh, Farmers Branch, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 344,332, Apr. 26, 1989, abandoned.
This application Sep. 3, 1992, Ser. No. 940,732
Int. Cl.[5] G06F *13/10*
U.S. Cl. 395—100 **31 Claims**



1. In a data processing system including a processor for executing program instructions, a display device coupled to said processor for displaying a plurality of images in an ordered sequence in response to said program instructions, and a keyboard coupled to said processor having a function key, said display device including a cursor displayed thereon and related to a selected location in said sequence of images where a result of actuating said function key is to have effect, a method for selecting one of a plurality of text editing functions to be performed when said function key is actuated, based on the location of said cursor in said sequence of images, comprising the steps of:

storing said plurality of images in said system in association with an image type value and a sequence indication;

storing a plurality of text editing instruction routines, each routine corresponding to one of said plurality of functions of said function key and related to said image type value;

displaying at least a portion of said plurality of images on said display device and displaying said cursor at a selected cursor location thereon;

identifying a focal image of said plurality of images in said sequence, having a sequence indication related to said selected cursor location;

identifying a preceding image of said plurality of images in said sequence which is adjacent to and precedes said focal image in said sequence;

accessing a selected text editing instruction routine from said plurality of instruction routines, based on said image type value of said focal image and an image type value of said preceding image;

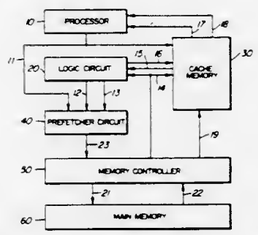
executing said accessed text editing instruction routine to perform a selected one function of said plurality of functions of said focal image.

5,285,527

PREDICTIVE HISTORICAL CACHE MEMORY

William R. Crick, Ottawa; Walter J. Jager, Kanata; Michael L. Takefman, and Randal K. Mullin, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 29, 1990, Ser. No. 619,588
Int. Cl.[5] G06F *12/00, 13/10*
U.S. Cl. 395—425 **2 Claims**



1. In a system having a processor and a memory system which includes a part predictive part historical cache memory, a method of halting the prefetching of instructions to the cache memory when the ratio of the predictive part to the historical part of the cache memory becomes greater than a predetermined ratio, the method comprising the steps of:

maintaining a first register which contains a word having a value which defines a first pointer to a location in the cache memory which held a last instruction provided to the processor from the cache memory; and

maintaining a second register having a predetermined number of contiguous zero-bits and having a predetermined number of one-bits forming a word, a ratio of the number of zero-bits to the number of one-bits corresponding to a desired ratio of the historical to predictive parts of the cache memory, the bit position having a value of zero that is immediately to the left of and adjacent to the contiguous bits having a value of one, corresponding to a location in the cache memory incremented by one location from

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where a last prefetched instruction was stored in the cache memory;

ANDing each bit of the first register with each respective bit of the second register to yield an ANDed word having a number of bits corresponding to the number of bit positions of the first and second registers;

ORing each of the bits of the ANDed word to yield a single bit value corresponding to a prefetch control signal; and

halting prefetching of instructions when the prefetch control signal has a zero value.

5,285,528

DATA STRUCTURES AND ALGORITHMS FOR MANAGING LOCK STATES OF ADDRESSABLE ELEMENT RANGES

Caswall A. Hart, Millwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1991, Ser. No. 660,451

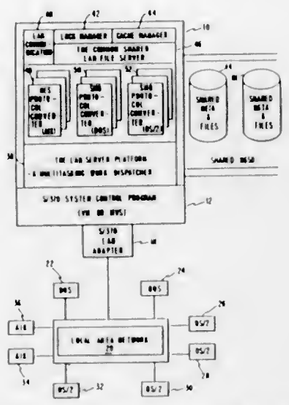
Int. Cl.[5] **G06F** *12/00*

U.S. Cl. 395—725 **26 Claims**

1. Apparatus including a lock manager means for representing possibly overlapping lock ranges of addressed elements, said apparatus including

means for creating and maintaining at least one singular description of at least one range of addressable elements representing one or more addressable elements, and

means responsive to at least requests for locks for controlling said means for creating and maintaining at least one singular description to at least divide overlapping descriptions of ranges of said addressable elements into non-overlapping, singular descriptions of ranges of said addressable elements.



DESIGN PATENTS

GRANTED FEB. 8, 1994

ERRATA

For CLASS	See PATENT NO.
022-107	D 343,954
015-133	D 344,081

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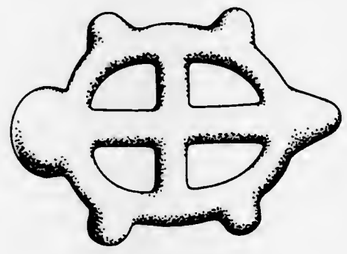
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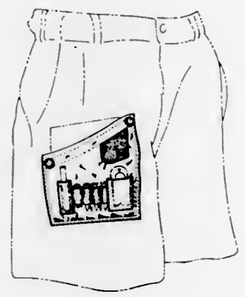
DESIGNS

FEBRUARY 8, 1994

343,943
TURTLE-SHAPED SNACK FOOD
George P. Mottur, Danville, Pa., and Michael J. Luebbers, Liverpool, N.Y., assignors to Borden, Inc., Columbus, Ohio
Filed Oct. 23, 1992, Ser. No. 797
Term of patent 14 years
U.S. Cl. D1—111



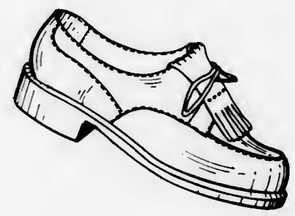
343,944
POCKET FOR A GOLF SCORECARD AND ACCESSORIES
David E. Krugler, 13716 W. Rim #601, Euless, Tex. 76040
Filed May 6, 1992, Ser. No. 880,318
Term of patent 14 years
U.S. Cl. D2—857



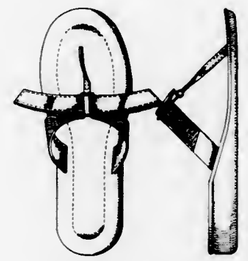
343,945
HAT
Jaime G. Rivera, 1724 W. Spring St., Long Beach, Calif. 90810
Filed Feb. 25, 1992, Ser. No. 840,995
Term of patent 14 years
U.S. Cl. D2—866



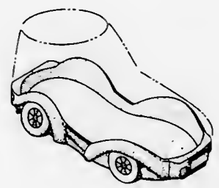
343,946
SHOE
Roger Valade, Limoges Cedex, France, assignor to Societe Francaise de Chaussures, Limoges Cedex, France
Filed Dec. 10, 1991, Ser. No. 805,799
Claims priority, application World Int. Prop. O., Jun. 13, 1991, DM/019881
Term of patent 14 years
U.S. Cl. D2—923



343,947
PEDICURE SLIPPER
Lucia B. Coito, 3120 Clamdigger La., Las Vegas, Nev. 89117, and Helen I. Atkins, 1700 Kassabian Ave., Las Vegas, Nev. 89104
Filed Jun. 29, 1992, Ser. No. 906,131
Term of patent 14 years
U.S. Cl. D2—917

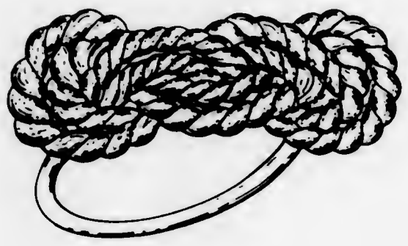


343,948
ATHLETIC SHOE OUTSOLE
Lori D. Smith, 12835 Via Catherina, Grand Blanc, Mich. 48439
Filed Feb. 19, 1992, Ser. No. 837,439
Term of patent 14 years
U.S. Cl. D2—977



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343,949
HAIRBAND
Merrill Weisgrod, South Dartmouth, Mass., assignor to TLS Acquisition, Dover, Mass.
Filed Jan. 13, 1992, Ser. No. 820,215
Term of patent 14 years
U.S. Cl. D2—875



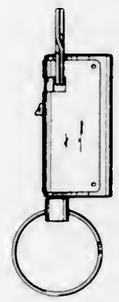
343,950
WALKING CANE
William J. Just, Ste. 200, 91 West Wieuca Rd., Atlanta, Ga. 30342
Filed Aug. 26, 1991, Ser. No. 750,021
Term of patent 14 years
U.S. Cl. D3—6



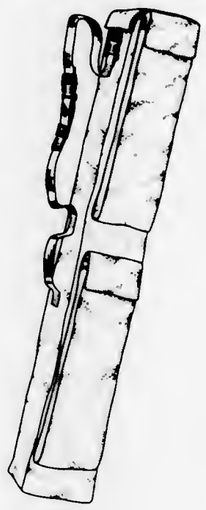
343,951
WALLET WITH CARRYING STRAP
Cindy Petty, West Bend; Suzanne L. Smith, Grafton; Richard D. Gagan, and Eric Lund, both of West Bend, all of Wis., assignors to Amity Leather Products Company, West Bend, Wis.
Filed Sep. 1, 1993, Ser. No. 12,492
Term of patent 14 years
U.S. Cl. D3—249



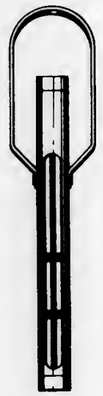
343,952
KEY HOLDER
Sumner B. MacDonald, 285 North Farm Dr., Bristol, R.I. 02809
Filed Jul. 17, 1991, Ser. No. 731,085
Term of patent 14 years
U.S. Cl. D3—207



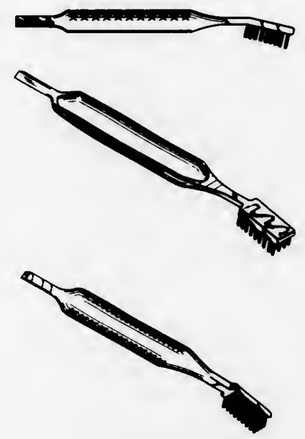
343,953
CATHETER STORAGE CASE
Jose A. Marques, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Apr. 13, 1992, Ser. No. 867,924
Term of patent 14 years
U.S. Cl. D3—203



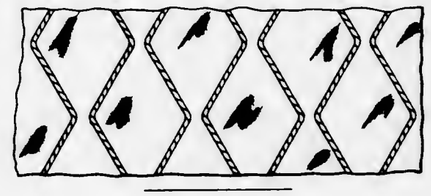
343,954
ARCHERY QUIVER
Orbon J. Simmons, Rte. 2, Box 49, Jasper, Ala. 35501
Filed Sep. 24, 1992, Ser. No. 948,796
Term of patent 14 years
U.S. Cl. D22—107



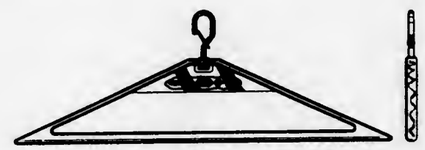
343,955
TOOTHBRUSH
Furman D. Peters, Jr., #1 Heathwood, Barnwell, S.C. 29812
Filed Oct. 12, 1990, Ser. No. 596,581
Term of patent 14 years
U.S. Cl. D4—104



343,956
RIBBON
Lana Wechsler, 1125 Park Ave., #11A, New York, N.Y. 10128, and Jean Battaglia, 11 E. 75th St., New York, N.Y. 10021
Filed May 15, 1990, Ser. No. 523,463
Term of patent 14 years
U.S. Cl. D5—40

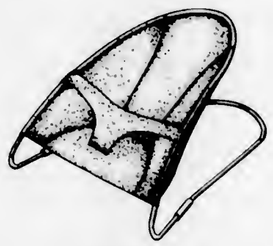


343,957
HANGER
Loren G. Sievila, 2100 Prairie Ave., Rock Springs, Wyo. 82901
Filed Aug. 3, 1992, Ser. No. 924,235
Term of patent 14 years
U.S. Cl. D6—317

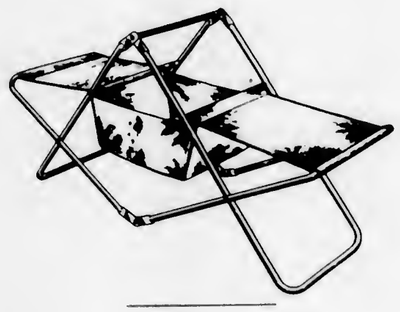


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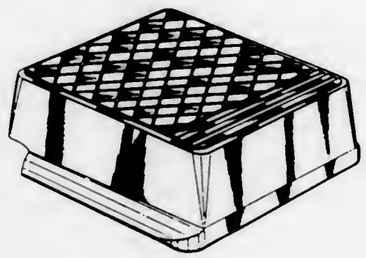
343,958
INFANT CHAIR
Mark H. Greenwood, Arlington Heights, Ill., assignor to Children On The Go, Inc., Wheeling, Ill.
Continuation-in-part of Ser. No. 779,717, Oct. 21, 1991, Pat. No. 5,203,611. This application Oct. 21, 1992, Ser. No. 704
Term of patent 14 years
U.S. Cl. D6—333



343,959
FOLDABLE DUAL SEAT
Henry W. Wolf, 649 S. Xenon Ct., Lakewood, Colo. 80228
Filed Aug. 29, 1991, Ser. No. 751,688
Term of patent 14 years
U.S. Cl. D6—335



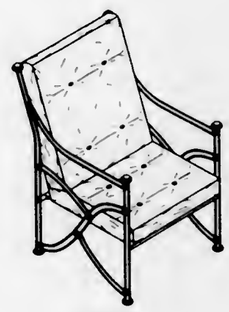
343,960
STEP STOOL
Paul Leduc, Scarborough, Canada, assignor to Santulin Management Ltd., Scarborough, Canada
Filed Jan. 11, 1993, Ser. No. 3,630
Claims priority, application Canada, Jul. 15, 1992, 15-07-92-2
Term of patent 14 years
U.S. Cl. D6—349



343,961
LAWN CHAIR
Terence E. Gibbs, Grandview, N.Y., assignor to Shin Yeh Enterprise Co., Ltd., Taiwan
Filed May 20, 1992, Ser. No. 886,981
Term of patent 14 years
U.S. Cl. D6—369



343,962
CHAIR
Bernie Lowsky, 1000 W. Island Blvd., Apt. #1810, North Miami Beach, Fla. 33160
Filed Jun. 1, 1992, Ser. No. 891,468
Term of patent 14 years
U.S. Cl. D6—369



343,963
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company, Birmingham, Ala.
Filed Nov. 19, 1991, Ser. No. 794,203
Term of patent 14 years
U.S. Cl. D6—373



343,964
LAWN CHAIR
Terence E. Gibbs, Grandview, N.Y., assignor to Shin Yeh Enterprise Co., Ltd., Taiwan
Filed May 20, 1992, Ser. No. 886,982
Term of patent 14 years
U.S. Cl. D6—374



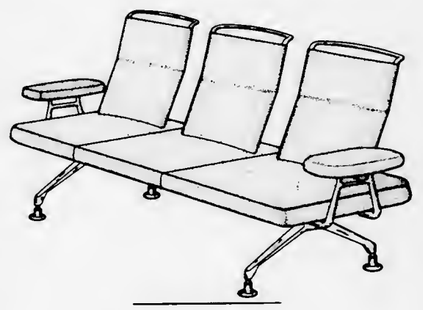
343,965
CHAIR
Hans H. Werner, Stuttgart, Fed. Rep. of Germany, assignor to Dreipunkt GmbH Objekt-und Wohnmöbel, Donzdorf, Fed. Rep. of Germany
Filed Mar. 6, 1991, Ser. No. 664,562
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1990, M90058453
Term of patent 14 years
U.S. Cl. D6—375



343,966
CHAIR
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company, Birmingham, Ala.
Filed Apr. 13, 1992, Ser. No. 867,903
Term of patent 14 years
U.S. Cl. D6—376



343,967
SETTEE
Antonio Citterio, Milan, Italy, assignor to Fehlbaum & Co., Switzerland
Filed Apr. 24, 1991, Ser. No. 690,800
Term of patent 14 years
U.S. Cl. D6—381

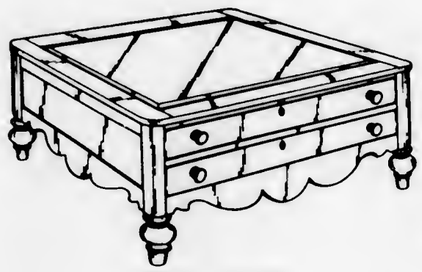


343,968
PLANT STAND DESIGN
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill. 60015, and Bradley S. Emalfarb, 26529 North Highway 83, Mundelein, Ill. 60060
Filed Aug. 9, 1991, Ser. No. 745,087
Term of patent 14 years
U.S. Cl. D6—403

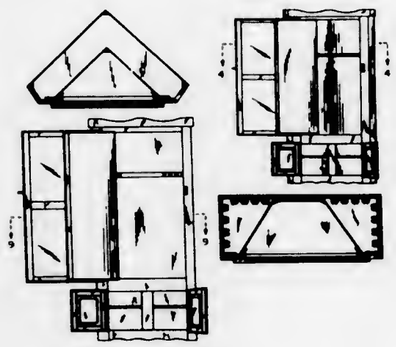


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343,969
COCKTAIL TABLE WITH STORAGE
Edwin L. Ball, Thomasville, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Continuation of Ser. No. 853,315, Mar. 18, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 7,083
Term of patent 14 years
U.S. Cl. D6—436



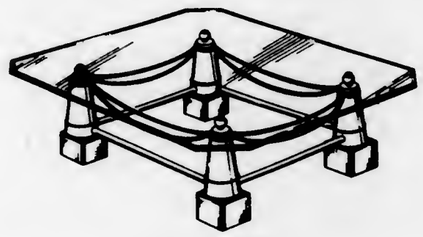
343,970
CABINET WITH CONCEALED GUN COMPARTMENT
William R. Campbell, 10431 Coppermine Rd., Woodsboro, Md. 21798
Filed Jan. 31, 1991, Ser. No. 648,353
Term of patent 14 years
U.S. Cl. D6—437



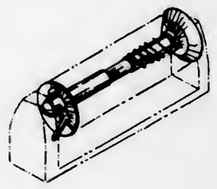
343,971
DESIGNER SHOWCASE CAROUSEL
Larry W. McClave, Louisville, Ky., assignor to Cardinal Aluminum Company, Louisville, Ky.
Filed Jul. 27, 1992, Ser. No. 920,269
Term of patent 14 years
U.S. Cl. D6—455



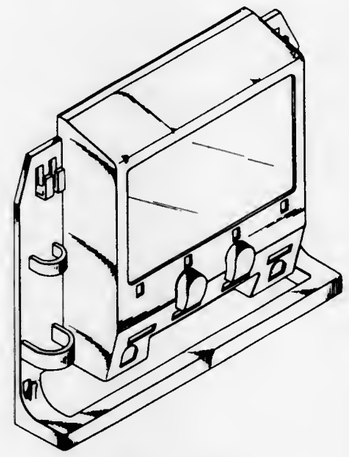
343,972
TABLE
Jericho P. Pauer, Onalaska, Wis., and Randy Peterson, Winona, Minn., assignors to Ashley Furniture Industries, Inc., Arcadia, Wis.
Filed May 14, 1992, Ser. No. 883,412
Term of patent 14 years
U.S. Cl. D6—480



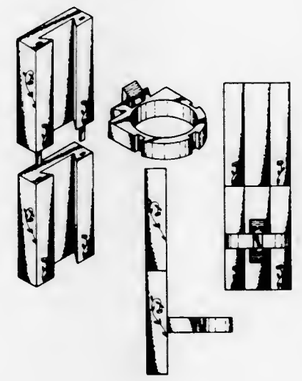
343,973
BRAKING ASSEMBLY FOR PREVENTING PAPER FROM UNROLLING TOO RAPIDLY
Peter C. Mele, P.O. Box 1596, Burlington, Vt. 05402
Filed Feb. 28, 1992, Ser. No. 842,597
Term of patent 14 years
U.S. Cl. D6—518



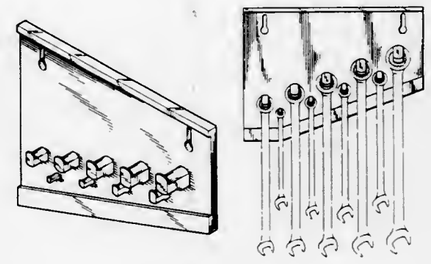
343,974
COMBINATION TOILETRY DISPENSING AND TOILET ARTICLE SUPPORT UNIT
Tsai Sz-Hsing, Suite 1, 11F, 95-8, Chang Ping Road Sec. 1, Taichung, Taiwan
Filed Nov. 25, 1991, Ser. No. 797,280
Term of patent 14 years
U.S. Cl. D6—524



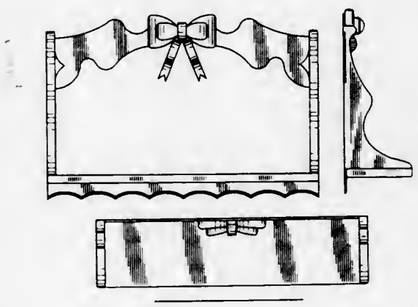
343,975
ROOM AND SHOP ORGANIZER
John Penalver, Jr., 138-06 234th St., Laurelton, N.Y. 11422
Filed Dec. 5, 1991, Ser. No. 802,458
Term of patent 14 years
U.S. Cl. D6—567



343,976
TOOL DISPLAY RACK
Jessie Chow, 15-30, Kuangming Rd., Taichung, Taiwan
Filed Nov. 30, 1992, Ser. No. 2,134
Term of patent 14 years
U.S. Cl. D6—571



343,977
SHELVING UNIT
Robert O. Iburg, R.R. 2, Box 65, Williamsburg, Iowa 52361
Filed Jun. 22, 1992, Ser. No. 902,039
Term of patent 14 years
U.S. Cl. D6—574

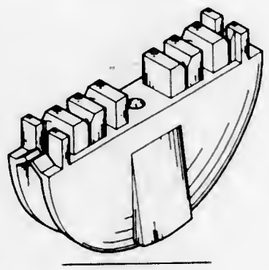


343,978
SHOWER CURTAIN REINFORCING ELEMENT
Michael Gifford, 4501 Charingwood Ct., Montgomery, Ala. 36109
Filed Aug. 7, 1991, Ser. No. 741,168
Term of patent 14 years
U.S. Cl. D6—580

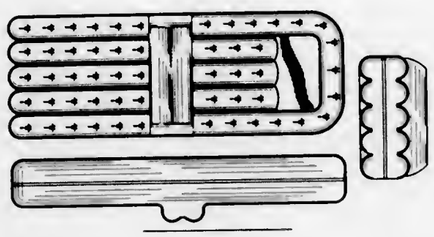


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343,979
LADDER TAPE FIXER
William H. Rapp, Buena Park, Calif.; Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Topeka, Kans., assignors to Nien Made Enterprise Co., Ltd., Chang Hua, Taiwan
Filed Dec. 4, 1992, Ser. No. 2,130
Term of patent 14 years
U.S. Cl. D6—581



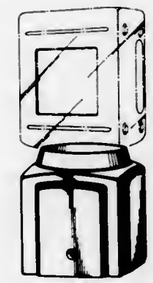
343,980
BACK REST AIR MATTRESS
Nancy L. Torchia, 36042 Cripps Pl., Fremont, Calif. 94536
Filed Sep. 19, 1990, Ser. No. 584,858
Term of patent 14 years
U.S. Cl. D6—596



343,981
COFFEEMAKER
Daniel R. Ferrara, Jr., Bantam, Conn., assignor to Conair Corporation, Stamford, Conn.
Filed May 5, 1992, Ser. No. 878,840
Term of patent 14 years
U.S. Cl. D7—309



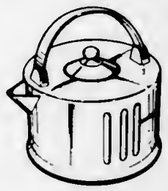
343,982
FLAT PANELLED BEVERAGE CONTAINER AND DISPENSER
Steve S. Davis; Timothy Sutherland, both of Atlanta, and Bernard J. Meineke, Marietta, all of Ga., assignors to Springwell Dispensers, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 588,424, Sep. 26, 1990. This application Oct. 23, 1990, Ser. No. 602,942
The portion of the term of this patent subsequent to Jun. 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—313



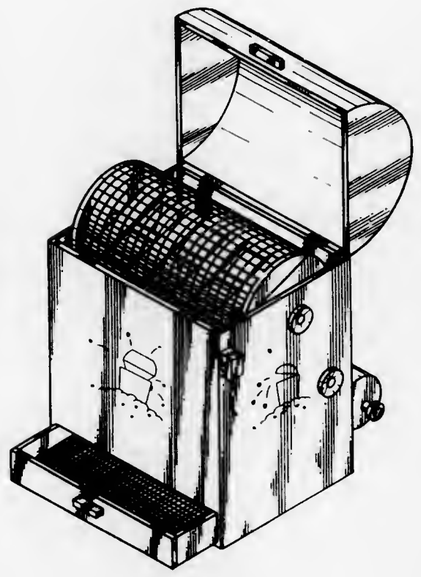
343,983
VACCUM BOTTLE
Pierre Tardif, Longueuil, Canada, assignor to Fuu Hwa Vacuum Bottle Co., Ltd., Tainan, Taiwan
Filed Apr. 27, 1992, Ser. No. 873,734
Term of patent 14 years
U.S. Cl. D7—319



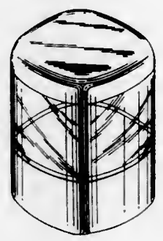
343,984
TEA POT
Gary Lin, 8-2F, No. 164, Sec. 4, Nanking E. Rd., Taipei, Taiwan
Filed May 18, 1992, Ser. No. 884,567
Term of patent 14 years
U.S. Cl. D7—320



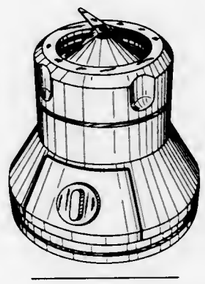
343,985
BUTTER BEAN SHELLING DEVICE
David O. Rath, Rte. 1, Box 249, Roper, N.C. 27970
Filed Apr. 12, 1991, Ser. No. 684,557
Term of patent 14 years
U.S. Cl. D7—369



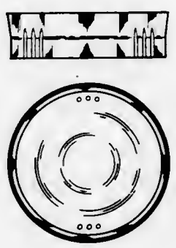
343,986
SPICE GRINDER
Marcus W. Kibbe, San Marcos, Calif., assignor to Dudley Kebow, Inc., Ocean Side, Calif.
Filed Mar. 6, 1992, Ser. No. 846,438
Term of patent 14 years
U.S. Cl. D7—372



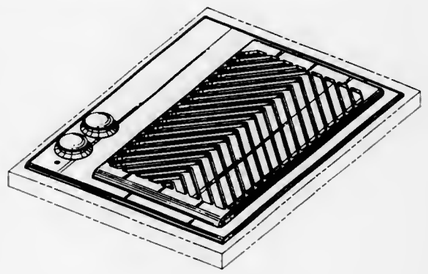
343,987
PEDESTAL FOR BLENDER
Andries C. Rotte, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 11, 1991, Ser. No. 667,072
Claims priority, application World Int. Prop. O., Sep. 12, 1990, DM/017.600
Term of patent 14 years
U.S. Cl. D7—386



343,988
JUVENILE CUP DRIBBLE LID
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed May 13, 1992, Ser. No. 883,705
Term of patent 14 years
U.S. Cl. D7—391

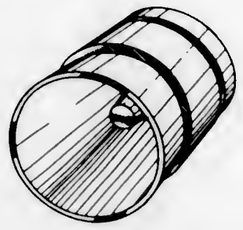


343,989
COUNTER TOP GRILL APPLIANCE
Donald G. Falk, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 9, 1991, Ser. No. 756,762
Term of patent 14 years
U.S. Cl. D7—407

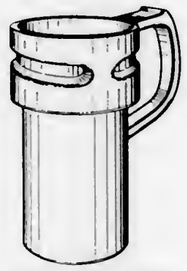


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343,990
BEVERAGE CUP
Benjamin M. Marsan, II, 2125 Raeburn Dr., Cincinnati, Ohio 45223
Filed Dec. 26, 1991, Ser. No. 812,961
Term of patent 14 years
U.S. Cl. D7—307



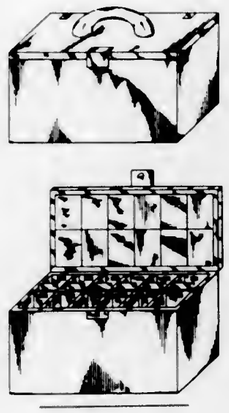
343,991
BEVERAGE MUG
Thomas J. Schaeppi, 5650 Juneau La. North, Plymouth, Minn. 55446
Continuation-in-part of Ser. No. 822,566, Jan. 16, 1992, Pat. No. Des. 339,029. This application Jun. 9, 1992, Ser. No. 895,400
The portion of the term of this patent subsequent to Sep. 7, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—536



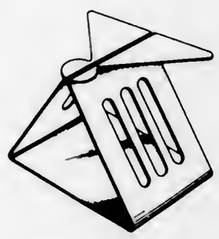
343,992
FLEXIBLE LUNCH COOLER
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jun. 11, 1992, Ser. No. 896,354
Term of patent 14 years
U.S. Cl. D7—607



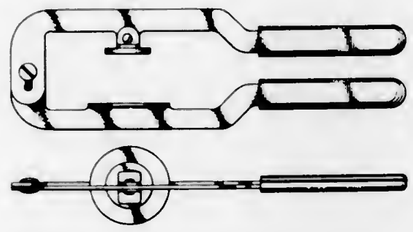
343,993
CARRYING CASE FOR FOOD ITEMS
Elizabeth J. Derrickson, 85 Vernon Rd., Waldorf, Md. 20601
Filed Jul. 14, 1992, Ser. No. 912,642
Term of patent 14 years
U.S. Cl. D7—709



343,994
NAPKIN RING
Gary Lin, 8-2F, No. 164, Sec. 4, Nanking E. Rd., Taipei, Taiwan
Filed May 19, 1992, Ser. No. 885,559
Term of patent 14 years
U.S. Cl. D7—633



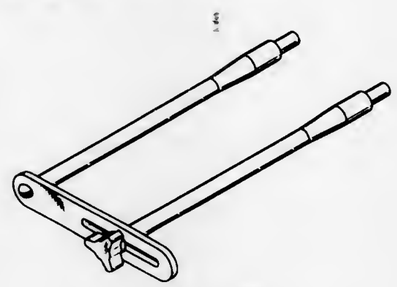
343,995
TUNA CAN PRESS
Roxanne Djelmane, 38630 Palm Pl., Palmdale, Calif. 93552
Filed Jun. 3, 1992, Ser. No. 892,518
Term of patent 14 years
U.S. Cl. D7—666



343,996
COMBINED SKIMMER AND SEPARATOR LADLE
Hans Hansen, Vejle, Denmark, assignor to Scanistra ApS, Vejle, Denmark
Filed Jun. 26, 1992, Ser. No. 905,645
Claims priority, application Denmark, May 1, 1992, 0415 1992
Term of patent 14 years
U.S. Cl. D7—692



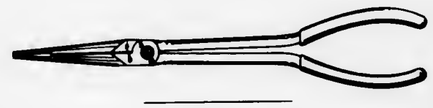
343,997
TOOL FOR MOUNTING A WHEEL ON A VEHICLE
Brad L. Smith, 11691 Lorenson Road, Auburn, Calif. 95602
Filed Jul. 16, 1992, Ser. No. 913,616
Term of patent 14 years
U.S. Cl. D8—14



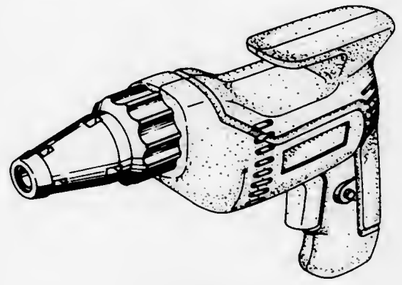
343,998
CONCRETE FINISHING TOOL BRACKET
Paul E. Griggs, 1716 N. Sabin, Wichita, Kans. 67212
Filed Oct. 7, 1991, Ser. No. 772,034
Term of patent 14 years
U.S. Cl. D8—45



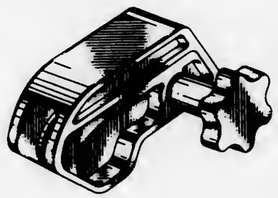
343,999
PLIERS
Marshall G. Letson, Mt. Carmel, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Division of Ser. No. 819,789, Jan. 13, 1992. This application Dec. 21, 1992, Ser. No. 2,777
Term of patent 14 years
U.S. Cl. D8—52



344,000
ELECTRIC SCREWDRIVER
Yoshinori Shibata, Anjo, and Masaki Kondo, Haza, both of Japan, assignors to Makita Corporation, Anjo, Japan
Filed Feb. 2, 1993, Ser. No. 4,328
Claims priority, application Japan, Sep. 29, 1992, 4-28567
Term of patent 14 years
U.S. Cl. D8—68



344,001
ADJUSTABLE DEPTH GAUGE FOR CHAIN SAWS
Paul F. Oxentenko, Scottsdale, Ariz., assignor to S & O Marketing, Inc., Phoenix, Ariz.
Filed Dec. 11, 1992, Ser. No. 2,472
Term of patent 14 years
U.S. Cl. D8—70

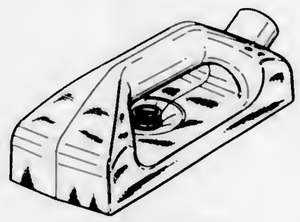


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344,002
SCREWDRIVER
Phil McKinney, LaGrange, Ky.; Timothy Miller, Lincolnton, N.C., and David Springstroh, Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.
Filed Oct. 4, 1991, Ser. No. 771,933
Term of patent 14 years
U.S. Cl. D8—82



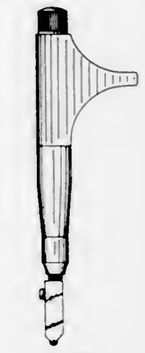
344,003
MANUAL SANDER
Terry H. Milkie, 3800 Steeles Ave. W., Ste. 9, Woodbridge, Ontario, Canada L4L 4G9
Filed Jul. 31, 1992, Ser. No. 927,358
Term of patent 14 years
U.S. Cl. D8—90



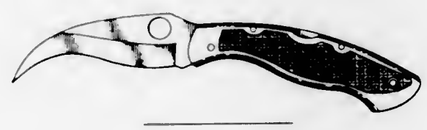
344,004
HOLDER FOR A SHARPENING STONE
Anthony J. Schofield, 1429 N. Grant Ave., Indianapolis, Ind. 46201
Filed Dec. 30, 1991, Ser. No. 814,661
Term of patent 14 years
U.S. Cl. D8—91



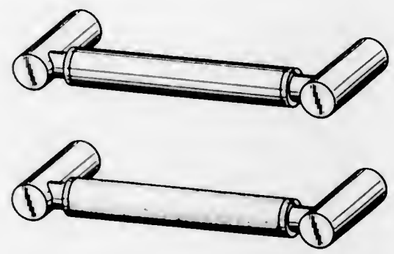
344,005
GLASS CUTTER
Toshimitsu Arai, Osaka, Japan, assignor to Toyo Sangyo Co., Ltd., Osaka, Japan
Filed Jan. 28, 1992, Ser. No. 827,810
Term of patent 14 years
U.S. Cl. D8—98



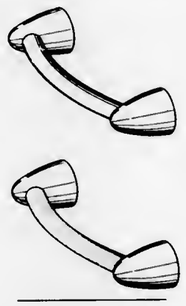
344,006
KNIFE
Louis S. Glesser, P.O. Box 800, Golden, Colo. 80402-0800
Filed May 26, 1992, Ser. No. 887,924
Term of patent 14 years
U.S. Cl. D8—99



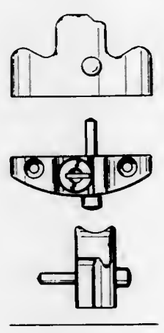
344,007
CABINET PULL
Franz W. Jans, Roedermark, Fed. Rep. of Germany, assignor to JADO Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed May 20, 1993, Ser. No. 8,679
Term of patent 14 years
U.S. Cl. D8—316



344,008
CABINET PULL
Franz W. Jans, Roedermark, Fed. Rep. of Germany, assignor to JADO Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed May 20, 1993, Ser. No. 8,676
Term of patent 14 years
U.S. Cl. D8—317



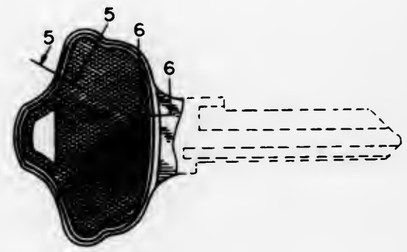
344,009
SLIDING GLASS DOOR/WINDOW LOCK
Albert M. Footenot, 11614 Riderwood, Houston, Tex. 77099
Filed Nov. 18, 1992, Ser. No. 1,585
Term of patent 14 years
U.S. Cl. D8—331



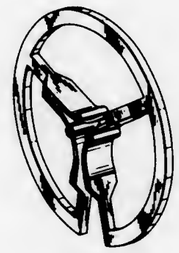
344,010
HOOK
William E. Brazis, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 28, 1992, Ser. No. 3,077
Term of patent 14 years
U.S. Cl. D8—367



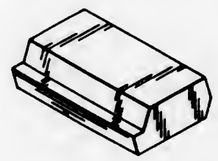
344,011
KEY BOW
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 31, 1992, Ser. No. 922,081
Term of patent 14 years
U.S. Cl. D8—347



344,012
ELECTRIC WIRE HOLDER
Osamu Aoki, Kamakura, Japan, assignor to Koyo Fastener Co., Ltd., Japan
Filed Jun. 2, 1992, Ser. No. 892,350
Claims priority, application Japan, Jan. 17, 1992, 4-954
Term of patent 14 years
U.S. Cl. D8—356

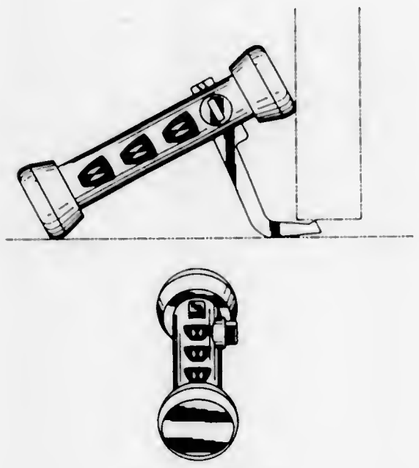


344,013
KEY FOR BUILDING BLOCKS
Jacques Rodrigue, Montreal, Canada, assignor to Transpavé Inc., St-Eustache, Canada
Filed Aug. 27, 1992, Ser. No. 935,218
Claims priority, application Canada, Mar. 2, 1992, 02-03-92-4
Term of patent 14 years
U.S. Cl. D8—382

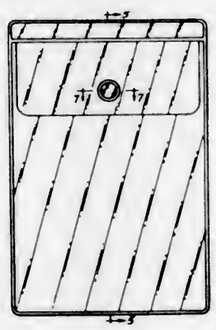


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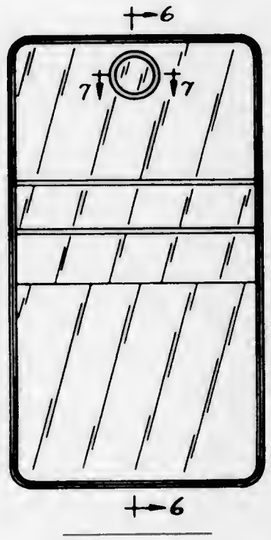
344,014
DOOR STOPPER
Bernard E. Marshall, 5621 Delmar The Clara #705, St. Louis, Mo. 63112
Filed Feb. 25, 1992, Ser. No. 841,002
Term of patent 14 years
U.S. Cl. D8—402



344,015
SEALABLE PLASTIC POUCH WITH HANGER
Arthur F. Jacobson, 1414 Jacobson Dr., Waukegan, Ill. 60085-7408
Filed Jun. 19, 1992, Ser. No. 905,631
Term of patent 14 years
U.S. Cl. D9—305



344,016
SEALABLE PLASTIC POUCH
Arthur F. Jacobson, 1414 Jacobson Dr., Waukegan, Ill. 60085-7408
Filed Jun. 19, 1992, Ser. No. 912,621
Term of patent 14 years
U.S. Cl. D9—305



344,017
DISPENSING CONTAINER FOR COSMETIC PRODUCT
Frank J. Lang, Henderson, Nev., and Robert Chadfield, Bradenton, Fla., assignors to Federal Package, Ltd., Chaska, Minn.
Continuation-in-part of Ser. No. 705,560, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 613,285, Nov. 15, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,616
Term of patent 14 years
U.S. Cl. D9—338



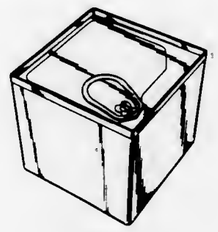
344,018
TABLET PACK
Stephen F. Kelsey, and Lucien A. Warner, both of London, England, assignors to Glaxo Group Limited, Greenford, England
Filed Oct. 22, 1991, Ser. No. 782,256
Claims priority, application United Kingdom, Apr. 23, 1991, 2014269; Apr. 23, 1991, 2014270
Term of patent 14 years
U.S. Cl. D9—346



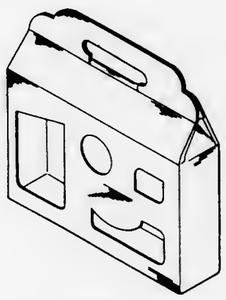
344,019
PACKAGE FOR A DEFLATED INFLATABLE FOOTBALL WITH VALVE AND AN INFLATION PUMP
Kenneth W. Pratt, Ware, Mass., assignor to Seneca Sports, Inc., Milford, Mass.
Continuation-in-part of Ser. No. 784,044, Oct. 28, 1991. This application Apr. 3, 1992, Ser. No. 863,701
Term of patent 14 years
U.S. Cl. D9—415



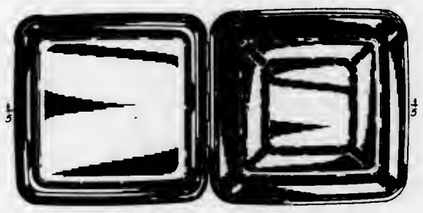
344,020
CONTAINER
Andrew P. Pavely, Lower Blunsdon, United Kingdom, assignor to Odin Developments Limited, Stevenege, United Kingdom
Filed Nov. 12, 1992, Ser. No. 1,341
Claims priority, application United Kingdom, May 22, 1992, 2023056
Term of patent 14 years
U.S. Cl. D9—416



344,021
FOOD PACKAGE
Monica L. V. Martin, and Elizabeth Y. Lott, both of West Point, Miss., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Aug. 1, 1991, Ser. No. 740,461
Term of patent 14 years
U.S. Cl. D9—418

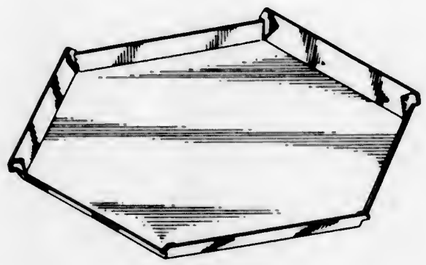


344,022
CONTAINER
Dominique Lesquir, Buckland, Canada, assignor to IPL Inc., St-Damien, Canada
Filed Sep. 28, 1992, Ser. No. 951,556
Term of patent 14 years
U.S. Cl. D9—423

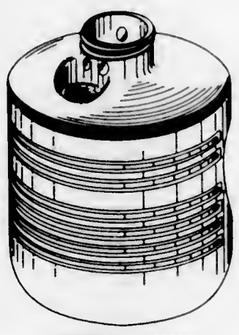


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344,023
FAST FOOD TRAY
Larry Eisman, Elkins Park, Pa., assignor to Dopaco, Inc., Downingtown, Pa.
Filed Feb. 10, 1992, Ser. No. 832,510
Term of patent 14 years
U.S. Cl. D9—430



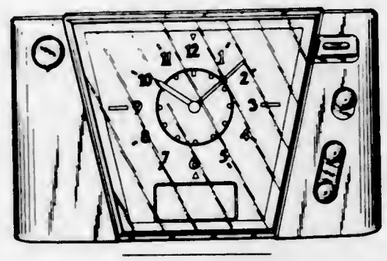
344,024
BOTTLE
Guy L. Charbonneau, Quebec, and Alan H. Bowler, Ontario, both of Canada, assignors to 159747 Canada, Inc., Quebec, Canada
Filed Feb. 11, 1991, Ser. No. 653,812
Term of patent 14 years
U.S. Cl. D9—520



344,025
CLOCK
Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 11, 1991, Ser. No. 641,105
Term of patent 14 years
U.S. Cl. D10—22



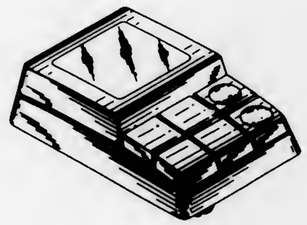
344,026
CLOCK
Mitsuo Wada, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 29, 1992, Ser. No. 890,676
Term of patent 14 years
U.S. Cl. D10—24



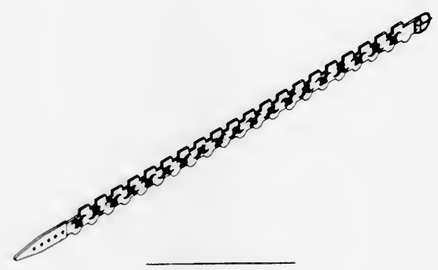
344,027
CLOCK
Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 30, 1992, Ser. No. 828,657
Term of patent 14 years
U.S. Cl. D10—25



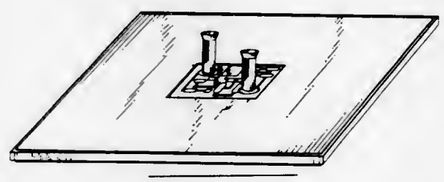
344,028
AUTOMATIC CLIMATE CONTROL DEVICE FOR AUTOMOBILES
Peter Byar, Willingboro, N.J., assignor to Interdynamics, Inc., Brooklyn, N.Y.
Filed Aug. 6, 1992, Ser. No. 926,867
Term of patent 14 years
U.S. Cl. D10—50



344,029
MEASURING BELT
Frank K. Sullivan, 27540 Quail Rd., Hemet, Calif. 92544
Filed Sep. 28, 1992, Ser. No. 951,708
Term of patent 14 years
U.S. Cl. D10—70



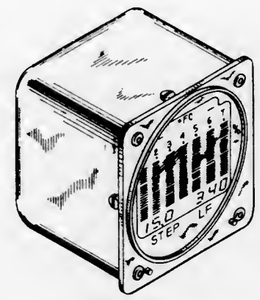
344,030
CAPACITIVE TEST PROBE BOARD
Ronald K. Kerschner, and Lisa M. Kent, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 25, 1992, Ser. No. 1,921
Term of patent 14 years
U.S. Cl. D10—80



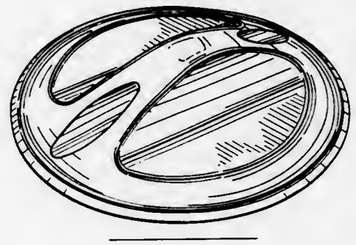
344,031
FLOWMETER
Donald C. Frick, Langhorne, and Wayne D. Tessarvich, Perkasie, both of Pa., assignors to World Wide Plastics, Inc., Trevose, Pa.
Filed Mar. 3, 1992, Ser. No. 846,414
Term of patent 14 years
U.S. Cl. D10—96



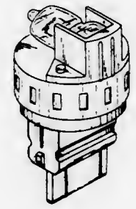
344,032
BEZEL
Joseph Polizzotto, P.O. Box 7033, Huntington Beach, Calif. 92646
Filed Oct. 1, 1991, Ser. No. 769,672
Term of patent 14 years
U.S. Cl. D10—99



344,033
ANTI-THEFT UNIT FOR SECURING PORTABLE ARTICLES TO A VEHICLE OR OTHER NON-PORTABLE OBJECTS
Gregory M. Davidge, Maui, Hi., assignor to Tortoise Products, Inc., Kula, Hi.
Filed Nov. 5, 1992, Ser. No. 1,187
Term of patent 14 years
U.S. Cl. D10—106

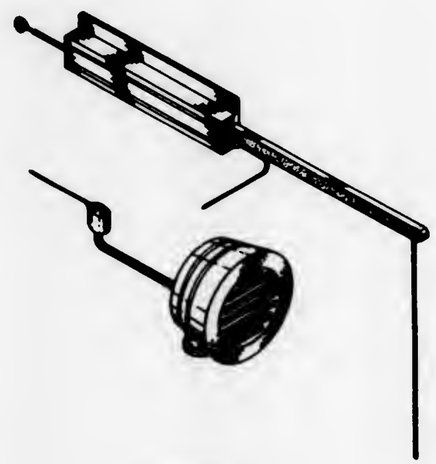


344,034
BACK-UP WARNING SIGNAL FOR VEHICLES
Mark Gottlieb, Annandale, Va., assignor to Design Tech International, Inc., Springfield, Va.
Filed Feb. 12, 1993, Ser. No. 4,742
Term of patent 14 years
U.S. Cl. D10—116



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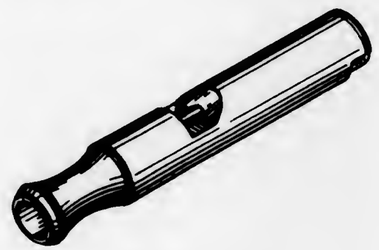
344,035
COMBINED CURB FEELER AND ALARM
Jeanne F. Hatfield; Edward Hatfield, and Kathleen Bennett, all of 1510 S. 11th St., Rogers, Ark. 72756
Filed Dec. 21, 1992, Ser. No. 2,771
Term of patent 14 years
U.S. Cl. D10—117



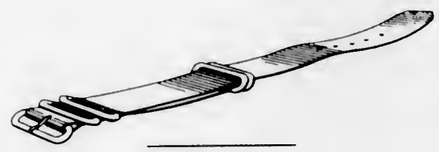
344,036
COMBINED TRANSMITTER AND RECEIVER FOR A DOOR CHIME
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 29, 1992, Ser. No. 875,133
Claims priority, application United Kingdom, Oct. 30, 1991, 2018652
Term of patent 14 years
U.S. Cl. D10—118



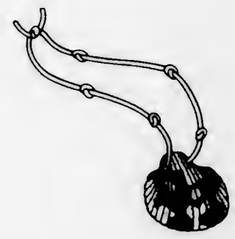
344,037
WHISTLE
Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.
Filed Mar. 10, 1993, Ser. No. 5,709
Term of patent 14 years
U.S. Cl. D10—119



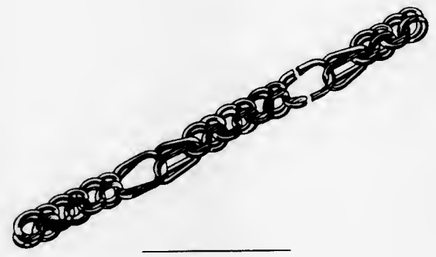
344,038
SAFETY STRAP FOR USE WITH WATCHES, COMPASSES AND DEPTH GAUGES
Mitchell J. Phillips, and Rayne Simpson, both of 124 Mitchell Street, Glebe, New South Wales 2038, Australia
Filed Oct. 28, 1991, Ser. No. 784,040
Term of patent 14 years
U.S. Cl. D11—5



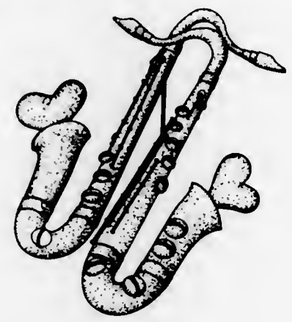
344,039
NECKLACE
Gloria E. Das, 505 Cativo Dr., SW., Atlanta, Ga. 30311
Filed Sep. 30, 1991, Ser. No. 767,927
Term of patent 14 years
U.S. Cl. D11—7



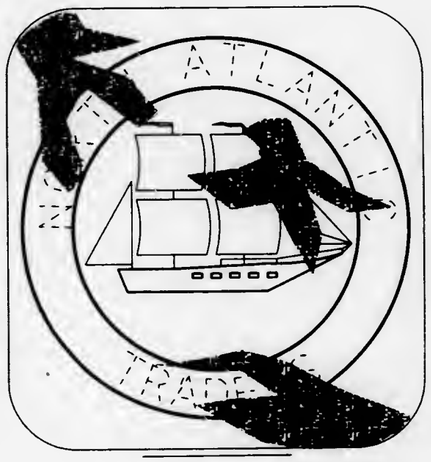
344,040
ORNAMENTAL CHAIN
David Rozenwasser, Savion, Israel, assignor to David Rozenvasser, Ltd., Petah Tikva, Israel
Filed Nov. 26, 1991, Ser. No. 798,426
Claims priority, application Israel, May 29, 1991, 17895
The portion of the term of this patent subsequent to Jan. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—17



344,041
SAXOPHONE PIN
Armand P. Arman, 430 Washington St., New York, N.Y. 10013
Filed Mar. 11, 1992, Ser. No. 851,140
Term of patent 14 years
U.S. Cl. D11—44



344,042
LOGO KNEE PATCH
Connie L. Calhoun, 10622 Sagetrail Rd., Houston, Tex. 77089
Filed Jul. 22, 1991, Ser. No. 733,262
Term of patent 14 years
U.S. Cl. D11—112



344,043
CHRISTMAS TREE FOR OUTDOOR USE
Howard E. Brookshire, Sr., 12 Holman St., Daleville, Ala. 36322
Filed Sep. 2, 1992, Ser. No. 938,350
Term of patent 14 years
U.S. Cl. D11—118

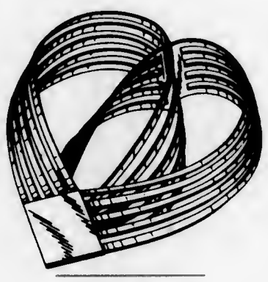


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344,044
SOFT SCULPTURE
Inger Corson, Box 339A, Yarmouth, Me. 04096, and Linda White, Box 367F, Chebeague Island, Me. 04017
Filed Sep. 24, 1992, Ser. No. 951,549
Term of patent 14 years
U.S. Cl. D11—160



344,045
GIFT PACKAGE BOW
Peter S. C. Cheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed Aug. 19, 1992, Ser. No. 931,533
Term of patent 14 years
U.S. Cl. D11—184



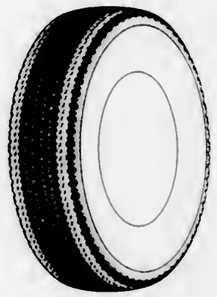
344,046
MOTORCYCLE
Makoto Kitagawa, Saitama, and Yutaka Kawasaki, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 975
Claims priority, application Japan, Aug. 26, 1992, 4-25251
Term of patent 14 years
U.S. Cl. D12—110



344,047
UPPER FRAME OF BABY CART
Kun-Hei Liu, 2F., No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Jul. 21, 1992, Ser. No. 915,961
Term of patent 14 years
U.S. Cl. D12—133



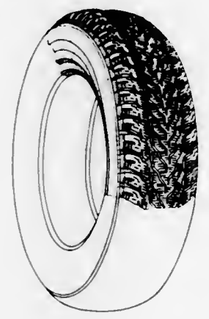
344,048
TIRE TREAD
Robert P. Loser, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 10, 1992, Ser. No. 926,808
Term of patent 14 years
U.S. Cl. D12—146



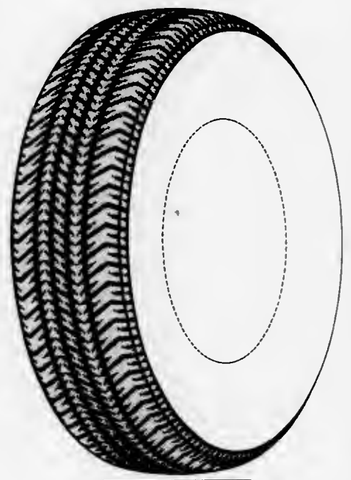
344,049
TIRE TREAD
Stephanie C. Brown; Keith C. Trares; Frederick W. Miller, all of Akron; Donald W. Gilliam; Anthony J. Scarpitti, both of Uniontown; Andy N. Hoang, Akron; Michael A. Kolowski, Mogadore, and Sean D. Montag, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 30, 1992, Ser. No. 954,985
Term of patent 14 years
U.S. Cl. D12—147



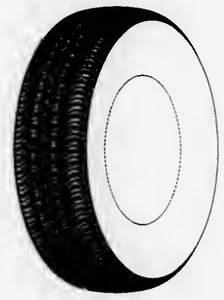
344,050
TIRE
Dietrich Overhoff, Grob-Umstadt, and Otto Sallein, Breuberg-/Odenwald, both of Fed. Rep. of Germany, assignors to Pirelli Armstrong Tire Corporation, New Haven, Conn.
Filed Mar. 2, 1992, Ser. No. 844,416
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1991, M 91 07 355.3
Term of patent 14 years
U.S. Cl. D12—147



344,051
TIRE TREAD
John S. Attinello, Hartville; Dale G. Freygang, Akron; Norman D. Anderson, and Samuel P. Landers, both of Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 22, 1992, Ser. No. 2,842
Term of patent 14 years
U.S. Cl. D12—147

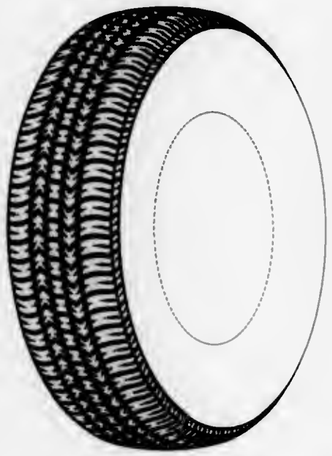


344,052
TIRE TREAD
John S. Attinello, Hartville; Dale G. Freygang, Akron; Norman D. Anderson, and Samuel P. Landers, both of Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 22, 1992, Ser. No. 2,843
Term of patent 14 years
U.S. Cl. D12—147

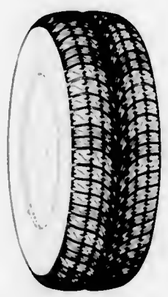


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344,053
TIRE TREAD
Joho S. Attinello, Hartville; Dale G. Freygang, Akron; Norman D. Anderson, Unlontown, all of Ohio; Max H. Dixon, Ridgeley, W. Va., and Samuel P. Landers, Uniontown, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 22, 1992, Ser. No. 2,844
Term of patent 14 years
U.S. Cl. D12—147



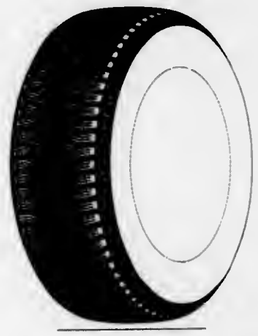
344,054
PNEUMATIC TIRE TREAD AND BUTTRESS
John S. Attinello, Hartville; William E. Glover, Akron; Samuel P. Landers, Uniontown, and Paul B. Maxwell, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 20, 1990, Ser. No. 616,305
The portion of the term of this patent subsequent to Sep. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—151



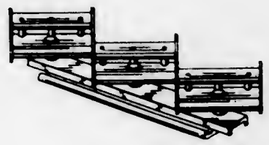
344,055
TIRE TREAD
Richard Heinen, Habay-La-Neuve, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 10, 1992, Ser. No. 866,540
Term of patent 14 years
U.S. Cl. D12—151



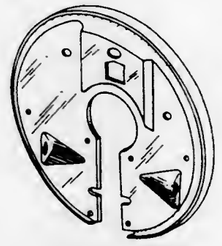
344,056
TIRE TREAD
Maurice Graas, Reichlange, and Jan H. Van Tuyl, Ettelbruck, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 21, 1992, Ser. No. 948,987
Term of patent 14 years
U.S. Cl. D12—151



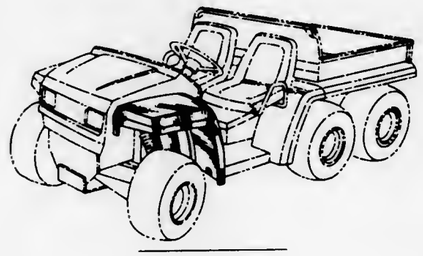
344,057
ANTI-LIFT UNIT FOR WINDSHIELD WIPERS
Walter E. Lyon, 11, 250 Hutchinson Rd., Englewood, N.J. 07631
Filed Feb. 10, 1992, Ser. No. 832,502
Term of patent 14 years
U.S. Cl. D12—220



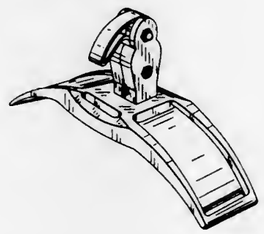
344,058
BRAKE PLATE
Henry J. Jones, P.O. Box 108, Sparta, Ontario, Canada M0L 2H0
Filed May 1, 1992, Ser. No. 877,588
Term of patent 14 years
U.S. Cl. D12—180



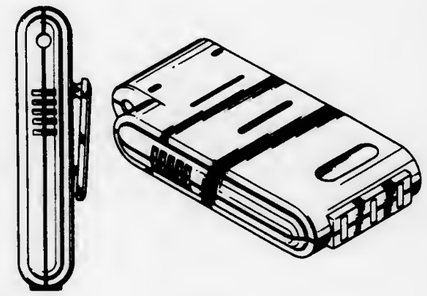
344,059
VEHICLE FENDER
Stanley J. DeBraal, West Bend, Wis.; Daniel R. Nickles, Hewitt; William E. Crookes, Waldwick, both of N.J.; Alberto J. Mantilla, Brooklyn; Tor G. Bonnier, New York, both of N.Y., and David R. Holm, Oconomowoc, Wis., assignors to Deere & Company, Moline, Ill.
Filed Nov. 16, 1992, Ser. No. 1,562
Term of patent 14 years
U.S. Cl. D12—184



344,060
SELF-RELEASE BUCKLE FOR A SAILBOARD HARNESS
James D. Woodfin, 1650 Stewart La., Melbourne, Fla. 32935
Filed Apr. 20, 1992, Ser. No. 870,720
Term of patent 14 years
U.S. Cl. D12—317



344,061
RECHARGEABLE BATTERY FOR HAND-HELD ELECTRONIC GAMES
Michael K. Tse, Kowloon, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong
Filed Feb. 4, 1992, Ser. No. 830,242
Term of patent 14 years
U.S. Cl. D13—103

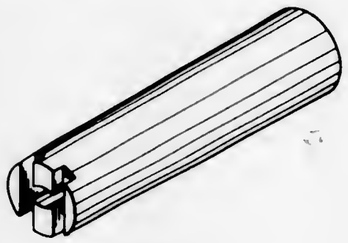


344,062
AUXILIARY ELEMENT FOR IGNITION PLUGS FOR INTERNAL COMBUSTION ENGINES FOR AUTOMOBILES
Ryohei Kashiwara, Raitsu Ootori 106, 456-1, Ootori-kitamachi 8-cho, Sakai-shi Osaka-fu; Hideaki Kashiwara, 3-B-611, 151-30, Mukojima Ninomarucho, Fushimi-ku, Kyoto-shi; Hidehiko Noguchi, 7-14, Taibo 3-chome, Kanancho, Minami-kawchi-gun, Osaka-fu, and Takeaki Kashiwara, 3-37-411, Nagayoshidedo 3-chome, Hirano-ku, Osaka-shi, all of Japan
Filed Jul. 21, 1992, Ser. No. 915,960
Claims priority, application Japan, Jan. 21, 1992, 4-1380
Term of patent 14 years
U.S. Cl. D13—127

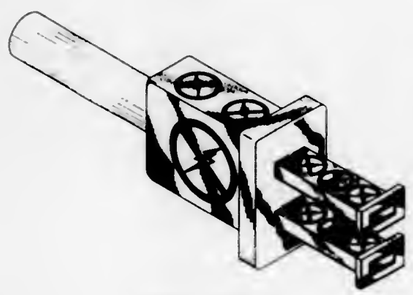


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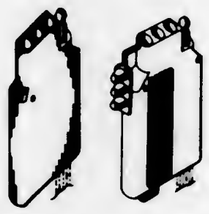
344,063
INSULATOR FOR AN ELECTRIC FENCE
Lucien Letarte, Notre-Dame-des-Prairies, and Roméo Boyer, Verdun, both of Canada, assignors to Financière Ioter-Plus Inc., Longueuil, Canada
Filed Jan. 22, 1991, Ser. No. 645,271
Term of patent 14 years
U.S. Cl. D13—131



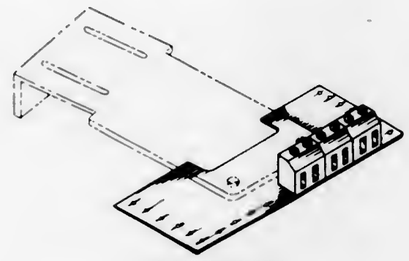
344,064
SAFETY PLUG
Bernard A. Cirullo, 26207 Edgemont Dr., Highland, Calif. 92346
Filed Jun. 17, 1992, Ser. No. 900,109
Term of patent 14 years
U.S. Cl. D13—138



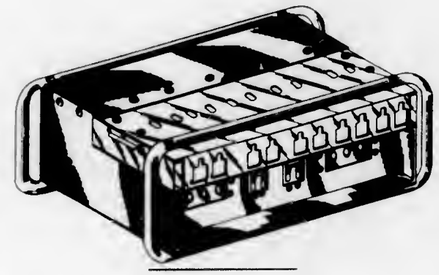
344,065
ELECTRICAL CONVERTER FOR AN AUTOMOTIVE TRAILER SIGNAL
Mike Hughes, 502 2nd St., Unit 1, Berthoud, Colo. 80513
Filed Nov. 30, 1990, Ser. No. 620,299
Term of patent 14 years
U.S. Cl. D13—147



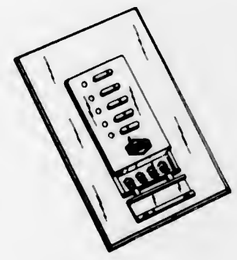
344,066
MODULAR TERMINAL BOARD
Peter D. Cesaro, 900 Linda Ave., Fayetteville, N.C. 28306-9501
Filed Apr. 2, 1992, Ser. No. 862,530
Term of patent 14 years
U.S. Cl. D13—147



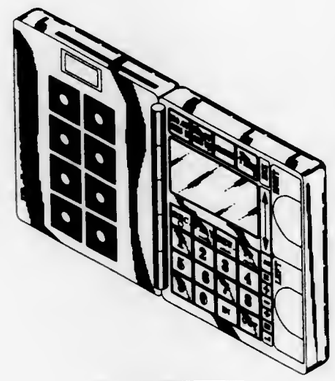
344,067
ELECTRIC POWER DISTRIBUTION UNIT
William G. Krokangger, Chatsworth, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Sep. 14, 1990, Ser. No. 581,975
Term of patent 14 years
U.S. Cl. D13—162



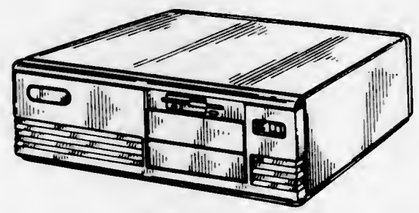
344,068
ELECTRICAL LOAD CONTROL PANEL
Jason O. Adams, Emmaus; Russel J. Jacobs, Center Valley; Noel Mayo, Philadelphia; Brett A. Pierce, Hellertown, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed Sep. 3, 1991, Ser. No. 754,435
Term of patent 14 years
U.S. Cl. D13—164



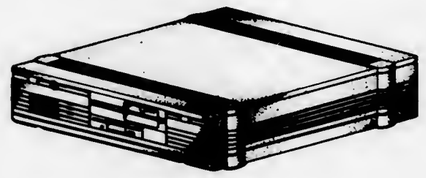
344,069
PERSONAL DATA INFORMATION CARD
Shirley J. Marmie, G3 Concord Sq., Ltrd., New Concord, Ohio 43762
Continuation-in-part of Ser. No. 491,593, Mar. 12, 1990, abandoned. This application Jun. 24, 1991, Ser. No. 719,587
Term of patent 14 years
U.S. Cl. D14—100



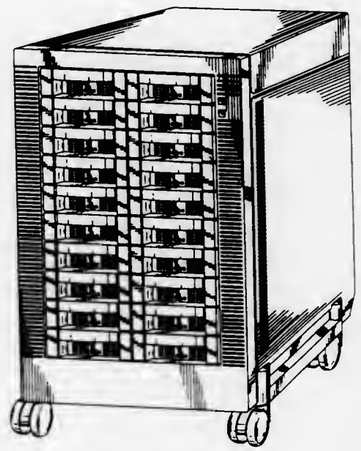
344,070
DESKTOP COMPUTER
Steven D. Gluskoter, Austin, and John E. Youens, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Sep. 16, 1991, Ser. No. 763,398
Term of patent 14 years
U.S. Cl. D14—100



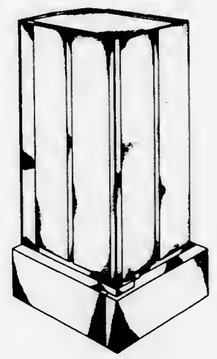
344,071
PERSONAL COMPUTER
Morgan C. Liu, Taoyuan, Taiwan, assignor to Enlight Corporation, Taoyuan, Taiwan
Filed Jul. 8, 1992, Ser. No. 910,637
Term of patent 14 years
U.S. Cl. D14—100



344,072
DATA PROCESSING EQUIPMENT CABINET
Mark C. Bates, Bellingham; Edward K. Driscoll, Westwood, both of Mass., and Thomas D. Fillio, Newton, N.H., assignors to Data General Corporation, Westboro, Mass.
Filed Oct. 2, 1992, Ser. No. 167
Term of patent 14 years
U.S. Cl. D14—102

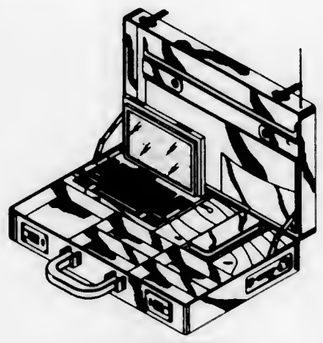


344,073
COMPUTER CABINET
Thomas M. Cipolla, Katonah, and John D. Swansey, Tivoli, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 22, 1992, Ser. No. 791
Term of patent 14 years
U.S. Cl. D14—102

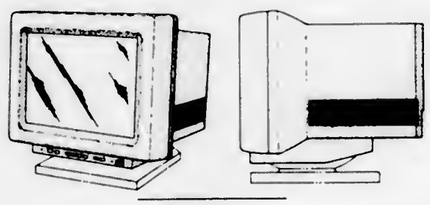


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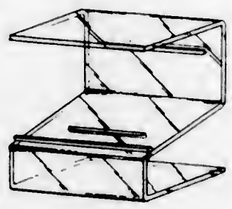
344,074
COMBINED LAPTOP COMPUTER WITH CELLULAR TELEPHONE AND CARRYING CASE THEREFOR
Steven M. Collins, 1310 Manhatas Trail, Algonquin, Ill. 60102-3631
Filed Jan. 4, 1991, Ser. No. 637,527
Term of patent 14 years
U.S. Cl. D14—106



344,075
VIDEO MONITOR
Richard K. Althans, Long Grove, and Mark Gartz, Mt. Prospect, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Dec. 27, 1991, Ser. No. 817,124
Term of patent 14 years
U.S. Cl. D14—113



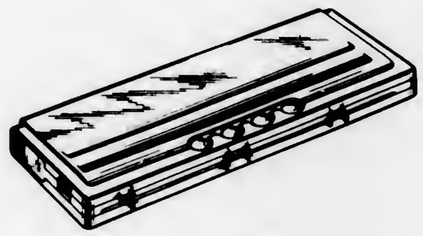
344,076
COMBINED COMPUTER WORK STATION AND PRINTER STAND
Moe A. Zahabi, P.O. Box 18260, Irvine, Calif. 92715
Filed May 2, 1991, Ser. No. 694,864
Term of patent 14 years
U.S. Cl. D14—114



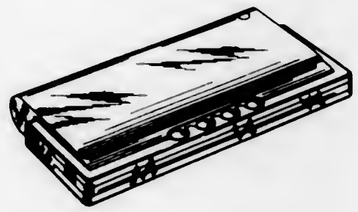
344,077
FACSIMILE TRANSMITTER-RECEIVER
Yoshinori Inukai, Tokyo; Tsutomu Yoshihara, Ayase; Hiroshi Komatsu, Yokohama, and Yoshiyuki Matsuda, Kokubunji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 909,429
Claims priority, application Japan, Jan. 14, 1992, 4-686
Term of patent 14 years
U.S. Cl. D14—118



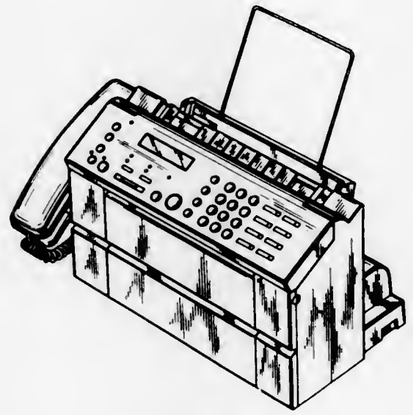
344,078
FACSIMILE TRANSMITTER-RECEIVER
Yoshinori Inukai, Tokyo; Tsutomu Yoshihara, Ayase; Hiroshi Komatsu, Yokohama; Yoshiyuki Matsuda, Kobubunji, and Hideki Kawai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 909,431
Claims priority, application Japan, Jan. 14, 1992, 4-687
Term of patent 14 years
U.S. Cl. D14—118



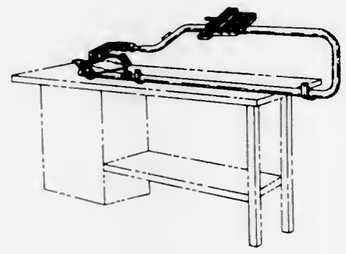
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FACSIMILE TRANSMITTER-RECEIVER
Yoshinori Inukai, Tokyo; Tsutomu Yoshihara, Ayase; Hiroshi Komatsu, Yokohama, and Yoshiyuki Matsuda, Kokubunji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 909,451
Claims priority, application Japan, Jan. 14, 1992, 4-684
Term of patent 14 years
U.S. Cl. D14—118



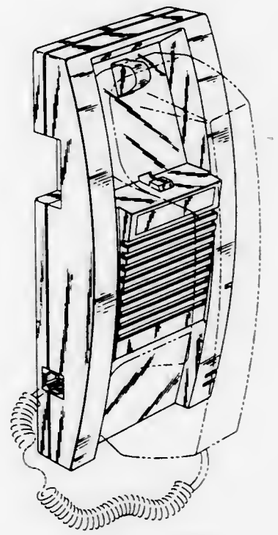
344,080
FACSIMILE
Seiichi Omino, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 948,943
Claims priority, application Japan, Mar. 19, 1992, 4-7873
Term of patent 14 years
U.S. Cl. D14—118



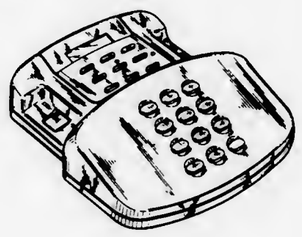
344,081
OVERARM BLADE GUARD SYSTEM
David N. Hollinger, Glenshaw; Louis C. Brickner, Pittsburgh; Stephen O. Sutton, Wexford, and Charles J. Baird, Pittsburgh, all of Pa., assignors to Delta International Machinery Corporation, Pittsburgh, Pa.
Filed Jul. 29, 1992, Ser. No. 918,422
Term of patent 14 years
U.S. Cl. D15—133



344,082
BASE FOR A TELEPHONE HANDSET
Bernard C. Lafreniere, Escondido; Lonnie C. Pogue, San Diego; Aubrey E. Thompson, San Diego; J. Randolph Sanders, San Diego, all of Calif., and Gerard L. Kappenman, Montrose, S. Dak., assignors to InterActive, Inc., Humbolt, S. Dak. and Torrey Pines Research, Inc., Carlsbad, Calif.
Filed Sep. 24, 1992, Ser. No. 951,542
Term of patent 14 years
U.S. Cl. D14—142



344,083
TELEPHONE BASE
Guy E. DesBarats, London, England, assignor to British Telecommunications plc, London, England
Filed Jan. 21, 1992, Ser. No. 823,425
Claims priority, application United Kingdom, Jul. 18, 1991, 2016069
Term of patent 14 years
U.S. Cl. D14—150

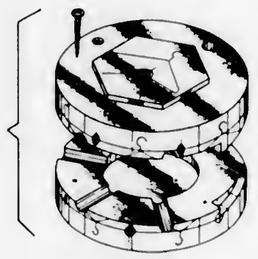


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344,084
TRANSPARENT DISPLAY PAGER BOX
Chen-Kuang Chen, No. 3, Alley 14, Lane 85, Dingjou Road, Section 4, Taipei, Taiwan
Filed Jan. 7, 1992, Ser. No. 817,676
Term of patent 14 years
U.S. Cl. D14—191

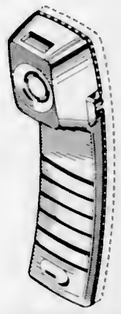


344,085
LEG AND FEED LINE HOLDER FOR A BAZOOKA ANTENNA
Robert W. Claxton, 929 Charles Ave., Winthrop Harbor, Ill. 60096
Filed Jul. 25, 1991, Ser. No. 735,460
Term of patent 14 years
U.S. Cl. D14—230

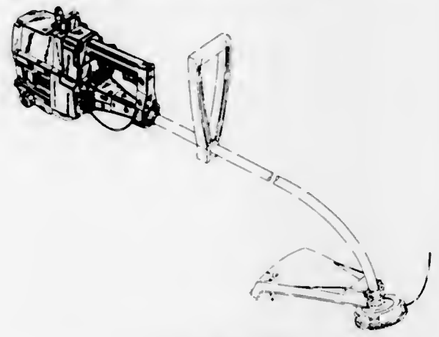


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Patent Not Issued For This Number

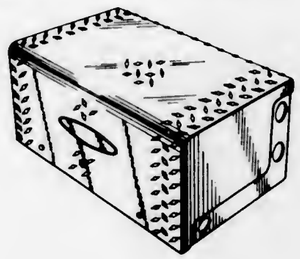
344,087
TELEPHONE HANDSET HOUSING PANEL
Albert L. Nagele, Wilmette, and Nicholas Mischenko, Mt. Prospect, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 18, 1991, Ser. No. 732,322
Term of patent 14 years
U.S. Cl. D14—248



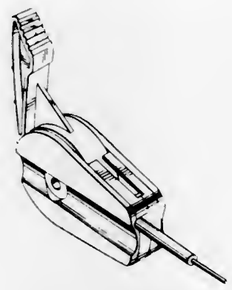
344,088
POWER HEAD FOR A FLEXIBLE LINE TRIMMER
Lloyd H. Tuggle, Shreveport; Jeff G. Sadler, Greenwood, and Mike Shoup, Shreveport, all of La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio
Filed Sep. 22, 1992, Ser. No. 948,786
Term of patent 14 years
U.S. Cl. D15—1



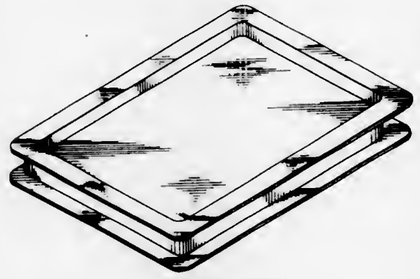
344,089
DIESEL ENGINE HEATER
Bruce C. Wilnechenko, Burnaby, and Douglas T. Paul, Vancouver, both of Canada, assignors to Teleflex (Canada) Ltd., Richmond, Canada
Filed Feb. 17, 1993, Ser. No. 6,119
Term of patent 14 years
U.S. Cl. D15—5



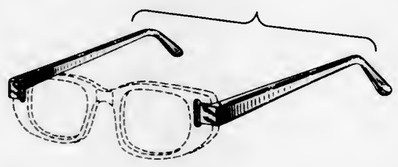
344,090
THROTTLE CONTROL
Michael A. Barnard, Wichita, Kans., assignor to Wescon Products Company, Wichita, Kans.
Filed Jan. 10, 1992, Ser. No. 818,994
Term of patent 14 years
U.S. Cl. D15—17



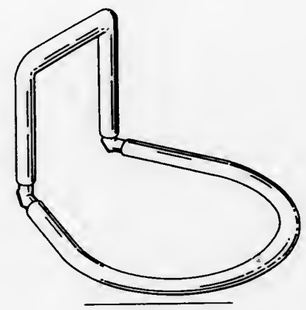
344,091
MAGNETIC ARTICLE HOLDER
Billie L. Plumlee, 3545 Holmes Rd., Salina, Kans. 67401, and Dwight L. Plumlee, 219 Matt Pl., Greensboro, N.C. 67406
Filed Feb. 21, 1992, Ser. No. 839,446
Term of patent 14 years
U.S. Cl. D15—140



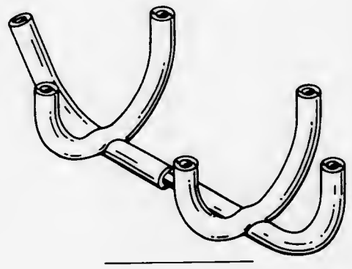
344,092
TEMPLES WITH FRAGMENTARY PARTS OF EYEGLASS FRAME
Jean L. David, Grand Cayman, Cayman Islands, assignor to Estim C.V., Amsterdam, Netherlands
Filed Feb. 19, 1992, Ser. No. 836,943
Term of patent 14 years
U.S. Cl. D16—127



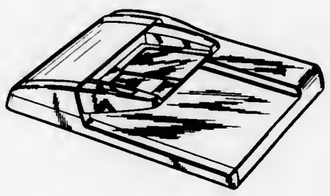
344,093
UDU DRUM HOLDER
Brian M. Melick, R.D. 1, P.O. Box 127, Ravena, N.Y. 12143
Filed Jul. 1, 1991, Ser. No. 724,945
Term of patent 14 years
U.S. Cl. D17—22



344,094
UDU DRUM HOLDER
Brian M. Melick, R.D. 1, P.O. Box 127, Ravena, N.Y. 12143
Filed Sep. 9, 1991, Ser. No. 756,385
Term of patent 14 years
U.S. Cl. D17—22

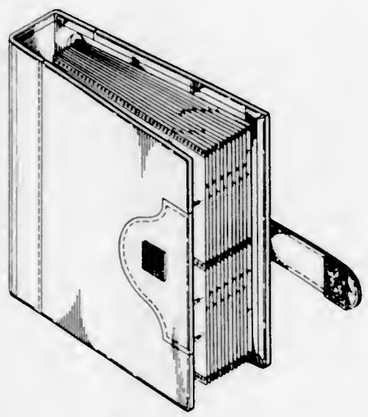


344,095
DOCUMENT FEEDER FOR COPYING MACHINE
Masataka Isomoto, Kawasaki, and Mitsuru Sakurai, Musashino, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1991, Ser. No. 732,714
Claims priority, application Japan, Jan. 31, 1991, 3-2461
Term of patent 14 years
U.S. Cl. D18—49

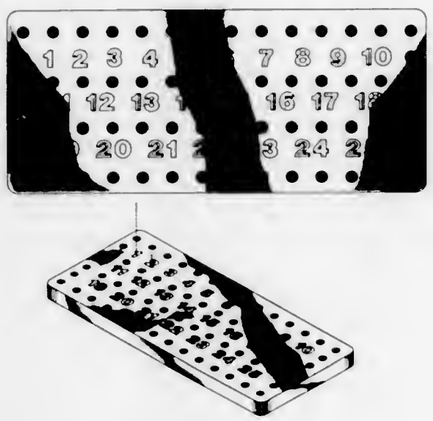


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344,096
PHOTO ALBUM
Kheng Koe Tan, Johor, Malaysia, assignor to Red Box (M) Berhad, Johor, Malaysia
Filed Apr. 30, 1992, Ser. No. 875,725
Term of patent 14 years
U.S. Cl. D19—26



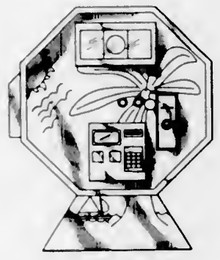
344,097
MATH TEACHING BOARD FOR SPECIAL EDUCATION STUDENTS
Freddie W. Green, 690 Mason Rd., Fraziers Bottom, W. Va. 25082
Filed Mar. 22, 1991, Ser. No. 673,492
Term of patent 14 years
U.S. Cl. D19—62



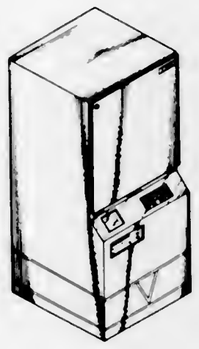
344,098
COIN OPERATED CARTOON HOUSE
Gregory J. Wilson, 10 Arabian Way, Scotts Valley, Calif. 95066
Filed May 5, 1992, Ser. No. 878,897
Term of patent 14 years
U.S. Cl. D20—3



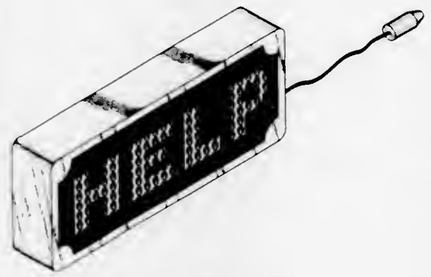
344,099
POST CARD VIDEO MACHINE
Jack J. Koenig, 120 Waldon Rd., Apt. C, Abingdon, Md. 21009
Filed Dec. 9, 1991, Ser. No. 804,179
Term of patent 14 years
U.S. Cl. D20—4



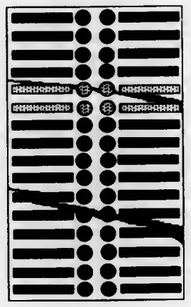
344,100
VIDEO TAPE VENDING MACHINE
Arkiema Williams, 5026 Devonshire, Detroit, Mich. 48224
Filed Apr. 24, 1992, Ser. No. 873,058
Term of patent 14 years
U.S. Cl. D20—5



344,101
EMERGENCY SIGN FOR AUTOMOBILES
Angelo DeRaffele, and Ann DeRaffele, both of 11 La Salle Dr., New Rochelle, N.Y. 10801
Filed Apr. 7, 1993, Ser. No. 6,775
Term of patent 14 years
U.S. Cl. D20—10



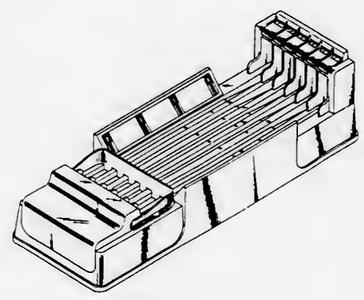
344,102
SHEET OF DECALS
Donald J. Polak, Brentwood, and John D. Gauld, Franklin, both of Tenn., assignors to Pelikan, Inc., Franklin, Tenn.
Filed Sep. 30, 1992, Ser. No. 954,375
Term of patent 14 years
U.S. Cl. D20—11



344,103
APPLIQUE FOR USE WITH A CEILING FAN
Richard A. Pearce, Memphis, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Division of Ser. No. 835,264, Feb. 13, 1992. This application Apr. 23, 1993, Ser. No. 7,466
Term of patent 14 years
U.S. Cl. D20—11



344,104
HORSE RACING TOY
Lee C. Yen, P.O. Box 82-144, Taipei, Taiwan
Filed Jan. 21, 1992, Ser. No. 822,843
Term of patent 14 years
U.S. Cl. D21—11



344,105
PUSH TOY
James C. Offutt, 733 Reba Pl., Evanston, Ill. 60202
Filed Aug. 10, 1992, Ser. No. 927,372
Term of patent 14 years
U.S. Cl. D21—59

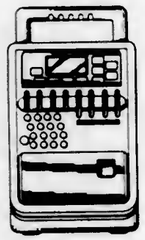


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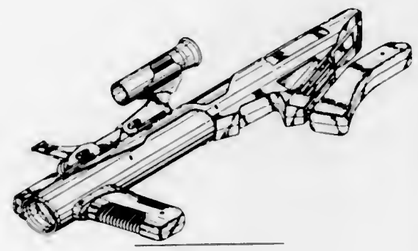
344,106
TOY
Maria R. Casha, Avenida Internacional, Galtpóo No. 30, Urbanización Industrial la Candelaria, Mariches, Venezuela
Filed Aug. 29, 1991, Ser. No. 751,696
Term of patent 14 years
U.S. Cl. D21—62



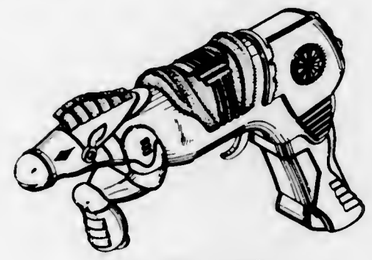
344,107
TOY BANK TELLER
Michael K. Tse, Kowlooo Bay, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong
Filed Feb. 3, 1992, Ser. No. 829,284
Term of patent 14 years
U.S. Cl. D21—111



344,108
GUN TYPE TOY
Ichiro Shirai, and Kenichi Sugino, both of Higashiyama, Japan, assignors to Nintendo Company Limited, Japan
Filed Jan. 6, 1992, Ser. No. 817,409
Claims priority, application Japan, Nov. 22, 1991, 3-35279
Term of patent 14 years
U.S. Cl. D21—147



344,109
TOY GUN
Chin-Chien Lin, Tainan, Taiwan, assignor to B.U. Toys Co., Ltd., Tainan, Taiwan
Filed Jul. 22, 1992, Ser. No. 917,444
Term of patent 14 years
U.S. Cl. D21—147



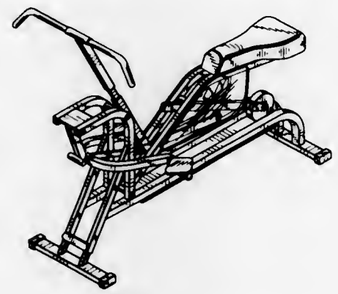
344,110
TOY STUFFED DOG
Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20827
Filed May 20, 1992, Ser. No. 885,221
Term of patent 14 years
U.S. Cl. D21—161



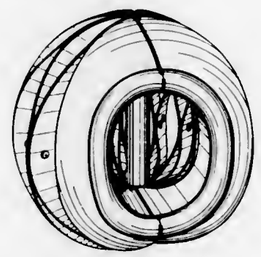
344,111
TOY FIGURE
Cheryl A. Israel, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Jun. 1, 1992, Ser. No. 891,813
Term of patent 14 years
U.S. Cl. D21—168



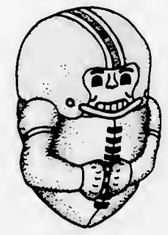
344,112
PHYSICAL EXERCISER
Gary H. Smith, 40 North State, Apt. 8D, Salt Lake City, Utah 84103
Filed Jun. 8, 1992, Ser. No. 896,475
Term of patent 14 years
U.S. Cl. D21—195



344,113
AQUATIC DUMBBELL
Robert N. Shelton, Princeton, and Andrew F. Fireman, Needham, both of Mass., assignors to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed May 21, 1992, Ser. No. 887,916
Term of patent 14 years
U.S. Cl. D21—197



344,114
FOOTBALL
Jon T. Cudzik, P.O. Box 1333, Hammond, La. 70401
Filed May 24, 1989, Ser. No. 356,283
Term of patent 14 years
U.S. Cl. D21—204



344,115
GOALKEEPER'S STICK
David Goyette, 157 Banff Road, Toronto, Ontario, Canada M4P 2P8
Filed Apr. 14, 1992, Ser. No. 868,356
Claims priority, application Canada, Feb. 28, 1992, 28-02-92-5
Term of patent 14 years
U.S. Cl. D21—211

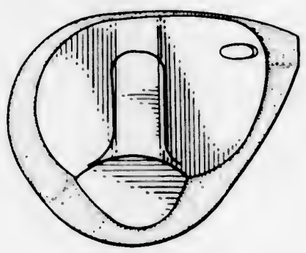


344,116
CLUB
Ta-Cheng Chen, and Da-Chung Chen, both of Kaohsiung, Taiwan, assignors to Love Blue Enterprise Co., Ltd., Kaohsiung, Taiwan
Filed Aug. 28, 1992, Ser. No. 935,224
Term of patent 14 years
U.S. Cl. D21—211

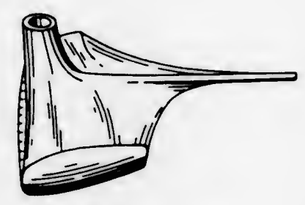


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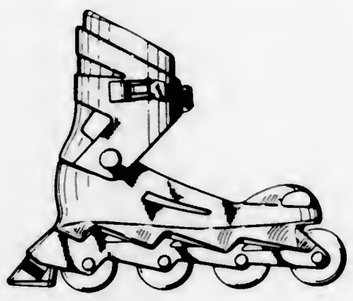
344,117
GOLF CLUB HEAD
Richard C. Helmstetter, Carlsbad, and Glenn H. Schmidt, Malibu, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Nov. 26, 1991, Ser. No. 797,822
Term of patent 14 years
U.S. Cl. D21—214



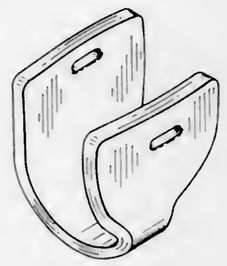
344,118
GOLF CLUB HEAD
Kingso C. Lin, Newark, Ohio, assignor to Wayne Products, Inc., Newark, Ohio
Filed Apr. 6, 1992, Ser. No. 864,022
Term of patent 14 years
U.S. Cl. D21—214



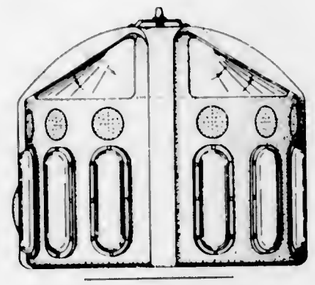
344,119
ROLLER SKATE FRAME
Robert K. Johnson, Blaine, Minn., and Michael D. Arney, Needham, Mass., assignors to Rollerblade, Inc., Minnetonka, Minn.
Filed Jan. 14, 1992, Ser. No. 820,396
Term of patent 14 years
U.S. Cl. D21—226



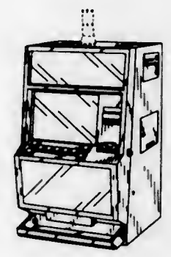
344,120
GARMENT FOR USE IN WATER RECREATION
Dewey E. Helt, and Johnann Helt, both of 4321 E. 74th Pl., Tulsa, Okla. 74136
Filed Feb. 10, 1992, Ser. No. 832,773
Term of patent 14 years
U.S. Cl. D21—238



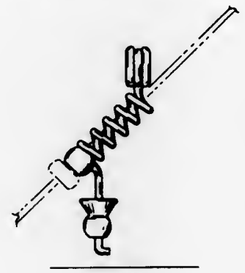
344,121
MODULAR PLAY EQUIPMENT ENCLOSURE
Mitchell R. Warren, Charlotte, N.C., assignor to Soft Play, Inc., Charlotte, N.C.
Filed Oct. 1, 1992, Ser. No. 84
Term of patent 14 years
U.S. Cl. D21—240



344,122
UPRIGHT VIDEO GAMING MACHINE
Linn A. McKay, Henderson, and Frank C. DeSimone, Las Vegas, both of Nev., assignors to Sigma Game, Inc., Las Vegas, Nev.
Filed Jun. 18, 1992, Ser. No. 904,522
Term of patent 14 years
U.S. Cl. D21—37



344,123
ARCHERY BOWSTRING PEEP SIGHT
Kim E. Bertram, 2003 M28 E., Marquette, Mich. 49855
Filed Feb. 21, 1992, Ser. No. 837,997
Term of patent 14 years
U.S. Cl. D22—107



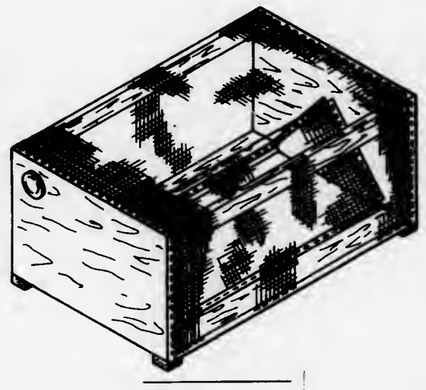
344,124
GUN GRIP
Carl J. Capp, Hawaiian Gardens, Calif., assignor to Pachmayr Ltd., Monrovia, Calif.
Filed Jan. 8, 1992, Ser. No. 818,215
Term of patent 14 years
U.S. Cl. D22—108



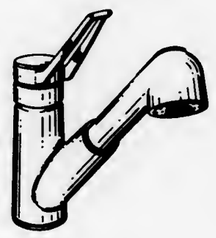
344,125
GRIPLESS FRAME FOR A HANDGUN
Sandy L. Strayer, 305 Hickok, Round Rock, Tex. 78681, and Virgil P. Tripp, 8907 Sparkling Creek Cir., Austin, Tex. 78729
Continuation-in-part of Ser. No. 844,417, Mar. 2, 1992. This application Sep. 9, 1992, Ser. No. 943,609
Term of patent 14 years
U.S. Cl. D22—108



344,126
FLY TRAP
Rebecca L. Tomasevich, 320 Dove Dr., Newark, Del. 19713, and James P. Barnett, 3205 Portofino Point, Apt. L4, Coconut Creek, Fla. 33066
Filed Jun. 5, 1991, Ser. No. 710,908
Term of patent 14 years
U.S. Cl. D22—122

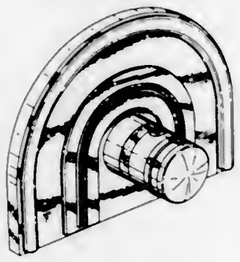


344,127
FAUCET
Kevin R. Carr, Elyria; William R. Markowitz, Cleveland, and Kevin W. Rosenbaum, Parma, all of Ohio, assignors to Moen Incorporated, Elyria, Ohio
Filed Jan. 21, 1992, Ser. No. 823,547
Term of patent 14 years
U.S. Cl. D23—238

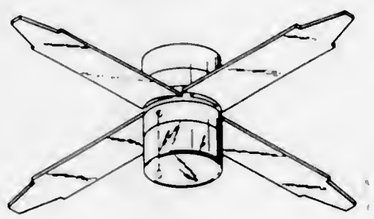


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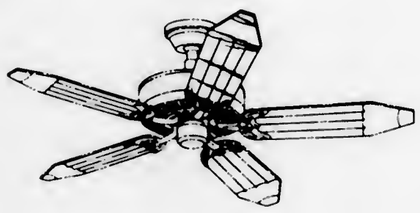
344,128
COMBINED CONTROL HANDLE AND ESCUTCHEON
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed Jun. 18, 1991, Ser. No. 717,108
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, M 9008428
The portion of the term of this patent subsequent to Nov. 3, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—254



344,129
COMBINED ELECTRIC CEILING FAN AND LIGHT
Michael A. Markwardt, Fort Worth, Tex., assignor to Econ Industries, Inc., Forth Worth, Tex.
Filed Aug. 28, 1992, Ser. No. 936,536
The portion of the term of this patent subsequent to Mar. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—377



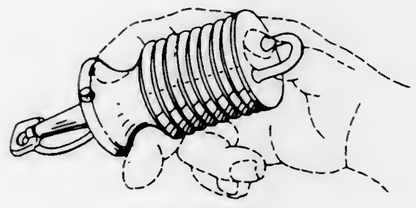
344,130
BLADE FOR A CEILING FAN
Dana W. Craig, Dallas, Tex., assignor to Litex Industries, Inc., Grand Prairie, Tex.
Filed Aug. 14, 1992, Ser. No. 930,816
Term of patent 14 years
U.S. Cl. D23—413



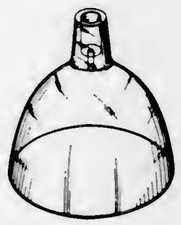
344,131
MECONIUM ASPIRATOR
Carl J. Hubbell, 3206 Kempwood, Sugarland, Tex. 77479
Filed Jan. 13, 1992, Ser. No. 820,044
Term of patent 14 years
U.S. Cl. D24—108



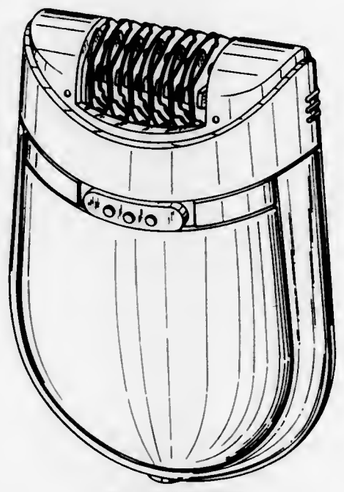
344,132
IRRIGATION SYRINGE
Gary E. Schneberger; Barry L. Synder, both of Ocala, Fla., and Nancy J. Voiselle, Greenwood, S.C., assignors to Professional Medical Products, Inc., Greenwood, S.C.
Filed Nov. 29, 1991, Ser. No. 800,405
Term of patent 14 years
U.S. Cl. D24—108



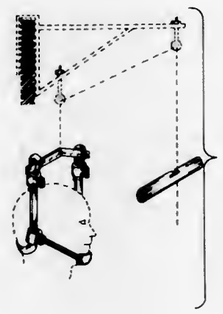
344,133
WOUND IRRIGATION SPLASH SHIELD
Keith D. Stamler, 26811 Westvale Rd., Palos Verdes Peninsula, Calif. 90274
Filed Jul. 19, 1990, Ser. No. 554,600
Term of patent 14 years
U.S. Cl. D24—130



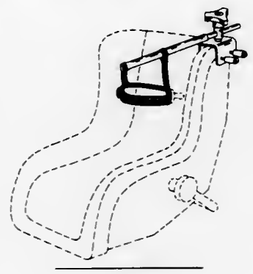
344,134
EPILATOR
Saskia H. P. M. Dingeistad, Helmond, and Marten F. Elkerbout, Groningen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 26, 1991, Ser. No. 817,120
Claims priority, application World Int. Prop. O., Jul. 22, 1991, DMA/001.553
Term of patent 14 years
U.S. Cl. D24—133



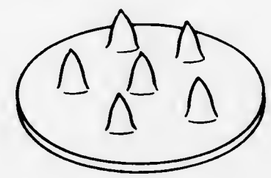
344,135
COMBINED CERVICAL TRACTION UNIT
Edwin A. Price, 16001 E. 11th Ave., Aurora, Colo. 80011
Filed Apr. 13, 1989, Ser. No. 340,156
Term of patent 14 years
U.S. Cl. D24—188



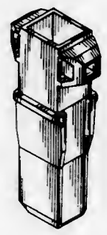
344,136
BOTTLE HOLDER FOR CAR SEAT
John J. Grimes, 525 "A" Kimble St., Modesto, Calif. 95354
Filed Sep. 21, 1992, Ser. No. 948,887
Term of patent 14 years
U.S. Cl. D24—199



344,137
ACUPRESSURE STIMULATOR
Tae W. Yoo, 807, 1-Dong, Hanyang Apt., San 189-1, Seocho-dong, Seocho-ku, Seoul, Rep. of Korea
Filed May 18, 1990, Ser. No. 525,478
Claims priority, application Rep. of Korea, Dec. 14, 1989, 89-17039[U]
Term of patent 14 years
U.S. Cl. D24—200

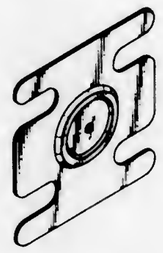


344,138
REACTION CONTAINER FOR A CHEMICAL ANALYZER
Takashi Nagata, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1992, Ser. No. 613
Claims priority, application Japan, Jun. 10, 1992, 017190/92
The portion of the term of this patent subsequent to Feb. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—224

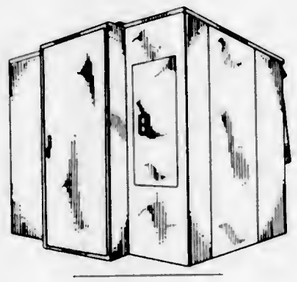


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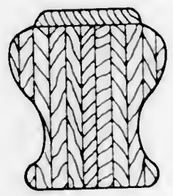
344,139
MASS SPECTOMETER SAMPLE SLIDE
John Spurr, Hayward, Calif., and John Cottrell, London, United Kingdom, assignors to Finnigan Mat Ltd., Herts, United Kingdom
Filed Apr. 3, 1991, Ser. No. 680,682
Term of patent 14 years
U.S. Cl. D24—225



344,140
ELECTRICAL EQUIPMENT ENCLOSURE
James W. Webster, Bensenville, Ill., assignor to Reliance Comm/Tec Corporation, Chicago, Ill.
Filed Feb. 27, 1991, Ser. No. 662,811
The portion of the term of this patent subsequent to Jan. 12, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—33



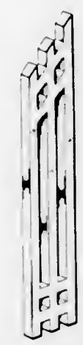
344,141
RAILING
John E. Wonderly, 769 Oaknoll Dr., Springboro, Ohio 45066
Filed Dec. 23, 1991, Ser. No. 812,655
Term of patent 14 years
U.S. Cl. D25—119



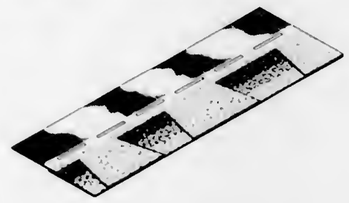
344,142
BALUSTER
William W. Bass, 150 Cavan Way, Mableton, Ga. 30059
Filed Nov. 2, 1992, Ser. No. 1,072
Term of patent 14 years
U.S. Cl. D25—126



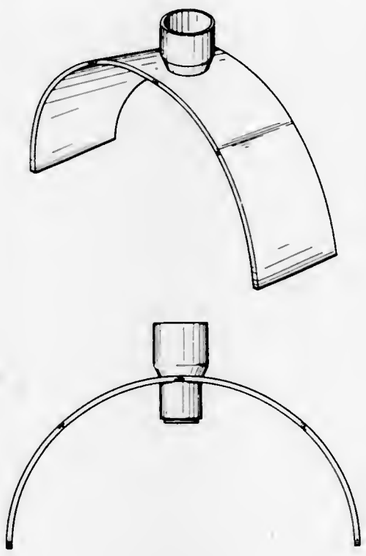
344,143
BALUSTER
William W. Bass, 150 Cavan Way, Mableton, Ga. 30059
Filed Nov. 2, 1992, Ser. No. 1,078
Term of patent 14 years
U.S. Cl. D25—126



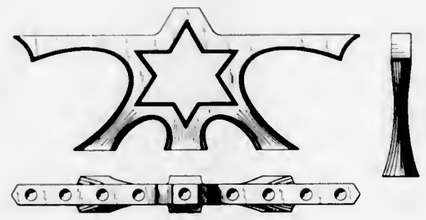
344,144
LAMINATED SHINGLE
Casimir P. Weaver, Northport, Ala.; Matti Kiik, Richardson, Tex., and William J. Schultz, St. Charles, Ill., assignors to Elk Corporation of Dallas, Dallas, Tex.
Filed Sep. 18, 1991, Ser. No. 762,857
Term of patent 14 years
U.S. Cl. D25—139



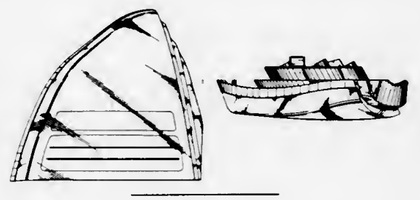
344,145
CANDLESTICK
Gregory Spiggle, and Christine Ingraham, both of 320 Dromara Rd., Guilford, Conn. 06437
Filed Feb. 8, 1993, Ser. No. 4,553
Term of patent 14 years
U.S. Cl. D26—9



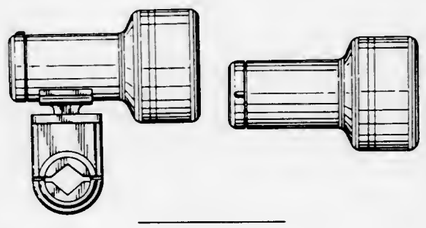
344,146
MENORAH
Richard P. Wilton; Amy E. Engle, both of Lancaster, and Ronald L. Feese, York County, all of Pa., assignors to The Wilton Company, Mount Joy, Pa.
Filed Feb. 27, 1992, Ser. No. 842,630
Term of patent 14 years
U.S. Cl. D26—13



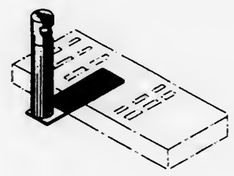
344,147
REAR LIGHT FOR AUTOMOBILE
Satoshi Uchida, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 9, 1991, Ser. No. 805,712
Claims priority, application Japan, Jun. 17, 1991, 3-18013
Term of patent 14 years
U.S. Cl. D26—28



344,148
WEATHER RESISTANT BICYCLE LIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jun. 23, 1992, Ser. No. 903,814
Claims priority, application United Kingdom, Dec. 24, 1991, 2 019 827
Term of patent 14 years
U.S. Cl. D26—28

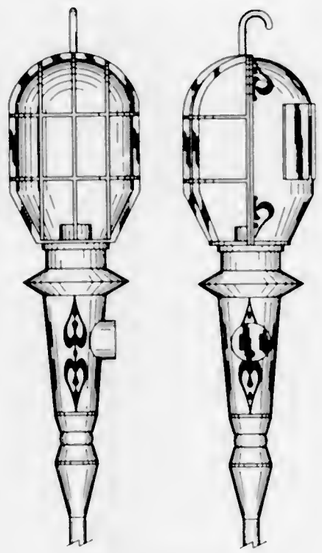


344,149
LIGHT FOR A REMOTE CONTROL DEVICE
Peter C. Mele, P.O. Box 1596, Burlington, Vt. 05402
Filed Aug. 26, 1991, Ser. No. 751,227
Term of patent 14 years
U.S. Cl. D26—37

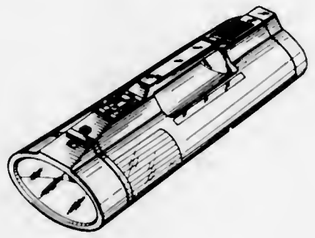


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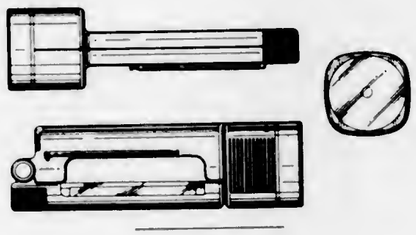
344,150
MAGNETICALLY MOUNTED DROPLIGHT WITH SWIVEL
Frank Umhauser, 1670 E. 32 St., Brooklyn, N.Y. 11234
Filed May 4, 1992, Ser. No. 878,006
Term of patent 14 years
U.S. Cl. D26—37



344,151
COMBINED FASHLIGHT AND FLUORESCENT LANTERN
Wan Yiu Kwong, Tsuen Wan, Hoog Kong, assignor to Fee Tat Plastic Factory Limited, Aberdeen, Hong Kong
Filed Apr. 13, 1992, Ser. No. 867,929
Claims priority, application United Kingdom, Oct. 24, 1991, 2018511
Term of patent 14 years
U.S. Cl. D26—42



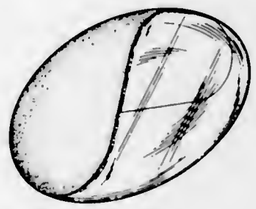
344,152
COMBINED MULTIPURPOSE LANTERN AND RADIO
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 1, 1992, Ser. No. 861,507
Claims priority, application United Kingdom, Oct. 1, 1991, 2 017 884
Term of patent 14 years
U.S. Cl. D26—38



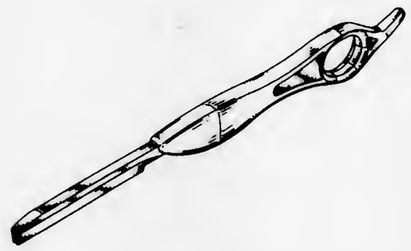
344,153
COMBINED POWDER APPLICATOR AND OVERCAP
Charlene Hartenstein, 209 S. La Peer Dr., Beverly Hills, Calif. 90211
Filed Jul. 30, 1990, Ser. No. 560,888
Term of patent 14 years
U.S. Cl. D28—8



344,154
SOAP BAR
Nicholas Mottola, New York, N.Y., assignor to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.
Filed Dec. 5, 1991, Ser. No. 803,402
Term of patent 14 years
U.S. Cl. D28—8.1



344,155
RAZOR BLADE HOLDER
Masayuki Ueno, and Shigeru Goto, both of Seki, Japan, assignors to Feather Safety Razor Co., Ltd., Osaka, Japan
Filed May 21, 1992, Ser. No. 887,915
Claims priority, application Japan, Dec. 17, 1991, 3-38101
Term of patent 14 years
U.S. Cl. D28—45



344,156
ELECTRIC SHAVER
Etsushi Muramatsu; Akio Goto, and Shinji Yamamoto, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Mar. 31, 1992, Ser. No. 862,238
Claims priority, application Japan, Oct. 8, 1991, 3-30517
Term of patent 14 years
U.S. Cl. D28—50



344,157
DRY SHAVER
Klaas T. Oord, Drachten, and Frank H. C. Newman, Zuidlaren, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 661,444, Feb. 26, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 6,120
Claims priority, application World Int. Prop. O., Sep. 18, 1990, DMA-001332
Term of patent 14 years
U.S. Cl. D28—50

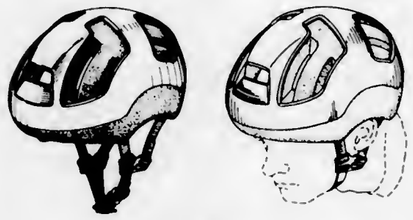


344,158
MASCARA BOTTLE
Walter K. Kemmerer, Cortlandt Manor, N.Y., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Nov. 12, 1991, Ser. No. 791,622
Term of patent 14 years
U.S. Cl. D28—76



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344,159
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1991, Ser. No. 723,015
Claims priority, application Japan, Mar. 20, 1991, 3-7806
Term of patent 14 years
U.S. Cl. D29—12



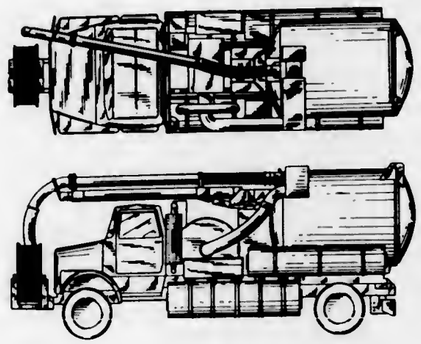
344,160
SPLATBALL HELMET
Todd G. Boza, Eight Surrey, Pontiac, Mich. 48340
Filed May 2, 1991, Ser. No. 673,573
Term of patent 14 years
U.S. Cl. D29—13



344,161
PET TOY
Joseph P. Markham, Lakewood, Colo., assignor to Bounce, Inc., Lakewood, Colo.
Filed Mar. 16, 1992, Ser. No. 851,770
Term of patent 14 years
U.S. Cl. D30—160



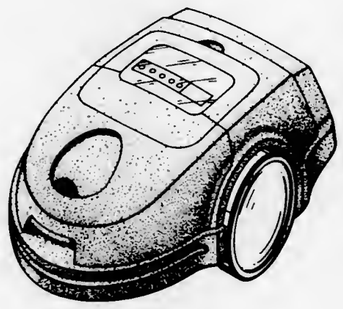
344,162
COMBINED SINGLE AXLE SEWER AND CATCH BASIN CLEANER
Kevin M. Kimes, Ottawa, Ill., assignor to Peabody Myers Corporation, Streator, Ill.
Filed Sep. 21, 1990, Ser. No. 586,593
Term of patent 14 years
U.S. Cl. D32—14



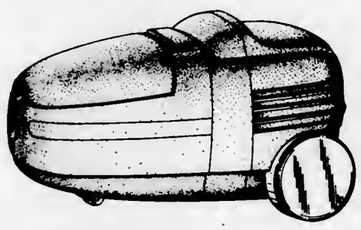
344,163
FLOOR BUFFING MACHINE
Charles W. Joines, Sparta, N.C., assignor to Pioneer/Eclipse Corporation, Sparta, N.C.
Filed Jun. 9, 1992, Ser. No. 896,476
Term of patent 14 years
U.S. Cl. D32—19



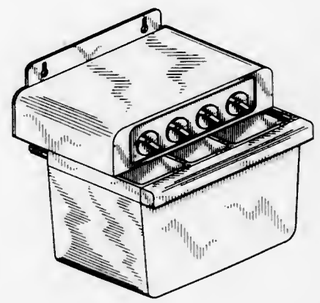
344,164
VACUUM CLEANER
Chikashi Kuriya, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 16, 1992, Ser. No. 821,932
Claims priority, application Japan, Jul. 16, 1991, 3-21319
Term of patent 14 years
U.S. Cl. D32—21



344,165
VACUUM CLEANER
Chikashi Kuriya, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 16, 1992, Ser. No. 821,933
Claims priority, application Japan, Jul. 16, 1991, 3-21313
Term of patent 14 years
U.S. Cl. D32—21



344,166
COMBINED STORAGE AND DISPENSER
Anita C. Jones, 75 Deep Step Rd., Covington, Ga. 30209
Filed Feb. 20, 1992, Ser. No. 839,231
Term of patent 14 years
U.S. Cl. D32—30



344,167
HAMPER
Jody A. Hobson, Rocky River; Richard R. Lewellen, Wooster; Russell P. Mottmiller, Wooster, and Stacy L. Wolfe, Wooster, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
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Hohberg, Gerhard, to Carl-Zeiss-Stiftung. Mirror for changing the geometrical form of a light beam. 5,285,320, Cl. 359-853.000.

Hohman, Michael; and Ludwig, Norbert, to Leybold Aktiengesellshaft. System for the production of powders from metals. 5,284,329, Cl. 266-202.000.

Holdaway, Charles R.: *See*—
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Miller, Richard J., 5,285,001, Cl. 800-200.000.

Holdsworth, David; Rickey, Daniel W.; Dranova, Maria; Miller, John; and Fenster, Aaron, to University Hospital (London) Development Corporation. Computer controlled positive displacement pump for physiological flow simulation. 5,284,423, Cl. 417-28.000.

Holman, Michael J. Electronic redeemable coupon system via television. 5,285,278, Cl. 358-142.000.

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Miller, Paul D.: *See*—
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Clarke, David; Goddard, John D.; Stanley, Paul L. R.; and Milner, Nigel E., 5,284,739, Cl. 430-504.000.

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Mader, Roger A.; and Tautvydas, Kestutis J., 5,284,759, Cl. 435-125.000.
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Yafuso, Masao; Holody, Mark Z.; Maxwell, Thomas P.; and Hacker, Thomas G., 5,284,775, Cl. 436-68.000.
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Montegari, Fred A., to International Business Machines Corporation. Complementary current tree decoder. 5,285,118, Cl. 307-463.000.

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Yonehara, Akifumi, to NEC Corporation. Cell flow control unit and method for asynchronous transfer mode switching networks. 5,285,446, Cl. 370-60.100.

Yonker, John H.: *See*—
Clemens, Jack G.; Yonker, John H., and Jonsson, Asmundur, 5,284,208, Cl. 166-383.000.

Yorde, Donald E.: *See*—
Mroczkowski, Susan J., Siegesmund, Kenneth A., and Yorde, Donald E., 5,284,748, Cl. 435-6.000.

Yorozu Manufacturing Corporation: *See*—
Shinji, Kawano; Hiroshi, Nakajima; Kimio, Okamoto; and Mayumi, Yanagisawa, 5,284,353, Cl. 280-660.000.

Yoshida, Hideo; and Ishiguro, Minoru, to Fuji Photo Optical Co., Ltd. Extrinsic light eliminator for autofocusing circuit. 5,285,233, Cl. 354-403.000.

Yoshida, Masatoshi: *See*—
Izuhayashi, Masuji; Yoshida, Masatoshi; Matsunaga, Toshiaki; Hori, Kohei; Kikuta, Teruo; Nakano, Shiro, and Hatta, Hideto-shi, 5,284,900, Cl. 524-492.000.

Yoshida, Norio: *See*—
Kajitani, Minoru; and Yoshida, Norio, 5,284,025, Cl. 62-160.000.

Yoshida, Ryouichi, to Takata Corporation. Vehicle collision detecting system. 5,285,188, Cl. 340-436.000.

Yoshida, Shoji, to Fujitsu Limited. System for suppressing spread of error generated in differential coding. 5,285,458, Cl. 371-42.000.

Yoshida, Tadashi; Kato, Toshiyuki; Kawamura, Yoshimi; Matsumoto, Koichi; and Itazaki, Hiroshi, to Shionogi Seiyaku Kabushiki Kaisha. Aldose reductase inhibitor. 5,284,870, Cl. 514-468.000.

Yoshida, Yasuhiro: *See*—
Sato, Hozumi; Yoshida, Yasuhiro, and Matunaga, Tatuaki, 5,284,912, Cl. 525-65.000.

Yoshikawa, Masato: *See*—
Kusano, Yukihiro; Yoshikawa, Masato; and Naito, Kazuo, 5,284,543, Cl. 156-272.600.

Yoshinaga, Kazuo: *See*—
Kaneko, Shuzo; Yoshinaga, Kazuo; Isaka, Kazuo; Kai, Takashi; and Toshida, Yomishi, 5,285,298, Cl. 359-43.000.

Yoshio, Hideaki: *See*—
Konishi, Akio; Yoshio, Hideaki; Kurumatani, Hiroshi; and Saito, Yoshiyuki, 5,285,332, Cl. 360-85.000.

Yoshioka, Satoru, to Ricoh Company, Ltd. Waste toner collecting device for electrophotographic equipment. 5,285,250, Cl. 355-298.000.

Yoshioka, Toshifumi: *See*—
Suzuki, Masaaki; Masaki, Yuichi; Yoshioka, Toshifumi, and Mitsui, Mutsuo, 5,285,300, Cl. 359-54.000.

Yoshioka, Tsutomu, to Toa Corporation. Loudspeaker horn. 5,285,025, Cl. 181-192.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Kinishi, Ryoichi; and Ozaki, Yoshihiro, 5,284,978, Cl. 568-33.000.

Young, Elvan S.; and Craine, Philip L., to Advanced Micro Devices. Scheme for eliminating page boundary limitation on initial access of a serial contiguous access memory. 5,285,421, Cl. 365-230.040.

Young, Timothy M.: *See*—
Michael, Robert K.; and Young, Timothy M., 5,284,320, Cl. 251-304.000.

Yu, Dequan, to Ford Motor Company. Automotive fuel pump with regenerative turbine and long curved vapor channel. 5,284,417, Cl. 415-55.100.

Yu, Kuang-Shih. Socket assembly. 5,284,446, Cl. 439-409.000.

Yuen, Po-Wai: *See*—
Bigge, Christopher F.; Johnson, Graham; and Yuen, Po-Wai, 5,284,862, Cl. 514-419.000.

Yum, Su Il: *See*—
Lee, Eun Soo; Theeuwes, Felix; Wong, Patrick S. L.; Yum, Su Il; Gale, Robert M.; and Zaffaroni, Alejandro, 5,284,660, Cl. 424-449.000.

Yumita, Takashi: *See*—
Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,284,860, Cl. 514-340.000.

Yun, Jondo: *See*—
Chou, Ye T.; Harmer, Martin P.; and Yun, Jondo, 5,284,823, Cl. 505-1.000.

Yun, Yeong-Kuk: *See*—
Kim, Chun-dong; Yun, Yeong-Kuk, and Jang, Hak-hyun, 5,285,434, Cl. 369-44.140.

Yunogami, Takashi: *See*—
Mizutani, Tatsumi; and Yunogami, Takashi, 5,284,544, Cl. 156-345.000.

Yuzuriha, Junji: *See*—
Shimizu, Yasuo; Kawai, Toshitake; and Yuzuriha, Junji, 5,284,219, Cl. 180-79.100.

Zacek, Franz: *See*—
Roth, Roland; Schick, Henning; Bloo, Johann; and Zacek, Franz, 5,284,540, Cl. 156-160.000.

Zachariadis, Robert G.; and Ting, Sam C., to Mobil Oil Corporation. Method of broadline seismic data acquisition. 5,285,423, Cl. 367-56.000.

Zaenger, Ian C.: *See*—
Sikkenga, David L.; Zaenger, Ian C.; and Williams, Gregory S., 5,284,987, Cl. 585-410.000.

Zaffaroni, Alejandro: *See*—
Lee, Eun Soo; Theeuwes, Felix; Wong, Patrick S. L., Yum, Su Il, Gale, Robert M.; and Zaffaroni, Alejandro, 5,284,660, Cl. 424-449.000.

Zagar, Paul S.: *See*—
Starkweather, Michael W.; and Zagar, Paul S., 5,285,408, Cl. 365-189.110.

Zagata, Blair J.: *See*—
Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., 5,284,880, Cl. 521-51.000.

Zaleski, Edward: *See*—
Sussman, Glenn; and Zaleski, Edward, 5,284,472, Cl. 604-22.000.

Zambon Group S.p.A.: *See*—
Villa, Marco; Giordano, Claudio; Cavicchioli, Silvia; and Levi, Silvio, 5,284,966, Cl. 560-9.000.

Zambuto, Sam C. Baby bottle air vent. 5,284,261, Cl. 215-11.500.

Zander, Jeffrey E.; and Kakuk, Jay J., to Toro Company, The. Power box for a low voltage lighting system. 5,285,349, Cl. 361-641.000.

Zapata, Luis E.: *See*—
Miller, John L.; Hackel, Lloyd A.; Dane, Clifford B.; and Zapata, Luis E., 5,285,310, Cl. 359-338.000.

Zarembo, Peter J., to Minnesota Mining and Manufacturing Company. Desensitizing apparatus for electromagnetic article surveillance system. 5,285,182, Cl. 335-284.000.

Zaretsky, Boris, to Northern Telecom Limited. Current limit circuit in current mode power supplies. 5,285,366, Cl. 363-56.000.

Zaretsky, Mark C.: *See*—
Rimai, Donald S.; Zaretsky, Mark C.; Primerano, Bruno; and Almeter, David D., 5,285,243, Cl. 355-246.000.

Zazzetta, Alessandro: *See*—
Custro, Sergio; and Zazzetta, Alessandro, 5,284,915, Cl. 525-89.000.

Zeiler, Hans-Joachim. *See*—
Petersen, Uwe; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,284,842, Cl. 514-187.000.
Petersen, Uwe; Schenke, Thomas; Schriewer, Michael; Grohe, Klaus; Krebs, Andreas; Haller, Ingo; Metzger, Karl G.; Bremm, Klaus-Dieter; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,284,855, Cl. 514-300.000.

Zenith Electronics Corp.: *See*—
Citta, Richard W., 5,285,276, Cl. 368-409.000

Zhou, Jiangying: *See*—
Pavlidis, Theodosios; and Zhou, Jiangying, 5,285,504, Cl. 382-9.000.

Zielinski, Robert W.: *See*—
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,285,099, Cl. 257-529.000.

Zimmer, Inc.: *See*—
Johnson, Erin M.; and Hayliss, Leroy C., 5,284,483, Cl. 606-86.000.

Zimmermann, Craig E.; and Merle, Rene K., to General Mills, Inc. Rolled food item fabricating methods. 5,284,667, Cl. 426-420.000.

Zimpel, John J.; and Koplin, David R., to Kearney & Trecker Corporation. Automated part storage and machining system. 5,283,934, Cl. 29-33.00P.

Ziogas, Phovios D.: *See*—
Huynh, Anh N.; and Ziogas, Phovios D., 5,285,372, Cl. 363-132.000.

ZMD Corporation: *See*—
Lopin, Michael L., 5,284,135, Cl. 607-4.000.

Zorner, Paul S.; Tsujino, Yasuko; and Kamioka, Osamu, to Mycogen Corporation. Herbicidally-active glycol esters of fatty acids. 5,284,819, Cl. 504-127.000.

Zottin, Walter: *See*—
Duarte, Durval, Jr.; Kaufmann, Manfred, Jr.; Praca, Mario Sergio; and Zottin, Walter, 5,284,393, Cl. 384-291.000.

Zur, Yuval, to Elscint Ltd. Reduction of truncation caused artifacts. 5,285,157, Cl. 324-309.000.

Zweigart, Gernard, to Mercedes-Benz AG. Motor vehicle windscreen having strip-shaped opaque dot pattern. 5,284,376, Cl. 296-96.190.

ZymoGenetics, Inc.: *See*—
Sledziewski, Andrzej Z.; and Sheppard, Paul O., 5,284,746, Cl. 435-6.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF FEBRUARY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, to Saint-Gobain Vitrage. Glazing laminates. Re. 34,538, Cl. 428-349.000.

AMP Incorporated: *See*—
Aoyama, Koji, Re. 34,539, Cl. 439-752.000.

Aoyama, Koji, to AMP Incorporated. Electrical connector. Re. 34,539, Cl. 439-752.000.

Bradford-White Corporation: *See*—
Staats, Charles W., Re. 34,534, Cl. 122-13.100.

Deyrup, Edward J., to Du Pont de Nemours, E. I., and Company. Plastic composite barrier structures. Re. 34,537, Cl. 428-35.700.

Du Pont de Nemours, E. I., and Company: *See*—
Deyrup, Edward J., Re. 34,537, Cl. 428-35.700.

Frimmel, James J., Jr., to International Telesystems Corporation. Call management system with protocol converter and port controller. Re. 34,536, Cl. 379-88.000.

Gesenhues, Paul: *See*—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, Re. 34,538, Cl. 428-349.000.

Haken, Roger A.: *See*—
Paterson, James L.; and Haken, Roger A., Re. 34,535, Cl. 365-185.000.

Hu, Charlie L.: *See*—
Wu, Joseph C.; Hu, Charlie L.; and Law, Yee S., Re. 34,540, Cl. 455-20.000.

International Telesystems Corporation: *See*—
Frimmel, James J., Jr., Re. 34,536, Cl. 379-88.000.

Jandeleit, Otto: *See*—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, Re. 34,538, Cl. 428-349.000.

Law, Yee S.: *See*—
Wu, Joseph C.; Hu, Charlie L.; and Law, Yee S., Re. 34,540, Cl. 455-20.000.

Paterson, James L.; and Haken, Roger A., to Texas Instruments Incorporated. Floating gate memory with improved dielectric. Re. 34,535, Cl. 365-185.000.

Radisch, Helmer: *See*—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, Re. 34,538, Cl. 428-349.000.

Saint-Gobain Vitrage: *See*—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, Re. 34,538, Cl. 428-349.000.

Schafer, Wolfgang: *See*—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, Re. 34,538, Cl. 428-349.000.

Staats, Charles W., to Bradford-White Corporation. Direct power vented water heater. Re. 34,534, Cl. 122-13.100.

Texas Instruments Incorporated: *See*—
Paterson, James L.; and Haken, Roger A., Re. 34,535, Cl. 365-185.000.

TFT, Inc.: *See*—
Wu, Joseph C.; Hu, Charlie L.; and Law, Yee S., Re. 34,540, Cl. 455-20.000.

Wigley, Freddie J. Method for preparing ice for transportation. Re. 34,533, Cl. 62-60.000.

Wu, Joseph C.; Hu, Charlie L.; and Law, Yee S., to TFT, Inc. Frequency modulated radio frequency broadcast network employing a synchronous frequency modulated booster system. Re. 34,540, Cl. 455-20.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allen, Richard C.: *See*—
Hamer, R. Richard L.; Freed, Brian; and Allen, Richard C., B1 5,006,563, Cl. 514-646.000.

Freed, Brian: *See*—
Hamer, R. Richard L.; Freed, Brian; and Allen, Richard C., B1 5,006,563, Cl. 514-646.000.

Hamer, R. Richard L.; Freed, Brian; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Incorporated. Alkylamino and alkylamino alkyl diarylketones. B1 5,006,563, 2-8-94, Cl. 514-646.000.

Hoechst-Roussel Pharmaceuticals Incorporated: *See*—
Hamer, R. Richard L.; Freed, Brian; and Allen, Richard C., B1 5,006,563, Cl. 514-646.000.

John Mezzalingua Assoc. Inc.: *See*—
Szegda, Andrew, B1 5,073,129, Cl. 439-585.000.

Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., to Recognition Equipment Incorporated. Document processing system. B1 4,404,649, 2-8-94, Cl. 364-419.000.

Recognition Equipment Incorporated: *See*—
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., B1 4,404,649, Cl. 364-419.000.

Reid, William J.: *See*—
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., B1 4,404,649, Cl. 364-419.000.

Simpson, Willis D.: *See*—
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., B1 4,404,649, Cl. 364-419.000.

Szegda, Andrew, to John Mezzalingua Assoc. Inc. Coaxial cable end connector. B1 5,073,129, 2-8-94, Cl. 439-585.000.

LIST OF DESIGN PATENTEES

Adams, Jason O.; Jacobs, Russel J.; Mayo, Noel; Pierce, Brett A.; and Spira, Joel S., to Lutron Electronics Co., Inc. Electrical load control panel. 344,068, 2-8-94, Cl. D13-164.000.

Althans, Richard K.; and Gartz, Mark, to Zenith Electronics Corporation. Video monitor. 344,075, 2-8-94, Cl. D14-113.000.

Amity Leather Products Company: *See*—
Petty, Cindy; Smith, Suzanne L.; Gagan, Richard D.; and Lund, Eric, 343,951, Cl. D3-249.000.

Anderson, Norman D.: *See*—
Attinello, John S.; Freygang, Dale G.; Anderson, Norman D.; and Landers, Samuel P., 344,051, Cl. D12-147.000.

Attinello, John S.; Freygang, Dale G.; Anderson, Norman D.; and Landers, Samuel P., 344,052, Cl. D12-147.000.

Attinello, John S.; Freygang, Dale G.; Anderson, Norman D.; Dixon, Max H.; and Landers, Samuel P., 344,053, Cl. D12-147.000.

Aoki, Osamu, to Koyo Fastener Co., Ltd. Electric wire holder. 344,012, 2-8-94, Cl. D8-356.000.

Aqua-Leisure Industries, Inc.: *See*—
Shelton, Robert N.; and Fireman, Andrew F., 344,113, Cl. D21-197.000.

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Arai, Toshimitsu, to Toyo Sangyo Co., Ltd. Glass cutter. 344,005, 2-8-94, Cl. D8-98.000.
Armament Systems and Procedures, Inc.: *See*—
Parsons, Kevin L., 344,037, Cl. D10-119.000.
Arman, Armand P. Saxophone pin. 344,041, 2-8-94, Cl. D11-44.000.
Arney, Michael D.: *See*—
Johnson, Robert K., and Arney, Michael D., 344,119, Cl. D21-226.000.
Ashley Furniture Industries, Inc.: *See*—
Pauer, Jericho P.; and Peterson, Randy, 343,972, Cl. D6-480.000.
Atkins, Helen I.: *See*—
Coito, Lucia B., and Atkins, Helen I., 343,947, Cl. D2-917.000.
Attinello, John S., Freygang, Dale G.; Anderson, Norman D., and Landers, Samuel P., to Goodyear Tire & Rubber Company, The. Tire tread. 344,051, 2-8-94, Cl. D12-147.000.
Attinello, John S.; Freygang, Dale G.; Anderson, Norman D., and Landers, Samuel P., to Goodyear Tire & Rubber Company, The. Tire tread. 344,052, 2-8-94, Cl. D12-147.000.
Attinello, John S., Freygang, Dale G.; Anderson, Norman D., Dixon, Max H.; and Landers, Samuel P., to Goodyear Tire & Rubber Company, The. Tire tread. 344,053, 2-8-94, Cl. D12-147.000.
Attinello, John S., Glover, William E.; Landers, Samuel P., and Maxwell, Paul B., to Goodyear Tire & Rubber Company, The. Pneumatic tire tread and buttress. 344,054, 2-8-94, Cl. D12-151.000.
B.U. Toys Co., Ltd.: *See*—
Lin, Chin-Chien, 344,109, Cl. D21-147.000.
Baird, Charles J.: *See*—
Hollinger, David N.; Brickner, Louis C.; Sutton, Stephen O., and Baird, Charles J., 344,081, Cl. D15-133.000.
Ball, Edwin L., to Lexington Furniture Industries, Inc. Cocktail table with storage. 343,969, 2-8-94, Cl. D6-436.000.
Barnard, Michael A., to Wescon Products Company. Throttle control. 344,090, 2-8-94, Cl. D15-17.000.
Barnett, James P.: *See*—
Tomasevich, Rebecca L.; and Barnett, James P., 344,126, Cl. D22-122.000.
Bass, William W. Baluster. 344,142, 2-8-94, Cl. D25-126.000.
Bass, William W. Baluster. 344,143, 2-8-94, Cl. D25-126.000.
Bates, Mark C.; Driscoll, Edward K., and Fillio, Thomas D., to Data General Corporation. Data processing equipment cabinet. 344,072, 2-8-94, Cl. D14-102.000.
Battaglia, Jean: *See*—
Wechsler, Lana; and Battaglia, Jean, 343,956, Cl. D5-40.000.
Bennett, Kathleen: *See*—
Hatfield, Jeanne F.; Hatfield, Edward; and Bennett, Kathleen, 344,035, Cl. D10-117.000.
Bertram, Kim E. Archery bowstring peep sight. 344,123, 2-8-94, Cl. D22-107.000.
Bonnier, Tor G.: *See*—
DeBraal, Stanley J.; Nickles, Daniel R.; Crookes, William E.; Mantilla, Alberto J.; Bonnier, Tor G.; and Holm, David R., 344,059, Cl. D12-184.000.
Borden, Inc.: *See*—
Mottur, George P., and Luebbers, Michael J., 343,943, Cl. D1-111.000.
Bounce, Inc.: *See*—
Markham, Joseph P., 344,161, Cl. D30-160.000.
Bowler, Alan H.: *See*—
Charbonneau, Guy L., and Bowler, Alan H., 344,024, Cl. D9-520.000.
Boyer, Romeo: *See*—
Letarte, Lucien; and Boyer, Romeo, 344,063, Cl. D13-131.000.
Boza, Todd G. Splathall helmet. 344,160, 2-8-94, Cl. D29-13.000.
Brazis, William E., to Rubbermaid Incorporated. Hook. 344,010, 2-8-94, Cl. D8-367.000.
Brickner, Louis C.: *See*—
Hollinger, David N.; Brickner, Louis C.; Sutton, Stephen O.; and Baird, Charles J., 344,081, Cl. D15-133.000.
British Telecommunications plc: *See*—
DesBarats, Guy E., 344,083, Cl. D14-150.000.
Brookshire, Howard E., Sr. Christmas tree for outdoor use. 344,043, 2-8-94, Cl. D11-118.000.
Brown, Stephanie C.; Trares, Keith C.; Miller, Frederick W.; Gilliam, Donald W.; Scarpitti, Anthony J.; Hoang, Andy N.; Kolowski, Michael A., and Montag, Sean D., to Goodyear Tire & Rubber Company, The. Tire tread. 344,049, 2-8-94, Cl. D12-147.000.
Byar, Peter, to Interdynamics, Inc. Automatic climate control device for automobiles. 344,028, 2-8-94, Cl. D10-50.000.
Calhoun, Connie L. Logo knee patch. 344,042, 2-8-94, Cl. D11-112.000.
Callaway Golf Company: *See*—
Helmstetter, Richard C.; and Schmidt, Glenn H., 344,117, Cl. D21-214.000.
Campbell, William R. Cabinet with concealed gun compartment. 343,970, 2-8-94, Cl. D6-437.000.
Canon Kabushiki Kaisha: *See*—
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi, and Matsuda, Yoshiyuki, 344,077, Cl. D14-118.000.
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi; Matsuda, Yoshiyuki; and Kawai, Hideki, 344,078, Cl. D14-118.000.
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi, and Matsuda, Yoshiyuki, 344,079, Cl. D14-118.000.
Isomoto, Masataka; and Sakurai, Mitsuru, 344,095, Cl. D18-49.000.
Omino, Senchi, 344,080, Cl. D14-118.000.
Cardinal Aluminum Company: *See*—
McClave, Larry W., 343,971, Cl. D6-455.000.
Carr, Kevin R.; Markowitz, William R., and Rosenbaum, Kevin W., to Moen Incorporated. Faucet. 344,127, 2-8-94, Cl. D23-238.000.
Carsello, Anthony J., to Emhart Inc. Key bow. 344,011, 2-8-94, Cl. D8-347.000.
Casha, Maria R. Toy. 344,106, 2-8-94, Cl. D21-62.000.
Cesaro, Peter D. Modular terminal board. 344,066, 2-8-94, Cl. D13-147.000.
Chadfield, Robert. *See*—
Lang, Frank J.; and Chadfield, Robert, 344,017, Cl. D9-338.000.
Charbonneau, Guy L., and Bowler, Alan H., to 159747 Canada, Inc. Bottle. 344,024, 2-8-94, Cl. D9-520.000.
Chen, Chen-Kuang. Transparent display pager box. 344,084, 2-8-94, Cl. D14-191.000.
Chen, Da-Chung. *See*—
Chen, Ta-Cheng, and Chen, Da-Chung, 344,116, Cl. D21-211.000.
Chen, Ta-Cheng, and Chen, Da-Chung, to Love Blue Enterprise Co., Ltd. Club. 344,116, 2-8-94, Cl. D21-211.000.
Cheng, Peter S. C. Gift package bow. 344,045, 2-8-94, Cl. D11-184.000.
Children On The Go, Inc.: *See*—
Greenwood, Mark H., 343,958, Cl. D6-333.000.
Chow, Jessie. Tool display rack. 343,976, 2-8-94, Cl. D6-571.000.
Cipolla, Thomas M., and Swansey, John D., to International Business Machines Corporation. Computer cabinet. 344,073, 2-8-94, Cl. D14-102.000.
Cirullo, Bernard A. Safety plug. 344,064, 2-8-94, Cl. D13-138.000.
Citterio, Antonio, to Fehlbaum & Co. Settee. 343,967, 2-8-94, Cl. D6-381.000.
Claxton, Robert W. Leg and feed line holder for a bazooka antenna. 344,085, 2-8-94, Cl. D14-230.000.
Coito, Lucia B.; and Atkins, Helen I. Pedicure slipper. 343,947, 2-8-94, Cl. D2-917.000.
Collins, Steven M. Combined laptop computer with cellular telephone and carrying case therefor. 344,074, 2-8-94, Cl. D14-106.000.
Compaq Computer Corporation: *See*—
Glusketer, Steven D.; and Youens, John E., 344,070, Cl. D14-100.000.
Conair Corporation. *See*—
Ferrara, Daniel R., Jr., 343,981, Cl. D7-309.000.
Cordis Corporation. *See*—
Marques, Jose A., 343,953, Cl. D3-203.000.
Corson, Inger, and White, Linda. Soft sculpture. 344,044, 2-8-94, Cl. D11-160.000.
Cottrell, John. *See*—
Spurr, John; and Cottrell, John, 344,139, Cl. D24-225.000.
Craig, Dana W., to Litex Industries, Inc. Blade for a ceiling fan. 344,130, 2-8-94, Cl. D23-413.000.
Crookes, William E.: *See*—
DeBraal, Stanley J.; Nickles, Daniel R.; Crookes, William E.; Mantilla, Alberto J.; Bonnier, Tor G.; and Holm, David R., 344,059, Cl. D12-184.000.
Cudzik, Jon T. Foothall. 344,114, 2-8-94, Cl. D21-204.000.
Cupp, Carl J., to Pachmayr Ltd. Gun grip. 344,124, 2-8-94, Cl. D22-108.000.
Das, Gloria E. Necklace. 344,039, 2-8-94, Cl. D11-7.000.
Data General Corporation. *See*—
Bates, Mark C.; Driscoll, Edward K.; and Fillio, Thomas D., 344,072, Cl. D14-102.000.
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Yamamoto, Shinji: *See*—
Muramatsu, Etsushi; Goto, Akio; and Yamamoto, Shinji, 344,156, Cl. D28-50.000.
Yen, Lee C. Horse racing toy. 344,104, 2-8-94, Cl. D21-11.000.
Yiu Kwong, Wan, to Fee Tat Plastic Factory Limited. Combined fashlight and fluorescent lantern. 344,151, 2-8-94, Cl. D26-42.000.
Yoo, Tae W. Acupressure stimulator. 344,137, 2-8-94, Cl. D24-200.000.
Yoshihara, Tsutomu: *See*—
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi; and Matsuda, Yoshiyuki, 344,077, Cl. D14-118.000.
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi; Matsuda, Yoshiyuki; and Kawai, Hideki, 344,078, Cl. D14-118.000.
Inukai, Yoshinori; Yoshihara, Tsutomu; Komatsu, Hiroshi; and Matsuda, Yoshiyuki, 344,079, Cl. D14-118.000.
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Yuen, John S., to John Manufacturing Limited. Combined transmitter and receiver for a door chime. 344,036, 2-8-94, Cl. D10-118.000.
Yuen, John S., to John Manufacturing Limited. Weather resistant bicycle light. 344,148, 2-8-94, Cl. D26-28.000.
Yuen, John S., to John Manufacturing Limited. Combined multipurpose lantern and radio. 344,152, 2-8-94, Cl. D26-38.000.
Zahabi, Moe A. Combined computer work station and printer stand. 344,076, 2-8-94, Cl. D14-114.000.
Zenith Electronics Corporation: *See*—
Althans, Richard K.; and Gartz, Mark, 344,075, Cl. D14-113.000.
159747 Canada, Inc.: *See*—
Charbonneau, Guy L.; and Bowler, Alan H., 344,024, Cl. D9-520.000.

LIST OF PLANT PATENTEES

Bear Creek Gardens, Inc.: *See*—
Kordes, Wilhelm, 8,580, Cl. 23.000.
Warriner, Alene B., 8,578, Cl. 10.100.
Warriner, William A., deceased, 8,579, Cl. 22.000.
Warriner, William A., deceased, 8,581, Cl. 26.000.
Warringer, William A., deceased, 8,582, Cl. 28.000.
Gardner, Leith M.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 8,583, Cl. 38.100.
Kordes, Wilhelm, to Bear Creek Gardens, Inc. Rose plant KORcilmo. 8,580, 2-8-94, Cl. 23.000.
Stravers, Lambertus J. M., to Terra Nigra B.V. Gerbera plant "Teroptima". 8,584, 2-8-94, Cl. 68.100.
Stravers, Lambertus J. M., to Terra Nigra B.V. Gerbera plant: Terbertola. 8,585, 2-8-94, Cl. 68.100.
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Stravers, Lambertus J. M., to Terra Nigra B.V. Gerbera plant: "Terkarola". 8,589, 2-8-94, Cl. 68.100.
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Stravers, Lambertus J. M., 8,585, Cl. 68.100.
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Stravers, Lambertus J. M., 8,589, Cl. 68.100.
Warriner, Alene B., to Bear Creek Gardens, Inc. Miniature rose plant named 'JACmo'. 8,578, 2-8-94, Cl. 10.100.
Warriner, Alene B., legal representative: *See*—
Warriner, William A., deceased, 8,581, Cl. 26.000.
Warriner, Alene Beatrice, legal representative: *See*—
Warriner, William A., deceased, 8,579, Cl. 22.000.
Warriner, William A., deceased (by Warriner, Alene Beatrice, legal representative), to Bear Creek Gardens, Inc. Floribunda rose plant named 'JACdor'. 8,579, 2-8-94, Cl. 22.000.
Warriner, William A., deceased (by Warriner, Alene B., legal representative), to Bear Creek Gardens, Inc. Floribunda rose plant named 'JACsim'. 8,581, 2-8-94, Cl. 26.000.
Warringer, Alene B., legal representative: *See*—
Warringer, William A., deceased, 8,582, Cl. 28.000.
Warringer, William A., deceased (by Warringer, Alene B., legal representative), to Bear Creek Gardens, Inc. Floribunda rose plant named 'JACsimpl'. 8,582, 2-8-94, Cl. 28.000.
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G. Plum tree "Earliqueen". 8,583, 2-8-94, Cl. 38.100.
Zaiger, Gary N.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 8,583, Cl. 38.100.
Zaiger, Grant G.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 8,583, Cl. 38.100.

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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
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U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 12, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,991,230 through 4,993,075
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 10, 1987 for which maintenance fees due at 7 years and

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six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,641,379 through 4,642,813
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 8, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,371,983 through 4,373,210
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 5, 1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,304,704	06/225,663	12/08/81
4,304,796	06/234,527	12/08/81
4,304,797	06/235,351	12/08/81
4,304,934	06/221,523	12/08/81
4,304,951	06/225,061	12/08/81
5,555,815	06/569,599	12/03/85
5,555,817	06/514,974	12/03/85
5,555,820	06/575,014	12/03/85
5,555,822	06/671,248	12/03/85
5,555,824	06/615,659	12/03/85
5,555,826	06/627,429	12/03/85
5,555,830	06/615,637	12/03/85
5,555,833	06/588,422	12/03/85
5,555,836	06/576,511	12/03/85
5,555,841	06/480,261	12/03/85
5,555,844	06/681,906	12/03/85
5,555,846	06/450,765	12/03/85
5,555,855	06/525,409	12/03/85
5,555,857	06/483,953	12/03/85
5,555,864	06/620,406	12/03/85
5,555,865	06/396,135	12/03/85
5,555,868	06/538,577	12/03/85
5,555,869	06/584,778	12/03/85
5,555,870	06/525,472	12/03/85
5,555,871	06/659,182	12/03/85
5,555,872	06/573,496	12/03/85
5,555,886	06/568,298	12/03/85
5,555,892	06/555,405	12/03/85
5,555,897	06/593,809	12/03/85
5,555,900	06/566,819	12/03/85
5,555,904	06/491,425	12/03/85
5,555,905	06/713,570	12/03/85
5,555,909	06/529,754	12/03/85
5,555,913	06/661,328	12/03/85
5,555,916	06/400,088	12/03/85
5,555,917	06/621,771	12/03/85
5,555,927	06/598,773	12/03/85
5,555,928	06/489,032	12/03/85
5,555,929	06/512,792	12/03/85
5,555,930	06/580,028	12/03/85
5,555,932	06/576,913	12/03/85
5,555,935	06/546,168	12/03/85
5,555,942	06/716,599	12/03/85
5,555,944	06/605,885	12/03/85
5,555,945	06/605,867	12/03/85
5,555,952	06/618,667	12/03/85
5,555,953	06/600,738	12/03/85
5,555,954	06/684,683	12/03/85
5,555,959	06/493,117	12/03/85
5,555,961	06/508,031	12/03/85
5,555,964	06/581,506	12/03/85
5,555,965	06/605,325	12/03/85
5,555,971	06/398,242	12/03/85
5,555,976	06/459,624	12/03/85
5,555,985	06/573,206	12/03/85
5,555,987	06/516,299	12/03/85
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5,555,990	06/614,801	12/03/85
5,555,998	06/706,023	12/03/85
5,555,999	06/597,920	12/03/85
4,556,000	06/585,133	12/03/85
4,556,002	06/489,117	12/03/85
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4,556,009	06/677,331	12/03/85
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4,556,016	06/503,198	12/03/85
4,556,019	06/583,573	12/03/85

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4,556,020	06/280,897	12/03/85
4,556,023	06/519,105	12/03/85
4,556,024	06/689,365	12/03/85
4,556,028	06/573,720	12/03/85
4,556,031	06/567,982	12/03/85
4,556,040	06/693,259	12/03/85
4,556,043	06/650,843	12/03/85
4,556,044	06/390,028	12/03/85
4,556,045	06/703,814	12/03/85
4,556,046	06/599,496	12/03/85
4,556,049	06/267,074	12/03/85
4,556,053	06/578,229	12/03/85
4,556,059	06/414,893	12/03/85
4,556,060	06/429,170	12/03/85
4,556,062	06/548,775	12/03/85
4,556,066	06/548,633	12/03/85
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4,556,068	06/526,762	12/03/85
4,556,070	06/547,307	12/03/85
4,556,071	06/575,168	12/03/85
4,556,074	06/545,890	12/03/85
4,556,075	06/604,172	12/03/85
4,556,080	06/626,213	12/03/85
4,556,083	06/569,792	12/03/85
4,556,084	06/698,260	12/03/85
4,556,095	06/626,302	12/03/85
4,556,097	06/625,085	12/03/85
4,556,100	06/616,842	12/03/85
4,556,104	06/628,080	12/03/85
4,556,107	06/489,649	12/03/85
4,556,113	06/547,944	12/03/85
4,556,114	06/480,251	12/03/85
4,556,116	06/646,368	12/03/85
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4,556,124	06/555,087	12/03/85
4,556,126	06/732,029	12/03/85
4,556,127	06/542,755	12/03/85
4,556,129	06/576,930	12/03/85
4,556,130	06/638,357	12/03/85
4,556,131	06/541,358	12/03/85
4,556,132	06/402,351	12/03/85
4,556,136	06/556,517	12/03/85
4,556,143	06/554,451	12/03/85
4,556,145	06/717,057	12/03/85
4,556,148	06/455,313	12/03/85
4,556,151	06/544,266	12/03/85
4,556,152	06/694,827	12/03/85
4,556,165	06/622,681	12/03/85
4,556,166	06/557,155	12/03/85
4,556,168	06/577,033	12/03/85
4,556,176	06/680,383	12/03/85
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4,556,185	06/558,531	12/03/85
4,556,187	06/568,059	12/03/85
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4,556,239	06/536,944	12/03/85
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4,556,356	06/411,132	12/03/85
4,556,376	06/625,598	12/03/85
4,556,377	06/583,132	12/03/85
4,556,378	06/650,900	12/03/85
4,556,380	06/684,948	12/03/85
4,556,381	06/597,449	12/03/85
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4,556,409	06/529,317	12/03/85
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4,556,412	06/662,007	12/03/85
4,556,418	06/657,121	12/03/85
4,556,424	06/541,754	12/03/85
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4,556,430	06/668,672	12/03/85
4,556,431	06/706,919	12/03/85
4,556,432	06/710,533	12/03/85
4,556,435	06/666,268	12/03/85
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4,556,443	06/474,715	12/03/85
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4,556,449	06/661,143	12/03/85
4,556,452	06/590,475	12/03/85
4,556,454	06/695,853	12/03/85
4,556,455	06/580,696	12/03/85
4,556,456	06/581,543	12/03/85
4,556,457	06/453,218	12/03/85
4,556,458	06/604,053	12/03/85
4,556,459	06/603,115	12/03/85
4,556,465	06/653,045	12/03/85
4,556,466	06/653,046	12/03/85
4,556,474	06/605,339	12/03/85
4,556,480	06/643,350	12/03/85
4,556,481	06/551,869	12/03/85
4,556,486	06/580,530	12/03/85
4,556,490	06/586,093	12/03/85
4,556,491	06/677,715	12/03/85
4,556,496	06/594,071	12/03/85
4,556,498	06/589,793	12/03/85
4,556,500	06/489,846	12/03/85

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Patent Number	Serial Number	Issue Date
4,556,501	06/659,883	12/03/85
4,556,504	06/592,039	12/03/85
4,556,511	06/617,536	12/03/85
4,556,512	06/668,059	12/03/85
4,556,513	06/627,254	12/03/85
4,556,520	06/598,647	12/03/85
4,556,523	06/638,930	12/03/85
4,556,529	06/609,150	12/03/85
4,556,530	06/634,848	12/03/85
4,556,532	06/690,231	12/03/85
4,556,533	06/556,605	12/03/85
4,556,537	06/540,670	12/03/85
4,556,542	06/616,639	12/03/85
4,556,548	06/557,349	12/03/85
4,556,554	06/269,935	12/03/85
4,556,555	06/694,695	12/03/85
4,556,557	06/514,182	12/03/85
4,556,563	06/474,750	12/03/85
4,556,564	06/475,370	12/03/85
4,556,566	06/509,844	12/03/85
4,556,567	06/509,846	12/03/85
4,556,568	06/509,848	12/03/85
4,556,574	06/552,128	12/03/85
4,556,577	06/509,845	12/03/85
4,556,578	06/509,847	12/03/85
4,556,581	06/678,185	12/03/85
4,556,582	06/375,180	12/03/85
4,556,583	06/375,216	12/03/85
4,556,591	06/305,446	12/03/85
4,556,592	06/561,122	12/03/85
4,556,598	06/504,990	12/03/85
4,556,603	06/591,755	12/03/85
4,556,610	06/484,869	12/03/85
4,556,614	06/439,003	12/03/85
4,556,615	06/675,266	12/03/85
4,556,616	06/500,194	12/03/85
4,556,629	06/564,971	12/03/85
4,556,635	06/527,540	12/03/85
4,556,637	06/486,286	12/03/85
4,556,639	06/472,286	12/03/85
4,556,640	06/508,836	12/03/85
4,556,643	06/462,719	12/03/85
4,556,647	06/705,392	12/03/85
4,556,652	06/585,769	12/03/85
4,556,659	06/406,583	12/03/85
4,556,661	06/412,360	12/03/85
4,556,670	06/545,450	12/03/85
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4,556,674	06/571,524	12/03/85
4,556,675	06/518,245	12/03/85
4,556,682	06/737,083	12/03/85
4,556,687	06/590,842	12/03/85
4,556,698	06/677,447	12/03/85
4,556,708	06/612,342	12/03/85
4,556,709	06/401,684	12/03/85
4,556,713	06/671,606	12/03/85
4,556,715	06/544,897	12/03/85
4,556,723	06/712,228	12/03/85
4,556,729	06/628,865	12/03/85
4,556,730	06/423,413	12/03/85
4,556,731	06/369,371	12/03/85
4,556,733	06/619,275	12/03/85
4,556,734	06/548,900	12/03/85
4,556,740	06/524,714	12/03/85
4,556,741	06/555,390	12/03/85
4,556,750	06/722,625	12/03/85
4,556,759	06/627,131	12/03/85
4,556,765	06/494,269	12/03/85
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4,556,820	06/565,284	12/03/85
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4,556,834	06/457,650	12/03/85
4,556,846	06/467,762	12/03/85
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4,556,864	06/411,686	12/03/85
4,556,868	06/555,309	12/03/85
4,556,872	06/524,152	12/03/85
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4,556,876	06/418,299	12/03/85
4,556,877	06/418,300	12/03/85
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4,556,918	06/564,235	12/03/85
4,556,922	06/403,379	12/03/85
4,556,928	06/620,443	12/03/85
4,556,930	06/398,634	12/03/85
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4,556,963	06/445,875	12/03/85
4,556,966	06/372,333	12/03/85
4,556,969	06/687,215	12/03/85
4,556,975	06/464,259	12/03/85
4,556,983	06/547,918	12/03/85
4,556,986	06/473,499	12/03/85
4,556,988	06/536,355	12/03/85
4,884,296	07/275,717	12/05/89
4,884,305	07/327,107	12/05/89
4,884,307	07/239,698	12/05/89
4,884,308	07/209,540	12/05/89
4,884,321	07/223,510	12/05/89
4,884,323	07/143,979	12/05/89
4,884,337	07/109,266	12/05/89
4,884,339	07/243,516	12/05/89
4,884,346	07/292,056	12/05/89
4,884,348	07/256,630	12/05/89
4,884,349	07/201,636	12/05/89
4,884,352	07/084,135	12/05/89
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4,884,357	07/264,431	12/05/89
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4,884,376	07/107,796	12/05/89
4,884,379	07/158,452	12/05/89
4,884,391	07/237,978	12/05/89
4,884,392	07/222,030	12/05/89
4,884,395	07/209,729	12/05/89
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4,884,404	07/186,141	12/05/89
4,884,409	07/301,631	12/05/89
4,884,412	07/244,306	12/05/89
4,884,419	07/291,664	12/05/89
4,884,420	06/832,178	12/05/89
4,884,421	07/208,973	12/05/89
4,884,428	07/186,088	12/05/89
4,884,432	07/313,110	12/05/89
4,884,434	07/309,988	12/05/89
4,884,438	07/260,350	12/05/89
4,884,441	07/192,836	12/05/89
4,884,444	07/315,155	12/05/89
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4,884,490	07/261,410	12/05/89
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4,884,496	07/305,460	12/05/89
4,884,497	07/223,341	12/05/89
4,884,501	07/131,001	12/05/89
4,884,507	07/273,608	12/05/89
4,884,512	07/276,904	12/05/89
4,884,519	07/268,164	12/05/89
4,884,524	07/260,460	12/05/89
4,884,525	07/177,545	12/05/89
4,884,526	07/116,829	12/05/89
4,884,527	07/098,237	12/05/89
4,884,533	07/166,382	12/05/89
4,884,536	07/305,731	12/05/89
4,884,538	07/159,338	12/05/89
4,884,542	07/280,864	12/05/89
4,884,543	07/269,335	12/05/89
4,884,547	07/227,834	12/05/89
4,884,553	07/123,686	12/05/89
4,884,562	06/945,178	12/05/89
4,884,568	07/202,146	12/05/89
4,884,582	06/940,063	12/05/89
4,884,583	07/141,962	12/05/89
4,884,587	07/107,022	12/05/89
4,884,588	07/248,584	12/05/89
4,884,593	07/263,623	12/05/89
4,884,598	07/238,255	12/05/89
4,884,603	07/349,178	12/05/89
4,884,614	07/093,066	12/05/89
4,884,615	07/249,705	12/05/89
4,884,619	07/222,933	12/05/89
4,884,623	07/281,813	12/05/89
4,884,625	06/643,110	12/05/89
4,884,627	07/211,868	12/05/89
4,884,633	07/303,208	12/05/89
4,884,635	07/235,414	12/05/89
4,884,637	07/123,264	12/05/89
4,884,639	07/167,184	12/05/89
4,884,642	07/266,630	12/05/89
4,884,646	07/220,526	12/05/89
4,884,647	07/127,618	12/05/89
4,884,654	07/088,132	12/05/89
4,884,660	07/350,303	12/05/89
4,884,664	07/389,261	12/05/89
4,884,669	07/232,605	12/05/89
4,884,670	07/168,489	12/05/89
4,884,680	07/220,930	12/05/89
4,884,683	07/336,798	12/05/89
4,884,686	07/279,548	12/05/89
4,884,688	07/179,659	12/05/89
4,884,691	07/180,363	12/05/89
4,884,702	07/279,728	12/05/89
4,884,706	07/313,084	12/05/89
4,884,711	07/210,510	12/05/89
4,884,713	07/249,278	12/05/89
4,884,714	07/181,699	12/05/89
4,884,719	06/947,777	12/05/89
4,884,720	07/058,448	12/05/89
4,884,721	07/205,438	12/05/89
4,884,724	07/237,282	12/05/89
4,884,725	07/178,134	12/05/89
4,884,726	07/234,212	12/05/89
4,884,728	07/337,831	12/05/89
4,884,732	07/244,721	12/05/89
4,884,735	07/236,460	12/05/89
4,884,738	07/275,419	12/05/89
4,884,743	07/171,479	12/05/89
4,884,750	07/044,495	12/05/89
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4,884,756	07/305,473	12/05/89
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4,884,760	07/138,902	12/05/89
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4,884,768	07/256,470	12/05/89
4,884,770	07/076,955	12/05/89
4,884,775	07/236,171	12/05/89
4,884,780	06/727,800	12/05/89
4,884,783	07/155,285	12/05/89
4,884,790	07/200,920	12/05/89
4,884,792	07/230,901	12/05/89
4,884,803	06/866,234	12/05/89
4,884,805	07/262,866	12/05/89
4,884,807	07/179,099	12/05/89
4,884,808	07/172,389	12/05/89
4,884,809	06/814,743	12/05/89
4,884,813	07/255,598	12/05/89
4,884,815	07/186,921	12/05/89
4,884,818	07/304,129	12/05/89
4,884,826	07/234,351	12/05/89
4,884,831	07/061,974	12/05/89
4,884,832	07/247,516	12/05/89
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4,884,838	07/296,781	12/05/89
4,884,846	07/242,033	12/05/89
4,884,847	07/157,773	12/05/89
4,884,854	07/324,464	12/05/89
4,884,864	07/132,493	12/05/89
4,884,868	06/694,188	12/05/89
4,884,874	07/219,510	12/05/89
4,884,882	07/219,405	12/05/89
4,884,883	07/205,350	12/05/89
4,884,884	07/162,322	12/05/89
4,884,888	06/860,548	12/05/89
4,884,891	06/888,204	12/05/89
4,884,893	07/071,783	12/05/89
4,884,895	07/159,749	12/05/89
4,884,896	07/296,569	12/05/89
4,884,898	07/306,588	12/05/89
4,884,907	07/282,920	12/05/89
4,884,913	07/331,865	12/05/89
4,884,915	07/014,059	12/05/89
4,884,920	07/266,206	12/05/89
4,884,922	07/097,492	12/05/89
4,884,924	06/901,627	12/05/89
4,884,927	07/250,540	12/05/89
4,884,931	07/160,544	12/05/89
4,884,932	07/044,708	12/05/89
4,884,937	07/074,153	12/05/89
4,884,944	07/241,417	12/05/89
4,884,946	07/264,723	12/05/89
4,884,953	07/264,689	12/05/89
4,884,954	06/342,363	12/05/89
4,884,960	07/190,867	12/05/89
4,884,970	07/264,858	12/05/89
4,884,973	07/298,168	12/05/89
4,884,974	07/135,739	12/05/89
4,884,979	07/339,016	12/05/89
4,884,984	07/291,741	12/05/89
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4,884,991	07/308,438	12/05/89
4,884,992	07/199,808	12/05/89
4,884,994	07/144,773	12/05/89
4,885,009	07/269,203	12/05/89
4,885,012	07/296,935	12/05/89
4,885,027	06/931,278	12/05/89
4,885,050	07/115,774	12/05/89
4,885,073	07/292,383	12/05/89
4,885,079	07/320,865	12/05/89
4,885,091	07/202,850	12/05/89
4,885,106	07/147,782	12/05/89
4,885,110	07/119,817	12/05/89
4,885,111	07/119,823	12/05/89
4,885,123	07/152,989	12/05/89
4,885,124	07/227,830	12/05/89
4,885,127	07/186,274	12/05/89
4,885,137	07/176,838	12/05/89
4,885,146	07/174,474	12/05/89
4,885,151	07/066,185	12/05/89
4,885,156	07/165,280	12/05/89
4,885,157	07/014,302	12/05/89
4,885,158	07/188,522	12/05/89
4,885,191	07/198,105	12/05/89

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Patent Number	Serial Number	Issue Date
4,885,195	07/222,026	12/05/89
4,885,210	07/041,295	12/05/89
4,885,218	07/159,599	12/05/89
4,885,226	07/251,944	12/05/89
4,885,230	07/241,790	12/05/89
4,885,241	07/257,073	12/05/89
4,885,263	07/029,184	12/05/89
4,885,276	07/261,868	12/05/89
4,885,277	07/118,316	12/05/89
4,885,285	06/773,707	12/05/89
4,885,286	07/157,934	12/05/89
4,885,296	07/126,799	12/05/89
4,885,298	07/229,798	12/05/89
4,885,302	07/228,748	12/05/89
4,885,303	07/141,363	12/05/89
4,885,305	07/294,902	12/05/89
4,885,309	06/893,076	12/05/89
4,885,310	06/732,876	12/05/89
4,885,313	07/127,365	12/05/89
4,885,317	07/222,651	12/05/89
4,885,339	07/240,844	12/05/89
4,885,342	07/247,393	12/05/89
4,885,344	07/145,238	12/05/89
4,885,349	07/157,821	12/05/89
4,885,355	07/236,819	12/05/89
4,885,361	07/221,578	12/05/89
4,885,365	07/196,507	12/05/89
4,885,366	07/203,843	12/05/89
4,885,369	07/278,237	12/05/89
4,885,371	07/369,966	12/05/89
4,885,372	06/909,745	12/05/89
4,885,376	07/107,347	12/05/89
4,885,393	07/339,163	12/05/89
4,885,394	07/258,691	12/05/89
4,885,397	07/244,070	12/05/89
4,885,402	07/201,742	12/05/89
4,885,403	07/225,699	12/05/89
4,885,409	07/190,049	12/05/89
4,885,417	07/246,485	12/05/89
4,885,418	07/242,402	12/05/89
4,885,442	07/132,240	12/05/89
4,885,443	07/277,302	12/05/89
4,885,446	07/277,996	12/05/89
4,885,450	07/286,345	12/05/89
4,885,459	07/102,517	12/05/89
4,885,460	07/185,580	12/05/89
4,885,478	07/225,112	12/05/89
4,885,483	07/321,507	12/05/89
4,885,486	07/135,226	12/05/89
4,885,487	07/236,528	12/05/89
4,885,488	07/197,224	12/05/89
4,885,495	07/220,739	12/05/89
4,885,497	07/228,408	12/05/89
4,885,508	07/203,517	12/05/89
4,885,519	07/141,406	12/05/89
4,885,522	07/272,142	12/05/89
4,885,526	07/172,274	12/05/89
4,885,530	07/123,257	12/05/89
4,885,545	07/229,195	12/05/89
4,885,557	07/229,244	12/05/89
4,885,570	07/277,693	12/05/89
4,885,590	07/339,563	12/05/89
4,885,602	07/264,149	12/05/89
4,885,604	07/238,774	12/05/89
4,885,607	07/245,993	12/05/89
4,885,609	07/126,425	12/05/89
4,885,613	07/254,804	12/05/89
4,885,632	07/168,651	12/05/89
4,885,633	07/205,900	12/05/89
4,885,648	07/178,350	12/05/89
4,885,654	07/241,979	12/05/89
4,885,660	07/345,398	12/05/89
4,885,666	07/300,911	12/05/89
4,885,674	07/366,232	12/05/89
4,885,690	07/100,163	12/05/89
4,885,703	07/117,111	12/05/89
4,885,711	07/094,238	12/05/89
4,885,722	07/145,014	12/05/89
4,885,726	07/265,428	12/05/89
4,885,727	07/036,198	12/05/89
4,885,728	07/061,911	12/05/89
4,885,729	07/228,532	12/05/89
4,885,736	07/088,727	12/05/89
4,885,751	07/242,974	12/05/89
4,885,763	07/127,338	12/05/89
4,885,767	07/251,084	12/05/89
4,885,768	07/250,907	12/05/89
4,885,771	07/184,417	12/05/89
4,885,772	07/112,839	12/05/89
4,885,797	07/199,277	12/05/89
4,885,803	07/026,460	12/05/89
4,885,804	07/191,546	12/05/89

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,483,397	06/453,050	11/20/84	12/27/82	12/10/93
4,641,012	06/778,908	2/03/87	9/23/85	12/08/93
4,770,430	07/084,626	9/13/88	8/11/87	12/10/93
4,784,709	06/776,081	11/15/88	9/06/85	12/10/93
4,806,663	07/035,049	2/21/89	4/06/87	8/16/93
4,828,495	06/923,898	5/09/89	10/28/86	12/10/93
4,854,601	07/185,486	8/08/89	4/25/88	12/10/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b) The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

5,053,339, Re. S.N. 08/125,701, Sept. 23, 1993, Cl. 436/2, COLOR CHANGING DEVICE FOR MONITORING SHELF-LIFE OF A PERISHABLE PRODUCTS, Gordhanbahal Patel, Owner of Record: *JP Labs, Inc., Piscataway, N.J.*, Attorney or Agent: Omri M. Behr, Esq., Ex. Gp.: 1809

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,527,012, Reexam. No. 90/003,281, Dec. 20, 1993, Cl. 379?284,COMMUNOCATIONS SWITCHING SYSTEMS WITH MODULAR SWITCHING COMMUNICATIONS PERIPHERAL AND HOST COMPUTER, Jerome S. Caplan, et. al., Owner of Record: *Redcom Laboritories, Fairview N.Y.*, Attorney or Agent: Mariin Lu Kacher, Rochester, N.Y., Ex. Gp.: 2601, Requester: Owner

4,581,247, Reexam. No. 90/003,282, Dec. 20, 1993, Cl. 427/513, LINING OF PIPELINES AND PASSAGEWAYS, Eric Wood, Owner of Record: *Insituform (Netherlands)* E.V., Rotterdam, Netherlands, Attorney or Agent: Fred C. Philpitt, Lowe, Price, Le Blanc,Becker & Shur, Alexandria, Va., Ex. Gp.: 1112, Requester: Inpipe Sweden AB, Skelleftea, Sweden

4,971,932, Reexam. No. 90/003,293, Dec. 30, 1993, Cl. 501/003, MAGNETIC MEMORY STORAGE DEVICE, James W. Alpha, et. al., Owner of Record: *Corning Glass Works, Corning, N.Y.*, Attorney or Agent: Clinton S. Janes, Jr., Corning, N.Y., Ex. Gp.: 1100, Requester: James V. Costigan, Herman, Gibson & Costigan, New York, N.Y.

5,074,979, Reexam. No. 90/003,283, Dec. 20, 1993, Cl. 204/181.7, CATIONIC RESIN CONTAINING BLOCKED ISOCYANATE GROUPS SUITABLE FOR USE IN ELECTRODEPOSITION, Joseph T. Valko, et. al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.*, Attorney or Agent: William J. Uhl, PPG Industries, Inc., Pittsburgh, Pa., Ex. Gp.: 1102, Requester: Owner

5,186,156, Reexam. No. 90/003,284, Dec. 20, 1993, Cl. 124/059, AIR OPERATED TOY GUN, Richard A. Clayton, Owner of Record: *Inventor, Chatsworth, Calif.*, Attorney or Agent: None, Ex. Gp.: 3501, Requester: Kenner Products, Cincinnati, Ohio

5,222,823, Reexam. No. 90/003,285, Dec. 21, 1993, Cll. 401/202, DEVICE FOR MARKETING TICKETS FOR GAME OF CHANCE WITH TRANSLUCENT VIBRANT COLORED INK, Patricia A. Conforti, Owner of Record: Patricia A. Conforti, Seal Beach, Calif., Attorney or Agent: Ralph A. Dowell, Dowell & Dowell, Arlington, Va., Ex. Gp.: 3301, Requester: Day-Glo Color Corp., Cleveland, Ohio

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 27, 1993
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
90,793	71/057,777	3/25/1913
90,799	71/063,795	3/25/1913
90,837	71/062,882	3/25/1913
90,841	71/067,559	3/25/1913
90,861	71/063,218	3/25/1913
301,881	71/331,251	3/21/1933
301,886	71/332,402	3/21/1933
301,929	71/332,680	3/21/1933
301,937	71/320,608	3/21/1933
301,941	71/316,322	3/21/1933
301,970	71/331,674	3/21/1933
301,971	71/331,614	3/21/1933
301,994	71/332,491	3/21/1933
301,996	71/322,388	3/21/1933
301,999	71/332,292	3/21/1933
302,000	71/332,272	3/21/1933
302,010	71/331,659	3/21/1933
302,024	71/332,371	3/21/1933
302,030	71/332,025	3/21/1933
302,038	71/329,526	3/21/1933
572,201	71/561,612	3/24/1953
572,207	71/579,675	3/24/1953
572,208	71/581,481	3/24/1953
572,210	71/589,011	3/24/1953
572,227	71/605,643	3/24/1953
572,237	71/609,213	3/24/1953
572,238	71/609,704	3/24/1953
572,241	71/610,199	3/24/1953
572,244	71/610,580	3/24/1953
572,250	71/611,706	3/24/1953
572,257	71/612,839	3/24/1953
572,259	71/613,115	3/24/1953
572,263	71/613,871	3/24/1953
572,278	71/616,285	3/24/1953
572,279	71/616,324	3/24/1953
572,285	71/616,847	3/24/1953
572,290	71/617,720	3/24/1953
572,292	71/618,070	3/24/1953
572,293	71/618,071	3/24/1953
572,294	71/618,103	3/24/1953
572,302	71/619,258	3/24/1953
572,304	71/619,829	3/24/1953
572,305	71/619,830	3/24/1953
572,309	71/620,823	3/24/1953
572,310	71/620,902	3/24/1953
572,311	71/621,169	3/24/1953
572,316	71/622,152	3/24/1953
572,321	71/622,900	3/24/1953
572,327	71/623,943	3/24/1953
572,329	71/624,068	3/24/1953
572,335	71/624,808	3/24/1953
572,343	71/625,475	3/24/1953
572,347	71/625,887	3/24/1953
572,353	71/626,357	3/24/1953
572,371	71/628,638	3/24/1953
572,376	71/629,427	3/24/1953
572,391	71/630,952	3/24/1953
572,393	71/630,979	3/24/1953
572,405	71/632,252	3/24/1953
572,406	71/632,304	3/24/1953
572,407	71/632,448	3/24/1953
572,415	71/634,303	3/24/1953
572,418	71/634,307	3/24/1953
572,419	71/634,308	3/24/1953
572,420	71/634,309	3/24/1953
572,421	71/634,310	3/24/1953
572,432	71/610,157	3/24/1953
572,443	71/554,224	3/24/1953
572,460	71/619,565	3/24/1953
941,884	72/393,497	8/29/1972
955,510	72/369,623	3/20/1973
955,511	72/385,169	3/20/1973
955,517	72/379,022	3/20/1973
955,523	72/383,361	3/20/1973
955,529	72/405,207	3/20/1973
955,530	72/413,415	3/20/1973
955,535	72/392,840	3/20/1973
955,536	72/394,488	3/20/1973
955,537	72/405,457	3/20/1973
955,540	72/410,583	3/20/1973
955,544	72/417,390	3/20/1973
955,551	72/388,182	3/20/1973
955,554	72/393,667	3/20/1973
955,555	72/394,461	3/20/1973
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Reg. No.	Serial Number	Reg. Date
955,564	72/423,833	3/20/1973
955,567	72/343,458	3/20/1973
955,571	72/367,605	3/20/1973
955,573	72/388,695	3/20/1973
955,574	72/415,811	3/20/1973
955,575	72/416,061	3/20/1973
955,577	72/399,029	3/20/1973
955,578	72/399,849	3/20/1973
955,582	72/408,117	3/20/1973
955,583	72/413,532	3/20/1973
955,584	72/413,557	3/20/1973
955,588	72/414,315	3/20/1973
955,589	72/414,316	3/20/1973
955,592	72/414,322	3/20/1973
955,594	72/415,857	3/20/1973
955,595	72/416,521	3/20/1973
955,604	72/402,482	3/20/1973
955,607	72/359,282	3/20/1973
955,612	72/390,985	3/20/1973
955,617	72/399,680	3/20/1973
955,618	72/400,300	3/20/1973
955,619	72/401,791	3/20/1973
955,621	72/404,214	3/20/1973
955,624	72/407,397	3/20/1973
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955,660	72/355,960	3/20/1973
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955,690	72/392,546	3/20/1973
955,694	72/398,643	3/20/1973
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955,696	72/402,001	3/20/1973
955,699	72/405,959	3/20/1973
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955,735	72/416,766	3/20/1973
955,736	72/416,825	3/20/1973
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955,777	72/388,948	3/20/1973
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955,905	72/390,671	3/20/1973
955,906	72/392,674	3/20/1973
955,907	72/395,070	3/20/1973
955,908	72/395,362	3/20/1973
955,914	72/403,915	3/20/1973
955,915	72/403,916	3/20/1973
955,916	72/403,917	3/20/1973
955,919	72/405,290	3/20/1973
955,920	72/405,325	3/20/1973
955,921	72/405,442	3/20/1973
955,922	72/405,444	3/20/1973
955,923	72/405,454	3/20/1973
955,924	72/407,151	3/20/1973
955,925	72/407,451	3/20/1973
955,930	72/409,629	3/20/1973
955,933	72/413,513	3/20/1973
955,935	72/427,766	3/20/1973
955,937	72/391,701	3/20/1973
955,939	72/408,074	3/20/1973
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955,951	72/364,603	3/20/1973
955,952	72/955,952	3/20/1973
955,965	72/329,690	3/20/1973
955,966	72/408,183	3/20/1973
955,969	72/393,827	3/20/1973
955,971	72/412,201	3/20/1973
955,973	72/308,861	3/20/1973
955,980	72/379,761	3/20/1973
955,982	72/396,254	3/20/1973
955,983	72/397,725	3/20/1973
955,987	72/410,666	3/20/1973
955,992	72/393,462	3/20/1973

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Corrections Week of February 15, 1994

D 330,198	5,140,005	5,179,630	5,205,280
D 337,179	5,141,764	5,180,148	5,205,334
4,859,662	5,142,438	5,180,346	5,205,435
4,896,941	5,143,335	5,180,351	5,206,137
4,927,507	5,146,663	5,180,748	5,206,165
4,928,054	5,148,486	5,181,132	5,207,002
4,957,987	5,149,211	5,181,246	5,207,017
4,969,867	5,149,376	5,183,826	5,207,742
4,976,504	5,149,385	5,185,254	5,208,936
4,984,756	5,149,544	5,186,475	5,209,725
4,990,301	5,149,716	5,187,793	5,210,338
5,028,617	5,150,654	5,189,291	5,210,495
5,034,516	5,153,085	5,189,454	5,210,674
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5,044,388	5,153,928	5,189,568	5,212,015
5,044,488	5,154,771	5,189,926	5,212,133
5,050,162	5,155,148	5,190,581	5,212,210
5,056,053	5,155,836	5,191,451	5,212,715
5,061,704	5,156,089	5,191,693	5,213,106
5,077,192	5,157,476	5,191,715	5,213,913
5,080,106	5,157,743	5,192,191	5,214,566
5,090,522	5,159,862	5,193,562	5,214,812
5,091,209	5,160,314	5,193,720	5,215,366
5,091,316	5,160,599	5,194,183	5,215,653
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5,103,264	5,161,760	5,196,416	5,217,587
5,104,026	5,161,993	5,196,484	5,218,835
5,108,599	5,165,633	5,196,673	5,218,885
5,113,868	5,166,424	5,196,721	5,219,057
5,114,601	5,167,293	5,197,096	5,219,997
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5,126,240	5,168,225	5,198,179	5,220,519
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5,128,831	5,171,159	5,198,334	5,221,413
5,131,966	5,171,213	5,198,430	5,223,005
5,132,786	5,172,587	5,199,384	5,223,229
5,133,229	5,174,476	5,199,444	5,223,673
5,133,719	5,174,892	5,199,837	5,224,379
5,133,820	5,175,118	5,200,169	5,224,592
5,134,024	5,176,192	5,200,524	5,224,716
5,134,206	5,176,406	5,202,364	5,224,870
5,135,171	5,176,990	5,203,234	5,225,851
5,136,867	5,177,099	5,203,330	5,226,385
5,137,613	5,177,351	5,203,907	5,226,519
5,138,164	5,178,932	5,204,304	5,226,674
5,138,362	5,179,026	5,204,707	5,227,091
5,227,185	5,228,565	5,229,003	5,230,047
5,227,416	5,228,591	5,229,159	5,230,271
5,228,399	5,228,817	5,229,487	5,231,171

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 20-23, 1993

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty	Recommended for Publication
12-20	EX	74/178,970	Gul International Limited	2(d)	Refusal Affirmed		"LOCAL MOTION" [bicycles, structural parts therefor, etc.]	"LOCAL MOTION" [surfboards, wind-surfers, kneeboards, etc.]	No
12-20	EX	74/184,966	Warren Distribution, Inc	2(d)	Refusal Reversed		"SURE FIRE" (and design) [automotive ignitions, alternators and spark plug wiring sets]	"SUREFIRE" (and design) [gasoline and diesel engine starting fluid]; "SURE FIRE" [storage battery chargers]	No
12-20	EX	74/188,087	Tropical Cheese Industries, Inc.	2(d)	Refusal Affirmed		"AZTECA" [cheese]	"AZTECA" [partially prepared Mexican foods, namely, tortillas, taco shells, enchiladas, etc.] "AZTECA" (and design) [corn taco shells, flour, flour tortillas, chunky salsa, taco sauce, etc.]	No
12-20	OPP	86,197	Chocolate House, Inc. v. P & T Distributors, Inc	2(d)	Opposition Sustained	"FUDGIE BEAR" [candy]	"PUDGY BEAR" [candy]		No
12-21	EX	74/098,479	Absolute Coatings, Inc	2(d)	Refusal Affirmed		"ULTRA-CLEAR" [acrylic urethane varnish type coating]	"ULTRA CLEAR" (and design) [multi-purpose interior/exterior thermoplastic copolymer sealant]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION, CU= CONCURRENT USE; (R)= REQ FOR RECONSIDERATION

Date Issued	Type of Proceeding (1)	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty	Recommended for Publication
12-21	EX	74/104,391	Dare to Dream	2(d)	Refusal Affirmed		"DARE TO DREAM" [conducting seminars and classes in the field of self-improvement for young people]	"DARE TO DREAM" (and design) [newspapers and journals for young people]	No
12-21	EX	74/225,087	Target Licensing Corp.	2(e)(1)	Refusal Reversed		"LINEN LITES" (LINEN disclaimed) [men's and women's sportcoats, jackets, suits, trousers, etc.]		No
12-22	EX	74/201,251	John Clarke	2(d)	Refusal Affirmed		"EARTH'S HARVEST" (and design) [retail natural food stores]	"EARTH HARVEST" (and design) [bread]	No
12-22	OPP	86,546	Infinity Systems, Inc. v. Trionics Corp.	2(d)	Opposition Dismissed	"INFINITY" [audio systems]	"INFINITY" [burglar alarms and home automation systems for remote programmable control of home appliances]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
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Box AF	Expedited procedure for processing amendments and other responses after final rejection.
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Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
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BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	1/30/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	12/24/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/16/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	10/16/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	2/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/07/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	6/20/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	2/03/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	5/06/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	3/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/13/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/09/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/07/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/09/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/01/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/29/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	2/18/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Jan. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,000,520 to 4,005,493 inclusive
Plant Patents ..... 4,000 to 4,012

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of January 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	12/15/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	11/18/93
Law Office 5—Mary Spartow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/23/93	10/08/93
Law Office 6—Myra Kurzhard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/18/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	9/15/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	10/10/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/11/93	10/18/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/21/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/20/93	11/01/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	11/24/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/19/93	11/10/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/16/93	11/11/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/13/93	11/11/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	10/02/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

FEBRUARY 15, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,544,218 (2214th)

ELECTRICAL ORNAMENTATION SYSTEM

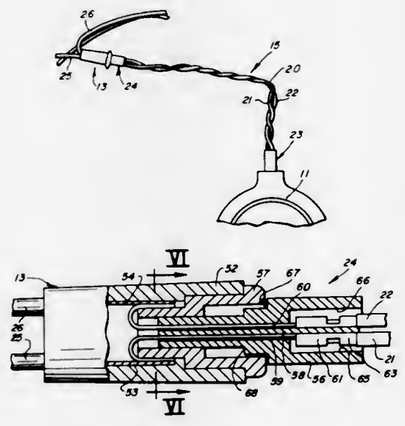
Robert E. Sanders, Lenexa, Kans.; Jerry L. Knipp, Grandview, and Charles J. Flynn, Kansas City, both of Mo., assignors to Hallmark Cards, Inc., Kansas City, Mo.

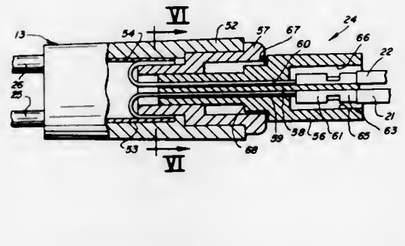
Reexamination Request No. 90/002,842, Sep. 23, 1992.

Reexamination Certificate for Patent No. 4,544,218, issued Jun. 27, 1983, Ser. No. 508,522, Oct. 1, 1985.

Int. Cl.[5] H01R *17/00*

U.S. Cl. 439—619





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1-4, 6-8** and **10** are determined to be patentable as amended.

Claims **5** and **9** dependent on an amended claim, are determined to be patentable.

New claims **11-18** are added and determined to be patentable.

2. In a connector as defined in claim **1**, said first connection means comprising a *miniature push-in light* socket of conventional *push-in* form and arranged for receiving a conventional type of *miniature push-in* light.

5. In a connector as defined in claim **1**, said member of insulating material of said second connection means including a reduced diameter end portion having a terminal end, said member of insulating material also having a pair of *electrically insulating* parallel passages therein extending to said terminal end of said end portion, and said [contact means] *conductors including contact portions* of said second connection means [including a pair of elongated contacts] mounted *each separately* in said *electrically insulating parallel* passages and bent back on the outside of said reduced diameter end portion.

B1 4,582,857 (2215th)

P-OXYBENZOIC ACID DERIVATIVES PROCESSES FOR THEIR PRODUCTION AND THEIR USE AS DRUGS

Helmut Grill, Vaterstetten; Friedemann Reiter, Putzbrunn; Roland Löser, Feldafing; Michael Schliack, Munich, and Klaus Seibel, Gräfelfing, all of Fed. Rep. of Germany, assignors to Klinge Pharma GmbH, Munich, Fed. Rep. of Germany

Reexamination Request No. 90/003,103, Jun. 22, 1993.

Reexamination Certificate for Patent No. 4,582,857, issued Apr. 15, 1986, Ser. No. 632,650, Jul. 20, 1984.

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326164

Int. Cl.[5] A61K *31/195;* C07C *103/29*

U.S. Cl. 514—563

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

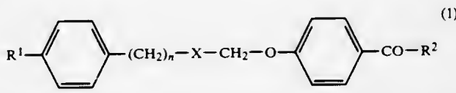
Claims **6** and **7** are cancelled.

Claims **1-3** and **8** are determined to be patentable as amended.

Claims **4** and **5**, dependent on an amended claim, are determined to be patentable.

New claims **9** to **13** are added and determined to be patentable.

1. A compound comprising a p-oxybenzoic acid derivative of the formula (1)



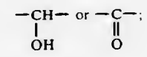
(1)

wherein

R^1 is hydrogen or straight or branched alkyl of one to four carbon atoms;

n is 1 or 2;

X is

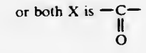


and

R^2 is —OH or —$NHCH_2COOH$; or a non-toxic, pharmaceutically acceptable salt thereof, *with the proviso that when R^1 is hydrogen, either X is*

or R^2 is $NHCH_2COOH$;

or both X is



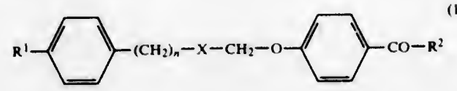
and

R^2 is $NHCH_2COOH$.

9. A composition of matter comprising a hypolipemically effec-

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tive amount of a compound comprising a p-oxybenzoic acid derivative of the formula (I)



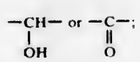
(1)

wherein

R^1 is hydrogen or straight or branched alkyl of one to four carbon atoms;

n is 1 or 2;

X is



and

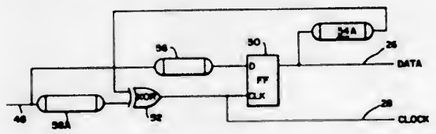
R^2 is —OH or —$NHCH_2COOH$; or a non-toxic, pharmaceutically acceptable salt thereof, and a non-toxic, pharmaceutically acceptable carrier therefor.

B1 4,592,072 (2216th)

DECODER FOR SELF-CLOCKING SERIAL DATA COMMUNICATIONS

Robert E. Stewart, Stow, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Reexamination Request No. 90/002,968, Feb. 24, 1993.
Reexamination Certificate for Patent No. 4,592,072, issued May 27, 1986, Ser. No. 578,883, Feb. 10, 1984.
Division of Ser. No. 376,069, May 7, 1982, Pat. No. 4,450,572
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.[5] H04L *27/10*
U.S. Cl. 375—55



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

1. Apparatus for decoding to an NRZ signal an encoded signal received from a signal source, the encoded signal encoding a series of data bits with, for each data bit, a first transition in the encoded signal, and for each data bit for which the succeeding data bit has the same binary value, a second transition occurring within a predetermined time interval after the first transition, said apparatus comprising:

A. storage means responsive to a clocking signal of at least a predetermined minimum pulse width, received at a clock input of the storage means, for storing a sample of a digital signal received at a data input of the storage means, the storage means having at least one output indicative of the value of the stored sample, an output of the storage [mjeans] *means* providing the decoded NRZ signal,

B. an exclusive-OR gate,

C. a first signal path from an output of the storage means through the exclusive-OR gate to the clock input of the storage means,

D. a second signal path from the source of the encoded signal through the exclusive-OR gate to the clock input of the storage means, and

E. a third signal path from the source of the encoded signal to the data input of the storage means,

wherein

a. the time for a signal to propagate along the first signal path is at least as long as the minimum pulse width required to clock the storage means, and

b. wherein the difference between the time for a signal to propagate along the second signal path and the time for a signal to propagate along the third signal path is at least as long as said predetermined time interval, and

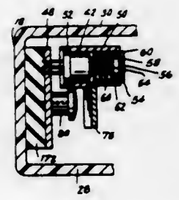
c. the output signal from the exclusive-OR gate comprises a signal which has exactly one pulse for each data bit.

B1 4,816,660 (2217th)

PORTABLE LASER DIODE SCANNING HEAD

Jerome Swartz, Setauket; Howard M. Shepard, Great River, both of N.Y.; Eric F. Barkan, San Francisco, Calif.; Mark J. Krichever; Boris Metlitsky, both of Hauppauge, N.Y.; Edward Barkan, South Setauket, N.Y., and Alexander M. Adelson, Peekskill, N.Y., assignors to Symbol Technologies, Inc.

Reexamination Request No. 90/002,148, Sep. 27, 1990.
Reexamination Certificate for Patent No. 4,816,660, issued Mar. 28, 1989, Ser. No. 196,021, May 19, 1988.
Continuation of Ser. No. 706,502, Feb. 28, 1985, abandoned
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–5, 7–12** and **16–20** are determined to be patentable as amended.

Claims **6** and **13–15**, dependent on an amended claim, are determined to be patentable.

New claims **21–65** are added and determined to be patentable.

4. An optical system *in the form of a hand-held laser bar code scanning head* for distinguishing different light-reflective indicia portions [from each other] *of a bar code*, comprising:

(a) means including a laser light source *in the head* for generating a wide-angle laser beam; and

(b) optic means *in the head* for optically forming and directing the laser beam along an optical path to [different] light-reflective indicia portions for reflection therefrom, said optic means including focusing means, *including a focusing lens* and an aperture stop located in the optical path in the immediate vicinity of the focusing [means] *lens* between the laser light source and the light-reflective indicia portions, for focusing the laser beam to have a beam cross-section of a predetermined size within a working distance range, said aperture stop having a cross-section which is smaller than the beam cross-section at the aperture stop to permit a part of the beam to pass through the aperture stop en route to the indicia portions, said cross-section of the aperture stop directly determining said pre-determined size of the beam cross-section, said aperture stop being bounded by a blocking wall for obstructing the remaining part of the beam from passing through the aperture stop en route to the indicia portions;

(c) a scanning mechanism mounted in the head for scanning the beam across the bar code to generate a reflected beam of variable intensity which returns to the optical system;

(d) a sensor mounted in the head for detecting the variable intensity of the returning portion of the reflected beam and for generating an electrical analog signal indicative of the detected variable light intensity; and

(e) a signal processor mounted in the head for processing the electrical analog signal, and for generating a processed signal indicative of the bar code.

B1 4,912,094 (2218th)

MODIFIED LIPOPOLYSACCHARIDES AND PROCESS OF PREPARATION

Kent R. Meyers, and Alex T. Trucbot, both of Hamilton, Mont., assignors to Ribi Immunochem Research Inc., Hamilton, Mont.

Reexamination Request No. 90/002,766, Jun. 30, 1992.
Reexamination Certificate for Patent No. 4,912,094, issued Mar. 27, 1990, Ser. No. 212,919, Jun. 29, 1988.
Int. Cl.[5] C07H *1/00, 13/02;* **C07G** *17/00;* **C12P** *19/04*
U.S. Cl. 514—54

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9, 17–20** and **24–26** having been finally determined to be unpatentable, are cancelled.

Claims **10, 15, 16** and **21–23** are determined to be patentable as amended.

Claims **11–14** dependent on an amended claim, are determined to be patentable.

New claims **27–34** are added and determined to be patentable.

10. A method for *selectively* removing from *diphosphoryl* lipid A or monophosphoryl lipid A [,] only the *β*-hydroxymyristic acyl residue that is ester-linked to the reducing-end glucosamine at position 3 of said lipid A *to produce a de-3-O-acyl lipid A, wherein said de-3-O-*acyl lipid A has reduced toxicity in comparison to the corresponding unmodified **3-***O-acyl lipid A*, which method comprises the steps of:

(a) dissolving said lipid A in an inert organic solvent;

(b) saturating said solvent *containing said dissolved lipid A* with an aqueous buffer comprised of an alkaline compound, at a pH of from about 10 to about 13;

(c) *separating the aqueous and organic phases and* flash evaporating [said solvent] *the organic phase* under a vacuum at a temperature of between about 40° C. and about 60° C.; and

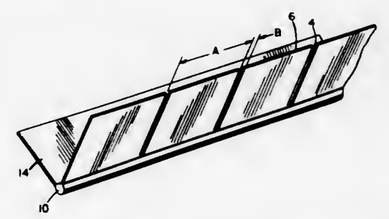
(d) recovering said [lipid A] *de-3-O-acyl lipid A.*

B1 5,048,247 (2219th)

ARCH CORNER BEAD

Michael D. Weldy, 1320 Dewey Pl., Campo, Calif. 92006

Reexamination Request No. 90/002,806, Aug. 5, 1992.
Reexamination Certificate for Patent No. 5,048,247, issued Sep. 17, 1991, Ser. No. 436,073, Nov. 13, 1989.
Int. Cl.[5] E04F *19/02;* **B32B** *1/04, 3/26*
U.S. Cl. 52—255



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **18–20** are cancelled.

Claims **2–17** are determined to be patentable as amended.

New claims **21–25** are added and determined to be patentable.

21. A beaded drywall corner strip suitable for reinforcing the corners of arches, comprising:

an elongated plastic strip having two flat legs extending side-by-side lengthwise along the strip at an angle of no more than 90° to one another;

a corner joint connecting the legs together at the junction of the angle along adjacent side edges of the legs, the corner joint comprising a substantially cylindrical solid bead;

one of said legs having a plurality of spaced kerfs comprising means for allowing the strip to follow curves;

the legs having no openings apart from said kerfs; and

the outside surface of said legs having surface means to adhere to joint compound.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,541

METHOD OF OPERATING A GAS-INFRARED RADIATOR, AND THE GAS-INFRARED RADIATOR

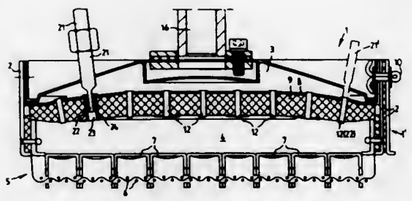
Kurt Kreiger, Asternweg 47, D-4050 Mönchengladbach 2, Fed. Rep. of Germany

Original No. 4,861,261, dated Aug. 29, 1989, Ser. No. 124,990, Oct. 5, 1987. Application for reissue Aug. 7, 1991, Ser. No. 741,763

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1986, 3603387

Int. Cl.[5] **F23C** *11/04*

U.S. Cl. 431—1 **14 Claims**



9. A method of operating a gas infrared radiator to provide a variable energy output and comprising means forming a combustion chamber and pre-chamber, a barrier layer arranged between said pre-chamber and said combustion chamber, said barrier layer having a plurality of pipes extending through said barrier layer for communicating said pre-chamber with said combustion chamber, the amount of a gas other than air supplied to the combustion chamber or said pre-chamber being variable by a control device, characterized in that the amount of gas supplied is intermittently varied by a pulse control system to regulate the output energy of the infrared radiator over a range extending from the maximum rated energy level capable of being delivered by the infrared radiator to an energy level less than about 40% of said maximum rated energy level, the air supply to said mixing chamber being continuously maintained and a pilot flame in said combustion chamber being maintained by gas supplied to the combustion chamber separately from the controlled gas supply to assure combustion within said combustion chamber whenever gas is delivered to the combustion chamber from said pre-chamber.

Re. 34,542

CHEMICAL ENERGY STORAGE SYSTEM

Uwe Rockenfeller, Boulder City, Nev., assignor to Rocky Research, Boulder City, Nev.

Original No. 4,823,864, dated Apr. 25, 1989, Ser. No. 215,204, Jul. 5, 1988. Continuation-in-part of Ser. No. 38,323, Apr. 14, 1987, abandoned. Application for reissue Apr. 25, 1991, Ser. No. 691,360

Int. Cl.[5] **F25B** *17/02*

U.S. Cl. 165—104.12 **34 Claims**

1. Apparatus for [transferring heat] *alternately charging and discharging thermal energy* comprising

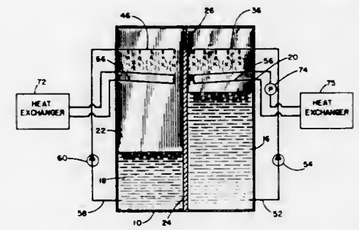
a first vessel containing a liquid solution of a compound selected from the group consisting of alkali and alkaline earth metal hydroxide, halide and thiocyanate, ammonium halide, *ammonium metal halide* and thiocyanate, and mixtures thereof, said solution having an initial concentration of between about 30% and about 80% by weight of said compound, said liquid selected from the group consisting of water, ammonia, an alcohol having between 1 and 8 carbon atoms, glycerol, glycols, polyglycols, glycol ethers, aliphatic amines and alkanol amines having between 1 and about 6 carbon atoms, and mixtures thereof,

and a first space above the level of said liquid solution and means for pumping said liquid solution to distribution means for directing said liquid solution into said first space,

a second vessel containing said liquid without said compound therein, and a second space above the level of said liquid and means for pumping said liquid to distribution means for directing said liquid solution into said second space,

both said first and second vessels being closed to atmosphere and capable of holding a vacuum,

conduit means communicating between said first space and



second space for allowing liquid vapor and pressure changes to pass therebetween, and valve means cooperating with said conduit means for terminating communication between said spaces,

heating means [for] *capable of* heating said solution to a temperature of above about [90°] *85°* F., and cooling means [for] *capable of* cooling said liquid to a temperature below about 55° F. *during said charging*,

first heat exchange means cooperating with said first vessel for transferring heat from heated solution therein, and second heat exchange means cooperating with said second vessel for transferring heat to liquid therein *during said discharging.*

Re. 34,543

BELT TENSIONER WITH RELEASABLE BELT LOAD DAMPING

Jacek S. Komorowski, Weston, Canada, assignor to Litens Automotive Partnership, Woodbridge, Canada

Original No. 4,824,421, dated Apr. 25, 1989, Ser. No. 90,495, Aug. 28, 1987. Application for reissue Dec. 21, 1992, Ser. No. 994,495

Int. Cl.[5] **F16H** *7/12*

U.S. Cl. 474—135 **50 Claims**

40. The combination comprising

an internal combustion engine including an engine frame subject to vibrational forces resulting from the operation of said internal combustion engine,

a plurality of shafts mounted for rotational movement about parallel axes fixed with respect to said engine frame,

a plurality of pulleys fixed to said plurality of shafts, one of said plurality of shafts constituting an output shaft of said internal combustion engine,

an endless flexible belt of a size capable of being loosely trained about said plurality of pulleys, and

a belt tensioner comprising

a fixed structure fixed with respect to said engine frame,

a pivoted structure,

a belt tensioning pulley mounted on said pivoted structure for rotational movement about a rotational axis,

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said pivoted structure being mounted on said fixed structure for pivotal movement about a fixed pivotal axis parallel with said rotational axis between a first position and a second position,

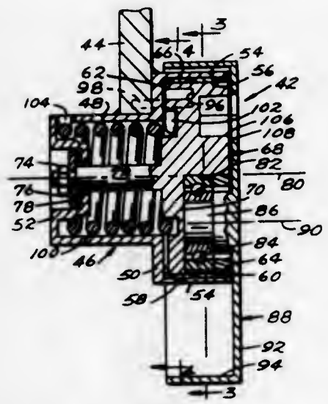
spring means for resiliently biasing said pivoted structure in a direction toward said second position with a spring torque which decreases as the position of said pivoted structure approaches said second position so that said belt tensioning pulley is biased into an intermediate operating static equilibrium position in tensioning engagement with said belt wherein the spring torque is equal and opposite to a belt load torque which varies with the variation in the spring torque as the intermediate operation position approaches said second position due to belt elongation by maintaining the belt load force generally constant and varying a lever arm distance to said pivotal axis through which the belt load force acts,

interengaging sliding friction damping surfaces operatively associated with said fixed structure and said pivoted structure for damping the pivotal movements of said pivoted structure as a result of dynamic belt load forces varying from the generally constant belt load force when the belt is moving,

said interengaging damping surfaces presenting sliding friction therebetween sufficient to establish a damping torque resistance restricting the pivotal movements of said pivoted structure by virtue of the pressure of interengagement of said damping surfaces and the position of interengagement of said damping surfaces from said pivotal axis to an extent such that movements in response to dynamic changes in the belt load force within a range of changes are prevented,

said interengaging damping surfaces and the operative association thereof respectively with said fixed structure and said pivoted structure being operable in response to the vibrational forces to which said engine frame is subject to instantaneously release the damping torque resistance to a level permitting instantaneous pivotal movements in response to dynamic changes in the belt load force which would otherwise be prevented by said interengaging damping surfaces as being within said range of changes,

said range of belt load force changes varying from the generally constant belt load force to a positive extent wherein the belt load force increases and to a negative extent wherein the belt load force decreases, the range being such that the positive extent exceeds the negative extent sufficiently to provide within the excess extent positive changes in the resistance to movement which exceed the negative change in the resistance to movement heretofore considered the limit necessary to prevent hang-up.



Re. 34,544

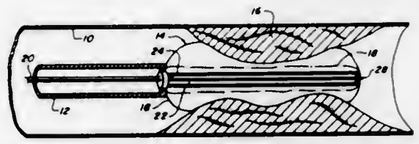
METHOD OF TREATMENT OF ARTHEROSCLEROSIS AND BALLOON CATHETER THE SAME

J. Richard Spears, Bloomfield Hills, Mich., assignor to The Beth Israel Hospital Association, Boston, Mass.

Original No. 4,773,899, dated Sep. 27, 1988, Ser. No. 244,698, Jan. 14, 1988. Continuation of Ser. No. 600,121, Sep. 18, 1990, abandoned, which is a continuation of Ser. No. 881,588, Jul. 2, 1986, abandoned, which is a continuation of Ser. No. 838,393, Mar. 5, 1986, abandoned, which is a continuation of Ser. No. 721,995, Apr. 11, 1985, abandoned, which is a division of Ser. No. 443,958, Nov. 23, 1982, Pat. No. 4,512,762. Application for reissue Nov. 12, 1992, Ser. No. 975,126

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 **55 Claims**



1. A balloon catheter for use in applying energy to a wall of an artery for medical treatment, said catheter comprising:

a tube defining a lumen;

an inflatable balloon secured to the distal end of said tube for inflation from a remote source of fluid, said balloon being configured so that said tube may be navigated through the artery when deflated and allow blood flow while said tube is being navigated with the balloon in a deflated state and also configured to displace blood within the artery when inflated;

fiber optic means connectable to an energy source at the proximal end and extending through said lumen to emit energy into the balloon for transmission of energy from an external energy source to the interior of said balloon; and

means for diffusing energy that is transmitted by said fiber optic means, said means for diffusing energy being in optical communication with said fiber optic means and being within said balloon so that the energy transmitted into said balloon via the fiber optic means may be applied through said balloon to all part of the walls of the artery surrounding said balloon simultaneously.

Re. 34,545

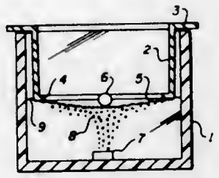
ARTIFICIAL HABITAT FOR AQUATIC [ANIMALS] *WORMS*

James Kroeker, 8081 Nalle Grade Rd., Fort Myers, Fla. 33917

Original No. 4,903,636, dated Feb. 27, 1990, Ser. No. 66,,952, Jun. 29, 1987. Application for reissue Aug. 26, 1991, Ser. No. 749,976

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—6.7 **14 Claims**



1. Artificial habitat for aquatic worms, comprising a frame defining an opening surrounded by said frame, a screen attached to said frame and covering said opening for supporting aquatic worms, *and* means for supporting said frame with said screen along a given water level such that the aquatic worms are partially above and partially below the given water level [, and means for circulating water along at least part of said screen from below for supplying water to the worms and removing waste from said screen].

Re. 34,546

PLASTIC COMPOSITE BARRIER STRUCTURES

Edward J. Deyrup, North East, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,973,625, dated Nov. 27, 1990, Ser. No. 100,191, Nov. 6, 1986. Application for reissue Sep. 21, 1992, Ser. No. 947,851

Int. Cl.[5] C08L *23/06, 51/06*

U.S. Cl. 525—674 **4 Claims**

1. A melt-extrudable bonding resin composition capable of adhering nonpolar high density linear polyethylene in the form of foils, sheets, tubes or blown bottles to polar oxygen barrier resins in the form, respectively, of foils, sheets, tubes or blown bottles which exhibits a combination of resistance to separation of said nonpolar high density polyethylene from said polar oxygen barrier resins and low moisture vapor transmission, said bonding resin composition consisting essentially of a blend of from 70 to 90 weight percent of composition (i) and from 10 to 30 weight percent of composition (ii) wherein composition (i) is composed of a blend of high density linear polyethylene having a melt index in the range of 0.1 to 8.0 g/10 min and a density in the range of from above 0.950 to 0.970 g/cm^3 and sufficient of a high density linear polyethylene having a melt index in the range of 0.1 to 8.0 g/10 min and a density in the range of 0.950 to 0.970 g/cm^3 having from [0.7-14 mole] *0.5 to 1 weight* percent of maleic anhydride grafted to said high density linear polyethylene to provide from [0.245-1.05 mole] *0.055 to 0.2 weight* percent of said grafted maleic anhydride in said composition (i), wherein composition (ii) is a linear low density polyethylene selected from the group consisting of linear copolymers of ethylene with butene-1 and linear copolymers of ethylene with octene-1 having a density in the range of 0.912 to 0.930 g/cm^3 and a melt index in the range of 0.5 to 3.35 g/10 min.

Re. 34,547

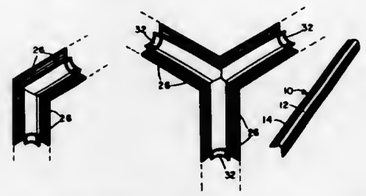
WALL BOARD JOINT REINFORCING SYSTEM

Derrell J. Weldy, 1316 Dewey Pl., Campo, Calif. 92006, assignor to Lewis Hein; Derrell J. Weldy and Michael D. Weldy, Santee, Calif.

Original No. 5,086,598, dated Feb. 11, 1992, Ser. No. 438,942, Nov. 17, 1989. Continuation of Ser. No. 328,759, Mar. 23, 1989, abandoned, which is a continuation of Ser. No. 205,424, Jun. 10, 1988, abandoned, which is a continuation of Ser. No. 7,570, Jan. 28, 1987, abandoned. Application for reissue Nov. 19, 1992, Ser. No. 978,737

Int. Cl.[5] E04F *19/04, 13/06;* **E04B** *1/38*

U.S. Cl. 52—288.1 **19 Claims**



13. A wall edging system for strengthening building wall intersections, comprising:

a first edging strip comprising a linear, resilient strip formed from a single piece of plastic and comprising a central arcuate portion extending along the length of the strip and a planar side flange projecting outwardly from each side edge of the arcuate portion;

a second edging strip comprising a two-way corner having a pair of legs joined in the middle of the strip and extending at right angles to one another, each leg of the two-way corner having a central arcuate portion extending along the length of the leg and a substantially planar side flange projecting outwardly from each side edge of the arcuate portion;

a third edging strip comprising a three-way corner having three legs joined together in a central, corner region of the strip and extending at right angles to one another from said corner region, each leg having a central arcuate portion extending along the length of the leg and a substantially planar side flange projecting outwardly from each isde edge of the arcuate portion;

each leg of each of said second and third strips having an arcuate tongue of reduced thickness extending axially from the outermost free end o the central arcuate portion of the respective leg for engagement beneath the central arcuate portion of an abutting linear strip; and

the arcuate portions of each of said strips having a width at least equal to that of a side flange.

Re. 34,548

PROCESS FOR THE SELECTIVE HYDROGENATION OF UNSATURATED COMPOUNDS

Paul Fiedler, Cologne; Hartmuth Buding, Titz, and Rudolf Braden, Odenthal-Scheuren, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen

Original No. 4,978,771, dated Dec. 18, 1990, Ser. No. 195,513, May 18, 1988. Continuation of Ser. No. 928,196, Nov. 7, 1986, abandoned. Application for reissue Jul. 29, 1992, Ser. No. 922,011

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1985, 3540918

Int. Cl.[5] C08F *8/04*

U.S. Cl. 525—329.3 **3 Claims**

1. A process for the hydrogenation of the C=C double bonds of a polymer consisting essentially of

(i) 85 to 50% by weight of copolymerized units of conjugated dienes selected from the group consisting of [butadiene-1.3 and pentadiene-1.3,] *butadiene-1.3, pentadiene-1.3, 2-methylbutadiene-1.3 and 2.3-dimethylbutadiene-1.3*

(ii) 15 to 50% by weight of copolymerized units of unsaturated nitriles selected from the group consisting of acrylonitrile and methacrylonitrile, and

(iii) 0 to 10% by weight of copolymerized units of other copolymerizable monomer in a homogeneous phase up to a hydrogenation degree of more than 80% with preservation of the nitrile units,

which process comprises reacting the polymer with hydrogen to a degree of hydrogenation greater than 80% at a pressure from 1 to 350 bar and a temperature from 80° to 200° C. in a ketone solvent having 3 to 10 carbon atoms in the presence of 10 to 1,000 ppm catalyst, based on polymer, which is a compound of the formula

$$RuH_{2n}L_{5-n}$$

wherein L is of the formula

$$R_1—P(R_3)—R_2 \text{ or } R_1—As(R_3)—R_2$$

wherein R_1, R_2 and R_3 are the same or different and each is alkyl having 1 to 20 carbon atoms, cycloalkyl having 5 to 7 carbon atoms, aryl having 6 to 18 carbon atoms or aralkyl having 1 to 6 alkyl carbon atoms, and n is the integer 1 or 2.

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PLANT PATENTS

GRANTED FEBRUARY 15, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,590

HYBRID TEA ROSE PLANT NAMED 'JACBUTE'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 14, 1992, Ser. No. 883,191

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its strong pleasant fragrance, its unusual and distinctive flower color, the presence of glands on peduncles, stipules and sepals, the presence of many small prickles on the rachis underside and its resistance to powdery mildew and rust in Somis, Calif.

8,591

HYBRID TEA ROSE PLANT NAMED 'JACPAL'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc, Medford, Oreg.

Filed Sep. 28, 1992, Ser. No. 953,722

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantally as herein shown and described, characterized particularly as to novelty by the unique combination of its production of long-lasting, long-stemmed cut roses; a vigorous, upright plant; dark green, leathery foliage; large, high-centered flowers, and a rich, coral orange flower color contrasted with a creamy reverse on the petal.

8,592

ROSE PLANT KORBIRAC

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Oct. 19, 1992, Ser. No. 963,914

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright growth habit, flower clusters with stems long enough to cut, thick leathery petals, a unique light orange with light yellow reverse flower color and a long flower life both on the plant and in the vase.

8,593

HYBRID TEA ROSE PLANT NAMED 'JACMAD'

William A. Warriner, deceased, late of Tustin, Calif. by Alene Beatrice Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 28, 1992, Ser. No. 953,531

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its strong, vigorous, upright, grown habit; its distinctive bicolor flowers; its dark green, glossy foliage, and its free-flowering ability.

8,594

HYBRID TEA ROSE PLANT NAMED 'JACPEND'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 28, 1992, Ser. No. 953,978

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright habit of growth, its large, well-formed flowers, its moderate scent and a color and petal count intermediate between its parents.

8,595

HYBRID TEA ROSE PLANT NAMED 'JACCHRY'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 28, 1992, Ser. No. 953,723

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its large, well shaped flowers, its strong stable deep pink flower color, its vigorous upright growth habit, its dark green glossy foliage and its sweet smelling fragrance.

8,596

FLORIBUNDA ROSE PLANT NAMED 'JACDAZ'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 14, 1992, Ser. No. 883,192

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—29 **1 Claim**

1. A new and distinct variety of rose plant of the Floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its disease resistant dark green leathery glossy foliage, its very bright red flower color, its profusion of bloom and its ease of propogation by softwood or hardwood cuttings and by budding.

8,597

"SPECIAL RED JULY" PEACH TREE

Federico E. Viscarra, 19728 E. Parlier Ave., Reedley, Calif. 93654

Filed Jul. 2, 1992, Ser. No. 907,648

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described which was derived as a spontaneous mutation of the "Spring Red" nectarine tree (U.S. Plant Pat. No. 3,619) and which is somewhat remotely similar to the "Elegant Lady" peach tree (U.S. Plant Pat. No. 4,399) and the "O'Henry" peach tree (U.S. Plant Pat. No. 2,964), but from which it is distinguished by producing a freestone fruit which is mature for harvesting and shipment approximately July 22 to August 5 in the San Joaquin Valley of central California, the fruit having from an orange-red to a deeper garnet-red coloration having substantial light colored speckles present and a flesh which is a light amber-yellow and of a very firm texture at commercial maturity.

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8,598
STRAWBERRY PLANT NAMED CARTCUA
Jose M. A. Lopez, Tudela-Navarra, Spain, assignor to Plantas de Navarra, S.A., Valtierra, Spain
Filed Jun. 19, 1992, Ser. No. 901,384
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct variety of strawberry, substantially as shown and described.

8,599
LAGERSTROEMIA INDICA CV. MONINK
Gilbert N. Resendez, La Verne, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.
Filed Jan. 4, 1993, Ser. No. 446
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—67.3 1 Claim

1. A new and distinct variety of Lagerstroemia plant as substantially shown and described herein, that is characterized particularly as a novelty by the unique combination of a floriferous habit of rich pink flowers and a dwarf overall size and more dense compact growth habit.

8,600
LAGERSTROEMIA INDICA CV. MONED
Gilbert N. Resendez, La Verne, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.
Filed Jan. 4, 1993, Ser. No. 449
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—67.3 1 Claim

1. A new and distinct variety of *Lagerstroemia* plant as substantially shown and described herein, that is characterized particularly as a novelty by the unique combination of a floriferous habit of rosy-red, thick textured flowers and a dwarf overall size and more dense compact growth habit.

8,601
IMPATIENS PLANT NAMED TAHITI
Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.
Filed Apr. 23, 1992, Ser. No. 872,422
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of Impatiens plant named Tahiti, as illustrated and described.

PATENTS

GRANTED FEB. 15, 1994

ERRATA

For CLASS	See PATENT NO.
099-280	5,285,705
141-059	5,285,744
607-005	5,285,779
607-043	5,285,780
607-059	5,285,781
220-004	5,285,914
366-072	5,286,121
432-105	5,286,200
433-080	5,286,201
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526-230	5,286,816
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348-624	5,287,174

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ERRATA—CONTINUED

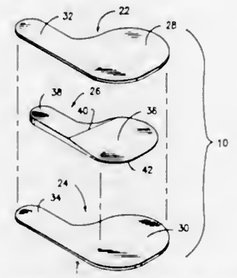
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370-060	5,287,535
375-089	5,287,540
378-054	5,287,546
395-375	5,287,548

PATENTS

GRANTED FEBRUARY 15, 1994

GENERAL AND MECHANICAL

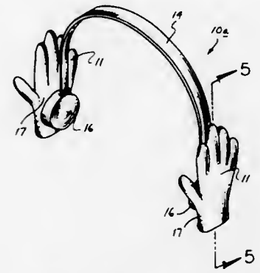
5,285,529
PROTECTIVE GLOVE PAD
Richard A. Arena, 5107 N. St. Vincent, Tampa, Fla. 33614
Continuation of Ser. No. 786,049, Oct. 31, 1991. This application Feb. 2, 1993, Ser. No. 12,614
Int. Cl.[5] A41D *13/00, 13/08*
U.S. Cl. 2—20 **5 Claims**



1. A protective glove pad for use by a baseball player configured to be positioned between the palm of the player's hand and the interior of a baseball glove to cover a portion of the palm of the hand to protect at least one knuckle joint and corresponding first joint from injury when catching a baseball comprising an enlarged palm pad portion having an elongated finger pad portion extending outwardly therefrom to selectively position and retain said protective glove pad in the baseball glove, said enlarged palm pad portion and said elongated finger pad portion are cooperatively formed by a first and second outer malleable, flexible thin cover member having an inner flexible layer of impact absorbing material disposed therebetween, said inner flexible layer of impact absorbing material comprises an enlarged palm pad area extending from a lower peripheral edge to an inner terminus edge and an elongated finger pad area extending from said inner terminus edge to a peripheral upper edge corresponding to said corresponding enlarged palm pad portions and corresponding elongated finger pad portion wherein said enlarged palm pad area of the inner flexible layer of impact absorbing material includes an inclined surface substantially uniformly increasing in thickness from said lower peripheral edge to said inner terminus edge and said elongated finger pad area comprises a substantially flat member having a thickness substantially equal to the thickness of said enlarged palm pad area at said inner terminus edge such that the knuckle joint and corresponding first joint are protected by said inner flexible layer of impact absorbing material.

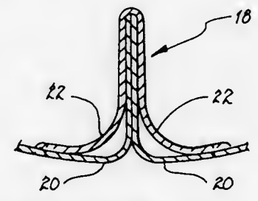
5,285,530
EAR MUFF DEVICE
Robert J. Nardone, Jr, 2717 Burwell St., Union, N.J. 07083
Filed Feb. 3, 1993, Ser. No. 12,770
Int. Cl.[5] A61F *11/14*
U.S. Cl. 2—209 **3 Claims**

1. An ear muff device, comprising,
a plurality of glove members, the glove members of a mirror image construction, each glove member having an interior surface and an exterior surface, each glove member including a plurality of glove fingers, and each glove member having a glove palm, with each glove palm arranged in a facing relationship,
and
a resilient band pivotally mounted to the glove members, wherein the resilient band is of a shape-retentive material, and having a semi-annular configuration, and
each palm includes a boss pad to provide a plurality of boss pads with the resilient band mounted to the boss pads, and



each glove member mounted in resilient surrounding relationship to one of said boss pads to impart a surrounding relationship of each glove member relative to said one of said boss pad.

5,285,531
FEMALE GARMENT
Robert M. Nalbandian, 1 E. River Rd., Tucson, Ariz. 85704
Filed Sep. 4, 1992, Ser. No. 941,383
Int. Cl.[5] A41D *27/00;* **A41B** *9/04*
U.S. Cl. 2—406 **8 Claims**



1. A female garment comprising:
a front portion;
a back portion;
leg encircling openings for allowing a wearer's legs to pass through said female garment;
a crotch portion located between said leg encircling openings comprising a first layer comprising the material of said female garment wherein said layer has an inner and outer surface and an infolding consisting of a single fold of said first layer, and a second layer attached to said inner surface of said first layer and over said single fold such that it simulates contours of the external female genitalia.

5,285,532
PORTABLE URINAL DEVICE
E. R. Sealy, 2850 W. 24th St., Apt. 8C, Brooklyn, N.Y. 11224
Filed Oct. 19, 1992, Ser. No. 962,699
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.3 **7 Claims**

1. An improved portable urinal device which comprises:
a) means for holding urine therein, said urine holding means is a container, said container includes an upstanding side

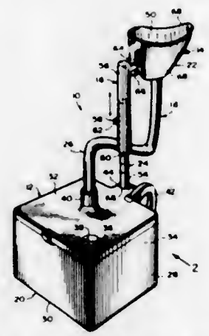
VOL 1159 ISS 3 FE 15 1994 UMI

wall thereabout, a bottom wall, and a top wall, so as to form a chamber therein for holding the urine therein;

b) means for channeling the flow of urine discharged from a body of a person, said channeling means is a urine funnel cup;

c) means for suspending said urine channeling means above said urine holding means, said suspending means is a stanchion coupled between one side of said container and said urine funnel cup;

d) means for fluidly connecting said urine channeling means to said urine holding means, so that the urine discharged from the body of the person can go directly into said urine holding means, said fluidly connecting means is an elongated flexible tube extending between the bottom of said urine funnel cup and the top of said container, so as to



convey the urine from said urine funnel cup into said container by the force of gravity therebetween;

e) a neck formed on said top wall of said container with said neck having an orifice for emptying the urine out of the chamber when full;

f) a snap on cap for covering the orifice of said neck;

g) a connector disposed on said top wall of said container, so that a lower end of said elongated flexible tube can be attached to said connector;

h) a handle extending from said upstanding side wall, so that said container can be carried by said handle; and

i) a pair of ears spaced apart and extending from said upstanding side wall one below the other, each said ear having a transverse hole therethrough, with said holes aligned so that a lower portion of said stanchion extends through said holes to be retained by said ears.

5,285,533
ANTI-LEAKAGE APPARATUS FOR CONTAINERS FOR LIQUID
Tai-Chung Chen, 6th Fl., No. 1, Lane 32, Shih Chien Rd., Pan Chiao City, Taipei Hsien, Taiwan
Filed Jan. 26, 1993, Ser. No. 9,244
Int. Cl.[5] E03D *5/00*
U.S. Cl. 4—415 **6 Claims**

1. An anti-leakage apparatus for a toilet tank, comprising:

leakage-detecting means comprising:

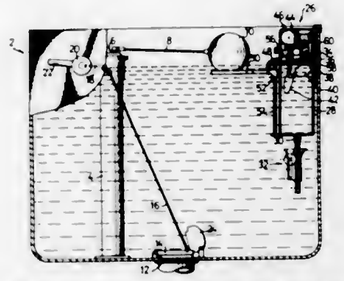
a cylinder comprising a periphery defining a hole for permitting water to flow into said cylinder, a top defining a hole and a bottom defining a hole for permitting water to flow out of said cylinder;

a switch comprising a relatively large middle portion from which a first tip and a second tip extend in opposite directions;

a spring through which said second tip extends, said second tip further extending through said hole defined in said top; and

a float ball lined to said second tip of said switch by means of a flexible element;

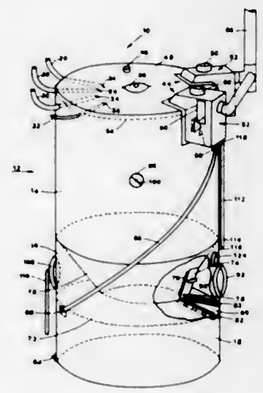
said switch being retained in a first position when said float ball floats on water contained in said cylinder and being pulled to a second position when said float ball is suspended when said cylinder is empty of water; and



means for restraining water form entering the toilet tank in response to said leakage detecting means; and

means for mounting said anti-leakage apparatus on the toilet tank.

5,285,534
RECYCLING DEVICE
Jeremy F. Criss, 5308 Emerald Dr., Sykesville, Md. 21784
Filed Sep. 28, 1992, Ser. No. 952,265
Int. Cl.[5] E04H *4/00*
U.S. Cl. 4—449 **10 Claims**



1. A recycling device usable to receive and compost solid and liquid human and organic wastes, said recycling device comprising:

a composting container, said composting container including an upper vacuumizable container, a worm chamber, and a liquid bottom drainage container;

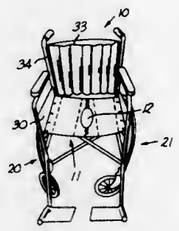
a plurality of vacuum transport lines extending between toilets and urinals and an upper portion of said upper vacuumizable container;

a plurality of individually and jointly operable vacuum motor and pump units in said vacuumizable container, said vacuum motor and pump units being operable to evacuate said vacuumized container and said vacuum transport lines, each of said vacuum motor and pump units including a vacuum motor and pump housing, each of said vacuum motor and pump housings being vented to atmosphere through a vent stack;

means for allowing discharge of separated liquid waste from said vacuumizable container to said liquid bottom drainage container; and

means for ventilating said worm chamber and said liquid bottom drainage container, said means including vent lines, said vent lines extending from said worm chamber and said liquid bottom drainage container to at least one of said vacuum motor and pump housings.

5,285,535
PORTABLE TOILET FOR COLLAPSIBLE INCONTINENT WHEELCHAIR
Darlene A. Stewart, 14095 T.W.P. Rd. 136, Bellevue, Ohio 44811, and Charles L. Ferrell, R.R. 1, Box 202-B, Milltown, Ind. 47145
Filed Apr. 1, 1993, Ser. No. 41,204
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—480 **7 Claims**

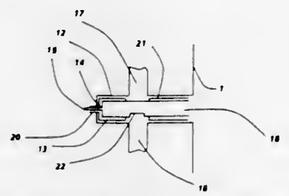


1. A toilet seat for use in a wheel chair framework having side support rails on opposite sides of an occupant for supporting a seat and a folding mechanism for moving the side rails together in a compact collapsed condition and apart to form a mobile chair, comprising in combination:

a seat for attachment to the support rails on opposite sides of said occupant to form soft flexible plastic seat extending between the support rails and having a central discharge opening extending through the seat, waste pan supporting means for removably supporting a waste pan under said discharge opening on the wheelchair framework below and spaced from said seat, and

hinging means in the seat between the support rails permitting the seat to be hinged and retained in folded position while attached to the side rails when the wheelchair is in its compact collapsed condition.

5,285,536
WAVE GENERATING SYSTEM
Arthur Long, 49 Ida St., Troy, N.Y. 12180
Continuation-in-part of Ser. No. 749,134, Aug. 26, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 931,406
Int. Cl.[5] E04H *4/14*
U.S. Cl. 4—491 **12 Claims**



1. A wave generator for a pool which includes a caisson wave generating chamber, comprising;

a valve body defining a bore, said valve body having an inlet opening, and an outlet opening;

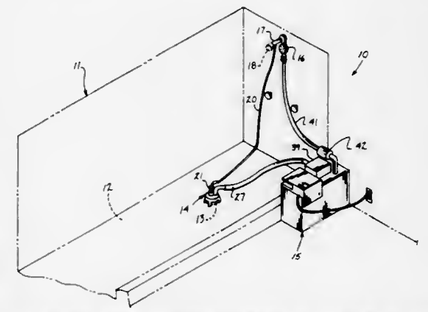
a tubular port sleeve with a closed end rotatably located within said bore in said valve body, wherein one end of said bore of said valve body is closed and said closed end of said port sleeve is adjacent to said closed bore end;

a tubular rotor defining an axial media flow path with a closed end rotatably located concentrically within said tubular port sleeve wherein said closed end is adjacent to said tubular port sleeve closed end and an open end operatively connected to the caisson wave generating chamber;

means for rotating said tubular rotor so as to allow the cyclical intake and exhaust of the media through said valve body; and

means to control the rotation of said tubular rotor so that a cyclical flow of air is charged into and exhausted from the caisson to cause waves to be generated on the pool surface.

5,285,537
SHOWER WATER RECYCLING APPARATUS
Frederick F. Hanks, 646 Elizabeth Dr., Arcata, Calif. 95521
Filed Jul. 15, 1992, Ser. No. 913,215
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—597 **5 Claims**



1. A shower water recycling apparatus in cooperation with a shower stall, having a floor and a floor drain, the shower stall further including a shower stall fluid conduit having a fluid conduit shower head, the apparatus further comprises,

a pickup head mounted on the shower stall floor over the drain, and

a storage tank assembly positioned exteriorly of the shower stall and being in fluid communication with the pickup head, and

an auxiliary shower head positioned within the shower stall and being in fluid communication with the storage tank assembly, and

a by-pass conduit is in fluid communication at one end with the shower stall fluid conduit, the by-pass conduit having a flow control valve mounted therewithin adjacent the shower stall fluid conduit, and the by-pass conduit in fluid communication at the other end with the pick-up head via a check valve, and

the pickup head includes a pickup head flange, and a plurality of pickup head flange legs mounted peripherally about the pickup head flange projecting below the pickup head flange in surrounding relationship relative to the drain, and a central boss fixedly and coaxially aligned relative to the pickup head flange and projecting upwardly from the pickup head flange, with the central boss having a chamber and the by-pass conduit directed into the central boss directing fluid into the chamber through the check valve from the flow control valve, and a piston slidably mounted within the chamber, and a piston rod mounted to

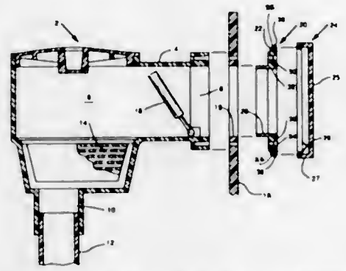
VOL 1159 ISS 3 FE 15 1994 UMI

the piston, the piston rod coaxially aligned with the chamber, with the piston rod directed through the pickup head flange, and a flexible stopper plug mounted to a lower distal end of the piston rod below the pickup head flange above the drain, and a spring wound about the piston rod captured between the pickup head flange and the piston within the chamber.

5,285,538
SEALING ASSEMBLY FOR A SWIMMING POOL SKIMMER

Frank J. Hodak, E. Cruikshank Rd., Valencia, Pa. 16059

Filed Apr. 14, 1992, Ser. No. 869,136
Int. Cl.[5] E04H *4/00*
U.S. Cl. 4—507 **8 Claims**



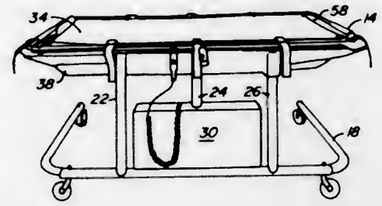
1. A sealing assembly for a swimming pool skimmer of the type having a skimmer body with a water receiving opening therein, said sealing assembly comprising:
a face plate for engaging said skimmer body around said water receiving opening at a sidewall of the swimming pool, said face plate defined by a frame-like element having a central opening therein communicating with the opening in the skimmer body, said face plate having a substantially flat border surface extending around said central opening and including a peripheral edge extending therearound;
sealing means carried by the face plate; and
a detachable cover element constructed of a flexible material comprising a planar portion for closing off the central opening in the face plate, said cover element further including an outwardly extending, peripheral lip portion surrounding the planar portion for sealably engaging the peripheral edge around said face plate to prevent pool water from entering the skimmer.

5,285,539
SHOWER BATH FOR A BEDRIDDEN PATIENT

Clifford M. Anderson, Nevada City, and Gary A. Schaal, Loma Rica, both of Calif., assignors to Andermac, Inc., Yuba City, Calif.

Continuation of Ser. No. 659,944, Feb. 22, 1992, abandoned. This application Aug. 21, 1992, Ser. No. 933,618
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—564.1 **5 Claims**

1. A bath apparatus for bathing a patient within a hospital bed supported on a hospital floor comprising in combination:
a rectilinear frame having parallel opposite sides about an unobstructed internal rectilinear dimension for fitting over from above and surrounding said patient within said hospital bed;
a rolling transport for supporting said rectilinear frame from the floor supporting said hospital bed at one edge of said rectilinear frame, said frame and rolling transporting being independent of said hospital bed;
means for raising and lowering said rectilinear frame with respect to said rolling transport at said one edge of said transportable frame for enabling said rolling transport to be moved under said hospital bed with said frame supported over said hospital bed in a position overlying said patient in said bed;
a water permeable sheet;
means for tensile attachment of said water permeable sheet to said rectilinear frame with said water permeable sheet underlying said patient on said bed;
a water impermeable sheet for suspension from said frame in an upwardly exposed concave configuration for forming a liquid retaining bath with respect to said frame; and



means for attachment of said water impermeable sheet to said frame with said water impermeable sheet extending below said water permeable sheet independent of said means for tensile attachment of said water permeable sheet for supporting said water impermeable sheet with respect to said frame with said exposed concave configuration for receiving and retaining the water of said bath while the patient is supported by said water permeable sheet over said bed.

5,285,540
TOILET TRAINING SYSTEM

Lawrence J. Putz, Grand Junction, Colo., assignor to Samantha Bell, Little Rock, Ark.

Filed Nov. 5, 1990, Ser. No. 609,521
Int. Cl.[5] A47K *17/00*
U.S. Cl. 4—661 **10 Claims**

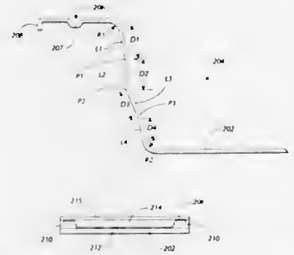


1. A toilet training system adapted to interest a child in using a toilet for elimination of urine and recording the child's toilet training progress comprising in combination:
a plurality of sheets adapted to dissolve when contacted with urine;
a chart for recording a child's use of a toilet for elimination; and
instructions including first instructions for positioning one of the plurality of sheets in the toilet such that the child's elimination of urine in said toilet causes the sheet to dissolve, second instructions for recording the child's elimination of urine in the toilet bowl on the chart; whereby when the instructions are followed the child becomes interested in using toilet for elimination because the child causes the sheet to disappear by elimination of urine in the toilet.

5,285,541
FLOTATION SYSTEM INCLUDING IMPROVED CUSHIONING AND SUPPORT FEATURES

C. Edward Steed, Alpharetta; Paul H. Brannock, Lilburn; Eugene E. Flower, Atlanta, all of Ga., and Gary C. Davis, Ponte Vidra Beach, Fla., assignors to Simmons Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 850,480, Mar. 12, 1992, Pat. No. 5,245,716. This application Oct. 14, 1992, Ser. No. 961,275
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—451 **3 Claims**



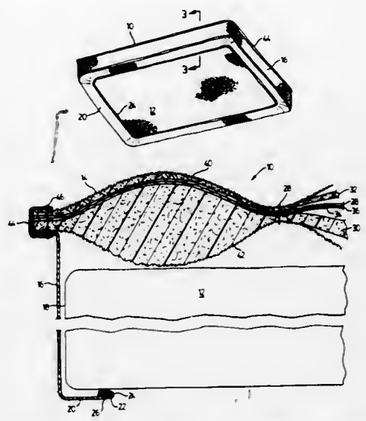
1. A water mattress construction, comprising:
a base including a planar member defining an upwardly-directed support surface;
a liquid-filled bladder;
a tray defining an upwardly-directed cavity for containing said bladder, said cavity partially defined by a floor portion and partially defined by a wall portion extending upwardly from the edge of said floor portion, said wall portion including first, second, third and fourth wall sections, said fourth wall section having a lower edge attached to the outer peripheral edge of said floor section and also having an upper edge, said third wall section having a lower edge attached along a pivot line to the upper edge of said fourth wall section, said second wall section having a lower edge attached along a pivot line to the upper edge of said third wall section, said first wall section having a lower edge attached along a pivot line to the upper edge of said second wall section; and
a flange portion extending outwardly and downwardly from the upper edge of said wall portion and terminating in a peripheral edge portion, wherein said peripheral edge portion of said flange portion is the lowest point of said flange portion such that a load placed atop said flange portion tends to cause said wall sections to bend relative to each other along said pivot lines, thus creating a spring effect to cushion said load.

5,285,542
MATTRESS COVER

Gordon W. West, 35 Peel Village Parkway, Brampton, Ontario, Canada L6W 1G1 , and Roy D. Moss, 5941 Midiron Cir., Huntington Beach, Calif. 92649

Filed Mar. 10, 1993, Ser. No. 28,868
Int. Cl.[5] A47C *31/00*; B32B *15/00*
U.S. Cl. 5—500 **17 Claims**

1. A mattress cover comprising:
a first thick layer of fiberfill;
a second conterminous thin layer of fiberfill;

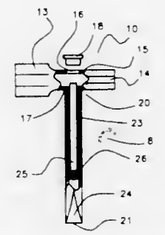


a metalized film attached to the thin fiberfill layer facing the thick fiberfill layer; and an air-permeable cover enveloping the fiberfill and film layers.

5,285,543
COMBINATION TOOL DEVICE

Robert G. Rowe, 382 Spanish Oak, Bullard, Tex. 75757

Filed Mar. 3, 1993, Ser. No. 25,875
Int. Cl.[5] B25B *13/00*
U.S. Cl. 7—138 **19 Claims**



1. A combination tool device, comprising
a double-ended socket wrench, including an elongate hollow body having an annular wall, open first and second ends, and a longitudinal axis, said annular wall forming a polygonal configuration at and inward of each of said first and second ends, said body including a first aperture penetrating said annular wall between said first and second ends of said body, and said body including a second aperture penetrating said annular wall in coaxial alignment with and in opposed relation to said first aperture across the longitudinal axis of said body;
an elongate handle having a longitudinal axis, an open first end, a closed second end, a hollow interior extending from said open first end through the majority of the length of said handle toward said second end, and an annular wall surrounding said hollow interior, said second end being beveled to form a standard screwdriver blade, and the inner surface of said annular wall being threaded at said first end of said handle, said handle being interconnected at said first end to said body of said socket wrench around said second aperture with the longitudinal axis of said

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handle in coaxial alignment with said first and second apertures and perpendicular to the longitudinal axis of said body of said socket wrench; and

a file, including an elongate shaft with first and second ends and an outer cutting surface, and a head, of larger cross-sectional dimension than said shaft, disposed at said first end of said shaft, said head being threaded on the outer surface thereof and being configured and dimensioned such that said head may be threaded into the threaded first end of said handle, with the length of said shaft being approximately equal to the length of the hollow interior of said handle and the cross-sectional dimension of said shaft being less than the cross-sectional dimension of said hollow interior of said handle, said file removably received in the interior of said socket wrench and said handle with said shaft disposed in the hollow interior of said handle with said head disposed in the interior of said body of said socket wrench, such that said file may be removed from said handle and socket wrench and said head may be inserted through said apertures and threaded into said first end of said handle to retain said file in position for use.

5,285,544

METHOD OF TREATING A WEB OF MATERIAL WITH A LIQUID

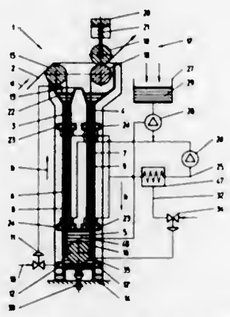
Hans Weber, Uzwil, Switzerland, assignor to Benninger AG, Uzwil, Switzerland

Filed Sep. 17, 1992, Ser. No. 946,108

Claims priority, application Switzerland, Sep. 23, 1991, 2814/91

Int. Cl.[5] **D06B** *3/12*

U.S. Cl. 8—151 **7 Claims**



1. A method of treating a web of material with a treatment liquid, said method comprising steps of

guiding the material web in a stretched condition in a predetermined direction through at least one U-shaped shaft, containing said treatment liquid, said shaft having two limbs joined at a common connecting area,

supplying fresh treatment liquid beneath the liquid's surface level, and, in each limb of the shaft,

drawing off liquid at one end of the limb, while feeding liquid into the other end of the limb, selectively in counterflow to or in the direction of travel of the material web.

5,285,545

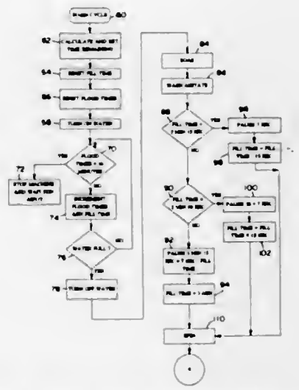
ELECTRONIC LAUNDRY CONTROL WITH FILL TIME COMPENSATION

Thomas R. Payne; Steven A. Rice, and William W. Wead, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 30, 1992, Ser. No. 968,831

Int. Cl.[5] **D06F** *33/02, 39/08*

U.S. Cl. 8—158 **15 Claims**



9. A washing machine electronic control system comprising:

control means for effecting an operational cycle for a washing machine comprising a sequence of operational modes, the operational modes including at least one fill operation having a duration defined by the actual time required for a predetermined amount of liquid to enter the washing machine, and at least one pause interval, the operational cycle having a nominal total cycle time which includes a nominal fill time for the at least one fill operation and a nominal time duration for the at least one pause interval;

said control elements being operable to measure the duration of the at least one fill operation, and to adjust the duration of the at least one pause interval to the extent possible to compensate for any difference between the duration of the at least one fill operation and the nominal fill time so as to tend to achieve the nominal total cycle time.

14. A washing machine electronic control system comprising:

a flood timer;

control means for effecting an operational cycle of a washing machine comprising a sequence of operational modes including at least one fill operation having a duration defined by the time required for a predetermined amount of liquid to enter the washing machine as sensed by a liquid level sensor; and

said control means being operable to prevent excessive flooding in the event the liquid sensor malfunctions by employing the flood timer to track actual fill time during a filling operation, periodically comparing actual fill time as tracked by the flood timer to a predetermined value, and terminating operation in the event the actual fill time exceeds the predetermined value.

15. A method for controlling a washing machine so as to achieve a constant total cycle time notwithstanding variations in the duration of filling operations, the washing machine being of the type which has an operational cycle comprising a sequence of operational modes, the operational modes including at least one fill operation having a duration defined by the actual time required for a predetermined amount of liquid to enter the washing machine, and at least one pause interval having a nominal pause time duration, said method comprising:

causing the fill operation to occur and measuring the actual time required for the at least one fill operation; and

adjusting the duration of the at least one pause interval to compensate for any differences between the actual time required for the fill operation and a nominal fill time such that the total cycle time is equal to the cycle time which would occur if the actual time required for the fill operation were the nominal fill time and if the pause interval were for the nominal pause time duration.

5,285,546

SHOE CHARACTERIZED BY A PLASTIC WELT

Franz Haimerl, Jetzendorf, Fed. Rep. of Germany, assignor to LOWA-Schuhfabrik Lorenz Wagner GmbH & Co. KG, Jetzendorf, Fed. Rep. of Germany

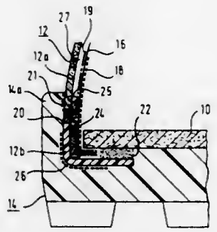
PCT No. PCT/EP89/01444, § 371 Date May 22, 1991, § 102(e) Date May 22, 1991, PCT Pub. No. WO90/06067, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 28, 1989, Ser. No. 689,264

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1988, 3840087

Int. Cl.[5] **A43C** *13/08*

U.S. Cl. 12—142 E **35 Claims**



1. A method for producing a shoe, the shoe comprising an upper (**12**) connected to an insole (**10**), a sole structure (**14**) connected to the upper (**12**), and a substantially water proof lining (**16**), said upper (**12**) comprising a water conductive portion (**12***a*) and a marginal strip (**12***b*), wherein the water conductive portion (**12***a*) has greater water conductivity than the marginal strip (**12***b*), wherein the marginal strip (**12***b*) is connected to the insole (**10**) and bears in a waterproof manner against the lining (**16**) through an interposed sealing composition (**24**), and wherein the sole structure (**14**) has at least one waterproof layer which is connected to the marginal strip (**12***b*) in waterproof fashion, said method comprising

(a) providing, as a separate intermediate product, an upper (**12**) comprising a marginal strip **12**(*b*) and a portion (**12***a*) of greater water conductivity than the marginal strip (**12***b*);

(b) inserting a waterproofing lining (**16**) into the upper (**12**);

(c) introducing a sealing composition (**24**) in pastry or liquid form between said marginal strip (**24***b*) and the water proof lining (**16**);

(d) attaching the marginal strip (**12***b*) to an insole (**10**); and

(e) attaching a sole structure **14** to the assemblage of the upper (**12**), waterproof lining (**16**), sealing composition (**24**) and insole (**10**), wherein the introduction of the sealing composition occurs independent of the attachment of the sole structure.

5,285,547

INTERNAL BY-PASS VALVE FOR SUBMERSIBLE SUCTION CLEANER

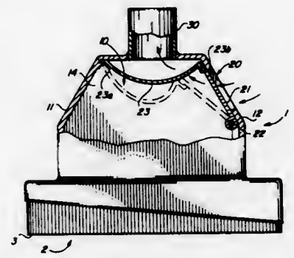
Pavel Sebor, 45 Highcliff Way, Northcliff Extension 12, Johannesburg, Transvall, South Africa

Filed May 11, 1992, Ser. No. 880,667

Claims priority, application South Africa, Feb. 28, 1992, 92/1500

Int. Cl.[5] **E04H** *4/16*

U.S. Cl. 15—1.7 **4 Claims**



1. A self-propelled submersible swimming pool cleaner, comprising:

a housing having peripheral walls, the walls enclosing and defining an internal suction chamber;

connector means extending through the housing for permitting the flow of water from the suction chamber and out of the housing;

a by-pass opening in one of the peripheral walls;

a by-pass closure plate rotatably hinged at one end to the peripheral wall having the by-pass opening therein and movable between a closed position in which water is prevented from flowing through the by-pass opening and an open position in which water flows from the by-pass opening and into the connector means; and

a leaf spring attached at one end to an edge of the by-pass closure plate opposite the rotatably hinged end, the leaf spring bridging the suction chamber and attached at the other end thereof to another of the peripheral walls.

5,285,548

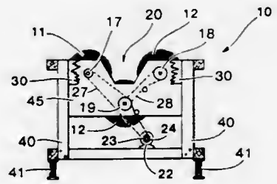
BRUSHING APPARATUS FOR CLEANING AND POLISHING PUMPKINS AND THE LIKE

Christopher A. Moll, 5980 Pease Rd., Williamson, N.Y. 14589

Continuation-in-part of Ser. No. 750,872, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 541,506, Jun. 21, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,294

Int. Cl.[5] **A23N** *12/02*

U.S. Cl. 15—3.2 **3 Claims**



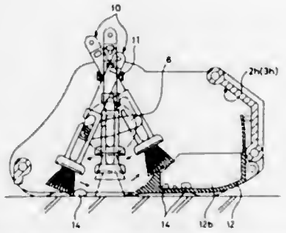
1. Brushing apparatus for cleaning and polishing farm produce, including:

first, second, and third elongated cylindrical brushes mounted for rotation on parallel and generally horizontal shafts, and disposed relative to each other to form a brush channel along the length of said brushes each of said

VOL 1159 ISS 3 FE 15 1994 UMI

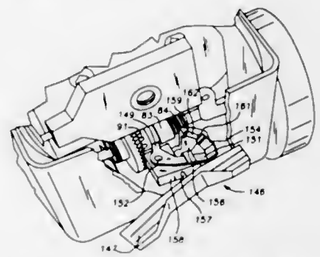
brushes having long resilient bristles extending to a diameter at least five times the diameter of said shafts;
drive means operatively connected to said brushes to drive said brushes in the same rotational direction and at different speeds to enhance brushing action and to retain articles of produce within said brush channel, said first brush faster than said second brush, and said second brush faster than said third brush, said rotational direction being such that the tangential direction of said first brush is upward from said channel, and the tangential direction of said third brush is downward into said channel;
said bristles being the sole agent of contact with articles of produce in said brush channel, the rotation of said brushes alone effecting movement of said articles from said feed end to said discharge end along said brush channel, said brush bristles imparting vertical and horizontal torques on said articles in the brush channel, with resultant rolling action of said articles and movement toward said discharge end; and
means to adjust the inclination of said brushes and said brush channel relative to the horizontal to thereby control the rate at which articles of produce move along said brush channel and the brushing time thereof.

5,285,549
DESK TOP CLEANER
Keiichi Yoshizawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Division of Ser. No. 550,264, Jul. 9, 1990. This application Jun. 30, 1992, Ser. No. 906,724
Claims priority, application Japan, Jul. 21, 1989, 1-190079
Int. Cl.[5] **A47L** *11/12*
U.S. Cl. 15—41.1 **1 Claim**



1. A desk top cleaner for cleaning an underlying surface comprising:
a frame having a support means;
a crank shaft rotatably mounted on said frame;
broom means having a lower portion formed with a brush and an upper portion engageable by said support means;
operable means operably disposed between said broom means and said crank shaft such that rotation of said crank shaft effects back and forth movement of said broom means relative to said frame to thereby effect sweeping of said underlying surface;
drive means on said frame for rotating said crank shaft;
dust receiving means on said frame for receiving the dust swept by said broom means, said dust receiving means having a dust entrance portion which is made of a resilient material to resiliently engage said underlying surface to be swept;
said dust receiving means comprising a dust receiving chamber having a dust entrance portion, said dust receiving chamber having a forward part and a rear part with said forward part being ahead of the rear part considered in the direction of movement of the desk top cleaner when it is effecting its cleaning action, said dust entrance portion being disposed at said forward part;
pivot means pivotably mounting said dust receiving means on said frame; and
resilient engaging means between said dust receiving chamber and said frame for resiliently urging said dust receiving chamber in a pivotal direction in which said dust entrance portion resiliently engages said underlying surface to be swept, said resilient means being disposed at said rear part of said dust receiving chamber, said resilient means comprising resilient portions on said dust receiving chamber, and projections on said frame engaged by said resilient portions.

5,285,550
SELF-PROPELLED VACUUM CLEANER HAVING FORWARD AND REVERSE DRIVE
Robert B. Meyer, Middleburg Hts.; John R. Lackner, Westlake, and Hans J. Matuschek, Parma, all of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Division of Ser. No. 708,735, May 31, 1991, Pat. No. 5,115,537, which is a division of Ser. No. 442,615, Nov. 29, 1989, abandoned. This application Apr. 20, 1992, Ser. No. 871,021
Int. Cl.[5] **A47L** *5/28*
U.S. Cl. 15—328 **8 Claims**

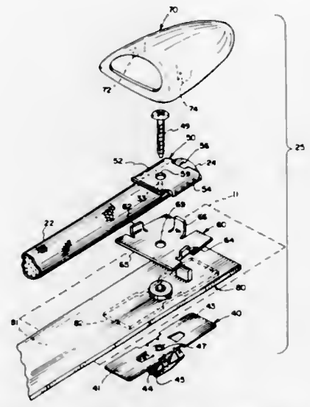


1. In a vacuum cleaner comprising a wheel supported housing and a reversible drive system in the housing, the drive system comprisin an input pinion and a pair of constantly meshed counter-rotating gears, the input pinion being in driving engagement with one of said gears, said counter-rotating gears each being supported for rotation about a respective axis parallel to the axis of the other, a sprocket associated with each gear to form a set, means supporting each sprocket in confronting relation to a respective gear, clutching surfaces for each gear and sprocket set, a common sprocket supported for rotation about an axis parallel to said gear axes, a belt trained around both of said associated sprockets and said common sprocket, an output shaft operatively connected to said common sprocket and adapted to drive the wheels of the device in forward or reverse rotation as determined by the rotational direction of the sprockets, and clutch actuation means responsive to a manually developed force applied in a first direction to at least a selected one of the gear and sprocket of one set to clutch the one set of said gears and sprockets together through their respective clutching surfaces to drive said sprockets in a first rotary direction and applied in a direction opposed to said first direction to at least a selected one of the gear and sprocket of the other set to clutch the other set of said gears and sprockets together through their respective clutching surfaces to drive said sprockets in a second rotary direction.

5,285,551
ASSIST STRAP
Walter M. Weiland, and Jay M. Frankhouse, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed Feb. 6, 1992, Ser. No. 831,976
Int. Cl.[5] **B60N** *3/02*
U.S. Cl. 16—125 **24 Claims**

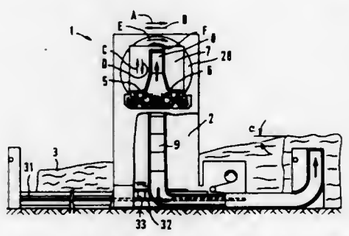
24. An assist strap for use in a vehicle comprising:
a core of foam polymeric material having a generally circular cross-section;

a cover for said core, said cover comprising a tubular flexible material covering said core and together with said core having sufficient strength to provide the sole support for a strap defined by said core and cover; and



means for attaching opposite ends of said strap to a vehicle, said means including a pair of plates mounted on opposite sides of an end of said strap and including means for drawing said plates together for compressing said strap therebetween, said drawing means including a snap-in clip for attachment to a vehicle.

5,285,552
LOCATION DETERMINING DEVICE FOR A TRAVELLING BALE OPENER
Ferdinand Leifeld, Kempen, and Josef Temburg, Jüchen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany
Filed Jun. 17, 1992, Ser. No. 899,844
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1991, 4119888
Int. Cl.[5] **G01C** *22/00;* **D01G** *7/04*
U.S. Cl. 19—80 R **14 Claims**



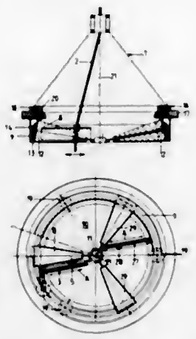
1. A bale opener for removing fiber tufts from top surfaces of fiber bales assembled in a series, comprising
(a) a carriage for travelling back-and-forth along a generally horizontal, first path of travel along the fiber bale series;
(b) a tower mounted on the carriage for travel therewith; said tower and said carriage forming a travelling assembly;
(c) a first motor means for propelling said travelling assembly along said first path of travel;
(d) a detaching device extending from the tower; the detaching device having a detaching element for penetrating into the bale surfaces to remove fiber tufts therefrom during travel of the tower;
(e) holding means for vertically displaceably mounting said detaching device in said tower;
(f) second motor means for moving said detaching device relative to the tower along a generally vertical, second path of travel;
(g) first and second incremental rotary displacement signalling devices, each including
(1) a shaft;
(2) a toothed rotary element mounted on the shaft; said toothed rotary element being a first element;
(3) a counter element having a series of spaced gaps engageable by teeth of the toothed element, whereby said toothed element is in a meshing relationship with said counter element; said rotary element and said counter element being movable relative to one another as said rotary element rolls on said counter element; said counter element being a second element; and
(4) signal generating means coupled to the toothed element for generating signals as a function of rotary displacements of the toothed element;
one of said first and second elements of the first displacement signalling device being mounted on a component of said travelling assembly and another of said first and second elements of the first displacement signalling device being mounted along said first path of travel for generating said signals by said signal generating means of the first displacement signalling device as a function of displacement of said travelling assembly along said first path of travel;
one of said first and second elements of the second displacement signalling device being mounted on a component of said detaching device and another of said first and second elements of the second displacement signalling device being mounted along said second path of travel for generating said signals by said signal generating means of the second displacement signalling device as a function of displacement and said detaching device along said second path of travel; and
(h) a control device having
(1) a first input connected to said first displacement signalling device to receive said signals from said first displacement signalling device;
(2) a second input connected to said second displacement signalling device to receive signals from said second displacement signalling device;
(3) a first output connected to said first motor means for controlling said first motor means; and
(4) a second output connected to said second motor means for controlling said second motor means.

5,285,553
SLIVER CAN COILER WITH DRAW-IN ROLLERS AND RADIAL FUNNEL MOVEMENT
Jakob Bahmer, and Kaspar Bahmer, both of Fabrikstrasse 1, D-7924 Steinheim-Söhnstetten, Fed. Rep. of Germany
Filed Jul. 11, 1991, Ser. No. 728,470
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022667
Int. Cl.[5] **B65H** *54/80*
U.S. Cl. 19—159 R **17 Claims**

1. An apparatus for depositing sliver in a can having a central longitudinal axis, the apparatus comprising;
a plurality of sliver draw-in rollers for drawing the sliver into the can through a funnel, at least one of said rollers having a conical configuration having a central longitudinal axis extending radially to the axis of the can and having a diameter decreasing in a direction towards the longi-

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tudinal axis of the can, said sliver draw-in rollers contacting the sliver to draw the sliver into the can;



moving means for moving said funnel in a radial direction to the longitudinal axis of said can whereby the sliver is deposited in a spiral path in said can.

5,285,554

SPREADING AND LAP-FORMING MACHINE

Robert Jean, Fouqueville; Bernard Chatelet, and Bernard Jourde, both of Elbeuf, all of France, assignors to Asselin (Societe Anonyme), Elbeuf, France

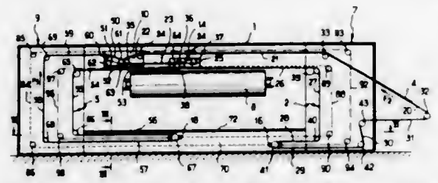
PCT No. PCT/FR92/00472, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/21802, PCT Pub. Date Dec. 10, 1992

PCT Filed May 27, 1992, Ser. No. 969,830

Claims priority, application France, Jun. 3, 1991, 91 06633

Int. Cl.[5] D01G *25/00*; D04H *1/74*

U.S. Cl. 19—163 **6 Claims**



1. A spreading and lap-forming machine for converting a web (4) to a lap (6) by folding in pleats, comprising at least two conveyor-belts (2, 5) following separate closed paths (20 to 31, 50 to 59) and associated with rollers (32 to 43, 60 to 69) for respective guiding and displacement of said conveyor-belts, the closed paths (20 to 31, 50 to 59) being external to each other and adjacent to each other in a pinching zone (23, 53) delimited by guide rollers carried by two main carriages (10, 14) displaceable in translational motion in a horizontal direction at right angles to axes of the rollers (32 to 43, 60 to 69), compensating means including at least one auxiliary carriage (16, 18) displaceable in translational motion at right angles to the axes of the rollers (32 to 43, 60 to 69) so as to maintain the length of each closed path (20 to 31, 50 to 59) at a substantially constant value, each closed path (20 to 31, 50 to 59) making a 180-degree turn around at least one guide roller (41, 67) carried by said at least one auxiliary carriage (16, 18), means (20, 21, 22) for transporting the web (4) to the pinching zone (23, 53), an apron (8) movable in a direction parallel to the axes of the rollers (32 to 43, 60 to 69) and receives the web (4) as the web passes out of the pinching zone (23, 53), and driving means (84, 85, 88, 89) for applying reciprocating movements of translation to the main carriages (10, 14) and to the compensating means (16, 18), wherein each said at least one auxiliary carriage (16, 18) is located within a bottom passageway (70) which extends beneath the apron (8) and is separated therefrom by a partition-wall (72) whereby air currents generated in particular by the auxiliary carriages are prevented from propagating to the lap which is being formed.

5,285,555

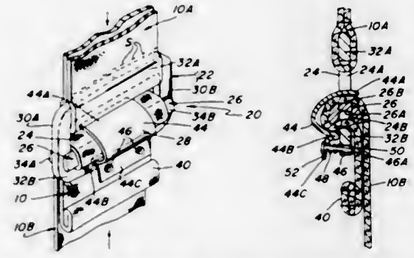
ADJUSTER BUCKLE WITH LOCKING MEANS

Michael Bell, 1705 Triumphe Way, Warrington, Pa. 18976

Filed Feb. 3, 1993, Ser. No. 12,691

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—196 **6 Claims**



1. A buckle for use on web of a belt or a harness, said buckle comprising a ring member defining a hollow interior space, a slidable bar, and releasable securable locking means, said ring member comprising a first and a second side section, and a first and a second end section, all of said sections being connected to one another, said slidable bar being slidably mounted between said side sections and movable between a position immediately adjacent said first end section and a position immediately adjacent said second end section, said first end section of said buckle being securable to a portion of said web, a free end portion of said web or another web of said belt or harness being extendable through the hollow space in said ring member between said first end section and said slidable bar, extending around said slidable bar, through the hollow interior space between the slidable bar and the second section and then beyond the second end section, whereupon pulling on said free end causes said slidable bar to slide into close proximity with said second end section to hold said free end portion of said web tightly within said buckle, said locking means being mounted on said second end section and comprising a concave member and a manually depressable portion, said concave member being arranged to be selectively extended over said slidable bar with the web section therearound to overlie and grasp and releasable secure said slidable bar and said web section in place, said concave member being normally biased to overlie and grasp said slidable bar with said web section thereareound, said manually depressable portion of said locking means being depressible to cause said concave member to release said slidable bar with said web section therearound.

5,285,556

INTEGRAL POLYMERIC CLAMP

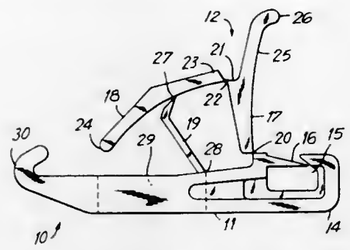
Joseph E. Shorin, and Peter Sullivan, both of 2245 Industrial Blvd., Sarasota, Fla. 34234

Filed Dec. 14, 1992, Ser. No. 990,236

Int. Cl.[5] A44B *1/04*

U.S. Cl. 24—487 **12 Claims**

1. An integrally molded clamp device of resilient polymeric material comprising a rigid base portion having a stop surface adjacent an end thereof, a clamp assembly moveably connected to said base portion, said clamp assembly including a first lever arm having first and second ends, a first hinge parallel to and spaced from said stop surface linking said first end of said first lever arm to said base portion, a second lever arm having a first end and a distal end, a second hinge member parallel to said first hinge member linking said first end of said second arm with said second end of said first arm, said distal end of said second arm being shifted toward and away from said stop surface responsive to movement of said second hinge



toward and away from said base portion, said clamp assembly being locked in stable clamping condition with said distal end yieldably biased toward said stop surface when said second hinge is shifted to a location between said base portion and a line extending between said stop surface and said first hinge.

5,285,557

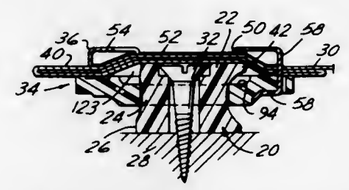
SNAP FASTENER AND TOOLING THEREFOR

Frederick G. Schriever, Grosse Pointe Shores, Mich., assignor to SnapFast Industries, Inc., Detroit, Mich.

Continuation of Ser. No. 765,437, Sep. 25, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 36,551

Int. Cl.[5] A44B *17/00*; A41F *1/00*

U.S. Cl. 24—662 **27 Claims**



1. A snap fastener for holding a fabric to a support comprising, in combination:

a stud having a relatively rigid pear shaped head and a shank for mounting to a support with the head uppermost;

a relatively rigid retainer having an aperture sized for snapping reception in one direction over the head of the stud and retention against removal except in said one direction;

a cap having a crown and a plurality of spaced apart prongs extending substantially perpendicular to the crown; said crown positionable on one side of a fabric and said retainer positionable on the opposite side of such fabric with said prongs extendable through the fabric and clinchable around and over the retainer independently of said aperture on the opposite side from said fabric to hold the fabric securely between the retainer and the crown with the fabric extending uninterruptedly over the head of the stud and held on the support to which the stud is mounted.

5,285,558

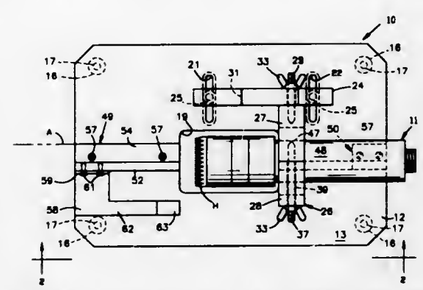
PILE CARPET BEVELER-TRIMMER APPARATUS

William E. Carder, 4 Spyglass Hill Rd., Fairport, N.Y. 14450, and Timothy Carder, 310 Cromwell Dr., Rochester, N.Y. 14610

Filed Mar. 19, 1992, Ser. No. 854,868

Int. Cl.[5] D06C *13/08*

U.S. Cl. 26—7 **18 Claims**



13. Apparatus for supporting a carpet trimming device for selectively performing beveling and trimming operations on pile carpet, comprising

a base plate having opposed side edges, and having an opening therethrough disposed to accommodate the cutting edge of a carpet trimming device, and said plate having planar upper and lower surfaces, respectively, said lower surface being disposed to slide on top of a nearly planar pile carpet surface during beveling and trimming operations,

means for supporting a carpet trimming device on the upper surface of said plate with the cutting edge of said device registering with said opening in said plate,

said supporting means including a support member slidably attached to said upper surface of said plate for lateral adjustment thereon in a direction extending transverse to said opposed side edges, and selectively towards and away from said opening;

means for mounting said carpet trimming device on said support member for adjustment therewith laterally of said opening, and for pivotal adjustment relative thereto about a first axis extending parallel to said upper surface of said plate, thereby to adjust the cutting edge of said device in one direction relative to said opening, and

said mounting means including means for adjusting said device about a second axis transverse to said first axis thereby to incline said cutting edge relative to said upper surface of said plate.

5,285,559

METHOD AND APPARATUS FOR ISOLATING ELECTRONIC BOARDS FROM SHOCK AND THERMAL ENVIRONMENTS

Craig Thompson, Redmond, and Lawrence L. Eakin, Bothell, both of Wash., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 10, 1992, Ser. No. 943,047

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—841 **8 Claims**

1. A method of isolating an electronic device from mechanical shock and thermal environments, comprising the steps of:

providing a mass of wax-like material having a high heat of fusion for absorbing a substantial quantity of heat before rising above a critical temperature limit, said mass taking the form of two pre-formed sections, one of said sections having an accessible cavity formed therein;

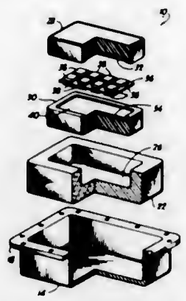
filling said cavity with a fluid that subsequently cures into a solid having a rubber-like consistency;

placing said electronic device into the fluid-filled cavity;

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assembling said two sections to render the cavity inaccessible;

applying heat insulating material around an outer surface of said mass of wax-like material for minimizing heat transfer to said electronic device; and



surrounding said heat insulating material with a metal shell for minimizing impact forces directed toward said memory device from outside said shell.

5,285,560

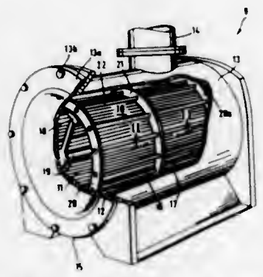
METHOD FOR REPAIRING A SCREEN PLATE ASSEMBLY

William Gero, Lanesboro, and Frank Paskowski, Pittsfield, both of Mass., assignors to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 678,465, Apr. 1, 1991, abandoned, which is a division of Ser. No. 510,332, Apr. 17, 1990, Pat. No. 5,023,986, which is a division of Ser. No. 206,151, Jun. 10, 1988, Pat. No. 4,954,249. This application Jan. 24, 1992, Ser. No. 825,745

Int. Cl.[5] B23P *6/00*

U.S. Cl. 29—402.08 **2 Claims**



1. A method for repairing a screen plate assembly for a pulp pressure screening apparatus, said method comprising:

removing the screen plate assembly from the pulp pressure screening apparatus; thereafter

loosening retaining elements secured between end rings of the screen plate assembly;

releasing end rings from opposite ends of a cylindrically-shaped screen section;

removing the screen section from the end rings;

obtaining a cylindrically-shaped screen section of corrugated material having been formed by bending from a relatively thin, flexible sheet-like material;

positioning end edges of the obtained cylindrically-shaped screen section in the end rings;

rigidifying the obtained screen section to withstand pressure screen operating pressures by tightening the retaining elements between the end rings, thereby compressing the end rings and the obtained screen section; and, thereafter reinserting and securing the plate assembly with the obtained screen section in the pressure screening apparatus.

5,285,561

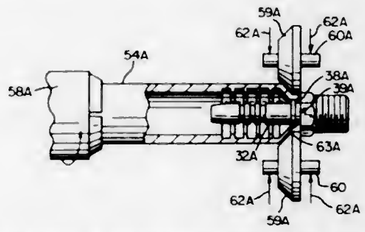
HOSE COUPLING, FERRULE THEREFOR AND METHODS OF MAKING THE SAME

Timothy J. Manning, Eldora, and Jerome P. Hoffman, New Providence, both of Iowa, assignors to Dayco Products, Inc., Dayton, Ohio

Filed Aug. 21, 1992, Ser. No. 934,048

Int. Cl.[5] B21H *8/00*

U.S. Cl. 29—417 **5 Claims**



1. In a method of making a hose coupling that comprises a ferrule having opposed ends and an insert interconnected to one of said ends of said ferrule so that an end of a hose can be inserted into the other of said ends of said ferrule and over said insert to be subsequently clamped between said ferrule and said insert, the improvement comprising the steps of forming said ferrule from a length of tubular stock that has opposed ends by rotating said stock, inserting part of said insert into one of said opposed ends of tubular stock, inwardly swedging said stock at said one of said opposed ends thereof to define said one end of said ferrule while said stock is rotating and to interconnect said one end of said ferrule to said part of said insert, and then cutting off a portion of said stock at a desired location thereon that is spaced inwardly from said one end of said stock to form said other end of said ferrule and to complete said coupling while said desired location on said stock becomes a new one end thereof for forming another coupling in the above manner.

5,285,562

APPLICATOR APPARATUS FOR PUSH-ON TYPE FASTENERS

Branko Bidefeld, Marietta, Ga., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 9, 1992, Ser. No. 988,211

Int. Cl.[5] B25C *1/04*

U.S. Cl. 29—525 **16 Claims**

1. Apparatus for installing a pushnut fastener on a rod or stud comprising:

an elongated main housing body having first and second axial ends;

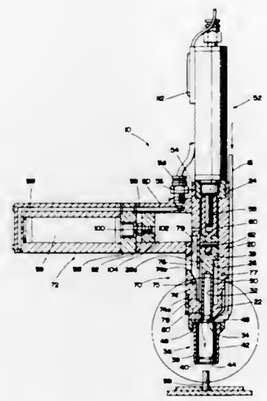
a guideway extending axially inward from the first end of the body;

a pushrod mounted in the guideway with a sleeve-like end portion, the pushrod being movable between a first position extending out of the body and a second position within the body;

a radially resilient tubular chuck having an open inlet end and open outlet end, the chuck having its inlet end joined to the body in axial alignment with the guideway to surround the sleeve-like end portion of the pushrod when the pushrod is in the first position;

an air cylinder first power means for moving the pushrod from the second to the first position when energized and returning the pushrod to the second position when de-energized;

feed means operable for supplying pushnut fasteners to the inlet end of the chuck when the pushrod is in the second position;



drive means operable when the first power means is energized for driving the pushrod from the first position to a third position beyond the second position; and,

trigger means for selectively releasing the drive means after the pushrod has been driven to the third position to permit the first power means to suddenly return the pushrod to the first position.

5,285,563

METHOD OF MAKING A STATIC ELECTROMAGNETIC INDUCTOR

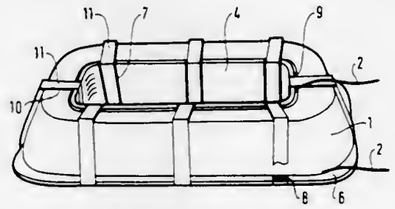
Marie-Claude Nove, Paris, and Michel Kouyoumdjian, Chatou, both of France, assignors to Rotelec, Bagnolet

Filed Jan. 7, 1992, Ser. No. 817,624

Claims priority, application France, Jan. 11, 1991, 91 00297

Int. Cl.[5] H02K *15/06*

U.S. Cl. 29—596 **7 Claims**



1. A method of making a static electromagnetic inductor including the following components:

a magnetic circuit yoke made of a ferromagnetic material;

magnetic circuit pole pieces made of a ferromagnetic material, which pieces project successively from a pole face of said yoke, each of the pieces extending along a pole axis and presenting a peripheral surface surrounding said axis;

excitation windings each made of an insulated conductor wound about a winding axis, the windings having been impregnated with a resin that has set and being respectively disposed coaxially around said pole pieces so as to constitute a sequence of pole blocks each including an association of one of said pole pieces and one of said windings; and

electric power supply means to supply said windings with excitation electrical currents;

said method comprising the steps of:

making said magnetic circuit,

making said pole blocks; wherein each step of making a pole block includes the following steps:

making a winding made of an insulated conductor wound about a winding axis, making a rigid insulating winding support which includes at least one tubular winding former around a central hole; and

installing said winding on said winding support around said winding former on said pole piece which is associated therewith;

locking said winding on said winding support by means of shims and bindings and further locking of said winding block onto its associated pole piece by means of winding block keys interposed in a removable manner between said winding former and said peripheral surface of the pole piece; and

impregnating a winding assembly made up of said winding support, said winding, said shims and said bindings such that said central hole is retained so as to form a winding block which is annular in overall shape, and wherein said step of installing the winding further comprises installing said winding block around said pole piece that is associated therewith.

5,285,564

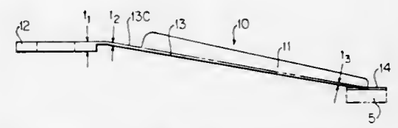
METHOD OF MAKING A MAGNETIC HEAD SUPPORT

Katsuhiro Imasaki, Kyoto, Japan, assignor to Suncall Corporation, Kyoto, Japan

Filed Apr. 10, 1992, Ser. No. 866,980

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **1 Claim**



1. A method of producing magnetic head support structures, comprising the steps of;

processing a linear steel material successively through pressure rolls and forming rollers to form rolled steel material ribbon having a profile cross-section in which a thick attaching base forming portion, a thin load beam forming portion and a thin gimbals spring forming portion are continuously formed between tie bars at opposite ends and orthogonal to the rolling direction,

lengthwise processing a lateral surface of said profile cross-section steel material ribbon to form an intermediate structure in which a number of magnetic head support structure elements are formed orthogonal to and between the tie bars at the opposite ends and juxtaposed with a predetermined pitch in which the attaching base portion, load beam portion and gimbals spring portion are connected on the same axis,

subjecting said intermediate structure to a forming process to curve the load beam portion while notching or cut-raising the gimbals spring portion at the magnetic head slider mounting position, and

severing the plurality of magnetic head support structures from the tie bars at the opposite ends.

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5,285,565

METHOD FOR MAKING A TRANSFORMER CORE COMPRISING AMORPHOUS STEEL STRIPS SURROUNDING THE CORE WINDOW

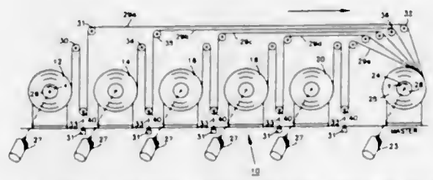
Donald E. Ballard, Conover, and Willi Klappert, Hickory, both of N.C., assignors to General Electric Company, Malvern, Pa.

Continuation of Ser. No. 622,364, Dec. 5, 1999, Pat. No. 5,050,294, which is a continuation of Ser. No. 505,593, Apr. 6, 1990, abandoned. This application Aug. 14, 1991, Ser. No. 746,235

The portion of the term of this patent subsequent to Sep. 24, 2008, has been disclaimed.

Int. Cl.[5] H01F *41/02*

U.S. Cl. 29—609 **4 Claims**



1. A method of making a transformer core comprising strips of amorphous metal wrapped about a window of the core, said method comprising the steps of:

(a) providing a first plurality of spools of amorphous metal strips;

(b) from said first plurality of spools selecting a second plurality of spools containing amorphous metal strip having preselected magnetic properties;

(c) unwinding said amorphous metal strip from each of said spools in said second plurality and combining said strip from each of said spools in said second plurality into a strip of multiple layer thickness;

(d) unwinding the multiple-layer thickness strips from a plurality of master reels wound with multiple-layer thickness strips provided as in (a) (b) and (c) and combining said multiple-layer thickness strips into a composite strip, and

(f) constructing with said composite strip a hollow core form having a window about which said composite strip is wrapped.

5,285,566

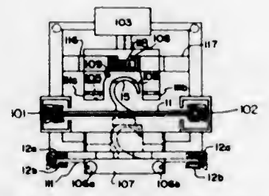
SYSTEM FOR ASSEMBLING CLOTHES HANGERS WITH INDEX-CODED CAPS

David J. Marshall, Victoria, Australia; Stanley Gouldson, Northport, N.Y.; John Mazza, Indianapolis, Minn.; Olaf Olk, Hauppauge, N.Y., and Robert Malorca, Syosset, N.Y., assignors to Plasti-form Enterprises, Inc., Deer Park, N.Y.

Division of Ser. No. 670,963, May 2, 1991, which is a continuation-in-part of Ser. No. 287,985, Dec. 20, 1988, abandoned. This application Sep. 30, 1992, Ser. No. 954,256

Int. Cl.[5] B23P *21/00*; B23Q *7/10*

U.S. Cl. 29—783 **13 Claims**



13. A system for producing a plurality of hangers wherein each hanger has an index-coded cap, said system comprising:

a plurality of index-coded caps, wherein each index-coded cap has at least one indexing indicia related to a specific characteristic of a respective garment to be hung from a respective hanger;

means for aligning and stacking said plurality of index-coded caps in a predetermined relationship to produce a stack of index-coded caps;

means for transporting said stack of index-coded caps to a location where each index-coded cap is to be affixed to a respective hanger; and

means for sequentially affixing each index-coded cap to a respective hanger at said location, each index-coded cap being secured to its respective hanger at the time said garment is hung therefrom.

5,285,567

MACHINE FOR APPLYING FASTENER DEVICES

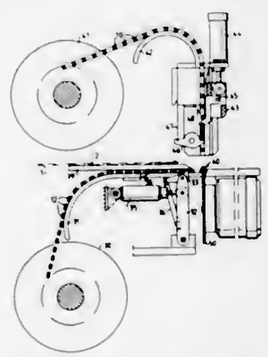
Hermann Thuswaldner, Gamleby, Sweden, assignor to Barracuda Technologies AB, Gamleby, Sweden

Division of Ser. No. 784,663, Oct. 24, 1991, Pat. No. 5,163,552, which is a continuation of Ser. No. 476,457, Jun. 8, 1990, abandoned. This application May 1, 1992, Ser. No. 877,884

Claims priority, application Sweden, Oct. 12, 1988, 8803629-8

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—786 **3 Claims**



1. A machine for applying fastener devices in a manner to join plastic film to a reinforcing net, having means for advancing at least two webs to be joined one to the other, including a first supply on one side of webs of banded female fastener parts, and a second supply for banded male fastener parts on an opposite side of said webs, wherein the supply for banded female fastener parts includes a first magazine (**30**), a path (**31**) for advancing female fastener parts from the first magazine to a fastener anvil (**40**) provided with a counter-force surface, feed means (**32-36**) for advancing female fastener parts (**12**) to the anvil (**40**) one at a time, means for disengaging female fastener parts (**12**) singly from the female fastener band, wherein the supply for banded male fastener parts includes a second magazine (**41**), a path (**42**) for advancing male fastener parts from the second magazine (**41**) to a position opposite the fastener anvil, wherein the male fastener parts (**10**) are provided with elements (**15**) which extend outwardly in the band of male fastener parts, a reciprocatingly movable slide (**43**), and a pivotable hammer and feed device (**45**) which is pivotally mounted adjacent the slide and operative in one direction of movement to feed an outermost male fastener part (**10**) in said band towards said fastener anvil and to disengage said fastener part from said band and press the pins of said male fastener part through a female fastener part located in the anvil (**40**) and at the same time penetrating material joined to the net, and wherein in the second movement direction the hammer and

feed device is swung away from the band so as to feed a further male fastener part (**10**).

5,285,568

APPARATUS FOR THE AUTOMATIC INSTALLATION OF EXPANDER RINGS INTO SPLIT PISTON RINGS

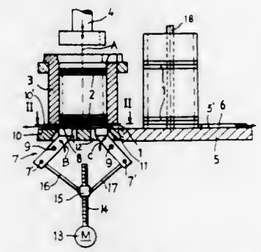
Walter Johann, Wermelskirchen, and Reiner Kierst, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 63,556

Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216652

Int. Cl.[5] B23Q *7/10*; B23P *19/04*

U.S. Cl. 29—809 **6 Claims**



1. An apparatus for inserting an expander ring into an inner circumferential groove of a split piston ring, comprising

(a) a first magazine for storing a stack of piston rings;

(b) a second magazine for storing a stack of expander rings; said second magazine having a discharge end and a longitudinal axis coinciding with longitudinal axis of the expander ring stack;

(c) means for displacing a piston ring from said first magazine into axial alignment with said longitudinal axis of said second magazine at said discharge end thereof;

(d) spreader means for radially outwardly spreading the piston ring positioned at said discharge end; and

(e) pusher means for pushing an expander ring from said second magazine parallel to said longitudinal axis into the piston ring spread-open by said spreader means.

5,285,569

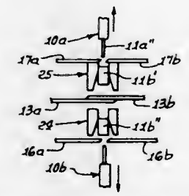
METHOD OF PROCESSING WIRE USING MULTIPLE BLADE SET

Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Company, Monrovia, Calif.

Division of Ser. No. 659,557, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Apr. 13, 1992, Ser. No. 867,466

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—825 **11 Claims**



1. In the method of processing wire to cut the wire into sections and to strip sheathing from the wire to expose wire ends at opposite ends of the sections, and by operation of wire feed means and cutter means, the steps that include operating the feed means and cutter means to:

a) displace the wire endwise along an axis to a first position,

b) sever the wire thereby to form wire forward and rearward sections, the forward section having a rearward end portion, and the rearward section having a forward end portion, and

c) strip sheathing from the forward section rearward portion and from the rearward section forward portion thereby to expose wire ends at said portions,

d) said cutter means including three blade pairs, each pair including two blades located at opposite sides of said axis, both blades of one pair being displaced toward the wire to sever the wire, and including the step of displacing both blades of the remaining two pairs toward the wire sections to strip sheathing from said rearward and forward portions during controlled endwise displacement of said sections,

e) said displacing of the blades of the remaining two blade pairs toward the wire sections being carried out to control penetration of the blades into the sheathing to selected depth,

f) separating said sections axially relatively endwise after said step b) severing of the wire and prior to said step c) stripping of sheathing, said separating of the sections being carried out by advancing one section and retracting the other section, relative to said one blade pair,

g) and including means for advancing said one section and retracting said other section, said means including forward and rearward pairs of endless conveyors, each pair of conveyors defining a wire gripping zone, and including the step of maintaining said zones in alignment with said wire sections during said further separating of the sections, axially.

5,285,570

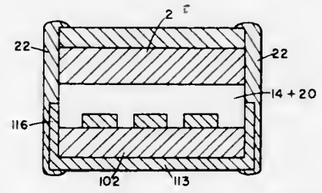
PROCESS FOR FABRICATING MICROWAVE AND MILLIMETER WAVE STRIPLINE FILTERS

Napoleon A. Fulinara, San Diego, Calif., assignor to Stratedge Corporation, San Diego, Calif.

Filed Apr. 28, 1993, Ser. No. 54,743

Int. Cl.[5] A05K *3/36*

U.S. Cl. 29—830 **17 Claims**



1. A process for fabricating a stripline filter using pre-fired ceramic technology comprising the steps of:

providing a first pre-fired ceramic substrate having a predetermined coefficient of thermal expansion, a first top surface, a first bottom surface and a first plurality of sides;

printing a first conductive film onto said first top surface;

patterning said first conductive film to define a filter trace pattern;

printing a second conductive film onto said first bottom surface;

painting a third conductive film onto said first plurality of sides of said first substrate;

printing a first seal glass over said first top surface and said filter trace pattern, said first seal glass having a substantially same coefficient of thermal expansion as said predetermined coefficient of thermal expansion;

providing a second pre-fired ceramic substrate having said predetermined coefficient of thermal expansion, a second top surface, and a second bottom surface;

lapping said second substrate so that said second top surface

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and said second bottom surface are uniformly spaced across said substrate;

printing a fourth conductive film onto said second top surface;

printing a second seal glass onto said second bottom surface, said second seal glass having said substantially same coefficient of thermal expansion;

forming an assembly by disposing said second bottom surface abutting said first top surface, aligning said first plurality of sides with said second plurality of side;

firing said assembly to bond said first substrate to said second substrate by bonding said first seal glass to said second seal glass; and

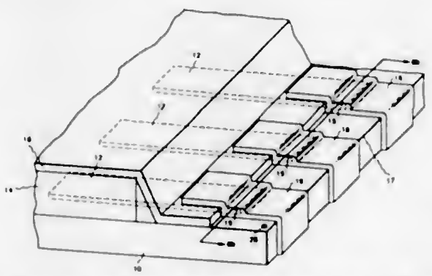
painting a fifth conductive film on said first plurality of sides and said second plurality of sides.

5,285,571

METHOD FOR EXTENDING AN ELECTRICAL CONDUCTOR OVER AN EDGE OF AN HDI SUBSTRATE

Thomas B. Gorczyca; Paul A. McConnelee, and Richard J. Saia, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,886
Int. Cl.[5] H05K *3/24, 3/28*
U.S. Cl. 29—848 **10 Claims**



1. A method for extending an electrical conductor over an edge of a substrate, the conductor being situated within a first dielectric layer previously fabricated on a surface of the substrate and being conductively coupled to an integrated circuit situated on one portion of the substrate surface, comprising the steps of:

ablating a part of the existing first dielectric layer on a second portion of the substrate, devoid of any integrated circuit, to expose a portion of the electrical conductor situated in the second substrate portion;

applying a second dielectric layer over at least a part of the first dielectric layer and over the second substrate portion and including the exposed electrical conductor portion, with the second dielectric layer not being applied to a region extending from an edge of the substrate onto an adjacent electrical conductor extremity portion, said edge disposed at an angle to the substrate surface; and

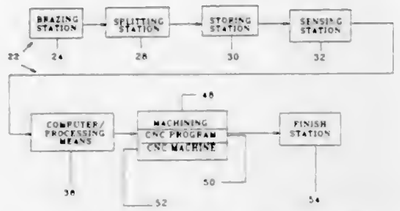
applying an electric-conducting extension means patterned to cover a portion of the second dielectric layer, a part of the electrical conductor extremity portion, and at least a portion of the angularly-disposed substrate edge.

5,285,572

METHOD AND SYSTEM FOR MACHINING CONTOURED PARTS

Rajendra P. Rathi, West Chester; David C. Fairbourn, Fairfield, and Joseph H. Nurre, Athens, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 12, 1992, Ser. No. 928,384
Int. Cl.[5] B23P *6/04;* **B23C** *3/18*
U.S. Cl. 29—889.1 **21 Claims**



1. A method for machining a workpiece using measurements taken from a surface of the workpiece, said method comprising the steps of:

(a) preparing the workpiece for machining;

(b) sensing a series of original digitized contour data points along the surface of the workpiece, said series of original digitized contour data points each lying in a common plane;

(c) calculating an original digitized contour profile corresponding to said series of original digitized contour data points;

(d) generating an energy function array based upon preselected energy parameters and a preselected step size;

(e) generating a revised contour profile using revised data points which are calculated using said series of original digitized contour data points and said energy array;

(f) repeating said steps (b)–(e) for another series of original digitized contour data points which lie in another imaginary plane;

(g) generating a machining profile from said revised contour profiles; and

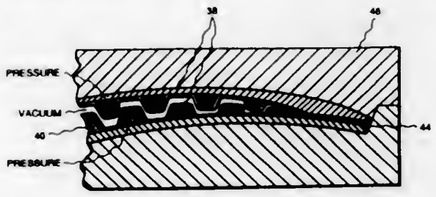
(h) machining said workpiece in accordance with said machining profile.

5,285,573

METHOD FOR MANUFACTURING HOLLOW AIRFOILS (FOUR-PIECE CONCEPT)

Jeffrey LeMonds, Clifton Park, N.Y.; Jung-Ho Cheng, Taipei, Taiwan; Gene E. Wiggs, West Chester, Ohio; Gary T. Martini, Loveland, Ohio, and Richard M. Cogan, Cincinnati, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 803,853, Dec. 9, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 29,286
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—889.72 **19 Claims**



8. A method of making hollow airfoils having a desired shape comprising the steps of:

forming two face sheets into respective in-process shapes;

forming two core sheets into respective in-process shapes;

machining a plurality of cavities in each of said two face sheets;

applying stopoff to each of said cavities;

arranging each of said face sheets with a corresponding one of said core sheets to form two in-process sub-assemblies;

applying external pressure to each of said two sub-assemblies so that the portions of said face sheets that lack stopoff diffusion bond to said corresponding core sheet;

applying internal pressure to each of said cavities so that each in-process sub-assembly superplastically deforms into an inflated sub-assembly;

arranging said inflated sub-assemblies together to form a single assembly with said two core sheets disposed between said two face sheets; and
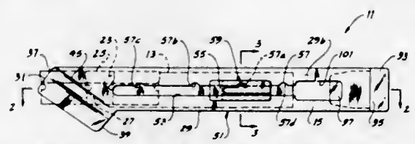
applying internal pressure to each of said cavities so that said two sub-assemblies bond together.

5,285,574

CARTON OPENER

Dennis P. Feltner, West Chester, Ohio, assignor to Cosco Industries, Inc., Spring Valley, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,931
Int. Cl.[5] B67B *7/00;* **B26B** *3/06*
U.S. Cl. 30—2 **3 Claims**



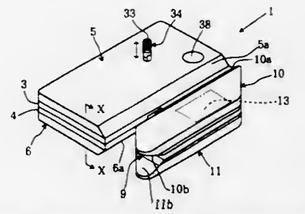
1. A carton opener capable of cutting a carton comprises a blade holder of the type adapted to receive and hold a single edged razor blade, a sheath having a body portion including two side walls closely fitted about said blade holder, and a guide member extending generally forward of said body portion, said blade holder being adapted to slide within the sheath to anyone of a plurality of temporary locking positions including a blade retracted position in which the body portion of the sheath covers the blade, a first blade cutting position in which the blade held by the holder extends out forward of the body portion for cutting an edge of the carton with the aid of the guide member which guides the opener along the edge of the carton, a second blade cutting position in which the blade holder extends forwardly from the first cutting position such that the edge of the blade is positioned beyond the guide member, the guide member in the second blade cutting position being adapted to control the depth of the cut, and a blade extended position in which the blade holder extends forwardly of the second cutting position and forward of the body portion sufficiently to allow the blade to be removed and a new blade inserted into the blade holder, manually operable means for temporarily locking said blade holder in any one of said locking positions so as to prevent movement of the blade holder by application of force on the blade, said temporary locking means comprising a slot formed on one of said side walls longitudinally along the length of the sheath and a moving member attached to the blade holder extending from the blade holder through the slot, the moving member being in registry with the slot for moving the blade holder longitudinally with respect to the sheath, the slot having four recesses formed in one side of the slot, a first recess for positioning the blade holder in its first blade cutting position, a second recess for positioning the blade holder in its second blade cutting position, a third recess for positioning the blade holder in its blade extended position and a fourth recess for positioning the blade holder in its blade retracted position, the moving member comprising a detent spring-biased to the side of the slot having the recesses for releasably engaging the recesses when the detent is adjacent thereto, the recesses receiving the detent for positioning the blade holder relative to the sheath until a sufficient force is exerted on the moving member to move it against the bias of the detent such that the detent disengages a recess and engages the side of the slot, the moving member comprising a generally planar base adapted to slide within the sheath and being captured by the blade holder, a stem extending upwardly from the base through the slot for moving the blade holder with respect to the sheath, and a retaining cap removably attached to the stem opposite of the base, the retaining cap and the base having a greater width than the width of the slot and the stem having a lesser width than the width of the slot, the carton opener further comprising means for resisting movement of the moving member when nominal forces are exerted on the retaining cap of the moving member, the stem having a cavity formed therein which is accessible through an opening, said resisting means comprising two spaced apart fingers extending downwardly from the retaining cap through the opening in the cavity, the moving member having a spring which is engaged by the fingers for positioning the retaining cap relative to the stem, the arrangement being such that the retaining cap is capable of moving slightly without moving the base and the stem of the moving member when forces are inadvertently exerted on the moving member.

5,285,575

CUTTER

Toru Hirano, 609, 3-1, Etchujima 1-chome, Koto-ku, Tokyo 135, Japan

Filed Nov. 12, 1992, Ser. No. 974,498
Claims priority, application Japan, Nov. 15, 1991, 3-327008
Int. Cl.[5] B67B *7/00*
U.S. Cl. 30—2 **7 Claims**



1. A cutter comprising: a pair of superposed holders secured to one another; a pair of open-close bodies rotatably supported by said holders, respectively, at corresponding edges of said holders, said open-close bodies defining a cutting area therebetween through which an article to be cut can be passed; and a cutting blade mounted to said holders and extending into said cutting area from said corresponding edges of said holders.

5,285,576

TOOL FOR GROOVING OR CUTTING PIPES

Clive N. Taylor, 15 Canford Cliffs Road, Poole Dorset BH13 7YF, United Kingdom

PCT No. PCT/GB89/01392, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO90/05610, PCT Pub. Date May 31, 1990
PCT Filed Nov. 22, 1989, Ser. No. 793,381
Claims priority, application United Kingdom, Nov. 22, 1988, 8827226
Int. Cl.[5] B23D *21/06;* **B26D** *3/16*
U.S. Cl. 30—94 **20 Claims**

1. A tool for treating a pipe, said tool comprising:

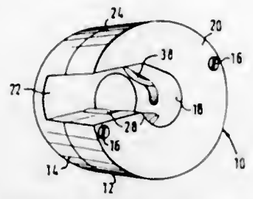
a body having an aperture for receiving a portion of the pipe to be treated,

pipe support means displaceably mounted on the body so as to be displaceable to project into the aperture to a variable extent,

a pipetreating wheel rotatably mounted on the body so that the pipe portion in the aperture is engageable between the pipe-treating wheel and the pipe support means, the pipe-

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treating wheel being displaceable along a predetermined path relative to the pipe portion such that its operative portion moves inwardly relative to the pipe portion, and



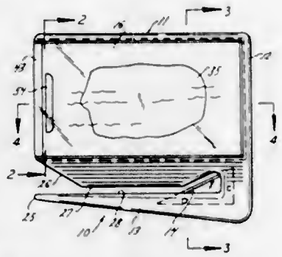
a rotatably mounted cam arranged to adjust the position of the support means.

5,285,577

LETTER OPENER WITH PROTECTED RECESS FOR BUSINESS CARD AND REMOVABLE SLIDE-IN COVER

Albert P. Carney, and David P. Lage, both of St. Louis County, Mo., assignors to Quick Point, Inc., Fenton, Mo.

Filed May 22, 1992, Ser. Nn. 887,086
Int. Cl.[5] B26B *29/00*
U.S. Cl. 30—294 **6 Claims**



1. A calling card letter opener comprising:

(a) a main body having a first member having a front face and a rear face, said front face being provided with a substantially rectangular recess sized to accept a calling card, said recess having side and front edges and an open back edge, and a second finger shaped member connected to the first member at one end and extending generally parallel to and spaced from the first member, the juncture of the first and second members defining a loop shaped corner;

(b) a cutting edge embedded in the first and second members at their juncture and extending into and exposed at the corner there between;

(c) a removable substantially rectangular slide-in transparent cover member adapted to enclose the recess in the first member and retain and protect a calling card located therein, and permit it to be viewed there through, the cover member being slidable into the recess from the said substantially open edge; and

(d) means associated with the cover member and the recess to permit the cover to be slid over the recess from the open edge and locked in place.

5,285,578

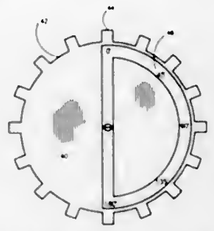
GAUGES FOR DETERMINING WHETHER STANDARDS FOR STEEL REINFORCING BARS ARE MET

Brent Sovereen, 2525 Kenwood St., Salt Lake City, Utah 84106

Filed Jan. 7, 1992, Ser. No. 817,605
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—1 N **4 Claims**

1. A gauge for determining whether a dimension or dimensions of a particular allowable size bend in a particular size steel reinforcing bar of the type used in concrete construction is or are more or less than the established allowable limit or limits, comprising:

a gauge body formed to provide at least a sector arc portion of a circular disc having a diameter approximating the minimum allowable bend diameter for a particular bar bend size in a particular size of reinforcing bar, said circular disc taking into account any deformations on said bar



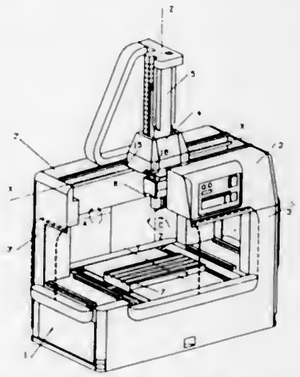
and having a diameter selected from allowable bend dimensions of allowable reinforcement bar diameters; a protractor pivotally attached at the center of the gauge body for lining up with the beginning and ending of the bar bend, whereby when said sector arc portion of said gauge body is abutted against the inside of a bar bend it can be determined by observation of the interface between said gauge and said bend whether the bend has exceeded the minimum bend diameter.

5,285,579

TRIDIMENSIONAL MULTIFUNCTION PLOTTER

Corsi Armando, Piacenza, Italy, assignor to Jobs S.p.A., Piacenza, Italy

Filed Feb. 14, 1991, Ser. No. 656,239
Claims priority, application Italy, Feb. 22, 1990, 44804 A/90
Int. Cl.[5] G05B *19/403;* **B23Q** *15/00;* **G06F** *15/46;* **G01B** *7/03*
U.S. Cl. 33—18.1 **3 Claims**



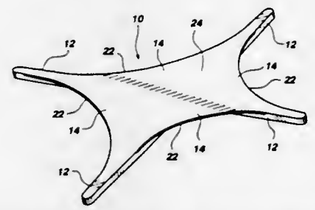
1. A tridimensional plotter for making a model of a CAD surface file, the plotter, comprising: an operating head for carrying an interchangeable tool having a known shape; a support for movably carrying the head; means for mounting the support for movement of the support along a first horizontal axis (x); a sleeve mounted for movement along a vertical axis (z) to the support, the head being connected for movement to the sleeve, the means for mounting the support comprising a horizontal guide, the support being mounted for horizontal movement along the horizontal guide, the horizontal guide comprising a pair of spaced apart beams, a machine framework for supporting the pair of beams, the support being mounted for horizontal movement between and along the beams; a table mounted for movement along a second horizontal axis (y) which is perpendicular to the first horizontal axis of movement of the support, the table being mounted to the framework, a plurality of electronic devices for controlling movements of the head on the sleeve, for movement of the sleeve on the support, for movements of the support along the pair of beams and for movement of the table on the framework; and a data processing unit integrated into the electronic devices for processing a CAD surface file to produce an NC file for operating the electronic devices; the NC file containing data for moving the head, sleeve, support and table, and the data processing unit being connected to the electronic devices for moving the head, sleeve, support and table according to the NC file; the data processing unit also including non-linear interpolation means for creating trajectories and paths of movement for the head, sleeve, support and table, in the NC file, which compensate for the tool shape to form an accurate model.

5,285,580

TEMPLATE FOR MARKING ROUNDED CORNERS

Robert J. Christensen, 210 E. 1000 South, Brigham City, Utah 84302

Filed Oct. 9, 1992, Ser. No. 958,893
Int. Cl.[5] B43L *13/20*
U.S. Cl. 33—565 **10 Claims**



1. A device for marking an arc of a predetermined radius at a square corner, said square corner having a face and free exterior edges such that the arc is marked upon the face when the device is asymptotically fitted to said exterior edges, the device comprising:

a plurality of positioning members, each positioning member including first and second edge members which form a right angle therebetween and which form an interior face configured for positioning against the exterior edges of the square corner in a seated position, and

a main body plate connected to the positioning members to thereby form a plurality of three-sided receiving pockets, each receiving pocket for selectively receiving the square corner, the main body plate configured for placement against a portion of the face of the square corner in a seated position and further including:

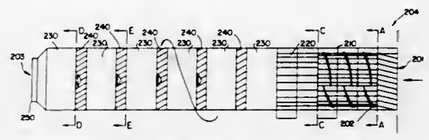
a plurality of planar, interconnected concave arc members positioned such that each arc member extends across the right angle formed between one of said first and second edge members and is symmetrically disposed between said edge members, so that at least a portion of each edge member is non-planar with its corresponding arc member and forms a side wall of its corresponding receiving pocket, said edge members being disposed on and extending from said arc members, each arc member having a free concave arcuate edge extending between its corresponding edge members to provide a guide for marking an arc on the square corner.

5,285,581

METHOD FOR DRYING WASTE MATERIALS

David R. Walker, Clearwater, Fla., assignor to Combustion Design Corporation, Tampa, Fla.

Division of Ser. No. 510,421, Apr. 18, 1990, Pat. No. 5,080,581.
This application Oct. 30, 1991, Ser. No. 785,276
Int. Cl.[5] F26B *17/00*
U.S. Cl. 34—28 **31 Claims**



1. A method of uniformly drying a moisture-laden material, comprising the steps of:

(A) introducing hot gasses and said moisture-laden material into a first longitudinal end of a dryer comprising a preheating portion and a mixing portion; then

(B) conveying said material through said preheating portion such that said material is heated by but is shielded from direct contact with said gasses, thereby ensuring that said material is not subject to combustion; then

(C) conveying said material through said mixing portion such that said material is uniformly mixed with said gasses and is dried to a predetermined moisture level; then

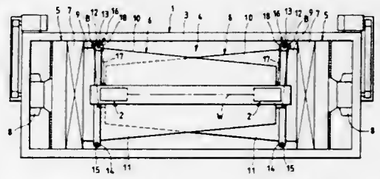
(D) conveying said material and said gasses out of a common outlet formed in a second longitudinal end of said dryer.

5,285,582

OVEN FOR A TRANSVERSE STRETCHING APPARATUS

Kunihiro Kouchi, and Kimiyasu Hanaki, both of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,387
Claims priority, application Japan, May 27, 1991, 3-225434
Int. Cl.[5] F26B *13/00*
U.S. Cl. 34—155 **3 Claims**



1. An oven employable for a transverse stretching apparatus, comprising:

a pair of air chambers, one of said air chambers being arranged on each side of a film passageway defined in the oven;

at least one radiator operatively coupled with each of said air chambers and extending above and below the film passageway in a direction substantially perpendicular to a length of the film passageway;

a plurality of nozzle units arranged in the oven, each nozzle unit being operatively connected to one of said air chambers and comprising an upper nozzle which extends across a width of the film passageway at a position above the film passageway and a lower nozzle which extends across a width of the film passageway at a position below the film passageway, said upper and lower nozzles being configured to direct hot air toward the film passageway; and

a blower coupled with said air chambers so as to cause air to flow through said radiators into said air chambers and subsequently into said nozzle units;

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said upper and lower nozzles being alternately connected to one of said air chambers through a hinged device so as to allow said upper nozzles to pivot upward and away from the film passageway and so as to allow said lower nozzles to pivot downward and away from said film passageway.

5,285,583

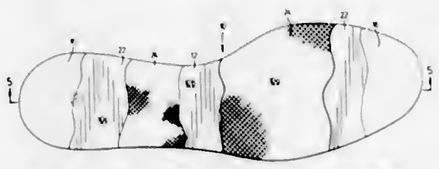
PUNCTURE RESISTANT INSOLE FOR SAFETY FOOTWEAR

Albertus A. W. Aleven, Markdale, Canada, assignor to Terra Nova Shoes Ltd., Harbour Grace, Canada

Continuation-in-part of Ser. No. 636,591, Jan. 2, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 956,978

Int. Cl.[5] A43B *13/38*

U.S. Cl. 36—44 **2 Claims**



1. A protective insole for safety footwear comprising

an integral protective layer composed of plastic comprising a polyamide substantially conforming in size and shape to a sole area of the footwear and including a heel portion and a relatively more flexible forepart portion,

an insole board bonded by the plastic to a bottom surface of the plastic over substantially the entire area of the protective layer, and

a fabric layer bonded by the plastic to a top surface of the plastic over substantially the entire area of the protective layer,

wherein the plastic has an Izod Impact Strength ranging from approximately 16.8 ft-lb/in to 20.6 ft-lb/in at 73° F., and from approximately 2.1 ft-lb/in to 2.7 ft-lb/in at −40° F., for a thickness of 0.125 inches; and a flexural stress ranging from approximately 10,400 lb/in^2 to 12,800 lb/in^2 as molded and from approximately 3,250 lb/in^2 to 3,950 lb/in^2 conditioned.

5,285,584

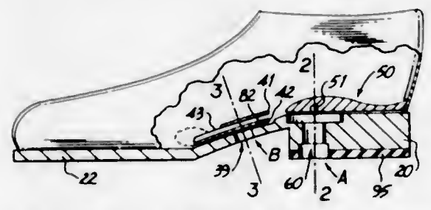
MECHANICAL CUSTOM MOLDING OF FOOTGEAR

Benjamin B. Dubner, 84 Marcus Ave., New Hyde Park, I.I, N.Y. 11040

Filed Jun. 12, 1991, Ser. No. 713,778

Int. Cl.[5] A43B *13/38, 7/14, 7/22*

U.S. Cl. 36—88 **2 Claims**



1. Footwear having an inner sole structure adapted to conform to the arch shape of the foot of the wearer first and second mechanical support means selectively positioned beneath the inner sole in proximity to a respective one of the arches of the foot, said first mechanical support means being fixedly adjustable in an up and down direction to cause said inner sole to engage the foot in the area of its associated arch, said second mechanical support means being fixedly adjustable in the forward and backward direction to cause said inner sole to engage the foot in area of associated arch wherein said first means to move separate areas of the inner sole in a selectively up and down direction include a semi rigid part disposed over an elevating screw disposed within a retaining screw that is secured, at least at its upper and lower ends, within a through bore of the sole of the footgear, and where said elevating screw has a partial bore with a pin disposed therein in a spline relationship, a compression spring interspersed between the closed end of the partial bore and said pin, and where the lower securing means of said retaining screw has a bore generally similar in shape of said pin, said bore being lipped to prevent through penetration of said pin, said lipping having sufficient open bore to selectively admit a bladed piece that fits a cut out area in the bottom of said pin to push and rotate said pin.

5,285,585

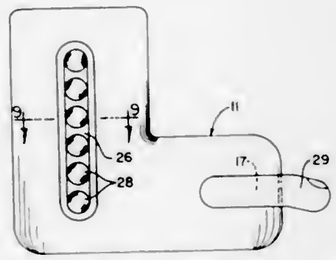
SOUND EMITTING INFANT BOOT STRUCTURE

Sharene M. Baker, 905 E. 26th St., Farmington, N. Mex. 87401

Filed Jan. 26, 1993, Ser. No. 9,150

Int. Cl.[5] A43B *3/30*

U.S. Cl. 36—112 **1 Claim**



1. A sound emitting infant boot structure, comprising,

an outer boot shell and an inner boot shell, having an enclosed pneumatic chamber therebetween, with a whistle member directed through the outer boot shell in communication with the pneumatic chamber arranged to emit an audible whistle upon compression of the pneumatic chamber during a walking procedure, and

the whistle member includes a rigid support tube, with the outer boot shell and inner boot shell formed of a flexible pneumatically impermeable material, and

the support tube includes a first, second, and third diaphragm plate, and the first diaphragm plate having a first whistle aperture, the second diaphragm plate having a second whistle aperture, the third diaphragm plate having a third whistle aperture, and wherein the first whistle aperture, the second whistle aperture, and the third whistle aperture are offset relative to one another within the support tube, and

an outer shell recess directed into the outer boot shell, wherein the outer boot shell recess includes a row of spherical members, each spherical member rotatably mounted about an axle within the recess for entertainment of an infant, and

a plurality of toe projections projecting beyond the outer boot shell, with at least one of the toe projections having pneumatic communication with the pneumatic chamber, whereupon compression of the at least one toe projection effects compression of air from within the pneumatic chamber for effecting a whistle through the member, and

a further one of the toe projections includes a fluid reservoir having an adjustable fluid therewithin, and a partition wall positioned within the further one toe projection, and the partition wall having a reservoir aperture directed therethrough in communication with the at least one toe projection extending beyond the outer boot shell, and

wherein the at least one toe projection extending beyond the outer boot shell includes a plurality of toe projection apertures in fluid communication with the fluid reservoir and the fluid reservoir aperture, and wherein the at least one toe projection extending beyond the outer boot shell is formed of a fluid impermeable material permitting fluid flow only through the toe projection apertures.

5,285,586

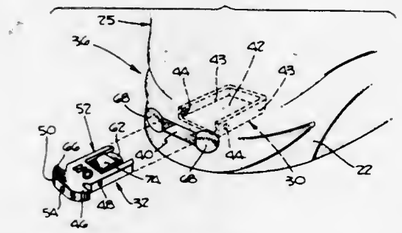
ATHLETIC SHOE HAVING PLUG-IN MODULE

Mark R. Goldston, 4221 Redwood Ave., Los Angeles, Calif. 90066; Jon L. Bemis, 14 Spruce St, Middleboro, Mass. 02346, and Carmen C. Rapisarda, 2650 Myrtle Ave., STE B-7, Monrovia, Calif. 91016

Continuation-in-part of Ser. No. 806,925, Dec. 11, 1991. This application Jun. 26, 1992, Ser. No. 917,000

Int. Cl.[5] A43B *23/00*

U.S. Cl. 36—137 **5 Claims**



1. An athletic shoe comprising:

an upper;

a sole attached to said upper along an upper surface thereof, said sole including a recessed cavity formed in a side surface thereof;

a plug-in module removably retained in said cavity in said sole, the plug-in module containing illumination means, activated by pressure from a foot of a wearer during walking, for emitting light which is visible from said side surface of said sole, wherein said illumination means comprises power source means for supplying electrical energy, light emitting means, responsive to the electrical energy supplied from the power source means, for emitting visible light, and electrical circuit means for electrically interconnecting said power source means and said light emitting means, and wherein said plug-in module includes switch means for closing said electrical circuit means in response to pressure exerted by the foot of the wearer of the athletic shoe during walking; and

receptacle means, fixed in said cavity, for slidably receiving and releasably locking said plug-in module in said sole, wherein said plug-in module includes means, operable by the water, for disabling said switch means while wearing the athletic shoe by removing said plug-in module, inverting it, and re-inserting it in said cavity.

5,285,587

UNDERWATER MINING DREDGE

Leo M. Krenzler, 1142 Industry Dr., Seattle, Wash. 98188

Filed Mar. 29, 1993, Ser. No. 38,467

Int. Cl.[5] E02F *3/88*

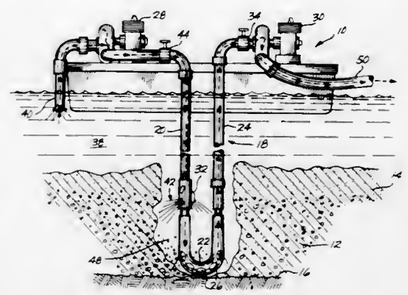
U.S. Cl. 37—323 **37 Claims**

21. Dredging apparatus for removing material from a bottom area of a body of water, comprising:

a flow conduit including a substantially U-shaped lower portion, a first leg, and a second leg; each said leg extending substantially vertically from said lower portion; said conduit being operable to communicate flow between said legs; said lower portion having a substantially horizontal bight section; and said bight section having an intake aperture directed generally downwardly for receiving a water suspension of said material from said bottom area;

a first pump operably connected to the first leg, said first pump being operable to provide flow through said conduit;

a second pump operably connected to said second leg, said



second pump being operable to provide flow through said conduit; and

a fluidizing nozzle carried by said first leg and positioned to divert out of said conduit a portion of fluid flowing through said first leg toward said lower portion, said diverted fluid being directed against said bottom area for agitating and thereby generating said water suspension.

5,285,588

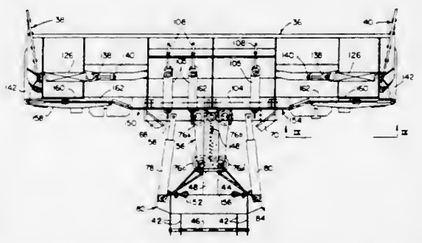
WINGED PLOW

W. Wally Niemela, Rte. 1, Box 289, Chassell, Mich. 49916, and Philip J. Quenzi, Atlantic Mine, Mich., assignors to W. Wally Niemela, Bonita Springs, Fla.

Filed Jul. 13, 1992, Ser. No. 912,896

Int. Cl.[5] E01H *5/04*

U.S. Cl. 37—234 **58 Claims**



1. A winged plow assembly for use with a vehicle, comprising:

a support frame adapted to pivotally connect with the vehicle and to extend away from the vehicle along a longitudinal centerline of vehicle, said support frame having a longitudinal axis oriented generally parallel with the vehicle centerline;

an elongated plow blade having two opposing ends and pivotally connected with said support frame to rotate generally horizontally between a centered position with said plow blade oriented generally perpendicular to said support frame longitudinal axis and a number of angled positions with said plow blade oriented at an angle relative to said support frame longitudinal axis;

a pair of plow blade wings, one of said pair of wings being pivotally connected with one end of said plow blade and the other of said pair of wings being pivotally connected with the opposing end of said plow blade, said wings

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rotating between a closed position in which said wings project generally forwardly, said wings and said plow blade defining a generally U-shaped assembly in said closed position so that said wings facilitate pushing material with said plow assembly, and an open position in which said wings project in generally opposite directions, away from each other to effectively extend the length of said plow blade so that said wings facilitate moving material to the side of the plow assembly; and

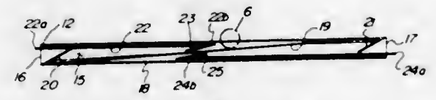
actuator means responsive to the position of said plow blade relative to said support frame and connected with each of said plow blade wings for rotating said wings substantially simultaneously in opposite rotational directions, between said closed position when said plow blade is substantially in said centered position and said open position when said plow blade is rotated substantially away from said centered position.

5,285,589

TELEPHONE INFORMATION FILE

Jeffrey L. Hyatt, 1543 Crypress Trace Dr., Melbourne, Fla. 32940-1627

Filed Sep. 24, 1992, Ser. No. 950,144
Int. Cl.[5] G09F *11/00*
U.S. Cl. 40—375 **3 Claims**



1. A telephone information file, comprising,

a tubular housing, the tubular housing having a parallelepiped configuration, including a housing cavity coextensive with the tubular housing, the housing having a top wall spaced from a bottom wall, and spaced parallel side walls, and a first end and second end, the first end having a first end entrance opening and the second end having a second end entrance opening, with a first message plate reciprocatably mounted within the tubular housing extensive relative to the first end entrance opening, and a second message plate reciprocatably mounted within the housing cavity extensive from the tubular housing and the second end entrance opening;

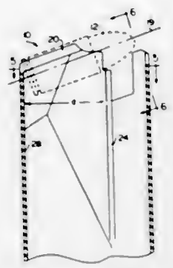
the first message plate includes a first abutment flange oriented at a first included angle relative to the first message plate positioned within the cavity, and the second message plate having a second abutment flange positioned within the cavity spaced from the second end entrance opening and the first message plate projecting from the first entrance opening and the second message plate projecting from the second entrance opening, and an intermediate web having an intermediate web first abutment flange having a predetermined included acute angle relative to the intermediate web, with the intermediate web first abutment flange positioned in adjacency to the first end entrance opening in facing relationship relative to the first message plate abutment flange, and an intermediate web second abutment flange mounted fixedly to the intermediate web at a further predetermined acute angle positioned in adjacency to the second entrance opening and in confronting facing relationship relative to the second message plate abutment flap.

5,285,590

ANTI-STOVEPIPING MAGAZINE

William J. Howard, P.O. Box 573, Wilson, N.C. 27893

Filed Oct. 7, 1992, Ser. No. 957,368
Int. Cl.[5] F41A *9/70*
U.S. Cl. 42—50 **8 Claims**



1. A magazine for reliably feeding cartridges to the chamber of a firearm without stovepiping;

wherein each of the cartridges comprises a uniformly tapered casing holding a projectile which projects from the casing;

wherein said magazine comprises:

A. a pair of juxtaposed, cartridge-retaining lips simultaneously contacting the projectile of the uppermost cartridge; and

B. spring means for biasing the cartridges toward the cartridge-retaining lips; and

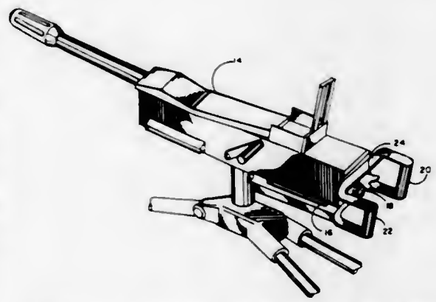
C. a pair of juxtaposed cartridge guides spaced from each other a distance less than said outside diameter of said projectile to simultaneously contact the uppermost projectile and constituting means for preventing orthagonal rotation of the uppermost cartridge during feeding of the uppermost cartridge to the chamber.

5,285,591

SAFETY LEVER PIN

David H. Goodwin, Hollis, and Thomas E. Charron, Saco, both of Me., assignors to Saco Defense Inc., Saco, Me.

Filed Dec. 16, 1992, Ser. No. 992,417
Int. Cl.[5] F41A *17/00*
U.S. Cl. 42—70.01 **2 Claims**



1. An improved safety lever pin for insertion into a safety lever pin receipt aperture defined in the sear assembly of an MK-19 grenade launcher, said receipt aperture having a side wall, comprising:

a cylindrical body member having a top, a bottom and side, the production of said body member characterized by not being cast;

an arm extending outward from the side of said body member near the top thereof;

means incorporated within said body member to retain said safety lever pin within said safety lever pin receipt aperture during inversion of said sear assembly including:

a ball receipt chamber, cylindrical in shape, defined in the side of said body member near its bottom, said chamber having an entrance;

spring means located within said chamber;

a ball member movably positioned within said chamber above said spring means, said spring means adapted to urge said ball member outward; and

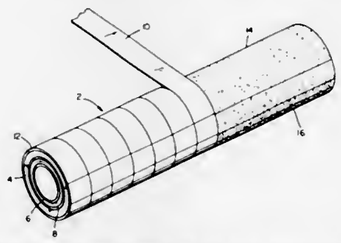
means to retain said ball member partially within said chamber, said ball member protruding from the entrance of said chamber, causing said ball member to extend beyond said side wall of said body member and urging outward against the side of said safety lever pin receipt aperture to retain said safety lever pin in place within said safety lever pin receipt aperture.

5,285,592

MOTOR CASE WITH COMPOSITE OVERWRAP AND METHOD

James R. Sides, Oakton, Va., assignor to Atlantic Research Corporation, Vienna, Va.

Filed Oct. 31, 1991, Ser. No. 784,874
Int. Cl.[5] F41A *21/02*
U.S. Cl. 42—76.02 **11 Claims**



1. A motor case comprising a tubular barrel having an outer surface and a composite overwrap wound around said outer surface forming a layer which protects against case failure caused by thermal effects, said overwrap including an elongated strip of fibrous material impregnated with a curable resin, and further wherein said outer surface of said barrel is textured such that there are jagged protrusions extending outwardly therefrom, said protrusions cooperating with said fibrous material to mechanically bond said overwrap to said barrel.

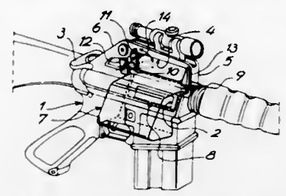
5,285,593

DEVICE FOR RECOVERING CARTRIDGE CASES FOR AN AUTOMATIC OR SEMIAUTOMATIC FIREARM

Timour Bammate, Paris, France, assignor to Marianne Bammate, Paris, France

Filed Dec. 9, 1992, Ser. No. 987,668
Claims priority, application Switzerland, Mar. 11, 1992, 00794/92
Int. Cl.[5] F41A *9/60*
U.S. Cl. 42—98 **8 Claims**

1. A device for recovering cartridge cases for an automatic or semiautomatic firearm having a window for the ejection of the cases of the cartridges fired, a loading handle, and a carrying handle with two posts spaced apart on the top of its frame, comprising a removable container with means permitting its temporary attachment to the firearm and an entrance opening intended to be opposite the cartridge-case ejection window in order to collect the cases upon the firing, characterized by the fact that the attachment means of the container (**7**, **70**, **71**) comprise a fork (**9**, **23**) intended to be engaged in the carrying handle (**4**) around an upright (**5**) of the latter, a lock (**10–12**, **24–25**) with bolt (**11**, **26**) intended to be engaged by horizontal pivoting of the container against the other post (**6**), the engagement of the bolt around the latter assuring the immobilizing of the container in the longitudinal and transverse directions, and at least one height retention stop (**12**, **13**, **23**, **24**) in the carrying handle associated with each of the said attachment means.

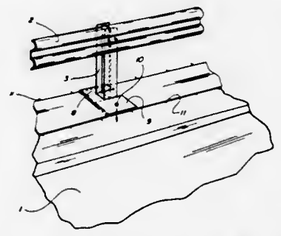


5,285,594

WEED GUARD COVER SYSTEM

Charles Penny, 108 Indian Hill Dr., Belleville, Ill. 62223

Filed May 26, 1992, Ser. No. 887,891
Int. Cl.[5] A01G *7/00*
U.S. Cl. 47—9 **4 Claims**



1. A weed guard cover system for retarding the growth of vegetation around a series of vertical posts, comprising:

a plurality of adjacent, identical, essentially flat, flexible, essentially elongated rectangular covers;

each cover having a front, a rear and two ends;

each end having a rectangular, off-set, cut-out section;

wherein said off-set, cut-out sections create a narrow rear section and a narrow rear flap and a wider front section and front flap;

said cut-out sections adapted to receive a series of vertical posts, wherein said flaps are adapted to overlap the corresponding flaps of adjacent covers and wherein said corresponding overlapping flaps are secured together;

further comprising a plurality of landscape staples placed along the front and rear edges of said cover whereby said cover is secured to the ground underneath said posts.

5,285,595

HYDROPONIC GROWING SYSTEM

Kozo Shirato, Ohmiya, Japan, assignor to Erma Incorporation, Japan

Filed Jan. 30, 1991, Ser. No. 647,933
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—62 **5 Claims**

1. A hydroponic growing apparatus which comprises:

a hydroponic culture body in which plants can grow and through which a hydroponic solution can flow,

supply means for supplying a hydroponic solution containing liquid fertilizer and controlled amounts of dissolved oxygen and carbon dioxide to said hydroponic culture body via a feed pipe, said supply means comprising

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a hydroponic solution feeder connected to said feed pipe for providing water having liquid fertilizer therein, said feeder including a first housing having first and second liquid passages extending therethrough, one of said passages being defined by a liquid-to-liquid semipermeable membrane means,

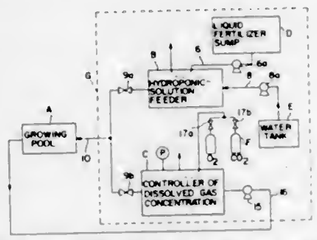
a liquid fertilizer sump connected to said first housing to provide liquid fertilizer to one of said first and second liquid passages,

a first pump means for controlling the flow of liquid fertilizer from said liquid fertilizer sump to said first housing,

a water tank connected to said hydroponic solution feeder to provide water to another of said first and second liquid passages,

a second pump means for controlling the flow of water from said water tank to said first housing,

a controller of dissolved gases connected to said feed pipe, said controller including a second housing having first and second fluid medium flow passages therethrough,



one of said passages being defined by a gas-to-liquid semipermeable membrane means,

an oxygen bomb connected to said second housing to provide oxygen to one of said first and second fluid medium flow passages,

a first valve means for controlling the flow of oxygen from said oxygen bomb to said second housing,

a carbon dioxide bomb connected to said second housing to provide carbon dioxide to said one of said first and second fluid medium flow passages,

a second valve means for controlling the flow of carbon dioxide from said carbon dioxide bomb to said second housing, and

a recirculating pipe connected between said hydroponic culture body and said second housing to recirculate hydroponic solution to another of said first and second fluid medium passages, said first and second pumps and said first and second valves enabling the control of the liquid fertilizer concentration and the oxygen and carbon dioxide gas concentrations in the hydroponic solution.

5,285,596

DOOR CLOSURE APPARATUS

Kenneth M. Kinsey, 2859 E. Impala Ave., Mesa, Ariz. 85204

Filed Nov. 13, 1992, Ser. No. 975,881

Int. Cl.[5] **E05D** *15/06;* **E05F** *1/00*

U.S. Cl. 49—404 **9 Claims**

1. A door closing device comprising

(a) a vertically oriented hollow tube having a top and a bottom and first (**24**) and second (**25**) vent openings formed in said bottom, said vent openings being spaced a selected distance apart with said first opening positioned above said second opening;

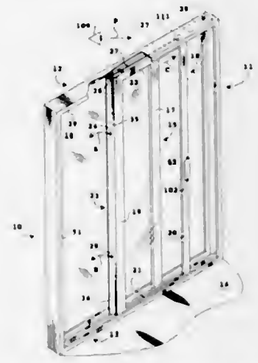
(b) a weight disposed in said tube for movement along said top and said bottom, said weight having a length less than said selected distance between said vent openings such that said weight is unable to simultaneously extend over both of said vent openings while said weight travels up and down through said hollow tube;

(c) a seal connected to said weight for sealing the exterior of said weight and the interior of said housing;

(d) a pulley attached to the top of said tube;

(e) a cable attached to the top of said weight and extending over said pulley and attached to a selected point on the door header; and

(f) spring means (**33**) mounted inside the top of said tube and spaced above said first vent opening to be contacted and compressed by said weight when said weight moves upwardly from said bottom over said first vent opening into the top of said tube, said weight being spaced apart from



said spring means when said weight is in said bottom of said tube;

air being forced out of said tube through said first vent opening and drawn into said tube through said second vent opening when said weight is intermediate said first and second vent openings and moving upwardly through said tube,

air being drawn into said tube through said first vent opening and being forced out of said tube through said second vent opening when said weight is intermediate said first and second vent openings and moving downwardly through said tube.

5,285,597

METHOD AND ARRANGEMENT FOR SUBDIVIDING SEMICONDUCTOR BARS INTO SEMICONDUCTOR WAFERS

Hubert Hinzen, Igensdorf, Fed. Rep. of Germany, assignor to GMN Georg Muller Nurnberg AG, Fed. Rep. of Germany

Filed Nov. 6, 1992, Ser. No. 973,060

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136566

Int. Cl.[5] **B24B** *7/00, 53/02;* **B28B** *5/02, 1/02*

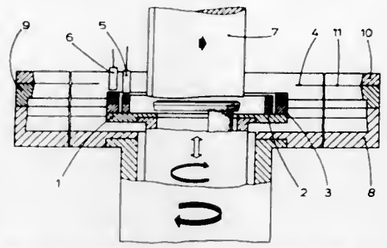
U.S. Cl. 51—5 C **13 Claims**

1. A device for subdividing semiconductor bars into semiconductor wafers comprising

a grinding tool having two concentrically arranged grinding discs mounted for rotation around an axis of rotation, an inner one of said grinding discs being a roughing disc having a grinding surface situated in a first plane and an outer one of said grinding discs being a polishing disc having a grinding surface situated in a second plane which is axially offset with respect to said first plane in a direction of said axis of rotation, said grinding tool structured and arranged to grind a face of a semiconductor bar to a smooth planar form,

a first electrolytic truer operating in conjunction with said polishing disc,

a second electrolytic truer operating in conjunction with said roughing disc, said first and second truers being ar-



ranged to maintain an axial offset between said grinding surfaces of said roughing disc and said polishing disc, and

a slicing tool for slicing the bar into wafers.

5,285,598

METHOD FOR DRILLING A PROCESSED HOLE TO A HARD BUT BRITTLE MATERIAL AND A DEVICE THEREFOR

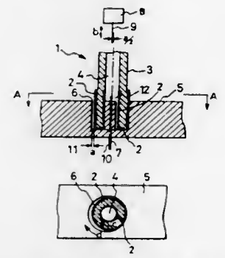
Tomoo Arita, Tokyo, and Toshihiko Hirabayashi, Higashikurume, both of Japan, assignors to Asahi Diamond Kogyo Kabushiki Kaisha and Kyokuei Kenmakako Kabushiki Kaichi, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,676

Claims priority, application Japan, Sep. 6, 1991, 3-254293

Int. Cl.[5] **B24B** *25/00*

U.S. Cl. 51—283 R **2 Claims**



1. In a method for drilling a processed hole into a hard but brittle material, by using a diamond core drill characterized by comprising the steps of:

contacting a rotating diamond core drill to one side of a hard but brittle material to bore a hole;

giving relative eccentrical motion between said rotating diamond core drill and said hard but brittle material so that said rotating diamond core drill contacts the inner circumferential surface of the hole in said hard but brittle material, supplying water to an axial center of a penetrating part of said diamond core drill; and

gradually reducing rotational speed of said diamond core drill near by the bottom of said hard but brittle material to be penetrated:

the improvement wherein said drilling operation of said diamond core drill is carried out by drilling the material to a distance of ⅔ of the thickness of said material in half of a necessary time for completing a penetrated hole, and then gradually reducing the drilling speed of said diamond core drill so that the remaining ⅓ of the thickness of the material is drilled in the remaining half of the necessary time for completing the penetrated hole.

5,285,599

METHOD FOR ADJUSTING A STEADY REST HAVING AN INTERNAL CENTERLINE ADJUSTMENT

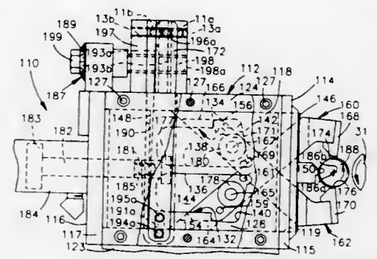
Richard J. Lessway, Farmington Hills, Mich., assignor to Arobotech Systems, Inc., Madison Heights, Mich.

Division of Ser. No. 830,666, Feb. 4, 1992, Pat. No. 5,237,780.

This application Apr. 28, 1993, Ser. No. 53,406

Int. Cl.[5] **B24B** *5/04*

U.S. Cl. 51—289 R **3 Claims**



1. A method for adjusting a true centering steady rest (**10,110,210,310**) having a multi-point support structure (**50,74,76**) in which a point of convergence of said multi-point support structure (**50,74,76**) is adjusted to correspond with a rotational dynamic working centerline (**86***b*) of a cylindrical workpiece (**88**), said method comprising the steps of:

determining a static centerline (**86***a*) of said cylindrical workpiece (**88**);

positioning said steady rest (**10,110,210,310**) such that said convergence point of said multi-point support structure (**50,74,76**) coincides with said static centerline (**86***a*);

grinding said workpiece (**88**);

gauging the ground workpiece (**88**) to determine its ground diameter; and,

adjusting said steady rest (**10,110,210,310**) to correct for an error between said ground diameter of said workpiece (**88**) and a desired diameter for said workpiece (**88**), said adjusting to correct for said error altering said convergence point of said multi-point structure point (**50,74,76**) to coincide with said rotational dynamic working centerline (**86***b*) of said workpiece (**88**).

5,285,600

APPARATUS AND METHOD FOR FINISHING A WORKPIECE

Barry E. Shepley, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1992, Ser. No. 992,348

Int. Cl.[5] **B24B** *7/00*

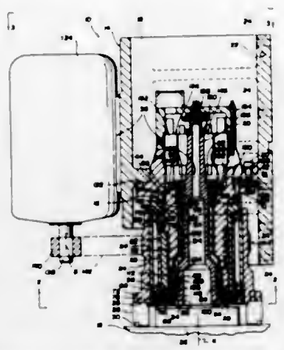
U.S. Cl. 51—323 **8 Claims**

6. A method for finishing a workpiece comprising:

rotating an annular milling cutter about a central axis to perform a milling operation on the workpiece; and

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rotating a grinding wheel about the same central axis as the annular milling cutter within the confines thereof but at a



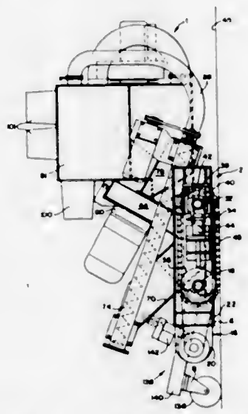
faster speed of rotation to perform a grinding operation on the workpiece.

5,285,601

MAGNETIC TRACK SELF-PROPELLED BLAST CLEANING MACHINE

Robert B. Watkin, and David A. Hanson, both of Peachtree City, Ga., assignors to The Wheelabrator Corporation, La Grange, Ga.

Continuation of Ser. No. 815,437, Dec. 31, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 48,925
Int. Cl.[5] B24C *5/00, 7/00*
U.S. Cl. 51—430 **31 Claims**



1. A machine for blast cleaning vertical surfaces, the underside of horizontal surfaces or surfaces orientated an any angle between vertical and horizontal and which are formed of ferromagnetic material, comprising:

a) a blast unit including means for projecting abrasive against a surface being cleaned at a blast zone, means for reclaiming the abrasive and debris generated when the abrasive strikes the surface, means for separating abrasive from debris and means for returning the abrasive to the projecting means;

b) means for supporting the blast unit on said surface being cleaned and for propelling the blast unit over said surface comprising first and second magnetic treads, each of said first and second magnetic treads having sections contacting said surface, said blast unit supported on said means for supporting such that said blast zone is on the same side of the machine as the sections contacting said surface, said first and second magnetic treads driven at a speed by a means for driving and controlling the speed of said magnetic treads whereby the speed and direction of travel of the blast unit can be controlled; and

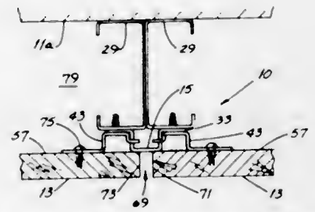
c) means for connecting the first and second magnetic treads to the blast unit such that the blast unit can pivot relative to the first and second magnetic treads.

5,285,602

MODULAR WALL SYSTEM WITH "SLIDEBY" MOUNTING FEATURE

J. Reed Felton, Milwaukee, Wis., assignor to T. J. Hale Company, Menomonee Falls, Wis.

Filed Mar. 9, 1992, Ser. No. 848,657
Int. Cl.[5] A47B *5/02;* **F04B** *2/78*
U.S. Cl. 52—36.6 **11 Claims**



1. In a modular wall system including (a) a wall panel having a rear surface (b) a forward standard having a front face, (c) a rearward pair of laterally-extending flanges, (d) a web extending between each flange and the front face and (e) at least one opening in each web for wall panel attachment, the improvement comprising:

a slideby bracket attached to the rear surface of the panel and including a tongue fixed with respect to the bracket and extending through the opening for slide-and-release panel mounting; and,

the rear surface of the panel is substantially aligned with and parallel to the front face

whereby the panel is mounted or demounted without tools.

5,285,603

METHOD AND APPARATUS TO ENSHROUD LARGE VERTICAL STRUCTURES

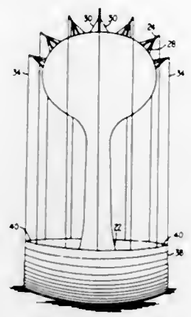
Louis J. Richard, Dexter, and Kenneth M. Richard, Chelsea, both of Mich., assignors to K & L Manufacturing, Ltd., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 531,845, Jun. 1, 1990, Pat. No. 5,033,240. This application Jul. 22, 1991, Ser. No. 733,038
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] E04B *1/343*
U.S. Cl. 52—63 **22 Claims**

1. Apparatus to temporarily enclose multistory structures comprising a plurality of booms extending outwardly about at least a portion of the structure adjacent the top of the structure, said booms extending beyond the periphery of the structure,

a sheave attached at the outboard end of each boom and a vertically extending hoisting cable supported by each sheave to form a plurality of downwardly extending hoisting cables, a plurality of flexible panels, means on the panels to attach the panels together to form a panel assembly and means to attach the panel assembly to the plurality of downwardly extending hoisting cables whereby upon raising the hoisting cables, the panel assembly forms an enclosure about at least a portion of the structure, and

stabilization means attached to each boom, said stabilization means extending diagonally away from each boom and



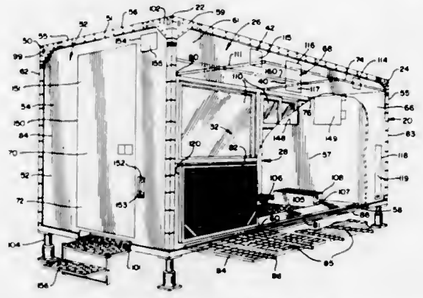
attached to the structure at a location spaced horizontally from the boom to which the stabilization means is attached.

5,285,604

CONTAINERIZED FIELD KITCHEN

Kevin Carlin, Fresno, Calif., assignor to TCBY Enterprises, Inc., Little Rock, Ark.

Filed Oct. 10, 1991, Ser. No. 775,705
Int. Cl.[5] E04H *1/12*
U.S. Cl. 52—79.1 **16 Claims**



1. A mobile kitchen, comprising a movable containerized field kitchen unit with interconnecting modular components comprising composite upright wall panels peripherally surrounding and cooperating with each other to define interior stations, each of said wall panels defining at least one access opening for access and service to at least one of said interior stations, said interconnecting modular components including a top wall providing a composite roof positioned above and connected to said upright wall panels, and a floor providing a base positioned below and operatively connected to said upright wall panels, said upright composite upright wall panels cooperating with said composite roof and floor;

said base defining a set of forklift pockets for receiving tines of a forklift truck and grab hooks of a helicopter; and

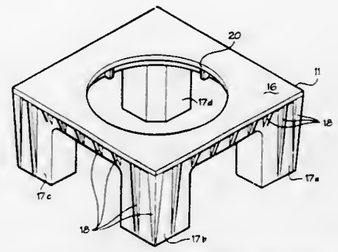
said composite upright wall panels intersecting and cooperating with said composite roof for defining molded composite corners with openings for receiving and lifting by a crane and grab hooks of a helicopter.

5,285,605

PEDESTAL MODULE FOR RAISED FLOOR AND RAISED FLOOR

Sherwood S. Greenfield, Charlotte, N.C., assignor to Starfair Corporation, Charlotte, N.C.

Filed Apr. 2, 1992, Ser. No. 862,519
Int. Cl.[5] E04B *5/48*
U.S. Cl. 52—126.2 **16 Claims**



1. A floor pedestal module for being assembled together with a multiplicity of other like modules and freely resting in detached relation on a supporting subfloor to form a raised floor providing space beneath the assembled modules and above the subfloor for electrical and/or communications wiring, said module comprising:

(a) a base having an upper surface and opposed lower surface and four integrally-formed supporting legs formed of a high density, heavy duty plastic material;

(b) the lower surface of the base defining a guide recess integrally-formed in the base for accepting a saw guide; and

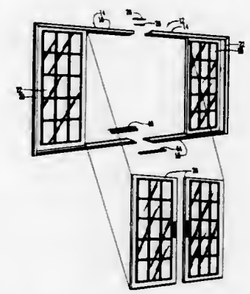
(c) at least two spaced-apart reenforcing ribs formed in said base concentric with said pilot hole and defining therebetween a circular area for being cut out to form an enlarged access hole.

5,285,606

WINDOW AND DOOR ASSEMBLY MANUFACTURED IN HALF SECTIONS AND METHOD OF INSTALLING SAME

Bruce A. Hagemeyer, Pella, Iowa, assignor to Pella Corporation, Pella, Iowa

Filed Nov. 18, 1991, Ser. No. 793,196
Int. Cl.[5] F16B *7/00*
U.S. Cl. 52—204.68 **16 Claims**



1. A window and door assembly comprising,

a pair of window and door half sections, each half section including head and sill members interconnected by an outer vertical frame member and having an inner vertical edge

head splice means interconnecting said head members and

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sill splice means interconnecting said sill members thereby forming a unitary window and door assembly having spliced together sill and head members adapted to be mounted in a wall opening,

said head members including aligned head channels and said head splice means including a head splice member received in said head channels, and

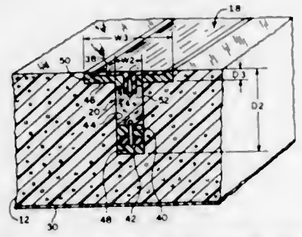
said head splice member received in said aligned head channels being further defined as including fasteners in opposite ends of said head splice member extending downwardly and outwardly towards the adjacent end of said head splice member and into holding engagement with said head members to draw and hold said half sections together as an integral unitary window and door assembly.

5,285,607

BUILDING EXTERIOR WALL PANEL

John W. Somerville, Green Bay, Wis., assignor to Somerville Associates Inc., Green Bay, Wis.

Filed Jun. 21, 1991, Ser. No. 719,112
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—235 **11 Claims**



1. A preformed structural exterior building wall panel, for placement on a building, said building wall panel comprising:

(a) a board comprising an effectively unitary slab of plastic foam material having a first major surface for disposition toward the interior of a building, and a second major surface, opposing said first major surface, for disposition toward the exterior of a building, said first major surface having a spaced apart channel extending thereacross, to receive a structural member thereinto, said channel having a depth;

(b) an elongate structural member secured in said channel and extending substantially across the entire respective dimension of said major surface of said board, said structural member, as secured in said channel, comprising

(i) an external flange disposed adjacent said major surface of said board, said external flange extending in a direction transverse to the depth of said channel and supporting said major surface of said board,

(ii) a web extending from said external flange into the interior of said board and terminating on the interior of said board, between said first and second major surfaces, and

(iii) an internal flange extending transversely from said web on the interior of said board, the dimensions of said internal flange transverse to said web, and said width of said channel, being cooperatively sized and configured such that said internal flange is received within said channel along the extent of the respective said depth as taken progressively from said first major surface, and

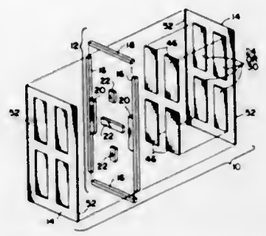
(c) a bed of adhesive in said channel and surrounding said internal flange, whereby a portion of said bed of adhesive is disposed between said internal flange and said first major surface of said board.

5,285,608

DOOR

James Costello, 195 W. Hills Rd., Huntington, N.Y. 11746

Filed Dec. 12, 1991, Ser. No. 805,619
Int. Cl.[5] E06B *3/36*
U.S. Cl. 52—456 **1 Claim**



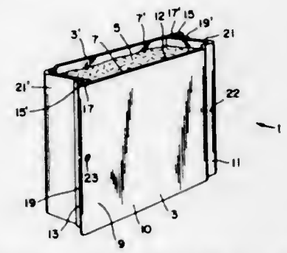
1. A wood-surfaced door formed of a metal core comprising a cooperating pair of rectangular facing body panels each of thin gauge sheet metal construction material, each said body panel having top, bottom and opposite side edges folded laterally thereof along fold lines correspondingly located along said top, bottom and opposite sides of each said body panel to contribute peripheral area rigidity to said body panel along said fold lines, four rectangular recesses in top and bottom areas of each said body panel, each said rectangular recess being bounded by four edges folded inwardly ninety degrees laterally of the plane of said body panel to form fold lines adapted to contribute along said fold lines a resistance to bending providing medial area rigidity to each said body panel, a frame having an operative position disposed along the top, bottom and opposite sides of said rectangular sheet metal body panels to contribute to the rigidity of the peripheral area of said door, and plural wood panels adhesively secured in covering relation over an exterior surface of each said core body panel, whereby the external appearance of said core door body panel is of a wood article of manufacture.

5,285,609

LAGGING PANEL

Gary N. Goad, Dickson, Tenn., assignor to Global Power Company, Wavery, Tenn.

Filed Aug. 24, 1992, Ser. No. 934,769
Int. Cl.[5] E04C *3/00*
U.S. Cl. 52—588 **1 Claim**



1. A prefabricated insulating panel adapted for assembling in an overlapping relation with other like panels upon a support member comprising:

a first panel half and a second panel half, said first and said second panel half each defining an exterior face and an interior face, an engaging end forming in right angle with said interior face and a receiving end;

a sleeve defined by a portion of said receiving end folded against said interior face, terminating in a projected foot perpendicular to and directed away from said interior face;

a recessed, substantially parallel engaging groove defined by and traversing a width of said exterior face;

a lip carried by a terminus of said engaging end, said lip substantially planar to said interior and exterior faces and directed away from said receiving end;

an insulating layer positioned between said interior faces of said panel halves;

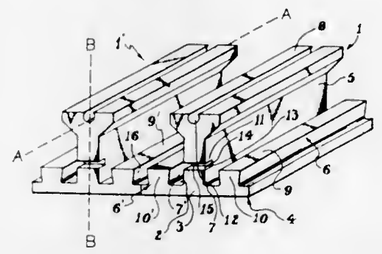
wherein a pair of panel halves accommodating an insulating layer between said respective interior faces in assembled, said lip of said engaging end of a first panel pair half is inserted into said sleeve of said receiving end of a second panel half, thereby forming a reversible panel adapted for assembly with other like fashioned panels by overlapping connection to a support member.

5,285,610

BUILDING BLOCKS AND THEIR USE

Cecil F. Schaaf, 3015 Palmer Rd., Standish, Mich. 48658, and Craig R. Schaaf, 741 Crawford St., Flint, Mich. 48507

Filed Mar. 6, 1992, Ser. No. 848,418
Int. Cl.[5] E04B *5/04*
U.S. Cl. 52—602 **2 Claims**



1. A building block, said block comprising a roof block formed from building materials, said roof block having a long axis and a short axis:

said roof block providing an upper surface, two essentially identical end surfaces, and a flat bottom surface;

each said roof block end surface being essentially flat:

said upper surface of the roof block comprising three rails said rails being in vertical alignment with regard to the flat bottom surface of the roof block and each rail having a length equal to the long axis of the roof block, said rails being aligned parallel to each other and further aligned in a spaced apart relationship to each other, said rails comprising a high center rail and two low tapered side rails;

each said low tapered side rail having a flat upper surface;

said high center rail having a flat upper surface; and two flat end surfaces coincidental with and forming part of the end surfaces of the roof block, and a mid-section located essentially mid-way between said flat upper surface of the high center rail and the bottom surface of the roof block, said flat upper surface having a channel therein of predetermined depth, said channel being essentially centered in the flat upper surface of the high center rail and aligned parallel to the long axis of the roof block, said channel having a length equal to the length of the high center rail;

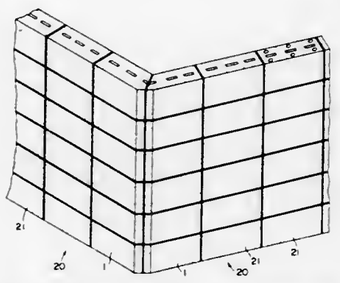
said high center rail of the roof block having located in each of its end surfaces, a notch of predetermined depth, said notch having a bottom surface and an upper surface, said notch being essentially located in the mid-section of the end surface of the center rail and located parallel to the flat upper surface of the high center rail such that the bottom surface of the notch lies in the same plane as the upper surfaces of the low tapered side rails.

5,285,611

WALL CORNER COMPOSITE, MOLD AND METHOD FOR PRODUCING GLAZED UNIT FOR SUCH

John McClinton, Hanover, Md., assignor to The Burns & Russell Company, Baltimore, Md.

Continuation-in-part of Ser. No. 795,773, Nov. 21, 1991, Pat. No. 5,212,925. This application Jul. 27, 1992, Ser. No. 919,988
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—612 **11 Claims**



1. A structurally reinforced corner composite which comprises at least two angled masonry building units wherein each angled masonry building unit comprises a front face, a back face, a top face, a bottom face and two side faces comprises a planar portion that is opposite to said back face and a second segment that intersects said planer portion to thereby form an obtuse, acute or right angle; one of said side faces being angled and intersecting said second segment and said back face forming an obtuse angle with said back face and forming an angle with said second segment and further including a cut out portion interposed between said front face and said back face;

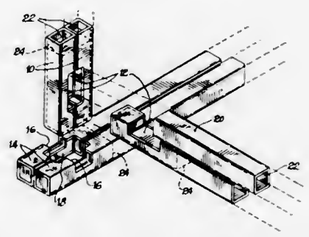
and wherein the cut out portion of each of said units face each other.

5,285,612

INTERLOCKING JOINT WITH NOTCH REINFORCEMENT

David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103

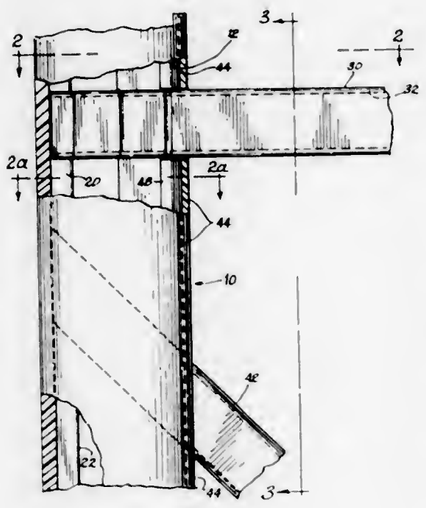
Continuation-in-part of Ser. No. 541,547, Jun. 21, 1991, Pat. No. 5,024,036. This application May 8, 1991, Ser. No. 696,922
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—655.1 **29 Claims**



19. A joint comprising a plurality of hollow interlocking structural beams at least some of which have jointing notches which interlock with one another to create a rigid joint, with said jointing notches each being reinforced by means of a reinforcing insert body inserted into the respective hollow structural beam, and each of said insert bodies having a nesting notch aligned with a respective jointing notch of the respective beam to create a multiple dimensional reinforced joint.

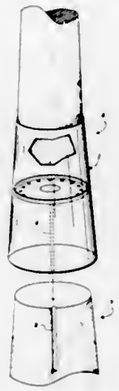
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,613
PULTRUDED JOINT SYSTEM AND TOWER STRUCTURE MADE THEREWITH
W. Brandt Goldsworthy, 2504 Novato Pl., Palos Verdes Estates, Calif. 90274 and David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103
Filed Jan. 31, 1992, Ser. No. 828,499
Int. Cl.[5] E04H *12/10*
U.S. Cl. 52—648.1 12 Claims



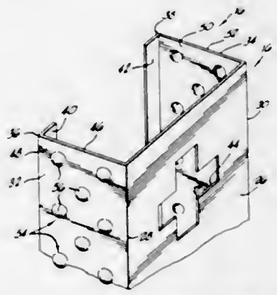
10. A tower comprising:
(a) a plurality of substantially vertical elongated first structural members defining in platform the corners of a polygon;
(b) each of said first structural members defining at least one substantially continuous longitudinal slot thereof;
(c) a reinforcing truss structure defined between said first structural members and having outwardly extending second structural members with seating ends extending into the slots in said first structural members;
(d) mutual detent means defined in said slots and in said seating ends of said second structural members to substantially lock said structural members together when said seating ends of said second structural members are inserted into said slot; and,
(e) said first structural members each including two opposite re-entrant stabilizing walls along two sides of said respective slots being deeply re-entrant to substantially to a central portion of said first structural member to define a continuation of said slots orientationally stabilize said seating ends when inserted into said slot.

5,285,614
CONCRETE POLE SPLICE
Fouad H. Fouad, Birmingham, Ala., assignor to Sherman Utility Structures, Inc., Birmingham, Ala.
Filed Jul. 16, 1992, Ser. No. 915,006
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—726.4 12 Claims



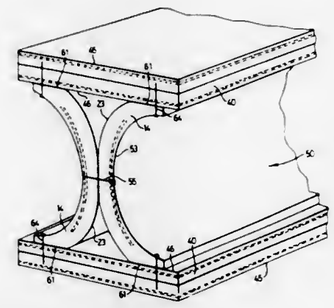
1. A segmented concrete pole in which an upper pole section is centrifugally cast integrally with a tapered sleeve and placed over a lower pole section, at least the top end of which is tapered to receive the sleeve.

5,285,615
THERMAL METALLIC BUILDING STUD
Michael F. Gilmour, Vancouver, Wash., assignor to Angeles Metal Systems, Los Angeles, Calif.
Filed Oct. 26, 1992, Ser. No. 967,864
Int. Cl.[5] E04C *3/09*
U.S. Cl. 52—729 13 Claims



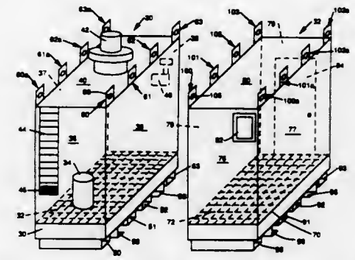
1. An elongated thermal C shaped metallic building stud including a web portion extending between the exterior and interior of a building and a pair of generally parallel legs bent from said web forming an exterior leg and an interior leg and each leg including a strengthening flange struck inwardly toward each other from the ends of said legs opposite said web and generally parallel therewith, said legs each adapted to have secured along their length by fastening means either exterior or interior wall structures, and each leg having exterior and interior generally smooth planar surfaces, said stud further including:
an upset formed on said smooth surface of the exterior wall of at least one of said legs extending outwardly and said upset is spaced away from the area where said web joins said leg, and there is no upset formed on said web portion, and said upset forming a contact area for said wall structure when said structure is secured to said leg and creating a thermal space between said structure and said generally smooth surface of said leg wherein ambient exterior air temperature, as it may pass by thermal conductivity through said exterior wall structure material, is impeded from conduction through said C shaped metallic building stud and said interior wall material to the interior of said building.

5,285,616
I-BEAM STRUCTURE
Benjamin A. Tripp, R.R. #2, Orangeville, Ontario, Canada L9W 2Y9
Continuation-in-part of Ser. No. 37,385, Mar. 26, 1993, which is a continuation-in-part of Ser. No. 750,936, Aug. 28, 1991, abandoned. This application May 24, 1993, Ser. No. 64,910
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—729 13 Claims



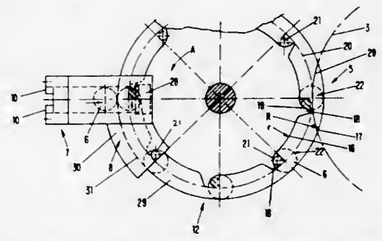
1. An I-beam structure, comprising:
a web formed from two tire belts attached together tread surface to tread surface centrally along their lengths, the web having longitudinal side portions capable of being bonded to flange forming members; and
first and second flange forming members of a two ply laminated structural material, comprising
a first continuous ply of used vehicle tire belt consisting of a plurality of tread bearing tire belts from individual tires joined end to end so that the continuous ply is capable of carrying a load in tension which is at least 10% of the magnitude of a load in tension which an individual tire belt can carry; and
a second continuous ply of used vehicle tire belt like the first continuous ply, wherein the first and second plies are bonded together tread surface to tread surface so that the resulting two ply laminated material is capable of carrying a bending, a shear, a tension, or a compression load anywhere along its length;
said first and second flange forming members being bonded to the longitudinal side portions of the web to make an I-beam structure.

5,285,617
METHOD OF ASSEMBLING A HAZARDOUS MATERIAL CONTAINER STORAGE BUILDING
Frederick W. Romig, Wexford, and Charles D. Ledford, New Alexandria, both of Pa., assignors to CID Associates, Inc., Leechburg, Pa.
Division of Ser. No. 678,830, Apr. 2, 1991, Pat. No. 5,191,742. This application Dec. 28, 1992, Ser. No. 997,050
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—745.01 5 Claims



1. A method of joining a plurality of modules to form a single, unitary hazardous material container storage building comprising:
providing a first module having (i) a floor for supporting containers of hazardous material; (ii) a containment sump disposed underneath said floor for collecting leakage from said containers; and (iii) tube means underlying said containment sump;
providing a second module having (i) a floor for supporting containers of hazardous material; (ii) a containment sump disposed underneath said floor for collecting leakage from said containers; and (iii) tube means underlying said containment sump;
effecting relative closing movement between said first and second modules; and
joining said first module to said second module by passing first mechanical joining means extending at least partially through said first module tube means and said second module tube means and securing said joining means in position.

5,285,618
APPARATUS FOR SEPARATING AND MAKING AVAILABLE CLOSURE ELEMENTS
Herbert Bernhard, Wolfsheim, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany
Filed Oct. 30, 1992, Ser. No. 969,015
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136464
Int. Cl.[5] B67B *3/064;* B65B *7/28*
U.S. Cl. 53—308 24 Claims



1. An apparatus for separating closure elements and for

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making them available to a receiving position of a closing machine, where a respective one of said closure elements, which is disposed on a support surface of a transport mechanism, is received and carried along by a closing mechanism that moves past over said support surface and, along with a plurality of similar closing mechanisms, is provided on a rotating rotor of said closing machine, said apparatus comprising:

wheel means as part of said transport mechanism, with said wheel means being rotatably driven about a vertical axis, in a given direction of rotation, synchronously with a movement of said rotor, said wheel means having a first periphery that concentrically surrounds said vertical axis, said wheel means further itself being provided with said support surface, which, relative to said vertical axis, extends radially outwardly from said first periphery and surrounds the same;

carrier members disposed on said first periphery of said wheel means and extending radially beyond said first periphery, with a leading side of each carrier member, as viewed in said direction of rotation, as well as an adjacent downstream portion of said first periphery, forming a carrier abutment surface for a respective one of said closure elements, said carrier abutment surface of said carrier member extending beyond said support surface of said wheel means;

at least one closure channel that interconnects a storage means and a transfer position that is formed at said support surface within a zone of movement of said carrier members, with said closure channel serving for the supply of said closure elements from said storage means to said transfer position and being offset from said receiving position relative to said vertical axis, with said closure channel being provided with an opening for releasing said closure elements to said transfer position;

positioning means disposed at said transfer position for a precise positioning of a respective one of said closure elements; and

at least one magnet arrangement at each carrier abutment surface for holding a respective carried-along closure element against said carrier or abutment surface during movement between said transfer position and said receiving position.

5,285,619

SELF TOOLING, MOLDED ELECTRONICS PACKAGING

Allen M. Jones, Novi, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Oct. 6, 1992, Ser. No. 957,596

Int. Cl.[5] B65B *53/02, 31/02, 23/00*

U.S. Cl. 53—431 **4 Claims**



1. A method of protecting an electronic component from the environment comprising the steps of

providing a bag made from thermoplastic heat shrink material,

inserting said electronic component into said bag,

injecting a liquid polymerizable resin into said bag,

heating said bag to shrink it about said electronic component and said resin and thereby exhaust air from within said bag, and curing said resin.

5,285,620

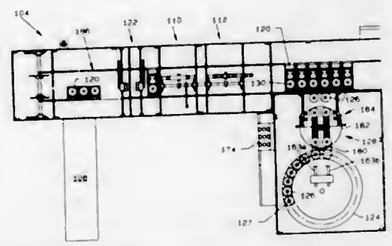
APPARATUS AND METHOD FOR MANUFACTURING A COMPACT DISC HOLDER

Stephen Kaye, Eden Prairie, and Peter N. Y. Pan, Minnetonka, both of Minn., assignors to Thiele Engineering Company, Minneapolis, Minn.

Filed Dec. 11, 1992, Ser. No. 989,533

Int. Cl.[5] B65B *25/24, 61/20*

U.S. Cl. 53—474 **15 Claims**



1. Apparatus for assembling compact disc packages comprising:

a. a central table;

b. a disc base conveyor table;

c. a sleeve hopper and placer table;

d. a final assembly conveyor table;

e. a disc base opening mechanism on said disc base conveyor table;

f. one or more tab operator mechanisms on said disc base conveyor table for flexing of live hinges and tab members;

g. a circular revolving compact disc spindle table having a plurality of stacked compact discs on a plurality of spindles;

h. a servo controlled CD handling system for placement of one or more CDs at a time into opened disc bases;

i. a positionable platform between said circular revolving compact disc spindle table and said servo controlled CD handling system;

j. said servo controlled CD handling system having a rotary table for rotating CD stacks 180°;

k. a CD pick and place mechanism for transporting one or more CDs from said rotary table to opened disc bases;

l. placement sensors for detection of proper placement of a CD on a disc base spindle;

m. a first generally circular table rotatably mounted on the central table;

n. a second generally circular table rotatably mounted on the central table in a slightly overlapping relationship with the first rotatable table;

o. a tray conveyor aligned for carrying compact disc trays to the central table;

p. placer means for moving compact disc bases from the disc base conveyor to the first table;

q. a sleeve conveyor, a hopper and rotary placer for moving and placing CD album cover sleeves from the sleeve hopper and placer table to the central table and onto glued surfaces of the disc tray;

r. means to rotate the first circular table;

s. means to rotate the second circular table;

t. second placer means for moving compact disc bases from the first table to the first circular table;

u. first circular table means for moving compact disc bases to the sleeves on the second table;

v. a glue means aligned over second circular table

w. a compression station on said central circular table;

x. a placer between said central table and said final assembly conveyor table;

y. a rotary placer for placement of instructional material into the sleeve disc combination along the final assembly conveyor table;

z. one or more booklet placers along the final assembly conveyor table

aa. one or more booklet hoppers along the final assembly conveyor table;

ab. a sleeve fold start mechanism along the final assembly conveyor table;

ac. a sleeve fold finish mechanism along the final assembly conveyor table; and,

ad. a discharge pick and place mechanism and for removing completed assembled sleeves and disc bases from the final assembly conveyor table.

5,285,621

APPARATUS FOR STRETCHING A CONTINUOUS PLASTICS FILM IN A PACKAGING MACHINE

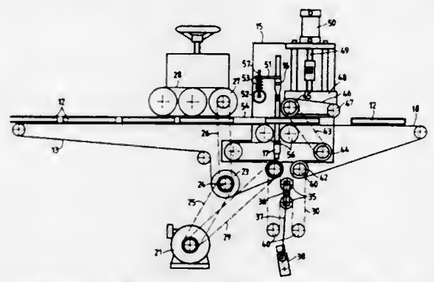
Aris Ballestrazzi, and Lamberto Tassi, both of Savignano sul Panaro, Italy, assignors to Sitma S.p.A., Modena, Italy

Filed Oct. 9, 1992, Ser. No. 958,781

Claims priority, application Italy, Oct. 14, 1991, MI91 A 002707

Int. Cl.[5] B65B *41/02, 51/30*

U.S. Cl. 53—556 **4 Claims**



1. An apparatus for stretching a continuous plastic film in a packaging machine, in which products fed one after the other are wrapped and sealed within said continuous film, which comprises:

a frame,

a first conveyor belt having an end roller for conveying the continuous film and a series of products therebetween,

a transverse welding apparatus, and

a second conveyor belt having an end roller,

a central drive unit for driving said first and second conveyor belts and said welding apparatus, said transverse welding apparatus comprising a carriage which is traversable horizontally relative to said frame of the packaging machine and has supported thereon a pair of superposed, upper and lower welding bars movable vertically between a position in which they are separated from the continuous film containing the products and a position in which they engage said film for welding,

a pressing belt facing said second conveyor belt,

a speed variator and a first and second transmission for driving said first and second conveyor belts,

a linkage assembly such that said first transmission directly drives said end roller of said first conveyor belt and the second transmission drives said end roller of said second conveyor belt by said linkage assembly wherein said linkage assembly provides increased speed of the second conveyor belt relative to the speed of said first conveyor belt to stretch said continuous film,

a clamping mechanism provided upstream of said transverse welding apparatus, both above said first conveyor belt and operationally linked to the vertical movement of said upper welding bar, for clamping said film onto said products wrapped in said film, and means for rigidly connecting said clamping mechanism to said upper welding bar wherein said clamping mechanism comprises a roller, a pair of brackets supporting said roller via vertical lateral rods with damper elements interposed therebetween, said roller being rotatable only in a direction of advancement of said product.

5,285,622

MEANS AND METHOD OF SECURING AND PROTECTING CROP ENGAGING ELEMENTS

Wilfred E. Klinner, Beechwood, Heath Lane, Aspley Heath, Woburn Sands, Milton Keynes, Buckinghamshire MK 17 8TN, United Kingdom

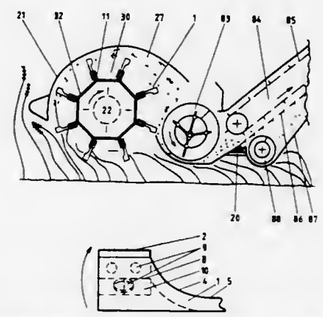
PCT No. PCT/GB91/01040, § 371 Date Apr. 9, 1992, § 102(e) Date Apr. 9, 1992, PCT Pub. No. WO92/03037, PCT Pub. Date Mar. 5, 1992

PCT Filed Jun. 26, 1991, Ser. No. 847,083

Claims priority, application United Kingdom, Aug. 14, 1990, 9017783; Sep. 24, 1990, 9020775

Int. Cl.[5] A01D *45/30*

U.S. Cl. 56—130 **11 Claims**



1. Apparatus adapted for being propelled over the ground, comprising:

a combing rotor and co-operating crop guide means for harvesting wanted plant parts from uncut crop, said combing rotor comprising:

a driven core structure;

transverse arrays of individual or conjoined outwardly projecting resilient crop engaging elements;

circumferentially spaced and laterally extending mounting members attached to the rotor core structure to provide support for the mounting regions of said crop engaging elements;

transversely extending clamping means for sandwiching the mounting region or regions of arrays of said crop engaging elements against a face of a mounting member;

fastening means for locating and securing said elements and clamping means to said mounting member; and

at least the inner crop engaging profiles on said combing rotor comprising regions of complemental components made of stiffer or more durable material than is provided in the intermediate yielding regions of said elements, to sustain effective operation of the apparatus.

10. A method of harvesting a crop comprising:

providing an apparatus for harvesting crops comprising:

a combing rotor and co-operating crop guide means for detaching and collecting wanted plant parts from uncut crop, the combing rotor comprising:

a driven core structure;

transverse arrays of individual or conjoined outwardly projecting resilient crop engaging elements;

circumferentially spaced and laterally extending mounting members attached to the rotor corer structure to provide

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support for the mounting region of said crop engaging elements;

transversely extending clamping means for sandwiching the mounting region or regions of each array of said crop engaging elements against a face of a mounting member; and

fastening means for locating and securing said elements and clamping means to said mounting member;

propelling said apparatus through the uncut crop;

combing through the uncut crop with said driven combing rotor whereby for sustained effective operation of the apparatus at least the inner crop engaging profiles on the combing rotor comprise correspondingly shaped complemental elements made of stiffer and/or more durable material than is provided in the intermediate yielding region of said crop engaging elements; and

impelling crop parts detached by combing towards collecting means.

5,285,623

STEEL CORD WITH IMPROVED FATIGUE STRENGTH

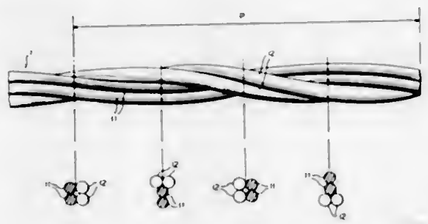
Freddy Baillievier, and Bernard Huysentruyt, both of Zwevegem, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Continuation of Ser. No. 761,867, Sep. 13, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,275

Claims priority, application European Pat. Off., Apr. 3, 1989, 89200838.4

Int. Cl.[5] **D02G** *3/48*

U.S. Cl. 57—236 **4 Claims**



1. A steel cord for the reinforcement of elastomers, said steel cord comprising:

two strands of at least two filaments each, said strands being twisted around each other and forming helicoids of a first pitch, the filaments of the first strand having essentially the same diameter and having a second pitch differing from the first pitch, said second pitch being more than 300 mm, the filaments of the second strand having essentially the same diameter and having the first pitch and being twisted in the same sense as said helicoids, all the filaments of both of said strands having a diameter between 0.08 and 0.45 mm,

the diameter of the filaments of said second strand being at least 0.02 mm greater than the diameter of the filaments of said first strand,

wherein the filaments of one of said strands have a tensile strength above 2250–1130 log d N/mm^2, d being the filament diameter of the one strand expressed in mm, while the filaments of the other of said strands have a tensile strength below 2250–1130 log d N/mm^2, d being the filament of the other strand expressed in mm.

5,285,624

ARRANGEMENT FOR PNEUMATIC FALSE-TWIST SPINNING

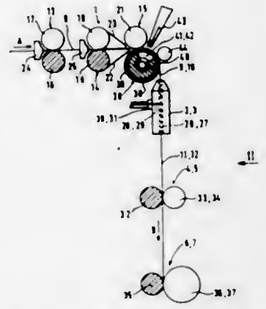
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Sussen, Fed. Rep. of Germany

Filed Oct. 17, 1991, Ser. No. 777,918

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1990, 4032940

Int. Cl.[5] **D01H** *13/04*

U.S. Cl. 57—328 **20 Claims**



1. An arrangement for false-twist spinning comprising:

a drafting unit including a delivery roller pair at its downstream end, said delivery roller pair including a suction roller with two separate suction zones for dividing a sliver behind a nip line of the delivery roller pair into two separated partial slivers,

a pair of pneumatic false-twisting devices disposed downstream of the drafting unit for applying false twist to the respective partial slivers,

and edge fiber spreading structure in the form of widening of at least one of the suction zones in the yarn travelling direction for spreading edge fibers away from the respective at least one partial sliver while travelling through the delivery roller pair and before being subjected to ballooning between the delivery roller pair and the false-twisting devices, whereby the spread away fibers are wound around core sections of the at least one partial sliver when the false twist is opened up.

5,285,625

SPIRAL DIAMOND CUT JEWELRY CHAIN

Aviad Ofrat, Franklin Lakes; Eitan Weinberg, Fairlawn, both of N.J., and Arie Gur, New York, N.Y., assignors to G.O.V. Jewelry, Inc., Manhattan

Filed Jul. 15, 1992, Ser. No. 914,846

Int. Cl.[5] **B21L** *5/02*

U.S. Cl. 59—80 **23 Claims**



1. A jewelry chain, comprising:

a plurality of links intertwined with one another and forming a chain which extend along a longitudinal direction and which defines a notional longitudinal chain center, at least one facet extending spirally around said longitudinal center of said chain along the length thereof, said at least one facet being defined by sub-facets imparted to successively located ones of said links, successive ones of said sub-facets lying in different spatially oriented planes.

5,285,626

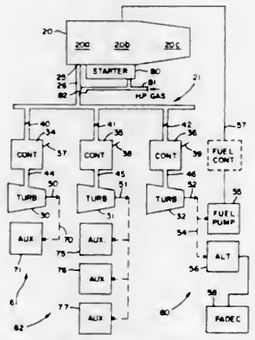
DRIVE FOR MAIN ENGINE AUXILIARIES FOR AN AIRCRAFT GAS TURBINE ENGINE

Plato J. Leeson, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Continuation-in-part of Ser. No. 855,178, Mar. 20, 1992, abandoned. This application Jun. 15, 1992, Ser. No. 898,136

Int. Cl.[5] **F02C** *6/08*

U.S. Cl. 60—39.02 **25 Claims**



1. A drive system for auxiliaries associated with a main gas turbine engine, the drive system comprising, in combination:

a first and a second group of auxiliaries, wherein the first group includes essential auxiliaries which must be operated in order to start the main engine and the second group includes non-essential auxiliaries;

at least two auxiliary turbines;

independent means coupling the intakes of each of the auxiliary turbines to a high pressure takeoff of the main engine;

means mechanically coupling the auxiliary turbines to the respective groups of auxiliaries so that each group of auxiliaries is driven by an associated auxiliary turbine, a first one of said auxiliary turbines being coupled for driving said first group of auxiliaries;

means independently controlling the auxiliary turbines to independently control the speed of rotation of the respective groups of auxiliaries; and

means driving the first auxiliary turbine to operate the essential auxiliaries during starting of the main engine.

5,285,627

METHOD FOR OPERATING A GAS AND STEAM TURBINE PLANT AND A PLANT FOR PERFORMING THE METHOD

Georg Lösel, Uttenreuth, and Werner Schwarzott, Grossenseebach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 916,027

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123731

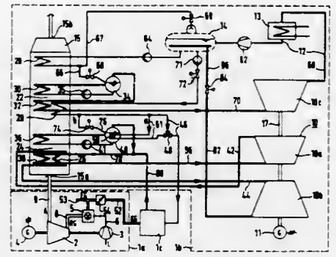
Int. Cl.[5] **F02C** *6/00*

U.S. Cl. 60—39.02 **6 Claims**

1. A method for operating a gas and steam turbine plant having a coal gasification process producing a coal gas, a gas turbine and a steam turbine with a water-steam loop, which comprises:

generating steam in the water-steam loop with heat contained in an expanded operating fluid of the gas turbine;

drawing preheated water for a coal gasification process from the water steam loop from cooling coal gas produced in the coal gasification process; and



altering the temperature of a partial quantity of water drawn in the drawing step in a loop coupled with the water-steam loop by indirect heat exchange with water from a water-steam drum of a high-pressure stage for adjusting a set-point temperature of the drawn water by mixing it with the partial quantity of the drawn water.

5,285,628

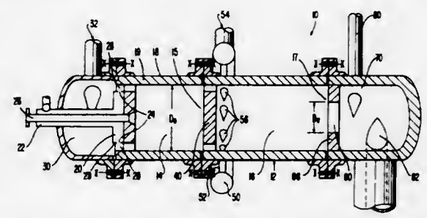
METHOD OF COMBUSTION AND COMBUSTION APPARATUS TO MINIMIZE NO_x AND CO EMISSIONS FROM A GAS TURBINE

Jacob Korenberg, York, Pa., assignor to Donlee Technologies, Inc., York, Pa.

Filed Jan. 18, 1990, Ser. No. 664,288

Int. Cl.[5] **F02G** *3/00*

U.S. Cl. 60—39.05 **22 Claims**



1. A method of combustion for a gas turbine to minimize NO_x and CO emissions, the method comprising the steps of:

tangentially supplying a first stream of pressurized air along a wall of combustion vessel into a first portion thereof in an amount sufficient for sub-stoichiometric combustion of fuel therein;

supplying fuel in the first portion of the combustion vessel in a fuel-rich ratio;

transporting resulting sub-stoichiometric combustion product gases from the first portion of the combustion vessel to a second portion of the combustion vessel, the first and second portions of the combustion vessel being separated by a gas swirler for increasing the swirling intensity of the gases entering the second portion;

tangentially supplying a second stream of pressurized air along the wall of the combustion vessel into the second portion in an amount sufficient for above-stoichiometric combustion of the gases entering the second portion;

creating a cyclonic flow pattern of hot gases within one of

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the first and second portions of the combustion vessel and creating a swirling pattern of combustion along the wall of the combustion vessel in the other of the first and second portions;

supplying pressurized steam into the combustion vessel to minimize NO_x emissions; and

transporting resulting above-stoichiometric combustion product gases out of the second portion of the combustion vessel to a gas turbine.

5,285,629

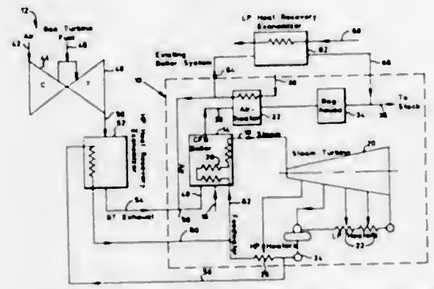
CIRCULATING FLUIDIZED BED POWER PLANT WITH TURBINE FUELED WITH SULFUR CONTAINING FUEL AND USING CFB TO CONTROL EMISSIONS

Ponnusami K. Gounder, San Diego, Calif., assignor to Pyropower Corporation, San Diego, Calif.

Filed Nov. 25, 1992, Ser. No. 981,773

Int. Cl.[5] F02B *43/00*

U.S. Cl. 60—39.12 **10 Claims**



1. A combined cycle power plant for burnish low quality fuels comprising, in combination:

a steam turbine;

a circulating fluidized bed boiler for supplying steam to said steam turbine, a supply of sorbents continuously circulated through the fluidized bed of said boiler;

a gas turbine for burning sulfur containing fuel, said turbine sized to supply the maximum quantity of exhaust gas that can pass through the fluidized bed of said boiler;

a heat recovery econimizer;

a source of feedwater including a pump, and means for passing said feedwater through said economizer to said boiler; and

means for directing exhaust gases of said gas turbine through the economizer, prior to entering the fluidized bed boiler, for reducing the temperature of the exhaust gases for raising the temperature of the feedwater and through the fluidized bed of said fluidized bed boiler for reducing sulfur emissions therein.

5,285,630

SYSTEM FOR REDUCING NITROGEN-OXIDE EMISSIONS FROM A GAS TURBINE ENGINE

Denis R. H. Ansart, Bois le Roi; Gérard J. P. Bayle Laboure, Avon; Jacques L. M. Maunand, Saint Forget, and Denis J. M. Sandelis, Nangis, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.-M.A., Paris, France

Filed Nov. 19, 1992, Ser. No. 978,819

Claims priority, application France, Nov. 20, 1991, 91 14291

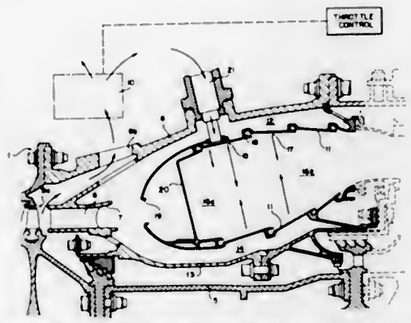
Int. Cl.[5] F02C *9/16*

U.S. Cl. 60—39.23 **7 Claims**

1. A system for reducing nitrogen-oxide emissions from a gas turbine engine having an air compressor and a generally annular combustion chamber, the combustion chamber having a primary zone in which injected fuel is burned and a dilution zone, comprising:

a) a plurality of fuel injectors arranged in a generally circular array so as to inject a plurality of intersecting fuel sprays into the primary zone of the combustion chamber;

b) tap means to tap a portion of the air from the air compressor;



c) inlet means to introduce at least a portion of the tapped air into the combustion chamber in the primary zone at the intersection of adjacent fuel sprays; and,

d) control means operatively associated with the tap means and inlet means to control the airflow passing to the inlet means.

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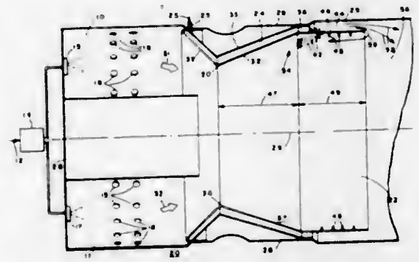
LOW NO_x EMISSION IN GAS TURBINE SYSTEM

William T. Bechtel, II, Schenectady; Masayoshi Kuwata, Ballston Lake, and Roy M. Washam, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 808,892, Dec. 18, 1991, abandoned, which is a division of Ser. No. 474,394, Feb. 5, 1990, Pat. No. 5,117,636. This application Jan. 12, 1993, Ser. No. 3,670

Int. Cl.[5] F02C *3/14*

U.S. Cl. 60—39.06 **6 Claims**



1. A method of providing fuel to a gas turbine combustor including a combustion chamber having a separated zone and a combustion zone downstream of said separated zone so as to achieve low nitric oxide and carbon monoxide emissions comprising:

mixing fuel gas and air in a premixer upstream of the combustion chamber;

passing the mixture of fuel gas and air after mixing through a venturi positioned between said premixer and said combustion chamber, said venturi having annular converging and diverging wall portions meeting at a throat, said separated zone being disposed between said diverging wall portion of said venturi and bulk flow detached from said converging and diverging wall portions of said venturi, said venturi effective to accelerate flow of said mixture to the combustion chamber;

cooling at least the annular converging and diverging wall portions of said venturi in a region of said combustion chamber with a cooling gas;

passing said cooling gas through a passageway adjacent to and downstream of the the diverging wall portion of said venturi and extending to said combustion zone, and dumping the cooling gas into the combustion zone by means of a passageway exit located in said combustion chamber a sufficient distance downstream from said venturi and toward the combustion zone of said combustion chamber to substantially minimize backflow of said cooling gas into said separated zone after exiting said passageway and to enhance flame stability in said combustion zone; and

igniting said mixture to burn within the combustion zone of said combustion chamber.

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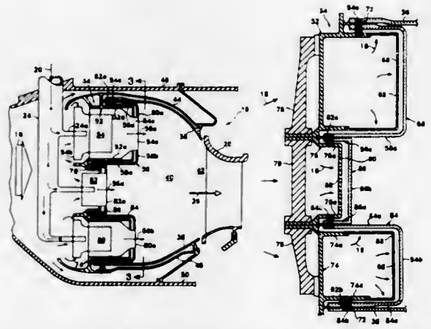
LOW NO_x COMBUSTOR

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 8, 1993, Ser. No. 14,887

Int. Cl.[5] F02C *7/20*; F02G *3/00*

U.S. Cl. 60—39.31 **13 Claims**



1. A combustor for a gas turbine engine comprising: a longitudinal axis

an annular dome assembly including at least a first annular dome having a pair of axially extending and radially spaced apart first flanges;

an annular radially outer liner joined to said dome assembly;

an annular radially inner liner joined to said dome assembly and spaced radially inwardly from said outer liner to define therebetween an annular combustion zone, downstream ends of said outer and inner liners defining therebetween a combustor outlet;

a plurality of circumferentially spaced apart first carburetors joined to said first dome between said first flanges and effective for discharging from a first outlet thereof a first fuel/air mixture for generating combustion gases in said combustion zone and dischargeable from said combustor outlet;

an annular first heat shield having a pair of radially spaced apart and axially extending first legs integrally joined to a radially extending first face in a generally U-shaped configuration, said first face including a plurality of circumferentially spaced apart first ports disposed concentrically with respective ones of said first outlets for allowing said first fuel/air mixture to be discharged from said first carburetors axially through said first heat shield, and at least one of said first legs including a plurality of circumferentially spaced apart and radially extending first mounting holes disposed adjacent to a respective mounting one of said first flanges; and

a plurality of first mounting pins fixedly joined to said mounting first flange and extending radially through respective ones of said first mounting holes without interference therewith for allowing unrestrained thermal movement between said first heat shield and said first dome while supporting said first heat shield against axial pressure loads thereon.

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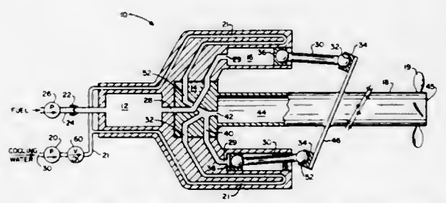
COOLANT SUBSYSTEM FOR A TORPEDO PROPULSION SYSTEM

Anthony W. Duva, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1993, Ser. No. 35,864

Int. Cl.[5] F02G *3/02*; F42B *19/12*

U.S. Cl. 60—39.63 **7 Claims**



1. In a torpedo with a propulsion system having an external combustion engine for driving a drive shaft, the propulsion system including a combustion chamber having an initiator propellant disposed therein to generate an energized gas upon torpedo launch to commence drive action of the drive shaft and to effect admission into the combustion chamber of a sustainer monopropellant which is combusted to form an energized gas, at least one cylinder for receiving and expanding the energized gas, an exhaust gas channel for removing expanded gas from the propulsion system, and rotary valve means for transferring the energized gas from the combustion chamber to the at least one engine cylinder and for transferring the expanded gas from the at least one cylinder into the exhaust gas channel, the rotary valve means being interconnected to the drive shaft, a coolant subsystem comprising, in combination:

an inlet for admitting a seawater coolant;

a coolant passage fluidly connected to the inlet and extending around a portion of at least one of the combustion chamber and the at least one cylinder;

a coolant pump which, upon a momentary lapse of time after torpedo launch, impels the coolant admitted to the coolant subsystem inlet through the coolant passage, through the rotary valve and into the exhaust gas channel through which it exits the torpedo in a mixture with the exhaust gas; and

means disposed in the path of the seawater coolant to prevent a backflow of exhaust in the coolant passage during the momentary lapse of time after drive action is commenced and before the pump impels seawater through the coolant passage.

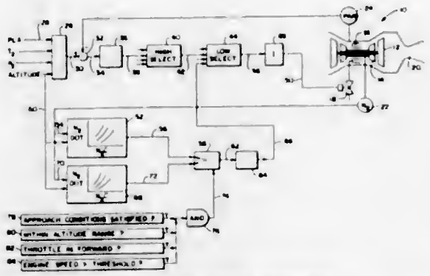
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5,285,634

AIRCRAFT GAS TURBINE ENGINE CONTROL

Richard W. Hoff, Glastonbury, and Barry I. Priest, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1991, Ser. No. 803,854
Int. Cl.[5] F02C *9/28*
U.S. Cl. 60—39.161 **11 Claims**



1. An aircraft gas turbine system comprising:
- a first acceleration schedule establishing an allowable engine acceleration signal as a function of a sensed engine parameter;
- a second acceleration schedule establishing a higher engine acceleration signal as a function of said sensed engine parameter;
- an approach conditions satisfied signal generator producing an approach signal indicating approach conditions satisfied;
- an altitude sensor producing an altitude signal;
- a pilot power lever angle signal producing a forward or reverse signal;
- an engine speed sensor producing a sensed engine speed signal;
- an engine power demand means for producing a power demand signal;
- a demand signal limiter for limiting said demand signal in response to a limit from one of said acceleration signals;
- an acceleration schedule selector for selecting a selected acceleration schedule from one of said first and second acceleration schedules;
- said acceleration schedule signal selector selecting said second acceleration schedule signal only in the presence of an approach condition satisfied signal; and
- transmitting means for transmitting said selected signal to said demand signal limiter.

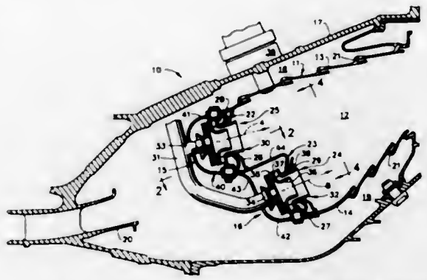
5,285,635

DOUBLE ANNULAR COMBUSTOR

Joseph F. Savelli, West Chester, and Byron A. Pritchard, Jr., Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 859,759, Mar. 30, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 81,482
Int. Cl.[5] F02C *3/14*; F23R *3/46*
U.S. Cl. 60—39.36 **11 Claims**

1. A double angular combustor having concentrical disposed inner and outer annular combustors without a centerbody therebetween, said inner annular combustor lying radially downstream of said outer annular combustor, comprising:
- (a) a first dome plate having an inner portion and an outer portion;
- (b) a second dome plate having an inner portion and an outer portion;
- (c) a cowl structure having an inner portion, an outer portion, and a middle portion, said cowl outer portion being connected to said second dome plate outer portion, is cowl inner portion being connected to said first dome plate inner portion, and said cowl middle portion being connected to said first dome plate outer portion and said second dome plate inner portion; and



- (d) said first dome plate outer portion including a section extending upstream to said cowl middle portion to form a sheltered region for said outer annular combustor.

5,285,636

DIAGNOSTIC DRAIN MAST FOR A GAS TURBINE ENGINE

Dennis D. Mayo; Ronald A. Janes, and Franklin E. Miller, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 28, 1992, Ser. No. 967,480
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.094 **10 Claims**

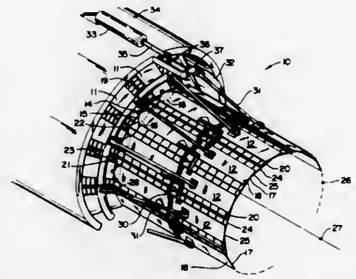
1. An improved drain mast assembly for a gas turbine engine, the assembly being connected to an outer surface of a nacelle of the engine and having a plurality of liquid drain lines terminating within the assembly, the improvement comprising:
- a plurality of liquid collection chambers installed within the drain mast assembly, each of said chambers being coupled in liquid receiving relationship with a respective one of the liquid drain lines, each of the chambers collecting drain liquid from a respective one of the drain lines; and
- means for selectively draining the collected liquid from each of said chambers for identifying drain lines having relatively high drain rates.

5,285,637

SEAL CENTERING AND RESTRAINING DEVICE FOR AN AXISYMMETRIC CONVERGENT/DIVERGENT NOZZLE

William K. Barcza, Stuart, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,211
Int. Cl.[5] F02K *1/00*
U.S. Cl. 60—230 **10 Claims**



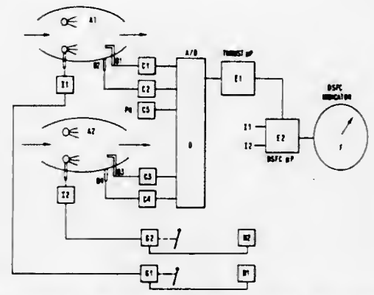
1. A thrust vectoring axisymmetric convergent/divergent nozzle comprising:
- a convergent section having a plurality of circumferentially spaced convergent flaps and an equal number of convergent seals, said convergent seals disposed between said convergent flaps;
- a divergent nozzle section having a longitudinal axis, said divergent nozzle section including a plurality of elongated divergent flaps, each of said divergent flaps pivotally connected to one of said convergent flaps and having a gas side facing said longitudinal axis and an air side facing in a direction away from said longitudinal axis, each of said divergent flaps selectively positionable between a first position wherein said each divergent flap is radially offset from one of the adjacent divergent flaps and a second position wherein said each divergent flap is axially offset from one of the adjacent divergent flaps;
- a plurality of divergent seals, each of said divergent seals pivotally connected to one of said convergent seals and disposed between adjacent divergent flaps on the gas side thereof and each seal having a gas side surface facing said longitudinal axis and an air side surface facing in a direction away from said longitudinal axis;
- a support secured to the air side surface of each of said seals, said support extending longitudinally of the seal secured thereto and including a mounting post extending perpendicular to the gas side surface;
- a plurality of seal centering and restraining devices, each device comprising
- a restraint bar rotatably secured to one of said mounting posts, said restraint bar rotatable in a plane substantially parallel to the gas side surface of the seal attached thereto, said restraint bar having two arms, each arm extending along the air side of an adjacent divergent flap,
- a slider pivotally connected to each arm adjacent the terminal end thereof, each slider slidably contacting one of the adjacent divergent flaps on the air side thereof and located radially outward from one of said seals,
- a positioning post fixedly secured to the air side of each of the divergent flaps adjacent the slider thereon, and
- positioning means for maintaining the position of said mounting post midway between said adjacent divergent flaps when said adjacent divergent flaps are positioned at either said first or second position, said positioning means pivotally secured to said positioning post and pivotally secured to said restraint bar.

5,285,638

METHOD AND APPARATUS FOR MAXIMIZING FUEL EFFICIENCY FOR JET ENGINES

Daniel G. Russ, deceased, late of Fort Wayne by Ruth S. Russ, executrix , and George J. Bertsche, Woodburn, both of Ind., assignors to Telectro-MEK, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 706,338, May 28, 1991, abandoned. This application Dec. 23, 1991, Ser. No. 812,415
Int. Cl.[5] F02K *3/00*
U.S. Cl. 60—243 **11 Claims**



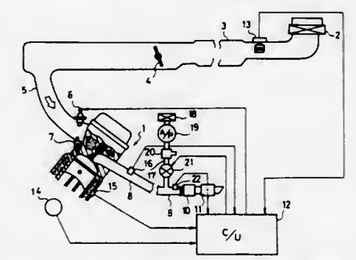
1. A system for maximizing fuel efficiency for a plurality of simultaneously operating engines causing movement to be imparted to an object, said system comprising means to determine the fuel consumption of each engine, means to measure the thrust of each engine, and means to substantially equalize the ratio of the derivatives of fuel consumption to the thrust as between each of said engines.

5,285,639

METHOD AND SYSTEM FOR CONTROLLING SECONDARY AIR FOR INTERNAL COMBUSTION ENGINE

Akihiko Araki; Toshio Namba, and Masanobu Osaki, all of Isesaki, Japan, assignors to Japan Electronic Conrol Systems Co., Ltd., Isesaki, Japan

Filed Jul. 10, 1992, Ser. No. 911,628
Claims priority, application Japan, Jul. 12, 1991, 3-172656
Int. Cl.[5] F01N *3/22*
U.S. Cl. 60—274 **12 Claims**



1. A method for controlling secondary air for an internal combustion engine comprising the steps of:
- detecting oxygen concentration at a position between a catalyst provided in an engine exhaust passage for emission control and a secondary air supply portion provided in said exhaust passage upstream of said catalyst;
- setting an amount of said secondary air so that the detected oxygen concentration approaches a target value by detecting an intake air flow amount of the engine and varying the operational magnitude of the secondary air amount depending upon the detected intake air flow amount of the

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engine wherein the target value is a value corresponding to a theoretical air/fuel ratio;

controlling the supply of the secondary air on the basis of the set secondary air amount by opening an electromagnetic valve disposed in a path of pressurized secondary air, depending upon the set secondary air amount;

detecting oxygen concentration in the exhaust gas at a position upstream of said secondary air supply portion;

feedback controlling an air/fuel ratio of an air/fuel mixture to be introduced into the engine so that the detected oxygen concentration at a position upstream of said secondary air supply portion approaches a target value that is the same as the target value of said secondary air amount; and

forcibly stopping the supply of said secondary air while said air/fuel ratio feedback control is active.

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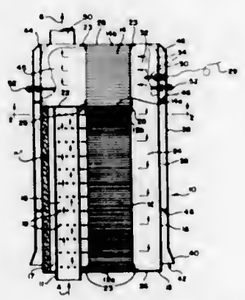
INTEGRATED POST-ENGINE EMISSIONS HEATER, CATALYTIC CONVERTER AND MUFFLER

John R. Olivo, 5410 W. Agatite Ave., Chicago, Ill. 60630

Filed Jul. 21, 1992, Ser. No. 917,760

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—274 **17 Claims**



1. A method for treating engine exhaust emissions and dampening engine noise comprising the steps of:

(a) first, directing said engine exhaust emissions through a perforated conduit;

(b) second, passing said engine exhaust emissions in contact with a reducing catalyst in an oxygen-deficient reaction chamber;

(c) third, heating said engine exhaust emissions to a predetermined temperature after passing said engine exhaust emissions in contact with said reducing catalyst;

(d) fourth, mixing the reduced engine exhaust emissions with heated ambient air supplied by an air-handling shroud; and

(e) fifth, subsequently passing the engine exhaust emissions in contact with an oxidizing catalyst.

5,285,641

FLOW DIVIDING PUMP

Kunifumi Goto; Shigeru Suzuki, and Shigeki Kanzaki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 5, 1991, Ser. No. 788,248

Claims priority, application Japan, Nov. 10, 1990, 2-117950[U]

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—422 **11 Claims**

1. A flow dividing pump comprising:

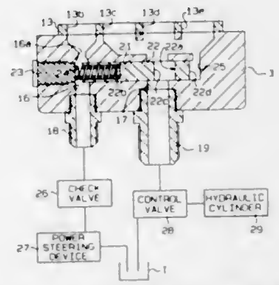
a housing having an opening at an end;

an end plate attached to said opening of the housing, said end plate having a fluid suction port and a pair of fluid discharge ports;

a pump mechanism incorporated in said housing for receiving fluid through said suction port and discharging the received fluid through said discharge ports, said pump mechanism comprising a cylinder rotatably supported by said housing and said end plate, a plurality of bores formed in said cylinder, respective pistons slidably mounted in said bores for reciprocal motion therein, a swash plate coupled to a first end of each piston, said swash plate being pivotally mounted to permit altering the capacity of said pump by pivoting said swash plate, and means for rotating said swash plate to reciprocate said pistons;

a plurality of discharge passages formed in said end plate between said pump mechanism and said discharge ports;

a control valve provided in said end plate for controlling the flow rate of fluid in said discharge passages;



a valve plate provided between said cylinder and said end plate, said valve plate having an enlarged suction hole that simultaneously communicates with a plurality of said bores, and a plurality of discharge holes;

said discharge passages being disposed in association with said discharge holes of said valve plate with a first of said discharge passages communicating with a first of said discharge holes, and a second of said discharge passages communicating with the rest of said discharge holes;

whereby as said cylinder rotates, the pistons are reciprocated according to the position of the swash plate so as to pump fluid from the suction port to the discharge ports.

5,285,642

LOAD SENSING CONTROL SYSTEM FOR HYDRAULIC MACHINE

Hiroshi Watanabe, Ushiku; Yasuo Tanaka, Tsukuba; Eiki Izumi; Hiroshi Onoue, both of Ibaraki, and Shigetaka Nakamura, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01296, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992, PCT Pub. No. WO92/06306, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 27, 1991, Ser. No. 857,934

Claims priority, application Japan, Sep. 28, 1990, 2-259712

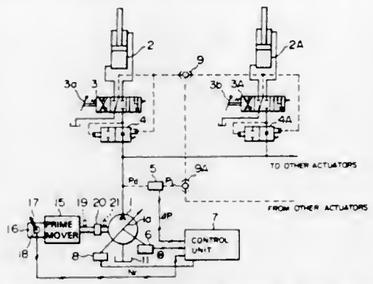
Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—452 **11 Claims**

1. A control system for a hydraulic pump in a hydraulic drive circuit of load sensing control type comprising at least one hydraulic pump of variable displacement type, at least one hydraulic actuator driven by a hydraulic fluid delivered from said hydraulic pump, and a flow control valve connected between said hydraulic pump and said actuator for controlling a flow rate of the hydraulic fluid supplied to said actuator, wherein a target displacement volume is determined based on a differential pressure deviation between a differential pressure between a delivery pressure of said hydraulic pump and a load pressure of said actuator and a target differential pressure whereby a displacement volume of said hydraulic pump is controlled so that said differential pressure between the delivery pressure and the load pressure is held at said target differential pressure, said control system for a hydraulic pump further comprising:

(a) first means including said target differential pressure set as a variable value;

(b) second means for determining a control factor that becomes larger as said differential pressure deviation calculated from said target differential pressure as a variable



value is increased and becomes smaller as said differential pressure deviation is decreased, and also that becomes larger as said target differential pressure becomes smaller; and

(c) third means for determining said target displacement volume based on said differential pressure deviation calculated from said target differential pressure as a variable value and said control factor.

5,285,643

HYDRAULIC DRIVE SYSTEM FOR CIVIL-ENGINEERING AND CONSTRUCTION MACHINE

Toichi Hirata, Ushiku, and Hiroshi Onoue, Ibaraki, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

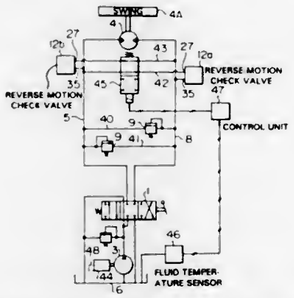
PCT No. PCT/JP91/00440, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO91/15636, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1990, Ser. No. 743,295

Claims priority, application Japan, Apr. 2, 1990, 2-84986

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—468 **11 Claims**



1. A hydraulic drive system for a civil-engineering and construction machine, comprising a hydraulic-fluid source, an actuator operated by hydraulic fluid supplied from said hydraulic-fluid source for driving an inertial body, a directional control valve for controlling flow of the hydraulic fluid supplied from said hydraulic-fluid source to said actuator, a pair of main lines through which said directional control valve and said actuator are connected to each other, said pair or main lines functioning selectively as a main line on a fluid supply side and a main line on a fluid return side by operation of said directional control valve, and reverse-motion check valve means connected to said main lines, said reverse-motion check valve means being brought temporarily to an open position under a restricting action of a damping small bore immediately after halt of said actuator to cause hydraulic fluid of high pressure to flow out from said main line on the fluid return side, thereby preventing a reverse motion of said inertial body, wherein

regulating means is provided for selectively limiting overflow of the hydraulic fluid from the main line on the fluid return side through said reverse-motion check valve means, when said directional control valve is returned to a neutral position to halt said actuator; and

wherein said regulating means includes auxiliary valve means arranged in a line through which said reverse-motion check valve means and the main line on the fluid supply side are connected to each other, for limiting flow of the hydraulic fluid below a predetermined amount depending on a viscosity of the hydraulic fluid.

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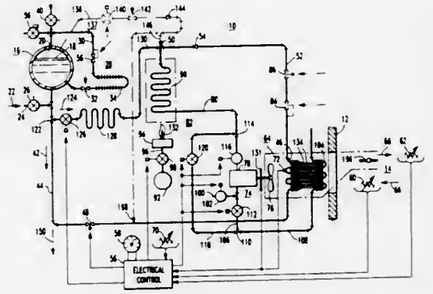
AIR CONDITIONING AND REFRIGERATION APPARATUS UTILIZING A CRYOGEN

Roland L. Roehrich, Pittsburgh, Pa., and Herman H. Viegas, Bloomington, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 27, 1992, Ser. No. 982,364

Int. Cl.[5] F17C *9/04*

U.S. Cl. 62—50.3 **37 Claims**



1. A method for controlling the temperature of a conditioned space, comprising the steps of:

providing a supply of cryogen,

providing a flow path for the cryogen, wherein cryogen from the supply of cryogen flows through the cryogen flow path,

using the cryogen in the cryogen flow path to provide a cooling cycle for the conditioned space, including the step of providing heat exchanger means in the cryogen flow path,

using the cryogen in the cryogen flow path to move air from the conditioned space in heat exchange relation with the heat exchanger means, after the step of using the cryogen to provide the cooling cycle for the conditioned space, including the step of providing cryogen driven air mover means in the cryogen flow path downstream from the heat exchanger means, such that the cryogen driven air mover means utilizes cryogen which is not required for the cooling cycle,

and controlling the flow of cryogen through the cryogen flow path to control the temperature of the conditioned space.

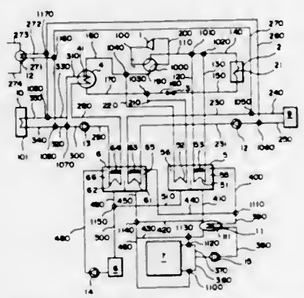
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,645

REGENERATIVE TYPE AIR CONDITIONING EQUIPMENT

Akira Yamada, Hitachi; Yasuo Koseki, Hitachiota; Risuke Onoda, Ibaraki; Fumiaki Yatsuboshi, Sakai, and Hirokuni Mizuno, Ibaraki, all of Japan, assignors to Hitachi, Ltd, Tokyo and The Kansai Electric Power Co., Inc., Osaka, both of Japan

Filed Feb. 13, 1992, Ser. No. 834,781
Claims priority, applicatioo Japan, Feb. 13, 1991, 3-20009
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—91 **13 Claims**



1. A regenerative type air conditioning equipment having a compressor-type heat pump device which develops a low temperature through adiabatic expansion of a coolant, and a concentration difference regeneration device which at least cools a medium to be fed to an air conditioner, using a concentrated heat accumulating liquid after subjecting a heat accumulating liquid to evaporation, and a condensate liquid produced by condensing vapor obtained by evaporation of said heat accumulating liquid,

wherein said concentration difference regeneration device includes an evaporator which vaporizes said condensate liquid under a low pressure, thereby removing heat from the medium sent from said air conditioner to cool said medium, and

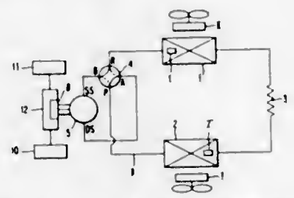
wherein said heat pump device includes a heat exchanger for subjecting said coolant cooled through said adiabatic expansion to heat exchange with said medium cooled by said evaporator to thereby further cool said medium and feed said cooled medium to said air conditioner.

5,285,646

METHOD FOR REVERSING A COMPRESSOR IN A HEAT PUMP

Kim TaeDuk, Taekoo, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 709,204, Jun. 3, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,533
Claims priority, application Rep. of Korea, Jun. 1, 1990, 90-8133
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—115 **11 Claims**



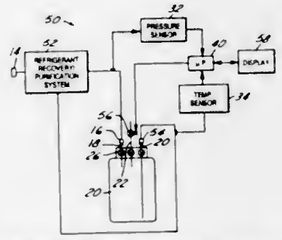
1. A method of reversing the direction of an operating compressor in an air conditioning system, comprising the step of reducing the speed of said compressor to a slower speed greater than zero for a predetermined time period before reversing the direction of said compressor.

5,285,647

REFRIGERANT HANDLING SYSTEM WITH AIR PURGE AND MULTIPLE REFRIGERANT CAPABILITIES

Kenneth W. Manz, Paulding; Sandra Snyder, and Christopher M. Powers, both of Bryan, all of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Filed Mar. 8, 1993, Ser. No. 27,425
Int. Cl.[5] F25B *43/04*
U.S. Cl. 62—127 **20 Claims**



1. In a refrigerant handling system that includes a closed vessel for storing refrigerant, apparatus for determining quantity of air captured within said vessel with the refrigerant comprising:

first sensing means operatively coupled to said vessel for providing a first electrical signal as a function of air/refrigerant vapor pressure within said vessel,

second sensing means operatively coupled to said vessel for providing a second electrical signal as a function of air/refrigerant vapor temperature within said vessel, and

microprocessor-based control means having stored therein electronic indicia that relates saturation pressure to temperature for at least one type of refrigerant, and means for receiving said first and second signals and responsive to said indicia for indicating quantity of air within said vessel as a function of a difference between pressure indicated by said first signal and said saturation pressure indicia at the temperature indicated by said second signal.

5,285,648

DIFFERENTIAL PRESSURE SUPERHEAT SENSOR FOR LOW REFRIGERANT CHARGE DETECTION

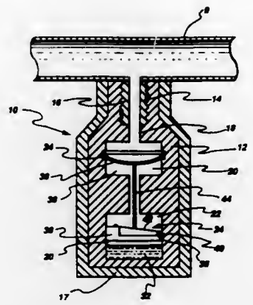
Warren F. Bessler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,545
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—129 **18 Claims**

1. A low refrigerant charge detecting apparatus for a refrigeration system including an evaporator, said apparatus comprising:

a casing having a reference chamber containing a reference charge of refrigerant;

a pressure responsive snap member disposed in said casing so as to have one side exposed to said reference chamber and another side exposed to the exit pressure of the evaporator, said pressure responsive snap member being normally biased into a first position but snapping to a second position when pressure in said reference chamber exceeds a predetermined level; and



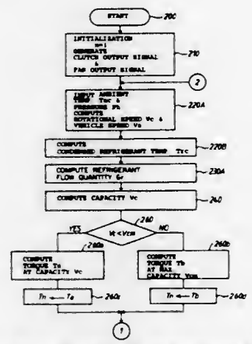
a switch which is opened and closed in response to said pressure responsive snap member.

5,285,649

METHOD AND APPARATUS FOR CALCULATING TORQUE OF VARIABLE CAPACITY TYPE COMPRESSOR

Yasushi Yamanaka, Nakashima; Nobuharu Kakehashi, Anjo; Shigeo Numazawa, Nagoya; Yasuyuki Nishi; Hiroshi Kishita, both of Kariya, and Kideki Suzuki, Chita, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 7, 1992, Ser. No. 864,771
Claims priority, application Japan, Oct. 9, 1991, 3-261936; Oct. 9, 1991, 3-261949; Oct. 9, 1991, 3-261955; Oct. 9, 1991, 3-261956; Oct. 9, 1991, 3-261958
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—133 **18 Claims**



1. A method for controlling a parameter of a prime mover that drives a variable capacity type compressor provided in a refrigeration circuit to compress and discharge refrigerant to be circulated through a heat exchanger in the refrigeration circuit, the method comprising the steps of:

calculating a rotational speed of the compressor;

calculating a quantity of the refrigerant discharged from the compressor and a pressure of the refrigerant circulated in a high-pressure side of the refrigeration circuit;

calculating a capacity of the compressor, which is operating, based on said calculated quantity of the refrigerant and said calculated rotational speed;

calculating said torque in accordance with said calculated pressure of the refrigerant and said calculated capacity; and

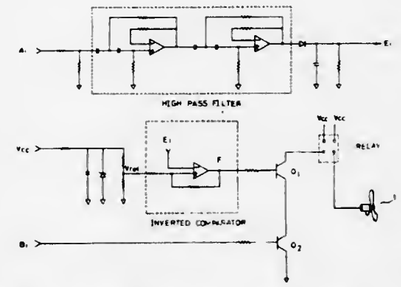
using said calculated torque to control an operating parameter of said prime mover.

5,285,650

AUTOMOBILE CONDENSER ELECTRIC FAN CONTROLLER

Che-Tzu Lin, 3F., No. 8-1, Alley 28, Lane 315, Sec. 2, Shih Pai Road, Pei Tou District, Taipei, Taiwan

Filed Jul. 27, 1993, Ser. No. 97,218
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—133 **3 Claims**



1. An automobile condenser electric fan controller installed in an automobile for automatically turning off a condenser electric fan of said automobile when a speed of said automobile surpasses a predetermined critical speed and for automatically turning on said condenser electric fan when said speed of said automobile below said predetermined critical speed, said controller comprising a working voltage source signal line connected to a battery of said automobile, a ground wire, a speed signal line connected in parallel to a speedometer of said automobile for providing a speed signal Ai, a compressor signal line connected in parallel to a low pressure switch of a compressor of said automobile for providing a compressor operating signal Bi having a high potential when said compressor is operating and a low potential when said compressor is not operating, an output control relay signal line, a filter for receiving a signal surpassing the predetermined critical speed reference signal Sth and converting the received signal into a corresponding DC level Ei, an inverted comparator for comparing the DC level Ei obtained from said filter with a reference DC level Vref and providing an output F according to the comparison result, said output F of said inverted comparator being at high potential when said DC level Ei is lower than said reference DC level Vref and being at low potential when said DC level Ei is higher than or equal to said reference DC level Vref, a first transistor connected between said inverted comparator and said output control relay signal line, and a second transistor connected between said first transistor and said compressor signal line, whereby said first and second transistor are electrically connected for turning on said condenser electric fan via said output control relay signal line when said output F and said compressor operating signal Bi both are at high potential, and said first and second transistor are electrically disconnected for turning off said condenser electric fan via said output control relay signal line when at least one of said output F and said compressor operating signal Bi is at low potential.

5,285,651

AIR CONDITIONER COOLING APPARATUS

Rnbert W. Marine, P.O. Box 41, Seaford, Del. 19973-0041

Filed Jul. 9, 1993, Ser. No. 88,380
Int. Cl.[5] F28D *3/00*
U.S. Cl. 62—171 **4 Claims**

1. An air conditioner cooling apparatus, comprising,

an air conditioner housing, having a plurality of housing side

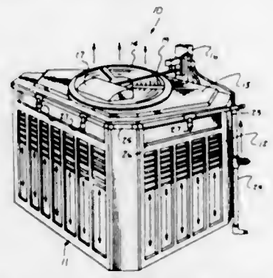
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walls, and a housing top wall, with a cooling condenser mounted within the air conditioner housing, and

the housing top wall including an exhaust grid and a fan mounted within the housing in adjacency to the exhaust grid, and

a support post, the support post including a switch member mounted to the support post, the switch member including a pivot axle, with a support rod extending from the pivot axle over the exhaust grid, with the support post having a first end secured to said pivot axle, and the support post having a second end, the second end including a lift cup, the lift cup including a convex cavity in facing relationship relative to the exhaust grid, and

the lift cup oriented between an outer periphery of the exhaust grid and a medial central of the exhaust grid, and



the switch member including a plunger in contiguous communication with the support rod to effect closing of the switch member upon pivoting of the support rod about the pivot axle, and

a fluid control valve in electrical communication with the switch member, and a fluid inlet conduit directed into the fluid control valve, and

a manifold conduit extending from said fluid control valve along a plurality of said side walls, with the housing side walls each including a side wall opening, and at least one nozzle conduit directed from the fluid inlet conduit through each of the side wall openings, each nozzle conduit including an outlet end projecting into the housing for effecting misting of said condenser upon the closing of the switch member directing fluid flow through the fluid control valve.

5,285,652

SENSOR FOR PRESSURE CONTROLLED SWITCHING VALVE FOR REFRIGERATION SYSTEM

James Day, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 8, 1993, Ser. No. 43,691
Int. Cl.[5] F25B *5/00*; H01H *35/40*
U.S. Cl. 62—199 **17 Claims**

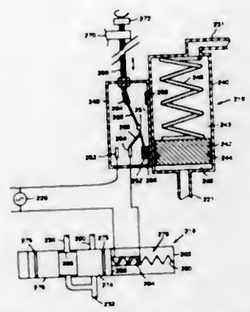
1. A flow switching device for alternately conveying refrigerant from low and high pressure evaporator means to compressor means of a refrigeration system, said device comprising:

a switching valve adapted to move between a low and high pressure position allowing said refrigerant to flow alternately and respectively from said low and high pressure evaporator means to said compressor means; and

a pressure switch between said high pressure evaporator means and said low pressure evaporator means, said pressure switch connected to said switching valve and adapted to move said switching valve between said low and high pressure positions and comprising:

a piston housing positioned in a refrigerant flow relationship between said high and low pressure evaporator means, said housing being divided into a first portion and a second portion by a ferrous metal piston slidably positioned therein;

a rocker arm chamber positioned in a slidable relationship with said piston housing and having first and second magnetized junctions mounted on a rocker arm; and



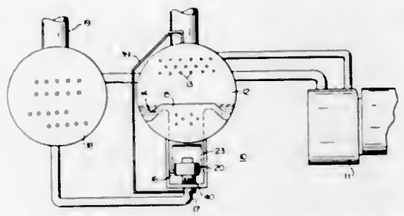
a switch assembly electrically connected to said switching valve such that when said piston is in a first position said switch assembly is opened and moves said switching valve to said low pressure position, and when said piston is in a second position said switch assembly is closed and moves said switching valve to said high pressure position.

5,285,653

REFRIGERANT FLOW CONTROL DEVICE

Steven E. Meloling, Cicero, and Zoltan P. Mandy, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,460
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—218 **10 Claims**



1. A float-type refrigerant flow control device for metering the flow of a refrigerant liquid to a subsequent stage from an outlet of a sump of a refrigerant condenser in which compressed refrigerant vapor is condensed to liquid; the control device metering the liquid flow as a function of the level of the liquid in the condenser sump, the device comprising:

a standpipe vertically disposed in said sump and having a tubular wall, an open lower end disposed at said outlet of the sump, a closed upper end, and at least one metering slot extending axially on said standpipe through said cylindrical wall near the lower end thereof;

a generally tubular metering sleeve slidably disposed within said standpipe and axially displaceable over a limited distance therewithin, said sleeve having a lower edge that gates the liquid flow through said at least one metering slot;

a float member that is slidably disposed on said standpipe and which floats on the refrigerant liquid in said sump, including means coupled the float member through the tubular wall of said standpipe to said metering sleeve to raise or lower same as a function of the vertical position of the float member along said standpipe, said float being in the form of a hollow annular shell closed except at the bottom thereof and having a bottom side closed off by the liquid in the sump to define an internal volume within said shell; and

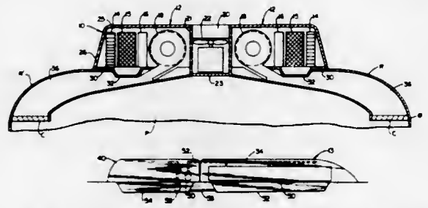
vapor injection means for supplying vapor of said refrigerant to said float internal volume to replenish same and for ensuring in operation that said float member maintains a positive buoyancy relative to the saturated liquid condensate in said sump.

5,285,654

EVAPORATIVE COOLING/HEATING SYSTEM WITH ROOF-MOUNTED WATER TANK

Houshang Ferdows, Boulder, Colo., assignor to Suetrak Air Conditioning Sales Corporation, Commerce City, Colo.

Filed Nov. 6, 1992, Ser. No. 972,599
Int. Cl.[5] F25D *17/04*
U.S. Cl. 62—309 **20 Claims**



1. In an evaporative cooling system adapted to be mounted on a roof of a vehicle wherein a first housing is provided with blowers to draw air from the outside of the housing through evaporative media in the housing, said media including a filter block saturated with water for the purpose of conditioning the air as a preliminary to delivery of the air into the interior of said vehicle, the improvement comprising:

water supply means for said evaporative media including a water tank mounted on said roof of said housing in tandem with said first housing to serve as the sole source of water supply to said evaporative media;

water delivery means for delivering water from said tank to said evaporative media; and

water return means for collecting and returning excess water from said evaporative media to said tank.

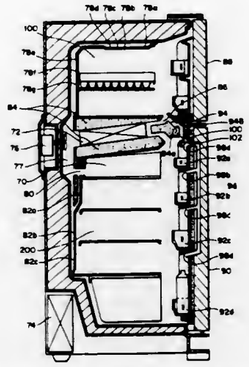
5,285,655

REFRIGERATOR WITH FREEZER AIR DIRECTED OVER COOLER COMPARTMENT SHELF

Park Sung-Il, Kyonggi; Kim Myoung-Uk, Seoul, and Lee Su-Il, Kyonggi, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 22, 1993, Ser. No. 7,977
Claims priority, application Rep. of Korea, Feb. 21, 1992, 92 2701
Int. Cl.[5] F25D *23/06*
U.S. Cl. 62—451 **14 Claims**

1. A refrigerator including a freezing room and a refrigerating room, said refrigerating room including a door having at least one shelf on an inner side thereof for storing food, and conduit-defining means defining a conduit located directly above said shelf directly communicating said at least one shelf with said freezing room so that in a normal operating mode



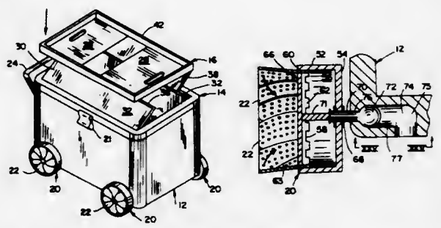
cool air descends directly downward from said freezing room to said shelf.

5,285,656

PORTABLE COOLER CHEST WITH EXPANDABLE WHEELS AND COLAPSIBLE EXTENSION

Calvin R. Peters, 351 N. Hardwick, SW., Grand Rapids, Mich. 49548

Continuation-in-part of Ser. No. 845,477, Mar. 6, 1992, Pat. No. D. 340,620. This application Aug. 6, 1992, Ser. No. 926,583
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.1 **7 Claims**



1. A portable cooler chest comprising:

an enclosure having a fixed volume and a top opening;

a lid removably covering said top opening;

a collapsible storage container carried on said lid and having an erected position in which said collapsible storage container extends upwardly from said lid and a collapsed position in which said collapsible storage container is collapsed on said lid;

a cover for covering said collapsible storage container when said collapsible storage container is in its erected position and for enclosing said collapsible storage container between said cover and said lid when said collapsible storage container is in its collapsed position; and

a plurality of wheels rotatably connected to the lower extent of said enclosure.

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CONTROLLED-ENVIRONMENT MEDICAL CONTAINER

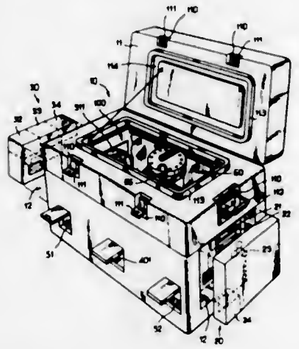
Bernard Bacchi, Garches; Patrick Marchot, Colombes; Philippe Mauriat, Vanves; Gilles Tonati, Tours; Philippe Pouard, Clamart; Alain Magnard, Longpont sur Orge; Philippe Thomas, Villiers sur Orge; Daniel Thépaut, Villecoain, all of France, and Fernand Muller, Vianden, Luxembourg, assignors to Electrolux S.A.R.L., Vianden, Luxembourg

Filed Sep. 27, 1991, Ser. No. 766,273

Claims priority, application France, Sep. 28, 1990, 90 12022

Int. Cl.[5] **F25D** *3/08*

U.S. Cl. 62—457.9 **12 Claims**



1. Controlled-environment container for preserving and transporting living organs to be transplanted comprising a box with a movable lid delimiting a thermally insulating inner enclosure and outer compartments, a refrigerating unit which is housed partly in one of said compartments and partly in said enclosure and which has means for maintaining a selected specified temperature in said enclosure, a pumping unit which is housed partly in another of said compartments and partly in said enclosure and which includes means for supplying at least one organ to be placed in said enclosure with a fluid for physiological use at a selected specified pressure and flow rate, a control means which is connected to said refrigerating and pumping units and which is adapted to operate said refrigerating and pumping units and monitor their assigned operations, and an electrical power source which is connected to said refrigerating and pumping units and which supplies power to said refrigerating and pumping units, and wherein said container further comprises a disposable aseptic detachable transporting assembly provided with: a reservoir means comprising a bag adapted to contain said fluid; a collector means comprising a bag adapted to collect fluid which has been supplied to said organ; a transporting means adapted to receive said organ and including means for receiving a suspension device in order to hold said organ and a dispensing means adapted to supply said organ with said fluid; and pipework connecting said reservoir means and said dispensing means by passing via said pumping unit and connecting said transporting means and said collector bag.

5,285,658

EMBROIDERED LACE BRACELETS

Bruce Altman, 2500 Hudson Ter., Ft. Lee, N.J. 07029, and Andrew Jiritano, 910 22 St., Union City, N.J. 07087

Division of Ser. No. 720,944, Jun. 25, 1991, Pat. No. 5,156,022.

This application Sep. 3, 1992, Ser. No. 940,033

Int. Cl.[5] **A44C** *25/00*

U.S. Cl. 63—3 **4 Claims**

1. An article for attachment about a body part comprising:

an embroidered band having a length, and first and second ends;

an embroidered loop, formed during the embroidery of the band, at the first end of the band;



an aperture, formed during the embroidery of the band, within the embroidered loop for receiving the second end of the band;

the second end of the bass passing through the aperture and tied thereto to fasten the ends of the band together about a body part.

5,285,659

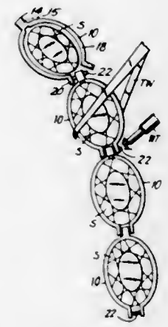
METHOD AND APPARATUS FOR SETTING STONES IN JEWELRY

Vahran Bardisbanyan, Encino, Calif., assignor to Marquesa, Inc., Van Nuys, Calif.

Filed Sep. 29, 1992, Ser. No. 953,724

Int. Cl.[5] **A44C** *17/02*

U.S. Cl. 63—26 **21 Claims**



1. A jewelry mounting for a stone having a girdle, said mounting comprising a housing having a pair of opposed channel-shaped legs, each having a first end and a free end, said channel-shaped legs being capable of surrounding and securely holding said girdle of said stone from both above and below, said channel shaped legs meeting at said first ends in an extending ear having an aperture therethrough, said free end of a first of said channel-shaped legs, opposite to said extending ear, having a post, smaller in diameter than said aperture and securable to the free end of said opposed channel shaped leg when said channel shaped legs are squeezed into contact with said girdle of said stone.

5,285,660

DEVICE FOR BENDING GLASS SHEETS USING FLUID BARRIER

Jean-Marc Petitcollin, Thourotte; Jean-Luc Lesage, and Arnaud Borderiou, both of Compiegne, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Division of Ser. No. 709,207, Jun. 3, 1991, Pat. No. 5,135,558.

This application Jun. 15, 1992, Ser. No. 898,684

Claims priority, application France, Jun. 1, 1990, 90 06842

Int. Cl.[5] **C03B** *23/023*

U.S. Cl. 65—273 **6 Claims**

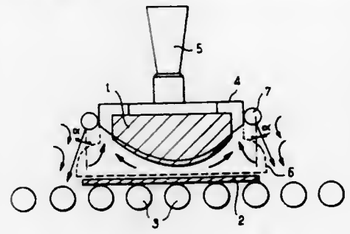
1. Device for bending a glass sheet comprising:

a furnace for heating glass sheets;

a bending station;

a conveyor for delivering a heated glass sheet from the furnace to the bending station;

an upper being form in said bending station and having a lower face turned toward the heated glass sheet in the bending station;



means for generating a pneumatic force for bringing the heated glass sheet into contact with the upper bending form; and

means for generating a fluid barrier of high pressure gas jets at the periphery of the glass sheet on the conveyor in the bending station, so as to limit entry and exit of air at the immediate vicinity of the upper bending mold from an exterior of the fluid barrier.

5,285,661

TUBULAR TEXTILE INSERT FOR STRENGTHENING MATERIAL AND A MECHANISM FOR ITS PRODUCTION

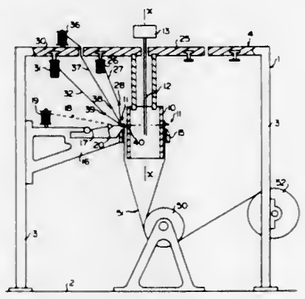
Laurent Mathieu, Gissey le Vieil, France, assignor to C.R.S.T. (S.A.), Vitteaux, France

Filed Aug. 27, 1992, Ser. No. 936,898

Claims priority, application France, Aug. 27, 1991, 91 10894

Int. Cl.[5] **D04B** *9/42*

U.S. Cl. 66—9 R **3 Claims**



1. Apparatus for producing a tubular textile insert or strengthening made up of a stack of successive layers of contiguous threads comprising:

a frame (1) with a cylindrical needle bed (10) in its centre with a set of needles (11) arranged on the circumference of the needle bed (10),

a controller for triggering the movement of the needles;

a concentric cylinder outside the needle bed holding several thread carriers (38) intended to receive the binding threads from several mixed bobbins (31) interdependent from the frame (1);

a mechanism of thread carriers (38) synchronized with the movement of the needles performing the stitches;

a central wheel (25) rotating around the longitudinal axis of the needle bed (10) holding several bobbins feeding strengthening threads guided to the level of the needles (11) to form a first layer of contiguous parallel threads arranged in a spiral;

a peripheral external wheel (30), concentric to the needle bed and to the central wheel (25) rotating around the longitudinal axis of the needle bed (10) but in the opposite direction of that of central wheel (25) holding several bobbins feeding the needles (11) from the frame (10) with strengthening threads to form a second layer of contiguous parallel threads arranged in a spiral but with a pitch which is opposite to that of the first layer;

a plurality of intermediate bobbins supported in a fixed relationship with the frame and feeding strengthening threads between the central wheel (25) and the external rotating peripheral wheel (30) to the needles (11) of the needle bed (10) to form a layer of intermediate contiguous parallel threads arranged according to the generating lines of the needle bed (10);

a system for drawing and winding the tubular textile insert.

5,285,662

SINGLE-CYLINDER CIRCULAR KNITTING MACHINE FOR MANUFACTURING SOCKS AND STOCKINGS OR THE LIKE

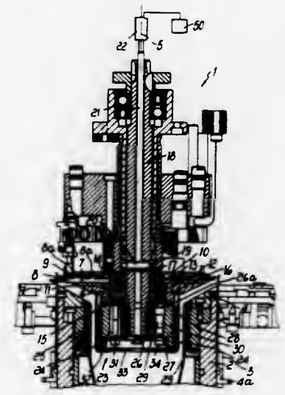
Francesco Lonati; Tiberio Lonati; Ettore Lonati, and Fausto Lonati, all of Brescia, Italy, assignors to S.F.I.M. S.r.l., Brescia, Italy

Filed Dec. 2, 1992, Ser. No. 984,622

Claims priority, application Italy, Dec. 17, 1991, MI91A003369

Int. Cl.[5] **D04B** *9/46*

U.S. Cl. 66—95 **13 Claims**



1. Single-cylinder circular knitting machine particularly for manufacturing socks and stockings, comprising, a vertically arranged needle cylinder having a skirt and an axis, a plurality of axial grooves defined in said skirt, a needle slideably accommodated in each of said grooves, a platen arranged coaxially above said needle cylinder, a plurality of radial grooves defined in said platen, hooks slideably accommodated in said radial grooves, at least one heel provided on each of said hooks and protruding from said radial grooves, actuation cams facing said platen and defining paths, said paths being engageable by said at least one heel of each of said hooks for moving said hooks upon rotation of said platen about said axis with respect to said actuation cams, between a retraction position whereat said hooks are retracted in said radial grooves of said platen and an extraction position whereat said hooks are extracted from said radial grooves of said platen, said machine further comprising a hook locking device, said hook locking device being arranged proximate to said platen and controllably movable between an inactive position, whereat said hook locking

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device does not interfere with said hooks, and an active position, whereat said hook locking device engages said hooks in said retracted position for retaining said hooks in said retracted position.

5,285,663

ROLLING AND DISCHARGING DEVICE OF KNITTED FABRIC ON CIRCULAR KNITTING MACHINE AND ITS CONTROLLING METHOD

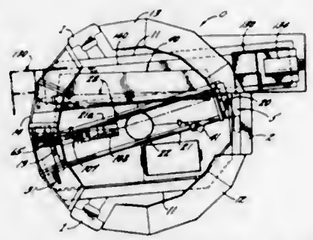
Kozo Taniguchi, Kobe, Japan, assignor to Precision Fukuhara Works, Ltd., Japan

Filed Sep. 17, 1992, Ser. No. 946,387

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] D04B *15/88*; B21C *47/24*

U.S. Cl. 66—153 **20 Claims**



1. A fabric winding and discharge unit for a circular knitting machine having a knitting section including a rotatable needle cylinder, said unit being in spaced underlying relationship to said needle cylinder and being rotatable synchronously therewith about a central axis of said knitting machine;

said unit including a rotatable shaft about which the fabric is wound, a plurality of fabric delivery rolls for conducting a free end of said fabric to said shaft, and transmission means for driving said delivery rolls and said shaft in response to rotation of said unit about said axis;

a pair of spaced frame members carried by and rotatable with said unit, one end of said shaft acting as a universal joint and being connected to one of said frame members, and an opposite end of said shaft being releasably connected to the other of said frame members;

said shaft being radially expandable and contractible and having fabric engaging comb means that at times extend from, and that at other times are retracted within, said shaft;

switch means associated with said fabric winding and discharging unit for stopping rotation of said unit at a fabric discharge position;

a shaft retaining/releasing device for at times securing an end of said shaft to said frame members, and for at other times moving said end of said shaft from said frame member;

a fabric receiving table carried by and rotatable with said unit, said table receiving rolls of said fabric following discharge thereof from said shaft retaining/releasing device; and

a thrusting device adjacent said fabric receiving table for pushing said rolls of fabric from said fabric receiving table and said knitting machine.

5,285,664

AUTOMATIC WASHING MACHINES

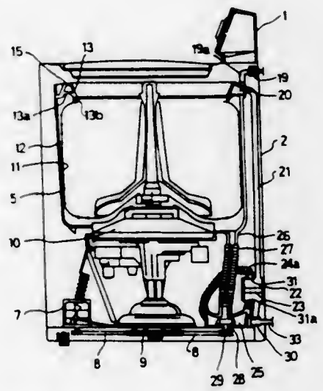
Suk-Kyu Chang, Seoul; Sung-Bum Cho, and Yong-Bum Shim, both of Suwon, all of Rep. of Korea, assignors to Tong Yang Cement Corp., Seoul, Rep. of Korea

Filed Feb. 9, 1993, Ser. No. 15,635

Claims priority, application Rep. of Korea, Feb. 25, 1992, 1992-2935

Int. Cl.[5] D06F *38/09*, *39/10*

U.S. Cl. 68—18 F **5 Claims**



1. A washing machine comprising a housing having a control panel at its upper part, a power transmission being connected to a reversible drive motor by means of a drive belt and a driven pulley, a washing tub, an agitator vane wheel being rotatably mounted on an upper part of said power transmission, a dehydrating tub which has a plurality of through holes at its side wall and is disposed in said washing tub for rotation inside the washing tub and a water feed control valve being disposed on an upper part of the washing tub and being adapted to control the water feeding, the improvement comprising:

sprinkling means for repeatedly sprinkling washing water into said dehydrating tub, said sprinkling means including a removable washing tub lid forming an upper part of said means and having a sprinkling guide surface, an adapter being provided at a side of said washing tub lid and permitting the washing water to be fed to said means therethrough and a guide member forming, in cooperation with the washing tub lid, a sprinkling nozzle through which the washing water is sprinkled into the dehydrating tub;

lint filtering means for filtering off lints generated in the washing and permitting the filtered lints to be automatically removed therefrom so as to be then drained off the washing machine, said lint filtering means communicating with the washing tub and said adapter of the sprinkling means; and

circulation pump means for circulating the washing water, said circulation pump means being connected to the washing tub and the sprinkling means in such a manner that it permits the washing water in washing cycle to be drawn up to the adapter of the sprinkling means through the lint filtering means and permits the used washing water in draining cycle to downwardly pass through the filtering means so as to be drained off the washing machine, thereby causing the lints in the washing water to be filtered off by the lint filtering means during the washing cycle and to be automatically removed from the lint filtering means during the draining cycle.

5,285,665

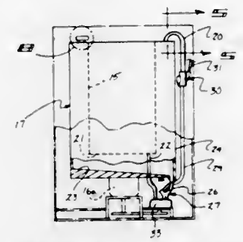
WASHING MACHINE WATER RECYCLING APPARATUS

Carl L. Hetrick, Jr., R.D. #1, Box 303A, Berlin, Pa. 15530

Filed Dec. 18, 1992, Ser. No. 993,364

Int. Cl.[5] D06F *39/08*, *39/10*

U.S. Cl. 68—18 F **2 Claims**



1. A washing machine water recycling apparatus, comprising,

a washing machine housing, having a housing top wall and a top wall opening directed through the housing top wall, with a lid mounted to the top wall for access to the top wall opening,

and

a washing machine tub mounted within the housing,

and

a recycling tank mounted within the housing in adjacency to the washing machine tub, the recycling tank having a recycling tank top wall, with a tank vent directed through the tank top wall,

and

the washing machine tub having a tub floor, with a tub drain conduit directed through the tub floor,

and

a reversible pump, with the reversible pump in fluid communication with the tub drain conduit,

and

the recycling tank having a tank floor, with the tank floor including a tank drain conduit directed through the tank floor,

and

a first solenoid valve in fluid communication with the tank drain conduit,

and

the first solenoid valve in fluid communication with the reversible pump,

and

a delivery conduit in fluid communication with the first solenoid valve directed from the first solenoid valve to a second solenoid valve, and the second solenoid valve having a valve drain conduit in fluid communication with the second solenoid valve, and the second solenoid valve further including a fill conduit directed from the second solenoid valve through the tank top wall into the recycling tank, with the delivery conduit in selective communication with the fill conduit and an outlet drain conduit,

and

the reversible pump in selective communication with the delivery conduit and the tank drain conduit,

and

the first solenoid valve includes a first solenoid valve first tube and a first solenoid valve second tube, the first solenoid valve first tube in fluid communication with the tank drain conduit, and the first solenoid valve second tube in fluid communication with the delivery conduit, with the first solenoid first tube and the first solenoid valve second tube in fluid communication with a first solenoid valve chamber, and the first solenoid valve chamber in fluid communication with the reversible pump, and the second solenoid valve having a second solenoid valve first tube in fluid communication with the outlet drain conduit, and the second solenoid valve second tube in fluid communication with the fill conduit, with the second solenoid valve first tube and the second solenoid second tube directed into a second solenoid valve chamber within the second solenoid valve, and the second solenoid valve chamber within the second solenoid valve, and the second solenoid valve chamber in fluid communication with the delivery conduit,

and the first solenoid valve and the second solenoid valve each includes a solenoid member, and the first solenoid chamber and the second solenoid chamber each include an actuator shaft, each actuator shaft including a first gate and a second gate, with each first gate in fluid communication with one of said first tubes, and each second gate in fluid communication with one of said second tubes, and each actuator shaft having a second link fixedly mounted thereto, and each second link having a first link pivotally mounted to the second link, and each first link including a solenoid rod pivotally mounted to the first link, with each solenoid rod reciprocatably mounted within a solenoid member, and said first solenoid and said second solenoid including said solenoid member,

and

the vent includes a vent tube directed through the tank top wall, with the vent tube having a first end spaced above the tank top wall, and a tube second end directed into the tank top wall, with the tube first end having a tube cap, and the vent tube including an intermediate web including a plurality of apertures directed therethrough, and a fragrance saturated porous sponge mounted within the vent tube between the intermediate web and the vent tube first end, and the vent tube further including a plurality of vent tube wall apertures directed through the vent tube between the intermediate web and the vent tube first end.

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COMBINED DEAD LOCK AND SAFETY CHAIN TYPE DOOR LOCK

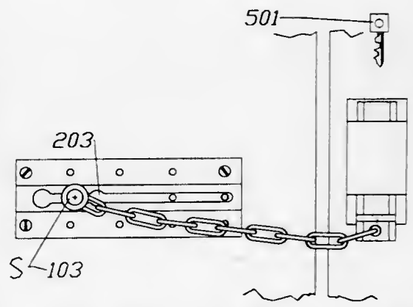
Arthur W. Bartnicki, 800 Victoria Sq. C.P. 403, Montreal, Quebec, Canada H4Z 1J7

Filed Apr. 2, 1992, Ser. No. 864,899

Claims priority, application Canada, Apr. 16, 1991, 2040618

Int. Cl.[5] E05C *17/36*

U.S. Cl. 70—93 **7 Claims**



1. A locking mechanism of the chain guard type for mounting on a door and on a frame riser against which said door closes, said mechanism comprising:

a lock for mounting on the riser which is actuated to open by a controlled access means such as a key;

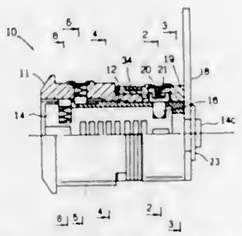
a lock member capable of being secured to and released from the lock;

an elongated assembly attached to the lock member, com-

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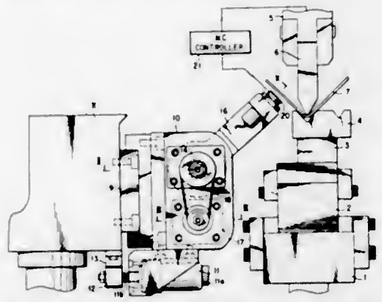
prising a flexible component, which is capable of being extended to a fixed maximum length;
a housing assembly mounted on the door, with means to engage a free end of the elongated assembly only at a position near a housing end furthest from the lock while the lock member is secured to the lock, and means to then retain and guide said engaged free end to a stop near a housing end closest to the lock;
wherein the improvement is to provide at least one additional means to engage the free end of the elongated assembly with a lengthened means to retain and guide the engaged said free end so that a new position of engagement is beyond reach of the free end of the elongated assembly when the lock member is secured to the lock, with a new stop now at least as close to the lock as in the first mentioned means; and
wherein the lock member is to be released from the lock whenever the free end of the elongated assembly is to be engaged or disengaged from the additional means in order to use a dead lock feature.

5,285,667
CYLINDER LOCK
Takeshi Fukasawa, and Junji Ohkawara, both of Yokohama, Japan, assignors to Alpha Corporation, Kawasaki, Japan
Filed Nov. 26, 1991, Ser. No. 798,573
Claims priority, application Japan, Nov. 30, 1990, 2-330273; Nov. 30, 1990, 2-330274
Int. Cl.[5] E05B *9/10*
U.S. Cl. 70—379 R **10 Claims**



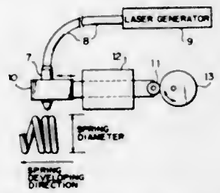
1. A cylinder lock including a casing for receiving a key cylinder rotatably;
rotatable means disposed between said key cylinder and the casing;
releasable latch means in said casing for engaging and retaining said rotatable means static;
tumbler means disposed in the key cylinder operable to engage said rotatable means releasably;
said tumbler means normally making a first driving connection between the key cylinder and the rotatable means whereby the key cylinder and the rotatable means are operable to rotate in unison;
said tumbler means being responsive upon insertion of a proper key into said key cylinder to release the first driving connection whereby the key cylinder is operable to rotate independently of said rotatable means;
connector means carried by and movable rotatably relative to said rotatable means operable to actuate a lock device;
radial cam follower means received by said rotatable means operable to make a second driving connection between the key cylinder and the connector means;
cam means within said key cylinder operable upon rotation of said key cylinder in a first direction through a first angle while said rotatable means is static to drive said cam follower radially for effecting said second driving connection whereby further rotation of said key cylinder through a second angle is operable to release said latch means and to actuate said connector means in turn actuating said lock device.

5,285,668
SYSTEM FOR DETECTING BENDING ANGLE FOR PRESS BRAKE
Shigeru Tokai, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan
Filed Aug. 11, 1992, Ser. No. 917,003
Claims priority, application Japan, Feb. 16, 1990, 2-13803[U]
Int. Cl.[5] B21D *5/02, 11/22*
U.S. Cl. 72—10 **14 Claims**



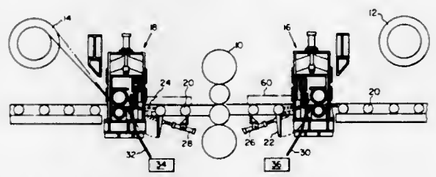
1. A bending angle detecting system for a press brake for a bending process of a workpiece between a die and a punch, comprising:
a back stop located on the press brake for determining a bending position of said workpiece;
a sensor means provided on said back stop in the vicinity of said workpiece being bent for directly detecting a bending angle of the workpiece during said bending process;
means for driving said punch for performing said bending process; and
means for controlling a lower limit position of said punch based on a detected angle signal from the sensor means.

5,285,669
SPRING MANUFACTURING APPARATUS AND SPRING CUTTING MECHANISM
Ichiro Itaya, Katsushika, Japan, assignor to Kabushiki Kaisha Itaya Seisaku Sho, Japan
Filed Jun. 24, 1993, Ser. No. 82,271
Claims priority, application Japan, Jan. 27, 1993, 5-011948
Int. Cl.[5] B21F *11/00*; B23K *26/14*
U.S. Cl. 72—132 **4 Claims**



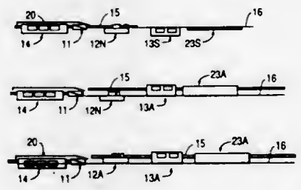
1. A spring manufacturing apparatus which forms a spring by supplying a wire material toward a point tool provided around a spring forming section and bringing the wire material into contact with the point tool so as to forcibly bend the wire material to make a diameter of the spring, comprising:
a feed roller for feeding the wire material toward the point tool;
a first motor for rotating said feed roller;
laser generation means for generating a laser beam for cutting the wire material;
laser irradiation means, movable in a direction substantially parallel to a developing direction of the spring made of the wire material bent by being brought into contact with the point tool, for irradiating the laser beam generated by said laser generation means upon the bent wire material;
a second motor for moving said laser irradiation means; and
control means for, when manufacturing of a single spring is completed, activating said laser generation means and driving said first and second motors at a synchronous timing,
wherein said spring manufacturing apparatus cuts the wire material by laser beam generated by said laser generation means in a plane substantially horizontal with respect to the developing direction of the spring.

5,285,670
PINCH ROLL AND SHEAR COMBINATION
John E. Thomas, Pittsburgh, Pa., assignor to Tippins Incorporated, Pittsburgh, Pa.
Filed Oct. 15, 1992, Ser. No. 961,512
Int. Cl.[5] B21B *39/16*; B21C *47/02*
U.S. Cl. 72—146 **17 Claims**



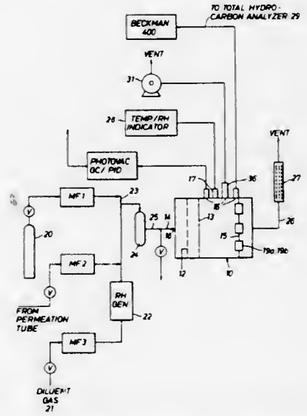
1. A pinch roll and shear combination comprising:
a frame;
a lower roll rotatably mounted on said frame;
a lower blade mounted on said frame adjacent said lower roll;
a movable carriage mounted on said frame;
a means for moving said carriage;
an upper roll rotatably mounted on said carriage and cooperating with said lower roll to form a pinch roll; and
an upper blade assembly mounted on said carriage, wherein said upper blade assembly cooperates with said lower blade for form a shear and wherein said upper blade assembly is mounted for movement relative to said carriage.

5,285,671
BENDING-SHAPING MACHINE HAVING MULTIPLE WORKING LEVELS
Giorgio Del Fabro, Cassacco-Fraz.Montegnacco, and Marcello Del Fabro, Udine, both of Italy, assignors to M.E.P. Macchine Elettroniche Piegatrici SpA, Reana Del Rojale
Filed Sep. 17, 1992, Ser. No. 945,888
Claims priority, applicatioo Italy, Oct. 21, 1991, UD9-1A000174
Int. Cl.[5] B21D *7/024, 43/08*
U.S. Cl. 72—294 **9 Claims**



1. A bending-shaping machine having a working surface for bending sections passing therethrough from an upstream end to a downstream end, comprising:
an assembly for drawing and/or straightening a section;
an intermittently operated bending unit, provided downstream of said assembly, for bending said section;
a shearing unit provided between said assembly and said bending unit, for shearing said section;
a downstream drawing unit, provided downstream of said bending unit, for drawing said section, said downstream drawing unit having a first normal working position level with said working surface and second retracted positioned below said working surface, said first normal working position permitting drawing of said section by said drawing unit away from said bending unit and said second retracted position allowing for movement of said section over said downstream drawing unit without interference therebetween;
wherein said bending unit is movable between a first normal working position level with said working surface, a second retracted position below said working surface and a third raised working position above said working surface for raising said section above a level of said assembly and said shearing unit facilitating bending of said section without interference with said assembly and said shearing unit, said second retracted position permitting movement of said section over said bending unit without contact thereto.

5,285,672
MULTIPURPOSE DYNAMIC CONTROLLED ATMOSPHERE CHAMBER
Chaoliang Yao, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 13, 1991, Ser. No. 806,176
Int. Cl.[5] G01D *18/00*
U.S. Cl. 73—1 G **12 Claims**



1. A dynamic, controlled atmosphere exposure testing chamber comprising:
an enclosure having an air inlet port and an exhaust gas outlet port;
means for introducing a pre-selected contaminant gas flow into said enclosure through said air inlet port;
a gas diffusion baffle plate located inside said enclosure transversely of said enclosure and perpendicular to said gas flow direction;
a hanger located inside said enclosure, essentially parallel to said baffle plate and downstream thereof with respect to said gas flow direction;
a first industrial hygiene passive monitor mounted on said hanger;
a plurality of sampling ports located in a wall of said enclosure downstream of said baffle plate;

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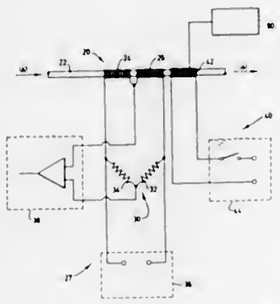
a first industrial hygiene active monitor connected to at least one of said sampling ports;
a sampling pump connected to said active monitor;
a gas chromatograph connected to one of said sampling ports;
a total hydrocarbon analyzer connected to one of said sampling ports;
an access port located in said enclosure wall;
a temperature/relative humidity indicator connected to said access port; and
means located external to said enclosure and connected to said outlet port for treating said contaminant gas before venting to the atmosphere.

5,285,673

METHOD FOR IN-LINE CALIBRATION VERIFICATION OF MASS FLOW METERS

Charles F. Drexel, Rolling Hills, and Daniel T. Mudd, Long Beach, both of Calif., assignors to DXL International, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 661,570, Feb. 26, 1991, abandoned. This application Nov. 8, 1991, Ser. No. 789,364
Int. Cl.[5] G01F *1/68, 25/00*
U.S. Cl. 73—3 **28 Claims**



1. A method for verifying the calibration of a flow meter having a flow tube and means for producing an output in response to temperature difference between first and second temperature sensors comprising:
measuring the output of the flow meter in response to a first asymmetric heat transfer to the first and the second temperature sensors produced by a means for asymmetrically transferring heat to the first and second temperature sensors independently of fluid flow through the flow tube, when the flow meter is calibrated;
subsequently measuring the output of the flow meter in response to a second asymmetric heat transfer between the two temperature sensors produced by the heat transferring means said first and second heat transfer simulating fluid flow through said flow tube; and
comparing the two outputs.

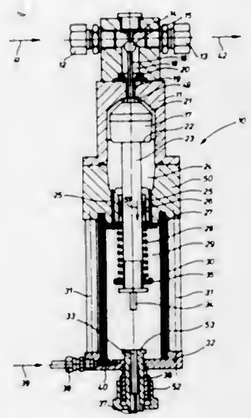
5,285,674

MEASUREMENT DEVICE FOR DETECTING GAS CHARGE OF A PLASTIC COMPONENT

Fritz Strub, St. Gallen, Switzerland, assignor to Spuhl AG, Gallen, Switzerland

Filed Jun. 18, 1992, Ser. No. 900,871
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119966
Int. Cl.[5] G01N *7/00*
U.S. Cl. 73—19.01 **4 Claims**

1. Apparatus for measuring gas charge of a liquid, comprising:
a measuring chamber to be filled with a gas-charged liquid whose gas charge is to be measured;
valve means for opening and closing a connection between the measuring chamber and a source of the gas-charged liquid;
a measuring piston fitted into said measuring chamber and including a leakproof pot membrane for forming a sealed measuring space;
a cylindrical bore provided at an upper portion of the measuring chamber opposite the valve means and;



means for introducing pressurized air into the cylindrical bore;
a first piston rod axially projecting from an end of said measuring piston through said measuring space towards said valve means and operative to actuate said valve means;
a second piston rod axially projecting from a second, opposite end of the measuring piston into the cylindrical bore of the upper portion;
a plug gage mounted at an end of the second piston rod; and
a proximity switch mounted opposite the plug gage.

5,285,675

ACOUSTIC FLUID FLOW MONITORING

Samuel O. Colgate, and Kenneth C. McGill, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Alachua, Fla.

Filed Jun. 5, 1992, Ser. No. 894,629
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—23.2 **4 Claims**

1. A passive, non-invasive method of measuring the flow and composition of a fluid or mixture of fluids through a structure within a system by:
attaching a thermometer, a pressure gauge, and a transducer to said structure for respectively detecting temperature, pressure, and sound in said fluid or mixture of fluids;
producing sounds corresponding to naturally occurring vibrations stimulated by flow of said fluid or mixture of fluids through said structure;
passing said sounds through said fluid or mixture of fluids;
detecting said sounds exiting from said fluid or mixture of fluids by use of said transducer;
determining the temperature, pressure and speed of sound in said fluid or mixture of fluids in said system by respectively using said thermometer, said pressure gauge and said fluid or mixture of fluids and calculating the flow, molar density and average molecular weight of the fluid from the equation:

$$c^2 = \frac{\tau}{M}\left(\frac{\delta P}{\delta \rho}\right)_T$$

$$\nabla^2\phi = \frac{1}{c^2}\,\frac{\delta^2\phi}{\delta t^2}$$

$$\tau = \frac{cP}{c_\rho}$$

wherein:
c_P=isobaric heat capacity
C_ρ=isochoric heat capacity
c=speed of sound
P=pressure of the fluid
T=temperature of the fluid
ρ=molecular density of the fluid
M=average molecular weight of the fluid
ϕ=velocity potential
t=time;
(a) the molar density of the fluid being determined from the equation of state over a small temperature range T-T':

$$\left(\frac{\delta P}{\delta \rho}\right)_T = f(P, c)_{T'}$$

wherein:
f=any EOS
T'=average temperature; and
(b) the average molecular weight of the fluid being determined from the equation:

$$\frac{c^2}{f(P, c)_T} = \frac{\tau}{M}$$

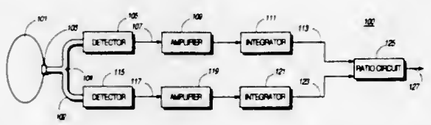
wherein: f=EOS;
said temperature, pressure and speed of sound being determined, respectively, by means of a thermometer, pressure gauge and transducer positioned in said system.

5,285,676

AIR-FUEL RATIO MEASUREMENT APPARATUS AND METHOD THEREFOR

Neil J. Adams, West Bloomfield, Mich., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1992, Ser. No. 923,425
Int. Cl.[5] G01N *31/12*
U.S. Cl. 73—23.32 **19 Claims**



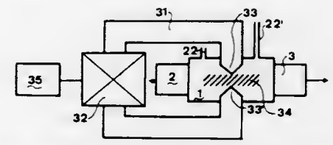
1. An apparatus for directly measuring air-fuel ratio in an internal combustion engine combustion process comprising:
first electromagnetic wave sensing means providing a first signal representative of light intensity emitted at a first wavelength;
second electromagnetic wave sensing means providing a second signal representative of light intensity emitted at a second wavelength; and
ratioing means for ratioing an integral of the first signal and an integral of the second signal and providing an air-fuel ratio signal, indicative of an air-fuel ratio during the combustion process.

5,285,677

SELECTIVE GAS DETECTION BY FIELD SEPARATION AND VELOCITY OF SOUND DETERMINATION, ESPECIALLY O_2 DETECTION

Oscar Oehler, Streulistrasse 24, 8032 Zürich, Switzerland

PCT No. PCT/CH90/00277, § 371 Date Jun. 17, 1993, § 102(e) Date Jun. 17, 1993, PCT Pub. No. WO91/09306, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 30, 1990, Ser. No. 720,788
Claims priority, application Switzerland, Dec. 8, 1989, 04406/89
Int. Cl.[5] G01N *29/18*
U.S. Cl. 73—24.01 **17 Claims**



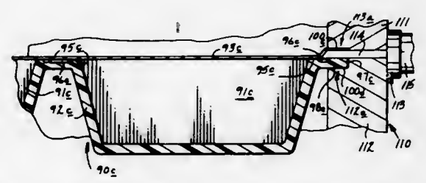
1. A method for selective detection of gases and vapors of a gas and/or vapor mixture comprising the steps of
changing the concentration of the gas or vapor to be measured by subjecting the gas or vapor to an inhomogeneous field,
transmitting sound through the gas or vapor, and
detecting the change of the gas or vapor concentration by measuring changes in the velocity of sound transmitted therethrough.

5,285,678

CONTAINER SEAL TESTING AND PRESSURIZATION

Gale E. McDaniel, Kennewick, and Patrick K. McDaniel, Richland, both of Wash., assignors to Seal Integrity Systems, Inc., Richland, Wash.

Continuation-in-part of Ser. No. 182,980, Apr. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 106,229, Oct. 6, 1987, Pat. No. 4,930,342, which is a continuation-in-part of Ser. No. 938,027, Dec. 4, 1986, Pat. No. 4,747,298. This application Dec. 21, 1988, Ser. No. 289,591
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—49.3 **56 Claims**



1. A process for nondestructively testing a sealed container to detect for any leaks existing in at least one preformed primary seal which connects at least two parts of the container in sealed relationship, said primary seal serving to seal an internal compartment enclosed by the sealed container, said primary seal having an inward side toward said internal compartment and an outward side opposite to said inward side, said outward side being connected to marginal edge portions of the container parts; said primary seal serving to maintain a seal thereacross between the inward and outward sides thereof, the process comprising:
creating a substantially sealed test chamber adjacent the outward side of the primary seal and which is in fluid communication therewith; said test chamber being substantially enclosed and defined between marginal edge

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portions of the container parts which are outwardly of said primary seal;

forming at least one of the marginal edge portions of the container to include at least one testing fluid supply passage which is capable of communicating a desired testing pressure to the test chamber by engaging and deforming marginal edge portions of the container with an injection probe to form said testing fluid supply passage, and positioning at least part of the injection probe between said container parts;

producing a desired testing pressure within the test chamber and against the primary seal to develop a differential pressure across the primary seal and cause transfer of fluid through any leaks in the primary seal, by communicating fluid through an injection passage in said injection probe;

detecting a change in the container which is selectively associated with transfer of fluid through any leaks in the primary seal; and

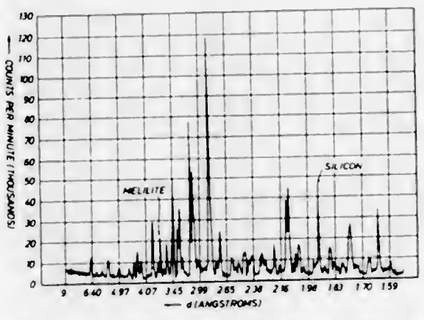
said forming being accomplished by laterally engaging and deforming marginal edge portions of the container with said injection probe by slidably and laterally passing the injection probe between the marginal edge portions of the conjoined first and second parts of the sealed container to form said testing fluid supply passage.

5,285,679

QUANTIFICATION OF BLAST FURNACE SLAG IN A SLURRY

William E. Jackson, Sugar Land; Thomas E. Murray, Missouri City, and Arthur H. Hale, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,981
Int. Cl.[5] G01N *5/04, 23/20*
U.S. Cl. 73—61.72 **6 Claims**



1. A process to determine the weight fraction of amorphous blast furnace slag in a sample comprising the steps of:

providing a quantity of a sample of known weight containing amorphous blast furnace slag;

annealing the known quantity of the sample at a temperature of between about 800° C. and about 1000° C. for a time period of about two hours or greater thereby converting the amorphous blast furnace slag to a crystalline composition comprising melilite;

weighing the annealed sample and determining the amount of weight loss (W_{Loss}) of the sample resulting from the annealing of the sample;

adding a quantity of a standard of known weight (w_j) to the annealed sample;

measuring the X-ray diffraction peak intensity of the combined annealed sample and standard for a crystalline melilite peak (I_i);

measuring the X-ray diffraction peak intensity of the combined annealed sample and standard for a standard peak (I_j); and

determining the weight fraction of blast furnace slag (X) in the sample by using the equation

$$\frac{w_i}{w_j} = \frac{I_i}{I_j R_{ij}}$$

to corrolate relative intensities of x-ray diffraction peaks with relative amounts of material in the sample, and by using the equation

$$X = \frac{W_{mel} + W_{Anh}}{W_{Sx} + W_{Loss}}$$

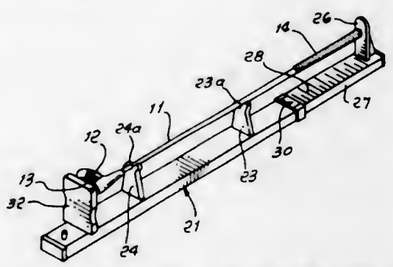
for relating relative amounts of the materials to the weight fraction of the blast furnace slag.

5,285,680

GOLF CLUB MEASURING APPARATUS AND METHOD

Donald J. C. San, 4251 Ocean Valley La., San Diego, Calif. 93130

Filed Oct. 2, 1992, Ser. No. 956,073
Int. Cl.[5] G01M *1/00;* **A63B** *53/00*
U.S. Cl. 73—65.03 **13 Claims**



1. In apparatus for determining the length and swing weight of a golf club having a shaft and a head, the head having a sole, there being a top at the end of the shaft remote from the head, the combination comprising:

a) a longitudinally lengthwise elongated frame,

b) first means on the frame for supporting the club shaft to extend generally longitudinally,

c) second means on the frame to contact the shaft top at a first locus and to contact the head sole at a second locus, whereby the club length "l" can be measured between said first and second loci,

d) and third means adjustably movable relative to the frame to support the shaft at a third locus promixate the determine center of gravity of the golf club,

e) fourth means associated with said third means to indicate the total weight "w" of the golf club imposed at said center of gravity, whereby the swing weight of the golf club can be determined as a function of "d" and "w", where d is the distance between said first locus and said third locus,

f) said second means including a first adjustable contact element to engage said top, and a second adjustable contact element to engage the head sole, said elements spaced apart in the length direction of the shaft,

g) support means carrying said first adjustable contact element for movement lengthwise of said frame,

h) said frame and said support means having slidable telescopic interfit,

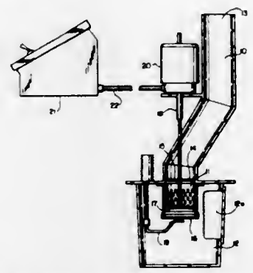
i) said fourth means including a weighing spring carried by and above the frame.

5,285,681

ON-LINE PELLET DURABILITY TESTER

Stephen F. Binder, Washington; Lawrence F. Reutzel, St. Louis, and David J. Rothermel, New Haven, all of Mo., assignors to Purina Mills, Inc., St. Louis, Mo.

Continuation of Ser. No. 630,918, Dec. 20, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 759,102
Int. Cl.[5] G01N *3/00*
U.S. Cl. 73—78 **15 Claims**



1. A process for measuring the durability of freshly formed, uncured pellets, the process comprising:

A. introducing a sample of the pellets by an all-atonce method of entry into a test chamber equipped with a rotating blade for breaking the pellets into pellet fines and pellet fragments,

B. disintegrating at least a portion of the pellets within the test chamber by breaking at least a portion of the pellets through the action of said rotating blade upon the pellets, and

C. measuring the durability of the pellets by

(1) measuring a power requirement to rotate the blade within the test chamber at a given rate of revolution per minute prior to the introduction of the sample of pellets,

(2) measuring the amount of increase in the power requirement necessary to maintain the rotation of the blade at or near its rate of revolutions per minute in step (1) after the introduction of the sample of pellets into the test chamber, and

(3) measuring the elapse of time from the first increase in power requirement required by the rotating blade after the introduction of the sample of pellets into the test chamber, to the time at which the increased power requirement has reduced to a predetermined level that is greater than or equal to the power level in step (1).

5,285,682

SPONGE ABSORBED FLUID MEASURING UNIT

Clara J. Micklish, 13303 Birch Grove Dr., Houston, Tex. 77083

Continuation of Ser. No. 682,475, Apr. 9, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,971
Int. Cl.[5] G01F *22/00;* **G01G** *5/04*
U.S. Cl. 73—149 **14 Claims**

1. A apparatus for measuring fluid volumes absorbed in a particular type of article, comprising:

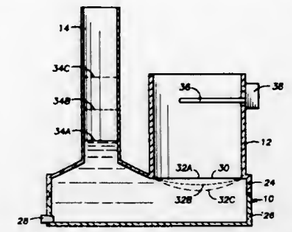
a base unit having top, bottom and side surfaces, said top surface having two openings;

a fluid filling said base unit;

a receiving chamber having open top and bottom surfaces and located over a first of said base unit top surface openings the first top opening for receiving articles of the particular type to measure;

a graduated chamber having open top and bottom surfaces and located over the second of said base unit top surface openings, said graduated chamber having graduations indicating quantities of the fluid volume absorbed in the articles placed in said receiving chamber; and

a flexible diaphragm positioned at said first base unit top surface opening and deflecting towards said base unit bottom surface when articles to be measured are placed in



said receiving chamber, thereby displacing said fluid located in said base unit from said base unit into said graduated chamber

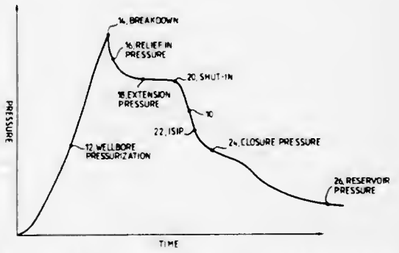
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5,285,683

METHOD AND APPARATUS FOR DETERMINING ORIENTATION OF A WELLBORE RELATIVE TO FORMATION STRESS FIELDS

Hazim H. Abass, Duncan; Saeed Hedayati, Lawton, and James J. Venditto, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 1, 1992, Ser. No. 955,110
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 **5 Claims**



1. A method of determining the horizontal direction of a deviated borehole relative to stress fields within a formation, comprising the steps of:

(1) applying fluid pressure into a formation surrounding a first deviated borehole to establish a formation breakdown pressure in said formation, to establish a fracture in said formation and a relief in pressure after said formation breakdown pressure is achieved;

(2) monitoring the pressure of said formation at times including at least a time at which said formation breakdown pressure is achieved and a time at which said relief in pressure occurs;

(3) repeating said steps in two additional deviated boreholes having a known angular relation to each other and the first deviated borehole;

(4) determining a derivative of said relief in pressure for each of said three boreholes; and

(5) functionally relating the determined derivative of the relief in pressure for each of said boreholes to the known angular relation between said boreholes to determine an actual angular deviation of at least one of said boreholes relative to a stress field in said formation.

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5,285,684

SHAPE DETECTING ROLL

Kenichi Uesugi, Kobe, and Toshiyuki Sasaki, Kakogawa, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

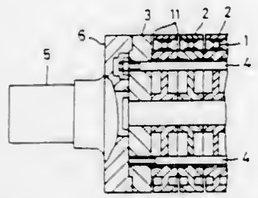
PCT No. PCT/JP90/00959, § 371 Date Mar. 28, 1991, § 102(e) Date Mar. 28, 1991, PCT Pub. No. WO91/02231, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 27, 1990, Ser. No. 667,396

Claims priority, application Japan, Jul. 28, 1989, 1-197298

Int. Cl.[5] G01L *5/00*

U.S. Cl. 73—159 **8 Claims**



1. A shape detecting roll rotatable for supporting a traveling rolled material over the width thereof to detect the pressure of the rolled material from portion to portion widthwise thereof and detect the shape of the rolled material by processing the detected pressure by calculation, the roll comprising a plurality of disks arranged axially of the roll concentrically with one another and each having a pressure sensor incorporated in its peripheral portion, a clearance being formed between the side surfaces of peripheral portions of the adjacent disks for preventing the interference between the peripheral portions, the improvement comprising at least the side surfaces of the disk peripheral portions forming the clearance are activated by a reverse electrolytic treatment and thereafter coated with a corrosion-resistant plating.

5,285,685

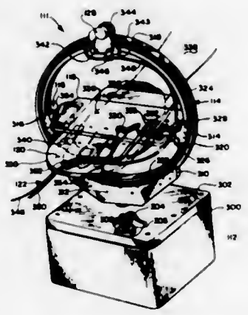
PERCEIVED ATTITUDE APPARATUS AND METHOD

Tamara L. Chelette, Miamisburg, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1992, Ser. No. 880,830

Int. Cl.[5] G06F *3/02*

U.S. Cl. 73—432.1 **20 Claims**



1. The method for communicating perceived physical attitude describing information from a g-force stressed human test subject to a data processor comprising the steps of:

disposing said human test subject in a body conforming and torso supporting capture frame located within a g-force generating apparatus;

supporting an arm and hand peripheral extremity of said human test subject in a body displaced position wherein engagement with a hand position responsive multiple axis of freedom electrical signal generating transducer apparatus is achievable;

assigning palm positioning as a converse with the hand communication protocol for communication from said human test subject to said data processor;

engaging predetermined hand portions of said human test subject in captive relationship with said hand position responsive multiple axis of freedom electrical signal generating transducer apparatus;

exposing said test subject and transducer apparatus to g-force field of predetermined selective orientation;

selecting with predetermined regimen a plurality of hand positionings by said human test subject as communicated perceptions by said test subject of experienced physical attitude; and

conveying said electrical signals from said transducer apparatus to said data processor via electrically conductive communicating paths.

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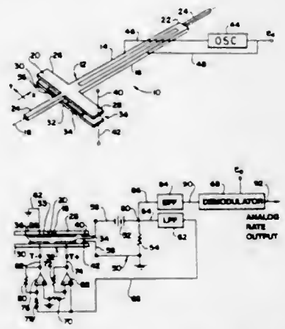
COLIOLIS RATE SENSOR USING TUNNEL-EFFECT DISPLACEMENT SENSOR

Rex B. Peters, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation of Ser. No. 720,981, Jun. 25, 1991, abandoned. This application May 17, 1993, Ser. No. 62,281

Int. Cl.[5] G01P *9/04*

U.S. Cl. 73—505 **11 Claims**



1. An angular rate sensor for deriving a Coriolis acceleration signal comprising:

Coriolis force sensing means having first and second vibrating tines interconnected with a mounting pad for generating a deflection of said mounting pad in response to an angular rotation of said force sensing means;

sensing circuit means including tunnel-effect sensing means having a first sensing probe disposed on said mounting pad of said Coriolis force sensing means and a second sensing probe disposed at an average predetermined spaced relation from said first sensing probe for detecting said deflection and generating a sensing signal in response to said deflection;

feedback circuit means coupled with said sensing circuit means for receiving said sensing signal and for providing a feedback signal to said Coriolis force sensing element for maintaining said first and second sensing probes at said average predetermined spaced relation; and

output circuit means coupled with said sensing circuit means for receiving said sensing signal and providing an output Coriolis signal indicative of angular rate.

5,285,687

PROCESS FOR THE ACOUSTIC EXAMINATION OF MONOLITHS FOR DAMAGE AND DEVICE FOR IMPLEMENTING THE PROCESS

Werner Ringel, Neusass; Peter Kugland, Friedberg, and Enrique Santiago, Diedorf, all of Fed. Rep. of Germany, assignors to Zeuna-Starker GmbH & Co. KG, Augsburg, Fed. Rep. of Germany

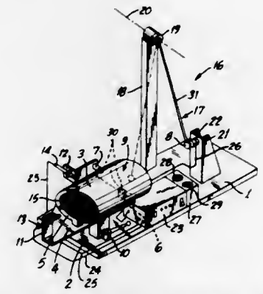
PCT No. PCT/EP90/02115, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO91/10131, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 7, 1990, Ser. No. 761,359

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1989, 3943133

Int. Cl.[5] G01H *3/08*

U.S. Cl. 73—579 **23 Claims**



11. A device for the acoustic examination for damage of monolithic carrier elements of porous ceramic material for use in manufacturing of waste gas catalysts, the device comprising:

receptacle means for holding a a cylindrical monolithic body of porous ceramic material, being examined;

a striker assembly including a movable striker for applying an impact force of a predetermined magnitude to said monolithic body fixed in said receptacle means;

sound pressure receiver means for performing synchronously at least two sound pressure measurements in varying spreading directions, of the noise radiated by a struck monolithic body; and

an evaluation unit including a computer unit and connected to said sound pressure receiver means for determining from said measurements, with a time delay after the striker has struck the fixed monolithic body, sound pressure distribution over a predetermined frequency range to obtain an analysis result in which an impact noise of the striker is not taken into consideration due to said time delay and comparing selected individual values of sound pressure obtained in said analysis result with reference values of sound pressure defined in a sound pressure reference curve for undamaged monolithic bodies.

5,285,688

SYSTEM FOR DETECTING WOOD-DESTROYING INSECT INFESTATIONS IN WOOD

William P. Robbins, St. Paul, and Rolf K. Mueller, Stillwater, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Sep. 17, 1992, Ser. No. 946,956

Int. Cl.[5] G01H *1/00*

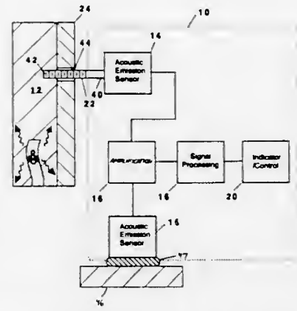
U.S. Cl. 73—587 **21 Claims**

1. A system for detecting infestations of wood-destroying insects in wood, the system comprising:

an acoustic emission sensor having an output, the acoustic emission sensor being responsive to acoustic emissions in wood and comprising means for converting the acoustic energy of the acoustic emissions into an electrical signal and providing the electrical signal at its output;

contact means for placing the acoustic emission sensor into mechanical contact with a piece of wood to be tested;

signal processing means having an input and having an output, the signal processing means including means for analyzing the spectral characteristics of the electrical signal provided by the acoustic emission sensor to determine whether the electrical signal provided by the acoustic emission sensor is caused by acoustic emissions from a wood-destroying insect infestation; and



indicating means having an input which is electrically connected to the signal processing means output for indicating to a user when the signal processing means has determined that the electrical signal provided by the acoustic emission sensor is caused by acoustic emissions from a wood-destroying insect infestation.

5,285,689

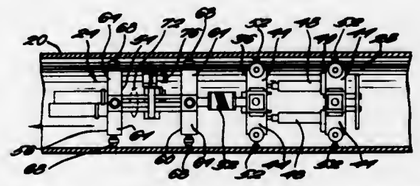
PIPING INSPECTION INSTRUMENT CARRIAGE WITH PRECISE AND REPEATABLE POSITION CONTROL AND LOCATION DETERMINATION

Mark Hapstack, North Augusta, S.C.; Ted R. Talarek, Augusta; W. Thor Zollinger, Martinez, both of Ga.; Frank M. Heckendorn, II, Aiken, and Larry R. Park, North Augusta, both of S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 16, 1991, Ser. No. 730,425

Int. Cl.[5] G01N *29/10, 29/24*

U.S. Cl. 73—623 **19 Claims**



1. An apparatus for inspecting a feature on an interior surface of piping, said apparatus comprising:

a frame having a first end and a second end;

a front leg assembly attached to said first end;

a rear leg assembly attached to said second end,

said front leg assembly having a first plurality of radially extendible legs and said rear leg assembly having a second plurality of radially extendible legs,

said first and said second pluralities of radially extendible

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legs extending radially to engage said interior surface of said piping, said legs centering and supporting said apparatus;

a first television camera mounted on said frame and directed toward said interior surface of said piping;

means for systematically scanning said feature along three mutually orthogonal coordinates, said scanning means carried by said frame between said front and said rear leg assemblies and producing an output, said scanning means further comprising

at least one probe,

an instrumentation arm carrying said at least one probe,

means carried by said frame for shifting said instrumentation arm axially in either direction,

means carried by said frame for rotating said instrumentation arm azimuthally at least 360°, and

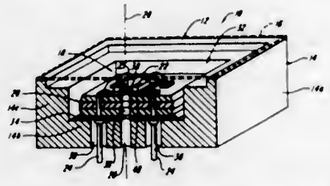
means carried by said instrumentation arm for extending said at least one probe radially, said extending means having a plate carrying said at least one probe and a pair of air cylinders extending said plate radially, each of said pair of air cylinders positioned on either side of said instrumentation arm.

5,285,690

PRESSURE SENSOR HAVING A LAMINATED SUBSTRATE

Edward F. Koen, Danville, Calif., and Robert D. Vernon, Norfolk, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Jan. 24, 1992, Ser. No. 825,620
Int. Cl.[5] G01L 9/06
U.S. Cl. 73—727 **15 Claims**



12. Pressure sensor apparatus having a minimum testable format and for post-testing assembly in a housing, said pressure sensor apparatus comprising

A. a ceramic substrate having first and second opposed sides, said substrate being laminated of at least first and second layers apertured with a through pressure passage, said substrate further having electrical conductors extending between said opposed sides, said substrate being pressure-tight between said opposed sides except at said pressure passage,

B. a bonding layer on said first side of said substrate,

C. electrical connector elements mounted on said substrate and connected with said electrical conductors, said connector elements extending from said substrate and being disposed for removable and replaceable connection with mating connector elements,

D. a solid-state pressure sensing element having a sensor diaphragm and electrical contacts and developing at said electrical contacts and electrical signal responsive to diaphragm deflection, said sensing element being bonded to said first side of said substrate by said bonding layer and said contacts being connected electrically to said conductors,

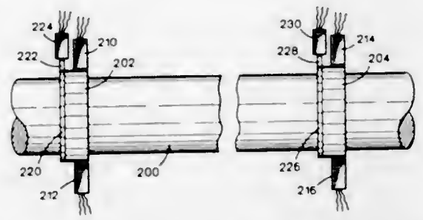
E. whereby the electrical response of said sensing element to pressure differentials between said first side and said pressure passage can be tested at said connector elements before the post-testing assembly.

5,285,691

APPARATUS FOR MONITORING OPERATION OF A DRIVE SHAFT

John S. Baer, Bar Harbor, Me., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 758,999, Sep. 6, 1991. This application Dec. 17, 1992, Ser. No. 992,506
Int. Cl.[5] G01L 3/02
U.S. Cl. 73—862.325 **5 Claims**



1. An apparatus for measuring torque applied to a shaft, comprising:

(a) a first tone wheel attached to said shaft, the plane of said tone wheel being orthogonal to the major axis of said shaft;

(b) a first pair of sensors disposed in quadrature in magnetically coupled relationship with said first tone wheel to output a first train of pulses as said first tone wheel rotates past said first pair of sensors;

(c) a second tone wheel attached to said shaft and spaced apart from said first tone wheel, the plane of said tone wheel being orthogonal to the major axis of said shaft;

(d) a second pair of sensors disposed in quadrature in magnetically coupled relationship with said second tone wheel to output a second train of pulses as said second tone wheel rotates past said second pair of sensors; and

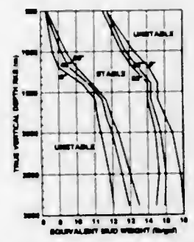
(e) means to output a difference count between said first and second train of pulses, the difference count being proportional to said torque applied to said shaft.

5,285,692

METHODS FOR MEASURING PHYSICAL PARAMETERS OF A LOW PERMEABILITY ROCK FORMATION IN SITU

Ronald P. Steiger, Houston, and Peter K. Leung, Sugar Land, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Division of Ser. No. 577,337, Aug. 31, 1990, Pat. No. 5,205,164. This application Aug. 18, 1992, Ser. No. 931,865
Int. Cl.[5] G01N 3/00
U.S. Cl. 73—866 **4 Claims**



1. A method for measuring in situ pore pressure of a specimen low permeability rock, the method comprising

obtaining a first rock sample from a first in situ location,

measuring an index property of the first rock sample and obtaining a value for it,

pressurizing the first rock sample triaxially by applying a load to it and a confining pressure,

measuring continuously and recording the first rock sample's pore pressure while applying the load to it,

applying the confining pressure to the first rock sample while applying the load to it,

measuring and recording the ultrasonic velocities of the first rock sample at different pore pressures,

determining the mean effective stress of the first rock sample at each different pore pressure,

performing the previously-listed steps for a plurality of different rock samples from in situ locations,

correlating ultrasonic velocity values and mean effective stress values with measured index property values for each sample and plotting a point on a graph for each such correlation,

determining a curve that fits the plot of points representing each ultrasonic velocity versus its corresponding index property value and mean effective stress,

measuring in situ ultrasonic velocities through the specimen,

measuring the index property of the specimen,

locating on the curve a point corresponding to the measured index property value and ultrasonic velocity value of the specimen, and then locating the mean effective stress value of the specimen corresponding to that index property value and ultrasonic velocity value,

determining the in situ vertical stress of the specimen and horizontal stresses of the specimen,

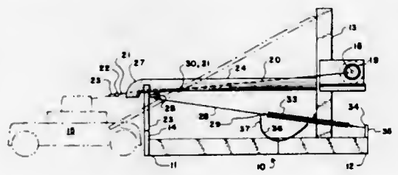
using the in situ mean effective stress from the curve, the in situ vertical stress and in situ horizontal stresses to determine the in situ pore pressure of the specimen.

5,285,693

LAWN MOWER STARTING DEVICE

Charles M. Sanders, and Douglas E. Sanders, Sr., both of R.R. 3 Box 1134, King George, Va. 22485

Continuation-in-part of Ser. No. 944,413, Sep. 14, 1992, Pat. No. 5,253,540. This application Jun. 11, 1993, Ser. No. 76,203
Int. Cl.[5] F02N 11/12
U.S. Cl. 74—6 **4 Claims**



1. An auxiliary starting device for an internal combustion engine associated with a mobile machine, said engine having a recoil type starter with a clutch and a pull cord having a proximal extremity attached to said starter, and a free distal extremity equipped with a pull handle, said machine adapted to rest upon a horizontal surface, said starting device comprised of:

a) a horizontally disposed foundation base elongated between front and rear extremities,

b) a support post vertically emergent from said base,

c) an abutment surface associated with the front extremity of said base,

d) a high torque electric motor mounted upon said support post and having a horizontally directed drive shaft,

e) a pulley wheel affixed to said drive shaft for rotation in a vertical plane,

f) a pulling cable having a first extremity attached to said pulley wheel and a second extremity configured to removable associate with said pull cord handle, said cable spanning the distance between said pulley wheel and pull cord handle in a substantially horizontal path,

g) a chute for protectively guiding said spanning portion of said cable,

h) a return wheel positioned above said abutment surface and disposed for rotation in a vertical plane,

i) a return cable having a first extremity, and a second extremity attached to the spanning portion of said pulling cable, said return cable passing forwardly about said return wheel,

j) elongatable restoring means having a free forward extremity attached to the first extremity of said return cable and an anchored rear extremity, and

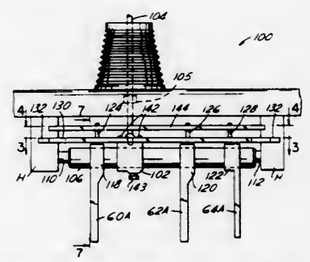
k) resilient restraining means disposed in parallel relationship to said restoring means and adapted to remain inactive until said restoring means has undergone a predetermined elongation.

5,285,694

SHIFT PLATE ACTUATED SINGLE SHAFT SHIFTING MECHANISM

William R. Chene, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 18, 1992, Ser. No. 977,928
Int. Cl.[5] G05G 5/10
U.S. Cl. 74—477 **14 Claims**



1. Apparatus for selection and engagement of selectable gear ratios in a change speed transmission, the apparatus comprising:

a shaft defining an axis;

a plurality of shift forks, each shift fork being axially movable along the shaft and having a projection extending from the shift fork;

a shift plate having a plurality of first patterns therethrough, each first pattern including pathways arranged axially and transversely to receive a corresponding projection such that when one of the projections is not aligned in an axial pathway of one of the first patterns, the other projections are aligned in axial pathways in the other first patterns;

an interlock plate having a plurality of second patterns therethrough, each second pattern including pathways arranged axially and transversely to receive a corresponding projection such that when one of the projections is aligned in an axial pathway of one of the second patterns, the other projections are not aligned in axial pathways in the other second patterns; and

a housing having a slot in which the interlock plate is mounted to fix the interlock plate against axial movement relative to the shaft.

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5,285,695

STEERING WHEEL AND DEFLECTION UNIT FOR A VEHICLE, IN PARTICULAR FOR A MOTOR VEHICLE

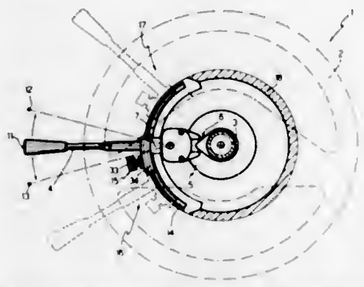
Nevio Di Giusto, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Sep. 16, 1992, Ser. No. 945,953

Claims priority, application Italy, Sep. 17, 1991, TO91 U 000210

Int. Cl.[5] G05G *1/04*; H01H *3/16*

U.S. Cl. 74—484 R **5 Claims**



1. A steering wheel and deflection unit of the type comprising a steering wheel connected in an angularly rigid manner with a steering shaft, a control lever for a direction signalling device supported radially in the vicinity of the steering wheel and a steering deflection device, the engagement of which is controlled by an angular displacement of the lever from an intermediate rest position to one of two opposing operating positions and the disengagement of which is controlled by the rotation of the steering shaft which returns the control lever to the rest position, characterized in that it further comprises means for adjusting the rest position of the control lever into a plurality of different angular positions with circumferential respect to the steering wheel.

5,285,696

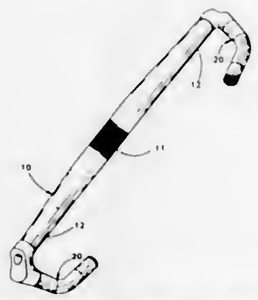
BAR END ASSEMBLY ATTACHABLE TO THE STEERER BARS OF BICYCLE HANDLEBAR SYSTEMS

Arnold Taylor, Huntington Beach, Calif., assignor to Answer Products, Inc., Valencia, Calif.

Filed Sep. 21, 1992, Ser. No. 948,363

Int. Cl.[5] B62K *21/12*

U.S. Cl. 74—551.1 **23 Claims**



1. A bar end assembly to be attached to a hollow end portion of a steerer bar for constructing a handlebar system for a bicycle, the bar end assembly comprising:

a. a bar end having a proximal end portion and a distal angled grip portion;

b. an extended outer sleeve extending from said proximal end portion of said bar end and having an interior surface which defines a hollow chamber for accommodating said end portion of said steerer bar;

c. a fixed wedge nut disposed within said hollow chamber;

d. said proximal end portion of said bar end having a through bore extending through said fixed wedge nut;

e. a threaded bolt extending through said through bore at said proximal end portion of said bar end;

f. an expandable segmented nut having two opposite ramp surfaces and a through bore for accommodating said threaded bolt, the segmented nut split radially into a multiplicity of segments which are bonded by an elastic retention ring;

g. a movable wedge nut having a threaded through bore for engaging with said threaded bolt; and

h. said expandable segmented nut disposed between, and its opposite ramp surfaces respectively engaged with, said fixed wedge nut and said movable wedge nut, such that when said bolt is threaded, said movable wedge nut will thread on said bolt and move toward said fixed wedge nut, so that said movable wedge nut and said fixed wedge nut will squeeze said segmented nut therebetween which causes said segmented nut to split and expand radially;

i. whereby said extended outer sleeve can be slid over and brace said hollow end portion, and said segmented nut can be caused to split and expand radially inside said hollow end portion for tightening said bar end to said steerer bar, while said outer sleeve provides protective support to said hollow end portion of said steerer bar so that it will not be damaged by any outward stress exerted by said expanded segmented nut.

5,285,697

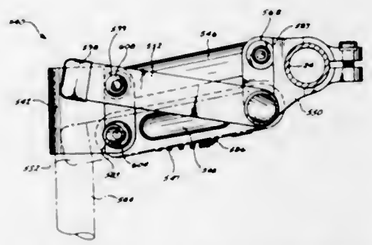
SHOCK ABSORBING BICYCLE HANDLEBAR ASSEMBLY

Elvind Clausen, Bellingham, Wash., assignor to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 982,229, Nov. 25, 1992, which is a continuation of Ser. No. 760,621, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,173, Jan. 30, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 45,984

Int. Cl.[5] B62K *21/14*

U.S. Cl. 74—551.2 **24 Claims**



1. A bicycle handlebar support assembly comprising:

a head unit adapted to be secured to a bicycle front fork assembly;

an upper linkage member having a front end and a tail end, wherein said tail end is pivotally attached to said head unit;

a lower linkage member having a front end and a tail end, said lower linkage member being disposed below said upper linkage member and spaced therefrom, said tail end of said lower linkage member being pivotally attached to said head unit;

handlebar clamp assembly means for mounting a handlebar, said handlebar clamp assembly means being pivotally attached to said upper linkage member front end and said lower linkage member front end;

a biasing member extending between said head unit and said handlebar clamp assembly means for resisting downward movement of said linkage members; and

a lockout assembly including: a lockout arm having a first end pivotally connected to one of said linkage members; and a fastening member for releasably securing said second end of said lockout arm, said fastening member being secured to the other of said linkage members, said head unit, or said handlebar clamp wherein, said fastening member is positioned so that when said second end of said linkage arm is secured to said fastening member, said lockout restricts said pivoting movement of said linkage members.

5,285,698

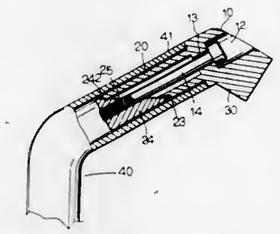
STOPPER DEVICE FOR AN AUXILIARY HANDLEBAR

Jim Liao, Taipei Hsien, Taiwan, assignor to Hsin Lung Accessories Co. Ltd., Taiwan

Filed Jan. 26, 1993, Ser. No. 9,560

Int. Cl.[5] B62K *21/12*; F16C *11/00*

U.S. Cl. 74—551.8 **1 Claim**



1. A stopper device for a hollow auxiliary handlebar for a bicycle comprising:

a rod member having an outer diameter corresponding to an outer diameter of a free end of the auxiliary handlebar, said rod member including a fastening shaft attached to a first end portion of said rod member, said fastening shaft being insertable in the free end of the auxiliary handlebar and having an inclined end surface, a circular recess in a second end portion of said rod member having a hole passing centrally through said fastening shaft, and a supporting rod member angularly formed on said second end portion of said rod member for providing a solid support to a thumb of a rider of the bicycle;

a locking block having a threaded recess in its central portion, said locking block having an inclined surface abuttable with the inclined end surface of said fastening shaft; and

a bolt member inserted in said hole of said circular recess and extending through said fastening shaft and screwed into threaded recess of said locking block for bringing the inclined end surface of said fastening member and the inclined surface of said locking block into abutment.

5,285,699

REINFORCED COMPOSITE FLYWHEELS AND SHAFTS

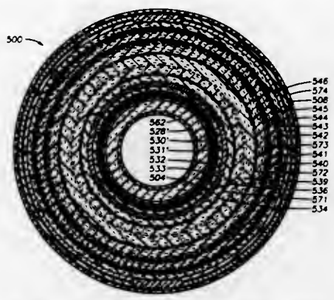
W. Alan Walls; Elvin Estes; Steve M. Manifold; Michael L. Spann, and John H. Gully, all of Austin, Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 577,478, Sep. 4, 1990, abandoned, which is a division of Ser. No. 281,188, Dec. 7, 1988, Pat. No. 4,996,016. This application Feb. 21, 1992, Ser. No. 840,737

Int. Cl.[5] G05G *1/10*; F16F *15/22*

U.S. Cl. 74—572 **35 Claims**

1. An article of manufacture comprising an outer annulus and an inner cylinder disposed in said outer annulus and an annular layer of solid bonding agent under pressure within an annular region between said outer annulus and said inner cylinder, wherein said outer annulus and said inner cylinder include substantial radial prestress, and wherein said annulus includes wound fibers.



5,285,700

ROTOR BALANCING

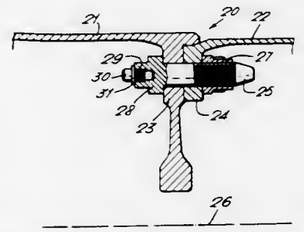
Kwok Lau, Oakwood, England, assignor to Rolls-Royce plc, London, England

Filed Mar. 16, 1993, Ser. No. 31,861

Claims priority, application United Kingdom, Apr. 7, 1992, 9207557.1

Int. Cl.[5] F16F *15/22*

U.S. Cl. 74—573 R **5 Claims**



1. A rotor comprising two parts which are attached to each other by a plurality of bolts, said rotor having an axis of rotation and said plurality of bolts being arranged in an array surrounding said axis, some of said bolts including balancing weights retained thereon, some of said balancing weights comprising a screw threadedly engaging a threaded bore formed in a said respective bolt, some of said bolts including another balancing weight retained on a respective said bolt by a said respective screw.

5,285,701

GEARING MECHANISM FOR HIGH SPEED BICYCLES

Danial Parachinni, 3074 S. Lock St., Chicago, Ill. 60608

Filed May 26, 1992, Ser. No. 888,126

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.2 **22 Claims**

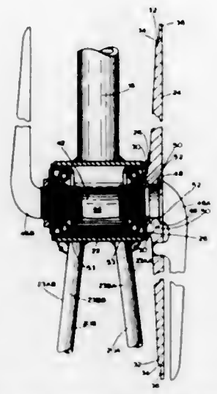
1. In a bicycle having a crank hub and a frame including a chain stay rail, a seat tube and a down tube aligned in the same plane as the seat tube, the improvement comprising:

a free-wheel mechanism comprising a first gear having gear teeth;

a crank sprocket having sprocket teeth, an outside diameter of at least about 9 inches and rotatable in a first plane substantially parallel to said planarly aligned seat tube and down tube, wherein the number of said sprocket teeth is at

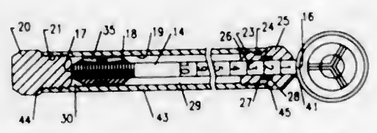
VOL 1159 ISS 3 FE 15 1994 UMI

least about 4.5 times the number of gear teeth of said first gear of said free wheel mechanism; and



extender means projecting between said crank sprocket and said hub to spacially extend said crank sprocket away from said hub wherein said crank sprocket does not contact said chain stay rail.

5,285,702
EXTENDIBLE TOOL HANDLE
George Hillinger, 2140 Davie Ave., Commerce, Calif. 90040
Filed Nov. 13, 1992, Ser. No. 975,836
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—177.2 **8 Claims**



1. An extendible handle for a tool to permit the user to increase the leverage applied on the tool, said extendible handle comprising:
an inner handle member having an outer surface, a tool end, and a remote end, said tool end including means for attachment to a tool;
an internal bushing member affixed to said inner handle member near the remote end thereof, said internal bushing member having an inner end, an outer end, and an outer surface;
an air passage extending from said inner end to said outer end of said bushing member;
an outer handle member having a tool end and a remote end, said outer handle member having a smooth unapertured inner cylindrical opening within which the internal bushing member closely fits and the internal bushing forms a forward air chamber within said cylindrical opening between the internal bushing and a tool end bushing and a rearward air chamber behind said bushing;
a tool-end bushing member affixed near said tool end of said outer handle member, said tool-end bushing member having an inner passageway which closely fits the outer surface of the inner handle member, whereby said outer handle member may be extended away from the means for attachment of a tool to provide greater leverage or may be contracted to provide a shorter handle when there is not room for the extended handle and the movement of the outer handle member is dampened by the necessity of air to pass through the air passage of the internal bushing member between the forward air chamber and the rearward air chamber.

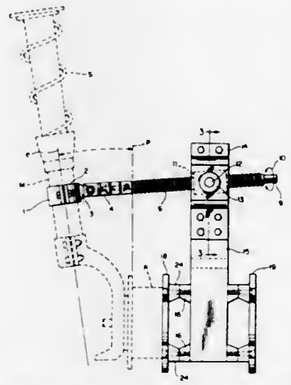
5,285,703
SPANNER PLIER TOOL
Thomas E. Carson, 7855 Jericho Rd., Stevensville, Mich. 49127
Filed Mar. 8, 1993, Ser. No. 27,430
Int. Cl.[5] B25B *7/02*
U.S. Cl. 81—423 **3 Claims**



1. A spanner plier tool, comprising,
a first jaw spaced from a second jaw, the first jaw including a first jaw shank orthogonally and integrally mounted to the first jaw, the second jaw including a second jaw shank in sliding engagement with the first jaw shank, the first jaw shank including an opening and the second jaw shank including a pivot axle received through the opening to permit pivoting of the first jaw relative to the second jaw, wherein the first jaw shank includes a first handle, the second jaw shank having a second handle, wherein the first handle and the second handle extend coextensively relative to one another, the first jaw including a first jaw planar face, the second jaw including a second jaw planar face, the first jaw planar face including a first threaded bore orthogonally directed into the first jaw planar face, and the second jaw including a second jaw threaded bore orthogonally directed into and through the second jaw planar face, and
a first insert threadedly received within the first threaded bore, and a second insert received within the second threaded bore, the first insert having a first insert projection extending orthogonally beyond the first jaw planar face, the second insert having a second projection extending orthogonally beyond the second planar face, wherein the first projection and the second projection are arranged for reception within a workpiece, and
the first handle includes a row of first handle threaded bores, the second handle having a further row of second handle threaded bores, the first handle threaded bores receiving at least one pair of further inserts threadedly therewithin, and the second handle threaded bores receiving at least one further pair of inserts threadedly received therewithin.

5,285,704
CASTER ANGLE REGULATING TOOL
Pedro Santana Gonzalez, Rodriguez Pena 2128, Castelar, Argentina 1712
Filed May 27, 1992, Ser. No. 888,643
Claims priority, application Argentina, Jun. 11, 1991, 319.907
Int. Cl.[5] B25B *11/00*
U.S. Cl. 81—484 **5 Claims**

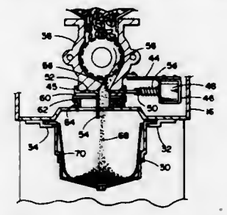
1. A tool for adjusting the caster angle of automobile wheels including an adjusting screw attached to a suspension spring stub axle of the automobile and coupled to a wheel drum plate, the tool comprising:
a prismatic head member;
a set of interchangeable wheel mounting disks;
means for removably mounting two of said disks of said set on said prismatic head;
an adjusting nut having a screw threaded bore therethrough;
a pair of co-axial axle shafts extending outwardly from opposite sides of said adjusting nut;
means for pivotally mounting said adjusting nut by said axle shafts on said prismatic head so that said adjusting nut is freely pivotable with respect to said prismatic head;
a screw threaded adjusting shaft extending through and operatively engaged in said adjusting nut screw threaded



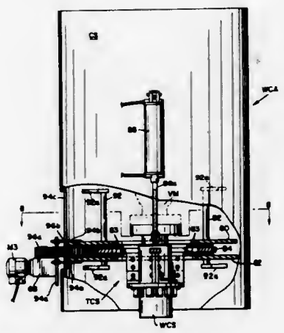
bore so that rotation of said adjusting shaft moves said shaft longitudinally in the direction of its central axis of rotation with respect to said adjusting nut and said prismatic head;
clamp means rotatably mounted on one end of said adjusting shaft for removably clamping onto said suspension spring stub axle; and
means on the other end of said adjusting shaft to facilitate rotating said adjusting shaft, so that with said two disks mounted on said prismatic head and said wheel drum plate mounted on one of said disks, and said clamp means clamped onto said stub axle connected to said wheel drum plate, rotation of said adjusting shaft in either direction adjusts the caster angle of said automobile wheels.

5,285,705
CONTINUOUS ACTING MOISTURE PREVENTION AND CLEANING VALVE
Donald R. Buttle, Geneva; Christopher J. Kenny, West Chicago, both of Ill., and Brian D. Newnan, Louisville, Ky., assignors to Grindmaster Corporation, Louisville, Ky.
Filed Apr. 6, 1993, Ser. No. 42,861
Int. Cl.[5] A47J *31/42*
U.S. Cl. 99—280 **9 Claims**

1. In a beverage making apparatus having a storage chamber for storing a solid component of a beverage mixture, a mixing chamber for mixing said solid component with a liquid component of the mixture, and a control device to initiate and end cycles of operation of the apparatus, each cycle starting with a transportation of a predetermined amount of said solid component of said beverage mixture to and through a passageway connecting said storage chamber with said mixing chamber and ending with a mixing of said solid component and said liquid component, said apparatus further comprising:
(a) a valve assembly operatively associated with said passageway and including a plate movable between a closed position and an open position, said plate defining an opening therethrough which registers with said passageway when said plate is in said open position thereby permitting transportation of said predetermined amount of said solid component during a cycle from said storage chamber through said passageway to said mixing chamber, said opening not in registry with said passageway when said plate is in said closed position wherein said plate prevents moisture from said mixing chamber from moving through said passageway into said storage chamber;
(b) an operative element connected to said plate for moving said plate between said open and closed positions; and
(c) said control device including a time measuring component in communication with said operative element for causing said operative element to open and close said plate between successive cycles of said apparatus when said component determines that a predetermined time interval has been reached, said component initiating the measure of said time interval from a time point within a cycle and being reset to a zero time point each time a new cycle is initiated wherein said plate in moving between open and closed positions between cycles breaks the build up of residue that fuses said plate to adjacent surfaces of said passageway due to exposure to moisture emanating from the mixing of the solid component with said liquid component.



5,285,706
PIPE THREADING APPARATUS
Jerry H. Robinson, Mobile, Ala., assignor to Wellcutter Inc., Brewton, Ala.
Filed Mar. 11, 1992, Ser. No. 849,711
Int. Cl.[5] B23B *3/22*
U.S. Cl. 82—113 **17 Claims**



1. A pipe threading apparatus comprising:
a pair of separated annular support collars;
a ring drive gear rotatably sandwiched between said pair of separated annular support collars;
a thread-cutting subassembly sized to cut threads in a predetermined pipe surface and coaxially coupled to said ring

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drive gear such that said thread-cutting subassembly rotates as a unit with said ring drive gear; and

a drive assembly operatively coupled to said ring drive gear for imparting rotational and longitudinal movements to said ring drive gear so as to responsively rotate and longitudinally displace said thread-cutting subassembly relative to said predetermined pipe surface and thereby cut threads in said predetermined pipe surface.

5,285,707

TIRE CUTTING MACHINE

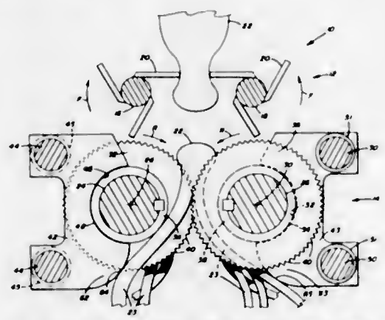
Frank J. Lodovico, Delmont, and John W. Wagner, New Alexandria, both of Pa., assignors to Allegheny Paper Shredders, Inc., Delmont, Pa.

Filed Oct. 11, 1991, Ser. No. 775,302

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] B23D *19/06*; B26D *1/24*

U.S. Cl. 83—114 **6 Claims**



1. An improved machine capable of cutting tires into a plurality of elongated strips, said machine being of a type which includes a pair of parallel cutting shafts mounted for rotation about central axes thereof in opposite directions, each of said cutting shafts supporting a plurality of cutting wheels mounted for rotation therewith, each of said cutting wheels on one of said cutting shafts axially separating and extending between axially adjacent said cutting wheels on the other of said cutting shafts, an annular spacer mounted on said each cutting shaft between said axially adjacent cutting wheels on said each cutting shaft for rotation therewith, wherein said improvement comprises:

said annular spacer having a cylindrical outer surface;

a spacer comber for each of said annular spacers;

said spacer comber having a cylindrical inner surface;

said spacer comber being fixedly mounted with said cylindrical inner surface aligned with said cylindrical outer surface of said annular spacer in a circumferential region thereof remote from a cutting area between said cutting shafts;

said spacer comber having a lower portion being disposed below said central axes and at a side thereof remote from said cutting area; and

said lower portion having a rounded surface which begins at said cylindrical inner surface and which extends uninterrupted downwardly from said cylindrical outer surface of said annular spacer to a location remote from said cutting area, whereby said rounded surface minimizes surface contact between said elongated strips and said spacer comber.

5,285,708

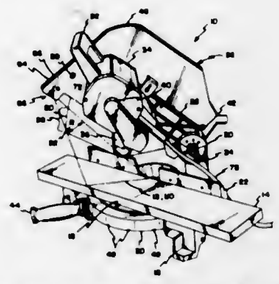
MITER SAW ALIGNMENT SYSTEM

Donald R. Bosten; John R. Kriaski; John W. Schnell; James P. Nichols, Jr., all of Jackson, Tenn.; Steven H. Plume, St. Charles, Mo.; Matthew G. Popik, Jackson, Tenn.; Dennis C. Huntsman, Jackson, Tenn.; Randy G. Cooper, Milan, Tenn., and David V. Keller, Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.

Filed May 18, 1992, Ser. No. 855,313

Int. Cl.[5] B26D *7/00*; B27B *5/20*

U.S. Cl. 83—520 **19 Claims**



1. A miter saw with an optical system for projecting an optical alignment marker onto a workpiece, comprising:

a base;

a turntable rotatably supported by the base, the turntable having a front and rear portion;

a fence disposed above the base for supporting the orientation of the workpiece located on the base;

a support coupled to the rear portion of the turntable;

cutting means including a blade for cutting the workpiece, the cutting means being pivotally coupled to the support for positioning the blade from a raised position above the workpiece to an operational position for engagement with the workpiece to an operational position for engagement with the workpiece, the blade having a radius, two sides, and a width and the cutting means having a front and rear portion; and

light projecting means attached to the cutting means for projecting a planar beam of light past one side of the blade and onto the workpiece in order to form a linear optical alignment marker on the workpiece, the linear optical alignment marker having a thickness and two sides, the light projection means further comprising adjustment means for adjusting the alignment marker so that the side of the alignment marker facing the blade is coincident with a plane defined by the one side of the blade, whereby the side of the linear optical alignment marker that is coincident with the plane defined by the one side of the blade will designate the location at which the one side of the blade will enter the workpiece.

5,285,709

MACHINE HEAD FOR TUNING A STRINGED INSTRUMENT, ESPECIALLY A GUITAR OR THE LIKE

John D. Grant, 8 South Rd., Lancaster, LA1 4XD, United Kingdom

PCT No. PCT/GB89/01191, § 371 Date Mar. 28, 1991, § 102(e) Date Mar. 28, 1991, PCT Pub. No. WO90/03637, PCT Pub. Date Apr. 5, 1990

PCT Filed Sep. 20, 1989, Ser. No. 671,835

Claims priority, application United Kingdom, Sep. 29, 1988, 8822819

Int. Cl.[5] G10D *3/00*, *3/14*

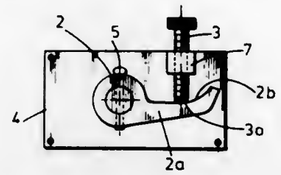
U.S. Cl. 84—297 R **22 Claims**

1. A machine head for fitting to a stringed instrument for tensioning and so tuning up a string, the machine head comprising:

a spindle around which the string is passed and to which the string is secured, the spindle having a longitudinal axis;

means mounting the spindle for rotation about the longitudinal axis;

a single arm extending from the spindle; and



screw threaded adjusting means including a threaded member which threadingly engages an abutment and a free end which engages the arm, for displacing the arm and thereby rotating the spindle about its longitudinal axis to pull the string around the spindle and tension the string.

5,285,710

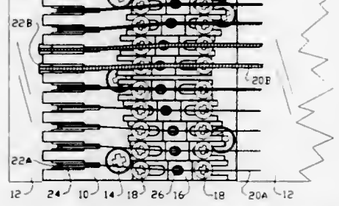
ADJUSTABLE BRIDGE FOR A STRINGED MUSICAL INSTRUMENT

Emmett H. Chapman, 6011 Woodlake Ave., Woodland Hills, Calif. 91367-3238

Filed Jun. 29, 1992, Ser. No. 905,681

Int. Cl.[5] G10D *3/04*

U.S. Cl. 84—307 **15 Claims**



1. An adjustable bridge assembly for a stringed musical instrument having a plurality of tensioned strings traversing an elongated fingerboard and a bridge region of a main instrument body, the assembly comprising:

a plurality of rigid elongated adjustment blocks, each associated with a corresponding one of the strings, disposed side by side in a row across the bridge region;

block fastening means, associated with said blocks, adapted to fasten each block in a fixed disposition relative to the fingerboard in a manner enabling initial positioning as well as subsequent release and repositioning of the block in at least a longitudinal direction of the fingerboard; and

a plurality of saddle screws each (a) interposed between a corresponding one of said adjustment blocks and a corresponding one of said strings, (b) configured with a guidance groove, disposed diametrically across an end thereof, supporting the string, and (c) threadedly engaging the corresponding block so as to allow the height of the string from the fingerboard to be set adjustably.

5,285,711

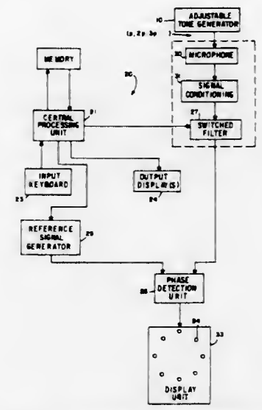
METHOD AND APPARATUS FOR TUNING MUSICAL INSTRUMENTS

Albert E. Sanderson, Carlisle, Mass., assignor to Inventronics, Inc., Chelmsford, Mass.

Filed Jul. 14, 1992, Ser. No. 913,695

Int. Cl.[5] G10G *7/02*

U.S. Cl. 84—454 **6 Claims**



1. A method for tuning a musical instrument comprising a plurality of adjustable frequency tone generators for generating a plurality of musical notes, each tone generator producing a signal having a plurality of different order partials with the first partial for each tone generator corresponding to the lowest frequency produced thereby and including frequency adjustment means for adjusting the frequency thereof, said method comprising the steps of:

A. measuring the inharmonicity of each of at least a first and second tone generator by measuring the frequency of two partials produced by each of the tone generators,

B. establishing a tuning curve determined by the measured inharmonicity of the tone generators thereby to establish a tuning frequency for each of the tone generators, and

C. adjusting each tone generator to its corresponding tuning frequency.

5,285,712

YARN CARRIER WITH CLUTCH

Richard A. Doyne; Rio H. Benson, both of Gastonia, and Aly El-Shiekh, Raleigh, all of N.C., assignors to North Carolina State University, Raleigh and A. B. Carter Inc., Gastonia, both of N.C.

Continuation-in-part of Ser. No. 533,482, Jun. 5, 1990, Pat. No. 5,156,079. This application Aug. 10, 1992, Ser. No. 927,611

Int. Cl.[5] D04C *3/18*

U.S. Cl. 87—57 **4 Claims**

1. A yarn carrier apparatus having enhanced yarn retraction capability for use with a fabric formation machine and the like, said yarn carrier apparatus comprising:

a housing;

a yarn supply spool rotatably mounted within said housing for feeding yarn therefrom to said fabric formation machine and taking up yarn therefrom during machine operation;

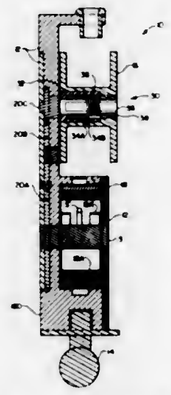
spring motor means mounted for rotational slipping movement within said housing and operatively connected to but having a rotational axis spaced-apart from the rotational axis of said yarn supply spool for providing tension on the yarn being fed to said fabric formation machine and

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taking up yarn on said spool while maintaining tension on said yarn;

drive means operatively connected between said spring motor means and said yarn supply spool for transmitting biasing force from said spring motor means to said yarn supply spool, said drive means comprising a first rotational drive element operatively connected to said spring motor means, a second rotational drive element operatively connected to said yarn supply spool, and at least one rotational drive element operatively positioned between said first and second rotational drive elements so as to multiply rotational movement between said first rotational drive element and said second rotational drive element; and

clutch means mounted on said second rotational drive element and being operatively connected to said yarn supply spool for allowing said spool to rotate relative to said second rotational drive element when a predetermined



tension on the yarn carried thereby is achieved but which is less than the tension required to actuate said rotational slipping movement of said spring motor means;

wherein said spring motor means comprises a ring element having a coil spring positioned therein, said coil spring defining engagement means at one end thereof for operatively engaging said first rotational drive element and being secured at the other end thereof to said ring element, said coil spring further comprising a radially movable elongate element secured proximate to the secured end of said spring and extending through an aperture in said ring so as to engage said housing, said elongate element being adapted to be withdrawn radially inwardly when said coil spring is wound tight and to thereby allow said spring motor means to rotate relative to said housing so as to at least partially unwind said spring, said rotating distance being determined by a plurality of spaced-apart recesses defined within said housing around the periphery of said spring motor means.

5,285,713

COUNTERMASS FOR RECOILLESS WEAPONS

Anders N. Brage, Sollentuna, Sweden, assignor to Forsvarets Forskningsanstalt, Sundbyberg, Sweden

PCT No. PCT/SE91/00064, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11672, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 29, 1991, Ser. No. 916,088

Claims priority, application Sweden, Jan. 29, 1990, 9000302

Int. Cl.[5] F41A *1/10*

U.S. Cl. 89—1.704 **5 Claims**

1. A countermass for a recoilless weapon of the kind having a projectile and a projectile propelling charge in a barrel which is open at both ends, the countermass for placement behind the projectile propelling charge and which is also intended to depart with the propellant gases which exit rearwardly from the weapon when the projectile is propelled forward, the



countermass comprising a countermass body means comprised of a weakly bonded powder mass and having at least one gas throughflow passage, the countermass body means having the form of a rearwardly widening nozzle.

5,285,714

ROTARY-RING CARRIAGE FOR A LIGHT WEAPON ON A COMBAT VEHICLE, ESPECIALLY FOR THE HATCHWAY OF A MILITARY TANK

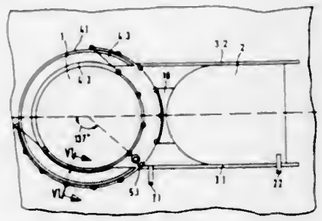
Uwe Sprafke, Schauenberg-Elmshagen, Fed. Rep. of Germany, assignor to Wegmann & Co. GmbH. Kassel, Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,645

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136602

Int. Cl.[5] F41A *23/24*

U.S. Cl. 89—37.03 **5 Claims**



1. A rotary-ring carriage for a light weapon on a combat vehicle, comprising: curved rails, an undercarriage having wheels which roll along the curved rails and on which a weapon is mountable, wherein the rails extend along arcs which subtend an angle greater than π rad and less than 2π rad corresponding to a complete circumference, and wherein the undercarriage extends along an arc which subtends an angle greater than the difference between 2π rad and the angle subtended by the rails.

5,285,715

ELECTROHYDRAULIC SERVOVALVE WITH FLOW GAIN COMPENSATION

Alvon C. Elrod, Jr., Ventura; Robert C. Heagey, Canyon Country; Donald C. Muths, Lake Hughes; Larry L. Nichols, Valencia, and Clyde E. Cobb, Lakeview Terrace, all of Calif., assignors to HR Textron, Inc., Valencia, Calif.

Filed Aug. 6, 1992, Ser. No. 926,013

Int. Cl.[5] F15B *9/03, 13/044*

U.S. Cl. 91—361 **4 Claims**

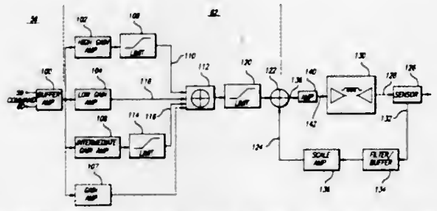
1. An electrohydraulic servovalve system having a motor responsive to electrical signals for positioning a valve member to control the flow of fluid therethrough, said valve includes round ports and said valve member overlays said round ports thereby providing flow characteristics including a deadband region, an intermediate flow region and a full flow region, said system comprising:

a) a source of electrical command signals:

b) means for receiving said electrical command signals;

c) means coupled to said receiving means for tailoring said command signals and providing a tailored signal including a plurality of amplifiers, each of said amplifiers having a different gain, at least one of said amplifiers including means for limiting the output signal thereof;

d) a first one of said amplifiers providing a first signal to compensate for said deadband region, a second one of said amplifiers providing a second signal to compensate for said intermediate flow region and a third one of said amplifiers providing a third signal to compensate for said full flow region;



e) means for summing the output signals from said amplifiers,

f) a position sensor coupled to said electrohydraulic servovalve system for providing an electrical signal representative of position;

g) means for comparing said position signal and said tailored signal for developing an input signal to said motor; and

h) means for coupling said input signal to said motor, whereby a substantially linear flow characteristic results.

5,285,716

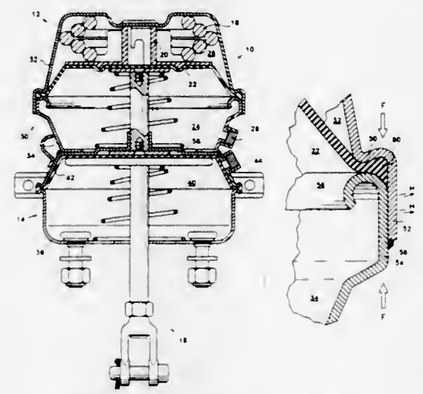
SPRING BRAKE ASSEMBLY HAVING TAMPER-RESISTANT WELDED HOUSING AND METHOD FOR MAKING SAME

Laurence D. Thompson, Fresno, Calif., assignor to TSE Brakes, Inc., Fresno, Calif.

Filed Sep. 22, 1992, Ser. No. 949,186

Int. Cl.[5] F01B *7/00*

U.S. Cl. 92—63 **18 Claims**



1. A method for making a brake actuator having an actuator housing containing an actuator chamber, a flexible diaphragm extending across said actuator chamber to define a first region and second region, and means inside said second region between said housing and said diaphragm for exerting an actuation force on said diaphragm in the direction of said pressurized region, said method comprising the steps:

terminating a lower peripheral portion of a first subhousing with a radially outwardly extending ledge from which downwardly extends a first cylindrical flange, a lower surface of said outwardly extending ledge and an inner surface of said first cylindrical flange cooperating to define an inside surface of a female coupling;

terminating an upper peripheral portion of a second subhousing with a radially inwardly extending lip at an upper end of a second cylindrical flange, an outer surface of said second cylindrical flange and an upper surface of said inwardly extending lip cooperating to define an outside surface of a male coupling adapted to fit within said inside surface of said female coupling;

positioning said first and second subhousings coaxially about an axis with the outside surface of the male coupling entering the inside surface of the female coupling and with a periphery of said diaphragm located between the upper surface of said lip and the lower surface of said ledge;

pressing said male coupling into said female coupling until the periphery of the diaphragm is squeezed between the upper surface of the lip and the lower surface of the ledge; and

welding a lower end of the female coupling downwardly remote from said lip to an exposed lower portion of the male coupling remote from said ledge, while the periphery of the diaphragm remains squeezed between said ledge and said lip.

11. A brake actuator comprising:

a subhousing having a first peripheral portion surrounding an axis and terminated by an outwardly extending circumferential ledge from which longitudinally extends a first cylindrical flange to thereby define define an inside surface of a female coupling;

a second subhousing having a second peripheral portion also surrounding said axis and terminated by a second cylindrical flange from which extends an inwardly extending lip to thereby define an outside surface of a male coupling adapted to fit inside said inside surface of the female coupling, said first and second subhousings being positioned coaxially about said axis with the male and female couplings matingly engaged to thereby form an actuator housing containing an actuator chamber;

a diaphragm extending across said actuator chamber and secured between said ledge and said lip to thereby separate said chamber into a first region and second region;

means inside said first region between said actuator housing and said diaphragm for exerting an actuation force on said diaphragm in the direction of said first region; and

a circumferential weld between an exposed end of said first cylindrical flange longitudinally spaced from said ledge and an adjacent portion of the outside surface of said second cylindrical flange for maintaining said male and female couplings in permanent engagement with each other with the periphery of the diaphragm trapped between said ledge and said lip.

5,285,717

BREWER CONTROL

John T. Knepler, Chatham, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation of Ser. No. 555,046, Jul. 19, 1990, abandoned. This application Apr. 1, 1993, Ser. No. 41,808

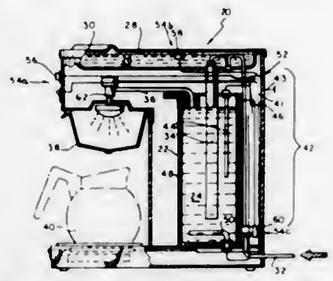
Int. Cl.[5] A47J *31/00*

U.S. Cl. 99—282 **4 Claims**

1. A temperature control device in combination with a fill water displacement beverage brewing apparatus, said brewing apparatus having a brew cycle during which a selected volume of heated water is dispensed from the beverage brewing apparatus to infuse a beverage brewing substance from which a beverage is brewed; said beverage brewing apparatus includ-

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ing a heated water reservoir for retaining a predetermined volume of water in a heated state, a controllable water heater operatively associated with said heated water reservoir for heating the water in the reservoir over a heating cycle of predetermined duration and maintaining the water in the reservoir within a predetermined temperature range, a temperature control device comprising sensor coupled with said controllable water heater for sensing the temperature of water retained in said reservoir and selectively energizing and deenergizing said controllable water heater when the water temperature is respectively below or above a predetermined maximum temperature, a basin communicating with said reservoir for retaining a measured volume of water prior to being dispensed into said reservoir; said temperature control device further comprising control means operative substantially at the beginning of the dispensing of water from the basin to the reservoir, for activating said controllable water heater and momentarily overriding said sensor regardless of the temperature of the water in the heated reservoir, said controllable water heater being activated by said control means independent of said sensor for a time period predetermined by a timing mechanism operatively associated with said control means such that during the overriding of the sensor the activation of the water heater is independent of the temperature of the water retained in the reservoir.

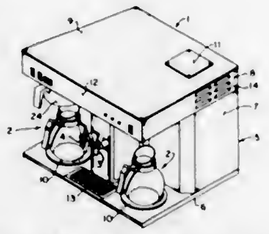


5,285,718

COMBINATION BEVERAGE BREWER WITH COLD WATER SUPPLY

Joseph P. Webster; William L. Gustafson, and Larry G. English, all of St. Charles, Mo., assignors to Newco Enterprises, Incorporated, St. Charles, Mo.

Filed Jul. 16, 1992, Ser. No. 915,053
Int. Cl.[5] A47J 31/50
U.S. Cl. 99—290 8 Claims



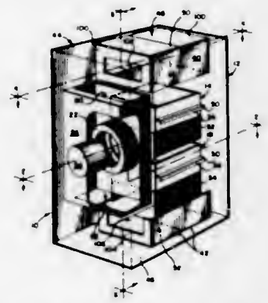
1. A combined dispenser of the type incorporating both a beverage brewer and a liquid cooler for receiving liquid from a supply source, and formed having a component housing, said housing segregated into two sections, the first section provided for containment of those components for brewing a beverage such as coffee and the like, and the other section provided for containing those components for cooling of a liquid for delivery by the dispenser, the liquids received by the first and other sections from a supply source being independently processed, with both the processed hot and cold distinct liquids received from the supply source being delivered by the dispenser upon functioning, the first section further containing a hot water tank means, for receiving water from the supply source for heating, a heating element contained within the tank means for heating said contained water, a brewing means operatively associated with the brewing section for receiving the heated water and for brewing a beverage, the other section containing a cold water tank means for receiving water from the supply source for cooling, cooling rod means provided within the cold water tank means for cooling said contained water, and dispenser means operatively associated with the cooling section for dispensing of cold water, insulation means provided within the housing within the cooling section and surrounding a part of the cold water tank means to insulate it from any generated ambient heat, and a wall contained within the housing and separating the brewing section from the cooling section of the combined dispenser, cooling module means operatively associated with the rod means and functioning upon operation as a heat pump to draw heat from the contained water to attain its cooling, heat exchanger means connecting with the cooling module means to provide for dissipation of heat extracted by the cooling rod means from the contained water, a water level probe operatively associated with the cooling rod means within the cold water tank and provided for detecting the level of water delivered to the cold water tank means during functioning of the dispenser when operated for cooling of a liquid, a filter and filter monitoring means associated with the combined dispenser, said filter provided for filtering of the incoming water and the filter monitoring means operatively associated with the filter and determining the quantity of water processed by the various sections, electronic means operatively associated with the filter monitoring means for determining the quantity of water passing through the said filter, said electronic means incorporating electronic counting means for gauging the length of a brewing cycle, whereby precisely controlled and regulated processing of liquid from a supply source is independently treated to produce both hot and cold distinct liquids within the first and other sections respectively of the combined dispenser to furnish a brewed beverage and an independent supply of cold water during its functioning.

5,285,719

RAPID FROZEN FOOD THAWING SYSTEM

David H. McFadden, Lexington, and Richard N. Caron, Dorchester, both of Mass., assignors to Gas Research Institute, Chicago, Ill.

Filed Sep. 11, 1992, Ser. No. 943,714
Int. Cl.[5] A21B 1/00, 1/08; A23L 3/16, 3/16; F24C 15/32
U.S. Cl. 99—476 16 Claims



1. Apparatus for rapid thawing of multiple frozen food pieces, said apparatus comprising, in combination:

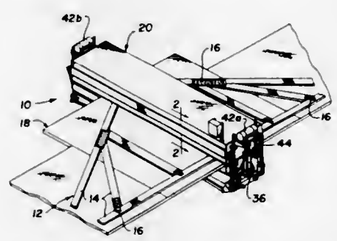
(a) housing means comprising food inlet means and food outlet means;
(b) upper and lower basket means for holding food pieces;
(c) basket support means for holding said upper and lower basket means inside said housing means with said basket means in substantially vertical orientation, one above the other;
(d) blower means for circulating a hot, gaseous stream inside said housing means so as to cause at least a part of said stream to pass through said upper basket means in one general direction and at least another part of said stream to pass through said lower basket means generally in an opposite direction; and
(e) heating means for heating said gaseous stream to a predetermined temperature before circulating said stream through said upper and lower basket means.

5,285,720

APPARATUS AND METHOD OF MANUFACTURING WOOD TRUSSES

Ronnie F. Wright, 2001 Haltom Rd., Fort Worth, Tex. 76111

Filed Oct. 2, 1992, Ser. No. 955,821
Int. Cl.[5] B30B 13/00, 9/00
U.S. Cl. 100—35 2 Claims



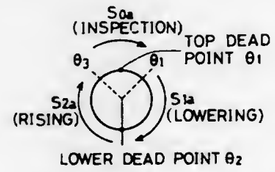
2. A method of forming wooden trusses by embedding the protrusions of connector plates in wooden cords to assemble the wooden cords into trusses, comprising the steps of positioning at least two wooden cords in an adjacent relationship, positioning at least one connector plate in a position overlapping said at least two wooden cords, forcing the protrusions of the connector plates into the wooden cords while simultaneously applying vibration forces to the connector plates.

5,285,721

SLIDE OPERATION CONTROL DEVICE FOR A PRESS

Noboru Sugimoto, Koganei; Souichi Kumekawa, Tokorozawa; Masao Mukaidono, Tokyo; Masayoshi Sakai, and Koichi Futsuhara, both of Urawa, all of Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 988,943
Int. Cl.[5] B30B 15/26, 15/14, 15/28
U.S. Cl. 100—43 7 Claims



1. A slide operation control device for a press having a structure in which the slide is driven when an operation button is operated at each reciprocating motion of the slide, the control device comprising an overrun monitoring circuit that monitors whether or not the slide is stopped in a predetermined range close to a top dead point when the operation button is operated and generates an operation permission signal when the slide is stopped in the predetermined range, the control device also comprising an operation button OFF checking circuit that confirms whether or not the operation button is turned off when the slide is restarted and that generates an operation permission signal in the case where the operation button is turned off, wherein the slide can be driven downward when both the overrun monitoring circuit and the operation button OFF checking circuit generate the operation permission signal, the overrun monitoring circuit including a first self holding circuit and a second self holding circuit in which the output level is not mistaken for logical value 1 in the case of a failure when the output energy condition of the circuit is represented by the binary variables of 1 and 0 and also when a high energy condition is represented by logical value 1 and a low energy condition or a no energy condition is represented by logical value 0, wherein the first self holding circuit being structured in such a manner that: a signal representing that the operation button is turned on is used for a trigger signal, the operation button ON signal becoming logical value 1 when the operation button is turned on, the operation button ON signal being not mistaken for logical value 1 in the case of a failure; and an output of logical product of a slide stop command signal and an output signal of the second self holding circuit is used for a reset signal, the slide stop command signal which is a signal to stop the slide becoming logical value 0 in a predetermined position in the range of slide elevation, the slide stop command signal being not mistaken for logical value 1 in the case of a failure, further the second self holding circuit being structured in such a manner that: a start button ON signal is used for a trigger signal, the start button ON signal being a signal showing the start of the operation of the press, the output level of the start button ON signal becoming logical value 1 when the start button is turned on, the output level of the start button ON signal being not mistaken for logical value 1 in the case of a failure; and the logical sum of a top dead point stop confirmation signal, a slide elevating process signal and the output signal of the first self holding circuit is used for a reset signal, the top dead point stop confirmation signal being a signal showing that the slide is in a predetermined range close to the top dead point, the output level of the top dead point stop confirmation signal becoming logical value 1 when the slide is in a predetermined range close to the top dead point, the output level of the top dead point stop confirmation signal being not mistaken for logical value 1 in the case of a failure, the slide elevating process signal being a signal showing that the slide is in the process of elevation, the output level of the slide elevating process signal becoming logical value 1 in a range of slide elevation, the output level of the slide elevating process signal being not mistaken for logical value 1 in the case of a failure, further the output signal of the second self holding circuit being made to be an operation permission signal based on overrun monitoring, wherein the operation is permitted when the output level of the signal is logical value 1.

5,285,722

PRESS SHUTHEIGHT ADJUSTMENT USING HYDRAULIC TIE ROD ASSEMBLIES

Robert L. Schockman, St. Henry, Ohio, assignor to The Minster Machine Company, Minster, Ohio

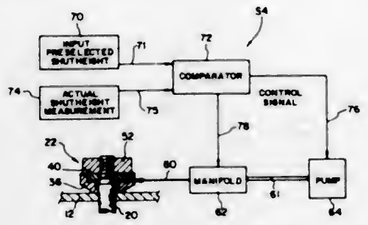
Filed Nov. 16, 1992, Ser. No. 977,141
Int. Cl.[5] B30B 15/14
U.S. Cl. 100—53 16 Claims

1. A press comprising:
a crown and a bed attached together by a frame; a slide attached to said crown for reciprocating movement in opposed relation to said bed;
a plurality of tie rods connecting between said crown and said bed;
a plurality of pressure activated tie rod nut assemblies at-

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tached to said tie rods so that when activated, said nut assemblies force said crown and said bed closer together;

a shutheight measuring means for measuring the shutheight of said press, said measuring means attached to said press; and



feedback means connected to said shutheight measuring means and said tie rod nut assemblies for comparing a predetermined desired shutheight to the shutheight measured by said measuring means and pressure activating said tie rod nut assemblies when the measured shutheight deviates from the predetermined shutheight, whereby shutheight is controlled.

5,285,723

PRINTING APPARATUS FOR WIRE MATERIAL

Tadashi Ichikawa, and Mitsuo Takahashi, both of Narita, Japan, assignors to Japan Airlines Co., Ltd., Tokyo, Japan

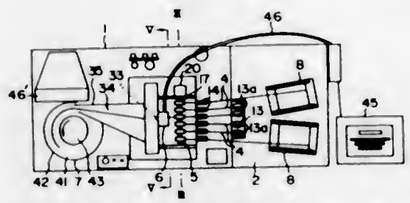
PCT No. PCT/JP91/00745, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/19299, PCT Pub. Date Dec. 12, 1991

PCT Filed May 31, 1991, Ser. No. 828,812

Claims priority, application Japan, May 31, 1990, 2-141872

Int. Cl.[5] B41F *17/00*

U.S. Cl. 101—35 **19 Claims**



1. A printing apparatus for wire materials in which identification displays for a wire material are printed on an outer periphery of the wire materials, comprising:

selection and drive means for feeding laterally spaced wire materials in a longitudinal direction and for selecting a laterally spaced wire material to be printed upon, the laterally spaced wire materials being laterally spaced at an exit location of said selection and drive means for a first transverse distance;

printing means for printing an identification display upon the selected laterally spaced wire material, said printing means further including a printing head assembly, a positioning table for supporting said printing head assembly and means for moving said printing head assembly with respect to said positioning table such that said printing head assembly is adapted for lateral movement for the first transverse distance;

a cutter member supported by said printing head assembly such that said cutter member is adapted t move transversely with said printing head assembly through the selected laterally spaced wire material so as to cut the selected laterally spaced wire material; and

drive control means for controlling the selection and drive means and the movable printing means so that printing is carried out on a wire material designated by printing data, a wire data storing means for storing a plurality of data of a wire material to be printed including contents of identification displays and class identification marks of the wire materials, and a data take-out means for taking out the data from the data storing means one-by-one so that the wire materials having the same class identification marks are continuously taken out and transmitting said take-out data to the drive control means as printing data.

5,285,724

INK SCRAPER FOR A STENCIL PRINTER

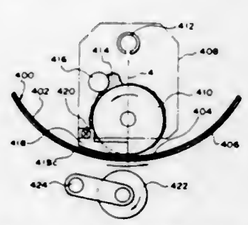
Kazuyosi Kobayasi, Murata; Tomoya Otomo, Sendai, and Mitsuo Sato, Shibata, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 753,235, Aug. 30, 1991, Pat. No. 5,172,632. This application Sep. 28, 1992, Ser. No. 952,791

Claims priority, application Japan, Aug. 31, 1990, 2-232074; Dec. 7, 1990, 2-407377; Dec. 11, 1990, 2-402870; Feb. 18, 1991, 3-13684; Mar. 25, 1991, 3-60116

Int. Cl.[5] B41F *15/42*; B41L *13/04*

U.S. Cl. 101—120 **5 Claims**



1. A printer for printing out an image formed in a stencil on a sheet, comprising:

a rotatable drum comprising a hollow cylindrical support including an apertured portion which is formed with a number of apertures and a non-apertured portion, a stencil being wrapped around an outer periphery of said support;

clamp means provided on said non-apertured portion of said support for clamping one edge of said stencil wrapped around said support;

ink supply roller means disposed in said support for supplying ink to said stencil via said apertured portion of said support;

press roller means for pressing a sheet against said stencil; and

ink scraper means located at an inlet side of said ink supply roller means for scraping ink deposited on an inner periphery of said drum;

said printer further including a side plate supporting said ink supply roller means, said ink supply roller means including a side and wherein one end of said ink scraper means is affixed to the side plate which supports said ink supply roller means, and a second end of said ink scraper means extends in a direction toward an outlet side of said ink supply roller means, said second end of said ink scraper means including a tip, said ink scraper means contacting said side of said ink supply roller means at said tip of said second end.

5,285,725

HEAT SENSITIVE STENCIL

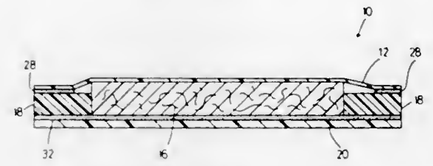
Teruo Imamaki, Kasugai, and Keiji Seo, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 21, 1992, Ser. No. 994,315

Claims priority, application Japan, Jan. 20, 1992, 4-1455; Feb. 18, 1992, 4-6505

Int. Cl.[5] B05C *17/06*

U.S. Cl. 101—127.1 **20 Claims**



1. A heat sensitive stencil having a side edge with a total thickness comprising:

heat sensitive means for forming a perforated image;

ink means for holding ink having a first thickness, and being located adjacent said heat sensitive means;

a frame with a second thickness having a first side and a second side, said first side and said second side being opposite to each other, said frame surrounding said ink means and being coupled to said heat sensitive means on said first side; and

an ink impermeable base coupled to said frame on said second side, adjacent said ink means,

wherein said first thickness is greater than said second thickness such that said ink means protrudes beyond said frame and beyond said total thickness of said side edge.

5,285,726

OFFSET ROTARY FOR COLOR PRINTING SYSTEM

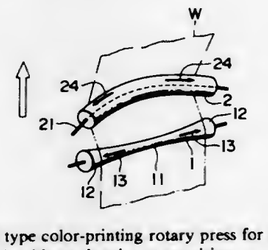
Hideo Ohta, Tokyo, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,907

Claims priority, application Japan, Nov. 15, 1991, 3-328077

Int. Cl.[5] B41F *13/54*

U.S. Cl. 101—228 **7 Claims**



1. An offset type color-printing rotary press for printing an image on a web without shearing, comprising:

(a) a plurality of printing sections including a first printing section;

(b) a concave crown roller having a concave circumferential surface arranged to contact one side of the web travelling through the press; and

(c) an expander roller with a curved axis having a convex circumferential surface arranged to contact an other side of the web travelling through the press;

wherein the crown roller and expander roller are positioned vertically below the first printing section, and the crown roller is positioned vertically below the expander roller.

5,285,727

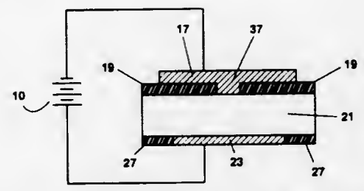
SEMICONDUCTOR IGNITOR

Robert B. Reams, Jr.; Jonathan Terrell, both of Silver Spring; Bohdan Dobriansky, Bethesda, all of Md.; Judith T. McCullen, Buffalo Mills, Pa., and Raymond Goetz, Baltimore County, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 2, 1992, Ser. No. 866,776

Int. Cl.[5] F42B *3/13*

U.S. Cl. 102—202.5 **12 Claims**



1. A semiconductor ignitor comprising a silicon substrate having substantially planar top and bottom faces, a layer of metal deposited over only a portion of said bottom face to form a Schottky barrier diode and contact pad thereon, another layer of metal deposited over a smaller portion of said top face to form a second Schottky barrier diode and a consumable plug thereon, wherein those portions of said top and bottom faces which have not been deposited upon are covered with an electrically insulating material, and another layer of metal is deposited upon both the consumable plug and the electrically insulating material on said top face to form a contact pad thereon.

5,285,728

SUCCESSIVE-ACTUATION DEVICE, USING PYROTECHNIC CORD

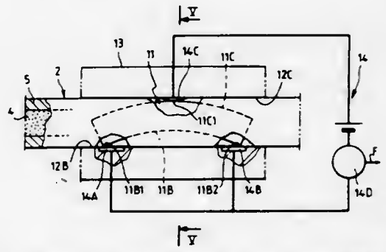
Alain Dolivet, Chatenay Malabry, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Dec. 4, 1992, Ser. No. 985,292

Claims priority, application France, Dec. 6, 1991, 91 15151

Int. Cl.[5] C06C *5/04*; F03G *7/06*

U.S. Cl. 102—275.1 **10 Claims**



1. A successive-actuation device, of the type including at least one pyrotechnic cord (2) and mean (3) for triggering the operation of said pyrotechnic cord, wherein it comprises at least one element (10) made from a shape-memory alloy having two stable states and disposed along said pyrotechnic cord (2), said element being capable of actuating a subsequent operation when it passes from one of its two stable states, for which the element occupies a neutral position, toward its other stable state for which it occupies an active position, under the action of the heat released by said pyrotechnic cord (2) following the triggering of the latter.

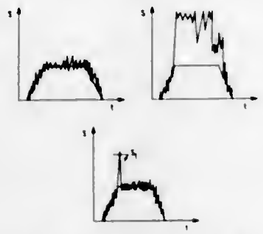
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,729

INDICATION OF SNOW PACKING FOR RAILWAY VEHICLES

Hans Bangtsson, Enkoping; Nils G. Nilstam, and Rickard Persson, both of Västeras, all of Sweden, assignors to ASEA Brown Boveri AB, Västeras, Sweden

Continuation-in-part of Ser. No. 776,326, Dec. 12, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,490
Claims priority, application Sweden, Jul. 13, 1989, 8902526
Int. Cl.[5] B61F 5/02
U.S. Cl. 105—199.2 4 Claims



1. A method for tilting the car body of a railbound vehicle in a track curve, the railbound vehicle comprising at least a first and a second bogie and at least one hydraulic cylinder mounted at each bogie and at least one servo valve controlling the position of said hydraulic cylinders, thus controlling the tilt value of the car body, the method comprising the steps of:
measuring the lateral acceleration of the car body;
setting a maximum tilt value for the car body;
forming a reference tilt value signal in a limiter in dependence on at least the measured lateral acceleration and the set maximum tilt value;
measuring the position of each hydraulic cylinder and forming an actual tilt value signal;
comparing the reference tilt value signal with the actual tilt value signal;
forming a regulation error signal which controls the servo valve, which by adjusting the hydraulic cylinders accommodates the tilt such that the actual tilt value equals the reference tilt value;
indicating the degree of snow packing on the vehicle by at least one indication signal, in the case of snow affecting the tilting of the car body;
setting a normal range of the indication signal as the range within which the indication signal lies when no snow packing occurs; and
forming a new reduced maximum tilt value such that the normal range of the indication signal is resumed if the normal range of the indication signal is exceeded in the case of snow packing.

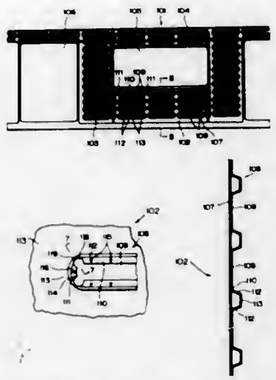
5,285,730

BODY STRUCTURE FOR RAILWAY VEHICLE

Takashi Fujinawa; Isamu Kawanishi; Hiroaki Kohira, and Kazuya Inoue, all of Hyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 17, 1991, Ser. No. 761,186
Claims priority, application Japan, Sep. 18, 1990, 2-246085; Sep. 20, 1990, 2-99099[U]
Int. Cl.[5] B61D 17/00
U.S. Cl. 105—401 8 Claims

1. A side body structure for a vehicle having a plurality of sections made of metal and connected together so as to form an entire body structure, each one of said sections comprising:
a reinforcement formed as an integrally continuous construction;
a plurality of holes formed within said reinforcement so as to reduce the weight thereof, each of said holes being substantially rectangular in configuration and having cutout portions at the four corners thereof;
a plurality of ribs formed respectively around said holes by



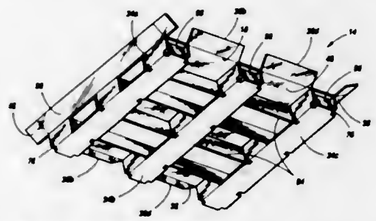
deforming a peripheral portion of each one of said holes, including said cutout portions; and
an outer plate securely fastened to a surface of said reinforcement;

5,285,731

LIGHTWEIGHT FIBERBOARD PALLET

A. Ross McIntyre, Salt Lake City, Utah, assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jul. 23, 1992, Ser. No. 919,132
Int. Cl.[5] B65D 19/00
U.S. Cl. 108—51.3 18 Claims



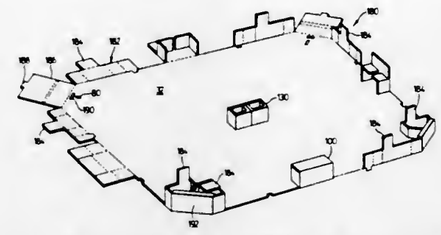
1. A fiberboard pallet comprising:
a base member having a top surface and a bottom surface interconnected by a first edge and a second edge opposing the first edge;
a plurality of elongated fiberboard support members disposed adjacent a bottom surface of said base member and extending between the first and second edges of the base member, each of said support members having first and second ends, the first and second ends extending between and being disposed adjacent to the respective first and second edges of the base member; and
interlocking means including a set of flaps and a set of apertures, one of said sets being disposed at the first and second ends of each of said support members and the other of said sets being positioned and connected at the opposing edges of said base member, said set of flaps engaging with said set of apertures to interlock the support members to the base member.

5,285,732

PALLET OF UNITARY CONSTRUCTION

Norman J. Gottlieb, Thornhill, Canada, assignor to Container Corporation International Ltd., Bridgetown, Barbados

Filed Nov. 18, 1992, Ser. No. 977,977
Int. Cl.[5] B65D 19/00
U.S. Cl. 108—51.3 30 Claims



1. A pallet blank fabricated of a stiff foldable sheet material, comprising:
a central platform having corner portions and side edges, the central platform having first and second opposed surfaces, including a corner flap located at each corner portion of said central platform and at least two spaced side flaps attached to each side edge of said central platform, each side flap on each side edge having a first end adjacent a corner flap and a second end opposed to said first end, the corner flaps and side flaps being of one piece construction with said central platform, each side flap being attached to said central platform side edge along a first fold line extending from said first end to a first position spaced from said second end of the side flap, each side flap being detached from the central platform along a cut line extending from said first position to said second end, the corner flaps and the side flaps being foldable in the direction out of the plane of said central platform, each corner flap also being foldable to overlap itself, said corner flaps once so folded being securable in position to said central platform, the second ends of the side flaps being foldable toward and inwardly of the corner flap which is adjacent said side flaps, and once so folded being securable in position, wherein said foldable corner flap and the adjacent foldable side flaps form a corner support member extending out of the plane of said central platform when the blank is assembled into a pallet.

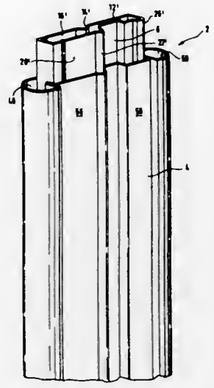
5,285,733

HEIGHT-ADJUSTABLE TABLE WITH A LINEAR OR STRAIGHT GUIDE

Walter Waibel, Birkenstr. 19, 8312 Dingolfing, Fed. Rep. of Germany

Filed Feb. 25, 1992, Ser. No. 840,067
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106610
Int. Cl.[5] A47B 9/00
U.S. Cl. 108—144 6 Claims

1. A height-adjustable table comprising:
a generally horizontal table surface;
a linear guide located along a side of and below said table surface, including a stationary frame and a movable frame, for guiding vertical relative movement between said frames;
a connection between one of said frame and table surface;
each of said stationary frame and said movable frame being comprised of vertically extending closed hollow profiles, with one of said profiles being telescopically receivable within and completely enclosed by another of said profiles for guided relative movement of said frames;
guide surfaces carried by each of said stationary and movable frames cooperable with one another during relative telescopic movement thereof to substantially preclude relative movement between said stationary and movable frames in longitudinal and transverse directions generally parallel to said table surface;
each of said profiles having end edges, the end edges of said



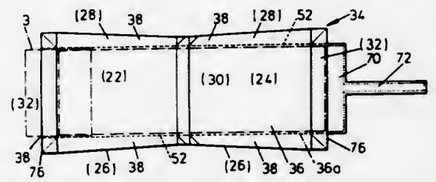
one profile being spaced inwardly from the end edges of said another profile to define between stationary and said moving frames a pair of generally vertically extending passageways extending substantially through the height of said guide.

5,285,734

SECURITY ENCLOSURES

Hugh MacPherson, Fife, Scotland, assignor to W. L. Gore & Associates (UK) Ltd., London, United Kingdom

Filed Jul. 16, 1992, Ser. No. 915,482
Claims priority, application United Kingdom, Jul. 24, 1991, 9115972.3
Int. Cl.[5] G08B 13/00
U.S. Cl. 109—42 18 Claims

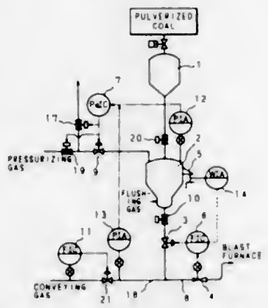


1. A laminate for use in forming security enclosures comprising: a flexible, electrically insulating sheet carrying lines of electrically conductive material on each side, the lines defining a conductor extending over both sides of the sheet, electrical connection between lines on one side of the sheet and respective lines on the other side of the sheet being provided by line connections located adjacent to edges of the sheet and extending through the sheet, and at least one edge of the laminate the line connections adjacent to said at least one edge being spaced inwardly from said one edge of the sheet and separated from said one edge by a line-carrying portion of sheet, an attempt to penetrate the laminate resulting in damage to the lines and changing a detectable electrical characteristics of the conductor; and means for connecting the conductor to means for detecting such changes wherein the sheet further includes a line carrying core portion completely bounded by said line connections and a line carrying extension portion at an edge of the core portion at said at least one edge of the sheet, the core portion having lines on one side of the sheet connected to lines

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on the other side of the core portion through said line connections and also having lines connected to lines on the extension portion.

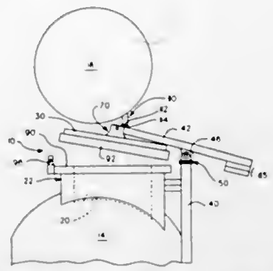
5,285,735
CONTROL APPARATUS FOR INJECTION QUANTITY OF PULVERIZED COAL TO BLAST FURNACE
Yasunori Motoi, Uozu; Matsuo Ohtaka, Ashiya, and Makoto Numazawa, Nishinomiya, all of Japan, assignors to Diamond Engineering Co., Ltd., Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of Japan
Filed Jul. 14, 1992, Ser. No. 913,056
Claims priority, application Japan, Jul. 16, 1991, 3-175248
Int. Cl.[5] F23K *3/02*
U.S. Cl. 110—101 CB **11 Claims**



1. In a pulverized coal injection system for injecting pulverized coal stored in a feed tank under pressure into a conveying pipe and for continuously injecting the pulverized coal into tuyeres of a blast furnace in a stream of a conveying gas blown to the pulverized coal, an apparatus for controlling the quantity of pulverized coal injected from the feed tank into the conveying pipe, comprising:
a valve for increasing or decreasing the flow rate of the pulverized coal injected from the feed tank into the conveying pipe according to the opening;
pressure gauges for detecting the internal pressures of the conveying pipe and the feed tank, respectively;
means for controlling the internal pressure of the feed tank so as to maintain the difference in the internal pressure between the conveying pipe and the feed tank at a prescribed value;
a flow meter for measuring the flow rate of the pulverized coal flowing in the conveying pipe; and
means for controlling the opening of said valve so that the measured amount by said flow meter becomes a prescribed value.

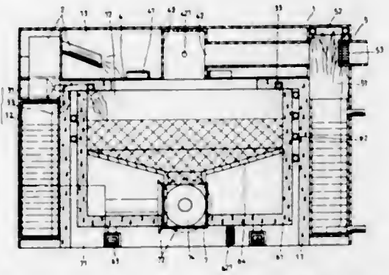
5,285,736
PRESSURE RELIEF APPARATUS FOR A VESSEL
Thomas F. Sturniolo, Rock Hill, S.C., assignor to Joy Technologies Inc., Pittsburgh, Pa.
Filed Dec. 18, 1992, Ser. No. 993,125
Int. Cl.[5] F23M *11/00*
U.S. Cl. 110—179 **9 Claims**

1. Apparatus for relieving pressure in an enclosed vessel having a vent opening therein comprising:
door means attached to said vessel and being movable between a closed position wherein said door means is in engagement with said vent opening and an open position remote from said vent opening wherein said vent opening is sufficiently open to relieve the pressure within said vessel when a predetermined amount of pressure occurs within said vessel;
liquid holding means attached to said vessel for retaining a liquid at a predetermined depth around the perimeter of said vent opening; and



sealing means attached to said door means, said sealing means extending into said liquid to create a substantially hermetic seal between said door means and said vessel when said door means is in said closed position.

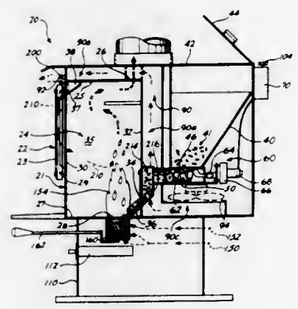
5,285,737
INCINERATOR
Hong-Jen Chen, Min Hsiung Hsiang, Taiwan, assignor to Tsai-Hsia Chen, Chia I, Taiwan
Filed Aug. 5, 1992, Ser. No. 924,917
Int. Cl.[5] F23B *5/00*
U.S. Cl. 110—214 **3 Claims**



1. An incinerator for combusting waste material comprising:
a furnace housing having a combustion chamber, said furnace housing an air receiving chamber formed in a top portion thereof adapted to collect air being inserted from a blower;
fuel supply means located internal said furnace housing for transport of fuel and ignition of said waste material, said fuel supply means including ignition means adapted to ignite said waste material, a fuel tank, and a fuel delivery pipe surrounding the inner top portion of said combustion chamber having a plurality of discharge ports adapted to spread fuel on said waste material;
air guiding means positioned in said air receiving chamber having a plurality of guide blades for directing air into said combustion chamber, a smoke outlet mounted above said combustion chamber and connected to a smoke removal pipe adapted to expel smoke external said incinerator, a plurality of apertures are formed through a side wall of said outlet adapted to suck air therein to thin the smoke from the ignited waste material;
filter means in fluid communication with said outlet having a sprinkle area including a plurality of water pipes adapted to sprinkle water on waste gas resulting from burning said waste material and for filtering larger particles contained in the smoke;
a broiling chamber formed within said furnace housing

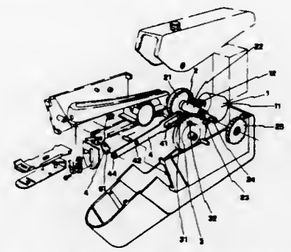
preferably formed from heat-resistant bricks having an opening at a top portion thereof adapted to receive ashes from said combustion chamber, a plurality of hot water pipes secured around said broiling chamber adapted to utilize the heat from said burning waste material to boil water within said hot water pipes, a plurality of wheel coupled to a lower portion of said broiling chamber to assist moving thereof at least partially external said furnace housing to clean said broiling chamber; and
dust expelling means mounted in a lower section of said furnace housing having a motor, a gear train, an output shaft, and a screw conveyor for removing dust from internal said furnace housing.

5,285,738
PELLET BURNING HEATING DEVICE
Leslie D. Cullen, Boise, Id., assignor to Mountain Home Development Company, Eagle, Id.
Continuation-in-part of Ser. No. 778,334, Oct. 17, 1991, Pat. No. 5,133,266. This application Jul. 22, 1992, Ser. No. 918,550
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—233 **20 Claims**



1. A pellet burning heating device designed to be coupled with a chimney, the device comprising:
a housing having a combustion chamber, said housing having a first aperture through which exhaust gases may escape from said combustion chamber, said first aperture being coupleable with the chimney;
a burn pot having an interior for supporting a plurality of pellets during combustion thereof, said burn pot being attached to said housing so that said interior is in communication with said combustion chamber via a second aperture;
feed means for dispensing pellets into said interior of said burn pot; and
combustion air intake means for coupling said combustion chamber with an atmosphere surrounding said housing so as to permit combustion air to flow into said combustion chamber solely by natural convection so as to supply air so as to permit pellets positioned in said interior to burn in a manner such that exhaust gases generated by such burning and withdrawn from said combustion chamber have a CO content of 0.04% or less, said combustion air intake means including a third aperture in said burn pot so as to permit combustion airflow into said burn pot and a fourth aperture in said housing so as to permit airflow into said combustion chamber.

5,285,739
TRANSMISSION MECHANISM FOR A MINI-SEWING MACHINE
Dennis Huang, 2F, No. 1, Lane 9, Ningpo E Street, Taipei, Taiwan
Filed Oct. 5, 1992, Ser. No. 956,626
Int. Cl.[5] D05B *69/00;* **F16H** *21/18*
U.S. Cl. 112—221 **2 Claims**



1. A transmission mechanism for driving a mini-sewing machine, said transmission mechanism being housed in a casing therefor comprising:
a needle arm mounted in said casing;
a DC motor having an output shaft coupled with a driving gear;
a transmission gear shaft having a speed reducing gear on one end meshed with said driving gear on said output shaft of said DC motor, a connecting rod on an opposite end coupled with a knob, and a transmission gear adjacent to said connecting rod;
an eccentric gear shaft having a driven gear meshed with said transmission gear of said transmission gear shaft, an eccentric axle perpendicular to said driven gear;
an elongated crank having an elongated slot on one end into which said eccentric axle of said eccentric gear shaft is movably inserted, said elongated crank being pivotally mounted centrally along the length thereof to the casing of the mini-sewing machine, and an eyelet hole on an opposite end;
a reciprocating block having a hole on one end coupled to said eyelet hole on said crank and a hole on an opposite end coupled to the needle arm of the mini-sewing machine; and
wherein turning on said DC motor causes said reciprocating block to be reciprocated by said crank via said transmission gear shaft and said eccentric gear shaft, to alternatively move the needle arm up and down in performing the process of stitching.

5,285,740
HORIZONTAL SPOOL PIN SUPPORTING DEVICE FOR A SEWING MACHINE
Kinzaburo Yanagi, Mouka, and Isao Takizawa, Tochigi, both of Japan, assignors to The Singer Company NV, Curaoco, Netherlands Antilles
Filed Dec. 3, 1992, Ser. No. 984,823
Claims priority, application Japan, Feb. 28, 1992, 4-18214[U]
Int. Cl.[5] D05B *75/00*
U.S. Cl. 112—258 **3 Claims**

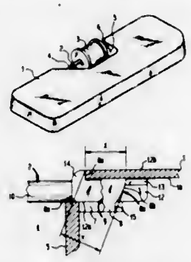
1. A horizontal spool pin supporting device in combination with a sewing machine having a body, said combination comprising:
a spool having an axial direction;
a spool pin having a spool mounting portion for mounting the spool thereon, a stopper portion formed at a central portion thereof and a swingingly guided portion which is coupled to the spool mounting portion and has a convex section, said portions being arranged in said axial direction;

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an upper cover for covering an upper portion of said body, the upper cover having an accommodating recess which is formed therein for accommodating therein the spool mounting portion together with the spool when it is mounted thereon, said recess having vertical side walls, one of the side walls having an opening, said opening having a back side and an upper edge;

first and second parallel vertically extending projections disposed on the back side of the opening and having edge surfaces and opposing side surfaces;

a circular arc guiding portion which is slidably engaged by



the convex portion of the spool pin, the arc guiding portion having a center at the upper edge of the opening and being formed on one of the edge surfaces of the projections;

a spool pin guiding portion being integral with the upper cover and being defined by the opposing side surfaces of the projections, said swingably guided portion being swingably inserted into said opening between said opposing side surfaces, said upper edge constituting a fulcrum for turning of the spool pin, the stopper portion being retained by the upper edge of the opening to prevent the spool pin from moving in the axial direction.

5,285,741

METHOD OF PRODUCING A FLEXIBLE TUBULAR LINING

Michael Askin, Huntingdon, England, assignor to Insituform (Netherlands) B. V., Netherlands

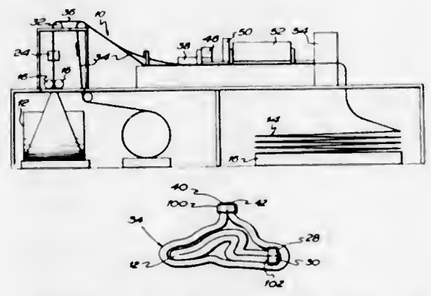
PCT No. PCT/GB91/00350, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/13559, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 6, 1991, Ser. No. 934,636

Claims priority, application United Kingdom, Mar. 10, 1990, 9005406.5

Int. Cl.[5] D05B *1/22*

U.S. Cl. 112—262.2 **15 Claims**



1. A method of producing a flexible tubular lining for use in a soft lining process wherein the tubular lining is pressed by internal fluid pressure into circular form and onto a pipeline or passageway surface comprising the steps of

(a) providing a first web of absorbent material having inner and outer sides, first web edges and first web regions of said inner side adjacent said first web edges,

(b) forming the first web into a tubular body by folding the first web in two so that said first web regions come face-to-face,

(c) sewing through said first web regions and around said first web edges loops of such size as to enable the first web edges to come into butting contact when the tubular lining is pressed as aforesaid,

(d) providing a second web of absorbent material having inner and outer sides, second web edges and second web regions of said inner side adjacent said second web edges,

(e) folding the second web into tubular form about the first web so that the second web regions come face-to-face, and

(f) sewing through said first web regions and around said first web edges loops of such size as to enable the second web edges to come into butting contact when the second tubular lining is pressed as aforesaid.

5,285,742

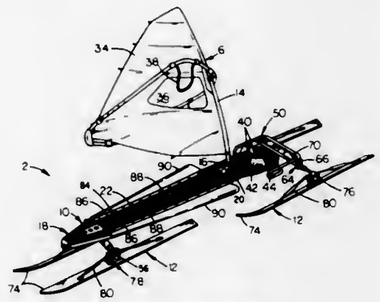
SAIL POWERED VEHICLE

Jay A. Anderson, 3344 Edgerton, St. Paul, Minn. 55110

Filed May 20, 1991, Ser. No. 702,822

Int. Cl.[5] B62B *15/00*

U.S. Cl. 114—43 **20 Claims**



1. A wind powered vehicle comprising:

(a) sail means for capturing surface winds including a sail, a mast and a boom and means for manipulating said sail means by an upright operator;

(b) an operator support platform including an aft platform section and a forward platform section, a longitudinal axle, means for coupling said sail means to said forward platform section and means for pivotally securing said longitudinal axle between the forward and aft platform section, wherein said aft platform section supports a first foot of the operator, wherein said forward platform section includes stirrup means for restraining the other foot of the operator to said forward platform section to control rotation of the forward section about the longitudinal axle;

(c) first and second terrain contacting means for supporting the platform to a terrain surface and wherein a caster angle of the first terrain contacting means is opposite to a caster angle of the second terrain contacting means;

(d) steering means coupled to said forward platform section including first and second portions and a plurality of roller bearings coupled between said first and second portions, wherein said first portion couples to the forward platform section and said second portion couples to a steering axle means containing the first terrain contacting means, and wherein the first and second portions rotate relative to one another with the rotation of the forward platform section to directionally steer the first terrain contacting means; and

(e) means for securing the second terrain contacting means to the aft platform section.

5,285,743

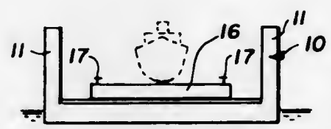
DRY DOCK

Patrick Connolly, 402-2950 Heather Street, Vancouver, British Columbia, V5Z 3J8, Canada

Filed Mar. 13, 1992, Ser. No. 850,721

Int. Cl.[5] B63C *1/02*

U.S. Cl. 114—45 **2 Claims**



1. A method of dry docking a plurality of vessels comprising;

submerging a first dry dock that is controllably submersible;

positioning a second dry dock having sea valves above a predetermined area of the first dry dock;

raising the first dry dock to contact the second dry dock;

opening the sea valves on the second dry dock;

submerging the first dry dock, the second dry dock submerging with the first dry dock and remaining in contact with the first dry dock;

positioning a vessel over the second dry dock;

raising the first dry dock, and with it the second dry dock, to contact and raise the vessel with the second dry dock;

submerging the first dry dock sufficiently to allow positioning of a second vessel on the first dry dock.

5,285,744

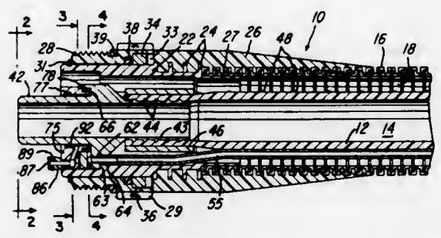
COAXIAL HOSE ASSEMBLY

Rodger P. Grantham, Springfield, Mo., and Glenn K. Walker, Miamisburg, Ohio, assignors to Vapor Systems Technologies, Inc., Dayton, Ohio

Filed Sep. 4, 1992, Ser. No. 940,528

Int. Cl.[5] B65B *3/18*; F16L *47/00, 9/18*

U.S. Cl. 141—59 **18 Claims**



1. A coaxial hose assembly for connecting a fuel dispensing pump to a fuel dispensing nozzle housing an evacuation passage, comprising an elongated flexible inner hose having opposite end portions and defining a fuel passage for directing a liquid fuel supply from the pump to the nozzle, an elongated outer flexible hose surrounding said inner hose and having corresponding opposite end portions, said inner and outer hoses defining therebetween a longitudinally extending annular vapor passage for returning fuel vapor from the nozzle to the pump, a tubular inner coupling member connected to one of said end portions of said inner hose and a tubular outer coupling member connected to the corresponding said end portion of said outer hose for connecting said hoses to the nozzle, said inner and outer coupling members defining therebetween a fuel vapor passage forming an extension of said vapor passage defined between said hoses, means defining a longitudinally extending fuel evacuation passage within said hoses and connected to said vapor passage, rotary coupling means for connecting said evacuation passage within said hoses to the vacuation passage within the nozzle, and said rotary coupling means providing for substantial rotation of the nozzle relative to said hoses while maintaining continuous fluid communication between said evacuation passages.

5,285,745

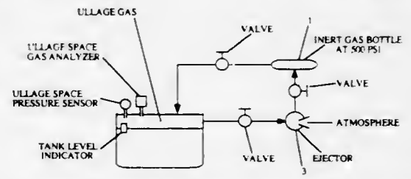
SYSTEM TO REDUCE SPILLAGE OF OIL DUE TO RUPTURE OF THE TANKS OF UNMANNED BARGES

Mo Hussain, 908 Stratford Ct., Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 377,886, Jul. 10, 1989, Pat. No. 5,156,109, and Ser. No. 503,712, Apr. 3, 1990, Pat. No. 5,092,259. This application Nov. 13, 1991, Ser. No. 792,026

Int. Cl.[5] B63B *43/00*

U.S. Cl. 114—74 R **20 Claims**



1. A system for creating an underpressure in the ullage space of a tank of a vessel comprising:

a source of a high pressure gas;

an ejector flow-connected to the source and also flow-connected to the ullage space of the vessel's tank in order that high pressure gas from the source may energize an evacuation of gases from the ullage space in and by the ejector so as to create an underpressure less than atmospheric pressure within the ullage space.

5,285,746

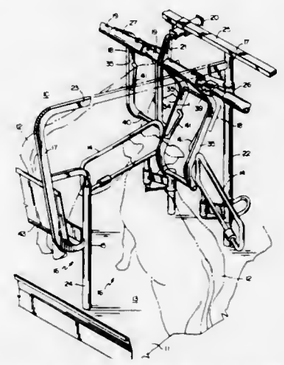
SELF-INDEXING EXIT GATE FOR MILKING PARLOR

Joseph R. Moreau, New Hartford, N.Y., assignor to Norbco, Inc., Westmoreland, N.Y.

Filed Feb. 5, 1993, Ser. No. 14,551

Int. Cl.[5] A01K *1/12*

U.S. Cl. 119—14.03 **17 Claims**



1. Gravity indexing exit gate assembly for a milking stall of a dairy parlor, said exit gate assembly defining a distal side of

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the stall and being rotatably liftable to release a cow from the associated stall; said exit gate assembly comprising:

an overhead horizontal rotary shaft journaled in a frame of said parlor;

means for rotating said shaft between first and second angularly separated positions;

a sleeve member mounted on said shaft;

yoke means affixed onto said sleeve member for releasable bearing against shoulders of the cow within the associated stall, including at least one yoke member that projects distally and then downwardly such that the yoke member has a center of gravity positioned distally of said rotary shaft; and

locking means positioned on said sleeve member and said shaft for rotatably locking the sleeve member to rotate with said shaft so that rotating said shaft from its first to its second position raises said yoke member to release the cow from the stall, and rotating the shaft from its second position to its first position returns the yoke means to a lowered position to close off the distal side of the stall;

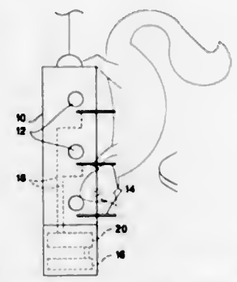
said locking means including means for affording sufficient rotational play between predetermined limits said sleeve member and said shaft to produce a corresponding play on the order of six inches in the yoke member at a point of contact with the cow's shoulders, so that the yoke member yieldably urges the cow gently towards the proximal side of said stall.

5,285,747

ANIMAL DETERRING BIRDFEEDER AND METHOD

Harold G. Caldine, 10812 Braddock Rd., Fairfax, Va. 22030

Filed Feb. 22, 1991, Ser. No. 659,275
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—57.9 **16 Claims**



1. A bird feeder having a squirrel deterrent that provides a mild electric shock to squirrels attempting to feed from the bird feeder but not to birds feeding therefrom, the bird feeder comprising:

(a) an upright container for birdfood having plural access holes;

(b) plural electrifiable perches extending outwardly from the container, each being adjacent one of said plural access holes so that a bird may feed on food in the container through one of said access holes while perched on the associated perch,

adjacent of said electrifiable perches being vertically separated so that a bird cannot simultaneously contact two perches and so that a squirrel attempting to feed from the bird feeder is likely to simultaneously contact an adjacent pair thereof; and

(c) means for electrifying adjacent of said electrifiable perches,

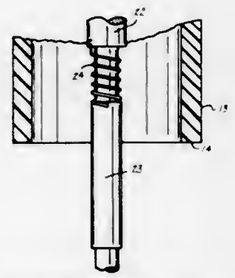
whereby a squirrel attempting to support itself on the perches to feed from the bird feeder, or to hang head down from the top of said container, is likely to simultaneously contact an adjacent pair of said electrifiable perches and thereby receive an electric shock so as to deter further feeding activity.

5,285,748

SQUIRREL-PROOF BIRD FEEDER APPARATUS

Roland E. Weldin, 276 Locust La., New Lenox, Ill. 60451

Filed Feb. 22, 1993, Ser. No. 20,609
Int. Cl.[5] A01K *39/01*
U.S. Cl. 119—57.9 **3 Claims**



1. A bird feeder apparatus, comprising,

a support post, the support post including a support post uppermost end having a support post plate,

and

a tubular housing, the tubular housing including a housing first end and a housing second end, and the tubular housing symmetrically oriented about a housing axis, and the support post coaxially aligned with the housing axis,

and

the tubular housing including a housing floor, with the housing floor fixedly secured to the support post plate,

and

the housing floor positioned within the tubular housing between the housing first end and the housing second end,

and

a support ring oriented exteriorly of and fixedly secured to the tubular housing in adjacency to the housing floor,

and

a plurality of housing slots directed through the tubular housing between the housing floor and the housing second end, and the housing having a housing cavity oriented between the housing floor and the housing second end,

and

a conical cap plate mounted to the housing second end, said conical cap plate including door means for permitting directing of bird feed within the housing cavity, and

a first sleeve fixedly secured to the support post oriented between the support post plate and the housing first end, and a second sleeve slidably mounted to the support post extending beyond the housing first end, and a spring member wound about the support post extending between the first sleeve and the second sleeve and secured to the first sleeve and the second sleeve.

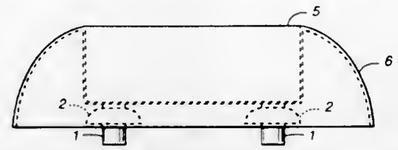
5,285,749

ANT PROOF DISH AND STAND

Gary M. Byer, Richmond, Calif., assignor to Gary Byer, Richmond, Calif.

Filed Feb. 12, 1993, Ser. No. 17,005
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—61 **1 Claim**

1. An elevated oval feeding dish having open top with peripheral flange joined at top with a downward and outward sloping peripheral skirt and supported above floor level by a plurality of pillars having a downward sloping hemispherical shaped collar attached to their top.



5,285,750

LASER CUTTING OF EGGSHELLS

P. A. Molian; Jerry L. Hall, and M. J. Hsu, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 7, 1993, Ser. No. 72,073
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—174 **20 Claims**

1. A method of machining an eggshell, comprising the steps of:

positioning an egg so that a portion of the eggshell is accessible; and

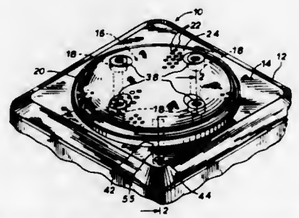
irradiating an area of the accessible portion of the eggshell with a laser beam until the irradiated area of the eggshell decomposes.

5,285,751

ENGINE AIR INTAKE SCREEN ASSEMBLY

David D. Liegeois, North Fond du Lac; Michael J. Dins, Sheboygan, and Daniel L. Bakke, Elkhart Lake, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Jul. 28, 1993, Ser. No. 98,546
Int. Cl.[5] F01P *7/04*
U.S. Cl. 123—41.63 **5 Claims**



1. An air intake assembly for an engine, comprising:

a shaft that rotates when the engine is running;

a blower housing having an air intake opening for receiving cooling air to cool the engine;

a fan connected to the shaft for drawing cooling air through the air intake opening to cool the engine;

a screen having an inside and outside surface, the screen covering the air intake opening, the screen being connected to the shaft to rotate therewith; and

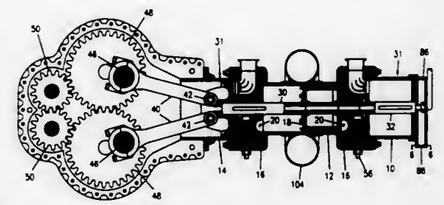
a blade extending only partially around the intake opening, being connected to the blower housing, and extending into the air intake opening under the inside surface of the screen at a clearance distance from the screen so as to be capable of scraping debris from the screen when the engine is operating in a debris containing environment.

5,285,752

INTERNAL COMBUSTION ENGINE

Jay L. Reed, Ovideo; Roger A. Villecco, Mary Esther, both of Fla., and Robert V. Frierson, Atlanta, Ga., assignors to Single-Stroke Motors, Inc., Valpariso, Fla.

Filed Apr. 23, 1993, Ser. No. 53,249
Int. Cl.[5] F02B *33/06*
U.S. Cl. 123—61 R **12 Claims**



1. A two-stroke cycle internal combustion engine comprising:

(a) first, second, and third axially elongated cylinders disposed in axial alignment;

(b) a piston assembly possessing first, second, and third pistons disposed in axial alignment, spaced axially apart, and fastened upon first and second hollow rods;

(c) said first and second hollow rods joined together by a hollow nipple within the interior of said second piston, thereby forming a sealed toric cavity within said second piston;

(d) said piston assembly disposed to reciprocate in the axial direction within said axially aligned first, second, and third cylinders, wherein said first, second, and third pistons possess top and bottom dead center positions within said cylinders;

(e) said second cylinder, closed at one end by a first head and closed at the remaining end by a second head, in which said second piston possesses a double crown, thereby forming separate first and second combustion chambers;

(f) said second cylinder possessing a multiplicity of openings about the equator of said second cylinder, thereby forming exhaust gas ports that are fully open when said second piston is in either said dead center position;

(g) the reciprocation is driven by alternating deflagrations within said separate combustion chambers of said second cylinder;

(h) said first cylinder joined and separated from said second cylinder by said first head, wherein said first head possesses a first gland to guide said first rod during said reciprocation;

(i) said third cylinder joined and separated from said second cylinder by said second head, wherein said second head possesses a second gland to guide said second rod during said reciprocation;

(j) said first and third cylinders and first and third pistons form first and second scavenging pumps, each possessing a rotary disc valve, and fresh air intake ducts, for phase controlled fresh air intake means;

(k) means for removing the heat of compression of the compressed fresh air within said scavenging pumps;

(l) phase controlled means for scavenging and releasing the spent exhaust gas from said combustion chambers into a toric exhaust gas header that surrounds said exhaust gas ports;

(m) means to extract heat from said engine by utilizing the oil from the engine's crankcase as the cooling medium;

(n) means to convert said reciprocation into a rotary motion;

(o) means to utilize said rotary motion to drive idler gears; and

(p) means to lessen the crankcase pressure pulsations resulting from said reciprocation of said first and second scavenger pumps.

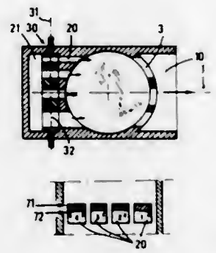
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,753

TWO-STROKE ENGINE WITH SELECTIVE CONTROL OF THE CHARGE INTRODUCED IN THE COMBUSTION CHAMBER

Pierre Duret, Sartrouville; Gaetan Monnier, Rueil Malmaison, and Thierry Colliou, Le Chesnay, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison Cedex, France

Filed Apr. 3, 1992, Ser. No. 863,030
Claims priority, application France, Apr. 3, 1991, 91 04006
Int. Cl.[5] F02B *25/16*
U.S. Cl. 123—65 V **12 Claims**



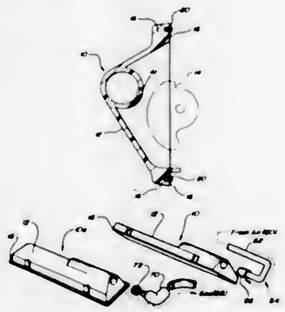
1. A two-stroke engine of a cross-scavenging type comprising a cylinder in which a piston moves, a m ans for allowing a charge under pressure to be fed to said cylinder, at least two inlet ports in a wall of said cylinder, said at least two inlet ports cooperating with said means for feeding the charge, and means for selectively sealing in a differentiated manner sections of flow of said at least two inlet ports in dependence upon at least one working parameter of the engine.

5,285,754

VALVE COVER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

Lawrence E. Bell, Kingston, N.H., assignor to Freudenberg-NOK General Partnership, Plymouth, Mich.

Filed Jul. 12, 1993, Ser. No. 90,898
Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.38 **13 Claims**



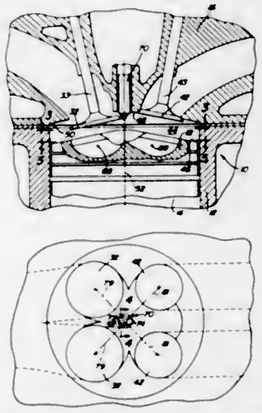
1. A one-piece molded or cast cover product for use on an internal combustion engine having an engine cylinder head and a plurality of valve-rocker arms, said cover product including:
- an elongated dome-like upper portion which acts as a cover over the rocker arm and cylinder head area of the engine,
- a peripheral flange portion adapted for sealing engagement to the cylinder head through the use of a seal gasket member,
- a plurality of apertures through said flange portion through which a plurality of fasteners can be inserted to secure said cover product in sealing engagement to the cylinder head,
- a conduit passageway member formed as part of the one-piece plastic cover product, said member extending inside the cover, and being adapted to receive an air/oil mixture associated with operation of the engine and to condense oil out of the air/oil mixture,
- at least one or more apertures located in a lower part of the passageway member to permit the oil which is condensed to drain back into the engine.

5,285,755

OPEN CHAMBER DIESEL ENGINE HAVING A PISTON WITH RECESSES THEREIN

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,003
Int. Cl.[5] F02B *19/16*
U.S. Cl. 123—193.6 **4 Claims**



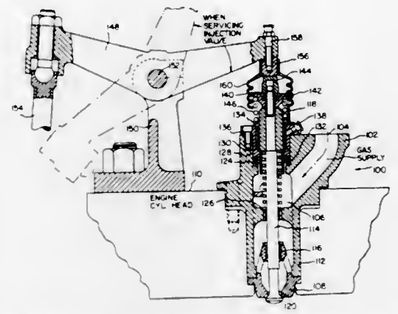
1. In an open chamber diesel combustion engine having a cylinder and a piston movably disposed in said cylinder for reciprocal motion, a cylinder head secured over said cylinder and piston to form a combustion chamber, a pair of intake ports extending through said cylinder head and an intake valve operably mounted in each respective intake port for allowing air to be admitted into said combustion chamber, and a pair of exhaust ports extending through said cylinder head and an exhaust valve operably mounted in each respective exhaust port for allowing exhaust gases to exit said combustion chamber; the improvement characterized by:
- a multihole fuel injector nozzle tip having a plurality of radially diverging discharge orifices for spraying a plurality of fuel plumes into said combustion chamber;
- said piston having a plurality of recessed lobes circumferentially spaced about a central axis of said piston; each recessed lobe being substantially aligned with respect to a respective discharge orifice to receive a respective fuel plume;
- each intake and exhaust valve being aligned along its stem axis over a respective recessed lobe and sized to fit within said recessed lobe when in the partially open position and when said piston is at or near TDC.

5,285,756

GASEOUS FUEL INJECTION VALVE AND ACTUATOR

Vaughn A. Squires, Grove City, Pa., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 16, 1992, Ser. No. 991,686
Int. Cl.[5] F02M *61/16*; B05B *1/30*
U.S. Cl. 123—294 **20 Claims**



1. A fuel injection valve assembly for use in a reciprocating gas engine, comprising:
- a valve body adapted for mounting in a cylinder head of a reciprocating gas engine, said cylinder head communicating with a combustion chamber in said engine;
- a valve seat sealing between said cylinder head and said valve body;
- a valve stem with a frustoconical end portion sealingly engaging said valve seat and stem threads at the opposite end of said valve stem from said frustoconical end portion;
- a spring maintaining said frustoconical end portion of said valve stem in sealing engagement with said valve seat,
- a stem piston annularly disposed between said valve stem and said valve body, guiding said valve stem within said valve body;
- said stem piston and said valve body defining an annular volume therebetween to receive an annular seal sealing the annulus between said valve body and said stem piston, said annular seal positioned to allow the incoming fuel flow to cool the lower portion of said stem piston and said annular seal adjacent thereto.

20. A method for servicing a pushrod actuated fuel injection valve mounted in cylinder head of a reciprocating gas engine without removing a rocker arm or a rocker arm support, comprising the steps of:
- (a) removing a tappet button laterally from said rocker arm,
- (b) pivoting said rocker arm to a first position allowing disconnection of a pushrod from said rocker arm,
- (c) pivoting said rocker arm to a second position allowing said fuel injection valve to be serviced or removed from said cylinder head for replacement.

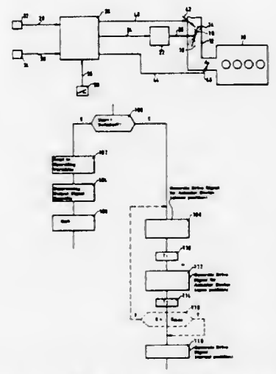
5,285,757

ARRANGEMENT FOR CONTROLLING AN ACTUABLE ELEMENT IN A MOTOR VEHICLE HAVING A DRIVE UNIT

Robert Entenmann, Benningen; Claus-Dieter Nusser; Jochen Stahl, both of Schwieberdingen; Albert Gerhard, Tamm, and Erhard Renninger, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Nov. 2, 1992, Ser. No. 969,978
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4135913
Int. Cl.[5] F02D *11/10*
U.S. Cl. 123—399 **11 Claims**

1. An arrangement for controlling an actuable element in a motor vehicle equipped with a drive unit, the arrangement comprising:
- an actuable element movable over a maximum possible operating range between two outermost limits including a normal operating work range within said limits;
- an electrically actuable actuating device for controlling the actuable element;
- a control unit for generating actuating signals for controlling said actuable element and for supplying said actuating signals to said actuating device;



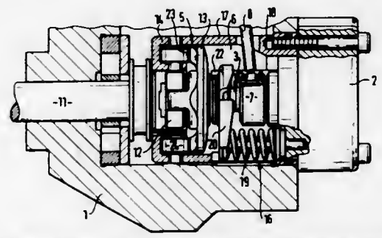
said control unit including means for generating said signals so as to cause said actuable element to move over most of said maximum possible operating range in a manner to prevent jammings with said actuable element being moved outside of said normal operating work range at least beyond one end of said normal operating work range;
- said actuable element being moved starting from a desired position for every possible direction of movement; and,
- said actuable element being moved at least at one of the following times: ahead of the start of the drive unit and after the drive unit has been switched off.

5,285,758

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Rolf-Gerhard Fiedler, Nuertingen; Reiner Kuenzel, Herrenberg; Helmut Tschoeke, Ostfildern, and Mohammad-Ali Khosrawi, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,634
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137073
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—495 **20 Claims**



1. A fuel injection pump for internal combustion engines having a cup-shaped pump housing (1), a pump head (2) which

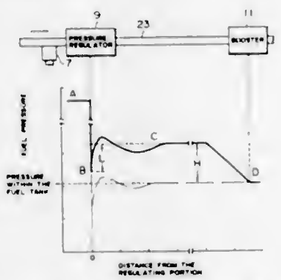
VOL 1159 ISS 3 FE 15 1994 UMI

closes said cup-shaped pump housing (1) said pump head has a pump cylinder (4) in which a pump piston (3), is set into simultaneously reciprocating and rotary motion by a cam drive (5), in the course of which said pump piston simultaneously acts as a distributor and encloses a pump work chamber, said work chamber upon an intake stroke of the pump piston (3) communicates with a fuel-filled suction chamber (6) formed in the interior of the fuel injection pump and upon the supply stroke of the pump piston (3) communicates with one of a plurality of fuel injection lines, wherein an eccentric cam disk (13) moved by a drive shaft (11) that protrudes into the suction chamber (6) acts as the cam drive (5), the pump piston (3) is held on the cam disk (13) via a restoring spring (19) supported on the pump head (2), said restoring spring simultaneously presses the eccentric cam disk (13) against a roller race (14) over which the cams of the eccentric cam disk (13) roll in their rotary motion, the roller race (14) is a cup-like part which receives the rollers (24) and which is joined to the pump head (2).

5,285,759
FUEL SYSTEM

Takehiko Terada; Hirotada Yamada, and Masao Yonekawa, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 30, 1992, Ser. No. 982,943
Claims priority, applicatioo Japan, Dec. 4, 1991, 3-320718
Int. Cl.[5] F02M *37/00*
U.S. Cl. 123—514 **5 Claims**

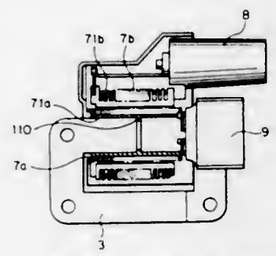


1. A fuel system of an internal combustion engine comprising:
a fuel tank for storing fuel;
a fuel injection valve disposed on the internal combustion engine;
a fuel supply pipeline connecting between said fuel tank and said fuel injection valve;
a fuel pump for supplying the fuel in said fuel tank to said fuel injection valve through said fuel supply pipeline;
a fuel injection pressure regulator for regulating the fuel injection pressure of said fuel injection valve to a predetermined pressure;
a fuel return pipeline through which surplus fuel from said fuel injection pressure regulator is returned into said fuel tank; and
pressure increasing means disposed in said fuel return pipeline for increasing the pressure in said fuel return pipeline above the pressure in said fuel tank so that the fuel pressure as abruptly reduced by said fuel injection pressure regulator is larger than the pressure in said fuel tank, said pressure increasing means comprising a mechanical choke having a cross-sectional area that is gradually reduced in the flow direction of the fuel so as to prevent an abrupt pressure reduction from occurring in said mechanical choke.

5,285,760
IGNITION COIL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Tadao Takaishi, and Toshio Maekawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 699,402, May 13, 1991, Pat. No. 5,186,154. This application Nov. 13, 1992, Ser. No. 976,253
Claims priority, application Japan, May 15, 1990, 2-122993; Jun. 7, 1990, 2-147337; Jun. 11, 1990, 2-149837; Jun. 11, 1990, 2-149838
Int. Cl.[5] F02P *3/02*; H01F *27/30*
U.S. Cl. 123—634 **4 Claims**



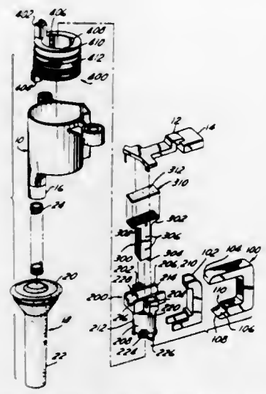
1. An ignition coil device for an internal combustion engine, comprising:
a C-shaped iron core having an air gap formed across and between opposing end surfaces of first and second legs thereof;
a primary winding wound on a primary winding bobbin carried on said legs of the core having the air gap thereacross, wherein said primary winding bobbin includes an inner annular flange disposed in said air gap between the end surfaces of the core legs to maintain the width of said air gap; and
a secondary winding wound on a secondary winding bobbin disposed around said primary winding.

5,285,761
IGNITION COIL

Robert L. Hancock, Ann Arbor; Steven E. Pritz, Westland; Robert C. Bauman, Flat Rock, and Shawn J. Nowlan, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 939,800, Sep. 3, 1992. This application Jan. 15, 1993, Ser. No. 4,007
Int. Cl.[5] F02P *11/00*
U.S. Cl. 123—634 **8 Claims**

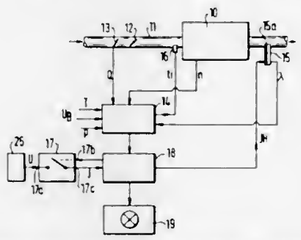
1. An ignition coil adapted for use with an internal combustion engine comprising:
a C-shaped iron core member defining an air gap between the terminal ends of the C-shaped member;
a coil sub-assembly within said air gap comprising a primary coil member and a secondary coil member;
both said primary coil member and said secondary coil member comprising a bobbin and a plurality of windings of conductive material being wound about the axis of each said bobbin, said primary coil member being received telescopically within said secondary coil member;
said primary coil member including a core member slidingly disposed along the cylindrical axis of said bobbin and in line contact with a through-bore of said bobbin, said core member including a pair of oppositely disposed ends, one said end being the base end of core member and the other end being the head of said core member;
a shim member located at said head end of said core member;
said shim member being in intimate contact with one terminal end portion of said C-shaped core member and said head end of said core member, and said core member at its base end being in intimate full line contact with the other terminal end of said C-shaped core member; and
said primary core member at its base end and said C-shaped core member at said other terminal end including mutually engaging means for maintaining each of said C-shaped core member, said primary core member and said shim member in intimate contact as an assembled integral unit.



5,285,762
METHOD AND ARRANGEMENT FOR MONITORING THE OPERABILITY OF A PROBE HEATING DEVICE

Peter Werner, Wiernsheim-Iptingen; Hermann Hemminger, Markgroeningen; Hubert Schweiggart, Stuttgart, and Andreas Werner, Reichenbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

PCT No. PCT/DE90/00858, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/09219, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 10, 1990, Ser. No. 862,567
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3941995.9
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—60 **16 Claims**

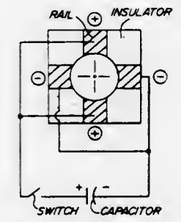


1. A method for monitoring the operability of a probe heating device, which includes at least one probe heater, an arrangement which supplies the probe heater with the necessary electrical energy and the supply leads corresponding thereto, the probe heating device being for an exhaust gas probe, which operates for controlling the air/fuel ratio of an air/fuel mixture supplied to an internal combustion engine, the method comprising the steps of:
detecting a heating current (IH) flowing through the heating device by means of a voltage (UM) dropping across a measuring resistor;
comparing the voltage (UM) to a voltage provided by a reference element, the reference element having a signal response the same as the measuring resistor; and,
when the comparison results in a plausibility interval (UMIN, UMAX) is exceeded, drawing a conclusion as to a corresponding fault condition of the probe heating device and emitting a corresponding fault signal.

5,285,763
SYMMETRICAL RAILGUN

Eduard Igenbergs, Munich, Fed. Rep. of Germany, assignor to Igenwert GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 458,711, Mar. 21, 1990, abandoned. This application Sep. 3, 1992, Ser. No. 939,566
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1988, 3819185
Int. Cl.[5] F41B *6/00*
U.S. Cl. 124—3 **26 Claims**



14. A symmetrical railgun comprising:
first and second pairs of elongated rails formed of an electrically conductive material, each rail being disposed substantially equidistant and parallel to a central axis, each rail having substantially the same peripheral spacing from one another, and wherein the surface of each rail facing the axis is at the same radial distance from the axis along substantially the entire length of that rail;
an insulator disposed between the first and second paris of rails in the peripheral direction for defining a cavity extending along the axis; and
means for flowing only direct current through the first and second pairs of rails through a common current flowing junction disposed within the cavity for forming a magnetic field which creates a force directed radially inwardly toward the axis.

5,285,764
ARROW REST APPARATUS

Greg A. Mertens, P.O. Box 105261, Jefferson City, Mo. 65110-5261

Filed Jul. 16, 1992, Ser. No. 915,078
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **22 Claims**

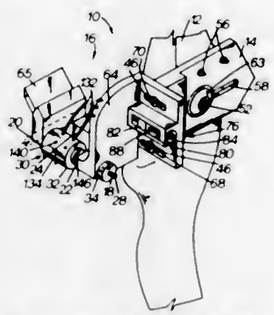
1. An improved arrow rest apparatus for use in archery having a carriage with a slotted opening which is mounted on an archery bow with a mounting bracket, the improvement which comprises:
a lockable shaft, having two ends, locked in a desired position to prevent said shaft from rotating during use, said lockable shaft being slightly rotatable prior to locking to provide vertical adjustment, said shaft extending between legs of said slotted opening contained on a main body portion of said carriage such that said shaft is supported on both ends within said slotted opening on said carriage;
a locking means attached to said shaft for locking said shaft in a desired position within said slotted opening; and
an arrow resting means on said lockable shaft.

20. A method of providing an improved arrow rest apparatus for use in archery in which the steps of providing an arrow rest apparatus includes, providing a mounting bracket for

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attaching said arrow rest apparatus to an archery bow, attaching a carriage to said mounting bracket and providing a slotted opening in said carriage, the improvement which comprises the following steps:

extending a lockable shaft between legs of said slotted opening contained on a main body portion of said carriage such that said shaft is supported on both ends within said slotted opening;



attaching an arrow resting means on said lockable shaft between said legs of said slotted opening;

slightly rotating said lockable shaft to provide proper vertical adjustment of said arrow resting means; and

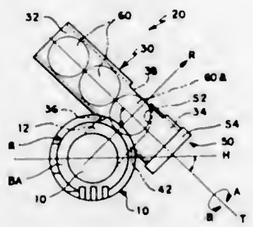
locking said lockable shaft in the desired position with a locking means to prevent said shaft from rotation during use.

5,285,765

MAGAZINE ASSEMBLY FOR GAS-POWERED GUN AND COMBINATION THEREOF

John P. Lee, 46 Cherry Bent Ct., Germantown, Md. 20874

Filed Dec. 23, 1992, Ser. No. 995,840
Int. Cl.[5] F41B *11/00*
U.S. Cl. 124—50 **19 Claims**



1. A magazine assembly attachable to a barrel of a gun, the barrel having a firing chamber, the firing chamber having a first opening, said magazine assembly comprising:

a magazine for storing therein a plurality of frangible projectiles each of which is configured to break upon impact with an intended target, said magazine having means defining a first opening, a second opening, a third opening, and a fourth opening, each of said projectiles being supplied to said magazine through said first opening thereof, said second opening being located opposite to said first opening of said magazine, said third opening being located opposite to said fourth opening;

a collar, to which said barrel is slidably attachable so that the firing chamber of the barrel can be accommodated into said collar, said collar having means defining a first opening, said first opening of said collar being coupled together with said third opening of said magazine, said first opening of said collar being coupled together to the first opening of the firing chamber when the barrel is attached to said collar, said magazine being attached tangentially to said collar, each of said projectiles being supplied from said magazine through said third opening of said magazine and said first opening of said collar; and

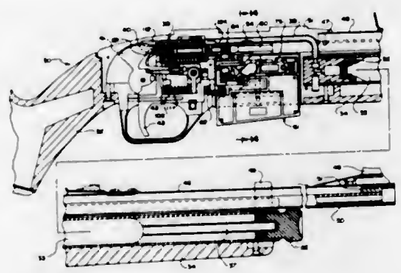
a guide member, coupled to said magazine, which supports a lowermost projectile of the plurality of frangible projectiles, said guide member facing said third opening of said magazine, whereby the lowermost projectile is allowed to drop to be loaded into the firing chamber through said first opening in the firing chamber through said third opening of said magazine and said first opening of said collar while prevented from dropping off through said fourth opening of said magazine, said fourth opening of said magazine being dimensioned so as to ventilate said collar even when said lowermost projectile is aligned with said third opening and said fourth opening of said magazine, and said first opening of said collar.

5,285,766

GUN WITH REMOVABLE ROTARY AMMUNITION CLIP

Keith L. Milliman, Fairport, N.Y., assignor to Crosman Corporation, East Bloomfield, N.Y.

Filed Jul. 30, 1992, Ser. No. 921,727
Int. Cl.[5] F41B *11/02, 11/06*
U.S. Cl. 124—72 **18 Claims**



1. A gun comprising:

a frame,

an elongated barrel slidably mounted on the frame for movement in a longitudinal direction,

a clip assembly removably mounted on the frame, the clip assembly including a housing and loader means on the housing for positioning a projectile in alignment with the barrel,

the frame including a recess in which the clip housing is mounted, the clip housing including a pair of spaced-apart side walls, each of the side walls being provided with a slot to provide a flexible latch portion on the side wall, the latch portion of each of the side walls being releasably engageable with the frame for retaining the clip housing in the recess.

10. A gun comprising:

a frame,

an elongated barrel slidably mounted on the frame for movement in a longitudinal direction,

a trigger mounted on the frame for movement between a rest position and a firing position,

a clip assembly removably mounted on the frame, the clip assembly including:

a clip housing,

means for removably attaching the clip housing to the frame,

a cylindrical loader rotatably mounted on the clip housing for rotation about an axis which extends parallel to the longitudinal axis of the barrel, the loader having a plurality of openings for retaining projectiles,

rotating means movably mounted on the clip housing for rotating the loader, and

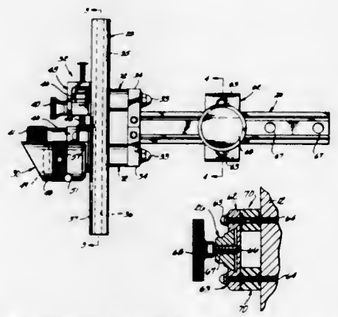
transfer means movably mounted on the clip housing and operatively associated with the rotating means whereby movement of the transfer means moves the rotating means to rotate the loader, the transfer means being engageable with the trigger when the clip assembly is mounted in the frame for transferring movement of the trigger to movement of the loader.

5,285,767

SHOCK ABSORPTION IN ARCHERY SIGHTS

Robert Padilla, 1702 Rosewood Dr., Monrovia, Calif. 91016

Filed Sep. 11, 1992, Ser. No. 944,168
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—87 **15 Claims**



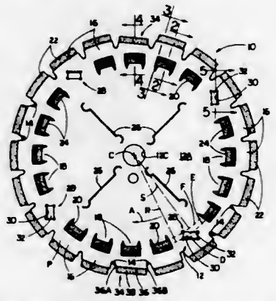
10. In the combination of an archery bow having a handle riser and an archery sight mounted to the riser and including a sighting element which is positionally adjustable relative to the riser, the improvement comprising a resilient shock-absorbing connection in the structural path between the handle riser and the sighting element.

5,285,768

TWO TIER GROOVE CUTTING CIRCULAR SAW BLADE WITH ANTI-UNDERCUT FEATURES

Romolo Messina, Exton, Pa., assignor to Sanders Saws, Inc., Honey Brook, Pa.

Filed Aug. 28, 1992, Ser. No. 937,638
Int. Cl.[5] B28D *1/04, 1/12*
U.S. Cl. 125—15 **17 Claims**



1. A circular saw blade for cutting a two-tier groove in a concrete surface, comprising:

(a) a substantially circular core having a center, a periphery and a pair of opposite surfaces, said core including a plurality of sectors defined in circumferentially spaced relation to one another relative to said center and along said periphery of said core, said core also including a plurality of lands defined in circumferentially spaced relation to one another relative to said center and between said periphery and center of said core;

(b) a plurality of outer cutting segments secured to said respective sectors of said core, each said outer cutting segment having a width greater than the thickness of said core between said opposite surfaces thereof extending between said sectors and said lands of said core such that said outer cutting segments extend beyond said opposite surfaces of said core and are operable for cutting a first tier of a groove in a concrete surface;

(c) a plurality of inner cutting segments secured to said respective lands of said core, each said inner cutting segment having a width greater than the width of each said outer cutting segment and greater than the thickness of said core between said opposite surfaces thereof extending between said lands and center of said core such that said inner cutting segments extend beyond said opposite surfaces of said core and are operable fur cutting a second tier of the groove in the concrete surface being superimposed on the shallower than the first tier of the groove; and

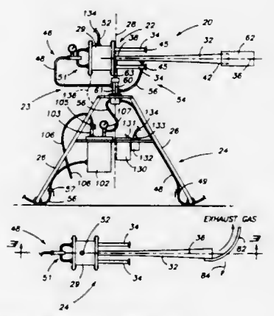
(d) inner means on said core at predetermined locations between said center and periphery thereof and between preselected ones of said lands thereof for defining a first exit path away from said inner cutting segments for flow of material particles generated from the cutting of the groove and flushing of the groove by fluid coolant so as to reduce wear and undercutting of said core adjacent to said inner cutting segments, said inner means including a plurality of openings defined through the core at said predetermined locations and a plurality of filler segments disposed in said openings and secured to portions of said core adjacent to said openings.

5,285,769

AEROSOL GENERATING ROTARY PULSE-JET ORCHARD HEATER

Stanislaw Wojcicki, Pullman, Wash., assignor to Washington State University Research Foundation, Pullman, Wash.

Filed Oct. 13, 1992, Ser. No. 961,175
Int. Cl.[5] A01G *13/06*
U.S. Cl. 126—59.5 **5 Claims**



1. An orchard heater comprising:

a base;

a rotor mounted for free rotation upon the base about an upstanding rotor axis of rotation;

a pulse-jet engine having an intake, a combustion chamber, and an exhaust tube with an outlet port through which exhaust gases are emitted; said pulse-jet engine being mounted upon the rotor for rotation therewith about the upstanding rotor axis of rotation; the pulse-jet engine

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generating a heated exhaust stream which is jetted from the exhaust tube along an exhaust jet path which is directed laterally with respect to the axis of rotation;

a rotary fuel supply means for providing a fuel to the combustion chamber from the base without preventing free rotation of the rotor;

a water injector mounted in the exhaust tube of the pulse-jet engine to inject water thereinto to cool the exhaust gases and create an air-water aerosol which is emitted from the outlet port of the exhaust tube;

a rotary water supply means for providing water to the water injector from the base without preventing free rotation of the rotor;

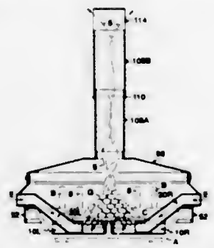
an exhaust director means for directing the exhaust stream to develop a torque which turns the rotor relative to the base to provide laterally omnidirectional dispersion of the heated exhaust stream to thereby heat areas around the orchard heater with a moderate temperature air-water aerosol.

5,285,770

CHARCOAL STARTER APPARATUS FOR CONVENTIONAL HIBACHI-TYPE GRILL

Stanley Kim, 714 75 Ave., Honolulu, Hi. 96816

Filed Oct. 20, 1992, Ser. No. 964,505
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—25 B **8 Claims**



1. A charcoal starter apparatus for use in a hibachi having an interior with a base having a left half and a right half, and a top perimeter, comprising:

a pair of removable troughs, each configured to cover less than one of said halves of said base, each having a deflector edge, wherein said troughs are positioned in said interior so that said deflector edges are adjacent to and substantially parallel to each other;

deflectors attached to said deflector edges and extending substantially vertically upwardly to a deflector height;

conduit means for conveying air from outside said hibachi into a portion of said interior spaced apart from said deflectors;

a rectangular housing configured to fit over said top perimeter;

clamp means for removably clamping said housing to said hibachi over said top perimeter;

a cover having an exhaust inlet configured to fit over said housing;

a flue having a top and a bottom, with the bottom removably mounted over said inlet; and

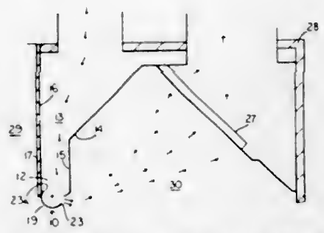
a cap removably fastened over said top of said flue.

5,285,771

MAKE-UP AIR CONTROL SYSTEM APPARATUS

Donald L. Griffes, East Charleston, Vt., assignor to New England Ventilation Technologies, Newport, Vt.

Filed Feb. 27, 1992, Ser. No. 842,654
Int. Cl.[5] F24C *15/08*; **F23J** *11/00*
U.S. Cl. 126—299 D **4 Claims**



1. A make-up air control system apparatus, for use in controlling replacement or make up air with cooking equipment ventilation hood systems, comprising:

a ventilation hood;

a plenum enclosure;

said plenum enclosure having an inlet;

said plenum enclosure further having an outlet;

said plenum enclosure comprising an integral part of the hood;

said plenum enclosure comprises a part of the building structure surrounding said hood;

said outlet having control means located therein;

said control means comprising a rotatable housing;

said rotatable housing having apertures located therein;

said control means further comprising attachment means;

said attachment means having apertures located therein; and

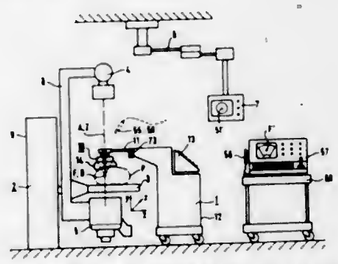
pivot means for passing through said apertures in said rotatable housing and said attachment means to create a complete apparatus.

5,285,772

THERAPY APPARATUS FOR TREATING A PATIENT WITH FOCUSED ACOUSTIC WAVES

Manfred Rattner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,635
Int. Cl.[5] A61B *17/22*
U.S. Cl. 128—24 EL **23 Claims**



1. A therapy system for treating a region of a subject with focused acoustic waves comprising:

a source of acoustic waves having an acoustic axis along which said acoustic waves propagate;

means for focusing said acoustic waves to a focus on said acoustic axis;

applicator means, containing an acoustic propagation medium, adapted to be disposed between said source and a region of said subject to be treated, for coupling said acoustic wave into said subject;

an x-ray impermeable mark disposed on said acoustic axis; and

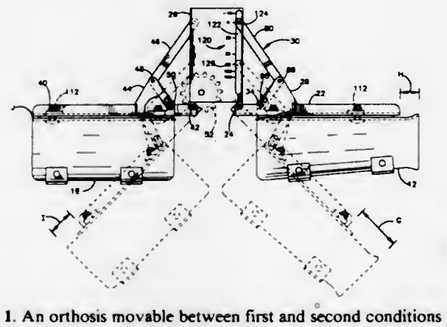
means for acoustically identifying a distance between said source and a region of said subject to be treated for use in relatively positioning said source and said subject.

5,285,773

ORTHOSIS WITH DISTRACTION THROUGH RANGE OF MOTION

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401, and Gary E. Zitzmann, Newton, Ill., assignors to Peter M. Bonutti, Effingham, Ill.

Continuation-in-part of Ser. No. 686,811, Apr. 17, 1991, Pat. No. 5,213,094, and a continuation-in-part of Ser. No. 559,700, Jul. 30, 1990, Pat. No. 5,167,612. This application Apr. 24, 1991, Ser. No. 690,845
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—25 R **87 Claims**



1. An orthosis movable between first and second conditions for moving a joint which is located between first and second relatively movable body portions, comprising:

a first cuff arm;

a second cuff arm movably connected to said first cuff

a first cuff on said first cuff arm for connecting said first cuff arm to the first body portion;

a second cuff on said second cuff arm for connecting said second cuff arm tot he second body portion;

means for moving said first cuff arm relative to said second cuff arm about an axis intermediate said first and second cuffs; and

means for counteracting compressive or distractive forces in the joint during movement of the joint by said orthosis, said means for counteracting comprising means for effecting movement of said first cuff along said first cuff arm in a predetermined direction which is a function of the direction of movement of the joint during relative movement between said first and second cuff arms.

5,285,774

NAPE AND SCALP STIMULATOR

Stephen A. Stachurski, 1221 Ocean Pines, Berlin, Md. 21811

Filed Sep. 15, 1992, Ser. No. 944,936
Int. Cl.[5] A61H *11/00*
U.S. Cl. 128—62 R **16 Claims**

1. A nape and scalp stimulator, comprising:

an elongated body having a top and a bottom surface as well as a peripheral rim extending between said surfaces, said elongated body having a length dimension longer than its width dimension;

a plurality of narrow teeth integral with said body and depending from said bottom surface;

a plurality of T-shaped handles joined to said body and extending from said top surface for applying direct pressure to said top surface of said elongated body;

each of said handles further comprising:

a finger retaining portion including:

a substantially rigid shaft contacting said top surface; and

a curved flange joined to the top of said shaft adapted to hold said stimulator against a human hand while in use;



a fastener portion for rotatably joining said handle to said body including:

two opposed semicircular stems laterally spaces from one another and joined to the bottom of said shaft, said stems adapted to be inserted through a hole provided in said body for that purpose; and

a flared catch extending from the distal end of each said stem for retaining said handle against said body when said stems are inserted into said hole whereby said handle is free to turn relative to said body.

5,285,775

SURGICAL BREATHING BAG HAVING HOUR-GLASS SHAPE AND NON-SLIP SURFACE

Michael J. Mayer, 1419 Gregory, Apt. 13, Ypsilanti, Mich. 48197

Filed May 5, 1992, Ser. No. 878,503
Int. Cl.[5] A62B *7/00*; **A61M** *16/00, 16/10, 15/00*
U.S. Cl. 128—205.13 **12 Claims**



1. A manually operable surgical breathing bag for the artificial respiration of human beings, comprising:

a gastight, elastomeric hollow body, essentially circular in cross section having a generally elongated hourglass shape defining a narrowed waist portion, two enlarged lobes having an exterior diameter greater than that of said narrowed waist portion and joined thereby, a throat portion open at its upper end and adapted to receive a nozzle therein, and a circular band of flexible material having a textured, non-slip surface and a width substantially similar

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to that of said narrow waist portion, said circular band being positioned between said enlarged lobes.

5,285,776

ADAPTOR WITH TRACHEAL TUBE

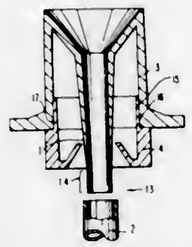
Volker Bertram, Robert-Bosch-Str. 7, 7247 Sulz a.N., Fed. Rep. of Germany

Filed Jan. 13, 1992, Ser. No. 819,289

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1991, 4100837

Int. Cl.[5] A61M *25/00*

U.S. Cl. 128—207.14 **3 Claims**



1. An assembly, comprising a tracheal tube having a wall thickness; and an adaptor having a connecting tube insertable in said tracheal tube and a connecting piece connectable with a resuscitation tube, said connecting tube having a free end which faces said tracheal tube and at least two tube portions including a first tube portion which extends from said free end and is straight and a second tube portion which is axially spaced from and which extends axially from said first tube portion and is conically widening away from said first tube portion, said adaptor having at least one clamping member including a ring provided with several clamping tongues directed at an acute angle inwards and pressing a portion of said tracheal tube located on said connecting tube from outside and yielding during mounting said tracheal tube so as to secure said tracheal tube against removal from said connecting tube, said clamping member being formed so that prior to pushing of said tracheal tube onto said connecting tube said clamping member has a similar radial spacing from said connecting tube than said wall thickness of said tracheal tube.

5,285,777

TRACHEOSTOMY APPARATUS

Wayne E. Beckwith, P.O. Box 774 Lakeview St., Greenville, Me. 04441

Filed Aug. 8, 1991, Ser. No. 742,373

Int. Cl.[5] A61M *16/00, 5/32;* **A62B** *9/06*

U.S. Cl. 128—207.15 **1 Claim**

1. A tracheostomy apparatus, comprising,

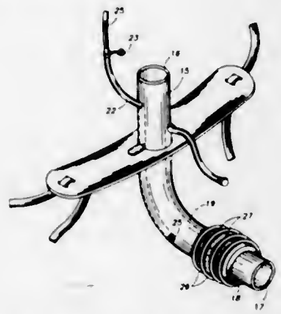
a flexible support plate member, the flexible support plate member including a first end spaced from a second end, and

a first strap mounted through the first end, with a second strap mounted through the second end for securement of the first and second straps about an individual for mounting the plate member about the individual, and

a receiving plate bore directed medially through the plate member between the first end and the second end, with a tracheal tube including a tracheal tube upper end and a tracheal tube lower end, with the tracheal tube lower end oriented below the plate member and the tracheal tube upper end positioned above the plate member, and

the tracheal tube includes an expandable balloon seal fixedly mounted in surrounding relationship relative to the tracheal tube adjacent the tracheal tube lower end below the plate member, and the balloon seal including an inflation tube in pneumatic communication with the balloon seal, the inflation tube fixedly mounted and secured to an interior surface of the tracheal tube below the plate member, and the inflation tube extending above the plate member and separated from the tracheal tube, and an inflation tube cap removably mounted to the inflation tube at an upper terminal end thereof spaced above the plate member, and

a directing tube fixedly mounted to an interior surface of the tracheal tube, the directing tube including a directing tube exit opening directed through the tracheal tube adjacent an upper terminal end of the balloon seal, and the directing tube projecting exteriorly of the tracheal tube adjacent the tracheal tube upper end, and a directing tube cap mounted to a directing tube upper terminal end spaced above the plate member, and



a catheter tube slidably received through the directing tube extending above the directing tube upper terminal end and extending into the directing tube exit opening, and

a plurality of parallel sealing ribs fixedly mounted to an exterior surface of the balloon seal coextensive therewith, and

an adhesive paste mounted coextensively between adjacent sealing ribs, and

a plurality of diametrically opposed pivot leg supports fixedly mounted to the support plate member, with each pivot leg support directed into the tracheal tube to pivotally mount the tracheal tube relative to the receiving plate bore.

5,285,778

ENDOTRACHEAL TUBE WIH FIBERS OPTIC ILLUMINATION AND VIEWING AND AUXILIARY TUBE

Robert A. Mackin, 1033 Lake Point, Flagstaff, Ariz. 86004

Continuation of Ser. No. 688,643, Apr. 19, 1991, abandoned. This application Jul. 9, 1992, Ser. No. 912,031

Int. Cl.[5] A61M *16/00*

U.S. Cl. 28—207.15 **7 Claims**



1. An endotracheal tube including means for lungs beyond the endotracheal tube during and/or after intubation continuous illumination and continuous viewing of the position of the endotracheal tube in the patient's trachea and conditions of portions of the trachea and lungs beyond the distal end portion of the endotracheal tube without either disconnecting a ventilator from the endotracheal tube or inserting a bronchoscope

or endoscope through the endotracheal tube, the endotracheal tube comprising in combination:

(a) a main tube having a proximal end portion and a distal end portion, an inflatable annular cuff being disposed on the main tube in sealed relation thereto adjacent to the distal end portion;

(b) an inflation tube extending from the proximal end portion into the cuff;

(c) integral means for avoiding problems in monitoring of the position of the endotracheal tube in a patient's trachea and conditions of portions of the trachea and lungs beyond the distal end portion during and/or after intubation of the endotracheal tube caused by use of an endoscope or bronchoscope extending through the endotracheal tube, the integral means including

i. a viewing lens located on and directly attached to the distal end portion and optically coupled to a first optical fiber integral with the main tube and extending from the proximal end portion to the distal end portion,

ii. a viewing device attached to a proximal end of the first optical fiber, and

iii. an illumination port located in the distal end portion coupled to a second optical fiber integral with the main tube and extending from the proximal end portion to the distal end portion, a proximal end of the second optical fiber being optically coupled to an illumination source.

5,285,779

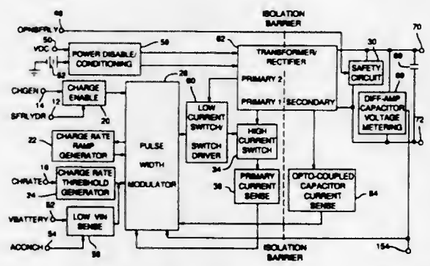
METHOD AND APPARATUS FOR A CARDIAC DEFIBRILLATOR HIGH VOLTAGE CHARGING CIRCUIT

David B. Cameron, and Paul D. Bliley, both of McMinnville, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 27, 1992, Ser. No. 858,808

Int. Cl.[5] A61N *1/00*

U.S. Cl. 607—5 **20 Claims**



1. A cardiac defibrillator charging circuit for charging an energy storage capacitor from multiple power supplies comprising:

a battery having an energy output,

a DC voltage supply having an energy output,

a high voltage storage and discharge capacitor,

a transformer having a first primary winding, a second primary winding, and a secondary winding, the secondary winding coupled across the capacitor; and

switching circuitry for intermittently connecting the battery to the first primary winding and for intermittently connecting the DC voltage supply to the second primary winding creating alternating fields across the first and second primary windings.

5,285,780

PACEMAKER WITH IMPROVED PULSE DETECTION

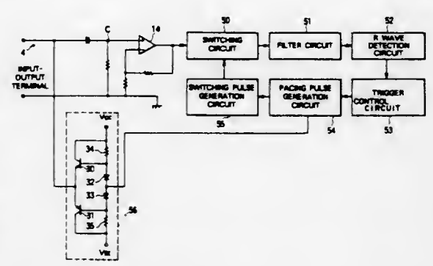
Takashi Tsuji, Fujisawa, and Masayuki Horikawa, Yokohama, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,889

Claims priority, applicatioo Japan, Nov. 29, 1990, 2-331881; Nov. 29, 1990, 2-331882; Nov. 29, 1990, 2-331883; Nov. 29, 1990, 2-331884

Iot. Cl.[5] A61N *1/362*

U.S. Cl. 607—13 **17 Claims**



1. A pacemaker comprising:

electrodes disposed in a heart for detecting electrical activity of the heart;

R wave detection means for detecting an R wave of the electrical activity of the heart input from said electrodes, said R wave detection means issuing an output signal when the R wave is detected;

pacing pulse generation means for discriminating a cycle of the R wave based on the output signal of said R wave detection means, said pacing pulse generation means only outputting a pacing pulse from said electrodes after the R wave is not detected for more than a predetermined interval;

input-output terminal means for transmitting the input signal from said electrodes to said R wave detection circuit and which transmits the output signal from said pacing pulse generation circuit toward said electrodes;

output circuit means connected between said input-output terminal means and said pacing pulse generation means, said output circuit means for setting a high output impedance of more than 5 kilohms when the potential of the input signal transmitted through said input-output terminal means is within a predetermined range, and for setting a low output impedance when the potential of said signal is outside of said range, said output circuit means including voltage determining means for determining when the potential of the input signal is within a predetermined range, and for determining when the potential of the signal is outside of the range.

5,285,781

ELECTRICAL NEUROMUSCULAR STIMULATION DEVICE

Roland Brodard, Villeneuve, Switzerland, assignor to Stiwell S. A., Switzerland

Filed May 24, 1991, Ser. No. 705,078

Claims priority, application Switzerland, May 26, 1990, 1781/90; Dec. 20, 1990, 4066/90

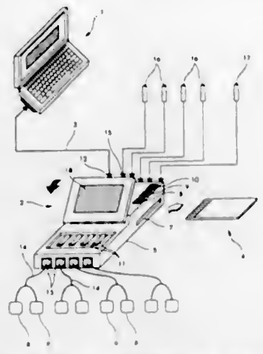
Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—59 **28 Claims**

1. An electrical neuromuscular stimulation device, comprising at least one autonomous portable stimulation unit equipped with at least one output with at least one pair of electrodes to be applied to the part of a patient's body to be treated that are in electrical communication with electronic circuitry means that transmit trains of electrical stimulation impulses intended

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to cause contractions and muscular exercise or training through said electrodes, and software control means that controls and supervises the transmission of said trains of electrical stimulation impulses, including detachable and interchangeable information medium previously programmed as a function of



the stimulation treatment parameters for individual patients and further including first means for enabling the value of each parameter of the stimulation treatment to evolve progressively between previously programmed reference values, and second means for enabling any parameter of stimulation treatment to control any other parameter of stimulation treatment.

5,285,782

METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF PULSE TRANSMITTANCE OXIMETER

Stephen J. Prosser, Bothell, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Jan. 17, 1992, Ser. No. 822,543

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **4 Claims**



1. A method of determining an oxygen saturation ratio of a patient comprising the steps of:

(a) transmitting light through tissue having arterial blood flowing therein;

(b) measuring a plurality of light parameters at a predetermined blood flow condition, said predetermined blood flow condition being blood flow at systolic pressure and at diastolic pressure and further wherein said plurality of light parameters is the transmittance of light through said tissue at systolic and diastolic blood pressure wherein said plurality of light parameters includes:

(i) the transmittance of light of a first wavelength light at systolic pressure and denoted by R_L;

(ii) the transmittance of light of said first wavelength light at diastolic pressure and denoted by R_H;

(iii) the transmittance of light of a second wavelength light at systolic pressure and denoted by IR_L; and

(iv) the transmittance of light of said second wavelength light at diastolic pressure and denoted by IR_H;

(c) obtaining a plurality of values for all of said plurality of light parameters;

(d) for all of said plurality of light parameters, calculating the arithmetic means of said plurality of values; and

(e) after calculating said arithmetic means, determining said blood parameter from said arithmetic means calculated in step (d) in accordance with:

$$R_{OS} = \frac{\ln \frac{\overline{R}_L}{\overline{R}_H}}{\ln \frac{\overline{IR}_L}{\overline{IR}_H}}$$

where R_{OS} is said oxygen saturation ratio, $\overline{R}_L$, $\overline{R}_H$, $\overline{IR}_L$, and $\overline{IR}_H$ are said arithmetic means of step (c).

5,285,783

SENSOR, APPARATUS AND METHOD FOR NON-INVASIVE MEASUREMENT OF OXYGEN SATURATION

Herbert Secker, Stuttgart, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

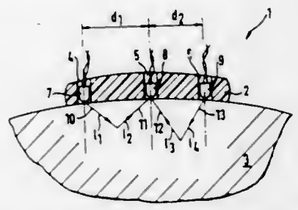
Division of Ser. No. 645,042, Jan. 23, 1991, Pat. No. 5,188,108.

This application Oct. 13, 1992, Ser. No. 959,742

Claims priority, application European Pat. Off., Feb. 15, 1990, 90102954

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **8 Claims**



1. A method for calculating oxygen saturation from an intensity of electromagnetic waves of at least two different wavelengths passing through human tissue, wherein said electromagnetic waves include one predefined wavelength that passes through human tissue along differing paths, the method comprising the processor-controlled steps of:

irradiating said human tissue with said electromagnetic waves;

receiving said electromagnetic waves that pass through said human tissue;

converting intensities of received electromagnetic waves into electrical signals;

comparing the electrical signals corresponding to the electromagnetic waves of said predefined wavelength with sets of predefined signals representative of certain places of application to the human body or representative of certain tissue characteristics;

selecting a set of predefined signals having the most common characteristics with said electrical signals corresponding to the electromagnetic waves of said predefined wavelength;

correcting said electrical signals corresponding to the electromagnetic waves of said predefined wavelength in a manner dependent upon the selected set; and

calculating oxygen saturation from said corrected electrical signals.

5,285,784

SENSOR, APPARATUS AND METHOD FOR NON-INVASIVE MEASUREMENT OF OXYGEN SATURATION

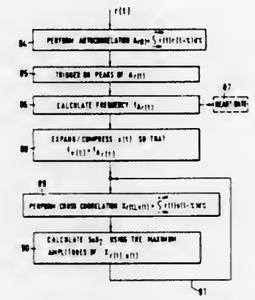
Herbert Seeker, Stuttgart, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 645,042, Jan. 23, 1991. This application Oct. 13, 1992, Ser. No. 960,923

Claims priority, application European Pat. Off., Feb. 15, 1990, 90102954

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **3 Claims**



1. Apparatus for noninvasive measurement of oxygen saturation from the intensity of electromagnetic waves of at least two different wavelengths reflected by or transmitted through human tissue, said apparatus comprising:

irradiating means for irradiating said human tissue with electromagnetic waves;

receiving means for receiving said electromagnetic waves that have been reflected by or have passed through said human tissue;

conversion means for converting the intensity of received electromagnetic waves into electrical signals;

autocorrelation means for performing an autocorrelation on at least a specific one of said electrical signals to derive an autocorrelation function;

frequency detection means for detection of the frequency of the autocorrelation function;

frequency adaptation means to adapt a frequency of a predefined signal to the frequency of the autocorrelation function;

cross correlation means for performing a cross correlation between said at least a specific one of said electrical signals and said adapted predefined signal;

detection means for detecting the maximum amplitude of said cross-correlation function; and

oxygen saturation calculation means for calculating oxygen saturation from said maximum amplitude.

5,285,785

APPARATUS AND METHOD FOR LOCATING FOREIGN BODIES IN HUMANS AND ANIMALS

Seymour W. Meyer, 495 E. Shore Rd., Great Neck, N.Y. 11024

Continuation-in-part of Ser. No. 784,597, Oct. 30, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,186

Int. Cl.[5] A61B *6/12*

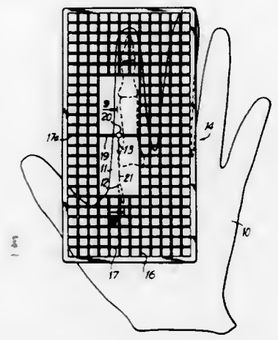
U.S. Cl. 128—653.1 **13 Claims**

1. A grid-like screen device for use in assisting the location of foreign bodies in the human or animal body for subsequent surgical removal, which comprises:

(a) a generally flat, planar sheet-like member formed of thin material,

(b) said material being sufficiently opaque to X-radiation to form an overlay image when interposed between an X-ray film cassette and an injury site being X-rayed;

(c) said sheet-like member being formed over a substantial portion of its surface with a calibrated grid of open rectangles, defined by integral, narrow, linear grid-forming elements of said material intersecting with each other at right angles to form individual open rectangles;



(d) said sheet-like member being formed with a generally centralized open area defined by edges and substantially free of linear grid-forming elements;

(e) the edges of said open area being defined by certain of said linear elements; and

(f) at least two of the linear elements, forming at least two of the edges of said open area, being intersected by at least one grid-forming linear element extending at right angles thereto.

5,285,786

APPARATUS AND METHOD FOR RADIOGRAPHIC DIAGNOSIS

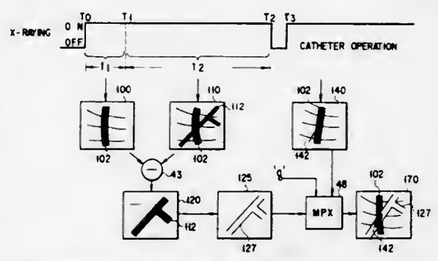
Senzo Fujii, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 10, 1992, Ser. No. 896,445

Claims priority, application Japan, Jun. 12, 1991, 3-139359

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—653.1 **16 Claims**



1. A radiographic diagnostic apparatus for irradiating radiations to a subject for diagnosis, comprising:

radiation generator means for irradiating radiations to said subject;

detecting means for detecting radiations passing through said subject, and converting a detection results into image data, said image data containing first image data before catheter insertion and second image data after said catheter insertion;

extracting means for extracting a desired portion from said first image data;

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image synthesizing means for combining the portion extracted by said extracting means with said second image data and converting overlapping areas in the resulting combined data into different data to form third image data; and

display means for displaying said third image data obtained by said image synthesizing means.

5,285,787

APPARATUS FOR CALCULATING COORDINATE DATA OF DESIRED POINT IN SUBJECT TO BE EXAMINED

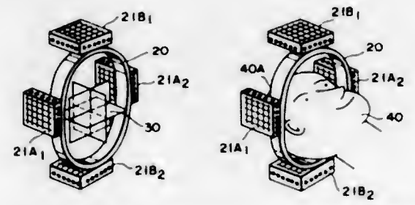
Yoshio Machida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 580,762, Sep. 11, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 953,760

Claims priority, application Japan, Sep. 12, 1989, 1-236489

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **8 Claims**



1. An apparatus for calculating coordinate data of a desired point in a subject comprising:

a frame for detachably holding the subject therein;

an indicator phantom affixed outside said frame;

a frame coordinate phantom being detachably mounted within said frame in place of said subject;

magnetic resonance imaging means for imaging said frame with said subject and said indicator phantom to produce a first image, and for imaging said frame with said frame coordinate phantom and said indicator phantom to produce a second image; and

calculating means for calculating the coordinate data of the desired point in the subject based upon said first image and said second image.

5,285,788

ULTRASONIC TISSUE IMAGING METHOD AND APPARATUS WITH DOPPLER VELOCITY AND ACCELERATION PROCESSING

James W. Arenson, Woodside; Ismayil M. Guracar, Redwood City; Janna G. Clark, and Marc D. Weinshenker, both of Mountain View, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Oct. 16, 1992, Ser. No. 962,145

Int. Cl.[5] A61B *8/00*

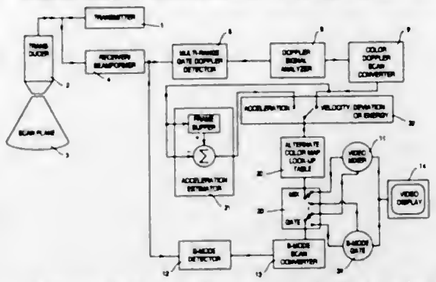
U.S. Cl. 128—660.05 **13 Claims**

1. An ultrasound tissue imaging system having an acoustic transducer and comprising

B-mode imaging means to produce with said transducer an electronically scanned B-mode image of tissue under examination, said B-mode image substantially representing the intensity of echoes returned from said tissue along multiple B-mode scan lines;

Doppler imagine means that accepts and processes large amplitude, low frequency signals to produce with said transducer an electronically scanned Doppler image of said moving tissue, the Doppler image representing estimates of velocity including means, standard deviation or energy derived from Doppler-shifted echoes reflected from said moving tissue at multiple sample volumes along multiple Doppler scan lines;

color display means for displaying the B-mode image as a two-dimensional image with echo intensities encoded using a first mapping function and for augmenting the B-mode image by simultaneously displaying said estimates



of velocity as a two-dimensional Doppler image using a second and distinct mapping function that is spatially coordinated with and superimposed upon said b-mode image.

5,285,789

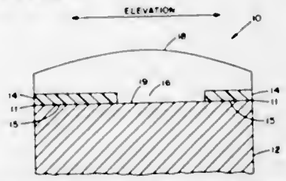
ULTRASONIC TRANSDUCER APODIZATION USING ACOUSTIC BLOCKING LAYER

James N. C. Chen, Chelmsford, Mass.; Gregory G. Vogel, Londonderry, N.H., and Martin K. Mason, Andover, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 21, 1992, Ser. No. 871,495

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.03 **24 Claims**



1. An ultrasound transducer for imaging a target comprising:

a piezoelectric transducer element having a front surface for emitting an ultrasonic wave toward the target, and for receiving an echo of the emitted ultrasonic wave returned from the target, and

ultrasound blocking means comprising a thin sheet of blocking material integral with the transducer for substantially blocking the ultrasonic wave emission from a portion of the front surface area defining an inactive area of the front surface, and for allowing substantial transmission of the ultrasonic wave emission from another portion of the front surface area defining an active are of the front surface.

5,285,790

Patent Not Issued For This Number

5,285,791

NOISE DAMPING SYSTEM FOR AN AUTOMATIC BLOOD PRESSURE GAUGE

David L. Smith, Ipswich, Mass., assignor to Siemens Medical Electronics, Inc., Danvers, Mass.

Filed Jan. 21, 1992, Ser. No. 823,735

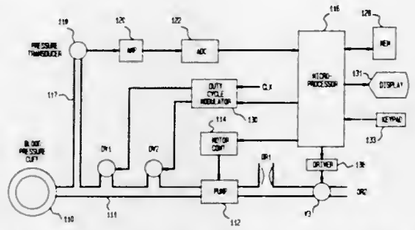
Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—677 **15 Claims**

1. A blood pressure monitoring system having a cuff, a deflation valve, a pump, and a manifold, said manifold comprising:

a partition defining a first expansion chamber and a second expansion chamber for damping fluid pressure waves, wherein said partition includes a first flow resistrictor for providing direct fluid communication between said first expansion chamber and said second expansion chamber;

inflation path means for providing fluid flow from an ambient source of said fluid to at least one of said first and second expansion chambers, and then to said pump and said cuff, in the named order, for inflating said cuff with fluid; and



deflation path means for providing fluid flow from said cuff to said deflation valve and then to at least one of said first and second expansion chambers, in said named order, for deflating said cuff of fluid;

wherein at least one of said inflation path means and said deflation path means provides said fluid flow using both of said first and second expansion chambers with said first flow restrictor therebetween.

5,285,792

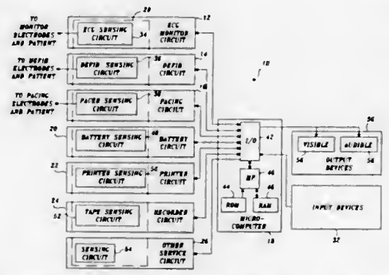
SYSTEM FOR PRODUCING PRIORITIZED ALARM MESSAGES IN A MEDICAL INSTRUMENT

Steven E. Sjoquist, Lynnwood, and John C. Daynes, Redmond, both of Wash., assignors to Physio-Control Corporation, Redmond

Filed Jan. 10, 1992, Ser. No. 819,200

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—697 **16 Claims**



1. A control system for use with a medical instrument comprising:

sensing means for monitoring the operation of said instrument to detect a plurality of predetermined conditions;

message means for generating initial and steady state visible and audible messages indicative of the predetermined conditions; and

prioritization means for controlling the generation of the initial and steady state messages by said message means in accordance with a predetermined set of parameters including a priority assigned to each of the predetermined conditions detected by said sensing means, wherein the visible messages include an initial display message, steady state display message, and icon.

5,285,793

NONINVASIVE DETECTION OF REJECTION IN HEART TRANSPLANT PATIENTS

David P. Slovut, Golden Valley; R. M. Bolman, III; Richard W. Bianco, both of Minneapolis, all of Minn., and John C. Wenstrom, Salida, Colo., assignors to Regents of the Univeristy of Minnesota, Minneapolis, Minn.

Filed May 21, 1992, Ser. No. 886,727

Int. Cl.[5] A61B *5/0452*

U.S. Cl. 128—706 **18 Claims**



1. A method for diagnosing heart rejection in a mammal with a transplanted heart, wherein the time interval between heart beats is an interbeat interval, and a series of interbeat intervals has an associated pattern, comprising the steps of:

(a) measuring the interbeat intervals in the transplanted heart and obtaining a pattern associated with its intervals; and

(b) diagnosing heart rejection based on the pattern of interbeat intervals using nonlinear dynamical systems analysis.

5,285,794

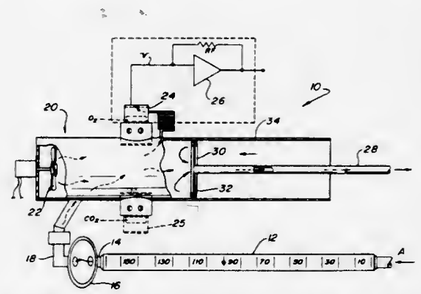
RESPIRATORY GAS MONITOR

Thomas J. Lynch, West Chester, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Dec. 14, 1992, Ser. No. 990,203

Int. Cl.[5] A61B *5/083*

U.S. Cl. 128—719 **15 Claims**



1. An apparatus for monitoring respiratory gas comprising:

a measuring means for measuring the volume flow rate of a therapeutic gas supplied to said apparatus;

a breathing device for supplying a portion of the flow of the therapeutic gas to a patient and for receiving respiratory gas expired from said patient;

a gas mixing chamber associated with the breathing device and adapted to receive the flow of therapeutic gas and expired respiratory gas and to equilibrate said gasses to an essentially homogenous mixture, wherein the mixing chamber further comprises structure adjusting the chamber volume;

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at least one sensor associated with said gas mixing chamber said sensor sensing the percentage concentration of a gaseous compound in the gas mixture contained within the chamber; and

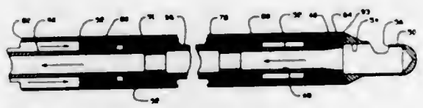
means for displaying the difference between percentage concentration of the compound in the mixing chamber to the percentage in the therapeutic gas.

5,285,795

PERCUTANEOUS DISCECTOMY SYSTEM HAVING A BENDABLE DISCECTOMY PROBE AND A STEERABLE CANNULA

Timothy J. Ryan, San Francisco, and Charles J. Winslow, Walnut Creek, both of Calif., assignors to Surgical Dynamics, Inc., Concord, Calif.

Filed Sep. 12, 1991, Ser. No. 758,806
Int. Cl.[5] A61B *10/00, 1/00, 17/20*
U.S. Cl. 128—750 **27 Claims**



1. A surgical instrument comprising:

a probe body;

an elongate probe needle with a longitudinal axis extending from said probe body and an end located distally from said probe body, and having a tissue removing means for removing tissue and an elongate outer tubular body, said elongate probe needle further having:

a first repeatably bendable section in said elongate outer tubular body in order to allow for selective positioning of said cutting means relative to said longitudinal axis,

an elongate inner tubular body within said elongate outer tubular body, said elongate inner tubular body including a second repeatedly bendable section, said second repeatably bendable section for allowing selective positioning of said tissue removing means relative to said longitudinal axis,

irrigation means for delivering irrigation fluid,

aspiration means for removing irrigation fluid and tissue, and

wherein said first and second repeatably bendable section allow said tissue removing means to be repeatably positioned to a location away from said longitudinal axis.

5,285,796

METHOD FOR CONTINUOUSLY MONITORING CARDIAC OUTPUT

Timothy J. Hughes, Palo Alto, Calif., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 815,068, Dec. 27, 1991, Pat. No. 5,217,019. This application Mar. 10, 1993, Ser. No. 28,992
Int. Cl.[5] A61B *5/02, 5/00, 19/00*
U.S. Cl. 128—668 **15 Claims**

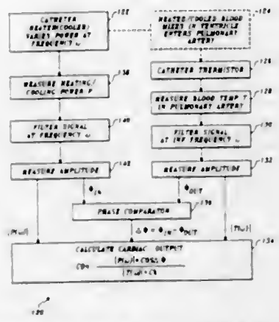
1. A method for determining a cardiac output of a heart, comprising the steps of:

(a) changing a temperature of blood within the heart so that it varies periodically;

(b) sensing a temperature of blood leaving the heart, producing a blood temperature signal that varies periodically;

(c) producing a power signal indicative of power used to change the temperature of the blood within the heart, said power signal varying periodically;

(d) determining a difference in phase between the power signal and the blood temperature signal; and



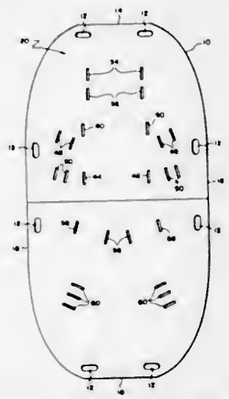
(e) determining the cardiac output of the heart as a function of the power signal, the blood temperature signal, and the difference in phase between said signals.

5,285,797

PORTABLE BODY RESTRAINT DEVICE

Donald D. Zeller, 1962 Carrier Rd., Palo, Iowa 52324

Filed Jan. 6, 1992, Ser. No. 817,379
Int. Cl.[5] A61F *5/37*
U.S. Cl. 128—870 **5 Claims**



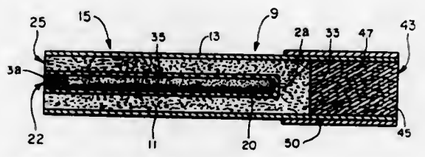
1. A portable body restraint device for restraining combative or violent individuals by securing the individual's head, pelvis, chest, wrists, arms, legs and ankles, said device comprising a rigid board having a relatively flat top surface, a head portion at one end for underlying the head of an individual to be restrained and a foot portion at the end opposite the head portion for underlying the legs of the individual to be restrained, the board being longer than it is wide and being of a sufficient length and width to accommodate an individual of any size in the proper position for restraint with the individual face down longitudinally on the board with the arms of the individual slightly separated from the body and the legs spread apart, a body portion intermediate the head portion and the foot portion for underlying the chest and pelvis of the individual to be restrained, a pair of slots one slot on each side of a properly positioned individual's head in the head portion of the board, a pair of slots one on each side of a properly positioned individual's chest and pelvis in the body portion of the board, a pair of slots one on each side of a properly positioned individual's wrists and arms in the body portion, a pair of slots one slot on each side of a properly positioned individual's upper legs in the foot portion, the slots for the head, chest, pelvis, wrists, arms and upper legs extending generally longitudinally of the board, at least one pair of slots beneath each one of a properly positioned individual's ankles in the foot portion of the board which ankle slots extend generally transversely of the board, there being more than one pair of slots in the foot portion for each ankle to provide for individuals of different heights, straps extending through each pair of slots so as to be engageable with respective ones of the individual's body parts to hold the individual securely on the board, a plurality of hand grips extending along the sides of the board to provide for carrying of the board, and support members on the bottom surface of the board to provide for spacing the board from a surface upon which it rests so as to facilitate grasping of the hand grips.

5,285,798

TOBACCO SMOKING ARTICLE WITH ELECTROCHEMICAL HEAT SOURCE

Chandra K. Banerjee, Pfafftown; Joseph J. Chiou, Clemmons; Ernest G. Farrier; Thomas L. Gentry, both of Winston-Salem, all of N.C.; Richard L. Lehman, Belle Mead, N.J.; Henry T. Ridings, Lewisville, N.C.; Andrew J. Sensabaugh, Jr., Winston-Salem, N.C., and Michael D. Shannon, Lewisville, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 28, 1991, Ser. No. 722,778
Int. Cl.[5] A24D *1/18*
U.S. Cl. 131—194 **68 Claims**



1. A cigarette which does not burn tobacco comprising:

a) tobacco; and

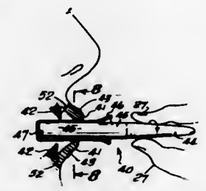
b) a non-combustion heat source for heating the tobacco comprising at least two metallic agents capable of interacting electrochemically with one another.

5,285,799

METHOD FOR PREVENTING DEPOSIT OF LIPSTICK ON TEETH

Donna Minard, 351 N. Newport Blvd. #525, Newport Beach, Calif. 92663

Division of Ser. No. 594,609, Oct. 9, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 898,533
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—200 **2 Claims**



1. A method of preventing deposit of lipstick on teeth in the interior of a person's mouth when a coating of lipstick is on the person's lips, comprising

mounting an absorbent tissue about a carrier mounted on a handle,

opening the lips of the person's mouth,

puckering the lips,

inserting the tissue on said carrier into the person's mouth,

pressing the puckered lips against the tissue on the carrier,

removing the lips from the tissue, and

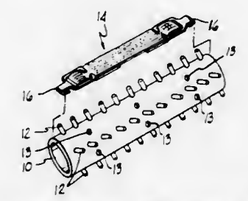
withdrawing from the mouth the tissue and its carrier.

5,285,800

PERMANENT WAVE APPARATUS AND PROCESS FOR CURLING HAIR

Susan Powers-McCarthy, 10150 E. Harvard Ave. E734, Denver, Colo. 80231

Filed Jul. 19, 1993, Ser. No. 94,371
Int. Cl.[5] A45D *7/00*
U.S. Cl. 132—210 **5 Claims**



5. A permanent wave process for curling hair, the process comprising the steps of:

providing a plurality of rollers, each of the rollers being fabricated as a hollow cylinder having opposite ends, said cylinders each having a plurality of equally-spaced, longitudinally-aligned rows of outwardly protruding teeth on an outer surface of the cylinder and having a plurality of drainage apertures linearly arranged between said rows of teeth;

providing a plurality of elastic end guards, each of the elastic end guards being of flat cross section and having a length sufficient to permit it to be stretched between ends of one of said rollers, each of the elastic end guards including a hook at each end thereof to enable it to be hooked over the ends of one of said rollers;

providing a plurality of rectangular end papers, each of said end papers being fabricated to include an I-shaped longitudinal slot opening for accommodating a row of teeth on said one of said rollers;

providing a plurality of plastic slide clips, each of said plastic slide clips being fabricated to be generally U-shaped with a pair of longitudinally extending clip members whose distal ends may be spread apart against a plastic spring force to an insertion position in which they are substantially parallel to each other for insertion into the cylindrical cavities of two adjacent ones of said rollers;

sectioning the hair to be curled;

dividing a section of hair into partings;

laying the loose ends of a first parting over one of said rollers such that strands of hair at the loose ends of the parting distribute themselves between the teeth of one of the rows of teeth of the roller;

laying one of said end papers over the loose ends of the first parting such that the teeth of said one of the rows of teeth extend through said I-shaped slot opening in said end paper;

stretching and hooking said elastic end guard in position across said roller;

wrapping said first parting of hair onto said roller;

inserting one of said plastic slide clips such that one slide member is positioned in the cylindrical cavity of the roller and the other slide member is positioned in the hair between the roller and the scalp;

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sequentially wrapping additional partings of the section of hair onto additional rollers; and

inserting one of said plastic slide clips into the cylindrical cavities of each subsequently wrapped roller and a previously wrapped roller to thereby maintain adjacent pairs of rollers in an interlocked position.

5,285,801

MACHINE FOR THE CLEANING OF BOTTLES OR THE LIKE
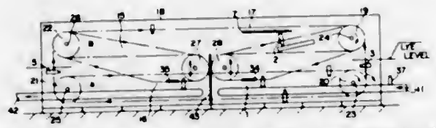
Klaus Klenk, Worms, Fed. Rep. of Germany, assignor to KRONES AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 933,474

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 9110492

Int. Cl.[5] B08B *3/02, 3/04;* **B65G** *21/18*

U.S. Cl. 134—73 **21 Claims**



1. A machine for the cleaning of bottles comprising bottle feeder means for feeding bottles to be cleaned to said machine, bottle discharge means for discharging cleaned bottles from said machine, an endless conveyor mounted for traveling movement in said machine between said feeder means and said discharge means, said endless conveyor having bottle carrier means thereon for receiving bottles from said feeder means, transporting the bottles suspended therefrom past a variety of bottle treatment means and for releasing the bottles to said discharge means, said endless conveyor belt traveling in a first path of travel in a horizontally directed spiral-like manner in a first traverse direction in a first portion of the machine and then in at least a second path of travel in a horizontally directed, spiral-like manner in a second transverse direction opposite said first direction in a second portion of the machine, said paths of travel being disposed one above the other in said machine.

5,285,802

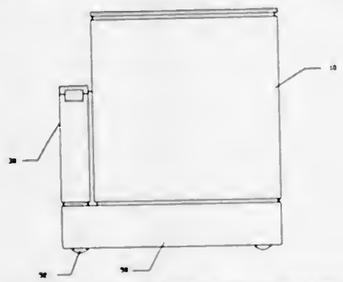
PORTABLE WHEELCHAIR CLEANING APPARATUS

Karl Soderquist, 110 Tirrell Hill Rd., Goffstown, N.H. 03045

Filed Jun. 18, 1993, Ser. No. 80,421

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—123 **8 Claims**



1. A mobile washing and disinfecting apparatus having cleaning cycles comprising:

removable wash chambers, each having a coupling dimension and a substantially enclosed interior region for washing articles of a predetermined size;

a single base having a complementary coupling dimension for supporting a selected wash chamber and also housing all electromechanical components thereon;

a re-configurable spray arm movably secured to the base, the spray arm having nozzles for directing a spray of washing and disinfecting fluids upon articles enclosed within the wash chamber and being movable in order to enable the spray arm to move over the articles and maximize the coverage of the spray of washing and disinfecting fluids over multiple surfaces of the articles; and

a modular programmable microprocessor supported on the base for controlling the cleaning cycles.

5,285,803

EMERGENCY UMBRELLA

Blair F. Baldwin, New York, N.Y.; Russell G. Dobrowski, Clinton, and Arthur L. Arledge, Basking Ridge, both of N.J., assignors to Bexel Corporation, New York, N.Y.

Filed Mar. 18, 1993, Ser. No. 33,495

Int. Cl.[5] A45B *13/00*

U.S. Cl. 135—19.5 **21 Claims**



1. An umbrella comprising:

a hollow tubular handle extending in an axial direction, said hollow tubular handle having an upper edge and a lower portion;

an elongated rod having an upper end and a lower end, said elongated rod movable in the axial direction within said hollow tubular handle;

a plurality of struts pivotally mounted to the upper end of said elongated rod for movement in a range between a storage position substantially parallel to said axial direction and adjacent to said elongated rod, and an open position substantially perpendicular to said axial direction;

a web of flexible, water-resistant material connected to said struts; and

locking means fixed to a lower end of said elongated rod for preventing movement of said elongated rod in said axial direction when said struts are in said open position and said storage position, by engaging with a lower portion of said tubular handle to releasably lock said struts in:

said open position in which said struts are positioned substantially perpendicular to said axial direction and rest on the upper edge of said tubular handle, and

said storage position in which said struts are positioned substantially parallel to said axial direction and adjacent to said elongated rod within said tubular handle.

5,285,804

FOLDABLE DUMMY OBJECT FOR CAMOUFLAGE PURPOSES

Floris Gretzmacher, Vienna, Austria, assignor to Barracuda Technologies AB, Sweden

Continuation-in-part of Ser. No. 646,639, May 11, 1990, Pat. No. 5,238,015. This application Dec. 22, 1992, Ser. No. 994,773

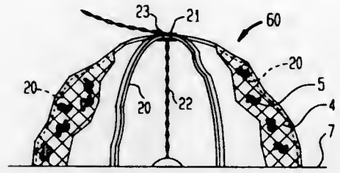
Claims priority, application Austria, May 31, 1989, 1308/89

Int. Cl.[5] E04H *15/40*

U.S. Cl. 135—104 **10 Claims**

1. A camouflage device adapted to fold and unfold and to assume the shape of a dummy object when in the unfolded configuration for camouflaging an object, comprising:

a frame for supporting a camouflage netting, said frame being adaptable for displaying irregular configuration and including a support member and a plurality of flexible rod structures having one end detachably secured to said support member and another end adapted for placement upon a suitable location of the object to be camouflaged, each of said rod structures being made of an elastic band



to allow flexible configuration and random shaping of said frame; and

adjustable fastening means connectable to said frame and to the object for exerting a tensile load in direction of the object to be camouflaged and for changing configuration of said frame.

5,285,805

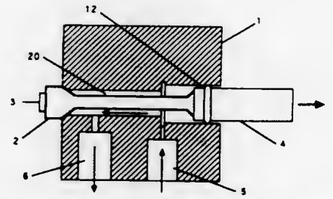
STRETCH VALVE METHOD AND APPARATUS

George N. Proper, Milpitas, Calif., assignor to General Valve Corporation, Fairfield, N.J.

Filed Mar. 22, 1993, Ser. No. 34,120

Int. Cl.[5] F16K *7/20*

U.S. Cl. 137—1 **13 Claims**



5. A method of precisely controlling a fluid flow between an inlet port and an outlet port connected by a hollow passage, comprising the steps of:

A) filling the passage with an elastomer body so as to prevent fluid flow between the inlet port and the outlet port, the elastomer body having a first end, a second end, and a diameter;

B) fixing the first end of the elastomer body so that the first end of the elastomer body will not move with respect to the passage;

C) pulling the second end of the elastomer body away from the passage to a precise extent, causing the elastomer body to stretch and causing the diameter of the elastomer body to decrease in size, allowing fluid flow between the input port and the output port, the rate of fluid flow being dependent on the extent of the pulling of the second end of the elastomer body.

5,285,806

METHOD AND APPARATUS FOR TEMPORARILY SEALING OFF PIPELINES

Daniel A. Ortega, Englewood, Colo., assignor to Public Service Company of Colorado, Denver, Colo.

Filed Dec. 30, 1992, Ser. No. 998,469

Int. Cl.[5] F16K *7/10;* **F16L** *55/124*

U.S. Cl. 137—15 **14 Claims**

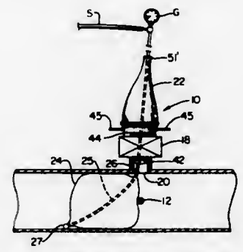
9. The method of repairing pipelines, such as, gas means in situ to prevent the escape of gas during repair comprising the steps of:

(a) tapping first and second holes in diametrically opposed sidewall portions of said pipe;

(b) aligning first and second valve members with said first and second holes and in sealed relation to said wall portions;

(c) removably inserting a rod through said first and second valve members diametrically across the interior of said pipeline and in sealed relation to said first and second valve members;

(d) tapping a third hole in a wall portion of said pipeline spaced from said first and second holes;



(e) aligning a third valve member with said third hole in sealed relation to said wall portion of said pipeline;

(f) inserting an inflatable bag in deflated condition through said third valve member into the interior of said pipeline and guiding into position upstream of said rod; and

(g) inflating said bag to fill the interior of said pipeline and expand into firm engagement against said rod and prevent bag from becoming lost down said pipeline whereby to prevent the escape of gas past said bag.

5,285,807

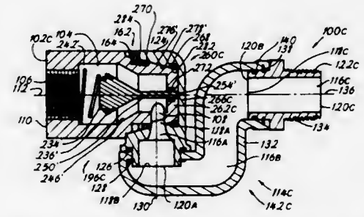
COUPLING SYSTEM

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Filed Sep. 27, 1991, Ser. No. 767,079

Int. Cl.[5] F16K *17/14*

U.S. Cl. 137—68.1 **11 Claims**



1. An improved breakaway coupling suitable for use intermediate a piping system or reservoir and a nozzle and in fluid communication therewith at a fuel dispensing station, said coupling comprising:

a first body member with a fluid passage therethrough in sealed fluid communication with a fluid passage through a second body member;

axial engagement means for juxtapositioning said body members;

outer sealing means at the interface of the first and second body members to maintain such body members in fluid communication and prevent pressurized liquid contained in said fluid passages from leaking therefrom;

inner sealing means to prevent pressurized liquid contained in said fluid passages from entering between said first and second body members at the axial interface between said

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first and second body members, thereby preventing pressurized fluid in the passages from exerting hydrostatic forces between the body members, which forces act to uncouple the release means,

release means suitable for coupling the first body member and second body member together in flow communication and for uncoupling them when a force in excess of a predetermined level is exerted along the axis of juxtapositioning;

alignment means which aligns the axis of juxtapositioning with the component of tensile force on the breakaway coupling, said alignment means aligning said axis of juxtapositioning and said force component at the point at which the first body member is releasably held to the second body member; and

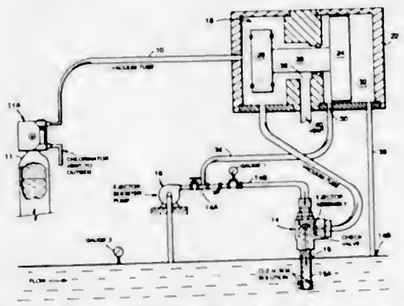
valving means for sealing the fluid passages against loss of fluid when the release means releases the first and second body members from axial juxtaposition.

5,285,808

DIVERTING RELIEF VALVE BACKFLOW

William B. Clanin, Fresno, Calif., assignor to Clanin & Associates, Fresno, Calif.

Filed Nov. 5, 1992, Ser. No. 972,238
Int. Cl.[5] G05D *11/03*
U.S. Cl. 137—114 **11 Claims**



1. Apparatus for diverting check valve leakage comprising,

a housing having first and second pressure inlets for receiving fluid signals representative of first and second pressures,

said housing having a gas inlet and a gas outlet and formed with a gas transmission passage for carrying gas from said gas inlet to said gas outlet,

a check valve coupled to said gas outlet for normally preventing liquid from entering said gas outlet while allowing gas exiting through said gas outlet to pass through said check valve,

said housing having a vent passage communicating with said gas transmission passage and the region outside said housing for carrying liquid leaking through said check valve from said gas transmission passage to the region outside said housing,

valve structure movable in said housing responsive to the difference in pressures at said first and second pressure inlets for blocking fluid flow between said gas transmission passage and said vent passage when said pressure difference is greater than a predetermined value and allowing fluid flow, including any liquid leaking through said check valve entering said gas transmission passage through said gas outlet, from said gas transmission passage to said vent passage when said pressure difference is below a predetermined value,

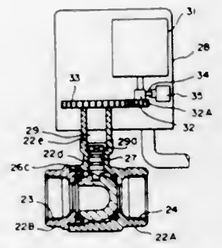
wherein said value structure is free of springs.

5,285,809

DRAIN DISCHARGE DEVICE

Yoshiyuki Shimoguri, Yokohama, Japan, assignor to Fukuhara Corporation, Yokohama, Japan

Filed Mar. 24, 1992, Ser. No. 856,657
Claims priority, application Japan, Oct. 11, 1991, 3-091522[U]
Int. Cl.[5] F16K *5/06*
U.S. Cl. 137—203 **6 Claims**



6. An effluent drain system for draining effluent from a plurality of devices receiving compressed air from an air compressor, comprising:

said plurality of devices including at least first and second devices connected to receive said compressed air in series;

said first device having a first air pressure drop;

said second device having a second air pressure drop, whereby an air pressure at an outlet of said second device is equal to a supply air pressure at an inlet of said first device minus said first air pressure drop and minus said second air pressure drop;

a first effluent outlet from said first device;

said first effluent outlet having said supply air pressure minus said first pressure drop;

a second effluent outlet from said second device;

said second effluent outlet having said supply air pressure minus said first pressure drop and minus said second air pressure drop;

a drain discharge valve;

said drain discharge valve including at least first and second inlets;

means for connecting said first effluent outlet to said first inlet;

means for connecting said second effluent outlet to said second inlet;

a drain outlet from said drain discharge valve;

said drain discharge valve including means for sequentially connecting said first inlet to said drain outlet, and said second inlet to said drain outlet, and for sealing the other thereof, whereby a difference in pressure at said first and second inlets remains sealed from each other; and

a motor driving said means for sequentially connecting, whereby said drain discharge valve continuously sequentially connects said first and second inlets to said drain outlet.

5,285,810

PRESSURE-REDUCING REGULATOR FOR COMPRESSED NATURAL GAS

Jeffrey B. Gotthelf, Charleston, S.C., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,376
Int. Cl.[5] G05D *16/02*
U.S. Cl. 137—340 **10 Claims**

1. A pressure-reducing regulator for compressed natural gas, comprising:

a regulator body;

said body having (a) an inner chamber for receiving high-pressure gas therein, and (b) an outer chamber for discharging low-pressure gas therefrom;

porting means, formed in said body, for admitting gas into said inner chamber, and for discharging gas from said outer chamber;

valving means, within said body, for controlling fluid communication between said chambers;

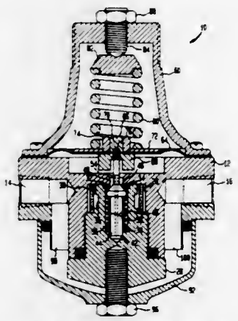
said inner chamber and said valving means have structural means which cooperatively define (a) a seating area, and (b) a sealing area for said valving means;

both said areas comprise means for defining boundaries between differential pressures of inner chamber high-pressure gas and outer chamber low-pressure gas;

said valving means comprises means for (a) equalizing magnitudes of forces of such differential pressures, (b) directing such forces in balanced opposition, in said areas, and (c) maintaining equalization of such forces and oppositely-directed balancing thereof, in said areas, regardless of how pressures of such inner chamber high-pressure gas and such outer chamber low-pressure gas vary;

said body further has means for (a) admitting and discharging a heating fluid thereinto and therefrom, and (b) heat-exchanging such fluid with a portion of said body wherein said areas and said inner chamber are positioned; and

said heating fluid admitting and discharging means comprises porting means formed in said body for conducting heating fluid into said body, and discharging such heating fluid from said body, and a bowl removably fastened to said body in which to pool such heating fluid.

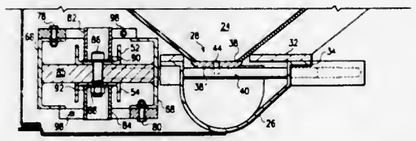


5,285,811

HOPPER GATE VALVE

Michael W. DiLuigi, and Terry W. Malone, both of Asheville, N.C., assignors to Trinity Industries, Inc., Dallas, Tex.

Filed Jul. 16, 1992, Ser. No. 915,001
Int. Cl.[5] A01M *7/00*
U.S. Cl. 137—347 **23 Claims**



1. A discharge gate valve of a container comprising:

valve body means for connecting to said container and defining a generally elongated discharge opening therefrom;

an elongated valve member having first and second ends, said elongated valve member being slidably moveable and engageable with said elongated discharge opening; and

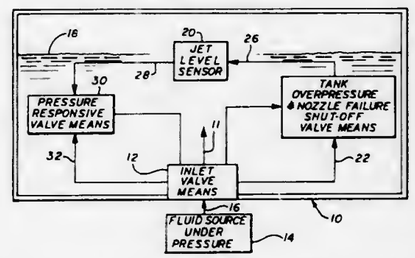
control means coupled to said elongated valve member and having a center pivot for rotating about said center pivot and controllably and pivotally effecting independent displacement of said first and second ends of said elongated valve member with respect to said elongated discharge opening.

5,285,812

JET LEVEL SENSOR FOR FUEL TANKS

Gerald A. Morales, Simi Valley, Calif., assignor to HR Textron, Inc., Valencia, Calif.

Filed Sep. 9, 1992, Ser. No. 942,551
Int. Cl.[5] F15C *1/14*; F16K *21/18*
U.S. Cl. 137—393 **10 Claims**



1. A jet level sensor for detecting the level of liquid in a tank comprising:

(A) a nozzle including a tip defining an orifice having a first predetermined diameter;

(B) a receiver including a tip defining an orifice having a second predetermined diameter;

(C) first conduit means coupled to said nozzle for providing a jet liquid stream emanating from said nozzle;

(D) bracket means receiving said nozzle and said receiver in axially aligned spaced apart position;

(E) said second predetermined diameter being smaller than said first predetermined diameter so that said receiver orifice is fully engulfed by said jet liquid stream when said liquid level in said tank is below said sensor;

(F) a manifold coupled to said receiver;

(G) a plurality of conduit means coupled to said manifold for providing a plurality of output pressure signals from said sensor indicating that said tank liquid level is below said sensor; and

(H) means for securing said nozzle to said bracket means so that at least said nozzle and said first conduit means are free to rotate with respect to said bracket means thereby to allow positioning of said bracket and said first conduit means at the time of installation of said jet level sensor to accommodate various applications of said jet level sensor.

5,285,813

PRESSURE LIMITING VALVE WITH STABLE SPRING PAD

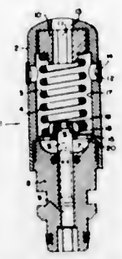
Norbert Quante, Dorsten, and Heinrich Quante, Recklinghausen, both of Fed. Rep. of Germany, assignors to Ingenieurtechnik GmbH & Co. KG, Rechlinghausen, Fed. Rep. of Germany

PCT No. PCT/DE91/00112, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/13280, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 14, 1991, Ser. No. 930,413
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1990, 283922
Int. Cl.[5] F16K *15/06, 17/04*
U.S. Cl. 137—494 **21 Claims**

1. A pressure limiting valve comprising a piston guided by an O-ring seal inside a piston bore correlated with a piston guide and secured by a valve spring acting through a spring plate, which are movable in a spring sleeve surrounding the valve spring and the spring plate, an adjusting screw which has a through-bore and which forms an end of the spring chamber

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opposite the spring plate, characterized in that the spring plate has openings functioning as flow-through openings, the spring plate has a blind bore, the piston has a straight side in the blind



bore, and the piston guide in an area forming a bottom of a spring chamber in the spring sleeve has a funnel-shaped recess which extends to an inside lateral wall of the spring chamber.

5,285,814

VALVE-SETTING DEVICE

Hans Pettersson, Huddinge, Sweden, and Peter Merz, Versoix, Switzerland, assignors to AB Mecman, Stockholm, Sweden

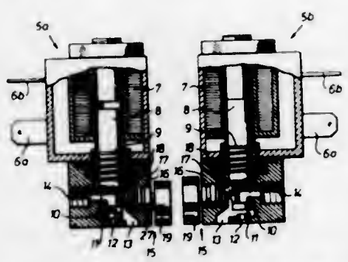
PCT No. PCT/SE90/00736, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO91/08411, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 14, 1990, Ser. No. 856,208

Claims priority, application Sweden, Nov. 24, 1989, 8903977

Int. Cl.[5] F16K *37/00*

U.S. Cl. 137—556 **14 Claims**



1. A device for manually setting a position of a valve body in a valve, comprising:

a valve mounted close to at least one other valve in a compact arrangement;

said valve including a valve housing and a valve body movable therein;

an axis portion being mounted in a wall opening in said valve housing and being provided, inside said valve housing, with a cam surface and, outside said valve housing, with a manually controllable handle;

said axis portion being rotatable so as to displace said valve body by means of said cam surface;

said handle including a central portion secured to said axis portion and two wing portions, said wing portions located radially outside said central portion and extending in opposite circumferential directions in relation to said axis portion;

whereby said valve body is displaceable by applying an elongated object onto one of said wing portions so as to rotate said axis portion.

5,285,815

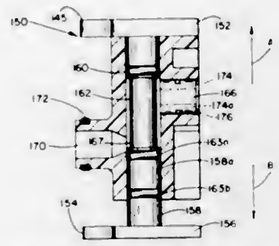
BEVERAGE DISPENSING VALVE HAVING QUICK DISCONNECT MOUNTING

Paul J. Henry, Anoka; Joseph W. Kieffer, Maple Grove, and W. Gregory Mertes, Andover, all of Minn., assignors to The Cornelius Company, Anoka, Minn.

Filed Nov. 21, 1991, Ser. No. 795,568

Int. Cl.[5] F17D *1/08*

U.S. Cl. 137—595 **11 Claims**



1. A quick disconnect for a liquid dispensing valve, comprising:

a disconnect body for securing to a liquid dispenser and to a source of the liquid to be dispensed, the disconnect body having a liquid inlet for providing fluid communication to the source of liquid and an outlet releasably connectable with the dispensing valve for providing communication of the liquid from the disconnect body to the dispensing valve,

a shaft extending through a bore in the disconnect body between a top end and a bottom end thereof in a direction transverse to the extension of the liquid inlet and liquid outlet, and the shaft having a smaller diameter portion along a segment thereof for defining an annular groove between the shaft and the bore in the disconnect body, the shaft also having a blocking portion and the shaft operable to alternately position the annular groove or the blocking portion between the liquid inlet and liquid outlet for permitting fluid communication and preventing fluid communication respectively between the liquid inlet and liquid outlet,

a top plate and a bottom plate, each plate having one or more locking tabs for providing locking cooperation with one or more corresponding tab receiving pockets in the dispensing valve, and the plates secured to opposite ends of the shaft so that when the shaft is positioned to permit fluid communication between the liquid inlet and liquid outlet the one or more locking tabs of the plates cooperate with the one or more corresponding tab receiving pockets for securing the valve to the disconnect body, and so that when fluid communication between the liquid inlet and liquid outlet is prevented the one or more locking tabs are not in locking cooperation with the one or more corresponding tab receiving pockets.

5,285,816

ONE WAY VALVE

Geoffrey F. Herlihy, Perth, Australia, assignor to Rapid Developments Ltd., Wembley, England

Filed Oct. 20, 1992, Ser. No. 963,852

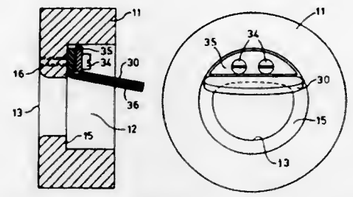
Claims priority, application Australia, Dec. 11, 1991, 88972/91

Int. Cl.[5] F16K *15/16*

U.S. Cl. 137—856 **10 Claims**

1. A non return valve comprising a relatively short tubular body having a fluid inlet opening at one end of the body and a fluid outlet opening at the other end of the body, an internal flow passage extending through the body from said inlet opening to said outlet opening, said inlet opening being substantially

in a form of a major segment of a circle, a seat being formed in said flow passage around an inner end of the inlet opening and perpendicular to the direction of fluid flow, and a flat valve member of circular configuration comprising a rigid part and a flexible part supported within the valve body by said flexible part such that said rigid part is located over said seat and normally covers said inlet opening, and said rigid part is hinge-



able inwardly about said flexible part to uncover said inlet opening; and the diameter of said circular valve member and the width of said flow passage are proportioned to each other such that said rigid part of said valve member abuts the periphery of said flow passage a few degrees before 90 degrees of inwardly hinged movement of said valve member thereby preventing further inwardly hinged movement thereof.

5,285,817

REMOTE-CONTROLLED INSERTION OF SHEATHING IN INACCESSIBLE MANIFOLDS AND JUNCTIONS

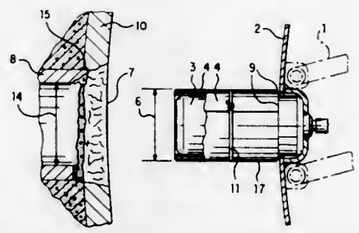
Alwin Sigel, Schlatt, Switzerland, assignor to Sika Robotics, Switzerland

Continuation of Ser. No. 619,094, Nov. 28, 1990, abandoned. This application May 10, 1993, Ser. No. 58,799

Claims priority, application Switzerland, Jan. 12, 1989, 04312/89/8

Int. Cl.[5] F16L *55/18*

U.S. Cl. 138—97 **10 Claims**



1. A device for remote-controlled installation of sheathing in a manifold, comprising:

an application device which insertable into a main piping of the manifold, wherein the application device has positioning means for positioning said application device on an internal wall of the main piping;

an inflatable balloon extendable from said positioning means in the direction of the internal wall of the main piping;

an air compressor connectable to said balloon; and

an expandable sheathing, said sheathing being rolled into a pre-tensioned state around said balloon and held by at least one wire therearound;

wherein said balloon, together with said expandable sheathing placed over said balloon and held tightly therearound by said at least one wire, is inserted into a junction of a branch piping of the manifold, and wherein inflation of said balloon causes said at least one wire to break so that said sheathing is released and thereby pressed against an interior wall of the branch piping as it springs open from its pre-tensioned state.

5,285,818

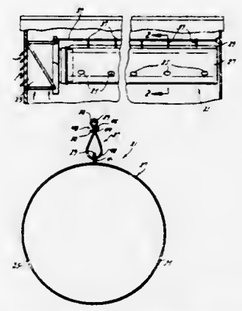
FLEXIBLE DUCT WITH METHOD OF MAKING SAME

August H. Hummert, III, 2746 Chouteau Ave., St. Louis, Mo. 63103

Continuation of Ser. No. 357,523, May 26, 1989, Pat. No. 5,137,057. This application Mar. 9, 1992, Ser. No. 848,675

Int. Cl.[5] F16L *11/04, 11/10*

U.S. Cl. 138—107 **8 Claims**



1. A flexible duct adapted to be suspended from a support, the duct comprising: an elongate seamless tube of flexible plastic film material whose wall is joined to itself along a longitudinal line to define a first relatively larger tube forming a longitudinally extending conduit and a second relatively smaller tube forming a longitudinally extending double-walled fin for suspending the duct, the double walls of the fin being heat-sealed together away from said longitudinal line only at longitudinally spaced apart locations to form reinforced regions each substantially the height of the fin and each having an aperture engageable by a fastener for suspending the duct; and at least one reinforcing strip heat-sealed over the reinforced regions of the fin.

5,285,819

DOBBY DRAWING DEVICE

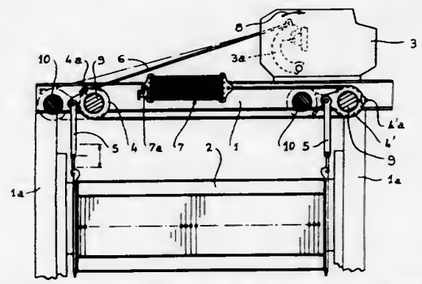
Jean-Paul Froment, Doussard; André Fumex, Talloires, and Jean-Pierre Pages, Faverges, all of France, assignors to S.A. des Etablissments Staubli (France), Faverges, France

Filed Jul. 17, 1992, Ser. No. 913,952

Claims priority, application France, Aug. 6, 1991, 91 10212

Int. Cl.[5] D03C *1/14*

U.S. Cl. 139—84 **4 Claims**



1. In a weaving mechanism of the negative type which includes a drawing device for controlling the movement of a heddle frame, a rocking member for manipulating the heddle frame and a pair of spaced actuating levers which are connected to the heddle frame, and wherein the drawing device includes connection means coupled to the rocking members and extending over the spaced actuating levers and to a set of

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return springs, the improvement comprising, said connection means including a single flexible connecting element having a first end coupled to the rocking member, an intermediate portion which is passed over a first of the actuating levers and then over a second of the actuating levers which guide the single flexible connecting element to the set of return springs, and said flexible connecting element having a second end connected to the set of return springs.

5,285,820

POWER LOOM LAY OR BATON DRIVE

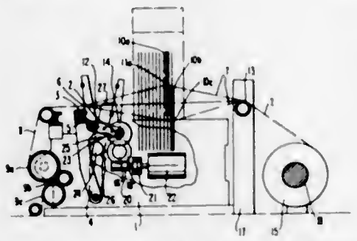
Friedrich W. Bassing, Emsdetten, Fed. Rep. of Germany, assignor to Jürgens Maschinenbau GmbH & Co. KG, Emsdetten, Fed. Rep. of Germany

Filed Jan. 19, 1992, Ser. No. 901,246

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1991, 4122249

Int. Cl.[5] D03D *49/60*

U.S. Cl. 139—190 7 Claims



1. A power loom, comprising a fabric batton; a fabric batton drive including a program-controlled servo motor operative for driving said fabric batton to make said fabric batton swing, and a transmission located between said servo motor and said fabric batton and formed as a self-locking transmission.

5,285,821

ARRANGEMENT FOR CONTROLLING FEED ELEMENTS ON A TEXTILE MACHINE

Lars-Berno Fredriksson, Kinna, Sweden, assignor to IRO AB, Ulricehamn, Sweden

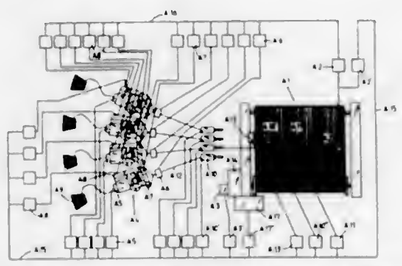
PCT No. PCT/SE90/00099, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991, PCT Pub. No. WO90/09475, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 15, 1990, Ser. No. 768,667

Claims priority, application Sweden, Feb. 16, 1989, 8900534

Int. Cl.[5] D03D *47/36, 47/38, 49/00*

U.S. Cl. 139—452 8 Claims



1. A yarn supply system for a textile machine, for providing a selected weaving pattern, comprising:

a plurality of yarn feeders each yarn feeder having a yarn supply, a yarn storage zone, a yarn winding-on element for supplying yarn from said yarn supply to said yarn storage zone, and a variable speed control for operating said yarn winding-on element, said variable speed control including a function control means for controlling operation of said variable speed control so that said yarn feeder continuously maintains in said storage zone a stock of yarn sufficient to provide the amount of yarn needed for achieving the selected weaving pattern of the textile machine;

a data-processing means containing programmed or stored information for establishing the selected weaving pattern, said data-processing means including yarn feed rate anticipating means for ascertaining, in advance and from the programmed or stored information, an upcoming change in yarn consumption of the textile machine in accordance with the selected weaving pattern, and signalling means operably connected to said variable speed controls for sending a control message to said variable speed control of one or more of said yarn feeders in response to a determination by said yarn feed rate anticipating means that an acceleration, speed or deceleration of the yarn in said one or more feeders would exceed one or more respective predetermined values if said control message is not sent;

said variable speed control further including means for adjusting a feed rate of said winding-on element in response to said control message in advance of the upcoming change in yarn consumption of the textile machine to prevent the acceleration, speed or deceleration of the yarn from exceeding said one or more respective predetermined values when said upcoming change in yarn consumption actually occurs.

5,285,822

CONTROL PANEL ARRANGEMENT FOR AN ELECTRONICALLY CONTROLLED WEFT PROCESSING UNIT

Paer Josefsson, Boras, and Thomas Hallberg, Goeteborg, both of Sweden, assignors to IRO AB, Ulricehamn, Sweden

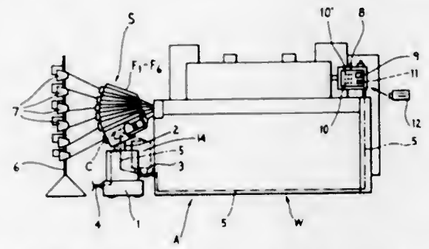
PCT No. PCT/EP90/00544, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991, PCT Pub. No. WO90/12135, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 6, 1990, Ser. No. 768,671

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911411

Int. Cl.[5] D03D *47/36, 49/02*

U.S. Cl. 139—452 6 Claims



1. In an electronically controlled weft yarn processing unit having a weft yarn feed system arranged separately in the vicinity of a weaving machine, the yarn feed system including a frame having attached thereto at least one yarn feeder having a separate drive means with an electronic control unit, the yarn feed system further including an input and indicating section connected to the electronic control unit of said one yarn feeder for adjusting at least one functional parameter thereof, the functional parameter being one of the group consisting of a speed limit of the drive means, a weft yarn length, a sensitivity of the monitoring and control elements, a reference value for a weft yarn store size, and a weft yarn store offset, and the weft yarn processing unit also having an operation and control panel provided on the weaving machine, the improvement wherein said input and indicating section is located within said operation and control panel on said weaving machine, said input and indicating section being connected to said electronic control unit of said one yarn feeder via a data transmission link for transmitting said at least one functional parameter to said one yarn feeder.

5,285,823

APPARATUS AND METHOD FOR EVACUATING BLOOD ASPIRATION TUBES

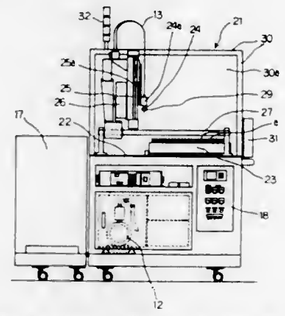
Kiyoteru Honda, Sasebo, Japan, assignor to Daiichi Industries Corporation, Nagasaki, Japan

Filed Sep. 20, 1991, Ser. No. 763,102

Claims priority, application Japan, Oct. 2, 1990, 2-65593; Jun. 24, 1991, 3-180322

Int. Cl.[5] G01N *3/02;* B65B *35/56*

U.S. Cl. 141—7 7 Claims



1. A method for automatically evacuating blood aspiration tubes comprising the steps of:

stoppering a number of blood aspiration tubes in an atmospheric pressure environment with rubber stoppers inserted in upper ends thereof for tightly sealing the inside of said blood aspiration tubes,

placing a number of stoppered blood aspiration tubes in a predetermined array on an arraying table,

mounting a plurality of air suction needles on a needle rest movable over said stoppered blood aspiration tubes,

moving said needle rest carrying said plurality of air suction needles along a horizontal path and a vertical path over said stoppered blood aspiration tubes arrayed on said arraying table, and driving said air suction needles with a downward vertical movement into the stoppers of respective ones of said blood aspiration tubes and, after evacuation of said blood aspiration tubes, withdrawing said air suction needles with an upward vertical movement from said stoppers,

sucking air simultaneously through said air suction needles so as to evacuate the inside of said blood aspiration tubes with a vacuum,

extracting said blood aspiration needles while pressing the stoppers of said blood aspiration tubes, by mounting a presser to a lower part of said needle rest and pressing said stoppers during upward vertical movement of said air suction needles such that said stoppers are prevented from moving upwards as said air suction needles are withdrawn, and

repeating the moving, sucking and extracting steps for a plurality of sets each consisting of a plurality of stoppered blood aspiration tubes.

5,285,824

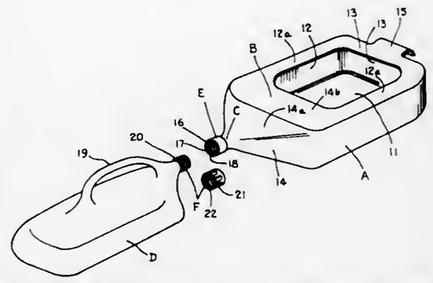
VEHICLE OIL DRAINAGE APPARATUS AND METHOD

Alexander P. Krstovic, 104 Cindy La., Easley, S.C. 29642

Filed Aug. 17, 1992, Ser. No. 931,009

Int. Cl.[5] F16N *31/00*

U.S. Cl. 141—1 2 Claims



1. The method of draining used engine oil from a vehicle comprising the steps of:

providing a catch pan and reservoir for containing oil when the catch pan is in tilted position at one end of the catch pan;

providing a tubular connector coupled on one end to a container and to said reservoir on the other end establishing a tubular passageway open for oil flow between the container and the reservoir;

opening the drainage plug of a vehicle permitting used oil to drain into the catch pan for retention therein in a level position wherein oil will not flow into the container;

tilting said catch pan and reservoir into upright position by elevating an end of said catch pan remote from said reservoir and said container thereby causing the used oil to flow through the passageway into the reservoir, thence through the passageway and into the container by the act of tilting said catch pan, reservoir and container;

disconnecting a coupling joining said reservoir to said container; and

closing the container for containment of the oil for transport to a suitable location.

5,285,825

METHOD AND APPARATUS FOR FILLING CONTAINERS

Robert C. Townsley, Bonnybridge, Great Britain, assignor to A.G. (Patents) Limited, London, England

PCT No. PCT/GB90/00900, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO90/15755, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 11, 1990, Ser. No. 776,333

Claims priority, application United Kingdom, Jun. 12, 1989, 8913434

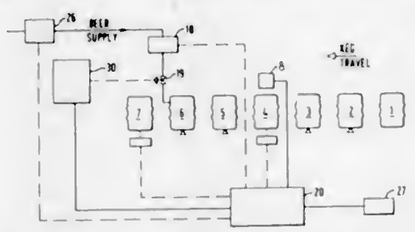
Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—9 25 Claims

1. A method of filling a succession of containers moving along a filling line with a predetermined net weight or volume of fluid by filling means located at a filling station on said line, comprising steps of: establishing by means of a control processing means a set point for the filling means which is arranged to deliver said predetermined weight or volume; entering into the control processing means tare weight data values in respect of the containers; successively moving said containers along said line to the filling stations where they are filled by said filling means in accordance with said set point; successively moving said containers to a gross weighing station where they are weighed full, and for each of said containers entering into the processing means a value representative of the gross weight of that particular container; for each of a batch of said containers, determining by said processing means a value representative of

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the net weight or volume of the contents based on the gross and tare weight values; calculating by said processing means, for said batch of containers, a value representative of average net weight or volume of the contents and, if necessary, applying a correction dependent on such value to the set point of the filling means established by the processing means, characterized by successively weighing a plurality of empty containers at a tare weighing station on said line upstream of the filling station, and for each of said containers storing in said processing means a value representative of the tare weight of that particular container, such values being output from a weighing means at said station; determining automatically, by means of



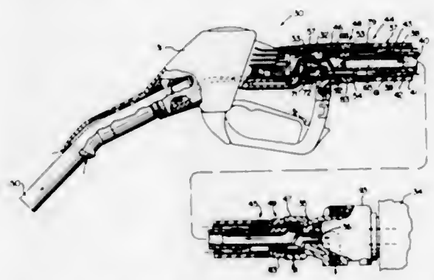
said processing means and for each respective container, which stored tare weight value corresponds to each respective gross weight value so entered into the processing means, whereby the value representative of net weight or volume of the contents is calculated on the basis of the tare weight of each individual container; and operating the processing means to apply said correction to the set point if the average net weight or volume of the contents for said batch of containers differs from the said predetermined net weight or volume by more than a given amount; wherein the specific gravity of the fluid being filled into the containers is input to the processing means to allow the net volume of the contents of the containers to be calculated.

5,285,826

FUEL DISPENSING SYSTEM, HOSE ASSEMBLY AND COUPLINGS THEREFORE AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, Mo., and Gary R. Long, Stourport-on-Severn, Great Britain, assignors to Dayco Products, Inc., Dayton, Ohio

Filed Mar. 11, 1992, Ser. No. 849,265
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—59 **36 Claims**



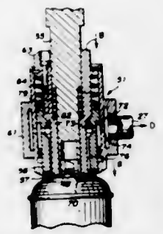
1. In a fuel dispensing system comprising a fuel dispensing nozzle construction having an outer annular fuel receiving inlet and an inner vapor outlet disposed substantially concentrically within said outer annular fuel receiving inlet, a fuel dispensing pump construction having an outer annular fuel dispensing outlet and an inner vapor inlet disposed substantially concentrically within said outer annular fuel dispensing outlet, and a hose assembly having a first fluid passage therein for conveying fuel from said outer annular fuel dispensing outlet to said outer annular fuel receiving inlet and a second fluid passage therein for returning vapors from said inner vapor outlet to said inner vapor inlet, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining an inner fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining an outer fluid passage therebetween, the improvement wherein said inner fluid passage comprises said first fluid passage and said outer fluid passage comprises said second fluid passage.

5,285,827

DEGASSING AND DECAPPING APPARATUS

Walter E. Gonzalez-Miller, Campbell, and Jacques M. Dulin, Morgan Hill, both of Calif., assignors to Depressurized Technologies International, Inc., San Jose, Calif.

Division of Ser. No. 715,544, Jun. 14, 1991, Pat. No. 5,174,344, which is a division of Ser. No. 429,852, Oct. 30, 1989, Pat. No. 5,067,529. This application Dec. 18, 1992, Ser. No. 992,996
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—65 **13 Claims**



1. Aerosol can depressurizing apparatus for removing propellant gas from an aerosol can having a can cap at one end crimpingly joined to said can along a rim, comprising in operative combination:

a) means for depressurizing said can comprising a vacuum depressurizing head assembly which includes:

i) means for isolating a propellant evacuation zone from the ambient atmosphere disposed in a surface of an aerosol can;

ii) means for puncturing at least one hole in said can within the area isolated in said propellant evacuation zone to permit release of pressurized propellant gas from said can when said isolation means is engaged with said can;

b) means for aligning an aerosol can to be depressurized into position with said vacuum head assembly so that said can surface is engageable by said isolation means; and

c) means for withdrawing by vacuum said pressurized propellant gas from said can via said at least one hole; and said vacuum withdrawing means is disposed in association with said hole puncturing means.

5,285,828

APPARATUS FOR INTRODUCING FILLER MATERIAL INTO CONTAINERS

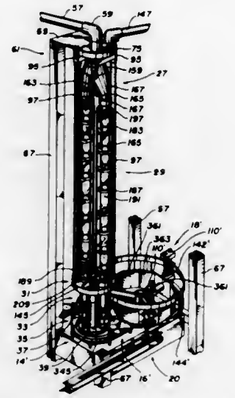
Stavros Mihail, Seattle, and Marvin I. Berg, Tacoma, both of Wash., assignors to Promation Incorporated, Seattle, Wash.

Filed May 28, 1992, Ser. No. 890,560
Int. Cl.[5] B65B *39/12*
U.S. Cl. 141—71 **30 Claims**

1. An apparatus for introducing solid filler material in a fluid carrier into a measuring chamber, the apparatus comprising:

a diverter subsystem for separating a stream of solid filler material in the fluid carrier into at least two separate streams; and

a concentrator subsystem for separating the solid filler material in one of the streams from the fluid carrier and compressing the solid filler material, the concentrator subsystem comprising an elongate inner tube within an elongate



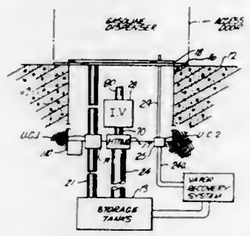
outer tube, the inner tube including a first end for receiving solid filler material and fluid carrier from the diverter subsystem and a second end for dispensing the filler material, the inner tube including openings that allow the fluid carrier to escape the inner tube, while maintaining the filler material within the inner tube, the inner tube and the outer tube defining a chamber where fluid carrier that escapes the inner tube is collected.

5,285,829

GASOLINE CONTAINMENT SYSTEMS WITH LEAK-RESISTANT PLASTIC FITTINGS

Sergio M. Bravo, 2872 Tigertail Dr., Los Alamitos, Calif. 90720

Filed Feb. 14, 1992, Ser. No. 836,787
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—88 **28 Claims**



1. An apparatus for reducing pollution associated with gasoline handling equipment and a gasoline supply pipe leading to such equipment, comprising:

containment means for collecting gasoline spilling from the gasoline handling equipment, the containment means having an aperture defined therein;

a gasoline supply pipe passing through the aperture in the containment means and leading to the gasoline handling equipment; and

a hollow fitting for sealing the aperture and fixing the supply pipe with respect to the box, the fitting comprising:

a hollow main body, a hollow deformable element, a hollow seating piece for seating the deformable element and being attachable to one end of the main body, and hollow clamping means for threading onto the seating piece and for camming the deformable sealing element radially inward, wherein the supply pipe is disposed through the hollow fitting, and the main body and seating piece are attached, and there is one gasket disposed between the main body and the containment means and a further gasket disposed between the seating piece and the containment means, and wherein the hollow clamping means is threaded onto the seating piece so as to cam the deformable sealing element against the supply pipe,

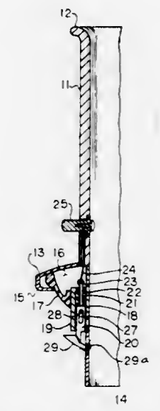
wherein there is a secondary pipeline surrounding the supply pipeline, and the main body has an adaptor section at an end of the main body remote from the one end, the adaptor section having a cylindrical extension for connection with the secondary pipeline.

5,285,830

MOTORCYCLE FUEL TANK EXTENSION ADAPTER

Lloyd C. Hilpipre, Jr., 1420 Pearl Ave. #2, Las Vegas, Nev. 89104

Filed Apr. 1, 1992, Ser. No. 861,566
Int. Cl.[5] B67D *5/06*
U.S. Cl. 141—312 **5 Claims**



1. A motorcycle fuel tank extension adapter arranged for reception within a motorcycle fuel tank, wherein the adapter comprises,

a fill tube, the fill tube defined about an axis, the fill tube including a lower distal end and a mounting housing fixedly secured to the fill tube in surrounding relationship concentric relative to the axis above the lower distal end, the mounting housing including a plurality of spaced locking tabs directly radially relative to the axis projecting from the housing in a diametrically aligned relationship relative to the fill tube and the mounting housing, and

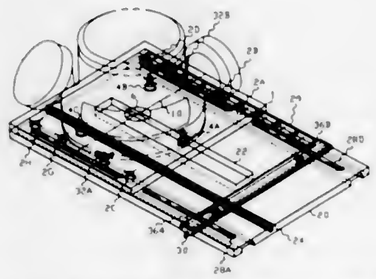
the mounting housing includes an annular housing flange orthogonally oriented relative to the axis and spaced from the fill tube, and the mounting housing including a housing cavity within the mounting housing above the annular flange, with a conical seal positioned within the housing cavity extending downwardly to the fill tube, and

the mounting housing includes a mounting housing inner cylindrical sleeve aligned with the fill tube, and a housing outer sleeve concentric and coextensive relative to the inner cylindrical sleeve, and each locking tab including a locking lug reciprocatably mounted within the locking lug cavity in biased communication with the respective locking tab, with each locking lug including a locking lug

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spring within the locking lug cavity biasing the locking lug exteriorly of the locking lug cavity, and each locking tab pivotally mounted to the fill tube below the mounting housing, with a spring hinge pivotally mounting the locking tab in a biased relationship towards the fill tube, and each locking lug including a locking lug rod fixedly mounted to the locking lug, with the locking lug rod extending through the locking lug cavity and extending into the housing cavity, and each upper distal end of each locking lug rod including a flexible pull line mounted thereto, the flexible pull line extending through the housing cavity and secured to a button member, with each button member directed into the fill tube, whereupon manually directing each button member into the fill tube effects displacement of each locking lug relative to a respective locking tab permitting upward pivotment of each locking tab.

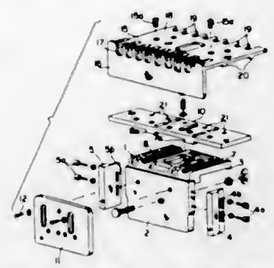
5,285,831
DADO DITTO
Clark L. Woolgar, 6209 W. Georgia Ave., Glendale, Ariz. 85301
Filed Sep. 20, 1991, Ser. No. 763,453
Int. Cl.[5] B27C *5/00*
U.S. Cl. 144—1 F **5 Claims**



1. A guide attachment adapted to be mounted to the underside of a router and comprising;
a generally top plate member having a router blade opening centrally located in said top plate;
a lower plate with an elongated router blade opening located and sized to coincide with said blade opening in said top plate in selected settings;
fastener means for said top plate and said bottom plate positioned and shaped for releasably securing said top plate to said bottom plate in selected positions;
scale indicia on said lower plate corresponding to the perpendicular distance between the center of the follower and the center of said blade opening in said top plate;
follower slot in said lower plate extending across said lower plate at a right angle to said scale indicia.

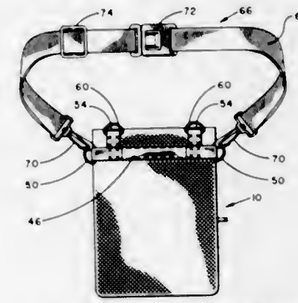
5,285,832
DEVICE FOR MORTISE, TENON AND DOVETAIL JOINERY
Jeremy H. Gibson, Eastlake, Ohio, assignor to Leichtung, Inc., Cleveland, Ohio
Filed Sep. 3, 1992, Ser. No. 928,456
Int. Cl.[5] B27M *3/00*; B27C *5/00*
U.S. Cl. 144—144.5 R **10 Claims**

1. A device for cutting dovetail mortise and tenon joints consisting of a base unit, including a main frame, said main frame having an upstanding leg and an offstanding portion, a cross slide mounted on the offstanding portion, means to adjustably position said slide, at least one stop plate means at one side of the upstanding leg, and a dovetail cutting template consisting of a first pin locating section and a second tail locating section fixed to each other, said template being mounted on the cross slide, said first section of the template having a series of uniformly spaced openings in the edge at the juncture of the sections, the second section having a series of tongues extending from an edge remote from the openings, and means to fix



the main frame, cross slide, spacer plate and cutter means template to position a workpiece for operations to be performed at their edges, whereby to permit close fitting interengagement thereof.

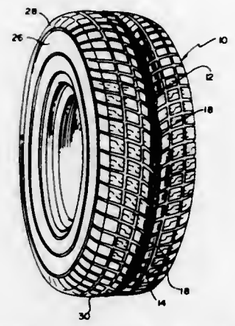
5,285,833
THEFT RESISTANT PURSE
Susan I. Haxby, 327 E. Pearson, Apt. 1, Anaheim, Calif. 92802
Filed Mar. 29, 1993, Ser. No. 47,568
Int. Cl.[5] A45C *13/18*
U.S. Cl. 150—102 **9 Claims**



1. A purse, designed to be worn by an individual, said purse being specifically designed to reduce the possibility of said purse being snatched away from the individual, wherein said purse has opposing lateral sides, said purse comprising:
a panel of material, said panel of material having a fold along which said panel of material is adapted to be folded to create an interior surface of said panel of material and an exterior surface of said panel of material, said interior surface of said panel of material being substantially concealed when said panel of material is in a folded state;
at least one interior pocket formed on said interior surface of said panel of material; and
securement means for securing said panel of material to the individual, said securement means being located on said panel of material substantially adjacent said fold; wherein said securement means comprises:
a first pair of D-rings, one each of said first pair of D-rings being attached to said panel of material adjacent said fold and on one each of said opposing lateral sides;
a second pair of D-rings, said second pair of D-rings being attached to said exterior surface of said panel of material substantially on said fold and spaced from one another along the axis of said fold: and

strap means for attaching selectively to either said first pair of D-rings or said second pair of D-rings.

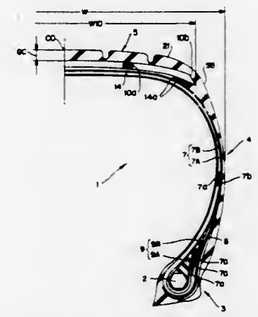
5,285,834
NO-SKID SPRING CHAIN
Robert E. Givens, 2231 S. Illinois Ave., Carbondale, Ill. 62901
Filed Feb. 4, 1993, Ser. No. 13,730
Int. Cl.[5] B60C *27/06*
U.S. Cl. 152—208 **3 Claims**



1. In combination with a pneumatic tire of the type having a central tread area circumferential groove therein, a loop-type skid chain construction for application to and disposition about the center tread area of said tire, said skid chain construction comprising a length of chain having a generally square cross sectional shape with rounded corners and opposite end portions with terminal end links, a generally cylindrical expansion spring interposed between and having opposite ends semi-permanently anchored to said terminal end links, the length of said chain plus the effective length of said spring defining a skid chain loop of slightly less than the circumference of said groove measured approximately at the ½ depth level of said groove when said spring is collapsed, said chain and spring being seated in said groove and projecting radially outwardly therefrom between ¼ and ¾ inches, the generally square cross sectional shape of said length of chain with rounded corners and the cylindrical configuration of said spring enabling said spring and the adjacent chain end portions, when comprising the last portion of chain to pass over the outer side tread area of said tire, to be "rolled" thereover.

5,285,835
HIGH SPEED RADIAL TIRE WITH DURABLE BEAD PART
Kiyoshi Ueyoko, Osaka; Tsuneyuki Nakagawa, Kobe; Mikio Takatsu, Takarazuka; Hiroyuki Noma, Kobe, and Yoshihide Kojima, Takarazuka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Continuation of Ser. No. 403,311, Sep. 6, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 794,646
Claims priority, application Japan, Sep. 6, 1988, 63-223941
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] B60C *3/00, 9/00, 9/08, 11/00*
U.S. Cl. 152—209 R **1 Claim**

1. A high-speed radial tire and rim assembly comprising
a rim, said rim having at least one radial rim flange; and
a tire, said tire including
a carcass having a radial construction composed of at least one ply of carcass cords aligned at an inclination of 70 to 90 degrees against the equator of a tire and fixed by folding over both ends around the bead cores of right and left beads, and
a belt layer comprised of plural plies of belt cords superposed at an inclination of 0 to 20 degrees against the equator of the tire,
wherein the thickness ratio (Gc−Gs)/Gc, that is, the ratio of the difference between the crown tread thickness Gc, which is a thickness of the tread on the equator of the tire, and the shoulder tread thickness Gs, which is a thickness of the tread of the ground contact surface at the outer edge in the tire axis direction, at a position where the ground contract surface in the tire axis direction is of the widest width, when mounted on said rim, inflated with a specified internal pressure and loaded with a specified load, Gc−Gs, to the crown tread thickness Gc is 0 to 0.3;
wherein the ratio X/H of a distance X, which is the distance in the tire axis direction from a bead heel point to an inward end in the tire axis direction of the bead core, to



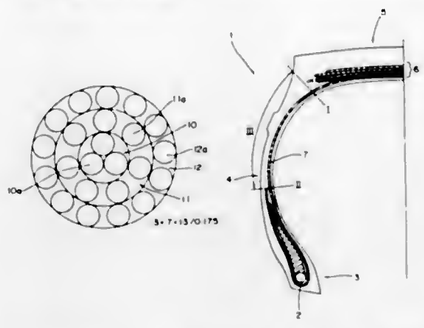
the height H of said rim flange, which is a distance in the radial direction from the bead heel point to the radially outer end of said rim flange, is 0.8 to 1.05, and
wherein an outward end in the radial direction of the bead core is positioned inside the radial direction of the line drawn in the tire axis direction via said outer end of said rim flange, and the ratio Y/H of a distance Y in a the radial direction from said line to said outward end of the bead core to the height H is 0 to 0.3, and
said carcass is composed of composite elastic cords which elongate by 5 to 10% upon 5 kgf loading and by 9 to 15% upon 10 kgf loading, and have an initial elasticity modulus of 130 to 200 kgf/mm^2, said composite elastic cord being made from at least two materials of the group consisting of nylon, polyester, aromatic polyamide, carbon and metal.

5,285,836
3+7+13 STEEL CORD AND TIRE INCLUDING SAME
Kazuhiko Kawamura, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 29, 1992, Ser. No. 827,931
Claims priority, application Japan, Jan. 31, 1991, 3-56254
Int. Cl.[5] B60C *9/00, 9/02, 9/18*; D07B *1/06*
U.S. Cl. 152—451 **10 Claims**

1. A steel cord comprising:
a core layer composed of three wires;
an intermediate layer composed of seven wires, a space ratio of the intermediate layer being in the range from greater than 25% to 34%; and
an outer layer composed of 13 wires, a space ratio of the outer layer being in the range from 10% to 20%.
6. A tire manufactured by using a steel cord comprising:
a core layer composed of three wires;
an intermediate layer composed of seven wires, a space ratio

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of the intermediate layer being in the range from greater than 25% to 34%; and



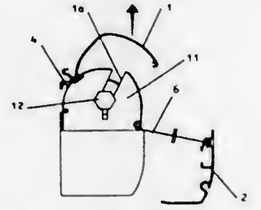
an outer layer composed of 13 wires, a space ratio of the outer layer being in the range from 10% to 20%.

5,285,837

AWNING

Carlo M. Pozzi, Ruvigliana, Switzerland, assignor to Fiamma S.P.A., Cardano Al Campo (VA), Italy

Filed Jun. 10, 1992, Ser. No. 896,225
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132362
Int. Cl.[5] E04F *10/00*
U.S. Cl. 160—22 **11 Claims**



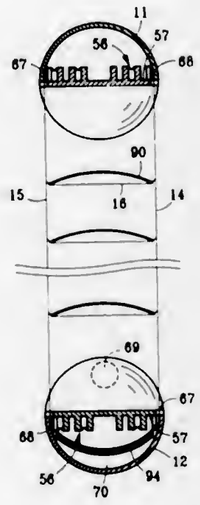
1. An awning assembly comprising a housing having a side adapted to be permanently installed on a structure and a side including a run-out opening adapted to receive and permit removal of a movable shutter section; an awning roll rotatably supported on a shaft and accommodated within aid housing, said awning roll including an extensible end attached to said shutter section; and an actuating mechanism for winding up said awning roll; said housing further having an openable cover section and respective first and second side sections including means for holding respective first and second ends of said shaft of said awning roll in which at least one of said first and second ends of said shaft extends through the respective first and second side sections, said actuating mechanism being associated with the first side section and engaging said first end of said shaft, the second side section including shaft mounting means for permitting the second end of said shaft held by said second side section to be inserted and removed from said second side section a sufficient amount to allow insertion and removal of said awning roll from the housing, when said cover section is opened, without removing either housing side section.

5,285,838

ROTARY TUBULAR HEADRAIL BLIND DESIGN

William H. Rapp, Buena Park, Calif.; Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Topeka, Kans., assignors to Nien Made Enterprise Co., Ltd., Chang Hua, Taiwan

Filed Dec. 4, 1992, Ser. No. 985,960
Int. Cl.[5] E06B *9/36*
U.S. Cl. 160—168.1 **8 Claims**



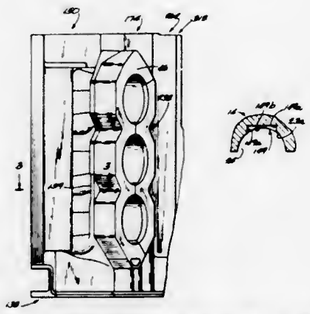
1. A rotary tubular headrail blind comprising
a rotary tubular headrail with a plurality of semi-circular recessions with openings facing downward;
a tubular foot rail with a plurality of semi-circular recessions with openings facing upwards;
a plurality of holders each firmly secured in a semi-circular recession of the headrail and the foot rail, each having a top plate with a hole in the middle, a first end and a second end at furthest sides, and two semi-circular extension elements extended downward from the top plates with an appropriate gap between them;
at least two ladder sets each fixed to a holder at the headrail, extending downward and fixed to another holder at the foot rail, comprising an inner ladder tape fixed to the first ends of both holders, an outer ladder tape fixed to the second ends of both holders, and a plurality of horizontal connecting tapes running in parallel and equal distance between the inner and outer ladders;
a soft lift cord to lift and lower the foot rail linearly, with its two ends extended from the headrail downward vertically to the foot rail and secured to the middle holes of the respective holders;
a plurality of slats placed above the respectively horizontal connecting tapes, each slat having a hole at an end for passing through of the lift cord;
a lifter to retain the soft lift cord tentatively; and
a tilter to rotate the headrail and to drive the inner and outer ladders to displace linearly in two opposite directions when the headrail is rotate in a way that the inner and other ladders are extended to a gap between the two semi-circular extension elements of the holder to maintain close and parallel to each other so as to tilt the slats for a degree same with the degree of rotation.

5,285,839

INTERNAL COMBUSTION ENGINE AND METHOD FOR MAKING SAME

Russell J. Van Rens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 512,848, Apr. 23, 1990, abandoned.
This application Feb. 26, 1992, Ser. No. 841,905
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] B22C *7/02*, *9/04*
U.S. Cl. 164—34 **13 Claims**



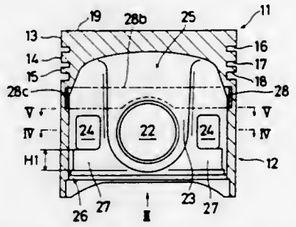
1. A method for manufacturing an engine block, said method comprising the steps of providing a lost foam pattern assembly comprising a crankcase section including a first surface and first and second mounting surfaces spaced from said first surface, a right cylinder section which is fixed to said first mounting surface and which includes a transfer passage outer end and a second locator, a left cylinder section which is fixed to said second mounting surface and which includes a transfer passage outer end and a second locator, utilizing said pattern assembly in a lost foam casting process to produce an engine block including locators corresponding to said locators of said pattern assembly and a first surface corresponding to said first surface of said pattern assembly, and using said locators of said engine block to locate said engine block while machining said first surface of said engine block.

5,285,840

METHOD AND APPARATUS FOR MANUFACTURING PISTON OF INTERNAL COMBUSTION ENGINE

Masamichi Hayashi; Yasuhiro Kawabata, both of Anjo; Shiro Machida, Okazaki, and Takanori Kamiya, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1992, Ser. No. 952,349
Claims priority, application Japan, Sep. 30, 1991, 3-252330
Int. Cl.[5] B22D *19/02*
U.S. Cl. 164—132 **8 Claims**



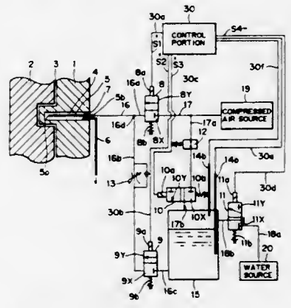
1. A method for manufacturing a piston of an internal combustion engine comprising the steps of:
forming a space by setting a pair of symmetrically divided holding dies having projection portions and a core being in contact with the projection portions to form through holes in a skirt portion of the piston, the core having a depression to form a rib on a base portion of the piston;
setting a strut on the core to cast the strut into the skirt portion of the piston before forming the space, the strut having a pair of straight portions and a pair of curved portions, wherein a radius of the piston is larger than each of radii of the curved portions, and wherein a center of each of the radii of the curved portions is located outside of a center of the piston;
pouring a melted aluminum alloy into the space;
removing the holding dies and the core; and
finishing the piston.

5,285,841

METAL MOLD COOLING DEVICE

Noriyoshi Yamauchi; Hitoshi Ishida; Nobuo Iwakuni, and Akio Kobashi, all of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Feb. 1, 1993, Ser. No. 11,539
Claims priority, application Japan, Feb. 12, 1992, 4-59059
Int. Cl.[5] B22D *27/04*
U.S. Cl. 164—348 **7 Claims**



1. A metal mold cooling device for cooling a metal mold formed with a cooling hole, the device including a cooling pipe inserted into the cooling hole, the cooling pipe having one end serving as a cooling liquid ejection opening and another end connected to a pipe member for supplying the cooling liquid, the pipe member being branched into a first pipe connected to a cooling liquid supplying means and a second pipe connected to a compressed air supplying means, and the improvement comprising:
the compressed air supplying means comprising a first change-over valve and a compressed air source, the compressed air in the compressed air source being supplied to the cooling pipe upon valve opening operation of the first change-over valve; and
the cooling liquid supplying means comprising a second change-over valve, a hermetical cooling liquid tank connected to the second change-over valve, and a third change-over valve disposed between the compressed air source and the cooling liquid tank, the compressed air being applied to a surface of the cooling liquid accumulated in the cooling liquid tank upon valve opening operation of the third change-over valve, the cooling liquid in the cooling liquid tank being supplied to the cooling pipe under pressure during a valve opening phase of the second change-over valve by making use of a pressure of the compressed air introduced into the cooling liquid tank through the third change-over valve.

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5,285,842

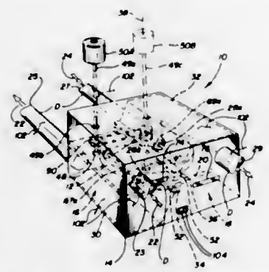
HEAT RECOVERY VENTILATOR

Catherine J. Chagnot, Athen, Ohio, assignor to Stirling Technology, Inc., Athens, Ohio

Continuation-in-part of Ser. No. 665,976, Mar. 7, 1991, Pat. No. 5,183,098, which is a continuation-in-part of Ser. No. 395,044, Aug. 17, 1989, Pat. No. 5,069,272. This application Jul. 12, 1991, Ser. No. 729,220

Int. Cl.[5] F28D *19/04*

U.S. Cl. 165—7 30 Claims



1. A compact heat recovery ventilator comprising:
a housing having first and second sections to convey separate first and second streams of air;
a heat exchanger rotatably disposed in said housing for rotation about a central axis, and adapted to intersect said first and second sections;
means for forcing said separate first and second streams through said first and second sections;
a source of rotary power;
first means for transmitting said rotary power to rotatably drive said heat exchanger; and
second means for transmitting said rotary power to drive said means for forcing, said second means for transmitting comprising a central shaft rotatably driven by said source of rotary power, said central shaft extending through the central axis of said heat exchanger and freely rotatable therethrough and connected to said means for forcing.

5,285,843

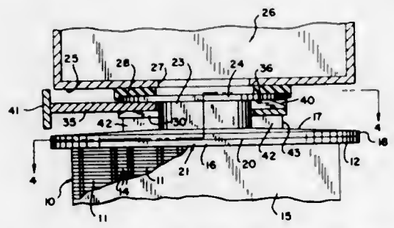
MOUNTING ASSEMBLY FOR MODULAR HEAT EXCHANGER

Robert F. Dierbeck, 2707 Hall Rd., Hartford, Wis. 53027

Filed Dec. 8, 1992, Ser. No. 986,988

Int. Cl.[5] F28F *9/26, 7/00*

U.S. Cl. 165—69 11 Claims



1. In combination, a replaceable heat exchanger module of the type providing generally axial through-flow of a heat exchanging fluid between opposite inlet and outlet openings defined by respective inlet and outlet flanges disposable in fluid communication with corresponding openings in inlet and outlet headers and having end chambers interconnecting the module to the inlet and outlet flanges, the end chambers including an enclosing wall which is flexible in the axial direction of flow to accommodate axial elongation of the module;
a mounting bracket assembly associated with each flange having a slot receiving the flange and attachable to a header wall so as to sealingly mount the module thereto; and
flexible cushioning means disposed between each mounting bracket and the enclosing wall of the associated end chamber for stabilizing the module against excessive movement and for damping vibration thereof.

5,285,844

HEATING OR COOLING ROLLS

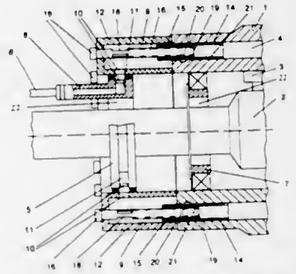
Josef Schneid, Vogt, Fed. Rep. of Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Jan. 5, 1993, Ser. No. 761

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202033

Int. Cl.[5] F28D *11/02*; F28F *5/02*

U.S. Cl. 165—89 13 Claims



1. Heating or cooling roll with a roll jacket arranged to be rotatable about a fixed carrier and shiftable in a pressure plane with respect to the carrier and mounted on it by means of at least one supporting element and having axially running peripheral borings for a heat carrying fluid, the borings being connected, at at least one end of the roll via a fixed ring shaped part, to each other and/or to the feed-in or feed-out lines of the heat carrying fluid; characterized in that said ring shaped part is sealed against the roll jacket and said feed-in and feed-out lines are arranged outside the roll, and in that the ring shaped part is mounted so as to be rotatable in the roll jacket as well as possessing an opening which allows movement in the pressure plane with respect to the carrier.

5,285,845

HEAT EXCHANGER ELEMENT

Karl Östbo, Stockholm, Sweden, assignor to Nordinvent S.A., Argentina

Continuation of Ser. No. 816,752, Jan. 2, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 997,615

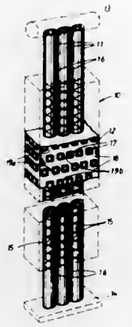
Claims priority, application Sweden, Jan. 15, 1991, 9100124-8

Int. Cl.[5] F28D *7/00*

U.S. Cl. 165—168 10 Claims

1. An element for a heat exchanger device comprising a cast metal body having a first predetermined length, and a plurality of tubes partially enclosed within said cast body, said cast body being cast in direct contact with said plurality of tubes along at least substantially the entire first predetermined length, said plurality of tubes being arranged adjacent to each other to provide mutual support for each other said plurality of tubes being connected to each other outside of said body during casting of the metal body and having a second predetermined length, said second predetermined length being longer than said first predetermined length, said tubes including external

rilling arranged thereon along substantially the entire first predetermined length and extending in opposite directions so



that said external rilling forms a criss-cross pattern on said tubes to increase strength and heat transfer thereof.

5,285,846

THERMAL MINERAL EXTRACTION SYSTEM

Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London, England

PCT No. PCT/GB91/00464, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/15654, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 27, 1991, Ser. No. 930,507

Claims priority, application United Kingdom, Mar. 30, 1990, 9007147

Int. Cl.[5] E21B *36/00*

U.S. Cl. 166—61 22 Claims



1. An apparatus for thermal extraction of material from an underground formation comprising:
a surface installation,
production tubing extending downhole from said surface installation for guiding said material thereto from said underground formation,
passage means receiving a heated fluid and extending along at least a portion of said production tubing and
a heat source for heating said fluid, said heat source being located to extend along at least a portion of said production tubing.

5,285,847

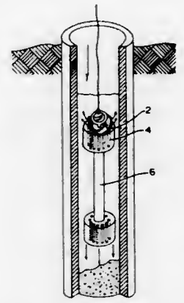
WATER AND GROUND WATER MONITORING WELL SURGE BLOCK

Sharon Halper, 305 Vista Way, Martiner, Calif. 94553, and Robert S. Baker, 206 S. Claremont Ave., San Jose, Calif. 95127

Filed Sep. 25, 1992, Ser. No. 950,486

Int. Cl.[5] E21B *37/00*

U.S. Cl. 166—177 8 Claims



1. A water well surge bock apparatus for agitating sand and gravel particles within well shafts by up and down motion, said apparatus comprising: upper and lower surge blocks, said blocks comprising cylindrical portions having an upper and lower surface, a shaft in connection with said upper and lower surge blocks, said upper surge block connected to said shaft at a point above said lower surge block, said upper surge block having a flexible membrane in connection with said upper surface of said surge block for flexing away from said upper surface upon downward movement of said surge block, said upper surge block having a plurality of apertures running through said cylindrical portion and in connection with said upper and lower surfaces of said upper surge block, said lower surge block having a plurality of apertures running through said cylindrical portion and in connection with said upper and lower surfaces of said lower surge block, said apertures of size suitable to retard downward movement of said particles when said apparatus moves upward.

5,285,848

METHOD FOR IMPROVING THE RECOVERY OF OIL FROM A SUBTERRANEAN FORMATION BY SOLVENT CONCENTRATION GRADING

Harry L. Chang, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 16, 1992, Ser. No. 976,748

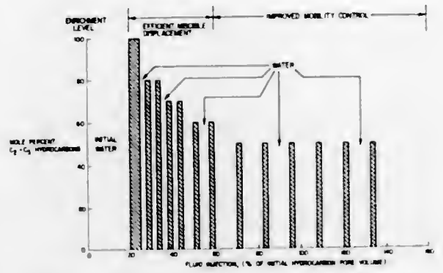
Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—279 11 Claims

1. A method for increasing oil recovery from a subterranean formation, the method consisting essentially of:
a) injecting a slug of water equal in volume to at least about 20% of an initial hydrocarbon pore volume of the formation into the formation;
b) thereafter injecting a slug of solvent, the solvent consisting of materials selected from the group consisting of carbon dioxide, nitrogen, methane, hydrocarbons containing from 2 to about 5 carbon atoms and mixtures thereof, into the formation in a volume equal to from about 2% to about 10% of the initial hydrocarbon pore volume of the formation;
c) thereafter injecting a water slug in an volume equal to from about 0.5 to about 3.0 times the volume of the preceding solvent slug;
d) repeating the solvent and water injection steps for a plu-

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rality of cycles with the amount of light hydrocarbons containing from 2 to about 5 carbon atoms in the solvent decreasing from about 90 to about 100 mole percent in the initial solvent to about 30 mole percent in the final solvent and with the volume of solvent in each slug after the first



being from about 0.5% to about 2.0% of the initial hydrocarbon pore volume of the formation; and

e) injecting after the last solvent slug, a slug of water equal in volume to at least about 20% of the initial hydrocarbon pore volume of the formation.

5,285,849

FORMATION TREATING METHODS

Billy W. Surles, and Robert H. Friedman, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 718,513, Jun. 21, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 909,479

Int. Cl.[5] E21B *33/138*

U.S. Cl. 166—295 **43 Claims**

1. A method for treating a well penetrating a subsurface formation and in fluid communication with at least a portion of the a subsurface formation, the temperature of the formation being from 60° F. to 180° F., comprising:

(a) selecting an acid catalyst having a pK which will cause polymerization of a polymerizable resin at the formation temperature in from 1 to 24 hours;

(b) providing a fluid comprising the polymerizable resin, a polar organic diluent for the resin, and a predetermined concentration of the oil soluble acid catalyst capable of causing polymerization of the resin at formation temperatures, said acid being selected from the group consisting of toluene sulfonic acid, hydrochloric acid, sulfuric acid, nitric acid and mixtures thereof;

(c) injecting said fluid into the formation to enter and saturate at least a portion of the formation adjacent to the well; and

(d) allowing the injected fluids to remain in the formations for at least four hours to accomplish at least partial polymerization of the resin, forming a consolidated resin-sand mass around the wellbore.

5,285,850

WELL COMPLETION SYSTEM FOR OIL AND GAS WELLS

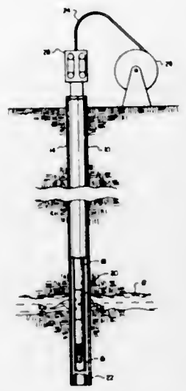
Russell I. Bayh, III, Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Oct. 11, 1991, Ser. No. 775,287

Int. Cl.[5] E21B *34/10*

U.S. Cl. 166—321 **17 Claims**

1. A completion system for producing fluids from a downhole formation through reeled tubing disposed in a wellbore and extending to the well surface, said system comprising a surface controlled subsurface safety valve located at a downhole location in the wellbore to normally prevent fluid flow through the reeled tubing; a control line extending through the reeled tubing from the well surface to the safety valve to pass control fluid to the safety valve to open the safety valve; and



means for releasably connecting the safety valve to the reeled tubing.

5,285,851

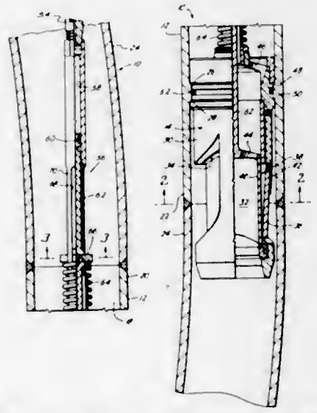
COILED TUBING SAFETY VALVE AND ASSEMBLY

Ronald E. Pringle, Houston, Tex., assignor to Camco International Inc., Houston, Tex.

Filed Aug. 12, 1992, Ser. No. 929,877

Int. Cl.[5] E21B *34/12*

U.S. Cl. 166—326 **14 Claims**



1. A coiled tubing safety valve assemhly comprising,

a coiled tubing tubular member having a bore therethrough and having first and second ends connected in a coiled tubing,

a safety valve, said valve including

a housing having a passageway and a valve closure member in the passageway moving between open and closed positions for controlling fluid flow through the passageway,

a flow tube telescopically moving in the housing for controlling the movement of the valve closure member, and

hydraulic piston and cylinder fluid actuating means positioned above and connected to the flow tube, and

a hydraulic control line connected to the hydraulic actuating means and extending upwardly, and at least some of the parts of the safety valve being flexible for allowing bending about its longitudinal axis and said safety valve positioned in the bore, and

holding means in the bore for engaging and holding the flexible safety valve in the bore.

5,285,852

WELLHEAD ISOLATION TOOL AND METHOD OF USE THEREOF

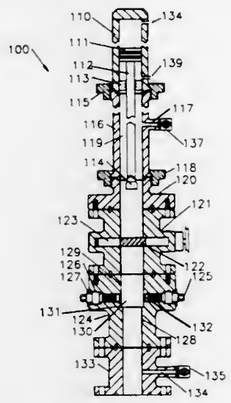
Roderick D. McLeod, 5104 - 125 Street, Edmonton, Alberta, Canada

Filed Jul. 27, 1992, Ser. No. 909,716

Claims priority, application Canada, Nov. 15, 1991, 2055656-01

Int. Cl.[5] E21B *19/00, 23/04, 33/02*

U.S. Cl. 166—379 **10 Claims**



1. A wellhead isolation tool for attachment to an oil and gas wellhead, the wellhead including tubing, the wellhead isolation tool comprising:

a pressure tight cylindrical unit having a cylindrical bore and a lower flange;

a rod forcibly reciprocatable entirely within the cylindrical bore of the unit, the rod having a lower end and a latch attached to the lower end of the rod;

a mandrel attachable onto and detachable from the latch, the mandrel having a sealing nipple;

an isolation valve attached and sealed to the lower flange of the cylindrical unit;

means for attaching the wellhead isolation tool to the wellhead;

the cylindrical unit and the isolation valve defining a sealed bore for the mandrel and rod to be sealed entirely within;

and the mandrel being movable from a first position out of the wellhead and entirely sealed within the sealed bore to a second position with the sealing nipple sealed against the tubing.

7. A method of isolating an oil and gas wellhead from high pressure, the wellhead having a wellhead valve which is initially closed and the wellhead having well tubing, the method comprising the steps of:

providing a rod and mandrel latched to the rod, the rod and mandrel being entirely sealable within a sealed wellhead isolation tool, the mandrel having a sealing nipple on its lower end, the wellhead isolation tool having a cylindrical sealed hydraulic means for receiving and reciprocatably moving the mandrel, an isolation valve attached tot he cylindrical sealed hydraulic means and means for attachment of the wellhead isolation tool to the wellhead;

attaching the wellhead isolation tool to the wellhead with the mandrel and rod entirely sealed within the isolation tool above the wellhead;

opening the wellhead valve;

inserting the mandrel into the wellhead with the sealing nipple sealed against the tubing;

unlatching the rod from the mandrel and removing the rod from the wellhead;

closing the isolation valve; and

removing the cylindrical sealed hydraulic means from the isolation valve.

5,285,853

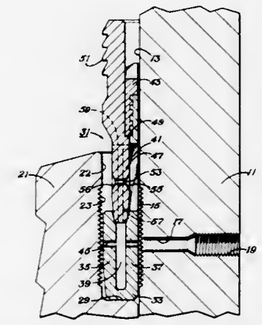
CASING HANGER SEAL WITH TEST PORT

Lawrence A. Eckert, and Carl F. Boehm, Jr., both of Houston, Tex., assignors to ABB Vetco Gray Inc., Houston, Tex.

Continuation-in-part of Ser. No. 805,416, Dec. 10, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,617

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—382 **22 Claims**



1. In a wellhead assembly of the type having a wellhead housing, a casing hanger landed in a bore of the wellhead housing for supporting a string of casing, an annular space located between the casing hanger and the wellhead housing bore, a metal seal member located in the annular space having cylindrical inner and outer walls spaced radially apart from each other, defining a central annular cavity, an annular energizing member carried by the seal member and movable between an upper position spaced above the cavity and a lower position in the cavity forcing the inner and outer walls apart to seal the annular space. the improvement comprising in combination:

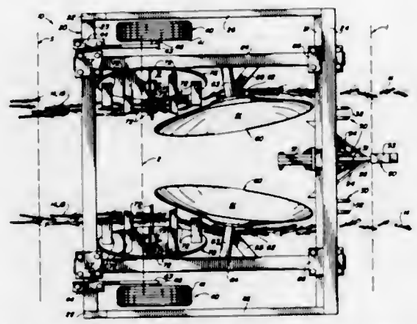
a wellhead housing test passage extending laterally from the exterior of the wellhead housing to the bore of the wellhead housing in the annular space;

a seal member test passage extending laterally through each of the inner and outer walls of the seal member in communication with the wellhead housing test passage;

an energizing member test passage extending laterally through the energizing member in communication with the seal member test passage when the energizing member is in the lower position, enabling an operator to apply pressure to the wellhead housing, seal member, and energizing member test passages to determine if leakage past the seal exists.

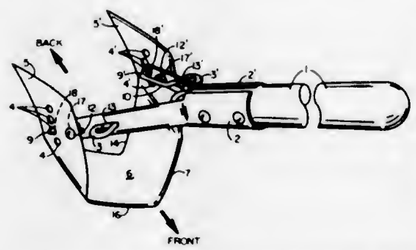
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,854
STALK AND ROOT EMBEDDING APPARATUS
Gary W. Thacker, and Wayne E. Coates, both of Tucson, Ariz., assignors to Gary Thacker, Tucson, Ariz.
Filed Apr. 15, 1992, Ser. No. 869,481
Int. Cl.[5] A01B *5/00, 49/02*
U.S. Cl. 172—176 35 Claims



19. A crop embedding apparatus for being towed behind an agricultural vehicle, the crop embedding apparatus comprising:
a) furrow means for creating a temporary furrow in a lee portion of said furrow means; and
b) packing means positioned in the lee portion for pushing stalks and roots of a row crop into said temporary furrow.

5,285,855
ADJUSTABLE PITCH GARDEN HOE TOOL
James A. Bojar, 2524 Pasadena Blvd., Wauwatosa, Wis. 53226
Filed Feb. 11, 1993, Ser. No. 16,252
Int. Cl.[5] A01B *1/06, 1/22*
U.S. Cl. 172—377 3 Claims

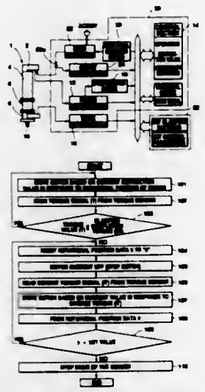


1. An adjustable pitch garden hoe tool wherein the improvement comprises;
a—a handle;
b—ferrule mount segments attached to said handle so as to form an apex;
c—ferrule legs attached to said ferrule mount segment;
d—a garden hoe tool head having a base blade and vertical sides;
e—said garden hoe tool head attached to said ferrule legs by fastening pivot bolts extending through said ferrule legs and said vertical sides of said base blade;
f—a compression V spring mounted between said ferrule legs, and the apex of said V spring mounted in the apex of said ferrule legs;
g—elbows of said V spring extending through slots in said ferrule legs; and
h—said V spring having a pair of legs, each said V spring leg having an arm extending outward and through a hole in said ferrule leg and extending through an aligned hole in said vertical side of said base blade.

5,285,856
MECHANICAL SUSPENSION DEVICE FOR PILER OF SUGAR CANE LOADERS
Juliusz Lewinski, and Ryszard Serwatowski, both of Querétaro, Mexico, assignors to Centro de Investigation y Asistencia Tecnica del Estado de Queretaro A.C., Queretaro Qro., Mexico
Filed Nov. 19, 1990, Ser. No. 615,290
Claims priority, application Mexico, Dec. 15, 1989, 18734
Int. Cl.[5] E02F *3/76*
U.S. Cl. 172—816 5 Claims

1. A piler for a mechanized sugar cane loader having a front end comprising, in combination, at least two spaced apart, vertical plates mounted on a frame, each having a curved forward facing edge ending in a forward tip, for pushing cut sugar cane on top of the ground into bundles, means pivotally connecting said piler to the front end of said loader allowing it to pivot in a vertical plane and a suspension device connected between the frame of the piler and the loader for suspending the piler the desired distance from the ground while permitting the piler to float up and down over the ground's surface and minimize ground penetration by the plate's tips as the piler is pushed forward by the loader, said device comprising a cylinder closed at both ends by an end plate, each of said end plates having an axially located opening therein, a compressed helical spring located in said cylinder, one end of said spring being in contact with a first one of said end plates and the other end in contact with an intermediate plate moveable at least partially within said cylinder between said end plates, said intermediate plate resting against the second one of said end plates under the force of the spring when the device is not in use and said spring being precompressed in the space between said plates an amount sufficient to support a major portion of the weight of the piler when the device is in use, a rod located axially of the spring, said rod being connected at one end to said intermediate plate and extending beyond said intermediate plate and slidably through the opening in said second end plate, adjusting means on the extended end of the rod for adjusting the relationship between said rod and said intermediate plate, the opposite end of said rod extending slidably through the opening in said first end plate and connection means on the end of the rod adjacent the cylinder's first end plate and on the cylinder adjacent its second end plate for connecting the device between the piler and the loader.

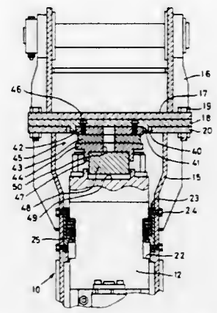
5,285,857
NUT RUNNER FOR CLAMPING BOLTS WITH PREDETERMINED TORQUE AND BOLT CLAMPING METHOD
Kyomi Shimada, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 29, 1992, Ser. No. 953,172
Claims priority, application Japan, Sep. 30, 1991, 3-280393
Int. Cl.[5] B23P *19/06*
U.S. Cl. 173—1 10 Claims



4. A method of clamping a bolt with a predetermined torque comprising the steps of:
executing a main clamping step including driving a clamping unit until a main clamping torque reaches a predetermined main clamping completion torque;
executing a detecting step including detecting an inverse torque generated in the clamping unit on the basis of an accumulated resilience;
executing a post-clamping step for driving the clamping unit with a post-clamping torque substantially equal to the detected inverse torque, the post-clamping torque being gradually reduced to nullify the inverse torque.

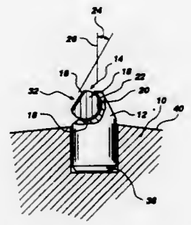
5,285,858
DEVICE FOR SUPPORTING IMPACT TOOL
Hiroshi Okada, and Tokujiro Nakamura, both of Osaka, Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan
Filed Mar. 15, 1993, Ser. No. 31,504
Claims priority, application Japan, Mar. 16, 1992, 4-058273
Int. Cl.[5] B25D *17/24*
U.S. Cl. 173—211 5 Claims

1. The combination of an impact tool and support structure supporting the impact tool on a tip of an arm of a piece of construction equipment, wherein said impact tool has an outermost casing from which vibrations produced by the impact tool propagate, said outermost casing having a top portion and a recess in the exterior of said top portion, and said support structure includes lower brackets mounted to the tip of said arm, vibration-damping support members interposed between the outermost casing of said impact tool and said lower brackets so as to damp the vibrations propagating from the outermost casing of said impact tool, top brackets mounted to the tip of said arm, a shock-absorbing member secured to a bottom portion of said top brackets at a location opposing said top portion of the outermost casing of said impact tool, said shock-absorbing member having a bottom facing the top portion of the outermost casing of said impact tool, and a stopper member fixed to one of the bottom of said shock-absorbing member and the top portion of the outermost casing of said impact tool, the other of the bottom of said shock-absorbing member and the top portion of the outermost casing of said impact tool having a guide recess therein freely receiving said stopper member such that the impact tool is slidable over a limited distance relative to said shock-absorbing member in an axial direction of



said casing of the impact tool, whereby said stopper member and said shock-absorbing member protect said vibration-damping support members from excessive forces which act on the impact tool supported on said lower brackets by the vibration-damping members.

5,285,859
DRILL BIT CUTTER MOUNTING SYSTEM PROVIDING SELECTABLE ORIENTATION OF THE CUTTING ELEMENT
Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Feb. 12, 1993, Ser. No. 17,148
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—57 18 Claims



1. Cutting structure associated with a drill bit for use in drilling earth formations comprising:
a bearing surface associated with said drill bit;
a supporting member structured to articulate with respect to said bearing surface to provide diverse rotational orientation, about at least one axis, of said supporting member relative to said bearing surface, said supporting member being securable to said bearing surface at a desired orientation; and
a cutting element securable to said supporting member.

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5,285,860

CONTAINER SCALE

Johannes Wirth, Zurich, Switzerland, assignor to Wirth Gallo Messtechnik AG, Zurich, Switzerland

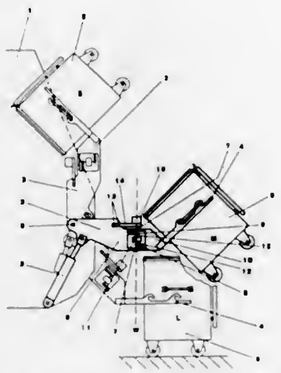
PCT No. PCT/CH91/00247, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO92/11515, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 5, 1991, Ser. No. 849,056

Claims priority, application Switzerland, Dec. 17, 1990, 03 988/90-0

Int. Cl.[5] **G01G** *19/08, 3/14*

U.S. Cl. 177—139 **15 Claims**



1. Weighing device for a lifting apparatus for containers (5), which swivel on an approximately horizontal axis (6), with at least one swivel arm (2) and electronic devices for calculation and storage of the weighing results, characterized by the fact that

the swivel arm (2) is integrated with a force measuring apparatus, through which the entire force flow of the swivel arm passes; this apparatus comprises essentially two parallel flexural members (7), which together form the primary spring of an elastic stepdown, and two spring tongues (8) lying one below the other parallel to the flexural members (7), which together form the secondary spring of the elastic stepdown; a force transducer (11) is installed between these spring tongues (8), whose force measuring direction defines an action line W, in which one spring tongue (8) is mounted on the swivel arm (2) on the axle part and the other spring tongue is mounted on the load-bearing part,

the two flexural members (7) are components of the swivel arm (2) and thus are integrated therein so that they lie horizontally during a central operating position of the swivel arm (2),

the force transducer (11) is installed between the spring tongues (8) in such manner that the force acting on it (therefore also the action line W), is perpendicular to the direction of the flexural members (7), to measure a vertically proceeding force in the central operating position of the swivel arm (2).

5,285,861

STEERING DEVICE OF CRAWLER TYPE VEHICLE

Mitsuaki Nakamura, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 936,565

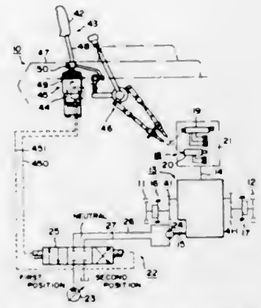
Int. Cl.[5] **B62D** *11/10*

U.S. Cl. 180—6.44 **20 Claims**

1. In a steering device of a crawler type vehicle in which one of power for forward movement, power for backward movement, and power capable of selecting a neutral is selectively inputted by a direction selector from a primary power inputting unit to a planetary steering differential device which drives righthand and lefthand crawlers, said vehicle being pivotally steered either rightwardly or leftwardly by a secondary power inputting unit coupled to a pivotal steering operation device, the improvement comprising the combination therewith of:

a rotary direction changing valve adapted to change a direction in which said pivotal steering operation device is rotated,

a lever member linked to a valve body,



a linking device coupling said lever member to said direction selector so that said valve body switches said rotary direction changing valve upon operation of said lever member to change the direction in which said pivotal steering operation device is rotated, whereby the selecting by the direction selector of power for forward movement and the selecting by the direction selector of power for backward movement is interlocked with the switching of the rotary direction changing valve.

5,285,862

POWER SUPPLY SYSTEM FOR HYBRID VEHICLES

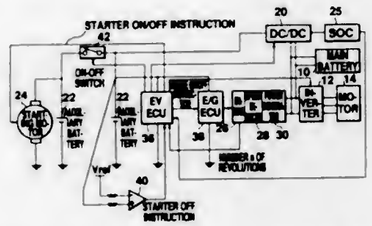
Masayuki Furutani, Susono; Yoshiyuki Nakamura, and Ryoji Oki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 9, 1993, Ser. No. 28,182

Claims priority, application Japan, Mar. 16, 1992, 4-58370; Oct. 2, 1992, 4-264798

Int. Cl.[5] **B60L** *11/10, 11/18*

U.S. Cl. 180—65.4 **7 Claims**



5. A power supply system for use in a hybrid vehicle including an engine for power generation as well as a drive motor for vehicle propulsion, comprising:

a drive power supply for driving said drive motor;

a starting motor for the actuation of said engine;

a first power supply means which receives electric power from said drive power supply and provides electric power to said starting motor;

a control section which receives electric power from said first power supply means and controls the drive of said starting motor;

a second power supply means which is connected between said first power supply means and said control section in parallel with said first power supply means and maintains supply voltage at said control section; and

an isolation means for separating said control section and said second power supply means from said first power supply means at the time of operation of said starting motor.

5,285,863

ENGINE COMPARTMENT OF A FORK-LIFT TRUCK

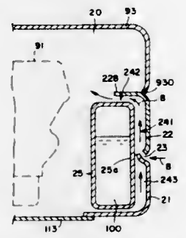
Osamu Miki, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 10, 1992, Ser. No. 819,383

Claims priority, application Japan, Jan. 10, 1991, 3-13886

Int. Cl.[5] **B60K** *11/06*

U.S. Cl. 180—68.2 **21 Claims**



1. A fork-lift truck having an internal engine compartment bounded on one side by a tank for hydraulic fluid, said tank having top, bottom and side walls, and said compartment being bounded by additional walls including a bottom plate, the latter shielding said compartment from dust and reducing emission of engine noise, said tank having one of said side walls facing out of said truck on one side of said truck, said truck further comprising:

means defining a substantially horizontal and horizontally elongated intake port adjacent said hydraulic fluid tank external to said engine compartment on the outside of said truck extending along said one side of said truck in the front-to-back direction along substantially the entire front-to-back length of said tank for admitting outside air; and

means including at least one of said top, bottom and said one side wall of said hydraulic tank for defining a passage between said intake port defining means and the interior of said engine compartment for conveying outside air from said intake port to the interior of said engine compartment in contact with substantially the entire length of a lengthwise extending wall of said hydraulic fluid tank for cooling said hydraulic fluid in addition to an engine in said engine compartment.

5,285,864

HYDRAULIC POWER STEERING GEAR WITH COMPOSITE PLASTIC SUPPORTING BODY

Jon W. Martin, Los Alamitos, and Thomas J. Engler, Los Angeles, both of Calif., assignors to TRW Inc., Lyndhurst, Ohio

Filed Nov. 24, 1992, Ser. No. 981,000

Int. Cl.[5] **B62D** *5/06*

U.S. Cl. 180—132 **14 Claims**

1. In a hydraulic power steering gear comprising:

a rotatable input member;

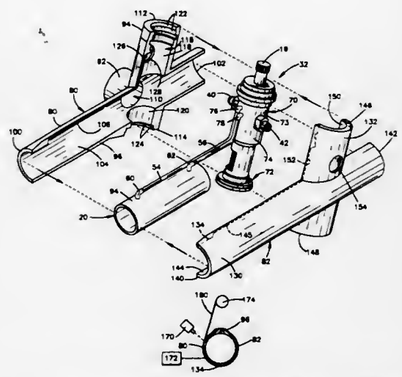
a valve housing formed of metal;

a hydraulic fluid control valve responsive to rotation of said input member, said valve being contained in said valve housing and defining hydraulic fluid flow paths through said valve within said valve housing;

a hydraulic ram cylinder formed of metal and containing a piston, said ram cylinder and said piston defining at least one variable volume hydraulic fluid chamber within said ram cylinder; and

means for directing pressurized hydraulic fluid to said fluid flow paths and to said fluid chamber in response to operation of said valve, said pressurized hydraulic fluid applying pressure outwardly against said valve housing from said fluid flow paths and applying pressure outwardly against said ram cylinder from said fluid chamber;

the improvement comprising:



supporting means for resisting said pressures applied outwardly against said valve housing and said ram cylinder by said pressurized hydraulic fluid, said supporting means comprising a composite plastic supporting body which contains both said valve housing and said ram cylinder, said composite plastic supporting body having a pressure-bearing inner surface means extending substantially coextensively over said valve housing and said ram cylinder, said pressure-bearing inner surface means being subjected to and resisting said pressures applied outwardly against said valve housing and said ram cylinder.

5,285,865

AUTO DRIVE SYSTEM FOR A VEHICLE

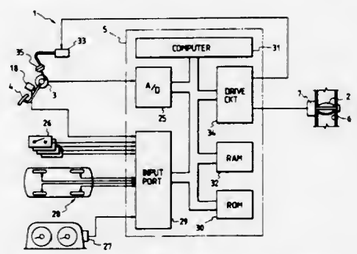
Katsuya Sakita, Oobu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1992, Ser. No. 915,979

Claims priority, application Japan, Jul. 22, 1991, 3-181276; Jun. 24, 1992, 4-165971

Int. Cl.[5] **B60K** *31/04*

U.S. Cl. 180—179 **9 Claims**



8. An auto drive system for a vehicle, comprising:

a throttle valve for adjusting a vehicle driving power;

an accelerator pedal being mechanically separate from the

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throttle valve and being movable between an undepressed position and a fully-depressed position;

detecting means for detecting a displacement of the accelerator pedal from its undepressed position, and outputting an accelerator pedal position signal representative thereof;

determining means for determining whether auto drive is executed or unexecuted;

first controlling means for controlling the throttle valve in response to the accelerator pedal position signal when the determining means determines auto drive to be unexecuted;

second controlling means for controlling the throttle valve in accordance with a desired position of the throttle valve when the determining means determines auto drive to be executed; and

changing means for changing the undepressed position of the accelerator pedal in response to a result of said determining by the determining means.

5,285,866

DRIVE TRAIN

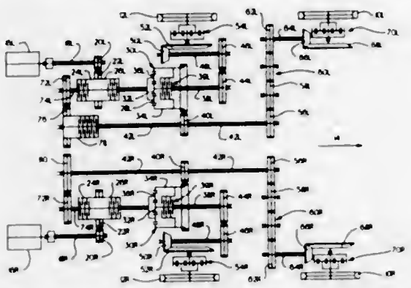
Gordon W. Ackroyd, Johannesburg, South Africa, assignor to Joy Manufacturing Company (Africa) Limited (PTY), Johannesburg, South Africa

Filed Jul. 25, 1991, Ser. No. 735,508

Claims priority, application South Africa, Jul. 27, 1990, 90/5290

Int. Cl.[5] B60K *1/02, 17/34*

U.S. Cl. 180—248 **7 Claims**



1. A drive train for a vehicle which has a first lateral side and a second lateral side and includes front and rear wheelsets, each said wheelset including at least one first lateral side wheel and at least one second lateral side wheel, the drive train comprising:

first drive means for delivering torque to at least a front wheel and a rear wheel on one side of the vehicle;

first torque sharing means interposed between the first drive means and the wheels on said first lateral side of the vehicle, said first torque sharing means being operable to share torque delivered by the first drive means between the first lateral side front and rear wheels while permitting the first lateral side front and rear wheels to rotate at different speeds in relation to each other;

second torque sharing means interposed between the first drive means and the wheels on said second lateral side of the vehicle, said second torque sharing means being operable to share torque delivered by the first drive means setween the second lateral side front and rear wheels while permitting the second lateral side front and rear wheels to rotate at different speeds in relation to each other;

first front and rear transfer means for transferring torque from the first torque sharing means to the front and rear wheels on the first lateral side of the vehicle respectively;

second front and rear transfer means for transferring torque from said second torque sharing means to the front and rear wheels on the second lateral side of the vehicle respectively;

a first releasable interlocking means for optionally interlocking the first front and rear transfer means with each other; and

a second releasable interlocking means for optionally interlocking said second front and rear transfer means with each other.

5,285,867

STEERING ARRANGEMENT

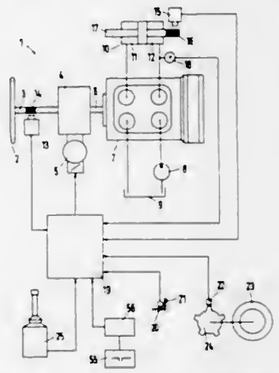
Poul H. H. Pedersen, Nordborg; Thorkild Christensen; Johannes V. Baatrup, both of Sonderborg, and Svend E. Thomsen, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jul. 1, 1991, Ser. No. 724,160

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 4025697.9

Int. Cl.[5] B62D *1/22*

U.S. Cl. 180—321 **19 Claims**



1. A vehicle steering arrangement comprising an operable motor having moveable output means, a steering shaft, a steering control unit that is operable by the steering shaft, a handwheel shaft, a handwheel rotatable by a manual force to rotate the handwheel shaft, steering control means for transmitting a rotating force from a selected one of said motor moveable output means and said handwheel shaft to said steering shaft, said steering control means including a load torque isolating device connected between the handwheel shaft and the steering shaft to rotate the steering shaft in either of two opposite directions of rotation without imposing any retarding load from the motor to the handwheel shaft when a manual force is applied for turning the handwheel shaft, said load torque isolating device including (1) a clutch housing rotatable by said motor and having a cylindrically shaped internal surface and (2) a hub member connected to and between said steering shaft and said handwheel shaft, said hub member having at least one transversely extending planar surface section forming with said housing cylindrically shaped internal surface a chamber having two wedge shaped sections, two jamming rollers respectively disposed in said wedge shaped sections with each said roller being alternately operable in one direction of rotation to a jamming condition to effect rotation of said hub member with said housing, and longitudinally extending pins fixed to said hub member and being respectively disposed in said wedge shaped sections n parallel with said rollers, each said pin being operable to effect the respective releasing of an adjacent said roller from said jamming condition by the rotation of said handwheel in the opposite direction by pushing said adjacent roller out of engagement with said clutch housing internal surface.

5,285,868

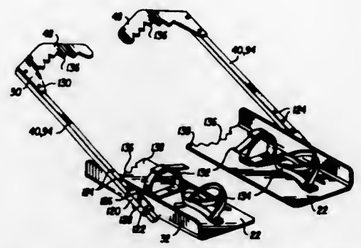
HOOK-TYPE TREE CLIMBING STAND

Joseph A. Amacker, 1212 Main St., Delhi, La. 71232

Continuation-in-part of Ser. No. 818,262, Jan. 8, 1992, Pat. No. 5,249,644, and a continuation-in-part of Ser. No. 818,120, Jan. 8, 1992. This application Nov. 16, 1992, Ser. No. 977,158

Int. Cl.[5] A63B *27/02*

U.S. Cl. 182—134 **17 Claims**



1. Apparatus for engaging a generally vertical member for supporting a user above the ground, comprising:

a platform having gripping members at one end thereof in an arcuate path for engaging the vertical member, the platform having a fist longitudinal axis horizontally passing the center of said platform and a second longitudinal axis parallel to said first axis and spaced therefrom;

a support arm supported along longitudinal edge of said platform extending beyond the platform toward the vertical member;

a clamping portion secured to the support arm and movable with respect to said platform to accommodate vertical members of various cross-sections, the clamping portion and platform forming an opening therebetween for receiving and engaging the vertical member at opposite points of the member, the clamping portion having a concave side cooperating with the engagement end of the platform to secure the apparatus to the vertical member, said clamping portion concavity having an apex, said second longitudinal axis of said platform passing through the apex of said clamping portion to stabilize said platform;

wherein the clamping portion is secured to said support arm at one end, the other end of said support arm being movably secured to said platform; and

wherein the support arm is rotatably affixed to said platform, said support arm being angularly adjustable relative to the plane of said platform.

5,285,869

SCAFFOLDING FRAME TO WHICH A STORY CAN BE ADDED

Ernst Röck, Amstetten, Austria, assignor to Osterreichischi doka Schalungstechnik GmbH, Amstetten, Austria

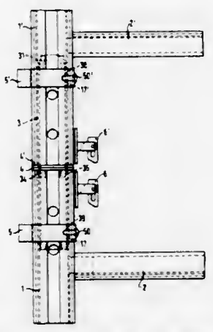
Filed May 8, 1992, Ser. No. 880,226

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 9106022

Int. Cl.[5] E04G *7/00*

U.S. Cl. 182—178 **10 Claims**

1. A scaffolding frame to which a story can be added comprising vertical stands which are formed as hollow sections, at least one joining sleeve which is inserted into a vertical stand, the joining sleeve having at least one peripheral expansion at its peripheral wall, and at least one safety bolt to set the joining sleeve at a specific height versus the vertical stand by being inserted through an opening provided in the peripheral wall of the joining sleeve and an opening in the vertical stand which is in alignment with the opening in the joining sleeve, characterized in that the vertical stand is provided with an inner cross section being adapted to slidably enclose the outer cross section of the joining sleeve including its at least one peripheral expansion, the vertical stand is further provided at its ends with a stop, respectively, for interaction with the at least one peripheral expansion of the joining sleeve to prevent the joining sleeve from being moved further out of the vertical stand beyond the position when the at least one peripheral expansion engages the stop, each stop having a circular ring-shaped form to cover an outer part of the cross section area of the vertical stand, the inner circular diameter of the stop substantially corresponding to the outer circular diameter of the joining sleeve without peripheral expansions, and the safety bolt is provided with a U-shape enclosing the vertical stand in a plane substantially perpendicular to the longitudinal axis of the vertical stand, the U-shape being movable in direction of the axis of the safety bolt to take either one of two positions, in each of said positions the U-shape being clung to the vertical stand by a portion of its circumference acting as a clamp, one of the positions corresponding to the safety bolt being engaged in the openings of both the vertical stand and the joining sleeve, the other position corresponding to the safety bolt being engaged in the opening of the vertical stand without engaging the opening of the joining sleeve, thereby the safety bolt always being secured to the vertical stand in alignment with the opening thereof.



5,285,870

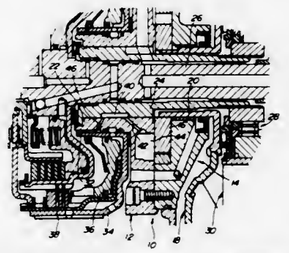
LUBRICATION ARRANGEMENT FOR AUTOMATIC POWER TRANSMISSION

Kazuyoshi Yuge, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Continuation of Ser. No. 567,649, Aug. 15, 1990. This application Apr. 16, 1992, Ser. No. 869,060

Int. Cl.[5] F01M *1/02*

U.S. Cl. 184—6.12 **3 Claims**



1. A lubricating arrangement for an automatic power transmission comprising:

an oil pump having a first pump housing member and a second housing member connected to said first pump

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housing member to define a space, and a rotor disposed within said space,

said first housing member being formed with a discharge port and having an integral cylindrical section;

a stator shaft inserted into said cylindrical section and being formed with a groove closed by said cylindrical section to form a fluid reservoir;

a drum rotatably supported on said cylindrical section;

a bushing disposed between said cylindrical section and said drum;

said cylindrical section being formed with a first orifice disposed between said discharge port and said fluid reservoir to provide restricted fluid communication therebetween,

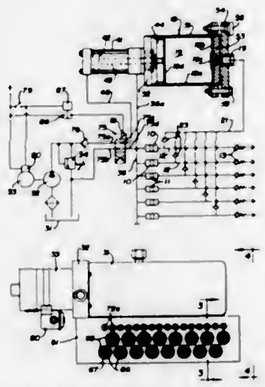
said cylindrical section being formed also with a second orifice disposed between said fluid reservoir and said bushing to provide a restricted fluid communication between said fluid reservoir and said bushing.

5,285,871

SYSTEM FOR DISTRIBUTING VISCOUS LUBRICANT

Donald A. Sievenpiper, Saint Charles, Ill., assignor to Mechanical Tool & Engineering Co., Rockford, Ill.

Filed Aug. 17, 1992, Ser. No. 929,989
Int. Cl.[5] F16N *27/00*
U.S. Cl. 184—7.4 **14 Claims**



1. A system for distributing viscous lubricant comprising, lubricant container means having a lubricant outlet, a plurality of injector cylinders each having a floating piston therein, lubricant inlet passage means communicating the lubricant outlet with each of the injector cylinders at one side of the floating piston therein, the lubricant inlet passage means including inlet check valve means individual to each injector cylinder operable to open for flow to the respective injector cylinder, a plurality of lubricant distribution passages each communicating with a respective one of the injector cylinders at said one side of the injector piston, the lubricant distribution passages each including an outlet check valve means operable to open for flow from the respective injector cylinder, hydraulic fluid pressure supply means including a fluid reservoir, pump means and selectively operable motor means for driving said pump means to supply hydraulic fluid at a preselected high pressure range, means for supplying fluid at said high pressure to the injector cylinders at a second side of the floating piston therein to feed lubricant from the injector cylinders to the lubricant distribution passages, and means actuated by said fluid pressure supply means for pressurizing the lubricant in the lubricant container means at a second pressure that is low as compared to said preselected high pressure range to feed lubricant from the lubricant container means to the injector cylinders.

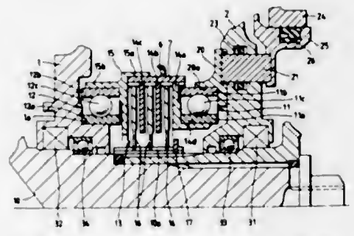
9. A system for distributing a viscous lubricant comprising, lubricant container means having a lubricant outlet adjacent one end and plunger means in the container means movable toward and away from the lubricant outlet, pressurizing cylinder means connected to the lubricant container means and lubricant pressurizing piston means in the pressurizing cylinder means connected to the plunger means for moving the latter toward the lubricant outlet, lubricant distribution means including a plurality of injector cylinders each having a floating piston therein, first passage means communicating the lubricant outlet with each of the injector cylinders at one side of the floating piston therein, the first passage means including first check valve means individual to each injector cylinder operable to open for flow to the respective injector cylinder, a plurality of lubricant distribution passages each communicating with a respective one of the injector cylinders at said one side of the floating piston therein, the lubricant distribution passages each including second check valves means operable to open for flow from the respective injector cylinder means, hydraulic fluid pressure supply means including a fluid reservoir, pump means and selectively operable motor means for driving said pump means to supply hydraulic fluid at a preselected high pressure range, means for supplying fluid from the hydraulic fluid pressure supply means to the pressurizing cylinder means for feeding lubricant from the lubricant container through the first passage means to the injector cylinders, and means for supplying fluid pressure from the hydraulic fluid pressure supply means to each of the injector cylinders at a second side of the floating piston therein to feed lubricant from the injector cylinders, said pressurizing piston means having an area smaller than the area of the plunger means and such that the plunger means applies pressure to the lubricant in the lubricant container means that is substantially lower than the hydraulic fluid pressure supplied to the pressurizing piston means.

5,285,872

HYDRAULIC RETARDER HAVING A FLUID FILLED CASING WITH A ROTOR OPERATING CLUTCH DISPOSED THEREIN

Naoki Kaneda, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 840,790
Claims priority, application Japan, Mar. 25, 1991, 3-082965
Int. Cl.[5] B60T *1/08;* **F16D** *57/02*
U.S. Cl. 188—71.5 **16 Claims**



1. A hydraulic retarder for a vehicle, comprising:

a casing fixed to vehicle body members and unrotatable with respect thereto;

an operational fluid filled within said casing;

stator means disposed in and secured to said casing;

rotor means disposed in said casing, said rotor means being rotatable with a rotational shaft of the vehicle;

clutch means disposed in said casing for rotating said rotor means;

plunger means slidably penetrating through said casing with fluid sealably; and

drive means disposed outside said casing for engaging said clutch means through said plunger means;

said drive means comprising;

a cover disposed outside the casing and securing to said casing to cover the outer peripheral portion of said casing;

a piston member mounted between said casing and said cover, an inner peripheral part of said piston member being press fitted on an outer end portion of said plunger, said piston member being slidably fitted on said cover through a seal member; and

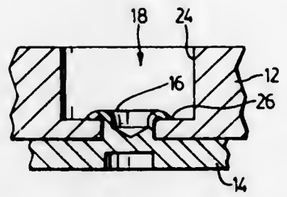
a diaphragm being sealably and flexibly adhered onto an outer peripheral portion of said piston member.

5,285,873

DISK BRAKE FRICTION ASSEMBLY

Ray Arbesman, 125 Renaissance Ct., Thornhill Ontario, Canada

Filed Feb. 19, 1992, Ser. No. 836,898
Int. Cl.[5] F16D *69/00*
U.S. Cl. 188—73.1 **4 Claims**



1. In a brake backing plate for a brake friction pad in a disk brake assembly, wherein the brake friction pad has a plurality of through bores for receiving a plurality of nips punched through the thickness of the brake backing plate and a plurality of fixation surfaces clinchable by an upper portion of each nip in a riveting step for fastening the brake friction pad to the brake backing plate, the improvement wherein each nip comprises:

a generally cylindrical, upstanding, cold extruded portion of the backing plate formed from substantially all material of the backing plate under the cold extruded portion with an upper end thereof extending from an upper surface of the backing plate a distance greater than the thickness of the backing plate, said cold extruded portion having a cylindrical cavity extending thereinto from the upper end thereof a distance sufficient to form a cylindrical wall surrounding the cavity that is overturnable in said riveting step so as to be clinchable against the fixation surface but insufficient to pass through the backing plate so as to provide a solid portion of the cold extruded portion between the cavity and a bottom surface of the backing plate.

5,285,874

COMPOSITE BRAKE DRUM WITH IMPROVED LOCATING MEANS FOR REINFORCEMENT ASSEMBLY

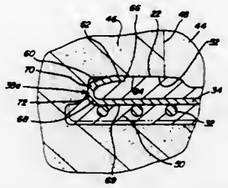
Ronald M. Revyn, Roseville, Mich., assignor to The Budd Company, Troy, Mich.

Filed Jun. 19, 1992, Ser. No. 901,256
Int. Cl.[5] F16D *65/10*
U.S. Cl. 188—218 R **11 Claims**

1. A composite article comprising:

a body molded within a mold cavity defined by a mold cavity surface, said body having an annular portion; and

a reinforcing structure substantially embedded within said annular portion, said reinforcing structure including at least one ring extending circumferentially about said annular portion and being substantially coaxial with said annular portion; said ring being axially positioned by at least two axially extending locator wires having a center portion connected to said ring and end portions for contact with said mold cavity surface to radially position said locator wires within said mold cavity, one of said end portions forming a hook having a radial bar at the end of said locator wires and a return bent contact segment extending generally in said axial direction for contact with



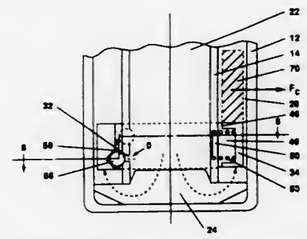
the mold cavity surface and a linear spring bar between said radial bar and said contact segment or between said radial bar and said center portion, said spring bar being inclined relative to said axis to form a lever arm to permit radial deflection of said center portion relative to said contact segment during molding of said molded body.

5,285,875

IMPACT SENSITIVE SHOCK ABSORBER

Carlos H. Munoz, Placentia, Calif., assignor to Nissan Research & Development, Inc., Plymouth, Mich.

Continuation-in-part of Ser. No. 622,864, Dec. 5, 1990, abandoned. This application Nov. 25, 1991, Ser. No. 797,357
Int. Cl.[5] F16F *9/50*
U.S. Cl. 188—275 **16 Claims**



1. An apparatus, comprising:

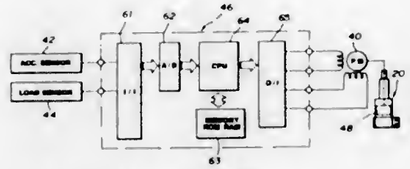
a shock absorber housing containing a damping chamber housing defining a damping chamber;

a shock absorber piston mounted for movement in said damping chamber; and

an inertia operated damping control valve in said shock absorber housing for altering a damping factor of said piston movement in said damping chamber in response to an acceleration of said shock absorber transverse to a longitudinal axis of said shock absorber housing, said inertia operated damping control valve comprising an actuation member loosely fitted around said damping chamber housing to permit movement of said actuation member laterally and longitudinally of said damping chamber housing, an orifice in said damping chamber housing, a movable valve member positioned between said actuation member and said orifice to normally cover said orifice, and a biasing member for biasing said actuation member toward said valve member.

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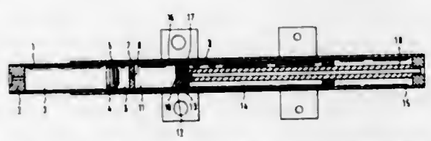
5,285,876
ADAPTIVE DAMPER CONTROL
Hiroyuki Shimizu, and Shinobu Kakizaki, both of Kanagawa, Japan, assignors tn Atsugi Unisia Corporation, Kanagawa, Japan
Filed May 28, 1991, Ser. No. 706,276
Claims priority, application Japan, May 28, 1990, 2-55660[U]
Int. Cl.[5] B60G *17/01, 17/015*
U.S. Cl. 188—279 2 Claims



1. In an automobile having a body:
a hydraulic shock absorber so constructed and arranged as to apply a load to the body, said hydraulic shock absorber including a stepper motor rotatable to assume a plurality of range positions and a variable flow restrictor assemhly operatively coupled with said stepper motor, said variable flow restrictor assembly providing different restrictions to be applied to flow of hydraulic damping fluid passing therethrough for said plurality of range positions, respectively;
load sensor means for detecting said load applied to the body and generating a load indicative signal indicative of said load detected; and
a control unit including:
means for determining which one of said plurality of range positions said stepper motor assumes and generating a range indicative signal indicative of said determined range position;
means for determining a state of an output signal to be supplied to said stepper motor in response to said range indicative signal;
means for varying a magnitude of said output signal to be supplied to said stepper motor in response to said load indicative signal; and
means for supplying to said stepper motor said output signal having said state determined and said varied magnitude,
whereby said stepper motor holds the range position indicated by said range position indicative signal against a varying torque induced by said flow of hydraulic damping fluid passing through said variable flow restrictor assembly.

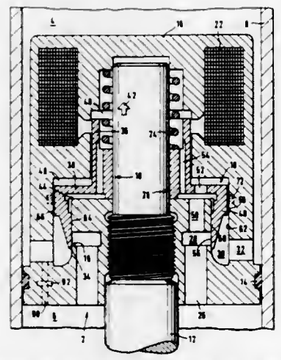
5,285,877
IMPACT DAMPER
Hartmut Bonenberger, Puchheim-Nord; Holger Kirchner, Ruppichteroth, and Kurt Wagner, Gröbenzell, all of Fed. Rep. of Germany, assignors to Boge Aktiengesellschaft, Eitorf, Fed. Rep. of Germany
Continuation of Ser. No. 763,942, Sep. 23, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 940,914
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1990, 4030033
Int. Cl.[5] F16F *9/06;* B60R *19/32*
U.S. Cl. 188—314 14 Claims

1. A system for increasing impact absorbtion ability between a motor vehicle and an obstacle, said system comprising:
a motor vehicle with a bumper and an impact damper disposed between the bumper and the motor vehicle, said impact damper comprising an inner tube and an outer which can be pushed one into the other, said inner tube having a first end disposed away from said outer tube, and said inner tube comprising:
a work piston, the work piston having a first side disposed towards the first end of said inner tube and a second side opposite the first side;
a piston rod connecting said work piston to said outer tube,
a first fluid chamber disposed adjacent the first side of said work piston;
a second fluid chamber disposed adjacent the second side of said work piston,
means for pressurizing at least said first fluid chamber;
electrically controlled control valve means disposed between said first and second fluid chambers for placing said first and second fluid chambers in communication with one another, said control valve means being configured for opening and closing the communication to control flow of fluid between said first and second fluid chambers;
said impact damper having a base configuration of said inner and outer tubes and an extended configuration of said inner and outer tubes, said inner and outer tubes being configured to be extended from the base configuration, a defined axial distance with respect to one another, into the extended configuration when said communication is opened between the first fluid chamber and the second fluid chamber, said impact damper being configured for adsorbing a first impact energy in the base configuration and a second impact energy in said extended configuration, the second impact energy being greater than the first impact energy;
means for electrically controlling the control valve means to open and close the communication between the first and second fluid chambers;
means for electrically operating said means for controlling



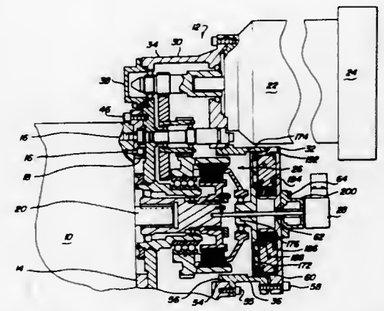
to extend said impact damper into the extended configuration under predetermined operating conditions of the motor vehicle;
said impact damper comprises mounting brackets for mounting said impact damper to the motor vehicle;
a fluid supply reservoir for supplying fluid to said first and second fluid chambers;
pump means for supplying fluid from the fluid reservoir to said impact damper;
said outer tube having a first and disposed away from the inner tube;
said piston rod extending from the second side of said work piston to the first end of said outer tube;
said piston rod comprising a longitudinal passage extending from said control valve means to the first end of said outer tube;
said longitudinal passage being configured to be connected to said pump means for passage of fluid therethrough;
said longitudinal passage further comprising means for electrically connecting said control valve means to said means for controlling said control valve means;
said means for controlling said control valve means further comprising means for controlling said pump means;
said impact damper in said base configuration has a first length, said impact damper in said extended configuration has a second length, and said second length is about 100 mm longer than said first length;
said predetermined speed of the motor vehicle is about 8 km/hr;
said impact damper in said base configuration is configured for absorbing an impact energy between the motor vehicle and the obstacle at impact speeds of up to about 8 km/hr; and
said impact damper in said extended configuration is configured for absorbing an impact energy between the motor vehicle and the obstacle at impact speeds of up to about 15 km/hr.

5,285,878
CYLINDER INCLUDING A PISTON WITH A VALVE CONTROL
Martin Scheffel, Vaihingen-Enzweihingen; Kurt Engelsdorf, Besigheim, and Roland Weisser, Unterkirnach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 13, 1991, Ser. No. 806,385
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041619
Int. Cl.[5] F16F *9/44*
U.S. Cl. 188—319 8 Claims



1. A cylinder having a piston, a jacket tube, and two work chambers each containing a pressure fluid, with a flow connection between the two work chambers, said piston defining a bore therein a throttle cross section in the course of said flow connection which is controllable with the aid of an electromagnetically actuatable control slide for generating an additional force, the control slide (20) having an effective face (70), said face having a width substantially equal to the diameter of said bore and extending transversely to the actuation direction of the control slide (20) which separates a first chamber (30), containing a higher pressure of the pressure fluid flowing in at the throttle cross section (16), from a second chamber (46), containing a lower pressure of the pressure fluid flowing in from the throttle cross section (16), wherein the pressure in the first chamber (30) containing the higher pressure acts in the opening direction upon a side of the effective face (70) of the control slide oriented toward this first chamber (30), and that the pressure in the second chamber (46) containing the lower pressure acts in the closing direction upon a side of the effective face (70) oriented toward the second chamber (46), said higher and lower pressures acting on both said sides of the effective face operate to create an additional force on said control slide.

5,285,879
ELECTRICAL ACTUATED MULTI-SPEED DRIVE APPARATUS
Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Co., Warren, Mich.
Filed Jul. 27, 1992, Ser. No. 920,248
Int. Cl.[5] F16D *67/06;* F16H *37/06*
U.S. Cl. 192—94 16 Claims



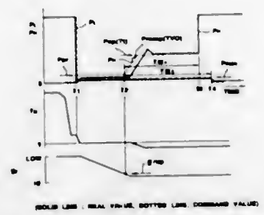
1. A two-speed drive unit for an apparatus, said apparatus having a main housing and a main shaft operably associated with said main housing, said two-speed drive unit comprising:
a two-speed drive housing secured to said main housing of said apparatus;
secondary motor means for driving said two-speed drive unit, said secondary motor means having a drive shaft extending therefrom, said secondary motor means secured to said two-speed drive housing such that said driveshaft of said secondary motor means extends into said two-speed drive housing;
first gear means disposed within said two-speed drive housing and operably associated with said secondary motor drive shaft;
second gear means disposed within said two-speed drive housing and operably engaged with said first gear means;
clutch means disposed between said second gear means and said main shaft for selectively engaging and disengaging said second gear means and said main shaft; and
means operably associated with said two-speed drive unit for selectively controlling said apparatus, said secondary motor means and said clutch means, said selectively controlling means being continuously self-adjusting in order to maintain a pre-specified speed versus time relationship of said two-speed drive unit.

5,285,880
METHOD AND APPARATUS FOR CONTROLLING AUTOMATIC TRANSMISSION
Yusuke Minagawa, and Satoshi Takizawa, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 22, 1992, Ser. No. 886,851
Claims priority, application Japan, May 23, 1991, 3-146627
Int. Cl.[5] F16D *25/11;* B60K *41/22*
U.S. Cl. 192—3.58 4 Claims

3. An apparatus of a shift control for an automatic transmission drivingly coupled with an engine, the automatic transmission including an input shaft drivingly coupled with the engine, and a plurality of friction elements each of which is set in one of an engaged state and a released state, said apparatus comprising:
means for detecting a signal needed for starting an up-shift; and a control unit including;
means for generating a release signal after a command for the up-shift which has been made according to the signal from said signal detecting means;

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means for controlling a hydraulic pressure supplied to one of the friction elements according to the release signal, said control means immediately changing the connecting state of the friction element from an engaged state to a disengaged state by immediately lowering the hydraulic pressure from a friction element engaging value to a predetermined pressure value at which the friction element is disengaged, said control means keeping the predetermined pressure value until a predetermined time has passed after the up-shift.

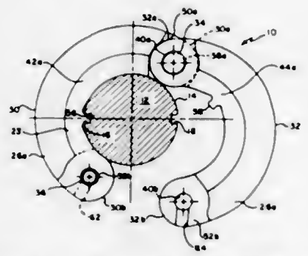


5,285,881

SPLIT HINGE CLUTCH BRAKE AND METHOD TO ASSEMBLE

John M. Lero, Smithville, and Bryan E. Simoncic, Kansas City, both of Mo., assignors to Midland Brake, Inc., Kansas City, Mo.

Filed Oct. 22, 1992, Ser. No. 964,783
Int. Cl.[5] F16D *67/02, 65/12*
U.S. Cl. 192—13 R **19 Claims**



1. A clutch brake for operably connecting to a rotatable shaft, the brake comprising:
a first arcuate member having a first end and a second end;
a second arcuate member having a first end and a second end;
means for pivotally coupling the first end of the first arcuate member to the first end of the second arcuate member, such that the second arcuate member pivots relative to the first arcuate member in a plane substantially including the arcuate members to form an annular assembly;
means for coupling the arcuate members to the shaft; and
means for connecting the second end of the first arcuate member to the second end of the second arcuate member when the arcuate members form the annular assembly, whereby engagement of the means for connecting with the second ends prevents further pivoting of the arcuate members relative to one another.

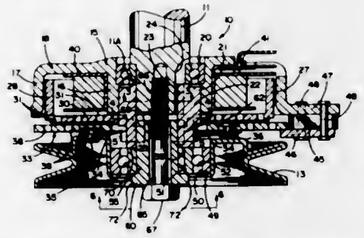
9. A method of installing a clutch brake onto a shaft disposed within a bell housing of a transmission assembly whereby the clutch brake may be installed without removing the bell housing from the transmission assembly, the method comprising the steps of:
pivotally coupling a first end of a first arcuate member to a first end of a second arcuate member such that the second arcuate member pivots relative to the first arcuate member substantially in a plane which includes the first arcuate member;
placing the pivotally coupled first arcuate member around the shaft;
pivoting the second arcuate member toward the first arcuate member to form an annular assembly about the shaft;
coupling the arcuate members to the shaft; and
connecting a second end of the first arcuate member to a second end of the second arcuate member.

5,285,882

CLUTCH WITH SPACER FOR SUPPORTING A BEARING

James A. Pardee, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 23, 1992, Ser. No. 996,122
Int. Cl.[5] F16D *27/112*
U.S. Cl. 192—84 C **6 Claims**



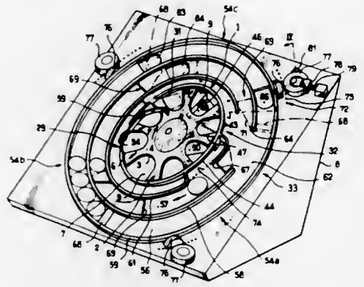
1. The combination of, a clutch and a rotatable drive shaft, said shaft having an end portion of predetermined diameter, said end portion of said shaft having an axially facing end, having an axially extending threaded hole opening out of said axially facing end, and having an outer peripheral surface with an axially extending keyway opening out of said axially facing end, said clutch comprising a tubular input hub telescoped onto said shaft end portion and having an integral key interfitting with said keyway to couple said hub for rotation with said shaft, said hub having an axially facing end and having an outer peripheral surface, a spacer telescoped into said hub and having a radially extending flange spaced axially from said axially facing end of said hub, said spacer having a generally cylindrical outer peripheral surface with an axially extending and axially opening keyway interfitting with said key to couple said spacer for rotation with said hub, a bearing having an inner rae supported on said outer peripheral surface of said spacer and located between said flange and said axially facing end of said hub, said bearing being free of the outer peripheral surface of said hub, an output member mounted on said bearing and supported by said bearing for rotation relative to said spacer and said hub, means selectively operable to couple said output member for rotation with said hub or to enable said hub to rotate relative to said output member, a screw having a threaded shank and having a driving head on one end of said shank, said shank being threaded into said hole in said shaft, said head being operable, upon tightening of said screw, to act against said flange and cause said bearing to be clamped axially between said flange and said axially facing end of said hub, and wrenching surfaces on said spacer and engageable by a wrenching tool during tightening of said screw whereby the wrenching tool coacts with said spacer and said hub to prevent said shaft from turning as said screw is tightened.

5,285,883

AUTOMATIC PAYMENT DEVICE AND METHOD FOR RECOGNIZING COINS

Son Le Hong, Villebon sur Yvette, and Claude Rigolet, Limours, both of France, assignors to Atoll Technology, Cedex, France

Division of Ser. No. 849,564, Mar. 11, 1992, Pat. No. 5,232,399. This application Jan. 21, 1993, Ser. No. 6,993
Int. Cl.[5] G07D *3/14*
U.S. Cl. 194—317 **17 Claims**



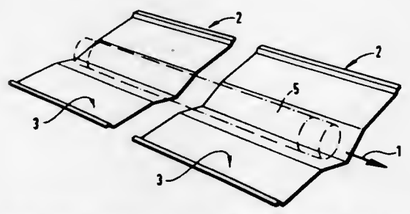
14. Process for recognizing objects of the type of coins, in which the objects are caused to pass through the field of action of a detector (31) belonging to a recognition device (1), and as a function of the response of the detector to the passage of each object, the object is selectively directed toward at least one outlet (43, 44) of the recognition device (1) and respectively the object is returned for a second passage through the field of action of the detector (31) and is caused to follow a predetermined cycle at its position is noted in the cycle, then at the end of the second passage the object is sent toward the outlet (43, 44) of the recognition device (1).

5,285,884

TIPPING CONVEYOR ELEMENT

Ludger Polling, Wadersloh; Gerhard Pelkmann, Beckum, and Hans Jäger, Wadersloh, all of Fed. Rep. of Germany, assignors to Bernhard Beumer Maschinenfabrik KG, Fed. Rep. of Germany

Continuation of Ser. No. 809,917, Dec. 20, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 24,107
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 91156645[U]; Dec. 20, 1991, 90175131[U]
Int. Cl.[5] B65G *47/38*
U.S. Cl. 198—365 **6 Claims**



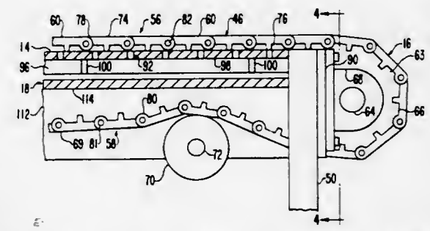
1. A tipping conveyor element for a continuous piece goods conveyor comprising:
a plurality of linked conveyor elements having a leading edge and a trailing edge, each of said linked conveyor elements including a supporting plate having outer edge portions which are contiguous with intermediate portions which, in turn, are contiguous with inner portions, said portions being symmetrically arranged about a middle line extending in a conveying direction, said outer edge portions being angled upwardly relative to said intermediate portions and said inner portions being angled downwardly relative to said intermediate portions, wherein the width of each of said inner portions measured transversely to the middle line is greater along the leading edge than along the trailing edge.

5,285,885

TOBACCO CONTAINER SORTING CONVEYOR

Alexander Hollingsworth, Arden, and John Metalsky, Hendersonville, both of N.C., assignors to Fishburne International, Inc., Arden, N.C.

Filed May 29, 1992, Ser. No. 890,001
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—367 **15 Claims**



1. A tobacco container sorting conveyor, the combination comprising:
an endless conveyor having a longitudinal axis and a foraminous belt with top and bottom runs;
means for driving said conveyor in an endless path;
a longitudinal support located below said top run and slidably receiving said top run thereon, said support having a plurality of spaced elongated slots therethrough, and said support being substantially coextensive with said top run; and
a longitudinal collector disposed directly below said longitudinal support and directly communicating with said support and elongated slots and between said top and bottom runs, for collecting tobacco particles falling directly through said slots from tobacco containers conveyed on said top run;
said foraminous belt including a plurality of links having a pair of protruding end links and ribbed bottom surfaces intermediate said end links which extend transverse to said support;
said top run of said belt having said plurality of protruding end links and ribbed bottom surfaces extending downwardly from said top run to provide a space for the accumulation of said tobacco particles which then fall onto said longitudinal collector as said top run moves over said support; and
said elongated slots being elongated and angled from said longitudinal axis in the direction of travel of said conveyor, and said elongated slots extending across said support.

5,285,886

CONVEYOR SYSTEM

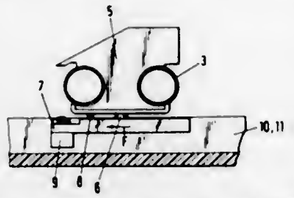
Ostholt, Rüdiger, Wetter, and Frank Ahrens, Hohen-Neuendorf, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 989,596
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140917
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—370 **15 Claims**

1. A conveyor system for conveying articles, the conveyor system comprising a conveyor track and at least one branch track connected with, and extending at an angle relative to the

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conveyor track, the conveyor track comprising endless circulating chains arranged spaced apart and parallel relative to each other and support rods for supporting the articles being fastened between the chains, a plurality of deflection slide members mounted so as to be slidable on the support rods, the deflection slide members projecting beyond a conveyor plane formed by the support rods for deflecting the articles from the conveyor track onto the branch track, guide rails mounted



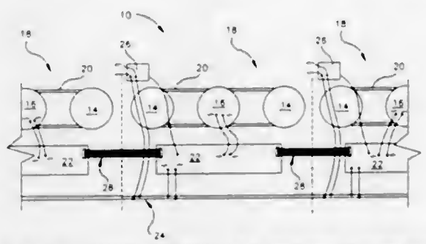
spaced from the conveyor track, and branch rails arranged spaced from the branch track and connected to the guide rail in a branching-off point, each deflection slide member having a guide bolt on a side facing the rails with an elongated guide member being swingably mounted on the guide bolt, the guide member being guided within the guide rail, a control body mounted at the branching-off point for deflecting the deflection slide member from the guide rail into the branch rail.

5,285,887

ACCUMULATING CONVEYOR AND CONTROL SYSTEM

David V. Hall, Wilmington, N.C., assignor to Interroll Holding A. G., San Antonio, Switzerland

Filed Nov. 23, 1992, Ser. No. 980,335
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—460 **4 Claims**



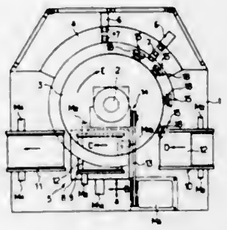
1. An accumulating conveyor for selectively transporting articles in either a forward or a reverse direction, comprising:
(a) a plurality of accumulating zones disposed in end-to-end relationship and defining a path for conveying articles;
(b) an electric motor for each accumulating zone and operative to independently drive a respective accumulating zone in either of the forward or reverse directions;
(c) a sensor disposed between each pair of end-to-end zones for sensing the presence or absence of an article in each end-to-end zone, wherein each sensor is operative to sense the presence or absence of an article in a first one of the end-to-end zones when the conveyor is operated in the forward direction and senses the presence or absence of an article in the other end-to-end zone when the conveyor is operated in the reverse direction; and
(d) an individual controller operatively connected to each accumulating zone of the conveyor with each controller controlling the movement of an article on a controlled zone associated with the controller, wherein each controlled zone is disposed between first and second adjacent zones which alternatively function as an upstream zone or a downstream zone depending on the direction of operation of the conveyor, each controller including:
(1) a first condition input indicative of the condition of the downstream zone when the conveyor is run in the forward direction;
(2) a second condition input indicative of the condition of the controlled zone when the conveyor is run in the forward direction and indicative of the condition of the upstream zone when the conveyor is run in the reverse direction;
(3) a third condition input indicative of the condition of the upstream zone when the conveyor is run in the forward direction and indicative of the condition of the controlled zone when the conveyor is run in the reverse direction;
(4) a fourth condition input indicative of the condition of the downstream zone when the conveyor is run in the reverse direction;
(5) a direction input indicative of the direction of operation of the conveyor; and
(6) a logic circuit responsive to said first, second, third and fourth condition inputs and said direction input for activating the controlled zone when either: (a) a load is present in the controlled zone and no load is present in the downstream zone; or (b) a load is present in the upstream zone and no load is present in the controlled zone.

5,285,888

PARTS MOUNTING APPARATUS

Takatomo Izume, Urawa; Shuji Sato, Yokkaichi; Shingo Sekiguchi, Hachiohji; Katasuga Sano, Kuwana; Hisao Suzuki, and Kazuhiro Tokitu, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 23, 1992, Ser. No. 949,899
Claims priority, application Japan, Sep. 25, 1991, 3-245906; Sep. 25, 1991, 3-245907
Int. Cl.[5] B65G *17/46*
U.S. Cl. 198—471.1 **13 Claims**



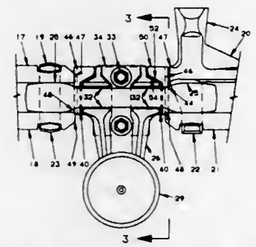
1. A parts mounting apparatus comprising:
a) a rotating carrier having a reference plane and rotated about a rotational shaft perpendicular to the reference plane;
b) a suction nozzle mounted on an outer periphery of the rotating carrier to be turned in a direction intersecting substantially perpendicularly to the reference plane, the nozzle performing a cycloid movement when turned with rotation of the rotating carrier, the nozzle having a distal end having a plurality of bottom dead points in the cycloid movement;
c) control means for controlling the nozzle so that the nozzle performs a suction operation in which a part is sucked into the distal end of the nozzle when the distal end of the nozzle reaches a predetermined one of the bottom dead points and so that the nozzle releases the suction operation when the distal end of the nozzle reaches the other or another predetermined bottom dead point;
d) a monitoring camera positioned at one of the plurality of dead points for monitoring the distal end of the nozzle during the cycloid movement of the nozzle;
e) operating means for obtaining an amount of deviation of the distal end of the nozzle from a bottom dead point from output information from the monitoring camera; and
f) compensation means for compensating a phase of the cycloid movement so that the amount of deviation of the distal end of the nozzle from a bottom dead point is zeroed.

5,285,889

ATTACHMENT MEMBER FOR CONVEYOR CHAIN AND TROLLEY ASSEMBLY

Clayton C. McDonald, Howell, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Nov. 16, 1992, Ser. No. 977,147
Int. Cl.[5] B65G *17/32*
U.S. Cl. 198—687 **10 Claims**



1. An attachment member for securing a pair of trolley bracket bases having opposite longitudinally space ends to a conveyor chain center link having an open central portion defined by a pair of parallel longitudinally extending transversely spaced sides and arcuate ends, said trolley bracket bases being insertable through said open central portion and having means for engagement with said center link sides, said attachment member comprising:
a stem portion insertable in said open central portion between said pair of trolley bracket bases for positioning said engagement means in engagement with said center link sides, and;
a pair of end portions formed integrally with said stem portion and spaced apart longitudinally a distance greater than the distance between said opposite ends of said trolley bracket bases, said end portions projecting transversely to each side of said stem portion into overlapping relation with the ends of the trolley bracket bases, each of said pair of end portions having a T-shaped transverse configuration formed by a leg and a head extending transversely to each side thereof, said leg being insertable between said center link sides, and said head having shoulders overlappingly engageable with said center link sides at a transition to an increase in the depth thereof.

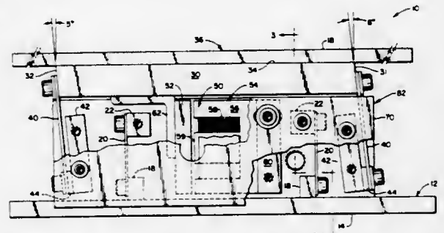
5,285,890

VIBRATORY FEEDER

Ralph A. Stearns, Bozrah, Conn., assignor to Spirol International Corporation, Danielson, Conn.

Filed Apr. 24, 1992, Ser. No. 874,294
Int. Cl.[5] B65G *27/16*
U.S. Cl. 198—766 **18 Claims**

1. In a vibratory feeder for feeding parts in a forward direction along a longitudinally extending axis of feed, comprising a base, a track support overlying the base, a counterweight located at least in part, between the base and overlying track support, a plurality of first, longitudinally spaced, generally upright leaf springs mounting the counterweight on the base, a plurality of second, longitudinally spaced, generally upright leaf springs mounting the track support on the counterweight, said first and second leaf springs permitting longitudinally vibratory motion of the track support generally parallel to but inclined upwardly from the longitudinally extending axis of feed and longitudinal vibratory motion of the counterweight in generally 180° out-of-phase synchronism with the vibratory motion of the track support, the vibratory feeder having an electromagnet, with separate coil assembly and armature parts, for vibrating the track support and counterweight in said generally 180° out-of-phase synchronism, one of said parts of the electromagnet being mounted on the track support and the other of said parts forming part of the counterweight; the improvement wherein the counterweight has a sandwich construction comprising an internal structure between the base and overlying track support and a pair of outer, longitudinally extending, side plates secured to opposite lateral sides of said



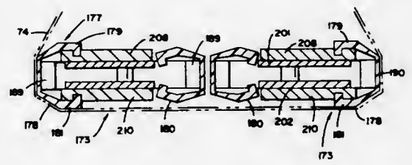
internal structure to form an integrated, rigid counterweight, wherein said internal structure comprises a plurality of separate, longitudinally spaced parts secured to the side plates, wherein said first generally upright leaf springs extend between the base and said internal structure to support the counterweight on and close to the base and wherein said second generally upright leaf springs are longitudinally spaced from and overlap, in a direction normal to the axis of feed, at least a substantial portion of the first generally upright leaf springs and extend between the track support and said internal structure to support the track support on and close to the counterweight.

5,285,891

CONVEYOR FOR ROTARY FILM WRAPPING APPARATUS

Charles P. Keip, Grandville, Mich., assignor to Liberty Industries, Girard, Ohio

Filed Jun. 1, 1992, Ser. No. 891,743
Int. Cl.[5] B65G *15/10*
U.S. Cl. 198—817 **12 Claims**



1. An improvement in a conveyor system for use in a wrapping apparatus comprises at least two endless conveyors positioned horizontally adjacent to one another, each conveyor having a path loop including a forward moving path portion for carrying an article and a rearward moving path portion, said forward and rearward path portions being oriented in a substantially horizontal plane, each conveyor further including a one piece segmented continuous lug belt arranged about the conveyors, said segmented continuous lug belt comprises a plurality of oppositely disposed arm segments extending from and integral with a common continuous spacing band, a continuous drive belt formed on said spacing band, each of said conveyors further including means for expanding said arm

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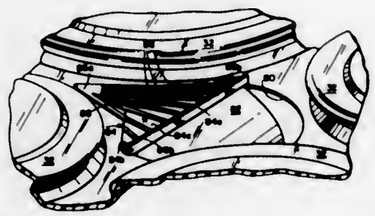
segments on the forward moving path portion in a direction perpendicular to the direction of movement to raise the article above the rearward moving path portion and for contracting said lugs as they traverse said rearward moving path portion.

5,285,892

SANITARY CAN CARRIERS AND MULTIPLE BEVERAGE CAN PACKAGES INCLUDING THE SAME

Arthur E. Adami, Andover, Mass.; Christopher P. Amberg, Owings Mills, Md., and William B. Pendergrass, Hanover, Pa., assignors to Sweetheart Cup Company Inc., Owings Mills, Md.

Continuation-in-part of Ser. No. 882,163, May 12, 1992, which is a continuation-in-part of Ser. No. 741,935, Aug. 8, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 924,557
Int. Cl.[5] B65D *71/00*
U.S. Cl. 206—151 **38 Claims**



1. A can carrier adapted to hold a number of cans, each can having an annular top head and a generally tapered bottom so as to allow the cans to be collectively stacked one upon the other, said can carrier comprising:

a one-piece generally planar carrier sheet having a plurality of can-stacking members upwardly protruding therefrom so as to establish a corresponding plurality of can-stacking platforms; and

said can-stacking platforms having (i) an annular cover wall defining an annular locking channel closely corresponding to the top bead of a can, (ii) a central platform wall, and (iii) an annular downwardly and inwardly sloping support wall integrally joining said bottom wall to said cover wall and establishing an annular recessed region bounding said central platform wall which is sized and configured to accept therewithin the tapered bottom of another can to allow nesting with said can-stacking platform; and wherein

said carrier sheet includes at least one pair of finger apertures, and generally triangular shaped pad regions extending from the plane of said carrier sheet and located adjacent said finger apertures.

8. A can carrier adapted to hold a number of cans comprising a one-piece generally planar carrier sheet which includes:

a number of can-receiving members upwardly protruding from the carrier sheet and establishing a corresponding number of can-receiving recesses which are sized and configured to removably engage, and thereby hold, a respective top of a can;

a pair of finger openings formed in said generally planar carrier sheet to allow said can carrier to be grasped manually; and

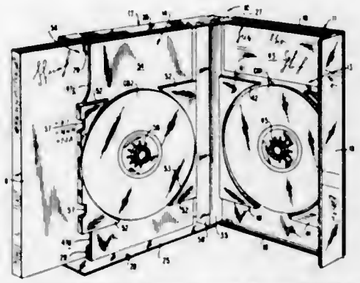
generally triangular raised pad regions which are positioned laterally adjacent to respective ones of said finger openings.

5,285,893

STORAGE CASE FOR MULTIPLE COMPACT DISCS AND RELATED PRINTED MATERIAL

Joseph J. Misterka, Terre Haute, Ind., and John W. Carroll, III, Pepperal, Mass., assignors to Digital Audio Disc Corporation, Terre Haute, Ind.

Filed May 14, 1993, Ser. No. 61,009
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 **17 Claims**



1. A storage case for accommodating a plurality of compact discs comprising:

a bottom member including a panel of rectangular configuration, and a pair of opposed peripheral walls extending along relatively long sides of said panel;

a lid member including a panel of substantially the same rectangular configuration as said panel of the bottom member, and a pair of opposed peripheral walls extending along relatively short sides of said panel of the lid member;

means pivotally connecting said lid and bottom members for movements relative to each other about an axis parallel to adjacent long sides of said panels of the lid and bottom members, respectively, between a closed position in which said panels are in parallel spaced relation with said peripheral walls of the lid member extending between adjacent ends of said peripheral walls of the bottom member for enclosing a space between said panels, and an opened position in which said panels of the lid and bottom members are angularly spread apart;

first and second trays each having disc supporting means for removably supporting a respective compact disc thereon; and

means for mounting said first and second trays on said lid and bottom members, respectively, so as to be disposed at interiors of said panels in said closed position with said disc supporting means of said first and second trays in confronting relation to each other, said means for mounting one of said trays including means for spacing said one tray from the panel of the respective one of said lid and bottom members and thereby defining a compartment for receiving a printed booklet and to which, in said opened position, access is had between ends of said peripheral walls of said one member.

5,285,894

WATERPROOF CASING

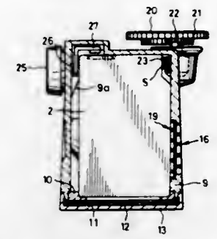
Kazuo Kamata; Hisashi Tasaka; Takashi Kubo, and Takaji Kono, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1993, Ser. No. 5,973
Claims priority, application Japan, Jan. 9, 1992, 4-002451
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.1 **24 Claims**

1. A waterproof casing for containing equipment in a watertight manner, comprising:

an air flow opening formed in said waterproof casing; and

an air-permeable waterproof sheet formed of a film and a supporting member and attached to an inside surface of said waterproof casing with said film closing said air flow



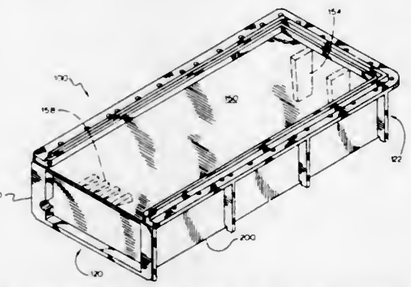
opening, said film being adapted to let air but not water pass therethrough and said supporting member being adapted to let both air and water pass therethrough.

5,285,895

CONTAINER FOR INTEGRATED CIRCUIT BOARD

William S. Bolt, 30W311 Army Trail Rd., Bartlett, Ill. 60103

Continuation-in-part of Ser. No. 785,556, Oct. 31, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,289
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—334 **18 Claims**



1. A container for an integrated circuit board capable of physically and electrostatically protecting the integrated circuit board, wherein:

(a) the container comprises a hollow rectangular shape;

(b) a plurality of supports for an integrated circuit board combine to maintain a chosen position of an integrated circuit board within the container;

(c) the container has a base and a top the base provides four sides of the container and the top provides a fifth side of the container;

(d) the base and the top combine to form the hollow, rectangular shape with an open end;

(e) the container includes a closing means for closing said open end;

(f) the container is formed of a material, which is substantially crushproof;

(g) the material of the container additionally is substantially electrostatic resistant;

(h) the four sides of the base include a bottom side, an end side, a first side and a second side;

(i) the first side is substantially parallel to the second side;

(j) the bottom side is substantially perpendicular to the end side, the first side and the second side;

(k) the end side is substantially perpendicular to the first side and the second side;

(l) the base has a flat base ledge around the free edges of three of the four sides of the base; and

(m) the flat base ledge includes a base rib framing the flat base ledge of the base.

15. A combination including a container and an integrated circuit board, the container being capable of physically and electrostatically protecting the integrated circuit board, wherein:

the container comprises a hollow rectangular shape;

a plurality of supports for the integrated circuit board combine to maintain a chosen position of the integrated circuit board within the container;

the container has a base and a top;

the base and the top combine to form a hollow, substantially rectangular shape with an open end;

the base includes a bottom side, an end side, a first side and a second side;

the integrated circuit board includes a means to close the container after its insertion therein;

the container is formed of a material, which is substantially crushproof;

the material of the container additionally is substantially electrostatic resistant;

the plurality of supports include bottom side means, end side means, first side means, second side means, and top side means, all for supporting the integrated circuit board in the container;

a removable cap is mountable on the open end to close the container with the integrated circuit board contained therein;

the first side is substantially parallel to the second side;

the bottom side is substantially perpendicular to the end side, the first side and the second side;

the end side is substantially perpendicular to the first side and the second side; and

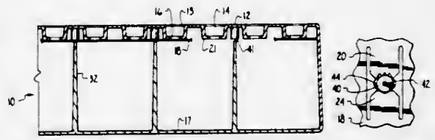
a flat base ledge extends outwardly from and substantially perpendicular to the end side, the first side and the second side.

5,285,896

APPARATUS FOR RECEIVING AND CAPTURING A HYPODERMIC NEEDLE HUB AND CANNULA

Robert G. Salatka; William B. Buck, both of Fallbrook; James H. Mitchell, San Diego; William J. Schultz, Encinitas, and Leslie Perhacs, Fallbrook, all of Calif., assignors to Timely Medical Innovations, Ltd., Carlsbad, Calif.

Filed Mar. 25, 1992, Ser. No. 856,631
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—366 **15 Claims**



1. Apparatus for receiving and locking a hypodermic needle hub inserted therein comprising:

a container having a cavity and a top cover having a plurality of ports for inserting a hypodermic needle cannula and hub therein, each of such ports having a dimension smaller than the largest cross-sectional dimension of said hub, whereby said hub may not entirely pass therethrough, and

a plurality of hub engaging and locking components each component comprising first and second flexible and memory retaining members, each member having a hub engaging edge, wherein said hub engaging edge of each of said first and second members has a notch substantially centered along said hub engaging edge and wherein said notches are substantially opposite one another, said hub engaging edges being substantially coplanar and facing one another and spaced apart a first distance less than a

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cross-sectional dimension of said hub to be engaged therebetween and capable of being spread apart to a second distance, greater than said first distance by urging said hub therebetween whereby said hub is engaged and locked therebetween, each of said hub engaging and locking components being aligned relative to a different one of said ports, whereby said edges are exposed in said ports, with said space between the facing hub engaging edges substantially centered relative to a port,

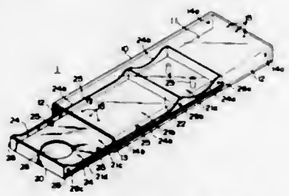
said components being secured adjacent to said top cover and proximate thereto whereby movement of said firs and second member in a direction toward said top cover is limited by abutment of said members thereagainst.

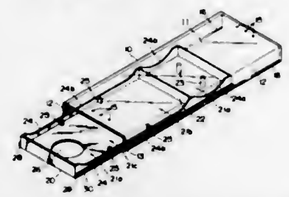
5,285,897

TAPE CASSETTE CASE

Hiroshi Ozaki, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,620
Claims priority, application Japan, Oct. 3, 1991, 3-281875
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—387 **5 Claims**





1. A rectangular tape cassette case for carrying a plurality of tape cassettes, said case comprising:

a base member formed with a bottom wall, a front wall, a rear wall and a pair of side walls; and

a cover member formed with a top wall and a pair of side walls, slidably mounted on said base member in a longitudinal direction of the rectangular tape cassette case, wherein

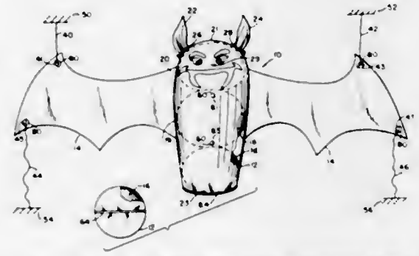
said base member is further formed with at least one pair of ribs partially projecting into said base member respectively from each of said pair of side walls defining a plurality of separate spaces for respectively accommodating each of said tape cassettes to be carried, wherein each of said side walls of said base member has a guide rail extending in the longitudinal direction of the tape cassette case near the bottom wall of said base member and each of said side walls of said cover member has a guide groove corresponding to said guide rail of said base member and engageable therewith for slidably guiding said cover member on said base member and wherein said side walls of the base member have a plurality of indented portions, and wherein said side walls of the cover member have a plurality of projections corresponding to said indented portions and engageable therewith in order to form a plurality of click stops, said click stops comprising means for arresting slidable movement of said cover member on said base member at respective different positions.

5,285,898

BAT-LIKE DECORATIVE OBJECT

Benson E. Zinbarg, 320 Chestnut Hill Rd., Stamford, Conn. 06905, and Nancy E. Mimoun, Stamford, Conn., assignors to Benson E. Zinbarg, Stamford, Conn.

Continuation-in-part of Ser. No. 554,967, Jul. 18, 1990, and a continuation-in-part of Ser. No. 664,023, Mar. 4, 1991, and a continuation-in-part of Ser. No. 664,024, Mar. 4, 1991, and a continuation-in-part of Ser. No. 749,263, Aug. 21, 1991, and a continuation-in-part of Ser. No. 749,165, Aug. 23, 1991, Pat. No. 5,195,638. This application May 29, 1992, Ser. No. 891,648
Int. Cl.[5] B65D *33/00*
U.S. Cl. 206—457 **20 Claims**



1. Decorative bag and sheet assembly stimulating a bat comprising:

a) a generally sleeve-shaped bag member made of thin flexible material, said bag member having a longitudinal axis and at least one open end, and having an outer surface which is mostly black to simulate the body of a large bat;

b) at least one light-weight filler means for placement within said bag member, said filler means sized to fill all but a longitudinally extending terminal portion of said bag member;

c) at least one closure means for substantially closing said at least one open end of said bag member at said longitudinally extending terminal portion, wherein said bag member assumes a generally tubular shape after said bag member is substantially filled with said at least one light-weight filler means;

d) a sheet of flexible material shaped to simulate a bat wing configuration, said sheet of flexible material attached to said generally sleeve-shaped bag member; and

e) a plurality of bendable spread clips attaching said sheet of flexible material to said bag member, wherein said bag member assumes a generally tubular shape, and said sheet of flexible material attached to said bag member by said plurality of bendable spread clips together with said bag member provides a decorative object which simulates a giant bat.

5,285,899

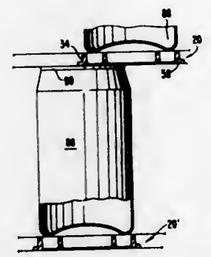
STACKABLE CAN TRAY SYSTEMS

William Appa, Anaheim, and Arne Lang-Ree, Manhattan Beach, both of Calif., assignors to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Division of Ser. No. 708,831, May 29, 1991, which is a continuation of Ser. No. 504,399, Apr. 3, 1990, abandoned, which is a division of Ser. No. 272,039, Nov. 15, 1988, Pat. No. 4,932,532. This application Jul. 1, 1991, Ser. No. 724,189
The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.
Int. Cl.[5] B65D *21/02, 1/24*
U.S. Cl. 206—503 **46 Claims**

1. A can tray system including (a) a bottom layer of cans, each said can having an upwardly disposed, generally circular top rim, (b) a tray having walls joined together to thereby define a generally rectangular wall structure, said tray including a floor structure secured to and positioned generally within said wall structure, said floor structure having a bottom floor surface and a top floor surface, said tray being supported at least in part by said bottom layer of cans, and (c) a top layer of cans supported on said top floor surface, each said can of said top layer having an upwardly disposed generally circular top rim; wherein the improvement comprises:

said tray having a plurality of spaced members depending down from said bottom floor surface and positioned relative to said top rims of said bottom layer of cans such that



said tray is normally positioned in a blocked position on top of said rims of said bottom layer of cans such that free sliding motion of said tray on said bottom layer of cans is blocked;

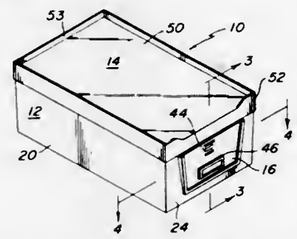
wherein when a generally lateral force is exerted on said wall structure, at least some of said spaced members are repositioned relative to said top rims of said bottom layer such that said tray is in a generally unblocked position relative thereto and said tray can slide on said rims of said bottom layer of cans.

5,285,900

STACKABLE STORAGE CONTAINERS

Sheni S. Swingler, 6105 W. Columbia Ave., Philadelphia, Pa. 19151

Filed Apr. 15, 1993, Ser. No. 48,023
Int. Cl.[5] B65D *41/16, 43/10*
U.S. Cl. 206—508 **20 Claims**



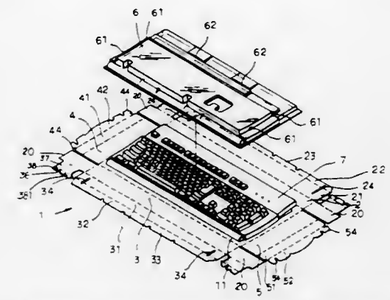
1. A stackable storage container for storing articles, comprising a box having a bottom and four walls extending upwardly from the bottom to a free edge, the bottom and the walls defining a storage space for articles and the free edge defining an opening for access to the storage space, a cover having a top and a downwardly depending lip for engaging the side walls adjacent the free edge for releasably retaining the cover on the box, one of the walls having a cut-out therein, and guide means bordering the cut-out for receiving and retaining a movable panel therein for selectably opening and closing the cut-out, the panel being approximately the same size as the cut-out, the guide means being arranged so that the panel when inserted into the guide means is at an angle to the wall having the cut-out such that the upper region of the panel extends further from the wall than the lower region of the panel.

5,285,901

SHOCK-PROOF PACKING AND DISPLAYING BOX

Cary Huang, Taipei, Taiwan, assignor to Cradle Design Co., Taipei, Taiwan

Filed Aug. 28, 1992, Ser. No. 936,444
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—521 **5 Claims**



1. An improved shock-proof packing and displaying box, comprising:

a one piece board which can be folded into a case having an opening at a top of when said box is assembled;

a modified dust cover disposed on top of an item to be packed and being located in said opening when said box is assembled;

said one piece board being provided with a box base and front, rear, left and right side flaps each respectively extended from a different corresponding side of said box base; a top fold extended from each side flap of said side flaps with a folding line disposed therebetween; front, rear, left and right inner fixing folds respectively extended from each corresponding said top fold with a folding line disposed therebetween; and a corner flap extended from each end of a front and rear side flap of said front, rear, left and right side flaps;

each end of a left and right inner fixing fold of said front, rear, left and right inner fixing folds being provided with an insertion tongue; a pair of retaining cuts on an edge of each of said left and right inner fixing fold;

an edge of each of a front and rear inner fixing fold of said front, rear, left and right inner fixing folds being provided with a number of recessed cuts so as to divide the same into a number of engagement inserts;

an elongated slot being disposed at each end of said front and rear top fold and inner fixing fold, said elongated slot extended away from said front and rear side flap, said elongated slot engageable with said insertion tongue when said box is assembled.

5,285,902

PACKAGING SYSTEM FOR PAINTINGS, OTHER WORKS OF ART AND THE LIKE

Ana Tabuenca Garcia, Avenida de Europa, No. 4, 28023 Pozuelo de Alarcón, Madrid, Spain

Filed Jun. 15, 1992, Ser. No. 898,488
Claims priority, application Spain, Jun. 14, 1991, 9101433; Jun. 14, 1991, 9101887; Jun. 14, 1991, 9101888; Jun. 27, 1991, 9102050
Int. Cl.[5] B65D *81/02, 85/30*
U.S. Cl. 206—583 **10 Claims**

1. A packaging system for works of art comprising:

a frame dimensionally and structurally suitable for receiving the work of art within the interior of the frame;

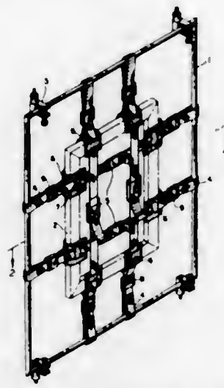
fasteners for connecting the frame to a support, said fasteners insulating the frame from vibrations from the support;

first and second belt means, each having ends secured to

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opposing portions of the frame and each belt means having a closure for closing the belt means under tension, the belt means having opposing portions for receiving the work of art therebetween and securing it within the interior of the frame;

first opposing clamps attached to the belt means movable



between a first position wherein the work of art is secured between the opposing clamps and the opposing portions of the belt means and a second position wherein the work of art is not so secured; and

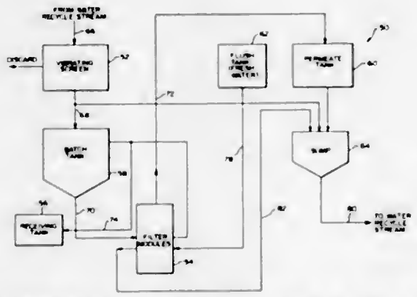
second clamps attached to the belt means for adjusting and maintaining the first clamps between the first and second positions.

5,285,903

METHOD FOR RECOVERING PARTICULATE AND SCAVENGING FORMALDEHYDE IN A WOOD PANEL FABRICATION PROCESS

Blaine F. Sorenson, 18813 SE. Lakehome Rd., Auburn, Wash. 98002, and Gary A. Raemhild, 2325 43rd Avenue E., Seattle, Wash. 98112

Filed Oct. 13, 1992, Ser. No. 960,109
Int. Cl.[5] B03B *9/00*; C02F *1/00*
U.S. Cl. 209—2 **5 Claims**



5. A method for capturing by-product of a wood panel fabrication process, the by-product comprising wood fiber, semi-solids and liquid, including hydro-carbon molecules, the fabrication process employing an emission control system in which a water stream collects the by-product, the recycling method comprising the steps of:

screening a liquor of by-product to separate large particulate and pass screened by-product to a batch tank;

circulating the screened by-product between the batch tank and a thin film membrane to concentrate the by-product;

discharging concentrated by-product to a receiving tank when the circulating by-product concentration reaches approximately 40–45% solid by weight; and

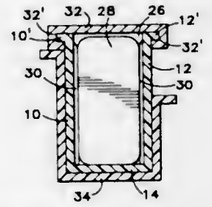
recycling permeate output from the membrane during circulation into the water treatment system for re-use in collecting wood panel fabrication by-product.

5,285,904

MAGNETIC SWEEPER CONSTRUCTION

Gerald A. Haase, 1005 Country Club Rd., Lake Oswego, Oreg. 97034

Filed Dec. 16, 1992, Ser. No. 992,284
Int. Cl.[5] B03C *1/00*
U.S. Cl. 209—215 **4 Claims**



1. A magnetic sweeper comprising:

a) a laterally elongated body member of non-magnetic material having front, rear, bottom and end walls defining a compartment open at the top thereof,

b) a permanent magnet in the compartment,

c) forwardly and rearwardly extending flanges on the upper ends of the front and rear walls,

d) at least one laterally elongated, rigid cover member configured to overlie the open top of the compartment,

e) the forward and rearward sides of the cover member terminating in reverse bends configured to form laterally extending guide slots configured to receive therein said forwardly and rearwardly extending flanges, for retaining the cover member on the body member over the open top of the compartment,

f) a catcher member of non-magnetic material having front, rear and bottom sides, the front and rear sides being configured for engaging the front and rear outer sides of the body member with the bottom side of the catcher member overlying the bottom side of the body member, and

g) handle means operatively engaging the body member for manipulating the sweeper over a surface to be swept of magnetic materials.

5,285,905

SCREENING ASSEMBLY FOR SOIL

Réal R. Laprade, 45 Terrace Venice, Coteau-du-Lac, Quebec, Canada J0P 1B0

Filed Jul. 20, 1992, Ser. No. 915,300
Int. Cl.[5] B07B *1/22*
U.S. Cl. 209—288 **6 Claims**

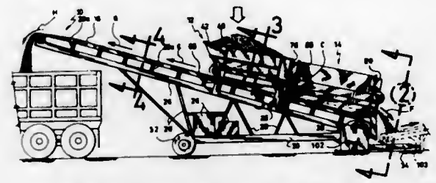
1. A screening assembly for soil comprising,

a mixed soil receiving bucket having a first conveyor means movably mounted along its bottom surface for transporting a mixture of soil and debris towards one end thereof,

a rotatable cylindrical drum axially mounted adjacent said one end of said bucket for receiving said mixed soil from said bucket, said drum being made of two end rings connected by a cylindrical meshed screen adapted to allow the soil from said mixed soil to pass through the screen, said drum being axially tilted downwardly in a direction away from said bucket for allowing the debris to be

dumped out at the lower end of the drum during rotation of the latter,

a second conveyor means tiltably mounted under said cylindrical drum and said bucket for collecting said screened soil from said drum, said second conveyor means being tilted at an angle substantially corresponding to the incli-



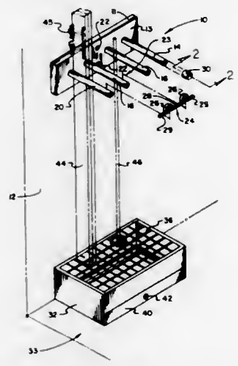
nation of the cylindrical drum, movable means on said second conveyor for transporting said screened soil in an upward direction away from said drum and said bucket, whereby said screen soil is adapted to be dumped at the upper end of said second conveyor means, and said debris are adapted to be dumped at the lower end of said drum.

5,285,906

SKI STORAGE RACK

Thomas B. Wisnowski; Gabriele R. Wisnowski; Rachel M. Wisnowski, and Kristin A. Wisnowski, all of 614 S. Minnesota St., Mitchell, S. Dak. 57301

Filed Mar. 1, 1993, Ser. No. 24,326
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—70.5 **9 Claims**



1. A ski storage rack comprising:

a vertically arranged first support member;

mounting means detachably connected to said first support member, wherein said mounting means is configured for receiving and securing a plurality of skis and poles in a manner wherein said skis and poles are maintained in a vertical position;

fastener means for detachably securing said mounting means to said first support member;

a horizontally arranged second support member; and

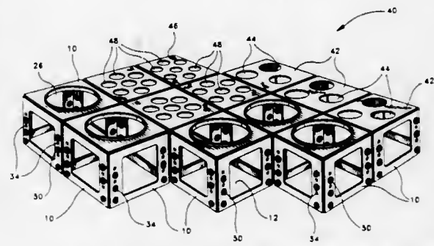
receiving means removably located on said second support member, wherein said receiving means is positioned below and in vertical alignment with said mounting means, wherein said receiving means includes a catch basin which is configured as a substantially rectangular box having an open upper end and an opposed lower end having a bottom wall, wherein said catch basin includes a third support member adjacent said open upper end thereof for engaging and supporting outer ends of said vertically positioned skis and poles in vertically aligned and spaced relationship with respect to said bottom wall, and wherein said receiving means further includes container means removably mounted within said catch basin for collecting snow and ice melting and dropping from said skis and poles.

5,285,907

MODULAR TUBE RACK ARRAYS

Larry A. Franchere, Sparta, and Douglas P. Henderson, Morristown, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 14, 1992, Ser. No. 884,661
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—74 **10 Claims**



1. A clinical laboratory rack unit for joining into an array of several such units to contain a plurality of laboratory specimen containers, comprising

(a) a flat bottom wall;

(b) a flat top wall;

(c) at least one vertical wall joining said bottom wall and said top wall;

(d) at least one opening in said top wall for receiving a container in said rack unit;

(e) a plurality of spaced protuberances along said vertical wall; and

(f) a plurality of spaced holes along said vertical wall

(g) whereby insertion of at least one of said protuberances into at least one of said holes in an adjacent rack unit provides an array of rack units for receiving laboratory specimen containers therein.

5,285,908

FLEXIBLE DISPLAY

Jerrel D. Rogers, 1317 NE. 20th Pl., Moore, Okla. 73160

Filed Dec. 8, 1992, Ser. No. 987,228
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—118 **28 Claims**

1. A flexible display for removably supporting a plurality of containers having saleable items disposed therein wherein the flexible display is supportable from a support structure, comprising:

a string having a first end and a second end and being constructed of a flexible material whereby the string is foldable to a folded condition and extendable to an extended position, the first end of the string being connectable to the support structure and the string extending from the support structure in an extended position of the string; and

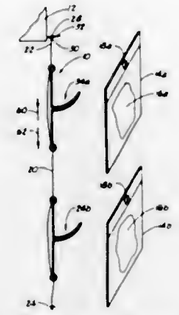
a plurality clip elements each clip element comprising:

a clip base having a container support connected thereto and having a string connector connected thereto, the container support being removably connectable to at least one of the containers and the string connector being connectable to the string; and

wherein each clip element is connectable to the string via the string connector and each container is removably

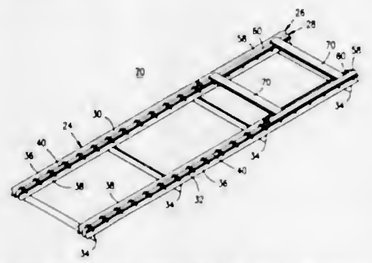
VOL 1159 ISS 3 FE 15 1994 UMI

connectable to the container support of one of the clip elements so that each container is removably connected to



the string via one of the clip elements in the extended position of the string.

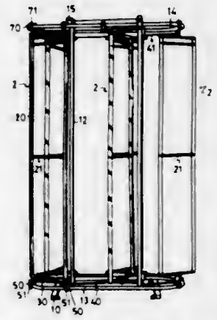
5,285,909
PALLET STORAGE RACK
Robert C. Slater, 854 Spring Cove, Schaumburg, Ill. 60193
Filed Feb. 4, 1993, Ser. No. 13,043
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—151 **5 Claims**



1. A storage rack for pallets and the like comprising:
a) a roller frame defined by at least one pair of spaced apart roller track assemblies, each roller track assembly in said pair being formed by two transversely spaced, longitudinal arrays of rollers defining a roller track with a guide between the arrays of rollers; and
b) at least one glide tube riding on a plurality of said rollers, said glide tube being formed of a pair of transversely spaced frame members, each frame member having a lower rail portion riding on the rollers of one of said roller tracks, guide means formed on said rail portions guiding said rail portions relative to the rollers of its associated spaced array of rollers, and means interconnecting the pair of transversely spaced frame members;
said roller frame being inclined downwardly and forwardly so that said glide tube will flow forwardly under the force of gravity.

5,285,910
ROTATABLE CLOTHING HANGER ASSEMBLY
Kuang P. Chen, Taipei, Taiwan, assignor to Lu Kuang Enterprise Co., Ltd., Taipei, Taiwan
Filed Sep. 8, 1992, Ser. No. 942,146
Int. Cl.[5] A47F *5/02*
U.S. Cl. 211—162 **8 Claims**

1. A rotatable clothing hanger assembly comprising:
a rack having an upper rack frame, a lower rack frame and a pair of spaced posts connected therebetween;
an upper loop track and a lower loop track respectively supported by said upper rack frame and said lower rack frame; and
a plurality of spaced hanger units slidably mounted between said upper loop track and said lower loop track, each said hanger unit comprising an upper sliding means, and a clothing hanger frame rotatably coupled therebetween to allow free rotation of said clothing hanger frame relative to said upper sliding means and said lower sliding means when manipulated;
each adjacent upper sliding means being pivotally linked, and each adjacent lower sliding means being pivotally linked, such that said hanger units are capable of revolving in concert with each other along said upper track and said lower track when manipulated;

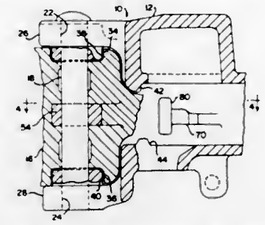


said upper sliding means including an upper rod positioned under said upper track and a pair of upper clamping means each having a first end mounted on each end of said upper rod and a second end slidably hung on said upper track;
said lower sliding means including a lower rod above said lower track and a pair of lower clamping means each having a first end mounted on each end of said lower rod and a second end slidably positioned on said lower track;
an upper bearing means being rotatably coupled between said upper rod and an upper side of said clothing hanger frame; and
a lower bearing means being rotatably coupled between said lower rod and a lower side of said clothing hanger frame, allowing said clothing hanger frame to have a free rotation about an axis therethrough when manipulated.

5,285,911
COUPLER KNUCKLE PIN PROTECTOR STRUCTURE AND STRESS RELIEVER
Russell G. Altherr, 8449 Moraine Ave., Munster, Ind. 46321
Filed Aug. 26, 1992, Ser. No. 935,201
Int. Cl.[5] B61G *3/04*
U.S. Cl. 213—152 **6 Claims**

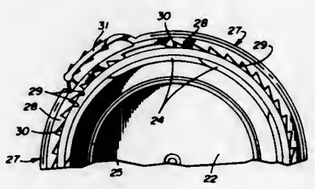
1. A railway vehicle coupler comprising a coupler body, a knuckle mounting means including vertically spaced pivot lugs mounting said knuckle on said coupler body for movement about a vertical axis between a locked position and a release position, pulling lugs on each of said knuckle and said coupler body engageable when said knuckle is in said locked position, stress relieving means integral with said coupler body extending between said knuckle and said coupler body intermediate said pivot lugs for distributing stresses applied on said knuckle to said coupler body when said knuckle is in said locked position, wherein said stress relieving means comprises a plate

means integral with said coupler body at one end and slot means in said knuckle accommodating said plate means, said



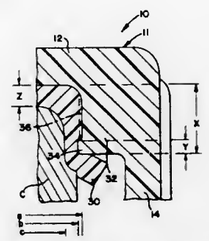
other end of said plate means engaging said knuckle so as to alleviate said stresses.

5,285,912
SNAP ON PULL OFF TAMPER INDICATING FLEXIBLE CAP AND NECK CONFIGURATION
Luca Molinaro, New Castle, Pa., assignor to Northern Engineering & Plastics, Corp., New Castle, Pa.
Continuation-in-part of Ser. No. 922,241, Jul. 31, 1992. This application Jul. 9, 1993, Ser. No. 89,769
Int. Cl.[5] B65D *1/02*
U.S. Cl. 215—256 **4 Claims**



1. A push on, pull off tamper indicating flexible cap and neck configuration for containers having a neck surrounding an opening therein comprising: a plurality of circumferentially and vertically spaced spiral thread configurations on said neck having lead-in points to form multiple means for registering engagement with said flexible cap having registrable spiral thread configurations thereon, a pair of vertically arranged fastening configurations on the exterior of said neck, a continuous groove within said fastening configurations defining vertically spaced identical ratchet portions, said cap comprising a top portion, an annular depending wall on the peripheral edge of said top portion, an outturned annular flange extending from the bottom peripheral edge of said annular depending wall, a tear skirt having continuous vertical ratchet teeth with connecting members formed thereby joined to said annular outturned flange to support the tear skirt, an inturned locking flange intermediately within the continuous vertical ratchet teeth, a frangible line in said tear skirt and a pull tab secured to said tear skirt at one side of said frangible line, said inturned locking flange within the continuous vertical ratchet teeth on the inner surface of the tear skirt arranged to engage within said continuous groove in said fastening configuration, said continuous vertical ratchet teeth arranged to engage said vertically fastening configurations on the neck of the container to prevent rotation of the cap until the tear skirt is removed.

5,285,913
CLOSURE ASSEMBLY WITH INSERT LINER
Hugh V. Morton, Veedersburg, Ind., assignor to H-C Industries, Inc., Crawfordsville, Ind.
Filed Nov. 24, 1992, Ser. No. 981,010
Int. Cl.[5] B65D *53/00*
U.S. Cl. 215—349 **8 Claims**



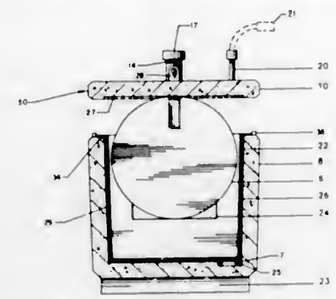
1. A closure assembly for a container, comprising:
a closure cap having a circular top wall portion, and an annular skirt portion depending from said top wall portion, and
a disc-shaped, sealing insert liner positionable adjacent said top wall portion by insertion into said closure cap for sealingly engaging said container, said sealing liner being formed prior to insertion in said closure cap,
said closure cap including annular shoulder means at the juncture of said top wall portion and said skirt portion, said shoulder means cooperating with said disc-shaped sealing insert liner to provide said liner with a generally inwardly facing sealing surface for sealingly engaging said container,
said closure including projection means for engaging said inset liner, said projection means comprising at least one annular rib extending inwardly of said annular shoulder means, said annular rib having an inside diameter for engagement with said insert liner, said liner being dimensioned for disposition of said liner between said annular rib and said container while said liner is held against said top wall portion of said closure cap, said annular rib extending parallel to and spaced from said top wall to define recess means at an inside surface of said annular shoulder means for receiving said insert liner upon application of the closure to said container.

5,285,914
ABOVE-GRADE STORAGE VAULT
William M. Del Zotto, 2300 Commonwealth Ave., Duluth, Minn. 55808-1699
Filed Nov. 24, 1992, Ser. No. 980,755
Int. Cl.[5] B65D *88/76*
U.S. Cl. 220—4.12 **19 Claims**

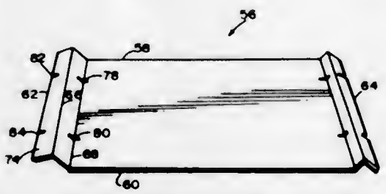
1. Liquid containment apparatus comprising:
(a) a concrete base having a bottom wall and a plurality of sidewalls which project from the bottom wall to define an open cavity;
(b) tank means for containing a liquid within a storage compartment and including access means for communicating with said storage compartment and further including attachment means for making a permanent coupling to said tank means; and
(c) a concrete cover which is removably supported to said sidewalls to cover said cavity, wherein said access means projects through said cover, and wherein said cover includes a plurality of reinforcement members which are

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integrally cast into said cover and coupled to said attachment means such that such cover and tank means are permanently aligned and bound to one another and removable as a unit from said base.



5,285,915
LID FOR A GRAPE OR FRUIT CARTON
Gary L. Earl, Walterville, Oreg., assignor to Anderson & Middleton Company, Hoquiam, Wash.
Filed Dec. 22, 1992, Ser. No. 994,994
Int. Cl.[5] B65D *5/22*
U.S. Cl. 217—56 **10 Claims**



1. In a box construction for use in harvesting grapes or other small fruit, the box formed by a pair of wood ends connected by a member forming sides and a bottom, the improvement comprising:
a one-piece lid having opposite edge portions adapted to be secured to said pair of wood ends, said end edge portions each defined by an integral Z-fold, and
wherein said wood ends each have a pair of upstanding nails extending from upper surfaces thereof, and said Z-fold end edge portions are provided with open-ended slots for receiving said nails.

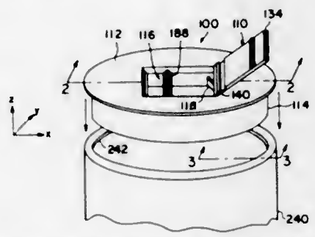
5,285,916
PRESSURE VESSEL
Donald B. Ross, P.O. Box 423, Markham, Ontario, Canada L3P 3R1
Filed Feb. 19, 1993, Ser. No. 19,526
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—89.1 **16 Claims**

1. A vessel for gas under pressure comprising a container, an open-celled foam, sized to fit within the container, a pressure relief system which is activated upon an increase in the internal pressure of the container when filled with gas under pressure and as a result of overheating the container, and which in combination with the foam prevents surging of the gas, flare out and container explosion, and an opening in the container



having an actuator valve secured thereto for discharge of the gas under pressure.

5,285,917
SAFETY CLOSURE FOR CONTAINERS
Richard W. Hofmann, Chicago, Ill., assignor to Magenta Corporation, Chicago, Ill.
Filed Mar. 11, 1992, Ser. No. 848,825
Int. Cl.[5] B65D *39/16, 43/26*
U.S. Cl. 220—212.5 **7 Claims**

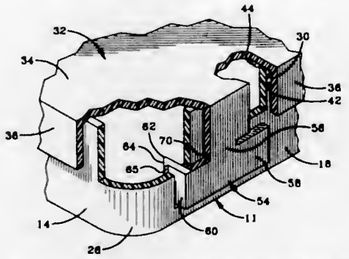


1. In a child-resistant closure for a product container having: a substantially cylindrical body wall, a cover plate attached to the body wall, a movable handle attached to the cover plate, a recess in the cover plate for receiving the handle, the handle being releasably retained by the cover plate in a closed position in the recess; the improvement wherein:
said closure further comprises resilient means disposed in the recess for urging the handle into a position angularly displaced from the cover plate whenever the handle is released from its closed position; and
said handle has one end thereof hinged to said cover plate and said resilient means contacts said handle adjacent said one end; and
said resilient means is a leaf member extending from a bottom wall surface of the recess.

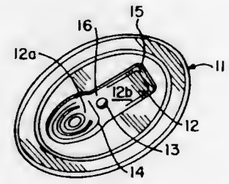
5,285,918
VIDEOCASSETTE SHIPPING CONTAINER
James T. Weisburn, Massillon; Ronald K. Burdett, Strasburg, and Christopher G. Gallagher, Akron, all of Ohio, assignors to Alpha Enterprises, Inc., Canton, Ohio
Filed Dec. 10, 1992, Ser. No. 988,894
Int. Cl.[5] B65D *43/16, 43/22*
U.S. Cl. 220—265 **14 Claims**

1. A container for storing an article including:

a base having a storage compartment formed by a pair of spaced end walls and a pair of spaced side walls;
a closure lid for said storage compartment;
hinge means for movably connecting the closure lid to the base;
a locking aperture formed in one of the lid and base;
a locking tang formed on the other of the lid and base, a portion of said tang being insertable through the aperture into the storage compartment for locking said lid and base in a closed position;
tab means on said locking tang located exteriorly of the storage compartment for destructive separation from said tang to permit unlocking of the lid from the base; and
latch means formed on the lid and base for releasably latching said lid and base int he closed position after the locking tang has been destructively separated from the tab means.

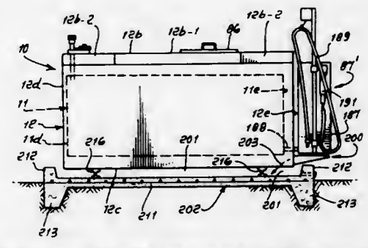


5,285,919
BEVERAGE CONTAINER WITH AIR ACCESS FOR DIRECT DRINKING
Donald Recchia, 128 S. Hillside Ave., Succasunna, N.J. 07876
Filed Dec. 30, 1992, Ser. No. 998,388
Int. Cl.[5] B65D *17/34*
U.S. Cl. 220—271 **5 Claims**



1. A beverage container having a top with a non-detachable fulcrum type lifting tab, having a pushing end and a lifting end, attached thereto, said lifting tab being adapted to form an opening in the container top for pouring-out access of the container contents; the container top comprising means for forming two separated openings therein, with formation of a first opening, providing for access to the container contents, and formation of a second opening, providing for air access to the interior of the container to facilitate said pouring-out access of the container contents; and wherein each of said openings is formed by a lifting of the lifting end of said tab; wherein said container top comprises a centrally located, integrally formed rivet member, said lifting tab being affixed to the container top by said rivet with the lifting end positioned on one side of the rivet and the pushing end positioned on the other side of the rivet and the lifting tab being swivelable about the rivet; the means for forming the two separated openings comprising two separate planar peninsularly shaped scored sections of the container top adjacent to and spaced from the rivet and extending therefrom, the swivelable tab held by the rivet is able to separately engage each of said scored sections with the pushing end thereof, so that lifting of the lifting end of the tab causes the pushing end of the tab to apply pressure to one of said two scored sections, causing said section to separate from the remainder of the container top, thereby forming the respective openings.

5,285,920
FIRE RESISTANT TANK ASSEMBLY AND LIQUID HYDROCARBON DISPENSING
David C. McGarvey, San Gabriel, Calif., assignor to LRS, Inc., South El Monte, Calif.
Continuation-in-part of Ser. No. 509,142, Apr. 6, 1990, Pat. No. 5,989,750, which is a continuation-in-part of Ser. No. 331,548, Mar. 31, 1989, Pat. No. 5,012,949. This application Dec. 9, 1991, Ser. No. 803,612
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—444 **16 Claims**



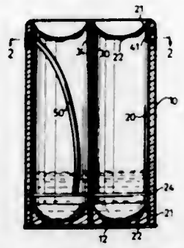
1. In fire resistant tank apparatus adapted for transportation and for installation above-ground to receive and dispense a liquid hydrocarbon, the combination comprising
a) a tank assembly having lightweight wall means defining inner wall means, and outer wall means, there being primary space between the inner wall means, and the outer wall means,
b) first means on the assembly defining access porting to a tank interior defined by the assembly,
c) a bottom wall defined by the assembly adapted to support the assembly at an installation site,
d) thermal barrier material located in said primary space to effectively define a shell about said tank interior,
e) and structure adjacent said wall means to support a dispenser for said liquid hydrocarbon,
f) said structure defining a drain to drain leaking liquid hydrocarbon to a receptacle below the level of said structure, and including said receptacle which comprises a concrete slab supporting said tank assembly at elevated position above the slab.

5,285,921
CONTAINER FOR SOLAR HEATER
Herman Lai, No. 25, Ta Chin St., Taichung, Taiwan
Filed Jan. 11, 1993, Ser. No. 2,565
Int. Cl.[5] B65D *90/00*
U.S. Cl. 220—444 **5 Claims**

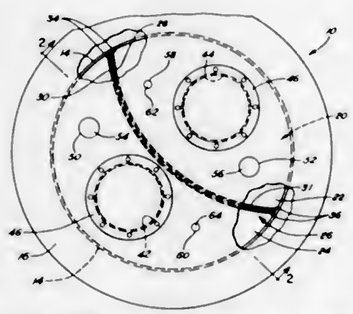
1. A container for a solar heater comprising a housing, a pair of barrels received in said housing for containing liquid and each including an upper portion and a lower portion, a space formed between said housing and said barrels, a sealing mate-

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rial filled in said space, a coupler engaged in said upper portion of each of said barrels, a connector connected between said lower portions of said barrels, whereby, said liquid contained in said barrels may flow from one of the barrels to the other.



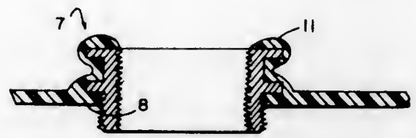
5,285,922
DUAL COMPARTMENT STORAGE TANK
Charles W. Harding, Clarkston, Mich., assignor to Clawson Tank Company, Clarkston, Mich.
Filed Mar. 29, 1993, Ser. Nn. 38,890
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—553 1 Claim



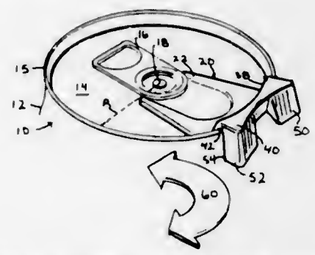
1. A dual compartment storage tank having a bottom wall, an annular side wall extending upwardly from said bottom wall, and a top cover, said bottom all, annular side wall and top cover defining a closed interior space, and a vertical bulkhead extending across said interior space and dividing it into two compartments, said bulkhead comprising a pair of substantially identical vertical arcuate plates which are curved about a common vertical axis throughout their entire lateral extent and are coextensive and overlie one another in closely laterally spaced apart relation, the bottom, side and upper edges of said plates being sealed to said bottom wall, side wall and top cover, respectively, along their entire peripheries so that said compartments are completely sealed and isolated from each other.

5,285,923
AMERICAN WET TANK SYSTEM
Darrell W. Brandon, Jr., P.O. Box 1143, Marion, Ind. 46952-7543
Division of Ser. No. 647,500, Jan. 24, 1991, Pat. No. 5,186,324. This application Dec. 1, 1992, Ser. No. 983,705
Int. Cl.[5] B65D *88/54*
U.S. Cl. 220—601 12 Claims

1. A port apparatus for a tank assembly comprising a rotationally molded tank, a metal port fitting molded into the tank, the fitting having an exterior end, an interior end and at least one intermediate flange which is molded into the wall of the tank, the exterior end extending out of the wall and having exterior threads, and at least one nut for screwing onto the exterior threads of the fitting to compress the molded material of the wall between the nut and the flange to provide an impermeable seal between the fitting and the tank.



5,285,924
SLIDABLE BEVERAGE CONTAINER COVER
Kenneth S. Morris, 2616 Ridge Brook Trail, Duluth, Ga. 30136
Filed Feb. 16, 1993, Ser. No. 17,762
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—694 4 Claims



1. A slidable removable cover for a beverage container, said container having a generally cylindrical shape and a radius top and bottom ends, a tab opener which when pulled will create an opening in said top end of said container and a circumferential lip at said top end defining an inner and an outer periphery, comprising:

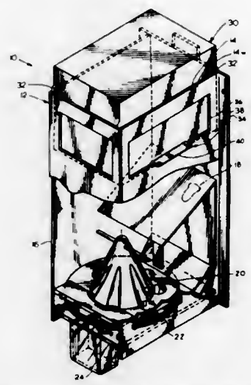
a tab portion having upper and lower surfaces, and a front and rear portion;

an inner periphery engaging portion attached to the rear of said tab portion comprising a curved inner raised flange having an upper and lower edge and having an inner radius of curvature dimensioned for mating relationship with said circumferential lip; and

an outer periphery engaging portion comprising an outer flange attached to the upper edge of said inner flange, said outer flange having inner and outer surfaces and having a curved outer portion terminating in a pair of ends, said curved outer portion being curved away from said inner flange, the ends of said curved outer portion being angled in toward said inner flange, said ends of said curved outer portion being capable of engaging said outer periphery, and said inner portion of said outer flange having a generally horizontal rib attached to said inner surface of said outer flange,

whereby said inner flange, a portion of said outer flange and said ends of said outer flange define a curved gripping surface capable of engaging said circumferential lip such that said cover can be rotated around said circumferential lip to bring said tab portion over said container opening thereby covering said opening.

5,285,925
RAPID RELEASE BOX
Howard S. Leight, 1330 Colorado Ave., Santa Monica, Calif. 90404
Filed Dec. 31, 1992, Ser. No. 999,292
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[5] G07F *11/00*
U.S. Cl. 221—1 12 Claims



1. A container which can hold multiple earplugs and which can be inserted into an open top portion of an earplug dispenser where the box can be readily released to allow the earplugs to fall into the dispenser, comprising:

a box having side and bottom walls, with a first of said side walls having a lower edge, said bottom wall including at least a first flap having an inner end pivotably mounted on said lower edge of said first side wall and having an outer flap portion;

a release device having an inner part coupled to said outer flap portion and to another part of said box to support said outer flap portion from moving down, said release device having an outer release device part forming a handle which can be moved to decouple said inner part of said release device from said outer flap portion and allow said flap to pivot down.

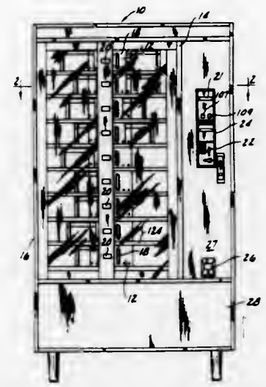
5,285,926
MULTIPLE-PRODUCT MERCHANDISING MACHINE
Leonard P. Falk, Florissant, and Paul K. Griner, St. Louis County, both of Mo., assignors to Unidynamics Corporation, New York, N.Y.
Continuation of Ser. No. 760,769, Sep. 16, 1991, Pat. No. 5,169,027, which is a continuation of Ser. No. 523,979, May 16, 1990, Pat. No. 5,048,717, which is a continuation of Ser. No. 112,475, Oct. 26, 1987, Pat. No. 4,927,051. This application Oct. 13, 1992, Ser. No. 959,676
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] B65H *5/00*
U.S. Cl. 221—2 16 Claims

1. A multiple-product merchandising machine, comprising:

a cabinet having at least one product access door associated with a respective opening in the cabinet, the door being movable between an open position to permit access to the interior of the cabinet through the opening, and a closed position in which access to the interior of the cabinet through the opening is prevented, and being normally locked in the closed position;

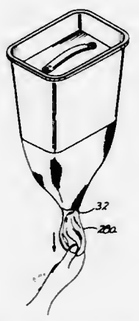
a plurality of product compartments mounted in the cabinet for movement past the at least one access door and accessible through the respective opening when the door is in the open position;

currency actuated means for allowing a selected access door to be moved from the closed position to the open position when a predetermined amount of currency is inserted by a customer; and



control means for preventing certain predetermined compartments from being accessed by the at least one access door during a predetermined time period by maintaining the at least one door locked when one of the predetermined compartments is aligned with the access door and thereafter allowing access to said predetermined compartments by allowing the associated access door to be unlocked and moved to its open position.

5,285,927
CONTAINER/DISPENSER FOR USED PLASTIC SACKS
Sam Pruitt, 2021 Ocean Ave., Apt. 309, Santa Monica, Calif. 90402
Filed Mar. 3, 1993, Ser. No. 25,857
Int. Cl.[5] B65G *59/10*
U.S. Cl. 221—22 8 Claims



1. A container/dispenser for receiving and storing a plurality of plastic tissue-like grocery sacks in random fashion and presenting the storage sacks for digital removal one at a time, said container/dispenser comprising:

a vessel having a plurality of adjoining walls defining and surrounding a storage space having a vertical axis, said walls having upper edges and lower edges, the upper edges defining an open sack entry area of a predetermined

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configuration, and the lower edges defining an area of a generally similar configuration, said lower edges having secured thereto further downwardly directed walls, each of said further walls decreasing in area downwardly from said lower edges to approach each other further wall to a point where the lowermost portion of the further walls define an exit area of a predetermined size and configuration to permit a single sack to be withdrawn digitally therefrom when a plurality of sacks have been placed in the storage space in random disposition and compressed downwardly in said storage area toward said exit area, said further walls being flexible with their inwardly facing sides having sufficient roughness to frictionally engage sacks moving in contact with the inside of said further walls; and

a lid fitting within the predetermined configuration of the sack entry area into the storage space, said lid including a portion extending downwardly into said storage space and serving to compress downwardly in the storage space a plurality of sacks randomly inserted into said space through said storage space whereby, when sacks are randomly disposed in the storage space and compressed down within the further walls, a lowermost sack may be digitally withdrawn individually through the exit area.

5,285,928

FLUID-OPERATED CONTAINER STORAGE AND DISPENSING SYSTEM

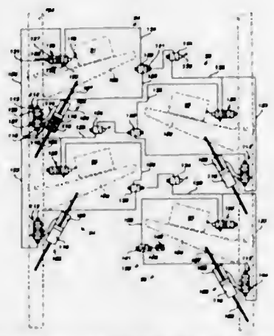
Frederick J. Stingel, Jr., 872 Lakeside Dr., North Palm Beach, Fla. 33408, and Frederick J. Stingel, III, Palm Beach Gardens, Fla., assignors to Frederick J. Stingel, Jr., Lexington, Ky.

Continuation-in-part of Ser. No. 878,709, May 1, 1992, Pat. No. 5,236,104. This application May 12, 1992, Ser. No. 882,145

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] **G07F** *11/06, 11/08*

U.S. Cl. 221—75 **9 Claims**



1. A vertically accumulating storage and dispensing system for containers and the like, comprising:

a first plurality of substantially vertically spaced shelf assemblies supported by support structure;

a second plurality of substantially vertically spaced shelf assemblies supported by support structure and opposing the first plurality of shelf assemblies;

each of said shelf assemblies comprising:

a shelf, the shelves being staggered substantially vertically relative to the shelves of the opposing plurality of shelf assemblies, said shelf being mounted to said support structure for pivotal movement at least between an upwardly tilted, receiving position and a downwardly tilted, discharge position;

fluid-operated structure for moving the shelf between at least the upwardly tilted, receiving position and the downwardly tilted, discharge position;

control structure for selectively applying fluid pressure to said fluid-operated structure to raise the shelf if the shelf does not have a container or if the next lower shelf assembly is not prepared to receive a container.

5,285,929

PARTS FEEDING AND RECEIVING MECHANISM

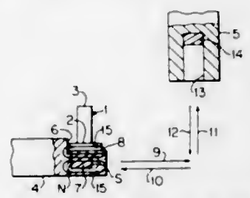
Yoshitaka Aoyama, 20-11, Mikitsukadai 2-cho, Sakai-shi, Osaka 590-01, Japan

Filed Apr. 1, 1992, Ser. No. 861,049

Claims priority, application Japan, Apr. 13, 1991, 3-171592

Int. Cl.[5] **B65H** *3/16*

U.S. Cl. 221—212 **3 Claims**



1. A parts delivery system for fasteners having coaxial proximal and distal portions, the system comprising:

a feeding member having a single first magnet mounted thereto for securing a fastener and transporting it to a receiving member;

a receiving member having a single second magnet mounted thereto for securely receiving the fastener from the feeding member;

the magnets being stationarily mounted in relative coaxial relation to the fastener when the fastener is mounted to a corresponding portion;

the lines of magnetic force from the first magnet flowing, in a concentrated manner, through the proximal portion of the fastener.

5,285,930

METHOD OF DOSING FIBRES

Niels H. Nielsen, Odense, Denmark, assignor to Skako A/S, Faborg, Denmark

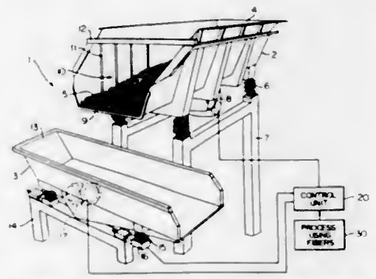
PCT No. PCT/DK91/00093, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO91/14551, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 27, 1991, Ser. No. 867,103

Claims priority, application Denmark, Mar. 28, 1990, 0788/90

Int. Cl.[5] **B67D** *5/08*

U.S. Cl. 222—1 **10 Claims**



1. A method of dosing fibres to be mixed in concrete, said method comprising:

storing a supply of fibres in a first vibration feeder having a trough for containing fibres and for transporting fibres by the action of a wall of the trough on the fibres,

transferring a quantity of fibres proportioned for a dosing operation by vibrations of the first feeder from the first to a second feeder having a trough for containing fibres and for transporting fibres by the action of a wall of the trough on the fibres, while said second vibration feeder stands still,

transporting the transferred fibre quantity from said second vibration feeder while the first vibration feeder stands still, and

transferring fibres from said second vibration feeder into a concrete mixture being mixed.

5,285,931

PRESSURE CAPSULE FOR SPRAY CAN AND SPRAY CAN WHICH UTILIZES SUCH PRESSURE CAPSULE

Vandonick Alfons, Antwerpen, Belgium, assignor to Jalco C.V., cooperatieve vennootschap, Opglabeek, Belgium

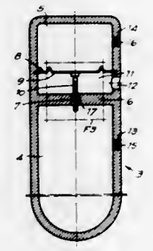
Filed Feb. 1, 1991, Ser. No. 648,915

Claims priority, application Belgium, Feb. 9, 1990, 9000156

The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] **B67D** *5/08*

U.S. Cl. 222—61 **33 Claims**



22. A pressure capsule for a spray can comprising:

a housing having a plurality of walls defining a chamber therein, said chamber being filled with pressurized fluid;

a valve, disposed in a first one of said walls, having a rod;

a disk shaped extremity being connected to said rod and being disposed outside said chamber such that a space is defined between said first wall and said disk shaped extremity;

means for communicating said space with the environment outside of said capsule; and

means for moving said valve into a closed and an open position; wherein said valve is in said closed position when (1) said pressure capsule is placed in an atmospheric environment and (2) said pressure capsule is disposed in said spray can and said moving means is subjected to a pressure equal to or greater than the operating pressure of said spray can.

5,285,932

APPARATUS FOR DELIVERING FLUIDS IN PROPORTIONAL QUANTITIES

Ronald A. Boudreau, 3421 Dragoo Park Dr., Modesto, Calif. 95350

Filed Nov. 15, 1991, Ser. No. 792,450

Int. Cl.[5] **B67D** *5/52*

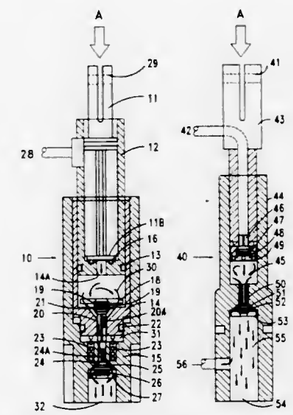
U.S. Cl. 222—137 **11 Claims**

1. An apparatus for mixing two fluids in precise proportions which comprises:

a quantifying meter and a concentrate meter;

means connecting said quantifying meter and said concentrate meter to simultaneously operate said quantifying meter and concentrate meter;

said quantifying meter including a servo plunger including means for coupling to said means to simultaneously operate, said servo plunger being elongated and further including a piston and a sealing member, said piston and said sealing member being axially spaced, said quantifying meter also including a servo piston having a central bore in which said servo plunger is movable coaxially with respect to said piston, said piston being in sealing engagement with said central bore, said servo piston including a pressure fluid entrance port and an axially spaced outlet bore, said sealing member covering said outlet bore when said servo plunger is in a first position relative to said



servo piston, said quantifying meter further including a quantifying meter body having a bore in which a floating valve is movably disposed with an outer surface of said floating valve in sealing engagement with said bore in said quantifying meter body and an inner surface of said floating valve is in sealing engagement with an outer surface of said servo piston, said quantifying meter further including a first valve means in said quantifying meter body and a second valve means in said floating valve, said first valve means cooperating with said second valve means in one position of said floating valve.

5,285,933

PRESSURE HOLDING LIQUID BOTTLE FOR MOUNTING ON A BICYCLE

James J. Gentes, Soquel, and Robert P. Lakes, Campbell, both of Calif., assignors to Giro Sports Design, Inc., Soquel, Calif.

Filed Sep. 30, 1991, Ser. No. 767,997

Int. Cl.[5] **B65D** *37/00*

U.S. Cl. 222—148 **15 Claims**

6. A pressure holding water bottle, suitable for mounting on a standard bicycle water bottle bracket or cage, comprising:

a vessel for holding a liquid, having an open end;

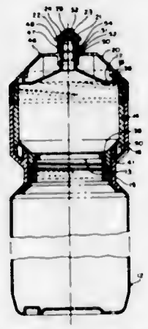
a hollow extension housing for extending the liquid holding capacity of said vessel, and having a first open end and a second open end, the first open end removably connectable to the open end of said vessel forming a pressure seal therebetween and the second open end for filling with the liquid, the second open end having a diameter substantially as large as that of said vessel, said extension housing and said vessel forming an exterior annular groove therebetween for mounting the bottle on the standard bicycle cage;

a cap removably attachable to the open end of said extension housing and forming a pressure seal therewith, said cap having a hollow protrusion communicating with and pointing away from the open end of said extension hous-

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ing, said protrusion having a plurality of sealable apertures near its free end;

a spout having a bore therethrough receiving the hollow protrusion of said cap forming a disengagable pressure seal with said cap protrusion around said sealable apertures, said spout having means for holding said spout in a first, second, and third position, in the first position said spout acting in cooperation with said pressure seals preventing leakage of liquid from the bottle, in the second position said spout allowing liquid to flow out of the bottle through the hollow protrusion and said spout, in the third position said spout acting as in second position and also exposing underside of said spout for cleaning, said spout further including a radially outward extending section having a diameter substantially equal to the diameter of



the open end of said extension housing for facilitating moving said spout from the second and third positions to the first position, the radially outward extending section having spirally formed ribs on its underside which are exposed in the third position and can channel external cleaning water in a spiral fashion to facilitate cleaning of said cap; and

an elastomer band removably mountable on circumference of said extension housing for gripping said water bottle, said band being longitudinally constrained by and covering the annular groove to form an exterior depression for mounting the bottle on the standard bike cage, said band and said housing each having protrusions and recesses that interlock the two parts, thereby rotationally constraining said band with respect to said housing.

5,285,934

AUTOMATIC MOLTEN METAL SUPPLYING DEVICE

Noriyoshi Yamauchi, and Hitoshi Ishida, both of Fuchu, Japan, assignors to Ryobi, Ltd., Fuchu, Japan

Continuation-in-part of Ser. No. 819,744, Jan. 13, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 944,649

Claims priority, application Japan, Jan. 14, 1991, 3-16007

Int. Cl.[5] B22D *39/06*

U.S. Cl. 222—595 **9 Claims**

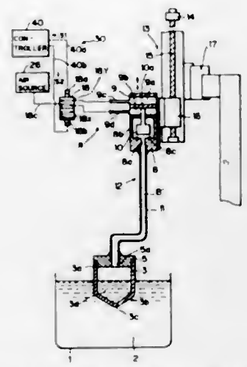
1. An automatic molten metal supplying device comprising:

a ladle having an upper opening portion, a bottom portion having a molten metal intake/discharge port formed therein, and an inner surface defining a molten metal accumulating space;

a lid portion for closing said upper opening portion of said ladle, said lid portion having a through hole formed therein;

a tubular member having a first end connected to said through hole: and,

atmosphere communication/blockage means connected to a second end of said tubular member for selectively disconnecting said molten metal accumulating space from the atmosphere in order to retain the molten metal in said accumulation space, a confined space being provided within said ladle and said tubular member when the molten metal is retained in said accumulating space;



a cross-sectional area of said molten metal intake/discharge port being in a range of from 28 to 80 mm^2 so as to be capable of successively supplying the molten metal to a desired location.

5,285,935

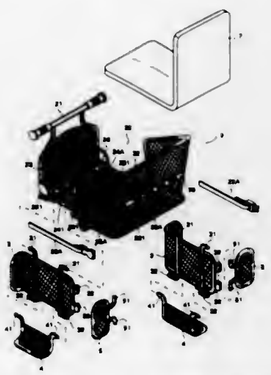
LUGGAGE CARRIER

Chin Y. Hsueh, 430, Ping Ho Road, Sec. 1, Nan Chen Village, Tien Wei Haiang, Changhua, Taiwan

Filed Jan. 26, 1993, Ser. No. 9,213

Int. Cl.[5] B62J *9/00*

U.S. Cl. 224—31 **1 Claim**



1. A luggage-carrier comprising a horizontal bottom panel, a vertical front panel raised from said horizontal bottom panel at one end, a vertical back panel raised from said horizontal bottom panel at an opposite end, two opposite side openings between said vertical front panel and said vertical back panel, a horizontal front hand-rail on said vertical front panel for grasping with the hand, a seat belt fastened to said vertical back panel at two opposite sides, two side panels respectively pivoted to said bottom panel at two opposite sides and moved to close or open said two side openings respectively, two bottom struts spaced on said bottom panel, said bottom struts having holes and hooks for fastening the luggage-carrier to a bicycle above its rear wheel, two foot rests and two back guards respectively pivoted to said side panels at two adjacent sides, and a back strut on said vertical back panel, said back strut having holes for fastening the luggage-carrier to a bicycle or motorcycle above its front wheel, wherein said side panels are respectively turned downwards and bilaterally suspended from said bottom panel for permitting a baby to be carried on said bottom panel and held steady by said seat belt; said side panels are respectively turned upwards and tied up by said seat belt to close said two opposite side openings for permitting things to be held inside the luggage-carrier.

5,285,936

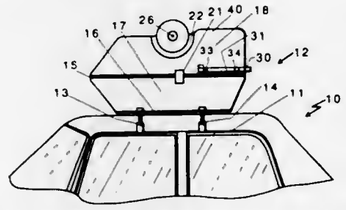
CONVERTIBLE CARGO CARRIER

Edmund A. Matricardi, Jr, 54111-D Backlick Rd., Springfield, Va. 22151

Filed Nov. 7, 1990, Ser. No. 609,841

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—42.01 **12 Claims**



1. In a cargo carrier for vehicle tops comprising a first and second molded clam shells, said clam shells having mated peripheral edges, respectively, means for securing said first clam shell to the vehicle top and means for securing said clam shells together along said mated peripheral edges to form an enclosed cargo carrying space on a vehicle, the improvement comprising:

said second clam shell having fore and aft bottom wall portions and sidewalls carrying one of said mating peripheral edges and fore and aft portions,

wheel means mounted on said second clam shell in the fore bottom wall portion,

said bottom wall in said aft bottom wall portion depending below the plane of said fore bottom wall portion and forming a ground engaging member, and

handle means on said second clam shell, whereby when said second clam shell is removed from peripheral engagement with said first clam shell, said second clam shell serves as a wheeled cargo carrier.

5,285,937

CYCLE RACK

Erik Schmidt, Herning, Denmark, assignor to Erik Schmidt Autoilbehlor A.S, Herning, Denmark

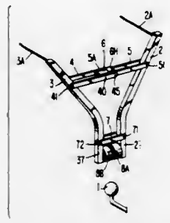
Continuation of Ser. No. 579,716, Sep. 10, 1990, Pat. No. 5,121,862. This application Apr. 6, 1992, Ser. No. 863,866

The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] B60R *9/10*

U.S. Cl. 224—42.03 B **17 Claims**

1. A cycle rack for carrying at least one bicycle during transportation, the cycle rack being adapted to be arranged above and clamped to a spherical trailer ball hitch adapted to be mounted to a vehicle, the cycle rack comprising holding means for holding the at least one bicycle including two longitudinally extending branches, a pair of annular holding members adapted to engage a ball of the spherical trailer ball hitch, each of the pair of annular holding members being positioned at a lower portion of one of said two longitudinally extending branches, each of said annular holding members engaging said spherical trailer ball hitch on opposite sides of the ball, means for pivotally connecting lower portions of said longitudinally extending branches to each other, and a lockable toggle joint means for clamping said holding means on the spherical trailer ball hitch under tension, said lockable toggle joint means including a first joining branch pivotally connected to one of said longitudinally extending branches, a second joining branch pivotally connected to another of said longitudinally extending branches, a common hinge joint means for pivotally connecting said first and second joining branches, at least one snaplock



provided on said first joining branch, whereby upon a pivotably movement of said first and second joining branches, to provide a tensioned spacing of the toggle joint means between the longitudinally extending branches of the holding means, said first and second joining branches are brought into alignment and are interlocked by said at least one snaplock cooperating with a receiving snaplock located on said second joining branch whereby the cycle rack is clamped to the spherical trailer ball hitch.

5,285,938

HOLDER FOR A MOBILE TELEPHONE

Willy Fauchald, Baneveien 34, N-2322 Ridabu, Norway

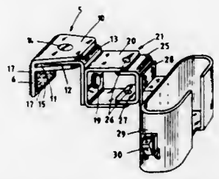
PCT No. PCT/NO90/00181, § 371 Date Jun. 3, 1992, § 102(e) Date Jun. 3, 1992, PCT Pub. No. WO91/08126, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 4, 1990, Ser. No. 852,197

Claims priority, application Norway, Dec. 4, 1989, 894829

Int. Cl.[5] B60R *11/02*

U.S. Cl. 224—42.45 R **2 Claims**



1. A holder for mounting a mobile telephone in a car or other vehicle comprising a U-shaped bracket means formed from first and second interconnected angular members, the bracket means having a first vertical limb to be pressed into a slot between a window pane and an inner, lower portion of a door frame of the car or other vehicle, a second vertical limb, and a first connector means between the angular members, said first connector means providing distance adjustment between the first and second vertical limbs to suit door frames of varying widths, the holder further comprising a universal joint assembly connected to the bracket means and a telephone holder means connected to the universal joint assembly, wherein the universal joint assembly comprises first and second pivotally interconnected U-shaped members, each U-shaped member having a base and opposed limbs extending from said base, wherein the base of the first U-shaped member is connected to said second vertical limb of the bracket means by second connector means including vertical and horizontal

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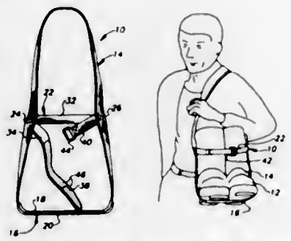
slots in said base and said second vertical limb and a fastener pivotally attaching the base to said second vertical limb through said slots whereby said slots provide vertical and horizontal adjustment of said universal joint assembly relative to said bracket means, wherein the limbs of the second U-shaped member are pivotally connected to the limbs of the first U-shaped member and wherein the telephone holder means is connected to the base of the second U-shaped member.

5,285,939

SLING FOR HOLDING AND CARRYING BOOTS

Darryl G. Hogan, 18013 S.E. Blanton St., Milwaukie, Oreg. 97267

Filed Aug. 10, 1992, Ser. No. 927,812
Int. Cl.[5] B65D *71/00*
U.S. Cl. 224—250 **13 Claims**



1. A sling for supporting, holding and carrying a pair of boots juxtaposed, comprising:
a first strap defining a closed loop and having a stiffened base portion adapted to underlie the pair of boots emplaced upright and juxtaposed in said sling, opposite sides of said first strap extending upward from said stiffened based portion along respective outer sides of the boot tops, said opposite sides extending further upward above the boot tops where said loop forms a carrying strap; and
a second strap defining an open loop and having a closure adapted to close said second strap in a loop around both the boot tops of the juxtaposed boots, said second strap being transverse said first strap and affixed to said first strap at points of intersection on said opposite sides of said first strap, said stiffened base portion holding said opposite sides of said first strap spaced apart when the boots are removed from said sling and said sling is held by said carrying strap, whereby the boots can be emplaced in said sling between said spaced apart sides.

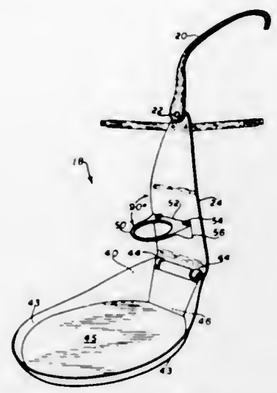
5,285,940

FOLDING NECK-SUPPORTED FOOD TRAY

Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Filed Aug. 3, 1992, Ser. No. 923,469
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—270 **7 Claims**

1. A neck-supported food tray, comprising:
a breast portion having an upper end and a lower end,
a suspension means for suspending said food tray from the neck of a user, said suspension means being attached to said breast portion proximate said upper end,
at least one clip suitable for holding a napkin, said clip being attached to said breast portion proximate said upper end,
a plate holder pivotally attached to said breast portion proximate said lower end,



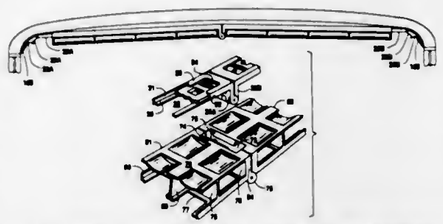
and a stop means for holding said plate holder in a position perpendicular to said breast portion.

5,285,941

CAR STORAGE SYSTEM

Paul L. Herrera, 327 Savannah, San Antonio, Tex. 78213

Filed Oct. 23, 1992, Ser. No. 965,198
Int. Cl.[5] B60R *7/08, 9/04*
U.S. Cl. 224—282 **8 Claims**



1. A portable overhead storage system for use in automobiles, comprising:
support means mountable to the ceiling of an automobile, comprising:
a first sleeve means and a second sleeve means pivotally connected together at respective ends, and
a first arm means slidably mounted within said first sleeve means and a second arm means slidably mounted within said second sleeve means for providing size adjustability of said support means and further for providing a connection point between said support means and the ceiling of the automobile; and
storage means mounted to said support means.

5,285,942

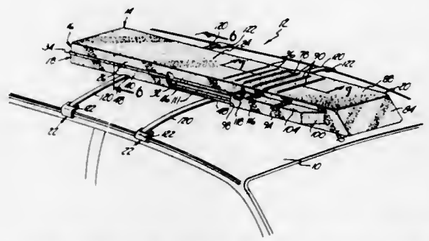
SKI CARRIER

James H. Wills, 12170 Ivywood St. NW., Coon Rapids, Minn. 55433

Filed Apr. 3, 1992, Ser. No. 862,804
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—328 **16 Claims**

1. A ski carrier to hold skis for being alternatively transported by carrying and by vehicular mounting, said ski carrier comprising:

an openable case means comprising a cover portion and a holder portion, said cover portion being positionable with respect to said holder portion to thereby permit closing of said case means about an interior space formed therein and to permit opening of said case means to expose said case interior space, said case means having a case opening therein at a case first end to provide access to said case interior space when said cover portion and said holder portion are in a closed position and being elongated along an axis therein passing through said case opening;
an end cap means having a cap first end of substantially rigid unitary construction with a cap opening therein to provide access to a cap interior space and elongated along an axis therein passing through said cap opening, said cap opening having sufficient dimensions to permit said first end of said case means to pass therethrough and enter said cap interior space when said cover portion of said case means is positioned with respect to said holder portion of said case means to substantially close said case means so as to thereby maintain said cover portion and said holder portion in said closed position; and
a securing means for securing said end cap means to said case means with said case first end extending a selected distance through said cap opening into said cap interior space.

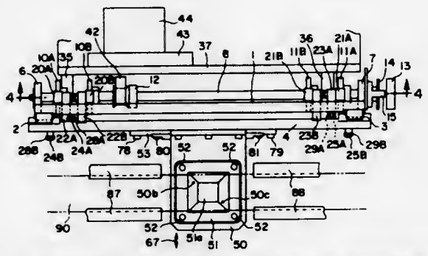


5,285,943

TAPE FEEDING APPARATUS

Koji Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,866
Claims priority, application Japan, Jul. 15, 1991, 3-198196
Int. Cl.[5] B65H *20/18*
U.S. Cl. 226—149 **1 Claim**



1. A clamping mechanism for a tape bonding machine used in semiconductor processing, said clamping mechanism comprising an upper clamper and a lower clamper for holding said tape and wherein:
said upper clamper and said lower clamper are both driven upward and downward, respectively;
said upper clamper and said lower clamper are driven by a single driving source;
said upper clamper and said lower clamper are forcibly raised by cams and lowered by spring means; and
control means for controlling said upper clamper and lower clamper during a tape clamping operation so that said upper clamper is lowered after said lower clamper has been raised, and during tape feeding operations, so that said lower clamper is lowered after said upper clamper has been raised.

5,285,944

SURGICAL STAPLER APPARATUS

David T. Green, Westport; Henry Bolanos, East Norwalk, and Keith Ratcliff, Sandy Hook, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 54,328, May 26, 1987, Pat. No. 5,119,983. This application Dec. 6, 1990, Ser. No. 622,943
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 227—179 **53 Claims**

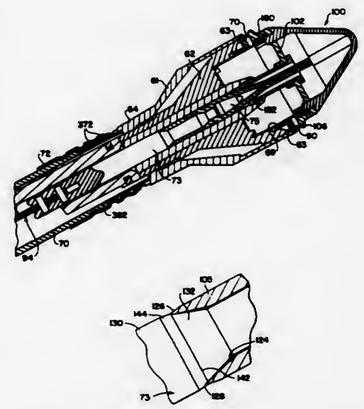
1. A circular anastomosis surgical instrument comprising a body having circular anastomosis means at its distal end, a longitudinally extendable central main shaft and a distal tip assembly having a separate shaft segment, and mounting means for securing said main shaft to said separate shaft segment, said mounting means including at least one detent mounted for radial movement for frictionally connecting said separate shaft segment and said central main shaft.

5,285,945

SURGICAL ANASTOMOSIS STAPLING INSTRUMENT

Ronald J. Brinkerhoff, Amelia; Rudolph H. Nobis, Mason; William Fox, Ohio Township, Clermont County; Mark S. Zelner, Cincinnati; E. David Allen, Okeana; Richard Smith, Miami Township, Clermont County; Jerome Reckelhoff, Blue Ash, all of Ohio, and Philip Churchill, North Potomac, Md., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 938,982, Sep. 1, 1992, Pat. No. 5,205,459, which is a continuation of Ser. No. 749,393, Aug. 23, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 998,285
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—179 **22 Claims**



19. A surgical stapling instrument for applying a plurality of surgical staples to tissue, comprising:
a casing;
a staple holder mounted ins aid casing and having a plurality of staple receiving slots for receiving a plurality of surgical supplies;

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an anvil for clamping the tissue against said staple holder and forming the staples;

a staple driver slidably mounted within said casing for movement into said staple recieving slots for engaging and driving the staples from said staple receiving slots into the tissue and against said anvil;

a trocar slidably receivable in said casing for longitudinal movement relative to said staple holder and said staple driver, said trocar having an enlarged trocar tip with a circumferential lip and chamfered proximally of said lip; and

said anvil including a hollow shaft for receiving said trocar tip therein, wherein tissue movement is facilitated along the chamfer on said trocar and onto said shaft, said anvil shaft supporting a pair of spring-like retainer clips extending longitudinally therealong for releasably engaging said trocar tip when said trocar is inserted into said hollow anvil shaft.

5,285,946

APPARATUS FOR MOUNTING COMPONENTS

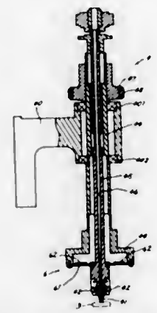
Yoshio Tomigashi, Higashiosaka; Yoshitoshi Morita, Kawanishi; Masahiko Hashimoto, Toyonaka; Akira Sakaguchi, Kobe, and Michio Kunimitsu, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 958,636

Claims priority, application Japan, Oct. 11, 1991, 3-263400; Oct. 11, 1991, 3-263401; Nov. 25, 1991, 3-308703; Mar. 19, 1992, 4-63236; Jul. 28, 1992, 4-201154

Int. Cl.[5] **H01L** *21/603*

U.S. Cl. 228—9 **6 Claims**



1. An apparatus for mounting components by pressing the component as placed on a surface against the surface by a pressure mechanism to bond the component to the surface under pressure, comprising a pressure control system, wherein the pressure control system comprises means for setting a desired value of pressure to be exerted on the component; means for measuring pressure exerted on the component by an actual mounting operation; and drive control means for driving the pressure mechanism in accordance with the deviation of the measured value from the desired value of pressure.

5,285,947

WELDING FIXTURE

Warren B. Depperman, Lugoff, S.C., assignor to Cogsdill Tool Products, Inc., Camden, S.C.

Filed Sep. 14, 1992, Ser. No. 944,876

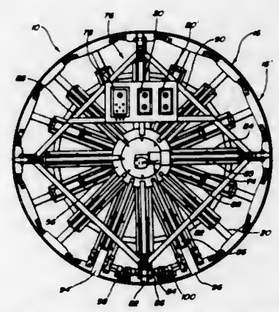
Int. Cl.[5] **B23K** *37/04*

U.S. Cl. 228—49.3 **15 Claims**

1. An apparatus for use in joining two tubular workpieces, said apparatus comprising:

a group of shoe assemblies including first and second pluralities of shoe assemblies, each shoe assembly of said group of shoe assemblies including a radial arm axially arranged about an axis, and an actuator link pivotally attached at a first end to said radial arm, each shoe assembly of said group of shoe assemblies further being radially moveable between a contracted position and an extended position; and

drive means operatively connected to each shoe assembly of said group of shoe assemblies for selectively moving each shoe assembly of said group of shoe assemblies between said contracted position and said extended position, said drive means comprising a shaft member disposed along said axis, at least one actuator, a first sleeve and a second



sleeve, said first and second sleeves being axially movable along said shaft member;

wherein a second end of said actuator links of said first plurality of shoe assemblies is pivotally attached to said first sleeve, and a second end of said actuator links of said second plurality of shoe assemblies is pivotally attached to said second sleeve, wherein said shoe assemblies of said group of shoe assemblies cooperate to provide substantially continuous contact with each of said tubular workpieces about an inner diameter of said tubular workpieces when each said shoe assembly is in said extended position.

5,285,948

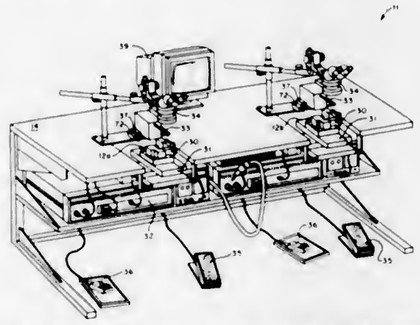
REFLOW SOLDER AND STATIC TEST STATION

Rick E. Rupp, Berthoud; John D. McCrandall, and Dennis L. Zekoff, both of Longmont, all of Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Apr. 30, 1992, Ser. No. 877,941

Int. Cl.[5] **B23K** *37/047*

U.S. Cl. 228—104 **23 Claims**



1. An apparatus for soldering and testing a head gimbal assembly for use in a hard disk drive system, comprising:

a fixture for holding and positioning said head gimbal assembly during said soldering and said testing operations;

a means for moving said fixture to a soldering position;

a solder tip for soldering a wire to an object when said fixture is moved to said soldering position;

a means for moving said fixture from said soldering position to a testing position;

a means for testing said head gimbal assembly, said testing means comprising a switch means which initiates said testing operation when said fixture is moved to said testing position, an interface for electrically interfacing said head gimbal assembly held in said fixture to electronic test circuitry for performing a plurality of electrical tests on said head gimbal assembly, a computer for controlling said electronic test circuitry, and a display device for displaying results of said testing operation.

5,285,949

WIRE-BONDING METHOD, WIRE-BONDING APPARATUS, AND SEMICONDUCTOR DEVICE PRODUCED BY THE WIRE-BONDING METHOD

Susumu Okikawa, Ohme, and Michio Tanimoto, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

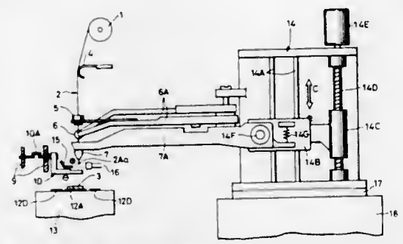
Division of Ser. No. 619,504, Nov. 29, 1990, Pat. No. 5,152,450, which is a division of Ser. No. 149,081, Jan. 26, 1988, Pat. No. 4,998,002. This application Jul. 1, 1992, Ser. No. 907,034

Claims priority, application Japan, Jan. 26, 1987, 14035/87; Jun. 19, 1987, 152839/87

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] **B23K** *31/02*

U.S. Cl. 228—179.1 **32 Claims**



1. A method for fabricating a semiconductor device, comprising the steps of:

(a) providing an insulating film coated metal bonding wire having a first end and a second end, the first end to be bonded to a bonding pad on a semiconductor device chip;

(b) bonding the first end to the bonding pad on the semiconductor device chip;

(c) removing the insulating film of the insulating film coated metal bonding wire, by heat, at a predetermined point between the first end and the second end of the bonding wire, while evacuating vapor of the insulating film produced by the heat through an evacuating nozzle adjacent to the predetermined point of the wire; and

(d) bonding the wire, at the predetermined point where the insulating film has been removed, to a lead.

5,285,950

WIRE SPRAG RETAINER

Thaddeus Zlotek, Centerline, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 19, 1991, Ser. No. 717,744

Int. Cl.[5] **B23K** *101/30;* **F16D** *41/07*

U.S. Cl. 228—189 **11 Claims**

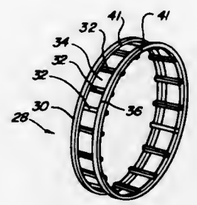
1. A method of forming a sprag retainer comprising the steps of:

(i) placing two generally linear members parallel to each other, and spaced by a first distance, the members each extending between first and second ends;

(ii) placing cross members across the two generally linear members such that the cross members are spaced between the first and second ends, and generally parallel to each other;

(iii) securing the cross members to the linear members;

(iv) bringing the respective first and second ends of the two



linear members together to form rings, the ends of the two linear members being brought together in a direction such that the cross members are at an inner peripheral surface of the rings; and

(v) securing the respective first and second ends of the two linear members.

5,285,951

GATE VALVES AND METHODS OF CONNECTING SAME

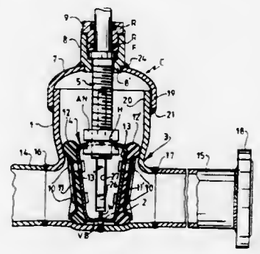
Andreas P. A. Dierikx, deceased, late of Bergen Op Zoom; by Johannes Kranenburg, legal representative, and Arthur A. J. M. Van Hooijdonk, both of Roosendaal, all of Netherlands, assignors to R.M.I. Holland B.V., Netherlands

Continuation-in-part of Ser. No. 554,914, Jul. 20, 1990, Pat. No. 5,085,403, which is a division of Ser. No. 282,581, Dec. 12, 1988, Pat. No. 4,972,577. This application Feb. 3, 1992, Ser. No. 829,283

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] **B23K** *31/00*

U.S. Cl. 228—214 **8 Claims**



3. A method of connecting a pipe to a gate valve, said gate valve comprising two dish-shaped metal casing halves defining a gate member and welded in mating relation, an actuating nut captured between the mated and welded gate halves, a wedge-shaped valve member comprising a pair of resilient, heat sensitive sealing discs, and a pair of plates secured to respective gate member halves and sandwiching the respective sealing discs thereto, a pair of stamped metal casing halves which are mated and welded together to define a guide track for said actuating nut, a threaded stem secured to one end of said actuating nut and projecting from said gate member parallel to said guide track, and a stamped metal cover welded to said casing and defining a substantially closed space therewith receiving said gate member,

said heat sensitive sealing discs movable to define an open position to allow a flow of fluid through said valve and a

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closed position to prevent a flow of fluid through said valve,

said method comprising:

turning the wedge-shaped valve member comprising both sealing discs to said fully open position such that said discs are at a position which is further away from said at least one opening within said mated and welded stamped metal casing halves than when said discs are in said closed position; and

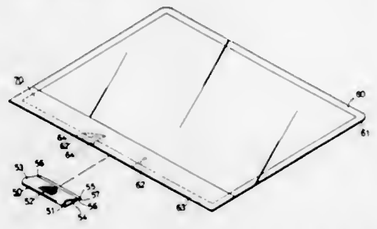
sealing a pipe to said at least one opening within said mated and welded stamped metal casing halves while said heat sensitive sealing discs are in said open position.

5,285,952

DOCUMENT FOLDER

Chen-Lien Ho, No. 36, Lo-Yang Rd., Hsi-Tun Dist., Taichung City, Taiwan

Filed Jan. 7, 1993, Ser. No. 1,357
Int. Cl.[5] B42D *3/10*
U.S. Cl. 229—1.5 R **3 Claims**



1. A document folder comprising an upper sheet, a lower sheet and an elongated folding portion which extends in a first direction and which interconnects said upper and lower sheets, a generally C-shaped clamp having an upper clamping plate, a lower clamping plate and a curved portion which interconnects said upper and lower clamping plates, said upper and lower clamping plates having free edges which are opposed to said curved portion and cooperatively clamping said document folder adjacent to said folding portion of said document folder, a positioning device having a first engaging member which is provided on said C-shaped clamp, and a second engaging member which is provided on document folder and which engages said first engaging member of said C-shaped clamp, the improvements comprising:

said first engaging member including two protrusions extending oppositely from said free edge of said lower clamping plate in said first direction, each of said protrusions being semi-circular in cross section with a flat face and a rounded face, said flat faces of said protrusions being flushed with the internal face of said lower clamping plate, said second engaging member including two parallel slits which are formed in said lower sheet of said document folder and which extend in a second direction perpendicularly to said first direction adjacent to said folding portion of said document folder, said protrusions of said lower clamping plate of said C-shaped clamp being slidably and respectively received in said slits.

5,285,953

BEVERAGE CUP HOLDER

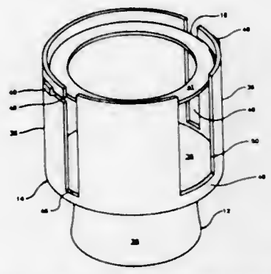
Robert B. Smith, 11731 Parks Farm La., Charlotte, N.C. 28277

Filed Apr. 26, 1993, Ser. No. 52,770
Int. Cl.[5] B65D *90/12*
U.S. Cl. 229—1.5 H **6 Claims**

1. A beverage cup holder of the type adapted to accommodate cups and mugs of various diameters; said cup holder including:

A) a base member having a substantially tubular shape and being of a prescribed height and outer diameter;

B) an upper socket member of substantially cylindrical configuration, having sidewalls of prescribed height, and a floor and said socket having a prescribed inner diameter; said socket member being attached to said base member, and including means for adjusting the position of said socket member laterally, relative to the vertical axis of said base member;



C) an adapter ring for reducing the effective inner diameter of said socket member; said adapter ring being retained in said socket member and movable between a first inactive position on the floor of said socket member, and a second, active position whereby said adapter ring is raised upwardly in said socket to hold small beverage containers;

D) means for retaining said adapter ring in said second, raised position;

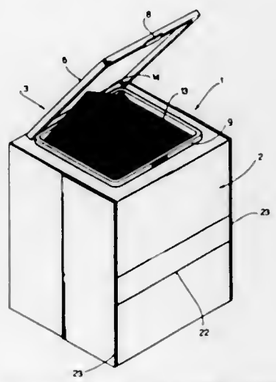
whereby said base member is inserted in an existing cup holder and retained therein to accommodate larger beverage containers.

5,285,954

FLEXIBLE MATERIAL CONTAINER

Luigi Goglio, Via Frua, 11, 20144 Milan, Italy

Filed Jan. 22, 1992, Ser. No. 902,599
Claims priority, application Italy, Jun. 27, 1991, MI91 A 001770
Int. Cl.[5] B65D *5/60, 5/64*
U.S. Cl. 229—125.14 **21 Claims**



1. A parallelepiped-shaped container (1) comprising:

a base plate (4);

a peripheral skirt forming a plurality of vertical walls rising from the base plate (4) and being made of flexible material (2) folded so as to present a horizontal folding edge (22) on one of the vertical walls and also to present two additional folding edges (23) on opposed sides of two other of the vertical walls;

a cover plate (3) applied on top of the peripheral skirt; and

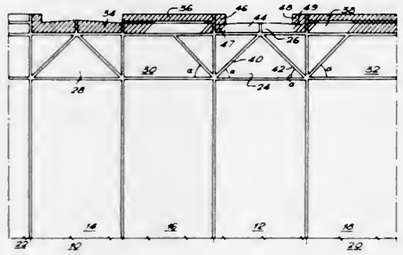
means (6, 26), associated with the cover plate (3), for allowing the container (1) to be emptied.

5,285,955

CARTONS WITH BELLOWS FOLDED TOPS

Richard W. E. Mosse, London, England, assignor to Tetra Alfa Holdings S.A., Pully, Switzerland

Filed Jul. 24, 1992, Ser. No. 917,950
Claims priority, application United Kingdom, Aug. 1, 1991, 9116664; Apr. 24, 1992, 9208961
Int. Cl.[5] B65D *5/40, 5/72*
U.S. Cl. 229—137 **11 Claims**



1. A carton having an openable bellows folded top comprising opposed side panels and front and rear panels folded in and sealed between said side panels, said panels being sealed together to close the top in a liquid tight manner, each said panel having an exterior face and an interior face, said top-forming front panel comprising an upper sub-panel comprising a central portion having an upper free edge defining a rim for a pull-out poring spout and first and second flanking portions of unequal width lying each on a respective side of said central portion, wherein said central portion is of a lesser height than said flanking portions and said central portion is not sealed on its interior face to the overlying side panels or the rear panel in sealing the top.

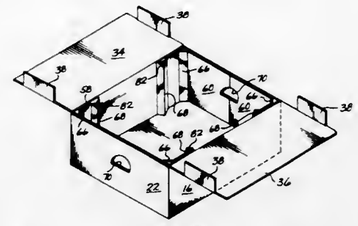
5,285,956

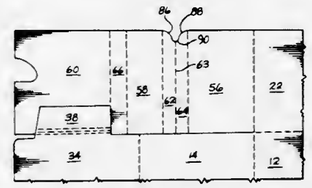
CONTAINER POST FOR PRODUCT PROTECTION

Wallace I. Piepho, South Sioux City, Nebr., assignor to Weyerhaeuser Company and IBP, Inc., Tacoma, Wash.

Filed Mar. 31, 1993, Ser. No. 40,761
Int. Cl.[5] B65D *5/20, 5/42*
U.S. Cl. 229—191 **2 Claims**

1. In a paperboard container of a type having upstanding side walls and a bottom wall together with at least one substantially triangular shaped upstanding reinforcing post extending from the bottom wall to a top of an adjacent one of said side walls and said reinforcing post having a pair of side-by-side strength enhancing panels with top edges extending into the container, having the improvement comprising:





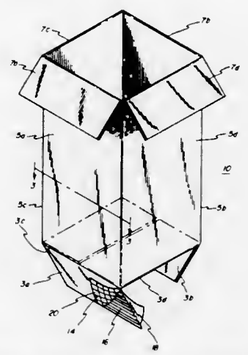
the top edges being curved so they are inclined downwardly with respect to the top of the adjacent side wall.

5,285,957

REPULPABLE, REINFORCED CORRUGATED CONTAINERS

H. Lee Halsell, Mountainburg, Ark., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 26, 1993, Ser. No. 9,559
Int. Cl.[5] B32B *3/28*
U.S. Cl. 229—199 **13 Claims**



1. A repulpable material useful for forming a reinforced corrugated container, said material comprising:

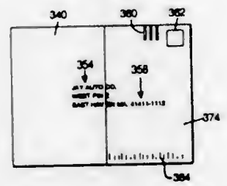
a lining member;

a corrugated medium member;

a reinforcing material positioned adjacent at least one of said lining member and corrugated medium member, said reinforcing material comprising a mesh of natural, cellulosic strands.

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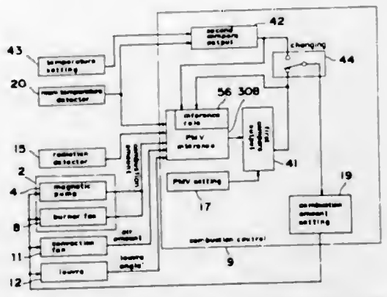
5,285,958
TWO WAY ENVELOPE
Eugene J. Buescher, Lake St. Louis, Mo., assignor to William R. O'Meara, Florissant, Mo.
Continuation of Ser. No. 693,917, Apr. 29, 1991, Pat. No. 5,169,061. This application Dec. 3, 1992, Ser. No. 985,822
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—305 **17 Claims**



1. A two-way envelope comprising front and back panels connected together to form a pocket therebetween for containing an element to be mailed, said front panel having an outgoing address area for receiving an outgoing mailing address, a reply address having at least a portion thereof on one of said panels, and a bar code corresponding to said reply address on one of said panels, said portion of said reply address and said bar code being located on the two-way envelope relative to said outgoing address area such that they will not be read when the two-way envelope is processed by the postal service, said front panel having a left section and a discardable right section separable from said left section during the opening of the two-way envelope to provide a reply envelope including at least a portion of said back panel and said left section, a part of said portion of said back panel of said reply envelope extending rightwardly beyond said left section to provide a right end closure flap foldable over said left section for closing said reply envelope, said portion of said reply address, said bar code, and said outgoing mailing address area being so located on the two-way envelope that after the two-way envelope is opened and said right end closure flap is folded over said left section said reply envelope includes on one side thereof said reply address and said bar code but is essentially free of said outgoing mailing address area, said bar code being in a location on said reply envelope where it will be read when said reply envelope is processed by the postal service, one of said bar code and said portion of said reply address being on said left section of said front panel and the other being on said right end closure flap.

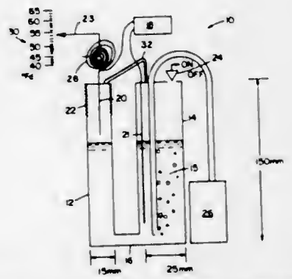
5,285,959
AIR HEATING APPARATUS
Masayuki Nanba; Yoshikazu Matsuda, both of Sakurai; Akio Taki, Shiki; Takashi Nishikawa, Tenri; Hiroshi Ishihara, Yamatokoriyama; Masao Yoshikawa, Katano, and Mitsuharu Tomioka, Kashihara, all of Japan, assignors to Matsushita Electric Industrial co., Ltd., Osaka, Japan
Filed May 14, 1992, Ser. No. 883,120
Claims priority, application Japan, May 16, 1991, 3-111567; May 16, 1991, 3-111570; Jun. 3, 1991, 3-131366
Int. Cl.[5] F23N *5/00*
U.S. Cl. 236—11 **27 Claims**

1. An air heating apparatus comprising
a burning means,
a room temperature detecting means which detects a room temperature,
a radiation detecting means which detects the amount of radiation from a surface of a room to be heated,
a convection fan for sending warm air into the room,
an operating means which generates a control signal on the basis of outputs from said room temperature detecting means and radiation detecting means, a burning amount output of said burning means and an air amount output of said convection fan, and
a burning amount setting means which controls the burning amount of said burning means and the air amount of said



convection fan so that the output from said operating means becomes a predetermined value.

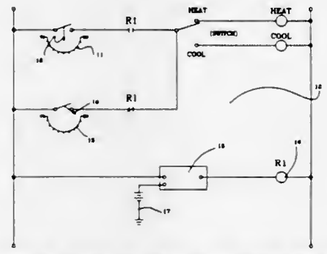
5,285,960
LITHIUM CHLORIDE HUMIDISTAT
Antonios I. Zografos, Oakland, Calif., assignor to Gas Research Institute, Chicago, Ill.
Filed Nov. 10, 1992, Ser. No. 972,987
Int. Cl.[5] B01F *3/02*
U.S. Cl. 236—44 E **11 Claims**



11. A method for controlling humidity comprising:
providing a wall mountable humidistat including two vials connected at their bottoms through a connecting tube and their top portions through an interconnecting tube and containing a hygroscopic solution and a conductivity probe including a ground electrode and a second electrode, each mounted in separate vials;
providing a calibration system;
setting a desired humidity level on the calibration system;
exposing the humidistat to ambient air so that the hygroscopic solution will absorb or give off water; causing a change in the level of solution in the vials;
calibrating to determine the humidity level of the ambient air; and
activating a switch when said calibrating stop detects a certain level of solution so as to start the humidifying or dehumidifying process.

5,285,961
THERMOSTAT CONTROL SYSTEM
Jose A. Rodriguez, Jr., 5800 Castle Ct., Fredericksburg, Va. 22407
Filed Feb. 11, 1993, Ser. No. 16,279
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—47 **4 Claims**

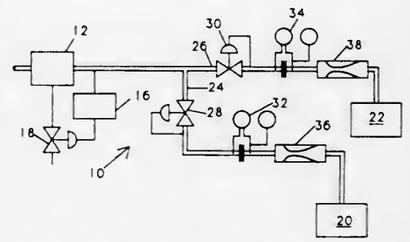
1. A new and improved thermostat control system for use with a heating and air conditioning unit, said thermostat control system comprising:
a first thermostat being electrically connectable to said heating and air conditioning unit and facilitating adjustable temperature control thereof, said first thermostat comprising a first control lever for facilitating an adjustment thereof, and a locking means for precluding a movement of said first control lever;
a second thermostat being electrically connectable to said heating and air conditioning unit and facilitating adjustable temperature control thereof, said second thermostat comprising a second control lever for facilitating an adjustment thereof;
a first relay means in electrical communication with said first thermostat for selectively allowing electrical communication between said first thermostat and said heating and air conditioning unit;
a second relay means in electrical communication with said second thermostat for selectively allowing electrical communication between said second thermostat and said heating and air conditioning unit;
an infrared motion detector;
and;



a timed relay switch in electrical communication with a power supply, said first relay means, said second relay means, and said infrared motion detector, whereby said timed relay switch may energize said first and second relays;
wherein said timed relay switch is operable to de-energize said first relay, thereby precluding electrical communication between said first thermostat and said heating and air conditioning unit, and energize said second relay, thereby allowing electrical communication between said second thermostat and said heating and air conditioning unit, upon a detection of motion by said infrared motion detection, and;
wherein said timed relay switch is further operable to de-energize said second relay, thereby precluding electrical communication between said second thermostat and said heating and air conditioning unit, and energize said first relay, thereby allowing electrical communication between said first thermostat and said heating and air conditioning unit, after a predetermined length of time following a detection of an absence of motion by said infrared motion detection.

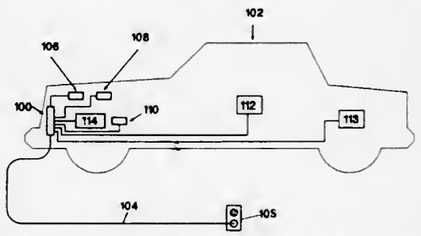
5,285,962
METHOD AND APPARATUS FOR AUTOMATICALLY TRANSFERRING AND MEASURING WET STEAM BETWEEN MULTIPLE CONSTANT DEMAND USERS
James R. Stoy, Missouri City; James L. G. Schrodt, Houston, both of Tex., and Stephen S. Wheeler, Bakersfield, Calif., assignors to Texaco Inc., White Plains, N.Y.
Filed Oct. 26, 1992, Ser. No. 966,819
Int. Cl.[5] F24D *1/00*
U.S. Cl. 237—9 R **2 Claims**

1. A method for automatically controlling the quantity and quality of steam delivered to a plurality of constant demand customers from a single steam source, said method comprising the steps of:
providing a wet steam generating means;
providing means to measurement the quality and quantity of steam generated by said generating means;
providing a plurality of constant demand customers;
providing pressure regulator means between each said constant demand customer and said steam generating means;



providing steam flow measurement means for each of said constant demand customers;
generating wet steam at said generating means; and
feeding said wet steam to said constant demand customers with each said constant demand customer adjusting a respective pressure regulator whereby the system automatically compensates for demand changes by the other constant demand customers.

5,285,963
INTELLIGENT CONTROLLER FOR EQUIPMENT HEATER
Thomas L. Wakefield, and George R. Plunkett, both of Anchorage, Ak., assignors to LLR Technologies, Inc., Anchorage, Ak.
Filed Apr. 29, 1993, Ser. No. 55,034
Int. Cl.[5] G05D *23/00*
U.S. Cl. 237—2 A **42 Claims**



1. A control system for heating or cooling an engine prior to start-up, comprising:
a temperature sensor to sense the temperature of an engine whose temperature is to be controlled;
an input device for receiving input data including an expected start time, the size of the engine, and a rating of a heating or cooling device; and
a computer, operatively connected to the temperature sensor and the input device, programmed to utilize the input data and the temperature of the engine to calculate an activation time at which the heating or cooling device should initiate a change in the existing temperature of the engine to provide the engine with a predetermined temperature at the expected start time, and to provide an initiation signal at the activation time.

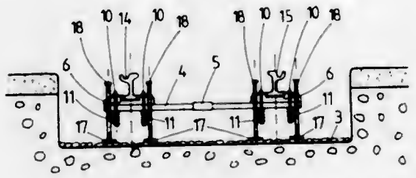
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,964

METHOD FOR CONSTRUCTING A RAILROAD IN CONCRETE HAVING VERTICAL AND LATERAL ADJUSTMENT STEPS PRIOR TO CONCRETE POURING

Gérard Vanotti, St-Paul-de-Varax, France, assignor to Etablissements Vape, St-Martin-du-Fresne, France

Filed May 13, 1993, Ser. No. 61,311
Claims priority, application France, May 22, 1992, 92 06303
Int. Cl.[5] E01B *21/00*
U.S. Cl. 238—7 **3 Claims**



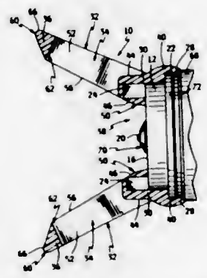
1. A method for constructing a railroad, according in which rails are positioned in a trench into which concrete is subsequently poured in order to fasten the rails, wherein:
ties are made having means for adjusting their length,
these ties are laid down on the bottom of the trench in a position corresponding approximately to the desired tie-spacing,
the rails are laid on provisional block-supports and a rough vertical and horizontal positioning of the rails is carried out by means of these block-supports,
the ties are lifted up and are fastened to the rails by using tie-screws and anchor sleeves respectively as bolts and nuts for holding rail-fastening parts,
vertical leveling screws are screwed into the tie and bearing plates for the end of said screws are disposed under the screws, on the bottom of the trench,
the rails are leveled by means of the leveling screws,
gage-setting of the track is adjusted by the tie-length adjustment means,
the concrete is poured into the trench so as to cover the ties, and
the leveling screws are removed.

5,285,965

SPRAY TIP GUARD FOR AIR-ASSISTED AIRLESS SPRAY GUN

Tera D. McCutcheon, Coon Rapids; Stanley G. Karwoski, Oakdale, and Timothy L. Mullen, Champlin, all of Minn., assignors tn Graco Inc., Golden Valley, Minn.

Filed Dec. 17, 1992, Ser. No. 992,546
Int. Cl.[5] B05B *1/28*
U.S. Cl. 239—288 **24 Claims**



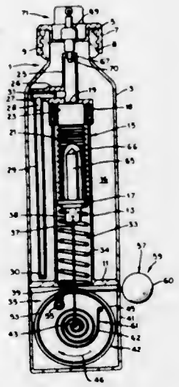
1. An improved tip guard for use with an air-assisted airless paint spray gun, said air-assisted airless paint spray gun having a tip having a paint orifice, an air cap having an air spray face and at least two horns, and a retaining ring said improvement comprising:
a) a base having a shoulder, an aperture, and an opposite pair of transition portions extending axially forward from said aperture, each transition portion having a centrally-positioned notch adapted for receiving engagement of one of said horns of said air cap;
b) at least two vanes extending axially forwardly and radially outwardly from each of said transition portions and forming at least first and second pairs, each said vane having a distal end, a substantially sharp inner edge facing radially inwardly and inner and outer sides, said sides diverging outwardly from said inner edge, said inner sides being substantially curved proximal to said base; and
c) at least two crossbars, each of said crossbars joining a pair of said vanes at said distal ends and each said crossbar having a substantially sharp inner edge facing inwardly, said tip guard being formed of material and dimensions sufficient to resist breakage during normal use, said crossbars having first and second sides, said first sides being substantially curved proximal to said pair of said vanes.

5,285,966

SPRAYING APPARATUS HAVING INTERNAL CHAMBER SELECTIVELY PRESSURIZED BY A PRESSURIZING DEVICE

Manuel Czech, Donaustauf, Fed. Rep. of Germany, assignor to Czewo-Plast Kunststofftechnik GmbH, Neutraubling, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,301
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 9112386.0[U]
Int. Cl.[5] B05B *9/04*
U.S. Cl. 239—321 **25 Claims**



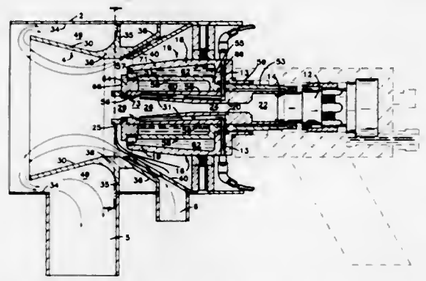
12. A spraying apparatus comprising:
a material container having located therein a supply chamber and a pressure chamber, said pressure chamber having a volume which is variable upon translation of a movable element defining a wall of said pressure chamber;
a spraying head mounted on said material container, said spraying head including a dispensing valve;
a dispensing duct connecting said pressure chamber to said dispensing valve;
a suction conduit connecting said pressure chamber to said supply chamber;
a rotatable winding spool;
a cord having a first end connected to said movable element and a second end connected to said winding spool, said cord winding around said winding spool upon rotation of said winding spool to translate said movable element; and
a rotatable driving spool which is connected to said winding spool and which, when rotated, causes said winding spool to rotate to cause said cord to wind around said winding spool.

5,285,967

HIGH VELOCITY THERMAL SPRAY GUN FOR SPRAYING PLASTIC COATINGS

Larry G. Weidman, Fort Meyers, Fla., assignor to The Weidman Company, Inc., Ft. Myers, Fla.

Filed Dec. 28, 1992, Ser. No. 997,607
Int. Cl.[5] B05B *7/20*
U.S. Cl. 239—80 **35 Claims**



1. A thermal spray apparatus for spraying molten substrate coatings, comprising:
high velocity oxygen fuel ("HVOF") generating means;
an elongated nozzle downstream from and in flow communication with said HVOF generating means for receiving an HVOF stream therefrom, said elongated nozzle including a fluid cooled barrel therein, said barrel having a central bore therethrough with an inlet opening and an outlet opening;
means for the introduction of a feed substrate into said HVOF stream at a point within said nozzle downstream from said inlet opening;
means for circulating cooling gas exteriorly of and around said nozzle; and,
means for preheating said feed substrate to a preselected temperature prior to introduction into said HVOF stream.

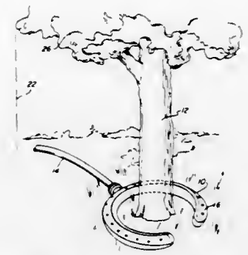
5,285,968

WATER DISTRIBUTION YOKE FOR TREE CULTIVATION

William H. McSheehy, 46 Singletary La., Sudbury, Mass. 01776

Filed Sep. 10, 1992, Ser. No. 942,995
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—273 **9 Claims**

1. A water distribution yoke for watering along the drip-line of a tree, comprising:
a substantially semicircular-shaped yoke, the yoke having an inside, an outside, a center, the yoke having a single set of a plurality of orifices, a throat, and a water-inlet, the orifices being distributed around the outside of the yoke, the water-inlet being located opposite the throat, wherein the throat passes in a substantially horizontal plane around the trunk of a tree; and
wherein water enters the water-inlet and exits the orifices such that all of the water is directed toward the surface



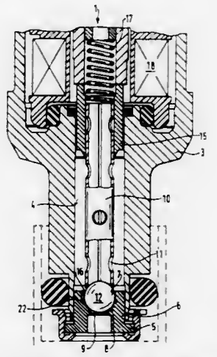
area substantially along and outward from the drip-line of the tree.

5,285,969

ELECTROMAGNETICALLY OPERATED FUEL INJECTION VALVE

Max Greiner, Gerlingen; Peter Romann, Stuttgart; Ferdinand Reiter, Markgröningen, and Rudolf Babitzka, Kirchberg-Neuhof, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 720,851, Jul. 11, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 989,720
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1989, 3939093
Int. Cl.[5] B05B *1/34*
U.S. Cl. 239—463 **8 Claims**



1. An electromagnetically operated fuel injection valve comprising a valve housing; a valve seat body having a valve seat and a guide cylinder provided with spiral flutes; a valve closing element projecting in and guided by said guide cylinder with said spiral flutes and supporting a ball type valve closing body around which fuel can flow through said spiral flutes in which said valve closing element interrupts or releases a fuel flow by sitting on or lifting off said valve seat, said valve seat body, in addition to said guide cylinder and said valve seat, also containing at least one outlet orifice, and said valve seat body being provided with a groove-like surrounding flute between said guide cylinder and said valve seat, said valve seat body being formed as a one-piece element which contains said guide cylinder, said valve seat, said outlet orifice and said groove-like surrounding flute.

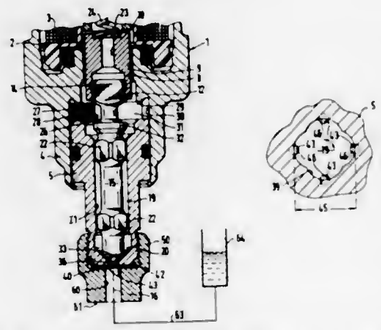
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,970

METHOD FOR CALIBRATING A FUEL INJECTION VALVE, AND FUEL INJECTION VALVE

Martin Maier, Moeglingen, and Juergen Buchholz, Lauffen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00587, § 371 Date Apr. 15, 1992, § 102(e) Date Apr. 15, 1992, PCT Pub. No. WO92/03652, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 17, 1991, Ser. No. 847,099
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025945
Int. Cl.[5] F02M *61/16*; B05B *1/16*
U.S. Cl. 239—533.12 15 Claims



1. A fuel injection valve comprising a valve housing (1), a valve closing part cooperating with a valve seat face located in a flow conduit (19), and a first perforated disk (42) disposed downstream of the valve seat face, said first perforated disk including at least two metering openings (43); said first perforated disk (42) adapted to abut a face end (40) that partially covers the metering openings (43), the face end (40) and the first perforated disk (42) are movable relative to one another, for adjustably varying the cross sections (46) of the various metering openings (43), and thereafter locked in a set position, and said face end (40) is a part of a nozzle body (5) and is interrupted by a non-circular flow opening (39) of the flow conduit (19).

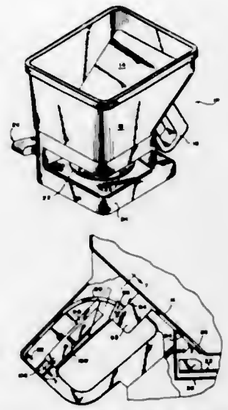
5,285,971

HAND HELD SPREADER

Paul Havlovitz, Escondido, Calif., assignor to Republic Tool & Mfg. Corp., Carlsbad, Calif.

Filed Jan. 19, 1993, Ser. No. 5,300
Int. Cl.[5] A01C *17/00*
U.S. Cl. 239—686 8 Claims

1. A hand held spreader comprising,
a hopper,
a dispensing aperture in said hopper,
a rotor disc disposed below said hopper for broadcasting material dispensed from said aperture,
a clam-shell housing for a gear assembly disposed below said rotor disc for rotating said rotor disc in response to a handle member rotatably connected to said gear assembly,
said gear assembly including a shaft having a pair of gear wheels disposed thereon,
said clam-shell housing having a bearing support means in each half of said clam-shell housing for providing a support for said shaft and allowing said shaft to be freely removed with the removal of both halves of said clam-shell housing, and



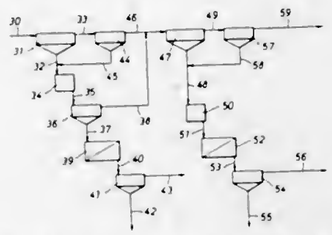
said bearing support means being disposed on both sides of at least one of said gear wheels.

5,285,972

ORE PROCESSING

Cornelius W. Notebaart; Hendricus J. J. J. Megens, and Irinaeus B. Klymowsky, all of Arnhem, Netherlands, assignors to Shell Research Limited, London, United Kingdom

Filed Jul. 28, 1992, Ser. No. 921,031
Claims priority, application United Kingdom, Jul. 29, 1991, 9116305.5
Int. Cl.[5] B03D *1/02*; B03B *7/00*, *1/04*
U.S. Cl. 241—19 8 Claims



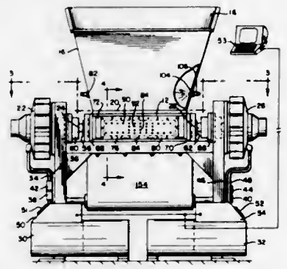
1. A process for the separation of a complex ore material comprising gangue and minerals including at least one of lead mineral or zinc mineral, which process comprises
(a) grinding the ore to an extent effective to liberate at least one of said lead or zinc minerals from the gangue material of the ore;
(b) conditioning the ground ore by treatment with collector or depressant to obtain flotation conditions for at least one of said lead or zinc minerals;
(c) subjecting the ground and conditioned ore to flotation to obtain a flotation concentrate stream and a flotation tailings stream, at least one of which streams contains at least one of said lead or zinc minerals sufficiently concentrated to permit effective mineral recovery;
(d) regrinding the flotation concentrate stream to a degree effective for liberating at least one said at least one of said lead or zinc minerals contained therein from the gangue material present;
(e) conditioning the reground material by treatment with an agglomerating reagent to obtain agglomeration conditions for the at least one of said lead or zinc materials of the reground material;
(f) agglomerating at least once the reground, conditioned material to produce an agglomerates stream containing at least one of said lead or zinc materials, and an agglomerates tailings stream; and
(g) separating the agglomerates stream containing at least one of said lead or zinc minerals and the agglomerates tailings stream;
the process separating at least one of said lead or zinc minerals from the complex ore in high grade and recovery.

5,285,973

CLOSE TOLERANCE SHREDDER

Billy D. Goforth, Fayetteville; Charles L. Goforth, Lowell; Joe G. Brooks, and J. Douglas Brooks, both of Springdale, all of Ark., assignors to Advanced Environmental Recycling Technologies, Inc., Springdale, Ark.

Filed Jul. 15, 1992, Ser. No. 914,155
Int. Cl.[5] B02C *4/32*
U.S. Cl. 241—36 12 Claims



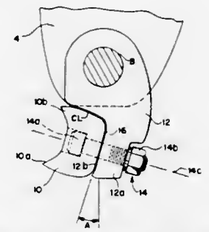
1. A shredder comprising:
(a) a shredder housing having an inside, an outside, opposed side walls, opposed end walls and a bottom portion, such that said end walls and side walls are joined together to define a top inlet opening and a bottom outlet opening;
(b) two parallel spaced apart shafts, each of said shafts horizontally aligned with each other shaft, and each shaft rotationally mounted through said end walls and for receiving rotational power;
(c) adjustable speed rotational motors engaged with each of said shafts for rotating said shafts in counter-rotational directions;
(d) a plurality of uniform thickness disk-shaped blades having at least one tooth positioned peripherally around each blade and alternatingly interposed disk-shaped spacers having a thickness slightly thicker than said blades, said blades and spacers arranged on said shafts and mounted for counter-rotation with said shafts in an interdigitated fashion so that said blades on one of said shafts are aligned with said spacers on the other shaft such that said teeth on said blades pass side-by-side closely spaced with blades on said counter-rotating shaft so that cutting occurs between the teeth on one blade and the sides of said other blades;
(e) a cylindrical exterior bearing surface around the periphery of each spacer; and
(f) adjustable side support bearings spaced centrally located along said opposed side walls of said inside of said shredder housing sized corresponding to the thickness of said disk-shaped spacers for sliding bearing engagement against said cylindrical bearing surface and arranged along each of said opposed side walls horizontally aligned and sized for bearing against cylindrical surfaces of said alternating disk-shaped spacers on each of said counter-rotating shafts so that said side bearings are interposed between said rotating disk-shaped cutting blades in each direction and provide bearing support to prevent shaft spreading during shredding operation.

5,285,974

TWO-PIECE HAMMER FOR USE IN A SHREDDER

Michael Cesarini, Pulaski, Tenn., assignor to American Magotteaux Corp., Nashville, Tenn.

Filed Oct. 16, 1991, Ser. No. 777,173
Int. Cl.[5] B02C *13/00*
U.S. Cl. 241—194 19 Claims



1. A hammer, for use in a shredder, comprising:
a supporting portion comprising a first end which includes an aperture adapted to receive a support pin of the shredder and a second end which includes a support flange;
a work engaging portion comprising a plurality of cutting surfaces; and
removable fastener means for removably fastening the work engaging portion to the support flange,
wherein the work engaging portion is made from a first material and the supporting portion is made from a second material, and wherein the first material is harder than the second material, said first material having a hardness of Rc 48 to Rc 65 and said second material having a hardness of Rc 30 to Rc 40, and a resilient member is interposed between the work engaging portion and the supporting portion so as to dampen an impact of a force transmitted from the work engaging portion to the supporting portion and to help maintain tension on the removable fastener means.

5,285,975

PROCESS AND DEVICE TO SPOOL A YARN ON A SPINNING MACHINE/SPOOLING DEVICE

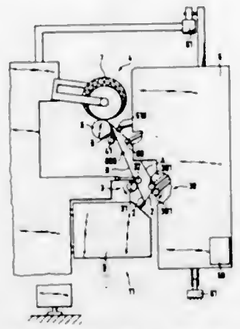
Walter Mayer; Johann Pohn, and Gottefried Schneider, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik AG, Ingolstadt, Fed. Rep. of Germany

Filed Feb. 5, 1992, Ser. No. 831,275
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1991, 4103902
Int. Cl.[5] B65H *54/02*, *54/26*, *54/28*, *57/28*
U.S. Cl. 242—18 R 17 Claims

1. A process for use in a textile machine of the type in which yarn is wound on a conical bobbin through a yarn guide which is guided in a back and fourth path across the bobbin, said process for reducing yarn tension and occurrence of yarn breakage during resumption of the yarn winding following an interruption wherein a yarn must be delivered to the yarn guide for back and fourth winding on the bobbin, said process comprising the steps of:
retaining the yarn at a position on a travelling service unit remote from the yarn guide so that the yarn is initially wound onto the bobbin without contacting the yarn guide as it traverses the back and forth path across the bobbin;
delivering the yarn from the remote position on the travelling service unit to a position across the back and forth path of the yarn guide;
grasping the delivered yarn with the yarn guide; and

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controlling said grasping of the delivered yarn by the yarn guide only when the movement of the yarn guide is in the direction from the larger to the smaller end of the bobbin



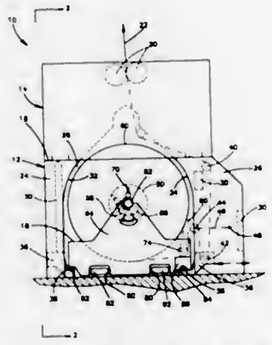
so that the initial winding of the yarn on the bobbin by the yarn guide is always as the yarn guide is moving towards the smaller diameter end of the bobbin.

5,285,976

UNWINDING DEVICE FOR PRINTING PRESSES

Gotthard Schmid, Nussloch, Fed. Rep. of Germany, and Bryan C. Dustin, Rochester, N.H., assignors to Heidelberg Harris, Inc., Dover, N.H.

Filed Nov. 1, 1991, Ser. No. 786,711
Int. Cl.[5] B65H *19/12, 19/30*
U.S. Cl. 242—55 **7 Claims**



1. Apparatus for supporting a reel (**60**) of web material (**22**) which is to be unwound from the reel (**60**) and directed into a web processing machine (**14**) having a front/operator's side and a rear/gear side, said apparatus comprising:

a cartridge (**18**) having front and rear cartridge frame parts (**64, 66**), said front and rear cartridge frame parts (**66, 66**) having means for holding the reel (**60**) in a loaded position extending axially from said front cartridge frame part (**64**) to said rear cartridge frame part (**66**), said cartridge (**18**) further having a mounting surface means including downwardly facing mounting surfaces (**82, 84**); and

means for defining a stationary frame (**16**) having a front side at the front/operator's side of the web processing machine (**14**), a rear side at the rear/gear side of the web processing machine (**14**), and a space for containing said cartridge (**18**) within said stationary frame (**16**) between said front and rear sides of said stationary frame (**16**), said front side of said stationary frame (**16**) having an opening through which said cartridge (**18**) is movable;

said stationary frame (**16**) further having a supporting means for supporting the weight of said cartridge (**18**) on said stationary frame (**16**), said supporting means including a pair of locating bars (**38**) extending longitudinally across the inside of said stationary frame (**16**) between said front and rear sides of said stationary frame (**16**), said locating bars (**38**) being spaced transversely from each other across said opening;

said cartridge (**18**) being movable horizontally through said opening in said front side of said stationary frame (**16**) to carry the reel (**60**) axially into and out of said space, said cartridge (**18**) being thus movable horizontally into and out of an intermediate position in which said mounting surfaces (**82, 84**) are located directly above said locating bars (**38**);

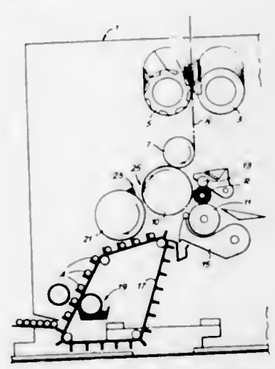
said cartridge (**18**) being further movable vertically in said space relative to said locating bars (**38**), said cartridge (**18**) being thus movable between said intermediate position and an operating position in which said mounting surfaces (**82, 84**) register with and rest on said locating bars (**38**) to impose the weight of said cartridge (**18**) onto said locating bars (**38**) and thereby to mount said cartridge (**18**) releasably on said locating bars (**38**).

5,285,977

APPARATUS FOR CUTTING WEB MATERIAL

Guglielmo Biagiotti, Lucca, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Filed Mar. 24, 1992, Ser. No. 856,445
Claims priority, application Italy, Apr. 3, 1991, FI/91/A 73
Int. Cl.[5] B65H *35/10*
U.S. Cl. 242—56 R **13 Claims**



1. An apparatus for cutting web material (N), comprising a roller (**10**) to drive the web material (N), provided with first cutting means (**25**), and a unit (**21**) carrying second cutting means (**23**), able to cyclically cooperate with said first cutting means (**25**) to cause the web material (N) to undergo an elongation beyond the breaking point, characterized in that said first cutting means (**25**) and said second cutting means (**23**) are so constructed as to penetrate one into the other without mutual contact, the web material (N) being subjected to stretching and rupture by the mutual penetration of said first and second cutting means (**25, 23**), the friction between the web material (N) and the roller (**10**) keeping the web in tension, and

wherein said first and second cutting means (**23, 25**) comprise a plurality of recesses (**37, 39, 41**) substantially parallel to each other, and a plurality of projections (**31, 33, 35**) able to penetrate into said recesses, and

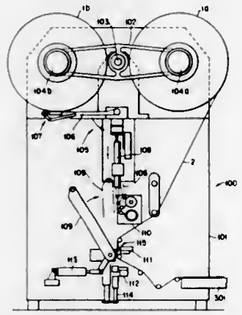
wherein said first cutting means (**25**) comprise three recesses (**37, 39, 41**) substantially parallel and close to each other, and said second cutting means (**23**) comprise three projections (**31, 33, 35**) able to cooperate with said recesses, and wherein the central projection (**33**) has a length in radial direction greater than said side projections (**31, 25**).

5,285,978

DEVICE FOR CHANGING WEB ROLLS AUTOMATICALLY

Makoto Sakano; Shozo Horikawa, and Shuji Wada, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,441
Claims priority, application Japan, Oct. 31, 1991, 3-311388
Int. Cl.[5] B65H *19/12, 19/18*
U.S. Cl. 242—58.1 **3 Claims**



1. An automatic web roll changing device for automatically and continuously supplying web rolls to a web supply-connection apparatus having two web rolls replaceably mounted thereon and each comprising a core and a web wound thereabout in which said web supply-connection apparatus repeats the steps of drawing out a web from one of said two web rolls and, when said web on said one of said two webs rolls is fully used, drawing out a web from the other one of said two web rolls, and connecting a leading end of said web of said other one of said two web rolls to a trailing end of said one of said two webs,

said automatic web roll changing device comprises:

(a) a rotary arm pivoted at a central portion thereof to said web supply-connection apparatus and provided on both ends thereof with two hubs on which web rolls are mounted; and

(b) a web roll storage-connection unit provided opposed to said web roll supply-connection apparatus and comprising:

(i) a rotary head rotatable about a vertical axis;

(ii) web roll storing shafts projecting horizontally from said rotary head and each having a distal end coaxially aligned with one of said hubs when said distal end coaxially aligned with one of said hubs when said distal end of the respective one of said web roll storing shafts is directed toward said one of said hubs, each of said web roll storing shafts being provided to mount a plurality of web rolls so that said web rolls are arranged axially of each of said web roll storing shafts and slidable therealong; and

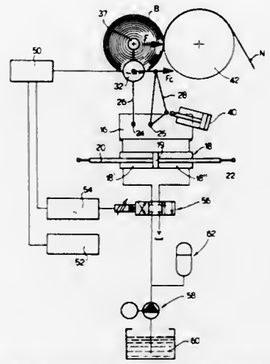
(iii) driving means for moving said web rolls mounted on each of said web roll storing shafts toward said distal end thereof.

5,285,979

WINDING APPARATUS FOR SHEET MATERIAL WEB

Lombardini Francesco, Nibbia, Italy, assignor to Gruppo Colines SRL, Nibbia, Italy

Filed Mar. 3, 1992, Ser. No. 845,317
Claims priority, application Italy, Mar. 4, 1991, MI91 A 000556
Int. Cl.[5] B65H *18/16*
U.S. Cl. 242—65 **3 Claims**



1. A winding apparatus for winding a web of sheet material comprising: a winding calendar (**42**); at least one spindle-holder or roll-holder lever (**26**), for supporting a spindle (**37**), for winding a roll of web, the axis of the spindle being parallel to the axis of the calendar, one or more carriages (**16**) onto which the said holder levers (**26**) are mounted for horizontal movement, a detector element (**32; 66**) for detecting the winding, a movement means (**18**) for the carriage, and a control system for determining the traverse of the said carriage/s according to the increasing winding on the spindle; said holder levers (**26**) being pivotable on the said carriage/s (**16**) between an upright working or web winding position for forming a roll, and a lowered position for unloading the roll, further comprising control levers (**28**) pivoted on the said carriages (**16**) along an axis (**25**) parallel to the axis (**24**) of the pivot/s of said holder levers (**26**), the said control levers each being connected to a respective holder lever on the same carriage by means of an arm or connecting rod (**30**); the said detector element (**32; 66**) comprising a load cell (**32**) which is positioned between the said holder lever (**26**) and said arm (**30**).

5,285,980

DEVICE FOR EXTRACTING THE END OF A NEGATIVE FILM FROM A CARTRIDGE

Philippe Combet, Sassenage, and Franck Gerstch, Meylan, both of France, assignors to Kis Photo Industrie, France

Filed Sep. 4, 1992, Ser. No. 940,670
Claims priority, application France, Sep. 5, 1991, 91 11176
Int. Cl.[5] G03B *1/56*
U.S. Cl. 242—71.1 **7 Claims**

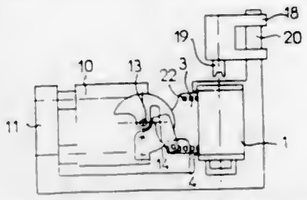
1. A device for extracting the end of a negative film from a cartridge which contains the film, the cartridge being cylindrical and including a longitudinal slot having a light-tight gate formed thereabout, said gate extending away from the cartridge in a plane that is tangent to the cartridge along the length of said longitudinal slot, the device including:

a gripper imparted with a translational movement in the plane of the gate of the cartridge and composed of two elements that interact with each other to secure the end of the film so that it may be extracted from the cartridge;

said gripper having a first stationary element consisting of a first disk section positioned in a plane of action being

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coincident with the gate plane, the diameter thereof being slightly less than the length of the slot in the gate and a second rotating element capable of rotational movement, and consisting of a second disk section substantially of the same diameter as said first element, said second rotating element being rotatable about a rotation spindle coincident with the center of a circle whose circumference coincides with an arc segment of said first disk section and



situated in the same plane as said first stationary element, said rotating element having a notch that interlocks with a projection formed on said first stationary element to form said gripper;

cradle means for receiving the cartridge and holding it in a stationary position, the gate of the cartridge thereby being held in the plane of action of the gripper; and

a rotating member for engaging and rotating the spindle of the cartridge around which the negative film is wound.

5,285,981

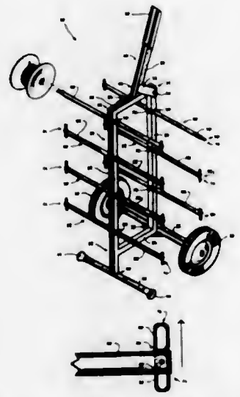
WIRE DISPENSER

Steven M. Pavelka, 14910 Crown Dr., Minnetonka, Minn. 55345

Filed Mar. 2, 1992, Ser. No. 844,779

Int. Cl.[5] B65H *16/00*

U.S. Cl. 242—86.50 R **5 Claims**



1. A spooled wire dispenser, comprising:

A. a central frame;

B. a plurality of spaced, substantially horizontal spool bars supported by and extending outwardly from the central frame, each spool bar having a secured end connected to the frame and a free end opposite thereto; and

C. spool retainer mans mounted on the free end of each spool bar for selectively allowing a wire spool to slide thereover, each spool retainer means having

(1) a blocking mode wherein a wire spool cannot freely slide over the free end of the corresponding spool bar, and

(2) an unblocking mode wherein a wire spool can freely slide over the free end of the corresponding spool bar, wherein the spool retainer means remains operatively connected to the free end of the spool bar in the blocking and unblocking modes of the spool retainer means; wherein:

a. when each spool retainer means is in the blocking mode the spool retainer means extends substantially beyond the outer periphery of the corresponding spool bar, and when each spool retainer means is in the unblocking mode the spool retainer means does not extend substantially beyond the outer periphery of the corresponding spool bar;

b. each spool retainer means comprises an elongate element which is substantially parallel to the corresponding spool bar when the spool retainer means is in the unblocking mode and is substantially perpendicular to the corresponding spool bar when the spool retainer means is in the blocking mode;

c. the free end of each spool bar is tubular, having a thin peripheral wall and a hollow center, the peripheral wall forming a pair of notches which are parallel to one another and to the corresponding spool bar, the notches receiving the corresponding spool retainer elongate element when the elongate element is in the blocking mode, and the free end of each spool bar comprises a pin extending across and perpendicular to the notches; and

d. each spool retainer elongate element forms an elongate slot having a first end located near the middle of the elongate element and a second end located near one end of the elongate element, and the elongate slot receives the pin extending across the notches in the free end of each spool bar, wherein when the elongate element is in the unblocking mode the end thereof forming the elongate slot is received by the hollow free end of the spool bar with the pin located at the first end of the elongate slot, and wherein when the elongate element is in the blocking mode the pin is also located at the first end of the elongate slot in the elongate element; wherein to convert the elongate element from the unblocking mode to the blocking mode the elongate element is (i) pulled axially out of the hollow end of the spool bar to the point where the pin is located at the second end of the elongate slot in the elongate element; (ii) rotated 90 degrees into a position perpendicular to the spool bar; and (iii) positioned such that the pin is once again located at the first end of the elongate slot in the elongate element, wherein the elongate element is held in the blocking mode by the notches and the pin, whereby the elongate element can assume the blocking mode without bearing against a wire spool and the wire spool can therefore spin freely on the spool bar when the corresponding elongate element is in the blocking mode.

5,285,982

BELT RETRACTOR WITH TENSION RELIEF FOR SAFETY BELT RESTRAINING SYSTEMS IN VEHICLES

Robert Kopetzky, Mutlangen, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,901

Claims priority, application European Pat. Off., Nov. 21, 1991, 91119838.0

Int. Cl.[5] B60R *22/44*

U.S. Cl. 242—107 **5 Claims**

1. A safety belt retractor for vehicles comprising:

a housing;

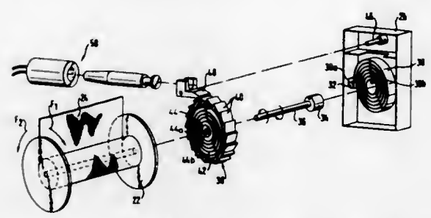
a belt spool rotatably mounted in said housing for coiling and uncoiling of belt webbing;

a retracting spring for biasing said belt spool relative to said housing;

a selectively lockable ratchet wheel rotatable relative to said belt spool, said ratchet wheel having a locked condition in which rotation of said ratchet wheel relative to said housing is prevented;

an auxiliary spring having a first end connected to said ratchet wheel; and

an overrunning clutch means for selectively causing a second end of said auxiliary spring to rotate with said belt spool;



said overrunning clutch permitting relative rotation between said second end of said auxiliary spring and said belt spool only in an uncoiling direction of said belt spool; and

said auxiliary spring, during the locked condition of said ratchet wheel, providing a means for biasing said belt spool relative to said housing in a direction opposite to the bias of said retracting spring.

5,285,983

SAFETY BELT RETRACTOR FOR MOTOR VEHICLES

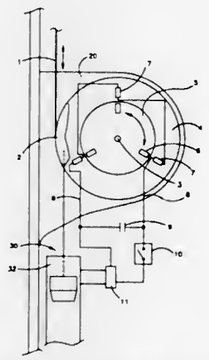
Thomas Mödinger, Alfdorf-Vordersteinenberg, and Michael Stütz, Spraitbach, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Dec. 8, 1992, Ser. No. 987,126

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 9115316[U]

Int. Cl.[5] B60R *22/46*

U.S. Cl. 242—107 **5 Claims**



1. A safety belt retractor for vehicles comprising:

a base member;

a belt spool rotatably mounted in said base member for coiling and uncoiling of belt webbing;

a belt pretensioner having a pyrotechnical drive engaging said belt spool for rotating said belt spool in a belt coiling direction;

an electrical ignitor for activating said pyrotechnical drive;

an inertial sensor comprising a switch adapted to be closed upon sensing a vehicle deceleration exceeding a predetermined threshold;

an electrical current generator having a stator connected to said base member and a rotor coupled to said belt spool;

and an electrical current collector fed by said current generator;

said electrical ignitor being connected to said current collector through said switch.

5,285,984

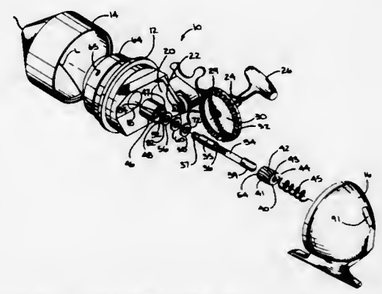
STRUCTURE FOR CONFINING THRUST WASHERS ON FISHING REELS

Lorens G. Hlava, Clinton, Mo., assignor to Zebco Corporation, Tulsa, Okla.

Filed Aug. 6, 1991, Ser. No. 741,033

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—239 **8 Claims**



1. In a fishing reel having a deck plate, a center shaft extending forwardly through the deck plate and rotatable about a first axis, a pinion gear on the center shaft, a crank shaft rotatable about a second axis transverse to the first axis, and means for rotating the center shaft about the first axis as an incident of the crank shaft rotating about the second axis, the improvement comprising:

a washer having a radially inwardly facing surface defining a bore for receiving the center shaft and a radially outwardly facing edge, the washer residing between the pinion gear and the deck plate,

said center shaft having a reduced diameter portion and a second portion spaced axially with respect to the first axis from the reduced diameter portion and having a diameter that is greater than the diameter of the reduced diameter portion,

the washer bore having a diameter that is greater than the diameter of the second portion to allow the washer to be slid axially with respect to the first axis over the second portion and;

means on the deck plate radially outside of the center shaft bore in the washer and overlapping at least a part of the washer and the reduced diameter portion of the center shafts in a lengthwise direction relative to the center shaft for limiting shifting of the washer transverse to the first axis by engaging the radially outwardly facing edge of the washer and thereby preventing interference between the pinion gear and the center shaft during operation of the reel.

5,285,985

TWO-BEARING REEL

Noboru Sakaguchi, tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jun. 4, 1991, Ser. No. 709,997

Claims priority, application Japan, Jun. 21, 1990, 2-65631[U]

Int. Cl.[5] A01K *89/033*

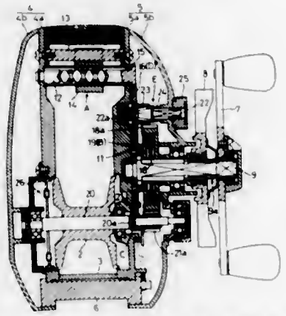
U.S. Cl. 242—302 **3 Claims**

1. A two-bearing reel comprising:

a side case including a side plate and an outer wall;

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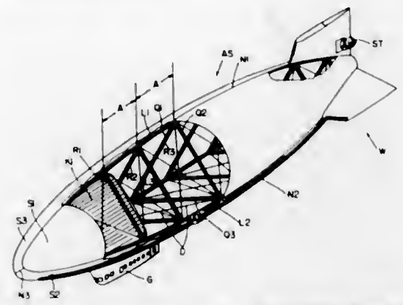
a handle for taking up a fishing line;
a handle shaft connected to said handle, and a gear fitted on said handle shaft;
a rotary transmission member rotatably supported to said side plate, said rotary transmission member being engaged with said gear, said transmission member having an axis of rotation; and
a one-way clutch mechanism for preventing rotation of said transmission member in a direction to feed out the fishing line, said one-way clutch mechanism including:
(a) a plurality of rollers attached to said rotary transmission member;



(b) a rod supported to said outer wall and having a tapered end surface for applying a frictional force to said rollers, said rod having an axis, said rod being non-rotatable relative to said outer wall, and said rod being axially movable relative to said outer wall;
(c) an elastic member for urging said rod toward said rotary transmission member; and
(d) a control element for moving said rod away from said rotary transmission member; and
wherein the axis of said rod is substantially aligned with the axis of rotation of said rotary transmission member; and
wherein said rollers are peripherally disposed around the axis of said rod.

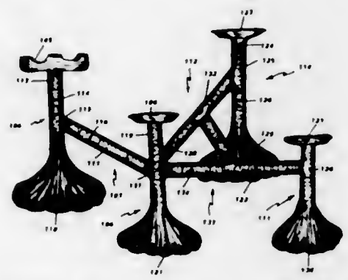
5,285,986
RIGID AIRSHIP WITH A CARRIER FRAME OF RIBS AND BEAMS ENCLOSED BY SKIN SECTIONS FORMING AN ENVELOPE
Klaus Hagenlocher, Friedrichshafen, Fed. Rep. of Germany, assignor to Luftschiffbau Zeppelin GmbH, Friedrichshafen, Fed. Rep. of Germany
Filed Apr. 16, 1992, Ser. No. 869,645
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1991, 4112621.1
Int. Cl.[5] B64B *1/06*
U.S. Cl. 244—97 **21 Claims**

1. A rigid airship with a carrier frame of ribs and beams enclosed by an envelope, comprising rigid cross-ribs and a first plurality of longitudinal rigid beams interconnecting said rigid cross-ribs to form said carrier frame, each of said longitudinal rigid beams having a mounting surface facing radially outwardly relative to said airship, a second plurality of longitudinal skin segments (S1, S2, S3) corresponding in number to said first plurality of rigid longitudinal beams, said skin segments forming together said envelope as an airship configuration in an inflated condition, each skin segment having longitudinal edges so cut that joint edges of neighboring skin segments form an attachment seam substantially along the entire length of said airship, means rigidly securing each attachment seam in a force transmitting manner to a respective mounting surface of said longitudinal rigid beams, and wherein said rigid beams and said envelope rigidly secured with its attachment seams to said rigid beams form together a load distribution system so that tension stress in said envelope is superimposed on any compression stress occurring in said rigid cross-ribs and in said longitudinal rigid beams, whereby said compression stress is at least partly compensated and correspondingly reduced, said



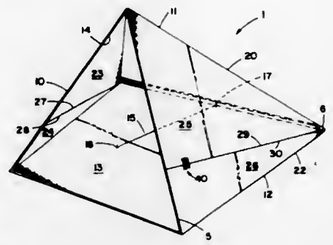
airship further comprising steering air chamber means (K1) arranged in said carrier frame for trimming said airship, and means connected to said steering air chamber means (K1) for controlling an air pressure in said steering air chamber means (K1) for said trimming.

5,285,987
PEDESTAL DISPLAY SYSTEM
Carlos M. Gonzalez, 3924 Tedrich Blvd., Fairfax, Va. 22031
Filed Aug. 7, 1992, Ser. No. 926,028
Int. Cl.[5] A47G *7/04*
U.S. Cl. 248—27.8 **6 Claims**



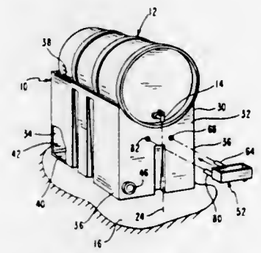
3. A pedestal display system comprising two or more pedestal display structures, each of said structures having atop and a bottom, each of said structures comprising a base with an elongate extension rising therefrom, said base having upper and lower ends, a removable support weight attachable to said lower end of said base, a removable receptacle disposed at the top of said structure, at least one removable connecting element attachable to said structure between said receptacle and said base, said connecting element having a vertical portion and a sideways portion, said pedestal display system further comprising at least one pedestal-to-pedestal linking element, said linking element having a center and two or more rods radiating therefrom, each of said rods having a distal end, each of said rod distal ends being attachable to one of said sideways portions of the connecting elements or attachable to another of said at least one pedestal-to-pedestal linking elements.

5,285,988
BAG HOLDER
Thomas F. Bogren, Minnetonka, Minn., assignor to TFB Enterprises, Inc., Minnetonka, Minn.
Filed Jul. 14, 1992, Ser. No. 913,288
Int. Cl.[5] B65B *67/12*
U.S. Cl. 248—95 **7 Claims**



1. A bag holder comprising two sections, each said section having a top edge, a bottom edge, and two side edges; said sections being hingedly connected to one another along said bottom edges thereof, and being moveable along a path between a first closed position in which said side edges of said top and bottom sections mate with one another such that said top and bottom sections define a bag-receiving cavity and said top edges define an opening into said bag-receiving cavity, and a second open position in which said side edges are not mated with one another.

5,285,989
INDUSTRIAL DRUM DISPENSING STAND WITH DRIP CATCH BASIN
Seymour Zilbert, Demarest, N.J., and Peter G. Hamaker, Beaufort, S.C., assignors to Bergen Barrel & Drum Co., Kearny, N.J.
Filed Sep. 21, 1992, Ser. No. 948,223
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 **10 Claims**



1. A dispensing stand for supporting an industrial drum in a generally horizontal dispensing attitude at a dispensing site, the industrial drum having opposite ends and a dispensing device at one of the opposite ends for dispensing selected volumes of contents poured from the industrial drum along a generally vertical dispensing path to a receptacle placed at a dispensing location beneath the dispensing device, when the industrial drum is in the generally horizontal dispensing attitude at the dispensing site, the dispensing stand comprising:
a housing, the housing including a front wall, a rear wall, opposite side walls, a top wall and a bottom wall;
a cradle on the housing, the cradle including a semi-cylindrical portion extending along the top wall, from one of said opposite side walls to the other one of said opposite side walls and from the rear wall to the front wall, for supporting the industrial drum in the generally horizontal dispensing attitude, with the one of the opposite ends overlying the dispensing location so as to locate the dispensing device adjacent the front wall and above the dispensing location;
a reservoir in the housing, the reservoir being established and fully enclosed by the front wall, the rear wall, the opposite side walls, the top wall and the bottom wall of the housing;
a catch basin;
mounting means mounting the catch basin on the front wall of the housing for selective movement between a first position where the catch basin intercepts the dispensing path for catching contents dripped from the dispensing device along the dispensing path, and a second position wherein the catch basin is clear of the dispensing path for enabling the poured contents to reach the receptacle at the dispensing location; and
drain means between the catch basin and the reservoir for directing the dripped contents from the catch basin to the reservoir wherein the dripped contents are essentially fully enclosed for isolation from the dispensing site and for confinement during movement of the housing, and the reservoir, from the dispensing site to a disposal site.

5,285,990
GOLF CLUB REST
Thomas H. Engel, 6455 S. Chestnut, Gilroy, Calif. 95020
Continuation of Ser. No. 778,574, Oct. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 530,908, May 29, 1990, abandoned. This application Mar. 17, 1993, Ser. No. 32,707
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—156 **4 Claims**



1. A portable golf club rest detachably connectable to a golf club carrier for temporarily supporting at least one golf club in a generally upright position removed from the golf club carrier, the golf club rest comprising:
shaft means for providing a temporary freestanding uncoupled club leaning support, the shaft means comprising an elongated shaft member having an upper end portion and a lower end portion;
a handle member attached to the upper end portion of the elongated shaft such that the handle member is axially aligned with the elongated shaft member;
ground penetrating means attached to the lower end portion of the elongated shaft member for selectively penetrating the ground and for supporting the elongated shaft member substantially upright from the ground when ground penetration is effected;
club support means supported by the upper end portion of the elongated shaft member adjacent the handle member for providing temporary partial support of a resting golf club, the golf club rest shaft means cooperating with the ground so that the club support holds the resting club in a generally upright position;
a support clip portion adapted to slidably clip over a portion of the golf club carrier, and

VOL 1159 ISS 3 FE 15 1994 UMI

a tong portion adapted to extend substantially around the elongated shaft member so that the club rest is removably attached to the golf club carrier.

5,285,991

CARD TABLE MOUNTED FOOD AND BEVERAGE HOLDING APPARATUS

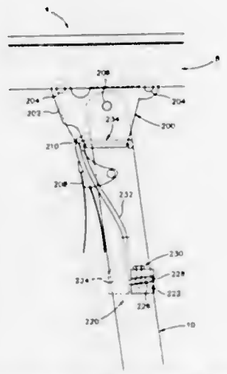
Arthur E. Carlson, 4444 W. Point Loma Blvd., #6, San Diego, Calif. 92107, assignor to Arthur E. Carlson

Continuation-in-part of Ser. No. 701,473, May 16, 1991, Pat. No. 5,169,108. This application Sep. 4, 1992, Ser. No. 940,620

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] A47K *1/09*

U.S. Cl. 248—311.2 **21 Claims**



11. A food and/or beverage container holding system for mounting on a card table having a vertical or non-vertical leg assembly, comprising:

a food and/or beverage container holder;

a base extending radially away from said holder and mounted thereto;

a table leg receptacle removably mounted to and extending radially away from said base, said table leg receptacle being sized to encompass a portion of the card table leg assembly to limit beverage movement that might cause beverage spillage;

at least one attachment hook extending removably and upwardly from said base for separately engaging a portion of the card table leg assembly;

levelling means for maintaining said food and/or beverage holder in a generally horizontal orientation despite changes in vertical orientation of the card table leg assembly; and

said base being sized to prevent beverage container contact with the card table leg assembly or said attachment hook during normal use of the food and/or beverage container holding system.

5,285,992

ADJUSTABLE STEP STOOL

Ronald G. Brown, Rte. 1, Box 554A, Mullins, S.C. 29574

Filed Jul. 14, 1992, Ser. No. 913,035

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—421 **18 Claims**

1. An adjustable step stool comprising:

a) a vertically expandable and contractible body;

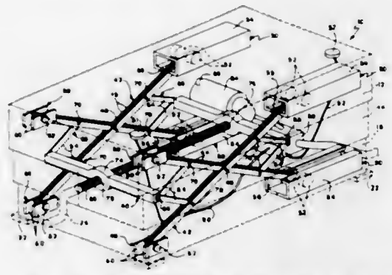
b) a scissor assembly disposed interiorly of said body, said scissor assembly being vertically expandable and contractible, wherein said scissor assembly further includes:

(1) a pair of laterally extending screw blocks;

(2) a pair of longitudinally extending cross bars;

(3) a plurality of knee brackets, said screw blocks and said cross bars being pivotally joined together by said knee brackets in such a manner that said screw blocks are held in a parallel spaced apart configuration relative to one another and said cross bars are held in a parallel spaced apart configuration relative to one another; and

(4) a threaded actuating rod, said threaded actuating rod being journaled through a one of said knee brackets and being threaded through another one of said screw blocks whereby,



when said rod is rotated in a one direction, said screw blocks converge, causing said cross bars to expand vertically and, in turn, causing said step stool to lower;

c) a motor engagable with said scissor assembly and purposed for driving said scissor assembly to an expanded and contracted posture;

d) means for defining a switch located proximate an upper surface of said body; and

e) a hand crank connected to said scissor assembly, whereby said hand crank may rotate in a selective direction to elevate and lower said step stool.

5,285,993

SEAT SLIDE DEVICE WITH PROTECTING COVER

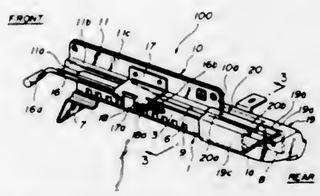
Kiyohiko Kamata; Hatsuo Hayakawa, and Mikio Hooma, all of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed May 29, 1992, Ser. No. 890,274

Claims priority, application Japan, May 30, 1991, 3-048234[U]

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—429 **10 Claims**



1. A seat slide device comprising:

a lower rail of channel structure adapted to be secured to a floor, said lower rail including means which defines a longitudinally extending slot in an upper portion of said lower rail;

an upper rail slidably engaged with said lower rail and adapted to mount thereon a seat, said upper rail including a base portion which is slidably received in said lower rail and a supporting wall portion which extends upward from said base portion and passes through said slot of the lower rail for connection with the seat;

a protecting cover covering one end portion of said lower rail, said protecting cover having a longitudinally extending slit into which said supporting wall portion of said upper rail is inserted when said upper rail assumes an extreme position relative to said lower rail;

a concealing structure integral with said protecting cover, said concealing structure being constructed to conceal said slit; and

means for permitting the insertion of said supporting wall portion into said slit irrespective of provision of said concealing structure.

5,285,994

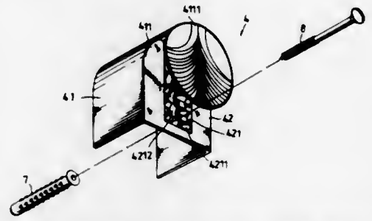
WALL MOUNTING SUPPORT

Wen-Mu Wang, No. 32, Lane 266, Fu Te I Rd., Hsi Tze Chen, Taipei Hsien, Taiwan

Filed May 20, 1992, Ser. No. 885,887

Int. Cl.[5] A47G *1/16*

U.S. Cl. 248—477 **2 Claims**



1. A wall mounting support comprising a shell fastened to a wall by an anchor and a screw, said shell including a front wall, a front guard spaced from said front wall, and a receiving chamber formed between said front wall and said front guard; said receiving chamber receiving an object to be supported, said front wall including an elongated opening with two resilient locating plates bilaterally and obliquely arranged therein, said two locating plates arranged with an elongated sliding hole therebetween and respectively having a corrugated surface with an identical pattern of shaped ridges and depressions, said screw passing through said elongated sliding hole and inserted into said anchor with a head of said screw head abutting one of said depressions of each said locating plate.

5,285,995

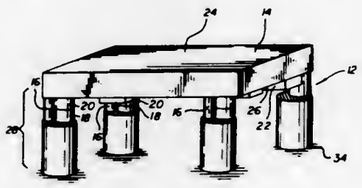
OPTICAL TABLE ACTIVE LEVELING AND VIBRATION CANCELLATION SYSTEM

Walter Gonzalez, Rancho Palos Verdes, Calif., and John A. Gniady, Albuquerque, N. Mex., assignors to Aura Systems, Inc., El Segundo, Calif.

Filed May 14, 1992, Ser. No. 884,428

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—550 **32 Claims**



1. An optical table active positioning system for a softly supported entity comprising:

at least one pneumatic support device, said pneumatic support device providing pneumatic force to the supported entity along a pneumatic support axis;

at least one electromagnetic force device, said electromagnetic force device being coupled to a corresponding pneumatic support device and providing electromagnetic force to the supported entity along an electromagnetic force axis, said electromagnetic force device further comprising a substantially planar bearing rotor and a first and a second electromagnet stator, said first stator being in a spaced apart relationship axially above said rotor and said second stator being in a spaced apart relationship axially below said rotor;

at least one first sensor coupled to said pneumatic support device and said electromagnetic force device, and detecting a motion of the supported entity along a first sensor axis in relation to a first fixed reference, wherein said first sensor generates a first signal in response to the motion; and

a controller for receiving the first signal from the sensor, and generating a control signal in response to the first signal, wherein the control signal is used to activate the pneumatic and electromagnetic devices to provide active positioning of the supported entity.

5,285,996

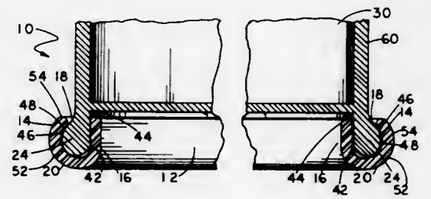
LOWER RIM GUARD FOR METAL CANS

David C. Waller, 7655 NW. 42nd Pl., No. 265, Sunrise, Fla. 33351

Filed Apr. 27, 1992, Ser. No. 874,083

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—687 **9 Claims**



1. An apparatus, comprising:

a can having a can bottom wall and a can side wall with a side wall lower end, and having a lower rim extending downward from said can side wall below said can bottom wall, said lower rim having an inner rim face and an outer rim face, at least one of said rim faces being a protruding rim face extending radially beyond said can wall, and a rim bottom edge extending between said inner and outer rim faces;

a can supporting channel member formed of a resilient material and having first and second side wall portions and a bottom wall portion connecting said first and second side wall portions, for snapping over said lower rim for abutting a can support surface to support said can and for shielding said rim from water deposits on said support surface and for shielding said support surface from any rust particles on said rim, such that said first side wall portion substantially covers said outer rim face, and said second side wall portion substantially covers said inner rim face, and said bottom wall portion substantially covers said rim bottom edge, wherein said side wall portions each have a side wall inner surface; and

a lip portion extending from at least one said side wall inner surface, for resiliently snapping over said protruding rim face and contracting above said protruding rim face to help hold said channel member securely on said lower rim,

wherein said channel member is formed into a substantially continuous loop.

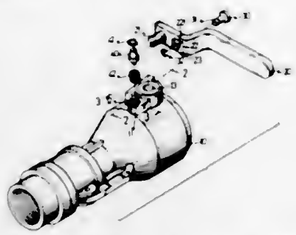
VOL 1159 ISS 3 FE 15 1994 UMI

5,285,997

DEVICE FOR LOCKING A LEVER FOR PIVOTING A VALVE

King Chang, No. 20, Hsi Wei St.,, San Chung City, Taipei Hsien, Taiwan

Filed Mar. 23, 1993, Ser. No. 35,680
Int. Cl.[5] F16K *35/02*
U.S. Cl. 251—95 1 Claim



1. A device for locking a lever for pivoting a valve contained in a valve housing, comprising:
a recess formed in the valve housing;
a groove formed in and about said recess;
a spring sited in said recess;
a latch comprising a relatively large middle section connecting an upper section with a lower section, said latch being sited in said recess so that said lower section thereof is inserted in said spring and that said middle portion thereof is sited on the spring;
a C-ring engaging in said groove so that said latch is trapped in said recess;
a hole formed in the lever, said hole comprising an upper section and a relatively large lower section;
a wedge surface extending from the underside of the lever towards the latch;
a button comprising a body connecting with a relatively large head and a groove formed about said body, said body of said button being inserted through said upper section of said hole; and
a C-clip engaging in said groove formed about said body so that said button is trapped in said hole;
wherein pivoting the lever towards an open position from a closed position engages said wedge surface with said upper section of said latch so that said wedge surface presses said upper section of said latch into the recess, such that when said valve is disposed in the open position said hole aligns with said recess and said upper section of said latch is biased into said hole by means of said spring in order to lock the lever in the open position; and
wherein pressing said button disengages said upper section of said latch from said hole, and said button and said wedge surface cooperate to prevent said latch from being biased into said hole, thereby allowing the lever to be pivoted towards the closed position from the open position.

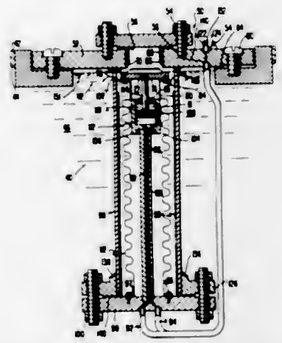
5,285,998

INTERNAL VALVE FOR PRESSURE FLUID CONTAINMENT VESSELS

Donald L. Zink, Billings, Mont.; Donald G. Zink, New Orleans, La., and John E. Schwartz, Billings, Mont., assignors to Montana Sulphur & Chemical Co., Billings, Mont.

Filed Oct. 9, 1990, Ser. No. 594,149
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 143 Claims

1. An internal valve for a pressure fluid containment vessel having a vessel port, said internal valve comprising:
a valve seat associatable with a vessel port of a pressure fluid containment vessel;
a valve member positionable generally inside of the fluid containment vessel and movable between a closed position against said valve seat to block the flow of fluid relative to the fluid containment vessel through the vessel port and an open position relative to said vessel seat to allow the flow of fluid relative to the fluid containment vessel through the vessel port;
a control chamber positionable generally in the fluid containment vessel and connected to said valve member;



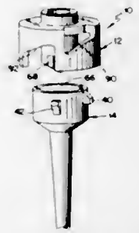
motive means for acting within said control chamber and thereby moving said valve member to at least one of the open and closed positions; and
sealing means including a flexing surface connected to said valve member and positionable relative to the fluid containment vessel such that fluid pressure in the fluid containment vessel acts on said flexing surface and thereby biases said valve member towards at least one of the open and closed positions.

5,285,999

LOW PRESSURE VALVE HAVING TWO RELATIVELY ROTATABLE SECTIONS

Michael P. Scholz, 118 Vua Zapata, San Clemente, Calif. 92672

Filed Mar. 5, 1993, Ser. No. 27,330
Int. Cl.[5] F16K *31/528*
U.S. Cl. 251—252 14 Claims



1. A valve comprising first and second plastic valve sections each being of one-piece molded construction,
said first valve section comprising:
a head forming a chamber which defines a longitudinal axis, one axial end of said chamber being open in a first axial direction, and a first fluid passage being disposed at a second axial end of said chamber,
a plurality of circumferentially spaced first cam faces disposed on an outer periphery of said head and facing in a second axial direction opposite said first axial direction,
a plurality of circumferentially spaced second cam faces disposed on said outer periphery and facing in said first axial direction,

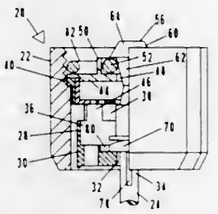
said second valve section comprising:
an end wall,
a closure extending from said end wall in said second axial direction and disposed in said chamber, said closure including a passage-closing end facing said first passage for opening and closing said first passage in response to axial movement of said second section in first and second axial directions, respectively,
a second fluid passage extending through said end wall and said closure and communicating with said chamber at a location spaced axially from said passage-closing end of said closure,
a skirt extending from said end wall in said second axial direction and extending axially around said closure, said skirt spaced radially outwardly from said closure to form a space therebetween in which said head is disposed,
a plurality of circumferentially spaced first cam follower faces disposed on said skirt, said first cam follower faces being engageable with respective first cam faces of said first section and being responsive to relative rotation between said first and second valve sections in a first rotary direction to produce movement of said first valve section in said second axial direction for closing said valve, and
a plurality of circumferentially spaced second cam follower faces disposed on said skirt, said second cam follower faces being engageable with respective second cam faces of said first section and being responsive to said relative rotation in a second rotary direction opposite said first rotary direction to produce movement of said first section in said second axial direction for opening said valve.

5,286,000

WAND ACTIVATED DISPENSING VALVE FOR A FAUCET

Gavriel Katz, 5025 S. Eastern Ave., No. 197, Las Vegas, Nev. 89119

Filed Jun. 25, 1993, Ser. No. 81,231
Int. Cl.[5] F16K *35/00*; E03B *3/18*
U.S. Cl. 251—339 15 Claims



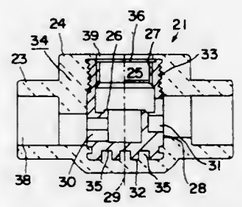
1. A dispensing faucet valve which comprises:
a. a valve housing formed of a open ended sleeve surrounding a through lumen;
b. a first foraminous plate having a first plate thickness and located within said sleeve at an intermediate axial position and extending across the lumen of said sleeve;
c. a second foraminous plate located at the lower end of said sleeve and extending across the lower open end thereof, said second foraminous plate having a through, wand aperture and a second plate thickness greater than three millimeters and at least 1.5 times greater than said first plate thickness;
d. a valve plate located above said first foraminous plate and a valve port surrounded by a valve seat;
e. a valve member received in said valve port and axially moveable therein, having a closure member at its upper end, and extending through said valve port with its lower end adjacent said wand aperture;
f. a wand having a bulbous upper end and a slender elongated shaft received within said wand aperture and captured within housing with said bulbous upper end contacting said lower end of said valve member, whereby upon deflection of said wand, said bulbous upper end moves said valve member to lift said closure member off said valve seat.

5,286,001

PLUMBING AND HEATING PIPE SYSTEM FOR WATER SUPPLY PURPOSES, MADE EITHER COMPLETELY OR MAINLY OF PLASTIC MATERIAL, ESPECIALLY OF POLYPROPYLENE

Karl Rafeld, Biessenhofen-Ebenhofen, Fed. Rep. of Germany, assignor to Karl Rafeld KG Spritzgusswerk, Elektronik und Formenbau, Biessenhofen-Ebenhofen, Fed. Rep. of Germany

Filed Nov. 14, 1991, Ser. No. 792,316
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 9015675[U]; Apr. 24, 1991, 9105038[U]; Apr. 26, 1991, 9105171[U]; Oct. 5, 1991, 9105823[U]; Oct. 5, 1991, 9105824[U]
Int. Cl.[5] F16L *25/00*
U.S. Cl. 251—366 8 Claims



1. Plumbing and heating pipe system for water supply purposes, made substantially of plastic material, comprising metallic connecting sleeves having two ends for connecting the plastic pipes to fittings made of metallic materials, in which one sleeve end includes an offset bore for welding a plastic pipe therein and the other sleeve end includes an injection-moulded metallic connecting sleeve formed with a screw thread for screwing onto a fitting, there being provided at least one anti-twist means on the outer surface of an end face of the connecting sleeve and parallel seal grooves extending about the outer cylindrical surface of the connecting sleeve, the improvement comprising that the parallel grooves have V-shaped cross-sections to ensure that a sufficiently small quantity of plastic material is present at bottoms of the grooves after injection moulding thereof that although subject to shrink stresses, due to the small mass results in such slight shrinkage as to thereby be able to fulfill the sealing function, i.e. to inhibit creeping fluid flows.

5,286,002

FUEL INJECTOR HAVING A COMPOSITE SILICON VALVE

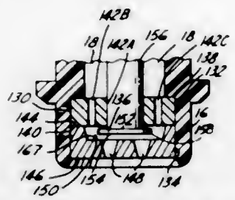
John Bergstrom, Williamsburg, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jan. 12, 1993, Ser. No. 3,205
Int. Cl.[5] F16K *31/02*
U.S. Cl. 251—368 10 Claims

1. A silicon valve comprising a silicon valve body member having through-passage means and comprising a seat having a

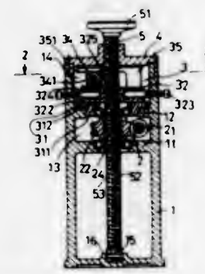
VOL 1159 ISS 3 FE 15 1994 UMI

seat surface, and a gate that comprises a silicon element and that is selectively positionable to seat and unseat a surface of



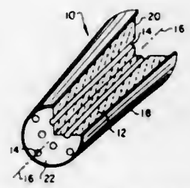
said silicon element on and from said seat surface, in which one of said surfaces comprises a p+ surface layer.

5,286,003
JACK
Ching-Pao Chuang, No. 120-18, Yu Che, Yu Che Li, Ma Tou Chen, Tainan Hsien, Taiwan
Filed Feb. 9, 1993, Ser. No. 15,424
Int. Cl.[5] B60S 9/02
U.S. Cl. 254—103 **1 Claim**



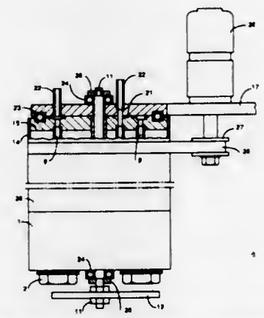
1. A jack comprising:
a longitudinally extended tubular housing having one open end, said tubular housing being defined by a cylindrically shaped wall closed on one end thereof by an end wall member, said tubular housing having a pair of longitudinally spaced annular ridges formed on an inner surface of said cylindrically shaped wall to define a lower chamber therebetween;
a cap member disposed on said one open end of said tubular housing for forming a closure therefor, said cap member and an upper one of said pair of annular ridges defining an upper chamber therebetween;
a lift rod member extending longitudinally through a central through opening formed in said cap member, said lift rod member having a male thread formed on an outer surface thereof between opposing ends of said lift rod member, said lift rod member having a pair of slotted recesses formed on opposing sides thereof and extending longitudinally between opposing ends of said lift rod member;
transmission means disposed in said lower chamber for rotating said lift rod responsive to a manual rotative force applied to said transmission means, said transmission means including a worm gear rotatively coupled to said lift rod member by a pair of keys extending into a central opening formed in said worm gear for respective engagement within said slotted recesses of said lift rod member, said lift rod member being slidably displaceable within said central opening of said worm gear, said transmission means further including a worm engaged with said worm gear and having a shaft portion extending through said cylindrically shaped wall for coupling with a first handle member; and,
guide means disposed in said upper chamber for releasable coupling with said lift rod member, said guide means including (1) a fixed base member supported by said upper annular ridge, (2) a first guide block slidingly coupled to said fixed base member on a first side of said upper chamber and having a first toothed rack formed on an upper surface thereof, said first guide block having a female thread portion disposed in a semi-cylindrical recess formed in one end thereof for releasable engagement with a respective side of said lift rod member, (3) a second guide block slidingly coupled to said fixed base member on a second side of said upper chamber, said second guide block having a female thread portion disposed in a semi-cylindrical recess formed in one end thereof for releasable engagement with a respective side of said lift rod member, (4) a pair of moving blocks coupled to an upper surface of said second guide block, each of said pair of moving blocks having an arm portion extending from said second side of said upper chamber to said first side thereof, each of said arm portions having a second toothed rack formed on a bottom surface thereof, (5) spring bias means disposed within openings formed in said first and second guide blocks for biasing said female thread potions of said first and second guide blocks into respective threaded engagement with said male thread of said lift rod member to thereby provide vertical displacement of said lift rod member responsive to rotation of said first handle member, (6) a toothed rod member extending transversely through said first side of said upper chamber for engagement with said first and second toothed racks on opposing sides thereof to provide linear displacement of said first and second guide blocks in opposing directions, said toothed rod member having a shaft portion extending through said cylindrically shaped wall for engagement with a second handle member, wherein rapid downward vertical displacement of said lift rod member is provided by displacement of said first and second guide blocks to disengage said female threaded portions from said male thread of said lift rod member responsive to rotation of said second handle member.

5,286,004
LOW POROSITY-HIGH DENSITY RADIAL BURST REFRACTORY PLUG WITH CONSTANT FLOW
Russell W. Rothrock, Jr., Lombard, Ill., assignor to Refractory Service Corporation, Ind.
Division of Ser. No. 744,108, Aug. 13, 1991, Pat. No. 5,156,801, which is a continuation-in-part of Ser. No. 532,585, Jun. 4, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 927,446
Int. Cl.[5] C21C 5/32
U.S. Cl. 266—44 **20 Claims**



1. A method of manufacturing a low porosity-high density elongated refractory plug with a plurality of substantially constant diameter apertures along the longitudinal axis of the plug; said method comprising the steps of:
providing an elongated casting shell;
inserting rods in said shell where the apertures are to be formed;
filling the shell with a castable refractory matrix;
heating said rods to expand the same prior to setting of said matrix;
bending at least some of the rods so that they assume an arcuate shape in said matrix; and
removing said rods after the refractory matrix has been set.

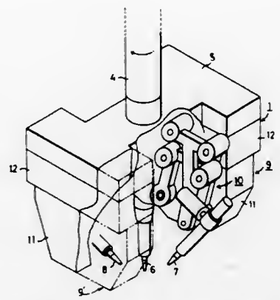
5,286,005
LONG LIFE AND MULTIPURPOSE HIGH PERFORMANCE BURNER
Horst K. Lotz, Hofheim-Wallau, and Mattias Lotz, Weishaden-Delkenheim, both of Fed. Rep. of Germany, assignors to GeGa Corporation, Pittsburgh, Pa.
Filed Jan. 21, 1992, Ser. No. 822,942
Int. Cl.[5] B23K 7/10
U.S. Cl. 266—77 **14 Claims**



1. A long life and multipurpose high performance burner for thermo-chemical separation of work pieces, comprising:
a frame;
a nozzle head rotatably mounted on said frame about an axis of rotation;
at least one cutting nozzle mounted on said nozzle head in a position eccentric to said axis of rotation and mounted to rotate with said nozzle head in a plane generally perpendicular to said axis of rotation; 'supply means connected to each said cutting nozzle to supply heating and cutting agents to said cutting nozzle; and
burner rotating means for rotating said nozzle head about said axis of rotation.

5,286,006
BEVEL CUTTING DEVICE
Susumu Ogura, Tokyo, Japan, assignor to Koike Sanso Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 29, 1992, Ser. No. 905,529
Int. Cl.[5] B23K 7/00
U.S. Cl. 266—77 **20 Claims**

1. A bevel cutting device for cutting a bevel in a steel plate, comprising:
a frame;
a vertical cutting torch, disposed on said frame, for cutting a root face of the steel plate;
at least one bevel cutting torch for cutting a bevel in the steel plate, said bevel cutting torch being disposed in parallel with said vertical cutting torch in a plate-cutting direction;
an inclining section, coupled to said frame, for inclining said bevel cutting torch about an axis parallel to said plate-cutting direction, said inclining section including a motor gear disposed in a casing and a link mechanism driven by said motor gear, said link mechanism being coupled to said bevel cutting torch, said link mechanism comprising four link arms coupled together to form a rectangular shape; and



a shifting section, coupled to said frame, for shifting said inclining section in a direction perpendicular to the plate-cutting direction.

5,286,007
HEAT TREATMENT SYSTEM
Ryoji Takagi, Nagaokyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Apr. 29, 1992, Ser. No. 875,376
Claims priority, application Japan, Apr. 30, 1991, 3-126596
Int. Cl.[5] C21D 9/00
U.S. Cl. 266—96 **9 Claims**



1. A heat treatment system for continuously heat treating a plurality of workpieces, said heat treatment system comprising:
a plurality of heat treatment furnaces, each of said furnaces being capable of simultaneously heat treating a constant number of said workpieces;
a control unit for starting heat treatments in said respective furnaces with constant time lags and for uniformly controlling treatment periods of said furnaces;
a front pool means for storing said workpieces before said workpieces are introduced into said furnaces;
a back pool means for storing said workpieces after said workpieces have been heat treated in said furnaces; and
a changing mechanism for discharging said workpieces being heat treated in said furnaces to said back pool means and for introducing said workpieces being stored in said front pool means into said furnaces said changing mechanism comprising first conveyor means for removing said workpieces being stored in said front pool means, one by one from said front pool means; lifter means for receiving said workpieces being carried by said first conveyor

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means for introducing said workpieces into said furnaces; and second conveyor means for receiving said workpieces being removed from said furnaces by said lifter means and for carrying said workpieces to said back pool means.

5,286,008

SYSTEM FOR INERTING A CASTING VESSEL USED FOR TRANSPORTING MOLTEN METAL

Hans de Haas, Lilienthal-Klostermoor; Klaus Ulrich; Klaus Grützmacher, both of Bremen; Erhard Krause; Horstmar Mohnkern, both of Ritterhude; Manfred Löwenstein, Schiffdorf; Manfred Voss, Bremen; Joachim Witt, Ritterhude, and Uwe Hammer, Bremen, all of Fed. Rep. of Germany, assignors to Klockner Stahl GmbH, Duisburg, Fed. Rep. of Germany

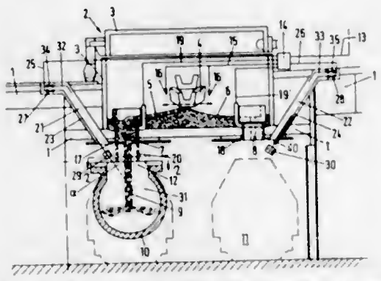
PCT No. PCT/DE91/00814, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO92/07099, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 861,873

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1990, 4033482

Int. Cl.[5] C21C *1/06*; C21B *7/14*; B08B *15/02*

U.S. Cl. 266—217 **8 Claims**



1. A system for inerting a casting vessel used for transporting molten metal, the vessel, for use when tapping a blast furnace, having an uncovered inlet opening and an internal cavity, the system including a gas-tight housing at a transfer station having a molten metal outlet opening below which the casting vessel is located, the vessel being movable into and out of the transfer station, means for pressurizing the cavity of the vessel with inert gas during the delivery of molten metal into the cavity of the vessel, a first inert gas blowpipe located in the vicinity of said outlet opening and out of the path of movement of the vessel into and out of the transfer station, the blowpipe extending toward the vessel inlet opening and terminating a predetermined distance from the vessel, the blowpipe being fixed to the housing and extending at an acute angle to the central axis of the inlet opening and being laterally spaced from said axis for delivering an inert gas stream to the internal cavity of the vessel without intersection the flow of molten metal through the vessel inlet opening and into he vessel cavity, whereby any contact between the surface of the molten metal in the vessel and the atmosphere is effectively prevented.

5,286,009

DEVICE FOR CONTROLLING THE POURING OF MOLTEN MATERIALS

Alan F. Moore, Knoxville, and Alfred L. Duncan, Clinton, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Aug. 24, 1992, Ser. No. 934,404

Int. Cl.[5] B22D *41/18*

U.S. Cl. 266—236 **18 Claims**

1. A device for controlling the pouring of a molten material from a container, said container defining a bottom portion provided with an opening through which said molten material is poured from said container, said device comprising:

a plug member having an annular forward end portion for force-fit reception in said opening of said container to selectively seal said opening and for being selectively forced through said opening of said container, said plug member having a rear end portion for being positioned within said container, said rear end portion including stop means for prohibiting said rear end portion from passing through said opening in said container when said forward end portion is selectively forced through said opening,



said plug member defining at least one flute extending from a point rearward of said annular forward end portion and forward said stop means to a point rearward of said stop means, said flute permitting fluid communication between interior and exterior of said container when said forward end portion of said plug is forced through said opening whereby said molten material is allowed to flow from said container through said opening.

5,286,010

ROLLING-LOBE AIR SPRING

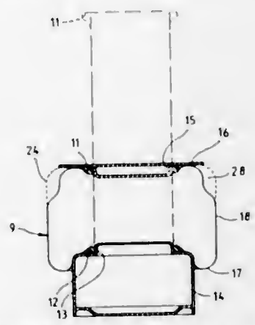
Hans-Joachim Pahl, Ronnenberg, and Wolfgang Bach, Hanover, both of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,360

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136460

Int. Cl.[5] F16F *9/05*; F16J *3/04*; B60G *11/27*

U.S. Cl. 267—64.24 **5 Claims**



1. A rolling-lobe air spring for attachment to first and second attachment parts, the second attachment part including a roll-off piston, the rolling-lobe air spring comprising:

an annular wall defining a longitudinal axis and being a flexible member made of elastomeric material;

said annular wall having first and second longitudinal end portions for attachment to said first and second attachment parts, respectively, and said annular wall being a single continuous uninterrupted annular wall between said end portions;

said annular wall having a pregiven longitudinal active portion within which a rolling lobe is formed as said longitudinal active portion rolls back and forth over said roll-off piston during the operation of the air spring and said annular wall having a longitudinal inactive portion within which the rolling lobe is not formed during said operation;

said annular wall having a first diameter at said longitudinal active portion thereof;

said first longitudinal end portion lying opposite said rolling lobe;

reinforcement layer means including two mutually crossing rubberized cord fabric layers arranged in said annular wall so as to extend uninterruptedly over the entire length thereof;

a rubberized double-layer fabric cord arranged in said inactive portion of said annular wall so as to extend in the direction of said axis from said first longitudinal end portion while remaining clear of said pregiven longitudinal active portion of said annular wall;

said rubberized double-layer cord fabric having cords defining a first cord angle and said cord fabric layers of said reinforcement layer means having cords defining a second cord angle; and,

said first cord angle being less than said second cord angle so as to cause said annular wall to have a depression formed therein in said inactive portion and said annular wall having a second diameter measured at said inactive portion which is less than said first diameter.

5,286,011

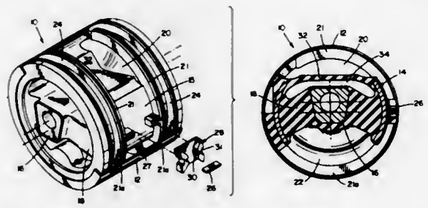
BUSH TYPE HYDRAULICALLY DAMPED MOUNTING DEVICE

Miles E. Strand, St. Marys, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 4, 1992, Ser. No. 985,715

Int. Cl.[5] F16F *5/00*

U.S. Cl. 267—140.12 **8 Claims**



1. A bush type mounting device comprising:

(a) an outer sleeve;

(b) an intermediate sleeve, radially inward from said outer sleeve defining an annular space therebetween;

(c) an inner metal portion radially inward from said intermediate sleeve;

(d) a rubber spring bonded to an outer surface of said inner metal and to an inner surface of said intermediate sleeve diametrically located to provide said device with an upper chamber and a lower chamber, each containing a fluid;

(e) an inertial damping channel molded in said annular space connecting said upper and lower chambers; and

(f) means for hydraulically decoupling said fluid between said upper and lower chambers in said annular space, wherein said decoupler means comprises a plate extending radially outwardly between the intermediate sleeve and the outer sleeve in free association with a holding means; and

(g) wherein said holding means is a saddle type structure having axially opposed slots whose widths are larger than the thickness of the plate.

5,286,012

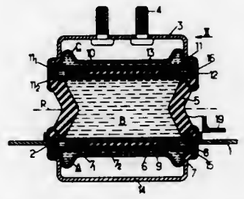
HYDRAULIC ANTIVIBRATION DEVICES

John F. Garety, and Patrick E. Corcoran, both of Rockford, Mich., assignors to Hutchinson, France

Filed May 7, 1992, Ser. No. 879,331

Int. Cl.[5] F16F *13/00*; B60K *5/12*

U.S. Cl. 267—140.13 **3 Claims**



1. A hydraulic antivibration device for interposing between two rigid items, the device comprising:

two rigid endpieces suitable for securing to respective ones of the two rigid items;

an annular elastomer wall that withstands axial compression and that interconnects the two endpieces, said annular elastomer wall including a length of tubing of substantially constant wall thickness, the wall having a middle which is constricted, forming two truncated walls that are interconnected at small bases;

a first flexible bellows carried by a first one of the two endpieces, and cooperating at least with the annular wall to form a liquid-tight pocket;

a mass of liquid filling said pocket;

a first rigid partition carried by the first endpiece and extending between the bellows and the annular wall so as to subdivide the inside of the pocket into a first and a second liquid-tight chamber;

a first constricted passage providing communication continuously between the two chambers;

a second flexible bellows, identical to said first flexible bellows and carried by a second one of the two endpieces, defining a pocket with the first bellows and the annular wall;

a second rigid partition, identical to said first rigid partition, and carried by the second endpiece extending inside said pocket between the second bellows and the annular wall and co-operating with the second bellows to delimit a third chamber;

a second constricted passage identical to said first constricted passage, providing the third chamber permanently into communication with an adjacent one of said first and second liquid-tight chambers;

a first diaphragm mounted in the opening of the first rigid partition for vibrating through a limited amplitude between the first and the second liquid-tight chambers; and

a second diaphragm, identical to said first diaphragm, mounted in an opening through the second rigid partition for vibrating with limited amplitude between the third chamber and the adjacent chamber;

wherein said hydraulic antivibration device is substantially symmetrical about a transverse plane intersecting the annular wall by virtue of the first and second bellows being identical and by virtue of the first and second partitions being identical such that the efficiency of the device permits doubling for a given frequency.

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5,286,013

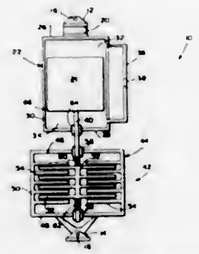
VIBRATION DAMPER ASSEMBLY

John R. Seymour, Lowell; Craig M. Gardner, Danvers; Kenneth V. Wellner, Westminster, and James J. Luz, Tewksbury, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 860,606, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 611,795, Nov. 13, 1990, abandoned. This application Mar. 5, 1993, Ser. No. 27,584

Int. Cl.[5] F16F *9/26*

U.S. Cl. 267—220 **21 Claims**



1. A vibration damper assembly for attachment between a vibrating structure at one end and a supporting substrate at another opposite end, the damper assembly capable of simultaneously camping vibrations under a range of amplitude conditions while accommodating long term creep and dynamic shock and having a tunable natural frequency comprising:

(a) a visco-elastic element for providing natural frequency tunability having first and second ends, the first end of which is adapted for attachment to the vibrating structure;

(b) a piston and cylinder assembly for accommodating long term creep and dynamic shock and including a cylinder, one end of said cylinder being attached to said second end of said visco-elastic element a piston movable relative to said cylinder to establish a pair of variable volume chambers therein with a relief line connecting said variable volume chambers; and a piston rod attached at one end to the piston, said piston rod having a free end extending out of the other end of the cylinder; and

(c) a viscous damping component for damping vibrations under a range of amplitude conditions, said viscous damping component axially spaced from said cylinder and operatively attached to the free end of the piston rod, said viscous damping component including a first portion fixed to said free end of said piston rod and received within a second portion movable relative to said first portion, and means on said second portion for attaching said second portion of said viscous damping component to said supporting substrate, and wherein during damping of the vibrations under the range of amplitude conditions, said piston and cylinder move as a rigid unit.

5,286,014

SLIPPER BUSHING WITH IMPROVED AXIAL LOAD CAPACITY

Mathew K. Chakko, Wabash, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Feb. 12, 1993, Ser. No. 16,617

Int. Cl.[5] F16F *1/44, 7/00*

U.S. Cl. 267—293 **7 Claims**

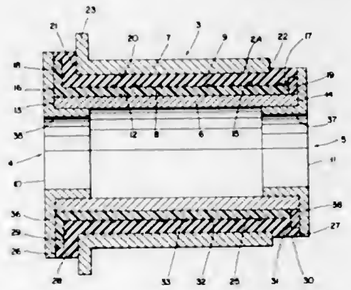
1. A slipper bushing having a flange end opposite a barrel end, comprising;

(a) a hollow, rigid inner sleeve having an outer cylindrical surface defined between a pair of opposing, annular ends adjacent the flange and barrel ends of the bushing and which is radially spaced from a center bore which extends longitudinally through the inner sleeve;

(b) a flat annular washer surrounding the inner sleeve at the annular end of the sleeve adjacent the barrel end of the bushing;

(c) a polymeric sleeve, secured around the outer cylindrical surface of the inner sleeve in concentric relation therewith, said polymeric sleeve having an outer cylindrical surface which is radially spaced from the outer cylindrical surface of the inner sleeve, and which is defined between a pair of opposing annular ends adjacent the flange and barrel ends of the busing, the end of said polymeric sleeve adjacent the flange end of the bushing including a flat annular flange which extends radially from the inner sleeve and the end of said polymeric sleeve adjacent the barrel end of the busing, which is in abutting relation with the washer;

(d) a sleeve, composed of resilient elastomeric material, surrounding the polymeric sleeve in concentric relation, the elastomeric sleeve having, (i) an inner cylindrical surface, which is in abutting relation with the outer cylindrical surface of the polymeric sleeve, and (ii) an outer cylindrical surface which is radially spaced from the inner cylindrical surface and defined between a first integrally formed flat annular flange at the flange end of the bushing and a second smaller diameter flat annular flange at the barrel end of the bushing, the first and second annular flanges having outwardly facing annular recesses for matingly receiving the annular flange of the polymeric sleeve and the washer respectively, one of the abutting cylindrical surfaces of the elastomeric and polymeric sleeves



having therein, a number of circumferentially oriented grooves which are spaced longitudinally of the elastomeric and polymeric sleeve in side-by-side relation;

(e) a lubricating flowing in the grooves during operation of the bushing to lubricate the abutting surfaces of the polymeric and elastomeric sleeves;

(f) a rigid cylindrical outer sleeve secured to the outer cylindrical surface of the elastomeric sleeve in concentric surrounding relation around the elastomeric sleeve between the annular flanges thereof, the outer sleeve having an annular flange adjacent the flange end of the bushing in parallel relation from the annular flange of the polymeric sleeve, such that at least a portion of the elastomeric annular flange, adjacent the flange end of the bushing, is sandwiched between the annular flanges of the outer and polymeric sleeves;

(g) a first hollow cylindrical end cap secured in the bore of the inner sleeve at the flange end of the bushing, the end cap having a radially extending flat annular flange which covers the annular end of the inner sleeve adjacent the flange end of the bushing, and the annular flanges of the elastomeric and polymeric sleeves adjacent the flange end of the busing, and seals the interfaces between such sleeves; and

(g) a second hollow cylindrical end cap secured in the bore of the inner sleeve at the barrel end of the bushing in oppositely disposed relation to the first end cap at the flange end of the bushing, the second end cap having a radially extending flat annular flange which covers the annular end of the inner sleeve adjacent the barrel end of the bushing, and the washer and annular flange of the elastomeric sleeve adjacent the barrel end of the bushing and seals the interfaces between such washer and sleeves.

5,286,015

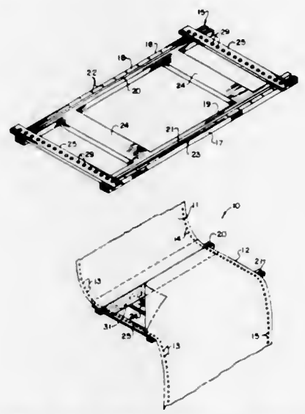
COMPUTER PAPER ASSEMBLY ORGANIZATION

Zena E. Uzep, 1 Bedford Dr., North Grafton, Mass. 01536

Filed Jun. 29, 1992, Ser. No. 905,468

Int. Cl.[5] B65H *39/00;* **B31F** *5/00;* **G03D** *15/04*

U.S. Cl. 270—52 **1 Claim**



1. A computer paper assembly method to join a plurality of computer sheets together, to include a first computer sheet and second computer sheet, and the first computer sheet and the second computer sheet each include a respective first side and a second side, with the first side of each of the computer sheets including a plurality of first side apertures spaced apart a predetermined spacing, and each of the second side of the first and second computer sheets includes a plurality of second side apertures spaced apart said predetermined spacing, the method further includes providing a support guide, wherein the support guide includes a first frame leg spaced from and parallel a second frame leg in a parallel and coextensive relationship, wherein the first frame leg and the second frame leg are provided to include a respective first top wall and a second top wall, with the first top wall including a first dovetail groove and the second top wall including a second dovetail groove, and the first dovetail groove and the second dovetail groove are spaced apart a predetermined distance, and providing a plurality of slide legs, wherein each of the slide legs includes a slide leg bottom wall and a slide leg top wall, with each slide leg bottom wall including a first dovetail projection slidably received within the first dovetail groove and a second dovetail projection slidably received in the second dovetail groove, and each slide leg top wall includes a plurality of registration rods spaced apart said predetermined spacing to accept said first computer sheet in a continuous coextensive edge-to-edge relationship with the second computer sheet, and the first computer sheet first side apertures are positioned and received on one of said slide legs and the second side apertures of the first and second computer sheets are positioned and received within a further of said plurality of slide legs, and the registration rods of the slide legs are received within the apertures, and providing a joining web, the joining web including an adhesive top surface, and the adhesive top surface is positioned coextensively below the first computer sheet and the second computer sheet to subsequently secure said first computer sheet and the second computer sheet onto the adhesive top surface, and the first frame leg and the second frame leg include at least one connecting plate fixedly and orthogonally extending between the first frame leg and the second frame leg to accept and receive the joining web on the connecting plate to minimize bowing of the first computer sheet and the second computer sheet when joining the first computer sheet and the second computer sheet together.

5,286,016

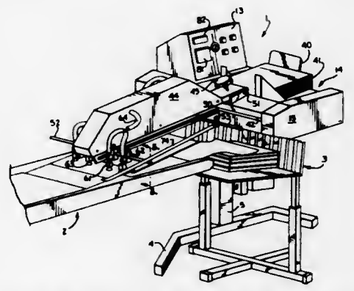
APPARATUS AND METHOD FOR INSERTING SHEETS INTO LAPSTREAM IN A DIRECTION OPPOSITE TO CONVEYING DIRECTION

James M. Franks, Burlingame, Kans., assignor to Brackett, Inc., Topeka, Kans.

Filed Sep. 16, 1992, Ser. No. 945,745

Int. Cl.[5] B65H *39/02*

U.S. Cl. 270—57 **23 Claims**



1. A chipboard inserter apparatus for inserting chipboard spacers between series of sheets within a sheet lapstream conveyed in a direction of movement on a lapstream conveyor, the apparatus comprising:

(a) sheet pick-up means for cyclically lifting a leading edge of a selected sheet on said conveyor; and

(b) chipboard ejector means for propelling a spacer in a direction opposite to the direction of movement of said lapstream conveyor to insert said spacer under said selected sheet.

15. A method of inserting chipboard spacers between series of sheets within a sheet lapstream conveyed in a direction of movement on a lapstream conveyor, the method comprising the steps of:

(a) cyclically picking up a leading edge of a selected sheet on said conveyor; and

(b) propelling a spacer in a direction opposite to the direction of movement of said lapstream conveyor toward the point on said conveyor at which the leading edge of said selected sheet is being picked up to insert said spacers under said selected sheet.

5,286,017

BILL ESCROW/RETURN DEVICE

Jeffrey L. Hawk, Hanover Park; Paul E. Stewart, Deerfield, and W. Ludwik Lichodziejewski, Elk Grove, all of Ill., assignors to ElectroCom Gard Ltd., Niles, Ill.

Filed Mar. 15, 1993, Ser. No. 30,913

Int. Cl.[5] B65H *5/22*

U.S. Cl. 271—3.1 **26 Claims**

1. A bill escrow/return device comprising:

a bill escrow chamber sized and positioned to receive a bill of a predetermined width;

a bill pusher plate reciprocally mounted for movement into and out of said bill escrow chamber;

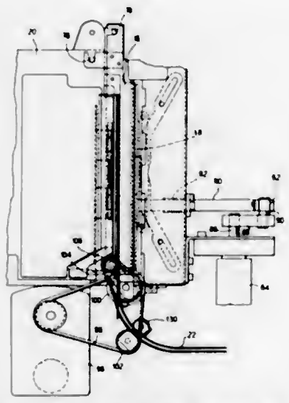
a bill stacker unit for receiving said bill from said bill escrow chamber by means of said pusher plate upon confirmation of a vend transaction; and

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a bill return chute for deposit of said bill upon cancellation of said vend transaction;

said bill escrow chamber having means for securing said bill escrow chamber in a fixed vertical position relative to said bill pusher plate and said bill stacker unit during operation of said bill escrow/return device and also having a first bill receiving area for receiving said bill in a vertical orientation;

a wing stop member having an opening therethrough sized to allow passage of said bill pusher plate, yet smaller in width than said width of said bill;



a pair of wings pivotally biased against said wing stop member, said wings laterally spaced apart a distance slightly less than a width of said bill pusher plate such that movement of said plate against said wings will cause said wings to pivot and move away from said wing stop member;

a second bill receiving area defined between said wing stop member and said wings, and

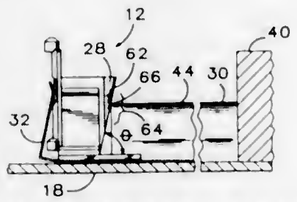
a bill drive mechanism for engaging and driving said bill from said second bill receiving area to said bill return chute without vertically moving said bill escrow chamber.

5,286,018

PRINTER PAPER STACK-HANDLING APPARATUS

Steve O. Rasmussen, Vancouver, and Allan G. Olson, Camas, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 29, 1992, Ser. No. 954,540
Int. Cl.[5] B65H *1/08*
U.S. Cl. 271—147 **20 Claims**



1. Paper stack-handling apparatus for use in a printer, the apparatus comprising:

printer structure for supporting a variable height paper stack including a top sheet, the top sheet defining a first plane, and

a pivotal member including a first end and a second end, the member including a top-of-stack contacting surface extending therebetween at an inclined angle relative to the first plane for contacting the top sheet of the variable height paper stack, said member being mounted adjacent said printer structure and biased for pivotal rotation in a plane generally parallel with the first plane to urge such top sheet into predefined lateral alignment within the printer, whereby the top-of-stack contacting surface contacts such top sheet at different locations therealong depending upon the height of the paper stack.

5,286,019

COMBINATION GOLF CLUB HANDLE SUPPORT AND WIPER

Jason M. Watabe, 9200 NE. 131st Pl., Kirkland, Wash. 98034

Filed Nov. 9, 1992, Ser. No. 973,647
Int. Cl.[5] A63B *57/00*; **B65B** *67/12*
U.S. Cl. 273—32 B **1 Claim**



1. In combination a wiper and a support for a plurality of golf clubs handle and said wiper, said support being supportable in terrain,

said support comprising a shaft having first and second ends, and

a bracket having a base and first and second arms extending upward from said base and shaft connecting means in said base, intermediate said arms, said connecting means and said arms lying generally in a single plane, said arms being spaced apart and configured to hold said handles on said support.

said first end of said shaft having a tapered configuration to facilitate penetration of said shaft in said terrain,

said second end of said shaft including means for being secured to said connecting means,

said wiper including means for forming a detachable tab straddling said base intermediate said arms for detachably attaching said wiper to said support,

whereby, said handles are made more visible by being supported on said support, said wiper increases said visibility and said wiper is useful for removing contamination from said handles.

5,286,020

MEDICINE BALL

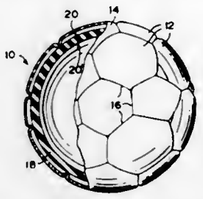
Andrew Caruso, c/o Kwik Goal Ltd., 140 Pacific Dr., Quakertown, Pa. 18951

Filed Nov. 6, 1991, Ser. No. 788,433
Int. Cl.[5] A63B *41/00*
U.S. Cl. 273—58 BA **2 Claims**

1. A pneumatic medicine ball comprising:

a) an outer cover of non-stretchable, flexible material adapted to assume a spherical shape and having a small opening therein; and

b) a bladder of elastomeric material having a thick, heavy, wall and a valve within said wall, said valve being inserted into the small opening within said outer cover, the thickness of said wall having a ratio of about 0.02 to the diameter of the fully inflated bladder, said bladder being inflated



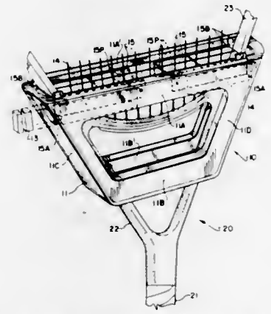
to a pressure of about 2–10 psi so that said ball is sufficiently pliable to be grasped easily by a small child.

5,286,021

RACQUET SPORT WARM-UP AND WEIGHT TRAINING DEVICE

Walter Shaw, 913 Stratfield Rd., Fairfield, Conn. 06432

Filed Mar. 19, 1992, Ser. No. 854,132
Int. Cl.[5] A63B *49/04*
U.S. Cl. 273—73 R **15 Claims**



1. A sports racquet weighting device for use with a sports racquet frame having a head, throat and handle, two opposing face areas, and a center of gravity comprising:

a. a housing, comprising first and second upper horizontal members, first and second lower horizontal members, each member having an inside and outside surface, means for connecting together the first upper and lower horizontal members, means for connecting together the second upper and lower horizontal members, and means for spacing apart the first and second upper horizontal members and the first and second lower horizontal members to define apertures adapted to receive the handle and throat of a sports racquet and dimensioned to constrain the device from passing over a head of a racquet;

b. an inner compliant surface attached to the inside surface of at least one horizontal member such that the inner compliant surface resiliently biases against, and slideably secures the device to a sports racquet frame; and

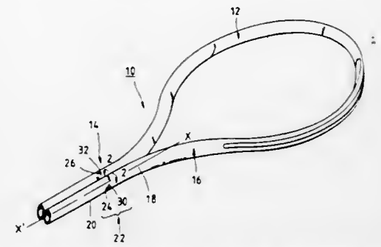
c. means for securing at least one supplemental weight to the housing near the center of gravity of a sports racquet frame.

5,286,022

METAL GAME RACKET

Chin-San You, No. 3, Lane 1029, Feng-Shyn Rd., Feng Yuan City, Taiwhung Hsien, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,811
Int. Cl.[5] A63B *49/06*
U.S. Cl. 273—73 H **16 Claims**



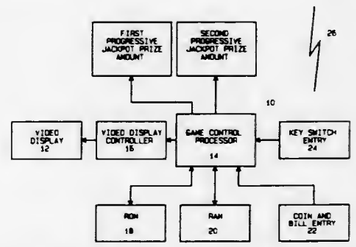
1. A game racket frame of metal material comprising a head frame, a handle, and a throat connecting said handle and said head frame, said handle having a shaft portion which has one end that is coupled with said throat portion and another end that extends axially to form a hand grip; wherein said hand grip is provided with an area adjacent to said shaft portion and having at least one slit of a predetermined width that is measured in a direction perpendicular to the longitudinal axis of said area, said width of said slit being at least corresponding to 3% of the circumferential length of a cross section of said area.

5,286,023

VIDEO LOTTERY GAME

Michael W. Wood, Denham Springs, La., assignor to BKE, Incorporated, Chicago, Ill.

Filed Nov. 20, 1991, Ser. No. 795,129
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—138 A **14 Claims**



1. A video lottery game having a video display and a processor for enabling a player to play the video lottery game comprising:

means for calculating and displaying jackpot prize schedules including a predetermined paytable; said jackpot prize schedules calculating means being based upon a preselected payback allocation percentage;

player operable means responsive to said displayed jackpot prize schedules for receiving and displaying a bet;

means responsive to said player operable means for receiving and displaying a bet for randomly selecting a plurality of objects;

means for sequentially displaying each of said randomly selected plurality of objects responsive to a player selection;

means responsive to said randomly selected and displayed objects for evaluating and displaying game results, said

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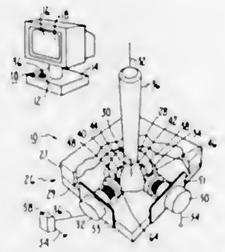
evaluating means including means responsive to a winning combination of said displayed randomly selected objects for calculating said jackpot prize schedules; and means responsive to said calculated jackpot prize schedules for calculating a payout; said jackpot prize schedules including a first progressive jackpot prize amount and a second progressive jackpot prize amount; said first progressive jackpot prize amount being substantially greater than said second progressive jackpot prize amount; said first progressive jackpot prize amount and said second progressive jackpot prize amount being separately calculated and awarded, whereby a player winning one of said first or second progressive jackpot prize amounts does not affect the amount of the other of said first or second progressive jackpot prize amounts.

5,286,024

SYSTEM FOR SENSING THE POSITION OF A JOYSTICK

Wade O. Winblad, Hayward, Calif., assignor to Atari Games Corporation, Milpitas, Calif.

Filed Mar. 20, 1991, Ser. No. 672,361
Int. Cl.[5] A63F 9/22
U.S. Cl. 273—148 B **26 Claims**



1. A joystick position sensing system, comprising:
a housing having first and second potentiometers mounted thereon;
a pivot ball movably mounted on said housing and defining a prime axis, said pivot ball being formed with first and second grooves, said grooves defining portions of respective first and second great circles each intersecting said prime axis, the plane of said first great circle being substantially orthogonal to the plane of said second great circle;
a joystick attached to said pivot ball and extending outwardly therefrom;
a first follower arm slidably engaged with said first groove and operatively engaged with said first potentiometer for generating a first signal representative of the orientation of said first groove relative to said housing;
a second follower arm slidably engaged with said second groove and operatively engaged with said second potentiometer for generating a second signal representative of the position of said second groove relative to said housing; and
means electrically coupled to said first and second potentiometers for generating a third signal representative of the position of said joystick relative to said housing.

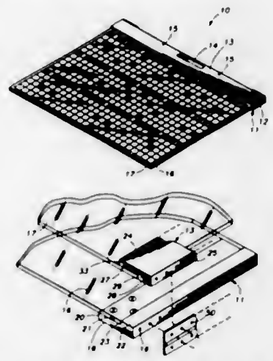
5,286,025

MULTIPLE BINGO CARD HOLDER APPARATUS

Eric E. Mulyca, and Edward A. Mulyca, both of 140 Rotterdam St., Schenectady, N.Y. 12306

Filed May 17, 1993, Ser. No. 61,262
Int. Cl.[5] A63F 3/06
U.S. Cl. 273—148 R **5 Claims**

1. A multiple bingo card holder apparatus, comprising,
a base block, the base block including a base block bottom wall, a base block rear wall, a base block front wall,
and
a first top wall extending from the base block front wall,
and
a base block second top wall extending from the base block first top wall to the base block rear wall,
and
the first top wall spaced from the base block bottom wall a first spacing, the second top wall spaced from the base block bottom wall a second spacing, with the second spacing greater than the first spacing, and a base block



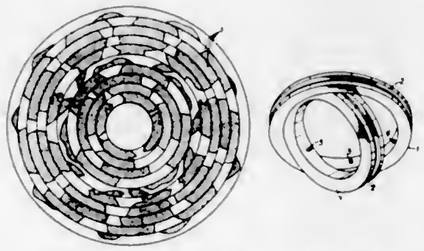
abutment wall extending coextensively of the first top wall and the second top wall in an orthogonal relationship relative to the first top wall and the second top wall,
and
a first rigid transparent web coextensively mounted in communication with the base block abutment wall,
and
a top hinge block hingedly mounted to the base block rear wall, wherein the top hinge block includes a second rigid transparent web coextensive with the first rigid transparent web, and the second rigid transparent web fixedly mounted to the top block.

5,286,026

PUZZLE COMPOSED OF CONCENTRIC RINGS

Abrahm Schnapp, 28 Yaffo Street, Haifa, Israel

Filed Mar. 17, 1992, Ser. No. 853,038
Int. Cl.[5] A63F 9/08
U.S. Cl. 273—155 **12 Claims**



1. A puzzle comprising a plurality of initially separate, concentric planar rings of stepped increasing size arrangeable together in the form of a flat circular plate having a center, said plate having a front surface and a rear surface and each said ring including:
an obverse planar surface,

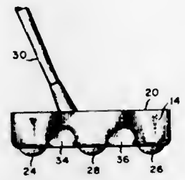
a reverse planar surface, the obverse and the reverse planar surfaces of each said ring having visual information imprinted thereon such that a visual pattern comprised of combinations of said visual information from said rings is formed on said plate when said rings are arranged in a predetermined order relative to each other by at least one of rotation and reversal of said rings relative to each other,
an inner circumference,
an outer periphery contiguous with the inner circumference of a next larger ring,
a circumferential groove on the outer periphery,
two pivot pin means on the inner circumference in diametrically opposed alignment with each other for pivotal connection to a next smaller ring, said obverse and said reverse surfaces of each said ring being pivotally reversible with respect to said front and rear surfaces of said plate by pivotal rotation about said pivot pin means, and
at least one knob means for releasably retaining each said ring in parallel relation to said plate and for permitting rotation of each said ring relative to other said rings of said plate about the center of said plate, said at least one knob means being positioned on the inner circumference in cooperating relation with said circumferential groove of the next smaller ring,
wherein assembly of said plate from said rings is made by placing said pins of a larger ring in the circumferential groove of the next smaller ring, while the planar surfaces of said larger ring and said next smaller ring are positioned substantially at right angles to each other, and by rotating and urging said larger ring into the plane of said next smaller ring, whereby said at least one knob means of said larger ring snaps into said circumferential groove of said next smaller ring due to elasticity of said larger ring, thereby positioning the obverse surfaces of said larger ring and said next smaller ring in an identical plane.

5,286,027

GOLF PUTTER

Angelo Koumarianos, 248 24 Ave., So. Seaside Park, N.J. 08752

Filed Oct. 30, 1992, Ser. No. 970,136
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 A **1 Claim**



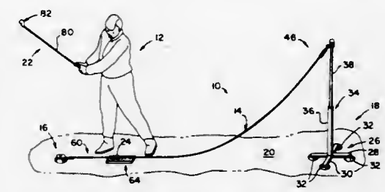
1. A golf putter having a handle and a putter head, said putter head having a ball-engaging surface, a trailing surface, a top surface, a bottom surface, a heel portion and a toe portion, said ball-engaging surface being substantially vertically planer, said trailing surface being curvilinear and having a rearwardly-extending protrusion centrally positioned thereon, a first spherical support and a second spherical support formed on said bottom surface and depending therefrom, said first spherical support located proximate said heel portion and said second spherical support located proximate said toe portion, a third spherical support spaced rearwardly from said first and second spherical supports, said third spherical support located proximate said protrusion in said trailing surface; a first recessed channel disposed between said first spherical support and said third spherical support and a second recessed channel disposed between said second spherical support and said third spherical support, said first and second recessed channels extending rearwardly from a point proximate to said ball-engaging surface to said trailing surface.

5,286,028

GOLF SWING TRAINING SYSTEM

Craig D. Daugard, 1170 Greenway Ter., #2, Brookfield, Wis. 53005

Filed Feb. 26, 1993, Ser. No. 23,082
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—176 FA **15 Claims**



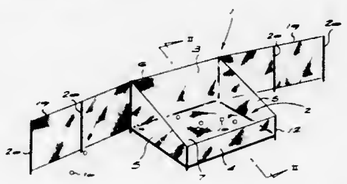
1. A golf swing training system, comprising:
a line defining a first end and a second end;
a first line support connected to the first end of the line and a second line support connected to the second end of the line, wherein the first line support and the second line support are mounted to a supporting surface and are arranged such that a first portion of the line adjacent the first line support is located closely adjacent the supporting surface and a second portion of the line adjacent the second line support is spaced above the supporting surface;
a ball slidably mounted to the line; and
a golf club defining a shaft and a head having a slot formed therein, wherein the slot extends upwardly from a lower surface defined by the head;
wherein a user stands adjacent the first portion of the line and grasps the golf club shaft and swings the golf club toward the line such that the line is received within the slot formed in the golf club head adjacent the supporting surface, to strike the ball and to propel the ball on the line upwardly on the second portion of the line toward the second line support.

5,286,029

GOLF PRACTICE APPARATUS

Hendrik P. Smit, P.O. Box 10056, Springs, Transvaal, South Africa

Filed Jun. 29, 1993, Ser. No. 84,013
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—181 F **7 Claims**



1. Golf practice apparatus for use in the practice of chip shots by a user, the apparatus being erectable into an erected configuration and collapsible into a collapsed configuration, the apparatus comprising:
a bin formed of a fabric or fabric-like flexible material, said bin when in the erected configuration being of generally rectangular shape and having a front wall, two side walls, a rear wall, and a base, the front wall being lower than the rear wall and the side walls having an upper edge which inclines from the front wall to the rear wall;
a frame for supporting the bin in its erected configuration, said frame being formed of releasably interconnected frame elements;

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a pair of wings connected to or integral with the rear wall and when in the erected configuration extending laterally to each side of the bin to form a catch fence on either side of the bin;

the apparatus being collapsible into its collapsed configuration by disconnecting the frame elements from each other and removing the bin from the frame to enable the bin and wings to be folded or rolled into a compact bundle.

5,286,030

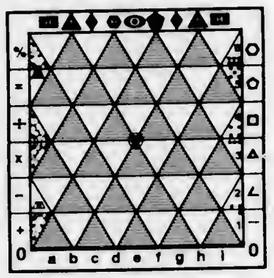
BOARD GAME APPARATUS

Butler A. Villagomez, 3111 Janet Rd., Wheaton, Md. 20906

Filed Dec. 29, 1992, Ser. No. 991,133

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—242 **16 Claims**



1. An apparatus for a playing game, said apparatus comprising:

first and second planar playing surfaces each having a rectangular perimeter, each of said first and second playing surfaces is divided into a plurality of playing spaces;

each of said plurality of playing spaces is a triangle having three sides and three angles, contiguous ones of said plurality of playing spaces share one coincident side; and

first and second sets of playing pieces, each of said first and second sets of playing pieces including a plurality of individual playing pieces, a plurality of pairs of playing pieces and a plurality of minor playing pieces; each of said individual playing pieces, each of said pairs of playing pieces and said minor playing pieces are movable to different subsets of said plurality of playing pieces.

5,286,031

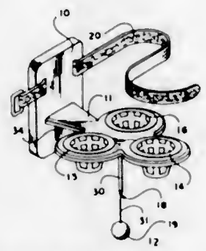
WAIST MOUNTED TETHERED BALL AND TARGET

Wilmer D. Walker, Jr., 1316 Sharon St., N.W., Atlanta, Ga. 30314

Continuation-in-part of Ser. No. 792,076, Nov. 7, 1992. This application Jan. 13, 1993, Ser. No. 3,750

Int. Cl.[5] A63B *67/10*

U.S. Cl. 273—320 **7 Claims**



1. In a game device comprising a target plate, at least one target carried by said target plate, a ball, a tether attaching said ball to said target plate, said tether being sufficiently flexible that said ball can be received by said at least one target, the improvement wherein said tether includes a first length that is generally rigid and a second length that is flexible throughout its length, said first length having a first end that is flexibly fixed to said target plate for allowing universal movement of said first length with respect to said target plate, and a second end opposite from said first end, said second length being fixed to said second end of said first length.

5,286,032

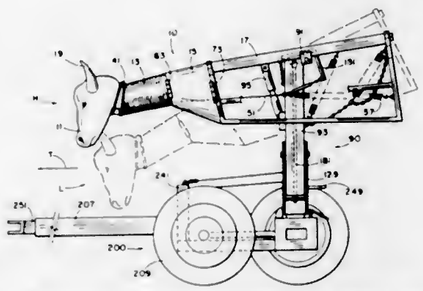
STEER WRESTLING DUMMY

Everett E. Spencer, Rte. 1, Box 312-1, Drumright, Okla. 74030

Filed May 21, 1993, Ser. No. 65,834

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—339 **28 Claims**



1. A steer wrestling dummy towable by a motorized vehicle comprising:

a body;

a neck hingedly connected to said body for lateral turning of said neck relative to said body, said neck having an upper neck hingedly connected to a lower neck portion for lateral turning of said upper neck portion relative to said lower neck portion in the same direction as said neck turns relative to said body;

a head hingedly connected to said neck for upward rotation of said head relative to said neck;

means having an upper portion connected to said body for supporting said body in an upright position; and

frame means mounted on at least two spaced apart tires and connected to a lower portion of said supporting means for transporting said supporting means overland with said body positioned laterally of and above said frame and with said body aligned for forward movement therewith.

5,286,033

PARACHUTE GAME AND TARGET

Mark Wayne, 29436 Briarbank Ct., Southfield, Mich. 48034

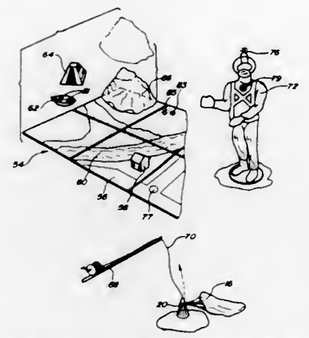
Continuation-in-part of Ser. No. 573,282, Aug. 24, 1990, Pat. No. 5,098,109. This application Mar. 23, 1992, Ser. No. 855,426

Int. Cl.[5] A63B *65/00*

U.S. Cl. 273—377 **22 Claims**

1. A parachute game comprising:

a parachute assembly, said assembly including a body and a parachute, said parachute being attached to said body; and a target;



said body including means for announcing if said body falls upon a selected part of said target.

5,286,034

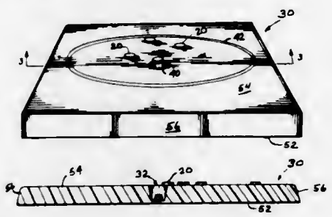
DISC PITCHING GAME

Richard L. Haverkate, and Diane L. Haverkate, both of P.O. Box 385, McQueeny, Tex. 78123

Filed Jul. 23, 1992, Ser. No. 917,230

Int. Cl.[5] A63B *67/06*

U.S. Cl. 273—401 **3 Claims**



1. A game for one or more players, comprising:

a disc;

at least one solid target platform including a top surface, said top surface having a depression therein;

said depression having a depression top and a depression base, said depression top being wider than said depression base, said depression base including a protrusion, said protrusion having a protrusion top and a protrusion base, said protrusion top being narrower than said protrusion base, and said protrusion top being substantially flat; whereby

when said disc is tossed into said depression, said disc is guided to and seated on said protrusion top to facilitate easy removal of said disc.

5,286,035

ARCHERY HUNTING ARROWHEAD

Dennis R. Ward, 807 Mesa Ave., Willcox, Ariz. 85643

Filed Mar. 1, 1993, Ser. No. 24,424

Int. Cl.[5] F42B *6/08*

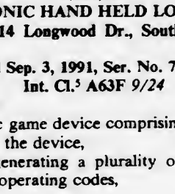
U.S. Cl. 273—422 **6 Claims**

1. An arrowhead comprising in combination:

(a) a round body portion tapering upward to a flattened point, said body having a slot therethrough, said body having a hole therethrough near the upper end and perpendicular to said slot, and a threaded shaft at the lower end of said body portion;

(b) a sharpened tip installed on said flattened point of said body portion;

(c) a steel roll pin mounted within the upper portion of said slot in said body, over which said sharpened tip is installed;



(d) a blade pivotally mounted within said slot of said body portion;

(e) a set screw mounted in said hole near the upper end and perpendicular to said slot, around which said blade pivots;

(f) a rubber o-ring installed on said body in such a way as to hold said blade in a temporarily stationary position centered within said slot in said body.

5,286,036

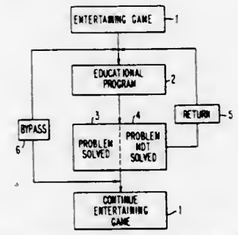
METHOD OF PLAYING ELECTRONIC GAME, AND ELECTRONIC GAME

Michael Barabash, Brooklyn, N.Y., assignor to Abrasion Engineering Company Limited, Channel Islands

Filed Sep. 8, 1992, Ser. No. 941,940

Int. Cl.[5] A63F *9/18*; G09B *7/04*

U.S. Cl. 273—429 **8 Claims**



1. A method of playing an electronic game, comprising the steps of

first playing an entertaining game in accordance with an entertaining game program;

then after a predetermined time automatically interrupting by a main program of the game the entertaining game by an educational game operated by an educational game program and having a problem to be solved; and

resuming by a main program of the game playing the entertaining game only after the problem of the educational game is solved by a player.

5,286,037

ELECTRONIC HAND HELD LOGIC GAME

Nabil N. Ghaly, 14 Longwood Dr., South Huntington, N.Y. 11746

Filed Sep. 3, 1991, Ser. No. 754,465

Int. Cl.[5] A63F *9/24*

U.S. Cl. 273—460 **46 Claims**

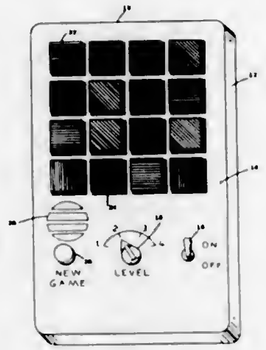
1. An electronic game device comprising:

a. a housing for the device,

b. means for generating a plurality of codes hereinafter refered to as operating codes,

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c. plurality of entry control means,
d. plurality of routing means defining a respective plurality of playing positions on the surface of said housing, each of said routing means being actuable by said entry control means to route said operating codes within the device,
e. means to generate a plurality of codes, hereinafter refered to as color codes, from said plurality of operating codes,
f. plurality of multi-color light emitting means,
g. means to route said color codes to said light emitting means in accordance with the determination of said routing means,
h. means to decode said plurality of color codes and activate said plurality of multi-color light emitting means,



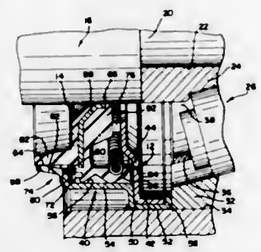
i. means for varying the level of difficulty of any particular game, and
j. sensorially perceptible indicating means responsive to said entry control means for generating a first sensorially perceptible indication corresponding to each activation of the entry control means, a plurality of sensorially perceptible and distinct indications each of which is corresponding to each of a plurality of predetermined colors being displayed at al multi-color light emitting means and a sensorially perceptible indication corresponding to the successful completion of a game.

5,286,038

UNITIZED SEAL FOR HEAVY DUTY APPLICATION

Dennis J. Abraham, St. Charles, and Linda Swetz, South Elgin, both of Ill., assignors to SKF USA Inc., Elgin, Ill.

Filed Sep. 24, 1992, Ser. No. 950,198
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—35 **6 Claims**



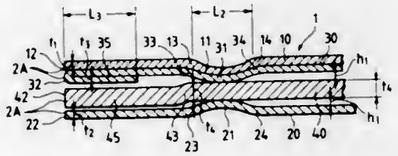
1. A unitized seal assembly for heavy duty use in association with first and second, relatively movable machine elements, said seal comprising, in combination, a primary seal component and a wear sleeve component, said primary seal component including a stiffener element and an elastomeric seal body, the radially inner portion of said stiffener element being sized for snug engagement with said first machine element, said seal body being bonded to said stiffener element and including a pair of frustoconical surfaces meeting along a generally circular locus to form a primary seal lip intended to contact an opposed, first surface portion of said wear sleeve component, said seal body also including an intermediate excluder lip formed by the convergence of two surfaces meeting along a generally circular or cylindrical locus to form an excluder lip in facing relation to a second opposed facing surface portion of said wear sleeve, said elastomeric body further including an exterior excluder seal portion extending axially outwardly of said primary lip and said intermediate excluder lip portions of said seal, said exterior excluder seal portion including a generally axially extending cylindrical contact surface for engagement with an exterior excluder lip, said wear sleeve component including a casing wall with an exterior cylindrical mounting surface for fluid-tight association with said second movable machine element, an interior cylindrical contact surface having first and second portions sized for sealing contact with said primary seal lip and said intermediate excluder lip, respectively, and an axially outer end portion, said wear sleeve component also including an elastomeric exterior excluder lip bonded to an extending outwardly from said axially outer end portion of said casing wall, said exterior excluder lip having a radially inwardly facing seal band portion adapted to contact said cylindrical contact surface on said exterior excluder seal portion, whereby when assembled, said seal assembly includes an exterior, elastomer-to-elastomer excluder seal, an intermediate excluder seal and a primary seal formed by contact between said primary seal lip and said casing contact surface.

5,286,039

METAL GASKET

Shigeru Kawaguchi; Kenji Kubouchi; Naoki Ii, and Kunitoshi Inoue, all of Osaka, Japan, assignors to Nippon Gasket Co., Ltd., Osaka, Japan

Filed Aug. 20, 1992, Ser. No. 932,184
Claims priority, application Japan, Aug. 21, 1991, 3-232449
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—180 **9 Claims**



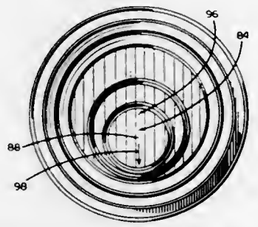
1. In a metal gasket including elastic metal plates disposed between a cylinder block and a cylinder head fixed to said cylinder block, the elastic metal plates being made of a metal material having elasticity and having holes for combustion chamber and beads as seal portions having convexities on one surface thereof and concavities on another surface thereof formed along said holes, said metal gasket comprising:
said elastic metal plates consisting of a first elastic metal plate, a second elastic metal plate, and a regulation plate and an intermediate plate both disposed between said first elastic metal plate and said second elastic metal plate;
said first elastic metal plate having first holes and first beads formed along said first holes and having convexities on one surface thereof and concavities on another surface thereof;
said regulation plate having third holes matching with said first holes, third beads formed along said third holes and having convexities on one surface thereof and concavities on another surface thereof, compression stop portions each formed by turning an end of said regulation plate back under itself to form a doubled over region, said convexities of said first beads being laminated on said concavities of said third beads, and said compression stop portions being shaped to a thickness smaller than the height of said third beads, so as to prevent full compression of said third beads;
said second elastic plate being disposed to oppose said regulation plate, and having second beads facing said third beads, and said convexities of said third beads and said convexities of said second beads oppose one another;
said intermediate plate being disposed between said regulation plate and said second elastic plate, and having fourth holes corresponding to said second holes and an offset portion extending in a direction spaced apart from said compression stop portions and having a thickness below that of said compression stop portions.

5,286,040

ASYMMETRICAL PIPE SEAL AND CLOSURE MEMBER

Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473

Filed Apr. 12, 1993, Ser. No. 46,501
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—207 A **6 Claims**



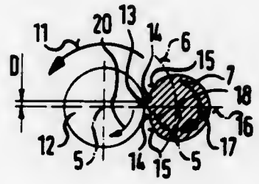
1. A combination aperture closure and low pressure seal for an exterior surface of a pipe adapted to be mounted in a cylindrical aperture and to receive an end portion of a pipe in a monolithically cast fluid distribution box or the like of cementitious material; said seal being composed of molded elastomeric material and comprising an annular body portion having generally cylindrical inner and outer surfaces, the former defining a central cylindrical pipe receiving opening which extends axially through the body portion and the latter engageable with a wall of the aperture, an integral annular flange on said body portion extending generally radially outwardly and adapted to be embedded in the case cementitious material about the aperture during casting of said box whereby to secure the seal in position in the aperture, and a hollow generally frusto-conical sealing skirt having a larger diameter end portion and a smaller diameter end portion with the seal body portion and projecting inwardly at an angle between radial and axial planes, the smaller diameter than the pipe to be received and being disposed radially inwardly from said inner cylindrical body surface and free to expand diametrically, said frusto-conical sealing skirt being adapted to receive and guide an end portion of a pipe introduced at its said larger diameter end portion and urged toward and axially through its said free smaller diameter end portion whereby to slightly diametrically expand said free end potion and thus to establish firm frictional engagement and effective sealing thereof with the exterior peripheral surface of the pipe, said seal further incurring a knock-out web which takes a substantially circular disk configuration and which extends radially across the smaller diameter free end portion of the frusto-conical sealing skirt, said web being molded integrally with the skirt and having an integrally molded first weakener narrow, completely round, of uniform radius, annular portion adjacent the skirt free end portion to facilitate web knock-out and a second weakened narrow, completely round, of uniform radius annular portion radially inwardly of said first weakened annular portion so that said web can be knocked out at either said first or said second weakened narrow annular portions whereby said seal can serve a dual purpose selectively as a closure for an associated aperture and a seal in full circumferential contact around a pipe for pipes of one of two different diameters entered in the aperture, a first axis, the radius of said first weakened narrow annular portion having said first axis,
a second axis, the radius of said second weakened narrow annular portion having said second axis, said second axis being radially displaced from the first axis, and
said second weakened narrows annular portion approaching tangency to but not coinciding with said first weakened annular portion in the general direction of said displacement of said second axis from said first axis.

5,286,041

DRILL CHUCK

Günter H. Röhm, Heinrich-Röm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,287
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1991, 4129048; European Pat. Off., Jan. 31, 1992, 92101585.5
Int. Cl.[5] B23B *31/12*
U.S. Cl. 279—60 **15 Claims**



1. A drill chuck for use with a tool having a shaft, the chuck comprising:
a chuck body centered on and rotatable about a chuck axis;
an adjustment body centered on the chuck axis, rotatable about the chuck axis on the chuck body, and axially fixed on the chuck body, one of the bodies being formed with a plurality of angularly equispaced jaw-guide passages centered on respective jaw axes all lying on the surface of an imaginary cone centered on the chuck axis, the other of the bodies being formed with a screwthread centered on the chuck axis and exposed in the guide passages; and
respective jaws displaceable in the passages along the respective jaw axes and each formed with
a row of teeth meshing with the screwthread, whereby relative rotation of the bodies in one direction moves the jaws radially inward and axially forward and opposite relative rotation moves the jaws radially outward and axially backward,
a generally axially extending first entrainment ridge projecting radially inward relative to the chuck axis from the respective jaw, lying offset forward, relative to a normal rotation direction of the chuck when drilling, from a respective jaw plane including the respective jaw axis and the chuck axis, and lying mainly within the imaginary cone, and with
a second such entrainment ridge offset from the respective first ridge and lying relative to the normal rotation direction behind the respective first ridge, each second ridge being offset radially of the respective jaw axis inward with respect to the respective first ridge from a respective plane perpendicular to the respective jaw plane.

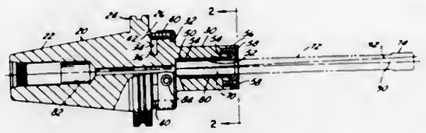
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,042

TOOL HOLDER WITH CENTERING ADJUSTMENT

Robert Laube, Mt. Clemens, Mich., assignor to Hydra-Lock Corporation, Warren, Mich.

Filed Mar. 24, 1993, Ser. No. 36,493
Int. Cl.[5] B23B *31/36*
U.S. Cl. 279—133 6 Claims



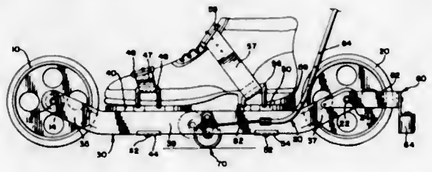
1. A tool holder for mounting an elongate tool for rotation in a machine tool comprising:
(a) an elongate body having a central recess to receive a holding shank of an elongate tool, said body having a first portion to be mounted for rotation in a machine tool and a second portion to receive the shank of a tool, an annular groove between said first and second portions,
(b) means in said second portion to clamp a tool shank, and
(c) adjustment means comprising a plurality of circumferentially spaced conical point screws each threaded into opposite sides of said groove to adjust the angle of said second portion relative to the centerline of said first portion to center a cutting end of the elongate tool on said center line.

5,286,043

ROLLER SKATE

John Tkaczyk, 3615 W. Leland Ave., #2, Chicago, Ill. 60625

Filed Aug. 31, 1992, Ser. No. 938,438
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 5 Claims



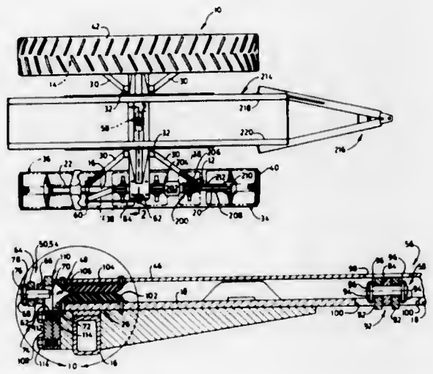
1. A roller skate for traveling along a supporting surface comprising:
a foot platform;
front and rear in-line wheels secured to said foot platform, said front and rear wheels having lowermost surfaces that normally engage the supporting surface;
a retractable wheel between said front and rear wheels, said retractable wheel having a lowermost surface;
support means for rotatably supporting said retractable wheel, said support means being movably secured to said foot platform; and
control means operable by a user during use of the roller skate for moving said support means and retractable wheel between a raised position and a lowered position, said lowermost surface of said retractable wheel being in one of two locations when in said raised position, said locations being even with and above a plane formed by said lowermost surfaces of said front and rear wheels, and said lowermost surface of said retractable wheel being below said plane when in said lowered position to provide a pivot point that permits quick turning and maneuvering of the roller skate.

5,286,044

BELTED MULTI-PURPOSE TRAILER

Ronald L. Satzler, Princeville, and Edward E. Schmillen, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 29, 1993, Ser. No. 10,902
Int. Cl.[5] B62D *55/06, 55/30;* B60G *11/22*
U.S. Cl. 280—28.5 18 Claims



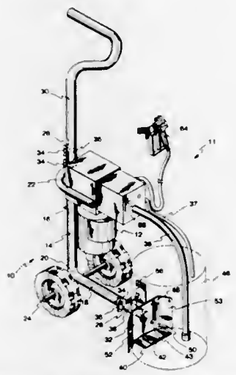
1. A belted multi-purpose utility trailer, comprising:
first and second T-shaped roller frame assemblies, each having first and second frame members, said first frame members having first and second end portions and a middle portion, said second frame members having first and second end portions, said first end portions of said second frame members being adapted to be connected respectively to said middle portions of said first frame members;
first and second wheel assemblies adapted to be rotatably connected to respective first and second end portions of each first frame member;
a plurality of rollers adapted to be rotatably connected to each first frame member between said first and second wheel assemblies;
first and second flexible endless belts encircling the wheel assemblies and rollers respectively of the first and second roller frame assemblies;
a main frame assembly having a cross-beam having first and second end portions and a middle portion;
first and second quick release connecting mechanisms adapted to connect said cross-beam first and second end portions respectively to said first frame members of respective first and second roller frame assemblies, said first and second quick release connecting mechanisms each include a first pin secured to said first frame member, a second pin having first and second end portions and secured to said cross-beam, an elongated tag-link releasably mounted on and extending between said first and second pins, and means for securing said tag-link to said first and second pins; and
a thick quick release connecting mechanism adapted to connect the second end portions of said second frame members to the middle portion of said cross-beam.

5,286,045

PAINT CONTAINER RETAINER FOR PORTABLE PAINTING EQUIPMENT

Norman A. Cyphers, Rogers, and Wayne M. Bekius, Milaca, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 697,753, May 9, 1991, Pat. No. 5,217,238. This application Aug. 6, 1991, Ser. No. 740,954
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] B62B *1/04*
U.S. Cl. 280—47.18 12 Claims



6. A convertible cart for a portable paint sprayer and pump assembly for alternatively supporting the pump assembly in a horizontal or a vertical position comprising:
a cart base having a first section and a second section intersecting at substantially a right angle;
a wheeled axle secured to the cart base;
means on the cart base for retaining the pump assembly;
a removable cart handle; and
a removable foot supporting means for supporting a section of the cart;
wherein the first section of the cart base provides a horizontal base support for the cart when the cart handle is attached to a second section distal end and the foot supporting means is attached to a first section distal end such that the pump assembly is supported in the horizontal position; and
wherein the cart handle and foot supporting means are interchangeable such that the second section of the cart base provides horizontal base support for the cart when the cart handle is attached to the first section distal end and when the foot supporting means is attached to the second section distal end such that the pump assembly is supported in the vertical position.

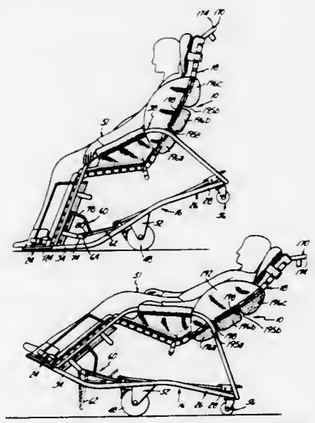
5,286,046

GERIATRIC CHAIR

Donald L. Bottemiller, and Arthur A. Apissomian, both of Wadena, Minn., assignors to Homecrest Industries Incorporated, Wadena, Minn.

Filed Nov. 25, 1991, Ser. No. 797,784
Int. Cl.[5] B62B *7/04*
U.S. Cl. 280—47.38 21 Claims

1. A geriatric chair comprising:
a chair base;
a seat portion;
a fulcrum member disposed below the seat portion wherein the fulcrum member comprises at least one axle including at least one freely rotatable ground engaging wheel attached to the axle;
a floor engaging foot rest portion positioned forwardly of the fulcrum member;
a rearward floor engaging member on a side of the fulcrum member opposite from the foot rest portion;
a handle member disposed rearwardly of the fulcrum member such that the chair is movable about the fulcrum member between a floor engaging patient entry/exit position wherein the floor engaging foot rest portion and the fulcrum member engage the floor and a patient rest position wherein the fulcrum member and the rearward floor engaging member engage the floor and a center of gravity of the chair shifts between a position forward of the fulcrum member and a position rearward of the fulcrum member when the chair is moved between the positions; and
a brake mechanism for engaging said at least one wheel wherein the brake mechanism includes:



means for engaging said at least one wheel to stop the wheel's rotation including a wheel engaging pad pivotally mounted to the base for engaging the wheel;
spring force means for biasing the means for engaging against the wheel including a spring bar extending between and attached at opposite ends to the pivotally mounted pad and another pivotally mounted pad;
a foot pedal member secured to the base for actuating the means for engaging in either a wheel engaging position or a non-wheel engaging position; and
linkage means for connecting the foot pedal member with the means for engaging and the spring force means, the linkage means including an activating bar pivotally attached at one end to the spring bar and pivotally attached at another end to the foot pedal.

5,286,047

RETAINER FOR A SUITCASE WHEEL ASSEMBLY

Dick T. Kho, P.O. Box 34454, West Los Angeles, Calif. 90034

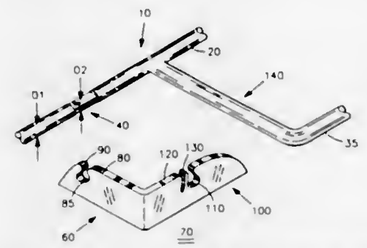
Filed Nov. 21, 1991, Ser. No. 795,660
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—47.131 6 Claims

1. A transport device, comprising:
a wheel assembly having a round axle with a diameter, the axle supporting a pair of wheels and a handle, and having at least two spaced apart flattened portions, the axle, across the flattened portions, having a smaller dimension than the axle diameter;
a pair of wall means extending away from a surface, each said wall means having a first slot, positioned to accept one of the flattened portions of the axle, for rotational motion of the axle within the first slots, each of the slots

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having an opening interconnecting the top edge of the wall means with the first slot the opening being more narrow than the first slot such that the flattened portion of the axle will pass through the opening to engage the axle within the slot and after a 90 degree rotation of the axle within the slot the axle will not pass through the opening so that the axle is captured within the slots;

at least one of the wall means defining a second slot therein



for accepting a portion of the handle when the handle is positioned parallel to the surface, the flattened portions of the axle being out of alignment with the first slot portion such that the axle cannot be withdrawn from the first slots, the second slot having a means for clamping such that the handle is removably, yet positivity captured therein;

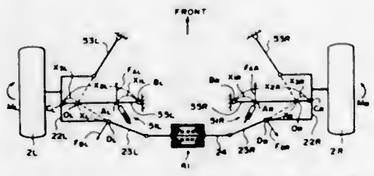
whereby the transport device is held onto the surface for improved mobility of an object providing said surface.

5,286,048

SUSPENSION SYSTEM FOR DIRIGIBLE REAR WHEELS

Kouji Tsuji, and Takeshi Edahiro, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 24, 1992, Ser. No. 933,652
Claims priority, application Japan, Aug. 30, 1991, 3-219669
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—91 **9 Claims**



1. A rear suspension system for supporting dirigible rear wheels of a vehicle having left and right rear wheel supports which respectively support the left and right rear wheels for rotation and a relay rod which connects the left and right wheel supports so that the rear wheel supports are turned in response to displacement of the relay rod in a transverse direction of the vehicle body, which rear suspension system consists of left and right rear suspensions each of which comprises first and second links which are connected for rotation to the rear wheel support in different positions at their outer ends and to the vehicle body in different positions at their inner ends and a damper which is connected to the vehicle body at its upper end and to the respective first link at its lower end;

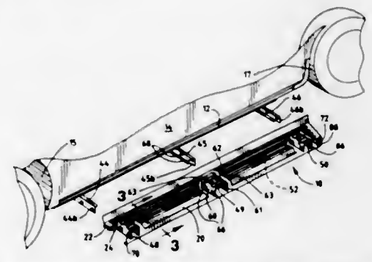
wherein said dampers of the left and right rear suspensions are inclined to the corresponding first links so that they transmit force to the first links to generate moments about instantaneous centers of turn defined by an intersection of respective axis of the first links and respective axis of the second links of the respective rear wheel supports, the moments being substantially equal to each other and being directed in opposite directions when the rear wheels are held in the straight ahead position, and said first and second links are arranged so that the sum of the moments becomes positive as the rear wheels are turned when a moment in the direction of turn of the rear wheels is defined to be positive and a moment in the reverse direction is defined to be negative such that in each of the left and right rear suspensions, said first link extends substantially in the transverse direction of the vehicle body, the damper is inclined rearward so that the lower end thereof is positioned forward of the upper end thereof and said outer end of the first link at which the first link is connected to the wheel support is positioned outward of said instantaneous center, whereby an inward moment is generated about the instantaneous center under the force transmitted to the first link from the damper, and in each of the left and right rear suspensions, the links are arranged so that the instantaneous center moves leftward when the rear wheels are turned left and rightward when the rear wheels are turned right, whereby the distance between the outer end of the first link and the instantaneous center increases to increase the inward moment in the rear suspension for the outer wheel and decreases to reduce the inward moment in the rear suspension for the inner wheel when the rear wheels are turned.

5,286,049

VEHICLE RUNNING BOARD

Shahid R. Khan, Champaign, Ill., assignor to Flex-N-Gate Corporation, Urbana, Ill.

Filed Oct. 9, 1991, Ser. No. 774,711
Int. Cl.[5] B62B *9/16*
U.S. Cl. 280—163 **8 Claims**



1. A running board for mounting to the underbody of a vehicle comprising:

an elongated deck;

first bracket means for attaching the elongated deck to the underbody, the first bracket means extending beneath and substantially transverse to the deck and having a portion attachable to the vehicle underbody; and

second bracket means on the deck for engagement with the first bracket means, the second bracket means comprising at least one generally U-shaped bracket fixed in a downwardly opening orientation to the underside of the deck, the bracket having at least one substantially vertically extending leg engageable with the first bracket means to mount the running board to the underbody,

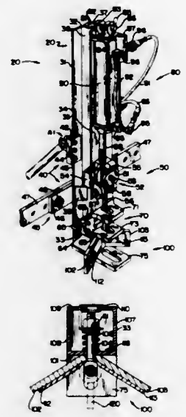
the second bracket means having grooves extending in substantially parallel relation to the deck, the underside of the deck having longitudinally extending ribs engaged with the grooves to facilitate the alignment of the second bracket means with the deck.

5,286,050

HITCH FOR TRAILERS

James C. Stallings, Jr., Gaston, and James C. Stallings, III, Macclesfield, both of N.C., assignors to Unlimited Solutions, Inc., Battleboro, N.C.

Continuation-in-part of Ser. No. 849,359, Mar. 11, 1992, abandoned. This application Jun. 19, 1992, Ser. No. 901,518
Int. Cl.[5] B60D *1/36*
U.S. Cl. 280—477 **37 Claims**



17. A trailer hitch for connecting a tongue of a trailer to a vehicle, comprising:

power liftable means adapted to be carried by the vehicle for raising and lowering the trailer hitch;

power operable means adapted to engage said power liftable means;

connecting pin means operably connected to said power operable means and including a vertically arranged connecting pin adapted to be moved in a vertical path of travel from an elevated uncoupled position to a lowered coupled position; and

horizontally swingable guide means positioned alongside said connecting pin and adapted to guide the tongue of the trailer into proper position for being connected by said connecting pin, said guide means comprising a pair of guide plates convergently arranged and defined at an angle therebetween with the vertex of the angle being closely adjacent the path of travel of said connecting pin and resilient means mounting said pair of guide plates at the vertex of the angle for unison horizontal swinging movement of said guide plates and for facilitating the guiding of the trailer tongue toward the vertex.

5,286,051

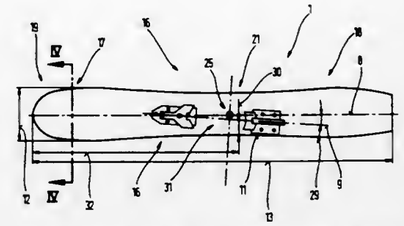
ALPINE SKI WITH A MINIMUM WIDTH AND SPECIFIC WIDTH/LENGTH RATIO

Franz Scheriibl, Österreich, Austria, assignor to Atomic Skifabrik Alois Rohrmoser, Wagrain, Austria

Continuation of Ser. No. 680,581, Apr. 4, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,552
Claims priority, application Austria, Apr. 4, 1990, A806/90
Int. Cl.[5] A63C *5/04*
U.S. Cl. 280—607 **24 Claims**

1. A pair of skis for downhill snow skiing, each of said pair of skis comprising:

a longitudinally extending body having an attachment area for a single binding, with a binding axis running lengthwise through said attachment area, said body having a top surface layer, a running surface layer having an area in the range of 3600 cm^2 to 5,000 cm^2, and at least one reinforcement layer sandwiched between said surface layers, and said body having a varying width along its length, the minimum width is 10 cm and the maximum width is in the



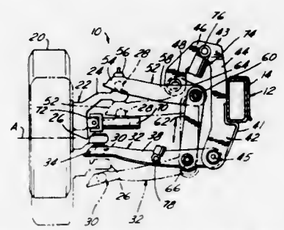
range of eleven percent to twenty percent of its length, and a length greater than 160 cm.

5,286,052

VEHICLE SUSPENSION WITH FLOATING UPPER ARM

Eugene R. Lukianov, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 23, 1992, Ser. No. 980,059
Int. Cl.[5] B60G *3/26*
U.S. Cl. 280—675 **3 Claims**



1. An independent wheel suspension and support bracket system for a motor vehicle body having a driven wheel supported on a wheel axle assembly to rotate therewith, and wherein the wheel axle assembly is operatively connected to a vehicle half shaft for driving the wheel axle assembly and wheel about a transverse rotational axis, said system comprising:

upper and lower control arms bifurcated inwardly defining upper and lower pairs of fore and aft forked portions, each said upper and lower control arm having an outer apex connected by a ball joint to respective inboard projecting upper and lower supports of a wheel carrier, each said lower forked portion having an inboard end thereof pivotally connected to a longitudinally extending lower pivot pin aligned on a common longitudinal lower pivot axis, said lower pivot pin having fore and aft ends supported by a bracket member adapted for mounting the suspension system on the vehicle body;

said wheel carrier upper and lower supports extending inboard and vertically spaced above and below the rotational axis, said wheel carrier supporting the wheel axle assembly for rotation by the drive shaft about the rotational axis;

said bracket member comprises fore and aft generally gooseneck-shaped mirror image bracket halves in transverse section longitudinally spaced a predetermined dimension on opposite fore and aft sides of the half shaft, each said bracket half providing an upstanding elongated neck portion terminating at its upper end in an outwardly extending hook-like head portion, said lower pivot pin having fore and aft ends thereof supported at a lower end of an associated fore and aft bracket neck portion;

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each said bracket fore and aft head portion terminating in a downwardly projecting free distal end, a longitudinally extending upper pivot pin aligned on a common longitudinal upper pivot axis, said upper pivot pin having forward and aft ends each supported by an associated fore and aft bracket half neck portion distal end;

a pair of mirror image upstanding fore and aft first links each having a pair of upper and lower end connections spaced apart a predetermined dimension, each said first link lower end connection pivotally connected at an intermediate point on an associated lower control arm forked portion, said intermediate point spaced a predetermined lateral dimension from said lower pivot axis, each said first link upper end connection pivotally connected to an associated fore and aft end of a longitudinally extending floating pivot pin;

said upper control arm pair of forked portions each having an inboard end thereof pivotally connected to said floating pivot pin;

a pair of mirror image fore and aft second links each having a pair of inboard and outboard end connections spaced apart a predetermined dimension, each said second link inboard end connection pivotally connected to said floating pivot pin such that said second pair of links are straddled by said upper pair of control arm forked portions;

each said second link outboard end connection pivotally connected to said upper pivot pin for pivotal movement about a common longitudinal upper pivot axis positioned substantially intermediate said upper control arm outer apex and said floating pivot pin;

each said second link dimension between its end connections being substantially equal to said lateral dimension between each said first link lower end connection and its associated lower pivot axis;

said lower control arm forked portions pair of fore and aft free ends straddled by said pair of bracket half neck portion lower ends, and said pair of bracket half head portion distal ends straddled by said upper control arm pair of forked portions; and

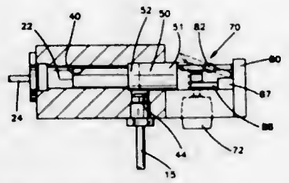
a shock absorber having an upper end thereof coupled to one of said fore and aft bracket head portions and a lower end thereof coupled to a corresponding lower control arm forked portion intermediate said lower arm outer apex and said first link lower end connection, whereby a space is provided between said pair of first links and between a lower portion of said fore and aft bracket halves enabling outboard passage of the half shaft via the space for driving connection with the wheel axle assembly.

5,286,053

APPARATUS FOR PREVENTING UNDESIRED IGNITION OF A PYROTECHNIC TRANSMISSION LINE

Reiner Lenzen, Almont, and Louis R. Brown, Oxford, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 13, 1990, Ser. No. 612,524
Int. Cl.[5] B60R *22/32*
U.S. Cl. 280—734 **1 Claim**



1. An apparatus comprising:

an actuatable safety device for, when actuated, protecting an occupant of a vehicle;

an ignitable pyrotechnic transmission line associated with said safety device for, when ignited, actuating said safety device;

firing means for igniting said pyrotechnic transmission line in response to a signal indicative of vehicle deceleration above a predetermined rate, said firing means including an ignitable microdet which ignites in response to said firing means receiving said signal;

means defining a passage between said microdet and said pyrotechnic transmission line for directing combustion products of said microdet to said pyrotechnic transmission line;

blocking means located between said microdet and said pyrotechnic transmission line for controlling ignition of said pyrotechnic transmission line;

said blocking means including a blocking member located in said passage and movable from a blocking position in which said blocking member prevents ignition of said pyrotechnic transmission line by ignition of said microdet to a non-blocking position in which said blocking member allows ignition of said pyrotechnic transmission line by ignition of said microdet, said non-blocking position of said blocking member being spaced apart from said blocking position of said blocking member;

said blocking means including supporting means for enabling movement of said blocking member from said blocking position to said non-blocking position when the vehicle decelerates above said predetermined rate and said microdet ignites;

said blocking member comprising a spool located in said passage for blocking combustion products of said microdet from being transmitted to said pyrotechnic transmission line when said spool is in said blocking position; and

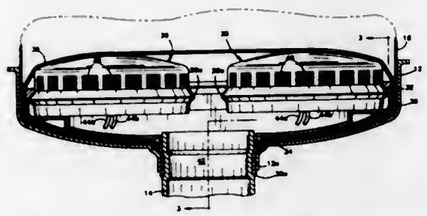
a pivotably mounted pendulum and a locking pawl having a position preventing movement of said spool from said blocking position, said pendulum pivoting to move said locking pawl to enable said spool to move away from said blocking position.

5,286,054

ASPIRATING/VENTING MOTOR VEHICLE PASSENGER AIRBAG MODULE

Jess Cuevas, Scottsdale, Ariz., assignor to Talley Automotive Products, Inc., Phoenix, Ariz.

Continuation of Ser. No. 445,802, Dec. 4, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 826,015
Int. Cl.[5] B60R *21/30*
U.S. Cl. 280—738 **39 Claims**



1. A motor vehicle passenger passive restraint module comprising:

(a) a base plate member;

(b) first and second inflator means for producing a sufficient amount of gaseous combustion product to substantially deploy expandable air cushion means operatively associated therewith within an interval between a primary collision involving a motor vehicle with an object external thereto and a secondary collision between a passenger within the motor vehicle and an interior portion of the motor vehicle, said first and said second inflator means being mounted within said base plate member, said first inflator means including a first inflator housing and a first combustion chamber therein, said second inflator means including a second inflator housing and a second combustion chamber therein, said first inflator housing being spaced from said second inflator housing;

(c) expandable air cushion means secured within said base plate member, said air cushion means adapted to be substantially inflated by said first and second inflator means upon actuation thereof to prevent said secondary collision between the passenger and the interior portion of the motor vehicle; and

(d) means secured to said base plate member in fluid communication with said first and second inflator means for permitting a reciprocal fluid flow between an interior portion of said expandable air cushion means and the ambient atmosphere surrounding the vehicle;

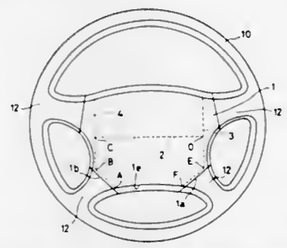
said first and second inflator means and said reciprocal fluid flow means being maintained together in locking engagement with said base plate member.

5,286,055

MODULAR COVER FOR AN AIR BAG ASSEMBLY

Takayasu Zushi, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

PCT No. PCT/JP91/00810, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO91/19628, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 18, 1991, Ser. No. 778,924
Claims priority, application Japan, Jun. 18, 1990, 2-159067
Int. Cl.[5] B60R *21/22, 21/20*
U.S. Cl. 280—728 B **3 Claims**



1. A modular cover for an air bag assembly, comprising:

a main portion extending substantially horizontally over an entire outer surface of the modular cover,

two upper engaging portions adapted to join to two spokes of a steering wheel and situated at upper side portions of the main portion,

two lower engaging portions adapted to join to two spokes of the steering wheel and situated at lower side portions of the main portion,

an upper edge portion situated between the upper engaging portions and extending from the main portion in a direction away from the outer surface of the modular cover,

a lower edge portion situated between the lower engaging portions and extending from the main portion in a direction away from the outer surface of the modular cover,

a first tear line extending centrally across the main portion in a direction for linking the two upper engaging portions, said first tear line having lateral ends, and

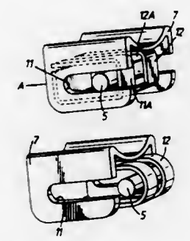
second and third tear lines intersecting the respective lateral ends of the first tear and extending substantially perpendicularly to the first tear line, said respective second and third tear lines extending linearly from the upper edge portion to portions adjacent to the lower engaging portions, changing directions toward the lower edge portion and extending linearly along the lower engaging portions to the lower edge portion so that when the air bag is inflated, a portion of the main portion between the first tear line and the lower edge portion is fully turned without preventing inflation of the air bag.

5,286,056

DEVICE FOR ABSORBING ENERGY TRANSMITTED THROUGH A VEHICLE STEERING COLUMN

Gerald A. Speich, Beaussle, England, assignor to The Torrington Company, Torrington, Conn.

Filed Apr. 22, 1993, Ser. No. 51,139
Claims priority, application United Kingdom, Jun. 19, 1992, 9213078.0
Int. Cl.[5] B62D *1/19*
U.S. Cl. 280—777 **9 Claims**



1. A mechanism for absorbing energy transmitted through a vehicle steering column in an impact situation, the mechanism comprising:

a steering column support member;

a slot located in the steering column support member;

a bolt arrangement coupling the steering column support member with a mounting bracket while allowing the steering column to extend, the bolt arrangement being located in the slot to allow the bolt arrangement to be adjusted thereby; and

energy absorption means for absorbing energy transmitted to the bolt arrangement from the steering column upon impact, the energy absorption means comprising a strap-like member which is wrapped around the bolt arrangement, the portion of the strap-like member which is wrapped around the bolt arrangement being plastically deformed in an impact situation, thereby absorbing energy.

5,286,057

COMFORT FEATURE

Lloyd M. Forster, 1827 Golf Ridge Dr., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 779,142, Oct. 21, 1991, abandoned, Ser. No. 560,227, Jul. 24, 1990, abandoned, Ser. No. 465,637, Jan. 22, 1990, abandoned, and Ser. No. 317,754, Mar. 2, 1989, abandoned. This application Sep. 8, 1982, Ser. No. 940,757
Int. Cl.[5] B60R *22/00*
U.S. Cl. 280—808 **16 Claims**



1. A vehicle shoulder belt restraint assembly comprising:

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a safety belt;

a safety belt retractor, said safety belt retractor being wound into said retractor and having one end connected to the retractor and a free end, said retractor including means for imposing a retraction tension upon the belt to wind the belt into the retractor and further including an inertia actuated means for locking said retractor against retraction of sad safety belt in a sudden deceleration;

a static loop adapted to be mounted to a vehicle body and including a slot, said safety belt passing through said slot for guiding the safety belt between said retractor and a buckle connecting the free end of the safety belt to the vehicle; and

comfort means connected to the static loop and for permitting take up of slack in the belt when tension in the belt is a slack tension, which is less than the retraction tension, snubbing the belt to provide frictional resistance to retraction and thereby limit the retraction tension force between the static loop and the free end of the belt in response to a retraction tension in the belt between slack tension and a high belt tension, and releasing said snubbing in response to the belt tension, and releasing said snubbing in response to the belt tension exceeding said retraction tension and in response to the belt tension falling below said retraction tension.

5,286,058

FASTENING DEVICE FOR SECURING A PIVOTABLE ANCHORING FITTING OF A SAFETY BELT SYSTEM TO A LOAD-BEARING PART OF A VEHICLE

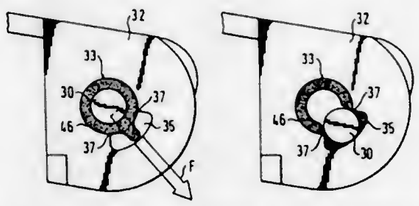
Franz Wier, Göggingen, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Division of Ser. No. 750,285, Aug. 27, 1991, Pat. No. 5,178,412. This application Sep. 9, 1992, Ser. No. 942,432

Claims priority, application European Pat. Off., Aug. 31, 1990, 90116751

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—808 **12 Claims**



1. A fastening device for a vehicle safety belt system comprising a pivot bearing mounted on a load-bearing part of the vehicle at a height corresponding to a region of the head of a passenger and an anchoring fitting for connection to a safety belt, said anchoring fitting being mounted on said pivot bearing, said pivot bearing comprising bearing sleeves of plastic material, said anchoring fitting being movable between a first position directed towards said passenger head region and a second position away from said passenger head region, said anchoring fitting being free, in normal use of the safety belt system, to pivot between said first and second positions and, after occurrence of loads typical of an accident, being blocked in a position at least close to said second position.

5,286,059

HEIGHT CONTROL SYSTEM WHEN VEHICLE IS JACKED UP

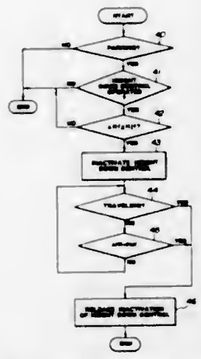
Masahiko Tabe, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 18, 1992, Ser. No. 884,688

Claims priority, application Japan, May 24, 1991, 3-120103

Int. Cl.[5] B60G *21/06, 17/00*

U.S. Cl. 280—840 **3 Claims**



1. A height control system for a vehicle comprising:

suspension units including actuators for adjusting height levels between a vehicle body and wheels respectively;

height sensor means for detecting a height level of the vehicle body at at least one of the wheels to provide a signal indicative thereof;

a vehicle parking state determining means for determining a vehicle parking state to provide a signal indicative thereof; and

height control means including means for receiving the signal from said height sensor means indicating a height level shifted from a preselected standard height value and for providing leveling control signals to the actuators so that the vehicle body is leveled at the preselected standard height value, means for receiving the signal from the vehicle parking state determining means, and means for deactivating vehicle height down leveling control in the vehicle parking state after said vehicle height down leveling control has been activated based upon a vehicle height variation above the preselected standard height value of at least one of the wheels becoming greater than a preselected threshold value.

5,286,060

AUTOMATIC BOOKMARK

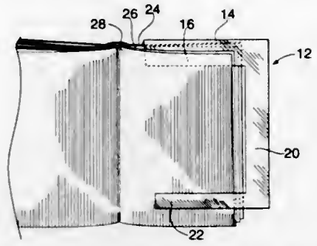
Albert Rivera, 9252 Westwood Dr., Tobyhanna, Pa. 18466

Filed Sep. 29, 1992, Ser. No. 953,501

Int. Cl.[5] B42D *9/02*

U.S. Cl. 281—42 **10 Claims**

1. In combination, a book and an automatic bookmark attached to the book, the book having a top, a bottom parallel to the top, a spine perpendicular to the said top and bottom, and an outside parallel to said spine and perpendicular to said top and bottom, the automatic bookmark comprising attachment means which attach the bookmark to the top of the back cover of the book, a marker spaced from the attachment means and being aligned generally perpendicular to the outside of the book and extending from the outside of the book towards the spine of the book, and a side-piece of said bookmark which



connects the attachment means and the marker, said side-piece being aligned parallel to the outside of the book.

5,286,061

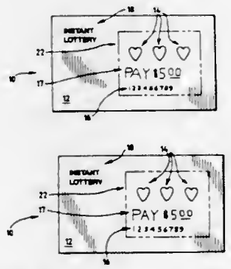
LOTTERY TICKET HAVING VALIDATION DATA PRINTED IN DEVELOPABLE INVISIBLE INK

Behm. William F., Marietta, Ga., assignor to Scientific Games, Inc., Alpharetta, Ga.

Filed Oct. 9, 1992, Ser. No. 958,999

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—95 **47 Claims**



1. A game ticket comprising:

a substrate adapted to be printed thereon;

a play area located on said substrate;

play indicia printed on said substrate;

a removable layer affixed to the game ticket over said play area; and

validation data printed on said substrate in a developable invisible ink capable of being rendered visible by application of a developing agent.

5,286,062

SPECIALTY GAME TICKETS

W. Loren Greenwood, Woodinville, and Harry Poll, Edmonds, both of Wash., assignors to Ace Novelty Co., Inc., Bellevue and Trade Products, Incorporated, Linnwood, both of Wash.

Filed Nov. 13, 1990, Ser. No. 612,827

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—106 **12 Claims**

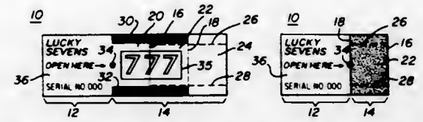
1. A gaming ticket comprising:

a first panel having visible indicia on a first portion thereof;

a second panel integrally formed with the first panel and formed of at least two sections to be folded over and glued to a second portion of said first panel to form a three section thickness hiving indicia representing winning or nonwinning combinations hidden on the inside thereof;

adhesive holding only the outer side edges of the ticket section securely together; and

perforations extending inwardly of the adhesive and along the outer side edges of only the at least one section to



allow the at least one section to be torn along the perforations to expose the indicia hidden on the inside thereof.

5,286,063

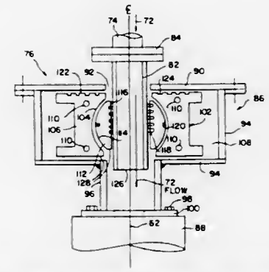
BALL AND SOCKET FLOATING SEAL ASSEMBLY

Douglas A. Huston, North Canton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 001,886, Jan. 8, 1993, abandoned. This application Aug. 27, 1993, Ser. No. 113,026

Int. Cl.[5] F16L *27/00*

U.S. Cl. 285—11 **5 Claims**



1. A pipe joint assembly for sealably connecting two substantially axially aligned pipes for conveyance of a pressurized fluid therebetween, one of the pipes rotating with respect to the other, which permits an amount of angular misalignment between rotating and stationary pipes while still maintaining an acceptable seal, comprising:

a stationary inlet pipe;

a slide pipe having a first end portion fixed to the stationary inlet pipe and a second end portion opposite the first end portion;

a ball and socket floating seal assembly mounted on the slide pipe for axial, rotational and angular motion relative to the slide pipe, the seal assembly including a ball having an aperture which axially and rotatably receives the slide pipe therethrough, the ball being located on the slide pipe between its first and second end portions, and including a two-part collar defining a socket which rotatably and angularly receives the ball therein, a first set of compression rings mounted on the ball and axially spaced within the aperture to provide a seal between the slide pipe and the ball, and a second set of compression rings mounted on an outside surface of the ball to provide a seal between the ball and the socket;

a rotatable housing having a thrust plate with an aperture which receives the slide pipe therethrough and a lower housing portion which, together with the thrust plate, defines a chamber which receives the second end portion of the slide pipe and the ball and socket floating seal assembly;

a support pipe fixed to the housing;

a rotating centering post fixed to the support pipe for rotation therewith;

means for passing the pressurized fluid from the stationary inlet pipe through the slide pipe from the first end portion

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to the second end portion and into the chamber to pressurize the chamber and the rotating centering post, the top surface of the collar being spaced from the thrust plate to form a gap when the chamber is depressurized, and bottom surfaces of the collar, ball and socket being exposed to the pressurized fluid during operation of the assembly when the chamber is pressurized so that the ball and socket floating seal assembly moves relative to the slide pipe due to the pressurized fluid to close the gap between the top surface of the collar and the thrust plate; and

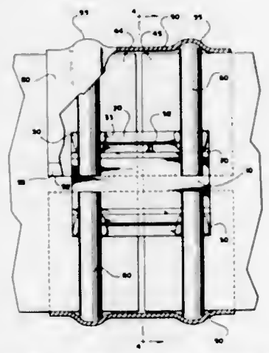
wherein the ball and its associated seal rings rotates within the socket to accommodate angular misalignment of the stationary inlet pipe and the rotating centering post during air heater operation, diameters of the aperture in the thrust plate and of the inside of the support pipe being large enough to prevent contact between the slide pipe and both the thrust plate and support pipe when such angular misalignment occurs.

5,286,064

SEALING PLATE FOR A PIPE COUPLING

Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075

Filed Apr. 2, 1992, Ser. No. 861,940
Int. Cl.[5] F16L *55/18*
U.S. Cl. 285—15 **21 Claims**



1. A sealing plate for use with a pipe coupling surrounding a leak location in a pipeline, comprising:

a plate having a pair of axial edges along opposite ends of said plate and a pair of side edges along opposite sides of said plate;

a pair of axial sealing pads, one adhered to an outer surface of said plate along each of said axial edges, each axial sealing pad defining a pair of spaced apart circumferential channels therein and a bridging member connecting said channels, said bridging member shaped to be engaged by an inner surface of said pipe coupling when said inner surface is pressed toward the outer surface of said plate; and

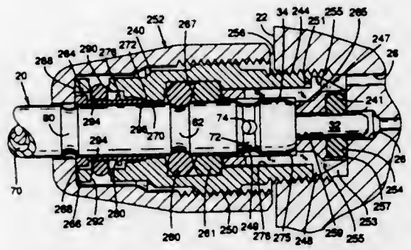
a pair of spaced apart circumferential sealing pads adhered to an inner surface of said plate.

5,286,065

RETAINER ASSEMBLY FOR SYRINGE TIP

George K. Austin, Newberg; Sandor Johannes, West Linn, and Ronald A. Rolleston, II, McMinnville, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.

Continuation-in-part of Ser. No. 659,759, Feb. 22, 1991, abandoned. This application Feb. 24, 1992, Ser. No. 841,598
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—23 **10 Claims**



1. An assembly for connecting a syringe tip to a syringe head, comprising:

a tubular coupled having an inner end and an outer end and having a bore sized to permit a syringe tip to extend therethrough and means to seal a syringe tip to said coupler, the inner end being configured to be connectable to a syringe head;

a collet member disposed near the outer end of the coupler and configured for surrounding a syringe tip that extends through the coupler, the collet member being slidable along a portion of a syringe tip it surrounds;

a retainer element having means to engage said collet member and said retainer element and coupler having coacting means for removably attaching said retainer element to the coupler to allow said retainer element to be advanced and retracted on the coupler and to advance against the collet member for pushing the collet member against the coupler wherein said coupler and collet have coacting surface means thereon, thereby forcing the collet member against a surrounded syringe tip; and

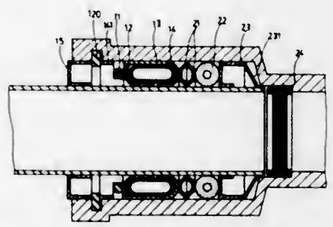
securing means for securing the collet member to and near the outer end of the coupler irrespective of movement of the retainer element relative to the coupler.

5,286,066

QUICK PIPE COUPLING

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Taipei Hsien, Taiwan

Filed Apr. 21, 1992, Ser. No. 871,516
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—23 **6 Claims**



1. A pipe coupling for joining ends of pipes, one of the pipe ends defining a chamber having an open end, a longitudinal

axis and adapted to receive a pipe end therein, the coupling comprising:

a) a lock ring located within the chamber and means attaching said lock ring in said chamber so that said lock ring is axially fixed therein, the lock ring having a portion defining teeth thereon;

b) a releasable ring located within the chamber, the releasable ring having indented portion means engagable with the teeth on the lock ring so as to permit axial movement of the releasable ring away from the lock ring, but prevent axial movement of the releasable ring towards the lock ring;

c) a forcing ring means located in the chamber having a plurality of radially inwardly projecting teeth thereon adapted to grip a pipe end inserted into the chamber;

d) seal means operatively interposed between the releasable ring and the forcing ring means and adapted to seal against a pipe end inserted into the chamber; and,

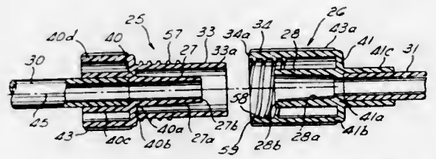
e) an inflatable member operatively interposed between the lock ring and the releasable ring such that inflation of the inflatable member causes axial movement of the releasable ring away from the lock ring wherein such axial movement of the releasable ring exerts a force on the forcing ring means thereby urging the projection teeth to grip a pipe end inserted into the chamber.

5,286,067

TAPER FITTING WITH PROTECTIVE SKIRT

Pradip Choksi, 9614-F Cozycroft Ave., Chatsworth, Calif. 91311

Continuation-in-part of Ser. No. 568,090, Aug. 16, 1990, Pat. No. 5,176,415. This application Jul. 29, 1992, Ser. No. 923,746
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—38 **18 Claims**



1. A shrouded tubing interface for quickly connecting, disconnecting and avoiding contamination of first and second fluid flow lines, comprising:

a male connector fluidly connected to said first fluid flow line, said male connector comprising:

(a) a first tubular portion defining a distal tip and a tapered outer surface, said first tubular portion being in fluid communication with said first flow line; and

(b) a first tubular skirt portion disposed about and spaced from the outer surface of said first tubular portion, said first skirt portion having inner and outer surfaces and being sized to extend axially beyond the first distal tip of said first tubular portion to prevent inadvertent contact to and contamination of said first distal tip;

a female connector fluidly connected to said second fluid flow line, said female connector comprising:

(a) a second tubular portion defining a second distal tip and a tapered inner surface complementary to the tapered outer surface of said first tubular portion, said second tubular portion being in fluid communication with said second flow line; and

(b) a second tubular skirt portion disposed about and spaced from said second tubular portion, said second skirt portion having inner and outer surfaces and being sized to extend axially beyond the second distal tip of said second tubular portion to prevent inadvertent contact to and contamination of said second distal tip;

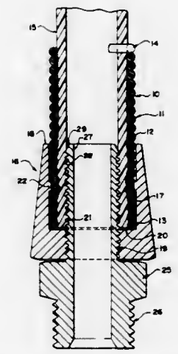
said male connector being fluidly connected to and maintained in sealed engagement with said female connector via the receipt of the first distal tip and said first tubular portion into the second distal tip of said second tubular portion, said first and second skirt portions extending in concentric, co-axial relation when said first tubular portion is received into said second tubular portion.

5,286,068

HOSE CONNECTION

Jacob Wiebe, 60 Heaton Avenue, Winnipeg, Manitoba, Canada R3B 3E3

Filed Sep. 10, 1992, Ser. No. 942,934
Int. Cl.[5] F16L *13/04*
U.S. Cl. 285—114 **6 Claims**



1. A hose connection comprising a flexible cylindrical hose having an interior hose surface and an exterior hose surface, a helical coil spring separate from the hose and engaged around the exterior hose surface at one end of the surface such that said spring and said hose are coincident at the terminal end of said one end of the hose and that the spring has an internal surface which, in an initial unassembled condition of the connection, is a sliding friction fit around the exterior hose surface of the end of the hose, a sleeve member having an internal cylindrical bore opening at one end of the sleeve member, one end portion of the hose and one end portion of the spring being received within the cylindrical bore with a remaining part of the hose and the spring projecting outwardly from said one end of the sleeve member and an outer surface of the spring being arranged such that, in said initial unassembled condition, it is a sliding friction fit in said cylindrical bore, an opposed end of the sleeve member having an internally threaded female bore therein coaxial with said cylindrical bore and a male insert member having coupling means at one end for connection to a separate coupling and a male threaded insert portion at an opposed end, said male threaded insert portion, in a final assembled condition of said connection, being engaged in said female bore and projecting into said interior hose surface and expanding said hose at said end outwardly into engagement with the spring.

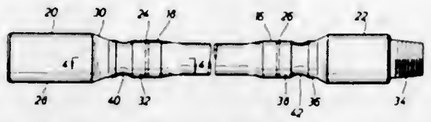
VOL 1159 ISS 3 FEB 15 1994 UMI

5,286,069

STRESS RELIEF GROOVE FOR DRILL PIPE

Gerald E. Wilson, Montgomery, Tex., assignor to Prideco, Inc., Houston, Tex.

Filed Dec. 3, 1992, Ser. No. 985,832
Int. Cl.[5] F16L 13/04
U.S. Cl. 285—114 11 Claims



1. In a joint of drill pipe having a tube section with upset ends to increase the wall thickness of the tube at its ends and tool joints connected to each end of the tube, each tool joint having a weld neck with a wall thickness equal to that of the upset end of the tube that is welded to the upset end of the tube, the improvement comprising an external, arcuate stress relief groove in the weld neck adjacent the weld to increase the fatigue life of the tube section of the drill pipe when the drill pipe is subjected to varying stresses produced by rotating the drill pipe while bent

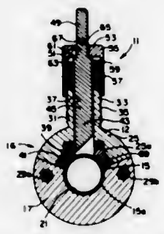
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5,286,070

SADDLE TEE CONNECTOR ASSEMBLY

Richard T. Williams, P.O. Box 39, Uwchland, Chester County, Pa. 19480

Filed Dec. 6, 1991, Ser. No. 804,907
Int. Cl.[5] F16K 41/04; F16L 41/06
U.S. Cl. 285—197 5 Claims



1. A saddle tee connector assembly (11) for making a tee connection to a copper tube (15) having an outer surface (15a), comprising

a saddle tee connector (12),

a bottom clamping portion (17) having a U-shape in an axial direction of the tube (15) with an inner surface (21) adapted to abut against the outer surface (15a) of the tube (15),

a top clamping portion (25) having an upside-down U-shape in said axial direction with an inner surface (25a),

fasteners holding the top and bottom clamping portions (25), (27) together,

a cutting pin (43) for cutting a hole in the tube (15), the cutting pin having a cylindrical body with a main body portion (45) and a reduced diameter upper body portion (49) providing a drive shoulder (51) at the top of the main body portion (45),

a single means for both guiding the cutting pin (43) and subsequently directing fluid flow completely through itself, comprising

(i) an outwardly extending boss (31) formed in the top clamping portion (25),

(ii) said boss (31) having an upper end portion and a lower end portion and an outer surface (35), exterior threads (33) formed on the outer surface (35), a cylindrical bore (37) extending through the entire top clamping portion (25) and through the boss (31) between the upper end portion and the lower end portion, wherein the bore (37) both guides the cutting pin (43) therethrough, and subsequently directs fluid flow from the cut tube (15) and completely through the bore (37) up to the upper end portion of the boss (31) after the cutting pin (42) has been removed from the bore (37),

an annular chamber (39) in the bottom inner portion (41) of said top clamping portion (25) at the bottom of the cylindrical bore (37),

a cup-shaped multi-sided drive nut (53) having a base (55) from which depends an annular side wall (57),

side wall (57) having interior threads (59) which engage the exterior threads (33) of boss (31),

said drive nut having a central opening (61) in its base (55) through which the upper body portion (49) of the cutting pin (43) projects so that the drive shoulder (51) of the cutting pin (43) is contacted by the bottom surface (63) of the base (55) to force the cutting pin (43) downwardly into the tube (15) when the drive nut is rotated to move downwardly on boss (31),

a transverse hole (65) formed in the upper body (49) of the cutting pin (43), the transverse hole (65) being positioned above the top of the base (55) of the drive nut (53) when shoulder (51) is contacted by bottom surface (63) of base (55),

a stop pin means (67) for completely retracting cutting pin (43) from the tube (15) and the cylindrical bore (37) of said boss (31), said stop pin means being positioned in said transverse hole (65) with said stop pin means (67) extending outwardly from both ends of the hole (65) so that when the drive nut (53) is rotated to move upwardly on the threaded boss (31), the base (55) of the drive nut (53) contacts said stop pin means (67) and moves the cutting pin (43) upwardly to completely retract the cutting pin (43) from the tube (15) and the cylindrical bore (37) of said boss (31),

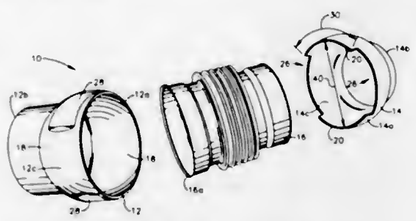
and a rubber tube seal member (69) seated in the inner portion (41) of the top portion (25) of the saddle tee connector (12) and contacting the outer surface (15a) of the tube (15) to seal the hole (15b) of the tube (15).

5,286,071

BELLOWS SEALED BALL JOINT

Michael R. Storage, Beavercreek, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 1, 1992, Ser. No. 983,950
Int. Cl.[5] F16L 51/02, 27/04
U.S. Cl. 285—226 13 Claims



1. A bellows sealed ball joint comprising:

an inner spherical section comprising a first end and a second end, said first end being spherically shaped and having a first plurality of spherical locking surfaces;

an outer spherical section comprising a first end and a second end, said first end of said outer spherical section being spherically shaped and having a second plurality of spherical locking surfaces, said inner and outer spherical sections cooperating to define a chamber when said outer spherical section is mounted on said inner spherical section;

a bellows for mounting in said chamber between said second ends of said inner and outer spherical members, respectively; and

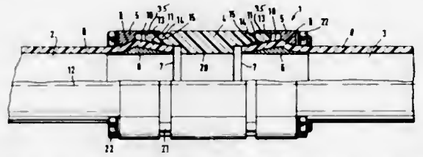
means located on said inner spherical section for receiving said second plurality of spherical locking surfaces in order to permit said inner and outer spherical sections to become locked when they are rotated a predetermined distance with respect to each other, thereby encasing the bellows in said chamber.

5,286,072

PIPE CONNECTION FOR HIGH PRESSURE APPLICATION

Hans-Peter Ruppert, Gottfried-Kinkel-Strasse 5, D-6200 Wiesbaden, and Ernst Wendorff, Waldstrasse 1, D-6204 Taunusstein 4, both of Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,515
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 9102381[U]
Int. Cl.[5] F16L 33/00, 47/00, 49/00
U.S. Cl. 285—247 13 Claims



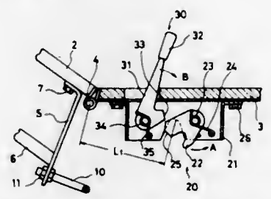
1. A pipe connection, for plastic pipes and hoses comprising a support portion disposed in the interior of the pipe to be connected, and a clamping means which is provided on the outside of the pipe and which comprises a sealing portion and a pressure-applying portion, characterized in that the sealing portion is made from a plastic material, which is a thermoplastic or thermosetting material, and the pressure-applying portion comprises a comparatively hard material, and that the pressure-applying portion externally surrounds the sealing portion; said sealing portions further comprising projections facing inwardly toward said pipe, said projections formed by mutually alternate sections which are at an inclination of 10° and 22° relative to the axis of the pipes to be connected.

5,286,073

DEVICE FOR FASTENING AJAR DOOR

Kunio Ui, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00737, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/19875, PCT Pub. Date Dec. 26, 1992
PCT Filed May 31, 1991, Ser. No. 956,755
Claims priority, application Japan, Jun. 20, 1990, 2-65170[U]
Int. Cl.[5] E05C 3/26
U.S. Cl. 292—216 20 Claims



1. A device for fastening an ajar door comprising:

a plate support element fixed adjacent to the center of the hinge side of the outer surface of a door of an operator's cab;

a tubular support element connected at one end to said plate support element and at the other end to said outer surface of the door;

a U-shaped striker fixed to said plate support element;

a lock fixed to the side wall of the operator's cab for holding said striker when the door is ajar; and

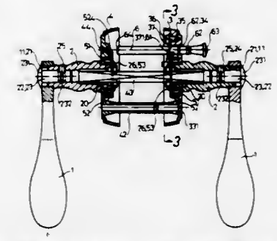
a releasing lever for releasing said lock from inside the operator's cab, said lever passing through said side wall of the operator's cab.

5,286,074

HANDLE LOCK

Jui-Chang Lin, No. 297, Bor-Ay Road, Kaohsiung, Taiwan

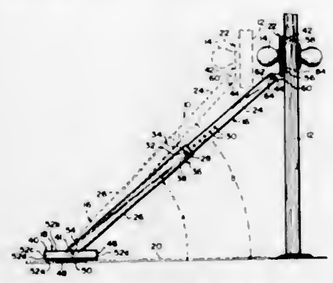
Filed Feb. 23, 1993, Ser. No. 21,114
Int. Cl.[5] E05C 1/16
U.S. Cl. 292—336.3 5 Claims



1. A door handle structure comprising an inner handle assembly, an outer handle assembly, and a drive element interconnecting said assemblies and for operating a door latch, the inner handle assembly including an inner bearing plate for attachment to an inner surface of a door, an inner tubular shaft journalled in the inner bearing plate, an inner handle on the inner tubular shaft externally of the inner bearing plate and an inner drive plate carried by the inner tubular shaft for rotation therewith internally of the inner bearing plate, the outer handle assembly including an outer bearing plate for attachment to an outer surface of the door, an outer tubular shaft journalled in the outer bearing plate, an outer handle on the outer tubular shaft externally of the outer bearing plate and an outer drive plate carried by the outer tubular shaft for rotation therewith internally of the outer bearing plate, the drive element comprising a drive shaft extending between and rotationally interconnecting the inner and outer drive plates, the handle structure further including a locking mechanism comprising a locking notch in the outer drive plate, an inwardly tapering hole in the inner bearing plate, an axially movable locking rod having a large diameter proximal end portion received in said hole, and a small diameter distal end portion for movement into and out of said notch respectively to lock and unlock the structure, the rod having a first unlocked position wherein said distal end portion is removed from said notch and said proximal end portion is a loose fit in said tapering hole and a second locked position wherein said distal end portion is received in said notch and said proximal end portion is a tight fit in said tapering hole, wherein the locking rod includes an elongate peripheral slot and the locking mechanism further includes a locating plate internally attached to the inner bearing plate, the locating plate extending into said slot for limiting axial movements of the locking rod.

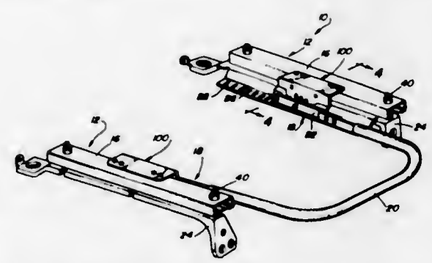
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,075
DOOR SECURITY DEVICE
Mathew Z. Monzingo, 2625 Sunset Dr., Vernon, Tex. 76384
Filed Dec. 28, 1992, Ser. No. 997,034
Int. Cl.[5] E05C *17/30*
U.S. Cl. 292—339 11 Claims



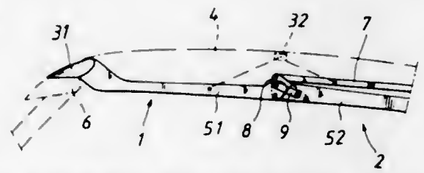
1. An improved door security device for a door having a doorknob which comprises:
a) an elongated leg brace;
b) means located on a lower end of said leg brace for frictional engagement upon a floor; and
c) means located on an upper end of said leg brace for engaging the doorknob on the door, so as to prevent an unauthorized opening of the door, wherein said leg brace includes:
a) two telescopic sections, in which said upper section slides into said lower sections;
b) means for securing said two telescopic sections in extended and retracted positions, so as to make said leg brace adjustable with respect to the location of the doorknob on the door and the distance of the doorknob from the floor, wherein said securing means includes:
a) said upper section of said leg brace having a plurality of spaced apart transverse holes therethrough at its bottom end;
b) said lower section of said leg brace having a transverse hole therethrough at its top end; and
c) a retainer pin to fit through said transverse hole in said lower section of said leg brace and any one of said transverse holes in said upper section of said leg brace, wherein said securing means further includes a flexible fastener for connecting one end of said retainer pin to the top end of said lower section of said leg brace to prevent an accidental loss of said retainer pin when removed therefrom, wherein said flexible fastener means is a chain extending between the one end of said retainer pin and the top end of said lower section of said leg brace, wherein said frictional floor engagement means includes:
a) a non-skid foot assembly; and
b) a means for pivotally mounting said foot assembly to said lower end of said lower section of said leg brace, wherein said doorknob engaging means includes:
a) a bracket for contacting said doorknob; and
b) means for pivotally mounting said bracket to said upper end of said upper section of said leg brace wherein said two telescopic sections of said leg brace are square shaped tubing, wherein said non-skid foot assembly includes:
a) a pair of support members to fit on opposite sides of said lower end of said lower section of said leg brace;
b) a plate affixed to and extending between the underside of said support members; and
c) a non-skid surface located at the underside of said plate to make contact with the floor wherein each said support member is a rectangular piece of square tubing and includes:
a) a rectangular shaped bottom wall;
b) a rectangular shaped top wall;
c) a pair of rectangular shaped side walls; and
d) a pair of square shaped end walls.

5,286,076
SEAT SLIDE DEVICE
Cathy A. DeVoss, Dearborn, and Richard F. Johnson, Bloomfield Hills, both of Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.
Filed Nov. 24, 1992, Ser. No. 980,994
Int. Cl.[5] B60N *1/08*
U.S. Cl. 296—65.1 25 Claims



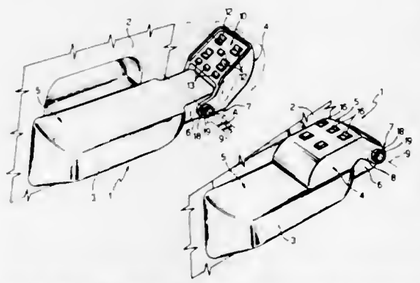
1. A seat slide device comprising:
a lower track;
an upper track supported for longitudinal movement on said lower track;
a lock plate fixed to said lower track and having a series of aligned apertures formed therein;
a latch mechanism mounted to said upper track and including a latch member supported for rectilinear movement along a vertical plane, said latch member having a plurality of locking teeth; and
manually-operable means for permitting a seat occupant to selectively move said latch member along said vertical plane between a first position wherein said locking teeth are in interdigitated engagement with said apertures and a second position wherein said locking teeth are disengaged from said apertures.

5,286,077
TOP MECHANISM FOR THE RETRACTABLE TOP OF AN OPEN AUTOMOBILE
Matti Kinnanen, Uusikaupunki, Finland, assignor to Oy Saab-Valmet AB, Vusikanpunki, Finland
Filed Jan. 25, 1993, Ser. No. 8,489
Claims priority, application Finland, Mar. 5, 1992, 920983
Int. Cl.[5] B60J *7/08*
U.S. Cl. 296—107 10 Claims



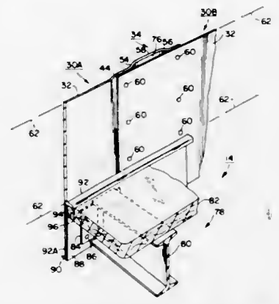
1. A mechanism for the retractable top of an open automobile, the top having a free end, comprising a plurality of frame elements (1,2) pivoted one after the other to be turnable relative to each other and being foldable together outside the passenger space and, on the other hand, stretchable out over the passenger space, and said frame elements (1,2) comprising a first frame element (1) which is the foremost frame element on the free end of the top and which, when the top is in stretched-over position, rests against a part (6) belonging to the vehicle proximate a windshield beam, and a second frame element (2) which is the frame element adjacent to said first frame element, the first frame element (1) comprising a pair of first side rods (51), which are substantially longitudinal to the vehicle, and the second frame element (2) comprising a pair of second side rods (52), which are substantially longitudinal to the vehicle, and said side rods (51,52) being disposed to be turnable relative to each other in a vertical plane, and the top mechanism comprising an operating rod (7) arranged to cause said turning of said first side rod relative to the second side rod in connection with the processes of stretching the top mechanism over and of folding it up, characterized in that the first side rod (51) and the second side rod (52) are connected to each other by means of a quadrangular linkage composed of first and second crank levers (8,9) of different lengths, and that the operating rod (7) is turnably pivoted to the first crank lever (8), whereby the first side rod is turnable in a completely controlled manner relative to the second side rod, throughout the turning movement.

5,286,078
ARMREST FOR A VEHICLE
Claudio Mottino, and Nevio Di Giusto, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy
Filed Oct. 13, 1992, Ser. No. 960,550
Claims priority, application Italy, Oct. 15, 1991, T091U 000254
Int. Cl.[5] B60N *3/00*
U.S. Cl. 296—153 7 Claims



1. An armrest (1) for a vehicle comprising a supporting portion (3) bounded at the top by a substantially planar supporting surface (5) extending from a rear edge to a front edge of the armrest for receiving the forearm of a user and a terminal portion (4) housing a first switch panel (1) and a second switch panel (15) respectively on the opposite sides of the terminal portion (4), the terminal portion (4) being hinged to the supporting portion (3) to rotate between a first and a second extreme working position, wherein:
(i) in the first extreme working position, a rear edge of the first switch panel (10) lies above and beyond the front edge of the armrest on the same side as the supporting surface (5) and forms an extension of the supporting surface (5);
(ii) in the second extreme working position, the terminal portion (4) at least partly overlaps the supporting portion (3) so that the first switch panel (10) faces the supporting surface (5), the terminal position being substantially in contact therewith, and the second switch panel (15) extends in the same direction as the supporting surface (5) substantially parallel therewith; and
(iii) the first switch panel (10) is for controlling first components of the vehicle that are operated more frequently, while the second switch panel (15) is for controlling second components of the vehicle that are operated less frequently.

5,286,079
FRAMELESS CONTAINER FOR CARRYING CARGO HAVING A MULTI-PANEL CONSTRUCTION
Ronald Zubko, and Stephen W. Burns, both of Ossian, Ind., assignors to Strick Corporation, Fairless Hills, Pa.
Filed Dec. 9, 1992, Ser. No. 987,925
Int. Cl.[5] B62D *27/02*
U.S. Cl. 296—181 17 Claims



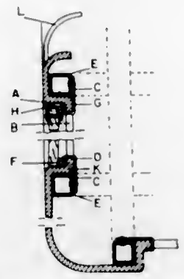
1. A panel having predetermined length, height, width and thickness dimensions for a frameless container for carrying cargo, said panel comprising a majority portion and integral connecting and bracing means, said majority portion having a first edge portion with apertures therein and having an inner face defining a vertical plane, said connecting and bracing means being located and blended into the edge of the majority portion opposite to said first edge portion, said connecting and bracing means comprising: (a) a first inclined portion having one end merged with said opposite edge of said majority portion, said first incline portion deviating from the vertical plane of said majority portion by an amount corresponding to the thickness of said panel; (b) first and second oppositely located ledge portions that are coplanar and each having an aperture therein, said first and second opposite ledge portions respectively merged into first and second vertical offset portions with the first vertical offset portion being merged with said first inclined portion; and (c) a plateau portion merged with and extending between the first and second vertical offset portions.

5,286,080
PLASTIC BODY ARRANGEMENT FOR SMALL, LIGHT VEHICLES
Jan O. Riogdal, and Lars Ringdal, both of Oslo, Norway, assignors to A. S. Ringdal Patenter, Oslo, Norway
Continuation of Ser. No. 820,635, Jan. 28, 1992, abandoned. This applicatioo May 10, 1993, Ser. No. 58,664
Claims priority, application Norway, Aug. 4, 1989, 89/3155
Int. Cl.[5] B62D *29/04*
U.S. Cl. 296—185 16 Claims

1. A light weight body for a vehicle of the type having a roll-over safety bar framework mounted on a floor frame, comprising:
said body including a floor and sidewalls extending from said floor;
a plurality of recesses located within said sidewalls, each of said recesses having an end projection and a door or window opening; and
a plurality of fixing means for connecting said body to said roll-over safety bar framework, each of said fixing means having a first end and a second end, wherein said first end of each of said fixing means is provided around an end

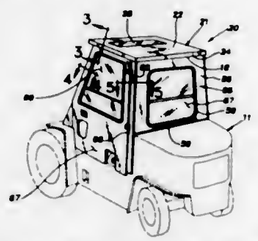
VOL 1159 ISS 3 FE 15 1994 UMI

projection of a recess and said second end of each of said fixing means is fixed to said roll-over safety bar frame-



work inside said body, so as to slidably connect said body to said roll-over safety bar framework.

5,286,081
PANEL CAB
Robert P. Martin, Jr., Cleveland, Ohio, assignor to Martin Sheet Metal, Inc., CLeveland, Ohio
Filed Jan. 21, 1993, Ser. No. 7,336
Int. Cl.[5] B62D *33/06*
U.S. Cl. 296—190 **3 Claims**



1. A cab enclosure for a land vehicle having an open cage-like overhead guard including generally vertical corner posts comprising a generally horizontal roof panel and at least one generally vertical face panel adapted to be fixed to the overhead guard, said one panel being a rigid body having generally vertical edges each extending along an associated generally vertical post of the overhead guard, cap means and fastener means for securing said cap means and said face panel together in assembled relation, said cap means and face panel in assembled relation embracing a sufficient circumferential extent of a post to securely retain said face panel on said associated posts, said fastener means being capable of holding said face panel on said associated posts during ordinary service of said vehicle without direct fastening between said cap means or said face panel and the associated posts.

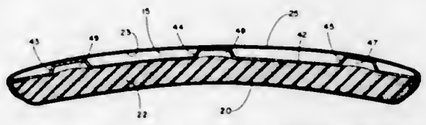
5,286,082
ANATOMICALLY COMPENSATING CYCLE SADDLE
Chris A. Hanson, Boulder, Colo., assignor to Alden Laboratories, Inc., Boulder, Colo.
Filed Aug. 30, 1991, Ser. No. 752,873
Int. Cl.[5] B62J *1/00*
U.S. Cl. 297—201 **34 Claims**

1. A cycle saddle having a central, longitudinal axis, comprising:
a support structure;
a pivotable member having first and second side portions, said first and second side portions being positioned on opposite sides of the axis and interfaceable with at least a portion of a rider's buttocks when positioned on said saddle; and
means for interconnecting said pivotable member with said support structure to allow pivoting of said pivotable member substantially about the axis and relative to said support structure to account for and based upon the motion of the rider's ischial tuberosities when pedalling, whereby said



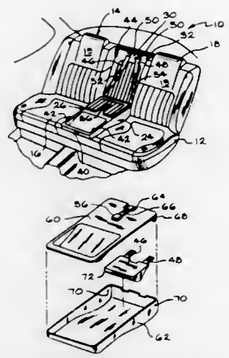
first side portion generally moves upwardly when said second side portion generally moves downwardly and said second side portion generally moves upwardly when said first side portion generally moves downwardly due to an alternating communication of a force to said first and second side portions by the motion of the rider's ischial tuberosities which causes said pivoting of said pivotable member.

5,286,083
LUMBAR SUPPORT BACK REST
Philip Mattison, Forest Lake, Minn., assignor to Core Products International, Inc., St. Paul, Minn.
Filed Oct. 7, 1991, Ser. No. 772,164
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—230.12 **6 Claims**



1. A lumbar support back rest having a general configuration conforming to a human spine, said lumbar support back rest comprising:
(a) a structural member having a first and second surface, said first surface having a plurality of vertically oriented protruding ribs and said second surface having a plurality of vertically oriented indentations opposing said plurality of ribs to define channels;
(b) a resilient material located on said second surface without occluding said channels; and;
(c) a covering surrounding said structural member.

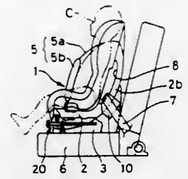
5,286,084
VEHICLE SEAT ASSEMBLY WITH INTEGRAL CHILD SEAT
Kurt A. Bart, Clinton Twp., Mount Clemens County, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.
Filed Nov. 27, 1992, Ser. No. 982,762
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—238 **16 Claims**



1. A seat assembly for a motor vehicle comprising:
a lower seat cushion having a horizontal adult seating surface and a rear end;
a seat back extending upwardly at the rear end of said cushion having upper and lower ends and a front face forming an adult seat back surface, said seat back further having a recessed portion forming a child seat back surface rearward of said adult seat back surface;
a panel with first and second opposite faces mounted for rotation about a first lateral axis at the lower end of said seat back, said panel having a first position disposed in said recessed portion in which said first face of said panel is generally flush with said adult seat back surface and forms a continuation thereof over said recessed portion;
said panel being rotatable to a second forwardly extending use position in which said child seat back surface is revealed, and said second face of said panel forms a top surface upon which a child can be seated; and
restraint means for restraining a child seat occupant seated upon said panel, said restraint means including a seat belt retractor mounted to said seat back and a seat belt strap having a first end wound upon said retractor and forming a shoulder belt for the child seat occupant.

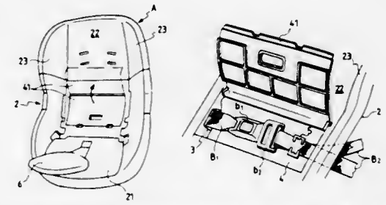
5,286,085
RESTRAINING PROTECTIVE SEAT FOR INFANTS
Yoshihiko Minami, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan
Continuation of Ser. No. 655,371, Feb. 26, 1991, abandoned.
This application Oct. 16, 1992, Ser. No. 962,083
Claims priority, application Japan, Jun. 30, 1989, 1-168713
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—250.1 **6 Claims**

1. A restraining protective seat for infants, comprising:
a base placed upon a vehicle seat;
a seat main unit supported on the base so as to be relatively movable continuously and independently from said base, and which is secured to said vehicle seat by passing a seat belt, with which said vehicle is provided, through mounting holes in said seat main unit, and then tightening said seat belt, wherein said mounting holes are formed in said seat main unit with a width greater than the width of said seat belt; and
a continuously adjustable reclining adjustment mechanism for selectively and continuously adjusting a reclining attitude of said seat main unit to a desired reclined position,
wherein said base and seat main unit have corresponding arcuately curved mating surfaces such that said seat main unit is movably supported on said base, and



wherein said continuously adjustable reclining adjustment mechanism consists of a worm gear mechanism providing mechanical engagement between said seat main unit and said base such that operation of said worm gear mechanism moves said seat main unit at said mating surfaces to provide continuous adjustment of the reclining attitude of said seat main unit.

5,286,086
AUXILIARY CHILD SEAT UNIT FOR A VEHICLE
Rikimasa Gunji, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan
Filed Oct. 26, 1992, Ser. No. 966,334
Claims priority, application Japan, Feb. 3, 1992, 4-10641[U]
Int. Cl.[5] B60N *2/28*
U.S. Cl. 297—250.1 **8 Claims**



1. An auxiliary child seat unit for securing a child in a vehicle comprising:
a body, said body comprising:
a seat;
a back extending up from a rear edge of said seat;
seat belt holes disposed in sides of a lower rear part of said body through which seat belts may be placed to allow the auxiliary child seat unit to be stably fastened in the vehicle;
a seat belt connection opening provided within said body between said seat belt holes, said seat belt connection opening defining a space in which the seat belts can be attached by an engagement means provided on the seat belts; and
a cover plate for said seat belt connection opening, wherein said cover plate is rotatably attached to said seat belt connection opening, such that said cover plate can be rotated to a position which covers the seat belt connection opening.

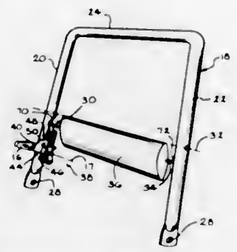
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,087

SEAT ASSEMBLY WITH LUMBAR SUPPORT MECHANISM

Robert D. Elton, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Nov. 9, 1992, Ser. No. 973,616
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284.8 **13 Claims**



1. A seat assembly comprising:
a lower seat cushion and a seat back;
a seat back frame having first and second generally upright members, one upright member being located along each transverse side of said seat back;
adjustable lumbar support means for a seat occupant comprising a transversely extending lumbar support member with two transverse ends and adjustable means carried by said seat back frame and mounting said lumbar support member for fore and aft movement;
said adjustable means including a transverse shaft mounted to said first upright member, a handle extending from said seat back for rotating said shaft, a cam mounted to said shaft having a control surface located at a progressively increasing radial distance from said shaft, a cam follower bearing against said cam control surface, guide means for guiding said cam follower as said cam follower moves radially relative to said shaft upon rotation of said cam, a lower link having first and second ends, said first end of said lower link including said cam follower for movement of said line with said cam follower, an upper link having first and second ends, the first end of said upper link being mounted to said first upright member for rotation about an axis, the second ends of both of said lower and upper links being coupled together at a pivoting joint whereby as said cam follower is moved along said guide means, said upper link is rotated about said axis, one end of said lumbar support member being coupled to said upper link, and a support link connected to the other end of said lumbar support member and to said second upright member for rotation about said axis whereby said lumbar support member is moved fore and aft as said upper and support links are rotated about said axis.

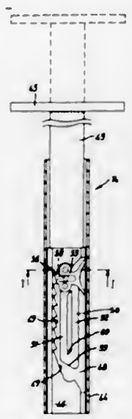
5,286,088

UNDERSEAT MECHANISM FOR A CHAIR

Arthur G. Taylor, Darwen, and Michael C. Hallmark, Dutton, both of England, assignors to Unit Press Limited, Blackburn, United Kingdom

Filed Feb. 20, 1992, Ser. No. 838,326
Int. Cl.[5] A47C *7/46*
U.S. Cl. 297—353 **9 Claims**

1. A back support pillar for a chair including a first pillar member and a second pillar member, one pillar member being connectable to a back support of the chair and the other pillar member being connectable to a back for the chair, one said member being slidable within the other, which other member provides longitudinally spaced notches cooperable with a catch which is resiliently urged transaxially towards said notches and movable between a ratchet position and a slide position, control of the catch being effected by a ball which engages between the catch and an endless groove on the other member, relative movement of the members towards minimum pillar length being effective to cause the catch to move to its ratchet position whence the pillar length can be increased stepwise and maintained at a selected number of lengths by



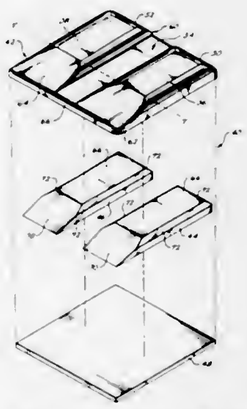
inter-engagement between the catch and the notches, relative movement of the members to maximise pillar length causing the catch to move to its slide position in which pillar length can be reduced from maximum to minimum with no engagement between the catch and the notches.

5,286,089

SEAT CUSHION FOR ALLEVIATION OF PERINEAL AND RECTAL DISCOMFORT

Stephen L. Goldman, 4821 Beach Dr. SW., Seattle, Wash. 98116

Continuation-in-part of Ser. No. 660,534, Feb. 25, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 840,008
Int. Cl.[5] A47C *7/18*
U.S. Cl. 297—452.26 **20 Claims**



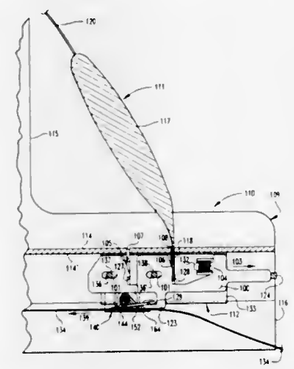
1. A compressible and resilient seat cushion for alleviating the perineal and rectal discomfort of a person with hemorrhoids, rectal surgery episiotomy, or the like, said seat cushion comprising a front edge, a back edge, a substantially rectangular bottom surface and a top seating surface, the seating surface including a pair of elongate, upwardly projecting support members extending parallel to one another and a channel located between the pair of parallel support members, the parallel support members and channel extending from the front edge to the back edge of the seat cushion, each support member including a base and a first support surface that lies parallel to the bottom surface and extends from the back edge of the seat cushion to a taper point and a second support surface that tapers downwardly from the taper point toward the bottom surface, ending at the front edge of the seat cushion, the bases of the support members being of substantially constant width along their length and spaced apart from one another by a distance that positions the support members for approximate registration with the thighs and ischia of a person seated on the seat cushion.

5,286,090

WEB ADJUSTER AND LOCK ASSEMBLY FOR A CHILD RESTRAINT SEAT

Harry W. Templin, Carmel, and David J. Lee, Indianapolis, both of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 635,715, Dec. 28, 1990, Pat. No. 5,160,186, which is a continuation-in-part of Ser. No. 499,946, Mar. 27, 1990, Pat. No. 5,031,962. This applicatinn Feb. 18, 1992, Ser. No. 837,867
Int. Cl.[5] A47D *15/00*
U.S. Cl. 297—473 **14 Claims**



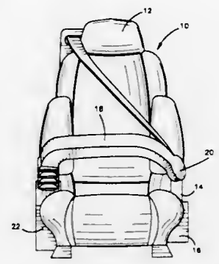
14. A harness control latch machanism for a seat with an opening comprising:
a harness mountable to said seat, said harness including a first end and a second end;
an adjustor mountable to said seat with said first end extending through said adjustor, said adjustor including a locked position and an unlocked position;
a first lock mounted to said second end of said harness;
a second lock mountable to said seat and locatable beneath said seat, said first lock extendable through said opening to lock to said second lock, and,
an operator movably mountable to said seat and extendable beneath said seat between said second lock and said adjustor to allow said adjustor to move said locked position and connect said second lock to said first lock and further operable to move said adjustor to said unlocked position while unlocking said second lock relative to said first lock.

5,286,091

PASSIVE SEAT BELT SYSTEM INTEGRATED WITH A SEAT

Craig A. Busch, Armada, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 1, 1992, Ser. No. 877,470
Int. Cl.[5] B60R *21/02*
U.S. Cl. 297—487 **10 Claims**



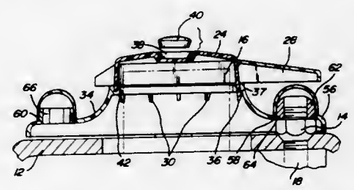
4. An apparatus for restraining an occupant in a seat of a vehicle, said apparatus comprising:
an arm movable from a fully stowed position adjacent one side of the seat toward the occupant to restrain the occupant in the seat and movable away from the occupant to the fully stowed position;
a latch assembly carried by one end of said arm and including a tongue receivable in and latchable with a buckle assembly;
a buckle assembly movable toward said latch assembly carried by said one end of said arm and for receiving said tongue to locate said one end of said arm on one side of the seat;
first actuatable motor means for, when actuated (i) moving said arm toward and from the fully stowed position, and (ii) moving said latch assembly toward and from said buckle assembly; and
second actuatable motor means separate from said first actuatable motor means and for, when actuated, moving said buckle assembly toward said latch assembly as said latch assembly moves toward said buckle assembly, said first and second actuatable motor means being actuatable independently of each other.

5,286,092

DECORATIVE WHEEL COVER FOR TRUCK WHEEL

Lewis Maxwell, Jr., 16132 Hartwell, Detroit, Mich. 48235

Continuation-in-part of Ser. No. 650,304, Feb. 4, 1991, Pat. No. 5,152,584. This application Sep. 9, 1992, Ser. No. 942,751
Int. Cl.[5] B60B *7/14*
U.S. Cl. 301—37.37 **10 Claims**



1. A decorative wheel cover for a wheel of a truck, said truck having a plurality of bolts for mounting said wheel cover to said wheel with a plurality of securing nuts having at least one pair of opposed sides, said wheel cover comprising:
a circular plate having a plurality of projections and a neck

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portion, said plurality of projections extending in a direction axially outwardly from said wheel, each of said projections having an aperture extending coaxially with a plurality of bores extending through said circular plate, said plurality of bores and said apertures of said projections adapted to receive respective ones of said plurality of bolts, each of said plurality of projections having at least two surfaces spaced apart a predetermined distance equal to the distance between said pair of opposed sides of said securing nuts;

a cap mounted to said neck of said plate, said cap and said neck covering said axle portion of said truck; and

means for mounting said cap to said neck portion of said center plate.

5,286,093

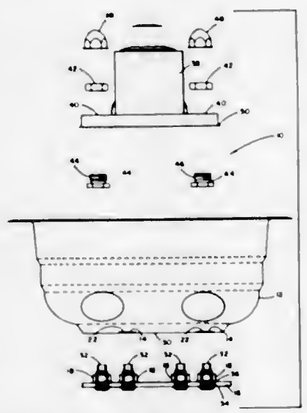
REVERSE DRAWN WHEEL TRIM SYSTEM

James P. Wright, 1060 Robin La., Cookeville, Tenn. 38501

Continuation-in-part of Ser. No. 909,030, Jul. 6, 1992. This application Oct. 5, 1992, Ser. No. 957,358

Int. Cl.[5] B60B *7/14*

U.S. Cl. 301—37.37 **4 Claims**



1. A wheel trim system for attachment to a wheel of a vehicle, said wheel having stud engaged by a lug nut, said system comprising:

a. a wheel trim member having a hole for receiving said lug nut and a flange surrounding said hole, said flange sized to frictionally engage said lug nut;

b. means attached to said stud for releasably attaching said trim member to said wheel;

c. a hub cover;

d. means for releasably attaching said hub cover to said wheel;

e. said means for releasably attaching said trim member to said wheel comprises a stud extender attachable to said stud; and

f. said means for releasably attaching said hub cover to said wheel comprises a jam nut attachable to said stud extender.

5,286,094

CONTROLLING BRAKING FORCES IN TRACTOR-TRAILER COMBINATIONS

Peter J. Milner, Warwickshire, England, assignor to Bloxwich Engineering Limited, United Kingdom

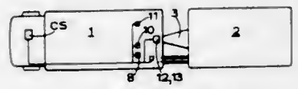
PCT No. PCT/GB91/00214, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO91/12160, PCT Pub. Date Aug. 22, 1991

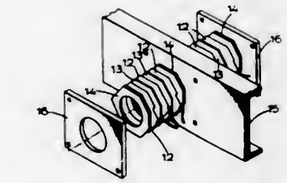
PCT Filed Feb. 13, 1991, Ser. No. 915,734

Claims priority, application United Kingdom, Feb. 16, 1990, 9003568

Int. Cl.[5] B60T *7/20, 13/66*

U.S. Cl. 303—7 **8 Claims**





1. A braking control system for a number of brakes of a trailer in a tractor-trailer combination comprising sensing means for sensing a push and a pull in a drawbar or other connection between the tractor and trailer, the sensing means acting to control a pressure in a fluid pressure circuit supplying a braking pressure from the tractor to the brakes on the trailer, distinguished by the features that the sensing means produces a first electrical signal which is substantially linearly proportional to both the push and the pull in the drawbar, said first signal is used to control a continuously variable proportional solenoid valve in a circuit to the trailer brakes, and there is passed to the solenoid valve a base signal representative of a proportion of a main braking pressure applied to the tractor and said first signal is added algebraically to this base signal and the sensing means is a variable capacitance transducer comprising two capacitors connected to two arms of a bridge circuit and arranged so that a change in a load between the tractor and trailer causes an increase in a value of one and a decrease in the value of another, said first signal being an alternating current bipolar signal obtained by phase detection of an alternating current applied to the bridge circuit.

5,286,095

AIR BRAKE EMERGENCY CONTROL VALVES

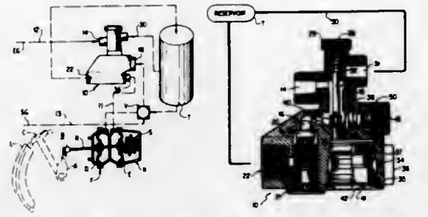
Edward D. Sell, and Sergio Campanini, Iola, both of Kans., assignors to Tramec Corporation, Iola, Kans.

Filed Nov. 27, 1992, Ser. No. 982,459

Int. Cl.[5] B60T *13/22*

U.S. Cl. 303—9 **24 Claims**

1. An emergency spring brake control valve assembly for use with air brake systems for controlling supply line pressure to a service reservoir and through an emergency supply line to at least one spring brake comprising, a housing having a supply inlet, a service reservoir outlet and a spring brake delivery port, a first passageway within said housing communicating with said supply inlet, a second passageway within said housing communicating with said spring brake delivery port, a spring brake supply valve means disposed within said housing, means for normally urging said spring brake supply valve means against a first valve seat to close said first passageway from said second passageway until a predetermined pressure is achieved within said service reservoir, a service reservoir supply valve means for controlling supply line pressure from said first passageway into the service reservoir, means for opening said spring brake supply valve means to permit supply line pressure in said first passageway to communicate with said second passageway and therethrough to said spring brake delivery port when a predetermined pressure level is established within the service reservoir, and said spring brake supply valve means including means for venting said second passageway therethrough to said first passageway when the supply line pressure within the said first passageway falls below the pressure in said second passageway.



5,286,096

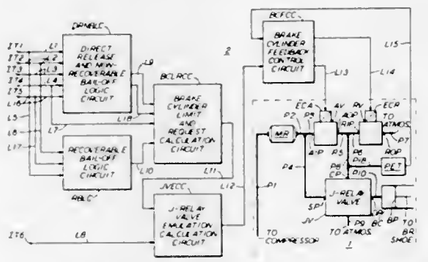
ARRANGEMENT FOR ENHANCING THE BAIL-OFF FUNCTION OF BRAKE CYLINDER PRESSURES ON A RAILROAD LOCOMOTIVE

Vincent Ferri, Pittsburgh, and Robert D. Dimsa, Elizabeth, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Aug. 13, 1992, Ser. No. 929,048

Int. Cl.[5] B60T *13/68*

U.S. Cl. 303—15 **17 Claims**



1. An arrangement for enhancing a bail-off function of brake cylinder pressure of a railway vehicle comprising, a non-recoverable bail-off logic means for supplying an output signal to a brake cylinder calculation means when a bail-off condition is present, a freight operating mode is in effect, a drop in brake pipe pressure is present, and an emergency brake state is absent, a recoverable bail-off logic means for supplying an output signal to the brake cylinder calculation means when a bail-off condition is present and an emergency brake state is present, the brake cylinder calculation means supplying an automatic brake cylinder demand signal on one input of a relay valve emulation calculation means and receiving an independent brake cylinder demand signal on another input of the relay valve emulation calculation means, the relay valve emulation calculation means supplying an output signal to a brake cylinder feedback control means for producing electrical output signals which are supplied to an electromagnetic application valve and an electromagnetic release valve for controlling the level of air pressure in an air brake cylinder, and a pneumatic-to-electrical transducer for sensing and feeding back an electrical signal corresponding to the pressure in the air brake cylinder to the brake cylinder feedback control means so as to appropriately energize and deenergize the electromagnetic application and release valves.

5,286,097

ANTI-LOCK CONTROL SYSTEM

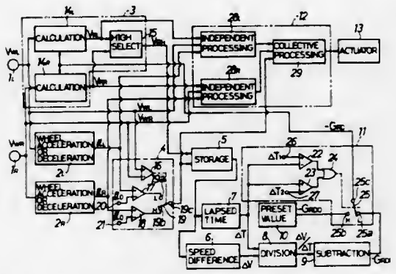
Masaaki Myoi; Shohei Matsuda, and Toshio Yahagi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,048

Claims priority, application Japan, Aug. 23, 1991, 3-212334

Int. Cl.[5] B60T *8/24*

U.S. Cl. 303—99 **4 Claims**



1. An anti-lock control system comprising:

wheel speed detecting means;

wheel acceleration/deceleration detecting means;

vehicle pseudo-speed calculating means for calculating a vehicle pseudo-speed on the basis of a wheel speed detected by the wheel speed detecting means;

storing means for storing the wheel speed or vehicle pseudo-speed at sampling times at which the wheel acceleration/deceleration has become equal to or less than a present acceleration set in a range near and including 0 after passing a peak in the wheel speed;

speed difference calculating means for calculating a speed difference between the wheel speed or vehicle pseudo-speed stored in a current sampling time and the wheel speed or vehicle pseudo-speed stored in a last sampling time in the storing means;

lapsed-time counting means for counting the time lapsed from the last sampling time to the current sampling time; and

division means for dividing said speed difference by the lapsed time to provide a value corresponding to a friction coefficient of a road surface.

5,286,098

ANTI-LOCK CONTROL METHOD FOR PREVENTING VEHICLE YAWING

Satomi Okubo, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,616

Claims priority, application Japan, Jul. 12, 1991, 3-197452

Int. Cl.[5] B60T *8/58*

U.S. Cl. 303—100 **3 Claims**

1. An anti-lock control method for preventing a vehicle from yawing when braking on a split-road surface, the vehicle including:

sensors for sensing a wheel speed for each wheel; and

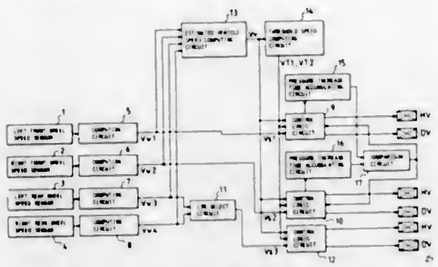
two independent control devices for controlling a right wheel speed and a left wheel speed, respectively, based upon said wheel speed sensed by said sensors during braking, by increasing, decreasing or holding constant a brake hydraulic pressure, said method comprising the steps of:

measuring an amount of brake hydraulic pressure increase in each said control device when said vehicle is braked;

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comparing said amount of brake hydraulic pressure increase in each said control device;

determining, when a difference in said brake hydraulic pressure increase amounts exists, that said control device having a greater pressure increase amount is a high road-



side control system and said control device having a smaller pressure increase amount is a low road-side control system; and

controlling said brake hydraulic pressure in said high road-side control system so that it does not excessively increase.

5,286,099

COLLISION PREVENTING SYSTEM FOR VEHICLE

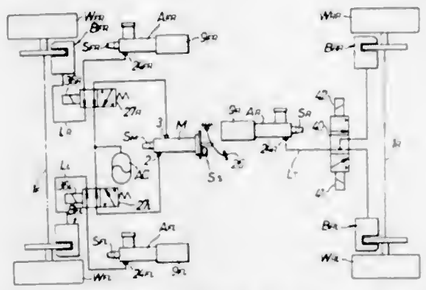
Yasuhiko Fujita; Toshiaki Arai, and Makoto Sato, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 892,827

Claims priority, application Japan, Jun. 7, 1991, 3-136570; Jun. 7, 1991, 3-136571

Int. Cl.[5] B60T *8/86*

U.S. Cl. 303—103 **3 Claims**



1. A collision preventing system for a vehicle, including a parameter detector for detecting an operational parameter between a vehicle and a contrast obstruction for judging a possibility of collision of the vehicle against the contrast obstruction, one or more brakes being operated on the basis of a detection value detected by the parameter detector, said system comprising:

a road surface friction coefficient judgement circuit for judging a friction coefficient of a travel road surface on the basis of a detection value detected by a wheel speed detector which detects a speed of each of a plurality of wheels, and for outputting a judgement signal, when determination is made that the friction coefficient is equal to or less than a predetermined value;

a first comparator for comparing the detection value of said parameter detector with a first reference value indicative of a possibility of collision of the vehicle against the contrast obstruction being high, and for outputting, on the basis of the result of such comparison, a first brake control signal indicative of a command to continuously operate each said brake;

a second comparator for comparing the detection value of said parameter detector with a second reference value indicative of a possibility of said collision lower than that in the case of the first reference value, and for outputting, on the basis of the result of such second comparison, a second brake control signal indicative of a command to perform a pumping operation for each said brake; and

a changing-signal output circuit for outputting a changing-signal indicative of a command to change an operation control mode for each brake in response to the judgement signal outputted from said road surface friction coefficient judgement circuit in a condition in which the second brake control signal is outputted from the second comparator.

5,286,100

ANTISKID CONTROL APPARATUS

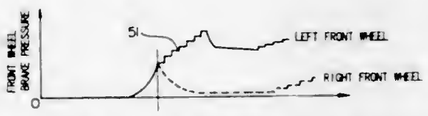
Toshi Takayama, Nakakoma, Japan, and Masaru Sakuma, Koblenz, Fed. Rep. of Germany, assignors to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 574,650, Aug. 29, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 926,551

Claims priority, application Japan, Aug. 29, 1989, 1-222728

Int. Cl.[5] B60T *8/64*

U.S. Cl. 303—111 **11 Claims**



1. An antiskid control apparatus for a vehicle having a relatively short wheel base including two front wheels, two rear wheels, and a brake system for selectively exerting a braking force on the wheels, wherein brake fluid is employed to transmit the braking force, and the center of weight of said vehicle being forwardly offset towards said front wheels, the antiskid control apparatus comprising:

a) wheel speed sensors for measuring the speed of the wheels, respectively;

b) a modulator for selecting a mode for each of the wheels, the mode being selected from an increase pressure mode, and at least one of a decrease pressure mode and a hold mode; the increase pressure mode increasing brake fluid pressure, the decrease pressure mode decreasing the brake fluid pressure, and the hold mode maintaining brake fluid pressure; and

c) a controller for judging, with reference to threshold values, whether a wheel has a locking tendency based on wheel speeds; in the event a wheel evidences the locking tendency, initiating antiskid control for the wheel which evidences the locking tendency by controlling the selection of modes of the modulator so that one of the hold mode and the decreasing pressure mode is selected for the wheel which has the locking tendency, and selecting the increase mode after cancellation of the locking tendency,

wherein said controller determines whether each of the front wheels is subjected to antiskid control, and upon said controller ascertaining that a first one of the front wheels which travels on road surface with a low coefficient of friction is under antiskid control and a second front wheel which travels on a road surface with a high coefficient of friction is not under antiskid control, said controller lowers the rate of the increase in brake fluid pressure in said second front wheel, and lowers the threshold value of the decrease pressure mode for the initiation of antiskid control corresponding to said second front wheel so that the second front wheel exhibits a reduced tendency to lock and a large side force is generated in the second front wheel.

5,286,101

ANTI-LOCK/TRACTION MODULATOR FOR BRAKE CONTROL SYSTEM

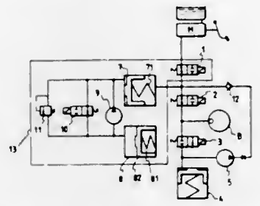
Hideki Kakizaki, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,340

Claims priority, application Japan, May 29, 1991, 3-152269

Int. Cl.[5] B60T *8/64*

U.S. Cl. 303—113.2 **6 Claims**



1. An anti-lock/traction modulator for a vehicle brake system having a master cylinder and a wheel cylinder for a vehicle wheel, comprising:

first fluid pressure passage circuit means for supplying a brake fluid from the master cylinder to the wheel cylinder, said first fluid pressure passage circuit means comprising a reservoir and a first pump for pumping the brake fluid to the master cylinder, said first fluid pressure passage circuit means being actuated when the vehicle wheel skids; and

second fluid pressure passage circuit means having an accumulating means for supplying a brake fluid to the wheel cylinder, said second fluid pressure passage circuit means comprising a piston means connected to the wheel cylinder and a second pump having an inlet side connected at the inlet side to said accumulating means for urging said piston means, said second fluid pressure passage circuit means being connected to said first fluid pressure passage circuit means by a passage extending from said piston means to a portion of said first fluid pressure passage circuit means, said second fluid pressure passage circuit means being actuated when the wheel slips, said second fluid pressure passage circuit means being actuatable independently from said first fluid pressure passage circuit means.

5,286,102

BRAKE CONTROL DEVICE

Hirotaka Nakamura, Tokyo, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 929,757

Claims priority, application Japan, Aug. 13, 1991, 3-203029

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.2 **3 Claims**

1. A brake control device comprising,

a first conduit connected from a first pressure source through a brake valve to a traction control valve,

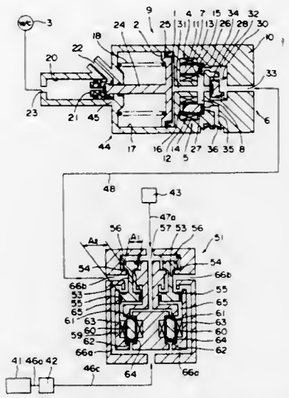
a second conduit connected from a second pressure source to said traction control valve,

a third conduit connected from said traction control valve to a modulator,

said modulator controlling the pressure applied to a wheel cylinder, wherein said modulator includes an air over hydraulic cylinder containing an air piston on one side and a hydraulic piston on the other side, and valve device for controlling air pressure in an air chamber on said air piston side,

said traction control valve positioned between said brake valve and said modulator and adapted to be activated in traction control including,

a) a valve piston having a first seal body for opening and closing the communication between said second conduit and said third conduit, and a second seal body for opening and closing the communication between said



first conduit and said third conduit at both ends thereof, and

b) a solenoid valve for controlling the supply of an activating air pressure to said valve piston,

wherein said solenoid valve supplies either of the pressures from said first pressure source or said second pressure source to said modulator.

5,286,103

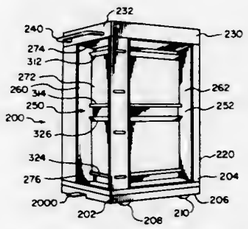
MOBILE CART FOR TRANSPORTING TAPE CARTRIDGE STORAGE PACKS AND METHOD THEREFORE

Macy J. Price, Jr., Louisville, and Timothy J. Pickles, Brighton, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.

Filed Oct. 30, 1992, Ser. No. 969,477

Int. Cl.[5] A47B *81/00, 49/00*

U.S. Cl. 312—9.46 **13 Claims**



8. A storage carousel for storing tape cartridge storage packs, said storage carousel comprising:

a base;

a housing unit rotatably mounted on said base;

a top surface, a bottom surface and a plurality of side surfaces on said housing unit;

compartments formed in each of said side surfaces; and

a first elongated engaging member extending across the rear portion of each of said compartments and extending at an acute angle upward and outward from said rear portion of each of said compartments for engaging a slot formed in

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the rear portion of a tape cartridge pack to securely hold a tape cartridge pack in each of said compartments.

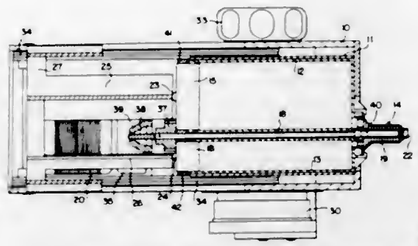
5,286,104
QUICK RELEASE FEEDING APPARATUS FOR AN EXTRUDER
Joseph R. Beaudoin, 53 Fillmore St., Chicopee, Mass. 01020
Filed May 24, 1993, Ser. No. 65,706
Int. Cl.[5] B28C *7/04*
U.S. Cl. 366—76 **4 Claims**



1. An apparatus for feeding material from a hopper to an extruder choke comprising:
an extruder head;
an extruder choke connected to said extruder head;
a feeder section having an inlet portion and an outlet portion capable of being sealably connected and disconnected to said extruder choke; and
an extension arm having a first end configured to be positioned into and out of sealable contact with said inlet portion of said feeder section and a second end configured to sealably engage with the hopper,
whereby when the hopper is opened, material is fed into said extension arm through said feeder section and into said extruder head.

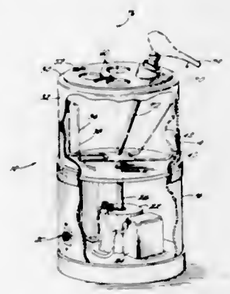
5,286,105
APPARATUS FOR MIXING AND DISPENSING MULTIPLE-COMPONENT SUBSTANCES
Wolf D. Herold, Seefeld; Gerd Brandhorst, Munich, and Guenther Rehfeld, Diessen, all of Fed. Rep. of Germany, assignors to Thera Patent GmbH & Co. KG Gesellschaft Fuer Industrielle Schutzrechte, Seefeld, Fed. Rep. of Germany
Filed Dec. 23, 1991, Ser. No. 811,440
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 9017322
Int. Cl.[5] B01F *15/02, 7/00*
U.S. Cl. 366—177 **10 Claims**

1. An apparatus for mixing and dispensing multiple-component substances comprising:
a housing for receiving at least two cartridge means each containing one component, and a mixer connected to said cartridge means and having a mixer element disposed in said mixer;
means including a mixer rotating shaft for rotating said mixer element, said shaft having an axis and being adapted to be disengaged from said mixer element by being shifted along the shaft axis;
a drive motor;
a piston reciprocably disposed in each cartridge means and connected to said drive motor for emptying said cartridge means;
a clutch having an input shaft coupled to said motor and an output shaft coupled to said pistons;
handle means accessible from outside said housing for manually retracting and advancing said pistons when said



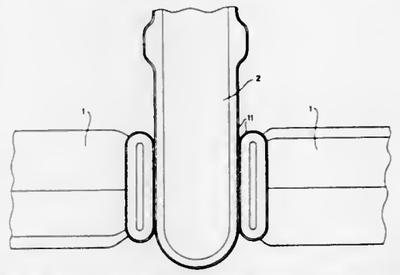
clutch is disengaged, said pistons being movable along a direction parallel to the axis of said mixer rotating shaft, and
means on said mixer rotating shaft engageable by said piston for positively moving said mixer rotating shaft out of engagement with said mixer element during a final part of the retracting motion of said pistons.

5,286,106
SOAP CREAMER AND DISPENSER
Donald R. Burgos, 507 Witney Chase, Stone Mt., Ga. 30088
Filed Nov. 25, 1992, Ser. No. 981,793
Int. Cl.[5] B01F *15/02;* **B67D** *5/40;* **G01F** *11/00*
U.S. Cl. 366—190 **9 Claims**



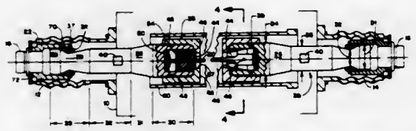
1. A device for use with water and pieces of soap, comprising:
a housing having an axis;
a motor adjacent to said housing;
a shaft having a first end and a second end, said first end rotated by said motor, said second end of said shaft extending into said housing;
a whisk attached to said second end of said shaft and rotatable within said housing by said motor, said whisk having a first wire arm, and
a second wire arm, said second wire arm having a different shape than said first wire arm so that said first wire arm sweeps out a different area than said second wire arm when rotated by said motor; and
a pump dispenser carried by said housing and extending into said housing so that said pump dispenser can pump out the contents of said housing, said pump dispenser positioned so as not to interfere with said whisk, said pump dispenser extending toward said axis of said housing from a point on said housing away from said axis so as not to interfere with said whisk when said whisk rotates.

5,286,107
ENAMEL COATED STIRRER WITH PADDLES DETACHABLY FIXED ON THE SHAFT IN ENAMEL TO ENAMEL COUPLING WITHOUT ANY GASKET
Gianni Artusi, San Donà di Piave, Italy, assignor to Tycon S.p.A., San Donà di Piave, Italy
Continuation-in-part of Ser. No. 509,811, Apr. 17, 1990, abandoned. This application Jun. 3, 1991, Ser. No. 709,162
Claims priority, application Italy, Apr. 17, 1989, 20174 A/89; Aug. 7, 1989, 21469 A/89
Int. Cl.[5] B01F *7/22*
U.S. Cl. 366—325 **8 Claims**



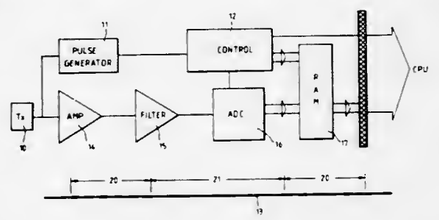
1. In a paddles stirrer completely coated with an enamel layer and suitable for mounting in a closed coverless reaction vessel, provided with:
a stirrer shaft having a lower end on which a hub holding the paddles is detachably fixed for operating inside the vessel, through enamel to enamel coupling on cylindrical surfaces and wherein the coupling between shaft and hub is realized by a male element consisting of the lower end of the shaft and by a female element consisting of a corresponding central hole in the hub, the improvement consisting in that the cylindrical coupling surfaces of the male element and of the female element have an oval cross section wherein the difference between the maximum and the minimum axis is comprised between 5% and 7%.

5,286,108
FIXTURE FOR PERFORMING TENSILE TESTS AT EXTREMELY HIGH TEMPERATURE
Walter J. Whatley, San Diego, and Gregory M. Duchnak, Vista, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Jun. 1, 1992, Ser. No. 891,515
Int. Cl.[5] G01N *3/18*
U.S. Cl. 374—49 **11 Claims**



1. A fixture for performing tensile texts at extremely high temperature comprising:
a pair of elongated pull rods, each of said elongated pull rods having a first end and a second end, each of said pull rods having a test specimen receiving portion at said first end and a collet attachment portion at said second end;
means for detachably securing one end of a test specimen to the first end of each of said pull rods;
said collet attaching portion having an outer surface having a fist cone shaped section and a second cone shaped section, said second cone shaped section having its largest diameter D1 closest to the second end of its said pull rod, said second cone shaped section having its smallest diameter D2 also forming the smallest diameter for said first cone shaped section whose diameter is D3;
an annular collet for each of the pull rods, the collet having an outer surface and an inner surface, the inner surface of said collet having a first cone shaped surface that mates with the second cone shaped section, wherein said collet is formed from two longitudinally split halves having means for detachably securing the two halves together in an assembled annular structure; and
a tubular first retaining ring for each of the pull rods and means on the outer surface of said annular shaped collet for detachably securing it to the inner surface of said first retaining ring.

5,286,109
DISTRIBUTED TEMPERATURE SENSOR
Paul A. Hanscombe, Uxbridge, and Paul N. Richards, Basingstoke, both of England, assignors to Schlumberger Industries Limited, Farnborough, England
Continuation of Ser. No. 712,769, Jun. 10, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,951
Claims priority, application United Kingdom, Jun. 28, 1990, 9014370
Int. Cl.[5] G01K *11/22*
U.S. Cl. 374—119 **7 Claims**



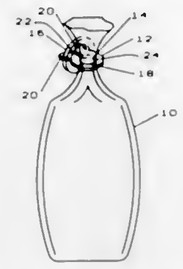
1. A distributed temperature sensor comprising an elongated solid ultrasonic waveguide, said waveguide having at least one zone formed as a grating to reflect the ultrasonic waves at a frequency determined by the grating dimensions and temperature, means for supplying a wide range of ultrasonic frequencies to the waveguide and means for detecting and analysing the frequencies reflected by the grating to provide a measure of the temperature of the zone.

5,286,110
BAG HAVING TAMPER-RESISTANT SEAL
Mickey Benson, 115 W. B St., Port Hueneme, Calif. 93041, and Donald P. Hilliard, 4610 Reading Dr., Oxnard, Calif. 93033
Filed Apr. 1, 1993, Ser. No. 41,206
Int. Cl.[5] B65D *33/34*
U.S. Cl. 383—5 **5 Claims**

1. A tamper-resistant seal comprising:
a sack type package having a neck,
a generally U-shaped flexible closure device encircling said neck to releasably close said package, and
an annular band of heat-shrinkable plastic dimensioned to

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slideably encircle said closure device prior to heat-shrinking and being heat-shrunk to fit closely about the closure



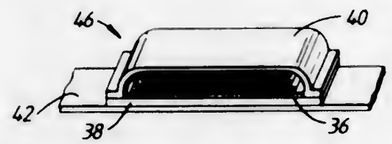
device so as to prevent removal of the closure device without prior removal of said band.

5,286,111

BAG TIES AND MANUFACTURE THEREOF

Roberto Brembilla, Milan, Italy, assignor to David J. Instance Limited, United Kingdom

Filed Apr. 17, 1991, Ser. No. 686,362
Claims priority, application United Kingdom, Aug. 31, 1990, 9019029.9; European Pat. Off., Nov. 12, 1990, 90312329.7
Int. Cl.[5] B65D *33/28*
U.S. Cl. 383—62 **12 Claims**



1. A self-adhesive tie for a bag, the tie comprising a support piece, a continuous annular loop of tie material, which is folded to form a folded length, being disposed on the support piece, said support piece having a rear surface being coated with an adhesive layer of pressure-sensitive adhesive for adhering the folded length to a bag, a backing of release material covering the adhesive layer, and a laminar material comprising a self-adhesive plastic material having a coating of pressure-sensitive adhesive, said laminar material extending over the folded length and being adhered to the backing of release material and the support piece.

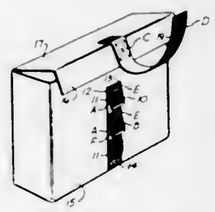
5,286,112

LOCKING FASTENER AND METHOD

Kenneth G. Bible, 201 Butler Dr., Greenvile, S.C. 29611

Filed Aug. 17, 1992, Ser. No. 930,804
Int. Cl.[5] B65D *33/16*
U.S. Cl. 383—86 **25 Claims**

1. A bag with integral locking closure features, comprising:
a bag having an interior receiving portion, a plurality of exterior walls, and a closable top generally opposite a defined front wall of said exterior walls;
a base fastener member, integrally associated with said bag front wall, and having first fastener material supported thereon facing outwardly from said front wall;
a plurality of locking strap members, pivotably supported at respective first ends thereof on said base fastener member at respective staged distances therealong from said bag closable top, said locking strip members having
respective first sides pivotable towards said bag closable top,
first fastener material supported on said first sides,
respective second sides, opposite to said respective first sides, and free of fastener material,
respective second ends, opposite to said respective first ends, and freely pivotable towards said bag closable top, and
respective tab elements, extending from said respective second ends, and free of fastener material on either side thereof; and
a movable closure strap member, associated with said bag closable top, and having a first side positionable in opposition to said base fastener member and carrying thereon



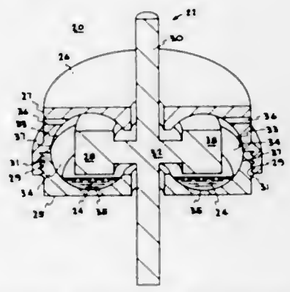
second fastener material complementary to said first fastener material, for selective locking engagement simultaneously with said first fastener material as supported on said base fastener member and as supported on said plurality of locking strap members, such that subsequent movement of said movable closure strap member so as to open said bag closable top is successively opposed by said staged plurality of locking strap members unless each respective tab thereof is secured to prevent pivoting movement of its associated locking strap member second end, which tab securement enables that locking strap member stage to be disengaged from said movable closure strap member.

5,286,113

CENTRIFUGALLY ACTIVATED BEARING FOR HIGH-SPEED ROTATING MACHINERY

Richard F. Post, Walnut Creek, Calif., assignor to The United States of American as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,678
Int. Cl.[5] F16C *21/00, 41/00*
U.S. Cl. 384—100 **15 Claims**



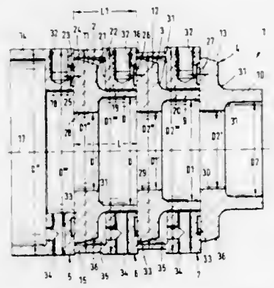
1. A centrifugally activated bearing, comprising:
an annular member protruding laterally and radially from a central axis; and
a rotating member for rotation about the central axis relative to the annular member, the rotating member having an interior chamber surrounding the central axis, the annular member being suspended wholly within the interior chamber, the interior chamber having a concave shape on the surface perpendicular to the central axis for retaining a lubricant therein while the rotating member is at rest and having a concave shape on the surface parallel to the central axis for retaining a lubricant therein while the rotating member is rotating, the concave shape being such that while the rotating member is rotating a centrifugal force causes a lubricant to be forced away from the central axis to form a cylindrical surface within the interior chamber having an axis collinear with the central axis.

5,286,114

HYDROSTATIC THRUST BEARING

Ernst Raphael, Bochum, Fed. Rep. of Germany, assignor to Jahnel-Kestermann Getriebewerke Bochum GmbH, Bochum, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,003
Int. Cl.[5] F16C *32/06*
U.S. Cl. 384—121 **7 Claims**



1. In a hydrostatic thrust bearing adapted for mounting on a shaft, the thrust bearing including at least two bearing bushings facing the shaft, each bearing bushing having an outwardly directed radial flange, each radial flange having an end face with a pressure surface, and at least two support bushings on an abutment side, each support bushing having an inwardly directed radial flange, each radial flange of the support bushings having an end face with a pressure surface, wherein a pressure surface of a bearing bushing is located frontally opposite a pressure surface of an adjacently located support bushing so as to form a pair of pressure surfaces to which oil can be admitted, and wherein the bearing bushings have spacer sleeves extending in one axial direction and the support bushings have spacer sleeves extending in an opposite axial direction, the radial flanges having a thickness and the spacer sleeves having a wall thickness, the improvement comprising the thickness of the radial flanges of the bearing bushings being smaller than the thickness of the radial flanges of the support bushings, the wall thickness of the spacer sleeves of the bearing bushings increasing from bearing bushing to bearing bushing in axial direction and the wall thickness of the spacer sleeves of the support bushings decreasing in the same axial direction from support bushing to support bushing.

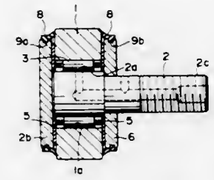
5,286,115

STUD TYPE TRACK ROLLER BEARING HAVING AN INCREASED SLIDING CONTACT SURFACE

Tosio Toji, Kazo, and Juichi Amano, Yokohama, both of Japan, assignors to Nippon Thompson Co., Ltc., Japan

Filed May 20, 1992, Ser. No. 887,161
Claims priority, application Japan, May 24, 1991, 3-46471[U]
Int. Cl.[5] F16C *21/00*
U.S. Cl. 384—127 **2 Claims**

1. A stud type track roller bearing, comprising:
a shaft extending over a length and including a flange having a flat guide surface;
an annular side plate fixedly attached to said shaft in an opposed relationship with said flange in an axial direction, said side plate having a flat guide surface;
a ring fitted onto said shaft to define an annular gap therebetween, said ring having a pair of flat end surfaces, each of which is located in an opposed relationship with a corresponding one of said flat guide surfaces of said flange and said side plate with a predetermined gap therebetween;
a plurality of rolling members provided in said annular gap in rolling contact with both of said ring and said shaft spaced apart from each other circumferentially;



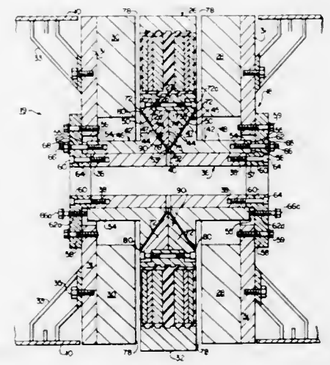
a sliding member provided in each of the gaps between said ring and said flange and between said ring and said side plate in sliding contact therewith; and
sealing means for sealing said gaps between said ring and said flange and between said ring and said side plate, said sealing means including a sealing member having one end fixedly attached to said flange or side plate and the other end pressed against and in sliding contact with said ring.

5,286,116

BEARING ASSEMBLY

Chester A. Garis, Jr., Gloucester, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Aug. 31, 1992, Ser. No. 938,420
Int. Cl.[5] F16C *17/10*
U.S. Cl. 384—271 **36 Claims**



1. An improved motor and bearing assembly wherein a motor includes a disk-shaped rotor and at least one disk-shaped stator adjacent to the rotor, said rotor and stator being axially aligned along a common longitudinal axis comprising:
a bearing support;
bearing cones adjustably mounted on said bearing support and a groove radially disposed between said bearing cones;
a rotating bearing member disposed within the inner periphery of said rotor and having a complementary configuration to said groove and rotating in said groove whereby

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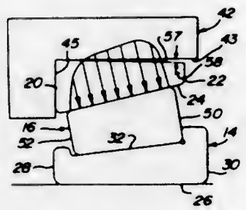
radial and axial support for said disk-shaped rotor is provided.

5,286,117

BEARING WITH ASYMMETRICAL FLEXIBLE SECTION

Scott A. Wojan, Ypsilanti, and Robert W. Frayer, Jr., Gregory, both of Mich., assignors to NTN Corporation, Osaka, Japan

Filed Aug. 17, 1992, Ser. No. 931,195
Int. Cl.[5] F16C *33/58*
U.S. Cl. 384—513 **46 Claims**



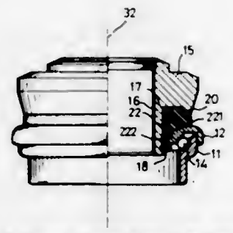
1. A rolling element bearing assembly comprising:
an inner bearing race having an inner bore and a bearing element raceway;
an outer bearing race having a bearing element raceway, an outer diameter surface and a pair of radial face surfaces;
a bearing housing for supporting said outer bearing race and having surfaces which confront and engage said outer bearing race outer diameter surface and said pair of radial face surfaces thereby defining an interface between said bearing housing and said outer bearing race;
a plurality of rolling bearing elements positioned between said inner and outer bearing race raceways;
said rolling element bearing assembly having a first circumferential segment which is more flexible in response to an applied load than a second remaining circumferential segment wherein at least one of said outer bearing race or said bearing housing having a geometric asymmetry in said surfaces defining said interface resulting in said first circumferential segment; and
indexing means for positioning said first circumferential segment with respect to said applied load such that contact forces between said rolling bearing elements in the area of said first circumferential segment are reduced as compared to a bearing assembly having substantially uniform flexibility characteristics.

5,286,118

JOURNAL OF A BICYCLE HAVING A SHOCK ABSORPTION CONFIGURATION

Yi Chen Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Haiang, Taichung Haien, Taiwan

Filed Jun. 4, 1992, Ser. No. 893,459
Int. Cl.[5] F16C *27/08*
U.S. Cl. 384—545 **12 Claims**



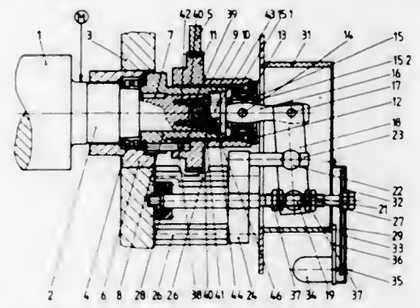
1. A journal of a bicycle comprising a cap engaged on a head tube of said bicycle, a bowl rotatably engaged on said cap, a bearing engaged between said cap and said bowl, a compression nut engaged on said bowl, and circumferential elastomeric means engaged between said compression nut and said bowl for absorbing shocks and vibrations transmitted to said journal.

5,286,119

BEARING PLAY ADJUSTING ASSEMBLY

Christian M. M. Fischer, Marktheidenfeld, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 962,420
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1991, P 41 34 573.8; Nov. 29, 1991, P 41 39 327.9
Int. Cl.[5] F16C *17/10*
U.S. Cl. 384—571 **4 Claims**



1. A bearing play adjusting assembly which is useable to effect adjustment of bearing play in a cylinder of a printing press, said bearing play adjusting assembly comprising:
an axle journal extending from a plate cylinder and being rotatably supported in a printing press;
a bearing having a conical inner race rotatably supporting said axle journal;
an inner bushing carried by said axle journal and having a first end which is engageable with said bearing;
a pressure plate securable to an end of said axle journal and engageable with said inner bushing;
a shim removably positioned between said pressure plate and said end of said axle journal;
an outer bushing concentrically supported on, and axially shiftable with respect to said inner bushing; and
means to adjust circumferential play between said inner and outer bushings.

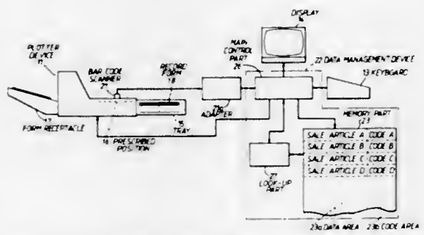
5,286,120

DATA PRINTING SYSTEM WITH SCANNING OF FORMS

Kazuya Udono, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 560,001, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 250,645, Sep. 29, 1988, abandoned. This application Jun. 30, 1992, Ser. No. 908,553
Claims priority, application Japan, Sep. 30, 1987, 62-246021
Int. Cl.[5] B41J *5/30*
U.S. Cl. 400—61 **9 Claims**

1. A system for printing input data on a corresponding one of a plurality of different individual record forms, comprising:
a printer;
means for feeding singly to the printer the different individual record forms without regard to the difference between the forms being fed;
means for distinguishing from one another each of the different individual record forms being fed to the printer in accordance with a distinctive code irrespective of the feeding sequence;
data memory for storing input data intended for distinguished individual record forms being fed to the printer;
means responsive to the distinguishing means for determining whether or not the distinctive code is registered in the memory;
means for registering in the memory the distinctive code of a distinguished record form and corresponding input data after determining that the code is not registered and prior to transmitting input data to the printer; and



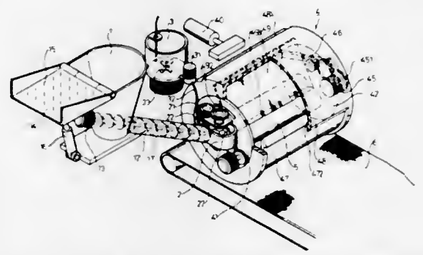
data control means, including first means governed by the determining means for accessing the input data stored in the data memory at times when the distinctive code is registered in the memory to transmit the input data intended for a respective distinguished record form, and including second means governed by the determining means for requiring an input of data corresponding to the unregistered distinctive code to the data memory during a break in processing and prior to any further record forms being fed to the system,
said printer being responsive to reception of the transmitted input data for printing on the distinguished record form.

5,286,121

AUTOMATIC DEVICE FOR MAKING FLOUR STRAP

Shih-Chu Tsay, No. 62, Lane 313, Wen-Hsien Rd., Tainan, Taiwan

Filed Apr. 22, 1993, Ser. No. 50,634
Int. Cl.[5] A21C *1/08*
U.S. Cl. 366—72 **6 Claims**



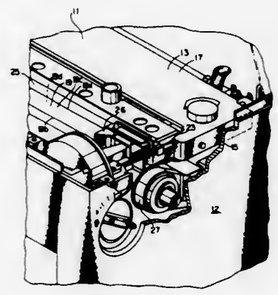
1. An automatic device for making a flour strap comprising:
a flour container provided with a forwarding pipe fastened thereto;
a liquid container provided with a liquid tube fastened thereto;
a mixing container communicating respectively with said flour container through said forwarding pipe and with said liquid container through said liquid tube;
a rolling container having a rotatable body and two stationary side walls opposite to each other, with one of said two stationary side walls being provided with an inlet through which said rolling container communicates with said mixing container, said rolling container further having a baffle mounted therein and two rolling wheel sets mounted therein; and
a conveyor located under said rolling container.

5,286,122

RIBBON CARTRIDGE WITH TAKE-UP ARM

Gregory M. Jung, Charlotte, N.C., and Keith Smith, Shelbyville, Tenn., assignors to Datasouth Computer Corporation, Charlotte, N.C.

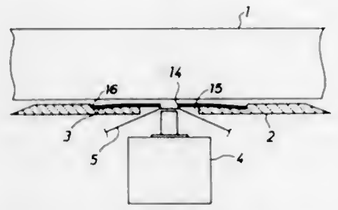
Filed May 25, 1993, Ser. No. 66,876
Int. Cl.[5] B41J *35/28*
U.S. Cl. 400—196.1 **2 Claims**



1. A ribbon cartridge (**11**) for a printer (**12**) adapted to print onto a sheet(s) of paper (or other similar media), comprising
an enclosed housing (**13**) formed by a case (**15**) and a cover (**17**),
a ribbon (**19**) stuffed in the housing (**13**),
said ribbon (**19**) having an upper edge (**19*a***) and a lower edge (**19*b***),
said ribbon (**19**) having an outer surface (**19*c***) adapted to face away from a paper sheet(s) (or other similar media) positioned in the printer (**12**) and having an inner surface (**19*d***) adapted to face toward the paper sheet(s) (or other similar media) in the printer (**12**),
an output arm (**21**) formed in the housing (**13**) from which the ribbon (**19**) exits the cartridge (**11**),
a take-up arm (**23**) formed in the housing (**13**) which receives the ribbon (**19**) into the ribbon cartridge (**11**),
said take-up arm (**23**) being spaced away from the output arm (**21**) to form a print space (**25**) therebetween,
said take-up arm (**23**) having an outer face (**23*a***) with a bottom portion (**23*b***), and an inner surface (**23*i***) to fit between combination pulley/gear (**27**) and ribbon guide (**26**) and to allow reliable routing of the ribbon (**19**) during operation,
a support stub (**24**) which extends forwardly from the bottom portion (**23*b***) of the forward end (**23*c***) of the take-up arm (**23**) to support the lower edge (**19*b***) of the ribbon (**19**),
an upper guide finger (**23*d***) which extends from the take-up arm (**23**) and forms an upper slot (**23*g***) with outer face (**23*a***) of take-up arm (**23**) for receiving and guiding the upper edge (**19*a***) of the ribbon (**19**),
a lower guide finger (**23*f***) on the take-up arm (**23**) which forms a lower slot (**23*h***) with outer face (**23*e***) of take-up arm (**23**) for receiving and guiding the lower edge (**19*b***) of the ribbon (**19**),
said upper and lower guide fingers (**23*d***), (**23*f***) being positioned so as to not interfere with components of the printer (**12**).

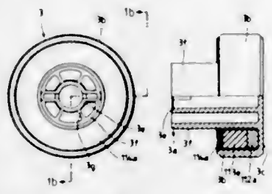
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,123
PAPER GUIDE MECHANISM FOR SERIAL PRINTER
Tatsuya Kusumi, Tokyn, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 953,002
Claims priority, application Japan, Oct. 4, 1991, 3-257427
Int. Cl.[5] B41J *35/04, 35/26*
U.S. Cl. 400—247 6 Claims



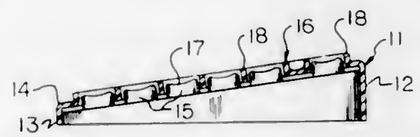
1. A paper guide mechanism comprising:
a platen having a longitudinal axis including a print face;
paper feeding means for feeding print paper along a paper path, said paper path extending along said print face;
a print head;
an ink ribbon interposed between said print head and said platen;
a paper guide plate for guiding said print paper along said paper path and pressing said print paper against said platen for feeding movement against said platen; and
an ink ribbon guide plate mounted on said paper guide plate and having a printing hole through which said printing head prints on said print paper, said ink ribbon guide plate having a convex configuration toward said platen in the direction of said longitudinal axis;
wherein said ink ribbon is prevented from leaping out through said printing hole as said ink ribbon enters and exits said printing hole during printing operation.

5,286,124
PLATEN KNOB
Yoshihiro Tsutsumi, Saga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 17, 1992, Ser. No. 913,915
Claims priority, application Japan, Jul. 18, 1991, 3-178020
Int. Cl.[5] B41J *11/04*
U.S. Cl. 400—661 6 Claims



1. A platen knob, comprising:
a first hollow cylinder having a bottom wall;
a second hollow cylinder extending from an interior surface of said bottom wall coaxially with said first hollow cylinder, said second cylinder being capable of being mounted on a shaft of a rotatable roller-shaped platen;
a layer of a reinforcing lining bonded to said interior surface of said bottom wall between said first and second hollow cylinders, said interior surface of said bottom wall being coaxial with the platen knob, the reinforcing lining being made of a material, the specific gravity of which is higher than that of the material of said hollow cylinders;
a sound absorbing layer provided on an interior surface of said layer of the reinforcing lining layer, said interior surface of said layer of the reinforcing lining being coaxial with the platen knob; and
a sliding layer provided on an interior surface of said sound absorbing layer, said interior surface of said sound absorbing layer being coaxial with the platen knob.

5,286,125
KEYBOARD AND KEY GUIDE FRAME ARRANGEMENT
Antonio G. DiGiosia, 12800 Woodforest #1215, Houston, Tex. 77015
Filed Nov. 16, 1992, Ser. No. 976,579
Int. Cl.[5] B41J *29/00*
U.S. Cl. 400—715 5 Claims



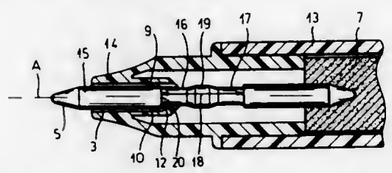
1. A keyboard and key guide framework arrangement, comprising,
a keyboard having a keyboard housing, with the housing having a first end wall of a first height spaced from and parallel a second end wall of a second height, wherein the second height is less than the first height, and
a housing top wall extending from the first end wall canted towards the second end wall, and
a plurality of keyboard members reciprocatably mounted through the housing top wall, with each of the keyboard members including a key concave top wall, and
a continuous flexible framework grid arranged in surrounding relationship to each key member of said key members, and
the framework grid includes a continuous framework wall, and said wall is arranged to extend above each key member, with the framework wall having a top wall surface spaced above each key concave top wall, with the top wall surface parallel to the housing top wall, and
the top wall surface includes a top wall surface groove coextensive with the top wall surface, and a resilient guide lip mounted within the top wall surface groove.

5,286,126
PUSH-UP PACKAGE
Dennis Harris, Scottsdale, and Ronald General, Phoenix, both of Ariz., assignors to GHS Products, Inc., Phoenix, Ariz.
Filed Oct. 9, 1992, Ser. No. 958,698
Int. Cl.[5] A45D *40/02*
U.S. Cl. 401—82 8 Claims



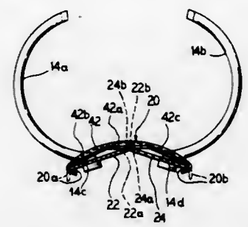
1. A package for solid product including in combination:
a hollow main body portion having first and second ends and having a uniform cross section across the length thereof between said first and second ends, said main body portion open on the first and second ends thereof;
a slide member with a hollow chamber therein located within said main body portion to frictionally engage the interior of said main body portion and configured to permit movement therein from the second end of said main body portion to the first end thereof, with the opening in the second end of said main body portion being large enough to permit the insertion of the finger of a person therein to move said slide member toward the first end of said main body portion away from the second end thereof;
blocking means at the second end of said main body portion for inhibiting said slide member from moving past the second end of said main body portion;
means on said slide member for holding a solid product thereon for movement therewith within said main body portion;
fluid absorption material in the hollow chamber in said slide member for absorbing fluids; and
means in said slide member for permitting the passage of fluid therethrough to the hollow chamber in said slide member.

5,286,127
WRITING INSTRUMENT
Günter Scholz, Garbsen, Fed. Rep. of Germany, assignor to Pelikan Akteingesellschaft, Hanover, Fed. Rep. of Germany
Filed Nov. 16, 1992, Ser. No. 975,358
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137838
Int. Cl.[5] B43K *8/02, 8/08, 8/12*
U.S. Cl. 401—199 12 Claims



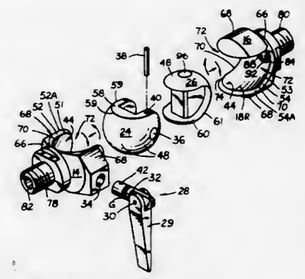
1. A writing instrument comprising:
an elongated hollow barrel having a front end formed with a longitudinally extending tip passage centered on and defining an axis;
an ink reservoir in the barrel;
a rigid and mainly cylindrical synthetic-resin tip extending along and centered can the axis, formed with longitudinal capillaries,
having a front pointed end which is centered on the axis and projects axially forwardly from the barrel and a rear pointed end which is centered on the axis and in the reservoir, and
centrally formed with a radially outwardly open groove having axially spaced and axially confronting front and rear flanks,
the tip being substantially symmetrical about a plane bisecting the groove and substantially perpendicular of the axis; and
a plurality of radially inwardly projecting and axially elongated holding ribs formed in the passage, radially engaging the tip, angularly spaced about the axis, and each forming an axially forwardly directed shoulder bearing axially forward on the front flank of the groove.

5,286,128
RING BINDER
Steven Gillum, Fairhaven, Mass., assignor to U.S. Ring Binder, New Bedford, Mass.
Filed Sep. 24, 1992, Ser. No. 950,017
Int. Cl.[5] B42F *3/04*
U.S. Cl. 402—39 19 Claims



1. A shield for a ring metal for a ring binder, the ring metal having hinged leaves covered by and resiliently clasped by said shield, said hinged leaves attached to openable sections of a ring for holding paper thereon, the shield comprising:
a first arcuate section located at the axial location of said ring; and
a first segmental section and a second segmental section having polygonal cross sections taken through a width of the shield and arranged connected to said first arcuate section on opposite longitudinal side of said arcuate section;
wherein said hinged leaves comprise tabs located under said first arcuate cross section, said first arcuate cross section and one of said polygonal cross sections adapted for said hinged leaves to abut said one polygonal cross section leaving a clearance remaining between said tabs and said first arcuate cross section.

5,286,129
COUPLING DEVICE AND METHODS OF COUPLING
Philip D. French, Mount Vernon, Me.; Charles R. Monty, Granby, and Steven P. Van Keuren, Wilton, both of Conn., assignors to Crater Corporation, Granby, Conn.
Filed Aug. 7, 1991, Ser. No. 740,579
Int. Cl.[5] F16D *1/10*
U.S. Cl. 403—24 59 Claims



1. A coupling device, comprised of
a housing having an interior cavity wall which defines a cavity adapted to rotatably retain a coupler therein and to have a portion of a concave surface of revolution,
means for rotatably retaining a coupler within the cavity,
a rotatable coupler rotatably retained within the cavity,
means for rotating the coupler within the cavity,
the housing being comprised of mated first and second housing parts, each having a cavity wall portion which

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includes a portion of said concave surface of revolution portion,

the coupler having one or more convex outer surface wall portion(s) which include(s) a portion of a convex surface of revolution adapted to rotatingly slip fit engage a portion of said cavity wall surface of revolution portion of each housing part,

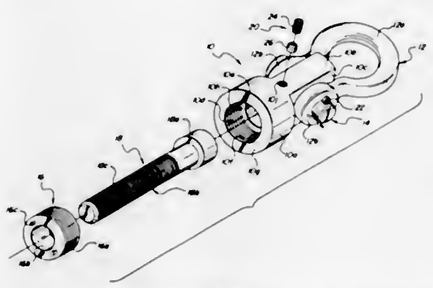
said housing parts being uncoupled and partable when said coupler is in a first position wherein it allows mating and parting of the respective housing parts, and said housing parts being coupled and not partable when said coupler is in a second position wherein one or more of its convex wall portion(s) is or are slip fit engaged by one or more of said coupler retaining concave cavity wall portion(s) of each of the first and second housing parts, to thereby prevent parting of and thereby couple the housing parts.

5,286,130

CLEVIS ASSEMBLY

Charles R. Mueller, 1253 Blairmoor Ct., Grosse Pointe Woods, Mich. 48236

Filed Dec. 22, 1992, Ser. No. 994,977
Int. Cl.[5] B66C *1/24, 1/34*
U.S. Cl. 403—79 **13 Claims**



5. A clevis assembly comprising:

a clevis including a clevis loop and a clevis body defining a downwardly opening recess including an upper smooth circular bore and a lower threaded circular counterbore coacting with said upper bore to define an annular shoulder therebetween;

an annular collar having a threaded outer periphery sized to be threadably received in the counterbore and seated at its upper end on said shoulder; and

a fastener having a head portion received in the upper bore and a shank portion passing downwardly through the collar.

5,286,131

BALL JOINT AND METHOD OF ASSEMBLY

Ruey E. Wood, Harrison, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Aug. 17, 1992, Ser. No. 930,987
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—138 **9 Claims**

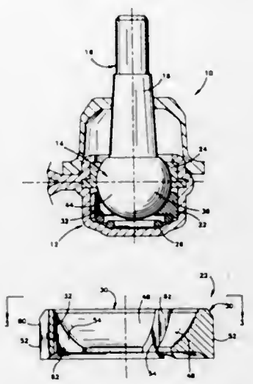
1. In a ball joint having:

a stud having a ball end and a shank extending from said ball end;

a housing at least partially enclosing said ball end of said stud,

a bearing disposed in said housing in engagement with said ball end of said stud,

the improvement comprising said bearing having a plurality of segments disposed in a circular array and a plurality of flexible connector sections interconnecting said segments and accommodating radial outward movement of said segments in their entirety to expand the circular array of segments radially outward to engage an inner side surface



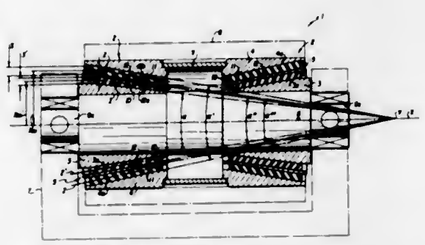
of said housing under the influence of force applied against said segments by said ball end of said stud.

5,286,132

ELASTIC JOINT

Emilio Morini, Milan, Italy, assignor to Pirelli Sistemi Antivibranti S.p.A., Milan, Italy

Filed Jun. 6, 1991, Ser. No. 711,011
Claims priority, application Italy, Jun. 14, 1990, 20647 A/90
Int. Cl.[5] F16D *3/00*
U.S. Cl. 403—228 **15 Claims**



1. An elastic swivel comprising:

a central core having two axially spaced apart ends, and having thereon two external attachment surfaces of truncated conical form;

two axially spaced apart outer collars having ends facing each other and disposed coaxially about the central core and having respective internal attachment surfaces of truncated conical form the vertex of which is axially directed as the vertex of the external attachment surface of the core;

two elastic rings made of elastomeric material, of truncated conical form and rigidly engaged between the external attachment surfaces of the core and the internal attachment surfaces of the outer collars;

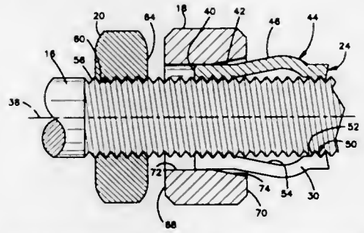
a sleeve having an axial length which is different by a predetermined value from the axial distance between said two facing ends of the two outer collars and means for mounting the sleeve to said facing ends as a result of an axial translation of said two outer collars, the degree of which makes the distance between said facing ends equal to the axial length of said sleeve, characterized in that the external attachment surface of the core and the corresponding internal attachment surface of the collar converge towards a common vertex V and in which each of said elastic rings comprises an inner layer made of elastomeric material joined to the external attachment surface of said core, an outer layer made of elastomeric material joined to the internal attachment surface of said collar and a stiff laminar insert piece of truncated conical form having (a) an inner surface which is joined to said elastomeric inner layer and (b) an outer surface which is joined to said elastomeric outer layer with the elastomeric outer layer being of greater thickness than the elastomeric inner layer.

5,286,133

JOINT FOR VEHICLE STEERING LINKAGE

Ruey E. Wood, Harrison, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Aug. 15, 1991, Ser. No. 745,523
Int. Cl.[5] F16B *2/06, 7/04, 7/18;* **F16D** *1/12*
U.S. Cl. 403—290 **10 Claims**



3. Apparatus for engaging a rod member in a vehicle steering linkage, the rod member having a screw threaded portion, said apparatus comprising:

a sleeve extending along an axis, said sleeve having an opening for insertion of the rod member, an internal screw thread engageable with the screw thread on the rod member, an external screw thread, and an external clamping surface which is inclined with respect to said axis; and

clamping means for clamping the screw threaded portion of the rod member in said sleeve, said clamping means including a clamping member which is free of a screw thread for engaging the screw thread on the rod member, said clamping member having an internal screw thread and an internal clamping surface, said internal clamping surface being inclined with respect to said axis;

said clamping member being movable axially on said sleeve upon rotation of said clamping member on said sleeve with said internal screw thread on said clamping member engaged with said external screw thread on said sleeve, said internal clamping surface being movable forcibly in rotational and axial sliding contact with said external clamping surface upon rotation of said clamping member on said sleeve to develop a clamping force between said clamping surfaces as said clamping member is rotated on said sleeve.

5,286,134

DEVICE FOR SUPPORTING CANOPY CLOTH

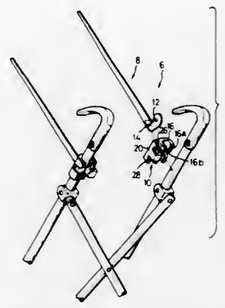
Ming-Tai Huang, 4 Fl., No. 302, Pai Ling Wu Rd., Taipei, Taiwan

Filed Dec. 18, 1992, Ser. No. 993,048
Int. Cl.[5] B62B *9/14, 3/10;* **E04H** *15/06;* **F16B** *2/20*
U.S. Cl. 403—389 **3 Claims**

1. A device for supporting a canopy, comprising:

two joints each comprising (a) a clamp for connecting with a corresponding handle support of a baby stroller and comprising a first finger and a second finger comprising an upper recess and a lower recess and (b) a strip connecting with said second finger and comprising an upper recess and a lower recess; and

two canopy shelves each comprising (a) a first member for supporting the canopy and (b) a second member connecting with a long member at an angle and comprising two sides respectively comprising two protrusions;



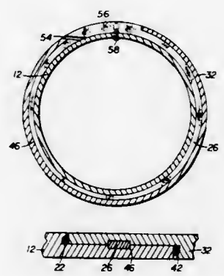
said second member of a canopy shelf being movable past said strip so that said protrusions engage with said recesses and so that said canopy shelf is retained in an upper position for shielding occupants.

5,286,135

JOINDER OF SEPARABLE TUBULAR STRUCTURES UTILIZING PRELOADED O-RING

John A. James, Pierson, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

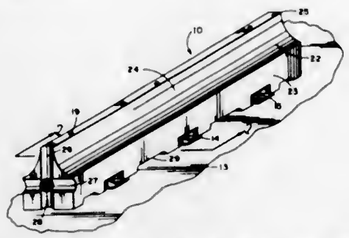
Continuation-in-part of Ser. No. 589,464, Sep. 28, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 936,420
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—405.1 **17 Claims**



17. The fastener system for joining the nested ends of first and second generally tubular housing members together as recited in claim **16** in which said locking strip has a dual series of consistently spaced teeth disposed along oppositely placed longitudinal edges, to facilitate the insertion of said locking strip by dual power applying means meshing with said teeth.

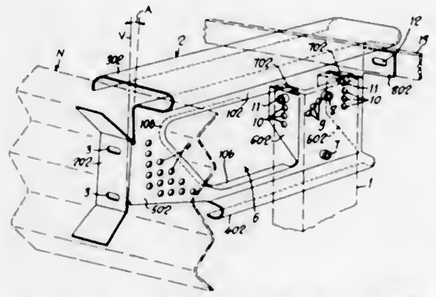
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,136
HIGHWAY BARRIER APPARATUS AND METHOD
Theodore O. Mandish, and Doneath M. Mandish, both of 5055 State Rd. 46, Mims, Fla. 32754
Filed Jun. 10, 1991, Ser. No. 712,966
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 **9 Claims**



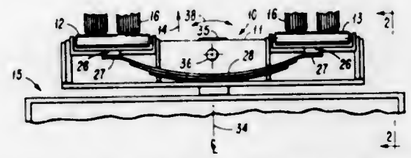
1. An energy absorbing roadway barrier for dissipating kinetic energy upon impact by a moving vehicle comprising:
an elongated core of reinforced high density concrete;
a plurality of elongated core supports and barrier anchor members attached to said elongated core;
an elongated barrier portion formed around said elongated core and around each elongated core support and anchor member, said barrier portion being shaped to form a roadway barrier member and being formed of a lightweight concrete having lightweight polymer pieces formed in a cement and water mixture; and
an interlock portion formed on the end of each roadway barrier member for attaching an adjacent roadway barrier member whereby an energy absorbing barrier member will dissipate kinetic energy upon impact by a vehicle.

5,286,137
GUARDRAIL BARRIER
Luigi Cicinnati, Padova, and Adriano Fracasso, Flesso D'Artico, both of Italy, assignors to Metalmeccanica Fracasso S.p.A., Italy
Filed Nov. 6, 1992, Ser. No. 972,918
Claims priority, application Italy, Nov. 22, 1991, GE91 A000154
Int. Cl.[5] E01F *15/00*
U.S. Cl. 404—6 **9 Claims**



1. A metallic guardrail barrier of the type comprising a sustaining post, a one piece spacing member extending parallel to the ground, secured at one side to the said sustaining post and carrying at the other side the rail, said spacing member being in the form of a substantially flat vertical plate presenting a front portion and a rear potion, in which the said spacing member is connected to said sustaining post by its rear portion so as to be swingable about a fulcrum under the control of a shock absorbing means including a weakened region on said rear portion of the spacing member at a location above and spaced from said fulcrum and a pin and said sustaining post, and passes through said weakened portion, such that said pin causes a tearing of said weakened region when said rail is impacted by a vehicle and said spacing member moves about said fulcrum, the spacing member presenting at its front portion a weakened region progressively increasing from the top to the bottom of the said front portion, wherein said weakened region defines a portion of said one piece spacing member.

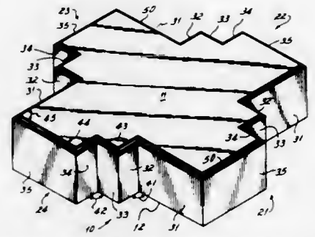
5,286,138
VEHICLE POSITIONING METHODS AND APPARATUS WITH IMPACT DAMPER
Jon D. Goodwin, Cedar Rapids, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa
Filed Apr. 1, 1991, Ser. No. 678,687
Int. Cl.[5] E01C *69/18*
U.S. Cl. 404—108 **19 Claims**



1. A device for cushioning a contact between a travelling paving machine equipped with a hopper for receiving paving material and a truck carrying paving material to be deposited in the hopper, the truck being equipped with a tire, the device comprising:
A. contacting means, connected to the paving machine, for contacting the truck and for applying to the truck a force tending to move the truck in a direction in which the paving machine is travelling, the contacting means movable between an extended position for initially containing the truck and a retracted position;
B. cushioning means, connected to the contacting means and to the paving machine, for cushioning the force applied to the truck and the force applied to the paving machine by the contact between the contacting means and the truck;
C. latch means, connected to one of the paving machine and the contacting means, for latching the contacting means in the retracted position, the latch means having a latched state and an unlatched state; and
D. restoring means, connected to the contacting means and to the paving machine, for restoring the contacting means to the extended position.

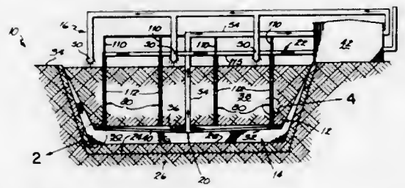
5,286,139
INTERLOCKING PAVING STONE FOR CLOSED AND OPEN DRAINAGE PATTERNS
Roberta A. Hair, 7554 Wooster Rd., Cincinnati, Ohio 45227
Filed Feb. 3, 1992, Ser. No. 829,391
Int. Cl.[5] E01C *5/00*
U.S. Cl. 404—41 **20 Claims**

1. An interlocking paving stone capable of being laid in either a closed pattern or a plurality of open patterns, comprising:
an integral block of molded ceramic material having a generally horizontal upper surface, a lower surface generally identical and generally parallel to the upper surface and spaced from the upper surface a distance defining the thickness of the stone, and four generally identical multifaced side surfaces;
each of the side surfaces being generally perpendicular to the upper and lower surfaces and having first and second major end faces respectively lying in spaced parallel first and second vertical planes, each first major end face being joined to a second major end face of an adjacent side surface at an exterior and approximately right angle, and each second major end face being joined to a first major end face of another and oppositely facing adjacent side surface at an exterior and approximately right angle;
each of the side surfaces having one central minor face lying in an intermediate vertical plane which is generally parallel to, lies between and is equidistant from the first and second planes;
each of the side surfaces having a first minor face, generally perpendicular to the planes and extending between the first and intermediate planes, which forms an interior and



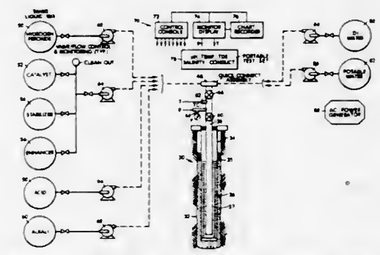
approximately right angle with the first major end face and an exterior and approximately right angle with the central minor face;
each of the side surfaces having a second minor face, perpendicular to the planes and extending between the second and intermediate planes, which forms an exterior and approximately right angle with the second major end face and an interior and approximately right angle with the central minor face; and
the first and second major end faces being approximately equal in length and the first and second minor faces being approximately equal in length, with major faces having a total length greater than that of the minor faces.

5,286,140
BIOREMEDIATION SYSTEMS AND METHODS
Eric C. Mather, Cincinnati, Ohio, assignor to Petro Environmental Technologies, Inc., West Chester, Ohio
Filed Dec. 17, 1992, Ser. No. 992,425
Int. Cl.[5] E02D *31/00*; B09B *3/00*
U.S. Cl. 405—128 **12 Claims**



1. An offsite system for bioremedation of petroleum contaminated soil (PCS), comprising:
an in-ground treatment cell for receiving and containing PCS during treatment thereof, said treatment cell including a substantially fluid-impervious containment liner which prevents contamination of soil surrounding said treatment cell by PCS contained in said cell;
a first fluid system for circulating infiltrating treatment water through PCS contained in said treatment cell to solubilize at least a portion of the contaminating petroleum hydrocarbons from the PCS, to supply cultivated hydrocarbon-consuming microorganisms to the PCS, and to supply nutrients which feed naturally-occurring hydrocarbon-consuming microorganisms present in the PCS to stimulate the growth and enhance the bioremediative action thereof, said first fluid system including
means for distributing infiltrating treatment water on the PCS, and
means for recovering from said treatment cell treatment water containing petroleum hydrocarbons solubilized from the PCS; and
a second gaseous fluid system for delivering oxygen-containing gas to the cultivated and naturally-occurring microorganisms present in the PCS to further enhance the bioremediative action thereof.

5,286,141
METHOD AND SYSTEM FOR REMEDIATION OF GROUNDWATER CONTAMINATION
Ronald J. Vigneri, 9 Leone Terr., Kinnelon, N.J. 07405
Filed Feb. 12, 1993, Ser. No. 17,478
Int. Cl.[5] E02D *3/00*; B09B *3/00*
U.S. Cl. 405—128 **22 Claims**



1. A method for remediating a hydrocarbon-contaminated region of a subterranean body of groundwater to destroy or reduce the initial concentration levels of hydrocarbon contaminants, comprising the steps of:
(a) providing a plurality of mutually spaced wells intersecting said groundwater region;
(b) determining the existence of acceptable continuity and well interflow paths for the said region by generating a test flow of a solution of hydrogen peroxide from one of said wells and monitoring pH changes at each other of said wells as a function of time to detect a pH drop of at least 0.2; and
(c) subsequent to detecting said pH drop, providing a treating flow of said hydrogen peroxide solution from one or more of said wells.

5,286,142
REDUCED MOMENT ANCHOR HUB
Robert M. Hoyt, and Daniel V. Hamilton, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Mar. 22, 1993, Ser. No. 34,101
Int. Cl.[5] E02D *5/80*
U.S. Cl. 405—244 **20 Claims**

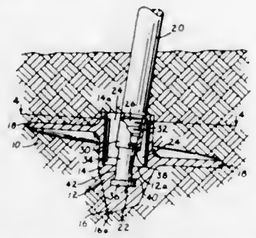
1. A screw anchor assembly adapted to be connected to a guy-wire comprising:
a main anchor body portion;
a tubular, open end, transversely polygonal hub connected to the main body portion of the anchor;
a lead point connected to the body of the anchor and projecting away from the open end of the hub;
a load bearing helix joined to the main body of the anchor in surrounding relationship to the hub and projecting outwardly therefrom in a helical direction;
an elongated anchor rod having means for securing the rod to said guy-wire;
an elongated boss having an outer length which is disposed

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within and extends longitudinally of the hub in spaced relationship from the inner wall surfaces of the hub,

said boss further having an inner segment joined to said outer length and provided with a portion which is recessed within and connected to the main body of the anchor; and

means on the anchor rod and boss respectively for affixing the rod to the end of the length of the boss remote from said segment thereof,



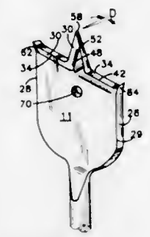
said segment of the boss being deflectable relative to the axis of the hub and thereby the helix to an extent that misalignment of the axis of the helix with a guy-wire connected to the anchor rod does not impose bending forces on the boss attributable to such misalignment that would result in failure of the boss when a predetermined load is imposed on the screw anchor assembly through the guy-wire of a magnitude that would cause failure of the boss in the absence of said deflection of the segment of the boss.

5,286,143

WOOD BIT AND METHOD OF MAKING

Thomas O. Schimke, Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed May 20, 1992, Ser. No. 883,522
Int. Cl.[5] B23B *51/02*
U.S. Cl. 408—211 **13 Claims**



1. A wood bit comprising:

a driving end;

a shank connected to said driving end;

a blade attached to said shank, said blade having a pair of parallel opposite faces connected by a pair of outer sides being generally parallel to said shank;

a pair of lateral shoulders extending inwardly from said outer sides, said lateral shoulders converging to form a central point projecting axially from the leading end of said blade;

a pair of cutting spurs projecting forwardly from said shoulders, each spur having an outer edge which is a continuation of said outer side of said blade and which is parallel to said outer side and an inner edge forming a point with said outer edge of said spur; and

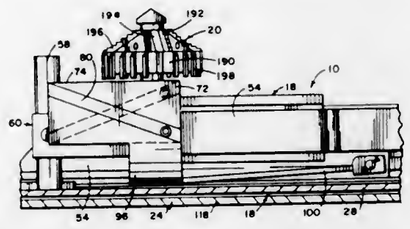
a continuous hook forged along the leading end of said blade projecting beyond or outwardly in the direction of rotation past the plane of said blade on each side of the axis of said shaft, said continuous hook extending continuously from each one of said sides through each one of said cutting spurs, through each one of said lateral shoulders, and through said central point.

5,286,144

APPARATUS AND METHOD FOR CUTTING A HOLE IN A PIPE LINER

Ward J. Griner, 913 Northside Dr., Mt. Dora, Fla. 32757

Filed Aug. 5, 1991, Ser. No. 740,395
Int. Cl.[5] B23B *27/00*; **B23C** *5/02*
U.S. Cl. 408—224 **16 Claims**



1. A cutting head comprising:

a ring having an outer perimeter surface, a top surface, and a center axis;

a first plurality of elongated cutting bars embedded in the outer perimeter of said ring, said cutting bars extending radially outward from the surface of said outer perimeter;

a cutting tip disposed in the center of the axis and extending longitudinally above the top surface; and

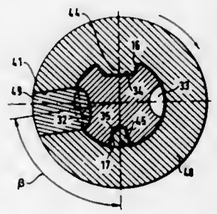
a second plurality of spaced elongated cutting bars extending radially outward from said axis to said ring, said second plurality of bars having a cutting surface with a positive incline, and said cutting surface extends from said top surface of said ring to said cutting tip.

5,286,145

TOOL BIT AND TOOL BIT CHUCK FOR PERCUSSION DRILLING

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Filed Nov. 12, 1992, Ser. No. 975,191
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137120
Int. Cl.[5] B23B *51/02, 31/10*
U.S. Cl. 408—226 **6 Claims**



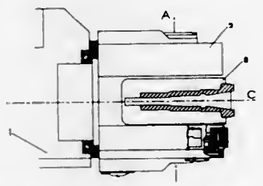
1. Tool bit comprising a substantially circular axially extending shank for insertion into a tool chuck in a hand-held tool for carrying out percussion drilling, said shank has a first end (**18**) insertable into the tool chuck, said shank has at least two axially extending rotary entrainment grooves (**14, 15, 34, 35**) each having a side flank (**16, 17**) loaded in drilling operation, said side flanks are not located diametrically opposite one another, said rotary entrainment grooves are open at the first end (**18**) of said shank for receiving rotary entrainment means of the tool chuck, said shank has two axially extending locking grooves (**12, 13, 22, 23, 32, 33**) spaced circumferentially from said entrainment grooves and said locking grooves are substantially close-ended at ends thereof closer to the first end (**18**) of said shank section for limiting axial movement of the tool bit, said locking grooves arranged to receive at least one locking member (**49**) of the tool chuck, wherein the improvement comprises that said locking grooves (**12, 13, 22, 23, 32, 33**) are not located diametrically opposite one another.

5,286,146

OPERATING HEAD FOR AUTOMATIC MACHINE TOOLS WITH CHUCK SUPPORT ANGULAR LOCKING DEVICES

Armando Corsi, Piacenza, Italy, assignor to JOBS S.p.A., Piacenza, Italy

Filed Sep. 23, 1992, Ser. No. 950,408
Claims priority, application Italy, Oct. 14, 1991, 000012 A/91
Int. Cl.[5] B23C *1/12*
U.S. Cl. 409—201 **3 Claims**



1. An operating head for automatic machine tools comprising:

a rotatable fork having a pair of arms;

a chuck rotatably fitted to the fork, the chuck rotatable about an axis, the axis passing through the arms of the fork;

a cogwheel built into the chuck; and

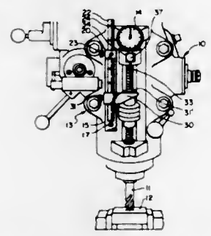
locking means built into the fork for locking the chuck into any angular position around the axis, the locking means including a plurality of collets each having a pair of pads for contacting the cogwheel, the pads being made of a high friction material for pressing against the cogwheel, and hydraulic means connected to the collets for pressing the pads against the cogwheel.

5,286,147

DEPTH GAGE ADAPTER

Francisco Escobedo, 23305 Ladeene Ave., Torrance, Calif. 90505, and Jose L. Ochoa, 22209 S. Vermont Ave. #7, Torrance, Calif. 90502

Filed Oct. 19, 1992, Ser. No. 962,743
Int. Cl.[5] B23B *49/00*
U.S. Cl. 409—218 **4 Claims**



1. In an adapter for cooperating with a depth gage having a probe comprising the combination of:

an elongated bracket with an exposed face having a pair of slots in fixed spaced-apart relationship;

a mounting block having upper and lower surface secured at a selected end of said bracket so as to outwardly project beyond said face;

said mounting block having an open-ended bore normal to a central longitudinal axis and a hole in said block in communication with said bore constituting a viewing opening;

an elongated rod disposed in said block bore projecting beyond said upper and lower surfaces thereof;

thumb screw means movably carried on said block for retaining said rod in position on said block; relationship to said fixed block having a broad flat, surface extending beyond said block;

a support disposed adjacent to said bracket and extending over said stop means broad flat surface; and

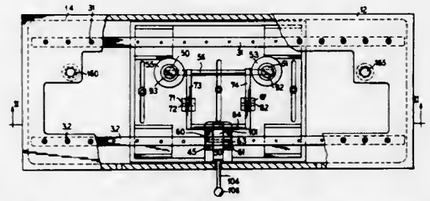
a depth gage carried on said support having a downwardly depending sensing probe movable with respect to said stop means and adapted to engage with said broad flat surface.

5,286,148

TABLE EXTENDER FOR A MILLING MACHINE

Michael P. Cayley, Jr., Schaumburg, Ill., assignor to Midaco Corporation, Elk Grove Village, Ill.

Filed Mar. 15, 1993, Ser. No. 30,904
Int. Cl.[5] B23Q *3/02, 1/00*
U.S. Cl. 409—219 **5 Claims**



1. A table extender for a milling machine comprising, a milling machine with a lower work support having means for attachment to a bed of the milling machine, an upper work support slidably connected by linear guides to said lower work support, a first plurality of spaced vertically moveable shot pins mounted on said lower work support, a second plurality of spaced vertical openings greater in numbers than said first plurality formed in the lower surface of said upper work support, and locking means mounted on said lower work support and engageable with said plurality of shot pins to move them up into selected ones of said plurality of spaced vertical openings in said upper work support to lock said upper and lower work supports together at different selected positions.

5,286,149

APPARATUS FOR SUPPORTING A VEHICLE INSIDE A CARGO CONTAINER

Michael W. Seay, P.O. Box 712, Springdale, Ark. 72765, and Jesse R. Winchel, P.O. Box 26, Elm Springs, Ark. 72728

Filed Feb. 16, 1993, Ser. No. 18,173
Int. Cl.[5] B60P *3/08*
U.S. Cl. 410—26 **14 Claims**

1. An apparatus for raising and supporting a vehicle within an enclosed cargo container having two opposite sides, wherein the apparatus comprises:

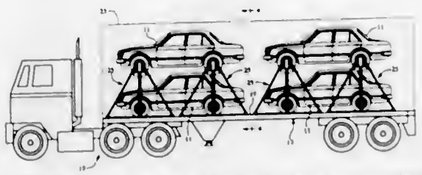
a pair of spaced apart vertical support posts, upstanding to a laterally displaceable upper end, each of the posts being individually positioned adjacent a relatively opposite side of the container to allow a vehicle to be received intervening therebetween;

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at least one contact pad on each of the vertical support posts laterally facing the respective container side thereat;

a horizontal support platform, transversely positioned between the posts below a received vehicle and having two ends;

connectors at opposite ends of the horizontal support platform for connecting the horizontal support platform to the



vertical support posts in a vertical displacement relation thereto; and

lift means for moving the connectors up and down the vertical support posts to raise and lower a vehicle on the horizontal support platform, wherein the horizontal support platform when raised spreads the upper ends of said posts and the contact pads thereon into contact against the sides of the cargo container thereat.

5,286,150

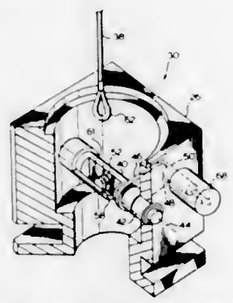
TIE DOWN DEVICE

Michael P. Buratynsky, Toronto, Canada, assignor to Spar Aerospace Limited, Brampton, Canada

Filed Jun. 16, 1992, Ser. No. 899,302

Int. Cl.[5] B60P *1/64, 7/06*

U.S. Cl. 410—103 **13 Claims**



1. A releasable tie down device, comprising the following:

a cap; biasing means supported by said cap;

a connector depending from said biasing means, said connector terminating in a hookable end;

a base;

a member rotatably supported by said base about a center of rotation, said member rotatable between a tie down position and a release position;

a lever arm depending from said member and having a latchable section offset from said center of rotation;

means for releasably latching said latchable section of said lever arm to prevent rotation of said member;

a hook depending from said member and configured so that when said member is in said tie down position, said hook is oriented in an operative hooking position for holding said hookable end of said connector and when said member is in said release position, said hook is oriented in an inoperative position for releasing said hookable end of said connector so that said hookable end of said connector is freed from said hook, said hook positioned on said member so that a force on said latching means when latching said latchable section of said lever arm resulting from any tension in said connector applied by said biasing means when said hookable end of said connector is held by said hook while said member is in said tie down position is at least an order of magnitude less than said any tension in said connector.

5,286,151

BLIND FASTENER

Soheil Eshraghi, Irvine, Calif., assignor to Textron Inc., Providence, R.I.

Filed Nov. 24, 1992, Ser. No. 981,018

Int. Cl.[5] F16B *13/04, 13/06;* **B23P** *11/02*

U.S. Cl. 411—43 **19 Claims**



1. A blind fastener, including a tubular rivet body having a shank for extending through a workpiece with a tail protruding beyond the workpiece, a stem extending through said rivet body having an enlarged portion on one end which is larger than the inner diameter of said shank, the improvement wherein:

said stem portion has a forward facing shoulder adapted to engage and enlarge said tail and draw workpiece panels together as the stem portion is drawn towards the workpiece during a fastener setting operation,

said stem portion further having a head with outwardly extending, spaced deforming edges to the rear of said shoulder which have a diameter larger than said shoulder so that when said edges engage said body tail, they further enlarge the body tail in the area of engagement, said edges extending circumferentially about only a portion of said stem head and being positioned to cause said tail to enlarge in diameter in one transverse direction, said stem head further having recesses between said edges to permit portions of said tail between said edges to deform inwardly to a reduced diameter, said edges and said recesses further being twisted in appearance about the longitudinal axis of said stem to cause said tail to conform to the shape of the stem head, and thereby capture the stem head to restrict it from moving axially relative to the rivet body.

5,286,152

RIVET FASTENER WITH PUSH-IN RELEASABLE DRIVE PIN

Laura A. Anderson, Elk Grove Village, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 8, 1992, Ser. No. 986,974

Int. Cl.[5] F16B *13/06*

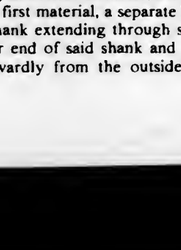
U.S. Cl. 411—45 **17 Claims**

1. A rivet fastener for securing two panels together in butt contact along first respective surfaces thereof, comprising:

a body portion having a head member for engaging a second surface of a first one of said two panels; and a shank member, integrally formed with a first back side of said head member, for insertion within apertures defined within said two panels, said head member including an aperture defined therethrough and having a predetermined configuration, and said shank member extending axially a predetermined distance away from said first back side of said head member and including at least two leg members opposed to each other so as to form an axial bore through said shank member in cooperative alignment with said aperture of said head member, at least one of said at least two leg members being substantially flexible;

a drive pin, having a predetermined length, a predetermined cross-sectional configuration, and first and second opposite ends, for complementary alignment and engagement with said aperture of said head member and said axial bore of said shank member and for outwardly flexing said at least one flexible leg member upon insertion of said first end of said drive pin within said axial bore of said shank member;

first engagement means defined between said shank member and said drive pin for releasably retaining said first end of said drive pin within said shank member at a first, axial, driven position at which said first end of said drive pin



causes outward flexing of said at least one flexible leg member such that said outwardly flexed flexible leg member can retainably engage a second surface of a second one of said two panels so as to cooperate with said head member in securing said two panels together, said first end of said drive pin being disposed completely within the confines of said rivet body portion when said drive pin is disposed at said first, axial, driven position; and

second engagement means defined between said shank member and said drive pin for releasably retaining said first end of said drive pin within said shank member at a second, axial, release position, disposed axially further away from said head member than said first, axial, driven position, at which said first end of said drive pin permits said outwardly flexed flexible leg member to collapse inwardly from said outwardly flexed position such that said body portion and said drive pin can be removed from said apertures of said two panels, said first end of said drive pin being disposed completely within the confines of said rivet body portion when said drive pin is disposed at said second release position.

5,286,153

CORROSION-RESISTANT NAIL FOR DRIVING INTO HARD MATERIALS

Dietmar Sartor, Mauren, Liechtenstein, and Friedrich Groeschel, Buchs, Switzerland, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

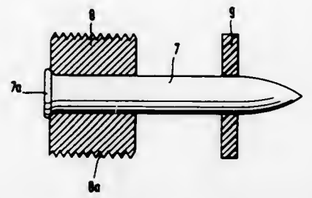
Filed Nov. 23, 1992, Ser. No. 980,007

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1991, 4139653

Int. Cl.[5] F16B *15/00, 15/02*

U.S. Cl. 411—441 **4 Claims**

1. A nail to be driven into hard receiving materials such as concrete, rock, metals and the like comprises an axially elongated shank having an outside diameter, a front end, a rear end, and is formed of a first material, a separate head fitted on said shank with said shank extending through said head, a flange located at the rear end of said shank and extending radially only slightly outwardly from the outside diameter of said shank, said head has an outside diameter greater than the outside diameter of said shank, and projects radially outwardly from said flange, a disk displaceably mounted on said shank and having an outside diameter corresponding to the outside diameter of said shank, said head is formed of a corrosion



resistant second material not as hard as the first material of said shank, and said first material comprises an austenitic steel alloyed with nitrogen, whereby after the nail is driven said head is in positively locked connection with said flange and said disk is displaced from the nail.

5,286,154

IN BUNDLE FOREIGN OBJECT SEARCH AND RETRIEVAL APPARATUS

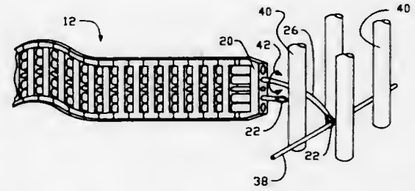
Stephen C. Jens, Ashland; Michael W. Osborne, Waltham; Paul F. Viola, Sommerville; Christos Athanassiu, Winchester, and Robert A. S. Lee, Stoneham, all of Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 314,091, Feb. 22, 1989, Pat. No. 5,036,871, and a continuation-in-part of Ser. No. 303,268, Jan. 27, 1989, Pat. No. 5,065,703, which is a continuation-in-part of Ser. No. 27,810, Mar. 18, 1987, Pat. No. 4,827,953. This application Feb. 27, 1991, Ser. No. 661,825

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] B25J *3/00*

U.S. Cl. 414—7 **23 Claims**



1. A system comprising, in combination, a flexible means for accessing an assembly having a difficult to access geometry, which comprises a flexible member having a distal end, an optical cable extending lengthwise along and within said flexible member for illuminating a portion of the difficult to access geometry, a video cable, a video camera connected to said video cable at the distal end of said flexible member for forming an image of a sense visible from the distal end of said flexible member for transmission by said video cable, a retractor tool mounted at the distal end of said flexible member, and at least one actuating cable for said retractor tool extending lengthwise along and within said flexible member, said flexible member having a plurality of separate, integrally formed hosebar supports, each comprising a pair of separate, longitudinally extending shapes engaging the separate shapes of adjacent hosebar supports and together defining flexible, longitudinally extending strips, and a bar joining said pair of shapes, said bar having a plurality of apertures aligned with a corresponding plurality of apertures in bars of adjacent hosebar supports, said

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plurality of apertures respectively receiving said optical cable, said video cable, and said actuating cable, a rigid guide extending lengthwise of said flexible member, said flexible member being movably mounted along said rigid guide, said rigid guide having an end positioned to turn said flexible member in a predetermined angle with respect to an extending direction of said flexible member as said flexible member passes from said rigid guide through said end, a drive means positioned to engage and drive said flexible member through said rigid guide, a transporter for said combination, in which said rigid guide comprises a body of said transporter, and at least one transporter drive means attached to said transporter, said flexible member comprising separate segments strung on at least one flexible cable which runs the length of the flexible member.

5,286,155

LOADING APPARATUS FOR A CONVEYING PIPE

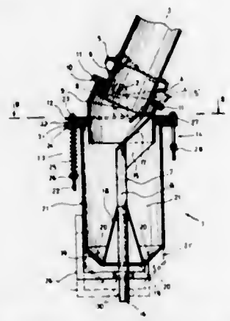
Paul Straub, Oberuzwil, Switzerland, assignor to Bühler AG, Uzwil, Switzerland

Filed Jun. 19, 1992, Ser. No. 901,542

Claims priority, application Switzerland, Jul. 9, 1991, 02037/91

Int. Cl.[5] **B63B** *27/00*

U.S. Cl. 414—139.4 **12 Claims**



7. A loading apparatus for suppressing emission of dust and loss of material during flow of bulk material from a conveying pipe through said apparatus to a storage area, said apparatus comprising:

an intermediate member connected to said conveying pipe, said member having an upper part comprising a joining pipe connected to said conveying pipe, an intermediate part with at least one open deflector surface for retarding the speed of said flow of said bulk material from said conveying pipe, and an end part extending downward from said intermediate part, a portion of said end part having a tubular shape;

shutter means enclosing said end part to define an annular retaining space for retaining said bulk material, said shutter means being movable relative to said end part for allowing and inhibiting flow of bulk material out of said retaining space, said shutter means having a closed position and at least one open position;

a discharge opening defined by said shutter means and said end part and being located at a lower end of said retaining space;

biasing means extending between said shutter means and said intermediate member for urging said shutter means with a predetermined biasing force into said closed position against the weight of said bulk material until the weight exceeds said biasing force;

wherein said shutter means further comprises a casing surrounding part of said retaining space and an upper opening within said casing, said upper opening surrounding said joining pipe and allowing a movement of said upper opening along said joining pipe; and

said shutter means comprises first movable sealing means located around said upper opening and fitting to said joining pipe.

5,286,156

APPARATUS FOR TRANSFERRING A MOTOR VEHICLE IN A MULTISTORY PARKING LOT

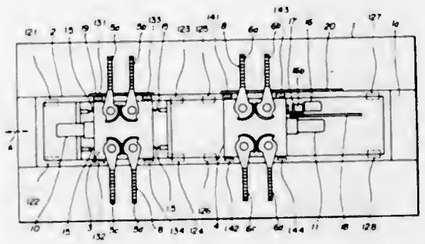
Terumasa Ikenouchi; Niro Okabe; Hirofumi Ishikawa, and Haruki Takeuchi, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,779

Claims priority, application Japan, Jun. 19, 1992, 4-184760

Int. Cl.[5] **E04H** *6/12*

U.S. Cl. 414—256 **5 Claims**



1. An apparatus for transferring a motor vehicle in a multistory parking lot, comprising:

a main carriage which is movable to a position under a motor vehicle, and which carries the motor vehicle;

a first small carriage and a second small carriage, both of which are movably positioned at forward and rearward positions, respectively, on said main carriage, and which are movable relative to said main carriage in a direction of movement of said main carriage;

two pairs of rotating shafts mounted on each of said first small carriage and said second small carriage;

two pairs of swing arms mounted on respective said pairs of said rotating shafts on each of said first small carriage and said second small carriage, said two pairs of swing arms of each of said small carriages being swingable horizontally from a first position in a direction of movement of said main carriage to a second position substantially perpendicular to said direction of movement of said main carriage, and between which front and rear wheels of the motor vehicle are engaged respectively when said swing arms are in said second position, said swing arms in said second position pressing against the respective wheels to thereby raise the front and rear wheels of the motor vehicle;

two pairs of fan-shaped spur gears mounted on respective said pairs of said rotating shafts of each said carriage, with the fan-shaped spur gears of each pair coacting with each other so as to simultaneously rotate each corresponding pair of swing arms oppositely relative to each other; and

driving means, associated with each said carriage, for rotatably driving said rotating shafts, each said driving means including one worm, and two worm gears mounted on each of said small carriages, one said worm gear being mounted on one rotating shaft of a pair of rotating shafts, and the other said worm gear being mounted on one rotating shaft of the other pair of rotating shafts of each small carriage, and the worm on each small carriage being engaged with said worm gears of the same small carriage so as to provide simultaneous rotation of said two pairs of swing arms of each small carriage upon rotation of the respective said worm.

5,286,157

METHOD AND APPARATUS FOR STORING PAPER ROLLS IN A STORAGE SHELVING

Frans Vainio, Karhutie 6 O, SF-02400 Kirkkonummi, Finland, and Walther Hilber, Griessbergweg 3, D-7142 Marbach, Fed. Rep. of Germany

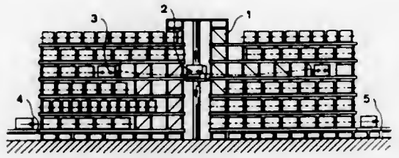
PCT No. PCT/FI88/00185, § 371 Date Jul. 11, 1991, § 102(e) Date Jul. 11, 1991, PCT Pub. No. WO89/04284, PCT Pub. Date May 18, 1989

PCT Filed Nov. 14, 1988, Ser. No. 768,240

Claims priority, application Finland, Nov. 12, 1987, 874991; Fed. Rep. of Germany, Mar. 24, 1988, 3809943

Int. Cl.[5] **B65G** *1/06*

U.S. Cl. 414—273 **17 Claims**



7. A storage shelving apparatus for the storage of paper rolls in a storage space comprising a plurality of long adjacent shelving corridors extending transversely along a side of a main access corridor, the apparatus comprising:

a transport carriage operative to transport said paper rolls;

a pair of running tracks provided in each shelving corridor of said plurality of shelving corridors, adapted to allow displacement of said transport carriage in the delivery and retrieval of said paper rolls;

an inside supporting wall and outer wall extending along each running track of said pair of running tracks; and

a flexible generally concave carrier surface adapted to receive said paper rolls, connecting said inside supporting walls of said pair of running tracks to each other such that when the roll of paper is deposited thereon, the roll causes flexing of said carrier surface thereby substantially adapting said carrier surface to an outer circumference of said roll in contact therewith so as to substantially reduce deformation of said outer circumference of said roll.

5,286,158

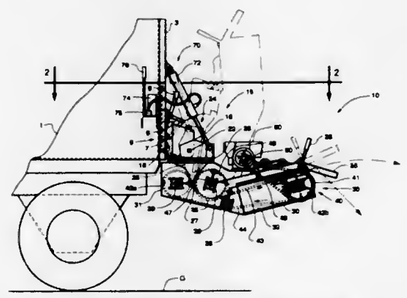
MATERIAL DISTRIBUTING APPARATUS

Harold M. Zimmerman, R.D. #1, Wabash Rd., Ephrata, Pa. 17522

Filed Jun. 19, 1992, Ser. No. 901,132

Int. Cl.[5] **B44D** *1/08*

U.S. Cl. 414—504 **19 Claims**



1. A material distributing mechanism comprising:

a frame generally defining a conduit having a discharge opening;

a pair of rollers rotatably mounted in said frame at opposing ends of said conduit with one of said rollers being mounted proximate to said discharge opening;

an endless conveyor entrained around said rollers for rotational movement therewith, said conveyor having an upper operative run which normally moves toward said discharge opening and a lower return run normally moving away from said discharge opening;

deflection means operatively engaged with the operative run of said conveyor between said rollers to cause a downward deflection of said conveyor, said operative run being divided into a downwardly moving portion, an upwardly moving portion and a generally arcuate transition portion between said downwardly moving portion and said upwardly moving portion;

chute means for receiving material and directing the material onto the downwardly moving portion of said operative run, said frame being connectable to a supply of material to be distributed to position said chute means in flow communication with said supply of material, said chute means including a material receiving portion defining an inlet opening and a lower feed portion terminating in an outlet opening smaller than said inlet opening and being located above said downwardly moving portion of said operative run;

a swing ring interposed between said material receiving portion and said lower feed portion so that said lower feed portion is rotatable about a generally vertical axis relative to said material receiving portion, said conduit being affixed to said swing ring to rotate with said lower feed portion, thereby maintaining a fixed orientation between said outlet opening and said conveyor irrespective of the rotated position thereof relative to said material receiving portion; and

power means for operatively powering the rotation of said conveyor and said rollers.

5,286,159

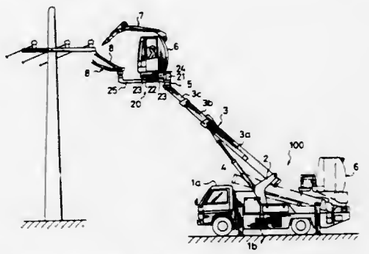
MOBILE VEHICULAR APPARATUS WITH AERIAL WORKING DEVICE

Kazuyoshi Honma, Numata, Japan, assignor to Kabusbiki Kaisha Aichi Corporation, Nagoya, Japan

Continuation of Ser. No. 610,757, Nov. 8, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 935,458

Int. Cl.[5] **B25J** *3/00*

U.S. Cl. 414—728 **6 Claims**



1. A mobile vehicular apparatus comprising:

a boom;

an aerial control cabin mounted on a tip end of said boom by a vertical shaft for turning movement about the vertical shaft;

an aerial working device disposed in front of said aerial control cabin; and

a slide mechanism which interconnects said vertical shaft and said cabin for moving said aerial control cabin back and forth horizontally with respect to said boom; wherein

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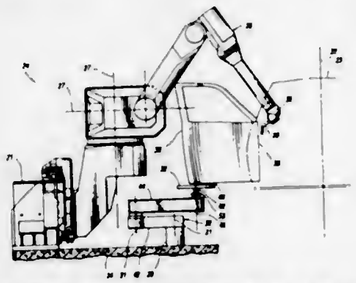
said slide mechanism moves horizontally at all times and comprises a guide base mounted on said vertical shaft for turning movement thereabout, a slider mounted on said guide base so as to be movable back and forth with respect to said guide base, and actuator means for sliding said slider with respect to said guide base, said aerial control cabin being disposed on said slider, wherein said aerial working device comprises a manipulator device, said manipulator device being connected to a front end of said guide base.

5,286,160

METHOD AND SYSTEM FOR CONSTRAINING AND FOR OPENING, HOLDING AND CLOSING A HINGED MAGNETIC MEMBER OF A BODY

Hadi A. Akeel, Rochester Hills; Richard A. McCann, Union Lake, and James S. Hager, Troy, all of Mich., assignors to FANUC Robotics North America, Inc., Auburn Hills, Mich.

Filed Mar. 11, 1992, Ser. No. 850,406
Int. Cl.[5] B25J *15/06*
U.S. Cl. 414—744.3 **16 Claims**



16. A system for opening, holding and closing a hinged magnetic member of a body to allow a process to occur therein at a process station, the system comprising:

a magnetic holder located at a holding position at the process station;

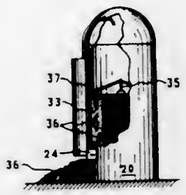
a process robot having a tool and capable of moving along a first programmed path so that the tool contacts the member, along a second programmed path so that the tool moves the member from a closed position to an open position immediately adjacent the holding position, the magnetic holder having sufficient strength to hold the member in the open position in a non-contact fashion, along a third programmed path so that the tool moves away from the member and the robot performs a process within the body, along a fourth programmed path so that the tool contacts the member at the open position and along a fifth programmed path so that the tool moves the member from the open position to the closed position of the member wherein the open position remains immediately adjacent the holding position while the robot performs the process wherein the system further comprises a programmable arm for supporting the magnetic holder, the programmable arm moving through an arm path to position the magnetic holder at the holding position and wherein the programmable arm is rotatable about a pair of substantially vertical, non-coincident parallel axes.

5,286,161

METHOD OF PRODUCING SILAGE REMOVAL CHANNEL

Edward Freeman, R.R. No. 3, Rockwood, Ontario, Canada N0B 2K0

Filed Feb. 7, 1992, Ser. No. 832,283
Int. Cl.[5] B65G *69/00*
U.S. Cl. 414—786 **10 Claims**



1. A method of producing a silage removal channel in silage stored in a silo, said silo comprising a wall having an interior surface and having a series of doors spaced vertically along the wall for discharging the silage, said method comprising the steps of:

disposing an inflatable tube within the silo when in an empty state, said tube placed so as to lie on the interior surface of the wall of the silo and to extend from an upper one of the series of doors to a lower one of the series of doors;

inflating said tube;

introducing feedstuff into the silo for storage;

allowing the feedstuff to settle for compacting the feedstuff to silage;

deflating said tube;

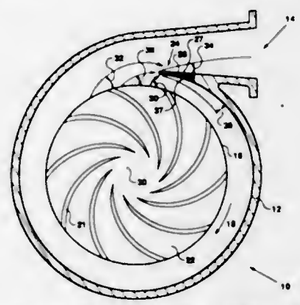
removing said tube thereby creating a channel in the silage for passing silage from the top thereof to the lower one of said series of doors for discharge from the silo.

5,286,162

METHOD OF REDUCING HYDRAULIC INSTABILITY

Joseph P. Veres, Westlake, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 163
Int. Cl.[5] F04D *29/68*
U.S. Cl. 415—115 **10 Claims**



1. A method of reducing hydraulic instability thereby extending the stall-free range of a centrifugal turbomachine including a volute casing having a discharge area therein, an impeller and a volute tongue having an outer surface and an inner surface, said method comprising the steps of:

introducing passageways in said volute tongue thereby placing said outer surface in communication with said inner surface,

increasing throttle in said centrifugal turbomachine whereby flow impinges said volute tongue at a high angle of incidence thereby creating boundary layer flow separation and high pressure at said outer surface of said volute tongue and a low pressure at said inner surface of said volute tongue, decreasing said boundary layer flow separation by using said low pressure to create suction whereby flow is sucked through the passageways in said volute tongue to the inner surface thereby forming laminar flow from said boundary layer flow separation on said outer surface of said volute tongue,

decreasing throttle in said centrifugal turbomachine whereby flow impinges said volute tongue at a low angle of incidence thereby creating boundary layer flow separation and high pressure on said inner surface of said volute tongue and low pressure on said outer surface of the volute tongue, and

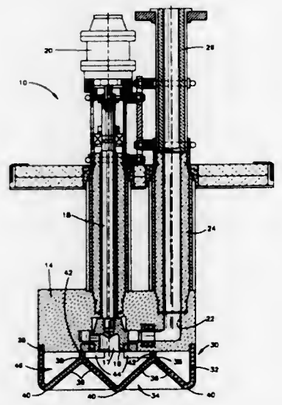
decreasing said boundary layer flow separation at said inner surface of the volute tongue by using said low pressure to creating suction whereby flow is sucked through the passageways in said volute tongue to the outer surface thereby forming laminar flow from said boundary layer flow separation at the inner surface of said volute tongue.

5,286,163

MOLTEN METAL PUMP WITH FILTER

Lutfi Amra, Cleveland Heights; Ronald E. Gilbert, Chardon, and George S. Mordue, Ravenna, all of Ohio, assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 467,485, Jan. 19, 1990. This application Jun. 5, 1990, Ser. No. 532,889
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] F04D *29/70*
U.S. Cl. 415—121.2 **24 Claims**



1. A molten metal pump, comprising:

a base member, the base member having a fluid inlet; and

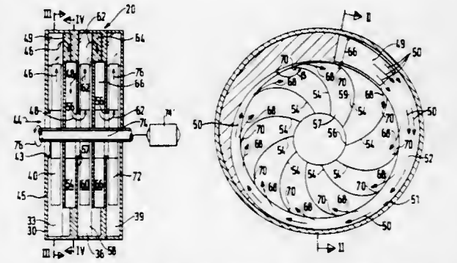
a filter secured to the base member and defining a portion of a cavity therebetween, the filter completely surrounding the inlet, the filter being a generally cup-like structure having an annular side wall and a corrugated end wall.

5,286,164

RADIAL BLOWER WITH BLOWER WHEEL ROTATING IN SPIRAL HOUSING

Jochen Goebre, Karlsruhe; Heinz Ruebig, Buehl-Eisental, and Gerhard Zink, Buehl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 872,640
Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115805
Int. Cl.[5] F04D *17/12*
U.S. Cl. 415—199.3 **10 Claims**



1. A radial blower for producing an air stream which is supplied as a secondary air to a waste gas stream of an internal combustion engine, comprising a spiral housing having a substantially tangentially oriented blower output and accommodating a blower wheel which rotates in said spiral housing about a rotary axis in a rotary plane, said blower output forming with said rotary plane of said blower wheel an acute angle which converges in a flow direction of an air stream; an air guiding chamber provided with stationary guiding elements, said blower output being open in said air guiding chamber; means forming an overflow opening which extends substantially radially to said rotary axis of said blower wheel, said guiding elements of said guiding chamber deviating the air stream substantially radially to said overflow opening; a second spiral housing accommodating a second blower wheel and having a central region, said overflow opening in said central region of said second spiral housing, said air guiding chamber being formed as a spiral housing having a spiral inner wall, said guiding elements being vane-like and arranged substantially concentrically to said overflow opening and radially to the latter, said guiding elements having outer ends which are spaced from said spiral inner wall by a distance which changes from said blower opening in the flow direction of the air stream from a maximum value to zero.

5,286,165

SPIRAL HOUSING MADE OF SHEET METAL

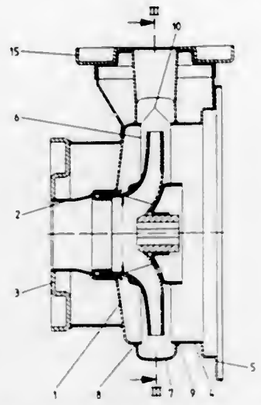
Rolf Scherer, Hessheim; Jörg Starke, Eppelsheim, both of Fed. Rep. of Germany; Primo Lovisetto, Vicenza, and Giuliano F. Matteazzi, Dueville, both of Italy, assignors to KSB Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

PCT No. PCT/EP91/00190, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/13260, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 1, 1991, Ser. No. 920,451
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1990, 4005640
Int. Cl.[5] F04D *29/42*
U.S. Cl. 415—204 **20 Claims**

1. A pump, particularly a centrifugal pump, comprising an annular member defining a volute chamber and an opening of predetermined diameter; and a housing member which, together with said annular member, at least in part constitutes a casing for said pump, said housing member having a position-

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ing portion of preselected outer diameter which engages said annular member in the region of said opening to thereby position said annular member, and said predetermined and preselected diameters being at least approximately equal.



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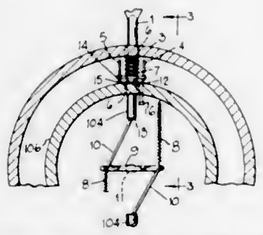
AUTOMATIC CENTRIFUGAL FORCE VARIABLE PITCH PROPELLER

Richard B. Steward, P.O. Box 15608, Rio Rancho, N. Mex. 87174-0608

Continuation-in-part of Ser. No. 885,378, May 19, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,042

Int. Cl.[5] B63H *1/06*

U.S. Cl. 416—89 **3 Claims**



1. An automatic centrifugal force variable pitch propeller assembly comprising:

a housing mounted to a rotatable shaft;

a plurality of propeller blades, each having a blade end and a cylindrical shaft end, the shaft end of each of the propeller blades being mounted within the housing such that the propeller blades extend radially from the housing, each of the propeller blades being mounted to permit limited radial travel in its entirety along a horizontal axis of each of the propeller blades and simultaneous limited rotation about said longitudinal axis, the limited radial travel of each of the propeller blades in its entirety being caused by a centrifugal force developed by rotation of the propeller assembly, the limited radial travel of each of the propeller blades in its entirety extending between an inward position corresponding to rotation of the propeller assembly at an idle speed and an outward position corresponding to rotation of the propeller assembly at a maximum speed;

pitch change means mounted within the housing and coupled to the shaft end of each of the propeller blades, the pitch change means being solely responsive to radial travel of each of the propeller blades in its entirety, caused by said centrifugal force developed by rotation of the propeller assembly, for causing an identical predetermined incremental rotation of each of the propeller blades about said longitudinal axis, said identical predetermined incremental rotation of each of the propeller blades being a nonlinear function of the radial travel of each of the propeller blades in its entirety; and

crank and push rod means for providing a rigid mechanical interconnection between the shaft ends of each of the propeller blades to in sure that the propeller blades travel radially in their entirety in concert with each other to thereby provide fail safe operation of the propeller assembly.

5,286,167

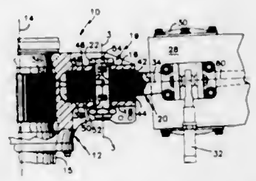
SPAR-TO-HUB JOINT FOR A FLEXBEAM HELICOPTER ROTOR

Francis E. Byrnes, White Plains, N.Y., and David N. Schmaling, Oxford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 530,717, May 30, 1990, abandoned. This application Jan. 27, 1992, Ser. No. 826,583

Int. Cl.[5] B64C *27/33*

U.S. Cl. 416—134 A **14 Claims**



1. A helicopter rotor of the flexbeam rotor variety including:

a. a hub member adapted to be mounted f or rotation about an axis of rotation and having vertically spaced peripheral flanges forming a clevis with the hub member;

b. an elongated, flexible, one-piece radially extending spar member comprised of a plurality of parallelly extending, high tensile strength fibers bonded together to form said spar member to be rectangular in cross section of selected width and thickness and having top and bottom surfaces, and having a pitch change axis about which the spar is torsionally flexible, and also having an effective flapping axis offset from said axis of rotation;

c. aligned holes in said hub peripheral flanges and said spar member radially inner end;

d. connecting bolts extending through said aligned holes to connect said spar member to said hub member for rotation therewith about the said axis of rotation;

e. a blade member connected to the radially outer end of said spar member for rotation therewith about said axis of rotation, and pitch change motion therewith about said pitch change axis, and for lead-lag motion, and for flapping motion therewith about said flapping axis;

f. wherein centrifugal blade loads created during rotation about said axis of rotation and lead-lag motion loads are reacted by said connecting bolts and said spar member and hub flanges at said aligned holes, and wherein loads created by blade flapping motion are reacted both by:

(1) a prying reaction between said spar member and said hub member flanges that creates loads in the spar member and the hub member which are maximum near the outer edge of the hub flanges and near the inner end of the spar; and

(2) a differential bending reaction between the spar member and the connecting bolts that creates loads in the spar member and the hub member at said aligned holes, and in said connecting bolts that are maximum at the interface between said connecting bolts and said spar member at the vertical top and bottom ends of said spar member holes; and

g. means coacting with said spar members and said hub flanges to decouple the loads created by said prying reaction and said differential bending reaction so that they are in substantially spaced relationship along the stations of spar and flange overlap and to reduce said maximum loads, to thereby permit use of a minimum thickness spar member and thereby reduce the weight and size of the helicopter rotor, and to achieve minimum offset of said flapping axis from said axis of rotation.

5,286,168

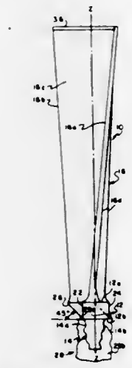
FREESTANDING MIXED TUNED BLADE

M. Lawrence Smith, Orlando, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1992, Ser. No. 829,133

Int. Cl.[5] F01D *5/16*

U.S. Cl. 416—193 A **5 Claims**



1. Rotating blades for a steam turbine comprising:

first and second blades, each having a platform portion with upper and lower surfaces;

a straight side-entry root portion extending downwardly from the lower surface of the platform position; and

a freestanding airfoil portion extending upwardly from the upper surface of the platform portion;

wherein the airfoil portion has a leading edge, a trailing edge, a concave pressure side, a convex suction side, a base section and a tip section,

wherein the base section of the second blade has an airfoil maximum thickness dimension that is less than an airfoil maximum thickness dimension of the base section of the first blade, and wherein the tip section of the first and second blades has a profile and the profile of the second blade is shorter in the longitudinal direction of the blade than a profile of the first blade,

wherein the first and second blades have a resonant frequency in a first vibratory mode, corresponding to a tangential vibration in a rotational direction of a rotor on which the first and second blades are to be mounted when the rotor is operated at a running speed, which is substantially between a third and fourth harmonic of the running speed, and the first and second blades have a resonant frequency in a second vibratory mode, corresponding to a vibration in an axial direction of the rotor when the rotor is operated at the running speed, which is substantially midway between a seventh and eighth harmonic of the running speed.

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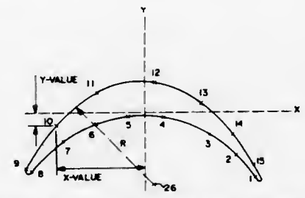
BUCKET FOR THE NEXT-TO-LAST STAGE OF A STEAM TURBINE

Cuong V. Dinh, Schenectady; Stephen G. Ruggles, Scotia, and Chic S. Yang, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1992, Ser. No. 991,545

Int. Cl.[5] F01D *5/14*

U.S. Cl. 416—223 A **2 Claims**



1. A bucket for a steam turbine having a profile in accordance with Charts II–XVI.

2. A bucket for a steam turbine having a profile in accordance with Charts I–XVII.

5,286,170

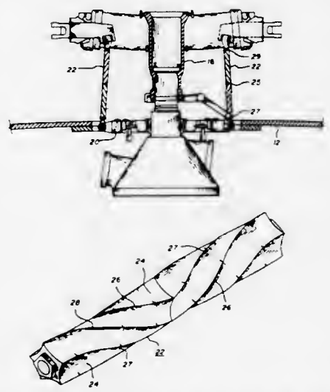
HELICOPTER WIRE STRIKE CUTTER

William W. Brannon, P.O. Box 5413, Fort Richardson, Ak. 99505

Filed Nov. 24, 1992, Ser. No. 981,187

Int. Cl.[5] B64C *27/00*

U.S. Cl. 416—247 R **18 Claims**



1. In helicopter wire strike cutting apparatus for a helicopter comprising a fuselage, a rotor assembly, rotor blades carried by the rotor assembly spaced from the fuselage and control rods to control the pitch of the rotor blades;

cutting means to cut wire engaged by the motor assembly between the rotor blades and fuselage, said cutting means including a cutting edge extending from adjacent the fuselage to a point adjacent the rotor blades, and said cutting means rotating with the rotor assembly.

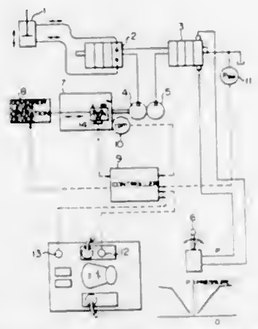
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5,286,171

METHOD FOR CONTROLLING ENGINE FOR DRIVING HYDRAULIC PUMP TO OPERATE HYDRAULIC ACTUATOR FOR CONSTRUCTION EQUIPMENT

Isao Murota; Naoyuki Moriya, and Kazuhito Nakai, all of Tokyo, Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 848,176
Claims priority, application Japan, Nov. 13, 1991, 03-297393
Int. Cl.[5] F04B 49/00
U.S. Cl. 417—34 21 Claims



1. A method for controlling an engine for driving a hydraulic pump to supply to pressurized fluid to at least one hydraulic actuator in construction equipment, comprising the steps of:

engine output decreasing step for decreasing a fuel flow supplied to the engine so that an output rotational speed of the engine is decreased to decrease an excess output of the engine, and

engine output increasing step for increasing the fuel flow to increase the output rotational speed of the engine when an actual condition of the load of the engine driving the hydraulic pump is more than a first level after the engine output decreasing step, and wherein the load of the engine for driving the hydraulic pump is measured from a difference between an actual output rotational speed of the engine and an output rotational speed of the engine which is obtainable when an action of the hydraulic actuator is stopped.

5,286,172

SLANT PLATE TYPE COMPRESSOR WITH VARIABLE CAPACITY CONTROL MECHANISM

Yukihiko Taguchi, Maebashi, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Dec. 23, 1992, Ser. No. 996,773
Claims priority, application Japan, Dec. 26, 1991, 3-345311
Int. Cl.[5] F04B 1/26
U.S. Cl. 417—222.2 13 Claims

1. A slant plate type refrigerant compressor comprising:

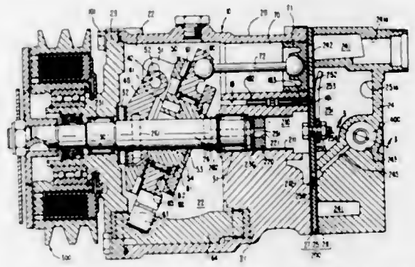
a compressor housing enclosing a crank chamber, a suction chamber and a discharge chamber therein, said compressor housing comprising a cylinder block having a plurality of cylinders formed therethrough;

a piston slidably fitted within each of said cylinders;

drive means coupled to said pistons for reciprocating said pistons within said cylinders, said drive means including a drive shaft rotatably supported in said housing and coupling means for drivingly coupling said drive shaft to said pistons such that rotary motion of said drive shaft is converted into reciprocating motion of said pistons, said coupling means including a slant plate having a surface disposed at an adjustable inclined angle relative to a plane perpendicular to said drive shaft, the inclined angle of said slant plate being adjustable in response to changes in fluid pressure in said crank chamber relative to fluid pressure in said suction chamber to vary the stroke length of said pistons in said cylinders to thereby vary the capacity of said compressor;

a passageway formed in said housing for linking said crank chamber and said suction chamber in fluid communication, said passageway including a valve seat; and

capacity control means for varying the capacity of the compressor by adjusting the inclined angle of said slant plate, said capacity control means including valve control means disposed in said passageway for controlling the opening and closing of said passageway in response to changes in fluid pressure in said suction chamber to thereby control the capacity of the compressor, said valve control means including pressure sensing means for sensing fluid pressure



in said suction chamber and a valve element connected to said pressure sensing means, said valve element being received on and moving away from said valve seat in response to changes in fluid pressure in said suction chamber so as to open and close said passageway to thereby control the capacity of the compressor, said valve element including a valve member, a rod member fitly and slidably disposed through said valve member and biasing means for biasing said valve member to a first position along said rod member when said valve member is away from said valve seat, said valve member being forcibly disengaged from the first position along said rod member to slide along said rod member to a second position away from said valve seat to open said passageway when the fluid pressure differential between said crank chamber and said suction chamber exceeds a predetermined value.

5,286,173

COOLANT GAS GUIDING MECHANISM IN SWASH PLATE TYPE COMPRESSOR

Kenji Takenaka; Toru Takeichi; Hiroaki Kayukawa, and Shigeyuki Hidaka, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 20, 1992, Ser. No. 963,850
Claims priority, application Japan, Oct. 23, 1991, 3-275721; Oct. 30, 1991, 3-285201
Int. Cl.[5] F04B 1/12
U.S. Cl. 417—269 17 Claims

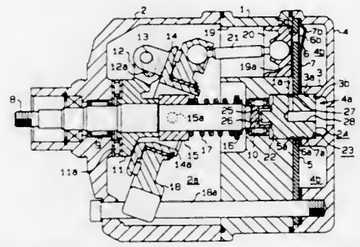
1. A coolant gas guiding mechanism or use in a compressor equipped with a housing having a suction chamber and a discharge chamber, a cylinder block connected to the housing, a plurality of cylinder bores formed in the cylinder block, and a plurality of pistons in corresponding cylinder bores, such that rotation of a rotary shaft is converted to reciprocating motion of each piston by means of a swash plate, the mechanism comprising:

a valve chamber provided between said housing and said cylinder block to communicate with at least one of said suction chamber and discharge chamber;

a plurality of passages for allowing said valve chamber to be connected to said cylinder bores;

a rotary valve disposed within said valve chamber, said rotary valve including an outer peripheral surface that can close said passages in accordance with the rotation of the rotary valve in one of a suction stage and a compression stage of a coolant gas;

a guide groove provided in said outer peripheral surface, to permit communication between each of said cylinder bores and an associated one of said passages, in one of the suction stage and the compression stage of the coolant gas;



a gas passage provided in said rotary valve, said gas passage having one end connected to said guide groove and another end for connection to one of said suction chamber and discharge chamber;

connecting means for connecting said rotary valve to said rotary shaft with a clearance therebetween; and

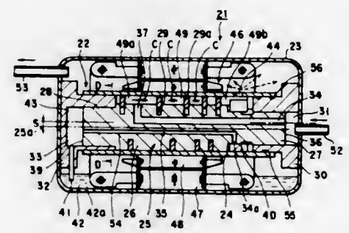
wherein said rotary valve is substantially aligned along a longitudinally extending line, and said connecting means connects one end of said rotary shaft and an adjacent end of said rotary valve.

5,286,174

FLUID COMPRESSION DEVICE

Takayoshi Fujiwara, Kawasaki; Toshikatsu Iida, Yokohama; Takashi Honjo, Tokyo, and Masayuki Okuda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1993, Ser. No. 15,791
Claims priority, application Japan, Feb. 10, 1992, 4-023975; Aug. 28, 1992, 4-229890
Int. Cl.[5] F04C 18/16
U.S. Cl. 417—356 9 Claims



1. A fluid compressor comprising:

a sealed case having an oil bank in which oil is held;

a cylinder arranged in said sealed case;

a rotation rod, having a main body portion with a spiral groove therein and having a suction hole therethrough, eccentrically arranged in said cylinder;

a main shaft formed at one of the axial end portions of said rotation rod, and a sub-shaft formed at the other end thereof; decreasing from said sub-shaft side to said main shaft side;

a spiral blade engaged with said groove such as to be able to project therefrom or retreat therein;

a main bearing and a sub-bearing for eccentrically supporting said cylinder and said rotation rod, an inner surface of the main bearing and an end face of the main shaft defining an inner cavity located at the main shaft side of the rotation rod; and

a suction tube, connected to the inner cavity, for allowing a low pressure operation fluid to flow through a wall of the sealed case and into the inner cavity, said suction hole provided in said rotation rod and connected to the inner cavity allowing the low pressure operation fluid to flow from the inner cavity at the main shaft side to said sub-shaft side so as to introduce said fluid into an inner space of said cylinder;

said cylinder and said rotation rod being rotatable with respect to each other so as to compress said operation fluid as the operation fluid is transported from said sub-shaft to said main shaft side;

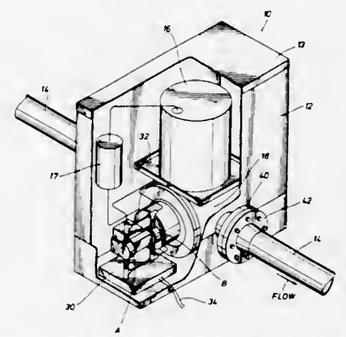
wherein a thrust force acting on the rotation rod resulting from the compression of the operation fluid is at least partially balanced by an opposing thrust force on the rotation rod resulting from the low pressure operation fluid in the inner cavity acting on the end face of the main shaft side of the rotation rod.

5,286,175

DYE INJECTION APPARATUS FOR A FUEL TERMINAL

Carl L. Hammonds, Humble, Tex., assignor to Hammonds Technical Services, Inc., Houston, Tex.

Filed Dec. 3, 1992, Ser. No. 984,959
Int. Cl.[5] F04B 17/00, 35/00
U.S. Cl. 417—375 10 Claims



1. Apparatus for injecting dye in a fuel flow line (14) comprising:

a fluid powered motor (18) adapted for placement in said fuel flow line (14) so that when said motor is connected to said flow line it is powered by fluid flowing in said flow line,

a dye reservoir means including a dye storage tank,

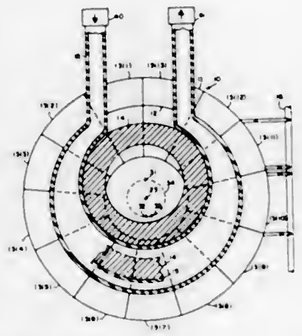
fluid injector means (A) in fluid communication with said dye reservoir means and driven by said fluid powered motor for injecting dye into said fuel flow line,

a cabinet (12) substantially enclosing said fluid powered motor, said dye storage tank and said fluid injector means, and

heating means (30) for maintaining the temperature within said cabinet above a predetermined temperature, thereby maintaining the viscosity of said dye below a predetermined level for injection within said fuel flow line.

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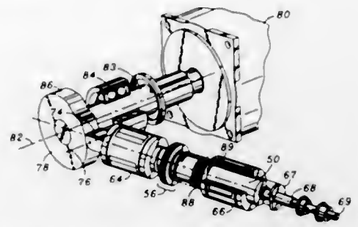
5,286,176
ELECTROMAGNETIC PUMP
Richard L. Bonin, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 6, 1993, Ser. No. 58,018
Int. Cl.[5] F04B *43/08*
U.S. Cl. 417—413 R **22 Claims**



1. A pump comprising
stator means having a cylindrical wall portion extending along a pump axis and a plurality of electromagnetic field generating means equispaced about said stator means for producing magnetic fields within said wall portion parallel to the pump axis;
compression roller means comprising a magnetic material capable of motion in said stator about the pump axis;
flexible diaphragm means intermediate said stator means and said compression roller means and disposed along said wall portion for defining a pumping volume with input port mean for receiving fluid to be pumped and outlet port means for discharging fluid under pressure; and
means for connecting said plurality of field generating means to energizing means that sequentially energize different overlapping sets of adjacent ones of said electromagnetic field generating means thereby to attract said compression roller means to said stator means and compress a portion of said flexible diaphragm means and that energize each overlapping set in sequence thereby to move said compression roller means and the location of the compressed portion of said flexible diaphragm means around said stator means and pump fluid through the pumping volume.

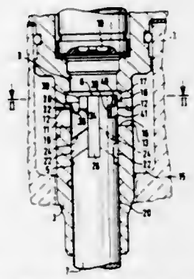
5,286,177
FLUID PUMP HAVING FLOATING RECIPROCATING SHAFT
Steven D. Johann, Concord, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Division of Ser. No. 481,848, Feb. 20, 1990, Pat. No. 5,152,188.
This application Dec. 10, 1991, Ser. No. 804,139
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—415 **19 Claims**

1. A fluid pump comprising:
a cam driven to rotate;
a longitudinal shaft supported for axial reciprocative motion to effect pumping of fluid;
a cam follower coupled to one end of the shaft in operative engagement with the cam;
a spring load on the shaft biased axially and towards the cam follower, whereby the cam and cam follower together with the spring load effect axial reciprocative motion of the shaft;



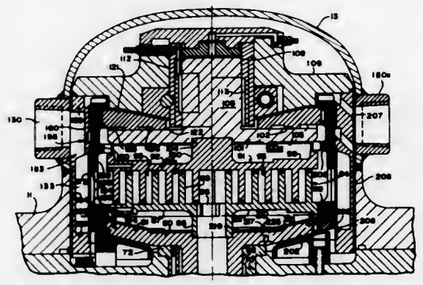
a bearing supporting the shaft for rotational movement and torsionally decoupling the shaft and the spring load.

5,286,178
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Wolfgang Schaef, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 26,796
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1992, 4206883.5
Int. Cl.[5] F04B *7/04*
U.S. Cl. 417—490 **13 Claims**



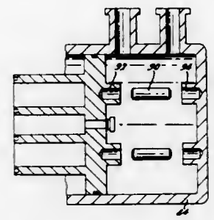
1. A fuel injection pump for internal combustion engines, having a pump piston (7), guided axially and rotationally movably in a cylinder bore (5), said pump piston includes an end face (6) which defines a pump work chamber (9), the pump piston having on a jacket face (20) two oppositely disposed recesses (22), which communicate with the pump work chamber (9) through at least one conduit (26), each recess has an upper oblique control edge (24) extending at a predetermined angle to the circumferential direction of the pump piston (7), the control edges (24) cooperate with two opposed control openings (11 and 13) in a wall of the cylinder bore (5) that lead to a low-pressure chamber (15),
an encompassing annular groove (17) in the wall of the cylinder bore (5) is located above the control openings (11) toward the pump work chamber, the annular groove (17) communicates during a partial stroke of the pump piston (7) with one of the control openings (13) and simultaneously with the pump work chamber (9) by means of a recess (38) in the jacket face (20) of the pump piston (7) that is defined on all sides by the pump piston jacket face (20), and
a cutout (30) of the pump piston (7), which during a portion of the pump piston stroke connects the pump work chamber (9) to the control opening (11), said cutout (30) is formed by a shoulder (28) that is recessed relative to the end face (6) of the pump piston (7) toward the pump work chamber, the boundary edge of said control opening (11) is cutout toward the pump piston jacket face (20) to form a control edge (32), by which the control opening (11) is closable earlier during the pump piston supply stroke than when the recess (38) establishes a communication between the annular groove (17) and the control opening (13),
the cutout (30) of the end face (6) of the pump piston (7) has a second shoulder in the end face (6) in an axial alignment with one of the oblique grooves (22).

5,286,179
THERMAL ISOLATION ARRANGEMENT FOR SCROLL FLUID DEVICE
Ronald J. Forni, Lexington; Robert M. Lucas, Lynnfield; John E. McCullough, Carlisle, and Richard J. Whitehead, Chelmsford, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass. Shigeki Hagiwara, Hiromichi Ueno, Katsumi Sakitani, Yoshitaka Shibamoto, Hiroyuki Taniwa, all of Sakai, Japan.
Filed Feb. 20, 1992, Ser. No. 837,965
Int. Cl.[5] F01C *1/04, 21/04, 21/06*
U.S. Cl. 418—55.1 **15 Claims**



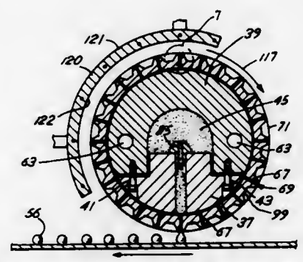
1. A scroll fluid device comprising a pair of opposed meshed axially extending involute wrap elements supported for orbital motion relative to each other to create radially moving progressively and periodically varying volume fluid compressing and transporting chambers between the wrap elements, said chambers moving radially from a first intake zone at a first temperature to a compressed fluid outlet zone at a second temperature higher than the first temperature;
a fixed housing enclosing the wrap elements;
a housing intake port adjacent said fluid intake zone;
a fluid intake manifold means for conveying intake fluid from the housing intake port to said wrap elements;
means for supporting at least one of the wrap elements, said supporting means including a portion extending from said outlet zone to said intake zone and terminating closely adjacent said manifold means, said supporting means further including a torque transmitting member drivingly connected to both wrap elements and including an axially extending portion spanning said intake zone, said axially extending portion including an intake port section extending through said torque transmitting member for providing communication between said manifold means and said wrap elements; and
thermal barrier means for impeding heat transfer via said supporting means between said outlet and intake zones, said thermal barrier means including a thermal insulator between the terminal area of said supporting means and said manifold means.

5,286,180
METHOD FOR ATTACHING FIXED SCROLL TO REAR HEAD OF SCROLL COMPRESSOR
Eric W. Scarlett, South Lyon, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 880,780, May 11, 1992, abandoned.
This application Apr. 8, 1993, Ser. No. 43,613
Int. Cl.[5] F01C *1/04*
U.S. Cl. 418—55.1 **7 Claims**



1. A scroll compressor, comprising:
A) a fixed scroll, having an end plate including a surface;
B) a rear head into which the fixed scroll is mounted, the rear head including a surface apposing the surface of the end plate, at least portions of said rear head and end plate surfaces cooperating to define a discharge chamber; and
C) means for attaching the fixed scroll in the rear head, said means consisting of a plurality of pins press-fitted into bores in upstanding bosses disposed intermediate the fixed scroll and rear head surfaces.

5,286,181
EXTRUSION APPARATUS HAVING A NOZZLE-HEADED DRUM
Jules Schwager, Palatine, Ill., assignor to Berndorf Belt Systems, Inc., Schaumbur, Ill.
Filed Apr. 26, 1991, Ser. No. 693,235
Int. Cl.[5] A23G *3/02;* B29B *9/00*
U.S. Cl. 425—8 **29 Claims**



1. An apparatus for extruding a flowable mass onto a moving support mechanism comprising:
a first cylindrical member for receiving a flowable mass to be extruded from within the interior of said first cylindrical member, said first cylindrical member having at least one exit area through which said mass is forced to the exterior of said first cylindrical member;
a second cylindrical member disposed about said first cylindrical member for relative rotation with respect to said first cylindrical member, said second cylindrical member including a plurality of forming channels having exit ends and being disposed for rotation into and out of an extruding position, and for alignment with said exit area of said first cylindrical member when said forming channels rotate into said extruding position, the alignment permitting

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the flowable mass to be forced through said forming channels, said second cylindrical member having an outer cylinder surface and including a border region on said outer cylinder surface, said border region being devoid of forming channels;

nozzle means formed into said outer surface for guiding excess mass which adheres to sad outer surface during rotation of the second cylindrical member towards said exit ends of at least one said forming channel moving into said extruding position, for merging said excess mass with a mass being extruded from said forming channels onto the moving support mechanism; and

blocking surface means located between said border region and said plurality of forming channels for limiting lateral movement of said excess mass into said border region.

5,286,182

SPINNING NOZZLE FOR PREPARING A FIBER PRECURSOR

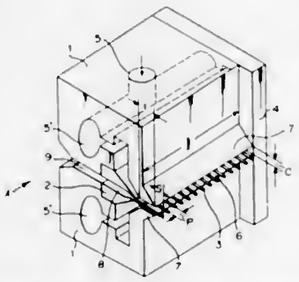
Hiroshi Maeda, Kitakyushu, and Mamoru Sboji, Joetsu, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jan. 6, 1992, Ser. No. 817,346

Claims priority, application Japan, Jan. 17, 1991, 3-017108; Dec. 18, 1991, 3-353735

Int. Cl.[5] B29C *47/78*; **D01D** *5/04*

U.S. Cl. 425—72.1 **4 Claims**



1. A spinning nozzle for dry spinning a spinning solution containing a metal compound and an organic polymer compound by a blowing method, said spinning nozzle comprising vertically arranged two cover plates each having a knife edge, two side plates attached to both sides of said cover plates, a rectangular-prism-like slit formed between said knife edges of said two cover plates and said two side plates, and a plurality of equidistantly spaced spinning solution supplying nozzles, each being formed of a linear pipe, which are disposed in said slit so that said nozzles are parallel and project from the space of the slit;

said spinning solution supplying nozzles having an inner diameter d, wherein d=0.1 to 0.5 mm;

wherein said spinning solution supplying nozzles project from said slit by an amount s=10d to 100d;

a pitch spacing of said spinning solution supplying nozzles being p=3d to 10d; and

a width of said slit being an amount c=3d to 20d;

wherein a length of projection of the knife edge of each of said two cover plates being t=2c to 80c.

5,286,183

EXTRUDER HEAD FOR APPLYING COATINGS OF POLYMERIC MATERIAL TO SEMIFINISHED PRODUCTS OF ELONGATED CYLINDRICAL CONFORMATION

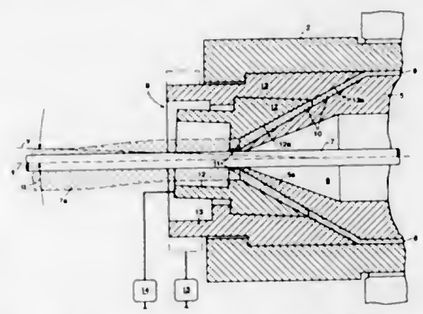
Lodovico Tonsi, Sesto S. Giovanni, and Giovanni Pozzati, Olgiate Olona, both of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Filed May 8, 1992, Ser. No. 880,742

Claims priority, application Italy, May 13, 1991, MI91A 001296

Int. Cl.[5] B29C *47/02, 47/22, 47/24, 47/92*

U.S. Cl. 425—113 **16 Claims**



1. In an extruder head for applying a coating of a flowable material to the outer surface of an elongated semifinished product to form a product having a circular cross-section, said extruder head comprising:

a fixed supporting body;

an inner die member fastened to said supporting body, said inner die member having a frusto-conical outer surface extending around a predetermined first axis, said frusto-conical outer surface having first predetermined diameter at a first end of said inner die member and a smaller second diameter at a second opposite end of said inner die member, and said inner die member also having an inner duct co-axial with said axis and extending from said first end to said second end of said inner die member for the passage therethrough of said elongated product; and

an outer die member mounted on said body and encircling said inner die member, said outer die member having a frusto-conical inner surface portion spaced from and encircling said outer surface of said inner die member to form a channel between said outer surface of said inner die member and said inner surface of said outer die member for the passage of said flowable material from said first end of said inner die member to said second end of said inner die member, said inner surface of said outer die member having a portion spaced from and adjacent said second end of said inner die member and said outer surface of said inner die member at said second end thereof and said portion of said inner surface of said outer die member adjacent said second

end of said inner die member defining an outflow port for applying said flowable material to said elongated product;

wherein the improvement comprises:

a centering element rotatably mounted within said outer die member, said centering element having a frusto-conical inner surface forming at least part of, and coextensive with, said frusto-conical inner surface of said outer die member and providing said outer die inner surface portion adjacent said second end of said inner die member and said outflow port, said centering element being rotatable around a second axis which extends at an oblique angle and intersects said first axis and said second axis being selected to provide concentric inner and outer surfaces of said outer die member and said inner die member at said outflow port in one rotational position of said centering element and non-concentric inner and outer surfaces at said outflow port in other rotational positions of said centering element without causing an interruption of said inner surface of said outer die member where uniform flow of the flowable material is modified.

5,286,184

INJECTION MOLDING APPARATUS HAVING TWO HOT RUNNER BLOCKS FOR PRODUCING A COMPOSITE ARTICLE

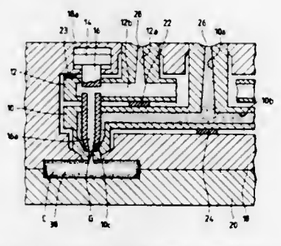
Toshio Nakayama, Hiroshima, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,443

Claims priority, application Japan, Apr. 15, 1991, 3-109827

Int. Cl.[5] B29C *45/16*

U.S. Cl. 425—130 **4 Claims**



1. An injection molding apparatus comprising:

a fixed mold (**18**) having a first hot runner block (**10**) and a second hot runner block (**12**) mounted therein, said fixed mold having a cylinder chamber (**18***a*) formed therein;

a movable mold (**20**), said movable mold (**20**) and said fixed mold (**18**) defining a cavity therein;

said first hot runner block (**10**) having a first sprue (**10***a*), a first hot runner (**10***b*) communicated with said first sprue, and a seat portion (**10***c*), said second hot runner block (**12**) having a second sprue (**12***a*), and a second hot runner (**12***b*) communicated with said second sprue;

a piston (**14**) fitted in said cylinder chamber which is formed in said fixed mold (**18**);

a valve member (**16**) connected to said piston (**14**) and extending through said second hot runner block (**12**), and fitted in said first hot runner block (**10**); and

said valve member (**16**) being movable between a hot runner-closing position where its distal end is pressed against said seat portion (**10***c*) and a hot runner-opening position where said distal end is spaced apart from said seat portion;

said valve member (**16**) having a resin passage (**16***a*) formed therein, one end of said resin passage (**16***a*) being in communication with said second hot runner (**12***b*), and another end thereof being in communication with said cavity (C), whereby when said distal end of said valve member (**16**) is held apart from said seat portion (**10***c*), said first hot runner (**10***b*) is in communication with said cavity (C), and when said distal end is pressed against said seat portion (**10***c*), communication between said first hot runner (**10***b*) and said cavity (C) is interrupted.

5,286,185

METHOD AND APPARATUS FOR CONTINUOUSLY SHAPING BAR-SHAPED BREAD

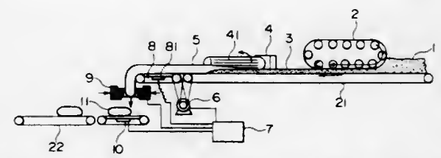
Yasunori Tashiro; Michio Morikawa; Torahiko Hayashi; Shigeo Uesawa, and Toru Watanabe, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Feb. 1, 1993, Ser. No. 12,073

Claims priority, application Japan, Mar. 30, 1992, 4-105498; Jun. 10, 1992, 4-176118; Jul. 30, 1992, 4-223290; Jul. 30, 1992, 4-223291

Int. Cl.[5] A21C *3/06, 5/08, 11/10*

U.S. Cl. 425—140 **6 Claims**



3. An apparatus for continuously shaping bar-shaped bread dough pieces, comprising:

a conveyor means for causing a mass of bread dough to travel thereon,

means for stretching the mass of bread dough conveyed on the conveyor means into a sheet of dough,

means for rolling the dough sheet to form a bar-shaped dough body,

means for continuously weighing each part of the bar-shaped dough body during a given distance over which the bar-shaped dough body passes on the conveyor,

means for storing the weights along with information regarding the positions of each part of the bar-shaped dough body,

means for calculating the length of the dough body that corresponds to a target weight, based on the obtained weights,

means for cutting a portion of the bar-shaped dough body which is hanging from one end of the conveyor, said cutting means including flat pressing surfaces, and

means for driving the cutting means based on the calculated length so that the desired length of each respective bar-shaped bread dough piece is obtained.

5,286,186

APPARATUS FOR INJECTION INTO A SELF-CLAMPING MOLD

Robert L. Brown, Hartville, and David E. Baxter, Ravenna, both of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Division of Ser. No. 751,353, Aug. 28, 1991, Pat. No. 5,183,605, which is a continuation-in-part of Ser. No. 621,675, Nov. 30, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,743

Int. Cl.[5] B29C *45/00*

U.S. Cl. 425—144 **11 Claims**

1. Apparatus for injecting molding material into an independent, self-clamping mold compressed under pressure, said apparatus comprising,

a support frame having spaced plates and support bars interconnecting said plates and a C-shaped opening formed in each of said plates for receiving a self-clamping mold,

an injector for injecting molding material into an internal molding cavity of a self-clamping mold under pressure and which is aligned with respect to the same self-clamping mold,

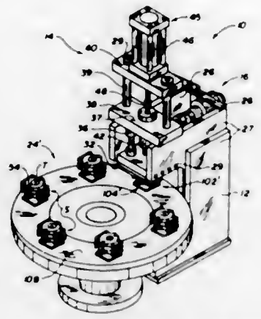
an extruder for providing molding material to said injector,

a temperature controller for controlling the temperature of said molding material, and

a lift mechanism supported on said frame and aligned with said injector for lifting engagement with a self-clamping mold, and engaging the same self-clamping mold with said

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aligned injector, said lifting mechanism includes a mold support aligned with said injector for engagement with the same self-clamping mold with a pressure necessary for application to a cross-sectional area of a sprue opening of the same self-clamping mold during injection of molding



material by said injector, said lift mechanism engaging the same mold with said injector with a force of less than 25 tones to resist forces applied to the self-clamping mold during injection of molding material into an internal molding cavity of the self-clamping mold by said injector.

5,286,187

METHOD FOR MOLDING SATURATED CRYSTALLINE POLYESTERS AND MOLDING EQUIPMENT THEREFOR

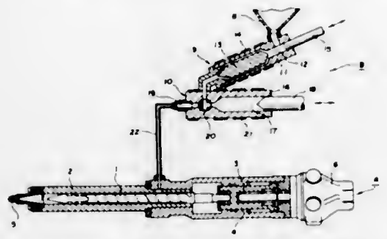
Hiroji Niimi; Takashi Satake, and Kunio Tomita, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 687,250, Apr. 18, 1991, abandoned, which is a division of Ser. No. 452,601, Dec. 19, 1989, Pat. No. 5,034,177. This application Dec. 23, 1992, Ser. No. 996,491

Claims priority, application Japan, Dec. 20, 1988, 63-321159; Dec. 20, 1988, 63-321160; Dec. 20, 1988, 63-321161; Dec. 20, 1988, 63-321162; Dec. 20, 1988, 63-321163

Int. Cl.[5] B29B *7/82;* **B29C** *45/18, 45/74, 47/80*

U.S. Cl. 425—205 **6 Claims**



1. An apparatus for molding a crystalline polyester resin having a crystallizing temperature Tc1, in ° C., into an article, said apparatus comprising:

a molding machine body for molding molten polyester resin into a desired shape; and

a starting resin feeder, operatively connected to said molding machine body, for supplying molten polyester resin to said molding machine body;

said molding machine body including a screw means for transporting said molten resin and a mold for receiving said transported molten resin, said screw means comprising, in sequential order, a feed section for receiving said molten resin, a compression section for compressing and kneading said molten resin and a metering section for feeding said molten resin to said mold;

said starting resin feeder comprising a drying hopper for heating said resin to a temperature below its melting point to dry said resin; a melting section, operatively connected to said drying hopper, for receiving dried resin and heating said dried resin to melt the dried resin substantially without adding mechanical shearing; and a quantitative feed section, operatively connected to said melting section, for quantitatively feeding molten resin to said feed section of said screw means, whereby the molded article has a crystallizing temperature Tc2, in ° C., where $Tc1-20<Tc2<Tc1$.

5,286,188

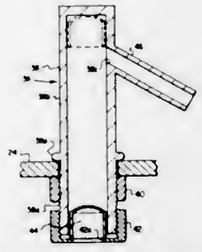
UNI-DIRECTIONAL ANTI-BACKSIFTING FLUIDIZATION NOZZLE AND A FLUIDIZED BED SYSTEM UTILIZING SAME

James D. Barkley, Boundbrook, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Sep. 11, 1992, Ser. No. 943,653

Int. Cl.[5] F23D *21/00*

U.S. Cl. 431—170 **36 Claims**



1. A fluidized bed system comprising an enclosure, means for introducing particulate material into said enclosure, a plate disposed in said enclosure and adapted to support said particulate material, a source of air, and at least one nozzle supported by said plate for receiving said air and directing said air through said plate and into said particulate material to fluidize same, said nozzle comprising a tubular portion for receiving air from said air source, and means for allowing the air to flow unobstructed through said tubular portion during operation of said system but preventing backflow of particulate material through said tubular portion when said system is not in operation.

5,286,189

DETACHABLE IGNITOR TIP FOR A BURNER ASSEMBLY

Charles T. Goss, 4207 Tanglewood Dr., Allison Park, Pa. 15101

Filed Feb. 16, 1993, Ser. No. 17,601

Int. Cl.[5] F23Q *7/12*

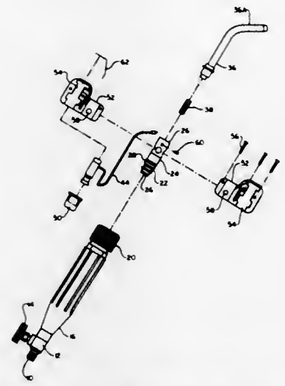
U.S. Cl. 431—255 **12 Claims**

1. A torch tip assembly including the combination of:

a burner tube having a gas discharge end for maintaining combustion of a combustible gas mixture conducted by the burner tube;

a back piece supporting a gas discharge nozzle for delivering a combustible gas to a mixing chamber formed in said back piece at the discharge end the nozzle, said mixing chamber being surrounded by a side wall having an opening therein to supply atmospheric air to the mixing chamber, means for removable attaching said back piece to said burner tube, said back piece including a passageway for discharging the combustible gas mixture formed therein to said burner tube;

an ignitor housing secured for support by walls of said mixing chamber, said ignitor housing including an upstanding housing portion presenting an end wall disposed oppositely to the burner tube when coupled to said back piece, said housing including an actuator button accessible in said end wall and operatively connected to a piezoelectric ignitor assembly supported in said housing to allow access thereto, a conductor wire connected to said piezoelectric ignitor assembly for extending from the housing through



the opening in the mixing chamber and thence along said burner tube to an anchor site, said ignitor housing surrounding said mixing chamber and including openings to supply atmospheric air to the opening in the mixing chamber; and

means to form a spark gap with said conductor wire for igniting the flow of combustible gas mixture conducted by said burner tube.

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JET BURNER CONSTRUCTION, HEATING APPARATUS UTILIZING THE JET, BURNER CONSTRUCTION AND METHODS OF MAKING THE SAME

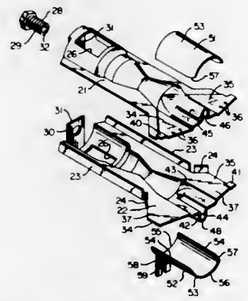
Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 698,942, May 13, 1991, Pat. No. 5,193,273, which is a division of Ser. No. 456,722, Dec. 26, 1989, Pat. No. 5,055,609. This application Aug. 28, 1992, Ser. No. 937,536

The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.

Int. Cl.[5] F23D *14/58*

U.S. Cl. 431—286 **20 Claims**



1. In a jet burner construction comprising a burner body means having a chamber means therein and having an inlet means leading to said chamber means for directing fuel from a fuel source therein and an outlet means leading from said chamber means and defining an outlet opening means through which said fuel is adapted to issue from said chamber means to burn externally to said burner body means said outlet opening means having a central opening part and a plurality of spaced apart opening portions interconnected thereto and radiating outwardly therefrom whereby flows of fuel respectively issuing out of said portions and said central part of said outlet opening means merge together in a turbulent manner externally of said outlet opening means, the improvement wherein said burner construction comprises flame retainer means carried by said body means and having outer edge means extending beyond said outlet opening means of said body means to prevent flows of induced air from being created between the flows of fuel issuing from said radiating portions of said outlet opening means.

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ONE-PIECE CAST RESIN DENTAL DOWEL WITH VISIBLE HORIZONTAL INDEX

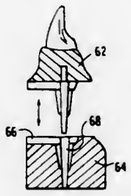
Melvin D. Poveromo, 1160 Kane Concourse, Bay Harbor Islands, Miami Beach, Fla. 33154

Continuation-in-part of Ser. No. 809,336, Dec. 18, 1991, Pat. No. 5,222,891. This application Dec. 15, 1992, Ser. No. 990,522

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] A61C *19/00*

U.S. Cl. 433—74 **10 Claims**



1. A one-piece molded non-metallic plastic dental dowel-pin in combination with a tooth die for use in a finally trimmed dental model that was made by a two-pour process, said combination comprising:

a tooth die made by a first pour and having an outer periphery and an upper surface and for use with a base model made by a second pour and having a groove therein, said dowel-pin being adapted to be fixed to said tooth die and to be removably inserted in a bore in said base model; said dowel-pin comprising:

a fastening end-portion extending in a first direction and adapted to be fixed to said tooth die;

an elongated cylindrical free end-portion which has an outer surface, which has a length extending in a direction opposite to said first direction, and which is adapted to be removably inserted in said base model; and

an integral elongated locking-and-indexing arm portion having a first index-segment extending from a junction of said fastening and free end-portions in a transverse direction relative to said first and opposite directions; said arm portion matching and being adapted to be received in said groove in said base model when said free end-portion is inserted in said base model; said first index-segment having a length which is sufficiently long to extend along said upper surface and outwardly beyond said outer periphery of said tooth die so that, after the dental model has been finally trimmed, an outer tip of said first index-segment is visible in an outer surface of said base model;

wherein said arm portion has a second index-segment which extends in a direction opposite to that in which said first

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index-segment extends, and which, after the dental model has been finally trimmed, is buried inside the dental model and is invisible on the outer surface of the dental model;

wherein said elongated free end-portion has at least two longitudinally extending integral ribs which project substantially transversely outwardly in opposite directions from said outer surface of said elongated free end-portion, and each of which has a transverse width and a longitudinal length; and

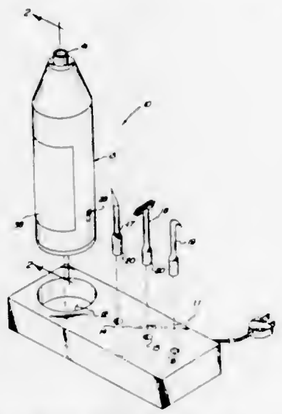
wherein said length of said first index-segment varies inversely with one of (1) said transverse width and (2) said longitudinal length in order to prevent rotation of said tooth die when inserted in said base model.

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ORAL IRRIGATION APPARATUS

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Filed Jun. 19, 1992, Ser. No. 901,573
Int. Cl.[5] A61G *17/02*
U.S. Cl. 433—80 4 Claims



1. An oral irrigation apparatus, comprising,

a support base, the support base including a first cavity, and a tool member having a tool member floor received within the first cavity,

and

the support base having at least a second cavity mounting a first tool head therewithin, the first tool head having a tool head base defined by a first diameter, and the tool member defined about a predetermined axis, wherein the tool member includes a tool member resilient socket having an integral diameter equal to the first diameter to receive the tool member base therewithin, wherein the tool member socket is coaxially aligned with the axis at an upper distal end of the tool member, and

the first tool head includes a fluid delivery conduit directed coextensively through the first tool member, and at least one fluid exit port directed through the first tool head into fluid communication with the fluid delivery conduit, and a tool head door directed into the first tool head, and a fluid mixing chamber positioned within the first tool head in adjacency relative to the tool head door, the fluid mixing chamber having a chamber diameter and the fluid delivery conduit having a conduit diameter less than the chamber diameter, and at least one cylinder means arranged for reception within the fluid mixing chamber for imparting a predetermined additive into fluid directed through the fluid delivery conduit.

5,286,193

ENDODONTIC GUTTA PERCHA PLACEMENT

James B. Roane, 707 SW. 24th St., Norman, Okla. 73069

Filed Oct. 30, 1991, Ser. No. 785,043
Int. Cl.[5] A61G *5/02*; A61C *5/02, 5/04*
U.S. Cl. 433—81 12 Claims



1. A prefilled disposable apparatus for placing filling material in an endodontically prepared root canal, comprising:

a hollow disposable carrier means for storing said filling material prior to use and for carrying said filling material to a position adjacent an opening to said root canal for displacement into said root canal, said carrier means being a segment of straight cylindrical tubing having an open unobstructed first end and an open unobstructed second end and having a constant diameter cylindrical outer surface extending from said first end to said second end, and having a constant diameter carrier bore defined through said tubing from said first end to said second end; and

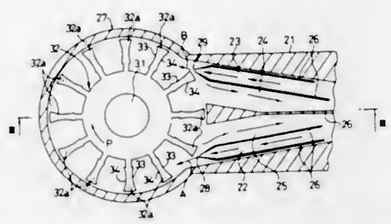
a filling material including gutta percha stored in said carrier bore.

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DENTAL HANDPIECE HAVING TURBINE ROTATABLE IN REVERSE DIRECTION

Hiroshi Horiuchi, Sendai, and Sosaku Kawata, Kanuma, both of Japan, assignors to Nakanishi Dental Manufacturing Co., Ltd., Kanuma, Japan

Filed Nov. 10, 1992, Ser. No. 974,861
Claims priority, application Japan, Nov. 12, 1991, 3-295930
Int. Cl.[5] A61C *1/05*
U.S. Cl. 433—132 7 Claims



1. A dental handpiece having a turbine rotatable in reverse, comprising:

a main handpiece body,

a turbine head mounted at a distal end of the main handpiece body,

a plurality of turbine vanes for rotatably driving a dental tool removably mounted within said turbine head,

a first air supply passage for ejecting compressed air to one surface of each of said turbine vanes for rotating said turbine vanes in one direction, said first air supply passage having a first nozzle-shaped distal end,

a second air supply passage for ejecting compressed air to the other surface of each of said turbine vanes for rotating said turbine vanes in the other direction, said second air supply passage having a second nozzle-shaped distal end, and

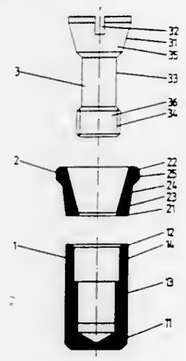
an air discharge passage for discharging said compressed air, said air discharge passage having a larger cross-sectional area than those of said respective first and second nozzle-shaped distal ends of both said first and second air supply passages.

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SCREW ELEMENT FOR THREADEDLY CONNECTING A MULTI-PART DENTAL PROSTHESIS

Volkhard-Hagen Clostermann, Hagen, Fed. Rep. of Germany, assignor to ZL Microdent-Attachment GmbH, Breckerfeld, Fed. Rep. of Germany

PCT No. PCT/DE90/00851, § 371 Date Oct. 30, 1991, § 102(e) Date Oct. 30, 1991, PCT Pub. No. WO91/08713, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 10, 1990, Ser. No. 741,397
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1989, 8914415[U]
Int. Cl.[5] A61C *13/12, 13/225, 8/00*
U.S. Cl. 433—172 1 Claim



1. A screw element for connecting a multi-part dental prosthesis, comprising:

(a) a hollow sleeve having

(1) a terminal edge surrounding an open end of the sleeve;

(2) a first, internally threadless length portion extending from said end;

(3) a second length portion adjoining said first length portion and being remote from said open end;

(4) a thread provided in said second length portion;

(b) a locknut being separate from said hollow sleeve; said locknut having

(1) opposite first and second open ends;

(2) a passage extending from said first to said second open end and having a conical wall tapering towards said second open end;

(3) a thread provided in said conical wall along a length portion thereof in a zone of said second end; and

(4) a terminal edge defining said second open end; and

(c) a screw having

(1) a screw head provided with a conical outer wall for complementally fitting into the conical wall of said locknut;

(2) a first, threadless length portion extending from said screw head;

(3) a second length portion adjoining said first length portion of said screw and being remote from said screw head; and

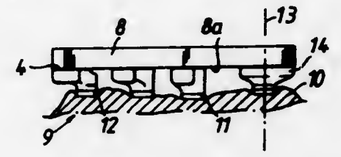
(4) a thread provided in said second length portion of said screw; said thread of said screw matching with said thread of said locknut and with the thread of said sleeve; in an untightened state in which said thread of said screw has passed beyond said thread of said locknut, said screw is slidable in and is held captive by said locknut between said second length portion of said screw and said screw head; and in a tightened state said thread of said screw is in a threaded engagement with said thread of said sleeve, and said conical wall of said screw head is in engagement with said conical wall of said locknut and said terminal edge of said locknut is pressured against said terminal edge of said sleeve.

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SYSTEM INDIVIDUALLY ADAPTABLE TO ELEMENTS IMPLANTED IN THE DENTINE AND THE LIKE

Isidor Brajinovic, Gothenborg, and Stig Wennberg, Angered, both of Sweden, assignors to Nobelpharma AB, Gothenborg, Sweden

Filed Feb. 28, 1992, Ser. No. 842,323
Claims priority, application Sweden, Mar. 1, 1991, 9100603
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 13 Claims



1. A bridge system which is individually adapted to elements implanted in dentine, joints, or the like and/or to parts secured in the implanted elements, said bridge system comprising at least two module units which are attachable to the implanted elements or parts and have first surfaces for attachment to the elements and second surfaces separate from the first surfaces, and an elongate, curved member which is securable in the module units at said second surfaces, said elongate, curved member being designated with a profile and made of a material having a quality of titanium and a tissue affinity equivalent to that of titanium, said profile being designed in a cross-section with a plane underside adapted to be applied against said second surfaces and with means projecting from said underside to facilitate holding of a prosthesis part (tooth/tooth part), abutment or the like which is being secured in the bridge, said material and said profile permitting bending without essentially impairing the strength of the elongate element in the bridge.

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Patent Not Issued For This Number

5,286,198

DENTURE APPARATUS

Larry W. Barnes, 120 N. Mingo Rd., Tulsa, Okla. 74115

Filed Aug. 17, 1992, Ser. No. 930,362
Int. Cl.[5] A61C *13/12, 13/225*
U.S. Cl. 433—179 11 Claims

1. A denture apparatus which comprises:

(a) an upper denture;

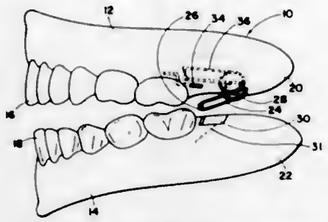
(b) an opposed lower denture;

(c) coil at least one spring means; and

(d) at least one leg extending from said at least one coil spring means, said leg and said coil spring means attached

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only to said upper denture, said at least one leg adapted to contact said lower denture



when said dentures are brought in proximity with each other in order to urge said lower denture away from said upper denture.

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ELECTROMECHANICAL TRANSDUCER

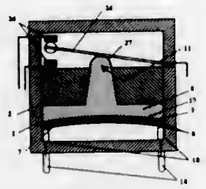
Siegfried Kipke, Horber Gaessle 13, 7240 Horb-Nordstetten, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,647

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4133000

Int. Cl.[5] **G09B** *21/00*; **H01L** *41/04*

U.S. Cl. 434—114 **8 Claims**



1. An electromechanical transducer comprising at least one piezoelectric transducer element (5) structured to convert an electrical signal applied to said at least one piezoelectric transducer element into a reversible deformation of said at least one piezoelectric transducer element and also convert a force applied to said at least one piezoelectric transducer element into an electrical signal; a pressurized chamber (3) with an opening (11), said at least one piezoelectric transducer element (5) being located in said pressurized chamber (3); a fluid (4) filling said pressurized chamber; means (7) for making an electrical connection to said at least one piezoelectric transducer element for applying a voltage to said at least one piezoelectric transducer (5) to deform said at least one piezoelectric transducer element (5) so as to force a portion of said fluid through said opening of said pressurized chamber (3) and also for detecting a change in an electrical property of said at least one piezoelectric transducer element in response to a change in a pressure applied to said at least one piezoelectric element (5); and an operating element consisting of an elastically deformable wall (27) covering said opening (11).

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ROTARY KILN

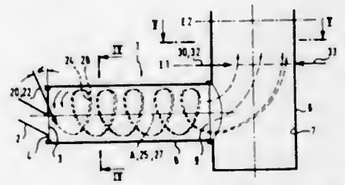
Dieter Wurz, Baden-Baden; Arvid Christmann, Pulheim; Gebhard Schetter, Krefeld; Wilfried Schings, Oberhausen; Dietmar Schneider, Dusseldorf, and Rüdiger Trumpf, Essen, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Anlagen GmbH, Oberhausen, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,401

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1992, 4224571

Int. Cl.[5] **F27B** *7/36*

U.S. Cl. 432—105 **21 Claims**



1. A rotary kiln with primary air feed at the end wall (4) thereof comprising:

at least two primary air nozzles (20, 22) that extend through spaced-apart portions of the end wall (4) and are directed into a rotary portion (8) of the kiln downwardly toward a fuel bed (10) thereof for generating two oppositely directed vortices (24, 26) within the rotary portion (8), the axes of rotation (25, 27) of said vortices extending substantially parallel to the axis (A) of the rotary portion (8), so that said vortices generate a central ascending flow above the fuel bed (10) and thereby promoting the thermal convection-induced motion (arrow T) of combustion gases.

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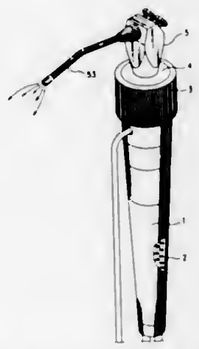
AIR DRYER DEVICE FOR A DENTAL 3-WAY SYRINGE

Chih-Ming Yu, No. 28, Kung Kuan St., Wen Shan Area, Taipei, Taiwan

Filed Jun. 21, 1993, Ser. No. 79,035

Int. Cl.[5] **A61G** *17/02*

U.S. Cl. 433—80 **1 Claim**



1. An air dryer device comprising a tapered cylindrical casing detachably connected to a dental 3-way syringe by a screw connector and a screw socket, and an air dryer unit fastened inside said tapered cylindrical casing for drying air passing through, said cylindrical casing comprising a first section, a second section, a third section, a fourth section, and a fifth section respectively connected in series through screw joints, said first section being disposed at one end, said fifth section being disposed at an opposite end and connected to said screw connector by said screw socket, said first section comprising a first air intake hole and a second air intake hole respectively made through a blocked bottom edge thereof, said fifth section comprising a first air outlet hole and a second air outlet hole respectively made through a blocked bottom edge thereof and a side hole on a peripheral wall thereof, the first air outlet hole of said fifth section being connected to the air intake port of the dental 3-way syringe by a tubing, the side hole on said fifth section being for inserting a water supply tubing for allowing the water supply tubing to be connected to the water intake port of the dental 3-way syringe, the air dryer unit comprising a lower wire gauze fastened between said first section and said second section, an intermediate wire gauze fastened between said second section and said third section, an upper wire gauze fastened between said third section, and said fourth section, a layer of activated aluminum particles filled in said second section between said lower wire gauze and said intermediate wire gauze, a layer of activated carbon filled in said third section between said intermediate wire gauze and said upper wire gauze, and an air filter board fastened inside said fourth section and covered over said upper wire gauze, said second air intake hole and said second air outlet hole being respectively sealed during the operation of the air dryer device, or opened for pumping a current of dry and hot air through said air dryer unit to remove moisture away as said tapered cylindrical casing is detached from the dental 3-way syringe.

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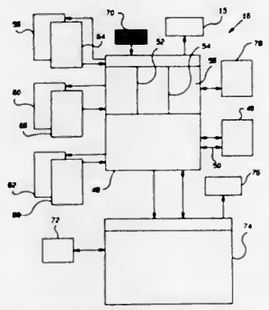
TRAINER USING VIDEO PHOTOGRAPHS AND OVERLAYS FOR RECONFIGURABLE HARDWARE SIMULATION

Victor S. de Gyarfas, and Randy Saunders, both of Upland, Calif., assignors to Hughes Training, Inc., Arlington, Tex.

Continuation of Ser. No. 605,621, Oct. 30, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 995,569

Int. Cl.[5] **G09B** *9/00*

U.S. Cl. 434—43 **20 Claims**



1. A vehicle simulation system for training operators of a hardware system comprising:

video storage means for storing and transmitting a plurality of static images, each consisting of a different view of the hardware system;

graphic generator means for generating overlay images simulating the appearance of manipulable controls in the hardware system in a plurality of states;

overlay processor coupled to the video storage means and to the graphics generator for combining the overlay images with the static images, the overlay images of a given manipulable control being superimposed over a corresponding manipulable control in the static image;

video monitor coupled to the video storage means, graphics generator means and overlay processor means for displaying said static and overlay images;

user interface coupled to said graphics generator means and responsive to user input for adjusting the state of said overlay images of manipulable controls; and

host computer coupled to the video storage means, graphics generator means and overlay processor for controlling the sequence and state of the display of the static and overlay images to simulate a plurality of views of the hardware system with the manipulable controls in a plurality of states.

17. A reconfigurable system for training operators for a variety of different hardware items in an operating environment, each hardware item having manipulable controls and displays which operate in a plurality of states, said system comprising:

an operator training station comprising video signal storage means for storing and transmitting a plurality of static images of said hardware in the operating environment, each consisting of a different view of the hardware system, video monitor means coupled to said video storage means for displaying said image of said hardware in the operating environment, graphics generator means for generating overlay images simulating the appearance of manipulable controls in a plurality of manipulative states, overlay processor coupled to the video storage means and to the graphics generator for combining the overlay images with the static images, the overlay images of a given manipulable control being superimposed over a corresponding control in the static image;

and a host computer coupled to said video signal storage means, said video monitor, and said graphics generator means for controlling the display of said images on said video monitor;

the system further comprising:

a graphics authoring work station coupled to said operator training station for authoring and updating said overlay image; and

a database authoring work station coupled to said operator training station for authoring and updating software, said software for defining a plurality of training programs, each program consisting of a sequence of said static images of said hardware in an operating environment and said overlay images of said plurality of manipulative states.

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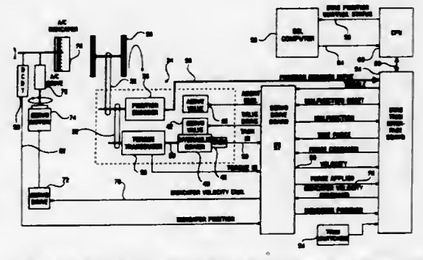
SIMULATING HORIZONTAL STABILIZER TRIMMING IN AN AIRCRAFT

John J. Fuller, Binghamton; Charles J. Bratt, Johnson City; Wayne Blackwell, Chenango Forks, and Paul E. Mueller, Greene, all of N.Y., assignors to AAI Microflite Simulation International, Binghamton, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,137

Int. Cl.[5] **G09B** *9/00*

U.S. Cl. 434—45 **4 Claims**

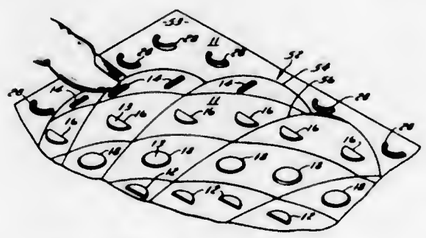


1. An apparatus for simulating horizontal stabilizer trim control in an aircraft, comprising:

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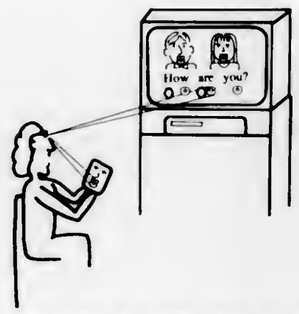
a) pilot-actuated control means for moving simulated horizontal stabilizers, said pilot-actuated control means being movable through a range of travel by an applied force from a pilot;
b) counter force producing means connected to said pilot-actuated control means for producing a force simulating aerodynamic forces resisting movement of said simulated horizontal stabilizers;
c) torque sensing means operatively connected to said pilot-actuated control means and said counter force producing means for providing an output signal related to said force applied by said pilot to said pilot-actuated control means;
d) a transducer operatively connected to said pilot-actuated control means, said counter force producing means and said torque sensing means for producing an output signal related to a position within said range of travel of said pilot-actuated control means;
e) stabilizer position indicating means operatively connected to said pilot-actuated control means, said counter force producing means, and said torque sensing means for indicating a position of said simulated horizontal stabilizers, said stabilizer position indicating means generating a signal related to an indicated position; AND
f) processing means operatively connected to said pilot-actuated control means, said counter force producing means, said stabilizer position indicating means, said transducer and said torque sensing means for receiving signals from said torque sensing means, said transducer and said stabilizer position indicating means, and, in response thereto, generating output signals for controlling simulated aerodynamic forces against said pilot-actuated control means, whereby a pilot can be trained to trim said horizontal stabilizers of an aircraft.

5,286,204
TACTILE SYMBOLS FOR COLOR RECOGNITION
Michael J. Minardi, Tampa, Fla., assignor to Touch Books, Inc., Tampa, Fla.
Continuation of Ser. No. 754,323, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 630,343, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 414,142, Sep. 28, 1989, abandoned. This application May 4, 1992, Ser. No. 879,526
Int. Cl.[5] G09B *21/00*
U.S. Cl. 434—113 **28 Claims**



1. A device for symbolically encrypting color information to convey said color information to a blind or visually-impaired individual by touching a symbol uniquely indicative of a predetermined color, comprising a field defined within a surface bearing said color information and a symbol for tactile decryption by said individual wholly contained within said field, wherein said symbol has a peripheral shape uniquely identifying said predetermined color, wherein said symbol is developed from an array of primary geometric shapes corresponding to primary colors and further wherein said peripheral shape indicative of color variations is derived by a geometric addition of said shapes congruous with color addition of said primary colors.

5,286,205
METHOD FOR TEACHING SPOKEN ENGLISH USING MOUTH POSITION CHARACTERS
Ken K. Inouye; Sidney C. Sheres, and Luna M. Inouye, all of 900 Wilshire Blvd., Ste. 702, Los Angeles, Calif. 90017
Filed Sep. 8, 1992, Ser. No. 942,021
Int. Cl.[5] G09B *19/06*
U.S. Cl. 434—157 **4 Claims**

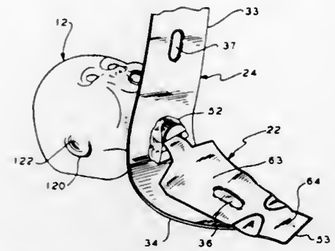


1. A method of teaching spoken English to a non-English speaking student using a mirror and audio/video presentation by an audio/video presentation means containing recorded speech together with close-up views of a model speaking English, comprising the steps of:
a. instructing said student to watch said views presented by said audio/video presentation means while comparing the shape of the model's mouth to the shape of the student's own mouth as viewed by said student in said mirror;
b. instructing said student to view a video presentation of eight mouth position characters which indicate respective mouth movements, said mouth position characters being displayed in sequences that correspond to the movements of the mouth during speech, said mouth position characters displayed with accompanying text and placed beneath the letters of the text that symbolize the sound associated with the movement, said mouth position characters including: "Open", "Triangle", "Base", "Pucker", "O-shape", "Lips-in", "Bottom-lip-in", and "Closed", and;
c. instructing said student to view a video presentation of eight contact points demonstrating where the tongue touches the teeth and gums when English target sounds are spoken.

5,286,206
CPR MANIKIN AND DISPOSABLE LUNG BAG
Herbert J. Epstein, Stanhope; John W. Reilly, New Vernon, both of N.J.; Richard A. Brault, and Dianne B. Croteau, both of Toronto, Canada, assignors to Actar Airforce, Inc., Canada
Filed Feb. 19, 1993, Ser. No. 20,203
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—265 **21 Claims**

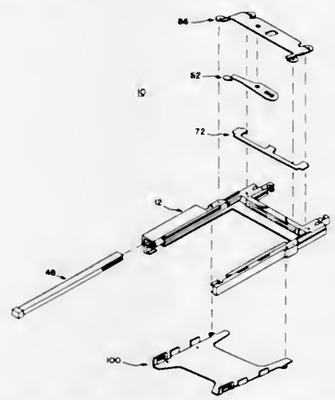
21. A disposable lung for use with a CPR manikin, comprising:
an inflatable bag having open and closed ends, said manikin including a transverse portion of reduced size for facilitating attachment of said open end of said bag to said manikin, said inflatable bag including first and second chambers in fluid communication, said first chamber proximate said open end and for simulating the lungs of a person and said second chamber proximate said closed end and for simulating the stomach of a person, and said inflatable bag

provided with an opening extending transversely therethrough for facilitating the positioning of said inflatable



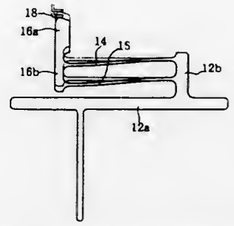
bag with respect to a predetermined portion of said manikin.

5,286,207
MEMORY CARD CONNECTOR
Robert G. McHugh, Evergreen, Calif., assignor to Foxconn International, Inc., Sunnyvale, Calif.
Filed Dec. 21, 1992, Ser. No. 994,617
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—64 **20 Claims**



1. A memory card connector assembly for use with at least a memory card including:
two stacked upper and lower connectors each including:
a generally H-shaped housing comprising a main body through which a plurality of contacts extend;
two parallel side guide arms positioned at two ends of the main body;
a first recess formed among two front portions of the side guide arms and the main body for reception of an alignment comb and/or an auxiliary socket therein; and
a second recess formed among two rear portions of the side guide arms and the main body for reception of the memory card; wherein
said alignment comb is positioned in the first recess of the upper connector for horizontal alignment of the contacts of the upper connector and said auxiliary socket is positioned in the first recess of the lower connector for vertical alignment of the contacts of the upper connector.

5,286,208
CONTACT IN ELECTRIC PART SOCKET
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electric Co., Ltd., Tokyo, Japan
Filed Feb. 4, 1992, Ser. No. 831,573
Claims priority, application Japan, Feb. 19, 1991, 3-103656
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—72 **5 Claims**



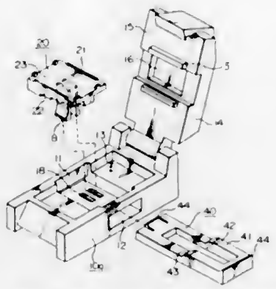
1. A contact for use in a socket for receiving an electric part, said contact comprising:
a first spring portion;
a second spring portion spaced apart from said first spring portion;
a basal end connecting portion connected between basal ends of said spring portions:
a distal end connecting portion connected between distal ends of said spring portions and extending along a connecting line perpendicular to a median line between said spring portions;
a terminal portion connected to the basal end connection portion and adapted to be brought into contact with a wiring board or the like; and
a contact end portion on said distal end connecting portion and extending from said distal end connecting portion in the direction of said connecting line and perpendicular to said median line and having a contact point on the free end thereof spaced from said distal end connecting portion in the direction of said connecting line and adapted to be contacted by a terminal of an electric part inserted into the socket for moving said contact end portion substantially in the direction of said connecting line toward said distal end connecting portion for distorting said first and second spring portions and completing electrical contact between said contact point and the terminal under the resiliency of the distorted first and second spring portions, whereby said contact point moves substantially parallel to said connecting line.

5,286,209
IC SOCKET
Hiroshi Nakagawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1992, Ser. No. 922,496
Claims priority, application Japan, Aug. 2, 1991, 3-193962
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—72 **7 Claims**

1. An IC socket on which an IC having a package and a plurality of outer leads extending from the package is mounted for establishing electrical connections with the IC comprising:
a main body;
a receiving base disposed in the main body, having a supporting surface for supporting an IC package with a plurality of leads extending beyond the supporting surface, and movable within the main body perpendicular to the supporting surface;
electrical connection means for making electrical connections to leads of an IC having a package supported by the supporting surface;
height adjustment means for changing the height of the

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supporting surface relative to the main body in a plurality of steps, the height adjustment means including a stepped bottom surface on the receiving base and a sliding member disposed in the main body movable parallel to the supporting surface and having a stepped top surface and an



oblique surface for abutment with the stepped bottom surface; and

pressing means for pressing the outer leads of an IC package supported on the supporting surface against the electrical connection means.

5,286,210

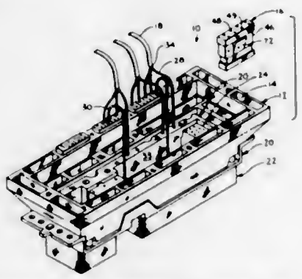
CONNECTOR INTERFACE ASSEMBLY AND METHOD

Jan A. Kilsdonk, Corona; Harold J. Toppen, Santa Ynez, both of Calif., and David H. Blyther, Whidbey Island, Wash., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 17, 1992, Ser. No. 930,801

Int. Cl.[5] H01R *13/648, 13/518*

U.S. Cl. 439—95 **21 Claims**



1. A connector interface assembly, comprising:

a module retainer block for mounting on a connector, said block having a central portion, said block having at least one receptacle therein, said at least one receptacle positioned between a peripheral portion of said block and said central portion;

a module housing for insertion into said at least one receptacle;

at least one first electrical contact mounted in said module housing for electrical connection of a conductor thereto, said at least one receptacle positioned at a different level than said central portion in a direction of orientation of said conductor when said conductor is electrically connected to said at least one first electrical contact;

a bus bar mounted in said module housing, said bar electrically connected to said at least one electrical contact;

a grounding means for grounding the conductor thereto.

5,286,211

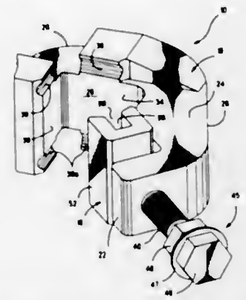
GROUND CONNECTOR

Gleo D. P. McIntosh, Scarborough, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 29, 1993, Ser. No. 11,021

Int. Cl.[5] H01R *4/30*

U.S. Cl. 439—100 **19 Claims**



1. A ground connector for connecting a conductor along a portion of the length of the conductor to a post, comprising:

a body having a first end portion and a second end portion joined by a middle portion, the portions being bounded by generally opposing side surfaces, the first end portion having a seat profiled for receiving the post therein, the seat having a plurality of recesses to receive the portion of the conductor to be connected with the post that are accessible to the portion of the length of the conductor to be received therein from along one of the side surfaces, whereby the portion of the conductor is positioned in one of the recesses without requiring access to an end of the conductor; and

a clamping mechanism movable between an engaged position where the post is held tightly in the seat and against the portion of the conductor received within the recess and a disengaged position away from the post where the connector disengages both the post and the conductor.

5,286,212

SHIELDED BACK PLANE CONNECTOR

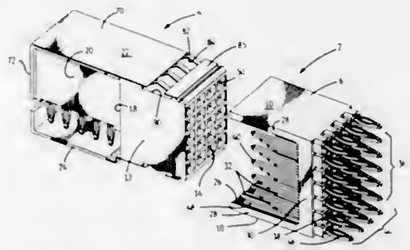
Johannes M. Broeksteeg, Oss, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 8, 1993, Ser. No. 27,992

Claims priority, application United Kingdom, Mar. 9, 1992, 9205087.1

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—108 **3 Claims**



1. A high density shielded backplane connector, comprising:

a first insulative housing for mounting to a mother board comprised of a header having two thin upstanding side walls, said header having a plurality of signal contacts within said header for mating with complementary contacts in a complementary connector, said thin sidewalls having strengthening ribs on an inside surface to ridify said upstanding sidewalls, a plurality of grounding tabs intermediate at least some of said strengthening ribs, and

a shielded daughter board electrical connector adapted to electrically mate with said mother board electrical connector, said daughter board connector comprising an insulative housing having a plurality of signal contacts adapted to mate with said mother board signal contacts, said daughter board connector further comprising an upper and lower shield member positioned over outer side walls of said daughter board housing, each said shield member including an outwardly projecting kink along a front edge thereof, thereby forming a ground shield contact for mating with the grounding tabs in said header, said ground shields each including openings on opposite sides of said ground shield contacts, said openings thereby forming a passage to receive said strengthening ribs with said ground shield contacts projecting between said ribs to make electrical contact with said header ground contacts.

5,286,213

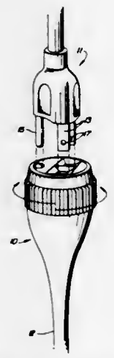
LOCKING RECEPTACLE

Raymond Altergott, 5110 N. Kildare Ave., Chicago, Ill. 60630, and William E. Kummetz, 1239 Old Mill Ln., Elk Grove, Ill. 60007

Filed Jan. 27, 1993, Ser. No. 9,981

Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—139 **6 Claims**



1. A female electrical receptacle for receiving a male receptacle having blade type terminals and said terminals defining depressions proximate the end of a broad side of said terminal blades, said female receptacle comprising:

a receptacle housing;

a terminal block pivotally mounted in said housing for relative rotation with respect to said housing and having a top surface for receiving a pair of terminal blades;

at least one pair of terminal contacts located within said terminal block for contacting said pair of terminal blades; a nub located on at least one of said terminal contacts for engaging a depression in the broad side of said terminal blade;

a ramp formed by said housing and cooperating with said terminal contact to urge said terminal contact into contact with said terminal blade and said nub into engagement with said depression when said terminal block is rotated relative to said housing; and,

a supply contact arranged to electrically contact one of said terminal contacts when said terminal block is rotated to urge said terminal contact into contact with said terminal blade.

5,286,214

MEMORY CARD CONNECTOR

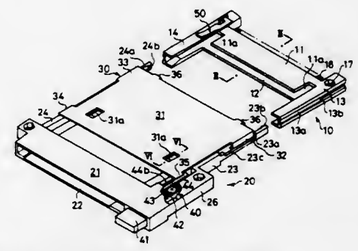
Hisafumi Takahashi, Tokyo, Japan, assignor to Kel Corporation, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 996,895

Claims priority, application Japan, Dec. 27, 1991, 3-113365[U]

Int. Cl.[5] H01R *13/633*

U.S. Cl. 439—159 **16 Claims**



1. A memory card connector comprising:

frame means providing a memory card receiving compartment having a front end formed with an elongate memory card receiving mouth, a rear end with mateable, electrical connecting means extending thereacross, and memory card guiding means extending rearward in a memory card insertion direction away from the mouth towards the electrical connecting means;

a memory card extraction plate having a thin, substantially planar body portion and memory card engaging hook means extending therefrom, means mounting the extraction plate on the frame for reciprocal movement in the insertion direction with the body portion bridging the compartment and with the hook means extending into the compartment, aligned for engagement with a mating end of a memory card received therein;

an ejection mechanism located on a lateral side of the guide frame adjacent and in substantially coplanar relation with the mouth comprising an ejection button exposed at the front of the frame, pinion means, and driving and driven rack means operatively connected with the ejection button and the extraction plate, respectively, and meshing with the pinion means in opposite rotational senses whereby

insertion of the memory card, mating end leading, through the mouth into the compartment brings the mating end, guided by the guide means, into mating engagement with the electrical connecting means to establish electrical connection therewith and depression of the ejection button actuates the driving rack to rotate the pinion means moving the driven rack and thereby the extraction plate forwards with the hook means engaging the mating end of the memory card to pull the memory card forwards out from mating engagement with the electrical connection means permitting manual withdrawal of the memory card from the compartment.

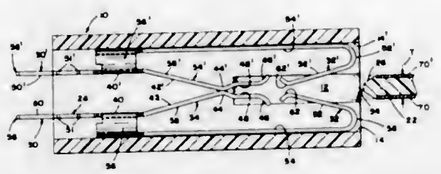
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5,286,215

MAKE-BEFORE-BREAK PC BOARD EDGE CONNECTOR

James D. Dewey, Plymouth; John M. Stasny, St. Paul; George B. Pfeffer, Minnetonka, and Ernest R. Beaudet, Brooklyn Park, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Oct. 15, 1992, Ser. No. 961,498
Int. Cl.[5] H01R 29/00
U.S. Cl. 439—188 4 Claims



1. An edge connector for receiving an edge portion of a printed circuit board of predetermined thickness, said edge connector comprising:

first and second contacts disposed as an opposing pair with each of said contacts formed of electrically conductive material;

each of said first and second contacts including an entrance end, an intermediate portion and a termination end;

each of said first and second contacts including first and second, respectively, normally closed spring contacts disposed in said intermediate portion, said first and second normally closed spring contacts each having first and second, respectively, spaced apart body portions and first and second, respectively, spring portions integrally formed with said first and second, respectively, body portions, said first and second normally closed spring portions resiliently biased into electrical contact;

each of said first and second contacts further including first and second, respectively, terminating members disposed at said termination end and electrically connected to said first and second, respectively, body portions;

each of said first and second contacted further including first and second, respectively, normally open spring contacts disposed at said entrance end, said first and second normally open spring contacts including first and second, respectively, support portions connected to said first and second, respectively, body portions and further including first and second, respectively, open spring portions disposed in spaced apart relation with a spacing selected to be less than said predetermined thickness;

said normally closed spring contacts and said normally open spring contacts mutually aligned in colinear alignment for an edge of a printed circuit board to be inserted into said edge connector with a location on said edge first passing between said first and second open spring portions and making electrical contact with said open spring portions and with said location upon further insertion of said edge, passing between and separating said first and second normally closed spring portions.

5,286,216

RETROFIT SYSTEM FOR ENERGY EFFICIENT LIGHTING

George A. Volz, 2373 NW. Johnson, Portland, Oreg. 97210

Filed Aug. 10, 1992, Ser. No. 929,184
Int. Cl.[5] H01R 33/02
U.S. Cl. 439—236 8 Claims

1. An energy efficient retrofit lighting system for retrofitting a standard incandescent lamp receiving socket to receive only an energy efficient light component, said system comprising:

an incandescent lamp receiving socket, a standardized thread provided on the interior of said socket;

an adaptor, external threads provided on said adapter exterior mateable with the interior threads of said socket, said adapter threadably installable in said socket, a connector provided on said adapter separate from said external threads;

an energy efficient lighting component including a power unit and an energy efficient lamp, a connector provided on said component mateable with the connector of said



adapter for removably mounting said component to said adapter, said connector of said adapter being non-mateable with the standard threads of an incandescent lamp; and

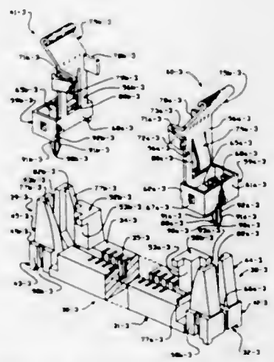
a lock mechanism, said lock mechanism cooperatively permitting installation of said adapter in said socket and locking said adapter in said socket to prevent removal of said adapter from said socket.

5,286,217

ELECTRICAL CONNECTOR WITH IMPROVED LATCH MECHANISM

Chao J. Liu, Yuan Lin; Ching-ho Lai, Tu Cheng Hsiang; Jeff Chen, Shin-Jwu, all of Taiwan; Sidney Lu, Sunnyvale, Calif., and Ton-Yo Chien, Pan Chiao, Taiwan, assignors to Foxconn International, Sunnyvale, Calif.

Filed Aug. 15, 1991, Ser. No. 745,609
Int. Cl.[5] H01R 13/62
U.S. Cl. 439—326 39 Claims



1. An assembly for releasably securing a first circuit board comprising:

(A) a respective first latch and a respective second latch, each of said respective latches including

(1) a respective main body portion,

(2) a respective latch lug extending from said respective main body portion, each said respective latch lug including a respective cam surface inclined relative to said respective main body portion and a respective lock

surface substantially perpendicular to said respective main body portion, and

(3) a respective upstanding sleeve mounting member extending from said respective main body portion and including at least two respective retaining barbs extending into respective interior portions thereof;

(B) an in-line housing defining

(1) an elongated slot,

(2) a first support post disposed at one end of the slot and a second support post disposed at an opposite end of the slot, each of the respective support posts including

(a) a respective base portion, and

(b) a respective backstop portion upstanding from a top surface of said respective base portion;

(C) wherein each said respective sleeve mounting member is dimensioned to substantially envelope said respective base portion such that said respective first and second latches are secured onto the respective first and second support posts; and

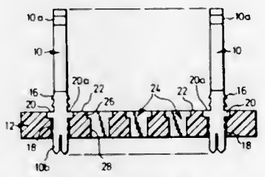
(D) wherein each said respective backstop portion is spaced apart from said respective main body portion such that said respective main body portion can be deflected toward said respective first and second support posts until said respective main body portions contact said respective backstop portion.

5,286,218

ELECTRIC CONNECTOR HAVING MEANS FOR FIXING CONTACTS

Haruo Sakurai, Machida; Choshiro Iida, Tendo; Kei Tohyama, Tendo, and Kazuhito Takemura, Tendo, all of Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1992, Ser. No. 986,133
Claims priority, application Japan, Dec. 27, 1991, 3-346992
Int. Cl.[5] H01R 4/24
U.S. Cl. 439—444 2 Claims



1. An electrical connector comprising an array-plate having a plurality of support holes extending through the array plate from an abutting surface through the thickness thereof and arranged in an array at predetermined positions, said array plate having depressions at the outer periphery of each of said support holes adjacent said abutting surface;

a body including a holding part for receiving and holding the array-plate, a fitting part defining a cavity for receiving another electronic component, and a wall part arranged between the holding part and the fitting part and having a plurality of fix openings; and

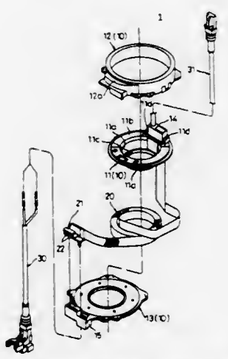
a plurality of contacts having at one end a connecting end extending through said fix openings into said fitting part for making connection to another electronic component and at the other end a terminating end for terminating with an electric cable, protrusions on each of said contacts positioned between said connecting end and said terminating end and having substantially the same dimensions as said depressions of said array plate so as to just fit within said depressions under pressure, and a press-fit area consisting of projections provided on said contacts between said protrusions and said connecting end so as to define a wide portion slightly wider than a width of said fix openings of said wall part and engaged with said wall part by press fitting said contacts into said fix openings.

5,286,219

CUTTER-LESS ROTARY CONNECTOR

Seiichi Ueno, and Tetsuya Okada, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,595
Claims priority, application Japan, Nov. 15, 1991, 3-93904[U]
Int. Cl.[5] H01R 39/02
U.S. Cl. 439—475 20 Claims



1. A cutter-less rotary connector comprising:

a stationary case fixed to a stationary member;

a rotating case coupled with the stationary case for rotation relative to the stationary case, an annular space being defined within a space enclosed by said stationary and rotating cases, the rotating case having a torque transmission section for transmitting a torque from a rotating member and a junction which is connectable to an external wire;

a flexible flat cable having a plurality of electrical conductors coated for insulation and housed, in the form of a spiral capable of tightening and loosening, in said annular space, one end of the flat cable being connected at said junction to the external wire;

said torque transmission section of said rotating case being fracturable and removable from said rotating case when a torque transmitted from the rotating member to said rotating case exceeds a given first torque value; and

said junction being fracturable and removable from said rotating case upon application of a given second torque value to said junction, said first and second torque values being different from each other.

5,286,220

ELECTRICAL CABLE CONNECTOR

Arthur I. Watson, Bartlesville, Okla., assignor to Camco International, Inc., Houston, Tex.

Filed Nov. 18, 1991, Ser. No. 793,523
Int. Cl.[5] H01R 13/40, 13/52
U.S. Cl. 439—589 10 Claims

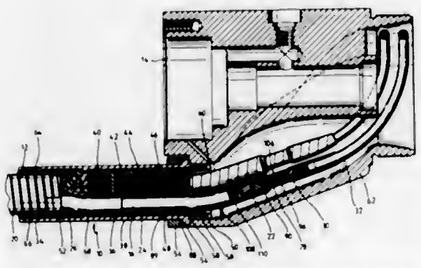
1. An electrical cable connector comprising:

a tubular body having at least one conductor member extending therethrough, and a fluid sealing system for sealing an interior of the tubular body against passage of fluid;

at least one elastomeric packing disc fitted transversely within the tubular body and having at least one opening for passage of a conductor member therethrough, the packing disc having a first annular lip about the outer periphery thereof and a second annular lip about the periphery of the at least one opening therein;

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at least one gland disc fitted transversely within the tubular body adjacent the at least one packing disc and having at least one opening for passage of the conductor member therethrough, the gland disc having a first annular chamfer about the outer periphery thereof and a second annular chamfer about the at least one opening therein, said first and second chamfers being correlated with the annular lips on the packing disc so as to apply a radial force to the



first and second annular lips to force the first annular lip into sealing engagement with an internal surface of the tubular body and to force the second annular lip into sealing engagement with an external surface of the conductor member in response to axial compression of the packing disc by the gland disc; and

a compression mechanism carried by the tubular body for urging the gland disc to compress the packing disc.

5,286,221

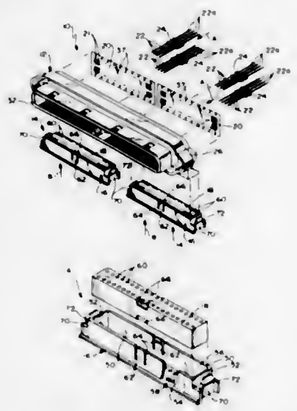
FILTERED ELECTRICAL CONNECTOR ASSEMBLY

Duane M. Fencl, Countryside; Stephen A. Colleran, Lisle; Burke J. Crane, Lombard; Robert M. Fuerst, Maple Park; Fred L. Krehbiel, Chicago; Jeffrey J. Pawlicki, Downers Grove; Edward J. Plocek, Lisle; Thomas G. Premo, West Chicago, and Bill B. Wilson, Montgomery, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 19, 1992, Ser. No. 962,763

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **12 Claims**



1. A multi-terminal filtered electrical connector assembly, comprising:

a housing having a plurality of terminal-receiving passageways;

a plurality of terminals received in the passageways with tail portions of the terminals projecting from the housing;

a terminal alignment plate independent of the housing and having a plurality of through holes for receiving and aligning the tail portions of the terminals;

first complementary interengaging latch means between the housing and the alignment plate for readily assembling the alignment plate on the housing;

a ferrite block mountable on the alignment plate and having a plurality of through holes alignable with the holes in the alignment plate for receiving therethrough the tail portions of the terminals; and

second complementary interengaging latch means between the alignment plate and the ferrite block for readily assembling the ferrite block on the alignment plate,

whereby the alignment plate and the ferrite block can be assembled as a subassembly about the tail portions of the terminals and the subassembly can be readily assembled to the housing.

5,286,222

SHIELDED FLOATING ELECTRIC CONNECTOR

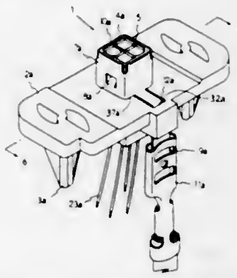
Masanori Yagi, Sagamihara, and Kazurou Yamada, Tokyo, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 18, 1992, Ser. No. 977,941

Claims priority, application Japan, Nov. 18, 1991, 3-329482

Int. Cl.[5] H01R *13/658*

U.S. Cl. 439—607 **3 Claims**



1. In a floating electrical connector for floatable mounting to a generally planar member, said generally planar member having at least one mounting aperture therein, said connector including a dielectric body, said body having a generally planar mounting flange, means extending from said flange for floatable mounting of a portion of said body in said aperture, and a terminal-receiving housing projecting from said flange, said housing including a plurality of terminal-receiving apertures with a terminal mounted in each said aperture, and contact portions of said terminals extending away from said flange in a direction generally perpendicular to the plane thereof a predetermined distance, said contact portions of said terminals adapted for mating with complementary terminals of a mating connector, wherein the improvement comprises:

a metal shell substantially encircling the center periphery of said housing and extending away from said flange a distance greater than said predetermined distance that the terminals extend away from said flange; and

a generally planar metal blade contact integrally formed with said metal shell and at least a portion of which extends in a direction generally perpendicular to said flange, said blade extending from one side of said flange to the other in order to permit interconnection to a wire on a side of said flange opposite said housing;

wherein said metal blade contact extends through a slot in said flange; and

wherein said housing includes a plurality of walls projecting away from said flange to create a central recess in which a plurality of terminal receiving projections are located, each said terminal receiving projection having a respective said contact portion therein, each said wall including a tapered lead-in surface sloping towards said projections, and said metal shell including at least one resilient, cantilevered spring finger for contacting a metal shell of a complementary mating connector, said spring finger extending along one of said tapered lead-in surfaces and into said recess between one of said walls and said projections.

5,286,223

SOCKET FOR WEDGE BASE BULB

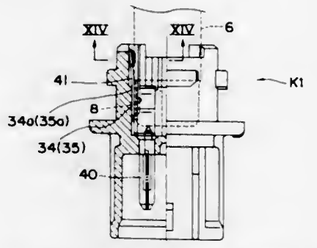
Shinji Ogawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Nov. 25, 1992, Ser. No. 981,311

Claims priority, application Japan, Nov. 30, 1991, 3-099014[U]; Nov. 30, 1991, 3-099015[U]; Dec. 20, 1991, 3-105533[U]

Int. Cl.[5] H01R *19/00*

U.S. Cl. 439—619 **7 Claims**



1. A socket for a wedge base bulb, in which a cylindrical socket body has an opening for receiving the bulb and a terminal having a pair of opposed contact pieces is mounted in the opening and the contact pieces grip a base portion of the bulb therebetween so as to be electrically connected to the base portion, the improvement comprising:

a slot for receiving a rectangular platelike mounting portion of the terminal, which is formed on an inner face of a circumferential wall of the socket body so as to confront the opening;

a step portion which projects radially inwardly from a location on the inner face of the circumferential wall in the slot;

the location, when an axis of the socket body extends in a vertical direction such that the opening is disposed at an upper portion of the socket body, being axially spaced from an upper end of the circumferential wall such that the step portion confronts a lower portion of the terminal mounting portion when the mounting portion has been fitted into the slot;

wherein when the bulb has a minimum size, the bulb is supported by the lower portion of the mounting portion of the terminal; and

wherein when the bulb has a maximum size, an upper portion of the mounting portion of the terminal is deflected radially outwardly by the bulb about a fulcrum defined by an upper edge of the step portion of the slot so as to grip the bulb.

5,286,224

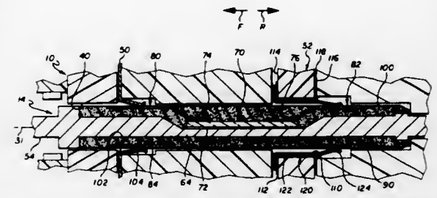
INTERCHANGEABLE CONTACT CONNECTOR

Eric J. Paulus, Scottsdale, Ariz., assignor to ITT Corporation, Secaucus, N.J.

Filed May 10, 1993, Ser. No. 59,223

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **14 Claims**



1. A connector having a housing with an insulator assembly forming a plurality of passages, having a ground plane mounted on said insulator assembly, and having a plurality of contact assemblies each mounted in one of said passages, including a first contact assembly that includes a conductive body having forward and rearward ends and a middle, and that includes a circuit component that is mounted on said contact middle and that has a plurality of terminals including a first terminal connected to said body middle and a second terminal, and that includes a first clip connected to said second terminal and electrically coupled to said ground plane, characterized by:

said circuit component has a third terminal; and including

a second clip electrically coupled to said third terminal;

a circuit board mounted in said housing and having a first conductive trace electrically coupled to said second clip.

5,286,225

CONNECTOR HOUSING ASSEMBLY

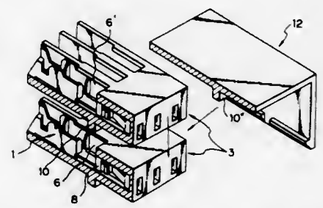
Yoshitsugu Tsuji, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed May 31, 1991, Ser. No. 708,600

Claims priority, application Japan, Jun. 4, 1990, 2-58895[U]

Int. Cl.[5] H01R *13/514*

U.S. Cl. 439—752 **2 Claims**



1. A connector housing assembly comprising a plurality of housings each having a series of laterally arranged terminal accommodating chambers, for respectively accommodating terminals, and being combined and united in a plurality of layers with the longitudinal direction of said terminal accommodating chambers being trued up; and having a terminal locking mechanism comprising locking ports provided in one of adjacent housings in such a manner as to be situated at a rear of locking portions of the terminals, and locking projections provided on the other housing in such a manner as to project therefrom so that said locking projections are inserted through said locking ports to be brought into engagement with locking portions of the terminals accommodated in said one of adjacent

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housings, wherein a locking pawl is provided at a top end of each of said locking projections, so that said locking pawls are brought into mesh engagement with edge portions of locking ports of an associated housing, the posture of said plurality of housings combined and connected to each other being thereby secured, and

wherein said connector housing assembly further comprises a case unit for securely covering and locking said housings in a combined and united posture, said case unit including a top wall, two side walls and an open bottom portion, said top wall including a plurality of locking projections for being inserted into locking ports of an uppermost housing, and each of said side walls including an inwardly projecting ridge for engaging with a lowermost housing.

5,286,226

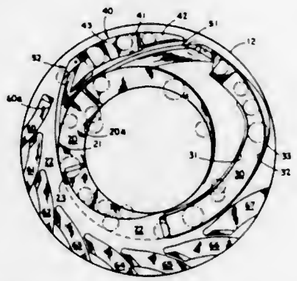
DISC-TYPE COIN SORTER

James M. Rasmussen, Chicago, Ill., assignor to Cummins-Allison Corporation, Mt. Prospect, Ill.

Continuation of Ser. No. 709,108, Jun. 3, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,353

Int. Cl.[5] **G07D** *3/02*

U.S. Cl. 453—10 **2 Claims**



1. A coin sorter comprising

a rotatable disc,

means for rotating said disc,

a stationary sorting head having a feed opening for receiving coins to be sorted, and a lower surface parallel to the upper surface of said rotatable disc and spaced slightly therefrom,

the lower surface of said sorting head forming an annular recess for receiving coins passing beneath the inner edge of the sorting head, a spiral channel for guiding those coins radially outwardly in a single file as the coins are carried along the lower surface of the sorting head by the rotating disc,

a gaging recess receiving said single-file coins before they reach said exit channels, the outer wall of said gaging recess being located at the desired gaging radius for the outer edges of said coins, said gaging recess having

a first flat upper surface that is spaced from the upper surface of said rotatable disc by a distance that is only slightly greater than the thickness of the thinnest coin and is less than the thickness of the thickest coin, said first flat upper surface having an upstream end and a downstream end, and

a second flat upper surface that is spaced from the upper surface of said rotatable disc by a distance that is greater than the thickness of the thickest coin, said second flat upper surface having an upstream end and a downstream end, said second flat upper surface being downstream of said first flat upper surface, the outer wall of said upstream end of said second flat upper surface being located at the same radius as the outer wall of the downstream end of said first flat upper surface,

the inlet end of said gaging recess tapering upwardly to said first flat upper surface.

5,286,227

ARC TUBE AND METHOD FOR MANUFACTURING THE SAME

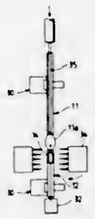
Yasuyoshi Numajiri; Shinichi Irisawa; Kunio Fukai, and Masakazu Nagasawa, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,483

Claims priority, application Japan, Dec. 25, 1991, 3-342867

Int. Cl.[5] **H01J** *9/38*

U.S. Cl. 445—26 **6 Claims**



1. A method for manufacturing an arc tube, comprising the steps of:

forming a glass bulb in a glass tube substantially at a middle portion of said glass tube;

inserting an electrode assembly into one end portion of said glass tube;

closing said one end portion by pinch-sealing;

supplying a light emitting material into said glass bulb through the other end portion of said glass tube by the steps of:

supplying an inert gas into said glass bulb,

inserting a supply nozzle into said glass bulb,

dropping at least one pellet of a light-emitting material from said pellet supplying nozzle into said glass bulb and heating said glass bulb to remove impurities from said light-emitting material;

inserting another electrode assembly into said other end portion; and

closing said other end portion by pinch-sealing.

5,286,228

TOY MECHANICAL HAND

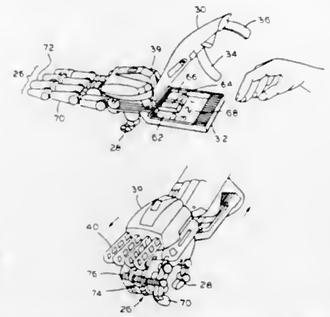
James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Hunghom, Hong Kong, assignors to C. J. Associates, Ltd., Monrovia, Liechtenstein

Filed Nov. 23, 1992, Ser. No. 980,929

Int. Cl.[5] **A63H** *33/00, 3/36*

U.S. Cl. 446—26 **18 Claims**

1. A toy comprising a mechanical hand having a control compartment attached to a palm section with a plurality of adjacent articulated mechanical fingers and an opposed thumb attached thereto, means associated with said control compartment for attaching said mechanical hand to a child's arm with at least part of the child's hand enclosed in the control compartment, and a plurality of adjacent slides, each attached at a forward end to a respective mechanical finger and each mounting a finger engageable trigger at a rearward end in said control compartment, said triggers being positioned in laterally fixed relation to each other so as to be engaged by the child's



fingers for articulating at least said mechanical fingers responsive to the child manipulating his fingers.

5,286,229

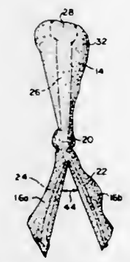
METHOD OF MAKING A FOOD PRODUCT FROM THE WING OF A BIRD AND FOOD PRODUCT MADE IN ACCORDANCE WITH THE METHOD

Eugene D. Gagliardi, Jr., West Chester, Pa., assignor to Designer Foods, Inc., Chadds Ford, Pa.

Filed Dec. 11, 1992, Ser. No. 989,399

Int. Cl.[5] **A22C** *21/00*

U.S. Cl. 452—169 **4 Claims**



1. A method of making a food product from a wing of a bird, the wing comprising a middle section having a first joint, a second joint, two bones spaced apart and generally parallel to each other and extending between and being connected to the first and second joints, and meat attached to each of the bones, a tip section connected to the first joint, and an end section connected to the second joint, the end section extending from the second joint at an angle of less than 180° with respect to the middle section, the end section having a bone and meat attached to the bone, the wing further comprising a web of skin extending between the middle section and the end section, the method comprising the steps of:

(a) cutting through the first joint to separate and remove the tip section from the remainder of the wing;

(b) cutting through the skin extending between the middle section and the end section along a cut line extending between the first and second joints;

(c) cutting through the end section to nick the second joint on a side opposite to the side on which the skin between the middle section and the end section is located;

(d) cutting through the first joint along a cut line extending generally parallel to and between the two middle section bones and extending to the second joint to separate the two middle section bones at least at one end proximate the first joint;

(e) bending the end section with respect to the middle section about the second joint so that the middle section and the end section are generally aligned end to end with the second joint therebetween; and

(f) spreading apart the two bones of the middle section on the one end whereby the food product has the general appearance of a cowboy wearing chaps.

5,286,230

APPARATUS FOR DIVIDING DEEP-FROZEN FOODSTUFFS, WITH RECOVERY OF FOODSTUFFS DETACHED DURING SAID DIVISION

Heinz Nienstedt, deceased, late of Haltern, and Heinz-Werner Nienstedt, legal representative, Ostfildern, both of Fed. Rep. of Germany, assignors to Heinz Nienstadt Maschinenfabrik GmbH, Haltern, Fed. Rep. of Germany

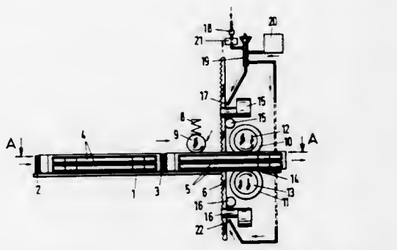
PCT No. PCT/EP90/01280, § 371 Date Feb. 3, 1992, § 102(e) Date Feb. 3, 1992, PCT Pub. No. WO91/01645, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 4, 1990, Ser. No. 828,975

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1989, 3926533

Int. Cl.[5] **A22C** *25/08;* **B26D** *4/44*

U.S. Cl. 452—170 **5 Claims**



1. Apparatus for dividing deep-frozen foodstuffs in the form of parallelipipedic bodies into a plurality of smaller parallelipipedic units, comprising

a table having an upper surface on which said parallelipipedic bodies are disposed,

conveying means for conveying said parallelipipedic bodies along said upper surface of said table in a conveying direction,

hold down elements engaging against said foodstuffs to hold them down against said upper surface of said table,

a plurality of spaced apart saw belts disposed one beside another and oriented for cutting said parallelipipedic bodies into said smaller parallelipipedic units as said saw belts move in an upward direction relative to said table, and

an applicator unit located above said table, said applicator unit including blowing nozzles out of which a flow of air is directed downwardly toward said saw belts and onto a top surface of said parallelipipedic bodies upstream of said conveying direction, so that pieces of foodstuff detached from said parallelipipedic bodies during the cutting process are lifted upwardly by said saw belts and are blown backward toward the top surface of said parallelipipedic bodies by said flow of air,

wherein said hold down elements include a contact pressure roller located upstream of said saw belts which bears against the top surface of said parallelipipedic bodies.

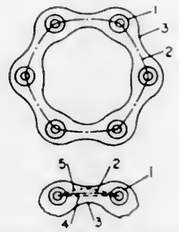
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5,286,231

FLEXIBLE ELASTOMER COUPLING ELEMENT

Josef Zilberman, Randallstown; Robert E. Munyon, Columbia, and Sujen Chen, Ellicott City, all of Md., assignors to Kop-Flex, Inc., Baltimore, Md.

Filed Mar. 26, 1992, Ser. No. 857,988
Int. Cl.[5] F16D 3/78
U.S. Cl. 464—93 **21 Claims**



1. A flexible coupling member for coupling a driving member to a driven member comprising an elastomer element substantially formed into a plurality of connected segments extending parallel to a plane and substantially symmetric to a central axis extending perpendicularly therethrough, said connected segments having a radial width and an axial thickness so as to generally form an open generally planar polygon, said elastomer element being provided at each of the intersections of said connected segments with a connection means for connecting said flexible member to said driving and driven members, said connection means preventing rotation of said connected segments relative to each said connection means, each said connected segment having opposite ends each fixed to a said respective connection means and a body extending between said opposite ends with the thickness of said body tapering continuously from said ends toward a minimum thickness at a middle portion thereof disposed between said opposite ends in at least one of a radial and axial direction, wherein each said segment has a radially inner and outer surface and an outward curving neutral axis therein, said neutral axis of each said segment being substantially situated in a region defined by an outer arc extending between the centers of each connection means and lying on the pitch radius of said centers of said connection means and an inner locus of points extending between said centers of each connection means and spaced inwardly from said outer arc of said respective segment to prevent relative rotation between a said connection means and an adjacent segment.

5,286,232

SLIP YOKE ASSEMBLY FOR OUTPUT OF POWER TRANSMISSION DEVICE

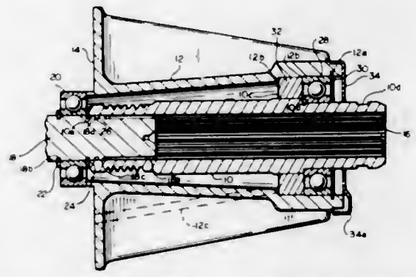
Jack F. Eagle, Muncie, Ind., assignor to Borg-Warner Automotive Diversified Transmission Products Corporation, Sterling Heights, Mich.

Filed Apr. 10, 1992, Ser. No. 866,680
Int. Cl.[5] B60K 25/02; F16D 1/06
U.S. Cl. 464—162 **12 Claims**

1. Apparatus for transmitting torque from a driving member having an externally splined torque output end and roller contact bearing means rotatingly supporting the driving member, said apparatus further comprising:

a rotatable propeller shaft having a torque input end and a torque output end, said torque input end of said propeller shaft having an open portion extending from the torque input end of said propeller shaft at least partly to the torque output end of said propeller shaft, said open portion of said torque input end of said propeller shaft having an internally splined portion which drivingly receives the externally splined torque output end of said driving member, said propeller shaft further having an open portion extending from the torque output end of said propeller shaft at least partly to the torque input end of said propeller shaft, said open portion of said torque output end of said propeller shaft having an internally splined portion which is adapted to drivingly receive a portion of a member that is to be driven by said propeller shaft;

a housing surrounding a substantial portion of the torque input portion of said propeller shaft including the internally splined portion which receives the externally splined torque output end of the driving member, said torque output portion of said propeller shaft extending beyond said housing, said housing being adapted to receive lubricant therein;



sealing means within said housing, said sealing means sealingly engaging said propeller shaft at a location spaced from said torque output end thereof and being adapted to sealingly accommodate rotation of said propeller shaft relative to said housing; and

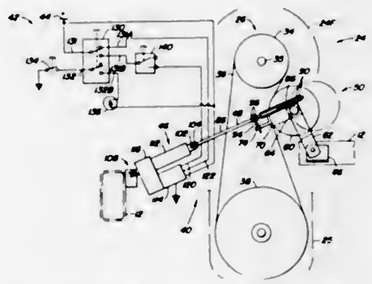
sealed, internally lubricated rolling contact bearing means rotatingly supporting said propeller shaft with respect to said housing, said sealed, internally lubricated rolling contact bearing means being positioned outboard of said sealing means and being isolated by said sealing means from contact with lubricant within said housing.

5,286,233

ELECTRIC CONTROL OF A HARVESTER FAN

Jonathan L. Engelstad, 728 SE. Richland Ct., Ankeny, Iowa 50021, and Ted R. Myers, 306 E. Monroe, Pleasantville, Iowa 50225

Filed Feb. 24, 1993, Ser. No. 21,701
Int. Cl.[5] F16H 7/00
U.S. Cl. 474—101 **19 Claims**



1. In a harvester having a frame, an engine having a running and a nonrunning state, a source of electric power, and a fan for providing a source of air for moving harvested crop material, a fan control comprising:

a first pulley driven by the engine;

a second pulley connected to the fan for driving the fan;

a belt trained around the first and second pulleys;

a belt tightener supported adjacent the belt and movable between a first position for relaxing the belt to disengage drive to the fan and a second position for tightening the belt to provide drive to the fan from the first pulley;

an electric actuator selectively connectible to the source of electric power for moving the tightener between the first and second positions and retaining the position selected after power is disconnected from the actuator; and

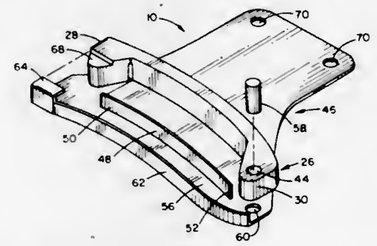
control means connected between the actuator and to the source of electric power on the harvester for moving the tightener to the second position.

5,286,234

CHAIN TENSIONER APPARATUS

James D. Young, Chesaning, Mich., assignor to Cloyes-Iwis Company L.P., Willoughby, Ohio

Filed Jul. 27, 1992, Ser. No. 919,648
Int. Cl.[5] F16H 7/08
U.S. Cl. 474—111 **15 Claims**



13. A chain tensioner comprising:

an elongated shoe having first and second longitudinally spaced enlarged ends joined by a central body section, the shoe being formed of a synthetic plastic and having a first exterior wall surface extending the length thereof adapted to engage the chain to be tensioned, narrow slots extending laterally into the enlarged ends generally parallel to the first exterior wall surface;

a blade spring having a length nearly as great as the shoe and terminating in first and second ends received respectively in the slots in the first and second ends of the shoe to extend longitudinally of the shoe generally parallel to the first exterior wall;

a rigid metal support bracket for mounting the shoe adjacent the chain to be tightened; and,

means adjacent a side of the shoe for overlying the blade spring on the side of the slots for retaining the blade spring in the slots.

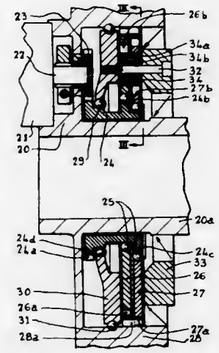
5,286,235

SPEED REDUCER OF THE CYCLOIDAL TYPE FOR ROBOTS AND OTHER INDUSTRIAL MANIPULATORS

Vincent Gerat, Saint-Jorioz, France, assignor to S.A. Des Etablissements Staubli, Faverges, France

Filed Nov. 17, 1992, Ser. No. 977,611
Claims priority, application France, Nov. 21, 1991, 91 14610
Int. Cl.[5] F16H 1/28
U.S. Cl. 475—162 **6 Claims**

1. A speed reducer of the cycloidal type for robots and other industrial manipulators which is engagable between an input drive shaft and an output, the speed reducer comprising, a frame, an eccentric-holder ring drivingly engagable with the input shaft so as to rotate about a portion of said frame, said eccentric-holder ring having first and second end portions, said eccentric-holder ring having a pair of eccentric bearing surfaces formed in said first end portion thereof and a single bearing surface formed in said second end portion thereof, a pair of generally oppositely oriented cam members surrounding said eccentric-holder ring and having inner and outer surfaces, first bearing members disposed between said inner surfaces and said pair of eccentric bearing surfaces of said eccentric-holder ring, a plurality of spaced first teeth provided along said outer surface of each of said cam members, a ring gear means surrounding said cam members and having a plurality of spaced second teeth meshed with said first teeth of said cam members, the number of said second teeth being greater than the number of said first teeth of each cam member,



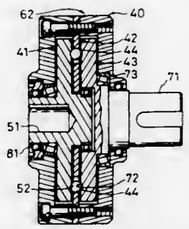
said cams having openings therein defining housings, a number of actuating fingers mounted within said housings and having outer portions engagable with the output, said actuation fingers including a support which extends through said housings and cylindrical members mounted in said housings with a clearance space about said supports, and bearing means engagable with said single bearing surface formed in said second end portion of said eccentric-holder ring in such a manner that said eccentric-holder ring is pivotable relative to said bearing means.

5,286,236

BALL-TYPE SPEED REDUCER

Toshihiro Hosokawa, Takatsuki, and Hitoshi Ohara, Kyoto, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Jun. 26, 1992, Ser. No. 904,851
Claims priority, application Japan, Jun. 28, 1991, 57936
Int. Cl.[5] F16H 13/08
U.S. Cl. 475—168 **1 Claim**

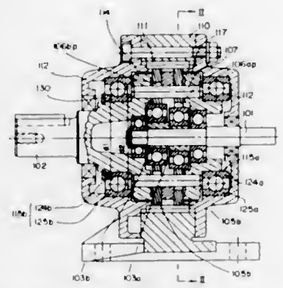


1. A ball-type speed reducer comprising: a driving disc rotatable about an axis and having an elliptic groove in one side centered around said axis, a driven disc rotatable about said axis and having a cycloidal groove in one side facing said elliptic groove centered around said axis, a plurality of balls the number of which is less than by an even number the number of waves of said cycloidal groove, and a ball retaining disc having through holes arranged on a circle for loosely holding said

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balls, said elliptic groove and said cycloidal groove holding said plurality of balls therebetween.

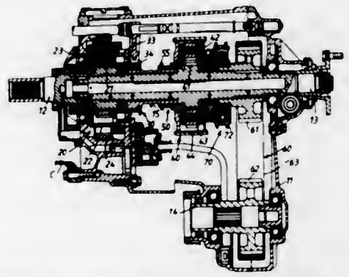
5,286,237
INSCRIBED MESHING PLANETARY GEAR CONSTRUCTION
Kiyoji Minegishi, Aichi, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Aug. 11, 1992, Ser. No. 928,124
Claims priority, application Japan, Aug. 13, 1991, 3-228339; Aug. 13, 1991, 3-228341
Int. Cl.[5] F16H *1/28*
U.S. Cl. 475—178 **3 Claims**



1. An inscribed meshing planetary gear construction, comprising:
a first shaft;
an eccentric body mounted on the first shaft;
an external-tooth gear eccentrically and rotatably attached to the first shaft through the eccentric body;
an internal-tooth gear with which the external-tooth gear is inscribed and meshed;
a second shaft connected to the external-tooth gear through means for transmitting only a rotating component of the external-tooth gear, said means for transmitting only a rotating component comprising inner pins acting as an isokinetic inscribed meshing mechanism in respect to internal pin holes placed in said external-tooth gear, said inner pins being supported at their either-ends by a flange part formed in the second shaft, and at the other ends by an annular support ring,
wherein both said annular support ring and said flange part of the second shaft are supported to a casing through a pair of bearings, said pair of bearings having inner rings and outer rings, and wherein an axial position of the inner pins is set in such a manner that both ends of the inner pins are held by one of respective inner rings and outer rings of said pair of bearings.

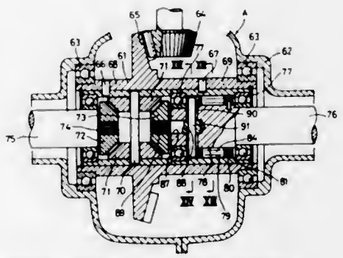
5,286,238
POWER TRANSFER DEVICE FOR FOUR-WHEEL DRIVE
Kenji Shimizu; Kazuhito Ikemoto; Masahiro Moritani; Yasuyuki Iida, and Tomoyuki Kanou, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 2, 1992, Ser. No. 942,161
Claims priority, application Japan, Sep. 2, 1991, 3-221567; Sep. 17, 1991, 3-267222
Int. Cl.[5] F16H *37/08*; B60K *17/346*
U.S. Cl. 475—221 **4 Claims**

1. A power transfer device adapted for use in combination with a power transmission for an automotive vehicle, comprising:
a housing;
a first output shaft rotatably mounted on said housing and having an input end for drive connection to an output shaft of said power transmission and an output end for drive connection to a first set of road wheels;
a second output shaft rotatably mounted within said housing in parallel with said first output shaft and having an output end for drive connection to a second set of road wheels;
a drive member rotatably mounted on said first output shaft;
a driven member mounted on said second output shaft for rotation therewith and being drivingly connected to said drive member;
a center differential in the form of a planetary gear unit mounted on said first output shaft and having a first output element in drive connection to said first output shaft and a second output element for drive connection to said drive member; and



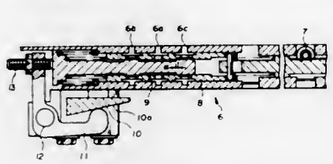
a changeover mechanism arranged between said planetary gear unit and said drive member and mounted on said first output shaft to selectively connect the second output element of said planetary gear unit to said drive member;
wherein the first output element of said planetary gear unit is in the form of a sun gear mounted on said first output shaft for rotation therewith and the second output element of said planetary gear unit is in the form of a carrier rotatably mounted on said first output shaft, and wherein a second changeover mechanism is arranged adjacent said planetary gear unit at the opposite side relative to said first-named changeover mechanism to selectively lock said planetary gear unit.

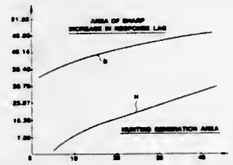
5,286,239
ROTATION TRANSMITTING DEVICE HAVING DIFFERENTLY ROTATING OUTPUT SHAFTS
Kenichiro Ito; Hiromi Nojiri, and Kenro Adachi, all of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan
Division of Ser. No. 834,955, Feb. 14, 1992, Pat. No. 5,203,232.
This application Dec. 30, 1992, Ser. No. 997,749
Claims priority, application Japan, Feb. 18, 1991, 3-023278; Mar. 28, 1991, 3-064788; Aug. 29, 1991, 3-218707
Int. Cl.[5] F16H *35/04*
U.S. Cl. 475—231 **2 Claims**



1. A rotation transmitting device, comprising:
a pair of output shafts, a pair of side gears opposed to said output shafts, an input member, pinion gears coupled to said input member, said pinion gears meshing with said side gears, one of said side gears being coupled to one of said output shafts and the other being separated from the other of said output shafts, said other of said output shafts and said input member being provided on their surfaces opposite to each other with engaging surfaces, a cage rotatably mounted between said engaging surfaces and having pockets formed therein, engaging elements mounted in said pockets and adapted to engage said engaging surfaces when said cage and said other of said output shaft rotate relative to each other, and elastic members mounted in said pockets for keeping said engaging elements out of engagement with said engaging surfaces, an intermediate shaft provided coaxially with said other of said output shafts, said cage and said other output shaft and said other side gear being coupled together through said intermediate shaft so that turning torque can be transmitted therebetween, said intermediate shaft and said other of said output shafts being loosely coupled together with gaps formed therebetween in the direction of rotation.

5,286,240
SHIFT CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRACTION ROLLER TRANSMISSION
Katsuya Kobayashi, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jul. 31, 1992, Ser. No. 922,789
Claims priority, application Japan, Aug. 1, 1991, 3-214262
Int. Cl.[5] F16H *15/08*
U.S. Cl. 476—10 **2 Claims**





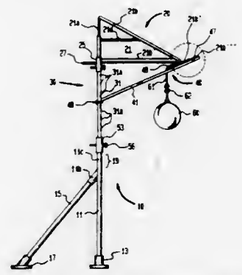
1. A continuously variable traction roller transmission, the transmission being shiftable in a speed ratio in response to a command thereof, comprising:
input and output toroidal disks having an axis;
a power roller interposed between said input and output toroidal disks to be rotatable with an inclination, said power roller having an axis;
a shift control valve disposed to be responsive to the command, said shift control valve having valve bodies and inflow and outflow ports having an opening area; and
a plurality of servo pistons fluidly connected to said shift control valve, said plurality of servo pistons moving said power roller to be offset from a position that said axis of said power roller intersects said axis of said input and output toroidal disks so as to direct the speed ratio to a value of the command, said plurality of servo pistons feedbacking movement and offset of said power roller to said shift control valve so as to hold said power roller in said position when said inclination of said power roller corresponds to said value of the command,
wherein when a dimensionless parameter R is given by:

$$R = \sqrt{\rho} \cdot A_1 \cdot \sqrt{C_r} / \sqrt{P} \cdot A_2,$$

, and wherein
ρ: specific gravity (kg/cm^3) of hydraulic fluid,
A_1: total pressure area (cm^2) of said plurality of servo pistons,
C_r: radial clearance (cm) between said valve bodies of said shift control valve at the overlap portion thereof,
P: input pressure (kg/cm^2) to said shift control valve,
A_2: average area (cm^2) of variations of said opening areas of said inflow and outflow ports for 0.1 mm of a relative displacement between said valve bodies of said shift control valve with respect to a balance state thereof, the feedback to said shift control valve is carried out so that a ratio b/a of a variation "b" mm of a feedback amount to said shift control valve for 1 mm of a displacement of said power roller to a variation "a" mm of said feedback amount to said shift control valve for 1 degree of said inclination of said power roller is in a range given by:

$$1.74R^{4/5} - 3.90 \leqq b/a \leqq 3.09R^{5/2} + 30.51.$$

5,286,241
TETHERED PUNCHING BAG SUPPORT DEVICE
Perry G. Petrakis, 131 Hewitt St., Trenton, N.J. 08611
Filed Nov. 23, 1992, Ser. No. 979,928
Int. Cl.[5] A63B *69/22*
U.S. Cl. 482—87 **12 Claims**

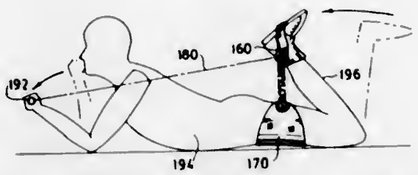


1. A tethered punching bag support device comprising:
a lower frame assembly
an upper frame assembly selectively attachable to an upper portion of said lower framer assembly, said upper frame assembly having a plurality of sub-assemblies wherein each subassembly includes a base member,
a height adjustment pole assembly selectively disposable between said lower frame assembly and said upper frame assembly,
a punching bag support platform further including a substantially flat board selectively attachable to said upper frame assembly,
a plurality of Z-shaped angle members disposed in displaced relationship on a bottom surface of said flat board and fixedly attached thereto,
hinge means pivotally attached at forward ends of said base members, said respective hinges having side portions thereof disposed below said Z-shaped angle member in sliding engagement there with, said hinges being selectively attachable to said board,
a plurality of clamp members selectively attachable to respective height adjustment poles thereby providing board retaining means for variable angular adjustment of said board and said support platform, relative to said upper frame assembly and,

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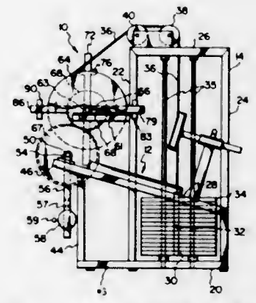
a punching bag being adjustably attachable to said support platform.

5,286,242
THERAPEUTIC LEVERAGING DEVICE
Thomas L. Johnston, Pittsford, N.Y., assignor to Mechanical Advantage Ltd., Pittsford, N.Y.
Continuation-in-part of Ser. No. 791,952, Nov. 13, 1991, which is a continuation-in-part of Ser. No. 638,074, Jan. 7, 1991, Pat. No. 5,076,576. This application Apr. 23, 1993, Ser. No. 52,166
Int. Cl.[5] A03B *21/12*
U.S. Cl. 482—95 7 Claims



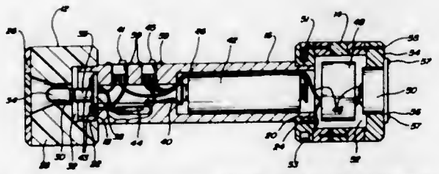
1. An apparatus for flexing a knee capsule of a human body, comprising means for grasping a foot, a thigh strap, a first line cord, a second line cord, a handle, a first means for guiding line cord, a second means for guiding line cord, a third means for guiding line cord, and a fourth means for guiding line cord, a fifth means for guiding line cord, a sixth means for guiding line cord, a seventh means for guiding line cord, and an eighth means for guiding line cord, wherein:
(a) said means for grasping a foot is comprised of a first strap with a proximal end and a distal end, a first pulley block attached to said proximal end of said first strap, and a second pulley block attached to said distal end of said first strap, wherein said first pulley block is comprised of said first means for guiding line cord and said second means for guiding line cord, and said second pulley block is comprised of said third means for guiding line cord and said fourth means for guiding line cord;
(b) said thigh strap is comprised of a third pulley block and a fourth pulley block, wherein said third pulley block is comprised of said fifth means for guiding line cord and said sixth means for guiding line cord, and said fourth pulley block is comprised of said seventh means for guiding line cord and said eighth means for guiding line cord;
(c) said first line cord extends from said means for grasping a foot to said sixth means for guiding line cord to said second means for guiding line cord to said fifth means for guiding lien cord to said first means for guiding line cord;
(d) said second line cord extends from said means for grasping a foot to said eighth means for guiding line cord to said fourth means for guiding line cord to said seventh means for guiding line cord to said third means for guiding line cord;
(e) said handle is comprised of a first orifice and a second orifice, wherein said first line cord extends from said first means for guiding line cord through said first orifice, and said second line cord extends from said third means for guiding line cord through said second orifice.

5,286,243
EXERCISE DEVICE HAVING A VARIABLE RESISTANCE CURVE
Thomas G. Lapcevic, 1411 Grandview Ave., Pittsburgh, Pa. 15211
Continuation-in-part of Ser. No. 464,231, Jan. 12, 1990, Pat. No. 5,039,089. This application Jun. 11, 1991, Ser. No. 713,746
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—97 55 Claims



1. An exercise device for generating a plurality of resistance curves comprising: a support frame; a shaft rotatably supported on the support frame; a user interface member connected to the shaft which when displaced by a user causes the shaft to rotate; a resistance generator connected to the frame which generates a constant selected baseline resistance force; a transfer assembly for transferring said constant baseline resistance force from the resistance generator to the user interface member; a torque assembly for applying a torque to the shaft which can selectively vary in magnitude and direction, said torque assembly comprising a plurality of weight members supported on a plurality of torque arms secured to the shaft at predetermined angular positions such that the baseline resistance force experienced by the user during an exercise motion can be selectively varied by selected relative placement of the weight members on the torque arms.

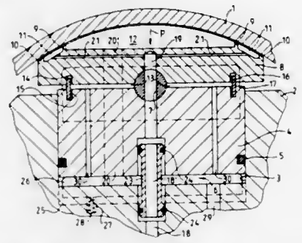
5,286,244
MULTI-FUNCTIONAL HAND WEIGHT
Donna J. Wright, West Bloomfield, and William J. Gallup, Bloomfield Hills, both of Mich., assignors to Safety Sports, Ltd., Mich.
Filed Jan. 6, 1992, Ser. No. 817,307
Int. Cl.[5] A63B *21/075, 71/00*
U.S. Cl. 482—108 10 Claims



1. A handweight for runners, the hand weight comprising:
a body having a first end portion, a second end portion, said first end portion being made in substantial part from a light transmitting material and a hand grip portion;
a signal means for emitting a perceptible signal, said signal means including a light in said first end portion and an electrical circuit operably connected to said light;

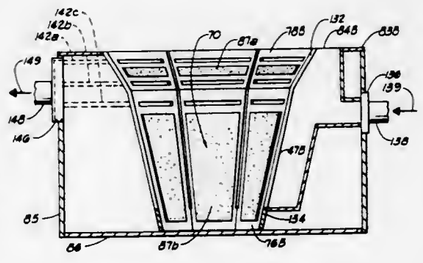
power supply means for enabling said power supply means to supply power to said signal means; and
means for providing biofeedback to a runner, wherein said biofeedback means includes a motion detection switch for indicating a vertical orientation of said body by closing said electrical circuit and for indicating a non-vertical orientation of said body by opening said electrical circuit in response to a repetitive movement of a runner while running to cause the power to be supplied to said signal means intermittently.

5,286,245
FLEXURE-COMPENSATED ROLL
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany
Filed Sep. 23, 1992, Ser. No. 950,647
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133562
Int. Cl.[5] B30B *3/04;* B21B *13/02*
U.S. Cl. 492—7 21 Claims



1. A flexure compensating roll comprising:
a rotatable external roll casing having a rotation axis;
a longitudinal support extending axially through the roll casing and facing toward the side of the roll casing to which pressure is applied and spaced away from that side of the roll casing;
an elongate piston supported on and extending along the longitudinal axis of the support defining a pressure space in the support beneath the piston, which space is pressurizable for moving the piston out of the support and toward the interior of the casing; sealing means between the piston and the support for the pressure space
a shoe supported on the piston for being moved by the piston out of and back toward the longitudinal support, the shoe having a side facing to the interior of the roll casing and being adapted externally to the internal diameter of the roll casing; the shoe having a circumferentially middle pressure chamber therein and also having a respective row of hydrostatic pockets arranged alongside the middle chamber at opposite circumferential sides of the middle chamber, and the middle chamber and the hydrostatic pockets facing out of the shoe surface and toward the interior, of the casing;
a pressure fluid connection between the pressure space beneath the piston and the middle pressure chamber of the shoe such that pressurizing of the pressure space delivers pressure fluid to the middle chamber;
unregulated pressure fluid connections to the hydrostatic pockets, and the connections to the hydrostatic pockets including choke elements which limit the quantity of pressure fluid to the pockets, the connection to the pockets bypassing both the pressure space and the middle chamber;
a regulation device for controlling the pressure force applied on the roll casing by regulating the pressure in the middle chamber and the regulation device not being connected with the pockets.

5,286,246
APPARATUS AND METHOD USING AIR PRESSURE AND VACUUM TO FORM FLAT-PANELED FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation of Ser. No. 805,412, Dec. 10, 1991, Pat. No. 5,176,609, which is a continuation-in-part of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224; and is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,459
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] B31B *1/44*
U.S. Cl. 493—154 3 Claims



1. A method of forming a sheet of material into a flat-paneled flower pot or flower pot cover, the steps of the method comprising:
positioning a sheet of material over an opening of a female die, the opening having at least three female forming surfaces for a flat-paneled base;
moving a male die into the opening of the female die, the male die having a male forming surface corresponding to each female forming surface and the sheet of material being pressed between the corresponding male and female forming surfaces to form the flat-paneled flower pot or flower pot cover as the male die is moved into the opening of the female die; and
introducing a blast of air directed into the opening of the female die at each intersection of laterally adjacent female forming surfaces as the male die is moved into the opening of the female die.

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5,286,247

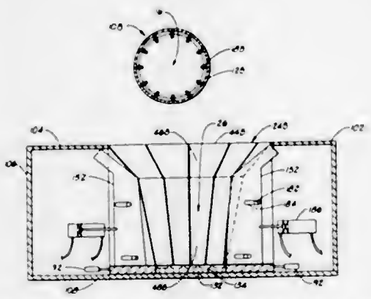
FLOWER POT OR FLOWER POT COVER WITH FINS

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Division of Ser. No. 805,419, Dec. 10, 1991, Pat. No. 5,221,248, which is a continuation-in-part of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation-in-part of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224, and a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 44,997

Int. Cl.[5] B31B *1/46*

U.S. Cl. 493—171 15 Claims



12. A method for forming a flower pot or flower pot cover with inwardly extending fins, comprising: placing a sheet of material between a male mold having a male molding surface and a female mold having an opening defining a female molding surface; moving the male mold into a forming position with the female mold wherein the male mold is disposed in the opening of the female mold with at least a portion of the sheet of material being disposed generally between the male molding surface and the female molding surface; and forming fins in the sheet of material whereby the flower pot or flower pot cover has fins extending inwardly from predetermined points of the flower pot or flower pot cover; wherein the step of forming inwardly extending fins further comprises:

moving a plurality of segments of the female mold to create spaces between the female segments;

moving a plurality of segments of the male mold to create fin-forming spaces between the male segments;

inserting a finger through each space between the female segments and into the corresponding aligned fin-forming space between two of the male segments whereby each finger pushes a fold in the sheet of material into the corresponding aligned fin-forming space between two of the male segments;

activating a vacuum of the male mold to hold the sheet of material and the folds in the sheet of material in place;

withdrawing the fingers from the fin-forming spaces between the male segments and the spaces between the female segments; and

moving the segments of the female mold together to push the segments of the male mold together until the folds in the sheet of material are pressed between the segments of the male mold to form inwardly extending fins in the sheet of material.

5,286,248

FLEXIBLE POUCH WITH FOLDED SPOUT

David P. Dunton, Mt. Clemens, Mich., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 478,883, Feb. 12, 1990, Pat. No. 4,978,232.

This application Oct. 1, 1990, Ser. No. 873,034

Int. Cl.[5] B31B *19/36*

U.S. Cl. 493—224 5 Claims



1. A method for producing flexible pouches comprising passing continuously a first web of a flexible plastic material over a shaping means to form the plastic material into an inverted U-shape having a rounded loop section, forming the loop section into an essentially flat section by continuously passing the web over the shaping means, the folding a portion of said flat section of material of the inverted U-shape outwardly along exterior surfaces of the plastic material of each leg of the inverted U-shaped plastic material to form a spout in the top of the flexible pouch and then sealing edges of said plastic material to form a pouch.

5,286,249

BRACE FOR FIXATION OF BONE FRACTURES

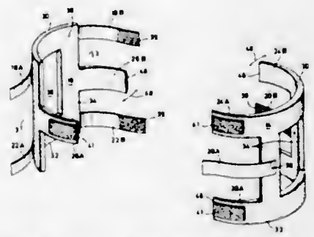
Peggy L. Thibodaux, P.O. Box 6685, Bakersfield, Calif. 93386-6685

PCT No. PCT/US89/04880, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992

PCT Filed Oct. 31, 1989, Ser. No. 854,660

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—12 11 Claims



1. A brace for external fixation of a fracture of a long bone comprising:

a first elongate, substantially rigid member having a cross-arm extending outwardly from each side of said first elongate member at each end thereof, the ends of the cross-arms being relatively flexible;

a second elongate, substantially rigid member having a cross-arm extending outwardly from each side of said second elongate member located at about the midpoint of the length thereof, the ends of the cross-arm being relatively flexible;

a strap affixed to each end of said second member for at least partly encircling a limb having a fractured bone therein when said second member is applied to one side of the limb and for engaging the ends of said first member to hold said first member in place on the other side of the limb; and

a strap affixed to said first member at about the midpoint thereof for at least partly encircling the limb and for engaging said second member, said straps causing the ends of the cross-arms of said first and second members to bend to conform to the shape of the limb when tightened around the limb, thereby resisting relative movement above and below the fracture in all directions.

5,286,250

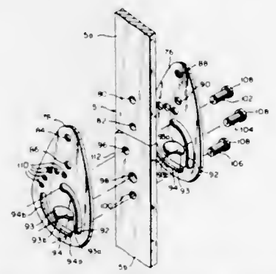
KNEE JOINT HINGE FOR BRACE

Andrew H. Meyers, 31 The Birches, Roslyn Estates, N.Y. 11576, and Roland J. Christensen, 192 E. 100 N, Fayette, Utah 84630

Filed Jun. 1, 1992, Ser. No. 890,800

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—16 19 Claims



1. A hinge for a brace having a sidebar with an upper portion and a lower portion, said hinge comprising:

first and second plates, each of said first and second plates having a plurality of cam slots disposed therein and being connected to the upper and lower portions of the sidebar; and

a plurality of cam pin followers each extending through said first and second plates and the lower portion of the sidebar such that said plurality of cam pin followers cooperate with said plurality of cam slots in said first and second plates to allow the lower portion of the sidebar to rotate through a predetermined angular range relative to the upper portion of the sidebar whereby an axis of rotation of the lower portion of the sidebar is constantly changing as the lower portion of the sidebar moves throughout said predetermined angular range;

wherein a first cam slot of said plurality of cam slots in each of said first and second plates has a first segment which is substantially transverse relative to the longitudinal direction of the lower portion of the sidebar, and a second segment which is directed away from said first segment at an obtuse angle.

5,286,251

HIP HARNESS

John K. Thompson, 2524 Old Oak Cir., Birmingham, Ala. 35243, and Randall B. Keith, 4324 Willow Bend Dr., Gardendale, Ala. 35071

Filed Apr. 10, 1992, Ser. No. 866,414

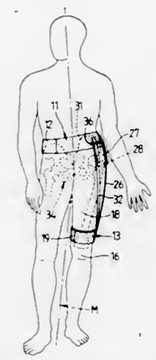
Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—23 10 Claims

1. Apparatus for limiting the movement of a patient's thigh to prevent inadvertent dislocation of the patient's femur from the patient's pelvic socket, said apparatus comprising:

(a) a flexible inelastic posterior strap fixably connected to a primary thigh belt wrapped around the patient's legs subjacent the muscle bulk of the patient's thigh and to a waist belt encircling the patient'waist such that said posterior strap will limit flexion of the patient's hip;

(b) a flexible inelastic medial strap fixably connected to said primary thigh belt adjacent said posterior strap and extending therefrom along the patient's tensor fascia latae



and across the patient's greater trochanter, wherein said medial strap is connected to said waist belt laterally of said posterior strap to limit flexion of the patient's hip and adduction of the patient's thigh; and

(c) a flexible inelastic anterior strap connected to said primary thigh belt adjacent said posterior strap and extending from said thigh strap along the anterior superior iliac spine, wherein said anterior strap is connected to said waist belt forwardly of said ilium to limit adduction of the patient's thigh.

5,286,252

DIAGNOSIS, EVALUATION AND TREATMENT OF CORONARY ARTERY DISEASE BY EXERCISE SIMULATION USING CLOSED LOOP DRUG DELIVERY OF AN EXERCISE SIMULATING AGENT BETA AGONIST

Ronald R. Tuttle, Escondido, and Clinton E. Browne, III, Oceanside, both of Calif., assignors to Gensia Pharmaceuticals, Inc., San Diego, Calif.

Division of Ser. No. 308,683, Feb. 9, 1989, Pat. No. 5,108,363, which is a continuation-in-part of Ser. No. 157,875, Feb. 19, 1988. This application Dec. 11, 1990, Ser. No. 625,362

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 10 Claims

1. A transdermal iontophoretic device for closed loop delivery of a drug to a mammal comprising:

at least one cardiovascular sensing device being operatively connected to said mammal;

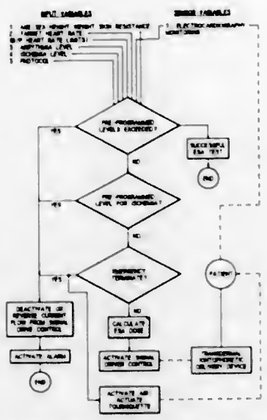
said device simultaneously being operatively connected to a device for receiving and processing a signal from said sensing device;

said receiving and processing device simultaneously being operatively connected to a power source;

said power source simultaneously being operatively connected to a transdermal iontophoretic drug delivery device; and

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said drug delivery device simultaneously being operatively connected to said mammal;



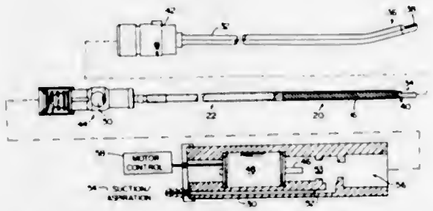
wherein an air-activated tourniquet is operatively connected to said receiving and processing device.

5,286,253

ANGLED ROTATING SURGICAL INSTRUMENT

Joseph Facci, Port Richey, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Oct. 9, 1992, Ser. No. 958,830
Int. Cl.[5] A61B *17/22*
U.S. Cl. 604—22 **20 Claims**



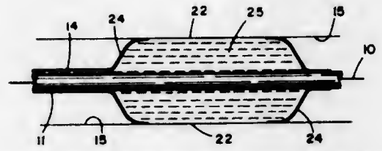
1. An angled motor-driven rotating surgical instrument, comprising:
a motor assembly;
a rotating cutter assembly;
a rigid elongated tubular sheath having a proximal end configured to be coupled to said motor assembly and a distal end including means for rotatably supporting a rotating cutter assembly, said tubular sheath having a bend formed intermediate said ends;
a torque-transmitting member received within said sheath and comprising a flexible section juxtaposed to the bend in said sheath;
said motor assembly including a coupling for receiving said proximal end of said sheath to apply torque to rotate said torque-transmitting member within and relative to said sheath; and
wherein said rotating cutter assembly is engaged with the distal end of said torque-transmitting member for rotation therewith;
wherein said flexible section of said torque-transmitting member comprises:
a tubular inner member having a plurality of substantially circumferential slits formed therein to allow flexibility of said inner member while it is being rotated within said bend in said tubular sheath; and
a tubular sleeve of a polymeric material secured to said inner member within said tubular sheath.

5,286,254

DRUG DELIVERY APPARATUS AND METHOD

James E. Shapland; Mark B. Knudson, both of Shoreview, and Jin Shimada, Falcon Heights, all of Minn., assignors to Cor-Trak Medical, Inc., Roseville, Minn.

Continuation-in-part of Ser. No. 705,731, May 24, 1991, which is a continuation-in-part of Ser. No. 637,299, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,961, Jun. 15, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 937,464
Int. Cl.[5] A61B *17/36*
U.S. Cl. 604—21 **17 Claims**



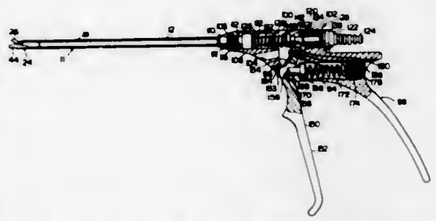
1. A drug delivery apparatus having a distal end and a proximal end for local delivery of a drug to internal body tissue comprising:
(a) a flexible catheter for insertion into an internal target area of a body;
(b) drug delivery means connected to said catheter for delivering a drug to said target area, said drug delivery means having a fluid delivery passageway for delivering said drug to said distal end, an outer wall and a selectively permeable microporous outer membrane portion proximate said distal end of said drug delivery apparatus, said microporous outer membrane further comprising pores sized from about 10 Å to about 1 micron and at least one impermeable end portion to enhance precise delivery of said drug to said internal target area; and
(c) phoresis means for assisting the transport of said drug across said selectively permeable microporous outer membrane.

5,286,255

SURGICAL FORCEPS

Robert M. Weber, Diamond Bar, Calif., assignor to Linvatec Corporation, Largo, Fla.

Filed Jul. 29, 1991, Ser. No. 737,338
Int. Cl.[5] A61B *17/28, 17/32*
U.S. Cl. 604—22 **13 Claims**



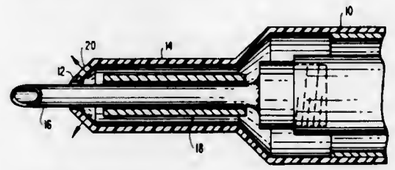
1. A surgical forceps for engaging tissue in the body comprising:
an elongate probe including an outer tubular member having a proximal end and a distal end and an inner member movable within said outer probe member and having a proximal end and a distal end;
jaw means for engaging tissue including a first jaw coupled with said outer probe member distal end and a second jaw coupled with said inner probe member distal end and mounted for pivotal movement relative to said first jaw in response to movement of said inner probe member within said outer probe member;
handle means coupled with said outer probe member proximal end and said inner probe member proximal end for moving said inner probe member relative to said outer probe member and pivoting said second jaw relative to said first jaw, said handle means including hand grip members squeezable to impart a force to pivot said first jaw via movement of said inner probe member; and
force diverting means coupled with said handle means for diverting at least a portion of a force applied to said grip members from said jaw means when the applied force exceeds a predetermined force, said force diverting means including movable pivot means for pivotally mounting one of said grip members, said pivot means being automatically moved closer to the other of said grip members when the applied force exceeds said predetermined force.

5,286,256

FLUID INFUSION SLEEVE

Richard J. Mackool, 31-27 41st St., Astoria, N.Y. 11103

Filed Dec. 30, 1992, Ser. No. 998,442
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **4 Claims**



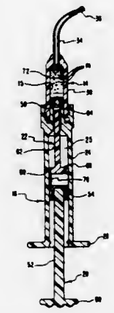
1. A surgical instrument for removing a cataract through an incision in a patient's eye, comprising
a hollow, compressible infusion sleeve;
said hollow, compressible infusion sleeve having a tapered, ported, distal and portion and having an extreme end portion;
said hollow, compressible infusion sleeve further including a cylindrical portion;
said cylindrical portion intersecting with and extending away from said tapered, ported, distal end portion;
a hollow, vibrating needle, having an inner needle diameter, an outer needle diameter and a wall thickness, said hollow, vibrating, needle extending into a patient's eye during the removal of a cataract;
said cylindrical portion and said tapered, ported, distal end portion surrounding said hollow, vibrating needle with there being a space between the extreme end portion of said tapered, ported distal end portion and the hollow, vibrating needle;
a free-floating, rigid, hollow, sleeve surrounding a portion of said hollow, vibrating needle with said free-floating, rigid, hollow, sleeve having an outer sleeve diameter and an inner sleeve diameter,
said inner sleeve diameter being larger than said outer needle diameter, thereby defining a path of fluid between said hollow vibrating needle and said rigid, hollow, sleeve;
said free-floating, rigid, hollow, sleeve being surrounded by said cylindrical portion of said, whereby said rigid, hollow, sleeve prevents the hollow, compressible infusion sleeve from collapsing against said hollow, vibrating needle; and
a stop for limiting the movement of said free-floating, rigid, hollow sleeve toward the tapered, ported, distal end portion and extreme end portion of said hollow compressible infusion sleeve.

5,286,257

SYRINGE APPARATUS WITH DETACHABLE MIXING AND DELIVERY TIP

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Nov. 18, 1992, Ser. No. 977,685
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—82 **16 Claims**



1. A syringe apparatus comprising:
barrel means forming first and second chambers, said second chambers adapted for receiving first and second substances to be mixed therein;
valve means situated in the barrel means between the first and second chambers for providing passage of air into and out of the second chamber; and
plunger means, slidably disposed in said barrel means, for sealing the valve means to prevent passage of air therethrough and for expelling the mixed substances from said second chamber as said plunger means is pushed into said barrel means, and wherein said plunger means comprises:
a first plunger member comprising a distal end with a piston mounted thereon, the distal end and piston being slidably disposed within said first chamber; and
a second plunger means separate and unattached from the first plunger member so as to be moveable only in tandem with the first plunger member once contacted by the first plunger member, and comprising a distal end for contacting the valve means and for sealing the valve means as said contact is made, and further comprising a proximal end slidably situated in said first chamber so as to be contacted by said piston at the distal end of the first plunger member, the distal end of said second plunger member thereafter being moveable through said second chamber by continued movement of the first plunger member.

5,286,258

MULTIPHARMACEUTICAL DELIVERY SYSTEM

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Mar. 8, 1991, Ser. No. 668,278
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—90 **24 Claims**

1. A variable ratio, liquid pharmaceutical dispensing system comprising:

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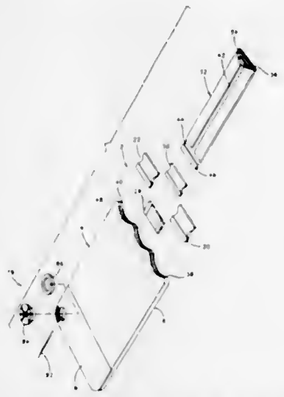
first and second variable volume liquid reservoirs containing first and second liquids;

a variable volume accumulator chamber;

means for permitting fluid flow from the first and second reservoirs into the variable volume accumulator chamber while preventing backflow;

a pharmaceutical delivery head;

means, including a manually movable element movable by a user between open and closed positions, for permitting and blocking fluid flow from the variable volume accumulator chamber to the pharmaceutical delivery head when the movable element is in the open and closed positions respectively;



means for forcing first and second volumes of the first and second liquids from the first and second reservoirs, respectively, to the variable volume accumulator chamber via the fluid flow permitting means when the movable element is in the closed position, so that the volume of the variable volume accumulator chamber increases by an amount equal to the first and second volumes combined, and the first and second volumes of the first and second liquids creates a liquid mixture in the variable volume accumulator chamber; and

means for expulsing the liquid mixture from the variable volume accumulator chamber through the pharmaceutical delivery head via the fluidly coupling means.

5,286,259

DUAL-DIAMETER MULTIFUNCTION CATHETER

Dipankar Ganguly, Redmond, and Faina Pulvermakher, Bellevue, both of Wash., assignors to Diagnostic Devices Group Limited, Kirkland, Wash.

Continuation of Ser. No. 494,109, Mar. 15, 1990, Pat. No. 5,108,369. This application Feb. 18, 1992, Ser. No. 837,724

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

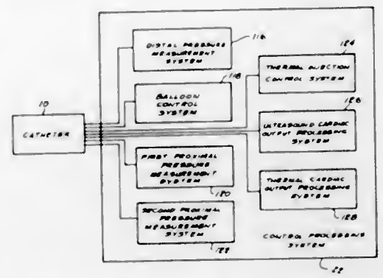
Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **5 Claims**

1. A catheter comprising:

an external tube having proximal and distal ends and being provided with a primary lumen and a plurality of secondary lumens, said primary lumen being roughly circular in cross section and each said secondary lumen roughly defining a segment of an annulus in cross section; and

an internal tube having proximal and distal ends and being provided with a plurality of internal tube lumens, each said internal tube lumen roughly defining a circular sector



in cross section, said internal tube being received within said primary lumen of said external tube.

5,286,260

MODULAR HIP PROSTHESIS

Richard Bolesky; Todd S. Smith, and Charles E. Whitcraft, Jr., all of Warsaw, Ind., assignors to DePuy Inc., Warsaw, Ind.

Division of Ser. No. 450,058, Dec. 13, 1989, Pat. No. 5,181,928, which is a continuation of Ser. No. 896,857, Aug. 15, 1986, abandoned. This application May 29, 1992, Ser. No. 891,419

Int. Cl.[5] A61F *2/36, 2/32*

U.S. Cl. 623—23 **10 Claims**



1. A modular hip prosthesis assembly for the replacement of a portion of a femur, the assembly comprising

a stem member of a predetermined size and shape having an upper portion and a lower portion and selected from a group consisting of differently sized and shaped stem members, each of said stem members lower portions sized and shaped to be received into said femur,

a body member of a predetermined size and shape to replace a portion of the femur and selected from a group consisting of differently sized and shaped body members, each of said body members configured to be received over one of said upper portions of said stem members,

a head member of a predetermined size and shape to replace the head of the femur and selected from a group consisting of differently sized and shaped head members, and

a neck member of a predetermined size and shape selected from a group consisting of differently sized and shaped neck members demountably engageable with any one of said body members and adapted to receive one of said head members in a spaced apart relation from one of said body members.

5,286,261

INFLATABLE BALLOON FOR TREATMENT OF RENTAL DETACHMENTS

Jaime Roizenblatt, Av. Angélica, 1045-Conjs. 52, 01227 Sao Paulo SP, Brazil

PCT No. PCT/BR91/00017, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO92/03996, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 20, 1991, Ser. No. 855,635

Claims priority, application Brazil, Aug. 30, 1990, P19004310

Int. Cl.[5] A61M *29/02*

U.S. Cl. 606—192 **18 Claims**

1. An inflatable balloon for use in the treatment of retinal detachments comprising:

a substantially hollow elliptic-shaped body, the body having a first apex and a second apex;

a solid base, the base being integrally formed within the second apex of the body; and

a solid cylindrical stem formed continuously with the base, wherein the solid base and stem provide a liquid-tight seal for the body of the balloon.

5,286,262

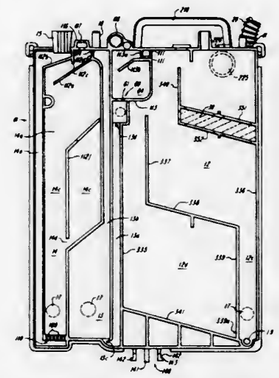
MULTIPURPOSE COLLECTION VESSEL

Steve A. Herweck, Nashua, and Theodore Karwoski, Hollis, both of N.H. assignors to Atrian Medical Corp., Hollis, N.H.

Continuation-in-part of Ser. No. 385,823, Jun. 26, 1989, Pat. No. 5,141,504, which is a continuation-in-part of Ser. No. 255,764, Oct. 11, 1988, Pat. No. 4,988,342, and a continuation-in-part of Ser. No. 20,449, Mar. 2, 1987, abandoned. This application Oct. 3, 1991, Ser. No. 770,614

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—321 **26 Claims**



1. A vessel for the collection of body fluids such as blood, such vessel comprising a collection chamber separated into upper and lower chambers by an angled divider wall such that said upper chamber forms a primary collection chamber that lies generally over and above one side of said lower chamber, first and second fluid inlets positioned in upper regions of said upper and said lower chamber, respectively, said second inlet including an overflow inlet located so that blood can overflow the upper chamber through the second inlet into the lower chamber, a filter located between said first inlet and said upper chamber for removing gross material from collected blood to make it suitable for reinfusion, and a reinfusion port in said upper chamber, whereby said vessel selectively functions as an autotransfusion device by attaching the first inlet to a collection tube, and as a surgical blood collection and autotransfusion device that receives overflow blood from said upper chamber in said lower chamber without back mixing of blood in said lower chamber with blood for reinfusion in said upper chamber.

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5,286,263

USE OF COPOLYMERS BASED ON LONG-CHAIN ALKYL VINYL ETHERS AND ETHYLENICALLY UNSATURATED DICARBOXYLIC ANHYDRIDES FOR RENDERING LEATHERS AND SKINS WATER-REPELLENT

Ortwin Schaffer, Ludwigshafen; Herbert Bay, Reuthlingen; Karl Stork, Carlsberg; Norbert Greif, Bobenheim; Knut Oppenlaender, Ludwigshafen; Walter Denzinger, Speyer, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/01283, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO91/02094, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 6, 1990, Ser. No. 829,062

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1989, 3926168

Int. Cl.[5] **C14C** *3/08*

U.S. Cl. 8—94.33 **6 Claims**

1. A process for rendering leathers and skins water-repellent, which comprises using a copolymer which is obtainable by free radical copolymeriztion of

(a) C_8–C_{40}-alkyl vinyl ethers or a mixture of C_8–C_{40}-alkyl vinyl ethers and not more than 50 mol % of C_8–C_{40}-monoolefins with

(b) ethylenically unsaturated C_4–C_8-dicarboxylic anhydrides to give a copolymer having a molecular weight of from 500 to 20,000 g/mol, subsequent solvolysis of the anhydride groups of the copolymer and partial or complete neutralization of the carboxyl groups formed during the colvolysis, in an aqueous medium by means of a base, and which is present in the form of an aqueous solution or dispersion.

5,286,264

GASOLINE DETERGENT ADDITIVE COMPOSITION AND MOTOR FUEL COMPOSITION

Joseph M. Russo, Poughkeepsie; Sheldon Herbstman, New City, and Jefrey B. Furman, Middletown, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,796

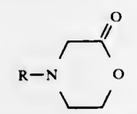
Int. Cl.[5] **C10L** *1/22*

U.S. Cl. 44—347 **30 Claims**

1. A detergent additive composition comprising

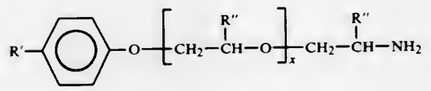
a) a first component comprising the reaction product of:

i. a 4-alkyl-2-morpholinone represented by the formula:



in which R represents a monovalent aliphatic radical having from 1 to 10 carbon atoms, and

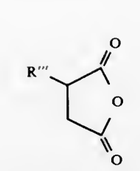
ii. an alkylphenoxypolyoxyalkylene amine represented by the formula:



in which R′ represents a hydrocarbyl radical having from 4 to 30 carbon atoms, x has a value from 5 to 50, and R″ represents a methyl radical or a mixture of hydrogen and methyl radicals;

b) a second component comprising the reaction product of

i. a polyalkenyl succinic acid anhydride represented by the formula



where R‴ is a polyalkenyl radical with an weight average molecular weight of about 300 to about 4000; and ii. a polyethylene polyamine represented by the formula

$$H_2N+CH_2-CH_2-NH\frac{}{}_n CH_2-CH_2-NH_2$$

where n is a number between 0 and about 6; and

c) a third component comprising a polyalphaolefin.

5,286,265

CARBAMATES, THEIR PRODUCTION AND USE AS FUELS ADDITIVES

Richard A'Court, Beverley; William J. Fox, London; John E. Hamlin, and Sean P. O'Connor, both of Hull, all of United Kingdom, assignors to BP Chemicals Limited, London, England

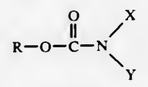
Division of Ser. No. 737,457, Jul. 29, 1991, Pat. No. 5,126,477, which is a division of Ser. No. 305,724, Jul. 31, 1989, Pat. No. 5,103,041. This application Apr. 14, 1992, Ser. No. 868,485

Claims priority, application United Kingdom, Jun. 25, 1987, 8714872; Jun. 25, 1987, 8714873; Jun. 25, 1987, 8714874

Int. Cl.[5] **C10L** *1/22*

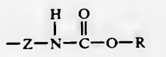
U.S. Cl. 44—387 **15 Claims**

1. An internal combustion fuel concentrate composition comprising as a first component from 1 to 95% by weight of a chlorine free carbamate prepared by reacting a carbamate of the formula:



(I)

wherein X and Y are independently any of hydrogen, a hydrocarbyl group or a hetero-substituted hydrocarbyl group or the group of formula:



(II)

where z is either a divalent hydrocarbyl, a substituted hydrocarbyl group or the group of formula:

(alkylene(m(NH)n(alkylene)m (III)

in which n=o to 4 and m=1 to 4, and R is a hydrocarbyl or substituted hydrocarbyl group, provided that if either one of X or Y is the group of formula (II), the other of X or Y is hydrogen, with a compound of the formula:

R^1OH (VI)

wherein R^1 is a hydrocarbyl or a hetero-substituted hydrocarbyl group different from R in the presence of either a strong organic base or a tetrahydrocarbyl titanate so as to exchange the group R in formula (I) with a group R^1, and as a second component a fuel compatible solvent therefor.

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5,286,266

MOTOR FUEL DETERGENT ADDITIVES - ASYMMETRICAL UREAS OF HYDROCARBYLOXYPOLYETHER AMINES AND TERTIARY AMINOALKYL PRIMARY AMINES

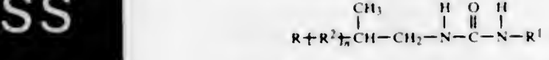
Sheldon Herbstman, New City, N.Y., assignor to Texaco, Inc., White Plains, N.Y.

Filed Jul. 9, 1992, Ser. No. 910,912
Int. Cl.[5] C10L 1/22; C07C 273/18
U.S. Cl. 44—417 **32 Claims**

15. A motor fuel composition comprising:

a) a major portion of a hydrocarbon fuel boiling in the range between 90° F. and 370° F.; and

b) a minor amount, sufficient to reduce the formation of deposits on intake valves, of an asymmetrical urea comprising a compound of formula



where R is a C_{12}-C_{24} alkylphenoxy or di-alkylphenoxy group, R^1 is hydrogen or a C_5-C_{20} tertiary aminoalkyl group, R^2 is a C_2 to C_4 oxyalkylene group and n is a number between about 5 and about 20.

5,286,267

POLYETHER HYDROXYETHYLAMINOETHYL OXALAMIDE MOTOR FUEL DETERGENT ADDITIVES

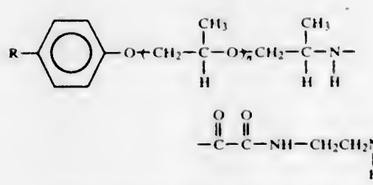
Wei-Yang Su, Austin, Tex.; Sheldon Herbstman, New City, N.Y.; Robert L. Zimmerman, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,798
Int. Cl.[5] C10L 1/22; C07C 233/00
U.S. Cl. 44—419 **7 Claims**

4. A motor fuel composition comprising:

(a) a major portion of a hydrocarbon fuel boiling in the range between 90° F. and 370° F.; and

(b) a minor amount, sufficient to reduce the formation of deposits on intake valves, of a polyether hydroxyethylaminoethyl oxalamide of the formula



where R is nonyl (C_9H_{19}) and is integer of 12.5.

5,286,268

PAINT MIST REMOVING APPARATUS

Makoto Watanabe, Moriguchi, Japan, assignor to Taikisha Ltd., Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,621
Claims priority, application Japan, Nov. 26, 1991, 3-310320; Jan. 22, 1992, 4-1717[U]
Int. Cl.[5] B01D 47/10
U.S. Cl. 55—228 **10 Claims**

1. A paint mist removing apparatus comprising:

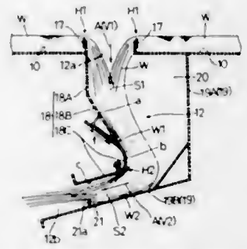
(a) a first chamber wherein paint may be applied to an object;

(b) a second chamber adjacent to said first chamber;

(c) a first panel including a first side plate and a second panel including a second side plate, said panels positioned between said first and second chambers and forming a passage inlet opening between said first and second chambers;

(d) a continuous first side wall within said second chamber including a vertical wall attached to said first panel at said first side plate, an upwardly facing inclined wall surface attached to said vertical wall, a curved wall surface extending below said inclined wall surface and a downwardly facing inclined wall surface attached to and extending below said curved wall surface;

(e) a substantially vertical second side wall within said second chamber substantially parallel to said vertical wall and attached to said second panel at a point substantially removed from said second side plate to form an area including a hollow space through which air and cleaning liquid from said inlet opening may pass and formed such that said area is substantially wider than said inlet opening; and



(f) an overflow barrier provided at said inlet opening to form a liquid shooting section for scattering a cleaning liquid into fine droplets through a paint laden gas from said passage inlet through a constricted passage formed from said passage inlet along said first side wall,

wherein a first cleaning region is formed inside said constricted passage between said passage inlet and said upwardly facing inclined wall surface, and

a second cleaning region is formed inside said constricted passage downstream of said curved wall surface which further scatters the cleaning liquid and guides the cleaning liquid in fine droplets toward said downwardly facing inclined wall surface for effecting a second stage of paint mist capture.

5,286,269

PRODUCTION OF COMPOSITE GLASS POWDER OF ANY DESIRED PARTICLE SIZE FROM A PARTICULATE MULTICOMPONENT MIXTURE

Hartmut Paschke, Ergolding, and Hermann Ditz, Landshut, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 969,880
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136115
Int. Cl.[5] C03B 23/20; C03C 3/072
U.S. Cl. 65—18.1 **7 Claims**

1. A process for the production of composite glass powder of a desired particle size made from a fine particle size, multicomponent mixture, comprising a powder of a base glass and material selected from the group consisting of a filler, an additive, and mixtures thereof, said process comprising sintering the fine particle size, multicomponent mixture for 10–60 minutes at a temperature at which the base glass has a viscosity of 10^5–$10^{6.5}$ dPas to form a sintered cake, cooling the cake, and grinding the resultant cooled sintered cake to a powder of the desired particle size.

5,286,270

METHOD OF FORMING GLASS HAVING A ZN_2SIO_4 ENAMEL LAYER THEREON

Clifford G. Ruderer; Robert C. Stroup, both of Pittsburgh, and George C. Korn, Coraopolis, all of Pa., assignors to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 799,389, Nov. 27, 1991, Pat. No. 5,208,191, which is a continuation-in-part of Ser. No. 579,301, Sep. 7, 1990, Pat. No. 5,153,150. This application Apr. 7, 1993, Ser. No. 44,293
Int. Cl.[5] C03B 11/00, 17/04
U.S. Cl. 65—33 **14 Claims**

1. A method of producing a section of formed decorated glass within a press comprising the steps of:

A. applying a layer of an enamel composition upon a section of vitreous glass, such enamel composition comprising:

i. a crystallizable glass frit portion including precursors from which Zn_2SiO_4 can be crystallized during firing of said composition;

ii. a seed powder which causes at least a portion of said precursors to crystallize upon firing such that during firing at least a portion of said crystallizable glass frit portion yields crystallized Zn_2SiO_4 formed by said precursors; and

iii. Bi_2O_3, which is added separately;

B. firing said section of vitreous glass to a temperature in the range of about 900° F. to about 1400° F. to form crystallized Zn_2SiO_4; and

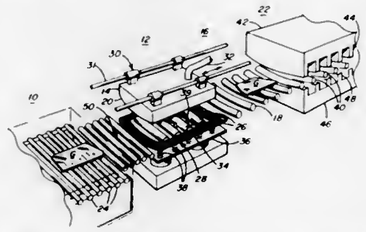
C. forming said section of vitreous glass to a desired shape in a press to produce a section of decorated glass.

5,286,271

METHOD AND APPARATUS FOR BENDING GLASS SHEETS

Richard E. Rueter, Gibsonia; Robert G. Frank, Sarver, and Michael T. Fecik, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 2, 1992, Ser. No. 908,150
Int. Cl.[5] C03B 23/023
U.S. Cl. 65—106 **20 Claims**



1. A method of shaping heat softenable sheet material comprising:

heating a sheet to its heat softening temperature;

conveying said sheet to a shaping station having an upper mold with a downwardly facing shaping surface which generally corresponds to a desired shape of said sheet;

engaging said sheet with said downwardly facing shaping surface;

drawing a vacuum through said shaping surface to conform said sheet to said downwardly facing shaping surface;

moving said mold and said engaged surface to a transfer station having at least one member providing a contoured conveying surface;

releasing said vacuum to deposit said shaped glass directly onto said conveying surface; and

advancing said sheet along said conveying surface.

5,286,272

WATER SOLUBLE POTASSIUM PHOSPHATE CAKING INHIBITOR FOR FERTILIZER

Richard L. Biamonte, 2822 Hamilton Blvd., Allentown, Pa. 18104, and Lorraine A. Corvino, 948 W. State St., Coopersburg, Pa. 18036

Filed Mar. 20, 1992, Ser. No. 854,197
Int. Cl.[5] C05C 9/00; C05B 7/00
U.S. Cl. 71—29 **3 Claims**

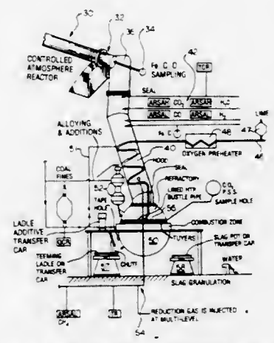
1. An inorganic fertilizer composition that flows freely and resists caking consisting essentially of at least one beneficial agent and an anti-caking agent in an amount in the range of 0.25% to 5.0% by weight to reduce the caking tendency of the beneficial agent wherein the anti-caking agent is tripotassium phosphate, said beneficial agent being selected from the group consisting of ammonium nitrate, monoammonium phosphate, diammonium phosphate, urea phosphate, monopotassium phosphate, potassium nitrate, potassium chloride, potassium sulfate, ammonium sulfate, urea, calcium nitrate, magnesium sulfate, magnesium nitrate, boric acid, copper EDTA (ethylenediaminetetraacetic acid), copper sulfate, iron DTPA, iron EDTA, manganese EDTA, manganese sulfate, sodium molybdate, ammonium molybdate and zinc sulfate.

5,286,273

METHOD FOR STEEL MAKING IN HIGH TEMPERATURE REACTOR

Ghulam Nabi, 220 Duncan Mills Road, Suite 619, North York, Ontario, Canada M3B 3J5

Continuation-in-part of Ser. No. 619,254, Nov. 23, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,379
Claims priority, application Canada, Jul. 14, 1990, 2019050
Int. Cl.[5] C21B 13/12
U.S. Cl. 75—10.22 **39 Claims**



1. A process for making steel comprising the steps of:

introducing a charge comprising iron ore comprising Fe_2O_3, and coal into an inlet end of a controlled atmosphere reactor having an inlet end and an outlet end while injecting oxygen into said controlled atmosphere reactor near said inlet end, and passing said charge through said controlled atmosphere reactor to said outlet end thereof;

discharging said charge through a sealed connection into an inlet end of a potential shift reactor for increasing the temperature and reduction of said charge, said potential shift reactor having an inlet and outlet end and passing said charge through said potential shift reactor to said outlet end thereof;

discharging said charge through a sealed connection from said outlet end of said potential shift reactor into a high temperature reactor in which steel is produced by combustion of reduction gases with oxygen;

meanwhile causing gases produced in said high temperature reactor to flow, counter-current to said charge, from said

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high temperature reactor through said potential shift reactor and through said controlled atmosphere reactor to said inlet end thereof;

regenerating said reduction gases at said inlet end of said controlled atmosphere reactor by reaction with said coal and iron ore of said charge, and with said oxygen injected into said controlled atmosphere reactor;

whereby said reduction gases are converted to form a mixture of CO, H_2, CO_2 and H_2O at an elevated temperature and whereby iron ore is reduced at least from Fe_2O_3 to Fe_3O_4 at temperatures above 800° C. in said controlled atmosphere reactor.

5,286,274

METHOD FOR TREATMENT OF POTLINING RESIDUE FROM PRIMARY ALUMINIUM SMELTERS

Jon G. Lindkvist, Oslo, and Terje Johnsen, Vanse, both of Norway, assignors to Elkem Technology a/s, Norway

Filed Nov. 3, 1992, Ser. No. 971,054

Claims priority, application Norway, Nov. 7, 1991, 914352

Int. Cl.[5] C22B *21/00*

U.S. Cl. 75—10.48 **20 Claims**

1. A method for treating a spent potliner from a furnace used for electrolytic smelting of aluminum comprising the steps of:

a) melting crushed spent potliner from said aluminum smelting furnace in a closed electrothermal furnace at a temperature of about 1300° C. to about 1750° C. to form a melt, said spent potliner comprising solid carbon and refractory material, said melt comprising aluminum, fluoride and carbon;

b) supplying an oxidizing agent to said melt to oxidize the carbon and other oxidizable components present in said melt; and

c) supplying a source of calcium oxide to said melt in an amount to react with all the fluoride present in said melt and form calcium fluoride and to form calcium aluminate slag or calcium aluminate silicate slag, said slag containing said calcium fluoride formed in said melt.

5,286,275

POWDER MIXTURE FOR POWDER METALLURGY AND BINDER THEREFOR

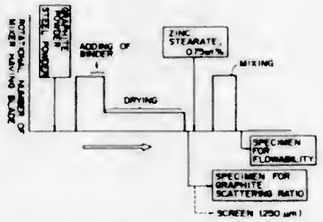
Masahiro Murakami; Hironori Suzuki; Hitoshi Sakuma; Takehiko Hayami, all of Kobe, and Jiro Chosokabe, Miki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 22, 1992, Ser. No. 872,120

Claims priority, application Japan, Apr. 22, 1991, 3-119241; Mar. 4, 1992, 4-83400

Int. Cl.[5] C22C *1/10*

U.S. Cl. 75—252 **7 Claims**



1. A powder mixture for powder metallurgy comprising a starting powder for powder metallurgy containing a metal powder, a powder of physical property improving ingredients and a lubricant and, blended therewith as a binder, a synthetic styrenic rubber copolymer comprising:

5 to 75 parts by weight of styrene and 95 to 25 parts by weight of butadiene and/or isoprene, as the monomer ingredient or a hydrogenation product thereof:

wherein said binder is blended in an amount of 0.1 to 0.3% by weight as a solid content based on 100 parts by weight of the starting powder; and

wherein said powder of physical property improving ingredients is one or more of inorganic powders selected from the group consisting of copper, nickel, chromium, molybdenum, graphite, manganese sulfide, phosphorus and sulfur.

5,286,276

QUENCHING SYSTEM TO PREVENT LOSS OF FLUIDITY IN A REACTION VESSEL

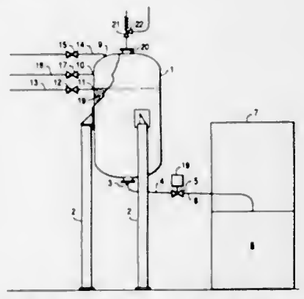
Paul Holmes, and Stephen M. Jones, both of Cleveland, England, assignors to Tloxide Group Services Limited, London, England

Filed Sep. 4, 1992, Ser. No. 940,993

Claims priority, application United Kingdom, Sep. 9, 1991, 9119205

Int. Cl.[5] C21D *11/00*

U.S. Cl. 75—375 **9 Claims**



1. A quench system for a chemical reaction comprising a quench pressure vessel and a reaction vessel, the quench pressure vessel having a base which is equipped with a full bore outlet valve, the outlet valve being connected to the reaction vessel by a connecting pipe, the quench pressure vessel containing an amount of a liquid said amount being insufficient to fill the quench vessel thereby creating ullage said ullage containing a gas at a pressure greater than atmospheric pressure and said pressure being sufficient to discharge said liquid from said quench vessel through said outlet valve when open, the quench system being equipped with means to detect cessation of stirring of reactants contained in said reaction vessel or power failure and said outlet valve being equipped with means to open the outlet valve in response to detection of cessation of stirring or power failure.

5,286,277

METHOD FOR PRODUCING STEEL

Rafik Aizatulov; Grigori Galperine, both of Novokuznetsk, U.S.S.R.; Gregory Gitman, Atlanta, Ga.; Jakov Grenader, Moscow, and Boris Kustov, Novokuznetsk, both of U.S.S.R., assignors to Zaptech Corporation, Norcross, Ga.

Filed May 26, 1992, Ser. No. 889,018

Int. Cl.[5] C21C *5/32*

U.S. Cl. 75—523 **126 Claims**

1. A method of steelmaking, conducted in an at least partially refractory-lined furnace, comprising the steps of:

(a) introducing a first basic slag forming material into the furnace;

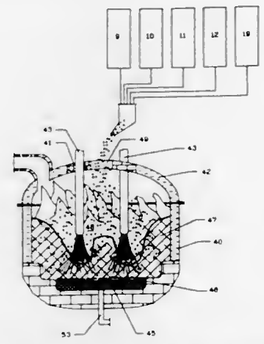
(b) then charging a first solid carbonaceous material including volatile hydrocarbons;

(c) then charging on top of previously charged materials at least a fraction of a solid ferrous metallic material;

(d) then preheating at least a part of said fraction of the metallic material charged in the preceding step by a process comprising the substeps of:

i. blowing a controllable flow of oxidizing gas toward said charged solid ferrous metallic material with a lancing means having a tip for directing the flow of oxidizing gas, wherein the tip is positioned above said solid ferrous metallic material charged in the preceding step; and

ii. essentially simultaneously with said blowing substep, charging continually on top of said solid ferrous metallic material a controllable amount of at least a second solid carbonaceous fuel material including a higher average concentration of volatile hydrocarbons than said first solid carbonaceous material; wherein said second solid carbonaceous fuel material is at least partially combusted to preheat the fraction of said solid ferrous metallic material charged in the preceding step;



(e) then burning a first portion of the preheated ferrous metallic material in a central zone of the furnace to release additional heat to melt at least a second portion of the preheated solid ferrous metallic material located in an area remote from the central zone, while protecting said second portion from oxidation;

(f) accumulating molten ferrous metal at the bottom of the furnace;

(g) at least partially refining and at least partially superheating said accumulated molten ferrous material above the melting point by a process including the substeps of:

i. charging additional basic slag forming material into the furnace; and

ii. blowing additional oxidizing gas with said lancing means; and

(h) tapping off said molten ferrous metal and at least a part of a resulting slag material after the desired tap temperature is reached.

5,286,278

DRY PROCESS FOR THE COLD BRIQUETTING OF METALLURGICAL DUSTS

Karl Heckel, Franz Schmidtweg 24, A-8046 Graz, Austria

PCT No. PCT/AT90/00085, § 371 Date Feb. 25, 1992, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/03577, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 29, 1990, Ser. No. 835,429

Claims priority, application Austria, Aug. 30, 1989, 2041/89

Int. Cl.[5] C04B *35/16*

U.S. Cl. 75—746 **3 Claims**

1. A dry process for cold briquetting of metallurgical dusts, including converter steel dust, to provide transportable briquettes which do not give off dust, comprising:

a. admixing metallurgical dust and at least one basic additive selected from the group consisting of lime, dolomite, magnetite, dunite, olivine and bauxite, in burnt or unburnt form, to provide a mixture; and

b. forming the mixture into briquettes at pressures in excess of 10,000 bar and at ambient temperature.

5,286,279

GAS PERMEABLE COATED POROUS MEMBRANES

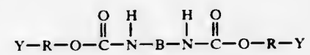
Huey S. Wu, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Dec. 14, 1992, Ser. No. 990,310

Int. Cl.[5] B01D *53/22, 69/12, 71/50*

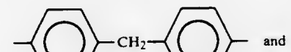
U.S. Cl. 95—45 **4 Claims**

1. A flexible gas permeable material which comprises a flexible porous, polymeric material having passageways through the material, in which the material is selected from the class consisting of porous polytetrafluoroethylene, porous polyamides, porous polyesters, porous polycarbonates, and porous polyurethanes; and which has a coating on at least a portion of the passageways, of a coating composition having the formula:



wherein

B is selected from the class consisting of



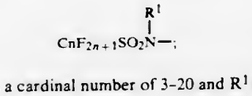
and



, and

R is $(-CH_2-)_x$ wherein x is a cardinal number of 1–4;

Y is $C_nF_{2n+1}-$ or



where n is a cardinal number of 3–20 and R^1 is H or alkyl of 1–4 carbons.

5,286,280

COMPOSITE GAS SEPARATION MEMBRANE HAVING A GUTTER LAYER COMPRISING A CROSSLINKED POLAR PHENYL-CONTAINING - ORGANOPOLYSILOXANE, AND METHOD FOR MAKING THE SAME -

Jeffrey J. Chiou, Irvine, Calif., assignor to Hoechst Celanese Corp., Charlotte, N.C.

Filed Dec. 31, 1992, Ser. No. 999,449

Int. Cl.[5] B01D *53/22, 71/64*

U.S. Cl. 95—45 **25 Claims**

1. A composite gas separation membrane comprising:

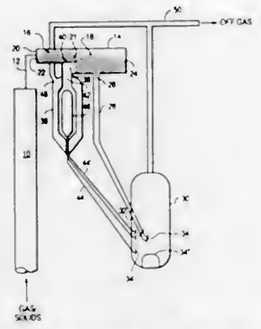
(A) a porous polyacrylonitrile structural support material having a polyacrylonitrile surface;

(B) a gutter layer coating comprising a crosslinked polar phenyl-containing-organopolysiloxane material on the polyacrylonitrile surface of the structural support material, leaving an uncoated gutter layer surface; and

(C) an ultrathin 6FDA-type polyimide selective membrane layer coating on the uncoated gutter layer surface.

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5,286,281
SOLIDS-GAS SEPARATION APPARATUS AND METHOD
David B. Bartholic, 75 Wetumpka La., Watchung, N.J. 07060
Filed Jan. 21, 1993, Ser. No. 981,301
Int. Cl.[5] B01D *45/12*
U.S. Cl. 95—271 **51 Claims**



32. The method of separating solid particles entrained in a process gas stream and producing a gas stream having a reduced solid particle content, which method comprises:

(a) introducing a stream of a process gas containing entrained solid particles into a first chamber portion of a ballistic separation chamber at a first velocity;

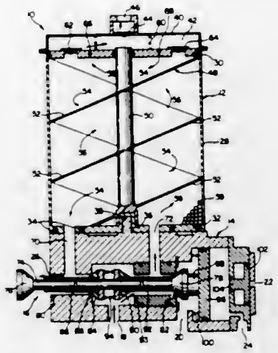
(b) passing said stream into a second chamber portion of said separation chamber and reducing the velocity thereof to a value lower than said first velocity so as to separate a major portion of said solid particles from said process gas in said second chamber portion;

(c) withdrawing said major portion of separated solid particles from a lower portion of said second chamber portion; and

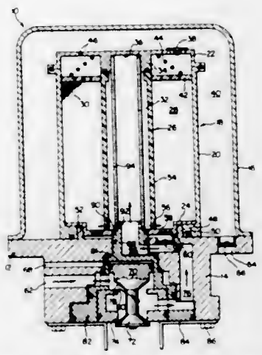
(d) withdrawing a process gas stream containing a minor portion of said solid particles from said second chamber portion.

5,286,282
CONTINUOUS FLOW AIR DRYER WITH DOUBLE HELIX SPLIT DESICCANT BED
David J. Goodell, Lorain, and James P. Koenig, Olmsted Twp., Lorain County, both of Ohio, assignors to Allied-Signal Inc., Morristown, N.J.
Filed May 4, 1993, Ser. No. 57,598
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—113 **18 Claims**

1. Air dryer for a compressed air system comprising a housing, a desiccant canister carried by the housing, said canister being defined by a circumferentially extending wall and a pair of opposite end walls, a double helix insert within said canister and cooperating with said walls to define a pair of intertwined, serpentine, pneumatically isolated flow paths through said canister and extending between said end walls, each of said flow paths being filled with desiccant, and valve means carried by said housing for controlling communication through said flow paths.



5,286,283
AIR DRYER FOR COMPRESSED AIR SYSTEM HAVING A SERVICEABLE OIL FILTER
David J. Goodell, Lorain, Ohio, assignor to AlliedSignal Inc., Morristown, N.J.
Filed May 17, 1993, Ser. No. 63,197
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—113 **18 Claims**



1. Air dryer for compressed air system comprising a housing having a supply port and a delivery port, said housing defining a flow path between the supply and delivery ports, a desiccant canister in said flow path for removing moisture entrained in said compressed air, an oil filter in said flow path between the supply port and said desiccant canister for removing oil entrained in said compressed air, said housing further including a control port, a purge port, and a purge valve responsive to the fluid pressure level at the control port to close said supply port and to communicate said flow path to said purge port for causing backflow of air through said flow path through said desiccant canister to said purge port during purging of the canister, said flow path including a bypass passage bypassing said oil filter, and a check valve in said bypass passage preventing communication through the bypass passage when compressed air flows from said supply port to the delivery port but permitting communication through said bypass passage during purging of the desiccant.

5,286,284
HYDRAZINIUM SULPHOSALICYLATE, ITS PREPARATION AND ITS USE AS AN ANTIOXIDIZING STABILIZER FOR TIN(II) COMPOUNDS
Erich Ruf, Auf'm Gartenstück 10, 4300 Essen-Haarzopf, Fed. Rep. of Germany
Division of Ser. No. 615,223, Nov. 19, 1990, Pat. No. 5,202,470. This application Dec. 16, 1992, Ser. No. 991,654
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1989, 3938472
Int. Cl.[5] C25D *3/32*; C07C *317/46*
U.S. Cl. 106—1.25 **3 Claims**

1. A process for stabilising a tin (II) compound which comprises adding to the compound, or to a solution or composition containing it, a hydrazinium sulphosalicylate of the formula

$$[NH_2NH_2]_a[2C_6H_3(COOH)\ (SO_3H)\ (OH)]_b$$

wherein a is 1 and b is from 1 to 2.

5,286,285
FINELY POWDERY MAGNESIUM HYDROXIDE AND A PROCESS FOR PREPARING THEREOF
Andreas Meier, and Michael Grill, both of Leoben, Austria, assignors to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria
PCT No. PCT/AT90/00043, § 371 Date Mar. 4, 1991, § 102(e) Date Mar. 4, 1991, PCT Pub. No. WO90/13516, PCT Pub. Date Nov. 15, 1990
Continuation of Ser. No. 613,809, Mar. 4, 1991, abandoned. This PCT application May 2, 1990, Ser. No. 71,615
Claims priority, application Austria, May 5, 1989, 1073/89
Int. Cl.[5] C09D *5/16, 5/18*
U.S. Cl. 106—18.26 **22 Claims**

1. A composition useful as a flame-retardant filler for plastic materials, consisting essentially of magnesium hydroxide particles having a grain size, as measured by laser diffraction, of less than 10 μm, wherein the median value of the grain size is 0.8 μm to 3 μm, and wherein Ca^{++}, Na^{++}, K^{+}, SO_4^{--} and Cl^{-} are present, and are present in an amount as follows:

$Ca^{++} < 1000$ ppm, $Na^{+} < 20$ ppm, $K^{+} < 20$ ppm,

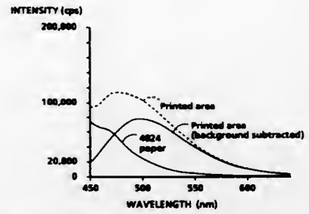
$SO_4^{--} < 1500$ ppm, $Cl^{-} < 1000$ ppm,

and wherein the amount of MnO, CuO and NiO is as follows:

MnO < 100 ppm, Nio < 100 ppm, CuO < 10 ppm.

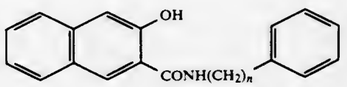
5,286,286
COLORLESS FAST-DRYING INK COMPOSITIONS FOR PRINTING CONCEALED IMAGES DETECTABLE BY FLUORESCENCE
Françoise M. Winnik, Toronto; Anthony R. Davidson, Agincourt, and Marcel P. Breton, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Coun.
Continuation-in-part of Ser. No. 701,231, May 16, 1991, Pat. No. 5,156,675, which is a continuation-in-part of Ser. No. 834,093, Feb. 12, 1992. This application Jul. 31, 1992, Ser. No. 922,882
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—21 A **18 Claims**

1. An ink composition consisting essentially of water, diethylene glycol-monobutyl ether, glycerol, an optional cyclohexyl pyrrolidinone component, a dye selected from the group consisting of dyes containing dansyl chromophores and dyes containing porphyrin chromophores, an optional biocide, and an optional polyalkylene oxide additive.



5,286,287
MONOAZO LAKE PIGMENT SUITABLE FOR USE IN PRINTING INK AND PROCESS FOR THE PRODUCTION THEREOF
Yuuji Hirasawa, and Akimitsu Mochizuki, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 773,117, Oct. 8, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,219
Claims priority, application Japan, Oct. 11, 1990, 2-272628
Int. Cl.[5] C09D *11/02, 17/00*; C09B *63/00, 29/20*
U.S. Cl. 106—22 K **9 Claims**

1. A monoazo lake pigment obtained by coupling a diazo component which is an aromatic amine having a sulfonic acid group with a coupler component which contains β-naphthol or β-oxynaphthoic acid and adding a laking agent during or after the coupling reaction, the coupler component further containing 0.1 to 30 mol %, based the coupler component, of a compound of the following formula,



wherein n=1 or 2.

5,286,288
HOT MELT INKS FOR CONTINUOUS JET PRINTING
Russell H. Tobias, Cary; Mairi C. MacLean, Mount Prospect, and Nicholas A. Davies, Elgin, all of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.
Filed Mar. 11, 1993, Ser. No. 29,892
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 B **23 Claims**

1. A hot melt ink composition for use in continuous ink jet printing comprising from about 0.1% to about 5% by weight of an electrolyte, from about 30% to about 99% by weight of an electrolyte-solvating and dissociating compound selected from the group consisting of alkanolamides and polyethylene glycol, and from about 0.1% to about 10% by weight of an image-forming agent, said ink being solid at about 25° C., said ink liquefying at a temperature between about 75° C. and about 175° C., and said ink in the liquid stage having a conductivity of greater than about 100 microsiemens/cm.

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5,286,289

COMBINATION IRON STAIN AND COATING FOR MASONRY CONCRETE AND LIKE MATERIAL AND METHOD OF FORMING THE SAME

David Shankman, 6732 SW. 71st Ct., Miami, Fla. 33143

Filed Dec. 23, 1991, Ser. No. 811,659
Int. Cl.[5] C09K *3/00*
U.S. Cl. 106—34 **8 Claims**

1. A method of forming an iron stain and iron coating for exposed surfaces of cementitious material, said method comprising the steps of:

a) placing a first volume of clean water in a container formed of a high strength material substantially nonreactive to acid,

b) adding a second volume of acidic solution in the amount sufficient to bring the ph level to substantially 1.0 or less,

c) monitoring the ph level of the first volume and the second volume beginning substantially when the second volume is added to the first volume,

d) adding one pound of iron particles for every gallon of the first volume of water in the resulting mixture,

e) mixing the first and the second volumes and the iron particles at least periodically, while monitoring the ph level thereof until an oxidation reaction between the iron particles and the diluted acid solution results in a ph level in a range of between about 3.0 and 6.0,

f) removing the resultant liquid phase comprising an iron oxide solution from the container prior to application thereof to a surface to define the iron stain,

g) collecting the remainder of the non-suspended iron particles to define the iron coating,

h) said second volume of the acidic solution being a sulfuric acid solution.

5,286,290

FILLER AND ARTIFICIAL STONE MADE THEREWITH

Lon F. Risley, Banning, Calif., assignor to Avonite, Inc., Belen, N. Mex.

Filed Apr. 16, 1992, Ser. No. 868,942
Int. Cl.[5] C09C *1/40*
U.S. Cl. 106—401 **20 Claims**

1. Method of making alumina trihydrate having a colorant incorporated therein comprising hydrating an alumina having less than three moles of water of hydration in the presence of a water-soluble colorant and in the absence of a laking aid.

5,286,291

PIGMENTS CONTAINING CARBON BLACK

Klaus Bernhardt, Bross Umstadt, and Gerhard Pfaff, Munster, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jul. 7, 1993, Ser. No. 87,095
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1992, 4222372
Int. Cl.[5] C09C *1/44*
U.S. Cl. 106—474 **18 Claims**

14. A process for the preparation of a pigment containing carbon black, comprising adding to an aqueous suspension of a platelet-shaped substrate

(i)

(a) a hydrolyzable metal salt solution,

(b) a carbon black dispersion containing an anionic or cationic surfactant,

(c) a carbon black dispersion containing a nonionic surfactant, and

(d) an organosilane compound; or

(ii)

(a) a hydrolyzable metal salt solution,

(b) a carbon black dispersion containing an anionic or cationic surfactant,

(c) an aqueous solution containing a nonionic surfactant, and

(d) an organosilane compound; or

(iii)

(a) a hydrolyzable metal salt solution,

(b) a carbon black dispersion containing a nonionic surfactant,

(c) an aqueous solution containing an anionic or cationic surfactant, and

(d) an organosilane compound;

during which addition of the pH of the substrate suspension is maintained in a range causing hydrolysis of the metal salt and wherein optionally further hydrolysis of metal salt without readdition of carbon black is conducted, and the coated substrate is optionally separated off, washed, dried and calcined.

5,286,292

METHOD OF TREATING FLY ASH AND FLY ASH CEMENT

Kazuhisa Tsukada; Takeshi Kuroda; Takane Mukaino, and Yukinori Saiki, all of Sakura, Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

Filed Jun. 26, 1992, Ser. No. 906,270
Claims priority, application Japan, Jul. 5, 1991, 3-165515; Mar. 11, 1992, 4-052698
Int. Cl.[5] C04B *7/26, 18/08, 20/02*
U.S. Cl. 106—705 **18 Claims**

1. A method of treating fly ash consisting essentially of the steps of:

charging fly ash in a vessel; and

supplying a halogen gas to the vessel thereby bringing the halogen gas into contact with the fly ash.

5,286,293

MULTIFUNCTIONAL POWDER MATERIAL FOR PROTECTING BUILDINGS AND PROCESS FOR THE SAME

Jianhua Li, Yuantong Town, China, assignor to Jianxin Waterproof Powder Factory of Chonging County, Sichuan Province, China

Filed Mar. 18, 1992, Ser. No. 853,206
Claims priority, application China, Jul. 9, 1991, 91 1 04534.1
Int. Cl.[5] C09C *1/02*
U.S. Cl. 106—817 **10 Claims**



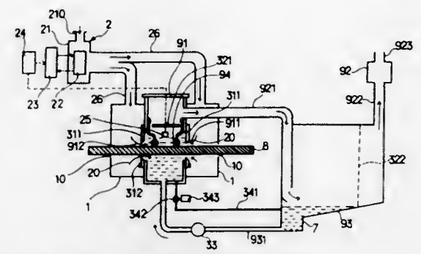
1. A multifunctional powder for protecting buildings, containing fine refined powders of 60–90 wt % limestone, 5–25 wt % dolomite and 5–25 wt % marble, a hydrophobic agent selected from the group consisting of a straight-chain alkyl acid and straight-chain alkane containing 16–25 carbon atoms, said hydrophobic agent packed closely on the whole surfaces of said fine powders, said hydrophobic agent being at least 0.3 percent by weight based on the total weight of the mixture of said powders.

5,286,294

VACUUM COATING APPARATUS

Tadamichi Ebi, and Yoshihiko Imai, both of Nagoya, Japan, assignors to Gen Gen Corporation, Nagoya, Japan

Filed Apr. 7, 1992, Ser. No. 864,857
Claims priority, application Japan, Apr. 24, 1991, 3-122688
Int. Cl.[5] B05C *3/12*
U.S. Cl. 118—667 **9 Claims**



7. A vacuum coating apparatus comprising:

a chamber filled with a treating liquid and provided with an inlet port and an outlet port through which a material to be treated is fed;

an evacuating device for subjecting said chamber to a partial vacuum;

a fluid supplier for supplying said treatment liquid to said chamber such that said treatment liquid is applied to a surface of the material as the material passes through said chamber;

a hood for covering said inlet port and said outlet port of said chamber, said hood having an inlet and outlet opening aligned with said inlet port and said outlet port, respectively, of said chamber for passing material therethrough; and

a feeder for feeding gas into said chamber, said feeder including a heat exchanger for heating or cooling said gas, a temperature sensor for sensing the temperature of said treatment liquid in said chamber, and a controller responsive to said temperature sensor to maintain said treatment liquid at a predetermined temperature, wherein said feeder supplies gas at a predetermined temperature to said hood to maintain the viscosity of said treatment liquid substantially constant independent of a change in environmental temperature surrounding said hood, and wherein said vacuum in said chamber and the gas supply to said hood causes air flow over the material such that excess liquid on said material is removed.

5,286,295

NOZZLE WITH NONSYMMETRICAL FEED FOR THE FORMATION OF A COATING LAYER ON A RIBBON OF GLASS, BY PYROLYSIS OF A GAS MIXTURE

M. Vincent Sauvinet, Saint-Denis, and M. Jean-Francois Oudard, Thiescourt, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Feb. 3, 1992, Ser. No. 829,505
Claims priority, application France, Feb. 13, 1991, 91 01682
Int. Cl.[5] B05C *1/04*
U.S. Cl. 118—718 **14 Claims**

1. Nozzle for the formation of a coating layer on a ribbon of glass moving at a constant speed over a float bath by pyrolysis of a laminar flow gas mixture, comprising:

first and second central shaped blocks that define therebetween a central injection passage extending crosswise to a direction of movement of the ribbon of glass and connected to a source of gas, said central blocks forming with the ribbon of glass two passages of constant thickness communicating with said central injection passage, wherein a gas from the central injection passage is divided into said two passages so as to form two laminar currents flowing parallel to the ribbon of glass, one of said currents flowing upstream and the other downstream, relative to the direction of movement;

an upstream shaped projection and a downstream shaped projection mounted respectively upstream from the first central block and downstream from the second central block, relative to the direction of movement, the central blocks and shaped projections defining an upstream suction passage and a downstream suction passage, wherein at least one of said upstream and downstream projections has a lower face that is raised from the ribbon of glass relative to said passages of constant thickness and is spaced from the ribbon of glass by between 3 mm and 50 mm; and

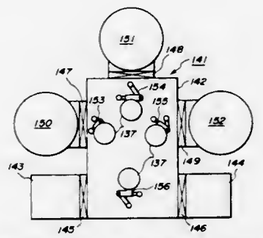
gas suction means for creating suction in at least one of the upstream and downstream passages corresponding to the at least one of the upstream and downstream projections having a raised lower face.

5,286,296

MULTI-CHAMBER WAFER PROCESS EQUIPMENT HAVING PLURAL, PHYSICALLY COMMUNICATING TRANSFER MEANS

Junichi Sato, Tokyo; Toshiaki Hasegawa, and Hiroshi Komatsu, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 9, 1992, Ser. No. 818,535
Claims priority, application Japan, Jan. 10, 1991, 3-001316; Jan. 22, 1991, 3-005428; Jan. 31, 1991, 3-010652
Int. Cl.[5] C23C *16/00;* **A61K** *27/02*
U.S. Cl. 118—719 **2 Claims**



1. A multi-chamber process equipment comprising:

a wafer transfer chamber for wafer transfer;

a plurality of process chambers for processing a wafer;

a plurality of gate valves each of which connects a unique one of said process chambers with said wafer transfer chamber so that said process chambers are connected with said wafer transfer chamber in parallel to one another; and

a plurality of wafer transfer means for transferring the wafer between said wafer transfer chamber and one of said process chambers through one of said gate valves, each of said wafer transfer means being placed in said wafer transfer chamber, each of said wafer transfer means being provided for a unique one of said process chambers so that each of said wafer transfer means is assigned to a unique one of said process chambers;

whereby each of said transfer means is capable of transferring a wafer directly to any other of said transfer means.

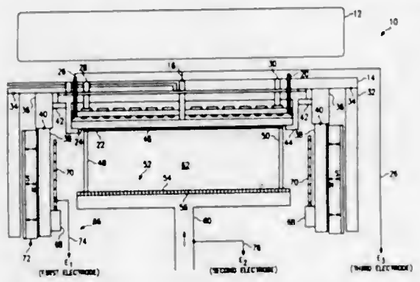
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5,286,297

MULTI-ELECTRODE PLASMA PROCESSING APPARATUS

Mehrdad M. Moslehi, Dallas; Cecil J. Davis, Greenville; John Jooes, and Robert T. Matthews, both of Plano, all of Tex., assignors to Texas Instrumeots Incorporated, Dallas, Tex.

Filed Jun. 24, 1992, Ser. No. 903,637
Int. Cl.[5] C23C 14/22
U.S. Cl. 118—723 E 20 Claims



1. A multi-electrode plasma generation system for plasma-enhanced processing in a fabrication reactor process chamber comprising:

a chuck electrode for holding a semiconductor wafer;

a showerhead electrode assembly, said showerhead electrode for injecting plasma-producing gas to the surface of said semiconductor wafer; and

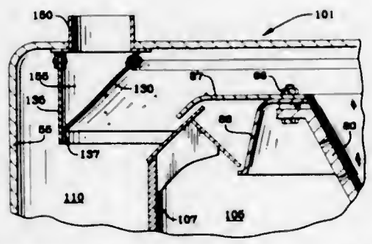
a peripheral chamber wall electrode for modifying process plasma characteristics, said peripheral chamber wall electrode comprising an electrically conducting screen having a plurality of passageways for allowing interaction of plasma medium with process chamber walls, and said screen further surrounding the chuck electrode, showerhead electrode assembly, and semiconductor wafer.

5,286,298

DEVICE AND METHOD FOR REDUCING CRYSTAL IMPACT DAMAGE AND LUMP FORMATION IN A SUGAR CENTRIFUGAL

Ted D. Milner, Westminster; Robert V. Zimmerman, Denver, and Myles G. Hill, Aurora, all of Colo., assignors to Silver Engineering Works, Inc., Aurora, Colo.

Filed Dec. 13, 1991, Ser. No. 808,415
Int. Cl.[5] B01J 3/00; B04B 3/00, 15/00
U.S. Cl. 127—2 4 Claims



1. An apparatus for reducing sugar crystal impact damage and lump formation in combination with a sugar centrifugal having a sugar housing surrounding a concentrically mounted rotatable centrifugal basket, comprising:

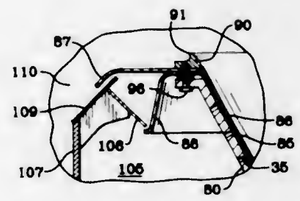
a shock absorbing barrier ring means extending, in a downward direction, from a top surface of said sugar housing to a point located below a top edge of said centrifugal basket and concentrically surrounding said centrifugal basket, said barrier ring means comprising one substantially cylindrical member and one truncated conical member said conical member being mounted within, and converging downward to make contact with, said substantially cylindrical member.

5,286,299

APPARATUS AND METHOD FOR PROVIDING REDUCED CRYSTAL DAMAGE IN A SUGAR CENTRIFUGAL

Ted D. Milner, Westminster, Colo., assignor to Silver Engineering Works, Inc., Aurora, Colo.

Filed Dec. 13, 1991, Ser. No. 807,284
Int. Cl.[5] C13F 1/06; B04B 15/00, 3/00
U.S. Cl. 127—17 12 Claims



1. An apparatus for reducing sugar crystal damage in a sugar centrifugal, comprising:

annular means at a top rim of a centrifugal bake for reducing incidence of crystal damage during passage of crystals from a screening surface of said centrifugal basket to a crystal discharge surface of an upper shroud ring, said annular means comprising a ring, free of asperities, between said screening surface and a crystal release line of said discharge surface.

5,286,300

RINSE AID AND LUBRICANT

Michael D. Hnatio, Williamsport, and David W. Reichgott, Richboro, both of Pa., assignors to Man-Gill Chemical Company, Cleveland, Ohio

Continuation of Ser. No. 654,819, Feb. 13, 1991, abandoned.
This application Aug. 12, 1992, Ser. No. 928,696
Int. Cl.[5] C23G 1/02; C10M 129/00, 173/02
U.S. Cl. 134—2 21 Claims

1. A concentrate composition useful as a rinse aid for metal surfaces and for improving the mobility of formed metal surfaces comprising:

(A) from about 10 to about 90% by weight of at least one nonionic polyoxyalkylene glycol comprising poly(oxypropylene) hydrophobic groups and poly(oxyethylene) hydrophilic groups characterized by the formulae

$$HO(CH_2CH_2O)_a(CH(CH_3)CH_2O)_b(CH_2CH_2O)_cH \quad (I)$$

$$HO(CH(CH_3)CH_2O)_a(CH_2CH_2O)_b(CH(CH_3)C-H_2O)_cH \quad (II)$$

wherein a and c are each independently at least 1, the sum of a+c is from 2 to about 100 and b is from about 5 to about 100, and

(B) from about 10 to about 90% by weight of at least one C_3 to about C_6 alkoxy derivative of at least one nonionic polyoxyalkylene glycol comprising random poly(oxypropylene) hydrophobic groups and poly(oxyethylene) hydrophilic groups.

13. An aqueous concentrate composition useful for preparing a rinse aid for metal surfaces and for improving the mobility of formed metal surfaces comprising:

(A) from about 3 to about 45% by weight of at least one

polyoxyalkylene glycol comprising poly(oxypropylene) hydrophobic groups and poly(oxyethylene hydrophilic groups characterized by the formulae

$$HO(CH_2CH_2O)_a(CH(CH_3)CH_2O)_b(CH_2CH_2O)_cH \quad (I)$$

$$HO(CH(CH_3)CH_2O)_a(CH_2CH_2O)_b(CH(CH_3)C-H_2O)_cH \quad (II)$$

wherein a and c are each independently at least 1, the sum of a+c is from 2 to about 100 and b is from about 5 to about 100, and

(B) from about 3 to about 45% by weight of at least one C_3 to about C_6 alkoxy derivative of at least one nonionic polyoxyalkylene glycol comprising random poly(oxypropylene) hydrophobic groups and poly(oxyethylene) hydrophilic groups, and

(C) from about 10 to about 94% by weight of water.

20. A process for improving the drainage of water from metal surfaces and improving the mobility of formed metal surfaces which comprises contacting said metal surface with an aqueous composition of comprising:

(A) from about 0.001 to about 0.1% by weight of at least one polyoxyalkylene glycol comprising poly(oxypropylene) hydrophobic groups and poly(oxyethylene) hydrophilic groups characterized by the formulae

$$HO(CH_2CH_2O)_a(CH(CH_3)CH_2O)_b(CH_2CH_2O)_cH \quad (I)$$

$$HO(CH(CH_3)CH_2O)_a(CH_2CH_2O)_b(CH(CH_3)C-H_2O)_cH \quad (II)$$

wherein a and c are each independently at least 1, the sum of a+c is from 2 to about 100 and b is from about 5 to about 100, and

(B) from about 0.001 to about 0.1% by weight of at least one C_3 to about C_6 alkoxy derivative of at least one nonionic polyoxyalkylene glycol comprising random poly(oxypropylene) hydrophobic groups and poly(oxyethylene) hydrophilic groups, and

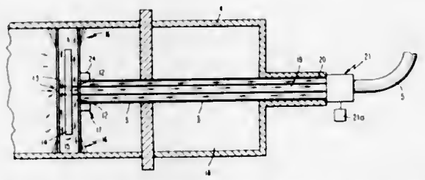
(C) from about 99.8 to about 99.998% by weight of water.

5,286,301

CHEMICAL VAPOR DEPOSITION SYSTEM CLEANER

John W. Albrecht, Bozeman, Mont., assignor to C.V.D. System Cleaners Corporation, Bozeman, Mont.

Division of Ser. No. 574,155, Aug. 29, 1990, Pat. No. 5,109,562, which is a continuation-in-part of Ser. No. 400,920, Aug. 30, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 862,139
Int. Cl.[5] B08B 9/08
U.S. Cl. 134—8 9 Claims



1. A method of cleaning the interior surfaces of a vessel which comprises:

providing a cleaning head having at least two spaced apart brush elements which are substantially perpendicular to an interior surface of a vessel;

positioning said cleaning head in said vessel;

defining a cleaning zone between said at least two spaced apart brush elements and between said interior surface of said vessel;

dislodging particulates from the interior surface of said vessel; and

removing said dislodged particulates,

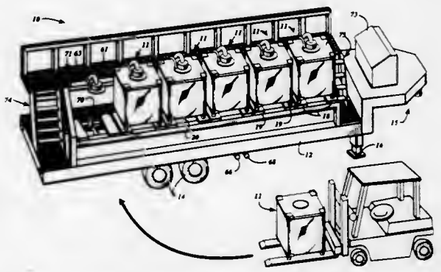
said dislodging being accomplished by supplying a heated turbulent process fluid into said defined cleaning zone in said vessel and by further subjecting said particulates to a process selected from the group consisting of mechanical agitation, thermal stress, physical interaction with said process fluid, chemical interaction with said process fluid and combinations thereof.

5,286,302

METHOD FOR CLEANING INTERMEDIATE BULK CONTAINERS ON A MOBILE VEHICLE

Ward E. Wickham, III, 6380 Edison, Cumming, Ga. 30130

Division of Ser. No. 694,507, May 2, 1991, Pat. No. 5,137,043. This application May 4, 1992, Ser. No. 878,177
Int. Cl.[5] B08B 9/00, 9/34
U.S. Cl. 134—22.1 5 Claims



1. A method of cleaning intermediate bulk containers each with an upper opening and a lower drain opening comprising:

loading a plurality of the containers on a mobile vehicle,

connecting a drain conduit system of the vehicle to the lower drain opening of each container,

mounting a high velocity rotary nozzle in the upper opening of each container,

connecting a high pressure liquid supply conduit system of the vehicle to each of said nozzles,

moving the vehicle into a bay of a tank trailer cleaning system,

connecting a high pressure liquid detergent supply of the tank trailer cleaning system to the high pressure liquid supply conduit system of the vehicle,

connecting the drain conduit system of the vehicle to the drain system of the tank trailer cleaning system,

operating the wash cycle of the tank trailer cleaning system to spray high velocity liquids from the rotary nozzles against internal surfaces of the containers and to drain the residual liquids from each container,

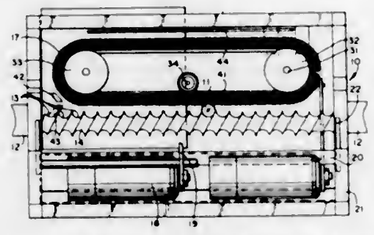
after the wash cycle has been completed, disconnecting the high pressure liquid detergent supply of the tank trailer cleaning system from the high pressure liquid supply conduit system of the vehicle,

disconnecting the drain conduit system of the tank trailer cleaning system from the drain conduit system of the vehicle and,

moving the vehicle out of the tank trailer cleaning bay.

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5,286,303
METHOD FOR DUSTING BOTTLES WITH BELT BRUSHES
Julian P. Avelis, Crete, Ill., assignor to McBrady Engineering, Inc., East Hazel Crest, Ill.
Division of Ser. No. 383,181, Jul. 19, 1989, Pat. No. 5,113,545.
This application Feb. 10, 1992, Ser. No. 834,896
Int. Cl.[5] B08B *1/00, 1/02, 1/04*
U.S. Cl. 134—25.1 12 Claims



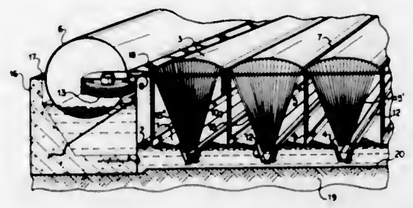
1. A method for dusting bottles moving on a conveyor having a longitudinal axis, said method comprising:
(A) contacting said bottles over a substantial length of its passage on said conveyor with an endless continuous belt having brush bristles attached thereto, with a portion of said bristles contacting said bottles; and
(B) moving the section of said belt with said portion of bristles in a direction substantially parallel to said axis.

5,286,304
THERMOELECTRIC DEVICE AND METHOD OF MANUFACTURING
Chris Macris, and John D. Anderson, both of North Bend, Wash., assignors to Enerdyne Corporation, North Bend, Wash.
Filed Oct. 24, 1991, Ser. No. 782,289
Int. Cl.[5] H01L *35/34*
U.S. Cl. 136—201 1 Claim



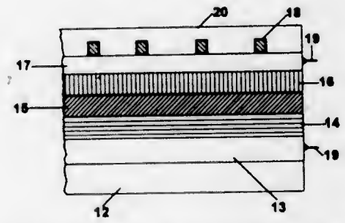
1. The method of forming a thermoelectric generator comprising the steps of:
simultaneously applying a mask of a predetermined configuration to both sides of a base metal;
temporarily covering one side of the masked base metal and plating the opposite side with a metal dissimilar from the base metal, producing a molecular bond with the base metal;
removing the temporary cover and insulating the now-plated side;
etching the base metal from the unmasked areas through to the plated metal and insulation; and
slitting the material resultant from the previous steps to a predetermined size and form, thus producing a more direct access to metallic junctions formed by the previous steps by a heat source.

5,286,305
PHOTOVOLTAIC POWER PLANT
Johannes N. Laing, and Inge Laing, both of 1253 La Jolla Rancho Rd., La Jolla, Calif. 92037
Filed Jun. 15, 1992, Ser. No. 898,160
Int. Cl.[5] H01L *31/052*
U.S. Cl. 136—246 9 Claims



1. A solar power plant platform rotatable around its vertical axis with concentrating means, which direct the sun rays by an optical system onto energy converters, characterized in that the optical system consists of optical concentrating panels (3) covering the aperture surface, having a first set of prisms extending horizontally, concentrating the sun rays (R) into wedges of rays (W_1, W_2 and W_3) and a second set of prisms running perpendicular to said first set of prisms by which the wedges of rays (W_1) originated by sun rays (R_1) with a low angle of incidence are refracted downwards forming an acute angle with the vertical whereby their focal point (B_1) on the focal line (F_1) is averted from the sun while the wedges of rays (W_3) originated by the steepest sun rays (R_3) form a focal point (B_3) on the focal line (F_3) directed towards the sun and that the wedges of rays (W_1, W_2 and W_3) are guided to the energy converter through a lens (12), arranged above said energy converter, the lens having a light incident surface and shape to refract the vertically running wedges of rays (W_2) with a focal line (F_2) below said lens (12) and all other wedges of rays (W_1 and W_3) in such a way that all rays impinge on the energy converter.
2. A solar power plant according to claim 1, characterized in that the energy converter is a photovoltaic cell (4) and that its upper surface is in direct contact with the lower surface of the secondary lens (12).

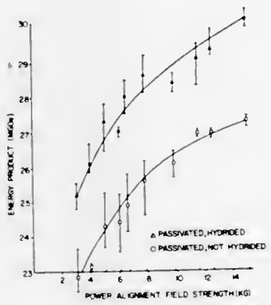
5,286,306
THIN FILM PHOTOVOLTAIC CELLS FROM I-III-VI-VII COMPOUNDS
Shalini Menezes, P.O. Box 5132, Thousand Oaks, Calif. 91358-0532
Filed Feb. 7, 1992, Ser. No. 832,420
Int. Cl.[5] H01L *31/072, 31/075, 31/18*
U.S. Cl. 136—249 20 Claims



1. A photovoltaic device for converting light to electrical energy with an n/i/p configuration, comprising:
a) an n-layer selected from I-III-VI semiconductor compounds;

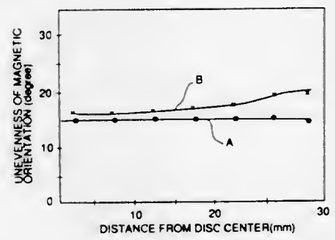
b) an i-layer of resistive semiconductor material comprising I-III-VI-VII elements; and
c) a p-layer selected from I-VI-VII semiconductor compounds.
7. A multijunction device of claim 1 used in cascade configuration with other semiconductor materials.

5,286,307
PROCESS FOR MAKING ND-B-FE TYPE MAGNETS UTILIZING A HYDROGEN AND OXYGEN TREATMENT
Richard L. Anderson, Marengo, Ill., assignor to SPS Technologies, Inc., Newtown, Pa.
Division of Ser. No. 403,697, Sep. 6, 1989, Pat. No. 5,129,964.
This application Apr. 21, 1992, Ser. No. 871,831
Int. Cl.[5] H01F *1/053*
U.S. Cl. 148—302 5 Claims



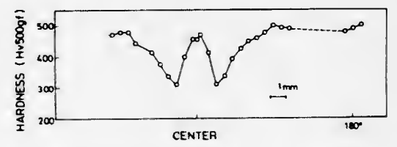
1. A passivated hydrided particle having an overall composition comprising 8 to 30 atomic percent of a first constituent selected from the group consisting of rare earth metals, 42 to 90 atomic percent of a second constituent selected from the group consisting of transition metals and 2 to 28 atomic percent of a third constituent selected from the group consisting of boron, aluminum, gallium, indium and thallium, and having an intrinsic coercivity of greater than 1000 Oersted, a hydrogen content of 5 to 25 atomic percent and an oxygen content of 2 to 10 atomic percent.

5,286,308
MAGNETICALLY ANISOTROPIC R-T-B MAGNET
Makoto Shinoda; Katsunori Iwasaki, both of Kumagaya; Shigeho Tanigawa, Kounosu, and Masaaki Tokunaga, Fukaya, all of Japan, assignors to Hitachi Metals Ltd., Tokyo, Japan
Division of Ser. No. 612,379, Nov. 14, 1990, Pat. No. 5,162,063.
This application Jul. 13, 1992, Ser. No. 912,703
Claims priority, application Japan, Nov. 14, 1989, 1-295331; Apr. 24, 1990, 2-108312
Int. Cl.[5] H01F *1/053*
U.S. Cl. 148—302 2 Claims



1. A plastically hot-worked, magnetically anisotropic magnet made of an R-T-B alloy based on a transition metal (T), a rare earth element (R) including Y and boron (B) and having crystal grains having aspect ratios of 2 or more, said magnet having a maximum energy product $(BH)_{max}$ of 35 MGOe or more, and having a substantially uniform maximum energy product distribution and a substantially uniform magnetic orientation distribution between a center portion and a circumferential portion thereof.

5,286,309
ELECTRIC-RESISTANCE-WELDED STEEL PIPE WITH HIGH STRENGTH
Tatsuo Maeda; Toshihiro Takamura; Yoshiichi Ishizawa; Yuji Sugimoto; Mitoshi Morimoto; Tetsuro Sugayoshi, and Fumihiro Nishimura, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan
Filed Dec. 24, 1991, Ser. No. 813,361
Claims priority, application Japan, Dec. 25, 1990, 2-413017
Int. Cl.[5] C22C *38/02, 38/12*
U.S. Cl. 148—320 6 Claims



1. An electric-resistance-welded steel pipe with high strength, consisting essentially of C, Mn, Si, Mo and Fe in the following amounts: 0.05 to 3 wt. % C, 0.6 to 2 wt. % Mn, 0.03 to 0.7 wt. % Si, 0.3 wt. % to 0.5 wt. % Mo and the balance being Fe and inevitable impurities, said steel pipe having a martensitic phase in an amount of 60 to 100% and having a tensile strength of 120 to 170 kgf/mm^2.

5,286,310
LOW NICKEL, COPPER CONTAINING CHROMIUM-NICKEL-MANGANESE-COPPER-NITROGEN AUSTENITIC STAINLESS STEEL
Gary M. Carinci, New Kensington; Ivan A. Franson, Saxonburg; Dominic A. Sorace, Sarver, and John P. Ziemianski, Avonmore, all of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.
Filed Oct. 13, 1992, Ser. No. 960,030
Int. Cl.[5] C22C *38/58*
U.S. Cl. 148—327 16 Claims

1. An austenitic stainless steel comprising the following elemental composition, on a weight percent basis:
about 16.5 to about 17.5% chromium;
about 6.4 to about 8.0% manganese;
about 2.50 to about 5.0% nickel;
about 2.0 to less than about 3.0% copper;
less than about 0.15% carbon;
less than about 0.2% nitrogen;
less than about 1% silicon;
the balance essentially iron and incidental impurities,
the steel having delta ferrite less than about 9% according to the formula:

$$\%\ \text{delta ferrite} = 12.48 + 0.52\ (\%\ \text{manganese}) - 54.27\ (\%\ \text{nitrogen}) - 47.48\ (\%\ \text{carbon}) - 1.57\ (\%\ \text{nickel}) - 1.62\ (\%\ \text{copper}) + 0.69\ (\%\ \text{copper})^2.$$

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5,286,311
PRECIPITATION HARDENING FERRITIC-PEARLITIC STEEL VALVE

Volker Schüler, Krefeld, and Klaus E. Richter, Nauheim, both of Fed. Rep. of Germany, assignors to Thyssen Edelstahlwarke AG, Fed. Rep. of Germany

Continuation of Ser. No. 794,380, Nov. 15, 1991, Pat. No. 5,221,373, which is a continuation of Ser. No. 536,405, Jun. 11, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,020

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1989, 3918869; May 2, 1990, 4014072

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] **C22C** *38/12*

U.S. Cl. 148—328 **2 Claims**



1. An inlet or outlet internal combustion engine valve useful to control transfer of gases into and out of the engine and seal the engine, said valve being composed of precipitation hardening ferritic-pearlitic steel containing:

0.20%–0.60%	carbon
0.20% to 0.95%	silicon
0.50 to 1.80%	manganese
0.004 to 0.04%	nitrogen
0.05 to 0.20%	vanadium and/or niobium
0 to 0.20%	sulfur
0 to 0.70%	chromium
0 to 0.10%	aluminum
0 to 0.05%	titanium

balance iron and incidental impurities.

5,286,312
HIGH-STRENGTH SPRING STEEL

Masataka Shimotsusa; Masao Toyama; Sinichi Ohnishi; Takahiko Nagamatsu, and Takenori Nakayama, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 2, 1992, Ser. No. 955,434

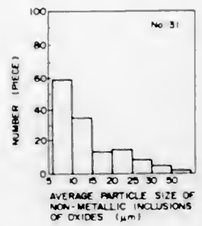
Claims priority, application Japan, Oct. 2, 1991, 3-283588; Aug. 31, 1992, 4-232359

Int. Cl.[5] **C22C** *38/46, 38/44*

U.S. Cl. 148—335 **15 Claims**

1. A high-strength spring steel which comprises:
0.3–0.5 wt. % C
1.0–4.0 wt. % Si
0.2–0.5 wt. % Mn
0.5–4.0 wt. % Ni
0.3–5.0 wt. % Cr
0.1–2.0 wt. % Mo
0.1–0.5 wt. % V
the balance being essentially Fe and inevitable impurities,
wherein the above components satisfy the following equation:

$$550-330(C)-34(Mn)-20(Cr)-17(Ni)-11(Mo)\geqq 300$$



wherein (c), (Mn) (Cr), (Ni), and (Mo) represent wt. % of each element; and
non-metallic inclusions of oxides with average particles sizes of 50 micrometers or more are not present, and those inclusions with an average particle size of 20 micrometers or more may be present in an amount of 10 inclusions or less per 160 mm^2.

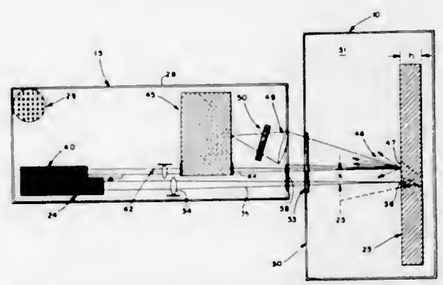
5,286,313
PROCESS CONTROL SYSTEM USING POLARIZING INTERFEROMETER

Thomas J. Schultz, Maumee, Ohio; Petros A. Kotidis, Waban; Jaime A. Woodroffe, North Reading, both of Mass., and Peter S. Rostler, Newton, Mass., assignors to Surface Combustion, Inc., Maumee, Ohio

Filed Oct. 31, 1991, Ser. No. 785,787

Int. Cl.[5] **G01H** *5/00*

U.S. Cl. 148—508 **36 Claims**



1. A method for controlling any industrial process which subjects a workpiece in an enclosure to heat while inherently introducing a vibration to said workpiece, said method comprising the steps of:
a) generating a sound wave in said workpiece;
b) sensing movement at the surface of said workpiece resulting from said sound wave by:
i) generating a light source beam;
ii) splitting said light source beam into a reference beam and a signal beam;
iii) directing said signal beam against said workpiece in the vicinity of said sound wave and collecting scattered light from said workpiece to reform said signal beam;
iv) introducing a phase-shift by changing the state of polarization of one of said signal and reference beams;
v) combining said signal and reflecting beams into a resultant beam containing an interference light pattern;
vi) sensing the intensity of said resultant beam by generating an electrical signal indicative of the intensity and phase-shift of the signal beam;
c) determining the speed of said sound wave from said electrical signal and correlating said sound wave speed to a property of said workpiece; and
d) regulating said industrial process so as to achieve a specific value of said property of said workpiece determined by the sensed of said sound wave, whereby said workpiece is directly measured in a non-destructive manner during the process.

5,286,314
RAPIDLY SOLIDIFIED ALUMINUM-GERMANIUM BASE BRAZING ALLOYS

Santosh K. Das, Randolph, and Chin-Fong Chang, Morris Plains, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 692,852, Apr. 29, 1991, Pat. No. 5,158,621. This application Jul. 23, 1992, Ser. No. 917,650

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] **C21D** *1/00*

U.S. Cl. 148—528 **1 Claim**



1. A brazed metal article having a plurality of base metal parts, said article having been brazed by a process comprising the steps of:
(a) interposing a filter metal between at least two of said base metal parts to form an assembly, said filler metal consisting essentially of a rapidly solidified brazing foil having a composition consisting essentially of about 14 to 52 weight percent germanium, 0 to 10 weight percent of at least one element selected from the group consisting of silicon, magnesium, bismuth, strontium, lithium, copper, calcium, zinc and tin, the balance being aluminum and incidental impurities;
(b) holding the assembly together using a fixture capable of applying pressure up to 6.9 MPa (1 Ksi) thereon;
(c) heating the assembly to at least above the solidus temperature of the filler metal;
(d) cooling the assembly; and
(e) annealing the assembly to improve the joint strength thereof.

5,286,315
PROCESS FOR PREPARING ROLLABLE METAL SHEET FROM QUENCHED SOLIDIFIED THIN CAST SHEET AS STARTING MATERIAL

Kenzo Iwayama; Isao Iwanaga; Kenichi Miyazawa; Toshiaki Mizoguchi, all of Kitakyusbu, and Hidehiko Sumitomo, Hiraki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

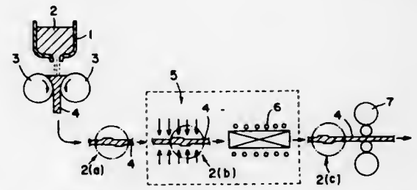
PCT No. PCT/JP90/00442, § 371 Date Nov. 29, 1990, § 102(e) Date Nov. 29, 1990, PCT Pub. No. WO90/11849, PCT Pub. Date Oct. 18, 1990

Continuation of Ser. No. 613,862, Nov. 29, 1990, abandoned. This PCT application Mar. 30, 1990, Ser. No. 956,931

Claims priority, application Japan, Mar. 30, 1989, 1-79981; Mar. 30, 1989, 1-79982; Mar. 30, 1989, 1-79983

Int. Cl.[5] **C21D** *8/12*

U.S. Cl. 148—538 **14 Claims**



6. A process according to claim 5, which comprises projecting a small rigid body comprising a shot or grit onto the surface of the thin cast sheet of a stainless steel, to form a worked layer on the surface of the thin cast sheet, heat-annealing the thin cast sheet at 700° to 1300° C. for 1 sec to 10 min to form a layer comprising a fine recrystallized grain having an average diameter of 100 μm or less in the resultant surface layer having a depth of 30 μm or more on the thin cast sheet, and subjecting the thin cast sheet to cold rolling and final annealing to prepare a stainless steel sheet having a required surface appearance.

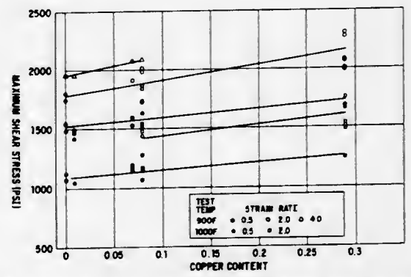
5,286,316
HIGH EXTRUDABILITY, HIGH CORROSION RESISTANT ALUMINUM-MANGANESE-TITANIUM TYPE ALUMINUM ALLOY AND PROCESS FOR PRODUCING SAME

Kenneth D. Wade, Midlothian, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 3, 1992, Ser. No. 862,896

Int. Cl.[5] **C22F** *1/04;* **C22C** *21/04*

U.S. Cl. 148—550 **17 Claims**



14. A process for extruding a product having high corrosion resistance, said process comprising:
a.) casting a billet having a composition consisting essentially of about 0.1 to 0.5% by weight of manganese, about 0.05 to 0.12% by weight of silicon, about 0.10 to 0.20% by

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weight of titanium, about 0.15 to 0.25% by weight of iron, not more than 0.01% by weight of copper, the balance being aluminum and incidental impurities;

b.) homogenizing the billet at an elevated temperature;

c.) cooling the billet;

d.) heating the billet to an elevated temperature; and

e.) extruding the billet to provide an improved product having high corrosion resistance.

5,286,317

ROTARY DIE CUTTING MECHANISM

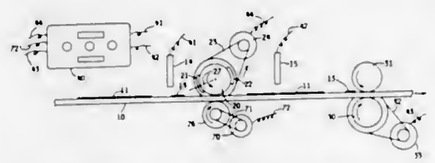
Douglas Treat, Concord, and Raymond Jorgenson, Ossipee, both of N.H., assignors to Computyre Inc., St. Paul, Minn.

PCT No. PCT/US91/05703, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992

Continuation-in-part of Ser. No. 589,381, Sep. 27, 1990, abandoned. This PCT application Aug. 9, 1991, Ser. No. 934,641

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—64 **14 Claims**



1. A process for rotary die cutting a series of labels carried on a web, said web having a series of eye marks thereon each of said eye marks being associated with a particular label, comprising:

passing said web sequentially through a rotary die cutting station having:

a. a die cutting roll carrying a label cutting die thereon with said die cutting roll having a home position; and a backup roll bearing against said die cutting roll, either of which is driven; and

b. a driven pinch roll that pulls said web continuously through said rotary die cutting station;

observing a eye mark and an angular position of said label cutting die;

transmitting said observations to an electronic processor;

determining by means of said electronic processor the adjustment, if any, required to position said label cutting die as desired relative to said web;

commanding said adjustment by changing the speed of said web with respect to the speed of said die cutting roll during cutting or prior to cutting by changing the speed of the driven pinch roll that pulls the web through the die cutting roll; and

returning said die cutting roll to the home position after making a cut.

5,286,318

METHOD OF FORMING EMI SHIELDED ENCLOSURES, EMI SHIELDED ENCLOSURES AND EMI SHIELDS

Richard E. Sims, Arlington Heights; William E. Curran, Mediнah, and Stefan J. Hipskind, Roselle, all of Ill., assignors to The Curran Company, Glendale Heights, Ill.

Continuation of Ser. No. 504,007, Apr. 4, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 804,489

Int. Cl.[5] **E04F** *15/00*; **H05K** *9/00*

U.S. Cl. 156—71 **11 Claims**

1. A method of forming an EMI shielded load bearing floor for an EMI shielded enclosure comprising the steps of:

applying a sealer composition to a rigid support substrate of said enclosure;

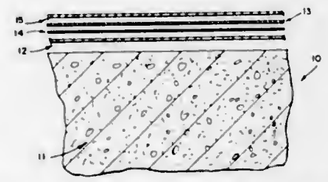
allowing said sealer composition to substantially cure on said rigid support substrate so as to create a substantially uniform seamless surface;

applying an adhesive composition to said sealed substrate; and

bonding an electrically conductive sheet material to said uniform seamless surface with said adhesive composition.

7. A method of forming an EMI shielded load bearing floor for an EMI shielded enclosure comprising the steps of:

applying a sealer composition to a rigid support substrate of said enclosure;



allowing said sealer composition to substantially cure on said rigid support substrate so as to create a substantially uniform seamless surface;

attaching a first side of a bonded sheet of dielectric material to said adhesive composition first layer;

applying an adhesive composition second layer to second side of said bonded sheet of dielectric material; and

bonding an electrically conductive sheet material to said second side of said bonded sheet of dielectric material with said adhesive composition second layer.

5,286,319

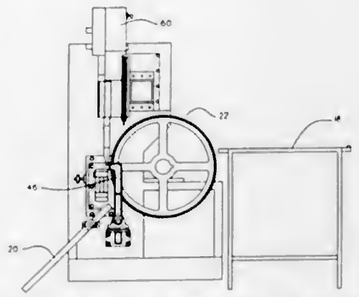
ULTRASONIC PLEAT WELDING MACHINE

Kenneth Gawne, Oak Ridge, and Gordon Thompson, Clinton, both of Tenn., assignors to Verosol USA Inc., Pittsburgh, Pa.

Filed Mar. 11, 1992, Ser. No. 849,456

Int. Cl.[5] **B31F** *1/00*

U.S. Cl. 156—73.1 **19 Claims**



13. A method for ultrasonically welding tabs on pleats of fabric comprising the steps of:

a) indexing a pleated blind panel one pleat at a time toward an anvil, said blind panel being indexed on a plurality of parallel index wheels;

b) pushing each said pleat to be welded into a proper position for welding on said anvil, said pleat being pushed by a plurality of pushers, one of said pushers being disposed between each said index wheel;

c) welding said pleat; and

d) removing said welded pleat from said anvil.

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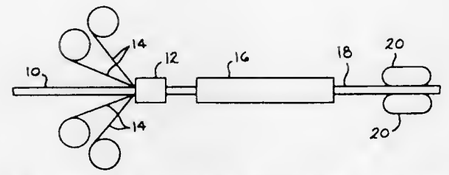
METHOD FOR MAKING A PULTRUDED PANEL

Ralph D. McGrath, Granville, Ohio; J. Gordon Murphy; Peter R. Mitchell, both of Halifax, Canada, and Christian C. Koppernaes, Varnville, S.C., assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Nov. 18, 1991, Ser. No. 793,750

Int. Cl.[5] **B32B** *31/12, 31/26*

U.S. Cl. 156—83 **18 Claims**



1. A method of continuously manufacturing a composite sandwich structure by pultrusion through a pultrusion die comprising:

arranging fiber reinforcement materials on the surface of a preformed closed cell foam core having a bursting pressure greater than about 10 psi (69 kPa);

moving the foam core through the pultrusion die;

applying liquid resin to the reinforcement materials on the surface of the foam core;

heating the surface region of the foam core to a temperature of at least 100° C. to convert water in the foam core to steam, thereby causing water vapor pressure expansion of the foam core and rupture of the foam cells on the surface of the foam core;

constraining the liquid resin so that the expansion of the foam core subjects the liquid resin to increased pressure, thereby forcing the liquid resin to penetrate and wet the reinforcement materials and to partially penetrate the foam core; and,

curing the resin.

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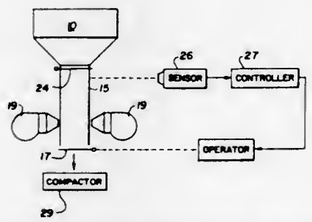
SYSTEM AND METHOD FOR DENSIFYING EXPANDED PLASTIC FOAM MATERIALS

Gunter G. Fuss, San Mateo, Calif., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.

Continuation of Ser. No. 782,245, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 632,951, Dec. 21, 1990, abandoned. This application May 27, 1993, Ser. No. 68,293

Int. Cl.[5] **B29B** *13/02*

U.S. Cl. 156—84 **18 Claims**



1. In a system for densifying an expanded plastic foam material having a plurality of gas-filled cells: a hopper for receiving the material to be densified, a chute having a perforate side wall extending in a downward direction from the outlet of the hopper, means positioned near the lower end of the chute for directing heated air through the perforate side wall and the material in the lower portion of the chute to heat the material to expel the gas from the cells and shrink the material, and an insulative enclosure surrounding an upper portion of the chute to prevent rising hot air from escaping from the chute.

5,286,322

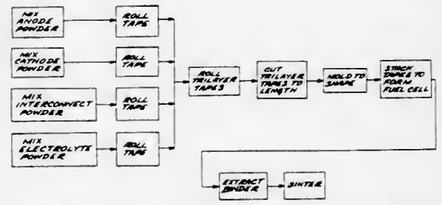
RAPID THERMAL PROCESSING OF MULTILAYER TAPES FOR FUEL CELL APPLICATIONS

Timothy R. Armstrong, Palos Verdes Pen, Calif., and Dawne M. Moffatt, Corning, N.Y., assignors to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Oct. 18, 1991, Ser. No. 780,659

Int. Cl.[5] **C04B** *37/00*

U.S. Cl. 156—89 **12 Claims**



1. A method of constructing a fuel cell, comprising the steps of:

mixing powders required to make an anode, a cathode, an electrolyte, and an interconnect material separately with processing aid materials comprising a plasticizer and a binder to form a batch of each of said materials;

rolling each batch of said materials into a tape having a desired width and thickness;

rolling the tape of anode and the tape of cathode material on each side of said tape of electrolyte and interconnect materials, thereby forming a trilayer electrolyte wall and a trilayer interconnect wall;

cutting said trilayer tapes to length;

molding at least one of said trilayer tapes into a desired shape;

alternately stacking the two trilayer tapes to the desired height to form a fuel cell core;

extracting the binder from the core; and

sintering the core to form the monolithic fuel cell core, the step of sintering being performed by

heating the core at a heating rate of greater than about 40° C. per minute to a sintering temperature of from about 1550° to about 1660° C.,

maintaining the core at the sintering temperature for a time of from about 5 to about 20 minutes, and

cooling the sintered structure.

5,286,323

DOME SHAPED EXTRUSION DIES

Rodney D. Bagley, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,257

Int. Cl.[5] **B29C** *47/12*

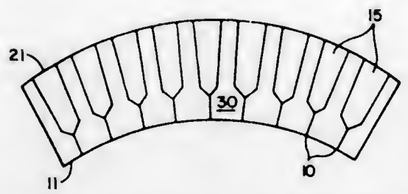
U.S. Cl. 156—89 **23 Claims**

1. A dome-shaped extrusion die having an inlet portion, an outlet portion, and a junction between the inlet portion and the outlet portion, the inlet portion having a plurality of feed holes longitudinally extending from a convex inlet face of said inlet portion, the outlet portion having a plurality of intersecting and laterally criss-crossing discharge slots extending from the junction to an opposite concave outlet face on the outlet portion, said die having a curved cross-section.

3. A method of forming a dome-shaped extrusion die from powders, comprising the steps of: compounding sinterable powders to form a mixture; shaping the mixture to form a preform; machining the preform by forming a plurality of longitudinally spaced feed holes and having a plurality of

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intersecting and laterally criss-crossing discharge slots in the body such that the slots are in communication with the feed



holes; reforming the preform to obtain a curved cross section; and sintering the preform to form a dome-shaped die.

5,286,324

POLYTETRAFLUOROETHYLENE RESIN POROUS MEMBRANE, SEPARATOR MAKING USE OF THE POROUS MEMBRANE AND METHODS OF PRODUCING THE POROUS MEMBRANE AND THE SEPARATOR

Takashi Kawai; Tomoko Katsu, and Toshio Yoshioka, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 358,205, May 30, 1989, Pat. No. 5,158,680. This application Jul. 24, 1992, Ser. No. 918,060
Claims priority, application Japan, Jul. 30, 1987, 62-193322; Jul. 30, 1987, 62-193323; Nov. 13, 1987, 62-287627
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—155 **15 Claims**

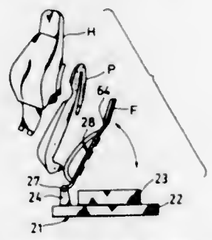
1. A method of producing a porous membrane comprising:
forming a membrane having a hollow fiber construction by coagulation of a dispersion of polytetrafluoroethylene resin in a solution of about 30 to 200% by weight of a film-forming polymer dissolved in said solution based on the weight of the polytetrafluoroethylene resin;
heat-treating said membrane at a temperature not lower than the melting point of said resin; and
removing said film-forming polymer.

5,286,325

METHOD OF MANUFACTURING A SEAT USING ADHESIVE

Akihiro Miyota, and Shuichi Hashiguchi, both of Tochigi, Japan, assignors to Tokyo Seat Co., Ltd., Japan

Filed Aug. 20, 1992, Ser. No. 932,672
Claims priority, application Japan, Aug. 27, 1991, 3-238873
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—212 **5 Claims**



1. A method of manufacturing a seat comprising a bag shaped skin material, a cushioning pad and an inner region of a seat frame having a flexible member by bonding the bag shaped skin material and the cushioning pad to each other by using a reactive hot melt adhesive, wherein the method comprises the following steps:
coating an adhesive on one side of the cushioning pad,
assembling a detachable press bonding plate to be positioned at the inner region of the seat frame,
attaching the seat frame assembled with the press bonding plate to the cushioning pad,
covering and provisionally assembling the bag shaped skin material to the adhesive coated surface of the cushioning pad,
arranging the provisionally assembled bag shaped skin material, the cushioning pad and the seat frame on an arranging die,
applying heat to the bag shaped skin material, the cushioning pad and the seat frame arranged on the arranging die by a heating die pressing from the side of the skin material,
applying cooling under pressure after the heating step with a cooling die pressing from the surface of the skin material to the cushioning pad, and
a step of detaching said press bonding plate from said seat frame after the cooling/press bonding step.

5,286,326

METHOD FOR BINDING FIBERS IN A FIBER REINFORCED PREFORM USING AN ELECTROMAGNETIC FIELD TO MELT BINDING FIBERS

Bruce N. Greve, Davisburg, Mich., assignor to The Budd Company, Troy, Mich.

Filed May 12, 1992, Ser. No. 881,851
Int. Cl.[5] B32B *31/04*; D21F *11/02*; B27N *3/10*
U.S. Cl. 156—272.4 **14 Claims**



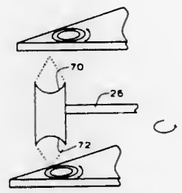
1. A method for binding fibers in a fiber reinforced plastic preform comprising:
(a) creating a preform from a mixture of reinforcing fibers and binding fibers having a matrix material and a filler material with ferromagnetic properties which are meltable in response to a high frequency electromagnetic field to thereby bind the reinforcing fibers together, and
(b) exposing the preform to an electromagnetic field to thereby melt the binding fibers and bind the reinforcing fibers of the preform.

5,286,327

METHOD AND APPARATUS FOR BONDING OR MELT FUSING PLASTIC MATRIX COMPOSITE MATERIALS

Henry D. Swartz, Newton, Mass., assignor to The Entwistle Corporation, Hudson, Mass.

Division of Ser. No. 759,055, Sep. 5, 1991, Pat. No. 5,151,149, which is a continuation of Ser. No. 329,323, Mar. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 225,296, Jul. 28, 1988, abandoned. This application May 22, 1992, Ser. No. 887,688
Int. Cl.[5] B32B *3/00*
U.S. Cl. 156—273.3 **22 Claims**



1. A method of bonding plastic materials reinforced with a reinforcing agent comprising the steps of:
(a) providing selected bonding zones on the surfaces of the materials to be jointed essentially free of the reinforcing agent;
(b) briefly and repeatedly applying points of focussed heat energy to surfaces of the materials in said designated bonding zones thereof to thereby effectively apply selected and limited areas of bonding zones with heat energy;
(c) continuously displacing the points of focussed heat energy through the bonding areas in an intermittent, repeated motion;
(d) terminating the heat energy application and immediately bringing the heated areas into bonding contact before substantial cooling thereof,
the said steps being controlled to produce at said heated surfaces temperatures in excess of respective melt fusion temperatures of said plastic materials while areas away from said designated bonding zones remain substantially below such temperatures and effecting the bonding before the surface temperatures at said zones decline to below melt fusion temperatures.

18. In the method of bonding parts of plastic, the improvements comprising the steps of:
(a) effecting a temperature rise at each of select surface areas of the parts to be joined by cyclic application of intense, focussed, infrared radiant heat to surfaces of the parts in said selected areas to establish a stepped rise of temperature essentially limited to said selected surface areas, with each of several steps comprising a temperature rise portion and a temperature decline portion until melt fusion temperature is achieved; and
(b) then terminating the heat application and immediately bringing the parts together to place said surface areas thereof into bonding contact before substantial cooling thereof.

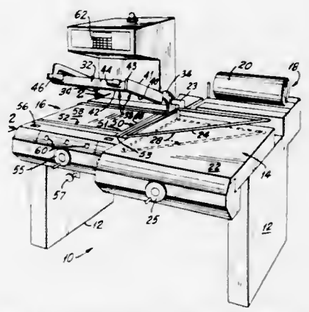
20. A method for bonding two thermoplastic objects comprising the steps of:
moving a focused beam of infrared heat relative to a first thermoplastic object to impinge said beam on said first object repeatedly upon the surface points lying within a first bonding area of said first object to bring the surface of said first bonding area to a melt fusion point;
simultaneously with said first mentioned moving, moving a focused beam of infrared heat relative to a second thermoplastic object to impinge said beam on said second object repeatedly upon the surface points lying within a second bonding area of said second object to bring the surface of said second bonding area to a melt fusion point; and
subsequent to the bringing of the surfaces of said first and second bonding areas to a melt fusion point, immediately bringing said first and second bonding areas into physical contact to thereby bond said first and second objects together along said first and second bonding areas.

5,286,328

HEAT SEALING METHOD AND APPARATUS

Martin Siegel, Englewood Cliff, N.J., assignor to Weldotron of Delaware, Inc., Wilmington, Del.

Continuation of Ser. No. 612,136, Nov. 7, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,451
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—290 **36 Claims**



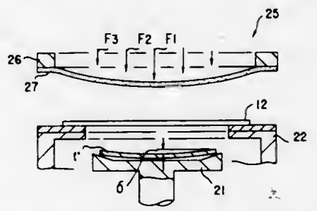
1. A method of sealing film comprising the steps of:
placing the film between a first housing having a first assembly with a protruding tip and a second housing with a recess wherein a second assembly with a recessed tip is slidably mounted in the second housing and wherein the recessed tip is disposed in the recess;
moving the first housing and the second housing into an abutting relationship such that the protruding tip contacts and pushes the film int the recess toward the recessed tip;
gripping the film;
moving the tip of the second assembly into the film such that it displaces the tip of the first assembly and thereby creates slack in the film before sealing;
heat sealing the film.

5,286,329

TAPE-ON-WAFER MOUNTING APPARATUS AND METHOD

Nobuo Iijima, and Akihisa Hayashida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1993, Ser. No. 28,551
Claims priority, application Japan, Mar. 13, 1992, 4-054031
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—297 **10 Claims**



1. A tape-on-wafer mounting apparatus for mounting a dicing tape on a wafer, comprising:

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a wafer stage for mounting the wafer thereon with a wafer surface on which chip circuits are fabricated faced down;
a tape stage, provided above and aligned with said wafer stage and having a ring whose inside diameter is larger than that of the wafer, for mounting the dicing tape on the ring with a tape surface on which adhesives are applied faced down; and
a tape pressing tool, provided above and aligned with said tape stage and having a tape presser, for pressing said tape stage on said wafer stage so that the tape presser presses the dicing tape on the wafer, the tape presser made of a sheet of an elastic material and constructed such that vertical force exerted thereby is largest at its center and smaller with the increase in distance from the center.

5,286,330
METHOD OF PRODUCING COPPER-CLAD LAMINATED BOARD

Keiji Azuma; Kimikazu Katoh, both of Tokyo, and Ryoichi Oguro, Imaichi, all of Japan, assignors to Sumitomo Bakelite Company Limited and Circuit Foil Japan Co., Ltd., both of Tokyo, Japan

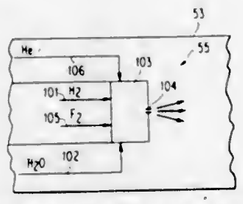
Filed May 1, 1992, Ser. No. 877,833
Claims priority, application Japan, May 13, 1991, 3-201525
Int. Cl.[5] B65C *9/25*
U.S. Cl. 156—323 **13 Claims**

1. A method for preparing a copper-clad laminated board for a printed circuit board which comprises:
(a) preparing a prepreg by permeating a thermosetting resin into a fabric and then drying the resulting material to a half-hardened state,
(b) laminating a both-side roughened copper foil on both sides or one side of the prepreg or plurality of prepegs bonded together, whereby a side of the roughened copper foil is exposed,
(c) placing the result laminate from step (b) between both press plates of a press machine,
(d) placing a polyamide film having a melting point equal to or higher than 170° C. between the exposed side of the both-side roughened copper foil of the laminate and a press plate,
(e) pressing the laminate with the press plates of the press machine at a temperature of 170° C. or higher, a pressure of 10 kgf/cm^2 or higher for a time of 60 minutes or longer,
(f) separating the laminate from the press machine and
(g) peeling the polyamide film from the laminate to obtain the copper-clad laminated board.

5,286,331
SUPERSONIC MOLECULAR BEAM ETCHING OF SURFACES

Lee Chen, New York; Shwu-Jen Jeng, Fishkill; Wesley C. Natzle, Wappingers Falls, and Chienfan Yu, Highland Mills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1991, Ser. No. 786,448
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **4 Claims**

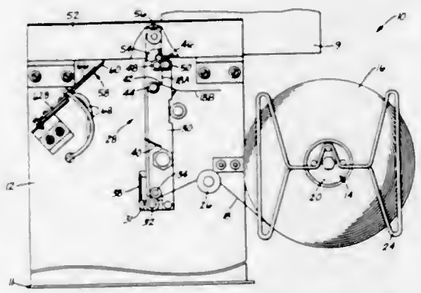


1. An apparatus for etching a substrate, comprising:
an enclosure;
means for maintaining said enclosure at a subatmospheric pressure;
a nozzle assembly for generating a supersonic molecular beam from reactant molecules expanded through at least one nozzle in said nozzle assembly into said enclosure;
means for controlling an energy parameter of said supersonic molecular beam associated with said nozzle assembly; and
means for supporting a substrate in a path of said supersonic molecular beam, wherein a reaction if formed by an interaction between said reactant molecules devoid of external activation, a product of said reaction being reactive with said substrate.

5,286,332
APPARATUS FOR APPLYING AN L CLIP TAPE TO A CARTRIDGE

Steven J. Rossini, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 580,071, Sep. 10, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,161
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—510 **12 Claims**

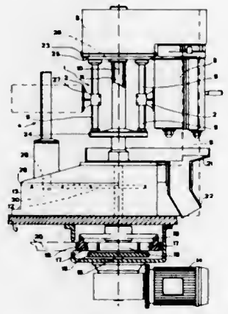


1. An apparatus for applying a fragile linered tape from a linered tape roll onto at least one surface of an object as the object is moved relative to the apparatus, wherein the tape includes a tearable film adhered to a support sheet, and a removable liner adhered to the tape such that the adhesive used to adhere the liner to the tape is also used to adhere the tape to an object, the apparatus comprising:
a frame;
a tape roll support mounted on the frame for rotatably supporting the linered tape roll to dispense the tape;
means mounted on the frame for stripping the liner from the tape before the tape is applied;
means for cutting a portion of stripped tape from the linered tape extending from the tape roll;
means for applying the tape onto the object, wherein the applying means applies the tape after the liner is stripped from the tape by the stripping means, and the relative movement of the object to the applying means pulls the tape from the apparatus; and
means for permitting a quantity of tape to be dispensed from said apparatus and applied to an object by said applying means without unwinding of linered tape from the linered tape roll, and for unwinding a quantity of linered tape from the linered tape roll after the tape application is complete to thereby isolate the unwind friction and inertia of the tape roll and tape roll support from the tension on the tape during application after the liner is stripped from the tape.

5,286,333
DEVICE FOR SUPPORTING AND DRIVING THE LABEL GUMMING AND TRANSFER UNIT IN LABELING MACHINERY

Ireneo Orlandi, San Giorgio di Mantova, Italy, assignor to Alfa Costruzioni Meccaniche S.p.A., Mantova, Italy

Cootinuation of Ser. No. 721,096, Jun. 25, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,795
Claims priority, application Italy, Dec. 21, 1990, 42545 A/90
Int. Cl.[5] B65C *9/08*
U.S. Cl. 156—570 **7 Claims**



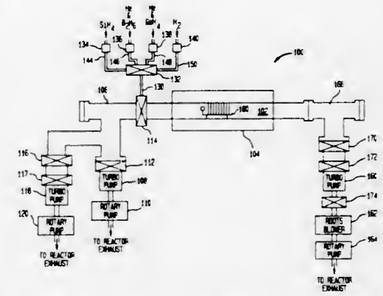
1. A device for supporting and driving the label gumming and transfer unit of a labeling machine comprising:
a plurality of rotatable segments or paddles carried by a center station;
a magazine, a roller and a drum distributed around the center station, by which labels are respectively dispensed, gummed and transferred to containers for labeling through interaction with the segments;
drive means positioned above the gumming and transfer unit, said drive means setting the gumming roller and the center station in motion, said drive means suspending the gumming roller and the center station from above, whereby any excess gum materials and solvents used with said gumming roller and center station cannot fall on said drive means, and
support means for supporting said drive means above said gumming roller and center station.

5,286,334
NONSELECTIVE GERMANIUM DEPOSITION BY UHV/CVD

Shahzad Akbar, Poughkeepsie; Jack O. Chu, Astoria; Brian Cunningham, Highland; Gregory Fitzgibbon, Hopewell Junction, and Somnuk Ratanaphanyarat, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1991, Ser. No. 779,677
Int. Cl.[5] C30B *25/00*
U.S. Cl. 156—62 **8 Claims**

1. A method of nonselectively depositing Ge onto a substrate in an ultra high vacuum chemical vapor deposition (UHV/CVD) system, the UHV/CVD system comprising a reaction chamber and a load lock chamber, said method comprising the steps of:
a) placing said substrate in said load lock chamber and pre-evacuating said load lock chamber to a pressure of approximately 10 to 50 mTorr and then subsequently evacuating said load lock chamber quickly to a pressure of approximately 10^{-7} Torr;
b) evacuating said reaction chamber to a pressure below 10^{-7} Torr;
c) bleeding hydrogen (H_2) into said reaction chamber at a rate of approximately 650 sccm;
d) opening said load lock chamber to said reaction chamber and transferring the substrate from said load lock chamber to said reaction chamber, whereby the bleeding of the H_2 of the previous step reduces cross contamination between said load lock chamber and said reaction chamber during the transferring of said substrate from said load lock chamber to said reaction chamber;
e) heating said substrate to a temperature on the order of 300° to 600° C.; and,

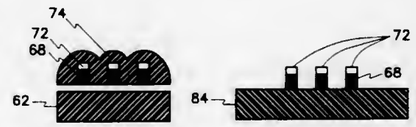


f) stopping the bleeding of H_2 and providing a mixture of GeH_4, He, and B_2H_6 gas in said reaction chamber, wherein a flow of GeH_4 and He is at a rate of approximately 10 to 25 sccm to produce a GeH_4 partial pressure of approximately 2–50 mTorr and a flow of B_2H_6 is at a rate sufficient to produce a B_2H_6 partial pressure of approximately 0.08 to 2 mTorr, the mixture thereby having a partial pressure ratio of GeH_4 to B_2H_6 on the order of 25:1.

5,286,335
PROCESSES FOR LIFT-OFF AND DEPOSITION OF THIN FILM MATERIALS

Timothy J. Drabik; Nan M. Jokerst; Mark G. Allen, and Martin A. Brooke, all of Atlanta, Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Apr. 8, 1992, Ser. No. 865,119
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—631 **25 Claims**



1. A process for lift-off of thin film epitaxial materials, comprising the steps of:
depositing an epitaxial layer on a sacrificial layer situated on a growth substrate;
coating all exposed sides of said epitaxial layer with a transparent carrier layer, thereby encapsulating said epitaxial layer;
etching away said sacrificial layer to separate the combination of said epitaxial layer and said carrier layer from said growth substrate;
while separating said combination, preventing deformation of said epitaxial layer; and
utilizing a carrier material for said carrier layer which permits dissociation of said epitaxial layer from said carrier layer after separating said combination without deformation of said epitaxial layer.

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5,286,336

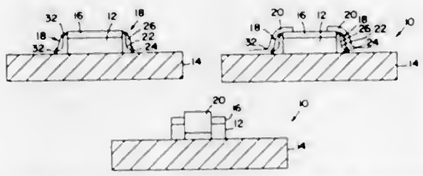
SUBMICRON JOSEPHSON JUNCTION AND METHOD FOR ITS FABRICATION

Hugo W. Chan; Arnold H. Silver, both of Rancho Palos Verdes; Robert D. Sandell, Manhattan Beach, and James M. Murduck, Lawndale, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 734,669, Jul. 23, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 952,011

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*; C23F *1/00*

U.S. Cl. 156—643 12 Claims



1. A method for fabricating a submicron Josephson junction, comprising the steps of:

forming a superconducting base electrode contact on an insulating substrate;

forming a laminated junction layer in situ on a side edge of the base electrode, the laminated junction layer including an insulating layer interposed between a superconducting base electrode and a superconducting counter electrode; and

forming a superconducting counter electrode contact over the laminated junction layer;

wherein one dimension of the junction area is defined by the thickness of the base electrode contact and the other dimension of the junction area is defined by the type of lithography used for fabricating the junction.

5,286,337

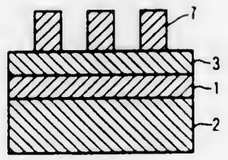
REACTIVE ION ETCHING OR INDIUM TIN OXIDE

Len Y. Tsou, New City, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,116

Int. Cl.[5] B01J *15/00*

U.S. Cl. 1156—643 24 Claims



1. A method of etching a thin layer of indium tin oxide deposited on a substrate comprising subjecting said layer of indium tin oxide to reactive ion etching in a plasma containing dissociated hydrogen bromide or a mixture of dissociated hydrogen bromide and dissociated boron trichloride.

5,286,338

METHODS FOR MAKING MICROLENS ARRAYS

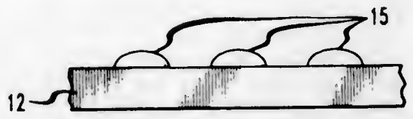
Avi Y. Feldblum, Highland Park, N.J.; Keith O. Mersereau, Northampton, Pa.; Casimir R. Nijander, Lawrenceville, and Wesley P. Townsend, Princeton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 1, 1993, Ser. No. 24,035

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 15 Claims

1. A method of forming a lens array comprising the steps of: forming a plurality of first elements of a first material overlying a substrate of a second material; at least partially melting the first elements to cause them to have curved upper surfaces and thereafter solidifying the first elements; locating the substrate and the first elements in a reactive ion etch chamber having gas input apparatus; reactive ion etching the substrate and said plurality of first elements such that differential etching of the



substrate produces lens elements in the substrate; wherein the improvement comprises:

during the reactive ion etch step, deliberately changing the gas constituency in the reactive ion etch chamber to adjust the curvature of lens elements formed in the substrate and to reduce aberrations of such lens elements.

5,286,339

PROCESS AND APPARATUS FOR THE HERMETIC ADHESIVE BONDING OF PLASTIC CASING PARTS OF A BATTERY OR OF A GALVANIC CELL

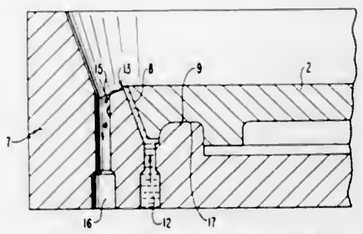
Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Deutsche Automobilgesellschaft mbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 13, 1992, Ser. No. 819,196

Claims prinrity, application Fed. Rep. of Germany, Jan. 12, 1991, 4000781

Int. Cl.[5] C09J *5/00*

U.S. Cl. 156—308.6 8 Claims



1. Process for the hermetic adhesive bonding of plastic casing parts for a battery, said casing parts comprising a cup-shaped casing container having an opening therein and a closure part having a size and shape corresponding to size and shape of said opening, both of said casing container and said closure part being made of a plastic material and being bonded to each to her along respective joining surfaces at peripheries of said opening of said casing container and said closure part, said joining surfaces being inclined at an angle of approximately 12° to 15° relative to a plane of said opening, said method comprising the steps of:

wetting said joining surface of one of said casing container and said closure part, for a time period which is in a range of from 5 to 7 seconds, with an agent which dissolves said plastic material;

airing said joining surface at room temperature in still air for a time period which is in a range of from 15 to 25 seconds;

placing said closure part into said opening; and

applying pressure to said closure part so that said joining surfaces of said closure part are pressed against said joining surfaces of said casing container for a time period which is in a range of from 5 to 10 minutes;

wherein said wetting step comprises the steps of:

inserting one of said joining surfaces in an immersion vessel;

forming an immersion channel between said joining surface and an inner wall of said immersion vessel; and

flowing said agent through said immersion channel parallel to and between said joining surfaces.

5,286,340

PROCESS FOR CONTROLLING SILICON ETCHING BY ATOMIC HYDROGEN

John T. Yates, Jr., Allison Park; Peijun J. Chen, and M. Luigi Colaianni, both of Pittsburgh, all of Pa., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Filed Sep. 13, 1991, Ser. No. 759,579

Int. Cl.[5] H01L *21/306*; B44C *1/22*

U.S. Cl. 156—628 8 Claims

1. A process for treating a silicon substrate which comprises:

selectively implanting a boron dopant in portions of the surface of said silicon substrate; and

effecting etching of the silicon substrate portions not treated with said boron dopant by applying atomic hydrogen to the surface of said portions and resisting etching by said atomic hydrogen of said portions of said silicon substrate treated with said boron dopant.

5,286,341

PROCESS FOR PRODUCING MICRO-MECHANICAL STRUCTURES

Hans-Peter Trah, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

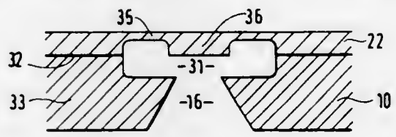
PCT No. PCT/DE91/00264, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO91/16608, PCT Pub. Date Oct. 31, 1991

PCT Filed Mar. 23, 1991, Ser. No. 937,878

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012071

Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—630 12 Claims



1. A method of making micro-mechanical structures from a first (**10**) and a second (**20**) semiconductor wafer,

comprising the steps of

applying, to portions of a major surface of said first wafer, a passivating layer (**14**), leaving other portions of said surface exposed;

causing local oxidation of said exposed other portions, thereby producing at least one recess or cut-out (**15**) in said major surface (**17**) of said first wafer (**10**);

removing said passivating layer (**14**);

filling said recess or cut-out with a semiconductor oxide (**13**), thereby forming a flat surface;

bonding said flat surface (**17**) of said first wafer (**10**) to a major surface (**27**) of said second wafer (**20**), thereby forming a sandwich structure enclosing said semiconductor oxide (**13, 30**);

forming an opening (**16**) extending from an outer surface of said sandwich structure to a surface of said semiconductor oxide; and

applying an etching solution, through said opening (**16**), until said semiconductor oxide is dissolved away, thereby defining a chamber (**31**) within said sandwich structure.

5,286,342

METHOD OF MANUFACTURING LEAD FRAME USED IN ELECTRONIC COMPONENT

Masahiro Tsuji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 5, 1992, Ser. No. 957,428

Claims priority, application Japan, Oct. 11, 1991, 3-263771

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—645 2 Claims



1. A method of manufacturing a lead frame used in an electronic component, comprising the steps of:

etching an unpatterned portion on one side of a metal plate including a region to be formed subsequently into a tip portion of each lead terminal of said lead frame without etching the opposite side of the plate to produce an unpatterned recess on one side of the metal plate and an unrecessed surface on the opposite side of the metal plate; and

forming said each lead terminal of said lead frame by subjecting both the unrecessed portion and the recessed portion of said metal plate to a punching process or an etching process.

5,286,343

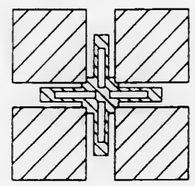
METHOD FOR PROTECTING CHIP CORNERS IN WET CHEMICAL ETCHING OF WAFERS

Wing C. Hui, Campbell, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Jul. 24, 1992, Ser. No. 918,601

Int. Cl.[5] H01L *21/306*; B44C *1/22*

U.S. Cl. 156—647 39 Claims



27. A method for protecting corners of polygonal feature areas on a wafer that will undergo anisotropic etching, which comprises: (a) forming a mask pattern on the wafer, wherein the mask pattern comprises:

(1) at least one feature area mask, wherein each feature area mask has at least one outer convex corner, and each corner is defined by two corner sides intersecting at a corner point; and

(2) at least one primary corner protection mask, which is to be undercut, wherein the corner protection mask

(i) abuts at least one corner point of the feature area mask and a segment along at least one feature area corner side,

(ii) extends laterally from the corner side in a first direction, forming a lateral extension,

(iii) extends from the lateral extension in a second direction, parallel to the corner side, and

(iv) forms at least one unmasked bomb region in the protection mask, wherein the unmasked region has at least one concave or planar boundary that etches more slowly than convex corners;

wherein the dimensions and geometry of the corner protec-

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tion mask are such that, during anisotropic etching, exposed convex boundaries of the protection mask are undercut back to the feature area mask corners at about the same time that grooves etched into the wafer reach a desired depth and width; and

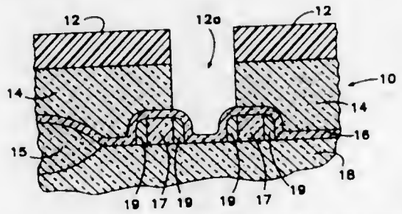
(b) etching the mask pattern on the wafer with an anisotropic etchant.

5,286,344

PROCESS FOR SELECTIVELY ETCHING A LAYER OF SILICON DIOXIDE ON AN UNDERLYING STOP LAYER OF SILICON NITRIDE

Guy Blalock; David S. Becker, and Fred Roe, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 15, 1992, Ser. No. 898,505
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—657 **31 Claims**



1. A process for plasma etching a multilayer structure to form a predetermined etched pattern therein, comprising:

providing a multilayer structure, the outer layers of the multilayer structure comprising a silicon dioxide outer layer on an underlying silicon nitride stop layer;

forming on the top surface of the multilayer structure a chemical etchant resistant layer having a pattern of openings in therein and thereby exposing areas of the silicon dioxide outer layer corresponding to the pattern of openings; and

etching the exposed areas of the silicon dioxide outer layer to the silicon nitride stop layer, at a high SiO_2 etch rate, and at a high level of selectivity of said SiO_2 etch rate with respect to said Si_3N_4 etch rate, with a fluorinated chemical etchant system including an etchant material ad an additive material, said additive material comprising a fluorocarbon material in which the number of hydrogen atoms is equal to or grater than the number of fluorine atoms, and sad etching step forming an etch pattern in the silicon dioxide outer layer in which the contact sidewalls of said SiO_2 outer layer are perpendicular to the multilayer structure layers.

5,286,345

PHOTOLITHOGRAPHIC ETCHING PROCESS FOR FABRICATING WIRE SCREEN DISKS FOR CRYOGENIC COOLER REGENERATORS

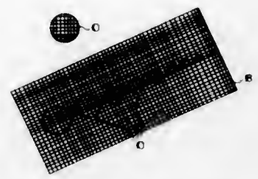
William W. Burt, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 3, 1992, Ser. No. 972,181
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—659.1 **9 Claims**

1. A photolithographic etching process for fabricating wire screen disks for cryogenic cooler regenerators, comprising the steps of:

applying a photoresist to a sheet of wire screen;

developing the photoresist in the form of one or more desired disk shapes; and



etching the developed sheet of wire screen to form the wire screen disks.

5,286,346

DEINKING OF WASTEPAPER WITH QUATERNIZED HYDROXYETHYL CELLULOSE

Konrad Engelskirchen, Meerbusch; Herbert Fischer, Duesseldorf; Klaus Hornfeck, Mettmann; Doris Oberkobusch, Duesseldorf, and Ludwig Schieferstein, Ratingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP89/01364, § 371 Date May 23, 1991, § 102(e) Date May 23, 1991, PCT Pub. No. WO90/05806, PCT Pub. Date May 31, 1990
PCT Filed Nov. 14, 1988, Ser. No. 689,262
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839478
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—8 **3 Claims**

1. A process for deinking wastepaper printed with water-dilutable printing ink, comprising fiberizing said wastepaper in an aqueous solution in the presence of an at least partly water-soluble polymer or copolymer comprising a quaternized hydroxyethyl cellulose having a number average molecular weight in the range of from about 2,000 to about 5000,000 in an amount effective to deink the wastepaper, and then removing the printing ink particles from the fiber suspension by flotation or washing.

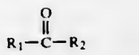
5,286,347

MELAMINE FORMALDEHYDE POLYMER FOR PITCH CONTROL METHOD

Paul F. Richardson, Mt. Lebanon, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 5, 1992, Ser. No. 878,637
Int. Cl.[5] D21C *9/08*; D21H *21/02*
U.S. Cl. 162—199 **4 Claims**

1. A method for inhibiting pitch deposition on pulping and papermaking equipment or machinery comprising adding to a pulp slurry containing pitch which contacts said equipment or machinery, an effective amount of a water-insoluble melamine formaldehyde-type polymer acid colloid, wherein said water-insoluble melamine formaldehyde-type polymer acid colloid comprises (a), melamine or a substituted melamine; and (b) a compound described by the following formula:



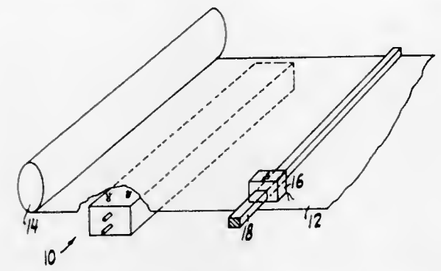
wherein R_1 and R_2 which may be the same or different are selected from the group consisting of H and straight or branched C_{1-4} alkyl groups wherein the melamine formaldehyde-type polymer has a molecular weight range from about 500 to about 5000, and said effective amount is between about 0.01 lb. to about 10 lb. polymer, on an active basis, per ton of dry fiber.

5,286,348

ELECTRONIC FLOW MODULATED CROSS DIRECTION MOISTURE ACTUATOR

Didier J. Perin, Toronto, Canada, assignor to Valmet Automation (Canada) Ltd., Concord, Canada

Filed Oct. 16, 1991, Ser. No. 777,583
Int. Cl.[5] D21F *7/00*
U.S. Cl. 162—262 **5 Claims**



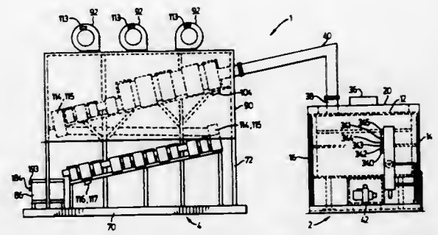
1. A system for rewetting a paper web traveling in a direction away from the dryer section of a paper machine including in combination a support extending across said web in a direction generally perpendicular to the direction of travel of the web, a plurality of air atomizing nozzles spaced along the length of said support for directing sprays of water against the surface of said web, means for supplying said nozzles with air under pressure, respective proportional valve assemblies associated respectively with said air atomizing nozzles, each of said proportional valve assemblies having an inlet and an outlet and comprising a seat and a valve member movable relative to said seat and an individual electromagnetic element responsive to a respective electrical signal for positioning said valve member relative to said seat to permit a flow through said valve assembly which is proportional to the strength of the electrical signal applied to the corresponding individual electromagnetic element, a source of water, means connecting said water source to said inlets of said proportional valve assemblies, means connecting the outlets of said proportional valve assemblies respectively to said air atomizing nozzles, means for obtaining a moisture profile in a direction across said web, means responsive to said moisture profile obtaining means for producing a plurality of control signals representing said profile and means for applying said control signals respectively to said electromagnetic elements of said proportional valve assemblies to pass flows of water from the water source through the valve assemblies to the respective air atomizing nozzles, said flows being proportional respectively to the magnitudes of said control signals to tend to make the moisture content across said web constant, each of said valve assemblies comprising means mounting said valve member for movement relative to said seat to permit flow through the valve assembly in proportion to the separation between the valve member and the seat, each of said valve assemblies comprising an elongated armature, means mounting said armature for pivotal movement around an axis intermediate the ends of the armature, said valve member mounting means comprising a rod mounted for movement around said axis with said armature, mens for applying balanced magnetic forces to the ends of the armature to cause it to occupy a neutral position in the absence of any other force applied thereto, said electromagnetic element being a coil carried by said armature, one of said control signals being applied to said coil, said coil being so wound as to produce a force assisting the magnetic force applied to one end of said armature and opposing the force applied to the other end of the armature to tend to rotate said armature to move said valve member away from said seat.

5,286,349

APPARATUS FOR RECLAIMING USEFUL OIL PRODUCTS FROM WASTE OIL

Edward C. Shurtleff, R.R. #1, St. George, N.B., Canada E0G 2L0

Continuation-in-part of Ser. No. 246,834, Sep. 20, 1988, abandoned. This application Jun. 10, 1991, Ser. No. 712,775
Int. Cl.[5] C10G *7/00, 7/12*
U.S. Cl. 196—46 **37 Claims**



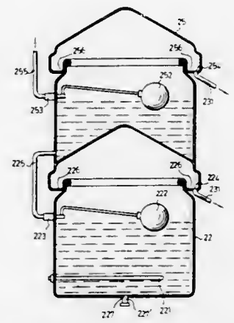
1. An apparatus for reclaiming a useful oil product from a waste oil, the apparatus comprising: an evaporation chamber, including an inlet for the waste oil, and an outlet for vaporized oil; heating means for heating the evaporation chamber to vaporize oil from the waste oil; a first float means for monitoring the level of the waste oil in the evaporation chamber; pump means connected to the inlet of the evaporation chamber for pumping waste oil into the evaporation chamber, and connected to and controlled by the first float means, to maintain the waste oil level in the evaporation chamber at a desired level; a heating control circuit connected to and controlling the heating means; and a second float means mounted so as to be subject to the oil level in the evaporation chamber, and connected in the heating control circuit, for opening the control circuit if the oil level exceeds predetermined upper and lower limits.

5,286,350

WATER DISTILLER

Shan-Meng Huang, No.3, I-Chung St., San-Min Dist., Kaohsiung City, Taiwan

Filed Dec. 14, 1992, Ser. No. 990,008
Int. Cl.[5] B01D *3/02*
U.S. Cl. 202—174 **4 Claims**



1. A water distiller including a raw water chamber for storing raw water; a main vaporization tank having a water conduit that is coupled with said raw water chamber at one end and that is communicated with said main vaporization tank at the other end, an electric heating element installed electrically

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in said main vaporization tank for vaporizing raw water in said main vaporization tank to form distilled water steam, a first float-controlled valve connected operatively to said water conduit, and a first float element attached to said first float-controlled valve so as to activate said first float-controlled valve in response to changes in the amount of water in said main vaporization tank, thereby introducing raw water from said water conduit into said main vaporization tank when raw water in said main vaporization tank is reduced to a predetermined amount; a condensation device including a condensing conduit unit that is coupled with said main vaporization tank, and a fan for blowing outside air over an outer surface of said condensing conduit unit so as to condense distilled water steam which flows into said condensing conduit unit from said main vaporization tank to form distilled water in said condensing conduit unit; and a distilled water chamber communicated with said condensing conduit unit for accepting and storing distilled water which is condensed from distilled water steam in said condensing conduit unit; the improvement comprising:

said main vaporization tank having a generally conical top wall so that distilled water steam which is generated in said main vaporization tank can be condensed to form distilled water drops on an inner surface of said conical top wall when distilled water steam touches said conical top wall, said conical top wall of said main vaporization tank having a lower end portion provided with an annular water collecting groove formed in said inner surface thereof, said water collecting groove collecting distilled water drops on said conical top wall of said main vaporization tank and having a bottom wall which has a discharge opening formed therethrough, said discharge opening being communicated with said condensing conduit unit of said condensation device so that distilled water and steam can flow from said main vaporization tank and into said condensing conduit unit through said discharge opening; and

an auxiliary vaporization tank communicated with said water conduit of said main vaporization tank so that raw water can flow naturally into said water conduit from said auxiliary vaporization tank, said auxiliary vaporization tank including a water pipe which is communicated with said raw water chamber and said auxiliary vaporization tank so that raw water can flow naturally into said auxiliary vaporization tank from said raw water chamber, said auxiliary vaporization tank being mounted securely on a top end portion of said main vaporization tank in such a manner that said conical top wall of said main vaporization tank has an outer surface surrounded by raw water in said auxiliary vaporization tank so as to effect heat exchange between raw water in said auxiliary vaporization tank and distilled water steam generated in said main vaporization tank, said auxiliary vaporization tank further including a second float-controlled valve connected operatively to said water pipe, and a second float element attached to said second float-controlled valve so as to activate said second float-controlled valve in response to changes in the amount of raw water in said auxiliary vaporization tank, thereby introducing raw water from said water pipe into said auxiliary vaporization tank when raw water in said auxiliary vaporization tank is reduced to a predetermined amount, said auxiliary vaporization tank having a generally conical top wall so that distilled water steam which is generated in said auxiliary vaporization tank due to said heat exchange can be condensed to form distilled water drops on an inner surface of said conical top wall of said auxiliary vaporization tank when distilled water steam touches said conical top wall, said conical top wall of said auxiliary vaporization tank having a lower end portion provided with an annular water collecting groove formed in an inner surface thereof, said water collecting groove collecting distilled water drops on said top wall of said auxiliary vaporization tank and having a bottom wall which has a discharge opening formed therethrough, said discharge opening being communicated with said condensing conduit unit of said condensation device so that distilled water and steam in said auxiliary vaporization tank can flow from said auxiliary vaporization tank and into said condensing conduit unit through said discharge opening.

5,286,351

WATER DISTILLING METHOD

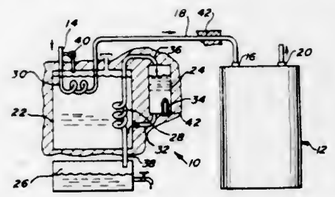
Michael E. Salmon, Linden, Mich., assignor to Terrill Designs, Inc., Spartanburg, S.C.

PCT No. PCT/US89/05518, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991

Division of Ser. No. 282,026, Dec. 9, 1988, Pat. No. 4,946,558. This PCT application Dec. 6, 1989, Ser. No. 700,142

Int. Cl.[5] B01D *3/42*; C02F *1/02*

U.S. Cl. 203—1 **11 Claims**



1. A method of recovering waste energy from a water distilling operation, comprising:

boiling water within an evaporator tank to generate steam;

condensing the steam within a first heat exchanger to provide distilled water;

transferring the heat rejected by the first heat exchanger to atmospheric pressure water held within a heat storage tank;

passing water to be supplied to a hot water heater inlet through a second heat exchanger in thermal cooperation with the water within the heat storage tank to absorb energy thereby reducing the hot water heater energy requirements;

automatically replenishing the water within the evaporator by coupling the heat storage tank to the evaporator thereby maintaining the water levels therein substantially equally;

sensing the level of water within the heat storage tank; and

automatically adding water to the heat storage tank in response to the level sensed to maintain a desired water level.

7. A method of recovering waste energy in a water distilling system, comprising:

boiling water within an evaporator tank to generate steam;

condensing the steam within a first heat exchanger to provide distilled water;

transferring the heat rejected by the first heat exchanger to atmospheric pressure water held within a heat storage tank;

storing the distilled water in a reservoir until needed;

passing water supplied to a water heater inlet through a second heat exchanger to absorb energy from the water within the heat storage tank thereby reducing the hot water heater energy requirements; and

monitoring the water level within the reservoir and the temperature of the heat storage tank and automatically regulating the operation of the evaporator to maintain a supply of distilled water within the reservoir while preventing the temperature of the water within the heat storage tank from exceeding a specified level.

5,286,352

ELECTROCHEMICAL PRODUCTION OF HIGHER PENTAFLUOROSULFONYL ACID FLUORIDES

John C. Hansen, and Patricia M. Savu, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 486,115, Feb. 28, 1990, Pat. No. 5,159,105. This application Jul. 15, 1992, Ser. No. 914,427

Int. Cl.[5] C25B *3/08*

U.S. Cl. 204—59 F **3 Claims**

1. A continuous process for preparing fluorochemical compounds, comprising the steps of:

(1) charging a Simons electrochemical cell with anhydrous liquid hydrogen fluoride;

(2) periodically charging the cell with a S- and H-containing organic precursor to form a solution of anhydrous liquid hydrogen fluoride containing the precursor;

(3) electrolyzing the solution to produce a gaseous product mixture containing fluorochemical compounds having the formula $F_5S—R_f—X$ where X is COF or SO_2F; R_f is a saturated fluoroaliphatic radical having at least 3 fully-fluorinated C atoms; and the F_5S group is bonded via a S—C bond to 1 of the 3 fully-fluorinated C atoms of the R_f radical.

5,286,353

ELECTROLYSIS CELL AND METHOD FOR THE EXTRACTION OF ALUMINUM

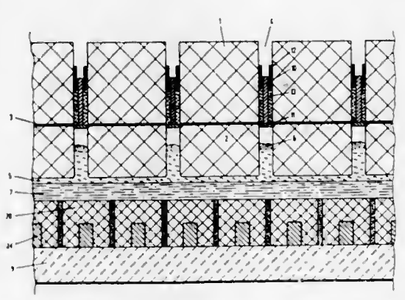
Siegfried Wilkening, Alfter-Oedekoven, Fed. Rep. of Germany, assignor to VAW Aluminium A.G., Bonn, Fed. Rep. of Germany

Filed Jun. 2, 1992, Ser. No. 892,470

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1991, 4118304

Int. Cl.[5] C25C *3/06, 3/12, 3/16*

U.S. Cl. 204—67 **32 Claims**



29. A method for refurbishing the anode blocks of an electrolysis cell, comprising:

providing:

a) a cell housing;

b) a plurality of anode blocks having longitudinal and front sides and a lower surface;

c) cross-connecting means for physically connecting said blocks along said longitudinal sides and providing a packing receiving channel therebetween, each said cross-connecting means attached to an upper part of the cell housing;

d) granulate packing of carbon-containing material packed into said channels, said packing and cross-connecting means physically and electrically joining the anode blocks;

e) a plurality of cathode blocks, each said cathode block having an upper surface facing the lower surface of a corresponding anode block; and

f) means for maintaining an intervening space between the facing surfaces of said anode block and said cathode block;

applying a layer of adhesive cement composition to the upper sides of an anode block in the cell; and

placing a replacement anode block upon the adhesive layer.

30. The method of claim 29, wherein the combination of said anode frame, said cross-connecting means, said anode blocks and the cell housing cover said cathode blocks and said intervening space between the anode and cathode blocks in a substantially gas-tight manner, and further comprising the step of recommencing fusion electrolytic extraction of aluminum without substantial interruption or diminishment in the function of the refurbished anode block.

5,286,354

METHOD FOR PREPARING ORGANIC AND INORGANIC HYDROXIDES AND ALKOXIDES BY ELECTROLYSIS

Allen I. Bard, and Hossein Sharifian, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 983,052, Nov. 30, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 45,819

Int. Cl.[5] C25B *1/00*

U.S. Cl. 204—86 **32 Claims**

1. A process for preparing organic and inorganic hydroxides or alkoxides from the corresponding halide salts in an electrolytic cell which comprises an anolyte compartment containing an anode, a catholyte compartment containing a cathode, and an anion selective membrane or a nonionic divider separating said compartments, said process comprising the steps of

(A) charging to the catholyte compartment, a mixture comprising an organic or inorganic halide salt and a liquid selected from water, organic liquids which do not react with hydroxide ions, or a mixture thereof provided that sufficient water or alcohol is present in the catholyte mixture during electrolysis to form the desired hydroxide or alkoxide;

(B) charging to the anolyte compartment, a mixture having a pH of from about 1 to about 7 and comprising a reducing agent which is capable of reducing halogen or being oxidized at the anode and a liquid selected from water, organic liquids, or mixtures thereof;

(C) subjecting the catholyte mixture and the anolyte mixture to electrolysis by passing a current through the electrolytic cell to produce the hydroxide or the alkoxide in the catholyte compartment, whereby the accumulation of halogen in the anolyte is substantially prevented by the action of the reducing agent; and

(D) recovering the organic or inorganic hydroxide or alkoxide from the catholyte compartment.

5,286,355

ELECTROCHEMICAL WIRE SHARPENING DEVICE AND METHOD FOR THE FABRICATION OF TIPS

Raul Fainchtein, Rockville, and Paul R. Zarriello, Catonsville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Aug. 12, 1991, Ser. No. 743,649

Int. Cl.[5] C25F *3/14, 7/00*

U.S. Cl. 204—129.55 **29 Claims**

1. An electrochemical etching process for preparing a tip comprising:

providing a wire to be sharpened to a tip;

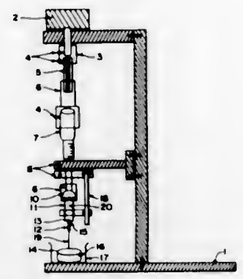
placing the wire in a container containing an electrolyte solution and an electrode;

moving the wire into the electrolyte;

applying a voltage to the wire, etching the wire and monitoring the resulting etching current in the electrolyte;

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stopping the etching process when a preselected current is reached; and including



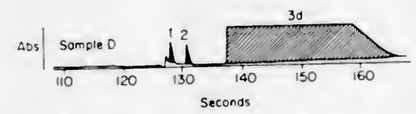
withdrawing the wire from the electrolyte step by step during the etching and at a time interval in the range of 1–700 msec.

5,286,356

METHOD FOR SAMPLE ANALYSIS USING CAPILLARY ELECTROPHORESIS

William R. Jones, Northborough; Martin Fuchs, Uxbridge, and Michael Merion, Upton, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jan. 21, 1993, Ser. No. 6,434
Int. Cl.[5] C25B *7/00*
U.S. Cl. 204—182.8 **13 Claims**



1. A method for analyzing a sample by capillary electrophoresis with improved regularity of migration time comprising the steps of:

dividing the analysis time into two or more time segments;

applying to a capillary high voltage power in a first mode during a first time segment to effect separation of said sample;

applying to said capillary high voltage power in a second and different mode during a subsequent time segment.

5,286,357

CORROSION SENSORS

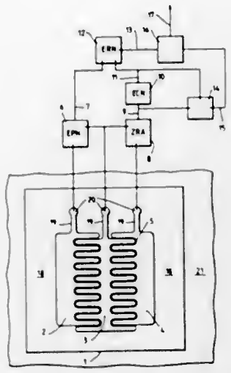
John D. Smart, Cheshire, and William M. Cox, Manchester, both of England, assignors to British Aerospace Public Limited Company, Farnborough and Capcis March Ltd., Manchester, both of England

Filed Aug. 4, 1992, Ser. No. 924,830
Int. Cl.[5] G01N *27/26, 27/416*
U.S. Cl. 204—153.11 **13 Claims**

7. A method of detecting corrosion of a surface, comprising the steps of

attaching to the surface a corrosion sensor comprising a thin, flexible, non-conducting substrate and an array of at least two thin, flexible, metallic electrodes carried on said substrate, wherein said electrodes co-extend closely adjacent one another so as to permit spontaneous generation of electrical signals by electrochemical action between said electrodes upon their corrosion,

subjecting said sensor and surface to a corrosive influence, and



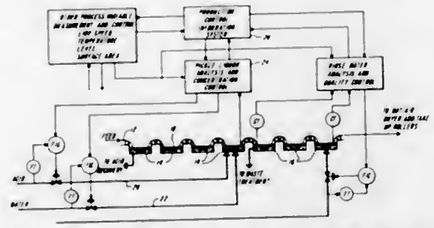
measuring, without the application of any electrical potential to said corrosion sensor, corrosion-induced electrochemical activity between said electrodes.

5,286,358

METHOD OF ANALYZING THE COMPLEXING POWER OF A PICKLING LIQUOR

Kenneth S. Fletcher, III, Rehoboth, and Jane K. Burdick, North Attleboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 1, 1991, Ser. No. 738,872
Int. Cl.[5] C23G *1/02*; G01N *33/00*
U.S. Cl. 204—153.13 **11 Claims**



1. A method of determining the iron complexing power of a liquid including hydrofluoric acid, fluoride ions, nitric acid, and complexed iron, comprising the steps of:

obtaining a test sample of the liquid;

adding a known amount of Fe^{+3} to the test sample, in stoichiometric excess of the amount necessary to complex with all available fluoride ions, such that the Fe^{+3} ions complex with essentially all of the available fluoride present in the sample, yielding iron-fluoride complexes and uncomplexed Fe^{+3};

performing a back titration to determine the difference between the amount of Fe^{+3} added to the sample and the amount of free Fe^{+3} found in the sample; and

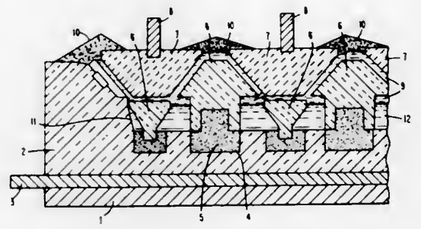
calculating the complexing power of the liquid based on said difference.

5,286,359

ALUMINA REDUCTION CELL

Nolan E. Richards, Florence, and Alton T. Tabereaux, Colbert County, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 20, 1991, Ser. No. 703,439
Int. Cl.[5] C25C *3/08, 3/10, 3/12*
U.S. Cl. 204—243 R **10 Claims**



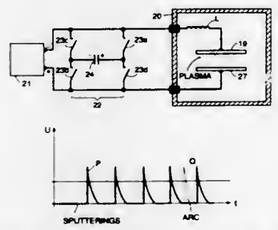
1. A reduction cell for use in the electrolytic production of metals from molten solutions which comprises: at least one anode having a plurality of inclined planer surfaces and a generally horizontal planer surface which generally define an inverted frustrum of a pyramid, a plurality of cathode elements, each having at least one inclined planer surface which is spaced apart from and parallel to a corresponding inclined planer surface of said at least one anode and at least one cathode element having a generally horizontal planer surface which is spaced apart from and parallel to a corresponding generally horizontal planer surface of said at least one anode such that there is a corresponding parallel surface of a cathode element for each planer surface of said at least one anode, and wherein the inclined planer surfaces of said plurality of cathode elements which are spaced apart from and parallel to inclined surfaces of said at least one and include grooves therein which are aligned in the direction to which said surfaces are inclined.

5,286,360

APPARATUS FOR COATING A SUBSTRATE, ESPECIALLY WITH ELECTRICALLY NONCONDUCTIVE COATINGS

Joachim Szczyrbowski, Goldbach; Goetz Teschner, Gelnhausen, and Siegfried Beisswenger, Alzenau, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Jul. 7, 1992, Ser. No. 909,591
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202425.0
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.08 **3 Claims**



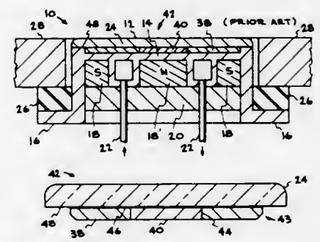
1. Apparatus for coating a substrate, especially with electrically non-conductive coatings, from an electrically conductive target in a reactive atmosphere, comprising: an evacuable coating chamber, a direct-current source, a magnetron cathode disposed in the evacuable coating chamber and containing a target and a magnet, which cooperates electrically with the target which is sputtered and whose sputtered particles deposit themselves on the substrate, said cathode being electrically connected to said direct-current source, an anode separated electrically from the sputtering chamber, said apparatus further including an additional circuit which brings said DC magnetron cathode periodically for brief periods of time individually of the order of microseconds to a positive potential, the frequency of this periodical change of polarity being adjustable in accordance with the coating material that is to be deposited.

5,286,361

MAGNETICALLY ATTACHED SPUTTER TARGETS

Daniel M. Makowiecki, and Mark A. McKernan, both of Livermore, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Oct. 19, 1992, Ser. No. 962,657
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—298.12 **35 Claims**



33. A sputtering apparatus comprising:

a sputtering cathode assembly defining a sputtering area and including permanent magnets and pole pieces;

a target assembly comprising a sputter target and magnetic attachment means formed integrally with said sputter target;

wherein said target assembly is magnetically attached to said sputtering cathode assembly by said magnetic attachment means; and

wherein the sputter target has an exposed sputtering surface which has substantially the same total sputtering area as the cathode assembly.

5,286,362

METHOD AND SENSOR ELECTRODE SYSTEM FOR THE ELECTROCHEMICAL DETERMINATION OF AN ANALYTE OR AN OXIDOREDUCTASE AS WELL AS THE USE OF SUITABLE COMPOUNDS THEREFOR

Joachim Hoenes, Zwingenberg, and Jurgen Schaeffler, Weinheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 852,610, Mar. 17, 1992, abandoned, which is a division of Ser. No. 650,265, Feb. 4, 1991, Pat. No. 5,122,244. This application Apr. 27, 1993, Ser. No. 53,317
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 4003194
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 **15 Claims**

1. A sensor electrode system for an electrochemical determination of the amount of an analyte in a liquid sample, comprising

an admixture of an oxidoreductase and a first reducible substance, wherein the reducible substance has the property that the reducible substance is reduced by said oxidoreductase to produce a reduced substance in a non-reversible reaction, and that, in turn, said reduced substance,

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when oxidized, produces a second reducible substance which is different from the first reducible substance;
means for storing the admixture of the oxidoreductase and the first reducible substance;
means for contacting the admixture with the liquid sample which may contain the analyte;
contacting means for electrically contacting the admixture in contact with the sample with two physically separated electrically conductive leads;



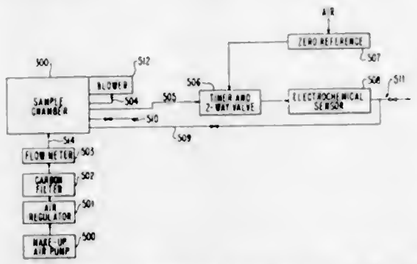
said contacting means including an electrically conductive surface means for receiving electrons from the first reducible substance when the first reducible substance is reduced by said oxidoreductase to produce a reduced substance, and for oxidizing the reduced substance at the electrically conductive surface means to a second reducible substance which is different from the first reducible substance.

5,286,363

DYNAMIC MICROCHAMBER FOR MEASURING FORMALDEHYDE EMISSIONS

William H. Anderson, Conyers, Ga., and Chris W. Huber, Orangeburg, S.C., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Oct. 18, 1990, Ser. No. 599,426
Int. Cl.[5] G01N *27/416*
U.S. Cl. 204—409 **16 Claims**



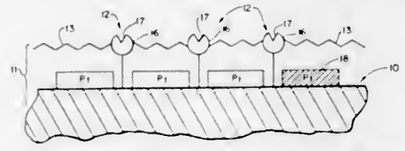
1. An apparatus for measuring formaldehyde emissions from composite wood products bonded with a urea-formaldehyde resin adhesive, said apparatus comprising in combination:
a sample chamber having a volume of less than about 0.5 m^3 for holding at least one sample board of said composite wood product and permitting said board to emit formaldehyde in said chamber;
blower means for circulating air through said sample chamber and across said at least one sample in said sample chamber;
a feed conduit for introducing ambient make-up air into said sample chamber, said feed conduit having a filter for removing contaminants from said make-up air;
an electrochemical formaldehyde sensor in fluid combination via a conduit with said air circulating in said sample chamber for measuring the formaldehyde concentration in said circulating air, wherein said electrochemical formaldehyde sensor can determine the formaldehyde content in said circulating air with a sufficiently low level of formaldehyde removal from said circulating gas as to leave the formaldehyde concentration essentially undisturbed in said circulating air during said measuring; and
a recycle for returning air from said electrochemical formaldehyde sensor to said sample chamber.

5,286,364

SURFACE-MODIFIED ELECTOCHEMICAL BIOSENSOR

Alexander M. Yacynych, East Brunswick; Sylvia S. Piznik, Jackson; Eugene R. Reynolds, Highland Park, and Robert J. Geise, Piscataway, all of N.J., assignors to Rutgers University, New Brunswick, N.J.

Continuation-in-part of Ser. No. 456,075, Dec. 20, 1989, which is a continuation of Ser. No. 59,706, Jun. 8, 1987, abandoned. This application Mar. 29, 1991, Ser. No. 677,384
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—418 **11 Claims**



1. A method of making a sensing element for use in a biosensor that amperometrically measures the concentration of an analyte in a biological liquid, said method comprising the following steps:
a) obtaining a first electrode having a sensing surface;
b) immersing said sensing surface of said first electrode in a solution of monomer wherein said monomer is electropolymerizable into an electrically non-conducting polymer;
c) flowing an electric current from a cathode, through said solution, to said first electrode, at a voltage and amperage sufficient to cause the monomer to be electropolymerized on the sensing surface of the first electrode;
d) ceasing the current flow after the amperage of the current as measured at the first electrode declines to a relatively steady minimum, thereby yielding a sensing surface coated with an adherent layer of electrically non-conducting polymer;
e) disposing with the polymeric coating on the sensing surface of the first electrode a chemical sensing agent that, when contacted by a specific analyte in a biological liquid, generates an electroactive molecule that can be detected amperometrically.

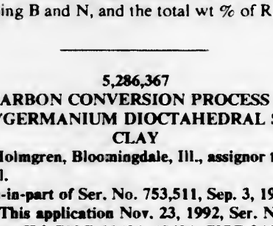
5,286,365

GRAPHITE-BASED SOLID STATE POLYMERIC MEMBRANE ION-SELECTIVE ELECTRODES

Frank R. Shu, La Habra Heights, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 15, 1992, Ser. No. 821,158
Int. Cl.[5] G01N *27/414*
U.S. Cl. 204—418 **15 Claims**

1. A solid-state ion-selective electrode comprising:
(a) a porous element comprising graphite;
(b) an electrochemical reference in substantially dry form on at least a portion of the element, the reference comprising:
(i) an oxidant;
(ii) a reductant that is the conjugate of the oxidant, the oxidant and reductant being present in about equimolar quantities; and
(iii) a concentration of the ion for which the ion-selective electrode is selective sufficient to increase the sensitivity of the electrode when the electrode is used to measure the ion in a physiological sample; and



(c) a polymeric membrane comprising an ion-selective ionophore selective for the ion incorporated in the electrochemical reference in contact with the electrochemical reference.

5,286,366

SURFACE TREATMENT FOR IRON-BASED PERMANENT MAGNET INCLUDING RARE-EARTH ELEMENT

Katsuo Mitsuji, Alma, Mich., assignor to Hitachi Magnetic Corp., Erdmore, Mich.

Filed Nov. 5, 1991, Ser. No. 788,181
Int. Cl.[5] C25D *5/10, 5/34*
U.S. Cl. 205—176 **4 Claims**

1. A surface treatment for a R-TM-X permanent magnet comprising the steps of:
first etching said surface in nitric acid having a concentration of from about 0.2 to about 10 vol %;
second etching said surface in an aqueous solution containing hydrogen peroxide having a concentration of from about 0.2 to about 10 vol % and acetic acid having a concentration of from about 10 to about 30 vol %;
forming an inner non-bright nickel layer on a surface of said permanent magnet;
said inner non-bright layer including not more than 0.008 wt % of sulfur;
forming an intermediate nickel-strike layer on said inner non-bright layer;
said intermediate layer including from about 0.1 to about 0.2 wt % of sulfur; and
forming an outer semi-bright nickel layer on said intermediate layer;
said outer semi-bright nickel layer including from about 0.015 to about 0.03 wt % of sulfur; and
applying a chromate coating over said outer semi-bright nickel layer;
where R is about 5 to 40 wt % of said magnet and comprises an element or a mixture of neodymium, praseodymium, and dysprosium, TM represents 50 to 90 wt % of said magnet and is comprised of iron and one or more elements selected from the group consisting of Co, Al, Ga, Ti, V, Cr, Mn, Zr, Hf, Nb, Ta, Mo, Ge, Sb, Sn, Bi, and Ni, X is 0.2 to 8 wt % of an element or a mixture of elements comprising B and N, and the total wt % of R, TM, and X is 100.

5,286,367

HYDROCARBON CONVERSION PROCESS USING A GALLIUM/GERMANIUM DIOCTAHEDRAL SMECTITE CLAY

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 753,511, Sep. 3, 1991, Pat. No. 5,192,725. This application Nov. 23, 1992, Ser. No. 980,028
Int. Cl.[5] C10G *11/04, 47/04;* C07C *2/66*
U.S. Cl. 208—111 **12 Claims**

1. A hydrocarbon conversion process comprising contacting a hydrocarbon feed under hydrocarbon conversion conditions with a catalyst to give a hydroconverted product, the catalyst comprising a dioctahedral smectite layered clay composition having the empirical formula

$$A_x(M_4)(M'_{8-x}M_x)(O_{20})(OH)_4$$

where A is a templating agent, M is aluminum or gallium, M' is silicon or germanium, except that when M is aluminum, M' is not silicon and x is the moles of A and varies from about 0.1 to about 2.0.

10. The process of claim 1 where the hydrocarbon conversion process is hydrocracking.

5,286,368

HYDROCARBON CONVERSION PROCESS USING A NOVEL BEIDELLITE CLAY

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 753,514, Sep. 3, 1991, Pat. No. 5,192,726. This application Nov. 25, 1992, Ser. No. 981,728
Int. Cl.[5] C10G *11/04, 47/04;* C07C *2/66*
U.S. Cl. 208—111 **5 Claims**

1. A hydrocarbon conversion process comprising contacting a hydrocarbon feed under hydrocarbon conversion conditions with a catalyst to give a hydroconverted product, the catalyst comprising a beidellite layered clay composition having the empirical formula

$$A_x(Al_4)(Si_{8-x}Al_x)(O_{20})(OH_4)$$

where A is a templating agent and x is the moles of the templating agent and varies from about 0.1 to about 2.0, the composition characterized in that it has crystals whose average crystallite size is about 50–150 Angstroms, has a surface area of at least 80 m^2/g, has its 060 X-ray diffraction peak at a d-spacing of 1.50 Angstroms and is substantially free of sodium cations.

3. The process of claim 1 where the hydrocarbon conversion process is hydrocracking.

5,286,369

CATALYTIC CRACKING UTILIZING A ZEOLITE AND ALUMINUM PHOSPHATE-CONTAINING CATALYST

Terry G. Roberie, Ellicott City, and John F. Terbot, II, Abingdon, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 643,980, Jan. 22, 1991, Pat. No. 5,194,412. This application Oct. 26, 1992, Ser. No. 966,488
Int. Cl.[5] C10G *11/02*
U.S. Cl. 208—114 **6 Claims**

1. A method for the catalytic cracking of hydrocarbons which comprises reacting a hydrocarbon under catalytic cracking conditions in the presence of a catalyst which comprises a zeolite selected from the group consisting of ultrastable Y, ZSM-5, Beta, SAPO, ALPO and mixtures thereof and a crystalline aluminum phosphate binder having a surface area of less than 20 m^2/g and a total pore volume of less than 0.1 cc/g.

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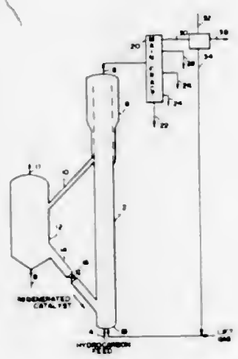
CATALYTIC CRACKING USING A LAYERED CRACKING CATALYST

Pochen Chu, Voorhees, N.J.; Albin Huss, Jr., Chadds Ford, Pa.; Hartley Owen, Belle Mead, N.J.; Joseph A. Herbst, Turnersville, N.J.; Garry W. Kirker, Washington Township, Bergen County, N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 516,482, May 1, 1990, Pat. No. 5,077,253, which is a continuation-in-part of Ser. No. 292,204, Dec. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 335,068, Apr. 7, 1989, Pat. No. 5,001,096, which is a continuation-in-part of Ser. No. 138,002, Dec. 28, 1987, abandoned. This application Dec. 17, 1991, Ser. No. 808,487

Int. Cl.[5] C10G *11/05;* **B01J** *29/06*

U.S. Cl. 208—120 **19 Claims**



1. A process for catalytic cracking of a heavy feed of hydrocarbons boiling in the gas oil and heavier boiling range to lighter products by contact of the feed with a catalyst, in a catalytic cracking reactor at catalytic cracking conditions including a catalyst to feed weight ratio of about 3:1 to 10:1 and a reactor outlet of about 450° to 550° C. characterized by use of a layered catalytic cracking catalyst comprising a core containing at least 10 wt % large pore molecular sieve selected from the group of zeolite L, zeolite X, zeolite Y, Dealuminized Y, Ultrastable Y and Ultrahydrophobic Y and a shell of inorganic solids comprising at least 1 wt % of the overall catalyst containing less than 10 wt % of said large pore molecular sieve.

5,286,371

PROCESS FOR PRODUCING NEEDLE COKE

Shri K. Goval, Naperville, Ill.; Jeffrey J. Kolstad, Wayzata, Minn.; F. W. Hauschildt, Geneva, Ill.; Dean G. Venardos, Batavia, Ill., and Cheryl L. M. Joval, Evanston, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 14, 1992, Ser. No. 913,461

Int. Cl.[5] C10G *9/14;* **C10B** *55/00*

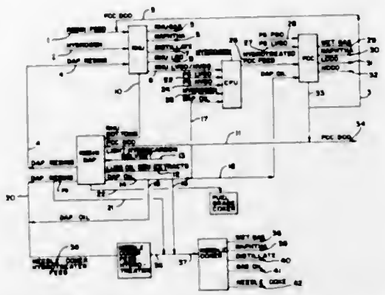
U.S. Cl. 208—131 **20 Claims**

1. A process for producing needle coke comprising the steps of:

passing a heavy resid feedstock to a resid hydrotreating reaction zone at resid hydrotreating conditions and producing light resid hydrotreated products and a heavy resid hydrotreated residual product;

directing said heavy resid hydrotreated residual product and FCC decanted oil to a solvent extraction process reaction zone at solvent extraction process conditions and producing products comprising a solvent extracted oil and resin stream and a stream comprising asphaltenes; and

conveying at least a portion of said solvent extracted oil and resin stream to a delayed coking process at delayed coking



conditions and producing liquid products and needle coke.

5,286,372

PROCESS FOR SWEETENING A SOUR HYDROCARBON FRACTION USING A SOLID BASE

Blaise J. Arena, Chicago; Jennifer S. Holmgren, Bloomingdale, and Barret A. Ferm, Rolling Meadows, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 862,151, Apr. 2, 1992, Pat. No. 5,232,887. This application Apr. 9, 1993, Ser. No. 44,667

Int. Cl.[5] C10G *19/073, 27/10;* **B01J** *31/18, 31/20*

U.S. Cl. 208—207 **16 Claims**

1. A process for sweetening a sour hydrocarbon fraction containing mercaptans comprising contacting the hydrocarbon fraction in the presence of an oxidizing agent with a catalyst and an effective amount of a polar compound, the catalyst comprising a metal chelate dispersed on a support selected from the group consisting of a solid solution of metal oxides, a layered double hydroxide and mixtures thereof, the solid solution having the formula $xMO{\cdot}yM'_2O_3$ where M is at least one metal having a +2 oxidation state and is selected from the group consisting of magnesium, nickel, zinc, copper, iron, cobalt and mixtures thereof and M' is at least one metal having a +3 oxidation state and is selected from the group consisting of aluminum, chromium, gallium, scandium, iron, lanthanum, cerium, yttrium, boron and mixtures thereof and the ratio of x:y is greater than 1 to about 15, the layered double hydroxide represented by the formula

$$M_xM'y(OH)_{2x+2y}(X^-)y{\cdot}zH_2O$$

where X^- is an anion selected from the group consisting of carbonate, nitrate, halide and mixtures thereof, M and M' metals are the same as those described for the solid solution, the ratio of x:y is greater than 1 to about 15, and z varies from about 1 to about 50, thereby oxidizing the mercaptans to disulfides.

5,286,373

SELECTIVE HYDRODESULFURIZATION OF NAPHTHA USING DEACTIVATED HYDROTREATING CATALYST

Chakka Sudhakar, Wappingers Falls, and Gerald G. Sandford, Glenham, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 8, 1992, Ser. No. 910,052

Int. Cl.[5] C01G *45/04*

U.S. Cl. 208—216 R **6 Claims**

1. A process for selectively hydrodesulfurizing naphtha comprising contacting naphtha, containing olefins and thiohydrocarbons, with hydrogen under vigorous hydrodesulfurizing conditions at a pressure of at least about 15 bars and sufficient to hydrodesulfurize a significant part of the naphtha in the presence of essentially deactivated hydrotreating catalyst comprising metals selected from the group consisting essentially of Group VIB metal, cobalt and nickel, wherein said catalyst is deactivated by hydrotreating petroleum distillates for over 3 months, which selectively produces hydrogen sulfide and desulfurized hydrocarbons while retaining high olefin content of at least about 50 weight percent of the olefin content before hydrodesulfurization.

5,286,374

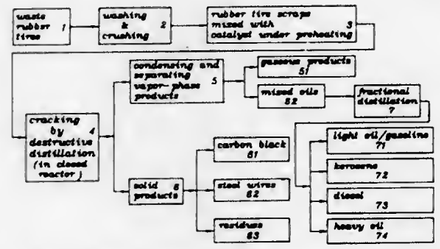
PROCESS FOR CRACKING WASTE RUBBER TIRES

Huang-Chuan Chen, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Feb. 26, 1993, Ser. No. 23,129

Int. Cl.[5] C10G *1/10, 11/02;* **B01J** *21/12, 21/14*

U.S. Cl. 208—400 **2 Claims**



1. A process for cracking waste rubber tires comprising:

a. washing and crushing waste rubber tires into rubber scraps;

b. mixing the rubber scraps with mica catalyst selected from the group consisting of muscovite, sericite and biotite under heating to 210° C.;

c. performing a cracking reaction with destructive distillation of the rubber scraps in the presence of the mica catalyst comprising a catalyst quantity of 2–3% by weight based on 100% of total waste rubber tires fed in the cracking reaction under heating to maintain a temperature ranging from 230° C. to 400° C. under a pressure of 1 atmosphere to 2.5 atmospheres for one hour to produce cracking products of vapor-phase products containing gases and mixed oils, and solid products containing carbon black and residual products; and

d. separating the cracking products into gases, mixed oils, carbon black and residual products.

5,286,375

OIL RECOERY APPARATUS

John D. Marrelli, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,456

Int. Cl.[5] B01D *17/038*

U.S. Cl. 210—96.1 **18 Claims**

1. Oil recovery apparatus comprising:

pump means for pumping an oil water mixture from a body of water containing oil therein;

first sampling means connected to the pump means for sampling the oil water mixture to provide a first sample stream;

stratifying means connected to the pump means for stratifying the oil water mixture into an oil rich substream and a water rich substream, the stratifying means includes:

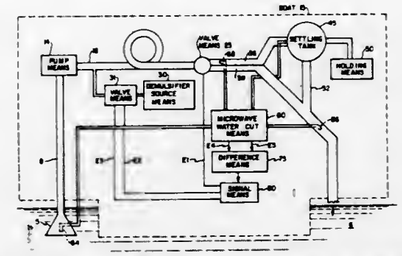
valve means for separating the stratified oil water mixture into an oil rich stream and a water rich stream,

a movable valve member whose position affects the volumetric flows of each substream, and

means connected to the movable member for positioning the movable member in accordance with a first control signal;

second sampling means for sampling one of the substreams to provided a second sample stream;,

water cut means receiving the two sample streams for determining the water cuts of both sample streams and providing water cut signals corresponding thereto, and



first control means for controlling the stratifying means so as to control the volumetric flows of the oil rich and water rich streams in accordance with the water cut signals.

5,286,376

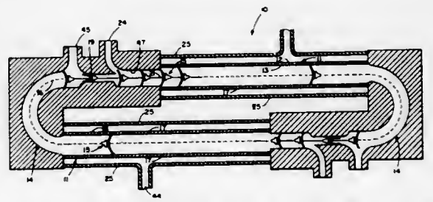
FILTERING APPARATUS

Robert A. Benson, 13 Commonwealth Ave., Boston, Mass. 02116

Filed Feb. 18, 1992, Ser. No. 837,487

Int. Cl.[5] B01D *29/23, 35/00*

U.S. Cl. 210—194 **9 Claims**



1. Apparatus for separating from a stream of fluid with particles greater than a cut-off size suspended therein a stream of fluid lacing particles of size larger than said cut-off size,

said apparatus comprising a tubular structure with a wall and a lumen, said lumen being in a form of a closed loop, said tubular structure wall having porous portions with pores therethrough, said lumen within said porous portions being of uniform cross-section,

said apparatus comprising a passage for introducing fluid into said lumen and means for collecting fluid which has passed from said lumen through said pores

said tubular structure having a reduced cross-section portion, the lumen therein having a diameter less than a diameter of the lumen in said porous portions,

said apparatus comprising a runner of generally linear form connected in a loop, lying within the lumen of said tubular structure, and being free to move along said lumen,

said runner including a string and a plurality of beads disposed at intervals along said string,

said beads comprising

blocking structures which when within the lumen of said reduced cross-section portion block flow therethrough and

filter maintenance structures which are deformable, assuming an expanded state when within the lumen of the porous portions and a compressed state when within the lumen of the reduced cross-section portion, each filter maintenance structure when in a compressed state fitting within the lumen of the reduced cross-section por-

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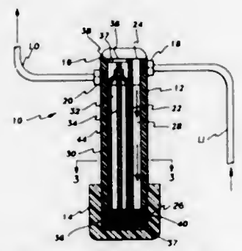
tion, each filter maintenance structure when in an expanded state extending over a cross-section greater than the cross-section of the reduced cross-section portion so as to define a constricted flow passage between each filter maintenance structure and tubular structure wall opposed thereto.

5,286,377

EVAPORATIVE COOLER WATER TREATMENT DEVICE

James Galvan, Sp. D9, HCR-2, Box 1600, Rosamond, Calif. 93560

Filed Sep. 9, 1992, Ser. No. 942,224
Int. Cl.[5] C23F *13/00*
U.S. Cl. 210—198.1 **10 Claims**



1. A water treatment device in combination with an evaporative cooler, said evaporative cooler having a water supply line extending from a water supply source to said evaporative cooler, said water treatment device comprising;

a central housing having an upper end, a lower end, and a hollow interior,

said hollow interior longitudinally divided by a longitudinal baffle having an upper and a lower end to provide an inlet side and a treatment side within said central housing,

a lower end cap providing removable closure means on said central housing lower end and including a lower circulation space therein connecting said inlet side and said treatment side,

an upper end closure providing closure means to said central housing upper end with said central housing upper end including a water inlet and a water outlet and having an inner surface immediately adjacent said upper end of said baffle,

a water treating chemical insert installed within said treatment side, whereby

said water inlet, said inlet side, said circulation space within said lower cap, said water treating chemical insert installed within said treatment side, and said water outlet provider means for treatment of water flowing therethrough to said evaporative cooler.

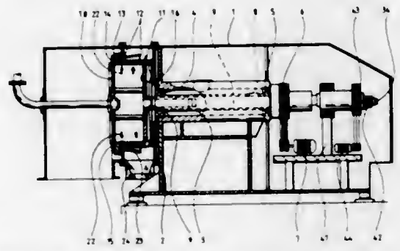
5,286,378

SLEEVE FILTER CENTRIFUGE

Hans Gerteis, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Heinkel Industriezentrifugen GmbH & Co. KG, Bietigheim-Bissingen, Fed. Rep. of Germany

PCT No. PCT/EP91/00047, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO91/14507, PCT Pub. Date Oct. 3, 1991
PCT Filed Jan. 15, 1991, Ser. No. 838,815
Claims priority, application European Pat. Off., Mar. 24, 1990, 90105624.2
Int. Cl.[5] B01D *33/067*
U.S. Cl. 210—232 **4 Claims**

1. Sleeve filter centrifuge comprising a drum (**11**) rotatably mounted in a housing (**1**) and having radial filtrate passages (**12**), an invertable filter cloth (**15**) covering the filtrate passages, a cover (**18**) closing one end face of the drum, a feed opening for the suspension to be filtered provided in the cover, a feed pipe (**19**) passing through the feed opening, and a safety device preventing the drum being opened by the cover being detached from it for as long as the drum is rotating at a rotational speed higher than a critical rotational speed above which any opening of the drum would be dangerous, said drum and cover being axially displaceable relative to one another by means of a rotatably driven hollow shaft and a support shaft telescopically reciprocating therein in order to invert the filter cloth, a screw spindle (**34**) arranged on the support shaft (**9**) and a nut (**33, 36**) engaging with this screw spindle, a motor (**44**) constructed and arranged to rotatingly drive that either the screw spindle (**34**) or the nut (**36**) so that the support shaft (**9**) reciprocates telescopically in the hollow shaft (**3**) in response to the rotational speed of the screw spindle (**34**) or the nut (**36**) relative to the rotational speed of hollow shaft (**3**) and drum (**11**), the drum (**11**) opening when the rotational speed of the screw spindle (**34**) or nut (**36**) driven by the motor (**44**) is higher than the rotational speed of the hollow shaft (**3**), and closing when the rotational speed of the screw shaft (**34**) or the nut (**36**) is lower than the rotational speed of the hollow shaft (**3**), and the maximum rotational speed of the motor (**44**) being such that the maximum rotational speed it imparts to the screw spindle (**34**) or nut (**36**) is lower than the critical rotational speed of the drum so that the drum opens only when it is rotated at a rotational speed lower than the critical rotational speed.



5,286,379

OIL-SPILL CLEAN UP APPARATUS

Gilbert R. Jackson, 108 S. Myrtlewood St., West Covina, Calif. 91791

Filed Aug. 24, 1992, Ser. No. 934,407
Int. Cl.[5] B04B *15/00;* **C02F** *1/38*
U.S. Cl. 210—242.3 **20 Claims**

1. An apparatus for removing oil and other liquids spilled onto a navigable body of water, comprising:

a vessel,

a substantial plurality of centrifugal separator modules disposed within said vessel,

each separator module comprising a plurality of individual centrifugal separators in an array wherein respective separators are disposed at respective progressively higher elevations, each centrifugal separator having a drive shaft,

electric motor means for driving the arrays of separators, said motor means including drive shaft means extending to the arrays of separators,

power transmission means interconnecting said motor means drive shaft means and each associated separator drive shaft, and

means carried by said vessel for collecting a liquid spill material mixture from the body of water and for transporting the mixture in a generally parallel manner to the modules.

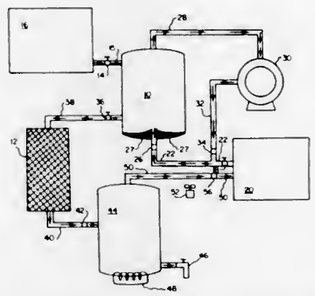


5,286,380

APPARATUS FOR CONTAMINATED OIL RECLAMATION

Craig R. Mellen, Salt Lake City, Utah, assignor to Petroleum Technology Corporation, Salt Lake City, Utah

Filed May 14, 1990, Ser. No. 522,642
Int. Cl.[5] B01D *36/04, 17/09, 1/02*
U.S. Cl. 210—296 **4 Claims**



1. An apparatus for reclaiming contaminated motor oil comprising:

a first reaction pressure vessel having a top and a bottom end, said top end comprising an outlet, and said bottom end comprising means for introducing a compressed gas into said first reaction pressure vessel;

a columned, pressurized filter of activated charcoal having a top and bottom end, said top end being in fluid communication with the bottom end of the first reaction vessel;

a second reaction pressure vessel having a top and a bottom end, said top end comprising an outlet and being in fluid communication with the bottom end of the columned filter, and said bottom end of said second reaction vessel comprising heating means for raising the temperature in said second reaction vessel; and

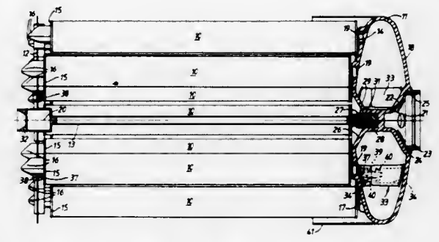
a compressor having an inlet and an outlet, said inlet being in fluid communication with the top end of the first reaction vessel and said outlet being in fluid communication with the bottom end of the first reaction vessel.

5,286,381

FILTER ASSEMBLIES

Roger A. Buttery, Petersfield, and Charles N. Rothwell, Halifax, both of England, assignors to Pall Corporation, Glen Cove, N.Y.

Filed May 9, 1991, Ser. No. 697,775
Claims priority, application United Kingdom, May 9, 1990, 9010349
Int. Cl.[5] B01D *29/39*
U.S. Cl. 210—323.2 **20 Claims**



1. A filter assembly comprising:

a plurality of elongate filter cartridges;

means defining an outlet at one end of each of said filter cartridges;

a one-piece hollow plastics plenum chamber formed by a rotational moulding process wherein the plenum chamber is without joins; and

means defining a plurality of apertures on a surface of said plenum chamber, each aperture communicating with a respective means defining an outlet at one end of one said filter cartridges.

5,286,382

HYDROPHOBIC POLYMERIC MEMBRANE COMPOSITES

Louis M. Scarmoutzos, Andover, and John Charkondian, Carlisle, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 852,584, Mar. 17, 1992, Pat. No. 5,217,802. This application May 17, 1993, Ser. No. 12,112
Int. Cl.[5] B01D *29/00*
U.S. Cl. 210—490 **14 Claims**

1. A composite porous polymeric membrane which comprises a porous membrane substrate having an average pore size between about 0.001 and 10 microns formed of a first polymer, said substrate having a surface which is modified on its entire surface with a cross-linked second polymer formed from a polymerizable fluorine containing monomer, said monomer being polymerized and crosslinked in situ on said substrate, said second polymer having a wettability such that it does not wet with solvents whose surface tension is greater than about 21 dynes/cm and said composite porous membrane having essentially the same porous configuration as said porous membrane substrate.

5,286,383

WATER-OIL EMULSION SEPARATOR

Allen J. Verret, Abita Springs; Bruce D. Cooley, Covington, and Malcolm J. Poche', New Orleans, all of La., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,766
Int. Cl.[5] C02F *1/40*
U.S. Cl. 210—521 **4 Claims**

1. A separator for breaking an emulsion comprised of an aqueous component having a greater specific gravity than a produced component, the latter being comprised of a liquid hydrocarbon component and particulated solids, said separator

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having means for handling an overload of said aqueous component and comprising:

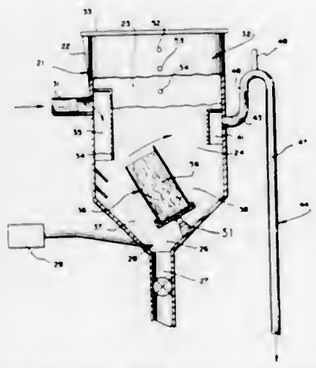
a receiving tank;

means defining an expansion chamber at the receiving tank upper end;

an emulsion permeable stabilizer means positioned in said receiving tank to form an inlet chamber and an emulsion separating compartment below said expansion chamber;

a downflow inlet means for receiving a stream of said emulsion in said inlet chamber

said emulsion permeable stabilizer means being aligned to receive emulsion entering said receiving tank, and to discharge a non-turbulent flow thereof into said separating compartment to cause an upward flow of the liquid hydro-



carbon component whereby to form a floating pad thereof at the surface of the aqueous component;

first discharge means in communication with the separating compartment to conduct the aqueous component therefrom; and

second discharge means in communication with said expansion chamber to conduct either the liquid hydrocarbon component, or the aqueous component therefrom,

said second discharge means including a plurality of discharge ports opening into said expansion chamber being spaced vertically apart to sequentially drain aqueous component which rises into the expansion chamber as a result of said aqueous component overloading the receiving tank.

5,286,384

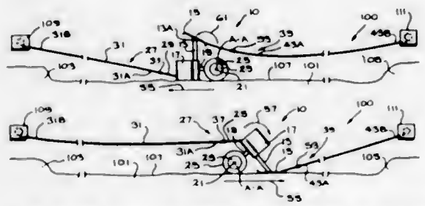
SLUDGE SCRAPER APPARATUS

Roger Haag, DeWitt, Mich., assignor to Enviroland, Inc., DeWitt, Mich.

Filed Jan. 14, 1993, Ser. No. 4,279

Int. Cl.[5] B01D *21/18*

U.S. Cl. 210—527 **21 Claims**



11. A sludge scraper apparatus for moving sludge sediment from a sludge containment means having a bottom and a sidewall extending from the bottom to form the containment means, which comprises:

(a) a frame means for providing structural support for the apparatus;

(b) a plow means mounted on a first end of the frame means for moving sludge sediment;

(c) a skid means mounted on a second end of the frame means for enabling the apparatus to move over the sludge sediment;

(d) a rotating means journaled on an axle means, means for mounting the axle means to said plow means, and wherein the axle means is mounted adjacent to and spaced from the frame means and the plow means intermediate the ends of the frame means; and

(e) a first actuating means and a second actuating means for moving said apparatus in first and second opposed directions, respectively, said first and second actuating means each having a first part and a second part, wherein the first part of the first actuating means is mounted adjacent to the pow means and the second part of the first actuating means is spaced apart from the plow means wherein the first part of the first actuating means is positioned to move the scraper apparatus in said first direction and wherein the first part of the second actuating means is mounted adjacent to the skid means and the second part of the second actuating means is spaced apart from the skid means wherein the second part of the second actuating means is positioned to cause the scraper apparatus to rotate in a first direction about the axle means on the rotating means such that the plow means is spaced above the skid means and wherein the second actuating means causes the scraper apparatus to move in said second direction.

5,286,385

METHOD FOR REMOVING NITROGEN FROM AN AQUEOUS SOLUTION

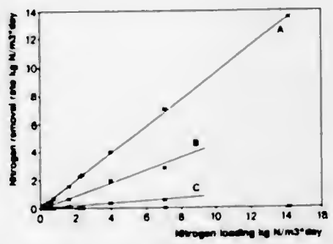
Svend E. Jorgensen, Langk r V age 9, DK-3500 V rlose; Bent Halling-Sorensen, Amager F lledvej 9, 5.th., DK-2300 Kobenhavn S; Henning Hjuler, Aajev 6, DK-2990 Nivaa, and Karsten Poulsen, Aars, all of Denmark, assignors to Svend Erik Jorgensen; Bent Halling-Sorensen and Henning Hjuler, all of Denmark

Filed Jan. 6, 1993, Ser. No. 969,265

Claims priority, application Denmark, May 7, 1990, 1125/90

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—610 **17 Claims**



1. A method of removing nitrogen from an aqueous solution by simultaneous microbial nitrification and denitrification comprising treating the aqueous solution in one or more fixed bed reactors containing a porous material having nitrifying and denitrifying microorganisms fixed thereto, said carrier material consisting of an ammonium selective ion exchanger.

5,286,386

SOLVENT EXTRACTION PROCESS FOR TREATMENT OF OILY SUBSTRATES

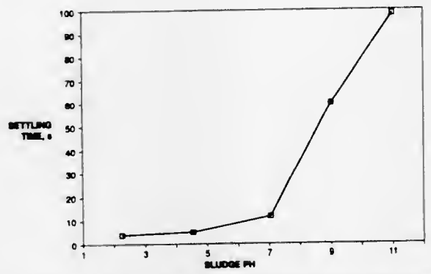
Saeed T. Darian, Sugarland, and Stephen P. Weinberg, Houston, both of Tex., assignors to ENSR Corporation, Mahwah, N.J.

Division of Ser. No. 591,116, Oct. 2, 1990, Pat. No. 5,154,831, which is a continuation-in-part of Ser. No. 289,219, Dec. 22, 1988, Pat. No. 5,055,196. This application Jul. 2, 1992, Ser. No. 908,154

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] B01D *11/04, 17/04*

U.S. Cl. 210—639 **33 Claims**



1. A process for treating an oily substrate selected from the group consisting of a mixture comprising water and oily material and a mixture comprising water, solids and oily material as components of said substrate, said process comprising:

contacting said oily substrate with a solvent for said oily material, a comminuting and dispersing surfactant for said oily substrate and a flocculant, wherein said solvent for said oily material ranges in solubility in water from sparingly soluble to substantially water insoluble, to produce at least one phase differentiating interface and to thereby render one or more components of said oily substrate separable at a rate faster than in the absence of said flocculant.

5,286,387

EFFLUENT FILTRATION AND SACK FILTER APPARATUS

David Froud, Maidstone, United Kingdom, assignor to Copa Research Limited, Kent, United Kingdom

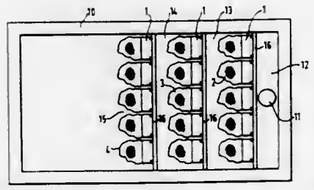
PCT No. PCT/GB91/01926, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/07645, PCT Pub. Date May 14, 1992

PCT Filed Nov. 4, 1991, Ser. No. 50,189

Claims priority, application United Kingdom, Nov. 5, 1990, 9023988.0; Apr. 30, 1991, 9109282.5

Int. Cl.[5] B01D *61/00, 24/46, 24/30*

U.S. Cl. 210—649 **9 Claims**



1. A method of filtering liquid effluent, comprising causing said effluent to pass through filtration means comprising at least one disposable sack filter, the open end of the sack filter being attached to an outflow conduit, wherein the opposing closed end of the sack filter is attached to a moving support at about the same horizontal level as the open end, and the moving support causes the closed end of the sack filter to rotate and/or reciprocate relative to the open end, thereby to cause agitation of the sack filter.

5,286,388

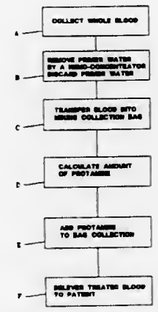
METHOD FOR NEUTRALIZING HEPARIN IN WHOLE BLOOD TAKEN FROM AN EXTRACORPOREAL CIRCUIT

John M. Ingram, 14120 Harpers Ferry St., Davie, Fla. 33325

Filed Jun. 20, 1991, Ser. No. 718,279

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—650 **24 Claims**



11. A method of recovering deheparinized whole blood from an extracorporeal circuit for infusion into a patient comprising the steps of:

(a) collecting whole blood having heparin from said circuit;

(b) removing primer water from the blood by hemo-concentrating and discarding the primer water;

(c) transferring the blood into a mixing container;

(d) mixing an anti-coagulant other than heparin with said blood;

(e) calculating an amount of heparin neutralizing chemical in relation to the amount of said transferred blood and the amount of heparin in the transferred blood or the contents of the container;

(f) transferring said amount of said neutralizing chemical into said container;

(g) infusing the de-heparinized blood into the patient.

5,286,389

REMOVAL OF HYDROGEN SULFIDE FROM SOUR WATER

Leslie C. Hardison, Barrington, Ill., assignor to ARI Technologies, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 873,713, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 464,730, Jan. 16, 1990, abandoned, which is a continuation of Ser. No. 246,191, Sep. 19, 1988, abandoned, which is a division of Ser. No. 20,568, Mar. 2, 1987, Pat. No. 4,784,775. This application Aug. 24, 1992, Ser. No. 934,571

Int. Cl.[5] C02F *1/74*

U.S. Cl. 210—712 **12 Claims**

1. A continuous process for treating sour water containing from about 5 ppm to about 500 ppm of dissolved hydrogen sulfide within aqueous polyvalent metal solution containing a non-chelated polyvalent metal to effect liquid phase oxidation of dissolved hydrogen sulfide to sulfur by means of dissolved oxygen, wherein said polyvalent metal is reduced from a higher valence state to a lower valence state during said oxidation of hydrogen sulfide to produce a sweet water product, said process comprising:

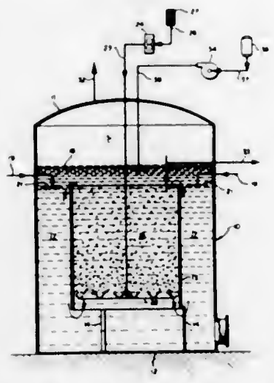
providing a recirculating system having a reaction zone for

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said oxidation of hydrogen sulfide and an interconnected oxygenation zone for introducing oxygen into said polyvalent metal solution;

continuously recirculating between said reaction zone and said oxygenation zone a liquid mixture comprising a dilute aqueous solution containing a non-chelated polyvalent metal such that the liquid mixture has a predetermined polyvalent metal ion content selected from the range of from about 0.5 ppm by weight to about 15 ppm by weight,

introducing sour water feed containing from about 5 ppm to about 500 ppm dissolved hydrogen sulfide into an inlet portion of said reaction zone, and mixing and diluting said sour water feed at said inlet portion with at least 2.5 volumes of freshly oxygenated liquid mixture recirculated from said oxygenation zone wherein the liquid mixture has a dissolved oxygen content of at least 1 ppm, and an HS content of less than or equal to 5 ppm to prevent precipitation of ferrous sulfide, where the dissolved oxygen is supplied in at least a stoichiometric amount to the HS content to effect substantially complete oxidation of said sulfide, said mixing and diluting being effected substantially entirely in liquid phase in said reaction zone so that said sour water feed is not contacted with air or gaseous oxygen or a stripping gas capable of stripping dissolved hydrogen sulfide from the liquid mixture until after the



sour water has been diluted and has passed through said reaction zone;

introducing air or other oxygen-containing gas into said oxygenation zone, and therein contacting the air or other oxygen-containing gas with said liquid mixture recirculated from said reaction zone under conditions effective to increase the dissolved oxygen content of said liquid mixture and also to oxidize the reduced polyvalent metal to its higher valence state;

withdrawing a minor portion of the oxygenated liquid mixture from said oxygenation zone as the sweet water product of the process, substantially the balance of the oxygenated liquid mixture being recirculated from said oxygenation zone to said reaction zone;

introducing replacement non-chelated polyvalent metal into the system at a rate sufficient to replace that removed in said sweet water product and to maintain said predetermined polyvalent metal ion content in said liquid mixture;

regulating the sour water feed rate and the sweet water product withdrawal rate to provide a predetermined residence time of the sour water in the system selected from the range of from about 5 to about 360 minutes; and

correlating said predetermined residence time and said predetermined polyvalent metal ion content so as to obtain substantially complete oxidation of the hydrogen sulfide in the sour water feed to sulfur.

5,286,390

METHOD FOR TREATING DEINK WASTES USING MELAMINE ALDEHYDE-TYPE POLYMERS

Ross T. Gray, Coraopolis, and Denis E. Hassick, Monroeville, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1992, Ser. No. 954,637

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—727 **2 Claims**

1. A method for separating ink-laden solids and turbidity from an ink-laden wastewater stream produced in a secondary fiber deinking operation, which method comprises:

a) adding to said ink-laden wastewater stream at least about 0.1 ppm, on an active basis, of a melamine formaldehyde acid colloid polymer, thereby causing formation of an ink-laden floc including said ink-laden solids and said turbidity, and b) segregating said ink-laden floc from said ink-laden wastewater stream.

5,286,391

RED MUD FLOCCULATION

John T. Malito, Oswego, and Michael G. Strominger, Dekalb, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Feb. 4, 1993, Ser. No. 13,524

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—733 **19 Claims**

1. A process for improving the flocculation of suspended solids in a Bayer process liquor in a primary settler stage, the method comprising:

adding to a primary settler feed from about 1 to about 100 parts per million of a composition including a water-continuous dispersion containing a polymer dispersed in the water of the continuous phase of said dispersion, said polymer comprised of at least 50 mole percent of mer units having pendent groups that hydrolyze to pendant carboxylic acid groups and wherein said dispersion contains at least about 20 weight percent of said polymer; and

flocculating red mud in said primary settler feed in a primary settler,

wherein a sufficient amount of said pendant groups of said mer units of said polymer hydrolyze to carboxylic acid groups between the time of said addition and the time of said flocculation that said polymer as so hydrolyzed is active as a red mud flocculant in said primary settler stage.

5,286,392

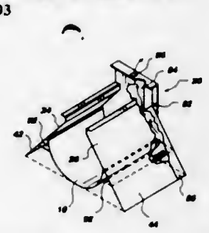
LAUNDER WITH BAFFLE SYSTEM AND REGULATABLE AIR DISCHARGE STRUCTURE

Edward M. Shea, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 841,828, Feb. 26, 1992, Pat. No. 5,227,077. This application Feb. 22, 1993, Ser. No. 21,160

Int. Cl.[5] B01D *24/46*

U.S. Cl. 210—793 **8 Claims**



6. A method of reducing loss of media during a backwashing cycle in a filtration tank using granular filtration media comprising:

providing in a filtration tank structure comprising:

an elongated launder having a bottom and spaced apart sides;

baffle structure connected to said launder and configured to reduce flow velocity, said baffle structure further being structured to provide a space for communication of air released from fluid circulating around said baffle structure;

regulatable air discharge structure associated with said baffle structure and in fluid communication therewith to selectively release air trapped beneath said baffle structure;

operating said filtration tank in a backwashing cycle by flushing fluid and air through said granular filtration media;

directing said fluid toward said bottom of said launder to urge said fluid toward said baffle structure to dissipate the velocity of said fluid, to dissipate air from said fluid and to direct said fluid away from said launder; and

adjusting said regulatable air discharge structure to selectively discharge air therefrom thereby establishing a selected fluid level relative to said baffle structure.

5,286,393

COATING AND BONDING COMPOSITION

Donald A. Oldiges, Cypress, and Anthony W. Joseph, Houston, both of Tex., assignors to Jet-Lube, Inc., Houston, Tex.

Filed Apr. 15, 1992, Ser. No. 870,132

Int. Cl.[5] C10M *113/08, 111/04*

U.S. Cl. 252—26 **5 Claims**

1. A resin based coating and bonding composition comprising:

about 0.1–15% by weight of a suspending agent selected from the group consisting of cellulose, clay and silica;

about 1.0–15% by weight of a bonding agent selected from the group consisting of an acrylic, a silicone, a urethane, an alkyd, a hydrocarbon, an epoxy, and a lacquer;

about 55–95% by weight of a thinning agent selected from the group consisting of aliphatic, aromatic, ketone, aldehyde, ester, ether, terpene, chlorinated hydrocarbon and cyclopentasiloxane solvents; and

about 2.0–25% by weight of a metallic flake selected from the group consisting of copper, aluminum, tin, brass, bronze, nickel and stainless steel.

5,286,394

FUEL ECONOMY AND OXIDATION INHIBITION IN LUBRICANT COMPOSITIONS FOR INTERNAL COMBUSTION ENGINES

Lionel D. Moore, Lisle, Ill., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 877,853, May 4, 1992, abandoned, which is a continuation of Ser. No. 534,958, Jun. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 371,911, Jun. 27, 1989, abandoned. This application Jun. 7, 1993, Ser. No. 73,453

Int. Cl.[5] C10M *129/40, 129/70*

U.S. Cl. 252—36 **17 Claims**

1. In a lubricant composition formulated for use in the crankcase of an internal combustion engine, the improvement wherein said lubricant contains, in combination, (i) a friction modifier selected from the group consisting of glycerol monooleate, pentaerythritol monooleate, oleamide, bis(2-hydroxyethyl)oleylamine and diethanolamine coco fatty amide; (ii) a sodium sulfonate; and (iii) a copper carboxylate; and wherein said friction modifier, said sulfonate and said carboxylate are proportioned such that the lubricant composition contains an amount of said friction modifier in the range of 0.05 to 2%, an amount of sodium contributed by said sulfonate in the range of about 10 to less than 1000 ppm, and an amount of copper as said carboxylate in the range of about 10 to 500 ppm and such that said lubricant composition provides a reduction in fuel consumption averaging at least 3.17% as compared to the same lubricant composition devoid of (i), (ii) and (iii).

5,286,395

OLEFIN POLYSULFIDE COMPOSITIONS OF HIGH SULFUR CONTENT AND VERY LOW CHLORINE CONTENT, THEIR MANUFACTURE AND USE AS ADDITIVES FOR LUBRICANTS

Maurice Born, Nanterre; Lucienne Briquet, Rueil-Malmaison, and Guy Parc, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 199,881, May 26, 1988, abandoned. This application May 14, 1992, Ser. No. 883,793

Claims priority, application France, May 27, 1987, 87 07560; Jan. 22, 1988, 88 00830

Int. Cl.[5] C10M *135/04*

U.S. Cl. 252—45 **20 Claims**

1. An olefin polysulfide composition of high sulfur content and a chlorine content lower than about 0.1% b.w., obtained by a process comprising the following steps of:

(1) reacting in an anhydrous medium at least one compound selected from sulfur monochloride and sulfur dichloride with at least one aliphatic monolefin of 2–12 carbon atoms, to form an adduct,

(2) reacting hydrogen sulfide with sodium, potassium or ammonium hydroxide dissolved in at least one anhydrous 99.9% C_1–C_4 aliphatic monoalcohol,

(3) contacting said adduct formed in step (1) and at least one monohalogenated, saturated or unsaturated hydrocarbon compound, with the alcoholic solution obtained at the end of step (2),

(4) heating the resultant mixture from step (3), removing said monoalcohol, while adding a sufficient water amount to maintain in solution the reactants and the inorganic products,

(5) after settling and removal of the aqueous phase, recovering the organic phase formed at least in major part of the desired olefin polysulfide composition.

5,286,396

NOVEL ALKYLATED PHENOXATHIN BASE STOCK FOR LUBRICANTS

Leslie R. Rudnick, Lawrenceville; Carleton N. Rowe, Wenonah, both of N.J.; Derek A. Law, Yardley, Pa., and G. Ali Naghipur, Edmonton, Canada, assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 686,452, Apr. 17, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 895,500

Int. Cl.[5] C10M *135/36;* C07D *327/06*

U.S. Cl. 252—48.2 **5 Claims**

1. A process for the preparation of a high-temperature stable lubricant fluid or lubricant additive comprising reacting in the presence of an acidic zeolite catalyst selected from the group consisting of zeolites X, Y, UHP-Y, ZSM-20, zeolite beta and MCM-22, (1) a hydrocarbyl alkylating agent selected from alpha olefins containing from 3 to about 500 carbons and optionally containing S, N, O, P, F, or mixtures thereof, and (2) a phenoxathin wherein the reaction temperature varies from ambient to about 350° C., the molar ratio of hydrocarbyl alkylating agent to phenoxathin varies from 0.5:1.0 to about 10.1:1.0 and the amount of catalyst varies from 5 to about 100 grams of catalyst to about 1 mole of phenoxathin and wherein the reaction product comprises a monosubstituted adduct.

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5,286,397

BASE OIL FOR THE LUBRICANT INDUSTRY

Karl Schmid, Mettmann; Frank Bongardt, Duesseldorf, and Reinhold Wuest, Kaarst, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01404, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/03531, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 23, 1990, Ser. No. 836,333

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929069

Int. Cl.[5] C10M *129/68*

U.S. Cl. 252—56 S 14 Claims

1. A low-viscosity lubricant composition stable to high and low temperature comprising as the main component an ester oil which is the esterfication product of an aliphatic dicarboxylic acid containing 8 or 9 carbon atoms and a branched Guerbet alcohol containing from 12 to 20 carbon atoms, said ester oil having a kinematic viscosity at about 40° C. as determined per DIN 51,562 of from about 7 to about 50 mm^2/s, and the halance, at least one lubricant additive to 100% by weight of said lubricant composition.

5,286,398

END-CAPPED POLYALKYLENE OXIDE COMPOSITIONS WITH HYDROXYL GROUP FUNCTIONALITY AND USE THEREOF FOR LUBRICATION IN REFRIGERATION SYSTEMS

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1992, Ser. No. 835,650

Int. Cl.[5] C09K *5/04*

U.S. Cl. 252—68 11 Claims

1. A lubricating composition comprising: at least one 2-hydroxy-2-perfluoroalkylethyl end capped polyalkylene oxide prepared by capping a preformed polyalkylene oxide, said end-capped polyalkylene oxide having a viscosity at 100° C. of from 50 to 3000 SUS and the formula

$$R^1(OC(R^2)HCH_2)_w O(CH_2C(CH_3)HO)_x(CH_2CH_2O)_y(CH_2C(R^2)HO)_zH$$

wherein at least one of the terminal groups contains one perfluoroalkyl group and one hydroxyl group attached to the same carbon wherein w is a number from 0 to 10, x is a number from 4 to 30, y is a number from 0 to 20, and z is a number from 1 to 10, wherein R^1 is selected from the group consisting of hydrogen and alkyl groups having from 1 to 8 carbon atoms, provided that when R^1 is an alkyl group, w is 0, and wherein R^2 is selected form the group consisting of perfluoroalkyl groups having from 1 to 4 carbon atoms.

5,286,399

FLOOR SWEEPING COMPOSITION

George E. Howell, Minnetonka Beach, and Charles D. Wright, White Bear Lake, both of Minn., assignors to Akona Corp., Maple Plain, Minn.

Filed Aug. 17, 1992, Ser. No. 930,992

Int. Cl.[5] C09K *3/22*

U.S. Cl. 252—88 8 Claims

1. A biodegradable nontoxic sweeping composition, comprising in combination a uniform mixture of (a) inorganic particulate material, (b) sawdust, and (c) a plant-derived liquid consisting essentially of pine oil acid or a vegetable acid oil byproduct obtained during the refining of vegetable oil.

5,286,400

FLOWABLE POWDER CARPET CLEANING FORMULATIONS

Leon E. Paszek, Mountainside, and Jeanne M. Weller, Glen Rock, both of N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1993, Ser. No. 38,389

Int. Cl.[5] C11D *3/382, 3/02, 3/08*

U.S. Cl. 252—88 9 Claims

1. A flowable powder fabric dry cleaning formulation comprising:

a) 20 to 50 parts of powdered cellulose;

b) 10 to 25 parts of borax;

c) 0 to 10 parts of hydrated amorphous silica;

d) 0 to 10.0 parts of one or more anionic surfactants;

e) 0.5 to 10.0 parts of an organic solvent;

f) 30.0 to 60 parts water; and

g) 0 to 10.0 parts of a zeolite; provided that at least one of the silicas or the zeolite is always present in the formulation.

5,286,401

USE OF HETEROCYCLIC COMPOUNDS AS BLEACH ACTIVATORS OR OPTICAL BRIGHTENERS IN WASHING AND CLEANING AGENTS

Bernhard Dung, Gruenstadt; Wolfgang Trieselt, Ludwigshafen; Erwin Hahn, Heidelberg; Johannes Perner, Neustadt, and Alfred Oftring, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/01897, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO91/08279, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 13, 1990, Ser. No. 836,279

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1989, 3938526

Int. Cl.[5] C07D *265/22;* C11D *3/395;* D06L *3/02, 3/12*

U.S. Cl. 252—102 5 Claims

1. A washing and cleaning composition, comprising from 0.1 to 10% by weight, based on the total amount of said composition, of one or more heterocyclic compounds selected from the group consisting of 2-phenylbenz-(4H)-1,3-oxazin-4-one, 2-(p-chlorophenyl)benz-(4H)-1,3-oxazin-4-one, and 2-(p-tolyl)benz-(4H)-1,3-oxazin-4-one.

5,286,402

DEMULSIFYING POWDER-FORM OR LIQUID CLEANING PREPARATIONS AND THEIR USE

Juergen Geke, and Friedbert Zetzsche, both of Duesseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 910,298

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1990, 4001595

Int. Cl.[5] C11D *1/83;* C23G *1/00*

U.S. Cl. 252—121 15 Claims

1. A demulsifying, powder-form aqueous preparation precursor or an aqueous liquid cleaning preparation comprising nonionic surfactants, monocarboxylic carboxylic acids, and anionic surfactants which contains in combination:

a) said nonionic surfactant being at least one alkyl ethoxylate of the formula (I):

$$R^1—O—(CH_2CH_2O)_n—H \quad (I)$$

in which R^1 is a linear alkyl radical containing 8 carbon atoms and n is a number of 4 to 6,

b) said at least one monocaroxylic acid being of the formula (II):

$$R^2—COOH \quad (II)$$

in which R^2 is a branched alkyl radical containing 8 to 9 carbon atoms, or water-soluble salts thereof,

c) said at least one anionic surfactant being selected from the group consisting of

c1) alkyl sulfates of the formula (III):

$$R^3—O—SO_3Me \quad (III)$$

c2) alkyl polyglycol ether sulfates of the formula (IV):

$$R^4—O—(CH_2CH_2O)_m—SO_3Me \quad (IV)$$

c3) alkylaryl sulfonates of the formula (V):

$$R^5—SO_3—Me \quad (V)$$

in which R^3 and R^4 independently of one another represent linear or branched alkyl radicals containing 10 to 18 carbon atoms, m is a number of 1 to 6, R^5 represents alkylbenzene groups containing 7 to 9 carbon atoms and Me is an alkali metal atom,

the total content of components a, b and c in the cleaning preparation being from 2.5 to 12.5% by weight, the ratio by weight of a to b being from 3:1 to 1:6 and the ratio by weight of (a+b) to c being 3:1 to 1:3,

d) 5 to 97.5% by weight of at least one organic or inorganic builder selected from the group consisting of oligo- and polycarboxylic acids or water-soluble salts thereof and the alkali metal phosphates, silicates, borates, carbonates and hydroxides,

e) up to 100% by weight powder-form or liquid auxiliaries and diluents.

5,286,403

CONCENTRATED CLEANING COMPOSITIONS

Michael O'Dwyer, 775 Kingston Dr., Edgewood, Ky. 41017; Mary K. Haber, 6984 Grace Ave., Cincinnati, Ohio 45227, and Eddy Stephens, 4530 Paddock Rd., Cincinnati, Ohio 45229

Continuation of Ser. No. 694,798, May 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 414,762, Sep. 29, 1989, abandoned. This application Feb. 19, 1993, Ser. No. 20,865

Int. Cl.[5] C11D *1/831*

U.S. Cl. 252—136 9 Claims

1. A phase stable aqueous cleaning concentrate which does not separate into two or more phases when stored for 28 days at 125° F., the concentrate consisting essentially of, by weight based on the total weight, about 54.05% water, about 2.05% of an inorganic acid selected from the group consisting of hydrochloric and phosphoric acid, about 11.9% of an organic acid having a pKa value of from 1 to 5, and about 32% of surfactants as a mixture of nonionic and anionic surfactants at a weight ratio of 0.5:1 to 2.1:1, the weight of said inorganic acids being on an anhydrous basis.

5,286,404

LIQUID ENZYMATIC DETERGENT COMPOSITION

Nina Eriksen, and Gitte Pedersen, both of Frederiksberg, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK90/00263, § 371 Date Feb. 27, 1992, § 102(e) Date Feb. 27, 1992, PCT Pub. No. WO91/05840, PCT Pub. Date May 2, 1991

PCT Filed Oct. 12, 1990, Ser. No. 835,907

Claims priority, application Denmark, Oct. 13, 1989, 5111/89; Jan. 31, 1990, 0257/90

Int. Cl.[5] C11D *17/00;* C12N *9/96*

U.S. Cl. 252—174.12 33 Claims

1. A liquid enzymatic detergent composition comprising

(a) a modified enzyme dissolved therein, which is produced by modifying a detergent enzyme having at least one primary amino group by (i) reaction with an aldehyde, (ii) acylation with an acylating agent or (iii) alkylation with an alkylating agent; wherein a molecule of said modified enzyme contains one molecule of said detergent enzyme; and

(b) a surfactant.

5,286,405

POLYMER-THICKENED LIQUID ABRASIVE CLEANING COMPOSITIONS

George K. Rennie, Wirral, Great Britain, and Neil P. Randle, Schwetzingen, Fed. Rep. of Germany, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

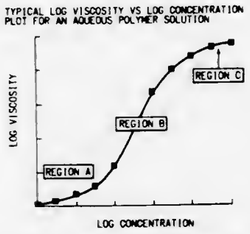
PCT No. PCT/GB90/01837, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO91/08283, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 27, 1990, Ser. No. 915,829

Claims priority, application United Kingdom, Nov. 28, 1989, 8926904.7

Int. Cl.[5] C11D *3/22, 3/37, 17/00*

U.S. Cl. 252—174.17 12 Claims



1. An aqueous liquid abrasive cleaning composition comprising an aqueous liquid medium containing detergent and a thickening mixture, with particulate abrasive suspended in the thickened liquid medium, the detergent being present in an amount of 0.02 to 20 wt. % based on the liquid medium, the particulate abrasive being present in an amount of 30 to 70 wt. % based on the liquid medium, and the thickening mixture being present in an amount of 0.01 to 10 wt. % based on the liquid medium and comprising a linear non-starch polymer and a branched starch polymer, wherein the two polymers are present in a weight ratio of linear non-starch polymer to branched starch polymer of between 20:1 and 1:25,

and wherein each said polymer, when in said liquid medium in the absence of the other said polymer, has a relationship between concentration and viscosity, measured at a shear rate of 10 sec^{-1} such that a graph of log (viscosity) against log (concentration) is a sigmoid curve with a lower position in which, over a range of concentrations, the gradient of the graph of log (viscosity) against log (concentration) is constant or increases with log (concentration),

and wherein the amount of each of said polymers is such that the concentration thereof in the liquid medium lies within said range over which the gradient of that polymer's said curve of log (viscosity) against log (concentration) is constant or increasing,

the thickened liquid system having a viscosity of at least 20 mPa-sec at a shear rate of 10 sec^{-1} greater than that of the liquid medium in the absence of the said thickening mixture.

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5,286,406

LIQUID BODY-CLEANSING AGENTS BASED ON ALKYL GLYCOSIDES

Wolfhard Scholz; Gryta Schosser; Werner Schneider; Heike Schelges, all of Krefeld, and Marianne Waldmann-Laue, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00516, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/14761, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 18, 1991, Ser. No. 927,479

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009616

Int. Cl.[5] **C11D** *3/22, 3/04, 3/32*

U.S. Cl. 252—174.17 **20 Claims**

1. A water-based detergent preparation, comprising:

(A) from 1 to 20% by weight of a condensation product of fatty acids containing 12 to 22 carbon atoms with a component selected from the group consisting of water-soluble oligo- and poly-peptides, water soluble salts thereof, and mixtures thereof; and

(B) from 1 to 20% by weight of an alkyl glycoside corresponding to the formula R^1-$(G)_x$, in which R^1 is an alkyl group containing 8 to 22 carbon atoms and $(G)_x$ is a glycoside or oligoglycoside unit having a degree of oligomerization x of 1 to 10.

5,286,407

OXYGEN ABSORBENT COMPOSITION AND METHOD OF PRESERVING ARTICLE WITH SAME

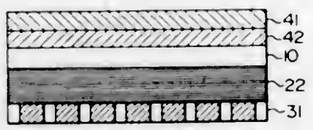
Yoshiaki Inoue; Shigeru Murabayashi; Kazuo Fujinami; Isamu Yoshino, all of Tokyo; Takamasa Kawakami; Satoru Makinose, both of Tsukuba, and Akira Naito, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,486

Claims priority, application Japan, Apr. 25, 1990, 2-107358; May 25, 1990, 2-134111; Jul. 30, 1990, 2-199209; Aug. 14, 1990, 2-213677; Aug. 14, 1990, 2-213678; Jan. 10, 1991, 3-012368; Feb. 22, 1991, 3-048611

Int. Cl.[5] **C09K** *15/04*

U.S. Cl. 252—188.28 **6 Claims**



ADHESIVE SHEET - ATTACHED, GAS - PERMEABLE PACKING MATERIAL (2) - B

1. An oxygen absorbent composition, comprising:

a polymer selected from the group consisting of polymers of isoprene, butadiene, 1,3-pentadiene and squalene, or a mixture of said polymer with an unsaturated fatty acid compound;

0.1 to 75 parts by weight per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of an oxidation promoter selected from the group consisting of transition metals and transition metal compounds;

0.1 to 1,000 parts by weight, per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of a basic substance selected from the group consisting of oxides, hydroxides, carbonates, organic acid salts of alkali metals and alkaline earth metals and amine compounds; and

50 to 1,000 parts by weight, per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of an adsorption substance selected from the group consisting of silica gel, activated clay, diatomaceous earth, zeolite, activated carbon, and pearlite.

5,286,408

LIQUID CRYSTAL DISPLAY DEVICE

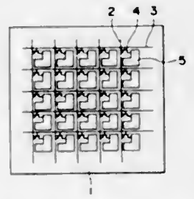
Shohei Naemura, Yokohama, Japan; Eike Poetsch, Mühltal; Ulrich Finkienzeller, Plankstadt, both of Fed. Rep. of Germany; Toshiyuki Hirai, Tenri, Japan; Shuichi Kouzaki, Nara, Japan, and Fumiaki Funada, Yamatokohriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 24, 1991, Ser. No. 814,408

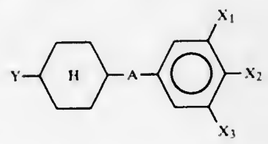
Claims priority, application Japan, Dec. 28, 1990, 2-409225

Int. Cl.[5] **C09K** *19/52;* **G02F** *1/13*

U.S. Cl. 252—299.01 **3 Claims**

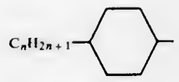


1. A liquid crystal display device comprising (i) a display electrode substrate provided with signal electrodes, scanning electrodes, switching transistors formed at the respective points of intersection of said signal electrodes and said scanning electrodes and display image element electrodes on a first transparent insulating substrate, (ii) a counter electrode substrate provided with a counter electrode arranged on a second transparent insulating substrate so as to be positioned within an opposite range of said display image element electrodes, and (iii) a liquid crystal layer with liquid crystals having a positive anisotropy in dielectric constant dispersed in a transparent polymer interposed between said display electrode substrate and said counter electrode substrate, wherein said transparent polymer is a cation polymerization photo-setting-type transparent polymer and said liquid crystals comprise at least one kind of liquid crystal selected from the group consisting of compounds expressed by the following chemical formulae [I] and/or [II]:

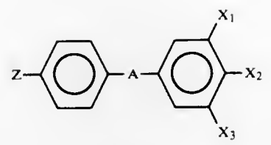


[I]

wherein X_1, X_2 and X_3 independently represent H, F, CF_3 or OCF_3; A represents a single bond, $—CH_2CH_2—$, —C≡C— or —COO—; Y represents C_nH_{2n+1}— or

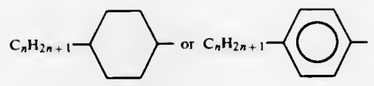


(n represents a number of 2 to 10),



[II]

wherein X_1 to X_3 and A have the same meaning as in [I]; Z represents C_nH_{2n+1}—,



(n has the same meaning as in [I]).

5,286,409

LIQUID-CRYSTALLINE MIXTURES, IN PARTICULAR FERROELECTRIC LIQUID-CRYSTALLINE MIXTURES

Hans-Rolf Dübal, Königstein/Taunus; Claus Escher, Mühltal, both of Fed. Rep. of Germany; Takamasa Harada, Inzai, Japan; Wolfgang Hemmerling, Sulzbach, Fed. Rep. of Germany; Gerhard Illian, Frankfurt am Main, Fed. Rep. of Germany; Ingrid Müller, Niedernhausen, Fed. Rep. of Germany; Mikio Murakami, Kakegawa, Japan; Dieter Ohlendorf, Liederbach, and Rainer Wingen, Hattersheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00458, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO90/11336, PCT Pub. Date Oct. 4, 1990

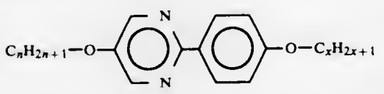
PCT Filed Mar. 21, 1990, Ser. No. 768,561

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909356

Int. Cl.[5] **C09K** *19/34, 19/20*

U.S. Cl. 252—299.61 **15 Claims**

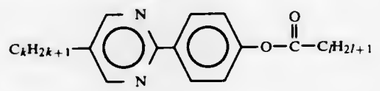
1. A liquid-crystalline mixture containing, as component A, at least two 5-alkoxy-2-(alkoxyphenyl)pyrimidines of the general formula (I)



(I)

in which the alkyl radicals are straight-chain alkyl radicals in which n is an integer from 6 to 14 and x is an integer from 2 to 14,

wherein the liquid-crystal mixture furthermore contains at least one component c of the general formula (V), (VI), (VII), (VIII) or the racemic mixture of one or more carboxylates of the general formula (IX) as a mixture component:

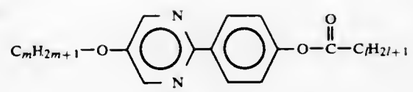


(V)

where

k may be an integer from 6 to 14, and

l may be an integer from 2 to 14,

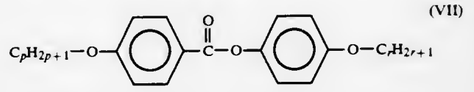


(VI)

where

m may be an integer from 5 to 14, and

l may be an integer from 2 to 14,

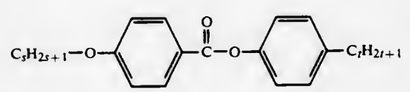


(VII)

where

p may be an integer from 7 to 14, and

r may be an integer from 4 to 14,

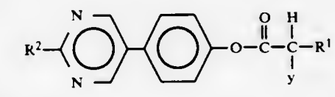


(VIII)

where

s may be an integer from 6 to 14, and

t may be an integer from 6 to 14,



(IX)

where

R^2 is straight-chain or branched (C_1–C_{12})alkyl or alkenyl, it being possible for one or two non-adjacent CH_2 groups to be replaced by O and/or S atoms,

y is F, Cl, Br, CN or CF_3 and

R^1 is branched (C_3–C_9)alkyl, benzyl or phenyl.

5,286,410

SUPERTWIST LIQUID-CRYSTAL DISPLAY

Georg Weber, Erzhausen, and Reinhard Hittich, Modautal, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 360,920, May 30, 1989, abandoned. This application Sep. 25, 1992, Ser. No. 951,367

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807958

Int. Cl.[5] **C09K** *19/34, 19/30, 19/52, 19/20*

U.S. Cl. 252—299.61 **4 Claims**

1. A supertwist liquid crystal display having

two planoparallel support plates which, together with a border, form a cell,

a nematic liquid-crystal mixture which is located in the cell, has positive dielectric anisotropy and has at least one chiral dope,

electrode layers with overlying orientation layers on the insides of the support plates,

a tilt angle between the longitudinal axis of the molecules at the surface of the support plates and the support plates of from about 1 degree to 30 degrees, and

a twist angle of the liquid-crystal mixture in the cell of between 160° and 360° from orientation layer to orientation layer, characterized in that the nematic liquid-crystal mixture satisfies the following conditions:

a nematic phase range of at least 60° C.,

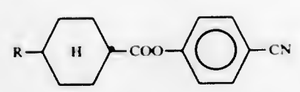
VOL 1159 ISS 3 FE 15 1994 UMI

a viscosity of 30 mPa.s or less,

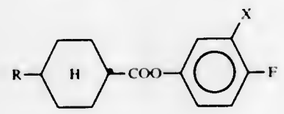
$\Delta\epsilon/\epsilon\perp < 1.5$, where $\Delta\epsilon$ denotes the dielectric anisotropy and $\epsilon\perp$ denotes the dielectric constant in the direction of the short axis of the liquid-crystal molecules, and

$\Delta\epsilon$ is greater than or equal to +5,

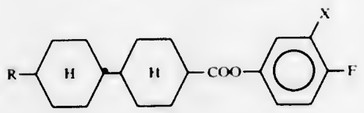
wherein the nematic liquid-crystal mixture comprises at least one component of the formulae 6, 7, 8, 9, 10 or 11, as follows:



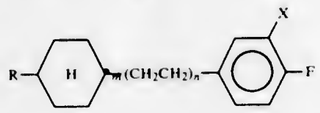
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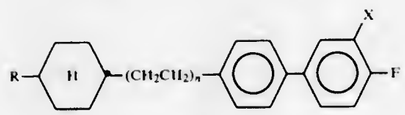
7



8

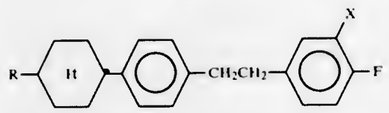


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10

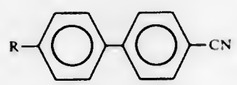
or



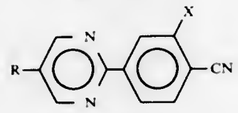
11

and is based on components (a) and (b):

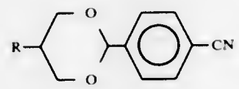
wherein component (a) comprises compounds having a high $\epsilon\perp$ and a clearly positive dielectric constant, selected from the group comprising compounds of formulae 1-5, A, and B:



1

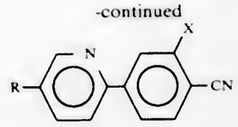


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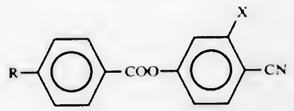


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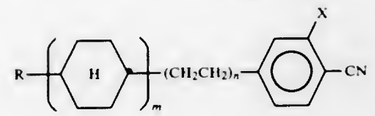
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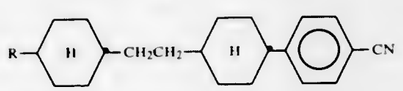
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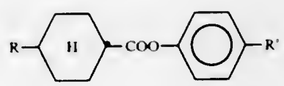
A



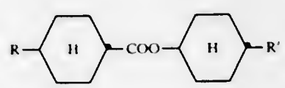
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and

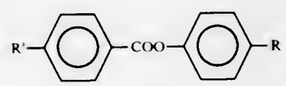
component (b) comprises relatively non-polar compounds having a large $\epsilon\perp$ selected from the group comprising compounds of formulae 12-18, C and D:



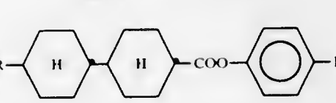
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13

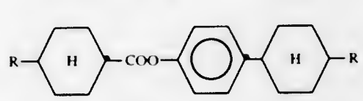


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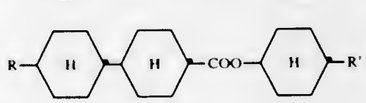


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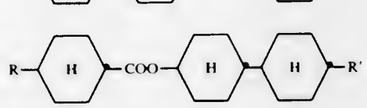
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17

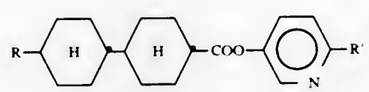


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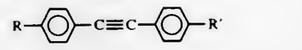
C

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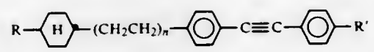


D

and optionally compounds having a high birefringence and a structure of formulae 19 or 20:



19



20

where X is H or F, m is 1 or 2, n is 0 or 1, and R is in each case alkyl, oxaalkyl or alkenyl having 2 to 7 C atoms, each of which is straight-chain, and R′ is alkyl or alkoxy, each of which has 1 to 7 C atoms and each of which is straight-chain.

5,286,411

LIQUID-CRYSTALLINE MEDIUM

Bernhard Rieger, Yokohama, Japan; Reinhard Hittich, Modautal; Volker Reiffenrath, Rossdorf, both of Fed. Rep. of Germany; David Coates, Merley, Great Britain; Hans A. Kurmeier, Seeheim-Jugenheim, and Herbert Plach, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Dramstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/00694, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO91/16398, PCT Pub. Date Oct. 31, 1991

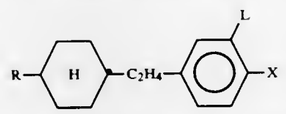
PCT Filed Apr. 12, 1991, Ser. No. 687,935

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1990, 4012033

Int. Cl.[5] C09K *19/30, 19/12;* **G02F** *1/13*

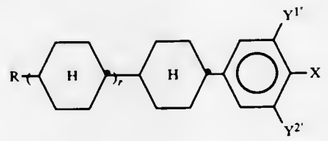
U.S. Cl. 252—299.63 **7 Claims**

1. A liquid-crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, comprising: one or more compounds of the formula I



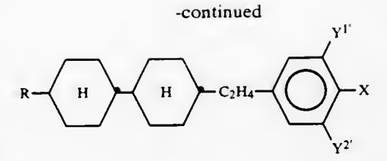
I

in which L is H or F, X is F, Cl, CF_3, OCF_3 or $OCHF_2$, and R is alkyl, oxaalkyl, fluoroalkyl or alkenyl, in each case having 1 to 7 carbon atoms and one or more compounds of the formulae II to VIII:

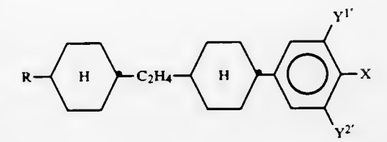


II

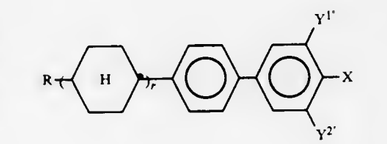
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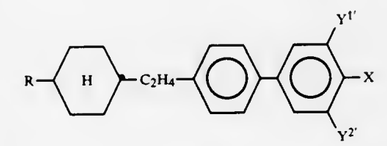
III



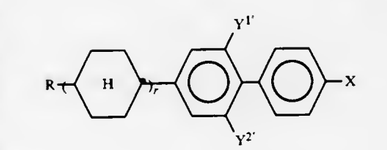
IV



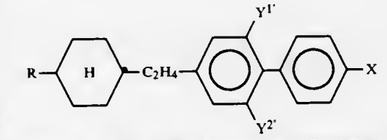
V



VI



VII



VIII

wherein R and X are independently as defined above, $Y^{1'}$ and $Y^{2'}$ are both F and r is 0 or 1.

5,286,412

MODIFIED LIGNOSULFONATE DISPERSANT FOR GYPSUM

Robert A. Northey, Bellevue, and Sara-Kaye Madsen, Tacoma, both of Wash., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Oct. 16, 1991, Ser. No. 777,073

Int. Cl.[5] C04B *24/18*

U.S. Cl. 252—352 **17 Claims**

1. A lowered set-retarding lignosulfonate dispersing agent useful for making an aqueous calcined gypsum slurry, said dispersing agent produced by contacting an aqueous solution of a substantially non-oxidized lignosulfonate with a salt of a multivalent metal selected from the group of iron(II), iron(III), manganese(II) and cobalt(II) to form an aqueous solution of said multivalent metal salt and lignosulfonate having an acidic pH, and thereafter neutralizing said aqueous solution of said multivalent salt and lignosulfonate at an elevated temperature with an alkaline material, wherein oxidation of said lignosulfonate is avoided during said contacting and neutralizing.

VOL 1159 ISS 3 FE 15 1994 UMI

5,286,413

MIXTURES OF POLAR POLYMERS AND DEDOPED CONDUCTIVE POLYMERS, PROCESSES FOR OBTAINING THESE MIXTURES AND USE OF THESE MIXTURES TO PRODUCE ELECTRONIC, OPTOELECTRICAL, ELECTRICAL AND ELECTROMECHANICAL DEVICES

Etienne Hannecart, Tervuren, and Claude Franquinet, Brussels, both of Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Aug. 20, 1991, Ser. No. 747,374

Claims priority, application Belgium, Aug. 30, 1990, 09000838

Int. Cl.[5] H01B *1/00, 1/20*

U.S. Cl. 252—500 **12 Claims**

1. A polymer mixture, comprising:

at least one conductive polymer which has been dedoped to provide at least one dedoped conductive polymer having a conductivity of less than 10^{-3} S.cm^{-1} and which is a homopolymer or copolymer selected from the group consisting of a polyacetylene, a polypyrrole, a polyindole, a polyaniline, a polyphenylene, and a polythiophene; and at least one polar polymer.

5,286,414

ELECTROCONDUCTIVE COATING COMPOSITION, A PROCESS FOR THE PRODUCTION THEREOF AND THE USE THEREOF

Günther Kämpf, Oestrich-Winkel, and Michael Feldhues, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 198,150, May 24, 1988, abandoned. This application May 24, 1993, Ser. No. 66,913

Claims priority, application Fed. Rep. of Germany, May 26, 1987, 3717668

The portion of the term of this patent subsequent to Mar. 3, 2010, has been disclaimed.

Int. Cl.[5] H01B *1/12;* **C08F** *28/06;* **B32B** *9/04*

U.S. Cl. 252—500 **18 Claims**

1. An electroconductive coating composition comprising:

a) 10 to 90% by weight of an electroconductive, positively charged oligomer having three to ten structural units which are connected to one another by linkage in the two-position or five-position or both the two-position and 5-position, on average comprising 60 to 100% by weight of structural units derived from at least one monomer of the formula (I)

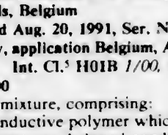
(I)

in which

R^1 denotes a C_1-C_{12} alkoxy group or $—O(CH_2CH_2O)_nCH_3$ where n=1 to 4 and

R^2 denotes a hydrogen atom, a C_1-C_{12} alkyl group, a C_1-C_{12}-alkoxy group or $—O(CH_2CH_2O)_nCH_3$ where n=1 to 4, or R^1 together with R^2 represent $—O(CH_2)_m—CH_2—$ or $—O(CH_2)_m—O—$, in which m is 1 to 12,

0 to 40% by weight of structural units derived from at least one monomer of the formula (II)



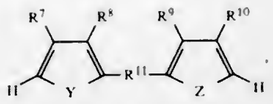
(II)

in which R^4 and R^5, independently of one another, denote a hydrogen atom, a halogen atom, a C_1-C_{12}-alkyl group or aryl or, together with the carbon atoms linking them, form an aromatic ring,

R^3 and R^6, independently of one another, denote a hydrogen atom, or R^3 together with R^4 and the carbon atoms linking them, or R^5 together with R^6 together with the carbon atoms linking them, in each case form an aromatic ring,

X denotes an oxygen atom, a sulfur atom, an =NH group, an =N-alkyl group or an =N-aryl group,

0 to 40 mol % by weight of structural units derived from at least one monomer of formula (III)



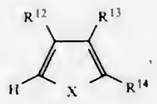
(III)

in which R^7, R^8, R^9 and R^{10} independently of one another denote a hydrogen atom, a C_1-C_{12} alkyl group, a C_1-C_{12}-alkoxy group or an aryl group,

Y and Z, independently of one another, denote an oxygen atom, a sulfur atom, an =NH group, an =N-alkyl group or an =N-aryl group,

R^{11} denotes an arylene group, a heteroarylene group or a conjugated system of the formula $—(—CH=CH)—_o$ in which o is zero, 1, 2 or 3,

0 to 40 mol % by weight of structural units derived from at least one monomer of the formula (IV)



(IV)

in which

R^{12} and R^{13}, independently of one another, denote a hydrogen atom, a halogen atom, a C_1-C_{12}-alkyl group, a C_1-C_{12}-alkoxy group, a C_1-C_4-alkylamino group or a C_1-C_4-acylamino group,

R^{14} denotes a halogen atom, a C_1-C_{12}-alkyl group, a C_1-C_{12}-alkoxy group, a C_1-C_4-alkylamino group or a C_1-C_4-acylamino group and X has the above-mentioned meaning,

where the electroconductive, positively charged oligomer is completely soluble in a dipolar aprotic solvent or mixtures at 25° C., and solutions having a content of at least 0.5 g of the oligomer in 100 ml of solvent or solvent mixtures are obtained of dipolar aprotic solvents at 25° C., and

b) 10% to 90% by weight of a non-conductive polymer which is soluble or swellable in solvents having a δ_P value greater than 3.5 (cal/ccm)$^{\frac{1}{2}}$ and a δ_H value less than 6.5 (cal/ccm)$^{\frac{1}{2}}$.

5,286,415

WATER-BASED POLYMER THICK FILM CONDUCTIVE INK

Michael S. Buckley, Diamond Bar, and Richard E. Bowns, Hacienda Heights, both of Calif., assignors to Advanced Products, Inc., Ontario, Calif.

Filed Dec. 28, 1992, Ser. No. 997,374

Int. Cl.[5] H01B *1/00, 1/20, 1/22, 1/24*

U.S. Cl. 252—502 **8 Claims**

1. An aqueous conductive polymer thick film-forming and printable composition comprising:

(a) about 0.25% to about 20% by weight of water-soluble thermoplastic polymer selected from the group consisting of polyethyloxyazoline, polyvinyl pyrrolidone, polyvinyl alcohol, polyacrylamide, polyglycol, and polyacrylic acid;

(b) about 10 to 70% by weight of a water insoluble polymer dispersion in water, said dispersed polymer selected from the group consisting of polyurethane resin polymer, acrylic resin polymer, polyester resin polymer, and vinyl resin polymer;

(c) about 2% to about 20% by weight of at least one glycol compound drying-retarder agent;

(d) an effective electrically conducting amount of less than 90% by weight of conductive particles selected from the group consisting of conductive metal particles, carbon black particles, graphite particles, and combinations thereof; with the proviso that the amount of said carbon black particles, graphite particles, or combinations thereof do not exceed 40% by weight; and

(e) an effective solvating amount of water to dissolve water-soluble thermoplastic polymer (a); each of said amounts being based upon the total weight of said composition.

5,286,416

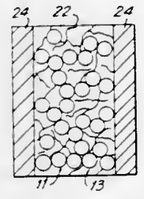
GALVANICALLY COMPATIBLE CONDUCTIVE FILLER USEFUL FOR ELECTROMAGNETIC SHIELDING AND CORROSION PROTECTION

Robert J. Teichmann, Towaco; James F. Walther, Mountain Lakes, and Andrew M. Wasowicz, West Patterson, all of N.J., assignors to Potters Industries Inc., Parsippany, N.J.

Division of Ser. No. 535,365, Jun. 8, 1990, Pat. No. 5,175,056. This application Sep. 22, 1992, Ser. No. 948,666

Int. Cl.[5] B32B *5/16*

U.S. Cl. 252—512 **25 Claims**



1. An electromagnetic energy shielding or electrostatic dissipation material comprising in combination:

(a) a matrix; and

(b) a plurality of composite particles dispersed throughout said matrix; each of said particles comprising in combination an electrically conductive core material having a surface oxide layer and an electrically conductive refractory material, said core material and said refractory material being conductively fused.

5,286,417

METHOD AND COMPOSITION FOR MAKING MECHANICAL AND ELECTRICAL CONTACT

Issa S. Mahmoud, Apalachin, N.Y., and Julian P. Partridge, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1991, Ser. No. 804,279

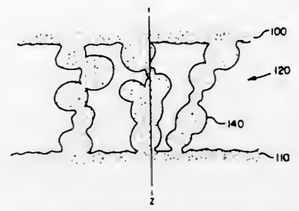
Int. Cl.[5] H01B *1/00, 1/20, 1/22*

U.S. Cl. 252—518 **13 Claims**

1. A fusible conductive adhesive for making electrical and mechanical contact comprising:

an polymer matrix having a glass transition temperature from about 150° C. to about 300° C. and a thermal expansion coefficient from about 5 ppm/C to about 10 ppm/C along a z-axis;

a conductive material having a sintering temperature range of between about 100° C. to about 250° C., wherein at least a portion of the sintering temperature range of the conductive material overlaps the glass transition temperature of the polymer matrix, wherein the conductive metal is loaded in the polymer matrix in the range of about 15 percent to about 20 percent conductive material by weight based on the total weight of the polymer matrix



and the conductive material, wherein the fusible conductive adhesive composition is anisotropically conductive.

5,286,418

POLARIZING FILM

Katsuji Nakamura, Yokohama; Junichi Fujio; Shin Hosonuma, both of Nagoya; Masakatsu Nakatsuka, and Tsutomu Nishizawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 579,246, Sep. 6, 1990, Pat. No. 5,059,356, which is a continuation of Ser. No. 308,031, Feb. 27, 1989, abandoned, which is a division of Ser. No. 866,492, May 20, 1986, Pat. No. 4,824,882. This application Jul. 3, 1991, Ser. No. 725,641

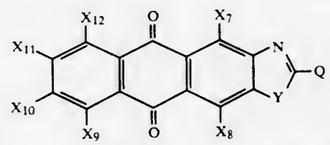
Claims priority, application Japan, Oct. 5, 1984, 59-210067

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] F21V *9/14;* **G02B** *5/30*

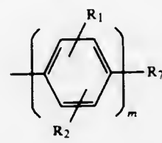
U.S. Cl. 252—585 **2 Claims**

1. A polarizing film comprising a hydrophobic polymer containing a dichroic organic colorant in an oriented state which is characterized in that the dichroic organic colorant, which is a compound of the formula:



(III)

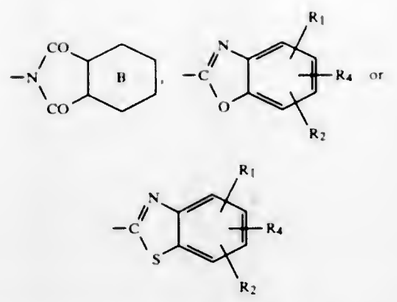
where Y represents an oxygen atom or a sulfur atom; X_7, X_8, X_9, X_{10}, X_{11}, X_{12} represent hydrogen atoms, halogen atom, hydroxyl groups or amino groups that may be substituted by an alkyl group of 1 to 3 carbon atoms; Q represents an anthraquinone radical that may be substituted by X_7, X_8, X_9, X_{10}, X_{11} or X_{12}, or a group of the formula:



(IIIa)

where R_1 and R_2 represent hydrogen atoms, halogen atoms, methyl groups or methoxy groups, m represents a whole number equal to 1, 2 or 3, and R_7 represents —COOH, —$COOR_4$, —$CONH_2$, —$CONHR_4$, —$COCR_4$, —$NHCOR_4$, —N=N—R_4,

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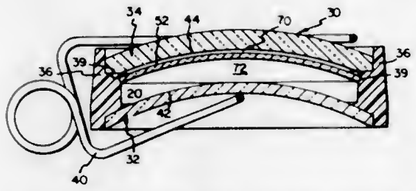
in which R_4 and ring B represent phenyl, biphenyl or naphthalene radicals that may be substituted by R_1, R_2, —COOH and/or —$COOCH_3$, has a solubility in water, organic solvents and liquid crystals of not greater than 0.05 percent by weight at about 25° C., and the dichroic ratio of the colorant is not less than 7 when it is measured with the film obtained by blending the colorant intimately with polyethylene terephthlate, melting the resulting blend and forming it into a film.

5,286,419

PROCESS FOR MAKING A LIGHT POLARIZING SPECTACLE LENS

Raoul F. van Ligten, Coral Springs, and Mark G. Asmus, Lauderhill, both of Fla., assignors to BMC Industries, Inc., Minneapolis, Minn.

Filed Feb. 20, 1992, Ser. No. 839,146
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.3 **3 Claims**



1. A process for making a light polarizing spectacle lens using a lens mold, comprising:

drying a polarizing film at a temperature and a time effective to drive any transport media from the polarizing film;

testing the dried polarizing film for delamination;

accepting the polarizing film if the film does not delaminate in the test after drying;

shaping the dried polarizing film into a wafer having a pair of opposing straight edges after accepting the dried polarizing film;

curving the polarizing film wafer after shaping the dried polarizing film with the proviso that when the plarizing film wafer is curved to a diopter listed below, the wafer is curved substantially at a temperature in degrees Fahrenheit for a time substantially indicated as follows;

Diopter	Temperature °F.	Time
2	208.4° F.	100 seconds
4	208.4° F.	200 seconds
5	235.4° F.	900 seconds
6	235.4° F.	1020 seconds
7	235.4° F.	1080 seconds

-continued

Diopter	Temperature °F.	Time
8	235.4° F.	1200 seconds

and

when the polarizing film wafer is positioned in a lens having a front element concave surface curve having substantially the following curvature in diopters, that the wafer is curved to a curvature substantially within one of the following ranges of diopters;

Curvature Range	Diopters
2.00–2.37	2.00
4.08–4.43	4.08
6.34–6.65	6.20
8.20–8.57	8.32

and

when the polarized film wafer is positioned in a progressive lens substantially having one of the curvatures listed below, the wafer is curved to a curvature substantially within one of the following ranges;

Curvature Range	Diopters
2.53–2.70	2.54
5.10–5.28	5.16
7.30–7.46	7.26
8.00–8.38	8.32

positioning the wafer within the lens mold;

filling the lens mold with a lens resin mixture comprising a pregelled monomer with a weight percent of about 65–75% of the mixture, a conventional monomer of about 25–35% by weight of the mixture and IPP of about 2.70–2.90% by weight of the mixture; permitting the resin to cure; and

drying the polarizing film within an approximate range of 140° F. to 160° F. for about 2 to 12 hours.

5,286,420

PRODUCTION OF LIGHT POLARIZING FILMS

Uwe Claussen, Leverkusen; Friedrich-Wilhelm Kröck, Odenthal, and Edouard Roche, Lohmar, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 743,723, Aug. 12, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 913,734
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026892
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.3 **3 Claims**

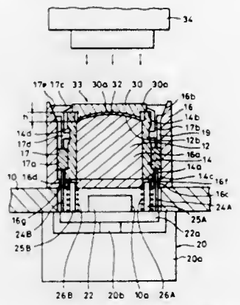
1. A process for the production of light-polarizing cast films that comprise two or more layers and have a sudden change in their composition at the phase boundary between at least two layers, comprising applying aqueous solutions of polyvinyl alcohol and dichroic dye-producing components to a substrate in two or more layers by means of a multiple coater and drying said layers, after which the dried film is removed from the substrate and is monoaxially stretched.

5,286,421

OPTICAL ELEMENT, AND METHOD AND APPARATUS FOR FORMING THE SAME

Takashi Arai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,852
Claims priority, application Japan, Jun. 7, 1991, 3-136279
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.7 **9 Claims**



1. An optical-element forming method for forming an optical element formed from a glass material and a resin material made as one body by forming a resin layer having a predetermined surface shape of said optical element on a surface of a glass member by one sequence forming-processing, said method comprising the steps of:

providing a mold member for transferring said predetermined surface shape of said optical element onto said resin layer;

transferring said predetermined surface shape of said optical element onto said resin layer by employing said mold member comprising a high molecular weight material having the physical values of:

a hardness greater than D50;

a modulus of elasticity in the range of 5000–35000 kgf/cm^2;

a coefficient of friction which is less than 0.2;

a coefficient of water absorption which is less than 0.3%; and

a light resistance which is substantially invariable.

5,286,422

PROCESS FOR PRODUCING THREE-DIMENSIONAL FIBER USING A HALOGEN GROUP SOLVENT

Jinichiro Kato; Toshio Yoneyama, both of Nobeoka; Kazuhiko Shimura, Moriyama; Yoshiaki Nakayama, and Kenji Kanekiyo, both of Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 922,546
Claims priority, application Japan, Aug. 3, 1991, 3-194551; Nov. 5, 1991, 3-288682; Nov. 5, 1991, 3-288766; Jan. 14, 1992, 4-004780; Jan. 14, 1992, 4-004936; Jan. 14, 1992, 4-004938
Int. Cl.[5] D01D *5/11*
U.S. Cl. 264—13 **9 Claims**

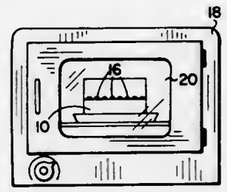
1. A process for producing a three-dimensional fiber of a polyolefin, comprising passing a polyolefin solution prepared under high temperature and high pressure conditions through a pressure let-down orifice, a pressure let-down chamber and a spinneret into a region where the temperature and pressure are room temperature and atmospheric pressure, respectively, to prepare a fibrilated, three-dimensional fiber of a polyolefin, wherein a mixed solvent consisting essentially of at least one solvent bromochloromethane or 1,2-dichloroethylene, and a co-solvent are used as a mixed solvent, wherein said co-solvent being at least carbon dioxide, sulfur hexafluoride, difluorochloromethane, 1,1,1,2-tetrafluoroethane, 1-chloro-1,2,2,2-tetrafluoroethane, 1-chloro-1,1-difluoroethane, 1,1 -dichloro-2,2,3,3,3-pentafluoropropane, 1,3-dichloro-1,2,2,3,3-pentafluoropropane, dodecafluoropentane or tetradecafluorohexane, the content of said co-solvent in the mixed solvent being 3 to 65% by weight, and the concentration of a polyolefin in said polyolefin solution is 5 to 25% by weight.

5,286,423

METHOD OF HEAT TREATING GUTTA PERCHA BASED MATERIAL TO IMPROVE THE CHARACTERISTICS THEREOF

William B. Johnson, 5010 E. 68th St., Ste. 104, Tulsa, Okla. 74136

Filed May 29, 1992, Ser. No. 889,828
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] A61C *5/02, 13/00*
U.S. Cl. 264—16 **4 Claims**



1. An improved method of manufacturing appliances for use in filling endodontically prepared root canals employing filler material having therein, at least in part, gutta percha, comprising the steps of:

(a) forming a plurality of elongated slim points of the filler material;

(b) placing each of the formed points into an elongated cavity in a mold;

(c) placing the mold having the points therein into an oven;

(d) subjecting the points while in the oven to a first selected temperature for a first selected time so that the filler material becomes heated and pliable;

(e) removing the mold having the points therein from the oven and before the points have cooled, inserting a shaft portion of a filler carrier into each cavity of the mold to partially displace the heated and pliable filler material therein, each carrier having a handle portion that remains exterior of the mold;

(f) placing the mold having the filler material and carriers therein back into the oven;

(g) heating the filler material and carriers therein at a second selected temperature for a second selected time to cause the filler material to adhere to the carrier shaft portions, the selected temperatures for each of steps (d) and (g) being at least 210° F. and not more than 310° F. and the selected times of steps (d) and (g) totaling a length of time of between about 2 hours and 24 hours, the total length of time being decreased as the temperature is increased; and

(h) removing the carriers having the filler material cured on the shaft portions thereof from the mold, each of which carriers is ready for use as an appliance to fill an endodontically prepared root canal.

5,286,424

RECYCLING POLYOLEFINS COATED WITH CHLORINE-CONTAINING POLYMER

Tien-Kuei Su, Belle Mead, N.J., and Kenneth L. Lilly, Jr., Farmington, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 9, 1992, Ser. No. 973,858
Int. Cl.[5] B29B *17/00*
U.S. Cl. 264—23 **22 Claims**

1. A method of reprocessing polyolefin material coated with a chlorine-containing polymer comprising the steps of:

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formulating a caustic solution comprising from about 0.1 wt. % to about 50 wt. % of caustic, and from about 0.05 wt. % to about 1.0 wt. % of a wetting agent;

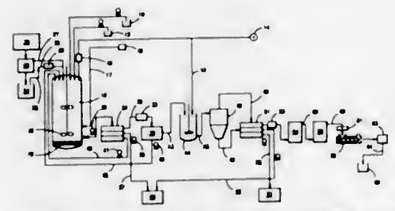
heating said caustic solution to a temperature from about 25° C. to about 140° C.;

soaking the coated polyolefin material in the heated caustic solution until said polyolefin material is separable from said chlorine-containing polymer coating, said polyolefin material becoming separable by the caustic selectively reacting with said chlorine-containing polymer to form a chloride salt and a dehydrochlorinated polymer;

separating said polyolefin material from said dehydrochlorinated polymer and said caustic solution; and

subjecting the separated polyolefin material to a heat generating product forming process.

21. A system for reprocessing polyolefin material coated with a chlorine-containing polymer comprising:



a vessel for separating said chlorine-containing polymer from said polyolefin material;

means for supplying a caustic solution to said vessel having a formulation comprising from about 0.1 wt. % to about 50 wt. % of caustic, and from about 0.05 wt. % to about 1.0 wt. % of a wetting agent;

means for heating said caustic solution to a temperature of from about 25° C. to about 140° C.;

means for supplying said coated polyolefin material to said vessel; and

means for applying a mechanical force to said solution and said coated polyolefin material to accelerate (1) separation of said polyolefin material from said chlorine-containing polymer and (2) formation of a reaction product of said caustic solution and said chlorine-containing polymer.

5,286,425

METHOD OF INSTALLING A CEMENTITIOUS COMPOSITION

H. Nash Babcock, Old Greenwich, and Edward P. Holub, Trumbull, both of Conn., assignors to Nomix Corporation, Fairfield, Conn.

Continuation of Ser. No. 199,556, May 27, 1988, Pat. No. 5,108,790, and a continuation of Ser. No. 518,040, May 2, 1990, and a continuation-in-part of Ser. No. 168,715, Mar. 16, 1988, Pat. No. 5,219,222, which is a continuation-in-part of Ser. No. 53,561, May 21, 1987, Pat. No. 4,732,782, and a continuation-in-part of Ser. No. 49,906, May 15, 1987, Pat. No. 4,747,878, which is a division of Ser. No. 843,316, Mar. 24, 1986, abandoned, said Ser. No. 53,561, is a continuation-in-part of Ser. No. 843,316, Mar. 24, 1986, said Ser. No. 199,556, is a continuation-in-part of Ser. No. 101,908, Sep. 28, 1987, Pat. No. 4,839,115, which is a division of Ser. No. 53,561, Sep. 28, 1987, which is a continuation-in-part of Ser. No. 843,316, Mar. 24, 1986, abandoned, said Ser. No. 518,040, is a continuation of Ser. No. 199,556, May 27, 1988, Pat. No. 5,108,790. This application Apr. 28, 1992, Ser. No. 874,905

Int. Cl.[5] B32B *35/00*; E02D *5/18, 5/34*; E04B *1/16*

U.S. Cl. 264—31 **16 Claims**

1. A method of installing a cementitious composition in a hole comprising:

(a) providing a dry fast setting cementitious composition having a set time and comprising particles of at least one cement binder, a majority of the particles being finely divided;

(b) providing a hole;

(c) providing a volume of water in the hole;

(d) pouring an amount of the dry cementitious composition into the volume of water, the volume of water being greater than an amount of water necessary for hydration of the amount of the cementitious composition, the water contacting the particles of the cementitious composition and hydrating the particles, the particles having a drop rate and a major portion of the particles of the cementitious composition having approximately the same drop rate through the volume of water;

(e) allowing the hydrated cementitious composition to drop through the water, displacing excess water as a result of the dropping of the cementitious composition; and

(f) allowing the hydrated cementitious composition to form into a cured substantially non-segregated mass.

5,286,426

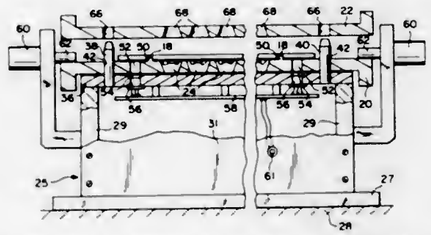
ASSEMBLING A LEAD FRAME BETWEEN A PAIR OF MOLDING CAVITY PLATES

Albert V. Rano, Jr.; Romeo R. Castro, and Benjamin O. Tee, all of Manila, Philippines, assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Apr. 1, 1992, Ser. No. 861,723

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—40.1 **3 Claims**



1. A method for assembling a lead frame strip within a pair of mold plates to form a sandwich assembly ready for molding comprising:

a) placing a metal lead frame strip on a bottom one of a mating pair of mold plates, each of said mold plates having a row of cavities therein spaced apart by identical intervals, said lead frame strip having a multiplicity of electronic components mounted to said strip at intervals commensurate with the intervals of said cavities in said mold plates, said placing including positioning said electronic components over corresponding of said bottom-plate cavities, said bottom mold plate having two lead-frame guide pins extending upwardly therefrom, said lead frame strip having two pilot holes that at said positioning lie about registered with and directly above said two guide pins;

said bottom mold plate having two light-detection holes underlying metal portions of said lead frame that are not registered with any one of said bottom-plate cavities,

b) sensing whether light is being admitted in said light-detection holes;

c) generating a warning signal when light is sensed in one of said light-detection holes, indicating that one of said lead-frame pilot holes has into exactly registered with the corresponding of said guide pins, and that said lead frame strip rides upon on said corresponding guide pin and has not seated to said bottom mold plate so that ambient light is not blocked from entering said light-detection hole;

d) repositioning said unseated lead frame strip to a coarsely align said pins with said pilot holes and seat said lead frame strip flush with said bottom mold plate to block ambient light from said light detection holes; and

e) fitting the other one of said pair of mold plates over said bottom mold plate and lead frame strip.

5,286,427

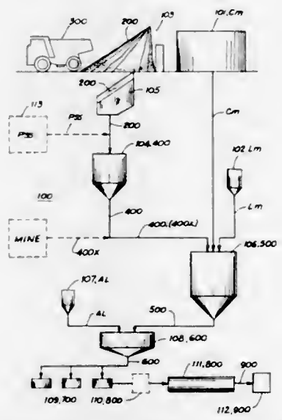
METHOD OF ENVIRONMENTAL CLEANUP AND PRODUCING BUILDING MATERIAL USING COPPER MINE TAILINGS WASTE MATERIAL

George Koumal, 4750 N. Oracle Rd., Ste. 214, Tucson, Ariz. 85705

Filed Jan. 6, 1993, Ser. No. 1,568

Int. Cl.[5] B28B *1/14, 1/50, 7/10, 11/12*

U.S. Cl. 264—40.1 **14 Claims**



1. A method of producing structural building products from autoclaved aerated concrete building material wherein mine tailings waste material remaining at a mine site is used as a processed silica sand substitute raw material during formation of said autoclaved aerated concrete building material from raw materials, said mine tailings comprising a plurality of autoclaved aerated concrete ingredients, including silica and lime, used in producing said autoclaved aerated concrete building material, said method comprising the steps of:

(a) providing facilities for producing said autoclaved aerated concrete building material and said structural building products therefrom;

(b) providing said mine tailings at said facilities from said mine site for use as said processed silica sand substitute raw material in said process for producing said autoclaved aerated concrete building material;

(c) performing an analysis on said provided mine tailings to determine a composition thereof including weight percentage amounts of materials therein, including autoclaved aerated concrete ingredients, and to determine whether adjustments are needed during said production of said autoclaved aerated concrete building material with respect to weight percentage amounts of autoclaved aerated concrete ingredients required for formation of said autoclaved aerated concrete building material, dependent upon said determined composition of said provided mine tailings, including determining whether adjustments are needed for silica and lime ingredients required for said autoclaved aerated concrete building material;

(d) processing said provided mine tailings with other raw materials comprising autoclaved aerated concrete ingredients to form a batch slurry having said required weight percentage amounts of said autoclaved aerated concrete ingredients, including adjusting amounts of said other raw materials to provide said required weight percentage amounts of said autoclaved aerated concrete ingredients dependent upon said determined composition of said provided mine tailings, in accordance with results determined from step (c), and mixing aluminum powder with said batch slurry to yield a production batch mixture;

(e) pouring said production batch mixture into provided molds and forming uncured autoclaved aerated concrete building material; and

(f) removing said formed uncured autoclaved aerated concrete building material from said molds and curing in provided autoclaved ovens to produce said structural building products from said autoclaved aerated concrete building material.

5,286,428

POLYPROPYLENE RESIN FOAMED SHEET FOR THERMOFORMING AND PROCESS FOR PRODUCING THE SAME

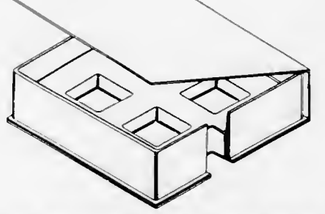
Motoshige Hayashi; Tsuneo Doi, and Kiyotaka Matsuoka, all of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Continuation of Ser. No. 257,619, Oct. 14, 1988, abandoned. This application Mar. 20, 1991, Ser. No. 671,637

Claims priority, application Japan, Oct. 16, 1987, 62-259458

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—45.3 **5 Claims**



1. A process for producing a foamed film, suitable for use in thermoforming, having a density of from 0.2 to 1.2 g/cm^3, a thickness of 0.2 to 3 mm, and a percent shrinkage in each of the longitudinal and the crosswise directions of 5 to 30% upon being heated to 190° C. for 30 minutes, which process comprises substantially uniformly compounding a polypropylene resin with from 10 to 50% by weight of an inorganic fine powder and a blowing agent, extruding and foaming said compounded resin through a ring die of an extruder to form a tubular foam form film thereof; and taking off said extruded tubular foam form film over a cylindrical drum means having a diameter of 2 to 3 times the diameter of said ring die; which tubular foam form film is suitable for cutting to form a flat foam form film suitable for use in said thermoforming, wherein the diameter of said cylindrical drum means and the temperature thereof in combination are sufficient to limit the longitudinal stretching of said foam form tubular film relative to the crosswise stretching thereof such that upon heating a square sample thereof, having adjacent sides which are substantially parallel to said longitudinal and crosswise directions respectively, to 190° C. for 30 minutes sufficient to shrink such film, the shrunk film resulting from said square has a ratio of its residual dimensions in its longitudinal to its crosswise directions of 1:0.7 to 1:1.1.

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5,286,429

HIGH MELT INDEX POLYSTYRENE FOAM AND METHOD

James E. Blythe, Williamson; Edward A. Colombo, Penfield; Charles M. Krutchen, Pittsford; Phillip A. Williams, Naples, and Wen-Pao Wu, Pittsford, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 586,313, Sep. 4, 1990, abandoned, which is a continuation of Ser. No. 211,625, Jun. 27, 1988, abandoned. This application Jul. 24, 1991, Ser. No. 734,836

Int. Cl.[5] **C08J** *9/08*

U.S. Cl. 264—51 **6 Claims**

1. In a method for forming foamed polystyrene the improvement consisting of employing polystyrene resin or a polystyrene resin composition having a melt index of about 8 or more as the foam precursor and defining the foam cell structure by employing at least approximately 100% carbon dioxide to yield a foam structure having a basis weight of less than 20 gms/100 in^2 and a density of about 6 lbs/ft^3 or less.

5,286,430

INCINERATION RESIDUE TREATMENT PROCESS

James J. Downs, Narberth, and William A. Roberts, Berwyn, both of Pa., assignors to Rolite, Inc., Pa.

Continuation-in-part of Ser. No. 731,528, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 366,158, Jun. 14, 1989, Pat. No. 5,037,286, which is a continuation-in-part of Ser. No. 211,267, Jun. 24, 1988, abandoned. This application May 1, 1992, Ser. No. 877,329

Int. Cl.[5] **C04B** *7/02*

U.S. Cl. 264—112 **27 Claims**

1. A process for disposing of untreated residue produced by the incineration of commercial, industrial or municipal waste, the process comprising:
(a) mixing the untreated residue with Portland cement;
(b) aggregating the mixture of the residue and the Portland cement into a free-flowing, granular treated residue;
(c) shaping the treated residue into a layer; and
(d) permitting the layer to cure into a cohesive mass.

5,286,431

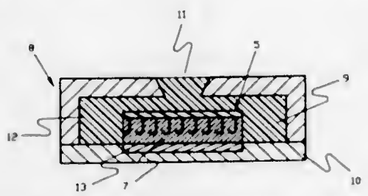
MOLDED PRODUCT HAVING INSERT MOLD-IN FASTENER

Donald L. Banfield, Hudson, and Gerald F. Rocha, Bedford, both of N.H., assignors to Velcro Industries, B.V., Amsterdam, Netherlands

Division of Ser. No. 695,183, May 3, 1991. This application Nov. 16, 1992, Ser. No. 976,544

Int. Cl.[5] **B29C** *33/16*

U.S. Cl. 264—134 **12 Claims**



1. A method for inserting separable fasteners of the hook and loop type into plastic parts comprising the steps of:
(a) coating the fastener to cover and intimately surround and encase the engaging elements with a protective means of an elastomeric composition which protects against the pressure and temperature of molding;
(b) inserting the coated fastener into a mold containing means for holding the fastener;
(c) injecting the mold with molten plastic;
(d) opening the mold to remove the plastic part thus formed; and
(e) removing the protective coating from the fastener elements to render the elements ready to engage elements on the companion portion of the hook and loop fastener.

5,286,432

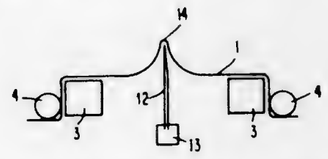
FABRICATION OF MICRON-RANGE HOLES IN PROTECTIVE BARRIERS AND ENCAPSULATING MATERIALS

Robert Schmukler, 13905 Vista Dr., Rockville, Md. 20853; Richard B. Beard, 21 Willow Way, Atco, N.J. 08004, and Frederick C. Prout, 937 Wesley Ave., Huntingdon Valley, Pa. 19006

Filed Mar. 30, 1992, Ser. No. 859,778

Int. Cl.[5] **B29D** *19/08*

U.S. Cl. 264—155 **24 Claims**



1. A method of fabricating micro-range holes in elastic barrier materials which comprises:
securing an elastic barrier material to a restraining ring; and
removing a limited portion of said elastic barrier material so as to form a hole having a diameter of less than about 10 μm in said elastic barrier material, said hole being defined by a surrounding portion of said elastic barrier material having a physical structure which is uniform throughout said elastic barrier material.

5,286,433

METHOD AND DEVICE FOR PRESSURE BALANCING OF HOSES AT EXTRUDING OF TWO COMPONENTS

Kjell Sand, Västra Frölunda, Sweden, assignor to Applicator System AB, Mölnlycke, Sweden

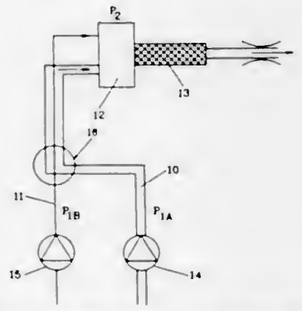
PCT No. PCT/SE90/00602, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO91/04103, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 20, 1990, Ser. No. 842,124

Claims priority, application Sweden, Sep. 25, 1989, 8903143-9

Int. Cl.[5] **B29C** *47/12*; **B05B** *12/00, 15/00*

U.S. Cl. 264—176.1 **3 Claims**



1. A method to pressure balance hoses during supply of two different components with substantially the same pressure to an extrusion head, where the flow of the second component is substantially below the flow of the first component, comprising the steps of:
supplying the first component to the extrusion head in a first hose;
supplying the second component to the extrusion head in a second hose; and
extending said second hose inside said first hose in which the pressure of the first component acts for at least a part of the path to the extrusion head.

2. A device for pressure balancing hoses during supply of two different components with substantially the same pressure to an extrusion head, where the flow of the second component is substantially below the flow of the first component comprising:
first hose means for supplying a first component to the extrusion head; and
second hose means partially enclosed in said first hose means for supplying a second component to the extrusion head and arranged for pressure actuation of the second component.

5,286,434

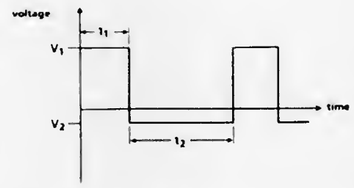
PROCESSES FOR THE PREPARATION AND SEPARATION OF MACROMOLECULES

Gary Slater, Ottowa; Jaan Noolandi, Ontario, and Chantal Turmel, Quebec, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 342,261, Apr. 24, 1989, abandoned. This application Oct. 29, 1991, Ser. No. 783,967

Int. Cl.[5] **G01N** *27/26, 27/447*

U.S. Cl. 204—182.8 **2 Claims**



1. A process for the separation of a mixture of DNA fragments or molecules comprising:
adding to an electrophoretic device an agarose gel which contains a solution mixture or an agarose plug containing DNA fragments of different lengths;
energizing the device, thereby creating a sequence of uniform electric field pulses along a single dimension therein, said sequence of field pulses alternating between positive polarity pulses and negative polarity pulses having less voltage than the positive polarity pulses; and
applying in the device selected positive polarity pulses and negative polarity pulses with intensities and duration corresponding to the size of fragments to be separated, wherein the negative polarity pulses are of a longer duration than the positive polarity field pulses; the fragments to be separated possess between about 2,000 and 6,000,000 base pairs; a concentration of agarose in the gel is between about 0.2 percent and about 2 percent; the positive polarity pulse have a strength of between about +0.50 and about 4.0 volts/centimeter, and the electric current of the positive polarity pulses is between about 4 and about 80 milliamperes; the positive polarity pulses are applied for about 1 second to about 1,000 seconds; the negative polarity pulses are applied for about 1 to about 2,000 seconds; and the negative polarity pulses have a duration about 1.4 times longer than the primary field pulses.

5,286,435

PROCESS FOR FORMING HIGH STRENGTH, HIGH MODULUS POLYMER FIBERS

Leonid I. Slutsker, Akron; Kenneth R. Lucas, Copley, and Georg G. A. Bohm, Akron, all of Ohio, assignors to Bridgestone/-Firestone, Inc., Akron, Ohio

Continuation of Ser. No. 826,714, Feb. 6, 1986, abandoned. This application Dec. 31, 1987, Ser. No. 143,246

Int. Cl.[5] **D01F** *6/00*

U.S. Cl. 264—205 **7 Claims**

1. A process for making a polymer filament having high tensile strength and high modulus, comprising the steps of:
(a) spinning a solution of polyethylene or polypropylene having a weight average molecular weight of at least 500,000, and containing from about 0.5 to about 20 weight percent polymer, through an aperture at a temperature above the gelation temperature of the solution and below the boiling point of the solvent, thereby forming a wet spun filament;
(b) cooling said wet spun filament without drying to a temperature below the gelation temperature of the polymer solution thereby forming a gel fiber filament;
(c) wet drawing said gel fiber filament at ambient temperature in air;
(d) continuously passing the gel filament through a drying zone which is maintained at a temperature from about 60° C. to the melting point of the polymer and at a pressure of not less than substantially atmospheric pressure; and
(e) continuously passing the dried filament through a hot drawing zone in which said filament is heated and hot drawn;
said process being carried out without solvent exchange whereby the spinning solution solvent remains in the fiber until removed by drying.

5,286,436

PRODUCING EXTRUDED SOLID PLASTIC SHEET AND FILM

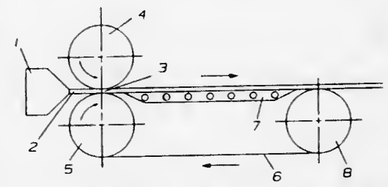
Karl Funk, Griesheim, and Heinz Gross, Rossdorf, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 711,948, Jun. 7, 1991, Pat. No. 5,242,742. This application Nov. 5, 1992, Ser. No. 972,379

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1990, 4018531

Int. Cl.[5] **B29C** *47/88*

U.S. Cl. 264—210.2 **11 Claims**



1. A method of manufacturing an extruded, smooth-finished solid sheet or film of thermoplastic plastic having a glass transition temperature of more than 50° C., comprising the steps of:
a) extruding said thermoplastic plastic in a thermoplastic state from a slit nozzle, to form a flat strip having a first surface and a second surface,
b) smoothing said first surface and said second surface of said strip whole in said thermoplastic state,
c) cooling said first surface and a layer of said strip adjoining said first surface to below the glass transition temperature, while maintaining said second surface and the remainder of said strip in the thermoplastic state, said layer of said strip adjoining said first surface being sufficiently thick hat said fist surface does not become reheated by the thermo-

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plastic plastic in the thermoplastic state in the remainder of said strip; and

d) cooling said strip under conditions which minimize deforming forces on the surfaces of the extruded strip.

11. An apparatus for manufacturing an extruded, smooth finished solid sheet or film, which sheet or film is comprised of thermoplastic material, said apparatus comprising:

(a) a slot nozzle fed by an extruder for producing a flat extruded strip;

(b) a smoothing apparatus comprised of at least one smooth-finished upper roll and a lower roll, for smoothing said flat strip in a gap between said upper and lower rolls;

wherein said upper roll has a cooling means;

and said lower roll has a means for heating said lower roll to a temperature in the thermoplastic state domain of the plastic;

(c) a planar cooling plate; and

(d) a smooth finished endless belt which is passed around said lower roll and is guided over said planar cooling plate and a redirecting roll, back to said lower roll.

5,286,437

METHOD AND INSTALLATION FOR THE PRODUCTION OF PLASTIC PRODUCTS WITH THE AID OF A HOT MIXTURE OF PVC POWDER AND ADDITIVES, AND A HOT MIXER SUITABLE FOR USE WITH THIS METHOD

Hendrik Severiens, Gramsbergen, Netherlands, assignor to Wavin B.V., Netherlands

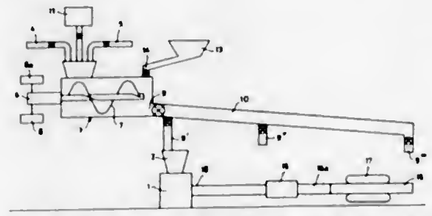
PCT No. PCT/NL91/00053, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/15347, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 28, 1991, Ser. No. 930,512

Claims priority, application Netherlands, Apr. 10, 1990, 9000840

Int. Cl.[5] B29B *7/28*; B29C *47/36*

U.S. Cl. 264—211 **18 Claims**



1. Method for the production of extruded plastic products using an extruder which has an extruder hopper comprising the steps of:

providing a hot mixture obtained by mixing PVC and an excess of additives with respect to the amount of additives as required in the final mixture to be supplied to the extruder in a hot mixing zone which includes a supply of frictional heat by high speed rotating mixing elements of the hot mixing zone;

homogenizing the mixture thus obtained in the same mixing zone with a supplementary amount of PVC of low temperature in order to obtain a final mixture having the desired concentration of additives, said homogenizing ocurring at a temperature below 100° C. and said homgenizing being effected by the mixing elements rotating at a speed which does not substantially produce frictional heat;

feeding the hot mixture obtained after homogenization directly to the extruder hopper; and

extruding the plastic products.

10. Installation for the production of extruded products comprising:

an extruder with a hopper;

a discontinuously operable hot mixer, which has a closable additive feed, a closable PVC and additives with the supply of frictional heat, the hot mixer being provided with drive means for driving mixing elements of the hot mixer to a first speed of revolution for providing frictional heat during mixing of PVC and additives;

the drive means comprising a two-speed control means, said first control means for driving the mixing elements of the hot mixer to said first speed of revolution; a second control means for driving the mixing means at a second speed of revolution, lower thans aid first speed, for homogenizing substantially without providing further frictional heat to a hot mixture of PVC and additives obtainable following the action of the mixing elements at said first speed of revolution, with a supplementary amount of PVC, in order to adjust the additive concentration in the final mixture to a desired value; and

the outlet of the hot mixer being connected directly to said hopper of said extruder.

14. A hot mixer for use with a plastic extrusion installation comprising:

drive means for driving mixing elements of the hot mixer to a first speed of revolution for providing frictional heat during mixing of plastic and additives;

said drive means being of a two-speed construction controllable by a first control means for driving the mixing elements at said first speed of revolution, or, by second control means for driving the mixing elements at a second control means for driving the mixing elements at a second speed of revolution lower than said first speed of revolution, for homogenizing substantially without providing further frictional heat a hot mixture following the action of the mixing elements at said first speed of revolution, with a supplementary amount of plstic at said second speed of revolution, said supplementary amount of plastic added to the hot mixer by a closable feed means.

5,286,438

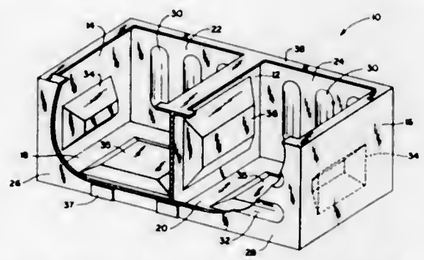
METHOD OF FABRICATING A COMPLEX PART MADE OF COMPOSITE MATERIAL

Alexander C. Dublinski, Northford; Ronald J. Cooper, Milford; Edward J. Fabian, Derby; Gary J. Jacaruso; Philip J. Ramey, both of Milford; Darryl M. Toni, North Haven, all of Conn., and Matthew T. Turner, Acton, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 629,934, Dec. 19, 1990, abandoned. This application Jun. 12, 1992, Ser. No. 899,571

Int. Cl.[5] B29C *33/40, 43/10*

U.S. Cl. 264—220 **17 Claims**



1. The method of fabricating a complex part having inner and outer surfaces and made of composite material and having a plurality of panels oriented in diverse angular relationship and wherein the composite material which will form the panels is laid up, then co-cured in a molding process to form the complete part, including the steps of:

a. providing a first mold shaped to define a plurality of part defining surfaces each associated with one of said part panels and which cooperate to define one of the entire inner surface and the entire outer surface of the part;

b. providing a mold mateable with the first mold comprising a plurality of conformable cauls, one caul for each said panel of the part, and each said caul having a surface shaped to define a portion of the other of said inner and said outer surfaces of the part and shaped to cooperate with others of said conformable cauls to define the entire other of said inner and said outer surfaces of the part and to cooperate with one of said first mold surfaces to define at least a panel of the part;

c. selectively laying up prepreg composite material on the surface of at least one of said molds to produce a composite material lay-up of selected dimension to form the complete part;

d. placing each conformable caul surface in alignment with a corresponding first mold surface and with the composite material lay-up therebetween;

e. placing the first mold with the conformable cauls and composite lay-ups so positioned in a vacuum bag to thereby provide an autoclave ready unit, and

positioning the autoclave ready unit in an autoclave and subjecting it to heat and pressure so as to co-cure all composite material lay-ups to form the complete composite material part.

5,286,439

PACKAGING FOR SEMICONDUCTORS

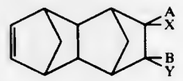
Hironobu Shinohara, Machida, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,744

Int. Cl.[5] B29C *45/14*; C08F *232/00*

U.S. Cl. 264—272.15 **6 Claims**

1. A method of packaging semiconductor chips by injection molding while continuously feeding a lead frame, characterized by using for the injection molding a hydrogenated polymer (A) obtained by the hydrogenation of a polymer obtained by ring-opening polymerization of (i) at least one norbornene derivative represented by the following formula (I),



(I)

wherein A and B are hydrogen atoms or hydrocarbon groups containing 1 to 10 carbon atoms; and X is a hydrogen atom or a hydrocarbon group containing 1 to 10 carbon atoms, Y is a group—$(CH_2)_nCOOR^1$ or a group—$(CH_2)_nOCOR^1$, wherein R^1 is a hydrocarbon group containing 1 to 20 carbon atoms and n is 0 or an integer of 1–10; or (ii) a monomer mixture comprising at least one of said norbornene derivatives and other monomer copolymerizable therewith, wherein said injection molding for the packaging is carried out under the conditions of a resin temperature in the range of 280° C. to 360° C.; the molding temperature in the range of Tg −80° C. to Tg +10° C., wherein Tg is the glass transition temperature of the hydrogenated polymer (A) is Tg; and the injection pressure in the range of 10 to 200 kgf/cm^2.

5,286,440

METHOD FOR THE PRODUCTION OF A SYMMERICAL OVAL CONCRETE PIPE

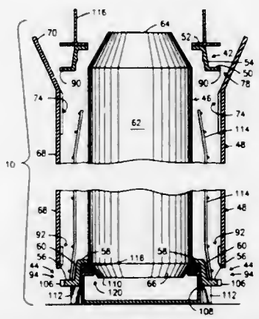
Roger Beacom, 241 Sorrento Ranches Dr., Nokomis, Sarasota, Fla. 34275

Division of Ser. No. 829,379, Feb. 3, 1992, Pat. No. 5,215,673. This application Jan. 14, 1993, Ser. No. 4,420

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] B28B *1/08, 3/00, 7/20*

U.S. Cl. 264—333 **4 Claims**



1. A method for production of an oval concrete pipe including a substantially elliptical male joint member and a substantially elliptical female joint member formed on opposite ends of an oval pipe body comprising using a mold including a substantially elliptical outer jacket having first and second opposite ends and a substantially elliptical inner core disposed in spaced relationship relative to each other to form said oval pipe body from concrete cast therebetween, and using a substantially elliptical upper pallet and a substantially elliptical lower pallet to form said substantially elliptical male joint member and said substantially elliptical female joint member of said oval concrete pipe respectively, said method further including using a pallet positioning means to engage and to operatively position said substantially elliptical upper pallet and said substantially elliptical lower pallet relative to said substantially elliptical outer jacket, said substantially elliptical inner core and to each other such that corresponding points on said substantially elliptical upper pallet and said substantially elliptical lower pallet are axially and radially aligned relative to each other during said formation of said oval concrete pipe having said substantially elliptical male joint member and said substantially elliptical female joint member formed on said opposite ends of said oval pipe body whereby corresponding points formed on said substantially elliptical male joint member and said substantially elliptical female joint member are axially and radially aligned relative to each other, said pallet positioning means comprising an upper pallet positioning section including an upper pallet positioning means comprising a first upper pallet positioning element comprising a substantially rectilinear radial alignment member having at least one cam surface formed on one side thereof and a lateral alignment member having a cam surface formed thereon formed on said substantially elliptical outer jacket at said first opposite end and a second upper pallet positioning element comprising a notch formed on said substantially elliptical upper pallet disposed to operatively engage each other and a lower pallet positioning section including a lower pallet positioning means comprising a first lower pallet positioning element comprising a substantially rectilinear radial alignment member having at least one cam surface formed on one side thereof and a lateral alignment member having a cam surface formed thereon formed on said substantially elliptical outer jacket at said second opposite end and a second lower pallet positioning element comprising a

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notch formed on said substantially elliptical lower pallet disposed to operatively engage each other to axially and radially align said substantially elliptical upper pallet and said substantially elliptical lower pallet relative to each other, and relative to said substantially elliptical inner core and said substantially elliptical outer jacket during said formation of said oval concrete pipe between said substantially elliptical outer jacket and said substantially elliptical inner core of said mold.

5,286,441

SILVER-METAL OXIDE COMPOSITE MATERIAL AND PROCESS FOR PRODUCING THE SAME

Akira Shibata, 298-45, Takada-cho, Kohoku-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Akira Shibata, Yokohama and Sumico Management Planning Company, Ltd., Tokyo, both of Japan

Division of Ser. No. 668,330, Mar. 14, 1991, Pat. No. 5,160,366, which is a continuation-in-part of Ser. No. 633,667, Dec. 26, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,751

Claims priority, application Japan, Dec. 26, 1989, 1-338005; Jan. 9, 1990, 2-2240

Int. Cl.[5] **B22F** *3/14*

U.S. Cl. 419—21 **6 Claims**

1. A process for producing a silver-metal oxide composite material, comprising the steps of:

(A) forming a mixture comprising silver, (a) from 1 to 20% by weight, in terms of elemental metal, of at least one element selected from the group consisting of Sn, Cd, Zn, and In in a metallic and/or oxide state and, optionally, (b) from 0.01 to 8% by weight, in terms of elemental metal, of at least one element selected from the group consisting of Mg, Zr, Ca, A., Ce, Cr, Mn and Ti in a metallic and/or oxide state and/or (c) from 0.01 to 8% by weight, in terms of elemental metal, of at least one element selected from the group consisting of Sb, Bi and iron family metals in a metallic and/or oxide state, and

(B) heating said mixture to between about 350° C. and 830° C. while raising the partial pressure of oxygen to between about 100 atm and 450 atm to thereby bring said mixture into a state where a solid phase and a liquid phase coexist, whereby the (a) element in a metallic state, and the (b) element in metallic state where present, and/or (c) element in metallic state where present, are precipitated as oxides, and

(C) lowering the partial pressure of oxygen and cooling the mixture.

5,286,442

HIGH-ALUMINUM-CONTAINING FERRITIC STAINLESS STEEL HAVING IMPROVED HIGH-TEMPERATURE OXIDATION RESISTANCE

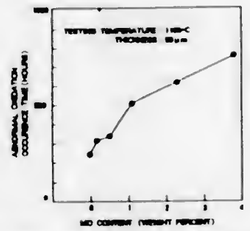
Yoshihiro Uematsu; Katsuhisa Miyakusu, and Naoto Hiramatsu, all of Yamaguchi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,647

Claims priority, application Japan, May 29, 1991, 3-154085

Int. Cl.[5] **C22C** *38/22*

U.S. Cl. 420—40 **4 Claims**



1. A ferritic steel consisting by weight of less than 0.03% carbon, less than 1% silicon, less than 1% manganese, less than 0.04% phosphorus, less than 0.003% sulphur, from 15% to 25% chromium, less than 0.03% nitrogen, from 3% to 6% aluminum, from 0.1% to 4% molybdenum, from 0.01% to 0.15% at least one of rare-earth elements and yttrium, and from 0.05% to 1% at least one of niobium, vanadium and titanium and the balance iron except for inevitable impurities.

5,286,443

HIGH TEMPERATURE ALLOY FOR MACHINE COMPONENTS BASED ON BORON DOPED TIAL

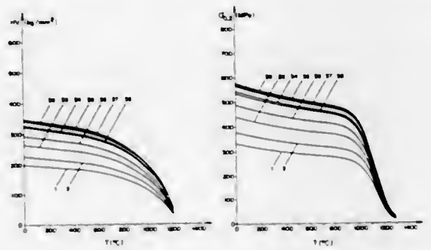
Mohamed Nazmy, Fislisbach, and Markus Staubli, Dottikon, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Division of Ser. No. 695,406, May 3, 1991, Pat. No. 5,207,982. This application Nov. 25, 1992, Ser. No. 981,479

Claims priority, application Switzerland, Apr. 5, 1990, 01523/90; Apr. 5, 1990, 01524/90; Nov. 5, 1990, 01616/90

Int. Cl.[5] **C22C** *14/00*

U.S. Cl. 420—418 **6 Claims**



1. A high temperature alloy for a component subjected to high mechanical stress in thermal equipment, based on doped TiAl, having the composition

$$Ti_xEl_yMe_zAl_{1-(x+y+z)}$$

in which El = B and Me = Co, Cr, Mn, Nb, Pd, W, Y and/or Zr and

0.46	$\leq x$	≤ 0.54	
0.001	$\leq y$	≤ 0.01	
0.01	$\leq z$	≤ 0.04	if Me is an individual element selected from the group consisting of Co, Mn, Pd, W, Y and Zr,
0.01	$\leq z$	≤ 0.08	if Me are two or more elements including W or Mn as a first one of the elements and Co, Cr, Mn, Nb, Pd, W, Y and/or Zr as a second one or more of the elements,
0.46	$\leq (x + y + z)$	≤ 0.54.	

5,286,444

COPPER BEARING ALLOY

Takashi Tomikawa, and Yoshio Kumada, both of Toyota, Japan, assignors to Taibo Kogyo Co., Ltd., Aichi, Japan

PCT No. PCT/JP91/01634, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992

PCT Filed Nov. 28, 1991, Ser. No. 862,541

Claims priority, application Japan, Nov. 30, 1990, 2-339520

Int. Cl.[5] **C22C** *9/08*

U.S. Cl. 420—491 **3 Claims**

1. Copper bearing alloy consisting of more than 4% by weight and up to 35% by weight of Bi, 0.2 to less than 1.5% by weight of Pb and the rest of Cu.

5,286,445

ALUMINIUM BEARING ALLOY CONTAINING BISMUTH

Soji Kamiya, Toyota, Japan, assignor to Taibo Kogyo Co., Ltd., Aichi, Japan

PCT No. PCT/JP91/01633, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992

PCT Filed Nov. 28, 1991, Ser. No. 862,540

Claims priority, application Japan, Nov. 30, 1990, 2-339519

Int. Cl.[5] **C22C** *21/00*

U.S. Cl. 420—530 **6 Claims**

1. Rolled, annealed bearing alloy consisting essentially of 2 to 15% by weight of Bi, 0.05 to 1% by weight of Zr, 0.1 to less than 1.5% by weight of Cu and/or Mg, and the remainder of Al, said bearing alloy being cast and then alternately rolled and annealed a plurality of times.

5,286,446

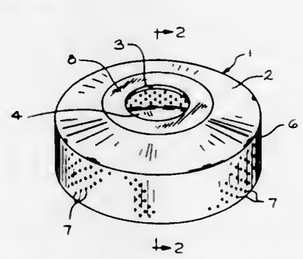
COBALT-BASE ALLOY

Dennis L. McGarry, Granville, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Dec. 28, 1992, Ser. No. 997,065

Int. Cl.[5] **C22C** *30/00*

U.S. Cl. 420—588 **9 Claims**



1. As a composition of matter of glass corrosion-resistant, high-strength alloy consisting essentially of the following elements in approximate amounts expressed in weight percent:

Element	Approximate Compositions, Weight %
Chromium	About 34.0 to about 38.0
Nickel	Greater than 15.0 to about 25.0
Tungsten	About 4.0 to about 7.0
Tantalum	About 2.0 to about 5.0
Zirconium	About 0.1 to about 0.4
Silicon	0 to about 0.8
Carbon	About 0.2 to about 1.2
Boron	About 0.005 to about 0.04
Hafnium	About 0 to about 1.0
Aluminum	0.0 to about 0.2
Titanium	0.0 to about 0.2
Manganese	0.0 to about 0.05
Molybdenum	0.0 to about 0.1
Iron	0.0 to about 2.0
Cobalt	About 25.0 to 39.0.

5,286,447

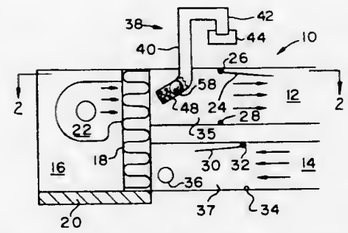
METHOD AND APPARATUS FOR CONTROLLING MICROBIAL GROWTH ON CONDENSATION COILS

Kerby F. Fannin, 7091 Bilby Rd., Jerome, Mich. 49249, and David P. Chynoweth, 1034 NW. 61st Ter., Gainesville, Fla. 32605

Filed Mar. 9, 1992, Ser. No. 848,351

Int. Cl.[5] **A01N** *25/00;* **A61L** *2/00, 9/00*

U.S. Cl. 422—28 **8 Claims**



1. The method for controlling microbial growth on cooling coil apparatus located within an air cooling system, comprising the steps of: providing a system including a first inlet passage having a first flow responsive valve open during primary air flow operation, a second outlet passage having a second flow responsive valve open during primary air flow operation, a chamber interconnecting the first and second passages, disinfectant gas outlet in communication with the chamber adjacent the outlet passage having a flow controlled valve closed during primary air flow operation of the air cooling system, a disinfectant gas circuit having a fan and an outlet in communication with the chamber adjacent the inlet passage, cooling coil apparatus within the chamber and a primary air mover selectively forcing air through the passages, chamber and cooling coil apparatus upon demand for cooled air,

energizing the primary air mover during an air cooling cycle during demand for cooled air,

timing the duration of the cooling cycle and sensing a first predetermined duration thereof,

deenergizing the primary air mover upon sensing of said first predetermined duration to close the valves of the first and second passages sealing the chamber with respect to the first and second passages and opening the disinfectant gas outlet valve,

introducing an anti-microbial disinfectant gas into the sealed chamber through the disinfectant gas circuit outlet by energization of the fan to treat the cooling coil apparatus,

removing the anti-microbial disinfectant gas from the sealed chamber and air cooling system through the disinfectant gas outlet, and

unsealing the chamber with respect to the first and second passages by opening the first and second flow responsive valves by energizing the primary air mover to initiate another first predetermined duration of the cooling cycle.

5,286,448

METHOD OF DECONTAMINATING A CHAMBER THAT HAS MOVABLE SHELVES

Robert W. Childers, Garner, N.C., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 4, 1993, Ser. No. 13,429

Int. Cl.[5] **A61L** *2/00, 9/00*

U.S. Cl. 422—28 **22 Claims**

14. A method for decontaminating a chamber system, which comprises the steps of:

a) providing a chamber system having a plurality of shelves, at least one of which is vertically movable while maintaining its horizontal position, a condenser, and piping that are fluid connected to each other and to a vacuum system;

b) placing n sets of containers, each set consisting of at least

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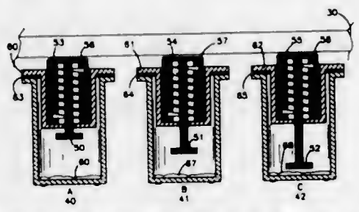
one container, into the chamber on at least one of the shelves, each container containing a pre-determined amount of liquid sterilant, and wherein each container further comprises a cap assembly, a compressure spring, a plunger, a sealing device, and a bottom assembly such that each set has a cap assembly of a different length;

c) placing the cap assembly loosely on each container;

d) moving the movable shelves until the cap assembly on each container is pressed by one of the respective adjacent shelves and seals substantially all of the containers;

e) evacuating the chamber, condenser and piping to a vacuum of below 1 Torr absolute pressure, wherein the chamber system is isolated from the vacuum system;

f) moving at least one of the movable shelves to a first predetermined level until the cap assembly is released and the seal on at least one set of the containers is broken;



g) vaporizing the liquid sterilant by exposing said liquid to the evacuated chamber environment;

h) maintaining the vacuum and exposing the interior of the chamber to sterilant vapor for a first pre-determined time;

i) injecting air into the chamber;

j) re-evacuating the chamber, condenser and piping;

k) moving at least another movable shelf to another predetermined level until the cap assembly is released and the seal of at least one additional set of containers is broken;

l) vaporizing the liquid sterilant by exposing said liquid to the evacuated chamber environment;

m) maintaining the vacuum and exposing the interior of said chamber system to sterilant vapor for another pre-determined time; and

n) maintaining the vacuum and exposing the interior of the chamber system to sterilant vapor until a predetermined level of decontamination is achieve.

5,286,449

ADSORBER MODULE FOR WHOLE BLOOD TREATMENT AND AN ADSORBER APPARATUS CONTAINING THE ADSORBER MODULE

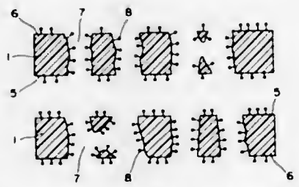
Toru Kuroda, Oita, and Norio Tohma, Ohno, both of Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 332,973, Apr. 4, 1989, abandoned. This application May 27, 1992, Ser. No. 888,313

Claims priority, application Japan, Apr. 4, 1988, 63-81276

Int. Cl.[5] **A61M** *1/14;* **B01D** *13/01*

U.S. Cl. 422—48 **12 Claims**



1. An adsorber module for whole blood treatment comprising:

a casing provided with blood introduction means and blood withdrawal means, and

a plurality of porous hollow fibers substantially equal in length arranged substantially in parallel relationship and bonded together at both end portions thereof to form a bundle, each porous hollow fiber of said bundle having openings at both terminal ends thereof,

said bundle being disposed in said casing along the length of said casing, said bundle being fluid-tightly connected to said casing,

said both end portions of the hollow fibers of said bundle being fluid-tightly connected to said blood introduction means and said blood withdrawal means, respectively, thereby establishing fluid communication between said blood introduction means and said blood withdrawal means through said bundle of hollow fibers,

each porous hollow fiber comprising a membranous porous resin matrix having pores which open at least at the inner wall of the hollow fiber and a plurality of ligands attached to the overall surface of said porous resin matrix,

said overall surface being all of the inner and outer surfaces of the hollow fiber membrane and the surfaces defined by the walls of open pores present within the membranous porous resin matrix,

said plurality of ligands having low antigenicity and interacting with a substance to be adsorbed,

said plurality of porous hollow fibers having an average effective length (L mm) and an average inner diameter (D mm) which satisfy the inequality:

$$L/D^2\ (\mathrm{mm}^{-1}) \geq 2000$$

said average effective length being defined as an average of the lengths of said plurality of porous hollow fibers minus the lengths of said both end portions of said bundle of porous hollow fibers at which the fibers are bonded together and fluid-tightly connected to said blood introduction means and said blood withdrawal means, respectively.

5,286,450

BILIRUBIN ASSAY USING CROSSLINKABLE POLYMERS

Stephen C. Hasselberg, Rochester; Ignazio S. Ponticello, Pittsford, and David M. Taylor, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 892,073

Int. Cl.[5] **G01N** *21/77, 33/00*

U.S. Cl. 422—56 **8 Claims**

1. An analytical element for the determination of conjugated or unconjugated bilirubin comprising a support having thereon, in order from said support.

(A) a reagent layer comprising a positively-charged interactive mordant for bilirubin, said mordant being dispersed in a copolymer binder material derived from:

(1) one or more monomers selected from the group consisting of acrylamide and N-vinylpyrrolidone; and

(2) one or more crosslinkable monomers selected from the group consisting of (i) primary amino group-containing monomers, and (ii) activated halogen group-containing monomers;

(B) a radiation blocking layer; and

(C) a porous spreading layer.

5,286,451

APPARATUS FOR CONTROLLED DELIVERY OF PARTICULATE MATERIAL

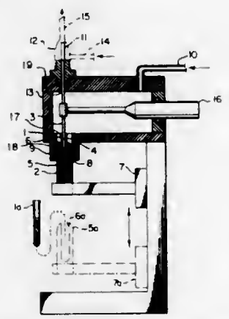
K. Nimalasiri De Silva, and Roger Guevremont, both of Ottawa, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy Mines and Resources, Ottawa, Canada

Continuation-in-part of Ser. No. 793,150, Nov. 18, 1991, abandoned. This application May 21, 1993, Ser. No. 64,366

Claims priority, application Canada, Nov. 23, 1990, 2030588

Int. Cl.[5] **G01N** *1/00, 21/00;* **B01L** *3/02;* **B65G** *53/04*

U.S. Cl. 422—68.1 **8 Claims**



1. An apparatus for controlled volumetric delivery of particulate material, comprising:

an elongated container having an opening for receiving particulate material to be delivered;

container supporting means for receiving the container;

a tubular member having a particulate material receiving inlet for insertion into the container, and an outlet;

tubular member supporting means interconnected with and positioned relative to the container supporting means to allow insertion of the tubular member into the container;

linear traversing means operatively interconnecting the tubular member supporting means with said container supporting means for traversing the tubular member relative to the container along a common longitudinal axis and towards the surface of the particulate material in the container at a predetermined rate selected to obtain the desired volumetric delivery rate of the particulate material;

tubular member agitating means operatively associated with the tubular member and container supporting means for effecting agitating motion of the material receiving inlet of the tubular member relative to the container for agitating and fluidizing a surface portion of the particulate material within the container while the container is traversed relative to the tubular member;

an enclosure surrounding the opening of the container for enclosing a region including the opening of the container and the particulate material receiving inlet of the tubular member;

enclosure outlet means defining a passageway for the outlet of the tubular member allowing egress of particulate material from the tubular member; and

inlet means communicating with the enclosure for receiving a transporting gas for transporting particulate material from the fluidized surface portion within the container;

wherein the agitating means in combination with the movement of the linear traversing means towards the surface of the particulate material in the container fluidizes only the surface portion of the particulate material and the transport gas transports the fluidized particulate material out of the container through the tubular member.

5,286,452

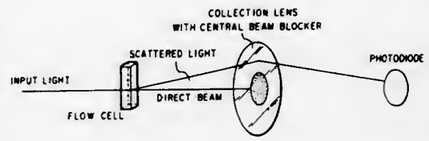
SIMULTANEOUS MULTIPLE ASSAYS

W. Peter Hansen, New York, N.Y., assignor to Sienna Biotech, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 702,302, May 20, 1991, abandoned. This application May 15, 1992, Ser. No. 883,574

Int. Cl.[5] **G01N** *15/02*

U.S. Cl. 422—73 **24 Claims**



1. An optical flow particle analyzer for simultaneous assay of multiple analytes in a single fluid sample by a rate-based particle aggregating method, comprising:

a) a light source;

b) an optically-defined viewing zone upon which viewing zone focused light from said light source is incident;

c) means for flowing through said viewing zone a reaction mixture comprising said single fluid sample and a reagent comprising, for each of said multiple analytes, monomeric coated particles of a diameter or refractive index unique for each said analyte, such that each said particle of unique diameter or refractive index or aggregate thereof produces a pulse signal from unidirectional low angle forward light scatter that is distinguishable optically from a pulse signal from unidirectional low angle forward light scatter produced by any other monomeric coated particle of unique diameter or refractive index or aggregate thereof wherein each said unique coated particle is coated with a unique composition that corresponds and binds specifically to a corresponding analyte so as to form aggregating coated particle-analyte binding pairs, so that unique monomeric coated particles or aggregated multimers formed therefrom flowing through said viewing zone produce discrete pulses of scattered light unique for each said unique coated particle-analyte binding pair or aggregated multimer thereof;

d) lens means for collecting said pulses of unidirectional low angle forward scattered light;

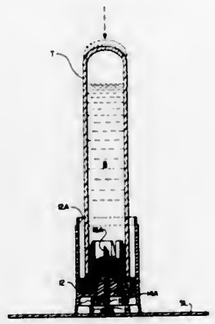
e) single light detector means for receiving collected pulses of said unidirectional low angle forward scattered light and converting said collected pulses into electrical pulse signals, each of said pulse signals being unique for each said coated particle monomer or each said aggregated multimer corresponding to different analytes;

f) analyzer means for separating said electrical pulse signals into separate output signals, each of said separate output signals representative of a different analyte, wherein said analyzer means comprises a plurality of single channel analyzers, each of said single channel analyzers being dedicated to each said coated particle monomer of unique diameter or refractive index, or aggregated multimer thereof, each of said unique monomers or multimers thereof corresponding to each of said multiple analytes, such that each of said single channel analyzers monitors the pulse signals from each of said coated monomeric particles of unique diameter or refractive index, or aggregated multimers thereof, and such that each said dedicated single channel analyzer passes as output signals, signals falling within predetermined ranges of signal values, said ranges differing for each subset of said unique coated monomeric particles or aggregated multimers thereof corresponding to each of said multiple analytes; and

g) calculator means for calculating and correlating a rate of arrival of each of said output signals per unit time from said analyzer means with each said analyte.

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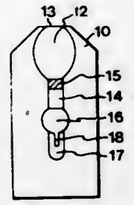
5,286,453
DEVICE FOR DISPENSING A BIOLOGICAL FLUID FROM A SEALED VACUUM TUBE
Carolyn M. Pope, 14 Lake Forest Dr., Taylorsville, N.C. 28681
Filed Apr. 2, 1992, Ser. No. 861,776
Int. Cl.[5] B01L *3/02*; A61B *19/00*
U.S. Cl. 422—100 **6 Claims**



1. A device for dispensing a portion of a biological liquid from a sealed vacuum tube, said device comprising:
a vacuum tube at least partially filled with a biological fluid, said tube being closed at one end and sealed at the other end by a flexible pierceable stopper;
an elongated housing having an open-ended upper portion and an open-ended lower portion;
a cannula mounted in said housing and extending in the longitudinal direction thereof with a first needle end being positioned in the upper portion of said housing to pierce said stopper of said tube when the tube is inverted and forced thereagainst, and a second needle end being positioned in the lower portion of said housing and terminating short of the bottom thereof; and
means for forcing said biological fluid out of said tube and through said cannula, said forcing means being positioned at the base of said first needle end and adapted to urge said stopper of said tube momentarily inwardly when said tube is pushed thereagainst;
whereby subsequent to piercing of said stopper, said tube can be inverted and pushed against said forcing means so as to force a predetermined portion of the biological liquid therein through said cannula and out of said second needle end.

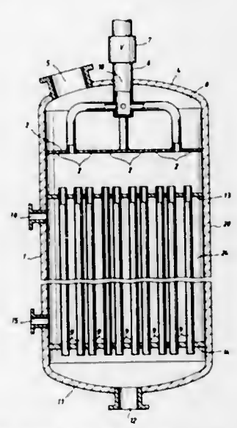
5,286,454
CUVETTE
Sven-Erik Nilsson, Döbellusvägen 39, S-253 67 Helsingborg, and Jan Lilja, Södra Brunnsvägen 63, S-253 68 Helsingborg, both of Sweden
PCT No. PCT/SE90/00275, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO90/13016, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 25, 1990, Ser. No. 768,321
Claims priority, application Sweden, Apr. 26, 1989, 8911518
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **17 Claims**

1. A cuvette for taking up at least one fluid and for mixing a fluid with a dry reagent for analyzing a mixture, wherein said cuvette comprises:
a) at least one capillary first cavity having an inlet and constructed and arranged to take up a fluid by capillary action alone;
b) a first channel having a non-capillary and non-spontaneous fluid transporting function operative only under external influence by application of a centrifugal force on the cuvette;
c) a centrifugation reception cavity communicating with said at least one capillary first cavity via said first channel and constructed and arranged to exert no capillary action:
d) at least one capillary second cavity constructed and arranged to take up fluid by capillary force alone; and



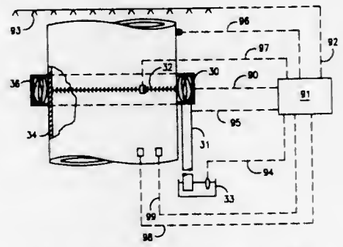
e) a first capillary transporting means projecting into said centrifugation reception cavity, being connected to said at least one capillary second cavity and constructed and arranged to transport fluid by capillary action from said centrifugal reception cavity into said at least one capillary second cavity.

5,286,455
PROCESS FOR THE PREPARATION OF HYDROCARBONS
Jacobus Ellers, Amsterdam; Sytze A. Posthuma, and Pieter J. Hoek, both of The Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 710,991, Jun. 6, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,120
Claims priority, application United Kingdom, Jun. 18, 1990, 9014417
Int. Cl.[5] G05D *7/00*; B01S *8/06*
U.S. Cl. 422—110 **3 Claims**



1. Apparatus for use in a process for the preparation of hydrocarbons from a feed gas comprising hydrogen and carbon monoxide, which apparatus comprises a reactor vessel having a sieve tray disposed across said reactor vessel; a catalyst-containing reaction zone disposed below said sieve tray and defined between two horizontal tube sheets wherein said reaction zone comprises a plurality of catalyst-containing reactor tubes arranged in the reactor vessel substantially parallel to a longitudinal axis of said reactor vessel and wherein said reactor tubes extend between the horizontal tube sheets; a storage cavity disposed above said sieve tray and defined by an upper end of said reactor vessel and said sieve tray; a hydrogen-rich gas inlet disposed in the upper end of said reactor vessel and terminating above the sieve tray and in said storage cavity; a feed gas inlet terminating below the sieve tray and above said reaction zone; means for interrupting the flow of feed gas to the reaction zone from the feed gas inlet; wherein said storage cavity is in communication with said reaction zone through said sieve tray; and an outlet disposed in a lower end of said reactor vessel.

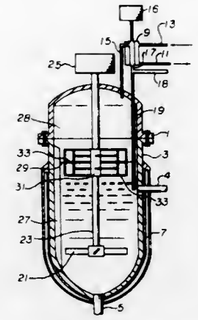
5,286,456
CONTAINMENT OF AN AEROSOLABLE LIQUID JET
Klaus W. Schatz, Lawrenceville, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Sep. 24, 1992, Ser. No. 950,354
Int. Cl.[5] G05B *9/00*
U.S. Cl. 422—117 **30 Claims**



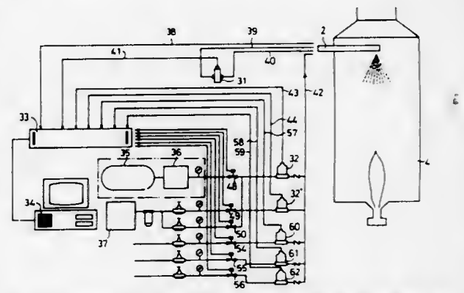
1. A system for increasing rainout from a liquid jet of an aerosolable substance comprising:
a pressurized source of a liquid jet of an aerosolable substance;
means including an impervious impact plate spaced from said pressurized source for deflecting said liquid jet to dissipate forward velocity and energy of said liquid jet; and
means including a meshed pad abutting said impact plate and facing said pressurized source for initially reducing the forward velocity of said liquid jet and for preventing back and radial splash of said liquid jet deflecting off said impact plate to thereby coalesce droplets of said aerosolable substance and produce a collectable run-off.

5,286,457
REACTOR WITH SURFACE AGITATOR FOR SOLUTION POLYMERIZATION PROCESS
Gary L. Woodson; Brian W. Walther; Brian G. Witt, and Gary R. Marchand, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 710,632, Jun. 5, 1991, Pat. No. 5,120,805. This application Mar. 27, 1992, Ser. No. 858,812
Int. Cl.[5] B01F *7/18, 7/32*
U.S. Cl. 422—135 **2 Claims**

1. A reactor suitable for use in the solution polymerization of a liquid reaction mixture comprising a volatile monomer, said reactor comprising a vessel having a vapor space and fitted with an inlet, outlet, and stirring means immersed in a liquid reaction mixture, said reactor characterized by the presence of a mechanical agitation means that is a rigid structure attached to a common shaft with the stirring means comprising a multiplicity of solid, elongated, bars projecting radially from the common shaft used to activate the stirring means as well as bars arranged parallel to common shaft and intersecting the surface of the reaction mixture, whereby rotation of the mechanical agitation means interrupts the surface of the liquid reaction mixture so as to cause splashing and droplet formation thereby increasing the surface area available for vapor absorption and a reduction of volatile monomer concentration in the vapor space of the reactor.



5,286,458
INJECTION TYPE NON-CATALYST DENITROGEN OXIDE PROCESS CONTROL SYSTEM
Shyh-Ching Yang; Jar-Ru Huang, and Li-Chiang Chen, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan
Filed Dec. 22, 1992, Ser. No. 995,058
Int. Cl.[5] B01D *53/34*
U.S. Cl. 422—168 **7 Claims**



1. An injection non-catalyst denitrogen oxide process control system for removing nitrogen oxide (NOx) from a flue gas leaving a combustion device, said process control system comprising:
means for spraying a mixture of a reducing agent and carriers or at least one additional gas into a flue gas leaving a combustion device, said spraying means comprising an injector installed in the flue gas leaving said combustion device, said injector including an injected pipe, said injected pipe having at least one spray nozzle or at least one injected orifice for spraying said mixture into the flue gas;
a pressure measurement means provided in said injector for measuring a pressure difference between a static pressure and a dynamic pressure of the flue gas and converting the pressure difference into a pressure difference signal;
a thermocouple means provided in said injector for measuring a temperature of the flue gas proximate said at least one spray nozzle or said at least one injected orifice and generating a thermocouple signal indicative of a temperature of the flue gas proximate said at least one spray nozzle or said at least one injected hold;

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a flow mass controlled means for controlling a flow mass of the reducing agent, the carriers or the at least one additional gas and sending the reducing agent, the carriers or the at least one additional gas to said injector for spraying through said injected pipe;

a pressure transducer means for converting the pressure difference signal of said pressure measurement means into a voltage signal indicative of a of the flue gas; and

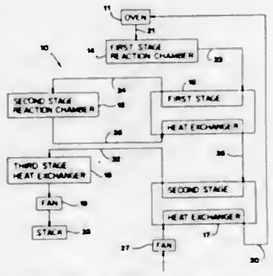
means for controlling said flow mass controller means according to the thermocouple signal and the voltage signal.

5,286,459

MULTIPLE CHAMBER FUME INCINERATOR WITH HEAT RECOVERY

Kenneth A. Krismanth, Strongsville, Ohio, assignor to FECO Engineered Systems, Inc., Cleveland, Ohio

Filed Jul. 30, 1992, Ser. No. 923,099
Int. Cl.[5] B01D *50/00;* **F23G** *7/06*
U.S. Cl. 422—170 **20 Claims**



1. A fume incinerator for eliminating fumes from a process gas comprising

a first stage reaction chamber for preheating a process gas to a first temperature;

a second stage reaction chamber for heating the preheated process gas to a second temperature higher than said first temperature; and

a first stage heat exchanger for exchanging heat from the process gas exiting from said second stage reaction chamber to the preheated process gas passing from said first stage reaction chamber to said second stage reaction chamber independently of said first stage reaction chamber.

5,286,460

METHOD OF OPERATING CATALYTIC CONVERTER

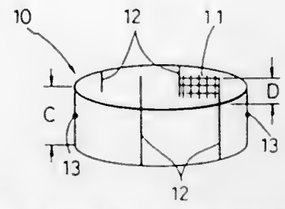
Fumio Abe, Handa; Takashi Harada, Nagoya, and Hiroshige Mizuno, Tajimi, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 581,984, Sep. 14, 1990, Pat. No. 5,204,066. This application Oct. 23, 1992, Ser. No. 965,013
Claims priority, application Japan, Jul. 4, 1990, 2-176943
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F01N *3/10;* **B01D** *53/36;* **H05B** *3/10*
U.S. Cl. 422—174 **3 Claims**

1. The method of operating a catalytic converter for purifying an exhaust gas from a vehicle, said converter having a honeycomb heater incorporated therein, comprising the steps of:

heating a honeycomb heater having a plurality of passages which are defined by partition walls and having a catalyst carried on said partition walls by directly energizing said honeycomb heater at a power level of 1.5 KW or above per unit volume m^3 of exhaust gas substantially concurrently with initial operation of an engine;

introducing an oxidizing gas into said honeycomb heater substantially concurrently with said initial operation of said engine, said oxidizing gas introduced such that an oxidation-reduction index is held between 0.7 to 1.1, said oxidation-reduction index being equal to $(O_2+\frac{1}{2}NO)/(-\frac{1}{3}CO+3/2HC)$,



reducing the power level when the temperature of said honeycomb heater exceeds 300° C. or greater; and

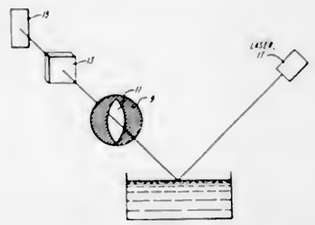
suspending energization within sixty seconds after exhaust gas is introduced into said catalytic converter.

5,286,461

METHOD AND APPARATUS FOR MELT LEVEL DETECTION IN CZOCHRALSKI CRYSTAL GROWTH SYSTEMS

Jurek K. Koziol, and Jonathan A. Talbott, both of Nashua, N.H., assignors to Ferrofluidics Corporation, N.H.

Filed Sep. 20, 1991, Ser. No. 762,755
Int. Cl.[5] C30B *15/28*
U.S. Cl. 422—249 **14 Claims**



1. An a crystal growing system for growing crystals of a material, the system including a crucible containing a pool of melt, the melt being a melted form of the material, the system further including a light source for directing a light beam at the melt, the light source being positioned outside of the crucible and located at a first side thereof, a melt level detection apparatus comprising:

a detection apparatus including a linear sensing element having a length and an axis extending along its length, said sensing element being positioned outside of the crucible and located at a second side thereof such that it is capable of being illuminated by the light beam reflected off the melt, said sensing element further being positioned such that its axis lies in a vertical plane, said sensing element generating a location signal indicating a location of the reflected light beam along its length and a gating signal when the reflected light beam impinges on any portion of the sensor;

processing means for utilizing the location signal to determine a level of the melt surface within the crucible; and

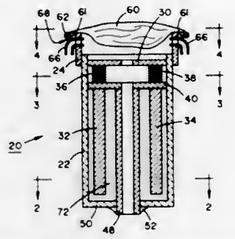
gating means responsive to the gating signal for gating the location signal to the processing means.

5,286,462

GAS GENERATOR SYSTEM FOR UNDERWATER BUOYANCY

Jonathan E. Olson, Fort Wayne, Ind., assignor to Magnavox Electronic Systems Company, Fort Wayne, Ind.

Filed Sep. 21, 1992, Ser. No. 947,608
Int. Cl.[5] B01J *7/00*
U.S. Cl. 422—305 **19 Claims**



1. A gas generator system for providing underwater buoyancy, comprising:

(a) a housing for placement therein of a solid chemical to produce a gas upon reaction of said solid chemical with water, said solid chemical having an upper surface;

(b) inlet means in said housing to bring said water in contact with solid chemical in said housing;

(c) float means, having a lower end, attached to an upper portion of said housing to receive said gas and thereby to become inflated so as to provide buoyancy for said housing;

(d) a pressure plate disposed in said housing to continually bear against said upper surface of said solid chemical as said solid chemical is consumed by said reaction, said pressure plate having defined therethrough a plurality of apertures, the total area of said apertures being selected so as to control the rate of said reaction of said solid chemical and being spaced so as to permit even distribution of water to the surface of said solid chemical; and

(e) biasing means contacting said pressure plate to cause said pressure plate to continually bear against said upper surface of said solid chemical as said solid chemical is consumed.

5,286,463

COMPOSITION FOR RECOVERING METALS AND PROCESS FOR USING SAME

John A. Schwartz, Jr., Spartanburg, S.C., assignor to Partek, Inc., Duncan, S.C.

Filed Mar. 23, 1992, Ser. No. 855,075
Int. Cl.[5] B03B *1/00*
U.S. Cl. 423—23 **17 Claims**

1. A process for simultaneously stripping metal and a polymeric adhesive resin from a polymeric film and reducing said metal to a recoverable form when said metal is adhered to said polymeric film by said polymeric adhesive resin, said method comprising the steps of:

(a) providing a quantity of said polymeric film;

(b) contacting said polymeric film with a composition comprising a reducing sugar and forming a slurry thereof;

(c) adjusting the pH of said slurry to a level of at least about 9 so that said metal and said polymeric adhesive resin are simultaneously stripped from said polymeric film and reduced to a recoverable form; and

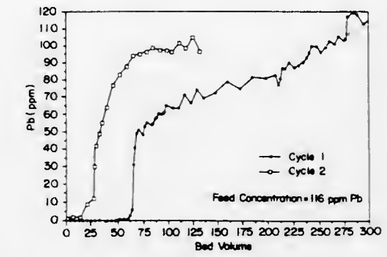
(d) separating said metal in recoverable form from said slurry.

5,286,464

SILICA GEL ION EXCHANGE RESINS FOR THE SELECTIVE REMOVAL OF LEAD AND CADMIUM IONS FROM AQUEOUS LIQUIDS

Vera Dragisich, Lisle, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 14, 1993, Ser. No. 75,380
Int. Cl.[5] C01G *21/00;* **C22B** *13/00, 17/00;* **C02F** *1/42*
U.S. Cl. 423—89 **9 Claims**



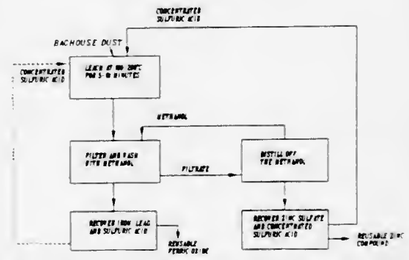
1. In an ion exchange process to selectively remove the metals, lead and cadmium, from aqueous liquids containing the ions of these metals wherein these liquids are contacted with an ion exchange resin for a period of time sufficient for the ion exchange resin to complex with the lead and cadmium ions in the aqueous liquids and then regenerating the resin to remove and recover the metals from the resin; the improvement which comprises using as the ion exchange resin an amorphous silica gel having a surface area of at least $100M^2/g$ having at least 10% of its surface silanol groups reacted with a triethoxy silane selected from the group consisting of Bis(2-hydroxyethyl)-3-aminopropyltriethoxysilane and N-[3-(triethoxysilyl)propyl]-4,5-dihydroimidazole.

5,286,465

HYDROMETALLURGICAL PROCESS FOR RECOVERING IRON SULFATE AND ZINC SULFATE FROM BAGHOUSE DUST

Solomon Zaromb, 95706 William Dr., Hinsdale, Ill. 60521, and Daniel B. Lawson, 925 Putnam Dr., Lockport, Ill. 60441

Filed Jun. 29, 1992, Ser. No. 905,330
Int. Cl.[5] C22B *7/02, 3/08*
U.S. Cl. 423—106 **15 Claims**



1. In the treatment of baghouse dust that is generated in various metallurgical industries, the process of separating zinc-rich and iron-rich fractions from said dust which comprises the steps of:

leaching the dust by hot concentrated sulfuric acid so as to generate dissolved zinc sulfate and a precipitate of iron sulfate;

separating the precipitate from the acid by filtration and washing with a volatile liquid; and

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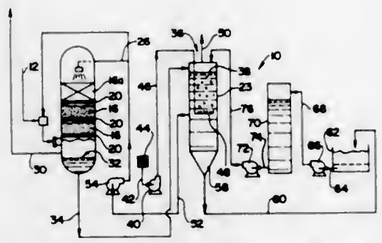
collecting the filtered acid and the washings into a concentrated sulfuric acid filtrate fraction.

5,286,466

MULTI-BED COCURRENT DOWNFLOW MASS TRANSFER COLUMN WITH SPHERICAL PACKING

Leslie C. Hardison, Barrington, Ill., assignor to Ari Technologies, Inc., Palatine, Ill.

Filed Apr. 8, 1991, Ser. No. 682,544
Int. Cl.[5] C01B *17/16*
U.S. Cl. 423—220 **16 Claims**



1. A method of operating a packed tower to provide mass transfer between a gas and a liquid wherein the packing material within the tower contacts solid particulate material and, therefore, the pressure drop across the tower increases due to solid particulate material entrapped between packing elements, comprising:

cocurrently flowing a gas and a liquid downwardly through a packed tower over a packed bed of mobile packing elements, said packing elements having a sufficiently low density to float in water and disposed between spaced upper and lower fluid-impervious grids, wherein the downward gas and liquid flow rates are such that the mobile packing elements are not substantially raised from the lower grid during mass transfer;

periodically stopping the flow of said gas and discharge of liquid during a cleaning cycle to remove particulate solids from the tower;

flooding the tower to cause the mobile packing elements to be raised from the lower support grid so that the particulate material can be washed from the packing elements; and

flushing the particulate solids from the tower, essentially without the solids being recaptured between packing elements.

5,286,467

HIGHLY EFFICIENT HYBRID PROCESS FOR NITROGEN OXIDES REDUCTION

William H. Sun; John E. Hofmann, and M. Linda Lin, all of Naperville, Ill., assignors to Fuel Tech, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 626,439, Dec. 12, 1990, Pat. No. 5,139,754, which is a continuation-in-part of Ser. No. 408,122, Sep. 12, 1989, Pat. No. 4,978,514. This application Jul. 1, 1992, Ser. No. 907,222
The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.
Int. Cl.[5] B01J *8/00*; **C01B** *21/00*
U.S. Cl. 423—239.1 **16 Claims**

1. A process for the reduction of nitrogen oxides in the effluent from the combustion of a carbonaceous fuel, the process comprising:

a) introducing a nitrogenous treatment agent other than ammonia into the effluent at an effluent temperature of about 1500° F. to about 2100° F. to create a treated effluent having reduced nitrogen oxides concentration, wherein the conditions under which said nitrogenous treatment is introduced are such that ammonia is present in the treated effluent and further wherein said nitrogenous treatment agent is selected from the group consisting of urea, one or more of the hydrolysis products of urea, a urea hydrolysate, ammonium carbonate, ammonium bicarbonate, ammonium carbamate, ammonium formate, ammonium oxalate, hexamethylenetetramine, and mixtures thereof;

b) introducing a source of ammonia into the effluent under conditions designed to avoid the non-catalytic reduction of nitrogen oxides such that the ratio of the total ammonia level in the effluent to the effluent nitrogen oxides level is about 1:10 to about 5:1; and

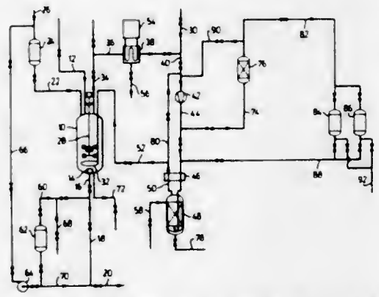
c) contacting the treated effluent with a catalyst effective for the reduction of nitrogen oxides in the presence of ammonia.

5,286,468

PRODUCING CARBON-14 ISOTOPE FROM SPENT RESIN WASTE

Francis H. Chang, Scarborough; Harold K. Vogt, Oakville; Leonard S. Krochmalnek, Downsview; Savtantar K. Sood, Mississauga; Frank E. Bartoszek, Toronto; Kenneth B. Woodall, and Jeffrey R. Robins, both of Oakville, all of Canada, assignors to Ontario Hydro, Toronto, Canada

Filed Feb. 21, 1991, Ser. No. 658,503
Int. Cl.[5] C01B *31/18, 31/20*; **C01F** *11/18*
U.S. Cl. 423—249 **22 Claims**



1. Method for the recovery of carbon-14 (C-14) from a mixture of inert gas and carbon-12 (C-12), carbon-13 (C-13) and carbon-14 (C-14) dioxides comprising: (a) cooling said mixture to a temperature below the solidification point of carbon dioxide and above the solidification point of the inert gas to obtain solid carbon dioxide and separating said solid carbon dioxide from said inert gas; (b) volatilising said solid carbon dioxide to provide substantially pure carbon dioxide gas; (c) reducing said carbon dioxide gas to carbon monoxide gas and obtaining liquefied carbon monoxide; (e) subjecting a feed of said liquefied carbon monoxide to fractional distillation and obtaining a bottoms rich in C-14 monoxide and poor in C-12 monoxide and a distillate poor in C-14 monoxide and rich in C-12 monoxide; (f) oxidizing said bottom to carbon dioxide rich in C-14 dioxide and (g) absorbing said carbon dioxide rich in C-14 dioxide in a metal hydroxide solution and obtaining a carbonate salt rich in C-14.

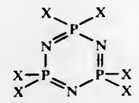
5,286,469

METAL-PHOSPHORUS-NITROGEN POLYMERS, METAL-PHOSPHORUS COMPOUNDS AND METHODS OF PREPARATION THEREOF

Geoffrey Davies, Lexington, Mass., and Nagwa El-Kady, Doha, Egypt, assignors to Northeastern University, Boston, Mass.

Filed Dec. 17, 1991, Ser. No. 809,700
Int. Cl.[5] C01B *25/00, 21/00*
U.S. Cl. 423—302 **12 Claims**

1. A solid metal-phosphazene polymer compound comprising a phosphazene $[PN]_3$ subunit having the formula



wherein

said $[PN]_3$ subunit is linked to at least one other $[PN]_3$ subunit through one or more $(P—X)^1—M—(X—P)^2$ bonds where the phosphorus of said $(P—X)^1$ is a member of a first $[PN]_3$ subunit and the phosphorus of said $(X—P)^2$ is a member of a second $[PN]_3$ subunit, X is either NH_2 or O and where M is a metal unit; and wherein

the X substituents not linked in $(P—X)^1—M—(X—P)^2$ bonds are NH_2 or OH.

5,286,470

SILICATE PRODUCTS

Francois Delwel, Dordrecht, Netherlands, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

PCT No. PCT/GB91/00300, § 371 Date Dec. 31, 1991, § 102(e) Date Dec. 31, 1991, PCT Pub. No. WO91/13026, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 27, 1991, Ser. No. 775,930
Claims priority, application United Kingdom, Mar. 1, 1990, 9004563.4
Int. Cl.[5] C01B *33/32*
U.S. Cl. 423—332 **8 Claims**

1. A method of treating compacted sodium silicate granules, having a mole ratio SiO_2/Na_2O of from about 1.5 to about 3.3:1 and an average particle size in the range from about 0.3 mm to about 2 mm, which comprises contacting the compacted granules with moisture in an agitated bed while avoiding caking of said granules but to thereby minimize the formation of fines by attrition when said compacted granules are subsequently handled.

5,286,471

GRAPHITE FLOURIDE FROM IODINE INTERCALATED GRAPHITIZED CARBON

Ching-Cheh Hung, Westlake, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed May 15, 1992, Ser. No. 884,097
Int. Cl.[5] C01B *31/04*
U.S. Cl. 423—448 **1 Claim**

1. A method of making graphite fluoride from graphitized carbon comprising

placing graphitized carbon, powder consisting of iron metal, and solid iodine in a reactor,

heating said reactor to a temperature between about 50° C. and about 150° C. thereby forming iodine vapor whereby said graphitized carbon is in direct contact with said vapor, adding liquid bromine into said reactor while simultaneously adjusting the temperature of said reactor to a temperature between bromin's boiling point of about 58° C. and iodine's boiling point of about 183° C. so that bromine boils creating a mixture of bromine vapor and iodine vapor whereby said bromine-iodine mixture initiates an iodine and bromine intercalation,

selectively capturing bromine vapor from said reactor by said iron metal powder while maintaining said iodine vapor in said reactor until the majority of the intercalants in the carbon is iodine,

removing the graphitized carbon from the reactor after completion of the iodine intercalation and placing the same in air whereby a portion of the bromine and iodine evaporates, and

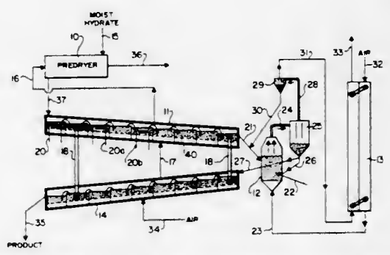
exposing said iodine intercalated graphitized carbon to fluorine gas to produce graphite fluoride.

5,286,472

HIGH EFFICIENCY PROCESS FOR PRODUCING HIGH PURITY ALUMINA

George D. Fulford, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 441,817, Nov. 27, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 800,880
Int. Cl.[5] C01F *7/02*
U.S. Cl. 423—625 **9 Claims**



1. A process for producing calcined alumina from aluminous material initially constituted of alumina trihydrate containing uncombined water, comprising:

(a) removing uncombined water from the material;

(b) advancing the material through a first cascade of fluidized bed stages having a first stage to which the material is delivered from step (a), a last stage, and a plurality of intermediate stages through which the material successively advances from the first stage to the last stage, while heating the material stepwise to sequentially higher temperatures in successive stages, for removing combined water from the material and then further elevating the temperature of the material, with passage of the material through intermediate crystalline forms, to a discharge temperature of about 800°–1000° C., such that the stages of said first cascade of fluidized beds have sequentially increasing temperatures from first to last stage;

(c) feeding the material from said last stage to a calciner and therein calcining the material; and

(d) advancing the hot calcined material from the calciner through a second cascade of fluidized bed stages having a first stage to which the material is delivered from step (c), a last stage, and a plurality of intermediate stages through which the material successively advances from the first stage to the last stage, while cooling the material stepwise to sequentially lower temperatures in successive stages, such that the stages of said second cascade of fluidized beds have sequentially increasing temperatures from last to first;

(e) wherein the stages of said first cascade of fluidized beds are respectively disposed adjacent and respectively individually connected by separate sealed heat-exchange units to the stages of said second cascade of beds in order of increasing temperature such that the first stage of the first cascade is adjacent and individually connected by one heat-exchange unit to the last stage of the second cascade,

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the last stage of the first cascade is adjacent and individually connected by another heat-exchange unit to the first stage of the second cascade, and each intermediate stage of the first cascade is adjacent and individually connected by a separate heat-exchange unit to a separate one of the intermediate stages of the second cascade, the temperature of each stage of the first cascade being lower than that of the stage of the second cascade to which it is adjacent and connected for heat exchange; and

(f) wherein the step of heating the material in the fluidized bed stages of the first cascade comprises separately transferring heat to each stage of the first cascade from that one stage of the second cascade to which it is adjacent and connected for heat exchange, through the heat exchange unit individually connecting the last-mentioned stage of the first cascade to the last-mentioned stage of the second cascade, thereby to provide substantially all of the heat required at least for further elevating the temperature of the material as aforesaid, and to cool the material in the second cascade.

5,286,473

PROCESS FOR THE PRODUCTION OF HYDROGEN

Nobuyasu Hasebe, and Nobukatsu Hasebe, both of 30351 Camino Porvenir, Rancho Palos Verdes, Calif. 90274

Filed Feb. 1, 1993, Ser. No. 11,740

Int. Cl.[5] C01B *3/08*

U.S. Cl. 423—657 **18 Claims**

1. A method for the production of hydrogen using recyclable reaction products, said method comprising the steps of:

contacting an alkali metal with an ionizable hydrogen containing compound selected from the group consisting of hydrochloric acid, water and mixtures thereof thereby to produce hydrogen; forming the chloride of said alkali metal after contact

with said ionizable hydrogen containing compound; heating said alkali metal chloride in the presence of aluminum to a reaction temperature above the sublimation temperature of aluminum chloride to form said alkali metal and aluminum chloride; and recovering said alkali metal for reuse in said process.

5,286,474

USE OF CAROTENOPORPHYRINS AS TUMOR LOCALIZING AGENTS FOR DIAGNOSIS

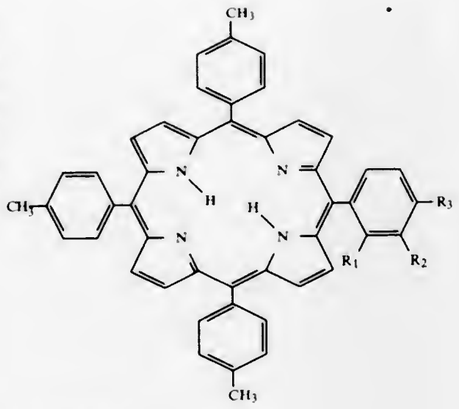
John D. Gust, Jr., Tempe; Ana L. Moore; Thomas A. Moore, both of Scottsdale, all of Ariz.; Giulio Jori, Padova, and Elena Reddi, Rovigo, both of Italy, assignors to Arizona Board of Regents, a body corporate, acting for and on behalf the Arizona State University, Tempe, Ariz.

Filed Oct. 22, 1992, Ser. No. 966,136

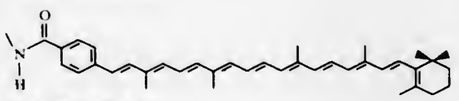
Int. Cl.[5] A61B *5/00;* **A61K** *31/555, 31/40;* **C07B** *47/00*

U.S. Cl. 424—7.1 **9 Claims**

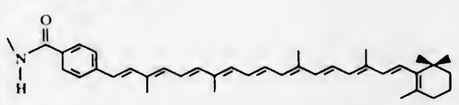
1. A method of locating a diagnostic agent in and visualizing non-hepatic and non-splenic tumor tissue in a mammalian host comprising: administering to a mammalian host an effective amount of a carotenoporphyrin represented by the formula:



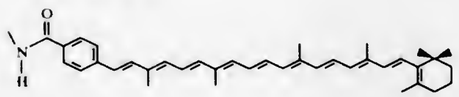
1: $R_1=R_2=H$, R_3 =



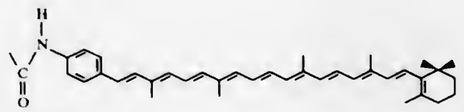
2: $R_1=R_3=H$, R_2 =



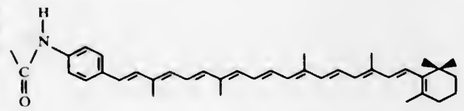
3: $R_2=R_3=H$, R_1 =



4: $R_1=R_2=H$, R_3 =



5: $R_2=R_3=H$, R_1 =



permitting said carotenoporphyrin to localize in the tumor tissue; and thereafter exposing said mammalian host to light whereby said carotenoporphyrin fluoresces permitting precise visualization of the tumor location, size and shape.

5,286,475

ANHYDROUS COSMETIC COMPOSITION IN THE AEROSOL FORM FORMING A FOAM

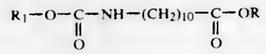
Nathalie Louvet, L'hay Les Roses; Liliane Lukassen, Chevilly Larue, and Jean P. Yquel, Colombes, all of France, assignors to L'oreal, Paris, France

Filed Nov. 8, 1991, Ser. No. 789,828

Int. Cl.[5] A61K *9/12*

U.S. Cl. 424—45 **10 Claims**

1. An anhydrous cosmetic aerosol composition capable of forming foam, comprising a propellant present in a concentration between 1 and 20% by weight relative to the total weight of the composition and an oil phase containing 20–99.95% by weight relative to the total weight of said oil phase of at least one cosmetic oil or a mixture of a cosmetic oil and a fatty substance and 0.05–20% by weight relative to the total weight of said phase of at least one foaming agent having the following formula:



wherein:

R represents a hydrogen atom or an alkyl radical having 14 to 20 carbon atoms, and R_1 represents an alkyl radical having 8 to 18 carbon atoms.

5,286,476

HAIR COSMETIC COMPOSITION

Tomiyuki Nanba; Kenji Torii; Hiroaki Yasuhara; Kenichi Tomita, and Yoko Fukuchi, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Continuation of Ser. No. 341,093, Apr. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 174,657, Mar. 29, 1988, abandoned. This application May 24, 1991, Ser. No. 708,095

Claims priority, application Japan, Mar. 30, 1987, 62-77047; Mar. 30, 1987, 62-77048; Jul. 1, 1987, 62-164936; Apr. 22, 1988, 63-99662

Int. Cl.[5] A61K *7/00*

U.S. Cl. 424—47 **10 Claims**

1. A method of preventing generation of split hair or torn hair for restoring worn hair which comprises applying to the hair a hair cosmetic composition comprising

(a) 0.1% to 50% by weight of at least one high molecular weight silicone having the formula (I):



(I)

wherein

R^1 represents a methyl group or a part thereof represents a phenyl group,

R^2 represents a methyl or hydroxy group, and

n represent an integer from 3000 to 20000; and

(b) 1 to 50-fold by weight, relative to the high molecular weight silicone, of a low boiling-point oil having a boiling point of 60° C. to 260° C. at normal pressure.

5,286,477

AEROSOL HAIR STYLING AID

Devendra C. Bhatt, Schaumburg, and Kathleen A. Kochevar, Wheeling, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 716,710, Jun. 18, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 924,086

Int. Cl.[5] A61K *7/11*

U.S. Cl. 424—47 **17 Claims**

1. An aerosol hair spray composition comprising a fixative resin comprising a terpolymer of vinylpyrrolidone/ethyl methacrylate/methacrylic acid, neutralized at least 30%, in an amount of about 1% to about 12% by weight of the composition; water in an amount of about 30% to about 90% by weight of the composition; dimethyl ether propellant in an amount of about 25% to about 35% by weight of the composition; and 0–30% alcohol.

5,286,478

DENTIFRICE-COMPATIBLE SILICA PARTICULATES

Jacques Persello, Montluel, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation-in-part of Ser. No. 261,935, Oct. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 261,936, Oct. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 518,764, May 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,765, May 3, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 901,078

Claims priority, application France, Nov. 4, 1987, 87 15275; Nov. 4, 1987, 87 15276; May 3, 1989, 89 05869; May 3, 1989, 89 05868

Int. Cl.[5] A61K *7/16, 7/18;* **C09K** *3/14;* **C01B** *33/12*

U.S. Cl. 424—49 **170 Claims**

1. Silica particulates adapted for formulation into dentifrice compositions, having a surface chemistry as to be at least 50% compatible with zinc values, and having a number of OH functions, expressed as OH/nm^2, of at most 15 and a zero charge point of from 3 to 6.5.

5,286,479

ORAL COMPOSITIONS FOR SUPPRESSING MOUTH ODORS

Joseph R. Garlich; Tipton T. Masterson, both of Lake Jackson; Jaime Simon, Angleton, all of Tex., and Vidyadhar B. Hegde, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1991, Ser. No. 805,599

Int. Cl.[5] A61K *7/16, 7/22*

U.S. Cl. 424—54 **31 Claims**

1. An oral composition consisting essentially of: (a) from about 0.0002 to about 1 percent by weight of one or more copper salts; (b) from about 0.0001 to about 10 percent by weight of one or more compounds having C-O-P bonds wherein the compound having C-O-P bonds is myo-inositol hexakis(dihydrogen phosphate), myo-inositol pentakis(dihydrogen phosphate), myo-inositol tetrakis(dihydrogen phosphate) or physiologically acceptable salts thereof; (c) from about 0.001 to about 10 percent by weight of one or more cationic antimicrobial compounds; (d) from about 0.1 to about 20 percent by weight of one or more a compatibilizing agents; and (e) balance, an orally acceptable vehicle, having a pH in the range of about 4.5 to about 9, wherein the compatibilizing agent prevents precipitation of the compounds having C-O-P bonds, antimicrobial compound and copper salt when in an aqueous environment and the compatibilizing agent allows compounds having C-O-P bonds to enhance retention of the cationic antimicrobial compound to a surface containing hydroxyapatite.

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5,286,480

USE OF N-ACETYLATED AMINO ACID COMPLEXES IN ORAL CARE COMPOSITIONS

Robert W. Boggs, Cincinnati, and John R. Wietfeldt, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1992, Ser. No. 905,963
Int. Cl.[5] A61K 7/16, 7/22, 9/68
U.S. Cl. 424—54 20 Claims

1. A method for reducing dental plaque coating on teeth comprising contacting tooth surfaces within the oral cavity in afflicted humans or lower animals in need thereof for from about 10 seconds to about 30 minutes with a composition comprising a safe and effective amount of a complex of metal ions with N-acetylated amino acids wherein the amino acids are selected from the group consisting of naturally occurring amino acids and wherein the metal ions are selected from the group consisting of In^+, Ga^+, and Al^+, and a pharmaceutically-acceptable topical oral carrier selected from the group consisting of aqueous alcoholic liquid, mouthwash, mouth rinse, mouth spray, dental treatment solution.

5,286,481

METHOD OF REDUCING WEIGHT IN MAMMALS

Michael S. Weisenfeld, 6018 Wymford Dr., West Bloomfield, Mich. 48322

Continuation-in-part of Ser. No. 614,160, Nov. 15, 1990, Pat. No. 5,137,716. This application Aug. 4, 1992, Ser. No. 925,091
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] A61K 31/74, 31/14
U.S. Cl. 424—78.01 7 Claims

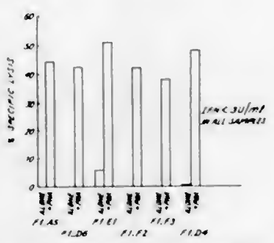
1. A method of reducing weight in mammals to a desired level comprising orally administering thereto an effective weight reducing amount of an anion exchange resin containing composition for a desired period of time to achieve a desired weight reduction.

5,286,482

METHODS AND COMPOSITIONS FOR INDUCING MONOCYTE CYTOTOXICITY

C. Michael Jones, Houston, Tex., assignor to Board of Regents, The University of Texas System

Division of Ser. No. 417,162, Oct. 4, 1989, Pat. No. 5,112,948, which is a continuation of Ser. No. 917,983, Oct. 10, 1986, Pat. No. 4,977,245. This application Dec. 7, 1990, Ser. No. 624,136
Int. Cl.[5] A61K 37/02; C07K 15/06
U.S. Cl. 424—85.1 9 Claims



1. A method of treating cancer in a patient comprising infusing the patient with a pharmaceutical composition comprising a substantially purified monocyte cytotoxicity inducing factor characterized by the following properties:
(a) capability of inducing human monocytes to a cytotoxic state;
(b) retention of biological activity following treatment at pH 2 for one hour;
(c) retention of biological activity following treatment at 60° C. for one hour;
(d) ability to bind to Matrex Gel Red A under low-salt conditions and elute from Matrex Gel Red A under high-salt conditions; and
(e) retention of biological activity in the presence of anti-serum to interferon gamma, interferon alpha, or a combination of anti-sera to interferon alpha and gamma.

5,286,483

50 KILODALTON ANTIGEN OBTAINED FROM THE INTRAERYTHROCYTIC PHASE OF PLASMODIUM FALCIPARUM

Alain Vernes, 20 Facade de l'Esplanade, 59 800 Little; François J. Dubrometz, 6 rue de la Coquerie, 59 310 Nomain; Bernard Fortier, A 1, Place du Maréchal Leclerc, 59 800 Little, and Patrick Deplace, 25 Square du Portugal, 59 000 Little, all of France

Continuation-in-part of Ser. No. 924,078, Oct. 27, 1986, abandoned. This application Feb. 26, 1991, Ser. No. 660,263
Claims priority, application France, Oct. 28, 1985, 85 15986
Int. Cl.[5] A61K 39/002
U.S. Cl. 424—88 3 Claims

1. An antigenic protein isolated from the intraerythrocytic phase of *Plasmodium falciparum*, comprising a protein having a constant molecular mass of 50 kDa whatever the strains used and an isoelectric point of 5.5, said protein originating exclusively in the serum of a patient infected by *Plasmodium falciparum* or in the culture medium of this microorganism during its intraerythrocytic phase, at the time of the merozoite release, said protein being obtained by proteolysis of a precursor protein which has a molecular weight varying from 126 kDa to 130 kDa and which precursor is synthesized during the nuclear multiplication phase during schizogony and localized on the periphery of the schizonts at the parasitophore vacuole level, wherein said antigenic protein is specifically reactive with the monoclonal antibody produced by clone 23D52H6.

5,286,484

NUCLEOTIDE SEQUENCE CODING FOR AN OUTER MEMBRANE PROTEIN FROM *NEISSERIA MENINGITIDIS* AND USE OF SAID PROTEIN IN VACCINE PREPARATIONS

Silva Rodriquez; Selman H. Sosa; Guillén Nieto; Saturnino H. Martinez; Julio R. F. Masó; Lidia I. N. Pérez; Juan M. Grillo; Vivian M. Córdova; Sonia G. Blanco; Beatriz T. Santos; Jesús A. del Valle Rosales; Evelin C. Menéndez; Anabel A. Acosta; Edelgis C. Rodriquez; Silian C. León, and Alexis M. Lasa, all of Ciudad de la Habana, Cuba, assignors to Centro de Ingeniería Genetica y Biotecnologia, Cuba

Filed Sep. 5, 1991, Ser. No. 754,918
Claims priority, application Cuba, Jul. 9, 1990, 145/90
Int. Cl.[5] A61K 39/02, 39/00; C07H 15/12; C12P 21/06
U.S. Cl. 435—252.33 12 Claims

1. A recombinant polynucleotide, comprising a nucleotide sequence coding for a protein P64k of *Neisseria meningitidis*, said protein P64k essentially having the amino acid sequence shown in SEQ ID NO:1.

5,286,485

PROCESS FOR CONTROLLING LEPIDOPTERAN PESTS

Kendrick A. Uyeda; Luis Foncerrada; Jewel M. Payne; Kenneth E. Narva, all of San Diego; George E. Schwab, La Jolla; Gregory A. Bradfisch, San Diego, and August J. Sick, Oceanside, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 642,112, Jan. 16, 1991, and a continuation-in-part of Ser. No. 658,935, Feb. 21, 1991, abandoned. This application Sep. 12, 1991, Ser. No. 758,020
Int. Cl.[5] A01N 63/00; C12N 1/20
U.S. Cl. 424—93 L 1 Claim

1. A process for controlling lepidopteran insect pests which comprises contacting said insect pests with an insect-controlling effective amount of, *Bacillus thuringiensis* isolate PS50C, or mutants thereof.

5,286,486

COLEOPTERAN-ACTIVE *BACILLUS THURINGIENSIS* ISOLATES AND GENES ENCODING COLEOPTERAN-ACTIVE TOXINS

Jewel M. Payne, and Jenny M. Fu, both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 788,638, Nov. 6, 1991. This application Nov. 6, 1992, Ser. No. 973,320
Int. Cl.[5] C12P 21/06; C12N 15/00; C07H 15/00
U.S. Cl. 424—93 L 11 Claims

1. An isolated nucleotide sequence comprising DNA encoding a *Bacillus thuringiensis* toxin active against coleopteran pests, wherein said DNA encodes a toxin consisting essentially of the amino acid sequence of SEQ ID NO. 2 or SEQ ID NO. 4, or portions thereof having activity against coleopteran pests.

5,286,487

COVALENT ANGIOGENIN/RNASE HYBRIDS

Bert L. Vallee, Brookline, and Michael D. Bond, Brighton, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 481,342, Feb. 15, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 953,555
Int. Cl.[5] A61K 37/54; C12N 9/22, 15/00
U.S. Cl. 424—94.6 8 Claims

1. A covalent hybrid mutant angiogenin protein comprising an N-terminal sequence wherein amino acids in a region at or corresponding to human angiogenin residues 8–22 have been replaced with a sequence of amino acids that is identical to or conservatively substituted from the sequence corresponding to mammalian RNase residues 7–21, and wherein the covalent hybrid mutant angiogenin protein has increased angiogenic activity as compared with angiogenin.

5,286,488

METHOD FOR TOPICAL TREATMENT OF LESIONS ASSOCIATED WITH VIRAL INFECTIONS

John T. Manikas, 2277 Fair Oaks Blvd., #400, Sacramento, Calif. 95825, and Lawrence R. Manning, 7409 24th St., Rio Linda, Calif. 95673

Continuation of Ser. No. 482,069, Feb. 16, 1990. This application Jul. 20, 1992, Ser. No. 916,600
Int. Cl.[5] A61K 35/78
U.S. Cl. 424—195.1 4 Claims

1. A method of treating topical lesions caused by topically manifested viral infection in mammal, which method comprises a topical administration to the surface of the lesions on the skin of the mammal of a topical pharmaceutical composition consisting essentially of 1–5% wt/wt active ingredient present in the juice of the green hull of the kukui nut *Aleurites moluccana*, wherein said active ingredient is formulated in a pharmaceutically acceptable carrier.

5,286,489

TASTE MASKING COMPOSITIONS

Josef H. Tsau, Skokie, Ill., and Nalinkant C. Damani, Cincinnati, Obio, assignors to The Procter & Gamble Company, Cincinnati, Obio

Continuation of Ser. No. 914,490, Jul. 14, 1992, which is a continuation of Ser. No. 765,710, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 579,765, Sep. 10, 1990, abandoned, which is a continuation of Ser. No. 517,965, May 1, 1990, Pat. No. 4,971,781, which is a continuation of Ser. No. 402,987, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 287,246, Dec. 20, 1988, abandoned, which is a continuation of Ser. No. 170,086, Mar. 10, 1988, abandoned, which is a continuation of Ser. No. 768,981, Aug. 26, 1985, abandoned. This application Mar. 16, 1993, Ser. No. 32,738
Int. Cl.[5] A61K 9/16, 9/20, 9/68
U.S. Cl. 424—440 5 Claims

1. A porous, uncoated, bitterless chewable matrix admixture of a bitter tasting active ingredient and a methyl methacrylic ester copolymer in at least a 1:1 by weight ratio of active ingredient to copolymer, effective to mask the taste, and admixture therewith a sugar or artificial sweeteners and/or flavoring agents to optimize the taste masking effect.

5,286,490

TRANSDERMAL FLUORIDE MEDICATION

Marcus G. Grodberg, Newton, Mass., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed May 4, 1990, Ser. No. 518,905
Int. Cl.[5] A61F 13/02; A61L 15/16; A61K 9/14; A01N 59/10
U.S. Cl. 424—448 10 Claims

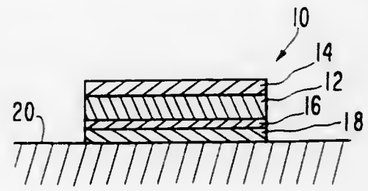
1. A transdermal medication comprising a patch including a fluid proof bottom sheet, carrying a pharmaceutically acceptable salt of monofluorophosphate and a transdermal enhancer.

5,286,491

PREVENTION OF CONTACT ALLERGY BY COADMINISTRATION OF A CORTICOSTEROID WITH A SENSITIZING DRUG

Alfred Amkraut, Palo Alto, and Jane E. Shaw, Atherton, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 753,284, Aug. 30, 1991, Pat. No. 5,171,576, which is a division of Ser. No. 604,840, Nov. 27, 1990, Pat. No. 5,077,054, which is a continuation of Ser. No. 217,014, Jul. 8, 1988, Pat. No. 5,000,956, which is a continuation of Ser. No. 23,583, Mar. 9, 1987, abandoned. This application May 18, 1992, Ser. No. 884,687
Int. Cl.[5] A61F 13/00
U.S. Cl. 424—449 8 Claims



1. A method of preventing human skin from becoming sensitized by a skin sensitizing drug which is transdermally administered to a human in need thereof, comprising:
placing a matrix, which matrix contains a composition of matter comprising the sensitizing drug and a corticosteroid, in drug-transmitting and corticosteroid-transmitting relationship to a selected skin site;
administering said drug at a therapeutically effective rate to the selected skin site over a predetermined period of time; and

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coadministering said corticosteroid to the selected skin site at a sensitization induction preventing rate and over at least the same predetermined period of time.

5,286,492

METHOD OF TREATMENT OF *HELIOBACTER PYLORI* INFECTIONS WITH TRICLOSAN

Peter W. Dettmar, Welwick, and John G. Lloyd-Jones, Cottingham, both of United Kingdom, assignors to Reckitt & Colman Products Limited, London, United Kingdom

Filed Apr. 30, 1991, Ser. No. 693,598

Claims priority, application United Kingdom, May 3, 1990, 9010039

Int. Cl.[5] A61K *9/58, 9/60, 9/62, 9/28*

U.S. Cl. 424—458 **23 Claims**

1. A method for the treatment of gastrointestinal associated with *Heliobacter pylori* infection which comprises administering to a patient an orally effective amount for said disorder of triclosan of from 1 to 200 mg.

5,286,493

STABILIZED CONTROLLED RELEASE FORMULATIONS HAVING ACRYLIC POLYMER COATING

Benjamin Oshlack, New York, N.Y.; Mark Chasin, Manalapan, N.J., and Frank Pedi, Jr., Yorktown Heights, N.Y., assignors to Euroceltique, S.A., Luxembourg

Filed Jan. 27, 1992, Ser. No. 826,084

Int. Cl.[5] A61K *9/62, 9/00*

U.S. Cl. 424—468 **35 Claims**

1. A method for obtaining a stabilized controlled release formulation comprising a substrate coated with an aqueous dispersion of a plasticized acrylic polymer for release of a dose of therapeutically active agent in the gastrointestinal tract, comprising

preparing a solid substrate comprising a therapeutically active agent,

overcoating said substrate with a sufficient amount of a plasticized aqueous dispersion consisting essentially of ammonio methacrylate copolymers which are copolymerizates of acrylic and methacrylic esters having a low content of quaternary ammonium groups acrylic and methacrylic acid esters having a permeability which is unaffected by the pH conditions prevailing in the gastrointestinal tract, in an amount sufficient to obtain a predetermined controlled release of said dose of said therapeutically active agent in the gastrointestinal tract, and

curing said coated substrate by subjecting said coated substrate to a temperature greater than the glass transition temperature of the aqueous dispersion of plasticized acrylic polymer for at least about 24 hours and continuing the curing until an endpoint is reached at which said substrate provides a stable dissolution profile, said endpoint being determined by comparing the dissolution profile of the formulation immediately after curing to the dissolution profile of the formulation after exposure to accelerated conditions of one month at a temperature of 37° C. and at a relative humidity of 80%.

5,286,494

MEDICINAL AGENTS WITH SUSTAINED ACTION

Christian Fechner; Michael Hümpel; Fred Windt-Hanke, and Johannes Tack, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 394,999, Aug. 17, 1989, abandoned, which is a continuation of Ser. No. 165,197, Apr. 25, 1988, abandoned. This application Jun. 17, 1991, Ser. No. 715,699

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622487

Int. Cl.[5] A61K *9/16, 9/54*

U.S. Cl. 424—490 **11 Claims**

1. A medicinal agent for sustained release of 4-(3-cyclopentyloxy-4-methoxyphenyl)-2-pyrrolidone or 5-{hexahydro-5-hydroxy-4-(3-hydroxy-4-methyl-1-octen-6-ynyl)-2(1H)-pentalenylidene}-pentanoic acid as an active compound, wherein the active compound is in the form of a solid which is poorly soluble in water, comprising a pellet, which comprises a pharmacologically acceptable auxiliary agent, in or on which pellet the active compound is distributed in a microcrystalline form or in molecular dispersion, said active compound-containing pellet being covered with a diffusion membrane, wherein the diffusion membrane comprises one or more of an acrylic acid ester, a methacrylic acid ester, a copolymer of one or more of an acrylic and one or more of a methacrylic acid ester, a vinyl acetate, or a modified cellulose derivative which retards permeability of the active compound, and wherein the pellet has an average diameter of 0.4–2.5 mm and the diffusion membrane has a thickness of 0.01–0.5 mm.

5,286,495

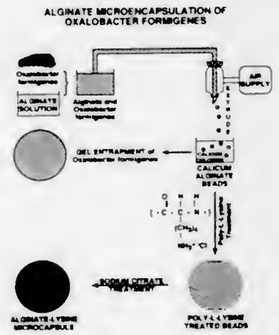
PROCESS FOR MICROENCAPSULATING CELLS

Chris Batich, Gainesville, Fla., and Farid Vaghefi, Foster City, Calif., assignors to University of Florida, Gainesville, Fla.

Filed May 11, 1992, Ser. No. 880,866

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **19 Claims**



1. In a method for preparing microcapsules of cells, viruses, drugs, or polypeptides, wherein said method comprises the following steps:

(a) mixing said cells, viruses, drugs, or polypeptides with a matrix-forming composition;

(b) making droplets of the mixture of part (a) and introducing said droplets into a gelling solution to form gel droplets;

(c) treating the gel droplets formed in part (b) with a polyelectrolyte to form a microcapsule;

an improvement which comprises making droplets in part (b) which have a size of between about 40 μm to about 100 μm and modulating the electrical characteristics of the surface said droplets before introducing said droplets into said gelling solution.

5,286,496

BREATH PROTECTION MICROCAPSULES

Judith H. Stapler, Wilmington, and Mary Ann Hunter, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 805,432, Dec. 11, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,080

Int. Cl.[5] A61K *9/50, 9/16, 9/68*

U.S. Cl. 424—490 **11 Claims**

1. Microcapsules adapted to be placed and retained in the mouth, and which are suitable for providing breath protection comprising [a] a core, or center fill, into which it may not be possible to easily incorporate breath control actives, which core or center fill includes from about 20% to about 80% of the total capsule weight of oil, triglyceride or polyethylene glycol core diluent, said core containing from about 0.1% to about 25% of the total capsule weight of flavoring agents providing additional efficacy and/or sensory perceptions, and [b] a shell material, surrounding said core or center fill, suitable for retention in the oral cavity as well as for ingestion, and disposed within said shell material, from about 0.001% to about 2% of the total weight of the capsule, one or more breath control actives said microcapsules not being incorporated into breath mints, mouthwashes, chewing gums, or other breath control or oral hygiene compositions, said [a] core or center fill also containing breath control actives.

5,286,497

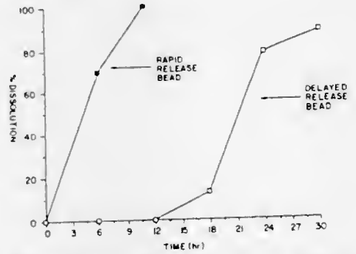
DILTIAZEM FORMULATION

Dennis L. Hendrickson, Overland Park, Kans.; Dan C. Dimmitt, Belton; Mark S. Williams, Kansas City, both of Mo.; Paul F. Skultety, Leawood, Kans., and Michael J. Baltezor, Lees Summit, Mo., assignors to Carderm Capital L.P., Thalwil, Switzerland

Continuation of Ser. No. 872,572, Apr. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 702,567, May 20, 1991, abandoned. This application May 6, 1993, Ser. No. 58,534

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **13 Claims**



1. A diltiazem formulation suitable for once-a-day oral administration comprising a blend of:

A) a sufficient quantity of rapid release diltiazem beads which further comprise

1) a diltiazem core containing an effective amount of diltiazem of a pharmaceutically acceptable salt thereof, optionally in association with pharmaceutically acceptable excipients and;

2) a sufficient quantity of a first suitable polymeric coating material which substantially envelops said diltiazem core so that said diltiazem bead exhibits the following in-vitro dissolution profile when measured in a type 2 dissolution apparatus (paddle) according to U.S. Pharmacopeia XXII at 37° C. at 100 rpm:

a) from 0–40% of total diltiazem is released after 3 hours of measurement in said apparatus, and;

b) from 30–100% of total diltiazem is released after 6 hours of measurement in said apparatus, and;

B) a sufficient quantity of delayed release diltiazem beads which further comprise:

1) a central core containing an effective amount of diltiazem or a pharmaceutically acceptable salt thereof, optionally in association with pharmaceutically acceptable excipients, and;

2) a sufficient quantity of a second suitable polymeric coating material which substantially envelops said diltiazem core so that said diltiazem bead exhibits the following in-vitro dissolution profile when measured in a type 2 dissolution apparatus (paddle) according to U.S. Pharmacopeia XXII, at 37° C. in 0.1N HCl at 100 rpm:

a) from 0–15% of total diltiazem is released after 12 hours in said apparatus;

b) from 0–45% of total diltiazem is released after 18 hours of measurement in said apparatus, and;

c) not less than 45% of total diltiazem is released after 24 hours of measurement in said apparatus,

wherein said blend exhibits the following in-vitro dissolution pattern when measured in a type 2 dissolution apparatus (paddle), according to U.S. Pharmacopeia XXII, in 0.1N HCl at 100 rpm:

a) from 20–45% of total diltiazem is released after 6 hours of measurement in said apparatus;

b) from 25–50% of total diltiazem is released after 12 hours of measurement in said apparatus;

c) from 35–70% of total diltiazem is released after 18 hours of measurement in said apparatus;

d) not less than 70% of total diltiazem is released after 24 hours of measurement in said apparatus; and

e) not less than 85% of total diltiazem is released after 30 hours of measurement in said apparatus.

5,286,498

RAPID EXTRACTION OF CIGUATOXIN FROM CONTAMINATED TISSUES

Douglas L. Park, and Pedro M. Gamboa, Both of Tucson, Ariz., assignors to Hawaii Chemtect Incorporated, Pasadena, Calif.

Filed May 1, 1992, Ser. No. 878,707

Int. Cl.[5] A61K *35/12, 31/195;* **C07H** *15/00*

U.S. Cl. 424—520 **11 Claims**

1. A method for rapidly extracting ciguatoxins from tissue comprising:

mixing a tissue sample with a first solvent to solubilize and extract ciguatoxin from the sample;

adding to the sample first solvent mixture a second solvent which is not soluble in the first solvent and which extracts contaminants, but not ciguatoxin, from the first solvent;

separating the phases formed by the first and second solvents;

collecting the first solvent phase;

evaporating the first solvent, of the first solvent phase, to dryness to produce a residue;

resuspending the residue in a third solvent;

adding a fourth solvent which is not soluble in the third solvent and which extracts contaminants, but not ciguatoxin, from the third solvent;

separating the phases formed by the third and fourth solvents; and

collecting the third solvent phase wherein the ciguatoxin included in the third solvent phase is sufficiently pure to allow assaying for the ciguatoxins.

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5,286,499
CHEWING GUM WITH IMPROVED TASTE PERCEPTION EMPLOYING INVERT SUGAR HUMECTANT
Steven B. Courtright, Evanston, Ill., assignor to Wm. Wrighley Jr. Company, Chicago, Ill.
Continuation-in-part of Ser. No. 632,151, Dec. 21, 1990. This application May 12, 1992, Ser. No. 881,539
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 **17 Claims**

1. A chewing gum composition having improved non-staling qualities and improved taste comprising chewable gum base, sweetener, flavoring, and a humectant comprising total invert sugar and said total invert sugar comprising between about 0.1 to 5.0 percent by weight of the chewing gum composition.

5,286,500
WAX-FREE CHEWING GUM BASE
Steven Synosky, Green Brook, N.J., and Michael A. Reed, Merrillville, Ind., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.
Continuation-in-part of Ser. No. 1,686, Mar. 3, 1992. This application Jun. 30, 1992, Ser. No. 906,921
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 **30 Claims**

1. A wax-free chewing gum base having flavor release characteristics at least as good as similar bases including wax comprising:
an elastomer;
polyvinyl acetate;
an elastomer plasticizer; and
a sufficient amount of oil having a capillary melting point between 40° C. and 70° C. to achieve flavor release characteristics that are at least as good as a similar gum base that includes wax.

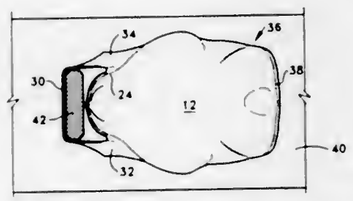
5,286,501
PETROLEUM WAX-FREE CHEWING GUMS HAVING IMPROVED FLAVOR RELEASE
Joo H. Song, Northbrook, Ill., and Michael A. Reed, Merrillville, Ind., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.
Filed Dec. 30, 1992, Ser. No. 997,732
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 **59 Claims**

1. A petroleum wax-free chewing gum comprising:
a) a petroleum wax-free gum base containing at least 1.0 weight percent of at least one elastomer plasticizer; and
b) at least 0.01 weight percent of a flavoring agent;
wherein the petroleum wax-free gum base has an average weighted Solubility Parameter ranging from about 16.0 to about 21.0 S.P.U.s, and
wherein at least 5 weight percent of the flavoring agent has a Solubility Parameter of from about 0.5 S.P.U.s greater than, or less than, the average weighted Solubility Parameter of the gum base.

5,286,502
USE OF EDIBLE FILM TO PROLONG CHEWING GUM SHELF LIFE
Marc A. Meyers, Naperville, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.
Filed Apr. 21, 1992, Ser. No. 871,962
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—5 **28 Claims**

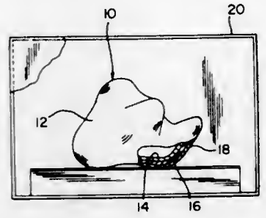
1. A method of preparing coated chewing gum sticks with improved shelf life, comprising the steps of:
preparing a chewing gum composition including about 5–95% by weight of a water soluble bulk portion, about 5–95% by weight of a water insoluble chewing gum base portion, and about 0.1–15% by weight of one or more flavoring agents;
rolling the chewing gum composition using a dusting compound, and forming the chewing gum composition into a sheet having first and second sides;
applying a coating of an aqueous solution of an edible, water soluble film forming agent to the first side of the sheet;
partially drying the coating of edible, water soluble film forming agent on the first side of the sheet at a temperature not exceeding about 120° F., until the film forming agent becomes tacky;
applying a coating of wax over the tacky coating of edible, water soluble film forming agent on the first side of the sheet;
applying a coating of aqueous solution of edible, water soluble film forming agent to the second side of the sheet;
partially drying the coating of edible, water soluble film forming agent on the second side of the sheet at a temperature not exceeding about 120° F., until the film forming agent becomes tacky;
applying a coating of wax over the tacky coating of edible, water soluble film forming agent on the second side of the sheet; and
cutting the sheet into chewing gum sticks.

5,286,503
FOOD CONTAINING PACKAGE WITH INTEGRAL HANDLE AND METHOD OF MAKING SAME
Vytautas Kupcikevicius, Oaklawn, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed May 14, 1992, Ser. No. 882,730
Int. Cl.[5] B65D *67/00;* **B65B** *53/00*
U.S. Cl. 426—110 **12 Claims**



1. A food package with integral carrying handle comprising:
a) a closed food-product containing portion having a food product completely encased between plies of a heat shrunk film, a heat seal joining said plies to form a closed end of said food package and at least one of said plies extending outwardly as a skirt from said heat seal at said closed end;
b) a self-supporting handle of a defined shape integral said package at said closed end and being formed of the heat shrunk film of said skirt, said handle being oriented generally in a first plane proximate a plane which longitudinally bisects said food-product portion;
c) said handle including a hand grip and spaced side elements, said side elements each extending between and connected to said closed end and said hand grip respectively, and said side elements supporting said hand grip spaced longitudinally outwardly along said first plane from said closed end to define a hand opening therebetween;
d) said hand grip being a strip of said heat shrunk film of said skirt oriented generally perpendicular to said first plane over the entire length of said strip; and
e) each of said side elements at said connection to said hand grip being oriented perpendicular to said first plane and, at said connection to said closed end being oriented in said first plane.

5,286,504
MICROWAVABLE FRY-LIKE COOKING PROCESS
Shiowshuh Sheen, New Hyde Park; John Moyer, Garden City, and Simon Gagel, Forest Hills, all of N.Y., assignors to DCA Food Industries, Inc., Garden City, N.Y.
Filed Feb. 1, 1993, Ser. No. 12,254
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—243 **25 Claims**



1. A fry-like microwave cooking process for producing food with a crisp exterior and a soft, tender interior, comprising the steps of:
(A) applying an edible hydrophilic lossy susceptor to at least a portion of the surface of the food bearing a moisture-retardant edible barrier layer, the susceptor including glycerine, sucrose ester, and chloride salt, and being characterized by the property that 25 grams of the susceptor in a 50 ml. glass beaker is heatable to 200° C. in less than 40 seconds by 900 watts of heatable microwave energy in a 1.1 cu. ft. oven; and
(B) microwave cooking the susceptor-bearing food to provide a crisp exterior and a soft, tender interior for the food.

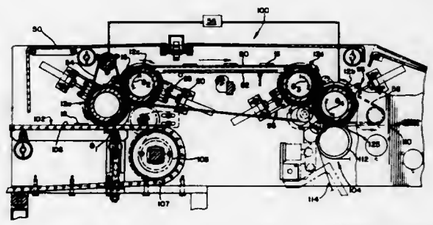
5,286,505
METHOD FOR INFUSING RAISINS WITH HIGH LEVELS OF HUMECTANT
Barton L. Hartson, Battle Creek, Mich.; Miguel Guzman, Santa Clara, and Steven Cauchi, Campbell, both of Calif., assignors to Kellogg Company, Battle Creek, Mich.
Filed Jul. 21, 1992, Ser. No. 917,834
Int. Cl.[5] A23L *1/212*
U.S. Cl. 426—321 **18 Claims**

1. A method of improving softness retention characteristics of raisins which comprises the steps of:
(a) providing raisins with a moisture content of from about 18 to about 26%;
(b) spraying the surface of said raisins pure 100% edible polyalcohol humectant at a temperature of from about 150° F. to about 190° F. in an amount of pure 100% edible polyalcohol humectant from about 20 to 28% based on the weight of the raisins;
(c) immediately immersing said raisins from step (b) with a sufficient amount of humectant solution, to completely immerse said raisins, wherein said humectant solution is at least 40% of said humectant;
(d) tempering said raisins from step (c) at a temperature of from about 90° F. to about 110° F. for sufficient time to enable the raisins to absorb said humectant to an amount of from about 10% to about 19% by weight;
(e) separating the raisins from said humectant solution;
(f) recycling said humectant solution resulting from step (e) to step (c) after adding additional humectant to maintain at least 40% humectant in said humectant solution; and
(g) rinsing and drying the raisins from step (e) to a moisture content of from about 7% to about 20%.

5,286,506
INHIBITION OF FOOD PATHOGENS BY HOP ACIDS
James R. Millis, Kohler, and Mark J. Schendel, Manitowoc, both of Wis., assignors to Bio-Technical Resources, Manitowoc, Wis.
Filed Oct. 29, 1992, Ser. No. 969,698
Int. Cl.[5] A23L *3/3508*
U.S. Cl. 426—335 **7 Claims**

1. A process comprising applying a solution containing 6 to 100 ppm beta-acids as extracted from hops to a solid food product to incorporate from 6 to 50 ppm beta-acids in said food product to prevent growth of Listeria in said food product.

5,286,507
METHOD FOR TRANSFER OF FOOD MATERIAL SLICES
Norman C. Abler, Madison, Wis., assignor to OScar Mayer Foods Corporation, Madison, Wis.
Continuation of Ser. No. 860,842, Mar. 31, 1992, Pat. No. 5,174,431, which is a continuation-in-part of Ser. No. 690,481, Apr. 24, 1991, Pat. No. 5,149,554. This application Dec. 17, 1992, Ser. No. 973,436
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] A23L *1/00;* **B65B** *35/00*
U.S. Cl. 426—420 **30 Claims**



1. A method of transferring strips of food material comprising the steps of:
providing at least two rotating members, each of the rotating members having a non-rotating inner member;
rotating one of the two rotating members so that an outer surface thereof engages an individual food material strip;
applying negative air pressure to a portion of the one rotating member outer surface to adhere the individual food material strip to a material strip receiving portion of said one rotating member;
rotating said one rotating member while said individual food material strip is adhered to said one rotating member material strip receiving portion;
urging said individual food material strip off of said one rotating member and onto a material strip receiving portion disposed on an outer surface of the other rotating member;
rotating the other rotating member so as to move the other rotating member material strip receiving portion proximate to a support surface, and
urging said individual food material strip off of said other rotating member onto the support surface.

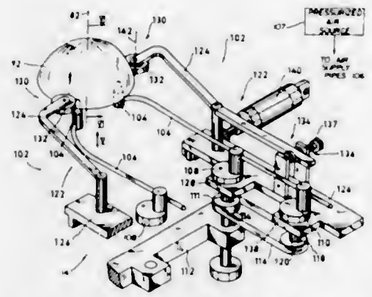
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5,286,508

METHOD FOR REMOVING PULP FROM FRUIT

David Nahir, Bat Yam, and Binyamin Ronen, Ra'Anana, both of Israel, assignors to State of Israel, Ministry of Agriculture, Bet Dagan, Israel

Continuation of Ser. No. 718,540, Jun. 21, 1991, abandoned, which is a division of Ser. No. 489,807, Mar. 5, 1990, Pat. No. 5,088,393. This application Oct. 15, 1992, Ser. No. 962,045
Claims priority, application Israel, Mar. 9, 1989, 89560
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—481 **4 Claims**



1. A method of removing pulp from a fruit having an exterior surface which has been cut so as to expose a portion of the fruit pulp surrounded by peel comprising the steps of:

directing at least one pressurized jet of air onto the exposed portion of pulp so as to separate it from the remainder of the fruit while substantially preventing impingement of said at least one jet of air on the peel; and

causing relative rotation between the fruit and said at least one pressurized jet of air

said step of directing including the step of engaging the exterior of the fruit and preventing the jet from impinging on the fruit at a location separated from the exterior surface of the fruit by less than a predetermined distance.

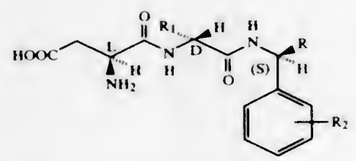
5,286,509

L-ASPARTYL-D-ALPHA-AMINOALKANOYL-(S)-N-ALPHA-ALKYLBENZYL AMIDES USEFUL AS ARTIFICIAL SWEETENERS

Libong L. D'Angelo, Decatur, and James G. Sweeny, Atlanta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 22, 1992, Ser. No. 902,310
Int. Cl.[5] A23L *1/236*; **C07C** *229/00*
U.S. Cl. 426—548 **30 Claims**

1. An artificial sweetener compound comprising an L-aspartyl-D-α-aminoalkanoyl-(S)-α-alkylbenzyl amide having the structure:

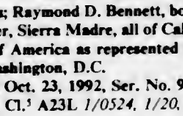


wherein

R_1=H, $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-CH(CH_3)_2$, $-C(CH_3)_3$, $-CH_2OCH_3$, $-CH_2OH$ or phenyl wherein R_2=H or CH_3;

$$R = \begin{matrix} R_3 \\ -\!\!< R_4 \\ R_5 \end{matrix} \text{ and}$$

R_3, R_4 and R_5=H, $-CH_3$ or $-CH_2CH_3$; or



wherein n=0, 1, 2, 3, 4.

5,286,510

FAT MIMETIC CONTAINING SALAD DRESSING AND PROCESS THEREFOR

Roland Bauer, West Milford; Jo Ann Cuccurullo, Cresskill, both of N.J.; Philip E. Dazo, Schiedam, Netherlands; Daniel J. Kochakji, West Milford, N.J.; Steven M. Rikon, Ringwood, N.J., and Richard E. Rubow, Ridgefield Park, N.J., assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Oct. 7, 1992, Ser. No. 957,492
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] A23L *1/0522, 1/0534*
U.S. Cl. 426—573 **7 Claims**

1. A fat mimetic composition comprising an intimate admixture of:

30%–70% colloidal microcrystalline cellulose;

30%–70% cold water swelling starch;

1%–15% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum and mixtures thereof;

0%–5% of alginate or alginate derivatives;

0%–5% opacifier selected from the group consisting of TiO_2, milk solids and mixtures thereof;

whereby the mimetic imparts organoleptic properties similar to fat when formulated at an amount of 1% to 10% in a dressing containing up to about 30% fat.

5,286,511

CLOUDING AGENT FOR BEVERAGES AND METHOD OF MAKING

Jerome A. Klavons; Raymond D. Bennett, both of Pasadena, and Sadie H. Vannier, Sierra Madre, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 23, 1992, Ser. No. 965,308
Int. Cl.[5] A23L *1/0524, 1/20, 2/38*
U.S. Cl. 426—577 **9 Claims**

1. An acidic beverage comprising

a. partially aggregated soy protein particles that provide a cloud in said beverage; and

b. an additive that maintains said partial aggregation of soy protein particles, said additive selected from the group consisting of pectin and pectic compounds;

wherein said beverage contains 10–2000 mg of said protein per 100 ml, and 200–1000 micrograms of said additive per ml.

5,286,512

DIOL LIPID ANALOGUES AS EDIBLE FAT REPLACEMENTS

Lawrence P. Klemann, Somerville; John W. Finley, Whippany, and Anthony Scimone, Cedar Grove, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 372,689, Jun. 27, 1989, abandoned. This application Apr. 24, 1991, Ser. No. 690,743
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] A23D *9/00*
U.S. Cl. 426—611 **22 Claims**

1. An edible composition having a fat ingredient, wherein at least 5% of said fat ingredient comprises a fat mimetic compound of the formula

R—(CO)—O—(D)—O—(CO)—R',

where D is an aliphatic group having 4to 10 carbons, and R and R' are aliphatic groups having 1 to 29 carbons.

5,286,513

PROTEINACEOUS FOOD PRODUCT CONTAINING A MELT SPUN OLEAGINOUS MATRIX

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

Division of Ser. No. 851,650, Mar. 16, 1992, Pat. No. 5,236,734, which is a continuation-in-part of Ser. No. 602,485, Oct. 24, 1990, Pat. No. 5,096,492, which is a continuation-in-part of Ser. No. 169,838, Mar. 18, 1988, Pat. No. 4,855,326, which is a continuation-in-part of Ser. No. 40,371, Apr. 20, 1987, abandoned. This application Jun. 22, 1993, Ser. No. 80,479
Int. Cl.[5] A23L *1/314, 1/315, 1/317, 1/325*
U.S. Cl. 426—641 **20 Claims**

1. A proteinaceous-based food product, comprising an oleaginous-containing a matrix formed by melt-spinning an oleaginous substance with a carrier material to provide internal flow thereby permitting transition in structure without degradation of said carrier material and oleaginous substance.

5,286,514

METHOD OF PREPARING LOW FAT MEAT PRODUCTS

Neil B. Webb; James P. Hadden, and Ta Chung Wu, all of Raleigh, N.C., assignors to Webb Technical Group, Inc., Raleigh, N.C.

Continuation-in-part of Ser. No. 774,516, Oct. 8, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,911
Int. Cl.[5] A23L *1/317*
U.S. Cl. 426—646 **12 Claims**

1. The process of producing a low fat ground beef meat product comprising: trimming the meat to no more than 11%, by weight, fat; cooling said meat to approximately 40 degrees Fahrenheit; comminuting the meat to approximately ⅜ inch particle size; mixing between 0.5 and 5.0%, by weight, oat bran and between 0.3 and 3.0% by weight beef flavoring with the comminuted meat; and comminuting said mixture to approximately ⅛ inch particle size whereby a low fat meat product is provided that when cooked, has the mouth-feel, texture, juiciness and tenderness of normal fat comminuted meat products.

5,286,515

CHOCOLATE FOR USE IN PRODUCING ROLLED CHOCOLATE

Kotaro Yamaguchi, Sennan; Tsugio Nishimoto, Naga; Yoshitaka Ebihara, Sakai, and Hidenobu Matsunami, Senna, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Mar. 4, 1992, Ser. No. 847,365
Claims priority, application Japan, Mar. 4, 1991, 3-063908
Int. Cl.[5] A23G *1/00*
U.S. Cl. 426—660 **5 Claims**

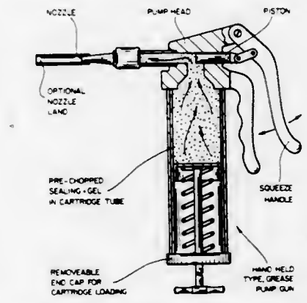
1. A chocolate having an oil ingredient which comprises at least 10% by weight of disaturated monolinoleate and at least 15% by weight of non-tempering type hard butter.

5,286,516

ENVIRONMENTAL SEALING

William D. Uken, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 275,444, Nov. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 126,655, Dec. 1, 1987, abandoned. This application Mar. 7, 1991, Ser. No. 666,552
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—58 **18 Claims**



1. A method of environmentally protecting a substate which comprises:

(a) subjecting a sealing material having an ultimate elongation according to ASTM D638080 of at least 100% and a cone penetration according to ASTM D217-68 at 21° C. of greater than 100 (10−1 mm) in the presence ofa solvent or suspending medium to mechanical deformation sufficient to cause the material to be fragmented prior to but in the process of being applied to a substrate to be protected;

(b) causing the fragmented material to flow and envelop a surface of the substrate to be protected: and thereafter

(c) maintaining the fragmented material in contact against the surfaceo fhte substrate to be protected.

5,286,517

A PROCESS FOR MAKING AN ELECTROLUMINESCENT CELL USING A ZNS HOST INCLUDING MOLECULES OF A TERNARY EUROPIUM TETRAFLUORIDE COMPOUND

Dawon Kahng, and T. Yoshioka, both of Princeton, N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Division of Ser. No. 690,587, Apr. 24, 1991, Pat. No. 5,198,721. This application Aug. 7, 1992, Ser. No. 927,617
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—66 **7 Claims**

1. A process for forming an array of electroluminescent cells comprising,

depositing on a transparent support member a conductive patterned layer of indium-tin oxide suitable for providing a first set of electrodes for the array,

depositing over the support member and the patterned layer a layer of silicon dioxide sufficiently thin to permit electron tunneling therethrough at operating voltages and sufficiently thin to permit electron tunneling therethrough at operating voltages and sufficiently thick to provide a chemically stable interface between the indium-tin oxide layer and the zinc sulfide layer to be deposited thereover,

preparing and heating a source of zinc sulfide and a source of an activator material taken from the group consisting of lithium europium tetrafluoride, sodium europium tetrafluoride, beryllium europium tetrafluoride, and magnesium europium tetrafluoride,

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codepositing on the support member by evaporation material from two sources to form a layer of zinc sulfide including a concentration of the activator material sufficient for electroluminescence, the heating and deposition conditions being such that the activator material sublimes and condenses primarily in molecular form in the layer of zinc sulfide,

forming over the zinc sulfide layer a dielectric layer sufficiently thick for serving as a charge storage medium, and

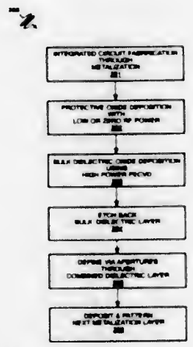
forming over said dielectric layer a conductive pattern suitable to provide the second set of electrodes of the array.

5,286,518

INTEGRATED-CIRCUIT PROCESSING WITH PROGRESSIVE INTERMETAL-DIELECTRIC DEPOSITION

John Cain, Schertz; Felix Fujishiro, San Antonio; Chang-Ou Lee, San Antonio; Sigmund Koenigseder, San Antonio, and Landon Vines, San Antonio, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Apr. 30, 1992, Ser. No. 876,276
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—96 **10 Claims**



1. A method of fabricating a multi-metalization-layer integrated circuit, said method comprising the steps of:

fabricating an integrated circuit through patterning a first metalization layer;

depositing a protective oxide sublayer over said first metalization by chemical vapor deposition while restricting any plasma enhancement to the chemical vapor deposition to an rf power of at most 200 watts;

depositing a bulk dielectric oxide sublayer over said protective oxide sublayer by a plasma-enhanced chemical-vapor deposition in which the rf power is greater than 200 watts, said bulk dielectric oxide sublayer being thicker than said protective oxide sublayer, said protective oxide sublayer and said bulk dielectric oxide sublayer collectively constituting a dielectric layer;

defining via apertures through said dielectric layer; and

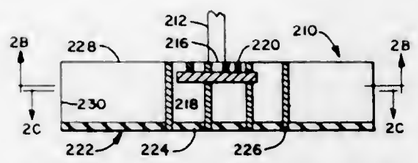
patterning a second metalization over said dielectric layer so as to define interconnects for said integrated circuit.

5,286,519

FLUID DISPERSION HEAD

Michael Vukelic, Felton, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 720,874, Jun. 25, 1991, abandoned. This application Mar. 24, 1992, Ser. No. 856,476
Int. Cl.[5] B05D *5/12*; **C23C** *16/00*
U.S. Cl. 427—99 **22 Claims**



1. A method for chemical vapor deposition comprising:

(a) providing a fluid, said fluid including at least one substance to be deposited onto a substrate, to an intake aperture of a fluid deposition head, the fluid deposition head consisting essentially of:

(i) a chamber for fluid flow being defined by a relatively rigid housing having an aperture at one end of the housing for the intake of a fluid, and a perforated outlet plate at an opposite end of the housing for the discharge of fluids;

(ii) a single, non-perforated baffle plate disposed within the chamber between the aperture and the perforated outlet plate, said baffle plate acting to disperse the fluid which enters the chamber, said baffle plate supported exclusively by a first support structure disposed within the housing and extending between an interior area of the baffle plate and the housing, the first support structure having a one end fixed to the housing and another opposite end fixed to the baffle plate; and

(iii) a second support structure, distinct from the first support structure, disposed within the chamber, and extending between the housing and an interior area of the outlet plate;

wherein fluid provided at the intake aperture is distributed substantially evenly across the perforated outlet plate; and

(b) depositing the fluid from the outlet plate evenly onto the substrate.

5,286,520

PREPARATION OF FLUORINE-DOPED TUNGSTIC OXIDE

James W. Proscia, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1991, Ser. No. 806,177
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—109 **13 Claims**

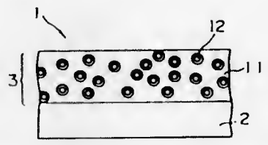
1. A process for preparing a layer of fluorine-doped tungstic oxide on a substrate by a chemical vapor deposition method, comprising reacting together at the surface of the substrate tungsten hexafluoride, an oxygen-containing compound, and a fluorine-containing compound at a temperature from about 350° C. to about 450° C. and for a time sufficient to form a layer of $WO_{3-x}F_x$ on the surface of the substrate, wherein x if from greater than zero to about less than one.

5,286,521

REUSABLE INK SHEET FOR USE IN HEAT TRANSFER RECORDING AND PRODUCTION PROCESS THEREOF

Genichi Matsuda, Kawasaki, and Takesi Sugii, Nagano, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 495,560, Mar. 19, 1990, Pat. No. 5,151,326. This application Jun. 29, 1992, Ser. No. 905,302
Claims priority, application Japan, Mar. 20, 1989, 1-68647
Int. Cl.[5] B32B *9/00*
U.S. Cl. 427—146 **11 Claims**



1. A process for the production of a reusable, heat transfer recording ink sheet which comprises providing an ink which contains:

at least one dye and/or pigment as a colorant;

a low melting compound as a vehicle; and

fine powders coated with ethylene/vinyl acetate copolymer and having a particle size of 0.01 to 200 μm, by dispersing the powders in a mixture of the dye and/or pigment and the low-melting compound, and coating said ink on a substrate, the ethylene/vinyl acetate copolymer having a number average molecular weight of 30,000 or less and containing vinyl acetate units in an amount of 18 to 45% by weight of the copolymer.

5,286,522

H_2O_2 INDUCED OXIDATION PROOF PHOSPHATE SURFACE COATING ON IRON SULFIDES

V. P. Evangelou, and Xiao Huang, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 19, 1992, Ser. No. 979,649
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—212 **22 Claims**



1. A method of inducing an oxidation proof phosphate surface coating on iron sulfide containing materials including pyrite and marcasite, comprising the steps of:

placing the iron sulfide containing materials in a reaction vessel;

leaching the iron sulfide containing materials with a phosphate coating composition including water, an oxidizing agent and a phosphate coating agent buffered to a pH of between substantially 5–7;

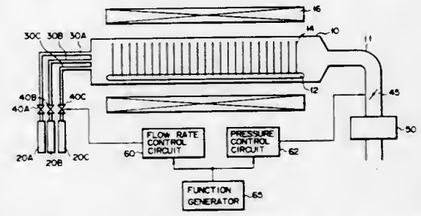
maintaining said phosphate coating composition at a temperature of substantially 25°–40° C. during leaching.

5,286,523

METHOD OF PROCESSING SUBSTRATES AND SUBSTRATE PROCESSING APPARATUS

Tetsuo Matsuda; Yuuichi Mikata, both of Kawasaki, and Akimichi Yooekura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1991, Ser. No. 750,601
Claims priority, application Japan, Aug. 29, 1990, 2-229219
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—248.1 **6 Claims**



1. A method of performing a surface process using a gas reaction on a plurality of substrates, comprising:

a first step of starting a reaction of at least one reactant gas;

a second step of supplying said reactant gas into a reaction vessel in a direction in which a plurality of substrates are arranged vertically against a direction of said reactant gas flow in said reaction vessel; and

a third step of changing, with time, an optimal reaction position of said reactant gas in said reaction vessel, wherein said optimal reaction position is the position at which film deposition conditions become optimal.

5,286,524

METHOD FOR PRODUCING CVD DIAMOND FILM SUBSTANTIALLY FREE OF THERMAL STRESS-INDUCED CRACKS

David E. Slutz, Columbus, and Friedel S. Knemeyer, Granville, both of Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Dec. 13, 1991, Ser. No. 806,393
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—249 **10 Claims**

1. A method for producing diamond film by chemical vapor deposition which comprises exposing both sides of a thin substrate to heat and an excited hydrogen and hydrocarbon gas mixture under conditions of temperature, pressure, and gas concentration which promote the growth of diamond coatings on both sides of said substrate, wherein the thickness of the substrate is in the range of 0.005–0.1 inches and is less than the diamond coatings grown thereon and separating the diamond coatings from the thin substrate to provide diamond films.

5,286,525

METHOD OF IMPROVING THE PRINTING OF POLYOLEFINS WITH WATER-BASED INKS

Bing-Lin Chen, Germantown, and James A. Barker, Memphis, both of Tenn., assignors to Witco Corporation, New York, N.Y.

Division of Ser. No. 831,955, Feb. 6, 1992, Pat. No. 5,232,966. This application May 5, 1993, Ser. No. 59,011
Int. Cl.[5] C08K *5/20*
U.S. Cl. 427—256 **8 Claims**

1. A method for printing polyolefin film which comprises incorporating an effective amount of an N-ethanol acid amide selected from the group consisting of N-ethanol erucamide and N-ethanol oleamide into a polyolefin film and printing the film with a water based ink.

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5,286,526

METHOD AND DEVICE FOR COATING OF A MOVING BASE

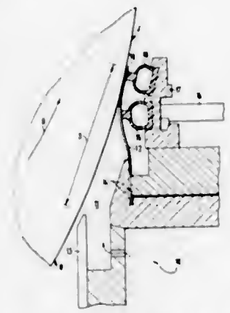
Rauno Rantanen, Muurame; Markku Lummila, and Hannu Korhonen, both of Jyväskylä, all of Finland, assignors to Valmet Paper Machinery Inc., Finland

Filed May 5, 1992, Ser. No. 878,862

Claims priority, application Finland, May 9, 1991, 912260

Int. Cl.[5] B05C *11/04*

U.S. Cl. 427—356 **20 Claims**



1. A method for coating a moving base, the face of a back-up roll, paper or board web, with a coating agent by means of a blade coater, comprising

installing a coating blade in a blade holder such that said coating blade forms a substantially small angle in relation to a moving base to be coated,

loading said coating blade in an area between said blade holder and a tip of the coating blade located in proximity to the moving base by means of a first loading member,

loading said coating blade towards the moving base in an additional location between said first loading member and said tip of said coating blade by means of a second loading member so that the smallest gap between said coating blade and the moving base is located before the tip of said coating blade,

arranging said second loading member such that said second loading member prevents separation of said tip of said coating blade from a layer of coating agent formed on the moving base, thereby preventing cavitation in the area of said tip of said coating blade,

applying a coating agent onto the moving base, and

regulating the quantity of the coating agent applied onto the moving base via said first loading member by adjusting the blade angle and/or the loading of said coating blade.

5,286,527

ADHESION PROMOTER

Rainer Blum, Ludwigshafen; Hans J. Heller, Hamburg; Hans-Joachim Haehnle, Ludwigshafen, and Klaus Lienert, Hamburg, all of Fed. Rep. of Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Münster, Fed. Rep. of Germany

Filed Apr. 24, 1992, Ser. No. 873,197

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113655

Int. Cl.[5] B05D *5/10*

U.S. Cl. 427—407.1 **4 Claims**

1. A process for improving the adhesion of polycondensates containing, as structural units, heterocyclic ring systems containing nitrogen atoms, or precursors of these polycondensates, to inorganic substrates, which comprises using, as adhesion promoter, a mixture of from 5 to 95% by weight of an azidosilane of the formula

$$N_3-R^3-Si-R^1_n(OR^2)_{3-n} \quad \text{I}$$

where R^1 is C_1-C_3-alkyl, phenyl, benzyl or tolyl, R^2 is C_1-C_4-alkyl, C_2-C_4-alkoxyalkyl, phenyl or benzyl, R^3 is C_1-C_8-alkylene, which may be interrupted by —(N—R^4)— in which R^4 is hydrogen, methyl, ethyl or phenyl, and n is 0, 1 or 2, and from 5 to 95% by weight of an aminoalkoxysilane of the formula

$$H_2N-R^5-Si-R^6_m(OR^7)_{3-m} \quad \text{II}$$

where R^5 is C_1-C_6-alkylene, C_5-C_6-cycloalkylene or C_5-C_6-arylene, each of which may be substituted by one or two C_1-C_3-alkyl groups, and R^6 and R^7, independently of one another, are C_1-C_6-alkyl or C_5-C_6-cycloalkyl, each of which may likewise be additionally substituted by one or two C_1-C_3-alkyl groups, and m is 0, 1 or 2.

5,286,528

PROTECTIVE AND DECORATIVE SHEET MATERIAL HAVING A TRANSPARENT TOPCOAT

Gerald G. Reafler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 287,417, Dec. 20, 1988, Pat. No. 5,114,789, which is a continuation-in-part of Ser. No. 116,426, Nov. 3, 1987, abandoned. This application Mar. 17, 1992, Ser. No. 852,635

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] B05D *7/04*

U.S. Cl. 427—412.1 **4 Claims**



1. A method of preparing a thermoformable sheet material having a carrier film, a paint layer containing light reflective metallic flakes and a transparent topcoat layer and having excellent gloss after being stretched during thermoforming, which comprises

in at least one coating pass continuously passing a carrier film web having a metallic paint layer thereon in coating proximity to a narrow extrusion slot of an extrusion coating hopper and extruding in laminar flow over the paint layer a crosslinking transparent topcoat composition, and

passing the web having a wet topcoat layer directly from the coating hopper to a drying chamber wherein the topcoat layer is dried and cured in a series of stages of successively increasing temperatures,

the speed of the web, the rate of extrusion of the topcoat composition, and the number of coating passes being such that the final thickness of the topcoat after drying is greater than 0.1 mm.

5,286,529

METHOD OF FORMING A ORGANIC THIN FILM

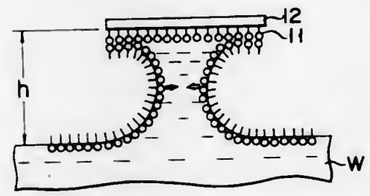
Toshio Nakayama, Fujisawa; Syun Egusa; Nobuhiro Gemma, both of Yokobama, and Akira Miura, Toride, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 686,858, Apr. 18, 1991, abandoned, which is a continuation of Ser. No. 314,135, Feb. 23, 1989, abandoned. This application May 4, 1992, Ser. No. 879,468

Claims priority, application Japan, Feb. 24, 1988, 63-39590; Mar. 25, 1988, 63-69645; Dec. 27, 1988, 63-327592

Int. Cl.[5] B05D *1/20*

U.S. Cl. 427—430.1 **5 Claims**



1. A method of forming an organic thin film comprising the steps of:

developing organic molecules having a hydrophilic portion and a hydrophobic portion on a water surface, and compressing the organic molecules thereby to form a monomolecular layer of a predetermined surface pressure;

bringing a given substrate into contact with said monomolecular layer while said substrate is kept in a horizontal direction, thereby to adhere a first monomolecular layer to said substrate; and

lifting the substrate, to which the first monomolecular layer is adhered, by a predetermined distance from the water surface at such a rate that the surface pressure of the monomolecular layer on the water surface is not substantially reduced, and laminating the monomolecular layer existing on the water surface onto said first monomolecular layer by utilizing the phenomenon in which a meniscus formed in the vicinity of the substrate spontaneously moves towards the center of the substrate, thus forming an organic thin film of a Y type lamination structure, wherein said predetermined distance is given by the formula

$$3.8\sqrt{1-\pi/73} \leqq h \leqq 3.8\sqrt{1-\pi/73} \times \sqrt{2}$$

{wherein h is a distance of the lifting of the substrate, and π is a surface pressure (dyn/cm) of the monomolecular layer on the water surface},

and the substrate is made stationary when the substrate is raised by the predetermined distance given by said formula.

5,286,530

METHOD FOR PROVIDING ADHERENT METAL COATINGS ON CYANATE ESTER POLYMER SURFACES

Bradley R. Karas, Amsterdam, and Herbert S. Chao, Schenectady, both of N.Y., assignors to General Electric Company, East Windsor, N.J.

Filed Jan. 13, 1993, Ser. No. 3,916

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—437 **20 Claims**

14. A method for depositing an adherent metal layer on the surface of a resinous substrate comprising a polymeric cyanate ester, said method comprising the steps in sequence of:

contacting at least a portion of said surface with an aqueous alkali metal hydroxide solution having a concentration in the range of about 4–5M;

contacting said surface with an aqueous solution consisting essentially of alkali metal permanganate and alkali metal hydroxide in concentrations of about 0.4–2.0M and about 0.5–4.0M, respectively;

contacting said surface with an aqueous alkali metal hydroxide solution having a concentration in the range of about 4–15M,

contacting said surface with a material consisting essentially of aqueous nitric acid of at least about 50% concentration by weight,

depositing an electroless metal layer on said surface, and

heat treating the metal-coated surface at a temperature in the range of about 100°–150° C. for at least about 30 minutes.

5,286,531

METHOD FOR TREATING AN OXIDE COATING

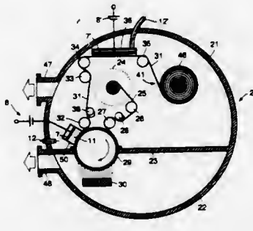
Thomas Krug, Rodenbach; Klemens Ruebsam, Jossgrund; Andreas Meier, Pfullingen; Gerhard Steiniger, Ronneburg, all of Fed. Rep. of Germany; Mitsuru Kano, Tokyo, Japan; Noboru Sasaki; Takashi Miyamoto, both of Sugito, Japan, and Mamoru Sekiguchi, Kawaguchi, Japan, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany and Toppan Printing Company, Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 924,318

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203631

Int. Cl.[5] C23C *16/50*

U.S. Cl. 427—536 **18 Claims**



1. A method for treating an oxide coating of a plastics film (**4**, **25**) for changing the color effects of said coating based on the stoichiometry of said oxide comprising:

disposing a glow cathode opposite said oxide coating of said plastics film having said oxide coating;

moving said plastics film (**4**, **25**) relative to said glow cathode (7, 7'); and

providing a gas comprising a reactive gas between said glow cathode (7, 7') and said oxide coating of said plastics film (**4**, **25**) having said oxide coating so that said oxide coating is treated by a plasma generated by said glow cathode (7, 7') and comprising said reactive gas to eliminate the color effects which rest on an oxygen understoichiometry.

5,286,532

METHOD FOR PRODUCING GOLF BALLS

Masato Yoshikawa, Kodaira; Yukihiro Kusano, Tokorozawa; Kazuo Naito, Kawasaki; Satiko Okazaki, Tokyo, and Masuhiro Kogoma, Wako, all of Japan, assignors to Bridgestone Corporation; Satiko Okazaki, both of Tokyo and Masuhiro Kogoma, Wako, all of Japan

Filed Aug. 19, 1992, Ser. No. 931,972

Claims priority, application Japan, Aug. 20, 1991, 3-232181; Jun. 15, 1992, 4-180291

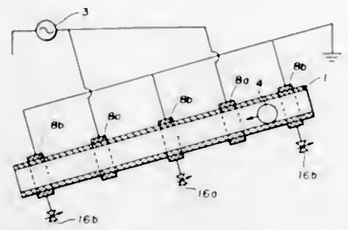
Int. Cl.[5] A63B *37/14*

U.S. Cl. 427—536 **12 Claims**

1. A method for producing a golf ball which comprises surface treating a golf ball with an atmospheric pressure plasma prior to finish coating, the method further including

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conducting the surface treatment in an insulating vessel having at least three elongate outer electrodes arranged in general at



equal intervals and at least three elongate inner electrodes arranged in general at equal intervals.

5,286,533

METHOD OF MAKING HARD BORON NITRIDE BY A PLASMA CVD METHOD EMPLOYING BEAM IRRADIATION

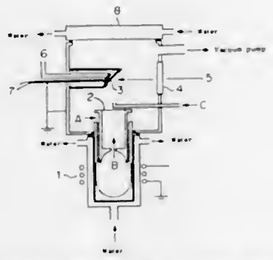
Shojiro Komatsu, Tsukuba; Yusuke Moriyoshi, Tokyo; Mitsuo Kasamatsu, Tsuchiura, and Kawakatsu Yamada, Tsukuba, all of Japan, assignors to National Institute for Research in Inorganic Materials, Ibaraki, Japan

Filed Jun. 25, 1993, Ser. No. 82,457

Claims priority, application Japan, Jun. 25, 1992, 3-191693

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—554 **2 Claims**



1. A method of making hard boron nitride by a plasma CVD method employing beam irradiation comprising the steps of:

introducing a boron source gas and a nitrogen source gas into a plasma generated by employing a working gas selected from the group consisted of helium, hydrogen and a mixture of these under pressure of 0.01 through 100 torr, said boron source gas and said nitrogen source gas are provided with volumetric percent of 0.01 through 10% with respect to the working gas;

transmitting activating innoculations formed in the plasma to a substrate of which temperature is maintained at 300° through 1100° C.;

converting the activating innoculations into precursor activating innoculations necessary for forming and growing a hard boron nitride film on the substrate by irradiating an ultraviolet beam to the activation innoculations on the substrate; and

accumulating the hard boron nitride on the substrate.

5,286,534

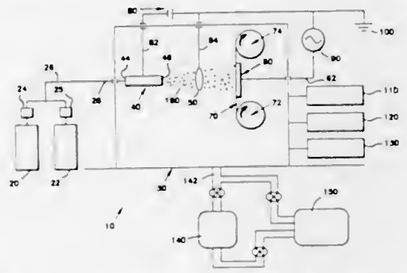
PROCESS FOR PLASMA DEPOSITION OF A CARBON RICH COATING

Gunter A. Kohler, Grant Township, Washington County, Minn.; Richard W. Duerst, New Richmond, Wis., and Daniel P. Stubbs, May Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 811,986, Dec. 23, 1991, Pat. No. 5,232,791. This application Mar. 31, 1993, Ser. No. 40,837

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—577 **14 Claims**



1. A process for the plasma deposition of a carbon rich coating onto a substrate comprising the steps of:

A. providing a substrate in a vacuum chamber;

B. generating a carbon rich plasma in the vacuum chamber by: 1) injecting a plasma gas, suitable to provide a carbon rich coating, into an elongated hollow cathode; 2) providing a sufficient voltage to create and maintain a carbon rich plasma in the hollow cathode; 3) maintaining a vacuum in said vacuum chamber sufficient for said plasma;

C. exposing said substrate to said plasma while said substrate is in close proximity to a radio frequency bias means, whereby said plasma is accelerated towards said substrate and is deposited thereon as a carbon rich coating.

5,286,535

DECORATIVE DISPLAY DEVICE

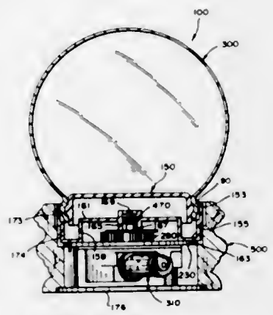
Jack Hou, Taipei, Taiwan, assignor to Giftec, Ltd., Alexandria, Va.

Continuation-in-part of Ser. No. 650,877, Feb. 5, 1991, Pat. No. 5,110,636. This application Dec. 12, 1991, Ser. No. 805,657

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] G09F *19/00*

U.S. Cl. 428—11 **4 Claims**



1. A display device comprising:

a) a display means for displaying an ornament, the display means including a lower peripheral portion;

b) a drive mechanism including a power output shaft;

c) a drive cup including a central drive socket, the lower peripheral portion of the display means being snugly fitted within the drive cup; and

d) means engaged with the central drive socket for drivingly connecting the drive cup with the power output shaft of the drive mechanism to rotate the display means.

5,286,536

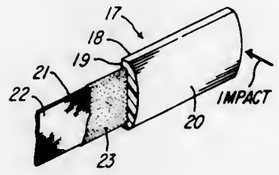
INDENTATION-RECOVERABLE MOLDING STRIP

Michael G. Gross, Tipp City, and Jack D. Young, Huber Heights, both of Ohio, assignors to Creative Extruded Products, Inc., Tipp City, Ohio

Filed Feb. 19, 1993, Ser. No. 22,482

Int. Cl.[5] B60R *13/04*

U.S. Cl. 428—31 **5 Claims**



1. An indentation-recoverable molding strip having a first first surface adapted to be mounted on a body, and an opposite exposed surface; the improvement wherein strip comprises a polymeric member and a woven fabric reinforcing layer extending along the longitudinal axis of said member and imbedded therein, said layer having a coating on its surfaces for improved adhesion of said layer within said member, said strip having a shrinkage no greater than 0.125% in a longitudinal direction when exposed to a temperature of 190 degrees F.

5,286,537

DOUBLE GLAZING GLASS

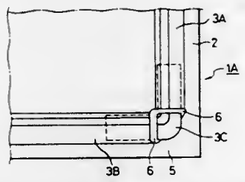
Shinji Oita; Kazuhiro Otani, both of Osaka, and Hiroaki Arai, Nara, all of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Tsutsunaka Plastic Industry Co., Ltd., Osaka, Japan

Filed Nov. 18, 1991, Ser. No. 793,155

Claims priority, application Japan, Dec. 27, 1990, 2-407996

Int. Cl.[5] E06B *3/24;* **E04C** *2/54*

U.S. Cl. 428—34 **8 Claims**



1. A double glazing glass comprising two transparent sheets, spacers disposed along edge parts of said transparent sheets to superpose said transparent sheets through the spacers, grooves disposed along the edge parts, each groove being defined by the two transparent sheets and the spacer, a primary sealant disposed between the transparent sheet and the spacer and joining said spacers to said transparent sheets, and a secondary sealant filled in the grooves, wherein at least one of said transparent sheets is a polycarbonate sheet and said secondary sealant is an alcohol silicone adhesive agent for completely and directly sealing between the two transparent sheets.

5,286,538

DISPOSABLE CONTAINER FOR MOIST PAPER TOWELS THE SAME

Leonard Pearlstein, 1441 Waverly Ave., Gladwyne, Pa. 19035, and Stuart P. Suskind, Wayne, Pa., assignors to Leonard Pearlstein, Gladwyne, Pa.

Continuation-in-part of Ser. No. 740,141, Aug. 5, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 923,556

Int. Cl.[5] B65D *71/00*

U.S. Cl. 428—34.2 **21 Claims**

1. A biodegradable, crush-resistant container for moist towels comprising:

a coated paperboard container having a Taber stiffness in the cross direction of the coated paperboard of at least 110, having a moisture resistant inner polymeric coating in a thickness of 0.5 to 6.0 mils, and having an outer barrier polymeric coating which is resistant to contamination and abrasion and which is water repellant, and

having therein moist towels having a lotion with a surface tension greater than about 27 dynes/cm.

5,286,539

GAS SEPARATING ASYMMETRIC MEMBRANE

Yoshihiro Kusuki; Toshimune Yoshinaga; Harutoshi Hoshino, and Shinji Asanuma, all of Chiba, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Sep. 9, 1992, Ser. No. 942,287

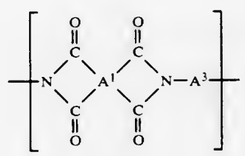
Claims priority, application Japan, Sep. 10, 1991, 3-307259

Int. Cl.[5] B32B *27/00;* **C08G** *69/26*

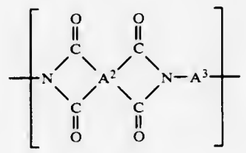
U.S. Cl. 96—10 **13 Claims**

1. A gas separating asymmetric hollow fiber membrane of an aromatic polyimide comprising a homogeneous layer and a porous layer which comprises recurring units of the formulae (I), and (II):

(I)



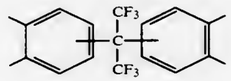
(II)



wherein

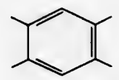
A^1 is a tetravalent unit having a diphenylhexafluoropropane structure expressed by the formula (III):

(III)



A^2 is a tetravalent unit having a benzene structure expressed by the formula (IV):

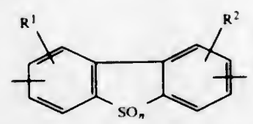
(IV)



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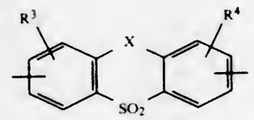
and

A^3 is a divalent unit selected from the group consisting of a unit expressed by the formula (VI):



(VI)

in which R^1 and R^2 independently represent hydrogen or an organic group and n is 0, 1 or 2, and a unit expressed by the formula (VII):



(VII)

in which R^3 and R^4 independently represent hydrogen or an organic group and X is $-CH_2-$ or $-CO-$,

said aromatic polyimide containing the recurring unit of the formula (I) in an amount of 40 to 90 molar % and the recurring unit of the formula (II) in an amount of 10 to 40 molar %.

5,286,540

BLOW MOLDED CONTAINER MADE OF POLYPROPYLENE RESIN

Yoshinori Suga, Machida; Eiji Tanaka, Kawasaki; Tsunemi Yoshioka, Kurashiki; Masaaki Uchida, Kurashiki; Hidehito Kato, Kurashiki, and Masayuki Arai, Kurashiki, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 613,697, Dec. 13, 1990, abandoned.
This application Mar. 19, 1993, Ser. No. 34,216
Claims priority, application Japan, Mar. 29, 1989, 1-77695; Mar. 30, 1989, 1-79174; Jan. 11, 1990, 2-4220; Jan. 11, 1990, 2-4221
Int. Cl.[5] C08L *23/10, 23/20;* **B65D** *1/26*
U.S. Cl. 428—36.92 **7 Claims**

1. A blow molded container made of a polypropylene resin obtained by injection stretch blow molding of a polypropylene resin, characterized in that the polypropylene resin contains from 0.0003 to less than 0.1% to by weight of a 3-methylbutene-1 polymer, the 3-methylbutene-1 polymer having a melting point of a least 300° C. and a heat of fusion of at least 9 cal/g.

5,286,541

COATED ABRASIVE HAVING COMBINATION BACKING MEMBER

Dhiraj H. Darjee; Richard W. Kalita, both of Ballston Lake; Gregg M. Bosak, Hoosick Falls; Eugene Zador, Ballston Lake, all of N.Y., and William F. McCutcheon, Mission, Tex., assignors to Norton Company, Worcester, Mass.

Filed Sep. 10, 1992, Ser. No. 943,077
Int. Cl.[5] C09K *3/14*
U.S. Cl. 428—40 **7 Claims**

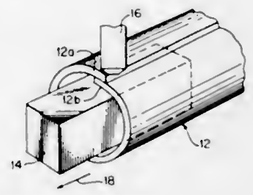
1. Coated abrasives material having a flexible backing member comprising, in combination, a flexible paper bottom member having top and bottom surfaces and an ionomer film layer adhered to the top surface of the bottom member and a maker coat adhered to the surface of the film layer component of the backing member, said maker coat having abrasive grains secured thereto, the peel adhesion strength between the film layer and the maker coat adhered thereto being greater than the ply adhesion strength of the paper bottom member and is at least 6 lbs/in.

5,286,542

WELDED NON-WOVEN ENDLESS BELT

Michael F. Susi, Newington, and Thomas E. Pramuka, Cromwell, both of Conn., assignors to Advanced Belt Technology, Middletown, Conn.

Filed Jun. 16, 1992, Ser. No. 899,373
Int. Cl.[5] B32B *3/00, 27/00;* **D04H** *1/04;* **G01J** *3/30*
U.S. Cl. 428—58 **12 Claims**



1. A composite belt comprising:

a substrate comprising an endless loop formed by a strip of a nonwoven, porous, open pore thermoplastic material having the ends thereof welded together by ultrasonic welding to form a weld region with substantially no increase in thickness, at the weld region;

at least one electrically conductive elastomeric coating on said substrate, the combined thickness of said substrate and said coating being less than 0.015 inches; and

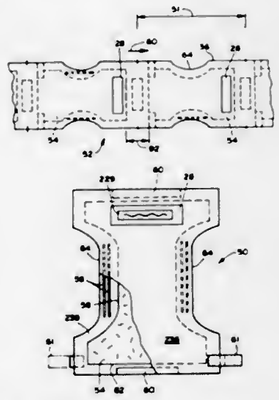
the porosity of said substrate being between about 0.1 cubic feet per minute and 25 cubic feet per minute as measured in terms of the air flow rate through the substrate using the Frazier CFM test method.

5,286,543

METHOD AND APPARATUS FOR CONTROLLING THE CUTTING AND PLACEMENT OF COMPONENTS ON A MOVING SUBSTRATE, AND ARTICLE MADE THEREWITH

Tanakon Ungpiyakul, Neenah; Christopher J. Sheleski, Menasha; Arch D. Morgan, Neenah, all of Wis.; Terry G. Hayes, Eden, Utah; Gene M. Gregory, Neenah, and Daniel J. Vander Heiden, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 832,511, Feb. 7, 1992, Pat. No. 5,235,515.
This application May 6, 1993, Ser. No. 59,945
Int. Cl.[5] A61F *13/15;* **B32B** *33/00*
U.S. Cl. 428—74 **1 Claim**



1. An article, comprising:

a backsheet layer;

a substantially liquid permeable topsheet layer disposed in an adjacent facing relation with said backsheet layer;

an absorbent pad sandwiched between said topsheet and backsheet layers; and

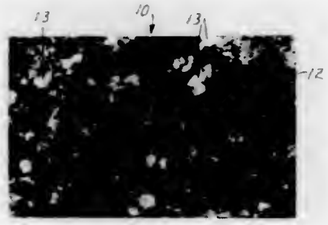
a relatively smaller patch of web material secured to an inward or outward facing surface of said backsheet layer, said patch having thereon at least one reference marker portion and a predetermined set of graphics which is congruously entire, said reference marker portion constructed to provide for a selected separating of said predetermined set of graphics from an interconnected plurality of graphic sets.

5,286,544

OIL AND RUBBER TREATED ROOFING GRANULES

Joseph Graham, Plymouth, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 28, 1990, Ser. No. 574,264
Int. Cl.[5] B32B *7/04*
U.S. Cl. 428—144 **28 Claims**



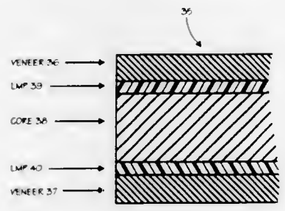
1. An article that comprises a colored roofing granule having the surface coated with a treatment composition that consists essentially of an oil and an elastomeric rubber which are compatible to each other.

5,286,545

LAMINATED WOODEN BOARD PRODUCT

Raymond C. Simmons, Jr., Greensboro, N.C., assignor to Southern Resin, Inc., Thomasville, N.C.

Filed Dec. 18, 1991, Ser. No. 809,947
Int. Cl.[5] B32B *27/10*
U.S. Cl. 428—192 **12 Claims**



1. A laminated wooden board product, comprising:

(a) a plurality of adjacent wooden sheets laid onto each other to form a laminate; and

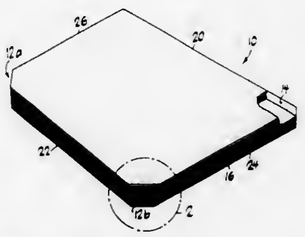
(b) a solid, dry adhesive bonding material positioned between adjacent wooden sheets and adhered to said adjacent sheets under heat and pressure to permanently secure said adjacent sheets together, said adhesive bonding material comprising a solid, dry low melt polyester having a melting temperature of between 200° F. and 275° F.

5,286,546

POSITION MARKING AND EASY TEARING-OFF FOR SELF-STICK REMOVABLE NOTE PAD OR SIMILAR DEVICES

Ping-Yao Su, 152-18 Union Tpke., Flushing, N.Y. 11367

Continuation of Ser. No. 776,608, Oct. 10, 1991, abandoned.
This application Jul. 24, 1992, Ser. No. 919,611
Int. Cl.[5] B32B *7/12, 7/14, 29/00*
U.S. Cl. 428—194 **5 Claims**



1. A note pad comprising:

a plurality of sheets arranged in overlying and coextensive relation, each of said sheets having top, bottom and side edges,

means for removably binding said sheets only at the back side of said top edges of each of said sheets to form a bound pad,

wherein said means for removably binding said sheets comprises a pressure-sensitive adhesive; and

position means for identifying the position of said bottom edge of each of said sheets, each of which is non-adhesive backed, to facilitate successive removal of each of said sheets from the bound pad;

wherein said position means comprises a diagonal edge cut in each of said sheets arranged in overlying relation with respect to each of said plurality of sheets and forms an inwardly slanted beveled corner in the pad,

wherein said diagonal cut edge is defined by the intersection of at least one of said side edges and said bottom edge;

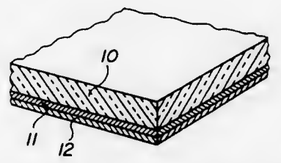
such that said bottom edge of the note pad is readily identifiable and said diagonal cut edge is of a size such that the thumb of a user of the note pad can easily remove each of said sheets from one another.

5,286,547

METHOD OF MAKING A PROTECTIVE AND/OR DECORATIVE COATING AND THE COATING MADE BY THIS METHOD

David W. Tyerman, Yverdon-les-Bains, Switzerland, assignor to Actino S.A., Switzerland

PCT No. PCT/CH89/00118, § 371 Date Feb. 22, 1990, § 102(e) Date Mar. 15, 1990, PCT Pub. No. WO89/12511, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 22, 1989, Ser. No. 459,789
Claims priority, application France, Jun. 23, 1988, 88 08629
Int. Cl.[5] B32B *3/00, 27/14*
U.S. Cl. 428—195 **14 Claims**



1. A method of manufacturing a protective decorative sur-

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facing laminate configured to be applied to any surface of an object comprising the steps of:

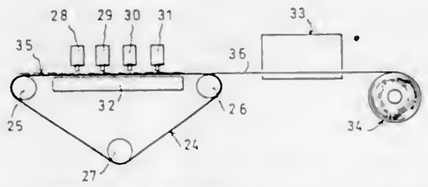
a) providing a sheet of synthetic polymer base support, having front and back faces;
b) cleaning and drying the sheet;
c) at least one of stabilizing and neutralizing static electrical charges on the cleaned and dried sheet;
d) applying a coating to the back face of the sheet, the coating comprising at least one of polyester ink, acrylic ink, dye, resin bonded pigments and polyurethane paint;
e) applying a protective layer over the exposed surface of the coating, the protective layer being suitable for attachment to an objection; and
f) simultaneously curing and drying the coating and the layer.

5,286,548

THERMOBONDING INTERLINING CONTAINING MICROFIBERS

Robert Bolliand, Ecully, and Pierre Groshens, Doingt Flamicourt, both of France, assignors to Lainiere de Picardie (S.A.), France

Filed Jul. 3, 1991, Ser. No. 725,509
Claims priority, application France, Jul. 12, 1990, 90 09255
Int. Cl.[5] B32B *27/14*
U.S. Cl. 428—198 **7 Claims**



1. Thermobonding interlining consisting in a nonwoven covered on one face with dots of thermobonding resin, said nonwoven being a web of fibers containing no binding agents, wherein said web has a g/m2 weight less than 50 and is produced from fibers having a mean diameter comprised between 1 and 5 μm.

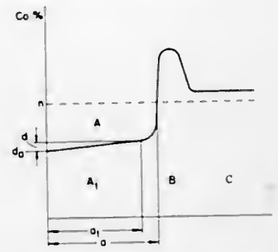
5,286,549

CEMENTED CARBIDE BODY USED PREFERABLY FOR ABRASIVE ROCK DRILLING AND MINERAL CUTTING

E. Torbjorn Hartzell; Jan Akerman, both of Stockholm, and Udo K. R. Fischer, Vallingby, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Feb. 18, 1992, Ser. No. 836,563
Claims priority, application Sweden, Feb. 18, 1991, 9100482-0
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—212 **9 Claims**

1. A cemented carbide body preferably for use in rock drilling and mineral cutting, comprising WC (alpha-phase) and a binder phase based on at least one of Co, Fe or Ni and comprising a core of eta-phase-containing cemented carbide surrounded by a surface zone of cemented carbide free of eta-phase, said surface zone having an inner part nearest the said core and an outer part, the outer part of the surface zone having a lower binder phase content than the nominal binder phase content of the cemented carbide body, the binder phase



content in the outer part of said outer part of the surface zone being substantially constant.

5,286,550

PROCESS FOR PRODUCING A PATTERNED METAL SURFACE

Edward C. Yu, St. Paul; Susan N. Bohlke; Andrew J. Ouderkirk, both of Woodbury, and Douglas S. Dunn, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 665,694, Mar. 7, 1991, Pat. No. 5,178,726.
This application Dec. 3, 1992, Ser. No. 985,838
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—212 **15 Claims**

3. An article comprising a layer of semicrystalline polymer having a pattern of metal the crystalline state of said polymer being quasi-amorphous either in areas not covered by said metal or under said metal on at least one surface, the crystalline state of said polymer being different under said metal than in areas not covered by metal.

5,286,551

MATERIAL TO PAVE SKATING RINKS

Vittorio Di Stefano, and Paolo Marini, both of Rome, Italy, assignors to Skitech S.r.l., Rome, Italy

PCT No. PCT/EP91/00006, § 371 Date Sep. 4, 1991, § 102(e) Date Sep. 4, 1991, PCT Pub. No. WO91/10486, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 4, 1991, Ser. No. 752,700
Claims priority, application Italy, Jan. 8, 1990, 47513 A/90
Int. Cl.[5] B32B *27/08, 7/04;* **B05D** *3/02*
U.S. Cl. 428—216 **9 Claims**

1. A material for the paving of rinks, said material having an upper skating surface layer and a lower layer, wherein the upper skating surface layer is about 100% rich in an A component and the said lower layer is about 100% rich in a B component and the composition of said material changing gradually between said upper skating surface layer and said lower layer; the A component having a melting temperature ranging from 30° C. to 130° C. and consisting of at least a compound selected from the group consisting of linear, branched or cyclic hydrocarbons, polymers and copolymers of ethylene, propylene, butylene and mixtures thereof; the B component consisting of a mixture of polymers and copolymers which are soluble in A when it is in the molten state and have a ductile/brittle transition temperature below the temperature at which the material is used.

5,286,552

PROCESS FOR THE PRODUCTION OF PROPYLENE POLYMER FILMS AND LAMINATES AND PRODUCTS THUS OBTAINED

Giuseppe Lesca; Vincenzo Giannella, both of Milan; Serafino Ongari, Rho, and Annibale Vezzoli, Carugo, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Feb. 25, 1991, Ser. No. 660,502
Claims priority, application Italy, Feb. 28, 1990, 19511 A/90
Int. Cl.[5] C08L *23/16, 53/00*
U.S. Cl. 428—220 **7 Claims**

1. A process for the production of a propylene polymer film comprising forming a film from a heterophasic propylene polymer composition obtained by sequential polymerization in at least two stages wherein components (B) and (C) are polymerized in the presence of component (A) polymerized in the first stage comprising:

(A) 10–60 parts by weight of homopolymer polypropylene having an isotactic index greater than 90, or of a crystalline copolymer of propylene with ethylene, other alpha-olefins or combinations thereof, containing more than 85% by weight of propylene and having an isotactic index greater than 85;
(B) 10–40 parts by weight of a semi-crystalline, essentially linear ethylene-propylene copolymer containing prevailingly ethylene, which is insoluble in xylene at room temperature;
(C) 30–60 parts by weight of an amorphous ethylene-propylene copolymer, which is soluble in xylene at room temperature and contains 40–70% by weight of ethylene;

said propylene polymer composition having a ratio between the intrinsic viscosities, in tetrahydronaphthalene at 135° C., of the portion soluble in xylene and of the portion insoluble in xylene at room temperature of from 0.8 to 1.2, and containing great than 40% by weight of component (C).

5,286,553

COMPOSITE SHEET FOR FIBROUS REINFORCING MATERIAL

Kelichi Haraguchi, Kusatsu, and Fumigo Goto, Nobeoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 465,185, Apr. 5, 1990, abandoned. This application Jul. 8, 1991, Ser. No. 728,026
Claims priority, application Japan, Dec. 15, 1988, 63-315091; Apr. 6, 1989, 1-85756
Int. Cl.[5] B32B *5/02*
U.S. Cl. 428—233 **5 Claims**



1. A composite sheet for a fibrous reinforcing material, which comprises a web comprising reinforcing continuous fibers having an elastic modulus of 5,000 kg/mm^2 or more, and a tensile strength of 100 kg/mm^2 or more, and thermoplastic polymer fibers in a single filamentary form, wherein the amount of the reinforcing continuous fibers is 5 to 80% by volume based on the composite sheet, and the thermoplastic polymer fibers in the single filamentary form are involved in the web-constituting continuous filaments in an entangled and integrated state.

5,286,554

SUBSTRATE MATERIALS SATURATED WITH LOW VAPORIZABLE ETHYLENICALLY UNSATURATED MONOMER EMISSION VINYL ESTER AND POLYESTER RESIN COMPOSITIONS

Terry W. Cowley, and Mary L. N. White, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 797,640, Nov. 25, 1991, Pat. No. 5,206,077. This application Dec. 24, 1992, Ser. No. 996,545
Int. Cl.[5] B32B *7/10, 27/04;* **D04H** *1/58*
U.S. Cl. 428—260 **4 Claims**

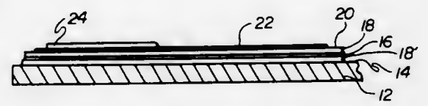
1. A substrate material saturated or impregnated with a curable composition comprising (A) at least one vinyl ester resin or at least one unsaturated polyester resin or a combination thereof; (B) at least one polymerizable, vaporizable, ethylenically unsaturated monomer; (C) a polymerizable, vaporizable, ethylenically unsaturated monomer emission suppression amount of ceresin wax; (D) a drying oil in an amount of from about 0.1 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer; (E) an epoxidized drying oil in an amount of from about 0.2 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer; and (F) a curing amount of a curing agent.

5,286,555

MULTILAYER SURFACE STRUCTURE COMPRISING LAYERS OF FIBER REINFORCED ELASTOMERIC MATERIAL, PARTICULATE MATERIALS AND A PROTECTIVE COATING

William C. Reed, P.O. Box 1267, Marathon, Fla. 33050

Filed Jun. 3, 1991, Ser. No. 709,672
Int. Cl.[5] B32B *5/16;* **B06N** *7/04;* **B02G** *3/00*
U.S. Cl. 428—283 **6 Claims**



1. A multilayer surface structure applied to the outer surface of an underlying structure, such as a roof, dock, walkway, pool, or the like, said multilayer surface structure comprising,

a first layer of elastomeric material on said outer surface of the underlying structure, said first layer having an inside surface and an outer surface,
a sheet of fabric embedded in the first layer of elastomeric material and comprising an intermediate layer,
a second layer comprising a continuous coating of silica sand on the outer surface of said first layer,
a third layer of hard protective material bonded to and covering the second layer selected from the group consisting of cementitious material, acrylic resin, epoxy resin and a combination of acrylic and epoxy resins, and
said sheet of fabric comprising a spun bonded, non-woven, isotropic, fabric composed of a co-axial, bi-component fiber with a polyester core and a polyamide skin coating said core.

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5,286,556

FIBER AGGREGATES SERVING AS SHAPED MATERIALS OR FILLERS FOR TEXTILES SUCH AS BEDSPREADS, GARMENTS OR THE LIKE, SHAPED MATERIALS AND FILLERS CONSISTING OF A PLURALITY OF SUCH FIBER AGGREGATES, TEXTILES CONTAINING THIS FILLER MATERIAL

Gunter Tesch, Avenue Jean-Marie-Musy 15, Fribourg, Switzerland CH-1700

PCT No. PCT/EP91/01353, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/01626, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 18, 1991, Ser. No. 842,187
Claims priority, application Switzerland, Jul. 18, 1990, 02374/90-3
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—288 13 Claims



1. Fiber aggregates for use as fillers for textiles such as bedspreads, garments or the like comprising: individual fiber aggregates having a maximum length of 50 mm, the fiber aggregates being smaller and softer than down, in that essentially all fibers are crimped and wherein the fibers of each individual fiber aggregate are randomly arranged therein and the fibers consist of a mixture of fine and coarse fibers.

5,286,557

COMPOSITE SHEET MOLDABLE MATERIAL

Karl I. Jacob, and Jal N. Kerawalla, both of Greenville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 606,664, Oct. 31, 1990, abandoned.
This application Nov. 5, 1992, Ser. No. 971,152
Int. Cl.[5] D04H *1/58*; B32B *27/00*
U.S. Cl. 428—288 1 Claim

1. A molded composite structure formed from a fiber reinforced resin matrix comprising: 30% to 40% by weight of polyethylene terephthalate reinforcing fibers having a denier per filament in the range of from 1.5 to 7 dpf and a cut length of from 1 to 2.5 inches and 60% to 70% by weight of resin matrix of a copolymer of polyethylene terephthalate and 12.5 mole % diethylene glycol, said molded structure having a Tensio'n Index of from 12 to 18, said structure having a molding temperature between the melting temperatures of the reinforcing fibers and the resin matrix.

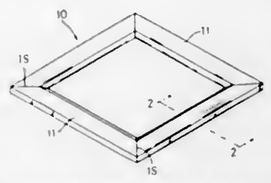
5,286,558

MAT FOR FRAME

Toshihiko Seo, and Atsuo Seo, both of Nagoya, Japan, assignors to Goshikaisha Seo Seigakusho, Nagoya, Japan and Garrett Moulding Company, Inc., Santa Cruz, Calif.

Filed Jun. 8, 1992, Ser. No. 895,030
Claims priority, application Japan, Jan. 8, 1992, 4-004073
Int. Cl.[5] A47G *1/12, 1/06*; B32B *3/16, 3/26*
U.S. Cl. 428—304.4 10 Claims

1. A mat for a frame for framing artwork comprising:
a plurality of elongated frame elements, each having a foamed synthetic resin substrate which is of predetermined thickness and width, each foamed synthetic substrate being covered by a layer of neutral paper, wherein said elongated frame elements each have a predetermined length with first and second ends cut at predetermined angles with respect to said length, said plurality of frame elements for connecting end to end so as to define an open



area through which the artwork to be framed can be viewed; and
wherein said foamed synthetic resin substrate of each elongated frame element is made of a sheet of low foaming polystyrene.

5,286,559

THERMAL TRANSFER SHEET

Hirokazu Kaneko, and Hideichiro Takeda, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 811,812, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 630,037, Dec. 19, 1990, Pat. No. 5,100,727. This application Feb. 24, 1993, Ser. No. 23,137
Claims priority, application Japan, Dec. 20, 1989, 1-330159
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—341 10 Claims

1. A thermal transfer sheet comprising substrate film, a transferable ink layer formed on one surface side of the substrate film, and a back coating layer formed on the other surface side of the substrate film to be in contact with a thermal head; wherein the transferable ink layer comprises a heat-fusible ink capable of being melted under heating, and the back coating layer comprises a binder predominantly comprising polyparabanic acid wherein said polyparabanic acid comprises a polymer prepared by hydrolyzing a cyclic addition polymer which is prepared by a hydrogen cyanide and a diisocyanate compound selected from at least one of 2, 4-tolylene diisocyanate and 2, 6-tolylene diisocyanate.

5,286,560

METHOD FOR INCREASING THE WETTABILITY OF ALUMINUM METAL TO ALUMINA CONTAINING FIBERS

Maya Fishkis; Chanakya Misra, both of Plum Boro, and Karl Wefers, Apollo, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 674,120, Mar. 25, 1991, abandoned.
This application Oct. 29, 1992, Ser. No. 968,473
Int. Cl.[5] C22C *1/09, 1/10*; B22D *19/14*; B32B *18/00*
U.S. Cl. 428—357 7 Claims

1. An aluminum alloy matrix composite containing alumina or aluminum silicate reinforcement whereby said composite material exhibits wetting between said reinforcement and said aluminum alloy, said composite comprising:
(a) alumina or aluminosilicate reinforcement;
(b) a matrix of aluminum or aluminum alloy; and



(c) an interlayer of mixed oxides of aluminum and boron at the interface between said reinforcement and said matrix wherein the interlayer of mixed oxides of aluminum and born includes but is not limited to the following oxides, B_2O, Al_2O_3, $2Al_2O_3.B_2O_3$ and $9Al_2O_32B_2O_3$.

5,286,561

POLY(ARYLENE SULFIDE)COMPOSITES AND METHODS OF PRODUCTION

Timothy W. Johnson, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 734,931, Jul. 24, 1991, Pat. No. 5,210,128. This application Jan. 14, 1993, Ser. No. 4,604
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—375 8 Claims

1. A method of preparing a continuous fiber-reinforced composite comprising the step of impregnating a continuous fiber material with a poly(arylene sulfide) resin composition by a pultrusion process wherein said poly(arylene sulfide) resin composition is originally in a solid, finely-divided form and said continuous fiber material is coated with said solid, finely-divided poly(arylene sulfide) resin composition by pulling said continuous fiber material through said solid, finely-divided poly(arylene sulfide) resin composition, wherein said solid, finely-divided poly(arylene sulfide) resin composition comprises a crystallizable arylene sulfide polymer and a nucleating agent and said solid, finely-divided poly(arylene sulfide) resin composition has been produced by a method comprising the steps of:
(a) forming a reaction system, said reaction system initially comprising (i) polymerization reactants which are reactable to form said crystallizable arylene sulfide polymer and (ii) a solvent;
(b) reacting said polymerization reactants to form said arylene sulfide polymer;
(c) after step (a), adding said nucleating agent to said reaction system; and
(d) after steps (b) and (c), recovering said poly(arylene sulfide) resin composition from said reaction system.

5,286,562

WEAVABLE TEXTILE GLASS STRAND

Mikhail M. Girgis, Wexford, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 523,150, May 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 278,390, Dec. 1, 1988, abandoned, which is a continuatioo-in-part of Ser. No. 217,464, Jul. 1, 1988, abandoned. This application Sep. 9, 1992, Ser. No. 942,482
Int. Cl.[5] B32B *9/00, 25/20*; D02G *3/00*
U.S. Cl. 428—391 14 Claims

1. Wound, weaveable and twisted textile glass fiber strand that is a unitary bundle of a multiplicity of glass fibers having thereon the heat or solvent cleanable, dried residue of an aqueous nonstarch, forming size composition that is an aqueous dispersion at ambient temperatures followed by subsequent drying without the addition of other chemical compounds, wherein on a weight basis the aqueous nonstarch, forming size composition, comprises:
at least 45 percent and up to around 90 percent but always as the predominant component of the nonaqueous components of the composition of at least one wax that is a solid at ambient temperatures and is in a solid-in-water dispersion or emulsion and is selected from the group consisting of microcrystalline wax, petroleum wax, and mixtures and blends thereof, and
a cationic lubricant and a second lubricating material selected from the group consisting of: with a molecular weight in the range of 300 to 12,000, polyalkylene polyols, and glycols wherein each of the lubricating materials are present in an amount less than the amount of the wax.

5,286,563

ACRYLIC FIBER STRAND SUITABLE FOR USE IN CARBON FIBER PRODUCTION AND PROCESS FOR PRODUCING THE SAME

Hayashi Takahashi, and Kazuhiro Yamamoto, both of Shizuoka, Japan, assignors to Toho Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,529
Claims priority, application Japan, Dec. 22, 1990, 2-418285
Int. Cl.[5] B05D *3/02*
U.S. Cl. 428—394 8 Claims

1. An acrylic fiber strand for use in carbon fiber production which comprises acrylic polymer filaments coated with an aminopolysiloxane and at least 10 parts by weight of a dialkyl sulfosuccinate per 100 parts by weight of the aminopolysiloxane, wherein the total amount of the aminopolysiloxane and the dialkyl sulfosuccinate is from 0.05 to 2.0% by weight based on the weight of dry fiber.

5,286,564

ELASTOPLASTIC POLYOLEFIN COMPOSITIONS

Giuliano Cecchin; Floriano Guglielmi; Anteo Pelliconi, all of Ferrara, and Emanuele Burgin, Bologna, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Jul. 23, 1991, Ser. No. 734,390
Claims priority, application Italy, Aug. 1, 1990, 21169 A/90
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C08L *23/10, 23/16*; C08F *297/08*
U.S. Cl. 428—402 5 Claims

1. A polyolefin composition prepared by sequential polymerization in at least two stages comprising:
(A) 10–50 parts by weight of a homopolymer of propylene with isotactic index greater than 80, or a copolymer of propylene with ethylene, a CH_2=CHR α-olefin where R is a 2–8 carbon alkyl radical or combinations thereof, which copolymer contains over 85% by weight of propylene and having an isotactic index greater than 80;
(B) 5–20 parts by weight of a copolymer fraction of ethylene and propylene or another CH_2=CHR α-olefin, where R is a 2–8 carbon alkyl radical, or combinations thereof, containing greater than about 51% by weight ethylene, insoluble in xylene at ambient temperature;
(C) 40–80 parts by weight of a copolymer fraction of ethylene and propylene or another CH_2=CHR α-olefin, where R is a 2–8 carbon alkyl radical, or combinations thereof, and optionally, minor portions of a diene, said fraction containing from 20 to less than 40% by weight of ethylene, being soluble in xylene at ambient temperature, and having an intrinsic viscosity from 1.5 to 4 dl/g; wherein the percent by weight of the sum of the (B) and (C) fractions with respect to the total polyolefin composition being from 50% to 90% and the (B)/(C) weight ratio being lower than 0.4, and said composition having a flex-

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ural modulus of less than 150 MPa, a tensile stress at break of from 10 to 20 Mpa, an elongation at break of higher than 400%, a tension set at 75% of from 20% to 50% and a haze of less than 40%.

5,286,565

OXIDATION RESISTANT CARBON AND METHOD FOR MAKING SAME

Robert A. Holzl, Flintridge, Calif.; Vincent L. Magnotta, Wescosville, Pa.; Paul N. Dyer, Allentown, Pa., and Howard P. Withers, Jr., Fleetwood, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 873,004, Jun. 11, 1986, which is a continuation-in-part of Ser. No. 654,329, Sep. 24, 1984, abandoned. This application Dec. 3, 1987, Ser. No. 131,479
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—408 30 Claims

1. A coated carbon body having improved resistance to high temperature oxidation comprising:

a carbon body,

said body having a converted porous layer formed by etching and reacting said carbon body with boron oxide, said converted layer containing interconnecting interstices and boron carbide formed by the reaction of boron oxide and said carbon body and

a glass forming coating at least a portion of which is within said converted layer, said coating comprising compounds selected from the group consisting of silicon nitride, silicon oxynitride and mixtures thereof.

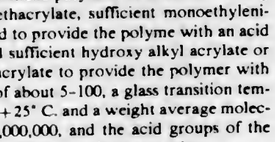
5,286,566

ELECTRICALLY CONDUCTIVE ELASTOMER

Edward L. Schlueter, Jr.; Henry L. Manuel, both of Rochester; James F. Smith, Ontario; Thomas C. Parker, Rochester, and Robert M. Ferguson, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 37,144, Mar. 25, 1993, Pat. No. 5,259,989. This application Aug. 31, 1993, Ser. No. 113,929
Int. Cl.[5] B32B *27/38*
U.S. Cl. 428—413 17 Claims

1. A member for electrically cooperating with an imaging support surface to attract charged toner particles from the support surface towards the member comprising a conductive substrate for supporting a uniform bias potential thereon and at least one coating on said substrate having an electrical resistivity such that the coating is capable of transmitting a bias potential from the substrate to the outer periphery of the coating, said coating comprising an electrically conductive polyurethane elastomer obtained by the reaction of a polytetramethylene ether glycol having the formula $HO[(CH_2)_4O]_xH$ where x is from 8 to 41 and from about 20 to about 95 parts by weight per 100 parts by weight of said glycol of at least one diisocyanate, a sufficient amount of cross linking agents and chain extenders to provide a crosslinked elastomer and an amount of an asymmetric ionic quarternary ammonium salt having the formula:



where R_1, R_2, R_3, R_4 and R_5 are C_nH_{2n+1} and $1 \leqq n \leqq 25$ sufficient to provide a D.C. volume resistivity of from about 10^7 to about 10^{11} ohm cm.

5,286,567

PELLICLE FOR PHOTOLITHOGRAPHIC MASK

Yoshihiro Kubota; Meguru Kashida; Yoshihiko Nagata, and Hitoshi Noguchi, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,792
Claims priority, application Japan, Jul. 23, 1991, 3-206588
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—422 2 Claims

1. A pellicle for a photolithographic mask made from an amorphous fluorocarbon resin which is a copolymer of tetrafluoroethylene and a fluorocarbon monomer copolymerizable therewith and capable of introducing a cyclic perfluoroether into the molecular structure of the copolymer wherein at least one of the surfaces is rendered hydrophilic and has a contact angle of water on the surface not exceeding 90° C. at room temperature.

5,286,568

ELECTRICALLY CONDUCTIVE GASKET MATERIALS

John E. Bacino, Landenberg, and James R. Hanrahan, Springfield, both of Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 680,444, Apr. 4, 1991. This application Sep. 30, 1992, Ser. No. 954,426
Int. Cl.[5] B32B *27/00, 3/26*
U.S. Cl. 428—422 6 Claims

1. A gasket comprising:

a) a substrate layer of porous expanded polytetrafluoroethylene having electrically conductive particles therein,

b) a coating on said substrate comprising a copolymer of tetrafluoroethylene and a fluorinated comonomer having electrically-conductive particles therein;

wherein the gasket is electrically conductive; and

wherein the gasket resists adhesion to surfaces between which it is compressed.

5,286,569

WATERBASED ACRYLIC SILANE AND POLYURETHANE CONTAINING COATING COMPOSITION

Ervin R. Werner, Jr., 33 Hunt Rd., Levittown, Pa. 19056, and Eileen A. Konsza, Box 307, Colony Ct., Swedesboro, N.J. 08085

Division of Ser. No. 568,488, Aug. 16, 1990, Pat. No. 5,204,404, which is a continuation-in-part of Ser. No. 326,724, Mar. 21, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 993,475
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—423.1 7 Claims

1. A substrate coated with a dried and cured layer of a waterbased coating composition comprising about 10–30% by weight of film forming binder dispersed in an aqueous carrier and has a pH of about 7–10; wherein the binder consists essentially of a blend of a dispersed acrylic silane polymer and a dispersed polyurethane of about

a. 60–90% by weight, based on the weight of the binder, of an acrylic silane polymer consisting essentially of polymerized monomers of alkyl methacrylate, alkyl acrylate or mixtures thereof, 1–10% by weight, based on the weight of the acrylic silane polymer, of silane containing alkyl acrylate or methacrylate, sufficient monoethylenically unsaturated acid to provide the polyme with an acid number of 2–100 and sufficient hydroxy alkyl acrylate or hydroxy alkyl methacrylate to provide the polymer with a hydroxyl number of about 5–100, a glass transition temperature of −40° to +25° C. and a weight average molecular of 500,000 to 3,000,000, and the acid groups of the polymer are reacted with ammonia or an amine;

b. 10–40% by weight, based on the weight of the binder, of the dispersed polyurethane selected from the group consisting of polyester urethane, polyether urethane of polyacrylourethane.

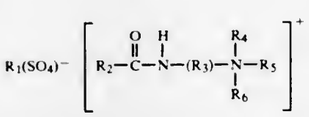
5,286,570

ELECTRICALLY CONDUCTIVE POLYURETHANE ELASTOMER

Edward L. Schlueter, Jr.; Henry Manuel, both of Rochester; James F. Smith, Ontario; Thomas C. Parker, Webster, and Robert M. Ferguson, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 37,145, Mar. 25, 1993, Pat. No. 5,259,990. This application Aug. 31, 1993, Ser. No. 113,629
Int. Cl.[5] B32B *27/00;* C08G *77/04*
U.S. Cl. 428—423.1 15 Claims

1. A member for electrically cooperating with an imaging support surface to attract charged toner particles from the support surface towards the member comprising a conductive substrate for supporting a uniform bias potential thereon and at least one coating on said substrate having an electrical resistivity such that the coating is capable of transmitting a bias potential from the substrate to the outer periphery of the coating, said coating comprising an electrically conductive polyurethane elastomer obtained by the reaction of a polytetramethylene ether glycol having the formula $HO[(CH_2)_4O]_xH$ where x is from 8 to 41 and from about 20 to about 95 parts by weight per 100 parts by weight of said glycol of at least one diisocyanate, a sufficient amount of cross linking agents and chain extenders to provide a crosslinked elastomer and an amount of an asymmetric ionic quarternary ammonium salt having the formula:



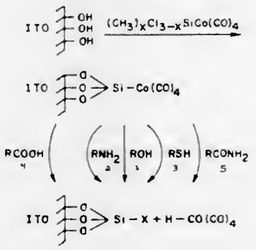
where R_1, R_2, R_3, R_4, R_5 and R_6 are C_nH_{2n+1} and $1 \leqq n \leqq 25$ sufficient to provide a resistivity of from about 10^7 to about 10^{11} ohm cm.

5,286,571

MOLECULAR MODIFICATION REAGENT AND METHOD TO FUNCTIONALIZE OXIDE SURFACES

Chad A. Mirkin, Skokie, and Kaimin Chen, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Aug. 21, 1992, Ser. No. 933,260
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—428 3 Claims



1. A composition of matter comprising an inorganic oxide substrate having surface oxygens bonded to silylcobalt tetracarbonyl groups.

5,286,572

PLANARIZING LADDER-TYPE SILSEQUIOXANE POLYMER INSULATION LAYER

Donna J. Clodgo; Rosemary A. Previti-Kelly; Ronald R. Uttecht, Essex Junction, and Erick G. Walton, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 589,955, Sep. 28, 1990, abandoned, which is a division of Ser. No. 276,597, Nov. 28, 1988, Pat. No. 4,981,530. This application Jul. 30, 1992, Ser. No. 924,414
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—447 15 Claims

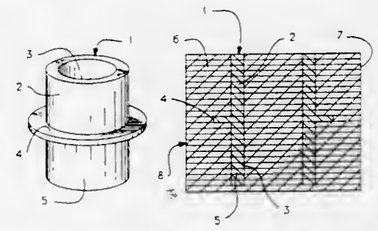
1. An insulation layer on a microelectric device, comprising a cured ladder silsesquioxane polymer prepared by reacting water with an aminotrialkoxysilane monomer in a solvent to form a solution of an oligomer in said solvent, said reaction being carried out by employing a mole ratio of total water in the reaction system/aminotrialkoxysilane monomer in the range from about 1.4/1 to about 1.6/1; allowing said solution to age for a period of time which is sufficient to allow condensation reactions to stabilize; coating a surface of a microelectronic device with a layer of said aged solution; and heating said layer in an essentially oxygen-free atmosphere and at a temperature in excess of about 150° C. so as to effect formation of said polymer.

5,286,573

METHOD AND SUPPORT STRUCTURES FOR CREATION OF OBJECTS BY LAYER DEPOSITION

Fritz Prinz, 6558 Darlington Rd., and Lee Weiss, 5801 Northumberland St., both of Pittsburgh, Pa. 15217

Continuation-in-part of Ser. No. 829,767, Jan. 31, 1992, which is a continuation-in-part of Ser. No. 620,745, Dec. 3, 1990, Pat. No. 5,126,529. This application Sep. 17, 1992, Ser. No. 946,969
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—457 11 Claims



1. A support structure for use in the manufacture of three-dimensional objects formed from a deposition material by incremental build-up of layers of deposition material layers and adjacent support structure layers, the support structure comprised of a plurality of layers, each support structure layer having at least one article face shaped such that a combination of all article faces defines an object to be manufactured, at least one of the support structure layers comprising:

(a) a first material; and

(b) a coating of a second material placed upon the first material in a manner so that at least a portion of the coating is adjacent to an article face wherein the deposition, material first material and the second material are selected to permit the manufacture of the three-dimensional objects by incremental build-up of layers of deposition material and the support structure and at least a portion of the support structure is removable from a manufactured three-dimensional object.

VOL 1159 ISS 3 FE 15 1994 UMI

5,286,574
METAL COMPOSITE GASKET MATERIAL
Richard P. Foster, Norwood, Mass., assignor to Hollingsworth & Vose Company, East Walpole, Mass.
Continuation of Ser. No. 861,477, Apr. 1, 1992, Pat. No. 5,240,766. This application Jun. 11, 1993, Ser. No. 75,994
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—457 17 Claims

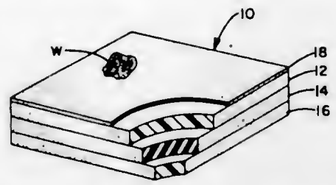
1. A hard gasket material comprising:
a composite component comprising a fibrillated or nonfibrillated fiber component, having thermal stability at temperatures at least as high as 200° C., and selected from the group consisting of natural fibers, carbon fibers, synthetic fibers and mineral fibers; a filler component wherein at least 20 percent by weight of the filler comprises a salt of a multivalent metal cation and a sterically hindered dicarboxylic acid; and an elastomeric binder component; and
a metal material laminated to the composite component,
the gasket material demonstrating good sealability properties and a thermal stability at temperatures at least as high as 250° C.

5,286,575
BLENDS OF ETHYLENE VINYL ALCOHOL COPOLYMER AND POLYAMIDES, AND MULTILAYER CONTAINERS MADE THEREFROM
Richard T.-H. Chou, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 554,776, Jul. 19, 1990, Pat. No. 5,126,401, which is a continuation-in-part of Ser. No. 301,473, Jan. 26, 1989, Pat. No. 4,990,562, which is a continuation-in-part of Ser. No. 88,261, Aug. 24, 1987, abandoned. This application Jun. 5, 1992, Ser. No. 893,996
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] C08L *29/02, 77/02*
U.S. Cl. 428—474.4 7 Claims

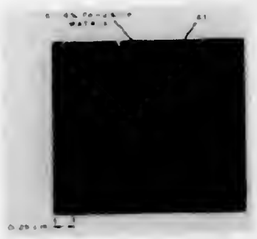
1. A blend comprising:
(a) about 5 to about 95 percent by weight of an ethylene vinyl alcohol copolymer ("EVOH") having a copolymerized ethylene content of about 20 to about 60 mole percent and a degree of saponification of at least about 90%, and
(b) about 95 to about 5 percent by weight of a amorphous polyamide having a glass transition temperature in the range of about 80° to 100° C.,
wherein the resulting blend provides separate domains of EVOH and polyamide.

5,286,576
COMPRESSION MOLDED FLAME RETARDANT AND HIGH IMPACT STRENGTH ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITION
Raymond C. Srail, Parma; Richard A. Glover, Brookpark, and Roy L. Orndorff, Jr., Kent, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio
Continuation of Ser. No. 396,251, Aug. 21, 1989, abandoned. This application Sep. 12, 1991, Ser. No. 759,988
Int. Cl.[5] B32B *27/32;* C08K *3/32*
U.S. Cl. 428—517 19 Claims

1. A compression molded polymer composition having good flame retardancy and high impact strength, comprising:
a) a polymer which is a high impact strength ultra-high molecular weight polyethylene (UHMWPE) which is free of halogen and cyanide or derivatives thereof on combustion;
b) at least 4.40 percent by volume as molded ammonium polyphosphate (APP); and
c) at least 6 percent by volume as molded of chopped glass fibers;
wherein the maximum amount of component (b) in combination with component (c) as molded is an amount such that composition has a notched Izod impact strength of at least about 7 ft.lbs. per inch of width, wherein the bulk volume percent fiberglass (BVPF) prior to molding is at least about 27 percent of the volume of the polymer composition as molded, and wherein said polymer composition exhibits no flame drip according to ASTM E-162.



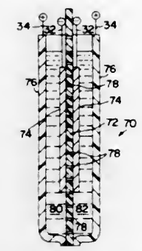
5,286,577
DRAWN CONDUCTORS FOR CRYOGENIC APPLICATIONS
M. K. Premkumar, Monroeville, Pa., and Gary W. Malette, Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Jul. 23, 1990, Ser. No. 557,218
Int. Cl.[5] B32B *15/20*
U.S. Cl. 428—558 11 Claims



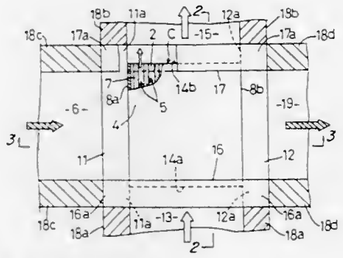
1. A composite product comprising at least one co-drawn conductor and a matrix, said conductor consisting essentially of substantially pure aluminum and said matrix comprising an aluminum alloy selected from the group consisting of:
(a) Al-Fe-V-Si aluminum alloy and
(b) an aluminum alloy consisting essentially of 3 to 5 wt.% Fe, 1 to 3 wt.% Ce, balance substantially aluminum.

5,286,578
COLLAPSIBLE ELECTROCHEMICAL CELL ASSEMBLY AND BATTERY ASSEMBLY COMPRISED OF A PLURALITY OF COLLAPSIBLE ELECTROCHEMICAL CELLS
Bhaskara M. L. Rao, Flemington, and William Kobasz, Edison, both of N.J., assignors to Alupower, Inc., Flemington, N.J.
Filed Jul. 30, 1992, Ser. No. 922,158
Int. Cl.[5] H01M *12/06*
U.S. Cl. 429—28 14 Claims

1. A collapsible electrochemical cell, which comprises:
a first flexible side wall member affixed to a second side wall member forming an expandable chamber for an electrolyte, one of said side walls formed with an air cathode mounted by a dielectric spacer to an electronegative member, said electronegative member being disposed within said chamber, said air cathode member having a hydrophobic layer facing outwardly from said electrochemical cell.



5,286,579
FUEL CELL
Kosuke Akagi, Ikoma, Japan, assignor to Osaka Gas Co., Ltd., Osaka, Japan
Filed Jul. 30, 1991, Ser. No. 737,673
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—33 20 Claims

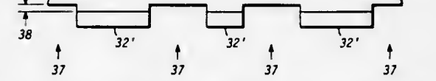


1. A fuel cell comprising.
a plurality of cells, each cell including;
a three-layer plate member having an electrolyte layer, an oxygen electrode attached to one face of the electrolyte layer and a fuel electrode attached to the other face of the electrolyte layer,
a separator affixed only to the oxygen electrode, and
an oxygen-containing gas flow passage formed between the oxygen electrode and the separator;
a plurality of fuel flow passages each formed between an adjacent pair of said cells;
first and second partition wall members respectively disposed tightly adjacent a pair of opposed end faces of said cell to which faces said oxygen-containing gas flow passage is closed by said separator;
third and fourth partition wall members respectively disposed along a pair of opposed cell edge portions where said oxygen-containing gas flow passage is open between said adjacent pair of cells;
said first and second partition wall members having end portions thereof projecting relative to said cell; and
said third and fourth partition wall members having end portions thereof projecting relative to said cell and placed in tight overlapping contact with said end portions of said first and second partition wall members.

5,286,580
FUEL ELECTRODE FOR SOLID ELECTROLYTE FUEL CELLS AND A METHOD FOR MANUFACTURE OF THE ELECTRODE
Masamichi Ippommatsu, Hyogo; Minoru Suzuki, Osaka; Horikazu Sasaki, Osaka; Shoji Otoshi, Osaka, and Hisao Ohnishi, Osaka, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan
Filed Feb. 4, 1991, Ser. No. 650,138
Claims priority, application Japan, Feb. 9, 1990, 2-30224
Int. Cl.[5] H01M *4/88, 4/86, 4/90;* B05D *5/12*
U.S. Cl. 429—40 14 Claims

1. A high-temperature solid electrolyte fuel cell comprising a porous fuel electrode and an air electrode, said porous fuel electrode consisting essentially of an electrode material and high-melting metal having a melting point of not less than 1,900° C., wherein said high-melting is at least one member selected from the group consisting of ruthenium, osmium, rhodium, iridium and alloys thereof.

5,286,581
PHASE-SHIFT MASK AND METHOD FOR MAKING
Fourmun Lee, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 19, 1991, Ser. No. 746,546
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 14 Claims



1. A method for making a phase-shift mask comprising, the steps of:
providing a mask plate;
depositing a semitransparent layer having a percent transmission from approximately 10 percent to 35 percent on the mask plate;
depositing a phase-shift layer on the semitransparent layer;
applying a photosensitive layer onto the phase-shift layer;
defining the photosensitive layer into geometric patterns, wherein portions of the phase-shift layer are exposed, while other portions of the phase-shift layer are covered by the photosensitive layer;
etching the exposed portions of the phase-shift layer, thereby transferring the geometric patterns from the photosensitive layer into the phase-shift layer and exposing portions of the semitransparent layer; and
etching the exposed portions of the semitransparent layer, transferring the geometric patterns from the phase-shift layer into the semitransparent layer, thereby producing geometric patterns of both the phase-shift layer and the semitransparent layer with substantially identical dimensions.

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5,286,582

MONAQUEOUS ELECTROLYTE SECONDARY BATTERY AND PROCESS FOR PRODUCING POSITIVE ACTIVE MATERIALS

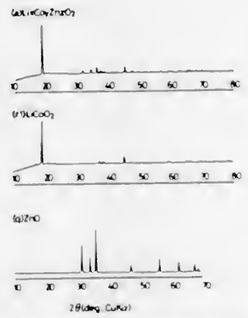
Kensuke Tahara; Hideki Ishikawa, and Tsugio Sakai, all of Sendai, Japan, assignors to Seiko Electronic Components Ltd., Japan

Filed Nov. 1, 1991, Ser. No. 786,431

Claims priority, application Japan, Nov. 2, 1990, 2-298213; Dec. 21, 1990, 2-405204; Dec. 21, 1990, 2-405205; Apr. 23, 1991, 3-92462; May 13, 1991, 3-107677; Jun. 11, 1991, 3-139246; Oct. 1, 1991, 3-253921

Int. Cl.[5] H01M *4/48, 4/52*

U.S. Cl. 429—218 **10 Claims**



1. A nonaqueous electrolyte secondary battery comprising: a negative electrode having lithium or a material capable of absorbing and releasing lithium as an active material; a lithium ion conductive nonaqueous electrolyte; and a positive electrode having an active material composed of a layer-like structure composite oxide

$$Li_xM_yL_zO_2 \quad (1)$$

wherein M is one or more transition metal elements selected from Groups IIIB, IVB, VB, VIB, VIIB and VIII of the periodic table and L is one or more elements selected from the group consisting of nonmetal, metalloid and semimetal elements selected from Groups IIIA, IVB and VA of the periodic table, alkaline earth metal elements and metal elements selected from Zn and Cu, and x, y and z are $0<x\leqq 1.15$ and $0.85\leqq y+z\leqq 1.3$ and $0<z$.

5,286,583

METHOD OF MANUFACTURING A PHOTOMASK FOR AN OPTICAL MEMORY

Junji Hirokane; Tetsuya Inui, both of Nara; Michinobu Mieda, Shiki, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,616

Claims priority, application Japan, Nov. 30, 1990, 2-339758

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 **7 Claims**

1. A method of manufacturing a photomask for an optical memory with said photomask having guide tracks and formatting pits with differing amounts of optical transmission, comprising the steps of:

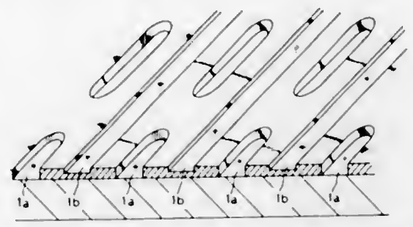
(a) Forming on a transparent substrate a thin film of a material through which the amount of light transmission depends upon its thickness;

(b) forming a photoresist film on the thin film;

(c) exposing the photoresist film on the guide tracks and the formatting pits to light having different relative light intensities wherein the photoresist over the guide tracks is exposed to relatively less intense light than the photoresist over the formatting pits;

(d) developing the photoresist film to expose the thin film at the formatting pits and to retain some photoresist film at the guide tracks;

(e) etching the thin film at the formatting pits only;



(f) eliminating the photoresist film to expose the thin film at the guide tracks;

(g) etching the thin film essentially to expose the transparent substrate at the formatting pits; and

(h) eliminating the remnant photoresist.

5,286,584

METHOD OF MANUFACTURING A DEVICE AND GROUP OF MASKS FOR THIS METHOD

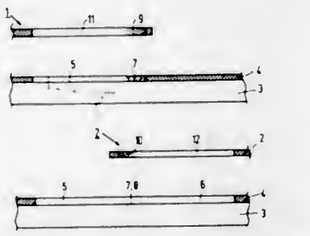
Jan W. Gemmink; Wilhelmus H. M. Geerts, and Marcel Dissel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 629,872, Dec. 19, 1990, abandoned. This application Oct. 26, 1992, Ser. No. 966,667

Claims priority, application Netherlands, Dec. 20, 1989, 8903108

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—5 **6 Claims**



1. A group of masks comprising at least two partial masks in which each of the partial masks has at least one peripheral region for obtaining an overlapping connection region in a photoresist layer illuminated through said partial masks, the at least two peripheral regions comprising ends of transparent regions whose ends in the one peripheral region correspond to ends in the other peripheral region, characterized in that the mutually corresponding ends of the transparent regions have complementary negative transparency gradients.

5,286,585

METHOD OF FORMING A PHOSPHOR LAYER ON THE SCREEN PANEL OF A CATHODE-RAY TUBE

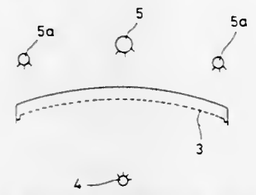
Jae K. Lee, Kyungsangbook-Do, Rep. of Korea, assignor to GoldStar Co., Ltd., Rep. of Korea

Filed Dec. 23, 1991, Ser. No. 812,475

Claims priority, application Rep. of Korea, Dec. 29, 1990, 90-22407

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—23 **1 Claim**



1. A method of forming a phosphor layer on a screen panel of a cathode-ray tube, consisting of the steps:

charging phosphor slurry on the inside of said screen panel;

rotating said screen panel to spread said phosphor slurry forming said phosphor layer; and

exposing said screen panel and said phosphor layer to a light disposed in front of the inside of said screen panel and a plurality of lights disposed in front of the outside of said screen panel,

wherein said plurality of lights disposed in the front of the outside of said screen panel are respectively disposed in front of a central portion and four corners of said screen panels.

5,286,586

SCRIBED SEAMED IMAGING FLEXIBLE MEMBER AND METHOD OF CONSTRUCTING A FLEXIBLE IMAGING SHEET

Geoffrey M. T. Foley, Fairport, and Robert C. U. Yu, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1991, Ser. No. 815,310

Int. Cl.[5] G03G *5/10; B32B 3/00*

U.S. Cl. 430—56 **18 Claims**

1. A flexible imaging member, comprising:

a sheet having opposed marginal end regions; and

means, defining a surface having at least one groove therein with one end of said surface being integral with one end of said sheet, for securing the opposed marginal end regions of said sheet to one another, wherein the groove penetrates less than the entire thickness of said imaging member, said securing means minimizing stress on said sheet.

5,286,587

ELECTROPHOTOGRAPHIC PHOTORECEPTOR AND PROCESS FOR PRODUCING THE SAME

Seiji Ashiya, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,383

Claims priority, application Japan, Feb. 19, 1991, 3-045445

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—58 **15 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate having thereon at least a charge generating layer and a charge transporting layer, in which said charge generating layer is a vacuum deposited film of a sublimable organic pigment and has an iron content of not more than 100 ppm and a sulfur content of not more than 500 ppm.

5,286,588

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Yasuo Suzuki, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 565,160, Aug. 10, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 952,154

Claims priority, application Japan, Aug. 24, 1989, 1-217985

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—58 **45 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support, and a photoconductive layer formed thereon, comprising (i) a charge generating material, (ii) a charge transporting material, and (iii) a hydroquinone compound having at least one group which contains 4 or more carbon atoms.

11. The electrophotographic photoconductor as claimed in claim **1**, wherein said photoconductive layer comprises a charge generating layer comprising said charge generating material and a charge transporting layer comprising said charge transporting material, said charge generating layer and said charge transporting layer being formed on said electroconductive support in an optional order, said hydroquinone compound being contained in one of or both of said charge generating layer and said charge transporting layer.

5,286,589

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

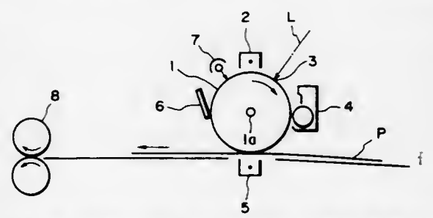
Shintetsu Go; Kazushi Iuchi, both of Yokohama; Toshie Miyaji, Kawasaki; Hajime Miyazaki, Yokohama; Hideyuki Takai, Yokohama, and Masakazu Matsumoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 766,976, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 488,732, Feb. 26, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,137

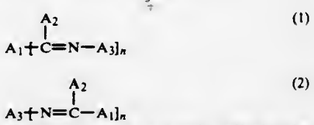
Claims priority, application Japan, Feb. 27, 1989, 1-045712

Int. Cl.[5] G03G *5/06, 5/047, 15/22*

U.S. Cl. 430—58 **13 Claims**



1. An electrophotographic photosensitive member having a photosensitive layer on an electroconductive support, said photosensitive layer comprising a laminated structure of a charge-generating layer on the electroconductive support and a charge-transporting layer on the charge-generating layer, wherein said charge generating layer contains a dispersed compound having a structure represented by the general formula (1) or (2) as a charge-generating material:



$$A_1\text{-}\underset{\displaystyle A_2}{\overset{|}{C}}\text{=N-}A_3]_n \quad (1)$$

$$A_3\text{-}N\text{=}\underset{\displaystyle A_2}{\overset{|}{C}}\text{-}A_1]_n \quad (2)$$

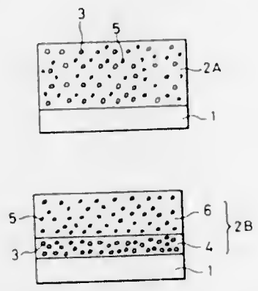
wherein A_1 and A_3 are respectively an aromatic radical or an aromatic heterocyclic radical; wherein when A_3 is an electron-accepting moiety, then A_1 is an electron-donating moiety and when A_3 is an electron-donating moiety, then A_1 is an electron-accepting moiety; A_2 is hydrogen atom and n is an integer of 1, 2, or 3.

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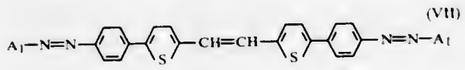
5,286,590
BISAZO PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Masami Kuroda; Masayo Amano, and Noboru Furusho, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

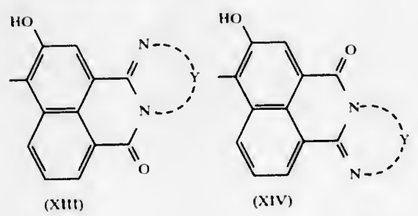
Division of Ser. No. 15,915, Feb. 10, 1993, which is a division of Ser. No. 982,897, Nov. 30, 1992, which is a division of Ser. No. 799,601, Nov. 27, 1991, Pat. No. 5,198,318, which is a division of Ser. No. 530,088, May 31, 1990, Pat. No. 5,087,541. This application Jun. 11, 1993, Ser. No. 74,545
Claims priority, application Japan, Jun. 6, 1989, 1-143523
Int. Cl.[5] G03G *5/047, 5/06*
U.S. Cl. 430—58 **3 Claims**

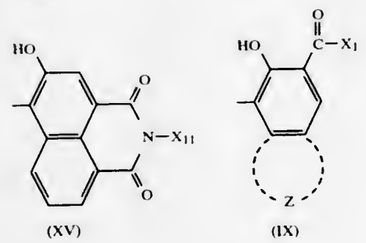


1. A photoconductor for electrophotography, comprising:
an electroconductive substrate; and
a photosensitive layer formed on said electroconductive substrate and including a charge transporting substance and a charge generating substance which is at least one bisazo compounds represented by general formula (VII):

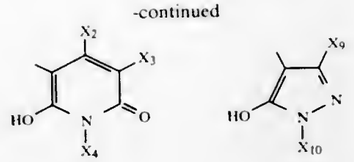


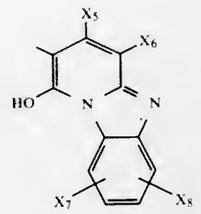
wherein A_1 is a coupler residual group represented by one of general formulae (IX) to (XV):





-continued





wherein Z is a residual group which condenses with a benzene ring to form an aromatic polycycle or heterocycle, X_1 is one of OR_1 and NR_2R_3, each of R_1, R_2 and R_3 is selected from the group consisting of a hydrogen atom, an alkyl group, an aryl group and a heterocyclic group, which groups may be substituted each of X_2 and X_5 is selected from the group consisting of an alkyl group, an aryl group and a heterocyclic group, which groups may be substituted, each of X_3 and X_6 is selected from the group consisting of a hydrogen atom, a cyano group, a carbamoyl group, a carboxyl group, an ester group and an acyl group, each of X_4 and X_{11} is selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group and a heterocyclic group, each of X_7 and X_8 is selected from the group consisting of a hydrogen atom, a halogen atom, a nitro group, an alkyl group and an alkoxy group, the alkyl group and the alkoxy group of which may be substituted, X_9 is selected from the group consisting of an alkyl group, an aryl group, a carboxyl group and an ester group, X_{10} is one of an aryl group and a heterocyclic group, which groups may be substituted, and Y is a residual group which forms an aromatic ring or a heterocycle.

3. The photoconductor as claimed in claim 1, wherein said photosensitive layer comprises a laminate of a charge transporting layer mainly composed of the charge transporting substance and a binder, and a charge generating layer including the charge generating substance and a binder.

5,286,591
ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH SUBBING LAYER

Kazuya Hongo, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,766
Claims priority, application Japan, Jul. 10, 1991, 3-196011
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—60 **6 Claims**

1. An electrophotographic photoreceptor comprising an electrically conductive substrate having thereon a subbing layer and a photosensitive layer, wherein said subbing layer contains (a) an organic metal chelate compound or an organic metal alkoxide compound and (b) a hygroscopic compound having at least two carboxyl groups per molecule, wherein said hygroscopic compound is present in an amount of from 0.01 to 10% by weight based on the solids content of the subbing layer.

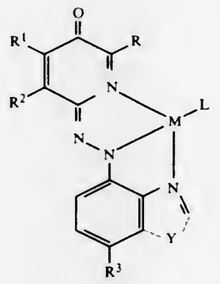
5,286,592
ELECTROSTATOGRAPHIC TONER CONTAINING CYAN PIGMENT

Brian H. Johnston, and Thomas H. Whitesides, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1992, Ser. No. 888,697
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—106 **18 Claims**

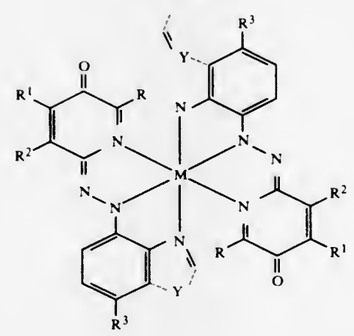
1. A dry, particulate electrostatographic toner composition comprising a binder polymer having mixed therewith a cyan pigment having a structure selected from the group consisting of:

a)



and

b)



wherein:
R is selected from the group consisting of OH and NH_2;
R^1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl;
R^2 is selected from the group consisting of hydrogen, an alkyl group having from 1 to about 6 carbon atoms, acyl, aryl, aralkyl, alkylsulfonyl, amino, alkoxy, halogen, morpholino, phenylsulfamoyl sulfonamido, sulfamoyl, carboxy and sulfo and hydrolyzable precursors thereof;
R^3 is an electron withdrawing group;
Y equals the number of atoms necessary to form an indole ring or a quinoline ring containing either hydrogen or a COOH group in the 2-position;
L is a ligand; and
M is a divalent or trivalent coordinate metal ion;
said toner having an average particle size within the range of from about 0.1 to about 100 microns.

5,286,593
LIQUID DEVELOPER CONTAINING STABILIZED CHARGE DIRECTOR COMPOSITION

Benzion Landa, Edmonton, Canada, and Yaacov Almog, Rehovat, Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands

Division of Ser. No. 630,339, Dec. 17, 1990, Pat. No. 5,264,313, which is a continuation of Ser. No. 306,155, Feb. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 45,168, Apr. 24, 1987, Pat. No. 4,842,974. This application Feb. 10, 1992, Ser. No. 833,232
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 **7 Claims**

1. A liquid developer comprising:
a carrier liquid,
toner particles, and
a stabilized charge director including:
a polymer insoluble in said carrier liquid and a charge director, soluble in said carrier liquid and at least partially present in the form of micelles, wherein said polymer is chemically incorporated into said micelles.

5,286,594
PHOTOGRAPHIC ELEMENTS UTILIZING A SINGLE PHOTOSENSITIVE LAYER CONTAINING A PHOTOPOLYMERIZABLE COMPOUND, PHOTOINITIATOR, DIAZONIUM COMPOUND AND BARRIER MATERIAL ENCAPSULATED PIGMENT PARTICLES

Maria T. Sypek, Belchertown; Paul A. Perron, Springfield, both of Mass., and Gary V. Grosclaude, Torrington, Conn., assignors to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 560,037, Jul. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 150,194, Jan. 29, 1988, abandoned. This application Jun. 11, 1992, Ser. No. 897,319
Int. Cl.[5] G03F *7/021, 7/09*
U.S. Cl. 430—138 **22 Claims**

1. A photographic element which comprises a substrate and a single photosensitive layer disposed on said substrate, said photosensitive layer comprising a light sensitive, photopolymerizable composition which comprises an admixture of:
a.) a substantially homogeneous pigment composition, which pigment composition comprises pigment particles which are substantially pre-encapsulated by a barrier material, which barrier material comprises one or more photopolymerizable monomer, oligomer or polymer components capable of being photopolymerized and which resists de-encapsulation when in admixture with the other components of the photosensitive composition, said pigment composition being present in an amount sufficient to substantially uniformly color the photosensitive composition; and
b.) at least one pohotpolymerizable monomer, oligomer or polymer binder in an amount sufficient to form a substantially uniform photopolymerizable composition; and
c.) at least one photoinitiator in an amount sufficient to effect photopolymerization of the barrier material and the photopolymerizable monomer, oligomer or polymer binder upon exposure to sufficient actinic radiation; and
d.) at least one diazonium compound in an amount sufficient to form a light sensitive composition.

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5,286,595

PROCESS FOR CREATING A TACKY TONABLE IMAGE SURFACE THROUGH EXPOSURE OF A SUBSTRATE COATED WITH A POLYMER BLEND, INCLUDING A PHOTO-ACID GENERATOR, TO ACTINIC RADIATION

Walter R. Hertler, Kennett Square, Pa.; Howard E. Simmons, III, Newark, Del., and Mario Grossa, Dreieich, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 906,073, Jun. 29, 1992, Pat. No. 5,229,244, which is a continuation-in-part of Ser. No. 564,246, Aug. 8, 1990, abandoned. This application Mar. 30, 1993, Ser. No. 52,424

Int. Cl.[5] G03F *7/28*

U.S. Cl. 430—144 **4 Claims**

I. A process for creating a tonable surface comprising the steps of

I. forming a blend by blending:

a) at least one first polymer that is tacky as a result of having a glass transition temperature T_g of below room temperature;

b) a composition that generates an acid upon exposure to actinic radiation; and

c) at least one second polymer that has a T_g sufficiently far above room temperature so that the blend of first and second polymer(s) is not tacky at room temperature, said second polymer(s) having functional groups that are sensitive to catalytic amounts of a strong acid such that the reaction of functional groups in the presence of the acid result in a polymer(s) with carboxylic acid groups or phenolic groups, said resulting polymer(s) being immiscible with the tacky polymer(s) in the blend;

II. dissolving the blend from step I in a solvent;

III. coating a substrate with the blend dissolved in the solvent of step II;

IV. imagewise irradiating the coated substrate to form acid which results in the formation of a tacky tonable image surface.

5,286,596

Patent Not Issued For This Number

5,286,597

PHOTOSENSITIVE TRANSFER MATERIAL

Tamotsu Suzuki; Mikio Totsuka, both of Shizuoka; Tohru Nakatsuka, and Masanori Obiwa, both of Osaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara and Nippon Paint Co., Ltd., Osaka, both of Japan

Filed Mar. 18, 1992, Ser. No. 853,041

Claims priority, application Japan, Mar. 19, 1991, 3-80765

Int. Cl.[5] G03C *1/805*

U.S. Cl. 430—262 **9 Claims**

1. A photosensitive transfer material comprising a support, a subbing layer comprising an alcohol-soluble polyamide and an image-forming layer containing a photosensitive polymer, in which the subbing layer contains a matting agent of core-shell type crosslinked resin particles consisting of a core part made of a polymer having a crosslinking degree of 0.05 to 3.0 mmole/g and a shell part made of a substantially linear polymer having at least one kind of a hydrophilic functional group.

5,286,598

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Nobuaki Inoue; Minoru Sakai; Shigeru Ohno, and Hisashi Okamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

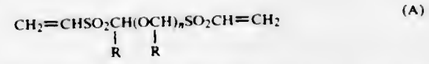
Filed Oct. 28, 1992, Ser. No. 967,742

Claims priority, application Japan, Oct. 28, 1991, 3-307162; Oct. 28, 1991, 3-307193

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **9 Claims**

1. A silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer and another hydrophilic colloid layer, wherein at least one of the emulsion layer or the other hydrophilic colloid layer contains a hydrazine derivative and a redox compound capable of releasing a development inhibitor by oxidation and further contains at least one hardening agent represented by formula (A):



(A)

wherein R represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; and n represents 0 or 1; which material has a water content of 22% by weight or less based on the total gelatin weight.

5,286,599

BASE DEVELOPABLE NEGATIVE PHOTORESIST COMPOSITION AND USE THEREOF

Edward D. Babich, Chappaqua; Eileen A. Galligan, Hopewell Junction, both of N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; Richard P. McGouey, Carmel, N.Y.; Sharon L. Nunes, Hopewell Junction, N.Y.; Jurij R. Paraszczak, Pleasantville, N.Y.; Russell J. Serino, Ridgefield, Conn., and David F. Witman, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

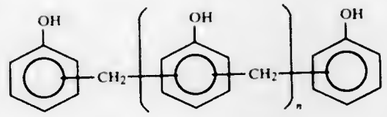
Filed Sep. 26, 1991, Ser. No. 766,596

Int. Cl.[5] G03C *1/72, 1/73*

U.S. Cl. 430—270 **35 Claims**

1. A basic aqueous developed photoresist composition containing a polymer selected from the group consisting of novolak polymer, poly(p-vinylphenol) and mixtures thereof; a di- or polyfunctional organosilicon material containing functional groups capable of reacting with amino groups, an amino polymer having available reactive amino groups in a crosslinking, effective amount, and a cationic photocatalyst in an amount effective to initiate crosslinking of said novolak polymer, or poly(p-vinylphenol), said organosilicon material and said amino polymer.

29. The composition of claim 1 wherein said polymer is a novolak represented by the formula:



wherein n is at least about 1.

5,286,600

NEGATIVE PHOTOSENSITIVE COMPOSITION AND METHOD FOR FORMING A RESIST PATTERN BY MEANS THEREOF

Tameichi Ochiai, Sagamihara; Noriaki Takahashi, Yokohama, and Yasuhiro Kameyama, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

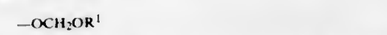
Filed Aug. 10, 1992, Ser. No. 926,693

Claims priority, application Japan, Aug. 27, 1991, 3-240548

Int. Cl.[5] C03F *7/38*

U.S. Cl. 430—270 **19 Claims**

1. A negative photosensitive composition, comprising: (a-1) an aromatic compound having at least two organic groups of formula (I):



(I)

wherein R^1 is an alkyl group, in its molecule and an alkali-soluble resin having phenolic groups, or (a-2) an alkali-soluble resin having at least two organic groups of the above formula (I) in its molecule; and

(b) a photo-acid-generating material, said aromatic compound (a-1), upon acid decomposition of the —OCH_2OR^1 groups, acting as a cross-linking agent for the alkali-soluble resin.

5,286,601

COMPOSITION CONTAINING A HALOMETHYL-1,3,5-TRIAZINE CONTAINING AN AMINE-CONTAINING MOIETY

Mitchell A. Rossman, Minneapolis, and James A. Bonham, Grant Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Division of Ser. No. 640,706, Jan. 14, 1991, Pat. No. 5,116,977, which is a continuation of Ser. No. 241,383, Sep. 7, 1988, Pat. No. 4,985,562. This application May 20, 1992, Ser. No. 886,438

Int. Cl.[5] G03C *1/675;* **C08F** *2/50*

U.S. Cl. 430—271 **21 Claims**

1. A radiation-sensitive composition comprising: (1) an ethylenically unsaturated, polymerizable compound, and (2) a 1,3,5-triazine compound having at least one halomethyl substituent on a carbon atom of the triazine nucleus and at least one amine-containing moiety attached to another carbon atom of the triazine nucleus, said at least one amine-containing moiety containing at least one tertiary amine group having three alkyl substituents on the amine nitrogen atom, said alkyl substituents having a hydrogen atom on the carbon atom adjacent to the amine nitrogen atom, provided that the amine nitrogen atom is not directly attached to the 1,3,5-triazine nucleus by a covalent bond or by a conjugated linkage.

5,286,602

ACID-CLEAVABLE COMPOUNDS, POSITIVE-WORKING RADIATION-SENSITIVE MIXTURE CONTAINING THESE COMPOUNDS, AND RADIATION-SENSITIVE RECORDING MATERIAL PRODUCED WITH THIS MIXTURE

Georg Pawlowski, Wiesbaden; Horst Roeschert, Ober-Hilbersheim; Walter Spiess, Dieburg, all of Fed. Rep. of Germany, and Ralph Dammel, Coventry, R.I., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

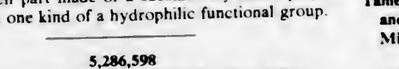
Filed Apr. 20, 1992, Ser. No. 871,009

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112968

Int. Cl.[5] C08G *12/12*

U.S. Cl. 430—270 **20 Claims**

1. A compound having repeating units of the formula I



(I)

in which

R^1 is an alkylene, cycloalkylene, alkenylene, alkynylene, or arylenebisalkyl group, in which one or more aliphatic CH_2 groups may be replaced by oxygen or sulfur atoms,

R^2 is an alkyl, alkenyl, alkynyl, cycloalkyl, alkoxyalkyl, aryl, aralkyl or aryloxyalkyl radical,

R^3 is an alkyl or aryl radical,

X is —CO—, —O—CO— or —NH—CO—, and

n is an integer greater than 1.

5,286,603

RADIATION SENSITIVE PLATES

John R. Wade, Otley; Rodney M. Potts, Leeds, and Michael J. Pratt, Menston, all of United Kingdom, assignors to Vickers PLC, Millburn, United Kingdom

Division of Ser. No. 418,758, Oct. 5, 1989, Pat. No. 5,130,227, which is a continuation of Ser. No. 191,831, May 9, 1988, abandoned, which is a continuation of Ser. No. 946,674, Dec. 31, 1986, abandoned, which is a continuation of Ser. No. 814,523, Dec. 19, 1985, abandoned, which is a continuation of Ser. No. 607,776, May 7, 1984, abandoned. This application Jun. 3, 1992, Ser. No. 894,002

Claims priority, application United Kingdom, May 9, 1983, 8312721; May 9, 1983, 8312722

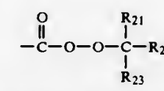
Int. Cl.[5] G03F *7/029, 7/031;* **C08F** *2/50, 4/34*

U.S. Cl. 430—281 **4 Claims**

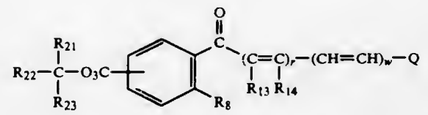
1. A radiation sensitive plate comprising a substrate coated with a photopolymerisable composition comprising

(i) at least one polymerisable compound containing ethylenic unsaturation;

(ii) a perester compound having a characteristic grouping

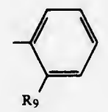


where R_{21}, R_{22} and R_{23} are each selected from the group consisting of hydrogen, an alkyl radical, and an aryl radical, the amount of said perester compound being effective to initiate polymerization of said polymerisable compound on exposure of the composition to radiation wherein the perester compound has the general formula:



wherein each of r and w is 0 or 1 except that w is only 1 when r is 1; and Q is selected from

(1b)



where r and w are zero and R_8 and R_9 are taken together and represent a ring member selected from the group consisting of —O—, —S—, C=O, —CH_2— and a single bond,

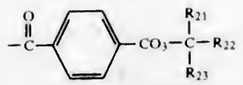
(2b) an aromatic or heterocyclic radical in the case where r=1, R_{14} represent H, and R_8 and R_{13} together represent the ring members necessary to complete a cycloalken (di)one nucleus, and

(3b)



where w=0, r is 1, R_8 represents H, and R_{13} is selected from the group consisting of H, acyl, aroyl and

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wherein R_{12} represents an alkyl radical and R_{15} and R_{14}, taken together, represent the ring members required to complete a 5- or 6-membered nitrogen containing ring which may be optionally fused to an optionally substituted aromatic nucleus; and

(iii) an optical sensitizer in an amount effective to alter the spectral response of the composition.

5,286,604

SINGLE LAYER DRY PROCESSIBLE PHOTOTHERMAL-SENSITIVE ELEMENT

Howard E. Simmons, III, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1992, Ser. No. 981,346
Int. Cl.[5] G03C 1/73; G03F 7/004
U.S. Cl. 430—286 **10 Claims**

1. A coating composition for use on a substrate comprising an optically clear blend of two or more polymers or copolymers with a near-infrared dye that generates intense heat locally upon imagewise exposure to near-infrared radiation, wherein the optically clear blend comprises:

(a) at least one first polymer or copolymer that is tacky as a result of having a glass transition temperature T_g of below room temperature;

(b) at least one second polymer or copolymer miscible with the first polymer, said second polymer having a T_g sufficiently far above room temperature so that the blend of first and second polymer(s) is not tacky at room temperature, said second polymer(s) having functional groups that are sensitive to heat, such that the reaction of functional groups in the presence of the imagewise generated heat results in a third polymer that is immiscible with the tacky polymer in the blend; and

(c) a near-infrared dye that upon exposure to near-infrared radiation generates locally intense heat.

5,286,605

METHOD FOR PRODUCING SOLID-STATE IMAGING DEVICE

Yasutaka Nishioka; Hiroshi Kawashima, and Sboji Suzuki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 788,378
Claims priority, application Japan, Nov. 30, 1990, 2-339355
Int. Cl.[5] G03F 7/26
U.S. Cl. 430—311 **5 Claims**

1. A method for producing a solid-state imaging device having a light-to-electricity conversion element disposed on a substrate and a micro lens for collecting light incident on the light-to-electricity conversion element comprising:

forming a transparent, thermally stable resin layer on a substrate including a light-to-electricity conversion element to produce a flattened surface;

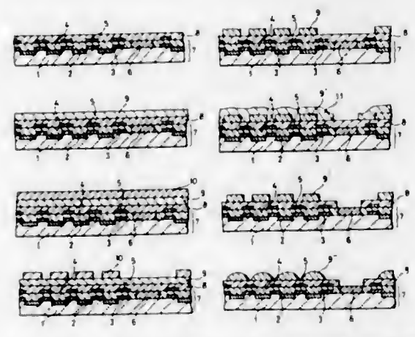
depositing on the flattened surface of said thermally stable resin layer a first photosensitive thermoplastic resin layer sensitive to light within a range of wavelengths shorter than wavelengths of visible light;

depositing on said first photosensitive thermoplastic rein layer a second photosensitive resin layer that is sensitive to light of longer wavelength than said first photosensitive thermoplastic resin layer and that absorbs the light to which said first photosensitive thermoplastic resin layer is sensitive;

exposing portions of said second photosensitive resin layer with light to which said second photosensitive resin layer is sensitive and developing said second photosensitive resin layer to form a pattern including portions of said second photosensitive resin layer remaining after developing said second photosensitive resin layer;

irradiating said thermally stable, thermoplastic, first, and second resin layers with the light to which said first photosensitive thermoplastic resin layer is sensitive using said pattern as a mask;

removing the portions of said first photosensitive thermoplastic resin layer exposed to light to which said first photosensitive thermoplastic resin layer is sensitive, leaving portions of said first photosensitive thermoplastic resin layer remaining on said transparent, thermally stable resin layer with portions of said transparent, thermally stable resin layer exposed;



depositing a photoresist film on the remaining portions of said first photosensitive thermoplastic resin layer and on the portions of said transparent, thermally stable resin layer that are exposed by the remaining portions of said first photo-sensitive resin layer;

exposing said photoresist film to a pattern of light to which said photoresist film is sensitive and developing said photoresist film to expose a portion of said transparent, thermally stable resin layer;

removing the exposed portion of said transparent, thermally stable resin layer to provide access to part of said substrate;

removing remaining portions of said photoresist film; and

thermally deforming the remaining portions of said first photosensitive thermoplastic resin layer into microlenses.

5,286,606

PROCESS FOR PRODUCING A DEVELOPER HAVING A LOW METAL ION LEVEL

M. Dalil Rahman, Warwick, and Dana L. Durham, East Greenwich, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 29, 1992, Ser. No. 996,925
Int. Cl.[5] G03C 5/305
U.S. Cl. 430—311 **9 Claims**

1. A process for producing a developer containing a surfactant, having a very low level of metal ions, which comprises:

a) treating an acidic ion exchange resin with water, followed by a mineral acid solution to reduce the level of sodium and iron ions in the ion exchange resin to less than 500 ppb each;

b) providing a solution of 1 to 40 weight percent of a surfactant in a deionized solvent;

c) passing the surfactant solution through the ion exchange resin and reducing the level of total sodium and iron ions in the solution to less than 200 ppb each;

d) formulating a developer composition containing a surfactant by providing an admixture of:

(1) the ion exchange resin treated surfactant solution in a suitable deionized solvent;

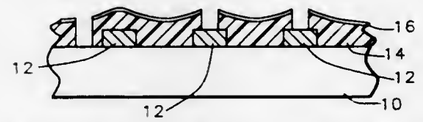
(2) a suitable metal ion free developer.

5,286,607

BI-LAYER RESIST PROCESS FOR SEMICONDUCTOR PROCESSING

Andrew V. Brown, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Dec. 9, 1991, Ser. No. 803,541
Int. Cl.[5] G03C 5/00; G03F 7/36
U.S. Cl. 430—313 **18 Claims**



1. An improved process for forming a patterned masking layer having a desired pattern of areas on the top surface of a semiconductor wafer using a multi-level resist system comprising:

forming on the top surface of said wafer a planarizing first layer of an organic polymer that is reactive with an organic silane compound;

exposing said first layer to a silicon containing medium for a period of time and at a temperature sufficient to cause partial penetration of silicon into said first layer;

depositing a resist layer over the first layer, exposing the resist layer to the desired pattern, and developing the resist layer to expose areas of said first layer that define said desired pattern;

exposing the wafer of a reactive ion etching environment for a time sufficient to partially remove the exposed areas of said first layer including the silicon that penetrated the first layer;

exposing the wafer to further reactive ion etching with an oxygen plasma in which the resist layer is eroded away to expose the silicon in the first layer which is then converted to silicon oxide by reaction with the oxygen plasma; and

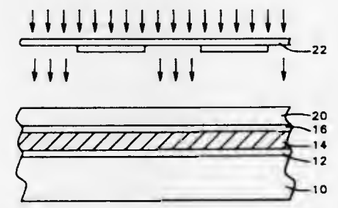
continuing the reactive ion etching in an oxygen plasma wherein the silicon oxide protects the first layer regions, but allow unprotected areas defining said desired pattern to be eroded away.

5,286,608

TIO_x AS AN ANTI-REFLECTION COATING FOR METAL LITHOGRAPHY

Chao-Ming Koh, Hsin, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 18, 1992, Ser. No. 884,772
Int. Cl.[5] G03F 7/26; G03C 5/00
U.S. Cl. 430—313 **19 Claims**



1. A photolithographic method of patterning a reflective metal layer of a semiconductor circuit comprising:

covering said reflective metal layer of an integrated circuit with a titanium layer having a thickness of between about 200 to 1000 Angstroms;

oxidizing said titanium layer to less than about an absorption of 30 atomic percentage oxygen to form a uniform anti-reflective, conductive titanium oxide layer;

covering said titanium oxide layer with a resist layer;

selectively exposing said resist layer to light by directing light through a patterned mask to expose a pattern in said resist layer;

developing said resist layer to form an etching mask;

etching openings in said titanium oxide metal layers using said etching mask; and

removing said etching mask to complete said patterning of said metal layer.

7. A method for making an integrated circuit comprising:

forming a dielectric layer over a semiconductor substrate;

forming over said dielectric layer a first metal layer which has a high reflectivity;

covering said first metal layer with a layer of titanium having a thickness of between about 200 to 1000 Angstroms;

partially oxidizing said titanium layer to less than about an absorption of 30 atomic percentage of oxygen which is an oxidation state that allows the titanium oxide formed by the oxidation to remain conductive;

covering said titanium oxide layer with a first resist layer;

selectively exposing said first resist layer to light by directing light through a patterned mask to expose a pattern in said first resist layer and developing said pattern in said first resist layer;

etching openings in said titanium oxide first metal layers using said pattern in said first resist layer as an etching mask;

removing said first resist layer etching mask;

covering said patterned first metal and titanium oxide layers with an inter-metal insulating layer;

covering said inter-metal insulating layer with a second resist layer;

selectively exposing said second resist layer to light by directing light through a patterned mask to expose a pattern in said second resist layer and developing the resist to form an etching mask therein;

etching openings in said inter-metal insulating layer using said etching mask;

removing said etching mask; and

depositing a second metal layer contacting said first metal layer through said patterned openings resulting in the desired integrated circuit.

5,286,609

PROCESS FOR THE FORMATION OF A NEGATIVE RESIST PATTERN FROM A COMPOSITION COMPRISING A DIAZOQUINONE COMPOUND AND AN IMIDAZOLE AND HAVING AS A HEAT STEP THE USE OF A HOT WATER CONTAINING SPRAY

Iwao Numakura, Tokyo, Japan, assignor to Yamatoya & Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 427,888, Oct. 30, 1989, abandoned. This application Jan. 14, 1992, Ser. No. 821,840
Claims priority, application Japan, Nov. 1, 1988, 63-274559; Nov. 8, 1988, 63-280358; Dec. 30, 1988, 63-171432
Int. Cl.[5] G03F 7/32, 7/38, 7/023
U.S. Cl. 430—325 **15 Claims**

1. A process for forming a negative resist pattern with a resist containing a diazoquinone sensitizer, which comprises the steps of

subjecting an imagewise exposed area of a layer of the resist to heat treatment with a water-containing heating medium in the presence of an imidazole compound, the heat treatment with a water-containing heating medium being conducted by exposure of the resist layer to a water-containing hot liquid in the form of spray at 50°-95° C. for 5-29 seconds,

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exposing the entire surface of the heat-treatment layer to radiation, and

then treating the thus-exposed surface with an alkaline developer solution to remove non-image areas to give a negative pattern.

5,286,610

METHOD OF PATTERNING ORGANIC MACROMOLECULAR FILM

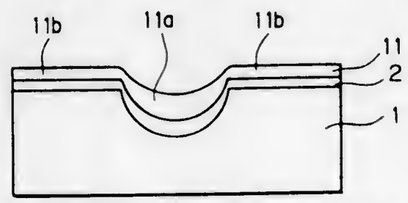
Yoshihiro Hisa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 863,732

Claims priority, application Japan, Jul. 24, 1991, 3-184567

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—325 **10 Claims**



1. A method of patterning an organic macromolecular film comprising the steps of

preparing a semiconductor substrate having a concave portion,

forming on said semiconductor substrate a first organic macromolecular film having a property which changes when exposed to light,

forming on said first organic macromolecular film a second organic macromolecular film in an initial state, said second organic macromolecular film having a property of being impervious to light in the initial state and being rendered pervious to light by illumination for a period of time proportional to its film thickness, said second organic macromolecular film including a first region formed on said concave portion and a second region formed on the other region than said concave portion, said first region being thicker than said second region,

illuminating said second organic macromolecular film from above for a predetermined period of time to render only said second region of said second organic macromolecular film pervious to light to thereby expose part of said first organic macromolecular film which is under said second region of said second organic macromolecular film, and

selectively removing either the exposed region or the unexposed region of said first organic macromolecular film by the use of the property of said first organic macromolecular film.

5,286,611

PHOTORESIST

Kurt Meier, Therwil, Switzerland; Robert J. Lunn, Bar Hill, England; Christoph Kroehnke, Freiburg/Munzingen, Fed. Rep. of Germany, and Giuliano Eugster, Itingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 20, 1992, Ser. No. 916,933

Claims priority, application Switzerland, Jun. 16, 1989, 2254/89

Int. Cl.[5] G03C *1/727*

U.S. Cl. 430—325 **13 Claims**

1 A process for the production of relief structures comprising the steps:

i) application to a substrate surface of a composition comprising:

a) a photopolymerizable acrylate or methacrylate,

b) a photoinitiator for component a),

c) a polymeric organic binder which comprises free carboxyl groups and has an acid number of at least 60,

d) as crosslinking agent, a blocked polyisocyanate which has a cleavage temperature of at least 100° C., and

e) an inert solvent in an amount such that the photocurable composition is pourable;

ii) drying of the coated substrate by evaporation of the majority of the solvent e) so that the solvent e) is substantially removed and a tack-free surface is produced,

iii) image-wise irradiation of the photosensitive coating with actinic radiation, so that the irradiated areas of the coating photopolymerize and become less soluble than the non-irradiated areas of the coating,

iv) removal of the non-irradiated areas of the coating by treating the coating with a solvent for the composition according to the invention,

v) heating the developed coating to temperatures above the cleavage temperature of the blocked polyisocyanate d) in order to thoroughly crosslink the irradiated composition.

5,286,612

PROCESS FOR GENERATION OF FREE SUPERACID AND FOR IMAGING, AND IMAGING MEDIUM FOR USE THEREIN

Stephen J. Telfer, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 23, 1992, Ser. No. 965,161

Int. Cl.[5] G03C *1/725, 1/73, 1/735, 5/00*

U.S. Cl. 430—335 **18 Claims**

1. A process for generation of free superacid, which process comprises:

providing a medium containing a mixture of a superacid precursor and a dye capable of absorbing actinic radiation of a first wavelength which does not, in the absence of the dye, cause decomposition of the superacid precursor to form the corresponding superacid, the superacid precursor being capable of being decomposed by actinic radiation of a second wavelength shorter than the first wavelength;

irradiating part of the medium with actinic radiation of the first wavelength, thereby causing, in the irradiated part of the medium, absorption of the actinic radiation, and decomposition of part of the superacid precursor, without formation of free superacid but with formation of a protonated product derived from the dye; and

thereafter irradiating a larger portion of the medium with actinic radiation of the second wavelength, thereby causing, in the part of the medium exposed to the radiation of both the first and second wavelengths, decomposition of part of the remaining superacid precursor, with formation of free superacid without generation of free superacid in the part of the medium exposed to the radiation of the second wavelength but not to the radiation of the first wavelength.

5,286,613

PHOTOGRAPHIC MATERIAL COMPRISING A COMBINATION OF COUPLERS FORMING WASHOUT AND NON-WASHOUT DYES

William J. Begley, Webster; Hans G. Ling, Rochester, and Drake M. Michno, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,794

Int. Cl.[5] G03C *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 430—382 **21 Claims**

1. A color photographic element comprising a support bearing at least one photographic silver halide emulsion layer and a combination of at least two couplers (A) and (B), coupler (A) capable upon reaction with oxidized developer of forming a compound that is washed out of the photographic element during photographic processing and capable of releasing photographic development inhibitor or capable of releasing a timing group having a photographic development inhibitor, the timing group capable of providing timed release of said photographic development inhibitor; and coupler (B), incorporated into the same emulsion layer as coupler (A), and capable upon reaction with oxidized developer of forming a compound that is not washed out of the photographic element during photographic processing and capable of releasing a photographic development inhibitor with or without time delay, coupler (A) represented by the formula:

$$(SOL)_y—COUP—(REL)_n—(TIME)_p—INH$$

and coupler (B) represented by the formula:

$$COUP—(REL)_n—(TIME)_p—INH$$

wherein

SOL is a water solubilizing group;

COUP is a coupler moiety;

TIME is a timing group;

REL is a releasing group;

n and p individually are 0 or 1; and

INH is a releasable development inhibitor group; and

y is 1 or 2.

20. A process of forming a photographic image that comprises developing an exposed photographic silver halide emulsion layer with a color developing agent in the presence of a combination of at least two different couplers as defined in claim 1.

5,286,614

SUBSTRATE OF AND CORE FOR PHOTOSENSITIVE MATERIAL

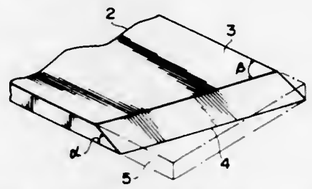
Keiichi Ishizaki; Takashi Takeuchi; Mutsuo Akao; Hiroyuki Osanai, and Shinichi Fujii, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Feb. 14, 1992, Ser. No. 835,585

Claims priority, application Japan, Feb. 15, 1991, 3-022265; Aug. 28, 1991, 3-217191

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—501 **12 Claims**



1. A core for a rolled photographic film which comprises a core body and a crosslinked foamed sheet having an expansion ratio of 18 to 45 times and a thickness of 0.2 to 2.0 mm which contains more than 50 wt. % in the sum of one or more members selected form the group consisting of polyethylene resin having a density of less than 0.930 g/cm^3, ethylenevinyl acetate copolymer resin having a comonomer content of less than 25 wt. % and ethylene-ethyl acrylate copolymer resin having a comonomer content of less than 25 wt. % is disposed on the surface of the core body.

9. A roll of photographic film which comprises a core body, cushioning material which is a member selected form the group consisting of paper, synthetic paper and nonwoven fabric having a density of less than 0.5 g/cm^3, and foamed polyolefin sheet having an expansion ratio of 18 to 45 times disposed on the surface of the core body, and a rolled photographic film having an upper face, a reverse face and first and second sides, the film further having a base end portion that is gradually thinned toward the base end wound around the cushioning material wherein the angle α between the reverse face and the oblique face is 20 to 50 degrees.

5,286,615

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Sadanobu Shuto, and Akio Mitsui, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1991, Ser. No. 776,110

Claims priority, application Japan, Oct. 15, 1990, 2-275682; Oct. 25, 1990, 2-287600

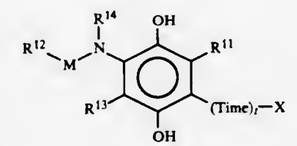
Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **12 Claims**

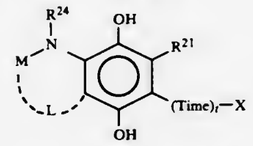


1. A silver halide color photographic material comprising a support, a blue sensitive layer, a green sensitive layer and a red sensitive layer and at least one non-light-sensitive layer, said non-light-sensitive layer being an intermediate layer arranged among the blue, green and red sensitive layers,

wherein at least one of the non-light-sensitive intermediate layer contains a compound represented by the formula (1a) or (1b):



(1a)



(1b)

in which R^{12} is an aliphatic group, an aromatic group or a heterocyclic group; M is $—N(R^{15})CO—$, $—OCO—$ or $—N(R^{15})SO_2—$; each of R^{14}, R^{15} and R^{24} independently is hydrogen, an alkyl group or an aryl group; L is a divalent linking group necessary for forming a 5, 6 or 7-membered ring; each of R^{11}, R^{13} and R^{21} independently is hydrogen or a substituent group of the hydroquinone nucleus; Time is a group which is released from the oxidation product of the hydroquinone nucleus to further release X; X is a development inhibitor; and t is 0 or 1.

5,286,616

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Nobuo Sakai, and Fuyuhiko Mori, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 206,057, Jun. 13, 1988, abandoned. This application Nov. 30, 1992, Ser. No. 983,291

Claims priority, application Japan, Jun. 12, 1987, 62-146630

Int. Cl.[5] G03C *1/38, 7/36, 7/388, 1/815*

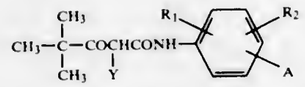
U.S. Cl. 430—505 **17 Claims**

1. A silver halide color photographic material comprising a reflective support having provided thereon a blue-sensitive

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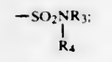
silver halide emulsion layer, a green-sensitive silver halide emulsion layer, a red-sensitive silver halide emulsion layer and plural light-insensitive layers, wherein the blue-sensitive silver halide emulsion layer contains a monodisperse silver halide emulsion and a yellow coupler represented by formula (I) defined below, and at least one light-insensitive layer which is positioned farther from the reflective support than the blue-sensitive silver halide emulsion layer is a hydrophilic colloid layer containing at least one hydrophobic compound represented by formula (II) defined below, and a relative refractive index of an organic phase containing the hydrophobic compound with the exception of a volatile organic solvent and an amphipathic solute to a hydrophilic polymer thin film which forms the light-insensitive layer is from 0.9875 to 1.0125;

wherein said yellow coupler is represented by formula (I)



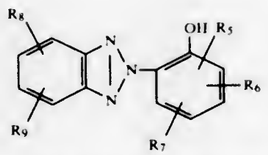
(I)

wherein R_1 represents a halogen atom or an alkoxy group; R_2 represents a hydrogen atom, a halogen atom or an alkoxy group; A represents $-NHCOR_3$, $-NHSO_2R_3$, $-SO_2NHR_3$, $-COOR_3$ or



R_3 and R_4 each represents an alkyl group; and Y represents a group which is capable of being released upon a coupling reaction with an oxidation product of a developing agent and is connected to the coupling position through an oxygen atom or a nitrogen atom;

wherein said hydrophobic compound is represented by formula (II)



(II)

wherein R_5, R_6, R_7, R_8, and R_9 each represents a hydrogen atom, a halogen atom, a nitro group, a hydroxy group, an alkyl group, an alkenyl group, an alkylthio group, an arylthio group, a mono- or di-alkylamino group, an acylamino group or a 5-membered or 6-membered heterocyclic group containing an oxygen atom or a nitrogen atom; or R_8 and R_9 are connected together to form a 5-membered or 6-membered aromatic carbon ring,

and wherein the hydrophobic colloid layer containing at least one hydrophobic compound represented by formula (II) further contains a non-volatile organic solvent having a boiling point of 175° C. or more and having a refractive index of less than 1.46, which solvent is selected from an ester of citric acid, an ester of fatty acid, an ester of carbonic acid, an amide, and an ester or ether of a fluorine-containing alcohol.

5,286,617

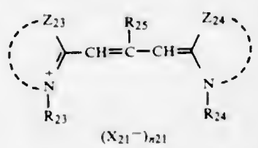
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeaki Otani, and Shoji Ishiguro, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 10, 1992, Ser. No. 896,309
Claims priority, application Japan, Jun. 12, 1991, 3-166138
Int. Cl.[5] G03C 1/08
U.S. Cl. 430—508 **10 Claims**

1. A silver halide color photographic material comprising a reflection support having provided thereon at least one of each of a yellow color developing silver halide emulsion layer, a magenta color developing silver halide emulsion layer and a cyan color developing silver halide emulsion layer, wherein the spectral sensitivity peaks of the emulsion layers reside in 400 to 490 nm, 530 to 570 nm and 660 to 720 nm, respectively; and wherein the cyan color developing silver halide emulsion layer comprises (1) a silver halide emulsion comprising silver halide selected from silver chloride, silver bromochloride, silver chloroiodide and silver bromochloroiodide, each having an average silver chloride content of 90 mol % or more, and (2) at least one thiocyanic acid salt compound, and wherein the spectral sensitivity peak of the cyan color developing silver halide emulsion layer is provided by a J-band absorption of a sensitizing dye represented by the following Formula (I):

Formula (I)



wherein Z_{23} and Z_{24}, which may be the same or different, each represents a group of atoms necessary to form a heterocyclic nucleus selected from a benzothiazole nucleus, a benzoselenazole nucleus, a naphthothiazole nucleus and a naphthoselenazole nucleus, each of which may have at least one substituent selected from a halogen atom, an alkyl group, an alkoxy group, an aryl group, and a hydroxyl group, provided that two of the substituents may be combined with each other to form a ring; R_{25} represents an alkyl group or an aryl group; R_{23} and R_{24}, which may be the same or different each represent a substituted or unsubstituted alkyl group; X_{21} represents a counter ion; and n_{21} is 0 or 1.

5,286,618

METHOD FOR PROVIDING ANTISTATIC LAYER

Noriki Tachibana; Yoichi Saito, and Kiyokazu Morita, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 823,601, Jan. 15, 1992, abandoned, which is a continuation of Ser. No. 612,543, Nov. 13, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,151
Claims priority, application Japan, Nov. 29, 1989, 1-309574
Int. Cl.[5] G03B 1/85
U.S. Cl. 430—529 **9 Claims**

1. In a method for providing an antistatic layer which can withstand wet photographic processing on a plastic film for a photographic material, said antistatic layer being formed by reacting hydrophobic polymer particles, a water-soluble conductive polymer and a polyfunctional aziridine compound or a hydroxy group containing epoxy compound as a curing agent, the improvement comprising:

preparing a solution for providing said antistatic layer, said solution comprising the hydrophobic polymer particles, the water-soluble conductive polymer, and the curing agent

coating said solution on said plastic film to form a coated layer, and

drying said coated layer;

wherein said conductive polymer contains a conductive group selected from the group consisting of a sulfonic acid group, a sulfate group, a quaternary ammonium salt group, a tertiary ammonium salt group, a carboxy group and a polyethylene oxide group in an amount of not less than 5% by weight in a molecule of said conductive polymer,

said hydrophobic polymer particles are provided to said solution in a form of latex obtained by polymerization of monomers selected from the group consisting of styrene, styrene derivatives, alkyl acrylates, alkyl methacrylates, olefin derivatives, halogenated ethylene derivatives, acrylamide derivatives, methacrylamide derivatives, vinyl ester derivatives and acrylonitrile, and

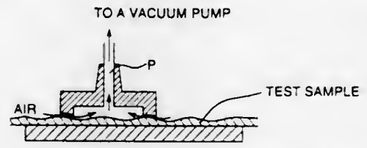
said coating solution further contains a salt of a strong acid and a weak base in an amount of 0.1 to 20% by weight based on said water-soluble conductive polymer so that the surface pH of said antistatic layer after said drying is in the range of 2.5 to 8.5.

5,286,619

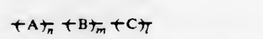
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuaki Tsuji, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,952
Claims priority, application Japan, Apr. 15, 1992, 3-95539
Int. Cl.[5] G03C 1/76
U.S. Cl. 430—536 **9 Claims**

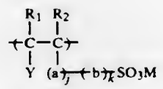


1. A silver halide photographic light-sensitive material comprising a support having on one side thereof hydrophilic colloidal layers including a silver halide emulsion layer, which is exposed and processed with an automatic processing machine, wherein at least one of the hydrophilic layers contains a water-soluble polymer represented by formula [I] or a water-soluble polymer having a repeating unit represented by formula [II], and a nonionic surfactant represented by formula [III a], [III b] or [III c]



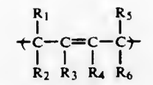
formula [I]

wherein A is a repeating unit represented by the following formula [A]; B and C each represent a repeating unit comprising a vinyl monomer copolymerizable with A; n is 10 to 100 mol % per polymer molecule and m+l is 0 to 90 mol % per polymer molecule,



formula [A]

wherein R_1 and R_2 each represent a hydrogen atom, an alkyl group, a halogen atom or $-CH_2COOM$, in which M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, or substituted or unsubstituted ammonium group; a represents $-CONH-$, $-NHCO-$, $-COO-$, $-OCO-$, $-CO-$, SO_2-, $-NHSO_2-$, $-SO_2NH-$ or $-O-$; b represents an alkylene group, an arylene group or aralkylene group; j represents 0 or 1; k represents an integer of 1 to 10; Y represents a hydrogen atom or $-(a)_j-(b)_k-SO_3M$,

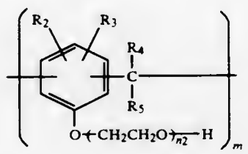


formula [II]

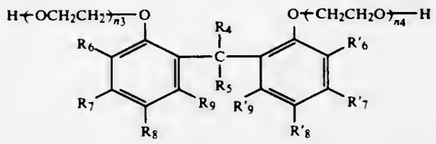
wherein R_1 through R_6 independently represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an aryl group having 6 to 20 carbon atoms or $-SO_3X$, where X represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, or substituted or unsubstituted ammonium group,



formula [III a]



formula [III b]



formula [III c]

wherein R_1 represents an alkyl group, an alkenyl group or an aryl group; A represents —O—, —S—, —COO—, —N—R_{10}, —CO—N—R_{10} or $-SO_2N-R_{10}$, where R_{10} represents a hydrogen atom or an alkyl group; R_2, R_3, R_7, R'_7, R_9 or R'_9 independently represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, a halogen atom, an acyl group, an amide group, a sulfonamide group, a carbamoyl group or a sulfamoyl group; R_4 and R_5 independently represent a hydrogen atom, an alkyl group or an aryl group; R_6, R'_6, R_8 and R'_8 independently represent an alkyl group, an aryl group, an alkoxy group a halogen atom, an acyl group, an amide group, a sulfonamide group, a carbamoyl group or a sulfamoyl group; n_1, n_2, n_3 and n_4 independently an integer of 2 to 50; m represents an integer of 2 to 50.

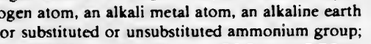
5,286,620

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Atsuhiro Ohkawa; Masuji Motoki, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 15, 1991, Ser. No. 655,605
Claims priority, application Japan, Feb. 16, 1990, 2-37070
Int. Cl.[5] G03C 7/32, 7/36, 7/38
U.S. Cl. 430—544 **9 Claims**

1. A silver halide color photographic material comprising a support having provided thereon at least one silver halide emulsion layer, wherein the silver halide color photographic material contains a compound represented by the following formula (I):



(I)

wherein

A represents a coupler residue having a non-diffusible group;

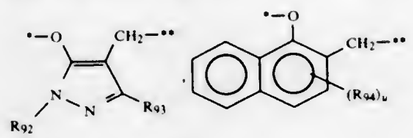
L_t represents *—OCH_2—** or

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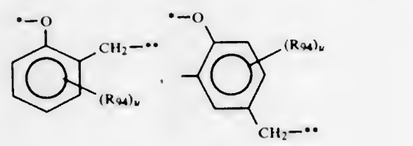


wherein • represents the position bonded to A and •• represents the position bonded to L_2;

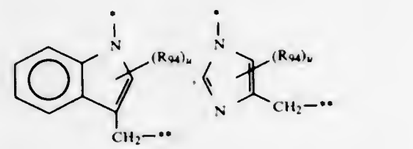
L_2 represents a group capable of releasing INH-Q through electron transfer along a conjugated system and is any of the groups represented by the following formulae:



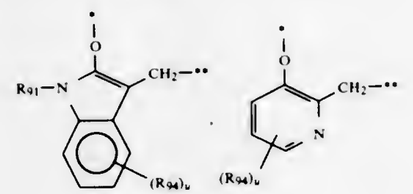
(INH-1)



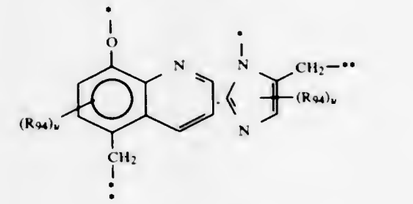
(INH-2)



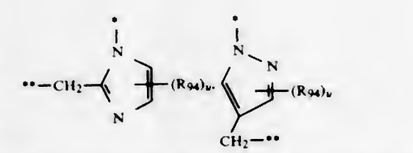
(INH-3)



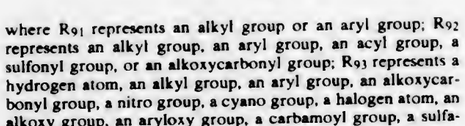
(INH-4)



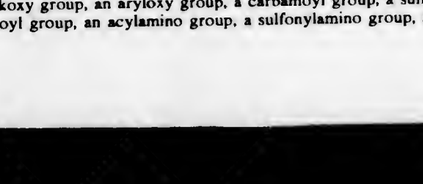
(INH-5)



(INH-6)



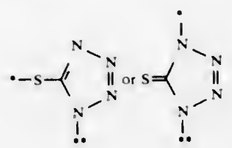
(INH-7)



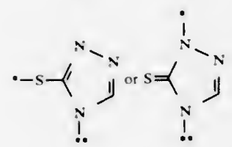
(INH-8)

where R_{91} represents an alkyl group or an aryl group; R_{92} represents an alkyl group, an aryl group, an acyl group, a sulfonyl group, or an alkoxycarbonyl group; R_{93} represents a hydrogen atom, an alkyl group, an aryl group, an alkoxycarbonyl group, a nitro group, a cyano group, a halogen atom, an alkoxy group, an aryloxy group, a carbamoyl group, a sulfamoyl group, an acylamino group, a sulfonylamino group, an amino group, an alkylthio group, or an arylthio group; R_{94} represents any of the groups represented by R_{93} except for a hydrogen atom; and u represents 0, 1, or 2; with u being 2, two R_{94} groups may be the same or different wherein • represents the position bonded to L^1 and •• represents the position bonded to INH-Q;

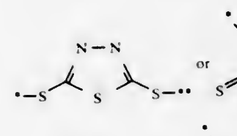
INH represents a development inhibitor residue connected to L_2 at the hetero atom thereof and is any of the groups represented by the following formulae (INH-1) to (INH-13);



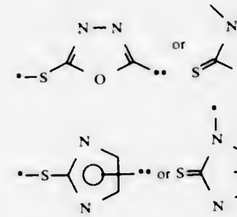
(INH-1)



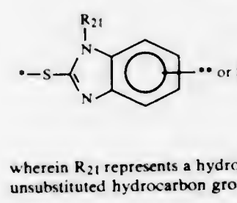
(INH-2)



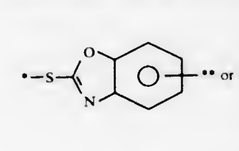
(INH-3)



(INH-4)

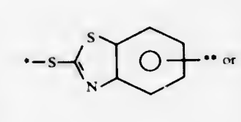


(INH-5)



(INH-6)

wherein R_{21} represents a hydrogen atom, a substituted or unsubstituted hydrocarbon group

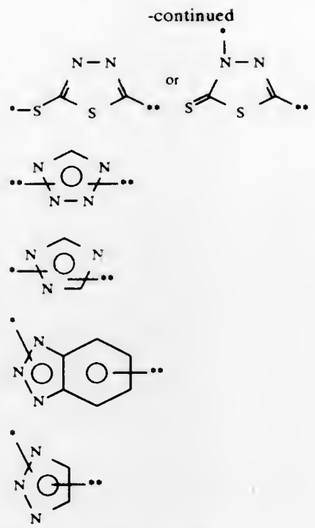


(INH-7)



(INH-8)

-continued



(INH-9)

(INH-10)

(INH-11)

(INH-12)

(INH-13)

wherein • represents the position bonded to L_2 and •• represents the position bonded to Q; and

Q represents a secondary or tertiary alkyl group having from 3 to 5 carbon toms, provided that when Q has a substituent(s), the total carbon atom number may exceed 5.

5,286,621

METHOD FOR THE PREPARATION OF TABULAR EMULSION GRAINS RICH IN CHLORIDE

Ann L. Verbeeck, Begijnendijk, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 26, 1992, Ser. No. 935,300

Claims priority, application European Pat. Off., Sep. 20, 1991, 91202446

Int. Cl.[5] G03C *1/035, 1/015, 10/07*

U.S. Cl. 430—567 **10 Claims**

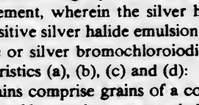


1. Method for the preparation of silver halide tabular emulsion grains, containing at least 75% chloride, wherein at least 50% of the total projected area of all the grains is provided by said tabular grains, and wherein said tabular grains exhibit an average aspect ratio of at least 5:1, an average thickness not greater than 0.5 micron and an average diameter of at least 0 6 micron, by a process comprising the following steps:

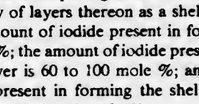
(1) preparing a dispersion medium containing a gelatino-peptizer, and performing the precipitation of the silver halide grains under the following conditions:

(a) the chloride ion concentration in the dispersion medium is lower than 0.15 molar at the start of the precipitation and remains lower than 0.15 molar during the whole precipitation, and pH is maintained between 5.0 and 9.0;

(b) the precipitation is performed in the presence of a crystal habit modifyer according to general formula Ia or Ib:



(Ia)



(Ib)

wherein Z represents the atoms necessary to form a fused on aromatic carbocyclic or heterocyclic, unsubstituted or substituted ring, e.g. substituted with alkyl, alkenyl, aryl, alkoxy, hydroxy. mercapto, carboxy, amino or halogen, and

R is hydrogen or a substituent as defined for ring Z; n is 1 or 0, and

Q represents carbon in which case n=1, or Q represents nitrogen, in which latter case n=0.

A (2) adding to the dispersion medium, during and/or after completion of the precipitation, a spectral sensitizing dye at a pH lower than 4.0.

(3) removing excessive inorganic salts by a procedure starting at a pH lower than 4.0.

5,286,622

LIGHT-SENSITIVE ELEMENT FOR SILVER SALT DIFFUSION TRANSFER METHOD

Koukichi Waki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 30, 1993, Ser. No. 54,981

Claims priority, application Japan, Apr. 30, 1992, 4-111637

Int. Cl.[5] G03C *5/54, 1/02*

U.S. Cl. 430—567 **6 Claims**

1. A light-sensitive element processable in a silver salt diffusion transfer method comprising developing a light-sensitive element containing a light-sensitive silver halide emulsion layer subjected to an imagewise exposure with an alkaline processing element containing a silver halide solvent to convert at least a part of the unexposed silver halide present in the emulsion layer to a transferable silver complex salt, and transferring at least a part of the silver complex salt to an image-receiving element including a silver precipitate nucleus-containing image-receiving layer to form an image on the image-receiving element, wherein the silver halide grain present in the light-sensitive silver halide emulsion layer comprises silver bromoiodide or silver bromochloroiodide having the following characteristics (a), (b), (c) and (d):

(a) the grains comprise grains of a core, as a nucleus and a plurality of layers thereon as a shell;

(b) the amount of iodide present in forming the core is 0 to 1 mole %; the amount of iodide present in forming the first shell layer is 60 to 100 mole %; and the total amount of iodide present in forming the shell layers after the first shell layer is 0 to 2 mole %;

(c) the average silver iodide content of the entire grain including the core and shell is 0.5 to 4.5 mole %; and

(d) silver bromoiodide having a silver iodide content of 2 to 8 mole % is deposited on the grain surface after chemical sensitization in an amount corresponding to 1 to 10% by weight (in terms of silver amount) of the silver halide grains formed before chemical sensitization.

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5,286,623

METHOD FOR SCREENING FOR KAWASAKI DISEASE

Donald Y. M. Leung, Englewood; Brian Kotzin, and Jun Abe, both of Denver, all of Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Continuation of Ser. No. 801,772, Nov. 26, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,520

Int. Cl.[5] C12Q *1/68;* **C12P** *19/34;* **G01N** *33/53*

U.S. Cl. 435—6 **7 Claims**

1. Method for screening for possibility of Kawasaki Disease in a patient comprising assaying a T cell receptor containing sample taken from said patient to determine level of Vβ2 or Vβ8.1 by immunoassay or by measuring mRNA expressing Vβ2 or Vβ8.1 wherein the level of Vβ2 or Vβ8.1 or said mRNA is increased in a patient with Kawasaki Disease relative to a normal level, and comparing the determined level to a normal level, wherein an increase in determined level relative to normal level is indicative of the possibility of Kawasaki Disease in said patient.

5,286,624

INTEGRAL MULTILAYER ANALYTICAL ELEMENT FOR DETERMINATION OF AMMONIA OR AMMONIA-PRODUCING SUBSTANCE

Kaoru Terashima; Toru Kitani; Toshihiro Mori, and Tsuneo Kawase, all of Saitama, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1991, Ser. No. 779,363

Claims priority, application Japan, Oct. 19, 1990, 2-281087

Int. Cl.[5] C12Q *1/58, 1/50;* **G01N** *21/77*

U.S. Cl. 435—12 **14 Claims**

1. In an integral multilayer analytical element for the determination of ammonia or an ammonia-producing substance comprising a light-transmissive liquid-impermeable support, an indicator layer containing an indicator which produces a detectable change by gaseous ammonia, a liquid permeation barrier layer, a reagent layer containing an alkaline buffer and optionally a reagent capable of reacting with said ammonia-producing substance to produce ammonia, and, a spreading layer, laminated in this order, the improvement which comprises that the indicator layer contains a polyvinyl alkyl ether as a binder polymer.

5,286,625

METHOD FOR ASSAYING ENDOTOXIN IN A WHOLE BLOOD SAMPLE OR PROTEIN SOLUTION CONTAINING THE SAME

Shigenori Tanaka, and Hiroshi Tamura, both of Tokyo, Japan, assignors to Seikagaku Corporation, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,583

Int. Cl.[5] C12Q *1/34, 1/00, 1/37;* **G01N** *1/00*

U.S. Cl. 435—18 **8 Claims**

1. A method of assaying an endotoxin in a whole blood sample or a protein solution containing a whole blood sample, using a limulus amebocyte lysate component comprising the steps of:

(a) obtaining a whole blood sample or a protein solution comprising a whole blood sample;

(b) treating said sample or solution, prior to contacting with the limulus amebocyte lysate component, by incubating said sample or solution in the presence of both nitric acid and a surfactant, separating the resulting precipitate, and collecting the supernatant, wherein the surfactant is selected from the group consisting of polyethylene glycol mono-p-iso-octylphenyl ether, polyethylene glycol mono-p-tert-octylphenoxypolyethoxyethanol, polyethylene glycol mono(nonylphenyl) ether, polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monopalmitate, polyoxyethylene sorbitan monostearate, polyoxyethylene sorbitan monooleate, polyoxyethylene sorbitan trioleate, n-octyl-α-D-glucopyranoside, n-octyl-β-D-glucopyranoside, n-nonyl-α-D-glucopyranoside, n-nonyl-β-D-glucopyranoside n-dodecyl-α-D-glucopyranoside, n-dodecyl-β-D-glucopyranoside, n-decyl-α-D-glucopyranoside, n-decyl-β-D-glucopyranoside, n-heptyl-α-D-glucopyranoside, n-heptyl-β-D-glucopyranoside, sodium dodecylsulfate and lithium dodecylsulfate; and

(c) assaying for endotoxin using the resulting treated sample or solution and the limulus amebocyte lysate component.

5,286,626

PROCESS AND APPARATUS FOR DIRECT DETERMINATION OF LOW DENSITY LIPOPROTEIN

Wai T. Law, Sewell, and Gerhard Ertingshausen, Princeton, both of N.J., assignors to ActiMed Laboratories, Inc., Mt. Laurel, N.J.

Filed Dec. 13, 1991, Ser. No. 806,183

Int. Cl.[5] C12Q *1/44;* **C12M** *3/04;* **G01N** *31/00*

U.S. Cl. 435—19 **12 Claims**

1. A process for direct determination of low density lipoprotein in a fluid sample comprising:

selectively precipitating very low density lipoprotein from the fluid sample;

adding a polyanionic compound, a salt of a divalent metal and a nucleating agent to the fluid sample to form clusters of low density lipoprotein;

adding an enzyme selected from the group consisting of cholesterol oxidase, cholesterol esterase, and mixtures thereof to consume high density lipoprotein selectively from the fluid sample;

contacting said sample with a protease for resolubilizing the low density lipoprotein;

and contacting said fluid sample with reagents for determining the amount of low density lipoprotein in the sample.

5,286,627

METHOD OF HIGH-SENSITIVE ANALYSIS OF BILE ACID AND REAGENT COMPOSITION FOR THE ANALYSIS

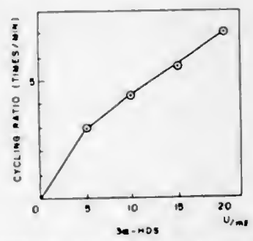
Shigeru Ueda, Shizuoka; Masashi Tanno, Mishima, and Hideo Misaki, Shizuoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1990, Ser. No. 510,716

Claims priority, application Japan, Apr. 18, 1989, 1-98443

Int. Cl.[5] C12Q *1/32, 1/26;* **C12N** *9/02, 9/08*

U.S. Cl. 435—26 **18 Claims**



1. A high-sensitivity method for the quantitative analysis of bile acid in a bile acid-containing sample, said method comprising:

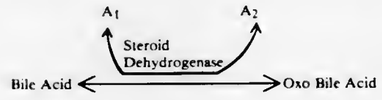
reacting a bile acid-containing sample with a reagent comprising:

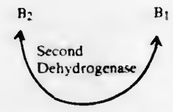
(1) a steroid dehydrogenase which is capable of effecting a reversible reaction producing oxobile acid using bile acid, as a substrate, and a nicotinamide adenine dinucleotide phosphate compound (hereinafter referred to as an NADP compound) or a nicotinamide adenine dinucleotide compound (hereinafter referred to as an NAD compound), as coenzyme,

(2) compound A_1 (defined hereinbelow) in an amount surplus relative to the amount of bile acid,

(3) compound B_1 (defined hereinbelow) or compound B_2 (hereinafter defined), or both, wherein the amount of B_1 plus B_2 is less than 1/100 of the molar amount of A_1, and

(4) a second dehydrogenase which does not react with bile acid and compound A_1, but effects a reaction converting compound B_2 into compound B_1, and the substrate of the second dehydrogenase, to effect the following reaction,





wherein

A_1 is an NADP compound or an NAD compound,

A_2 is a reduced product of A_1,

B_1 is a reduced NAD compound, when A_1 is an NADP compound, or a reduced NADP compound, when A_1 is an NAD compound,

B_2 is an oxidized product of B_1, and

$B_2 \rightarrow B_1$ indicates a reaction producing B_1 using B_2 as a coenzyme; and

measuring the amount of A_2 produced in the above reaction.

5,286,628

MONOCLONAL ANTIBODIES TO MITE ALLERGEN AND THE USE THEREOF

Midori Akagawa; Yachiko Hayashi; Toshio Mori, all of Tokyo; Satoshi Sugiyama, Chiba, and Tohru Andoh, Funabashi, all of Japan, assignors to Asahi Breweries, Ltd. and Torii & Co., Ltd., both of Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,483

Claims priority, application Japan, Feb. 6, 1991, 3-35018

Int. Cl.[5] G01N *33/53;* **C07K** *15/14;* **C12N** *5/12*

U.S. Cl. 435—7.21 **4 Claims**

1. An anti Derf II monoclonal antibody selectively binding to Derf II alone and not binding to Derp I, Derp II and Derf I, wherein said monolonal antibody is produced by hybridoma cell line 15E11 (FERM BP-3249) or 13A4 (FERM BP-3251).

5,286,629

METHOD OF BINDING A PRODUCT TO THE MEMBRANE OF A KERATINOCYTE BY MEANS OF A LIGAND-RECEPTOR BOND, METHOD OF PREPARING SUCH A PRODUCT, PRODUCT OBTAINED, COSMETIC OR PHARMACEUTICAL COMPOSITION IN WHICH IT IS PRESENT AND ITS METHOD OF PREPARATION

Alain Denis, Loges; Claudine Kieda, Orleans; Michel Monsigny, Saint Cyr En Val; Pierre Perrier, Orleans, and Gérard Redziniak, Saint Cyr En Val, all of France, assignors to Parfums Christian Dior, Paris, France

PCT No. PCT/FR90/00176, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO90/11069, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 16, 1990, Ser. No. 761,809

Claims priority, application France, Mar. 20, 1989, 89 03628

Int. Cl.[5] A61K *9/127, 47/48*

U.S. Cl. 435—7.1 **59 Claims**

1. A method of binding a product to the membrane of a keratinocyte by means of a ligand-receptor bond, which comprises using a product comprising at least one ligand consisting of an oside residue accessible to the membrane receptors, said oside residue being selected from rhamnose, galactose and galactose-6-phosphate.

5,286,630

YEAST EXTRACTS FROM CANDIDA UTILIS AND THE PRODUCTION OF SAME

Edward G. Schanus, Warrenton, Oreg., and Marinelle McPherson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 5, 1991, Ser. No. 802,578

Int. Cl.[5] C12P *1/02;* **A23L** *1/28, 2/26;* **A23J** *1/00*

U.S. Cl. 435—41 **5 Claims**

1. A process for the isolation of an extract from pasteurized *Candida utilis* cells which comprises:

(a) heating *Candida utilis* yeast cells for a time period in the range of about 30 seconds to about 20 minutes and at a temperature in the range of about 75° C. to about 85° C.;

(b) mechanically rupturing the heated cells;

(c) separating the ruptured cells into a soluble portion and an insoluble portion; and

(d) recovering the resulting soluble yeast extract.

5,286,631

PROCESS FOR PRODUCING THE A10255 COMPLEX AND CORRESPONDING MICROORGANISM

LaVerne D. Boeck, Indianapolis; Otis W. Godfrey, Jr., Greenwood, and Karl H. Michel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 941,473, Dec. 15, 1986, abandoned. This application Feb. 28, 1991, Ser. No. 663,194

Int. Cl.[5] C12P *21/04;* **C12N** *1/20*

U.S. Cl. 435—71.3 **8 Claims**

1. A process for producing the A10255 complex, which comprises cultivating *Streptomyces gardneri* NRRL 15922, or an A10255-producing variant, for mutant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until the A10255 antibiotic complex is produced.

5,286,632

METHOD FOR IN VIVO RECOMBINATION AND MUTAGENESIS

Douglas H. Jones, 2047 Aber Ave., Iowa City, Iowa 52246

Filed Jan. 9, 1991, Ser. No. 638,512

Int. Cl.[5] C12N *15/10, 15/00;* **C12P** *19/34*

U.S. Cl. 435—91.2 **8 Claims**

1. A method for synthesizing a double-stranded circular DNA molecule, using the polymerase chain reaction (PCR) process, comprising the steps of:

(i) amplifying a double-stranded DNA segment by means of PCR, wherein two primers effect said amplification and add nucleotide sequences to said segment, several of which are homologous to the ends of a linear, second, double-stranded, extra-chromosomal DNA molecule;

(ii) transfecting the resulting product of step (i) into a host cell comprising said linear, second, double-stranded, extra-chromosomal DNA molecule; and

(iii) allowing the added nucleotide sequences of the product of step (i), which are homologous to the ends of said linear, second, double-stranded, extra-chromosomal DNA molecule, to recombine therewith, thereby producing a double-stranded circular DNA molecule.

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5,286,633

ENZYMATIC TRIGLYCERIDE CONVERSION

Harry Moore, Oakley, Great Britain, assignor to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jun. 17, 1992, Ser. No. 900,227

Claims priority, application European Pat. Off., Jun. 18, 1991, 91305516

Int. Cl.[5] C12P *7/64*

U.S. Cl. 435—134 **10 Claims**

1. A process for the enzymic interesterification of a triglyceride and a compound providing a free fatty acid moiety, which process comprises the following steps:

1) reacting in the presence of an enzyme in a first enzymic conversion zone (ECZ(1)) a mixture of:

a) a starting triglyceride, and

b) a compound providing a fatty acid moiety which compound has been partially converted, to obtain a first crude reaction mixture;

2) reacting in the presence of an enzyme simultaneously with step (1), in a second enzymic conversion zone (ECZ(2)) a mixture of:

c) a starting compound providing fatty acid moieties; and

d) a partially converted triglyceride, to obtain a second crude reaction mixture;

3) combining the first and the second crude reaction mixtures and to obtain a combined stream;

4) separating the combined stream in a deacidification unit (DAU(1)) into:

e) the compound providing a fatty acid moiety which compound has been partially converted;

f) the partially converted triglyceride;

g) a triglyceride product stream;

5) recycling the compound providing a fatty acid moiety which compound has been partially converted to the first enzymic conversion zone (ECZ (1)); and

6) recycling the partially converted triglyceride to the second enzymic conversion zone (ECZ(2)).

5,286,634

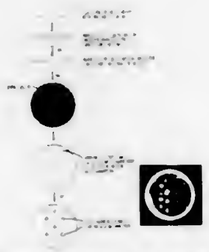
SYNERGISTIC METHOD FOR HOST CELL TRANSFORMATION

Joan K. Stadler, 3313 Oakland St., Ames, Iowa 50010, and Nunzio M. Antonelli, via Pezze del Sole, 24, Bari, Italy 70125

Filed Sep. 28, 1989, Ser. No. 414,091

Int. Cl.[5] C12N *15/00*

U.S. Cl. 435—172.3 **13 Claims**



1. A method for transforming a cell comprising

treating for a predetermined time a host cell with a solution of a polycation compound to form a cell polycation complex;

treating DNA nonnative to said host cell with a suspension of cationic liposomes to form a DNA liposome complex at a predetermined DNA/lipid ratio;

combining said DNA liposome complex with said cell polycation complex thereby transforming said host cell with said nonnative DNA.

5,286,635

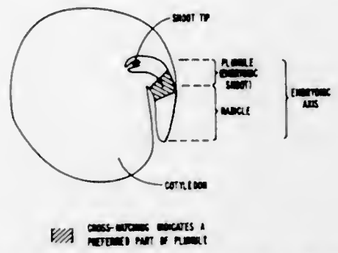
GENETICALLY TRANSFORMED PEA PLANTS AND METHODS FOR THEIR PRODUCTION

William Hanson, San Francisco; Alison Morgan, Fremont; Karol E. P. Robinson, Moraga, and Karen L. Ruby, Berkeley, all of Calif., assignors to FreshWorld, L.P., Doylestown, Pa.

Filed Sep. 24, 1991, Ser. No. 764,583

Int. Cl.[5] C12N *15/00, 5/00;* **A01H** *1/04*

U.S. Cl. 435—172.3 **23 Claims**



1. A method for genetically transforming a pea plant, said method comprising:

(a) culturing explant material from the seed plumule of the pea plant with *Agrobacterium tumefaciens* or rhizogenes cells carrying an exogenous DNA sequence, wherein the strain of Agrobacterium is selected to be capable of infecting and transferring DNA to the explant material;

(b) regenerating shoots from the explant material from step (a), wherein said shoots are obtained from non-callus material;

(c) selecting regenerated shoots from step (b) which express the exogenous DNA sequence, and

(d) rooting said regenerated shoots to produce viable pea plants expressing the exogenous DNA sequence.

5,286,636

DNA CLONING VECTORS WITH IN VIVO EXCISABLE PLASMIDS

William Huse, Del Mar; Joseph A. Sorge, and Jay M. Short, both of San Diego, all of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 341,261, Apr. 20, 1989, Pat. No. 5,128,256, which is a continuation of Ser. No. 2,441, Jan. 12, 1987, abandoned. This application May 21, 1992, Ser. No. 856,556

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] C12N *15/10, 15/70*

U.S. Cl. 435—172.3 **11 Claims**

1. A bacteriophage lambda cloning vector that infects a host, the vector containing linear DNA flanked by filamentous phage replication initiation and termination DNA sequences oriented to permit in vivo excision and circularization of the linear DNA from the vector, the circularization producing a DNA molecule capable of replication in the host.

5,286,637

BIOLOGICALLY ACTIVE DRUG POLYMER DERIVATIVES AND METHOD FOR PREPARING SAME

Francesco Veronese; Luciana Sartore, both of Padua, Italy; Piero Orsolini, Martigny, and Romano Deghenghi, S.-Cergue, both of Switzerland, assignors to Debiopharm, S.A., Lausanne, Switzerland

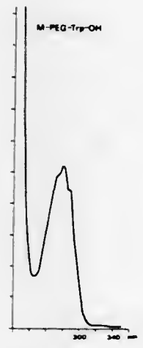
PCT No. PCT/EP90/01261, § 371 Date Jun. 3, 1991, § 102(e) Date Jun. 3, 1991, PCT Pub. No. WO91/01758, PCT Pub. Date Feb. 21, 1991

Continuation of Ser. No. 681,493, Jun. 3, 1991, abandoned. This PCT application Jul. 26, 1990, Ser. No. 1,434

Claims priority, application United Kingdom, Aug. 7, 1989, 891009.5; Aug. 30, 1989, 8919618.2

Int. Cl.[5] C12N *9/00;* **C12P** *21/06;* **A01N** *37/18*

U.S. Cl. 435—183 **6 Claims**



1. Biologically active drug polymer derivatives having the formula

$$RO-(CH_2-CH_2O)_n-(CO)-NH-X-(CO)-N-H-Z \quad (I)$$

wherein

R represents a lower alkyl group,

n is an integer between 25 and 250,

X when combined with adjacent NH and CO groups represents an amino acid or a dipeptide or tripeptide residue, and

Z when combined with the adjacent NH group represents a biologically active peptide or protein or NH or NH_2 containing drug residue.

5,286,638

PEROXIDASE GENE OF MICROBIAL ORIGIN

Yoshikazu Tanaka; Toshihiko Ashikari, both of Osaka; Haruyo Hatanaka, Kyoto; Yuji Shibano, Osaka; Teruo Amachi, Hyogo; Toru Nakayama, and Motoo Sumida, both of Osaka, all of Japan, assignors to Suntory Limited of 1-40, Dojimahama, Osaka, Japan

Filed Nov. 15, 1991, Ser. No. 792,259

Claims priority, application Japan, Nov. 16, 1990, 2-310415; Apr. 26, 1991, 3-097615

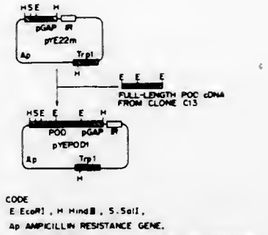
Int. Cl.[5] C12N *15/53, 9/08, 15/81, 15/70*

U.S. Cl. 435—192 **2 Claims**

1. A process for producing a peroxidase which comprises culturing yeast host cells transformed with a recombinant vector having a peroxidase gene encoding the amino acid sequence of the following formula

MKLSLFSTFA AVIIGALALP

QGPGGGGGSV TCPGGQSTSN SQCCVWFDVL



-continued

DDLQTNFYQG SKCESPVRKI

LRIVFHDAIG FSPALTAAGQ FGGGGADGSI

IAHSNIELAF PANGGLTDTI

EALRAVGINH GVSFGDLIQF ATAVGMSNCP

GSPRLEFLTG RSNSSQPSPP

SLIPGPGNTV TAILDRMGDA GFSPDEVVDL

LAAHSLASQE GLNSAIFRSP

LDSTPQVFDT QFYIETLLKG TTQPGPSLGF

AEELSPFPGE FRMRSDALLA

RDSRTACRWQ SMTSSNEVMG QRYRAAMAKM

SVLGFDRNAL TDCSDVIPSA

VSNNAAPVIP GGLTVDDIEV SCPSEPFPEI

ATASGPLPSL APAP

(see SEQ ID: NO 12 and 13).

and recovering and purifying a peroxidase-active substance from the culture broth, whereby enzymatically active peroxidase is obtained without incubation of the peroxidase with heme.

5,286,639

RECOMBINANT AVIPOXVIRUS

Noboru Yanagida, Kawasaki; Sakiko Saeki, Tokyo; Ryobei Ogawa; Kouichi Kamogawa, both of Yokohama; Yoshiyuki Hayashi, Kusatsu, and Kazunari Sawaguchi, Shiga, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 244,780, Sep. 15, 1988, abandoned. This application Feb. 8, 1991, Ser. No. 652,490

Claims priority, application Japan, Sep. 16, 1987, 62-231653

Int. Cl.[5] C12N *7/01, 15/86;* **A61K** *39/275, 39/295*

U.S. Cl. 435—235.1 **7 Claims**

2. A recombinant Avipoxvirus which induces a protective immune response in domesticated fowl again Newcastle Disease, said Avipoxvirus having inserted therein a nucleotide sequence consisting essentially of a promoter operably linked to a Newcastle Disease Virus hemagglutinin neuraminidase cDNA, wherein said cDNA encodes the amino acid sequence as shown in FIG. 4, said insertion being into a genomic region which is nonessential for proliferation of Avipoxvirus.

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5,286,640
ATTENUATED POLIOVIRUSES
Jeffrey W. Almond, Department of Microbiology, University of Reading, London Road, Reading RG1 5AQ; Michael A. Skinner, Medical Research Council Laboratory of Molecular Biology, Hills Road, Cambridge CB2 2QH, both of United Kingdom; Vincent Racaniello, Dept. of Microbiology College of Physicians & Surgeons of Columbia University, 701 W. 168th St., New York, N.Y. 10032, and Philip D. Minor, National Institute of Biological Standards & Control, Blanche Lane, South Mimms Potters Bar Herts EN6 3QG, United Kingdom
PCT No. PCT/GB89/00004, § 371 Date Jul. 19, 1990, § 102(e) Date Jul. 19, 1990, PCT Pub. No. WO89/06277, PCT Pub. Date Jul. 13, 1989
Continuation of Ser. No. 543,759, Jul. 19, 1990, abandoned. This PCT application Jan. 5, 1989, Ser. No. 62,046
Claims priority, application United Kingdom, Jan. 5, 1988, 8800100
Int. Cl.[5] C12N *7/04, 15/09, 7/01;* A61K *39/13*
U.S. Cl. 435—236 10 Claims
1. An attenuated poliovirus having an attenuating nutation at least at a position which is, or corresponds with, position 479 and/or 482 of the genome of poliovirus type 3 Leon strain.

5,286,641
IN VITRO CULTURE METHOD FOR A FERTILIZED OVUM OF A HEN
Mitsuru Naito, Ibaragi, Japan, assignor to Director General, National Institute of Animal Industry, Ibaragi, Japan
Filed Sep. 18, 1991, Ser. No. 761,547
Claims priority, application Japan, Apr. 30, 1991, 3-126657
Int. Cl.[5] C12N *5/00, 1/00*
U.S. Cl. 435—240.1 4 Claims
1. An in vitro culture method for a fertilized ovum of a hen comprising:
recovering a fertilized ovum from an upper portion of a magnum of an oviduct of a dead hen 60 to 80 minutes after oviposition;
providing thin albumen in a container having sufficient capacity to hold said fertilized ovum and a sufficient amount of said thin albumen to partially submerge said fertilized ovum;
placing said fertilized ovum in said container and partially submerging said fertilized ovum in said thin albumen whereby effectively contacting said fertilized ovum with said thin albumen in said container;
covering a yolk of the ovum with a sheet of gauze which is in effective contact with said thin albumen and with said yolk; and
culturing the ovum so covered with said gauze up to the blastoderm stage.

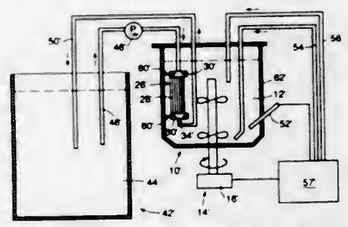
5,286,642
RAT OSTEOSARCOMA CELL LINE OSR5TR2
Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 24, 1992, Ser. No. 903,429
Int. Cl.[5] C12N *5/06;* C12P *21/02*
U.S. Cl. 435—240.2 1 Claim
1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11068.

5,286,643
RAT OSTEOSARCOMA CELL LINE OSR-8
Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 24, 1992, Ser. No. 903,431
Int. Cl.[5] C12N *5/06;* C12P *21/02*
U.S. Cl. 435—240.2 1 Claim
1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11070.

5,286,644
RAT OSTEOSARCOMA CELL LINE OSR-2
Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 24, 1992, Ser. No. 903,432
Int. Cl.[5] C12N *05/06;* C12P *21/02*
U.S. Cl. 435—240.2 1 Claim
1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11065.

5,286,645
RAT OSTEOSARCOMA CELL LINE OSR3TR1
Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 24, 1992, Ser. No. 903,434
Int. Cl.[5] C12N *5/06;* C12P *21/02*
U.S. Cl. 435—240.2 1 Claim
1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11066.

5,286,646
METHOD FOR MAMMALIAN CELL CULTURE
Michael J. Kearns, Seeshaupt; Michael J. Comer, Bernried; Ulrich Steegmans, and Herbert Jungfer, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Continuation of Ser. No. 409,959, Sep. 18, 1989, abandoned, which is a continuation of Ser. No. 934,662, Nov. 25, 1986, abandoned. This application Sep. 20, 1991, Ser. No. 763,867
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1985, 3541738
Int. Cl.[5] C12N *5/06*
U.S. Cl. 435—240.24 12 Claims



1. In a process for culturing mammalian cells for production of biological products in a batch fermenter having means for monitoring and controlling the environmental conditions of the cells and wherein the cells are in homogeneous suspension the improvement comprising
a) maintaining and culturing mammalian cells in a homogeneous suspension to a final concentration of more than 1.5×10^6/ml in a batch fermenter which contains a cell culture medium containing high molecular weight proteinaceous material required for mammalian cell proliferation,

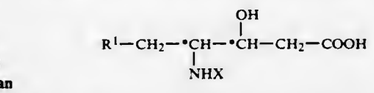
b) providing a nutrient medium, without transporting any high molecular weight proteinaceous material therewith, to the cells while simultaneously maintaining the high molecular weight proteinaceous materials within the cell culture medium in situ by means of a device inside said batch fermenter being in contact with the cell culture medium, said device containing a multiplicity of hollow fibers which multiplicity of hollow fibers are freely immersed in the cell culture medium contained in the batch fermenter said multiplicity of hollow fibers having an outer semipermeable membrane and an inner hollow space wherein the outer semipermeable membranes have an exchange surface of less than $0.3m^2$ per liter of cell culture medium, wherein the cell culture medium is in revolving motion to continuously flow past the multiplicity of hollow fibers without damage to the cells and wherein the inner hollow space of the multiplicity of hollow fibers is connected to a source of the nutrient medium and the nutrient medium passes to the cells and cell waste from the cell culture medium passes to the nutrient medium to minimize the presence of cell waste in the cell culture medium via the outer semipermeable membrane of the hollow fiber, wherein the high molecular weight proteinaceous material of the cell culture medium is maintained in situ and cannot pass the semipermeable membrane of the hollow fibers.

5,286,647
HUMAN-HUMAN HYBRIDOMAS FOR NEOPLASMS
Harold H. Handley, Charlottesville, Va.; Mark C. Glassy, San Diego, Calif.; Ideaki Hagiwara, Osaka, and Yoshihide Hagiwara, Uka, both of Japan, assignors to University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 573,974, Feb. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 465,081, Feb. 9, 1983, Pat. No. 4,618,577. This application Oct. 23, 1987, Ser. No. 113,212
Claims priority, application Japan, May 21, 1982, 57-84843
Int. Cl.[5] C12N *5/12*
U.S. Cl. 435—240.27 7 Claims
1. A human-human hybridoma produced by fusing human B-lymphocytes from lymph nodes draining a solid tumor with human fusion partners, wherein said human fusion partners are immortalized human B-cells.

5,286,648
A84575 ANTIBIOTICS
Karl H. Michel, Indianapolis, and Raymond C. Yao, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of Ser. No. 422,185, Oct. 16, 1989, abandoned. This application Jun. 27, 1991, Ser. No. 722,060
Int. Cl.[5] C12R *1/01;* C12N *1/20;* C12P *21/04*
U.S. Cl. 435—252.1 1 Claim
1. A biologically pure culture of *Streptosporangeum carneum* selected from the group consisting of NRRL 18437, NRRL 18505, and mutants of said cultures which produce A84575 compounds.

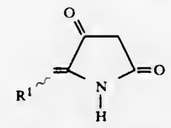
5,286,649
ANTIVIRAL ANTIBIOTIC BU-3889V
Masataka Konishi, Kawasaki; Mitsuaki Tsunakawa, Yokohama; Osamu Tenmyo, Yokohama; Takeo Miyaki, Yokohama, and Toshikazu Oki, Yokohama, all of Japan, assignors to Bristol-Myers Squibb Co., New York, N.Y.
Filed Jan. 10, 1992, Ser. No. 819,543
Int. Cl.[5] C12N *1/20;* C12P *1/06*
U.S. Cl. 435—252.1 1 Claim
1. A biologically pure culture of the microorganism *Amycolatopsis orientalis* ATCC-53884, said culture being capable of producing the antibiotic BU-3889V in a recoverable quantity upon cultivation in a culture medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions.

5,286,650
PROCESS FOR THE PRODUCTION OF OPTICALLY-ACTIVE 4-AMINO-3-HYDROXYCARBOXYLIC ACIDS
Markus Bänziger, Brig-Glis; John McGarrity, and Thomas Meul, both of Visp, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland
Filed Aug. 20, 1992, Ser. No. 932,587
Claims priority, application Switzerland, Aug. 22, 1991, 2471/91
Int. Cl.[5] C12P *13/04*
U.S. Cl. 435—280 11 Claims
1. Process for the production of optically-active (rel-3R,4R)-4-amino-3-hydroxycarboxylic acids of formula:



I

wherein R^1 is a branched alkyl group having 1 to 10 C atoms, a straight chain alkyl group having 1 to 10 carbon atoms, an alkyl group having 1 to 10 carbon atoms containing at least one substituent, an aryl group, an arylalkyl group, a cycloalkyl group, a substituted arylalkyl group, a substituted aryl group and a substituted cycloalkyl group, and X is hydrogen, comprising (i) acylating a substituted tetramic acid of formula:



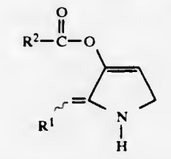
II

wherein R^1 has the above-mentioned meaning, with a carboxylic acid or a carboxylic acid derivative of formula:



III

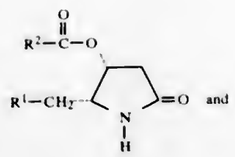
wherein R^2 is a branched alkyl group having 1 to 10 C atoms, a straight chain alkyl group having 1 to 10 carbon atoms, an alkyl group having 1 to 10 carbon atoms containing at least one substituent and an aryl group, and Y is halogen, OH or OC(=O)R^2, to a compound of formula:



IV

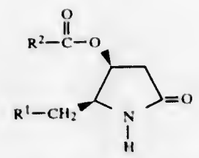
wherein R^1 and R^2 have the above-mentioned meaning. (ii) stereoselectively hydrogenating the compound of formula I to the corresponding enantiomeric pyrrolidin-2-ones of formula:

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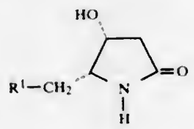
Va

and



Vb

wherein R^1 and R^2 have the above-mentioned meanings, with a catalyst of the group consisting of palladium catalyst, rhodium catalyst and palladium/rhodium catalyst, (iii) hydrolyzing enantioselectively the (4R,5R)-enantiomer (Va) with a lipase from *Candida cylindracea* to the corresponding (4R,5R)-4-hydroxypyrrolidin-2-one of formula:



VI

(iv) separating hydroxy compound VI from the nonhydrolyzed (4S,5S)-enantiomer (Vb), and (v) hydrolyzing with cleavage of the lactam ring of the acyloxy compound Vb or the hydroxy compound VI to the end compound I.

5,286,651

DETERMINING COLLECTIVE FLUID INCLUSION VOLATILES COMPOSITIONS FOR INCLUSION COMPOSITION MAPPING OF EARTH'S SUBSURFACE

Michael P. Smith, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 398,341, Aug. 24, 1989, abandoned. This application May 11, 1993, Ser. No. 60,485

Int. Cl.[5] G01N *33/24*; G01V *5/00*

U.S. Cl. 436—32 **15 Claims**

1. Apparatus, including controller means, for releasing, delivering, and analyzing composition of a plurality of fluid inclusion volatiles samples comprising:

releasing means for impacting and deforming a sedimentary rock sample effective for releasing a fluid inclusion volatiles sample therefrom, the releasing means comprising an evacuable chamber, impacting means within the evacuable chamber for impacting a positioned semimentary rock sample and releasing a collective fluid inclusion volatiles sample from a myriad of fluid inclusions therein; and positioning means within the evacuable chamber for supporting a plurality of sedimentary rock samples and positioning one of the plurality of sedimentary rock samples relative to the impacting means as the positioned one of the plurality of sedimentary rock samples;

analytical means for determining the chemical composition of the fluid inclusion volatiles sample as it is being released, the analytical means comprising:

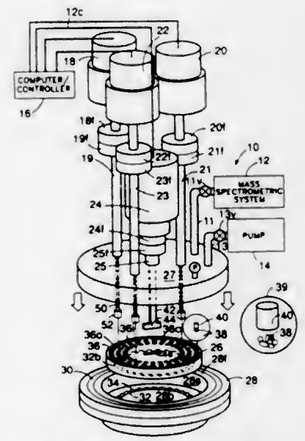
an analyzer for analyzing the chemical composition of collective fluid inclusion volatiles samples while being released, each volatiles sample being a heterogeneous mixture of volatiles released from the myriad fluid inclusions in the rock sample, wherein the heterogeneous mixture of volatiles analyzed comprise hydrocarbons having more than one carbon atom, the analyzer comprising:

a plurality of mass spectrometric means for determining mass to charge ratio responses of each collective fluid inclusions volatiles sample, wherein the mass spectrometric means operate concurrently and each mass spectrometric means is configured to sample a specific set of mass to charge ratio responses;

means for causing each of the plurality of mass spectrometric means to scan its set of mass to charge ratio responses a multiplicity of times during a period of time while each collective fluid inclusion volatiles sample is being provided to mass spectrometric means;

means for summing mass to charge ratio responses on a mass to charge ratio by mass to charge ratio basis for all of the multiplicity of scans for each rock sample's collective fluid inclusions volatiles sample;

means for storing summed mass to charge ratio responses as a record of the composition of collective fluid inclusions volatiles sample for each sedimentary rock sample;



delivery means for delivering the fluid inclusion volatiles sample from releasing means to analytical means as it is being released; and

controller means for causing the releasing means to sequentially and individually release the collective fluid inclusions volatiles sample from each of the plurality of sedimentary rock samples and for causing each collective fluid inclusion volatiles sample to be sequentially and individually analyzed by the analytical means, wherein the controller means comprises:

means for generating a positioning signal causing the positioning means to position one of the plurality of sedimentary rock samples relative to the impacting means for impacting the positioned rock sample;

means for generating an impacting signal for causing impacting means to impact the positioned rock sample;

means for generating an analyzing signal for causing the analytical means to analyze the composition of gases in the evacuable chamber including collective fluid inclusion volatile; and

means for effecting sequential operation of the previously defined means for each of the plurality of rock samples in the evacuable chamber.

5,286,652

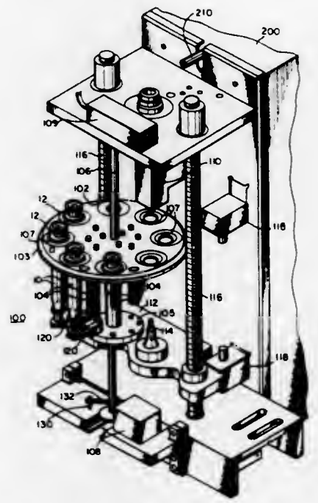
AUTOMATED SAMPLE INPUT MODULE

Michael S. James, New Castle; Robert C. Kirkpatrick, Bear, both of Del., and Frank J. DeMonte, West Chester, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 876,934

Int. Cl.[5] G01N *30/24*

U.S. Cl. 436—48 **4 Claims**



1. A method of handling a plurality of sample containers to be placed into communication with an instrument comprising a sample input port, wherein the plurality of sample containers are disposed in lower arms of a retaining means, and wherein the sample container is guided by a stripper assembly to place the sample container into fluid communication with the input port, the method comprising the steps of:

indexing the retaining means to substantially align one of the sample containers with the sample input port;

creating a mechanical connection between the sample container and a stripper assembly by moving the stripper assembly through the lower arm to engage an end cap of the sample container;

moving the sample container into fluid communication with the input port by displacing the sample container from the retaining means using the stripper assembly and the lower arm;

urging the sample container against the input port to create an interference fit connection between the end cap of the sample container and the stripper assembly by moving the stripper assembly and the lower arm together until the lower arm encounters a positive stop that prevents further motion of the lower arm, thereby allowing further motion of the stripper assembly for urging the sample container against the input port;

operating the instrument to interact with a sample contained in the sample container; and

disengaging the mechanical connection between the sample container and the stripper assembly by moving the stripper assembly and the lower arm together in an opposite direction until the lower arm encounters and abuts a plate that prevents further motion of the lower arm, thereby further motion of the stripper assembly causes the step of disengaging the mechanical connection between the sample container and the stripper assembly.

5,286,653

METHOD FOR DETECTING THE GAMMA, DELTA T CELL RECEPTOR

Michael B. Brenner, Ashland; Jack L. Strominger, Lexington; Jonathan Seidman, Milton; Stephen H. Ip, Framingham, and Michael S. Krangel, Newtonville, all of Mass., assignors to T Cell Diagnostics, Inc., Cambridge; Dana Farber Cancer Institute and President & Fellows of Harvard College, both of Boston, all of Mass.

Filed Jul. 3, 1986, Ser. No. 881,825

Int. Cl.[5] G01N *33/566*

U.S. Cl. 436—501 **60 Claims**

1. A method for detecting T cells, each of which has a δ chain of a T cell antigen receptor, which comprises contacting a sample containing T cells with an antibody capable of forming a complex with the δ chain of a T cell antigen receptor so as to form cellular complexes between the antibody and the δ chains of a T cell antigen receptor, detecting such cellular complexes and thereby detecting T cells, each of which has a δ chain of a T cell antigen receptor, in which the δ chain (a) is of a form capable of being found associated in a complex with the T3 antigen on the surface of a T cell, (b) is not reactive with antibodies to the alpha or beta chain of the T cell antigen receptor, and (c) is not reactive with antibodies to the γ chain of the T cell antigen receptor.

5,286,654

DETECTION AND PURIFICATION OF ACTIVIN POLYPEPTIDE

Edward T. Cox, Foster City; Jennie P. Mather, Millbrae; Mary B. Sliwkowski, San Carlos, and Teresa K. Woodruff, Millbrae, all of Calif., assignors to Genentech, Inc., S. San Francisco, Calif.

Division of Ser. No. 716,826, Jun. 19, 1991, Pat. No. 5,216,126. This application Feb. 3, 1993, Ser. No. 12,711

Int. Cl.[5] G01N *33/566, 33/536*; C07K *15/28*

U.S. Cl. 436—501 **3 Claims**

1. A method of determining in vitro the presence in a test sample of a molecule that binds to an activin receptor polypeptide comprising contacting the test sample with an isolated activin receptor polypeptide which does not bind to TGF-β, has a molecular weight on reduced 10% SDS-PAGE of 135–150 Kd, and has an N-terminus of: Val Leu Thr Glu Glu Thr Glu Ile Ile Met Pro Thr Pro Lys Pro Glu Leu Xaa Ala Xaa Xaa Asn, (Seq ID No. 1), wherein Xaa indicates an unknown amino acid, and determining if binding has occurred.

5,286,655

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE OF AN ANODE SHORT CIRCUIT STRUCTURE

Tetsujiro Tsunoda, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 11, 1993, Ser. No. 74,618

Claims priority, application Japan, Jun. 12, 1992, 4-153462

Int. Cl.[5] H01L *21/332*

U.S. Cl. 437—6 **7 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:

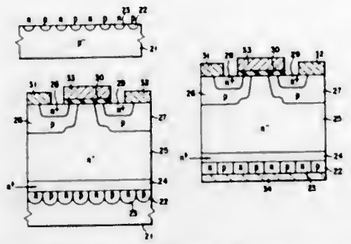
selectively diffusing an impurity of a first conductivity type and another impurity of a second conductivity type into a main surface region of a semiconductor substrate so as to form first semiconductor regions of the first conductivity type and second semiconductor regions of the second conductivity type;

forming a first semiconductor layer of the second conductivity type on the semiconductor substrate, said first semiconductor layer being of at least a single layer structure;

forming element regions of the first and second conductivity types by thermal diffusion of impurities into the first semiconductor layer; and

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polishing the opposite main surface of the semiconductor substrate to expose the first semiconductor regions of the



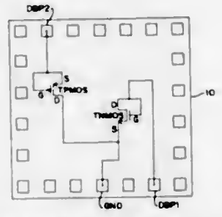
first conductivity type and the second semiconductor regions of the second conductivity type.

5,286,656

INDIVIDUALIZED PREPACKAGE AC PERFORMANCE TESTING OF IC DIES ON A WAFER USING DC PARAMETRIC TEST PATTERNS

Susan M. Keown, and Myron J. Miske, both of Portland, Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 2, 1992, Ser. No. 970,292
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—7 **19 Claims**



1. A method of fabricating and testing IC dies on a wafer in a wafer fabrication process producing IC dies having a selected sensitive AC parameter with performance of the sensitive AC parameter within a first range of variation characteristic of the wafer fabrication process, comprising:

forming on substantially every die of the IC dies of the wafer a test structure for testing in a DC parametric test at the wafer level sorting stage before scribing and packaging the dies from the wafer;

constructing said test structure for generating test measurements in a DC parametric test reflecting the AC performance of the selected sensitive AC parameter within the range of variation characteristics of the wafer fabrication process;

constructing at least one dedicated test bond pad on substantially every die of the wafer coupled to said test structure for applying a selected test voltage during DC parametric testing with a DC parameter tester and wafer probe;

testing substantially every die on the wafer at the wafer level stage before scribing and packaging the dies using said test structure in a DC parametric test reflecting the AC performance of said selected sensitive AC parameter.

selecting those dies on the wafer reflecting AC performance of the selected sensitive AC parameter within a second range of variation narrower than the first range characteristic of the wafer fabrication process;

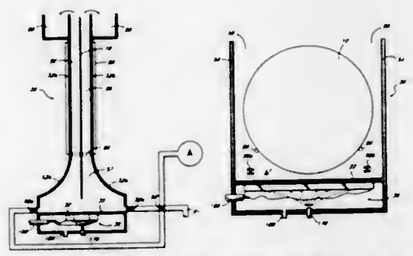
and packaging the selected IC dies from the wafer while rejecting or otherwise sorting the other IC dies from the wafer before packaging for increasing the yield of packaged IC dies meeting AC specifications for AC performance of the selected sensitive AC parameter within the narrower second range.

5,286,657

SINGLE WAFER MEGASONIC SEMICONDUCTOR WAFER PROCESSENG SYSTEM

Mario E. Bran, Garden Grove, Calif., assignor to Verteq, Inc., Anaheim, Calif.

Division of Ser. No. 598,426, Oct. 16, 1990, Pat. No. 5,090,432.
This application Dec. 18, 1991, Ser. No. 809,799
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—9 **3 Claims**



1. A method of cleaning a semiconductor wafer or the like, comprising:

positioning the wafer in a container having a plurality of upstanding walls with upper portions defining a thin, flat, vertically oriented chamber for receiving the wafer, said chamber having a generally rectangular cross section defined by two side walls having flat, generally vertically oriented surfaces closely spaced from each other, said side walls being joined by two edge walls which are spaced from each other a distance slightly greater than the diameter of the largest wafer to be processed in the container, said walls extending to a open upper end for receiving and permitting withdrawal of the wafer from said container;

supporting said wafer so that two large, flat sides of the wafer extend vertically, positioned between but spaced from the chamber vertical side walls, said supporting step including supporting the wafer at a sufficiently low level that the upper edge of the wafer is located below the upper edges of said chamber walls;

introducing cleaning liquid into the chamber; and

directing megasonic energy into the chamber to agitate the liquid adjacent the flat sides of the wafer so as to loosen particles on the wafer, said energy being directed upwardly in a pattern greater in area than that defined by said upper portions of said walls, said side walls having lower portions spaced from each other in an amount considerably greater than the spacing between the side wall upper portions and including side wall portions which taper inwardly from the widely spaced lower side wall portions to said side wall upper portions whereby the portion of said energy being directed at said tapered wall portions is deflected and guided upwardly and inwardly to increase the agitation of said liquid adjacent said wafer.

5,286,658

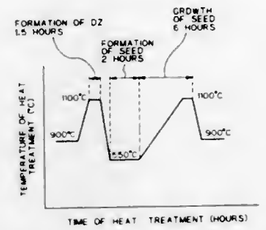
PROCESS FOR PRODUCING SEMICONDUCTOR DEVICE

Yoshimi Shirakawa, and Hiroshi Kaneta, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 5, 1992, Ser. No. 846,061
Claims priority, application Japan, Mar. 5, 1991, 3-038676; Mar. 13, 1991, 3-048190; Sep. 4, 1991, 3-224068
Int. Cl.[5] H01L *21/322, 21/324*
U.S. Cl. 437—10 **8 Claims**

1. A process for the production of a semiconductor device,

comprising a step of performing a heat treatment at a temperature of from 950° C. to 1,250° C. for a period of from one to four hours on a silicon crystal having an impurity carbon concentration exceeding 1.0 ppm and not exceeding the solid solution limit to thereby form a denuded zone therein, a step of performing a heat treatment at a temperature of from 350° C. to 600 ° C. for a period of one to 24 hours on said silicon crystal



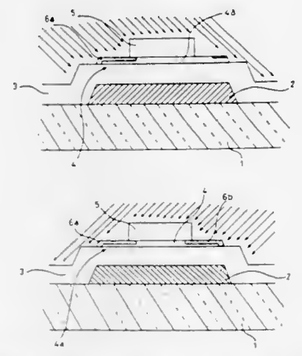
having said denuded zone formed therein to thereby form a complex defect of impurity oxygen and impurity carbon therein, and a step of performing a heat treatment on said silicon crystal having said complex defect formed therein by the elevation of the temperature of said silicon crystal at a temperature increasing rate such that no core effect is broken to a level of from 900° C. to 1,250° C. to thereby effect an intrinsic gettering.

5,286,659

METHOD FOR PRODUCING AN ACTIVE MATRIX SUBSTRATE

Yasuhiro Mitani, Habikino; Katsumara Ikubo, Tenri; Yasunori Shimada, Nara; Hirohisa Tanaka, Ikoma; Hiroshi Morimoto, Kitakatsuragi; Yutaka Nishi, Osaka; Tomohiko Yamamoto, and Kenichi Nishimura, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1991, Ser. No. 813,385
Claims priority, application Japan, Dec. 28, 1990, 2-408959; Jan. 18, 1991, 3-4575; Feb. 1, 1991, 3-12004; Feb. 26, 1991, 3-30511; Jun. 17, 1991, 3-144914; Aug. 26, 1991, 3-213949; Aug. 26, 1991, 3-213950; Aug. 26, 1991, 3-213953; Aug. 27, 1991, 3-215561
Int. Cl.[5] H01L *21/336, 21/84*
U.S. Cl. 437—21 **1 Claim**



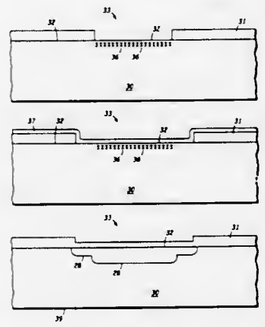
1. A method for producing an active matrix substrate which uses a thin film transistor having a gate electrode on an insulating substrate, both of them being covered with a gate insulating layer, a semiconductor layer on the gate insulating layer, a channel protective layer on the semiconductor layer, a drain electrode having a portion overlying the gate electrode with the interposition of the gate insulating layer, the semiconductor layer and the channel protective layer, and a source electrode having a portion overlying the gate electrode with the interposition of the gate insulating layer, the semiconductor layer and the channel protective layer, the method comprising the steps of forming the channel protective layer in the shape of a trapezoid, and implanting ions into the semiconductor layer through the channel protective layer such that a contact layer is formed in the portions of the semiconductor layer which are directly below the edge of the declining sides of the trapezoidal shaped channel protective layer.

5,286,660

METHOD FOR DOPING A SEMICONDUCTOR WAFER HAVING A DIFFUSIVITY ENHANCEMENT REGION

Herng-Der Chiou, Tempe; Gary G. Ehlenberger, and Earl D. Fuchs, both of Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1992, Ser. No. 996,747
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **17 Claims**



10. A method for modulating a solubility of a semiconductor dopant in a semiconductor wafer, comprising the steps of:

providing a semiconductor wafer wherein the semiconductor wafer has a crystalline lattice structure;

altering a portion of the crystalline lattice structure;

providing a semiconductor dopant in the altered portion and in an adjacent unaltered portion of the crystalline lattice structure; and

diffusing the semiconductor dopant into the semiconductor wafer.

5,286,661

METHOD OF FORMING A BIPOLAR TRANSISTOR HAVING AN EMITTER OVERHANG

Edouard D. de Fresart, Tempe, and John W. Steele, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1992, Ser. No. 935,508
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **15 Claims**

1. A method of forming a bipolar transistor comprising

providing a semiconductor substrate having a collector region wherein the collector region has a first width;

using low temperature epitaxial deposition for applying a base layer on the collector region wherein the base layer is in-situ doped;

forming a sacrificial layer on the base layer wherein the sacrificial layer includes a first silicon dioxide layer;

covering the sacrificial layer with a layer of polysilicon having a first thickness;

forming an opening through the polysilicon wherein the

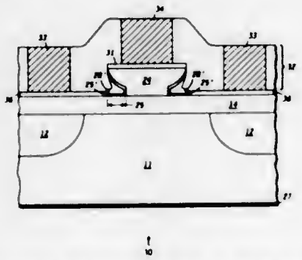
VOL 1159 ISS 3 FEB 15 1994 UMI

opening overlays the collector region and has a second width that is less than the first width;

forming an emitter opening through the sacrificial layer by isotropically etching the sacrificial layer while using the polysilicon as a mask wherein the emitter opening undercuts the polysilicon and forms sloping sidewalls in the sacrificial layer, and wherein an active portion of the base layer is exposed;

removing the polysilicon by selectively etching the polysilicon;

selectively depositing an in-situ doped emitter on the active portion of the base layer wherein the emitter fills the emitter opening, and wherein the emitter has a top and also has sidewalls with a sloping portion of the sidewalls of the emitter along the sloping sidewalls of the sacrificial



layer so that the sloping portion of the sidewalls of the emitter forms an emitter overhang that overlays an extrinsic portion of the base layer;

removing the sacrificial layer by selective etching that does not etch the emitter thereby exposing a first portion of the base layer that includes the extrinsic portion of the base layer;

covering the emitter, and the first portion of the base layer with a silicon nitride protective layer; and

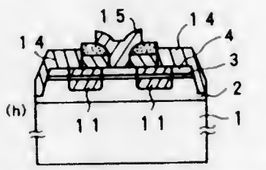
forming a protective area on the extrinsic portion of the base layer and on the sloping portion of the sidewalls by anisotropically etching the silicon nitride protective layer for the purpose of removing the silicon nitride protective layer from the top of the emitter and from the base layer external to the emitter overhang.

5,286,662

METHOD FOR MANUFACTURING FIELD EFFECT TRANSISTOR

Nobuhiro Kuwata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Jul. 13, 1992, Ser. No. 912,732
Claims priority, application Japan, Jul. 17, 1991, 3-176977
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **3 Claims**



1. A method for manufacturing a field effect transistor comprising the steps of:

epitaxially growing on a semi-insulative semiconductor substrate, a GaInAs/GaAs quantum well structure having an undoped GaAs buffer layer, an impurity doped GaInAs channel layer, and an undoped GaAs cap layer, said undoped cap layer having a thickness of from 30 nm to 50 nm and a flat surface portion,

ion-implanting impurities from a surface of said GaInAs/-GaAs quantum well layer to reach at least said impurity doped GaInAs layer,

annealing to form a source region and a drain region of low resistivity, said step of annealing being a rapid thermal annealing at over 800° C. without breaking said quantum well structure, and

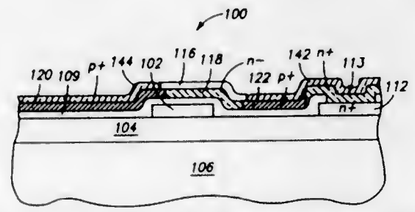
forming a gate electrode, a source electrode, and a drain electrode on said flat surface portion of said undoped GaAs cap layer.

5,286,663

METHODS FOR PRODUCING THIN FILM TRANSISTOR HAVING A DIODE SHUNT

Monte Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 29, 1992, Ser. No. 828,001
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **21 Claims**



1. A method of forming a thin film transistor and of connecting a thin film transistor active region of a first conductivity type to a connecting region of a second conductivity type, the method comprising the following steps:

forming a transistor gate on a semiconductor substrate;

providing a thin film of polysilicon over the transistor gate for formation of thin film active regions and a thin film channel region;

providing a mask layer over the thin film of polysilicon;

patterning and etching the mask layer to remove the mask layer over the thin film active regions and to define a channel mask overlying the thin film channel region;

doping the thin film active regions with an impurity of the first conductivity type to provide first conductivity type active regions and to form an exposed parasitic diode junction between one thin film transistor active region and a connecting region of the second conductivity type, the channel mask restricting doping of the thin film channel region with the first conductivity type impurity;

applying a metal layer over the exposed parasitic diode junction, wherein the metal layer is capable of producing a silicide; and

heating the metal layer to form a silicide shunt across the exposed parasitic diode junction, the channel mask preventing formation of silicide over the thin film channel region.

5,286,664

METHOD FOR FABRICATING THE LDD-MOSFET

Tadahiko Horiuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,356
Claims priority, application Japan, Oct. 1, 1991, 3-253253
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **3 Claims**

1. A method for fabricating an asymmetrical LDD-MOSFET, comprising:

providing a semiconductor substrate;

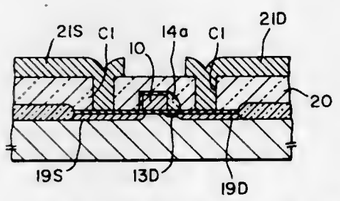
forming device isolation structures to define a MOSFET-formed region at a surface of the semi-conductor substrate;

forming a gate insulating film on said surface at said MOSFET-formed region;

selectively forming on said gate insulating film, a gate electrode which has a top surface and two sidewalls;

forming over said MOSFET-formed region an organic insulating film having a window which exposes one side-all of said gate electrode and at least a part of said top surface thereof, said organic insulating film being formed so that it covers another sidewall of said gate electrode and a remaining part of said top surface thereof;

forming at said surface of said semiconductor substrate a lightly-doped drain region self-aligned with said one sidewall of said gate electrode by an impurity introduction using said organic insulating film and said exposed part of said top surface of said gate electrode as masks;



depositing an inorganic insulating film only within said window so that said inorganic insulating film covers said exposed part of said top surface of said gate electrode, said one sidewall of said gate electrode and said gate insulating film at said window;

forming a spacer at said one sidewall of said gate electrode by etching anisotropically said inorganic insulating film and thereby removing said inorganic insulating film from said exposed part of said top surface of said gate electrode;

removing said organic insulating film; and

after removing said organic insulating film, forming at said surface of said semiconductor substrate a highly-doped drain region self-aligned with said spacer and a source region self-aligned with said another sidewall of said gate electrode by an impurity introduction using said gate electrode and said spacer as masks.

5,286,665

METHOD OF MANUFACTURING MOS MEMORY DEVICE HAVING A LDD STRUCTURE AND A-VISOR-LIKE INSULATING LAYER

Takeo Muragishi, and Eiichi Arima, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 637,428, Jan. 4, 1991, Pat. No. 5,172,200. This application Oct. 16, 1992, Ser. No. 961,978
Claims priority, application Japan, Jan. 12, 1990, 2-5163
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **6 Claims**

5. A process for producing a memory transistor of a dual gate structure of a non-volatile semiconductor memory device, comprising the steps of:

forming a first gate insulating layer on a major surface of a semiconductor substrate,

forming a first electrically conductive layer on said first gate insulating layer,

forming a second gate insulating layer on said first electrically conductive layer,

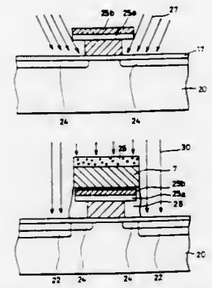
forming a nitride layer on the major surface of a semiconductor substrate said nitride layer having a main surface,

forming an etching mask of a predetermined shape on the main surface of said nitride layer,

patterning said nitride layer and the second insulating layer by a first etching method by using said etching mask,

patterning said first electrically conductive layer by using a second etching method having an etching selectivity different from that in the first etching method and using said mask to form a first gate electrode narrower than the patterned nitride layer,

implanting impurity ions obliquely into the major surface of said semiconductor substrate, using the patterned nitride layer and the first gate electrode as masks to form an



impurity region of lower concentration in said semiconductor substrate,

forming a thermally oxidized film on a lateral surface of said first gate electrode and the main surface of said nitride layer by using a thermal oxidation method, and

implanting impurity ions substantially vertically into the major surface of said semiconductor substrate by utilizing the patterned nitride film layer as a mask, and

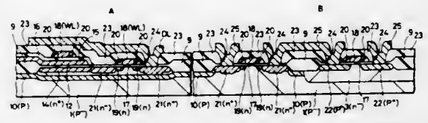
forming a second gate electrode on the main surface of the nitride layer covered by said thermally oxidized layer.

5,286,666

METHOD OF PRODUCING SEMICONDUCTOR MEMORY DEVICE

Hisao Katto, Hinode, and Jun Sugiura, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 396,686, Aug. 22, 1989, Pat. No. 5,116,775, which is a continuation of Ser. No. 63,110, Jun. 17, 1987, abandoned. This application Feb. 28, 1992, Ser. No. 843,599
Claims priority, application Japan, Jun. 18, 1986, 60-140061
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **49 Claims**



1. A method of manufacturing a semiconductor memory device, comprising the steps of:

providing a semiconductor substrate having a main surface, said main surface including a memory cell region in which a plurality of memory cells are to be formed, and including a peripheral circuit region in which a peripheral circuit is to be formed, wherein said memory cell region includes first active regions of a first conductivity type and a first region between said first active regions, and wherein said peripheral circuit region in which a peripheral circuit is to be formed, wherein said memory cell region includes first active regions of a first conductivity

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type and a first region between said first active regions, and wherein said peripheral circuit region includes second active regions of said first conductivity type and a second region between said second active regions;

selectively introducing first impurities of the first conductivity type into said second region without introducing said first impurities into said memory cell region, in order to form a first channel stopper layer of the first conductivity type in said section region;

after the step of selectively introducing said first impurities of the first conductivity type, selectively forming an isolation oxide film in said first and second regions by thermally oxidizing said main surface of said substrate at said first and second regions, said first channel stopper layer being disposed under said isolation oxide film in said second region;

after the step of selectively forming said isolation oxide film, introducing second impurities of the first conductivity type into said first region in said memory cell region, through said isolation oxide film, and into said first active regions in said memory cell region, in order to form a second channel stopper layer of the first conductivity type under isolation oxide film in said first region and a first semiconductor layer of the first conductivity type under said active regions in said memory cell region, said first semiconductor layer having a higher impurity concentration than that of said first active regions; and

forming first MISFETS in said first active regions, and forming second MISFETS in said active regions, said plurality of memory cells comprising said first MISFETS, said peripheral circuit comprising said second MISFETS.

5,286,667

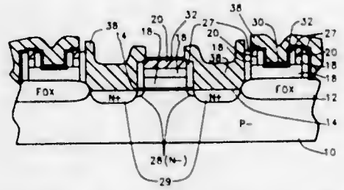
MODIFIED AND ROBUST SELF-ALIGNING CONTACT PROCESS

Jiunn-Jyi Lin, Hsinchu; Lih-Shyng Tsai, Hsin-chu; Hsien-Wen Chang, and Chang-Tai Chiao, both of Hsinchu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Aug. 11, 1992, Ser. No. 925,453

Int. Cl.[5] H01L *21/82*

U.S. Cl. 437—52 **13 Claims**



1. The method of fabricating an integrated circuit having a combination of a capacitor and metal oxide semiconductor field effect transistor with gate electrodes and source/drain regions comprising:

providing field oxide regions formed on a silicon substrate to isolate surface regions of silicon from one another and the regions having one conductivity;

depositing a doped polysilicon layer on top of said field oxide regions and said isolated surface regions;

forming a first silicon oxide layer on top of said doped polysilicon layer;

depositing a first silicon nitride barrier layer or first silicon oxynitride barrier layer on top of said first silicon oxide layer;

forming an opening having substantially vertical sidewalls through said first silicon nitride layer or first silicon oxynitride barrier layer and said first silicon oxide layer to said doped polysilicon layer in the planned said capacitor;

forming said gate electrodes on said surface regions and the pattern of said capacitor on said field oxide regions by etching openings with substantially vertical sidewalls in said silicon oxide, silicon nitride or silicon oxynitride, and polysilicon layers using a lithography mask;

ion implanting lightly doped said source/drain regions of an opposite conductivity into said surface regions of silicon having said one conductivity;

depositing a second layer of silicon dioxide over the exposed surfaces;

anisotropically etching said second silicon dioxide layer to form spacers on said substantially vertical sidewalls whereby said first silicon nitride barrier layer aids in etch endpoint detection;

growing a polysilicon oxide layer on top of the exposed said doped polysilicon layer to form plate of said capacitor;

ion implanting said opposite conductivity impurities into said surface regions of silicon to form heavily doped said source/drain regions adjacent to said gate electrode;

depositing a second barrier layer of silicon nitride or silicon oxynitride over the exposed surfaces;

depositing a layer of dielectric material over said second barrier layer of silicon nitride layer or silicon oxynitride layer;

forming openings through said layer of dielectric material in all areas but that which covers said planned capacitor;

etching the remaining exposed said second barrier layer of silicon nitride silicon oxynitride to expose said source/-drain regions;

etching the remains of said dielectric material covering said planned capacitor;

forming the dielectric of said capacitor; and

depositing and patterning a metal layer to form the top metal electrode of said capacitor and contacts to said source/-drain regions of said integrated circuit.

5,286,668

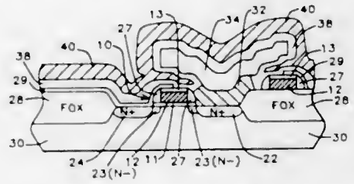
PROCESS OF FABRICATING A HIGH CAPACITANCE STORAGE NODE

Hsiang-Ming J. Chou, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 3, 1993, Ser. No. 13,064

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **18 Claims**



1. A method for fabricating a dynamic random access memory having a capacitor comprising:

selectively forming field oxide areas on the surface of a semiconductor substrate while leaving device areas for fabrication of field effect devices having gate structures and source/drain structures;

forming a gate dielectric layer on said substrate in the said device areas;

depositing a first layer of polysilicon on the said field oxide areas and said device areas;

removing portions of said first polysilicon layer while leaving portions thereof for the gate structure in said device areas, and portions over said field oxide areas; forming said source/drain structures within said device areas of said semiconductor substrate associated with said gate structures;

forming a first oxide layer over said device and field oxide areas; and forming said capacitors by,

forming openings to said source/drain structures by etching through said first oxide layer, wherein said openings extend over a portion of said first polysilicon layer of said gate structure and said field oxide areas,

depositing a doped second silicon layer over the device and field oxide areas to contact said source/drain structures wherein the doping is greater than about 1 E 19 atoms per cm^3,

depositing an undoped third polysilicon layer over said second doped silicon layer,

patterning anisotropically said second silicon and third polysilicon layers so as to have their remaining portions over planned capacitor areas which include portions over said first polysilicon layer in said gate structure and said filed oxide areas,

removing by selective etching with a phosphoric acid solution at a temperature of more than about 140° C. said portion of doped second silicon layer to create an undercut of said undoped third polysilicon layer over both the said portion of said first polysilicon layer of said gate structure and said field oxide areas and to construct the bottom storage node electrode of said desired capacitor,

wherein the selectivity of etching the doped silicon layer versus said undoped polysilicon layer is greater than about 50 to 1 wherein a phosphoric acid solution is used at a temperature of more than about 140° C.,

doping said remaining portions of said bottom storage node electrode,

forming a capacitor dielectric layer over the said third polysilicon layer, and

depositing a fourth polysilicon layer as the top plate electrode, and

patterning said fourth polysilicon layer and said dielectric layer to complete said capacitor.

5,286,669

SOLID-STATE IMAGING DEVICE AND METHOD OF MANUFACTURING THE SAME

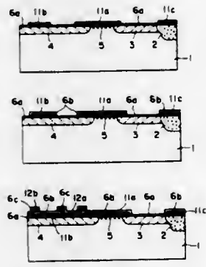
Toru Maeda, Kawasaki, and Patsuzo Kawaguchi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 547,050, Jul. 2, 1990, abandoned. This application May 26, 1992, Ser. No. 887,662

Claims priority, application Japan, Jul. 6, 1989, 1-175171; Nov. 17, 1989, 1-299251

Int. Cl.[5] H01L *21/339*

U.S. Cl. 437—53 **1 Claim**



1. A method of manufacturing a solid-state imaging device comprising the steps of:

forming a light-sensitive element region and a charge transfer region that are isolated from each other, by implanting into specific regions of a semiconductor device of a first conductivity type an impurity of a second conductivity type, and forming a channel region by implanting an impurity of said first conductivity type into a region of said semiconductor substrate between said light-sensitive element region and said charge transfer region;

forming an insulation film over the entire surface of said semiconductor substrate;

forming first charge transfer electrodes by depositing a film including at least an alloy consisting of a high-melting-point metal and silicon over said insulating film formed on said semiconductor substrate, patterning said alloy film, then subjecting said alloy to high-temperature processing in an O_2 atmosphere; and

forming second charge transfer electrodes by depositing a film, including at least an alloy formed of a high-melting-point metal and silicon, over said first charge transfer electrodes formed on said semiconductor substrate, patterning said alloy file to form portions that partially overlap said first charge transfer electrodes, then subjecting said alloy to high-temperature processing in an O_2 atmosphere.

5,286,670

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING BURIED ELEMENTS WITH ELECTRICAL CHARACTERISTIC

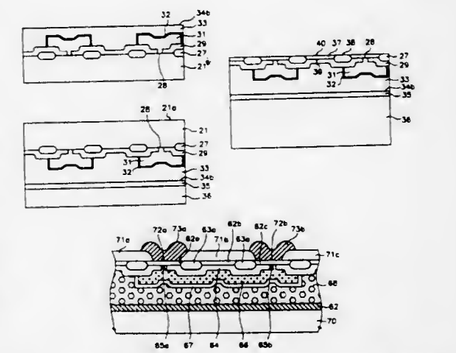
Sang-Won Kang; Hyun-Kyu Yu, and Won-Gu Kang, all of Daejeon, Rep. of Korea, assignors to Korea Electronics and Telecommunications Research Institute, Rep. of Korea

Filed May 8, 1992, Ser. No. 880,892

Claims priority, application Rep. of Korea, May 8, 1991, 91-7454

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—61 **8 Claims**



1. A method for manufacturing a semiconductor device having buried elements with electrical characteristic in a SOI substrate comprising the steps of:

(a) forming a first isolating insulator layer at a seed wafer by using an isolation mask, depositing a second isolating insulator layer overlying the first isolating insulator layer and the seed wafer, and defining contact holes by using a contact mask to form contacts on the seed wafer;

(b) depositing a first polysilicon layer on the second isolating insulator layer and the contacts and doping an impurity into the first polysilicon layer;

(c) patterning the first polysilicon layer to define an electrical element, depositing an insulating layer around the electrical element, and forming a second polysilicon layer overlying the second isolating insulator layer and the insulating layer;

(d) doping an impurity into the second polysilicon layer for connecting with a handling wafer, and polishing the second polysilicon layer thus doped to form a mirror surface;

(e) depositing an insulating layer for connection on the handling wafer, and performing a thermal process to bond the handling wafer and the mirror surface through the insulating layer for connection; and

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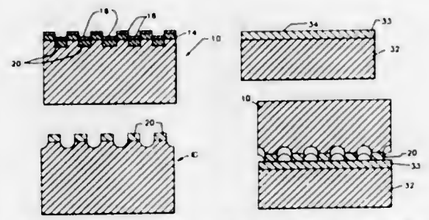
(f) polishing the seed wafer until the first isolating insulator layer as a polishing stopper is exposed, to form the SOI substrate having an active region where a device is formed.

5,286,671

FUSION BONDING TECHNIQUE FOR USE IN FABRICATING SEMICONDUCTOR DEVICES

Anthony D. Kurtz, Teaneck, and Alexander A. Ned, Bloomingdale, both of N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed May 7, 1993, Ser. No. 58,400
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—64 **16 Claims**



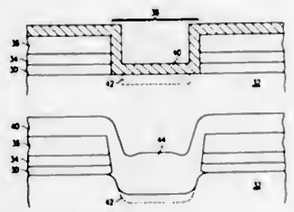
1. A method of bonding a first silicon wafer to a second silicon wafer comprising the steps of:
diffusing a high conductivity pattern into a surface of a first semiconductor wafer;
etching a portion of said surface to raise at least a portion of said pattern;
providing a second semiconductor wafer having an insulating layer of a silicon compound disposed thereon;
contacting the surface of said pattern to said insulating layer; and
bonding said first and second semiconductor wafers at an elevated temperature.

5,286,672

METHOD FOR FORMING FIELD OXIDE REGIONS

Robert L. Hodges, Euless, and Fu-Tai Liou, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 722,859, Jun. 28, 1991, abandoned. This application Mar. 10, 1992, Ser. No. 848,919
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 **4 Claims**



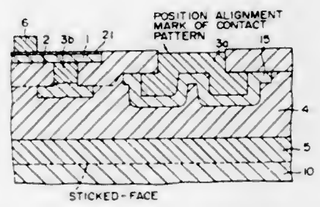
1. A method for formation of an isolation region in an integration circuit, comprising the steps of:
creating an oxidation barrier over a semiconductor substrate;
patterning and etching the oxidation barrier to define an opening where oxide will be grown;
forming a conformal layer of polycrystalline silicon over the oxidation barrier and extending into the opening;
implanting a channel stop region through the conformal layer of polycrystalline silicon into the semiconductor substrate; and
oxidizing a field oxide region in the substrate while the conformal layer of polycrystalline silicon remains in place.

5,286,673

METHOD FOR FORMING POSITION ALIGNMENT MARKS IN A MANUFACTURING SOI DEVICE

Toshiyuki Nishihara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,401
Claims priority, application Japan, May 10, 1991, 3-105602
Int. Cl.[5] H01L *23/544, 21/441*
U.S. Cl. 437—187 **3 Claims**



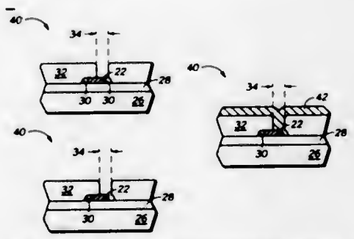
1. A method for forming a position alignment mark comprising the steps of:
simultaneously forming on a silicon substrate an alignment marking contact hole and a back surface electrode contact hole, respectively, in a field zone and an element zone;
forming on said field zone and said element zone a wiring pattern layer and a back surface electrode, respectively; and
cutting a silicon layer from the back surface of said silicon substrate to expose the wiring pattern layer and an alignment marking contact hole pattern and then using said contact hole pattern as an alignment mark for forming a surface electrode.

5,286,674

METHOD FOR FORMING A VIA STRUCTURE AND SEMICONDUCTOR DEVICE HAVING THE SAME

Scott S. Roth, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,044
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—190 **20 Claims**



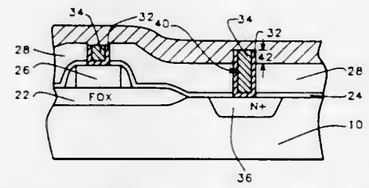
1. A method of fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate;
forming a first interconnect of a first metallic material overlying the substrate, the first interconnect having a top surface and sides;
forming a first dielectric material adjacent at least a portion of a side of the first interconnect, the first dielectric material having a first etch rate;
forming a second dielectric material overlying the first dielectric material and the first interconnect, the second dielectric material having a second etch rate which is substantially faster than the first etch rate;
removing a portion of the second dielectric material to form a via which overlies a portion of the first interconnect and exposes a portion of the first dielectric material, wherein removing the second dielectric material is accomplished selectively to the first dielectric material;
selectively removing the exposed portion of the first dielectric material to expose at least a portion of the side of the first interconnect; and
depositing a second metallic material which fills the via to form a contact to both the top surface and the exposed side of the first metallic interconnect.

5,286,675

BLANKET TUNGSTEN ETCHBACK PROCESS USING DISPOSABLE SPIN-ON-GLASS

Kuang-Chao Chen, and Shaw-Tzeng Hsia, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 14, 1993, Ser. No. 46,780
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **25 Claims**



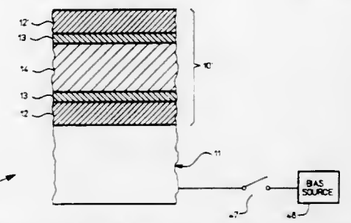
1. The method of completing tungsten contacts in an integrated circuit comprising:
providing semiconductor device structures in and on a semiconductor substrate;
providing at least one patterned conductive layer for contacting the active elements of said device structures;
the surface of said patterned conductive layer structure is irregular with horizontal and vertical components;
depositing and flowing an insulator layer over said irregular structure patterned conductive layer;
covering said insulator with a spin-on-glass layer and baking said spin-on-glass layer;
defining contact openings through said insulator and spin-on-glass layers to said device structures and to said substrate;
depositing a nucleation layer over said spin-on-glass layer and within said contact openings;
depositing a layer of tungsten over said nucleation layer;
etching back said tungsten layer and said nucleation layer thereby leaving said tungsten layer within said contact openings and leaving some of said tungsten layer as residue overlying said spin-on-glass layer;
removing said spin-on-glass layer and thereby removing any said tungsten layer residue overlying said spin-on-glass layer; and
depositing a layer of metal to complete said contacts to said device structures and to said silicon substrate.

5,286,676

METHODS OF MAKING INTEGRATED CIRCUIT BARRIER STRUCTURES

James B. Kruger, Half Moon Bay; S. Jeffrey Rosner, Palo Alto, and Iton Wang, Cupertino, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 15, 1992, Ser. No. 898,980
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—190 **10 Claims**



1. A method of making integrated circuit barrier structures comprising the steps of:
applying a first transitional metal layer onto a substrate;
backsputtering said first layer in an atmosphere having a nitrogen plasma, thereby forming a second nitrided transitional metal layer having more than the stoichiometric minimum of nitrogen;
applying a third electrically conductive metal layer onto said second nitrided transitional metal layer; and
depositing a transitional metal onto the surface of said third layer while simultaneously carrying out techniques for backsputtering in an atmosphere having a nitrogen plasma, thereby forming a fourth nitrided transitional metal layer having more than the stoichiometric minimum of nitrogen.

8. A method of making integrated circuit barrier structures comprising the steps of:
applying a transitional metal first layer onto a substrate;
fabricating on a surface of said first layer a nitrided transitional metal second layer having more than the stoichiometric minimum of nitrogen comprising the substeps of:
electrically biasing said substrate in a nitrogen atmosphere,
applying electrical power to a transitional metal target at substantially the same time as said electrically biasing said substrate, and
activating the nitrogen in said nitrogen atmosphere; and
applying an electrically conductive metal third layer onto said nitrided transitional metal second layer; and
fabricating on a surface of said third layer a nitrided transitional metal fourth layer having more than the stoichiometric minimum of nitrogen comprising the substeps of:
electrically biasing said substrate in a nitrogen atmosphere,
applying electrical power to said transitional metal target at substantially the same time as said electrically biasing said substrate, and
activating said nitrogen.

5,286,677

METHOD FOR ETCHING IMPROVED CONTACT OPENINGS TO PERIPHERAL CIRCUIT REGIONS OF A DRAM INTEGRATED CIRCUIT

Kuo-Chang Wu, Taichung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 7, 1993, Ser. No. 57,884
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **16 Claims**

1. The method for etching contact openings through first and second interlevel dielectric layers covering the peripheral

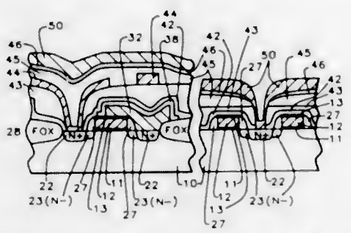
VOL 1159 ISS 3 FE 15 1994 UMI

circuits of a DRAM integrated circuit to be electrically contacted in a semiconductor wafer comprising:

providing within and over said semiconductor wafer said DRAM integrated circuit including said peripheral circuits to be electrically contacted;

forming a first conductive layer over said DRAM integrated circuit and patterning said layer;

forming a first interlevel dielectric layer over said first conductive layer which has been patterned, said first interlevel layer being composed of in the order from the first conductive layer of a silicon oxide layer and a borophosphosilicate layer;



forming a second conductive layer over said first interlevel dielectric layer and patterning said second conductive layer;

forming a second interlevel dielectric layer over said exposed second conductive layer and first interlevel dielectric, said second interlevel layer being composed of in the order from the second conductive layer of a borophosphosilicate layer and a silicon oxide layer; and etching said openings through said first and second interlevel dielectric layers to electrically contact regions in said peripheral circuits whereby due to the order of said interlevel dielectric layers said openings have an improved slope characteristic.

5,286,678

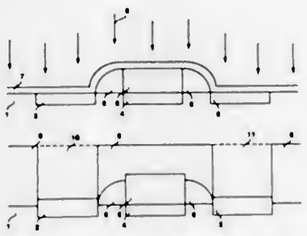
SINGLE STEP SALICIDATION PROCESS

Rajiv Rastogi, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 785,946, Oct. 31, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,945

Int. Cl.[5] H01L *21/28*

U.S. Cl. 437—200 **8 Claims**



1. An improved method of fabricating a semiconductor device with mean sheet resistivity less than 1 ohm per square, said improved method comprising:

a) forming active regions on said semiconductor device;

b) depositing a titanium metal on said active regions;

c) annealing said semiconductor device in a single step at a temperature within a range of 630° C.–650° C. and for approximately 90 seconds while maintaining nitrogen gas flow to produce an entirely C54 phase of tisalicide; and

d) forming interconnects on said semiconductor device.

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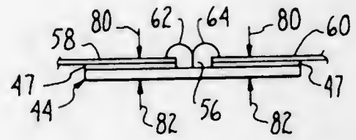
METHOD FOR ATTACHING A SEMICONDUCTOR DIE TO A LEADFRAME USING A PATTERNED ADHESIVE LAYER

Warren M. Farnworth, Nampa; Ed A. Sbrock, Boise; Scott Clifford, Boise; Jerrold L. King, Boise, and Walter Moden, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 18, 1993, Ser. No. 33,140

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **22 Claims**



1. A method of attaching a semiconductor die formed with a plurality of bonding pads to a leadframe having a plurality of continuous metal lead fingers adapted to extend across a surface of the die for attachment to the bonding pads using fine bond wires, comprising:

depositing an adhesive selected from the group consisting of thermoplastic adhesives or thermosetting adhesives on the die and patterning the adhesive to form a preapplied patterned adhesive layer on a surface of the die with the bonding pads of the die free of adhesive;

heating the adhesive layer during a packaging process; and

pressing the die, heated adhesive layer and lead fingers of the leadframe together during the packaging process to bond the adhesive layer and lead fingers and attach the lead fingers to the die.

5,286,680

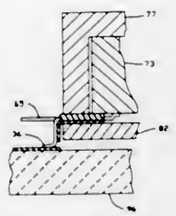
SEMICONDUCTOR DIE PACKAGES HAVING LEAD SUPPORT FRAME

Earl S. Cain, Napa, Calif., assignor to Tribotech, Napa, Calif.

Division of Ser. No. 609,088, Oct. 31, 1990, Pat. No. 5,184,207, which is a continuation of Ser. No. 281,016, Dec. 7, 1988, abandoned. This application Jul. 9, 1992, Ser. No. 912,032

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—216 **6 Claims**



1. A method of forming a lead pack comprising the steps of:

forming in a conductive foil such as copper a plurality of elongated spaced windows extending outwardly from a central area to define therebetween flat spaced elongated leads having an inner end at said central area and extending outwardly from said central area;

applying first and second frame members of electrical insulating material, one to each side of said elongated leads spaced from the inner ends of said leads;

pressing said frame members together so that they join to imbed and support the leads; and

excising the foil adjacent the two ends of the leads to form a lead pack comprising a frame of electrical insulating material supporting a plurality of spaced leads extending inwardly and outwardly from said frame.

5,286,681

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING A SELF-PLANARIZING FILM

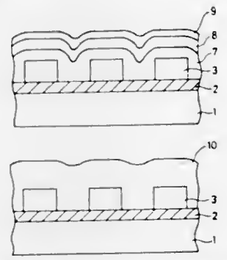
Kazuo Maeda; Bunya Matsui, and Yuko Nishimoto, all of Tokyo, Japan, assignors to Canon Sales Co., Inc., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,329

Claims priority, application Japan, Jun. 20, 1991, 3-149013

Int. Cl.[5] H01L *21/02*

U.S. Cl. 437—240 **6 Claims**



1. A method for manufacturing a semiconductor device, consisting essentially of the steps of:

forming a film having a self-flattening property on an uneven surface of a substrate;

then directly depositing a SiO_2 film doped with impurities to cover said self-flattening film;

then directly depositing a moisture resistant film to cover said doped SiO_2 film; and melting and fluidizing said self-flattening film, said doped SiO_2 film and said moisture resistant film by applying heat treatment so as to flatten the surface thereof, whereby the films flow into one another to form a unitary whole film.

5,286,682

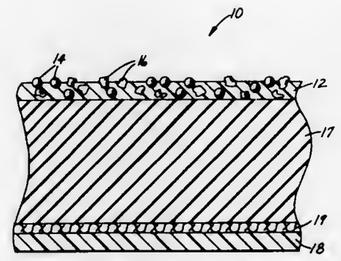
YELLOW RETROREFLECTIVE PAVEMENT MARKINGS

Gregory F. Jacobs, Woodbury; James E. Lasch, Oakdale; Thomas P. Hedblom, Eagan, all of Minn., and Larry K. Stump, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1992, Ser. No. 838,527

Int. Cl.[5] C03C *12/02*

U.S. Cl. 501—34 **28 Claims**



1. A retroreflective pavement marking, which comprises:

(a) a bead-carrier medium that is free of cadmium, chromium, and lead and contains a yellow colorant and at least 0.5 volume percent of a light-scattering agent that scatters white light and has an index of refraction greater than 1.6, the volume percent being based on solids of the bead-carrier medium excluding beads and anti-skid particles; and

(b) a plurality of retroreflective beads at least partially embedded in the bead carrier medium, the plurality of retroreflective beads having a yellow tint that provides the retroreflective pavement marking with a distinct yellow nighttime color that has a sum of chromaticity coordinates x and y greater than 0.95 when tested according to ASTM E 811-87, the pavement marking also exhibiting a specific luminance greater than 150 millicandela per square meter per lux when tested according to ASTM D 4061-89.

5,286,683

ALKALI METAL, COPPER PHOSPHATE GLASSES

Bruce G. Aitken, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,416

Int. Cl.[5] C03C *3/16*

U.S. Cl. 501—45 **2 Claims**

1. A glass exhibiting a transition temperature below 375° C. and a weight loss of less than 0.1% after immersion in boiling water for six hours, said glass consisting essentially, expressed in terms of mole percent on the oxide basis, of

Li_2O	0–15	BaO	0–20
Na_2O	0–20	MgO + CaO + SrO + BaO	0–25
K_2O	0–10	Al_2O_3	0–5
Tl_2O	0–15	B_2O_3	0–5
$Li_2O + Na_2O + K_2O + Tl_2O$	12–30	$Al_2O_3 + B_2O_3$	0–5
CuO	10–50	ZnO	0–37
P_2O_5	28–36	Sb_2O_3	0–36
MgO	0–15	CeO_2	0–3
CaO	0–20	MoO_3	0–7
SrO	0–20	MnO	0–20
WO_3	0–7	RE_2O_3	0–2

wherein at least two alkali metal oxides are present, the predominant proportion of the copper present in the glass will be in the Cu^{+2} oxidation state, and up to 12% by weight of fluoride may optionally be included.

5,286,684

ALUMINUM OXIDE-BASED SINTERED OBJECT AND PROCESS FOR PRODUCING THE SAME

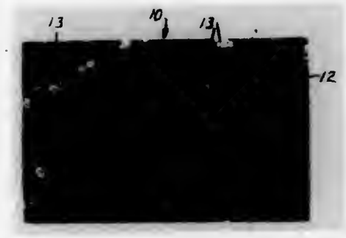
Jun Otsuka; Satoshi Iio, and Yo Tajima, all of Aichi, Japan, assignors to NGK Spark Plug Company, Ltd., Aichi, Japan

Filed Feb. 10, 1993, Ser. No. 15,920

Claims priority, application Japan, Feb. 14, 1992, 4-61307; Dec. 4, 1992, 4-350612

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—89 **8 Claims**



1. An aluminum oxide-based sintered object having excellent abrasion resistance which comprises α-aluminum oxide, a silicon compound and a tungsten compound, wherein the silicon compound and the tungsten compound are present in amounts based on starting amounts of SiC and W metal of from about 5 to about 40 mole % and from about 0.5 to about 25 mole %, respectively, based on the sintered object overall,

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with a W/SiC molar ratio of 4 or less, and in which particles of at least one of tungsten carbide and tungsten silicide having an average particle diameter of 0.5 μm or less are dispersed as a crystalline phase.

5,286,685

REFRACTORY MATERIALS CONSISTING OF GRAINS BONDED BY A BINDING PHASE BASED ON ALUMINUM NITRIDE CONTAINING BORON NITRIDE AND/OR GRAPHITE PARTICLES AND PROCESS FOR THEIR PRODUCTION

Jacques P. R. Schoennahl, Villeurbanne, and Michel Dussaulx, Lagnieu, both of France, assignors to Savoie Refractaires, Venissieux, France

Continuation of Ser. No. 774,525, Oct. 8, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,070

Claims priority, application France, Oct. 24, 1990, 90 13169

Int. Cl.[5] C04B *35/52, 35/54, 35/58*

U.S. Cl. 501—98 **9 Claims**

1. A refractory material which comprises, in % by weight

(A) 32–85% of grains of at least one refractory material whose melting point and thermal decomposition temperature are higher than 1700° C.;

(B) 10–40% of a binding matrix produced in situ which bids these grains together, said matrix comprising a major proportion of at least one member of the group consisting of at least one of the polytypes of AlN designated in the Ramsdell notation by 2 H, 27 R, 21 R, 12 H and 15 R, and the mixtures thereof with AlN of hexagonal structure, as determined from an X-ray diffraction pattern; and

(C) 3–42% of a dispersed phase selected from the group consisting of hexagonal boron nitride particles, crystalline graphite flakes, and mixture thereof, said phase being dispersed in the binding matrix;

said refractory material exhibiting resistance to corrosion by molten steel at 1700° C.

5,286,686

AIR-SINTERABLE LANTHANUM CHROMITE AND PROCESS FOR ITS PREPARATION

Stephen Haig, Piscataway; Beili L. Wu, and Jean Yamanis, both of Morristown, all of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 826,194, Jan. 21, 1992, Pat. No. 5,185,301, which is a continuation of Ser. No. 511,708, Apr. 20, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,633

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] C04B *35/04, 35/51;* **C01G** *39/00*

U.S. Cl. 501—117 **5 Claims**

1. A process for the preparation of sinter-reactive lanthanum chromite doped with divalent metals having the formula $LaCr_{1-x}M_xO_3$ where M is a divalent metal selected from the group consisting of zinc, copper and mixtures thereof, and x ranges from 0.02 to 0.20, said process comprising the steps of:

i. preparing a lanthanum chromite precursor having the empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate) where M is selected from the group consisting of zinc, copper and mixtures thereof, x ranges from 0.02 to 0.20, and Adsorbate is volatile matter, which is adsorbed on the powder and which is present up to 35 weight % based on total precursor weight, said precursor being prepared by a process comprising the steps of:

(a) reacting a solution containing a lanthanum compound and a chromium compound in an atomic ratio of La:Cr of 1:1−x with a stoichiometric excess of ammonium hydroxide to precipitate an intermediate hydroxide in the form of a slurry;

(b) washing the precipitated intermediate hydroxide with a wash liquid comprising deionized (DI) water and DI water/alcohol mixtures to remove most of the anions from the lanthanum and chromium compounds used in step (a) and to yield a slurry in a water/alcohol liquid;

(c) adding to the hydroxide slurry obtained in step (b) a solution of an M compound taken in such quantity as to yield an atomic ratio of La:Cr:M of 1:1−x:x where M is a divalent metal selected from the group consisting of zinc, copper and mixtures thereof and operative as a dopant;

(d) separating the powder from the water/alcohol liquid at supercritical conditions wherein temperature and pressure are equal to or greater than the critical point of the water/alcohol liquid in a batch or continuous process to obtain precursor lanthanum chromite powder with empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate); and

ii. calcining the lanthanum chromite precursor having the empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate) at a temperature ranging from 650° to 1100° C. for a time period ranging from 0.5 to 4 hours followed by deagglomeration to obtain a sinter-reactive ceramic powder having the chemical formula $LaCr_{1-x}M_xO_3$.

5,286,687

METHOD FOR PRODUCTION OF NEEDLELIKE CRYSTALLINE PARTICLES

Yoshio Murase, and Takeo Iga, both of Nagoya, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Continuation-in-part of Ser. No. 925,666, Aug. 7, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 14,526

Claims priority, application Japan, Aug. 9, 1991, 3-225249

Int. Cl.[5] C04B *35/10;* **C01F** *7/02*

U.S. Cl. 501—128 **7 Claims**

1. A method for the production of α-alumina particles having a Si content in the range of from 0.1 to 2 atomic % and measuring 0.005 to 0.05 microns in average width and from 0.3 to 2.0 microns in average length comprising mixing $Al(NH_4)(CO_3)(OH)_2$ particles measuring from 0.01 to 0.1 microns in average width and from 0;.5 to 3.0 microns in average length with 0.1 to 2% by weight in terms of silicon, based on the amount of said $Al(NH_4)(CO_3)(OH)_2$ particles of a silicon-containing compound to form a mixture, and heat-treating the mixture in air at a temperature in the range of from 1200 to 1500° C.

5,286,688

RARE EARTH OXIDE POWDER

Fumihiko Saito; Yuji Kimura, and Norifumi Yoshida, all of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,685

Claims priority, application Japan, May 28, 1992, 4-162021

Int. Cl.[5] C04B *35/50, 35/51*

U.S. Cl. 501—152 **3 Claims**

1. A green ceramic body shaped from an aqueous slurry of a rare earth oxide powder of which each of the particles has a coating of a flux composition consisting of (1) a borate of an alkali metal or alkaline earth metal element or (2) a combination of a boron oxide constituent and an oxide, carbonate, or chloride of an alkali metal or alkaline earth metal element, the powder having a specific surface area not exceeding 3 m^2/g.

5,286,689

Patent Not Issued For This Number

5,286,690

METHOD OF HEAT EXCHANGE OF SOLID PARTICLES FOR REGENERATION IN CATALYTIC CRACKING

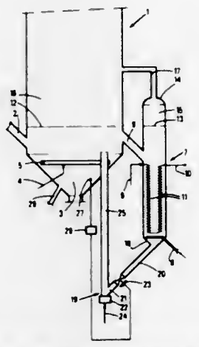
Frederic Hoffmann, Paris, and Regis Bonifay, Asnieres, both of France, assignors to Institut Francais du Petrole, Reuil Malmaison, France

Filed Apr. 20, 1992, Ser. No. 870,862

Claims priority, application France, Apr. 26, 1991, 91 05282

Int. Cl.[5] B01J *38/30, 38/32;* **C10G** *11/18;* **F27B** *15/08*

U.S. Cl. 502—41 **12 Claims**



1. A method of fluidized bed regeneration of a catalyst contaminated by coke deposited on it, comprising the following stages:

(a) in at least one regeneration zone and under dense bed regeneration conditions, regenerating the contaminated catalyst and the at least partially cooled recycled catalyst from stage (f) in the presence of a regenerating gas containing oxygen, resulting in regenerated catalyst and fumes, said regenerating gas being injected in said regeneration zone through an injector disposed in said regeneration zone;

(b) discharging at least a part of the catalyst contained in the regeneration zone and some of the fumes through a downwardly inclined duct into an external heat exchange zone of a suitable height, said duct communicating the dense bed of the regeneration zone with the heat exchange zone at a junction so disposed that from the bottom end of the external heat exchange zone to a level above the top of the said junction, a further dense bed of catalyst is established having an upper level of substantially the same height as the upper level of the catalyst in the regeneration zone and providing a clearance zone offering space above the said further dense bed at the top of the heat exchange zone;

(c) cooling the discharged catalyst in the said dense bed of said external heat exchange zone under adequate fluidization and indirect heat exchange conditions, in the presence of fluidizing gas containing oxygen, while circulating the catalyst downwardly and countercurrently to the direction of flow of the fluidizing gas and wherein substantially all of the heat exchange is carried out below the said junction point communicating with the heat exchange zone;

(d) separating the catalyst from the fluidizing gas as well as any regeneration fumes in said space of the clearance zone;

(e) withdrawing the said gases and fumes from the clearance zone in stage (d) and passing said gases and fumes to above the dense bed of the regeneration zone, and

(f) recycling the cooled catalyst from the bottom part of the heat exchange zone to a conduit in the dense bed of the regenerator by a countercurrent injection of fluidizing gas containing oxygen into said conduit and withdrawing the recycled catalyst from said conduit in the regeneration zone at a level above said injector.

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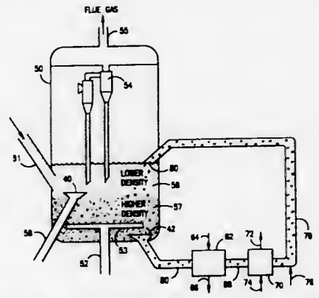
DEMETALLATION IN FCC REGENERATOR

Mohsen N. Harandi, Langhorne, Pa.; Joseph A. Herbst, Turnersville; Hartley Owen, Belle Mead, both of N.J.; Paul H. Schipper, Doylestown, Pa., and Robert T. Thomson, Lawrenceville, N.J., assignors to Mobil Oil Coproration, Fairfax, Va.

Filed Oct. 26, 1992, Ser. No. 966,475

Int. Cl.[5] B01J *38/30, 29/38, 38/72;* **C10G** *11/18*

U.S. Cl. 502—41 **10 Claims**



1. A process for regenerating and demetallizing a metal contaminated fluidized catalystic cracking catalyst comprising:

a. charging to a catalyst regeneration means a spent cracking catalyst having an average particle size within the range of 50 to 100 microns and having a settling velocity at FCC regeneration conditions and containing coke and at least one of Ni, V and Fe deposited thereon during catalytic cracking of a metals containing feed;

b. regenerating said spent catalyst in said regeneration means by contact with oxygen or an oxygen containing gas at regeneration conditions including a superficial vapor velocity;

c. maintaining a fluidized bed of regenerated catalyst within said regeneration means;

d. demetallizing said regenerated catalyst in said regeneration means by solid-solid interaction with a metals getter additive having an affinity for metals at FCC regeneration conditions, and separable by elutriation or settling within said regeneration means from said regenerated FCC catalyst

e. withdrawing regenerated catalyst, essentially free of said metals getter, from said regenerator vessel for reuse in the cracking reaction via an FCC catalyst withdrawal means within said regeneration means; and

f. withdrawing, at least periodically, said metals getter from said regenerator vessel for disposal or metal removal via an additive withdrawal means located within said discrete phase of fluidized additive and below said fluidized bed of FCC catalyst and wherein

g. said regeneration means comprises a single vessel containing a bubbling, dense phase fluidized bed of FCC catalyst above a discrete phase of metals getter and spent catalyst is added via an inlet within or beneath said discrete phase of metals getter.

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5,286,692

MILD HYDROCRACKING CATLYST AND THE PROCESS THEREFOR

Yan Zhao; Yuduo Hou; Quanzhu Peng; Jiduan Liu, and Xiaogang Chen, all of Fushun, China, assignors to China Petro-Chemical Corporation, Beijing, China

Continuation of Ser. No. 670,050, Mar. 15, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,555
Claims priority, application China, Mar. 17, 1990, 90101355-2
Int. Cl.[5] B01J *29/08*
U.S. Cl. 502—65 24 Claims

1. A mild hydrocracking catalyst, comprising 2–3 percent by weight alumina as support, 10–60 percent by weight REUHP zeolite dispersed in said support, and further admixed therewith 10–45 percent by weight (on the basis of oxides) metal compounds as active hydrogenation components in which at least one metal compound is non-noble metal selected from Group VIII and at least one metal compound is selected from Group VIB with the atom ratio of said metal compounds VII/(VIII+VIB) in the range of 0.2–0.8, 10–30 percent by weight binder (on the basis of γ-Al_2O_3), and 0–10 percent by weight phosphorus oxide as promoter.

3. The catalyst according to claim 1, wherein said Group VIB metal is Mo or W, and said Group VIII metal is Co or Ni.

5,286,693

METHOD OF PRODUCING CATALYST FOR CONVERTING HYDROCARBONS

Takashi Ino, Kawasaki; Kazumasa Hamatani, Yokohama; Nobuyuki Miyajima, Kawasaki, and Kazuya Nasuno, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,200
Claims priority, application Japan, Nov. 6, 1991, 3-290111
Int. Cl.[5] B01J *29/06, 37/28*
U.S. Cl. 502—68 19 Claims

1. A method of producing a catalyst for converting hydrocarbons comprising spray-drying a slurry containing crystalline aluminosilicate zeolite and magnesium silicate mineral, said magnesium silicate mineral functioning as a metal trap containing 10 to 60 wt % of magnesium as an oxide, said magnesium silicate mineral having been treated with a phosphorus-containing solution.

14. The method as defined in claim 1 wherein said slurry is obtained by kneading said crystalline aluminosilicate zeolite, said magnesium silicate mineral and a binder.

15. The method as defined in claim 14 wherein said binder is selected from the group consisting of an alumina sol type binder, a silica sol type binder and mixtures thereof.

18. The method as defined in claim 1 wherein said slurry contains clay selected from the group consisting of kaoline, bentonite, montmorillonite, halloysite and mixtures thereof in an amount of 2 to 25 wt % based on total weight of the slurry.

5,286,694

LANTHANIDE HALIDE CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Ted M. Pettijohn, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 11, 1991, Ser. No. 805,440
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] C08F *4/626, 10/00*
U.S. Cl. 502—110 17 Claims

1. A process for producing a polymerization catalyst comprising:

(1) contacting at least one metal halide selected from the halides of scandium, yttrium, and rare earth metals having atomic numbers in the range of 57 to 71 with at least one alcohol to form a lanthanide halide solution;

(2) contacting the solution of (1) with an organometallic compound to form a complex in solution; and

(3) contacting the complex of (2) with a halide ion exchanging source to form a solid catalyst;

wherein said organometallic compound is selected from compounds wherein the metal is selected from the Groups IA, IIA, IIB, and IIIA.

5,286,695

OLIGOMERIZATION CATALYST FOR α-OLEFINS AND PROCESS FOR OLIGOMERIZING α-OLEFINS

Keiji Hirose, Yamaguchi, Japan, and Wilhelm Keim, Aachen, Fed. Rep. of Germany, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,275
Claims priority, application Japan, Sep. 5, 1991, 3-226166
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—117 12 Claims

1. An oligomerization catalyst for α-olefins, comprising

[A] at least one nickel compound selected from the group consisting of a nickel salt of organic acid, a nickel salt of inorganic acid and a complex compound of nickel,

[B] an organoaluminum oxy-compound having at least 3 aluminum atoms in the molecule, and

[C] a trivalent phosphorous compound represented by the formula [I]

$$PR^1R^2R^3 \qquad [I]$$

wherein R^1, R^2 and Rhu are each independently a hydrocarbon group or substituted hydrocarbon group having 1 to 10 carbon atoms.

5,286,696

ETHYLENE OLIGOMERIZATION AND CATALYST THEREFOR

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 4, 1992, Ser. No. 985,713
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—155 16 Claims

1. A composition comprising a nickel compound, a phosphine compound having the formula of PR_3 and a phosphated alumina; wherein each R is selected from the group consisting of hydrogen, a C_1 to C_{20} hydrocarbyl radical, and mixtures thereof; and at least one R is not hydrogen.

5,286,697

CATALYST FOR THE SELECTIVE OXIDATION OF SULPHUR COMPOUNDS TO ELEMENTAL SULPHUR, PROCESS FOR PREPARING SUCH A CATALYST AND METHOD FOR THE SELECTIVE OXIDATION OF SULPHUR COMPOUNDS TO ELEMENTAL SULPHUR

Peter J. van den Brink, and John W. Geus, both of Utrecht, Netherlands, assignors to Veg-Gasinstituut N.V., Amsterdam and Comprimo B.V., Apeldoorn, both of Netherlands

Filed Jul. 19, 1990, Ser. No. 555,254
Claims priority, application Netherlands, Jul. 21, 1989, 8901893; Oct. 31, 1989, 8902690
Int. Cl.[5] B01J *21/08, 23/26, 23/74, 23/86*
U.S. Cl. 502—257 8 Claims

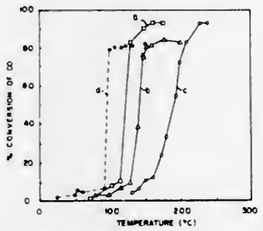
1. A catalyst for the selective oxidation of sulphur containing compounds to elemental sulphur, consisting essentially of a catalytically active material, selected from the group consisting of iron compounds and mixtures of iron and chromium compounds, and a carrier, said carrier consisting essentially of silica, the catalytically active material being present on the silica in an amount of 0.1–40% by weight, calculated on the total weight of the catalyst, the catalyst having a specific surface area of more than 20 m^2/g and an average pore radius of at least 50 Å, said catalyst exhibiting no substantial activity towards the Claus reaction ($2H_2S+SO_2 \rightleftarrows 3/n\ S_n+2H_2O$), the definition of no substantial activity towards the Claus reaction being that under reaction condition for the conversion of hydrogen sulphide to elemental sulphur in the presence of 30% by volume of water, the selectively of the catalyst for the reaction to elemental sulphur is not more than 15% lower than the selectivity of the catalyst under said reaction conditions in the absence of water, said catalyst having been prepared by incipient wetness impregnation of carrier with a solution containing cations of the catalytically active material.

5,286,698

METAL OXIDE CATALYSTS

James J. Carberry, South Bend, and C. Benjamin Alcock, Mishawaka, both of Ind., assignors to University of Notre Dame du Lac, Notre Dame, Ind.

Continuation of Ser. No. 723,848, Jul. 1, 1991, abandoned, which is a division of Ser. No. 343,054, Apr. 25, 1989, Pat. No. 5,028,404. This application Jul. 10, 1992, Ser. No. 912,004
Int. Cl.[5] B01J *23/10*
U.S. Cl. 502—303 6 Claims



1. A catalyst composition comprising a refractory substrate and on the surface of said substrate a metal oxide solution of the formula $La_{1-x}Sr_xCrO_{3-\partial}$ wherein x is greater than zero and less than about 0.5 and ∂ is an index of deviation from the indicated oxygen stoichiometry so that the whole number 3 is the whole number closest to the numerical value of the subscript $3-\partial$.

5,286,699

EXHAUST GAS PURIFYING CATALYST SUPPRESSING THE GENERATION OF HYDROGEN SULFIDE AND METHOD OF MAKING THE CATALYST

Tomohisa Ohata; Kazuo Tsuchitani, and Eiichi Shiraiashi, all of Himeji, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 671,658, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 367,259, Jun. 16, 1989, abandoned. This application Dec. 20, 1991, Ser. No. 812,849
Claims priority, application Japan, Dec. 9, 1988, 1-310169
Int. Cl.[5] B01J *23/00*
U.S. Cl. 502—304 7 Claims

1. An exhaust gas purifying catalyst which suppresses the generation of hydrogen sulfide comprising a honeycomb carrier of a monolithic structure on which is coated and supported a catalyst composition containing (a) activated alumina on which is supported from 5 to 30 weight %, based on the weight of the active alumina, of platinum, palladium or a mixture of platinum and palladium and from 1 to 20 weight %, based on the weight of the active alumina, of rhodium, (b) a cerium oxide, (c) additional activated alumina free of platinum and palladium and optionally (d) alkali metal, wherein 1 to 20 g of the activated alumina (a), 50 to 200 g of the additional activated alumina (c) and 10 to 150 g, as CeO_2, of the cerium oxide (b) are supported per liter of the carrier.

7. A process for preparing a three-way exhaust gas purifying catalyst which is capable of suppressing the generation of hydrogen sulfide, said method comprising forming a slurry of a catalyst composition comprising (a) activated alumina on which is supported from 5 to 30% by weight of a noble metal selected from the group consisting of platinum, palladium and mixtures thereof, and from 1 to 20% by weight of rhodium, (b) cerium oxide, (c) additional activated alumina free of platinum and palladium, and optionally (d) alkali metal and optionally (e) nickel oxide, supporting the slurry on a honeycomb carrier of a monolithic structure and drying the slurry to obtain a coating of the catalyst composition on the honeycomb carrier, wherein the slurry contains the activated alumina (a), the cerium oxide (b) and the additional activated alumina (c) in an amount such that the coating contains from 1 to 20 g of component (a), 10 to 150 g, as CeO_2, of component (b) and 50 to 200 g of component (c), per liter of the honeycomb carrier.

5,286,700

CATALYST AND METHOD OF PREPARING THE CATALYST

Sadao Terui, Hyogo, and Yoshiyuki Yokota, Suita, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Division of Ser. No. 766,092, Sep. 27, 1991, Pat. No. 5,187,137. This application Oct. 21, 1992, Ser. No. 964,268
Claims priority, applicatioo Japan, Sep. 29, 1990, 2-262450; Feb. 14, 1991, 3-043021; Feb. 14, 1991, 3-043022
Int. Cl.[5] B01J *23/64*
U.S. Cl. 502—324 1 Claim

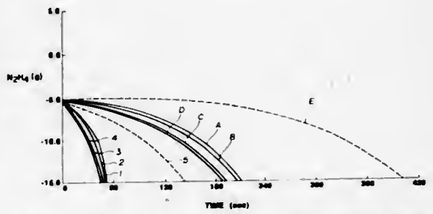
1. A catalyst consisting essentially of Mn oxide and palladium selected from the group consisting of metallic palladium, Pd oxide and mixtures thereof, the Mn oxide and palladium being in a mixing ratio of 1:0.001–1:0.15 by Mn-Pd atom ratio, and a support carrying on its surface said catalyst in a thickness of 5–250 μm.

5,286,701

METHOD FOR PREPARING HYDRAZINOLYSIS CATALYST

Fujio Mizukami; Tsuneji Sano, both of Ibaraki, and Koji Masuda, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology and Nissan Motor Company, Ltd., both of Japan

Continuation-in-part of Ser. No. 665,544, Mar. 5, 1991, abandoned. This application Apr. 30, 1992, Ser. No. 876,809
Claims priority, application Japan, Mar. 6, 1990, 2-52616
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] B01J *23/56*
U.S. Cl. 502—332 5 Claims



1. A method for preparing a hydrazinolysis catalyst including alumina support and iridium, said method comprising the steps of;

adding aluminum alkoxide into hexyleneglycol (2-methyl-2, 4-pentanediol) to form a mixture,

preparing a sol by heating said mixture,

hydrolyzing said sol until changed to a gel,

drying and calcining said gel to obtain said alumina support, and

dispersing said iridium on said support.

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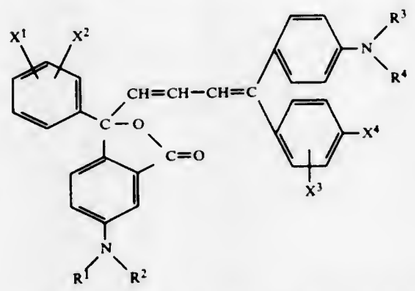
5,286,702

PHTHALIDE COMPOUND AND RECORDING MATERIAL USING THE COMPOUND

Yutaka Muraki, Uji; Hidekazu Ishida, Nara; Hajime Kawai, Tsuzuki, and Katsuhiko Tsunemitsu, Uji, all of Japan, assignors to Yamada Chemical Co., Ltd., Kyoto, Japan

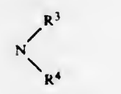
Filed Apr. 24, 1992, Ser. No. 873,938
Claims priority, application Japan, Apr. 26, 1991, 3-191351
Int. Cl.[5] B41M *5/145, 5/30;* C07D *307/79*
U.S. Cl. 503—220 3 Claims

1. A phthalide compound represented by the formula (I):



(I)

where R^1 and R^2 represent, independently, alkyl group having 6 or less carbon atoms; cycloalkyl group having 5 or 6 carbon atoms; aryl group; or R^1, R^2 and N can be taken together to form a pyrrolidino group or a piperidine group, R^3 and R^4 represent, independently, alkyl group having 6 or less carbon atoms; cycloalkyl group having 5 or 6 carbon atoms; aryl group; or R^3, R^4 and N can be taken together to form a pyrrolidino group or a piperidine group, $X^1 \sim X^3$ represent, independently, hydrogen atom, alkyl group having 6 or less carbon atoms, alkoxy group having 6 or less carbon atom or halogen atom, and X^4 represents hydrogen atom, alkyl group having 6 or less carbon atoms, alkoxy group having 6 or less carbon atom, halogen atom or

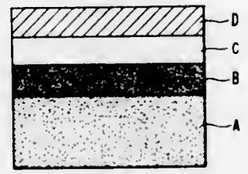


5,286,703

HEAT-SENSITIVE RECORDING MATERIAL

Naotaka Wachi; Ken Iwakura; Kensuke Ikeda, and Katsuya Takemasa, all of Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1991, Ser. No. 795,800
Claims priority, application Japan, Nov. 22, 1990, 2-319745; Nov. 29, 1990, 2-331413
Int. Cl.[5] B41M *5/40*
U.S. Cl. 503—221 7 Claims



1. A heat-sensitive recording material comprising a support having thereon a color-developing layer and at least one separate UV-absorbing layer with a light-transmittance of 70% or less at 400 nm, 5% or less at 370 nm, and 70% or more for entire visible light range.

5,286,704

HEAT-SENSITIVE RECORDING MEDIUM

Motonao Yoshikawa, Shizuoka, and Katsumi Moronuki, Koganei, both of Japan, assignors to Honshu Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 644,907, Jan. 23, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 953,307
Int. Cl.[5] B41M *5/40*
U.S. Cl. 503—226 4 Claims

1. A heat-sensitive recording medium, comprising:
(a) a biaxially oriented polypropylene film support;
(b) a ionomer-resin layer on said support; and
(c) a heat-sensitive recording layer on said ionomer-resin.

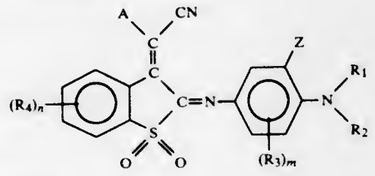
5,286,705

HEAT TRANSFER SHEET

Jumpei Kanto; Hitoshi Saito; Masayuki Nakamura, and Yasushi Sato, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

PCT No. PCT/JP89/00877, § 371 Date Apr. 30, 1990, § 102(e) Date Apr. 30, 1990, PCT Pub. No. WO90/02047, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 29, 1989, Ser. No. 474,052
Claims priority, application Japan, Aug. 29, 1988, 63-212397; Dec. 27, 1988, 63-327883
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 4 Claims

1. A heat transfer sheet comprising a substrate sheet and a dye carrying layer formed on its major side, characterized in that a dye included in said dye carrying layer is expressed by the following general formula (II):



(II)

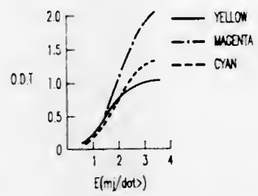
wherein:
A stands for a cyano, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylcarbamoyl, arylcarbamoyl, alkylcarbonyl, arylcarbonyl, alkylsulfonyl, alkylsulfonylamino, arylsulfonyl or aryl group,
R_1 denotes a substituted or unsubstituted alkyl, aralkyl or aryl group, or an atom or atomic group which form a five- or six-membered ring together with Z,
R_2 indicates a substituted or unsubstituted alkyl, aralkyl or aryl group,
said R_1 and R_2 may form a five- or six-membered ring which may include an oxygen or nitrogen atom,
R_3 stands for a hydrogen or halogen atom or an alkyl, alkoxy or acylamino group which may include a substituent,
R_4 denotes a hydrogen or halogen atom or an alkyl, alkoxy, nitro, cyano, acylamino or aryl group which may include a substituent,
Z indicates a hydrogen atom or an atom or atomic group which forms a five- or six-membered ring together with R_1, and
n and m each are 1 or 2.

5,286,706

SUBLIMATION-TYPE THERMAL IMAGE TRANSFER RECORDING MEDIUM

Hidehiro Mochizuki, Numazu; Masaru Shimada, Shizuoka; Naoya Morohoshi, Numazu; Hiroyuki Uemura, Numazu; Chiharu Nogawa, Numazu, and Yutaka Ariga, Fuji, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 7, 1991, Ser. No. 696,716
Claims priority, application Japan, May 8, 1990, 2-116878; May 10, 1990, 2-118661; Jan. 28, 1991, 3-25115
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 14 Claims



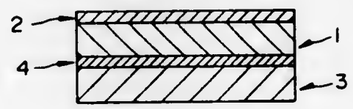
1. A sublimation thermal image transfer recording medium comprising (i) a support and (ii) a plurality of ink layers with different colors formed on said support, each ink layer comprising an organic binder agent and a sublimable dye dispersed in said organic binder agent, with the gram-absorptivity coefficient of said sublimable dye being 150,000 or more.

5,286,707

RECORDING MEDIUM FOR SUBLIMATION TYPE HEAT-SENSITIVE TRANSFER RECORDING PROCESS

Kenji Kushi; Takayuki Iseki; Tadayuki Fujiwara, and Kazuhiko Jufuku, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 788,427
Claims priority, application Japan, Nov. 7, 1990, 2-301767
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 12 Claims



1. A recording medium for sublimation type heat-sensitive transfer recording process comprising a substrate and a dye-accepting layer on one surface of the substrate, wherein the substrate comprises a laminate paper, and wherein the laminate paper consists of two sheets of cellulosic fiber paper bonded together by an adhesive agent and further wherein one of the sheets of cellulosic fiber paper, on a surface of the substrate on which the dye-accepting layer is not formed, has a tension which is 1.5 to 20 times higher than the tension of the other sheet of cellulosic fiber paper which is on a surface of the substrate on which the dye-accepting layer is formed.

5,286,708

PHOTODYNAMIC HERBICIDAL COMPOSITIONS USING DELTA-AMINOLEVULINIC ACID

Constantin A. Rebeiz, Urbana, Ill., and Herbert J. Hopen, Madison, Wis., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Division of Ser. No. 895,529, Aug. 11, 1986, Pat. No. 5,127,938, which is a continuation of Ser. No. 754,092, Jul. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 634,932, Jul. 27, 1984, abandoned. This application Oct. 8, 1991, Ser. No. 773,030
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] A01N *43/42, 37/44*
U.S. Cl. 504—130 48 Claims

1. A composition comprising δ-aminolevulinic acid, and at least one compound selected from the group consisting f inducers of δ-aminolevulinic acid, enhancers of δ- aminolevulinic acid conversion to photodynamic tetrapyrroles, and inhibitors of conversion of divinyl tetrapyrroles to monovinyl tetrapyrroles at a concentration of from about 2 to bout 30 mM of δ-aminolevulinic acid and about 10 to about 30 mM of the compound selected from the group consisting of inducers of δ-aminolevulinic acid, enhancers of δ-aminolevulinic acid conversion to photodynamic tetrapyrroles, and inhibitors of conversion of divinyl tetrapyrroles to monovinyl tetrapyrroles.

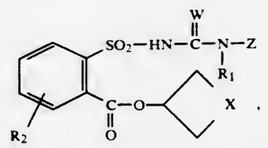
5,286,709

SULFONYLUREAS

Willy Meyer, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

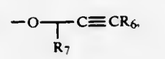
Division of Ser. No. 823,515, Jan. 21, 1992, Pat. No. 5,209,771. This application Feb. 8, 1993, Ser. No. 14,947
Int. Cl.[5] C07D *239/69;* A01N *43/54*
U.S. Cl. 504—215 10 Claims

1. A compound of the formula I



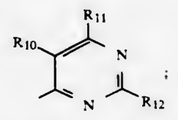
(I)

in which X is oxygen, sulfur, SO or SO_2; W is oxygen or sulfur; R_1 is hydrogen or methyl; R_2 is hydrogen, fluorine, chlorine, bromine, iodine, $(X)_nR_3$, NO_2, NR_4R_5, $-C{\equiv}CR_6$,



or cyano; n is the number 0 or 1; R_3 is C_1-C_4alkyl or C_1-C_4alkyl which is substituted by 1–4 halogen atoms, C_1-C_3alkoxy or C_1-C_3alkylthio; or C_2-C_4alkenyl or C_2-C_4alkenyl which is substituted by 1–4 halogen atoms; R_4 is hydrogen, CH_3O, CH_3CH_2O or C_1-C_3alkyl; R_5 is hydrogen or C_1-C_3alkyl; R_6 is hydrogen, methyl or ethyl; R_7 is hydrogen or methyl; Z is

Z2



R_{10} is hydrogen, fluorine, chlorine, methyl, trifluoromethyl, CH_3O, CH_3CH_2O, CH_3S, CH_3SO, CH_3SO_2 or cyano; R_{11} is methyl, ethyl, CH_3O, CH_3CH_2O, fluorine or chlorine; R_{12} is

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methyl, ethyl, CH_3O, CH_3CH_2O, fluorine or chlorine; or a salt thereof.

5,286,710

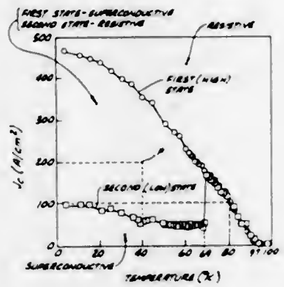
SUPERCONDUCTIVE ALLOYS HAVING BIFURCATED CRITICAL CURRENT DENSITY AND METHOD OF PREPARATION

Yusuf S. Hascicek, and Louis R. Testardi, both of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Filed Jan. 22, 1991, Ser. No. 644,175

Int. Cl.[5] H01B *12/00;* **H01L** *39/12;* **H03K** *17/92, 3/38*

U.S. Cl. 505—1 **20 Claims**



1. A device having superconductive and resistive states, said device comprising:

an element comprising a high temperature superconductive material characterized by a bifurcated critical current density (J_c) versus temperature (T) curve which has a bifurcation temperature of about 69° K. or greater, the material further having a first (high) state with a first (high) critical current density and having a second (low) state with a second (low) critical current density, wherein the second (low) critical current density is less than the first (high) critical current density;

means for applying to the element a current having a current density in a range between and including the first (high) and second (low) critical current densities; and

means for applying a transient pulse to the element whereby the transient pulse changes the state of the element between the first (high) and second (low) states when the element is at a temperature below the bifurcation temperature, the element being superconductive in the first (high) state as a result of the current density of the applied current being less than or equal to the first (high) critical current density, and the element being resistive in the second (low) state as a result of the current density of the applied current being greater than or equal to the second (low) critical current density.

5,286,711

METHOD OF PRODUCING OXIDE SUPERCONDUCTOR

Hiroko Kaneko; Keiji Kaneko; Hideo Ihara, all of Tsukuba, and Akira Negishi, Matsudo, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 23, 1992, Ser. No. 856,378

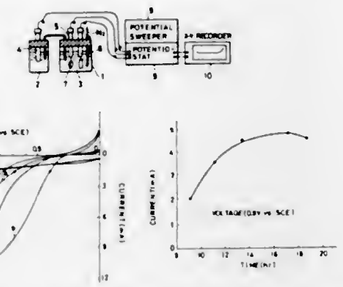
Claims priority, application Japan, Jun. 21, 1991, 3-177257

Int. Cl.[5] H01B *12/00*

U.S. Cl. 505—1 **12 Claims**

1. A method for producing an oxide superconductor comprising obtaining a cyclic voltammogram in an electrolyte using an oxide material containing an element having a redox charge as an electrode, determining an electrolytic potential for the oxide material on the basis of the voltammogram, and electrolyzing the oxide material at the determined potential wherein the electrolytic potential is determined from the oxide material's cyclic voltammogram as one which satisfies the following conditions:

1) that at electrolysis temperature the difference between oxidation and reduction currents is large and



2) at least one of the oxidation current and the reduction current flows.

5,286,712

HIGH TC SUPERCONDUCTING FILM

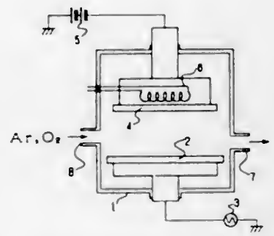
Nobuhiko Fujita; Tadakazu Kobayashi; Hideo Itozaki; Saburo Tanaka; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 563,687, Aug. 3, 1990, Pat. No. 5,175,140, which is a continuation of Ser. No. 171,359, Mar. 21, 1988, abandoned. This application Sep. 30, 1992, Ser. No. 953,861

Claims priority, application Japan, Mar. 19, 1987, 62-65281

Int. Cl.[5] H01L *39/00*

U.S. Cl. 505—1 **12 Claims**



1. A film of a superconducting compound oxide material represented by the general formula:

$$A_uB_vC_wCu_xO_y$$

in which,

"A" is selected from the group consisting of magnesium (Mg), calcium (Ca), strontium (Sr) and barium (Ba);

"B" is selected from the group consisting of yttrium (Y), lanthanum (La), and lanthanide elements;

"C" is selected from the group consisting of vanadium (V), tantalum (Ta), indium (In), and thallium (Tl), and

$0<u\leqq 1.0$,

$0<v\leqq 1.0$,

$0<w\leqq 1.0$,

$0<x\leqq 1.0$, and

$2\leqq y\leqq 4$, said film being deposited on a substrate by physical vapor deposition.

5,286,713

METHOD FOR MANUFACTURING AN OXIDE SUPERCONDUCTING CIRCUIT BOARD BY PRINTING

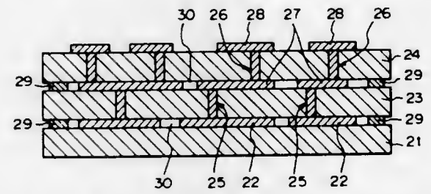
Hiromitsu Yokoyama, Sagamihara; Yoshihiko Imanaka, Atsugi; Kazunori Yamanaka, Sagamihara; Nobuo Kamehara, Isehara; Koichi Niwa, Tama; Takuya Uzumaki, Kawasaki; Hitoshi Suzuki, Zama, and Takato Machi, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 769,730, Oct. 2, 1991, abandoned, which is a division of Ser. No. 268,195, Jan. 30, 1989, Pat. No. 5,081,070, which is a division of Ser. No. 191,157, May 6, 1988, abandoned. This application May 21, 1993, Ser. No. 64,668

Claims priority, application Japan, May 8, 1987, 62-110718; May 11, 1987, 62-112550; May 11, 1987, 62-112552; May 11, 1987, 62-114327; May 11, 1987, 62-114328; Jan. 11, 1988, 63-03408; Jan. 19, 1988, 63-09373

Int. Cl.[5] B05D *3/02, 5/12*

U.S. Cl. 505—1 **24 Claims**



1. A process for manufacturing a superconducting circuit board, the process comprising the steps of:

printing an interconnection pattern of a paste of a superconducting ceramic material on a sintered alumina board; and

firing the interconnection pattern of the paste on the alumina board in an oxidizing atmosphere to form a superconducting interconnection pattern of the superconducting ceramic material on the alumina board, wherein the sintered alumina board contains more than 99% by weight of alumina and the superconducting ceramic material is made of a superconducting oxide which exhibits superconductivity at the temperature of liquid nitrogen and which is represented by the general formula:

$$A_{0.5\text{-}1.8}R_{0.2\text{-}2}M\ O_{2\text{-}5}$$

where A stands for at least one of Ba, Sr, Ca or Mg; R stands for at least one of Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb or Lu; M stands for copper or copper and at least one of silver and gold; and O stands for oxygen.

5,286,714

SYNTHETIC ISOHIRUDINS WITH IMPROVED STABILITY

Peter Crause, Offenbach am Main; Paul Habermann, Eppstein am Taunus; Dominique Tripier, Eppstein am Taunus; Wolfgang Ulmer, Eppstein am Taunus, and Gerhard Schmid, Müchen , all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,110

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, 41 40 381.9

Int. Cl.[5] C07K *7/10;* **A61K** *37/64*

U.S. Cl. 514—12 **9 Claims**

1. An isohirudin with the following amino acids

Glu at position 33

Gln, Glu, Asn or Asp at position 52

Glu at position 53

Gly or Ala at position 54

Asp or Glu at position 55 (Seq. ID No. 3).

5,286,715

NEW ADAMANTYL COMPRISING TRIPEPTIDES, DERIVATIVES AND HYDROCHLORIDES THEREOF, THEIR PREPARATION AND USE

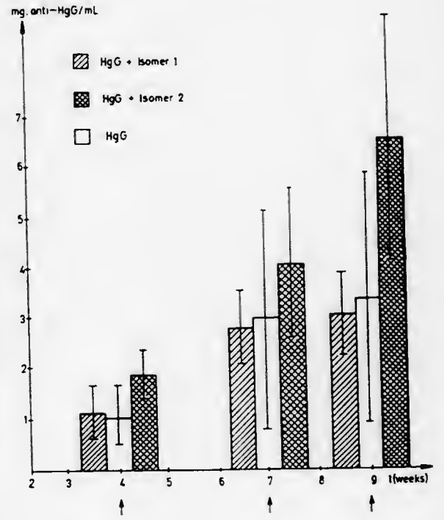
Branka Vranesic; Jelka Tomasic; Stanislav Smerdel; Darko Kantoci, all of Zagreb, Yugoslavia; Gianni Sava, Trieste, Italy, and Ivo Hrsak, Zagreb, Yugoslavia, assignors to Imunoloski Zavod, Costa Rica

Division of Ser. No. 477,373, Feb. 9, 1990, Pat. No. 5,066,642. This application Nov. 15, 1991, Ser. No. 792,619

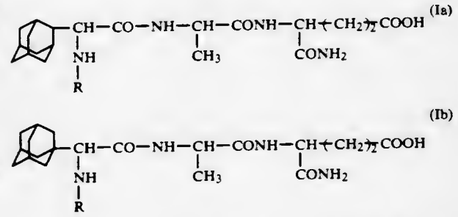
Claims priority, application Yugoslavia, Feb. 9, 1989, 305/89

Int. Cl.[5] A61K *37/02;* **C07K** *5/08*

U.S. Cl. 514—18 **5 Claims**



1. A method of treating tumors in humans and animals, which comprises administering an effective amount of 1 to 100 mg/m^2 of body surface per day of a compound selected from the group consisting of D/L-(2-adamantyl)- and D/L-(1-adamantyl-) glycyl-L-alanyl-D-isoglutamine of the formulae



wherein R stands for a hydrogen atom or a MurNac group, and hydrochlorides thereof or a composition containing the same as an active ingredient.

VOL 1159 ISS 3 FE 15 1994 UMI

5,286,716
INHIBITOR OF THE PROLIFERATION OF ENDOTHELIAL CELLS

Werner Risau, Gräfelfing, and Hannes Drexler, Munich, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft Zur Forderung Der Wissenschaften E.V., Gottingen, Fed. Rep. of Germany

PCT No. PCT/EP91/00388, § 371 Date Aug. 25, 1992, § 102(e) Date Aug. 25, 1992, PCT Pub. No. WO91/13094, PCT Pub. Date Sep. 5, 1991
PCT Filed Mar. 1, 1991, Ser. No. 920,467
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 4006609
Int. Cl.[5] A61K *37/00*
U.S. Cl. 514—21 11 Claims

1. A protein purified from baby hamster kidney cells which has a molecular weight between 60 and 100 kD as determined by gel filtration under native conditions and is thermally stable at 60° C., wherein said protein inhibits the proliferation of endothelial cells and is obtained by a process comprising the steps of:
a) concentrating a conditioned medium of embryonic cells by ultrafiltration,
b) precipitating the protein using ammonium sulfate, and
c) purifying the protein further using affinity chromatography on heparin sepharose, anion-exchange chromatography, Affi-gel chromatography and/or hydrophobic interaction chromatography.

5,286,717
INHIBITORS FOR REPLICATION OF RETROVIRUSES AND FOR THE EXPRESSION OF ONCOGENE PRODUCTS

Jack S. Cohen; Len Neckers, both of Bethesda; Cy Stein, Gaithersburg; Sbe L. Loke, Wheaton, all of Md., and Kazuo Shinozuka, Kazo, Japan, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 159,017, Feb. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 30,073, Mar. 25, 1987, abandoned. This application Nov. 16, 1992, Ser. No. 976,777
Int. Cl.[5] A61K *31/70*; C07H *17/00*
U.S. Cl. 514—44 20 Claims

1. A compound for inhibiting the expression of an oncogene in a host, the compound comprising a mixed linkage oligonucleotide phosphorothioate having a complementary base sequence with a portion of the oncogene.

5,286,718
METHOD AND COMPOSITION FOR AMELIORATING TISSUE DAMAGE DUE TO ISCHEMIA AND REPERFUSION

Gary T. Elliott, Hamilton, Mont., assignor to RIBI Immunochem Research, Inc., Hamilton, Mont.

Filed Dec. 31, 1991, Ser. No. 815,250
Int. Cl.[5] A61K *31/715*
U.S. Cl. 514—54 12 Claims

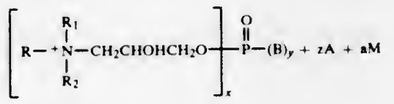
1. A method for the amelioration of organ tissue injury in warm blooded animals caused by reperfusion of blood flow to the organ following a period of ischemia, which method comprises administering to a warm blooded animal prior to a medical procedure normally causing ischemia followed by reperfusion an effective amount of a pharmaceutical composition comprising a refined detoxified endotoxin selected form the group consisting essentially of monophosphoryl lipid A and 3-deacylated monophosphoryl lipid A and a pharmaceutically acceptable carrier.

5,286,719
PHOSPHOLIPID VIRUCIDAL COMPOSITIONS

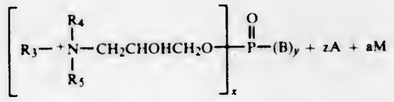
Dennis L. Fost, Ridgewood, and Joseph A. Komor, Ramsey, both of N.J., assignors to Moan Industries, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 784,154, Oct. 28, 1991. This application Jan. 19, 1992, Ser. No. 901,204
Int. Cl.[5] A61K *31/685*
U.S. Cl. 514—114 3 Claims

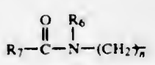
1. A method of providing virucidal activity to a substrate surface subject to contact by infections viral organisms which comprises treating a substrate surface subject to contact by infectious viral organisms with a virucidally effectivc amount of a composition selected from a synthetic from a synthetic phospholipid of the formula:



wherein:
x = 1 to 3 or mixtures thereof;
x + y = 3;
z = x;
a = 0 to 2;
B = O⁻ or OM;
A = Anion;
M is a cation;
R, R_1 and R_2 are the same or different and are alkyl, substituted alkyl, alkyl aryl or alkenyl groups of up to 16 carbon atoms with the proviso that the total carbon atoms in $R + R_1 + R_2$ is between 10 and 24;



wherein:
x is as hereinabove defined;
x + y = 3;
z = x;
a = 0 to 2;
B = O⁻ or OM;
A is on Anion;
M is a Cation;
R_3 is an amidoamine moiety of the formula:



wherein:
R_7 is alkyl, alkenyl, alkoxy or hydroxyalkyl of from 5 to 21 carbon atoms each, or aryl or alkaryl of up to 20 carbon atoms;
R_6 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms, polyoxyalkylene of up to 10 carbon atoms;
R_4 and R_5, may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms; in addition R_4 and R_5 taken together with the nitrogen to which they are attached may represent an N-heterocycle; and
n is an integer from about 2 to 6;
or mixtures thereof.

5,286,720
COMPOSITIONS AND METHODS FOR TOPICAL TREATMENT OF SKIN LESIONS

Raymond S. Niedbala, Wescosville, and Elizabeth A. Vail, Bethlehem, both of Pa., assignors to Solarcare Technologies Corporation, Bethlehem, Pa.

Filed Jul. 16, 1992, Ser. No. 915,142
Int. Cl.[5] A61K *31/60, 31/605*
U.S. Cl. 514—164 12 Claims

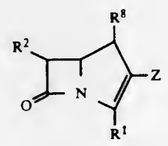
1. A composition for the treatment of warts of human or non-human animal subjects, said composition consisting essentially of salicylic acid and a mixture of dimethyl ether and propane, said mixture of dimethyl ether and propane and said salicylic acid being present in said composition in amounts effective to remove said wart by a combination of cryogenic and keratolytic action.

5,286,721
1-AZABICYCLO[3.2.0]HEPT-2-ENE-2-CARBOXYLIC ACID COMPOUNDS

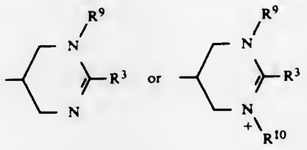
Masayoshi Murata; Toshiyuki Chiba, both of Osaka; Hideo Tsutsumi, Toyonaka; Kohji Hattori, Nagoya; Satoru Kuroda, Ikeda; Hiroaki Ohtake, Suita, and Fumiyuki Shirai, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01394, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO92/06978, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 14, 1991, Ser. No. 853,746
Claims priority, application United Kingdom, Oct. 15, 1990, 9022309
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] C07D *477/00*
U.S. Cl. 514—210 9 Claims

1. A compound of the formula:



in which
R^1 is carboxy, COO⁻ or protected carboxy,
R^2 is hydroxy(lower)alkyl or protected hydroxy(lower)alkyl,
R^8 is hydrogen or lower alkyl,
Z is a group of the formula:



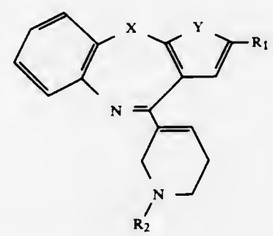
wherein
R^3 is hydrogen; lower alkyl or lower alkenyl, each of which is optionally substituted by the group consisting of lower alkoxy, carbamoyl, hydroxy, halogen, mono-(or di)(lower)alkylcarbamoyl, mono(or di)(lower)alkenylcarbamoyl, mono(or bis)carbamoyl, optionally substituted cyclicaminocarbonyl, acylamino, ureido, optionally substituted heterocyclic-carbonylamino, carbamoyloxy, mono(or di)(lower)alkylcarbamoyloxy, lower alkylthio, halo(lower)alkylthio, optionally substituted heterocyclicthio, optionally substituted heterocyclic group, optionally substituted aryl, and acyl;
R^9 is hydrogen or lower alkyl, and
R^{10} is lower alkyl,
or a pharmaceutically acceptable salt thereof.

5,286,722
TETRAHYDROPYRIDINYLDIBENZAZEPINE DERIVATIVES

James Cairns, Cumbernauld; Samuel G. Gibson, and Duncan R. Rae, both of Lanarkshire, all of Scotland, assignors to AKZO N.V., Arnhem, Netherlands

Continuation of Ser. No. 734,824, Jul. 24, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,259
Claims priority, application European Pat. Off., Jul. 24, 1990, 90308071.1
Int. Cl.[5] A61K *31/55*; C07D *267/20, 281/16, 498/04*
U.S. Cl. 514—211 6 Claims

1. A tetrahydropyridinyldibenzazepine derivative of the formula I



wherein
R_1 is a substituent selected from the group consisting of halogen and lower alkyl;
R_2 is selected from the group consisting of hydrogen, unsubstituted lower alkyl, and unsubstituted or hydroxy substituted lower alkenyl;
X is O or S;
Y is HC═CH or S; or a pharmaceutically acceptable salt thereof.

6. A method of treating dopamine effected psychotic disorders comprising administering to a human patient an effective amount of the tetrahydropyridinyldibenzazepine derivative of claim 1.

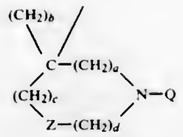
5,286,723
SPIRO COMPOUND

Isao Hayakawa; Shohgo Atarashi; Masazumi Imamura, and Youichi Kimura, all of Chiba, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo

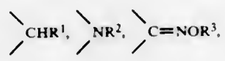
Continuation of Ser. No. 400,835, Oct. 30, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 902,560
Claims priority, application Japan, Aug. 31, 1988, 63-217638; Sep. 14, 1988, 63-231318; Nov. 24, 1988, 63-296985; Jun. 19, 1989, 63-156316
Int. Cl.[5] A61K *31/55, 31/47*; C07D *223/32, 223/14*
U.S. Cl. 514—213 34 Claims

1. A spiro compound of formula I:

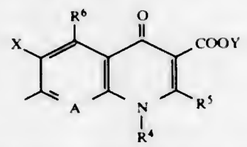
VOL 1159 ISS 3 FE 15 1994 UMI



wherein a represents an integer equal to 0 or 1; b represents an integer equal to 2 through 5, inclusive; c represents an integer equal to 0 or 1; and d represents an integer equal to 0 through 2, inclusive; Z represents



an oxygen atom or a sulfur atom, wherein R^1 represents a hydrogen atom, an amino group, a monoalkylamino group of 1 to 6 carbon atoms, a dialkylamino group containing 1 to 6 carbon atoms per alkyl, a hydroxyl group, an alkoxy group of 1 to 6 carbon atoms or a hydroxyalkyl group of 1 to 6 carbon atoms; R^2 represents a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, a hydroxyalkyl group of 1 to 6 carbon atoms, a haloalkyl group of 1 to 6 carbon atoms, a formyl group or an alkylcarbonyl group of 2 to 7 carbon atoms; and R^3 represents a hydrogen atom or an alkyl group of 1 to 6 carbon atoms; Q represents a partial structure of formula II:

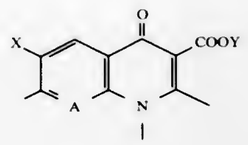


II

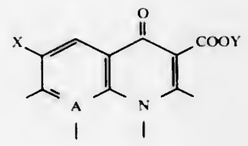
wherein R^4 represents an alkyl group of 1 to 6 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a haloalkyl group of 1 to 6 carbon atoms, a substituted or unsubstituted cycloalkyl group of 3 to 6 carbon atoms, a substituted or unsubstituted aryl group, a 4-pyridyl group or a 2-fluoro-4-pyridyl group, an alkoxy group of 1 to 6 carbon atoms or an alkylamino group of 1 to 6 carbon atoms; R^5 represents a hydrogen atom or an alkyl group of 1 to 6 carbon atoms; R^6 represents a hydrogen atom, an amino group, a methylamino group, an ethylamino group, an isopropylamino group, a dimethylamino group, a diethylamino group, a hydroxyl group, an alkoxy group of 1 to 6 carbon atoms or a halogen atom; A represents a nitrogen atom or



wherein R^7 represents a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, a halogen atom, an alkoxy group of 1 to 6 carbon atoms, a haloalkyl group of 1 to 6 carbon atoms or a cyano group; X represents a halogen atom; Y represents a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, an alkoxyalkyl group of 1 to 6 carbon atoms, a phenylalkyl group containing 1 to 6 carbon atoms in its alkyl moiety, a phenyl group, an acetoxymethyl group, a pivaloyloxymethyl group, an ethoxycarbonyloxy group, a choline group, a dimethylaminoethyl group, a 5-indanyl group, a phthalidinyl group, a 5-substituted-2-oxo-1,3-dioxazol-4-ylmethyl group or a 3-acetoxy-2-oxobutyl group; R^4, together with R^5, or R^4 together with R^7 may form a tricyclic ring of the following structure:



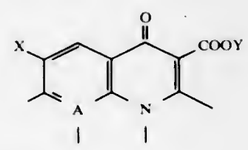
or



wherein A represents



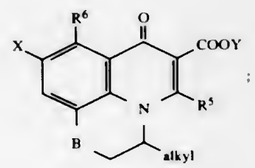
and X and Y are as earlier defined in this claim; or R^4, R^5 and R^7 may form a tetracyclic ring system of the following formula:



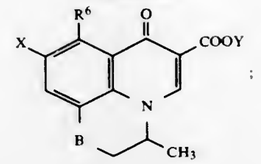
wherein A represents

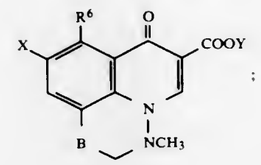


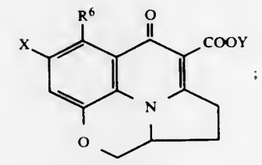
X and Y are as earlier defined in this claim, and the broken lines represent a monocyclic or bicyclic ring system fused to the quinoline ring, which tricyclic or tetracyclic ring is a 4 to 7 membered substituted or unsubstituted carbon-containing ring having one of the following formulae:

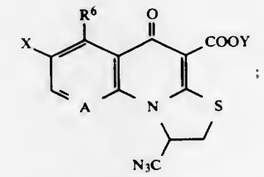


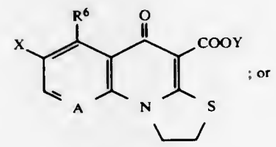
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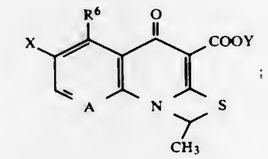












wherein A represents



R^5, R^6, and X and Y are as earlier defined in this claim; alkyl means an alkyl group of 1 to 6 carbon atoms; and B represents an oxygen atom, sulfur atom or carbonyl group, or a salt thereof.

5,286,724

FUNGICIDAL COMPOSITION

Hubert Sauter, Mannheim; Klaus Schelberger, Goenheim; Reinhold Saur, Boehl-Iggelheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 904,654, Jun. 26, 1992, Pat. No. 5,242,920. This application Mar. 3, 1993, Ser. No. 25,577

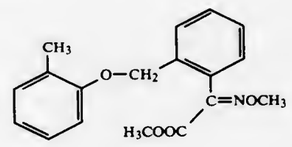
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 4124255

Int. Cl.[5] A01N *37/12, 37/44, 43/84*

U.S. Cl. 514—231.2 **2 Claims**

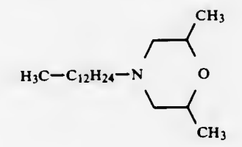
1. A fungicidal composition comprising a synergistically fungicidally effective amount of a composition of

a: methyl α-methoximino-2-[(2-methylphenoxy)-methyl]-phenylacetate of the formula



and

b: N-tridecyl-2,6-dimethyl-morpholine of the formula



in a ratio of a:b of about 1:3.

5,286,725

PYRIDAZINONES ENDOWED WITH ACARICIDE AND INSECTICIDE ACTION

Franco Bettarini; Luigi Capuzzi, both of Novara; Sergio Massimini, Milan; Paolo Castoro, Vercelli, and Vincenzo Caprioli, Pavia, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Technologica, Rome, Italy

Continuation of Ser. No. 760,374, Sep. 16, 1991, abandoned. This application Aug. 19, 1992, Ser. No. 930,451

Claims priority, application Italy, Sep. 17, 1990, 21496A/90

Int. Cl.[5] A01N *43/58*

U.S. Cl. 514—247 **3 Claims**

1. 2-tert-butyl-4-chloro-5-(4-isobutoxymethyl-cyclohexyl)-methylthio-3(2)-pyridazinone.

5,286,726

DIFLUOROGLUTAMIC ACID CONJUGATES WITH FOLATES AND ANTI-FOLATES FOR THE TREATMENT OF NEOPLASTIC DISEASES

Philippe Bey, Cincinnati, Ohio; James K. Coward, Ann Arbor, Mich., and John J. McGuire, Kenmore, N.Y., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.; Health Research, Inc., Buffalo, N.Y. and Merrell Dow Pharmaceuticals, Inc., Cincinnati, Ohio

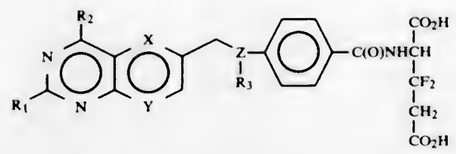
Filed Apr. 12, 1990, Ser. No. 508,873

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—249 **6 Claims**

1. A compound of the formula

VOL 1159 ISS 3 FE 15 1994 UMI



wherein
R_1 is $-NH_2$, H, or $-CH_3$;
R_3 is H, (C_1-C_4)alkyl, allyl, or propargyl; and
X, Y, and Z are each independently a nitrogen atom or a CH group;
or a pharmaceutically acceptable salt thereof.

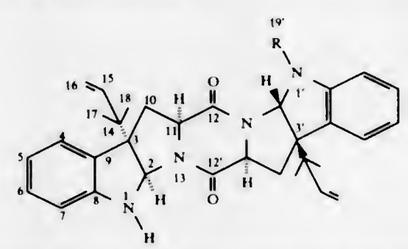
5,286,727

N-METHYLEPIAMAUROMINE, EPIAMAUROMINE AND CYCLOECHINULIN ANTIINSECTAN METABOLITES

Florecita S. deGuzman, Coralville, Iowa; Patrick F. Dowd, Peoria, Ill.; James B. Gloer, Iowa City, Iowa, and Donald T. Wicklow, Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.; University of Iowa Research Foundation, Iowa City, Iowa and Biotechnology Research & Development Corporation, Peoria, Ill.

Division of Ser. No. 732,776, Jul. 19, 1991. This application Apr. 27, 1992, Ser. No. 843,567
Int. Cl.[5] A61K *31/495;* **C07D** *241/36*
U.S. Cl. 514—250 **7 Claims**

1. A substantially pure diketopiperazine compound selected from the group consisting of:



wherein: R is a hydrogen atom or a methyl group, such that the compound formed when R is a hydrogen atom is designated epiamauromine, and the compound formed when R is a methyl group is designated N-methylepiamauromine.

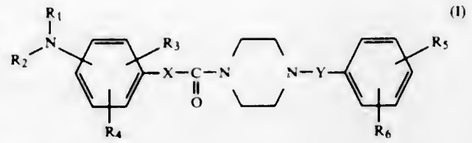
5,286,728

AMINO-SUBSTITUTED PIPERAZINE DERIVATIVES

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 14, 1992, Ser. No. 913,277
Claims priority, application Switzerland, Jul. 19, 1991, 2160/91; Apr. 27, 1992, 1340/92
Int. Cl.[5] A61K *31/495;* **C07D** *295/185, 295/192, 401/12*
U.S. Cl. 514—255 **16 Claims**

1. A compound of formula I



(I)

wherein
(a) R_1 is
hydrogen,
lower alkyl,
lower alkoxy-lower alkyl,
lower alkoxy-lower alkyl,
phenyloxy-lower alkyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy,
phenyl-lower alkoxy-lower alkyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy,
N-lower alkylamino-lower alkyl,
or N,N-di-lower alkylamino-lower alkyl and
R_2 is
lower alkenoyl,
(carboxy or lower alkoxycarbonyl)-lower alkenoyl,
halo-lower alkanoyl,
amino-lower alkanoyl,
N-lower alkylamino-lower alkanoyl,
N-lower alkanoyl,
N,N-di-lower alkylamino-lower alkanoyl,
pyrrolidino-lower alkanoyl,
piperidino-lower alkanoyl,
morpholino-lower alkanoyl,
thiomorpholino-lower alkanoyl,
piperazino-lower alkanoyl, wherein the piperazino radical is unsubstituted or substituted in the 4-position by lower alkyl or by lower alkanoyl,
hydroxy-lower alkanoyl,
lower alkoxy-lower alkanoyl,
lower alkanoyloxy-lower alkanoyl,
lower alkylthio-lower alkanoyl,
lower alkylsulfinyl-lower alkanoyl,
lower alkylsulfonyl-lower alkanoyl,
phenylthio-lower alkanoyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy,
phenylsulfinyl-lower alkanoyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy,
phenylsulfonyl-lower alkanoyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy,
carboxy-lower alkanoyl,
lower alkoxycarbonyl-lower alkanoyl,
carbamoyl-lower alkanoyl,
N-lower alkylcarbamoyl-lower alkanoyl,
N,N-di-lower alkylcarbamoyl-lower alkanoyl,
cyano-lower alkanoyl,
carbamoyl,
N-lower alkylcarbamoyl,
N,N-di-lower alkylcarbamoyl,
carboxycarbonyl,
lower alkoxycarbonylcarbonyl,
(carbamoyl, N-lower alkylcarbamoyl,
or N,N-di-lower alkylcarbamoyl)-carbonyl; or
(b) R_1 is
lower alkoxy-lower alkyl,
lower alkoxy-lower alkoxy-lower alkyl,
phenyloxy-lower alkyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy, or

phenyl-lower alkoxy-lower alkyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy; and
R_2 is
hydrogen,
lower alkanoyl,
carboxy,
lower alkoxycarbonyl
or phenyl-lower alkoxycarbonyl, wherein the phenyl group is unsubstituted or substituted by lower alkyl, trifluoromethyl, lower alkoxy, halogen and/or by hydroxy;
R_3 and R_4 are each independently of the other
hydrogen,
lower alkyl,
halogen,
lower alkoxy
or lower alkylthio;
R_5 and R_6 are each independently of the other
hydrogen,
lower alkyl,
halo-lower alkyl,
lower alkoxy,
lower alkylthio,
halogen,
amino,
lower alkylamino,
di-lower alkylamino
or lower alkanoylamino; and
X and Y are each independently of the other
a direct bond,
lower alkylene
or lower alkenylene;
or a pharmaceutically acceptable salt thereof.

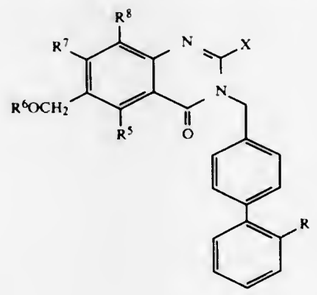
5,286,729

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

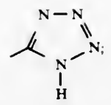
Jeremy I. Levin, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,935
Int. Cl.[5] A61K *31/505;* **C07D** *401/14, 401/12, 405/12*
U.S. Cl. 514—259 **19 Claims**

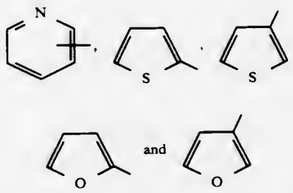
1. A quinazolinone compound having the formula:



wherein
R is

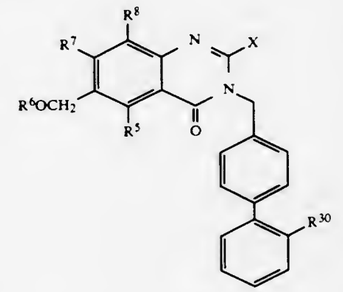


X is straight or branched alkyl of 3 to 5 carbon atoms;
R^5, R^7 and R^8 are H;
R^6 is

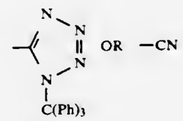


or the pharmaceutically acceptable salts thereof.

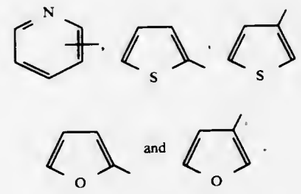
4. A quinazolinone compound having the formula:



wherein
X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^{30} is



R^5, R^7 and R^8 are H;
R^6 is



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5,286,730

METHOD OF TREATING IMMUNOINFLAMMATORY DISEASE

Craig E. Caufield, Plainsboro, N.J.; John H. Musser, Alameda, Calif., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 761,120, Sep. 17, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 931,242

Int. Cl.[5] **A61K** *35/00, 31/395*

U.S. Cl. 514—291 **4 Claims**

1. A method of treating an immunoinflammatory skin disease selected from the group consisting of psoriasis, atopic dermatitis, contact dermatitis, *eczematous dermatitis, seborrheic dermatitis, Lichen planus, Pemphigus, bulus pemphigoid, Epidermolysis bullosa, urticaria, angioedema, vasculitide, erythema,* and *cutaneous eosinphiliia* in a mammal in need thereof which comprises administering an antiimmunoinflammatory amount of rapamycin orally, parenterally, intranasally, intrabronchially, topically, transdermally, or rectally to said mammal.

5,286,731

METHOD OF TREATING IMMUNOINFLAMMATORY BOWEL DISEASE

Craig E. Caufield, Plainsboro, N.J.; John H. Musser, Pacific Marina, Calif., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 761,120, Sep. 17, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 931,243

Int. Cl.[5] **A61K** *31/70, 31/44, 31/40*

U.S. Cl. 514—291 **8 Claims**

1. A method of treating immunoinflammatory bowel disease in a mammal in need thereof which comprises administering an antiimmunoinflammatory amount of rapamycin orally, parenterally, intranasally, intrabronchially, topically, transdermally, or rectally to said mammal.

5,286,732

NITROGEN-CONTAINING BICYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Michel Vincent, Bagneux; Georges Remond, Versailles; Bernard Portevin, Elancourt; Yolande Herve, Puteaux; Jean Lepagnol, Chatou, and Guillaume de Nanteuil, Suresnes, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Sep. 25, 1992, Ser. No. 950,958

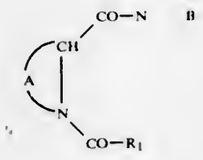
Claims priority, application France, Sep. 27, 1991, 91 11893

Int. Cl.[5] **A61K** *31/40, 31/47;* **C07D** *401/06*

U.S. Cl. 514—299 **12 Claims**

1. A compound selected from those of formula (I):

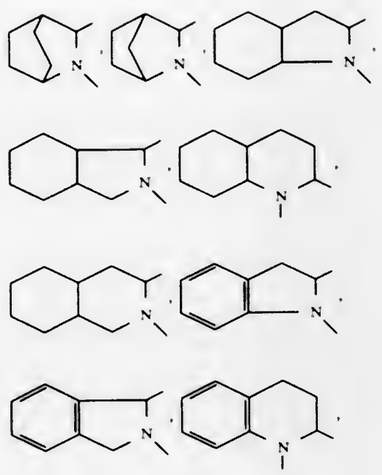
(I)

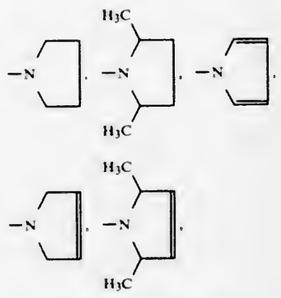


in which:

A represents, with the carbon and nitrogen atoms to which it is attached, a heterocycle selected from the group consisting of.

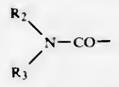
B represents, with the nitrogen atom to which it is attached, a heterocycle selected from the group consisting of:



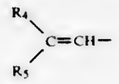


R_1 represents linear or branched (C_1-C_6) alkoxy, benzyloxy, phenoxy, or linear or branched (C_1-C_6) alkyl, or branched (C_2-C_6) alkenyl, or (C_3-C_7) cycloalkyl, each of the alkyl, alkenyl, or cycloalkyl being optionally substituted by one or more groups, which are identical or different selected from:

phenyl, napthyl, (C_3-C_7) cycloalkyl, (C_3-C_7) phenylcycloalkyl, trifluoromethyl, (diC_3-C_7 cycloalkyl)methylthio,



in which R_2 and R_3, which are different, represent hydrogen, phenyl, benzyl, or (C_3-C_7) cycloalkyl)-methyl,



in which

R_4 represents phenyl, (C_3-C_7)cycloalkyl, or (diC_3-C_7 cycloalkyl)methyl, and

R_5 represents hydrogen, phenyl, (C_3-C_7) cycloalkyl, or trifluoromethyl,

provided that:

when B represents, with the nitrogen atom to which it is attached, a pyrrolidine ring,

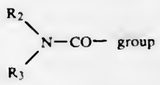
R_1 represents any one of the following groups

tert-butoxy,

phenylcyclopropyl,

linear or branched (C_1-C_6)alkyl or linear or branched (C_2-C_6) alkenyl,

each of the alkyl or alkenyl still being substituted by at least one (C_3-C_7 dicycloalkyl)methyl, (di C_3-C_7 dicycloalkyl) methylthio,



or by two (C_3-C_7) cycloalkyl,

linear or branched (C_1-C_6) trifluoromethylalkyl, linear or branched (C_1-C_6) trifluoromethylalkenyl which are optionally substituted by one or more phenyl or (C_3-C_7) cycloalkyl,

when A represents, with the carbon and nitrogen atoms to which it is attached, a 2,3-dihydroindole ring and B represents, with the nitrogen atom to which it is attached, a pyrrolidine ring,

R_1 is different from 3-phenylalkyl,

their enantiomers, diastereoisomers and epimers, as well as their addition salts with a pharmaceutically-acceptable acid.

5,286,733

SUBSTITUTED 3-PIPERIDINEALKANOATES AND ALKANONES AND COMPOSITIONS AND METHOD OF USE THEREOF

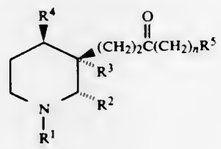
Diane L. DeHaven-Hudkins, Chester Springs, Pa.; John P. Mallamo, Kinderhook; William F. Michne, Poestenkill, both of N.Y., and Martha R. Heimann, Durham, N.C., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,028

Int. Cl.[5] **A61K** *31/445;* **C07D** *211/34, 405/12*

U.S. Cl. 514—315 **12 Claims**

1. A compound of the formula:



wherein:

R^1 is hydrogen, lower-alkyl, phenyl-lower-alkyl, C_3-C_7-monocyclic cycloalkyl-lower-alkyl, or hydroxy-C_3-C_7-monocyclicycycloalkyl-lower-alkyl;

R^2 is lower-alkyl;

R^3 is hydrogen or lower-alkyl;

R^4 is lower-alkyl;

n is an integer from zero to three; and

R^5 is hydroxy, lower-alkoxy, lower-alkyl, C_3-C_7-monocyclic cycloalkyl, phenyl, or a 5-membered aromatic monocyclic heterocycle selected from the group consisting of furanyl, thienyl and isoxazolyl; or a pharmaceutically acceptable acid-addition salt thereof; with the proviso that when n is zero, R^5 is other than hydroxy.

5,286,734

ARYLPIPERIDINE DERIVATIVE, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Marco Baroni, Vanzago; Umberto Guzzi, Milan, both of Italy; Michèle Arnone, Ramonville St Agne, and Philippe Sonbrie, Saint Mathieu de Treviers, both of France, assignors to Elf Sanofi, Paris, France

Filed Apr. 16, 1993, Ser. No. 49,106

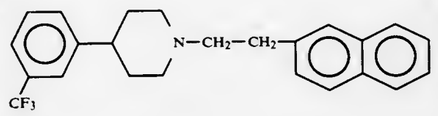
Claims priority, application France, Apr. 17, 1992, 92 04821

Int. Cl.[5] **A61K** *31/445;* **C07D** *211/06*

U.S. Cl. 514—319 **5 Claims**

1. A compound of formula (I)

(I)



and its acid addition salts.

5,286,735

DERIVATIVES OF 4-AMINOMETHYLPIPERIDINE, THEIR PREPARATION AND THEIR USE AS THERAPEUTICS

Bernard Bonnaud, Lagarrigue, and Dennis Bigg, Castres, both of France, assignors to Pierre Fabre Medicament, Boulogne, France

Filed Sep. 14, 1992, Ser. No. 944,433

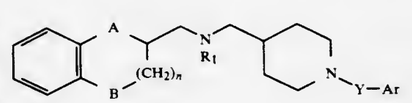
Claims priority, application France, Sep. 16, 1991, 91 11382

Int. Cl.[5] **A61K** *31/445;* **C07D** *405/12, 409/12, 411/12*

U.S. Cl. 514—321 **6 Claims**

1. A 4-aminomethyl piperidine compound selected from those having formula 1:

1



in which

A and B, represent, independently of each other, oxygen, sulfur, or methylene;

n is 0 or 1;

R_1 represents hydrogen or C_1-C_4 alkyl;

Y represents carbonyl or methylene;

Ar represents phenyl, unsubstituted or substituted by a substituent selected from halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, and trifluoromethyl,

a pharmaceutically-acceptable salt thereof with an inorganic or organic acid and, when the compound contains an asymmetric carbon an enantiomer thereof.

5,286,736

PYRIDYL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Rainer Soyka; Wolfgang Eisert; Thomas Mueller, and Johannes Weisenberger, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 796,525, Nov. 22, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,725

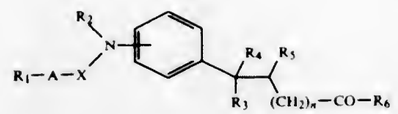
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037112

Int. Cl.[5] **C07D** *213/56*

U.S. Cl. 514—357 **18 Claims**

1. A pyridyl derivative of the formula

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(I)

wherein
n represents the number 2, 3 or 4,
X represents a carbonyl or thiocarbonyl group,
R_1 represents an optionally phenyl-substituted C_{1-4}-alkyl group or a C_{5-7}-cycloalkyl group, or R_1 represents a phenyl group or, if A does not represent a bond, R_1 may represent a benzoyl or benzenesulphonyl group in which each phenyl moiety may be mono-, di- or trisubstituted by fluorine, chlorine or bromine atoms or by C_{1-4}-alkoxy or C_{1-4}-alkyl groups which substituents may be identical or different and one of the substituents may also represent a trifluoromethyl, carboxyl, amino or nitro group, or R_1 may also represent a naphthyl, biphenylyl, diphenylmethyl, indolyl, thienyl, chlorothienyl or bromothienyl group,
R_2 represents a hydrogen atom or a C_{1-4}-alkyl group,
R_3 represents a 2-, 3-, 4-pyridyl group,
R_4 and R_5 each represent a hydrogen atom or together represent another carbon-carbon bond,
R_6 represents a hydroxy or C_{1-3}-alkoxy group, and
A represents a bond, a C_{3-4}-cycloalkylene or C_{3-4}-cycloalkylidene group wherein a methylene group may be replaced by a dichloromethylene group, or A represents a straight-chained, optionally mono- or polyunsaturated C_{2-3}-alkylene group, an $-R_7CR_8-$, $-O-R_7CR_8-$, $-O-CH_2CH_2-$, $-O-CH_2CH_2CH_2-$ or $-NR_9-$ group, wherein
R_7 represents a hydrogen atom, a hydroxy, phenyl or C_{1-3}-alkyl group,
R_8 represents a hydrogen atom or a C_{1-3}-alkyl group and
R_9 represents a hydrogen atom, a C_{1-3}-alkyl group or a phenyl group,
the enantiomers thereof, the cis- or trans-isomers thereof if R_4 and R_3 together represent a carbon-carbon bond, or an addition sal thereof.

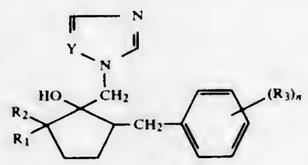
5,286,737

METHOD FOR INHIBITING AROMATASE

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Filed Sep. 16, 1992, Ser. No. 945,178
Claims priority, application Japan, May 21, 1992, 4-155782
Int. Cl.[5] A61K *31/41, 31/415*
U.S. Cl. 514—383 **4 Claims**

1. A method of inhibiting aromatase in a patient comprising administering to the patient in need thereof an aromatase-inhibiting amount of a compound of the formula



wherein
R_1 represents hydrogen atom or (C_1–C_5) alkyl;
R_2 represents hydrogen atom or (C_1–C_5) alkyl;
R_3 represents halogen atom, (C_1–C_5) alkyl, trifluoromethyl, phenyl, or cyano, R_3 being either the same or different;
n represents an integer of 1 or 2; and
Y represents nitrogen atom or CH; or a pharmaceutically acceptable salt thereof.

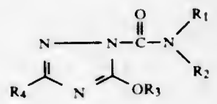
5,286,738

TRIAZOLE COMPOUND AND INSECTICIDE

Toshiya Kimata; Shunji Hayashi; Satoshi Yamanaka; Sayoko Kawaguchi, and Kazuhiro Kojima, all of Tokyo, Japan, assignors to S.D.S. Biotech K.K., Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 772,360
Claims priority, application Japan, Mar. 6, 1990, 2-52708
The portion of the term of this patent subsequent to Nov. 6, 2008, has been disclaimed.
Int. Cl.[5] A01N *43/653;* **C07D** *249/12, 401/08*
U.S. Cl. 514—384 **6 Claims**

1. A triazole compound represented by the formula (I):



(I)

wherein R_1 represents hydrogen or a C_1–C_2 alkyl group, R_2 represents a C_1–C_2 alkyl group, R_3 represents a C_1–C_{12} alkyl group, a C_1–C_{12} alkenyl group, a C_4–C_7 cycloalkylmethyl group, a C_1–C_{12} haloalkyl group, a C_1–C_6 alkyl group substituted with a phenyl group (which may be also substituted with a halogen atom, a C_1–C_6 alkyl group, a C_1–C_6 haloalkyl group, a C_1–C_6 alkoxy group or a C_1–C_6 haloalkoxy group), a C_1–C_6 hydroxyalkyl group, a C_1–C_6 thioxyalkyl group or a C_1–C_6 carbonylalkyl group, a C_1–C_6 alkyl group substituted with a C_1–C_6 alkoxy group or a C_1–C_6 alkylthio group, a C_1–C_6 alkyl group substituted with a C_1–C_6 alkylsulfinyl group or a C_1–C_6 alkyl-sulfonyl group, a C_1–C_6 alkyl group substituted with an α- or β-thienyl group (which may be also substituted with a halogen atom), a C_1–C_6 alkyl group substituted with a cyano group or a C_1–C_6 alkyl group substituted with a C_2–C_7 alkoxycarbonyl group, R_4 represents



(where R_5, R_6 and R_7 represent the same or different C_1–C_3 alkyl groups, or in some cases, two groups of R_5, R_6 and R_7 form a C_3–C_5 carbon ring).

5,286,739

PARENTERAL FORMULATIONS FOR THE INHIBITION OF SYSTEMIC HYPOTENSION ASSOCIATED WITH NITRIC OXIDE PRODUCTION OR ENDOTHELIAL DERIVED RELAXING FACTOR

Robert G. Kilbourn, Houston, Tex.; Owen W. Griffith, and Steven S. Gross, both of New York, N.Y., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed Sep. 27, 1991, Ser. No. 767,265
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—400 **9 Claims**

1. A method for treating hypotension due to septic shock or cytokine-induced hypotension by reducing blood arginine concentrations in an animal comprising:
selecting a hypotensive animal having a systolic blood pressure of less than 100 mm Hg;
administering to said animal an anti-hypotensive parenteral formulation comprising an essentially arginine-free mixture of amino acids in an amount sufficient to reduce blood arginine concentrations;
obtaining periodic blood pressure measurements of the animal; and
continuing administration of the anti-hypotensive parenteral formulation until a systolic blood pressure of greater than 100 mm Hg is detected in the animal.

5,286,740

CARBAMOYL DERIVATIVES

Robert T. Jacobs, Wilmington, Del., assignor to Imperial Chemical Industris PLC, Millbank, England

Continuation of Ser. No. 626,072, Dec. 11, 1990, abandoned.
This application Aug. 10, 1992, Ser. No. 927,762
Claims priority, application United Kingdom, Dec. 11, 1989, 8927981
Int. Cl.[5] A61K *31/40;* **C07D** *209/08*
U.S. Cl. 514—419 **12 Claims**

1. 3-Methoxy-4-[1-methyl-5-(2-methyl-4,4,4-trifluorobutylcarbamoyl)indol-3-ylmethyl]-N-(2-methylphenylsulfonyl)benzamide, or a pharmaceutically acceptable salt thereof.

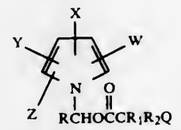
5,286,741

N-OXY- AND THIOALKYLCARBONYLOXYALKYLPYRROLE INSECTICIDAL, ACARICIDAL AND MOLLUSCICIDAL AGENTS

David G. Kuhn, Newtown; Stephen F. Donovan, Yardley, both of Pa., and Joseph A. Furch, Lawrenceville, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Oct. 27, 1992, Ser. No. 966,990
Int. Cl.[5] A01N *43/36, 43/78;* **C07D** *207/34, 207/42*
U.S. Cl. 514—422 **23 Claims**

1. A compound having the structural formula



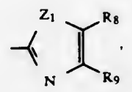
wherein
W is CN, NO_2, $S(O)_mCF_2R_4$ or



R_4 is hydrogen, F, Cl, Br, CF_2H, CCl_2H, CF_3 or CCl_3;
m is an integer of 0, 1 or 2;
R_5 and R_6 are each independently hydrogen,
C_1–C_4 alkyl optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
X is halogen, CF_3, CN, NO_2, $S(O)_mCF_2R_4$ or
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Y is halogen, CF_3 or
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Z is hydrogen, halogen or CF_3;
R is hydrogen or C_1–C_4 alkyl;
R_1 and R_2 are each independently hydrogen,
C_1–C_6 alkyl optionally substituted with one or more halogen atoms,
C_1–C_6 alkoxy optionally substituted with one or more halogen atoms,
C_1–C_6 alkylthio optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
when R_1 and R_2 are taken together with the atom to which they are attached may form a C_3–C_6 cycloalkyl group optionally substituted with one to three C_1–C_4 alkyl groups, C_2–C_6 alkenyl groups or phenyl groups, or R_1 or R_2 may be taken together with R_3 and the atoms to which they are attached to form a 4- to 7-membered heterocyclic ring;
Q is AR_3 or



A is O or $S(O)_p$;
p is an integer of 0, 1 or 2;
R_3 is hydrogen,
C_1–C_6 alkyl,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl,
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms,
$C(O)R_7$ provided p is 0,
$C(O)A_1$ provided p is 0,
$(CH_2CH_2O)_nR_7$, or



or
R_3 may be taken together with either R_1 or R_2 and the atoms to which they are attached to form a 4- to 7-membered heterocyclic ring;
Z_1 is O or S;
R_7 is
C_1–C_6 alkyl,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl, or
phenyl optionally substituted with one or more
halogen atoms,
NO_2 groups,
CN groups,

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C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
n is an integer of 1, 2 or 3;
R_8 and R_9 are each independently hydrogen or C_1–C_4 alkyl, or
when taken together may form a ring wherein R_8R_9 is represented by —CH=CH—CH=CH—;
A is OR_{10} or $NR_{11}R_{12}$;
R_{10} is C_1–C_6 alkyl or
phenyl optionally substituted with one or more halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
R_{11} and R_{12} are each independently hydrogen or C_1–C_4 alkyl; and
R_{13} is C_1–C_4 alkyl.

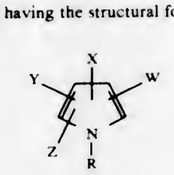
5,286,742

PYRROLE THIOCARBOXAMIDE INSECTICIDAL AND ACARICIDAL AGENTS

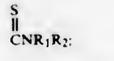
Kevin E. Henegar, Portage, Mich., and Roger W. Addor, Pennington, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Nov. 3, 1992, Ser. No. 971,025
Int. Cl.[5] **A61K** *31/40;* **C07D** *207/36, 405/00*
U.S. Cl. 514—423 **9 Claims**

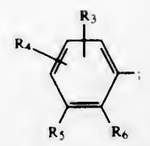
1. A compound having the structural formula



wherein
W is



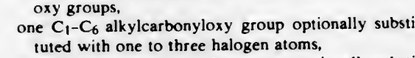
R_1 and R_2 are each independently hydrogen,
C_1–C_4 alkyl optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
X is Q or
phenyl optionally substituted with one or more halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Q is



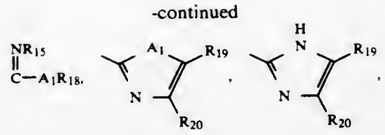
R_3 and R_4 are each independently hydrogen, halogen, NO_2, CN or C_1–C_4 alkyl optionally substituted with one or more halogen atoms;
R_5 and R_6 are taken together with the atoms to which they are attached to form a 5- or 6-membered heterocyclic ring containing 1 or 2 oxygen atoms and optionally substituted with one or more halogen atoms or C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms;
Y is hydrogen, Cl, Br, CN, NO_2, $S(O)_nT$, Q,
C_1–C_4 alkyl substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Z is hydrogen, Cl, Br, $S(O)_nT$ or C_1–C_4 alkyl substituted with one or more halogen atoms;
T is C_1–C_4 alkyl substituted with one or more halogen atoms;
n is an integer of 0, 1 or 2;
R is A, OA or CN;
A is hydrogen,

CH_2SQ_1,
C_1–C_6 alkyl optionally substituted with one to three halogen atoms,
one tri(C_1–C_4 alkyl)silyl,
one hydroxy,
one cyano,
one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,
one C_1–C_4 alkylthio,
one phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
one benzylcarbonyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

C_3–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group, or aklynyl optionally substituted with one to three halogen atoms or one phenyl group;
R_7 is C_1–C_6 alkyl or C_3–C_6 cycloalkyl each optionally substituted with one to three halogen atoms,
one hydroxy,
one cyano,
one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,
one C_1–C_4 alkylthio,
one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
one benzyloxycarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
C_2–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group,
C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group,
phenyl optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, phenoxy groups, C_1–C_4 alkylthio groups, tri(C_1–C_4 alkyl)-silyl groups, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkylsulfonyl groups, CN groups, NO_2 groups or CF_3 groups,
phenoxy optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, C_1–C_4 alkylthio groups, tri(C_1–C_4 alkyl)silyl groups, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkylsulfonyl groups, CN groups, NO_2 groups or CF_3 groups,
1-or 2-naphthyl,
2-, 3-, or 4-pyridyl optionally substituted with one to three halogen atoms,
C_1–C_6 alkoxy optionally substituted with one to three halogen atoms, or
C_2–C_6 alkenyloxy optionally substituted with one to three halogen atoms;
R_8 is hydrogen or C_1–C_4 alkyl;
R_9 is C_1–C_6 alkyl optionally substituted with one to three halogen atoms,
phenyl optionally substituted with one to three halogen atoms, CN groups, NO_2 groups, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or CF_3 groups,
2- or 3-thienyl, or
2- or 3-furyl;
Q_1 is



-continued



CN,
C_1–C_6 alkyl optionally substituted with one or more halogen atoms, CN groups or phenyl groups, or
phenyl optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, CN groups, NO_2 groups, CF_3 groups or $NR_{21}R_{22}$ groups;
A_1 is O or S;
R_{10} is C_1–C_6 alkyl or phenyl;
R_{11} is C_1–C_6 alkyl;
R_{12} and R_{13} are each independently hydrogen, C_1–C_6 alkyl or may be taken together with the atom to which they are attached to form a 5- to 7-membered ring;
R_{14} is C_1–C_4 alkyl;
R_{15} is hydrogen, C_1–C_4 alkyl or may be taken together with either R_{16} or R_{18} and the atoms to which they are attached to form a 5- to 7-membered ring optionally substituted with one or two C_1–C_4 alkyl groups;
R_{16} and R_{17} are each independently hydrogen or C_1–C_4 alkyl;
R_{18} is C_1–C_4 alkyl or when taken together with R_{15} and the atoms to which they are attached may form a 5- to 7-membered ring optionally substituted with one or two C_1–C_4 alkyl groups;
R_{19} and R_{20} are each independently hydrogen or C_1–C_4 alkyl or when taken together may form a ring wherein $R_{19}R_{20}$ is represented by —CH=CH—CH=CH—; and
R_{21} and R_{22} are each independently hydrogen or C_1–C_4 alkyl;
with the proviso that when W is on the 3-position of the pyrrole ring, X is on the 4-position of the pyrrole ring, and Y, Z and R are each hydrogen, then X is other than 2- or 3-chlorophenyl; and with the proviso that when W is on the 2- or 5-position of the pyrrole ring, then R is other than H; and with the further proviso that when R_1 and R_2 are both H, then X and Y are other than phenyl optionally substituted with one or more halogen atoms,
NO_2 groups,
CN groups,
C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or
C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms.

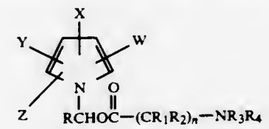
5,286,743

N-AMINOALKYLCARBONYLOXYALKYLPYRROLE INSECTICIDAL ACARICIDAL AND MOLLUSCICIDAL AGENTS

David G. Kuhn, Newtown; Stephen F. Donovan, Yardley, both of Pa., and Joseph A. Furch, Lawrenceville, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Oct. 27, 1992, Ser. No. 966,992
Int. Cl.[5] **C07D** *207/34, 207/36;* **A01N** *43/36*
U.S. Cl. 514—424 **25 Claims**

1. A compound having the structural formula



wherein

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W is CN, NO_2, $S(O)_mCF_2R_5$ or

R_5 is hydrogen, F, Cl, Br, CF_2H, CCl_2H, CClFH, CF_3 or CCl_3;
m is an integer of 0, 1 or 2;
R_6 and R_7 are each independently hydrogen,
C_1–C_4 alkyl optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
X is halogen, CF_3, CN, NO_2, $S(O)_mCF_2R_5$ or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Y is halogen, CF_3 or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Z is hydrogen, halogen or CF_3;
R is hydrogen or C_1–C_4 alkyl;
R_1 and R_2 are each independently hydrogen,
C_1–C_6 alkyl optionally substituted with one or more halogen atoms,
C_1–C_6 alkoxy optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms,
when R_1 and R_2 are taken together with the atom to which they are attached may form a C_3–C_6 cycloalkyl group optionally substituted with one to three C_1–C_4 alkyl groups, C_2–C_6 alkenyl groups or phenyl groups, or
R_1 or R_2 may be taken together with R_3 and the atoms to which they are attached to form a 4- to 7-membered heterocyclic ring;
n is an integer of 1, 2, 3 or 4;
R_3 is hydrogen,
C_1–C_6 alkyl,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms, or
R_3 may be taken together with either R_1 or R_2 and the atoms to which they are attached to form a 4- to 7-membered heterocyclic ring;
R_4 is hydrogen,
C_1–C_6 alkyl,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl,
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms,
C(A)R_8,
C(A)R_9,
CN,
SO_2R_{10}, or
C(O)C$HR_{11}NHR_{12}$;
A is O or S;
R_8 is C_1–C_6 alkyl optionally substituted with one to three halogen atoms,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
R_9 is OR_{13}, CO_2R_{13} or $NR_{14}R_{15}$;
R_{13} is C_1–C_6 alkyl optionally substituted with one phenyl group, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
R_{14} and R_{15} are each independently hydrogen or C_1–C_4 alkyl;
R_{10} is $NR_{14}R_{15}$,
C_1–C_6 alkyl,
C_2–C_6 alkenyl,
C_2–C_6 alkynyl, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
R_{11} is hydrogen,
C_1–C_4 alkyl groups optionally substituted with
one hydroxy group,
one SR_{16} group,
one $C(O)NH_2$ group,
one NH_2 group,
one $NHC(=NH)NH_2$ group,
one CO_2H group,
one phenyl group optionally substituted with one hydroxy group,
one 3-indolyl group or
one 4-imidazolyl group;
R_{16} is hydrogen or C_1–C_4 alkyl;
R_{12} is C(A)R_{17}; and
R_{17} is C_1–C_6 alkyl optionally substituted with one or more halogen atoms,
C_1–C_6 alkoxyalkyl,
C_1–C_6 alkylthio,
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms,
OR_{13},
$NR_{14}R_{15}$, or
CO_2R_{13}.

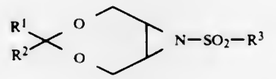
5,286,744

N-SULFONYL-TETRAHYDRO-[1,3]-DIOXEPINO[5,6-BIAZIRINES, INTERMEDIATES FOR THEIR PREPARATION AND THEIR USE

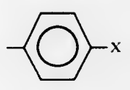
Miljenko Dumić; Darko Filić, both of Zagreb; Vinković, Cakovec, and Blanka Jamnicky, Zagreb, all of Yugoslavia, assignors to Pliva Handels GmbH, Fed. Rep. of Germany and Pliva, Croatia, Yugoslavia

Filed Aug. 20, 1992, Ser. No. 932,482
Claims priority, application Yugoslavia, Aug. 22, 1991, 1433/91
Int. Cl.[5] **A61K** *31/395;* **C07D** *491/02*
U.S. Cl. 514—450 **35 Claims**

1. N-sulfonyl-tetrahydro-[1,3]-dioxepino[5,6-b]azirine of the formula I,



wherein R^1 and R^2 stand for a hydrogen atom, a straight or a branched C_{1-4} alkyl or a phenyl, or R^1 and R^2 together form an alkylidene group of 4–6 carbon atoms, R^3 stands for a straight or a branched C_{1-4} alkyl, trifluoromethyl group or a p-substituted phenyl group,



wherein X stands for a hydrogen atom, a straight or a branched C_{1-4} alkyl, fluorine, chlorine, bromine, iodine, nitro, amino, acetylamino or alkoxy group.

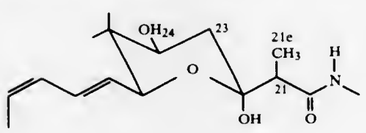
5,286,745

ANTIBIOTICS LL-E19020 EPSILON AND LL-E19020 EPSILON$_1$

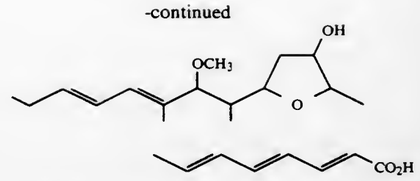
Guy T. Carter, Suffern, and Joseph J. Goodman, Spring Valley, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Sep. 9, 1991, Ser. No. 756,931
Int. Cl.[5] **A61K** *31/35;* **C07D** *315/00*
U.S. Cl. 514—459 **4 Claims**

1. A compound LL-E19020 Epsilon comprising
(a) the structure



-continued



(b) a molecular weight of 643 (FABMS=M/Z 666 corresponding to [M+Na]+).
(c) a specific optical rotation:

$[\alpha]_D = +24°(1.53, MeOH)^{26}$

(d) a characteristic ultraviolet absorption spectrum as shown in FIG. I of the attached drawings;
(e) a characteristic infrared absorption spectrum as shown in FIG. II of the attached drawings;
(f) characteristic proton nuclear magnetic resonance spectrum as shown in FIG. III of the attached drawings;
(g) a characteristic carbon-13 nuclear magnetic resonance spectrum as shown in FIG. IV of the attached drawings;
(h) a characteristic HPLC retention time of 12.6 minutes using a gradient of acetonitrile in aqueous acetic acid; and
(i) a characteristic HPLC retention time of 11.4 minutes using a gradient of dioxane in aqueous acetic acid.

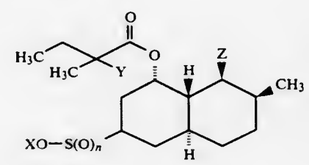
5,286,746

SULFUR-SUBSTITUTED MEVINIC ACID DERIVATIVES

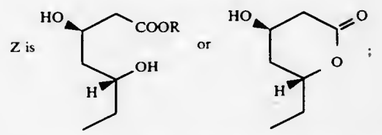
Kathleen M. Poss, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 20, 1991, Ser. No. 811,124
Int. Cl.[5] **A61K** *31/35*
U.S. Cl. 514—460 **10 Claims**

1. A compound of the formula



wherein:
X is hydrogen, alkali metal or ammonium;
Y is hydrogen, alkyl, cycloalkyl, aryl, or aralkyl;



R is hydrogen, alkyl, ammonium, alkyl-ammonium, or alkali metal; n is 1 or 2
and wherein:
"alkyl" refers to straight and branched chain hydrocarbon groups of 1 to 12 carbon atoms that may be substituted with halo, hydroxy, thio, thio-alkyl, aryl, alkyl-aryl, haloaryl, cycloalkyl, or alkylcycloalkyl groups;
"aryl" and "ar" refer to monocyclic and bicyclic aromatic groups containing from 6 to 10 carbon atoms in the ring, which may be substituted with 1 or 2 lower alkyl groups, 1 to 5 halogen atoms, or 1 or 2 lower alkoxy groups; and
"cycloalkyl" refers to saturated cyclic hydrocarbon groups

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containing 3 to 12 carbon atoms and may be substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups, or 1 or 2 lower alkoxy groups.

5,286,747

1-ALKYL-2-AMINOTETRALIN DERIVATIVES

Folke L. Arvidsson, Uppsala; Per A. E. Carlsson, Torild Wulffsgatan 50, Göteborg S-413 19; Ulf A. Hacksell, Uppsala; John S. M. Hjorth, Göteborg; Anette M. Johansson, Uppsala; Per L. Lindberg, Askim; John L. G. Nilsson, Tullinge; Domingo Sanchez, Floda, and Håkan V. Wikström, Partille, all of Sweden, assignors to Per A. E. Carlsson, Gothenburg, Sweden

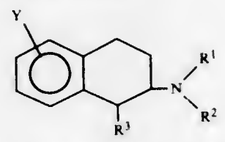
Division of Ser. No. 143,260, Jan. 11, 1988, Pat. No. 4,876,284, which is a continuation of Ser. No. 16,447, Feb. 23, 1987, abandoned, which is a continuation of Ser. No. 610,241, May 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 374,769, May 4, 1982, abandoned. This application Sep. 29, 1989, Ser. No. 415,079

Claims priority, application Sweden, May 8, 1981, 8102908

Int. Cl.[5] **A01K** *31/27;* **C07C** *271/08*

U.S. Cl. 514—481 **12 Claims**

1. A compound of the formula



wherein R^3 and the NR^1R^2 group are in a cis-position to each other and wherein Y is in position 7 and is OH, R^4COO, $(R^5)_2NCOO$ or R^6O, wherein R^4 is an alkyl group having 1–5 carbon atoms or a possibly substituted phenyl group, R^5 is an alkyl group having 1–5 carbon atoms and R^6 is an alkyl, allyl or benzyl group; R^1 is hydrogen or an alkyl group having 1–3 carbon atoms; R^2 is an alkyl group having 1–6 carbon atoms, a phenylalkyl or m-hydroxyphenylalkyl group with 2–4 carbon atoms in the alkyl part, or an alkenyl group with 3–6 carbon atoms, and R^3 is an alkyl group having 1–3 carbon atoms, as the base or a pharmaceutically acceptable acid addition salt thereof.

5,286,748

GENERAL METHOD OF SHORTENING THE DURATION OF COMMON COLDS BY APPLICATION OF MEDICAMENTS TO TISSUES OF ORAL CAVITY

George A. Eby, III, 2109 Paramount Ave., Austin, Tex. 78704

Continuation-in-part of Ser. No. 633,043, Dec. 24, 1990, Pat. No. 5,095,035, which is a continuation-in-part of Ser. No. 182,983, Apr. 18, 1988, Pat. No. 5,002,970, and a continuation-in-part of Ser. No. 102,750, Sep. 24, 1987, Pat. No. 4,956,385, which is a continuation of Ser. No. 667,097, Nov. 1, 1984, abandoned, which is a continuation-in-part of Ser. No. 378,479, May 14, 1982, Pat. No. 4,503,070, which is a continuation-in-part of Ser. No. 288,750, Jul. 31, 1981, abandoned, which is a continuation-in-part of Ser. No. 22,620, Jan. 5, 1981, abandoned. This application Nov. 27, 1991, Ser. No. 799,607

Int. Cl.[5] **A61K** *9/20, 31/315;* **A01N** *55/02*

U.S. Cl. 514—494 **5 Claims**

1. A composition for use within the oral cavity that shortens the duration of common colds in a human through oral and oral pharyngeal absorption of an antirhinoviral medicament selected from the group consisting of interferon, interferon inducers, propanediamine, enviroxime, dichloroflaven, and 2{(1,5101-tetrahydro-3H-thiazolo[3,4b]isoquinolin-3-ylidene)amino}-4-thiazoleacetic acid (S) which are dispersed either singularly or in combination in a sweet pharmaceutically acceptable carrier as a lozenge, troche, syrup or other similar oral composition, whereby said composition excludes sodium polyacrylate and has a pleasant taste and aftertaste, and the medicament is released in a slow sustained manner in the oral cavity to facilitate absorption of the medicament into the oral and oral pharyngeal membranes.

5,286,749

CONTROL OF SHEEP ECTOPARASITES

Peter J. Kieran, Beecroft, and Robert B. Townsend, Waitara, both of Australia, assignors to Pitman-Moore Inc., Lake Forest, Ill.

Continuation of Ser. No. 355,087, May 18, 1989, abandoned, which is a continuation of Ser. No. 935,113, Nov. 26, 1986, abandoned, which is a continuation of Ser. No. 640,029, Aug. 10, 1984, abandoned, which is a continuation of Ser. No. 323,117, Nov. 20, 1981, abandoned. This application Oct. 12, 1990, Ser. No. 597,110

Claims priority, application Australia, Nov. 21, 1980, PE 6592

Int. Cl.[5] **A01N** *53/00;* **A61K** *31/215*

U.S. Cl. 514—531 **4 Claims**

2. A method of treating a sheep having a lice or ked infestation, which comprises applying to said sheep a 2 ml to 15 ml volumn of a liquid pour-on formulation containing an effective lice or ked infestation treatment amount of permethrin, phenothrin, cypermethrin, cyhalothrin, flumethrin, cyfluthrin, cyphenothrin, tralomethrin, tralocythrin or fenvalerate in a lower alkyl ether of a glycol.

4. A topical liquid formulation for treating lice or ked infections comprising the active ingredient permethrin, phenothrin, cypermethrin, cyhalothrin, flumethrin, cyfluthrin, cyphenothrin, tralomethrin, tralocythrin or fenvalerate in a lower alkyl ether of glycol, said formulation containing 1 to 250 mg/ml of the active ingredient.

5,286,750

PHENYLACETIC ACID DERIVATIVES AND FUNGICIDES CONTAINING THEM

Bernd Mueller, Frankenthal; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt, and Franz Roehl, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

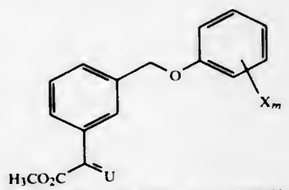
Continuation of Ser. No. 595,413, Oct. 11, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 32,201

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1989, 3933591

Int. Cl.[5] **A61K** *31/22, 31/38;* **C07C** *67/02;* **C07D** *239/02*

U.S. Cl. 514—546 **6 Claims**

1. A compound of the formula



wherein U is $=CH_2$, $=CHCH_3$, or $=CHCH_2CH_3$; X is methyl; and m is 0, 1, or 2.

5,286,751

SUSTAINED/ENHANCED ANTIPYRETIC RESPONSE

Abraham Sunshine, New York, and Eugene M. Laska, Larchmont, both of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Continuation-in-part of Ser. No. 384,101, Jul. 21, 1989, Pat. No. 4,927,854, which is a continuation of Ser. No. 137,866, Dec. 24, 1987, abandoned. This application May 18, 1990, Ser. No. 524,910

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] **A61K** *31/19*

U.S. Cl. 514—570 **24 Claims**

1. The method of eliciting a sustained, enhanced antipyretic response in a human mammal suffering from elevated body temperature and in need of such treatment, comprising administering to such organism a unit dosage sustainedly enhancing, antipyretically effective amount of the S(+) flurbiprofen enantiomer, and said enantiomer being substantially free of its R(−) flurbiprofen antipode.

5,286,752

ANTIARRHYTHMIC DIARYLAMIDINES

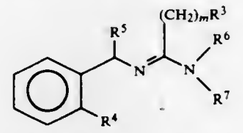
Robert E. Johnson, East Greenbush, and Thomas E. D'Ambra, North Greenbush, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Sep. 10, 1991, Ser. No. 757,083

Int. Cl.[5] **A61K** *31/155;* **C07C** *257/18*

U.S. Cl. 514—637 **9 Claims**

1. A compound chosen from the group consisting of



II

or acid-addition salts thereof wherein

R^3 is hydrogen, phenyl, or phenyl substituted with lower-alkyl, lower-alkoxy or halogen;

R^4 is hydrogen, lower-alkyl, benzyl, or benzyl substituted with lower-alkyl, lower-alkoxy or halogen;

R^5 is phenyl or phenyl substituted with lower-alkyl, lower-alkoxy or halogen;

R^6 and R^7 are independently lower alkyl;

m is zero, 1, 2 or 3;

with the proviso that in formula II, when R^4 is hydrogen and both of R^6 and R^7 are methyl, the following three combinations are excluded: (1) R^3 is hydrogen, R^5 is phenyl and m is one, (2) R^3 and R^5 are phenyl and m is two, (3) R^3 is hydrogen, R^5 is 4-chlorophenyl and m is zero.

5,286,753

RING-SUBSTITUTED 2-AMINO-1,2,3,4-TETRA-HYDRONAPHTHALENES AND PHARMACEUTICAL COMPOSITIONS THEREOF

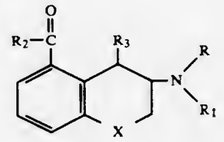
John M. Schaus, Zionsville; Craig S. Hoechstetter, Indianapolis; Diane Huser, Indianapolis; Charles J. Paget, Indianapolis, and Robert D. Titus, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 567,985, Aug. 15, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 48,553

Int. Cl.[5] **A61K** *31/165;* **C07C** *211/42*

U.S. Cl. 514—657 **10 Claims**

1. A compound of the formula



in which R is C_1–C_4 alkyl, C_3–C_4 alkenyl, or cyclopropylmethyl;

R_3 is hydrogen;

R_1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, C_6–C_{10} aryl(C_1–C_4-alkyl), $—COR_4$, $—((CH_2)_nS($-C_1–C_4 alkyl) or $—(CH_2)_nCONR_5R_6$;

n is an integer from 1 to 4;

R_4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, or phenyl;

R_5 and R_6 are independently hydrogen, C_1–C_4 alkyl, or C_3–C_7 cycloalkyl with the proviso that when one of R_5 or R_6 is cycloalkyl the other is hydrogen;

X is $—CH_2—$;

R_2 is C_1–C_8 alkyl, optionally substituted with C_1–C_3 alkoxy, halo, hydroxy, or C_1–C_3 thioalkyl, C_2–C_4 alkenyl, C_6–C_{10} aryl, C_6–C_{10} aryl(C_1–C_4-alkyl), wherein the aryl groups are optionally substituted with C_1–C_3 alkoxy, halo, hydroxy, or C_1–C_3 thioalkyl, C_3–C_7 cycloalkyl-substituted methyl, or C_3–C_7 cycloalkyl;

and pharmaceutically acceptable acid addition salts thereof.

8. A pharmaceutical formulation which comprises, in association with a pharmaceutically acceptable carrier, diluent, or excipient, a compound of the formula

in which R is C_1–C_4 alkyl, C_3–C_4 alkenyl, or cyclopropylmethyl;

$R_3$is hydrogen;

R_1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, C_{6-10} aryl(C_1–C_4-alkyl), $—COR_4$, $—(CH_2)_nS($-C_1–C_4alkyl) or $—(CH_2)_nCONR_5R_6$;

n is an integer from 1 to 4;

R_4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, or phenyl;

R_5 and R_6 are independently hydrogen, C_1–C_4 alkyl, or C_3–C_7 cycloalkyl with the proviso that when one of R_5 or R_6 is cycloalkyl the other is hydrogen;

X is $—CH_2—$,

R_2 is C_1–C_8 alkyl optionally substituted with C_{1-3} alkoxy, halo, hydroxy, or C_{1-3} thioalkyl, C_2–C_4 alkenyl, C_{6-10} aryl, C_{6-10} aryl (C_1–C_4-alkyl) wherein the aryl groups are optionally substituted with C_{1-3} alkoxy, halo, hydroxy, or C_{1-3} thioalkyl, C_3–C_7 cycloalkyl-substituted methyl, or C_3–C_7 cycloalkyl;

and pharmaceutically acceptable acid addition salts thereof.

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5,286,754
PHARMACEUTICAL FORMULATIONS OF CIPROFLOXACIN

Bernd Streuff, Wermelskirchen, and Helmut Luchtenberg, Niederkassel, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 3,108, Jan. 14, 1987, abandoned. This application Sep. 19, 1988, Ser. No. 246,576

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1986, 3601566

Int. Cl.[5] A61K *9/36*

U.S. Cl. 514—772.3 **1 Claim**

1. A pharmaceutical formulation of high biological availability and storage life consisting of by weight 583 parts of 1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-quinoline-3-carboxylic acid HCl monohydrate; 55 parts of microcrystalline cellulose; 72 parts of moist starch; 30 parts of cross-linked polyvinyl-pyrrolidone; 5 parts of silicon dioxide; and 5 parts of magnesium stearate.

5,286,755
COSMETIC COMPOSITION IN THE FORM OF A SOLID GEL

Myriam Kauffmann, Lyon; Nathalie Gregoire, Sceaux, and Eric Quemin, Villepinte, all of France, assignors to L'Oreal, Paris, France

Filed Sep. 2, 1992, Ser. No. 937,604

Claims priority, application France, Sep. 6, 1991, 91 11062

Int. Cl.[5] A61K *7/02, 7/15, 7/40, 7/48*

U.S. Cl. 514—944 **8 Claims**

1. A non-alcoholic cosmetic gel in solid form for application to the skin, comprising:
(i) from 65 to 99 weight percent of a polyol,
(ii) from 0.1 to 5 weight percent of a dibenzylidene-ose,
(iii) from 0.1 to 5 weight percent of a hardening agent selected from the group consisting of silicone sulfosuccinate and sterol sulfosuccinate, and
(iv) from 0.5 to 40 weight percent water.

5,286,756
EXPANDABLE STYRENE POLYMERS HAVING A FIRST COATING CONTAINING BISAMIDES

Manfred Walter, Speyer, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,372

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123252

Int. Cl.[5] C08J *9/224*

U.S. Cl. 521—57 **5 Claims**

1. A process for the preparation of screen fractions of bead-form, expandable styrene polymers prepared by suspension polymerization, which comprises intimately mixing the beads, which are still moist at the surface, with from 0.02 to 0.25% by weight, based on the dry styrene polymer, of a coating composition comprising (c_1) a bisamide made from C_2-C_8-alkylenediamine and an aliphatic C_6-C_{20}-carboxylic acid and (c_2) an antistatic agent selected from the group consisting of N,N-bis(2-hydroxyethyl)-C_{12}-C_{16}-alkyamines, fatty acid diethanolamides, chlorine ester chlorides of fatty acids, C_{12}-C_{20}-alkyl sulfonates, and ammmonium salts in a (c_1):(c_2) weight ratio of from 1 to 50, subsequently removing the surface water by flash drying at a temperature of from 30° to 65° C. for from 1 to 10 seconds, then separating the dry, coated beads into screen fractions.

5,286,757
FOAMABLE COMPOSITION AND PROCESS FOR MAKING LARGE CELL SIZE ALKENYL AROMATIC POLYMER FOAM STRUCTURE WITH 1,1-DIFLUOROETHANE

Roy E. Smith, Pickerington; Warren H. Griffin, Granville; Deborah L. Koesis, Newark, and Dennis R. Lantz, Granville, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 927,110, Aug. 7, 1992, Pat. No. 5,244,928. This application May 24, 1993, Ser. No. 66,453

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—87 **10 Claims**

1. A foamable gel capable of being expanded to form an alkenyl aromatic polymer foam structure having an average cell size of from about 0.3 to about 3.0 millimeters, comprising a melt of an alkenyl aromatic polymer material comprising greater than 50 percent by weight alkenyl aromatic monomeric units based upon the total weight of the polymer material, the gel having a blowing agent incorporated therein comprising as a primary blowing agent greater than 50 percent by weight 1,1-difluoroethane and from about 10 percent to less than 50 weight percent of a secondary blowing agent based upon the total weight of the blowing agent, the secondary blowing agent being more soluble in the melt polymer than 1,1-difluoroethane is in the melt polymer, the secondary blowing agent further having a lower vapor pressure in air at 25° C. than 1,1-difluoroethane.

5,286,758
USE OF FORMATE SALTS AS AUXILIARY AGENTS FOR LOW DENSITY RIGID FOAMS

Donald L. Christman, Grosse Ile, and Curtis J. Reichel, Southgate, both of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jan. 4, 1993, Ser. No. 355

Int. Cl.[5] C08J *9/12*

U.S. Cl. 521—125 **7 Claims**

1. A method of modifying reactivity characteristics, such as cream time, gel time, rise time, and tack-free time, of a low density, rigid polyurethane foam by;
A) adding an auxiliary agent selected from the group consisting of ammonium formate, sodium formate, potassium formate and mixture, to a rigid polyurethane foam, comprising;
B) a polyisocyanate component;
C) an isocyanate reactive component containing at least one organic compound having at least two isocyanate reactive groups; selected from the group consisting of
i) polyoxyalkylene polyether polyols
ii) polyester polyols
iii) polymer modified polyoxyalkylene polyol, and
iv) mixtures thereof
D) water as a blowing agent;
E) a catalyst capable of promoting urethane formation, and
F) a surfactant.

5,286,759
FOAMING SYSTEM FOR RIGID URETHANE AND ISOCYANURATE FOAMS

Guido F. Smits, Wijnegem, Belgium; Henri J. M. Grünbauer, Oostburg, Netherlands; Johan A. Thoen, and Werner A. Lidy, both of Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 8, 1991, Ser. No. 666,825

Int. Cl.[5] C08G *18/06*

U.S. Cl. 521—131 **22 Claims**

1. A process for preparing a fine, closed-cell, polyisocyanate-based foam by reacting a polyisocyanate with an isocyanate reactive material in the presence of water and a physical blowing agent, wherein the blowing agent comprises a mixture of:

(a) from about 5 to about 95 mole percent, based on components (a) and (b), of a hydrocarbon compound containing four or more carbon atoms;
(b) from about 95 to about 5 mole percent, based on components (a) and (b), of a polyfluorocarbon compound which has a Kelvin boiling point of from about 283 K. to about 293 K. at 760 mm Hg and wherein the ratio of Kelvin boiling point to molecular weight of said polyfluorocarbon compound is less than or equal to 1.7; and
(c) from about 2 to about 70 mole percent based on total moles of components (a), (b) and (c) present, and wherein (c) is a substance, different from (a) or (b), which has a boiling point of from about 200 K. to about 393 K. at 760 mm Hg and when the boiling point is 283 K. or greater a Kelvin boiling point to molecular weight ratio of greater than 1.7, and wherein the water is present in at least 2 parts by weight per 100 parts isocyanate reactive material.

5,286,760
PROCESS FOR REDUCING IMPURITY LEVELS IN METHYLENE DIPHENYAMINES

Jeffrey S. Bolton, Wheeling, and Robert L. Mayen, New Martinsville, both of W. Va., assignors to Miles, Inc., Pittsburgh, Pa.

Filed Oct. 9, 1992, Ser. No. 959,233

Int. Cl.[5] C07C *263/10, 265/12*

U.S. Cl. 521—160 **16 Claims**

1. A process for preparing a reaction product containing methylene di(phenylamine) comprising reacting aniline with an formaldehyde, in the presence of a low level of an acid which is sufficient to catalyze the reaction at an initial and/or condensation stage of said reaction and produce methylene di(phenylamine)intermediates; providing a reaction mixture at the condensation stage with an acid content which is at or below the initial acid level at the end of the condensation stage, and holding reaction mixture at a high temperature which is sufficient to effect a rearrangement of the intermediates to produce a reaction product containing methylene di(phenylamines) and low levels of impurities.

5,286,761
PROCESS FOR THE PRODUCTION OF LOW-FOG FLEXIBLE POLYESTER POLYURETHANE FOAMS AND THEIR USE IN VEHICLES

Manfred Naujoks, Burscheid; Klaus König, Odenthal; Manfred Schmidt, Dormagen; Hans-Walter Illger; Günter Baatz, both of Roesrath-Forsbach, and Hansjürgen Rabe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1993, Ser. No. 86,489

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1992, 4223014

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—172 **9 Claims**

1. A process for the production of low-fog flexible polyester polyurethane foams comprising reacting
a) polyisocyanates, and
b) polyesters containing at least two hydroxyl groups and having a molecular weight in the range of from 400 to 10,000, in the presence of
c) water and/or readily volatile organic compounds as blowing agents;
wherein prior to reacting b) said polyesters have been subjected to continuous distillation for an average holding time of 2 to 600 seconds, at a temperature of from 160° to 250° C., and a pressure of from 0.05 to 10 mbar.

5,286,762
STYRENE-BASED POLYMER MOLDINGS AND PROCESS FOR PRODUCTION THEREOF

Keisuke Funaki, Ichihara, and Komei Yamasaki, Sodegaura, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 642,141, Jan. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 378,384, Jul. 10, 1989, abandoned. This application Mar. 8, 1993, Ser. No. 44,096

Claims priority, application Japan, Jul. 23, 1988, 63-182825

Int. Cl.[5] C08J *3/28;* **C08L** *25/06, 25/16*

U.S. Cl. 522—3 **24 Claims**

1. A styrene-based polymer molding which is produced by irradiating with electron rays a molding of a styrene-based polymer having a syndiotactic configuration with a syndiotacticity of at least 70% in racemic pentad; said styrene-based polymer having a weight average molecular weight of about 150,000 to 1,000,000 being a homopolymer of styrene or a copolymer containing at least 70 mol % styrene and containing alkylstyrene as a comonomer.

5,286,763
BIOERODIBLE POLYMERS FOR DRUG DELIVERY IN BONE

Tobin N. Gerhart, Brockline; Cato T. Laurencin, Somerville, both of Mass.; Abraham J. Domb, Baltimore, Md.; Robert S. Langer, Newton, and Wilson C. Hayes, Lincoln, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 810,324, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 690,042, Apr. 23, 1991, abandoned, which is a continuation of Ser. No. 361,222, Jun. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 613,001, May 21, 1984, Pat. No. 4,906,474, which is a continuation of Ser. No. 477,710, Mar. 22, 1983, abandoned, said Ser. No. 361,222, is a continuation-in-part of Ser. No. 61,294, Jun. 12, 1987, Pat. No. 4,888,176, which is a continuation-in-part of Ser. No. 892,809, Aug. 1, 1983, Pat. No. 4,757,128, which is a continuation-in-part of Ser. No. 613,001, Aug. 1, 1983, Pat. No. 4,906,474, said Ser. No. 361,222, is a continuation-in-part of Ser. No. 313,953, Feb. 22, 1989, abandoned. This application Jun. 30, 1992, Ser. No. 908,438

Int. Cl.[5] A61M *31/00;* **C08G** *63/02*

U.S. Cl. 514—772.4 **8 Claims**

1. A method for delivering a bioactive molecule to bone comprising
making a polymeric composition including as structural and functional components a polyanhydride, and
bioactive molecules, and implanting the material it bore.

5,286,764
HIGH LOAD POLYMER PASTES AS A DENTURE ADHESIVE

William E. Prosise, Ramsey, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Jul. 20, 1992, Ser. No. 916,448

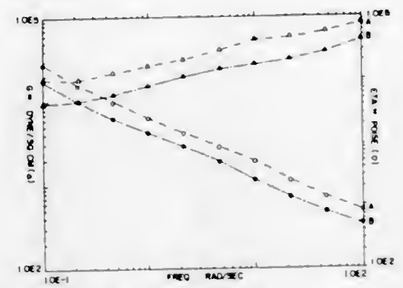
Int. Cl.[5] A61K *6/00;* **A61C** *13/12*

U.S. Cl. 523—120 **11 Claims**

1. The process of applying to the biocontact surface of a denture an effective adhesive coating amount of an adhesive composition comprising a uniform dispersion of an innocuous adhesive polymeric resin in an oil base and a non-releasing amount of between 0.01 and 5 wt. % of a non-toxic, food grade surfactant selected from the group consisting of a lecithin,

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polyglycerol ester, alkali metal stearoyl lactate, a succinylated or ethoxylated mono- or di- glyceride and polyoxyethylene



ether of a fatty acid ester of sorbitol anhydride, to provide a high polymer load gel adhesive.

5,286,765

PROCESS FOR THE PREPARATION OF FOUNDRY CORES AND MOLDS

Joachim Franke, Cologne, and Hans-Dieter Jakob, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 581,484, Sep. 12, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 810,795

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930837

Int. Cl.[5] C08G *8/36*

U.S. Cl. 523—142 **16 Claims**

1. In a method for the preparation of foundry cores and molds comprising combining a filler and a casting resin mixture and curing the combined filler and casting resin mixture at room temperature in the presence of an amine catalyst which is introduced as a gas or an aerosol, the improvement wherein said casting resin mixture comprises

(a) 50 to 99.2%, based on the total quantity of resin, of at least one organic polyisocyanate,

(b) 0.8 to 40%, based on the total quantity of resin, of at least one organic compound containing at least two epoxide groups, and

(c) 0 to 17%, based on the total quantity of resin, of a polyhydroxyl compound.

5,286,766

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITION AND METHOD FOR PRODUCING THE SAME

Masatoshi Arai; Tsuneo Kimura, both of Annaka, and Kazuyuki Suzuki, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 892,892

Claims priority, application Japan, Jun. 3, 1991, 3-159975

Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—213 **14 Claims**

1. A room temperature vulcanizable organopolysiloxane composition which comprises:

(A) 100 parts by weight of at least one diorganopolysiloxane which is blocked with at least one alkoxy group at both ends of a molecular chain thereof;

(B) from 1 to 25 parts by weight of a first alkoxysilane of the general formula, or a partial hydrolyzate thereof,

$$R^1_{4-n}Si(OR^2)_n$$

wherein R^1 and R^2 may be the same or different and represent an unsubstituted or substituted monovalent hydrocarbon group, and n is 3 or 4, said first alkoxysilane having a first hydrolyzing property;

(C) from 0.01 to 10 parts by weight of a curing catalyst selected from the group consisting of titanic esters and titanium complex compounds;

(D) from 5 to 500 parts by weight of a silica filler; and

(E) from 1 to 25 parts by weight of a second alkoxysilane of the following general formula, or a partial hydrolyzate thereof,

$$R^1_{4-m}Si(OR^2)_m$$

wherein R^1 and R^2 have, respectively, the same meanings as defined with respect to (B) and m is an integer of from 1 to 4, said second alkoxysilane having a second hydrolyzing property, the first and second hydrolyzing properties being such that the second alkoxysilane is less hydrolyzable than the first alkoxysilane,

said room temperature vulcanizable organopolysiloxane composition being prepared by first mixing components (A)-(D) and then adding component (E) to the resulting mixture.

5,286,767

MODIFIED AGAR AND PROCESS FOR PREPARING MODIFIED AGAR FOR USE CERAMIC COMPOSITION TO ADD GREEN STRENGTH AND/OR IMPROVE OTHER PROPERTIES OF A PREFORM

Ronald P. Rohrbach, Flemington, N.J.; Julie R. Schollmeyer, Des Plaines, Ill., and Anthony J. Fanelli, Rockaway, N.J., assignors to Allied Signal Inc., Morristown, N.J.

Filed Mar. 28, 1991, Ser. No. 676,646

Int. Cl.[5] C08L *5/12*; B09C *39/00*

U.S. Cl. 524—27 **9 Claims**

8. An injection molding process comprising the steps of

a) injecting a mixture comprising

(1) powders selected from the group consisting of metal powders, ceramic powders and mixtures thereof,

(2) a gel-forming polysaccharide material,

(3) a gel-enhancing agent capable of reacting with said gel-forming material,

(4) a gel-forming material solvent, and

(5) an oxidizing agent capable of oxidizing said gel-forming material;

into a mold, the mixture being maintained prior to the injection step at a first temperature above the gel point of the gel-forming material, said temperature being in the range from about 70° C. to about 100° C.; and

b) cooling the mixture in the mold to a second temperature below the gel point of the gel-forming material to form a self supporting article, wherein said gel-enhancing agent is a polymer having nitrogen containing groups.

5,286,768

AQUEOUS COATINGS COMPOSITION CONTIANING CELLULOSE MIXED ESTER AND AMINE NEUTRALIZED ACRYLIC RESIN AND THE PROCESS FOR THE PREPARATION THEREOF

Kenneth R. Walker, Wigan, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1992, Ser. No. 854,501

Int. Cl.[5] C08L *1/14, 33/02*

U.S. Cl. 524—40 **16 Claims**

1. An aqueous coating composition comprising:

(a) an amount of 3 to 50 weight percent based on total solids, of at least one cellulose mixed ester having an acid number of at least 50 and having a first ester residue, that is a residue of a dicarboxylic acid anhydride, and a second ester residue that is selected from the group consisting of oleophilic monocarboxylic acid residue, hydrophilic monocarboxylic acid residue, and mixtures thereof; and

(b) at least 50 weight percent, based on total solids, of a compatible amine neutralized acrylic resin;

wherein the aqueous coating composition has a near neutral pH and a volatile organics content below 20 weight percent based on the total of solids and liquid.

5,286,769

CORRUGATING ADHESIVE CONTAINING SOLUBLE HIGH AMYLOSE STARCH

James Eden, Millstone; James Kasica, Whitehouse Station; Craig Leake, Edison, all of N.J.; Norman Lacourse, Indianapolis, Ind., and Paul Altieri, Belle Mead, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 764,559, Sep. 20, 1991, Pat. No. 5,236,977. This application Apr. 19, 1993, Ser. No. 48,245

Int. Cl.[5] C08L *3/04*; C09D *4/00*

U.S. Cl. 524—49 **18 Claims**

1. A process for preparing a corrugated paperboard, comprising the steps:

a) providing a dry mixture for use as a corrugating adhesive, comprising an effective amount of a raw starch and an effective amount of a soluble high amylose starch, having at least 40% amylose, wherein the soluble high amylose starch is selected from the group consisting of (a) a spray-dried, non-granular starch, characterized in that the starch is substantially non-crystalline, substantially non-retrograded, and fully pre-dispersed; (b) a spray-dried, uniformly gelatinized starch in the form of granular indented spheres, with at least a majority of the granules being whole and unbroken, these starch granules being in the form of loosely-bound agglomerates and individual granules; and (c) an extruded, non-granular starch, characterized in that the starch is fully pre-dispersed; and (d) a mixture thereof, and wherein the soluble high amylose starch is substantially water soluble at 25° to 55° C. in the absence of alkali;

b) preparing a corrugating adhesive by blending the dry mixture with 60 to 80% water, based on the total weight of the adhesive;

c) applying the corrugating adhesive to the tips of the corrugations of a fluted paper strip; and

d) applying a facing to the adhesive coated tips of said fluted paper strip to form an adhesive bond, wherein the process is carried out at any pH and the corrugated paperboard produced by this process is characterized by water resistance.

5,286,770

DISPOSABLE ABSORBENT ARTICLES

Catia Bastioli, Novara; Vittorio Bellotti, Fontaneto D'Agogna, and Giancarlo Romano, Novara, all of Italy, assignors to Novamont S.P.A., Milan, Italy

Filed Aug. 13, 1991, Ser. No. 744,300

Claims priority, application European Pat. Off., Aug. 1, 1991, 91112942.7

Int. Cl.[5] B32B *9/02*; C08L *3/02, 23/08, 29/04*

U.S. Cl. 524—52 **16 Claims**

1. An absorbent article comprising:

(a) a liquid pervious topsheet;

(b) a liquid impervious backsheet joined to the topsheet, wherein the backsheet comprises a flexible starch-based film comprising:

(i) starch;

(ii) at least one synthetic thermoplastic polymer selected from the group consisting of

(aa) polyvinyl alcohol; (bb) copolymers of an olefin selected from the group consisting of ethylene, propylene, isobutene, styrene and combinations thereof with acrylic acid, vinyl alcohol, vinyl acetate, and combinations thereof; and (cc) combinations thereof;

(iii) from 0.5 to 20 weight percent urea based on the total weight of the film;

(iv) moisture; and

(v) 5-25 percent plasticizer by weight based on the total weight of the film, wherein the plasticizer is selected from the group consisting of mono-ethoxylate, di-ethoxylate, mono-propoxylate, di-propoxylate, mono-acetate derivatives of sorbitol, di-acetate derivatives of sorbitol, and combinations thereof;

wherein the (i) starch and the (ii) at least one polymer form an at least partially interpenetrated network; and

(c) an absorbent core positioned between the topsheet and the backsheet.

5,286,771

ETHYLENE/ACID COPOLYMERS WITH IMPROVED BLOCK RESISTANCE

Malcolm S. Smith, Beaumont, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1992, Ser. No. 881,962

Int. Cl.[5] C08K *3/08*

U.S. Cl. 524—78 **7 Claims**

1. Pellets of a direct ethylene copolymer comprising repeat units derived

a) at least 50 wt. % from ethylene,

b) 8–30 wt. % from acrylic or methacrylic acid and

c) up to 40 wt. % from an alkyl acrylate or vinyl acetate,

with from 0–80% of the acid groups neutralized with metal ions selected from the group consisting of zinc, magnesium and calcium, surface-coated with an effective amount, between about 5 and 1000 ppm, of a liquid additive or water-soluble solid additive to raise the stick temperature of said pellets to above about 30° C., the additive having a boiling point at atmospheric pressure above about 220° C., the additive being selected from the group consisting of:

(i) monohydric and polyhydric aliphatic alcohols,

(ii) aliphatic acid esters or fatty acid esters of (i),

(iii) homopolymers and copolymers of 2–5 carbon alkylene oxides of average molecular weight from about 200 to about 5000;

(iv) ethers, aliphatic acid esters of fatty acid esters of (iii);

(v) low molecular weight liquid polyesters plasticizers, and

(vi) mineral oil, vegetable oils and animal oils.

5,286,772

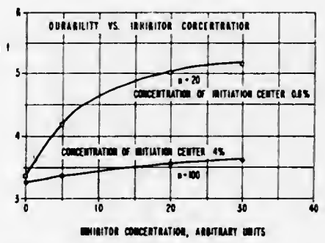
SYNERGISTIC COMPOSITIONS FOR THE PREVENTION OF POLYMER DEGRADATION

Natalya Rapoport, Salt Lake City, Utah, assignor to The University of Utah, Salt Lake City, Utah

Filed Nov. 27, 1992, Ser. No. 982,490

Int. Cl.[5] C08K *5/13*

U.S. Cl. 524—345 **11 Claims**



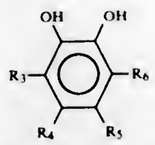
1. A composition comprising;

(a) a polyolefin;

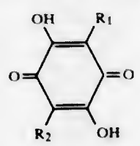
(b) a phenolic oxidation inhibitor for polyolefins having at

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least one phenolic group that is reactive with free radicals of the polyolefin to form phenoxyl radicals;
(c) a catechol synergist represented by the formula;



where R_3, R_4, R_5, and R_6 are the same or different and are chosen from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, alkaryl, and aralkyl, wherein at least one of the members of the group consisting of R_3 and R_6 is a non-hydrogen radical chosen from bulky substituents such that the catechol is sterically hindered.
2. A composition comprising;
(a) a polyolefin;
(b) a phenolic oxidation inhibitor for polyolefins having at least one phenolic group that is reactive with free radicals of the polyolefin to form phenoxyl radicals;
(c) an oxiquinone synergist represented by the formula;



where R_1 and R_2 are the same or different and are chosen from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, alkaryl, and aralkyl.

5,286,773
THERMOPLASTIC POLYMERS WITH DISPERSED FLUOROCARBON ADDITIVES
Robert E. Sterling, Homosassa Spa, and Eugene P. Goldberg, Gainesville, both of Fla., assignors to Res Development Corporation, Lecanto, Fla.
Continuation of Ser. No. 639,232, Jan. 9, 1991, Pat. No. 5,143,963, which is a continuation of Ser. No. 446,675, Dec. 6, 1989, abandoned. This application Jun. 17, 1992, Ser. No. 899,895
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] C08K *5/09*
U.S. Cl. 524—366 **44 Claims**

1. A composition of matter formed by melt-blending a thermoplastic polymer consisting of a styrene-olefin block copolymer and from about 0.01% to less than 1%, by weight, of a fluorocarbon additive selected from the group consisting of a fluorocarbon oil, a fluorocarbon gum, a fluorocarbon grease and mixtures thereof, said fluorocarbon additive having a lower surface energy than that of said polymer; said melt-blending resulting in a substantially homogenous admixture consisting of said polymer and said fluorocarbon additive; said admixture, upon cooling, resulting in a solid composition wherein the concentration of said fluorocarbon additive through a cross-section of said solid composition is lower in the interior thereof and higher at the surfaces thereof.

5,286,774
AQUEOUS COMPOSITIONS
Graeme McGibbon, Whitley Bay, and Julie E. Robinson, Stockton on Tees, both of England, assignors to Tioxide Specialties Limited, Loodon, England
Filed Jul. 27, 1992, Ser. No. 919,274
Claims priority, application United Kingdom, Jul. 27, 1991, 9116267.7
Int. Cl.[5] C08K *3/10;* **C08L** *25/14;* **C09B** *11/00*
U.S. Cl. 524—398 **20 Claims**

1. A printing ink composition comprising an aqueous emulsion or aqueous solution of a film-forming polymer selected from the group consisting of acrylic polymers, styrene-acrylic polymers, or shellac-supported polystyrene polymers, and a titanium compound comprising the reaction product of a titanium orthoester, a beta-diketone and a dihydric alcohol.

5,286,775
HALOGEN-FREE FLAME RETARDANT COMPOSITIONS
Pradip K. Bandyopadhyay, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 29, 1992, Ser. No. 997,074
Int. Cl.[5] C08K *3/32, 5/34*
U.S. Cl. 524—416 **15 Claims**

1. A halogen free composition useful for electrical insulation comprising 100 parts of polyolefin resin grafted with from about 1 to about 10 parts maleic anhydride; from about 0.1 part to about 10 parts of a free radical catalyst therefore, from about 0.5 to about 10 parts of an antioxidant and from about 5 parts to about 500 parts of at least one ammonium polyphosphate containing flame retardant.

5,286,776
REINFORCED POLYPROPYLENE RESIN COMPOSITION CONTAINING GLASS FIBER, MICA AND COPOLYMER ADDITIVES
Shigeji Ichikawa; Katsunori Arai, both of Yoshimi; Hideyo Morita, Tokyo; Koubei Ueno, and Tatsuhi Akou, both of Sakai, all of Japan, assignors to Kanesi Corporation, Saitama and Ube Industries, Ltd., Yamaguchi, both of Japan
Continuation of Ser. No. 793,276, Nov. 8, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 61,428
Claims priority, application Japan, Nov. 8, 1990, 2-303555
Int. Cl.[5] C08J *5/08;* **C08K** *3/34;* **C08L** *23/12*
U.S. Cl. 524—449 **6 Claims**

1. A reinforced polypropylene resin composition comprising:
(a) 45 to 75% by weight of a polypropylene modified with an organosilane compound or an unsaturated acid, or a modified polypropylene containing an unmodified polypropylene;
(b) 1 to 10% by weigh of a noncrystalline ethylene-α-olefin copolymer;
(c) 1 to 10% by weight of a styrenic hydrogenated block copolymer selected from the group consisting of SEBS and SEPS;
(d) 2 to 12% by weight of a glass fiber having a mean fiber diameter of 4 to 15 μm; and
(e) 15 to 35% by weight of a hard mica having a tensile strength of 30 kg/mm^2 or more, a mean particle diameter of 50 to 250 μm and an aspect ratio of 15 to 80, the total amount of said components (b) and (c) being 2 to 14% by weight of said composition.

5,286,777
PREPARING A DYE-CONTAINING POLYMER
Ulrich Schoeler, Gerolzhofen; Peter Ast, Schoenaich; Eugene W. Reynolds, deceased, late of Schoenaich, all of Fed. Rep. of Germany by Beverly D. Reynolds, Administrator , and Darlene J. Spira-Solomon, Stanford, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 306,951, Feb. 3, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 912,063
Int. Cl.[5] C08F *2/02, 20/56;* **C08L** *39/00;* **C08G** *63/78*
U.S. Cl. 524—460 **13 Claims**

1. A method of preparing particles of a dye-containing polymer comprising the steps of:
polymerizing a solution of monomers in the presence of the dye to produce a homogenous bulk dye-containing polymer;
forming slices from said polymer preparation for analysis of the properties of these slices; and
dividing the bulk polymer into particles of dye-containing polymer.

5,286,778
LATICES AND WATERBORNE COMPOSITIONS FOR WOOD STAINS, SEALERS, AND THE LIKE
Roy E. Dean, Lower Burrell, and Edward E. McEntire, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sep. 28, 1992, Ser. No. 951,619
Int. Cl.[5] C08L *27/08;* **B32B** *21/08*
U.S. Cl. 524—460 **25 Claims**

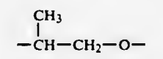
1. An aqueous wood stain composition comprising:
a latex polymer which comprises the free radical polymerization reaction product of vinyl halide and vinylidene halide in aqueous medium in the presence of polymeric surfactant;
colorant;
solvent, of which the major constituent is water, the amount of solvent being such that the solids content of the composition is less than 50 percent by weight.

5,286,779
EMULSION POLYMERIZATION COMPOSITION
Jui-Chang Chuang, Wayne; Jenn S. Shih, Paramus, both of N.J.; Domingo I. Jon, New York, N.Y., and John C. Hornby, Washington Township, Bergen County, N.J., assignors to ISP Investments Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 928,594, Aug. 18, 1992, Pat. No. 5,225,474. This application Mar. 10, 1993, Ser. No. 28,866
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] C08F *2/16*
U.S. Cl. 524—460 **5 Claims**

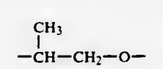
1. An emulsion polymerization composition in the form of an aqueous dispersion for producing a latex of at least 30% solids having a Brookfield viscosity of at least 600 cps, and with substantially no coagulum or residue, comprising:
(a) about 30–65% by weight of the composition of an emulsion polymerizable monomer selected from styrene, butadiene, vinyl acetate, methyl acrylate, ethyl acrylate, butyl acrylate, vinyl chloride, acrylonitrile, and acrylamide and mixtures thereof, which may include one or more comonomers selected from acrylic acid, itaconic acid, fumaric acid, 2-hydroxyethyl acrylate and methacrylic acid;
(b) about 0.1–5% by weight of the composition of a copolymer of (i) a vinyl lactam and (ii) a polymerizable carboxylic acid, in a 99/1 to 1/99 weight ratio;
(c) about 1–10% by weight based on the monomer of a surfactant which is a non-ionic or anionic surfactant, or mixtures thereof, selected from condensation products of active hydrogen containing organic compounds with ethylene oxide, sulfonic acid esters, sulfate esters, phosphate esters, alkyl arylsulfonic acids, and salts thereof;
(d) about 0.1–2% by weight of the composition of a polymerization initiator; and
(e) the rest being water.

5,286,780
CURABLE COMPOSITION
Hiroshi Iwakiri; Masayuki Fujita, and Takashi Hasegawa, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Sep. 8, 1992, Ser. No. 941,804
Claims priority, application Japan, Sep. 9, 1991, 3-228104
Int. Cl.[5] C08G *65/32;* **C08L** *71/02, 83/10*
U.S. Cl. 524—500 **9 Claims**

1. A curable composition comprising:
(A) an oxypropylene polymer:
(1) which has a ratio of Mw/Mn of not higher than 1.6;
(2) which has a polymer main chain consisting essentially of a repeating unit represented by the following formula;



(3) which does not have any branched chain other than methyl groups of said repeating unit; and
(4) which has at least one silicon atom-containing group having one or more silicon atoms to which one or more hydrolyzable groups are attached; and
(B) an oxypropylene polymer:
(1) which has a ratio of Mw/Mn of not higher than 1.6;
(2) which as a polymer main chain consisting essentially of a repeating unit represented by the following formula;



(3) which as at least one branched chain consisting essentially of a repeating unit represented by the above formula;
(4) which as at least one silicon atom-containing group having one or more silicon atoms to which one or more hydrolyzable groups are attached.

5,286,781
PRESSURE SENSITIVE ADHESIVE COMPOSITION AND PRESSURE SENSITIVE ADHESIVE TAPE OR SHEET MAKING USE OF THE SAME
Masahiko Gotoh, Hasuda; Shigehisa Kobayashi, Kazo, and Kazuhiro Kawabata, Tokyo, all of Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan
Filed Apr. 14, 1992, Ser. No. 868,166
Claims priority, application Japan, Apr. 18, 1991, 3-86739; Sep. 4, 1991, 3-224150; Nov. 18, 1991, 3-302060; Jan. 29, 1992, 4-13949
Int. Cl.[5] C09J *153/02*
U.S. Cl. 524—505 **6 Claims**

1. A pressure sensitive adhesive composition consisting essentially of 100 parts by weight of at least one block copolymer selected from the group consisting of block polymers represented by the general formula A-B-A and block copolymers represented by the general formula A-B, wherein A denotes a styrene polymer block and B denotes a butadiene polymer block, an isoprene polymer block, a polymer block obtained by hydrogenating a butadiene polymer block, or a polymer block obtained by hydrogenating an isoprene block, 10–200 parts by weight of a tackifying resin and 25–200 parts by weight of a polyolefin having a melt index of about 0.1–30 g/10 min, wherein the polyolefin contains products which can be extracted in n-pentane in an amount less than 1.0 wt. %.

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5,286,782

COATING COMPOSITION OF AN ACRYLIC POLYMER, POLYOL AND POLYISOCYANATE CROSSLINKING AGENT

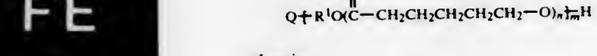
Douglas M. Lamb, Lansdale, Pa., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 31, 1992, Ser. No. 937,281
Int. Cl.[5] C08L 75/04; C08F 8/30
U.S. Cl. 524—507 15 Claims

1. A clear coating composition which cures at ambient temperatures having a film forming binder solids content of about 30–70% by weight and an organic liquid carrier, wherein the binder contains about

(A) 50–80% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of polymerized monomers of styrene, a methacrylate monomer selected from the group consisting of methyl methacrylate, isobornyl methacrylate, cyclohexyl methacrylate or any mixtures thereof, a second methacrylate monomer selected from the group consisting of n-butyl methacrylate, isobutyl methacrylate or ethyl hexyl methacrylate or any mixtures thereof and a hydroxy alkyl methacrylate or hydroxy alkyl acrylate each having 1–4 carbon atoms in the alkyl group; wherein the acrylic polymer has a number average molecular weight of about 1,000–12,000 determined by gel permeation chromatography and a calculated Tg of at least 40° C.,

(B) 1–20% by weight, based on the weight of the binder, of a polyol component comprising a compound of the formula of



wherein:

R^1 is a covalent bond or alkylene containing 1, 2, 3 or 4 carbon atoms;

n is about 1 to about 4;

m is 2, 3 or 4; and

Q is a saturated carbocyclic ring containing 5 or 6 carbon atoms, or S—R^2—T wherein S and T are each independently saturated carbocyclic rings containing 5 or 6 carbon atoms, and R^2 is a covalent bond or an alkylene group containing 1, 2 or 3 carbon atoms;

provided that no more than one R^1 is bound to any c carbocyclic carbon atom, and further provided that when Q is S—R^2—T, each R^1 is bound to a carbon atom of the carbocyclic rings of S and T and

(C) 10–49% by weight, based on the weight of the binder, of an organic polyisocyanate.

5,286,783

COPOLYMER LATEX

Hiroshi Hisaki, Yokosuka; Katsuo Hagiwara, Yokohama; Yasuhiro Nakano, Tokyo; Satoru Takinami, Yokohama, and Masayoshi Sekiya, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 627,242, Dec. 14, 1990, abandoned, which is a division of Ser. No. 432,307, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 909,250, Sep. 19, 1986, abandoned. This application Jul. 30, 1992, Ser. No. 921,397
Claims priority, application Japan, Sep. 24, 1985, 60-210656
Int. Cl.[5] C08K 3/20
U.S. Cl. 524—510 1 Claim

1. An adhesive composition for bonding fibers to rubber consisting essentially of (1) a copolymer latex obtained by emulsion polymerization of 45 to 85% by weight of a conjugated diene monomer, 0.1 to 25% by weight of an ethylenically unsaturated acid monomer, 10–45% by weight of a vinylpyridine monomer and 0 to 30% by weight of another monomer copolymerizable with these monomers, the amount of the carboxyl groups on the surface of the latex particles being at least 0.01 milliequivalent per gram of the copolymer, and (2) a resorcinolformaldehyde resin.

5,286,784

POLY(PHENYLENE SULFIDE) RESIN COMPOSITION

Hiroshi Inoue; Toshikazu Kato; Takehiko Sakane, and Masanori Fujioka, all of Mie, Japan, assignors to Tosoh Corporation, Yamaguchi and Toso Susteel Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 550,582, Jul. 10, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,343
Claims priority, application Japan, Jul. 10, 1989, 1-175538
Int. Cl.[5] C08L 81/00
U.S. Cl. 524—609 10 Claims

1. A poly(phenylene sulfide) resin composition which comprises:

100 parts by weight of a poly(phenylene sulfide) resin that has been cured by heating it in a non-oxidative, inert gas in the absence of oxygen at temperatures within the range of from about 200° C. to about 270° C.; and

10–200 parts by weight of glass fibers exhibiting a weight loss of not greater than 0.7% by weight when heated at a temperature of 330° C. for a period of 1 hour, and

said poly(phenylene sulfide) resin having, before curing, a melt viscosity of not less than 400 poises as measured in a KOHKA type flow tester at a temperature of 300° C. and a load of 10 kg using a die of 0.5 mm diameter and 2.0 mm length.

5,286,785

THERMOSTABLE ETHYLENE-CARBON MONOXIDE COPOLYMER CONTAINING AL-MG-CO_3 OR CAO

Pieter Gijsman, Beek, and Daniël J. M. Tummers, Geleen, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Filed Jun. 25, 1992, Ser. No. 904,490
Claims priority, application Belgium, Jun. 25, 1991, 9100609
Int. Cl.[5] C08L 73/00
U.S. Cl. 524—612 12 Claims

1. Ethylene-carbon monoxide copolymer composition containing 0.05–2 wt. %, calculated relative to the copolymer, of an inorganic compound reacting as a base upon contact with water, excluding ZnO, and additionally comprising a phenolic anti-oxidant.

5,286,786

PROCESS FOR PRODUCING STABILIZED ETHYLENE CARBON MONOXIDE INTERPOLYMERS

Stephen M. Hoenig, Lake Jackson; Gregory E. Johnson, Brazoria, and Gerald M. Lancaster, Freeport, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 699,426, May 13, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 911,242
Int. Cl.[5] C08K 5/13
U.S. Cl. 524—740 12 Claims

1. In a method for preparer ethylene-carbon monoxide interpolymer for ambient-temperature transportation and storage for an extended period of time, comprising polymerizing a monomer mixture containing ethylene and carbon monoxide in the presence of a free radical polymerization initiator in a copolymerization reaction vessel, and recovering an ethylene-carbon monoxide interpolymer containing at least about 10 up to about 35 percent by weight carbon monoxide in interpolymerized form, the improvement wherein the recovered interpolymer is intimately melt blended with form about 500 to about 5000 ppm of a hindered phenol antioxidant, downstream of the copolymerization reaction vessel prior to exposure to air, effective ti impart a stable melt flow rate and melt tension to the recovered interpolymer.

5,286,787

MOISTURE-CURING POLYURETHANE SEALING COMPOUNDS HAVING IMPROVED PROPERTIES

Tore Podola, Monheim, and Martin Majolo, Erkelenz, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/02212, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO91/09893, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 17, 1990, Ser. No. 866,173
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 3943090
Int. Cl.[5] C08G 18/61
U.S. Cl. 524—773 24 Claims

1. A moisture-curing jointing and sealing compound composition having improved stability against weather conditions, said composition comprising an NCO-terminated polyurethane prepolymer containing on average 2 or more isocyanate groups in the molecule, and a reactive polysiloxane containing one or more functional groups which react with said polyurethane prepolymer or the compound formed therefrom as a result of moisture curing said composition.

5,286,788

THIOESTER POLYMERIZATION MODIFIERS

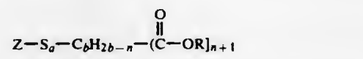
Mohammed Shahid, Minneapolis, Minn., assignor to Witco Corporation, New York, N.Y.

Continuation of Ser. No. 679,740, Apr. 3, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,454
Int. Cl.[5] C08G 63/91
U.S. Cl. 525—23 33 Claims

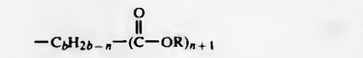
1. A polymerizable resin composition comprising:

at least one polymerizable resin which undergoes exothermic polymerization and which is selected from the group consisting essentially of at least one unsaturated monomer and unsaturated polyester resins, vinyl ester resins and mixtures thereof; and

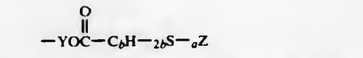
a substantially non-polymeric ester of a thiocarboxylic acid mixed with said resin in an effective amount to substantially reduce the exothermic heat generated during free radical polymerization of said resin, but insufficient to substantially reduce the exothermic heat generated during free radical polymerization of said resin, but insufficient to substantially affect the degree or rate of free radical polymerization of said resin, said ester of a thiocarboxylic acid having the formula



in which Z is an alkyl having 1–18 carbon atoms or Z is



and where a is 1, b is a whole number from 1 to about 5, n is a whole number from zero to b, and R is an alkyl or hydroxyalkyl having 1–18 carbon atoms and zero to 2 hydroxyl groups, alkyloxyethyl, alkyloxyethoxyethyl, and alkyloxypolyethoxyethyl having 1 to about 30 carbon atoms in the alkyl group; or when n is zero and Z is alkyl, R is



in which Y is an alkylene group having 2 to about 20 carbon atoms or an alkylene group interrupted at intervals or 2 or more carbon atoms by oxygen atoms and having 4 to about 40 carbon atoms and one to 19 oxygen atoms.

5,286,789

SOLID PHASE MULTIPLE PEPTIDE SYNTHESIS

David Okrongly, Sunnyvale; Brian R. Clark, Redwood City, both of Calif., and Jack Spesard, Arlington Heights, Ill., assignors to Applied Immune Sciences, Inc., Santa Clara, Calif.

Continuation of Ser. No. 671,671, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 357,987, May 26, 1989, abandoned. This application Apr. 2, 1993, Ser. No. 41,901
Int. Cl.[5] C08F 8/32; C08L 89/00
U.S. Cl. 525—54.11 26 Claims

1. A fabricated polystyrene article characterized by:

being optically clear;

being functionalized at high density at an activated polystyrene support article surface with linking groups terminating in a primary amino or hydroxy group, and

having linked to said terminating amino or hydroxy group (a) an amino acid the amino group thereof optionally coupled to a protecting group used for peptide synthesis or (b) an oligopeptide, wherein said oligopeptide is substantially uniform in composition and the N-terminal amino group of said oligopeptide is optionally coupled to a protecting group used for peptide synthesis.

5,286,790

ACRYLATE POLYMERS MODIFIED WITH POLY(PHENYLENE ETHER)

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1992, Ser. No. 850,324
Int. Cl.[5] C08L 33/04, 69/00, 71/12
U.S. Cl. 525—67 15 Claims

1. An improved composition of matter of the type which comprises, in admixture,

(a) poly(alkyl acrylate); and

(b) a blend of poly(phenylene ether) with

(i) a random, alternate, block, or grafted copolymer prepared from a vinyl aromatic compound and maleic anhydride, and

(ii) polycarbonate,

wherein the poly(phenylene ether) is present in the composition in an amount of 5 weight percent of the composition or less.

5,286,791

IMPACT MODIFIED GRAFT COPOLYMER COMPOSITIONS CONTAINING BROAD MOLECULAR WEIGHT DISTRIBUTION POLYPROPYLENE

Anthony J. DeNicola, Jr., and Michael R. Conboy, both of New Castle County, Del., assignors to Himont Incorporated, Wilmington, Del.

Filed May 29, 1992, Ser. No. 891,374
Int. Cl.[5] C08G 63/48, 63/91
U.S. Cl. 525—71 13 Claims

1. An impact modified graft copolymer composition comprising, by weight:

(A) from 10 to 90% of a graft copolymer of propylene polymer material having graft polymerized thereto one or more vinyl monomer(s);

(B) from 90 to 10% of at least one broad molecular weight distribution propylene polymer material having a M_w/M_n of 8 to 60, a melt flow rate of 0.5 to 50, and a xylene insolubles at 25° C. of greater than or equal to 94%; and

(C) from 2 to 25% of at least one rubber component, wherein the total amount of (A)+(B)+(C) is 100%.

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5,286,792

ABS WITH NOVEL MORPHOLOGY

Wan C. Wu, Longmeadow, and Vincent A. Allberti, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 4, 1990, Ser. No. 576,758
Int. Cl.[5] C08L 51/04
U.S. Cl. 525—84 5 Claims

1. An acrylonitrile-diene rubber-styrene-ester polymer made by a continuous mass polymerization process having a matrix phase comprising a copolymer comprising at least 20 weight percent of a monalkenyl aromatic monomer, at least five weight percent of an ethylenically unsaturated nitrile monomer and at least five weight percent of an ethylenically unsaturated monomeric ester which is a whole or partial ester of a mono or dicarboxylic acid and a dispersed phase comprising diene rubber particles having a grafted superstrate of a copolymer of a monoalkenylaromatic monomer, an ethylenically unsaturated nitrile monomer and an ethylenically unsaturated monomeric ester which is a whole or partial ester of a mono or dicarboxylic acid and wherein the diene rubber is a conjugated diene rubber or mixtures of such rubbers used in an amount such that the final acrylonitrile-butadiene-styrene-ester polymer contains 10 to 25 weight percent of diene rubber based on the total polymer weight; wherein the acrylonitrile-diene rubber-styrene-ester polymer is characterized by having the following properties:

(a) a gloss level of at least 50%;
(b) an Izod impact of at least 120 J/M;
(c) an IDI impact of at least 15 J;
(d) a tensile strength of at least 36 MPa;
(e) a melt viscosity (KPa-S) of less than 0.45; and a rubber phase morphology characterized by having a bimodal distribution of rubber particles wherein 10 to 30% of the rubber particles have Dw of from 0.6 to 1.0 micron and 70 to 90% of the rubber particles have a Dw of from 0.2 to 0.6 microns and wherein the smaller particles are substantially free of occluded matrix polymers and wherein a majority of the large particles have a "low level of occluded matrix polymer as represented by the structures of the larger particles in FIG. V A & B" in the form of an interpenetrating network.

5,286,793

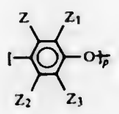
IN SITU COMPATIBILIZATION OF PPE/POLYETHYLENE COPOLYMER BLENDS

Steve G. cottis, Hightstown, and Kavilipalayam M. Natarajan, North Brunswick, both of N.J., assignors to Istituto Guido Donegani, Milan, Italy and Enichem America, Inc., Monmouth Junction, N.J.

Filed Jan. 15, 1992, Ser. No. 898,829
Int. Cl.[5] C08L 71/12, 33/02
U.S. Cl. 525—132 15 Claims

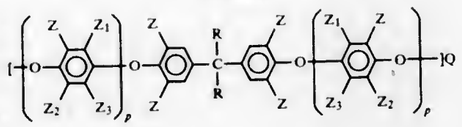
1. A polymer blend prepared by reactive melt mixing a polyphenylene ether and an ethylene-(alkyl)acrylic acid copolymer, consisting of:

A) 40 to 80% by weight of uncapped polyphenylene ether or ester end-capped polyphenylene ether wherein said uncapped polyphenylene ether or ester end-capped polyphenylene ether consists of repeating monomer units of the formula

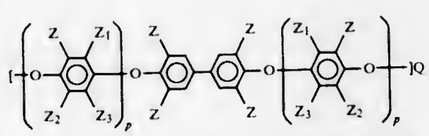


or

-continued



or



wherein Z, Z_1, Z_2 and Z_3, which may be the same or different, are monovalent substituents selected from the group consisting of hydrogen, halogen, hydrocarbon groups containing 1-4 carbon atoms and phenyl, R is hydrogen or C_{1-4} alkyl and p and O are the number of monomer units and are positive integers of 20 or more,

B) 20 to 60% by weight of an ethylene-(alkyl)acrylic acid random copolymer containing from 0.1 to 5 mol % acrylic acid monomer unit, and optionally

C) an effective amount of an esterification catalyst.

5,286,794

BLENDS OF POLYCARBONATE CONTAINING FLUORINATED-BISPHENOL A AND POLYVINYL CHLORIDE

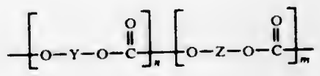
Michael A. Drzewinski, Princeton Junction, N.J., assignor to Enichem S.p.A., Milan, Italy

Filed Jun. 1, 1992, Ser. No. 891,032
Int. Cl.[5] C08L 69/00, 27/06
U.S. Cl. 525—147 7 Claims

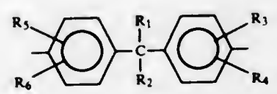
1. A thermoplastic composition comprising a thermodynamically miscible blend of

(I) 1 to 99% of polyvinyl chloride; and

(II) 99 to 1 wt. % of an aromatic polycarbonate represented by the formula

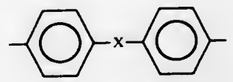


wherein Y is



wherein R_1 and R_2 independently are fluorinated C_1–C_6 alkyl or fluorinated C_6–C_{10} aryl groups; R_3, R_4, R_5 and R_6 are each independently hydrogen, C_1–C_3 alkyl, chlorine, bromine, or fluorine;

Z is a radical of the formula



wherein X is C_1–C_6 straight or branched alkyl, carbonyl, sulfonyl, oxygen, sulfur or a single bond; n is an integer between 5 and 10,000, m is an integer of 0–10,000 provided

$n \geq 0.15(m+n)$ wherein said composition has been melt blended and said blend of components I and II has one Tg.

5,286,795

THERMOPLASTIC ELASTOMER BASED UPON CHLOROSULFONATED POLYETHYLENE AND A CRYSTALLINE OLEFIN POLYMER

Oliver C. Ainsworth, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 629,501, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 462,666, Jan. 4, 1990, Pat. No. 4,978,703. This application Apr. 8, 1993, Ser. No. 45,282
Int. Cl.[5] C08L 23/34; C08K 5/10
U.S. Cl. 525—195 18 Claims

1. A process for preparing a partially crosslinked blend thermoplastic elastomer material having a tension set value, at 100% elongation, of less than about 50% from a blend of an amorphous chlorosulfonated polyethylene, a crystalline thermoplastic polyolefin polymer, and a thermoplastic chlorosulfonated polyethylene, the process comprising:

a. forming a heat-plastified, substantially uniform admixture comprising an amorphous chlorosulfonated polyethylene, a crystalline thermoplastic polyolefin polymer and an inorganic base;

b. dispersing a vulcanizing material for the chlorosulfonated polyethylene throughout the admixture while mixing said admixture at a temperature sufficient to activate the vulcanizing material without substantially degrading any component of the composition and for a period of time sufficient to cure substantially all of the chlorosulfonated polyethylene, the vulcanizing material comprising (1) a derivative of 2,5-dimercapto-1,3,4-thiadiazole or (2) a combination of 2,5-dimercapto-1,3,4-thiadiazole and an activator material; and

c. dispersing in the vulcanized admixture prepared in step (b), a material comprising a chlorosulfonated polyethylene being substantially free from additional vulcanizing material, for a period of time sufficient to achieve substantially uniform admixture and at a temperature sufficient to produce a molten partially crosslinked blend of a thermoset chlorosulfonated polyethylene in a thermoplastic chlorosulfonated polyethylene.

5,286,796

METHOD FOR THE PREPARATION OF POLYVINYL CHLORIDE RESIN

Tadashi Amano, and Ichiro Kaneko, both of Ibaraki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 936,601
Claims priority, application Japan, Sep. 6, 1991, 3-254462
Int. Cl.[5] C08F 2/20
U.S. Cl. 526—200 5 Claims

1. In a method for the preparation of a polyvinyl chloride resin by the suspension polymerization of vinyl chloride monomer in an aqueous polymerization mixture consisting of an aqueous suspension medium containing a water-soluble polymer, which is a partially saponified polyvinyl acetate having a degree of saponification in the range from 75 to 99% and an average degree of polymerization in the range from 1500 to 2700, a hydroxypropyl methyl cellulose, of which the degree of substitution with methoxy groups is in the range from 26 to 30% by weight, the degree of substitution with hydroxypropoxy groups is in the range from 4 to 15% by weight and a 2% by weight aqueous solution has a viscosity in the range from 5 to 4000 centipoise at 20° C., or a combination thereof, as a suspending agent and droplets of the monomer suspended in the suspension medium in the presence of a monomer-soluble polymerization initiator, the improvement which comprises adding, to the polymerization mixture, a water-insoluble partially saponified polyvinyl acetate having a degree of saponification not exceeding 60% and an average degree of polymerization of at least 1000.

5,286,797

POLYCYCLOOLEFIN POLYMER ALLOYS UTILIZING DISPERSED ETHYLENE-BASED FUNCTIONAL POLYMERS

Biing-Lin Lee, Broadview Heights, and Robert J. Minchak, Parma Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 22,317, Mar. 5, 1987, abandoned. This application Nov. 24, 1992, Ser. No. 983,104
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] C08L 45/00
U.S. Cl. 525—210 9 Claims

1. A polymerization blend containing a polycycloolefin polymer, comprising:

at least one polycycloolefin polymer, said polycycloolefin polymer being selected from the group consisting of a homopolymer made from a polycycloolefin monomer, an interpolymer made from two or more polycycloolefin monomers, and an interpolymer made from one or more polycycloolefin monomers with one or more cycloolefin monomers, said monomers having from 1 to 4 double bonds therein and polymerized by ring opening polymerization in the presence of a dissolved ethylene-based functional copolymer to form a polycycloolefin polymer blend having improved thermal stability, the amount of said ethylene-based functional copolymer being 15% or less by weight based upon the total weight of said ethylene-based functional copolymer and said at least one polycycloolefin polymer, said ethylene-based functional copolymer being a blend of an ethylene-vinyl ester copolymer and at least one copolymer of ethylene with a functional vinyl monomer, the amount of said ethylene-vinyl ester copolymer being from about 50% to about 99% by weight based upon the total weight of said ethylene-vinyl ester copolymer and said ethylene-vinyl functional copolymer, the amount of said ethylene-vinyl functional copolymer being from about 1% up to about 50% by weight, said ester portion of said ethylene-vinyl ester copolymer containing a total of from 1 to 10 carbon atoms, the weight of said vinyl ester portion of said ethylene-vinyl ester copolymer being from about 5% to about 50% by weight, and said vinyl functional portion of said ethylene-vinyl functional copolymer containing a vinyl organic acid or an organic anhydride having from 3 to 12 carbon atoms.

5,286,798

POLYMER BLENDS FOR HEAT SEAMABLE ROOF SHEETING

James A. Davis, Uniontown, and Joseph K. Valaitis, Brecksville, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 594,457, Oct. 4, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,092
Int. Cl.[5] C08K 3/00; C08L 23/16
U.S. Cl. 525—211 2 Claims

1. A self-adhering heat seamable sheet material for roofing prepared from an uncured polymeric composition of matter comprising:

100 parts by weight of a polymer blend comprising

from at least about 25 to 95 parts by weight of a polymer selected from the group consisting of polyolefins having less than 1 percent by weight crystallinity and having an ethylene content of up to about 60 to 61 percent by weight, said polyolefins being prepared from monomers having at least 2 carbon atoms and mixtures thereof; and

from about 5 to 75 parts by weight of a crystallinity enhancing polymer selected from the group consisting of polyethylene and polypropylene homopolymers, poly-

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(ethylene-co-propylene) random copolymers and poly-(ethylene-b-octene) and poly(ethylene-b-butene) block copolymers, said crystallinity enhancing polymer having about 2 up to about 65 percent by weight crystallinity;

from about 20 to 300 parts by weight of a filler selected from the group consisting of reinforcing and non-reinforcing fillers and mixtures thereof per 100 parts of said polymer blend; and

from about 20 to 150 parts by weight of a processing material selected from the group consisting of paraffinic oils, naphthenic oils and waxes and mixtures thereof, per 100 parts of said polymer blend, said sheet material exhibiting a peel adhesion value of at least 2 pounds/inch and a shear adhesion value of at least 15 pounds/square inch, so that seaming is achieved in the absence of an adhesive, said sheet material being devoid of curing ingredients.

5,286,799

TWO-STEP FREE RADICAL CATALYZED PROCESS FOR THE PREPARATION OF ALKENYL SUCCINIC ANHYDRIDE

James J. Harrison, Novato, and William R. Ruhe, Jr., Benicia, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jul. 23, 1992, Ser. No. 918,180

Int. Cl.[5] **C10M** *145/02*; **C08F** *255/02, 255/08, 255/10*

U.S. Cl. 525—285 **13 Claims**

1. A process for the preparation of an alkenyl-substituted succinic anhydride wherein the alkenyl substituent has a number average molecular weight of from about 500 to 5000 and the average number of succinic groups per alkenyl group is greater than 1.2 which comprises:

(a) reacting a polyolefin having an alkylvinylidene isomer content of less than about 10 percent and a number average molecular weight of about 500 to 5000 with maleic anhydride in the presence of a free radical initiator at a temperature in the range of about 100° C. to 220° C. to provide a mixture of alkenyl succinic anhydride having an average of greater than 1.2 succinic groups per alkenyl group and unreacted polyolefin, wherein the conversion of polyolefin is from about 30 to about 65 percent, and

(b) reacting the mixture of alkenyl succinic anhydride and unreacted polyolefin with maleic anhydride at a temperature in the range of about 200° C. to 250° C. to thereby provide an alkenyl succinic anhydride having an average of greater than 1.2 succinic groups per alkenyl group, wherein the total conversion of polyolefin is about 5 to 40 percentage points higher than the conversion in step (a).

5,286,800

OLEFIN GRAFT COPOLYMERS PREPARED USING BORANE-CONTAINING OLEFIN BACKBONE POLYMERS

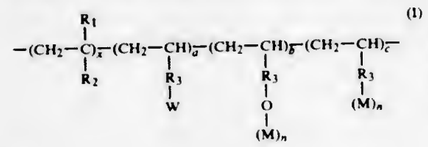
T. C. Chung; G. J. Jiang, and D. Rhubright, all of State College, Pa., assignors to The Pennsylvania Research Corporation, University Park, Pa.

Filed Apr. 6, 1992, Ser. No. 863,632

Int. Cl.[5] **C08F** *255/00, 279/00*

U.S. Cl. 525—288 **17 Claims**

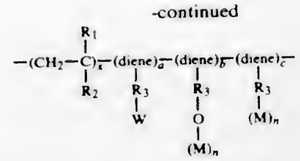
1. A graft copolymer having the formula selected from:



(1)

and

-continued



(II)

wherein R_1 and R_2 are the same or different and are selected from the group consisting of H, C_1 to C_{20} alkyl, phenyl and alkyl substituted phenyl; R_3 is a direct link or a divalent hydrocarbon having from 1 to 20 carbon atoms of linear or branched structure and comprises the residue from a group having the structure $-R_3BR_4R_5$, where R_4 and R_5 are the same or different alkyl or cycloalkyl group containing from 1 to about 10 carbon atoms and R_3 is as defined above; W is a polar substituent group; M is the residue of a free radically polymerizable monomer; n is the degree of polymerization of M ranging from 1 to about 70,000; (diene) is a recurring segment of a polymerized diolefin monomer; x ranges from about 50 to about 70,000; (a) ranges from 0 to about 20,000; and the sum of (b) and (c) ranges up to about 20,000 with the proviso that (b) or (c) is at least 1 when the other of (b) or (c) is 0;

wherein said graft copolymer having the formula I is prepared by:

(i) contacting in the presence of a Ziegler-Natta catalyst a mixture of at least one C_2 to C_{22} alpha-monoolefin and a borane-containing monomer having the structure $CH_2{=}CH(CH_2)_m{-}BR_4R_5$ wherein m is an integer of from 3 to 12 and R_4 and R_5 are as described above, to form a copolymer product having borane-containing units in the copolymer chain; and

(ii) contacting the copolymer formed in step (i) with at least one free radically polymerizable monomer in the presence of an oxidative reagent to convert at least one of said borane-containing units to a free radical which, in turn, initiates free radical polymerization of said free radically polymerizable monomer, thereby forming said graft copolymer having the formula I; and,

wherein said graft copolymer having the formula II is prepared by:

(iii) reacting a diene copolymer of at least one C_2 to C_{22} alpha olefin and at least one conjugated or non-conjugated diene with a hydroboration reagent to incorporate borane-containing units into the diene copolymer chain; and

(iv) contacting the borane-containing diene copolymer formed in step (iii) with at least one free radically polymerizable monomer in the presence of an oxidative reagent to convert at least one of said borane-containing units to a free radical which, in turn, initiates free radical polymerization of said free radically polymerizable monomer, thereby forming said graft copolymer having the formula II.

5,286,801

EMULSION GRAFT COPOLYMERS

Siegmund Besecke, Hameln; Daniel Wagner, Bad Durkheim; Wilfried Schoen, Ingelheim, and Karl-Ludwig Endlich, Mainz, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 30, 1992, Ser. No. 876,780

Claims priority, application Fed. Rep. of Germany, May 4, 1991, 4114641

Int. Cl.[5] **C08F** *265/06, 285/00*

U.S. Cl. 525—307 **1 Claim**

1. An emulsion graft copolymer composed of

a) 2–10% by weight of a core composed of

80–99.99% by weight of methyl methacrylate (I),

0.01–5% by weight of allyl methacrylate (II),

0–19.99% by weight of other monofunctional comonomers (III), which are ethylenically unsaturated monomers and

0–3% by weight of other di- or polyfunctional comonomers (IV) which are ethylenically unsaturated monomers,

b) 15–50% by weight of a first shell composed of

60–89.99% by weight of a C_1–C_{20}-alkyl acrylate (V),

10–39.99% by weight of a vinylaromatic monomer (VI),

0.01–5% by weight of II,

0–10% by weight of I and/or III,

0–3% by weight of IV,

c) 5–20% by weight of a second shell with a composition as indicated under (a),

d) 15–50% by weight of a third shell with a composition as indicated under (b),

e) 15–30% by weight of a fourth shell composed of

80–99.95% by weight of I,

0.05–2% by weight of a regulator (VII) and

0–19.95% by weight of III,

with the proviso that the total of the contents of the shells (b) and (d) is 50–75% by weight.

5,286,802

INJECTION COMPACTING COMPOSITION FOR PREPARING SINTERED BODY OF METAL POWDER AND SINTERED BODY PREPARED THEREFROM

Norimasa Uesugi, Kyoto; Hirokazu Kato, Jyoyo, and Katuyoshi Saitoh, Kyoto, all of Japan, assignors to Dai-ichi Ceramo Co., Limited, Kanzaki and Dai-ichi Kogyo Seiyaku Co., Ltd., Kyoto, both of Japan

Continuation-in-part of Ser. No. 677,928, Apr. 1, 1991. This application Apr. 30, 1991, Ser. No. 693,471

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] **C08F** *265/04*

U.S. Cl. 525—309 **9 Claims**



1. An injection compacting composition suitable for preparing sintered bodies of metal powders which comprises a metal powder and an organic binder, said organic binder comprising a composite acrylic polymer and an atactic polypropylene, and said composite acrylic polymer being a suspension polymerization product prepared by dissolving (a) a polymer selected from the group consisting of an ethylene-vinyl acetate copolymer and an ethylene-ethyl acrylate copolymer in (b) an acrylic or methacrylic acid ester monomer or a mixture of an acrylic or methacrylic acid ester monomer and a styrene compound monomer, dispersing the resulting solution in an aqueous medium in the presence of a dispersing agent, and subjecting the resulting dispersion to a suspension polymerization.

5,286,803

COUMARIN DYES AND SIDE-CHAIN COUMARIN DYE-SUBSTITUTED POLYMERS WHICH EXHIBIT NONLINEAR OPTICAL PROPERTIES

Geoffrey Lindsay; Ronald A. Henry, and James M. Hoover, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1990, Ser. No. 621,689

The portion of the term of this patent subsequent to Feb. 15, 2010, has been disclaimed.

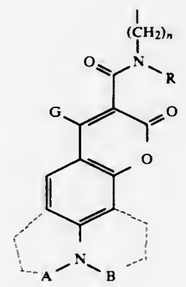
Int. Cl.[5] **C08F** *20/06, 24/00, 12/08*

U.S. Cl. 525—329.7 **27 Claims**

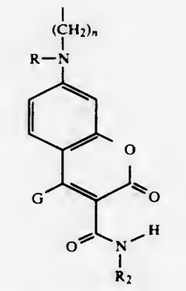
1. Coumarin dye-containing polymers which are water insoluble, having second-order nonlinear optical properties, which are characterized by a recurring monomeric unit corresponding to the formula:

where P is a polymer main chain unit; and,

where D is a coumarin dye selected from the group consisting of:



and



where R and R_2 are independently selected from the group consisting of H, alkyl of 1 to 22 carbon atoms, and alkenyl of 1 to 22 carbon atoms;

where G is selected from the group consisting of H, $-CH_3$, and $-CF_3$;

where A and B are independently selected from the group consisting of H, alkyl of 1 to 22 carbon atoms, and the atoms necessary to complete a 6-membered ring; and,

where n=2 to 18.

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5,286,804

HALOGENATION OF STAR-BRANCHED BUTYL RUBBER WITH IMPROVED NEUTRALIZATION

Kenneth W. Powers, Berkeley Heights; Hsien C. Wang, Edison; Robert N. Webb, Madison; James V. Fusco, Red Bank, all of N.J.; Hans F. Vanbrackle, Baker, and Michael F. McDonald, Jr., Greenwell Springs, both of La., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Sep. 17, 1991, Ser. No. 761,211
Int. Cl.[5] C08C *19/12*; C08F *8/18*
U.S. Cl. 525—333.4 18 Claims

1. In a process for halogenating star-branched copolymer of a C_4 to C_7 isomonoolefin and a C_4 to C14 multiolefin, which comprises the steps of:

(a) contacting a solution comprising said copolymer, solid particles of a branching agent, and an organic solvent for said copolymer with a halogenating agent at halogenation conditions to produce a reaction product comprising the corresponding halogenated copolymer and hydrogen halide;

(b) neutralizing said hydrogen halide by contacting said reaction product with an aqueous alkaline material to react with said hydrogen halide at neutralization conditions, and

(c) recovering said halogenated copolymer;

the improvement which comprises adding to said solution, prior to said step (a), water and a wetting agent or a precursor of said wetting agent.

5,286,805

Patent Not Issued For This Number

5,286,806

METHODS OF MAKING AND USING HIGH MOLECULAR WEIGHT ACRYLAMIDE POLYMERS

Roger E. Neff, Stamford, and Roderick G. Ryles, Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 14, 1993, Ser. No. 62,379
Int. Cl.[5] C08F *8/12*
U.S. Cl. 525—369 8 Claims

1. A method of preparing a flocculating agent having improved properties which comprises:

a) providing a water-in-oil emulsion which comprises, as a discontinuous phase, small droplets of an aqueous acrylamide monomer solution containing a redox polymerization catalyst and, as a continuous phase, a liquid hydrocarbon containing an oil soluble emulsifying agent;

b) polymerizing said acrylamide monomer to form aqueous acrylamide polymer droplets as the discontinuous phase; and

c) reacting said acrylamide polymer with an alkali metal hydroxide or quaterary ammonium hydroxide to hydrolyze at least a portion of said polymer to produce a polymer having a molecular weight of at least about 10 million as indicated by an intrinsic viscosity of at least about 15 dl/g. and a solution viscosity of at least about 4 mPa.s.

5,286,807

IMPACT RESISTANT POLYOXYMETHYLENE COMPOSITIONS

Edmund A. Flexman, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 270,467, Nov. 9, 1988, abandoned, which is a continuation of Ser. No. 76,982, Jul. 21, 1987, abandoned, which is a continuation of Ser. No. 814,055, Dec. 27, 1985, abandoned, which is a continuation of Ser. No. 570,036, Jan. 16, 1984, abandoned, which is a continuation-in-part of Ser. No. 464,412, Feb. 7, 1983, abandoned. This application Jul. 10, 1990, Ser. No. 551,678
Int. Cl.[5] C08L *75/04*
U.S. Cl. 525—399 28 Claims

1. A impact resistant thermoplastic polyoxymethylene composition consisting essentially of

(a) 5–15 weight percent of at least one thermoplastic polyurethane, which polyurethane has a soft segment glass transition temperature of lower than 0° C., and

(b) 85–95 weight percent of at least one polyoxymethylene polymer, which polyoxymethylene polymer has a number average molecular weight of from 20,000 to 100,000,

the above-stated percentages being based on the total amount of components (a) and (b) only, the thermoplastic polyurethane being dispersed throughout the polyoxymethylene polymer as discrete particles, and the composition having a Gardner impact value of greater than 9 J.

5,286,808

ELASTOMERIC CROSSLINKED POLY(1,3-DIOXLANE)

George L. Collins, Maplewood; William M. Pleban, Stanhope, and Paul Zema, Fanwood, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Jul. 25, 1991, Ser. No. 735,486
Int. Cl.[5] C08L *29/14*
U.S. Cl. 525—401 5 Claims

1. A crosslinked elastomeric acetal polymer consisting of monomer units derived from (a) 1,3-dioxolane; and (b) one or more bifunctional monomers having the formula:

X—R—Y

wherein X and Y are reactive functional groups, which are identical or different, and are selected from the group consisting of epoxides, glycidyl ethers, glycidyl esters, cyclic ethers, vinyl ethers, vinyl esters, acrylate esters, methacrylate esters, allyl ethers, and allyl esters, and R is a linkage that does not react under conditions of cationic polymerization, wherein said monomer units derived from said 1,3-dioxolane and from said bifunctional monomers are incorporated in amounts that yield a crosslinked polymer that is essentially non-crystalline at room temperature.

5,286,809

THERMOPLASTIC MOULDING COMPOUNDS

Hans-Detlef Heinz, and Burkhard Köhler, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 9, 1991, Ser. No. 803,616
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041519
Int. Cl.[5] C08F *283/04*
U.S. Cl. 525—420 2 Claims

1. Thermoplastically processible compositions of

1) 60% by weight of 50% glass fiber reinforced polyamide 6,

2) 40% by weight of a functionally grafted arylene sulphide polymer prepared by the reaction of 98% by weight of polyparaphenylene sulphide with 2% by weight of sulphonaphthalene diacid anhydride,

the reaction being carried out at temperatures of about 320° C.

5,286,810

SALT OF POLYMER FROM MALEIC ACID, POLYAMIND AND AMMONIA

Louis L. Wood, Rockville, Md., assignor to SRCHEM Incorporated, Elkridge, Md.

Continuation-in-part of Ser. No. 926,242, Aug. 7, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 44,900
Int. Cl.[5] C08G *69/48*
U.S. Cl. 525—421 4 Claims

1. A salt produced by polymerizing (1) maleic acid, (2) ammonia and (3) a polyamine having two or more primary or secondary amine groups per molecule to a temperature greater than 120° C., to produce a crosslinked polymer, adding a metal hydroxide or ammonium hydroxide to the crosslinked polymer to produce a salt of said polymer.

5,286,811

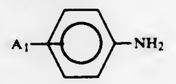
BLENDED POLYIMIDE OLIGOMERS AND METHOD OF CURING POLYIMIDES

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

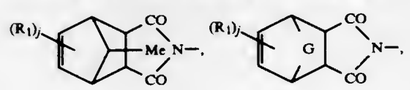
Division of Ser. No. 353,588, May 18, 1989, Pat. No. 5,116,935, which is a continuation-in-part of Ser. No. 46,376, May 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 715,801, Mar. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 536,264, Sep. 27, 1983, abandoned. This application May 21, 1992, Ser. No. 886,960
Int. Cl.[5] C08F *283/04*; C08G *73/10*; C08L *77/06*
U.S. Cl. 525—422 12 Claims

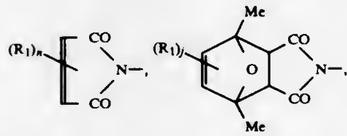
1. A blend comprising a mixture of an oligomer and a comparable, noncrosslinking polymer, the oligomer being the product formed by reacting in a suitable solvent under an inert gas atmosphere a mixture comprising:

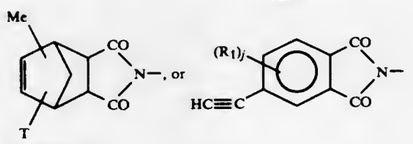
(a) two moles of a crosslinkable imidophenylamine end cap having the general formula:



wherein A is selected from the group consisting of:







wherein

Me = methyl;

G = —O—, —SO_2—, —CH_2—, or —S—;

T = allyl or methallyl;

R_1 = lower alkoxy, aryl, substituted aryl, lower alkyl, substituted alkyl, aryloxy, or halogen;

i = 2; and

j = 0, 1 or 2;

(b) an moles of at least one diamine having terminal amine groups and selected from the group consisting of lower alkylene diamines and polyaryl diamines having the general formula:

$$H_2N—Ar—O\left(Ar—L_1—Ar—O\right)_mAr—NH_2$$

or

$$H_2N—Ar—L_2—Ar—NH_2$$

wherein

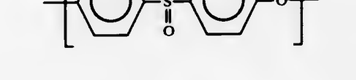
Ar = an aromatic radical;

L_1 = a linkage selected from the group consisting of —SO_2—, —S—, —CO—, —$(CF_3)_2C$—, and —$(CH_3)_2C$—;

L_2 = a linkage selected from the group consisting of —SO_2—, —O—, —S—, and —CH_2—; and

m = a small integer greater than or equal to 1;

(c) n+1 moles of at least one dianhydride of the general formula:



wherein

Ar = an aromatic radical; and

p = a small integer greater than or equal to 1; and wherein

n = an integer selected so that the oligomer possesses thermoplastic properties.

5,286,812

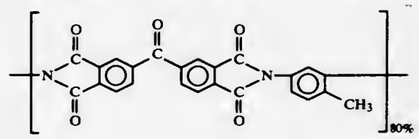
HIGH PERFORMANCE BLENDS OF AROMATIC POLYIMIDES WITH AROMATIC POLYETHERSULFONES

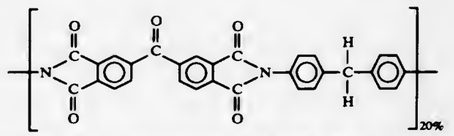
Frank E. Karasz, and William J. MacKnight, both of Amherst, Mass., assignors to University of Massachusetts, Amherst, Mass.

Continuation of Ser. No. 634,971, Jan. 7, 1991, abandoned, which is a continuation of Ser. No. 158,288, Feb. 19, 1988, abandoned. This application Sep. 12, 1991, Ser. No. 759,823
Int. Cl.[5] C08L *79/08*
U.S. Cl. 525—436 2 Claims

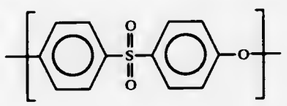
1. A composition comprising a miscible polyblend of 1% to 99% aromatic polyether sulfone and 99% to 1% aromatic polyimide,

said aromatic polyimide having the following formula:





and said aromatic polyether sulfone having the following formula:



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5,286,813

MELT KNEADING POLYCARBONATE WITH COMPOUND CONTAINING CARBON TO CARBON DOUBLE BOND

Masataka Morioka, Moka, Japan, assignor to GE Plastics Japan, Ltd., Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 947,369
Claims priority, application Japan, Nov. 25, 1991, 3-334590
Int. Cl.[5] C08G *64/42*
U.S. Cl. 525—468 **1 Claim**

1. A polycarbonate modification method comprising melt-kneading a polycarbonate resin containing a compound having:

(a) a carbon-carbon double bond, and

(b) at least one group selected from the group consisting of —C(=O)—Cl, —C(=O)—Br, —C(=O)—OH, —OH, —O—C(=O)—Cl and —O—C(=O)—Br

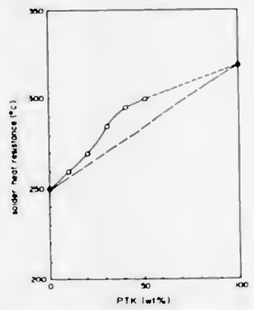
in the presence of a radical initiator.

5,286,814

HEAT-RESISTANT STRETCHED FILM AND PRODUCTION PROCESS THEREOF

Toshiya Mizuno; Yoshikichi Teramoto; Takeshi Saito, all of Tsuchiura; Juichi Wakabayashi, Tamari; Yoshikatsu Satake, Iwaki; Ken Kashiwadate, Iwaki, and Takayuki Katto, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K. K., Tokyo, Japan

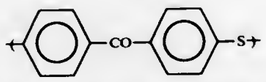
Continuation of Ser. No. 358,045, May 30, 1989, abandoned.
This application Apr. 26, 1991, Ser. No. 690,318
Claims priority, application Japan, Jun. 13, 1988, 63-143611; Jan. 20, 1989, 1-9796
Int. Cl.[5] C08G *75/14*; C08F *283/00*
U.S. Cl. 525—471 **4 Claims**



1. A heat-resistant stretched film obtained by stretching a resin composition comprising:

(A) 100 parts by weight of a poly(arylene) sulfide of a linear structure containing at least 50 weight percent of p-phenylene sulfide units and having a melt viscosity of at least 1,000 poises as measured at 310° C. and a shear rate of 200 sec^{-1}; and

(B) 5 to less than 100 parts by weight of a melt-stable poly(arylene thioether-ketone) containing greater than 50 weight percent of recurring units of the formula



wherein the —CO— and —S— groups are bonded in the para position to each other through the benzene ring, said melt-stable poly(arylene thioether-ketone) having the following physical properties (a)–(c):

(a) a melting point, Tm being 310°–380° C.;

(b) a melt crystallization temperature, Tmc (420° C./10 min) being at least 210° C. and a residual melt crystallization enthalpy, ΔHmc (420° C./10 min) being at least 10 J/g; and

(c) a reduced viscosity being 0.3–2 dl/g at 25° C. and a polymer concentration of 0.5 g/dl in 98% sulfuric acid,

said film having been stretched at a draw ratio of 1.5–7 in at least one direction and then heat set at 270°–350° C., and having a solder heat resistance of at least 260° C./10 sec.

5,286,815

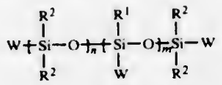
MOISTURE CURABLE POLYSILOXANE RELEASE COATING COMPOSITIONS

Charles M. Leir, Falcon Heights; Audrey A. Sherman, St. Paul, both of Minn., and Manisha Sarkar, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 7, 1992, Ser. No. 832,270
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] C08G *77/06*
U.S. Cl. 525—477 **21 Claims**

1. A release coating composition comprising:

(a) about 1 to about 100 percent by weight of polymer selected from the group consisting of polymers of the general Formula:


(1)

and mixtures thereof: wherein

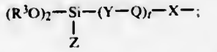
n and m each represent integers, wherein the sum of n plus m is an integer of about 20 to about 5000;

m has a value ranging from about 0 to about 0.1(n+m);

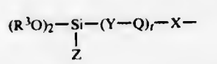
R^1 are monovalent moieties which can be the same or different selected from the group consisting of alkyl, substituted alkyl, aryl, and substituted aryl;

R^2 are monovalent moieties which can be the same or different selected from the group consisting of alkyl, substituted alkyl, aryl, and substituted aryl;

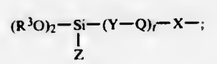
W are monovalent moieties which can be the same or different selected from the group consisting of alkyl, substituted alkyl, aryl, substituted aryl, and reactive hydrolyzable group



wherein at least about 50% of the total number of silicon atoms excluding those in said reactive hydrolyzable group(s) have two methyl groups bonded thereto, and wherein at least one reactive hydrolyzable group



appears on each polymer of Formula 1 and further wherein at least about 25% of the polymers of Formula 1 in the release coating composition have at least two reactive hydrolyzable groups



wherein

X are divalent linking groups which can be the same or different selected from the group consisting of alkylene groups comprising about 1 to about 12 carbon atoms;

Q are divalent linking groups which can be the same or different selected from the group consisting of urea, amide, urethane, thiourethane, ether, and thioether groups;

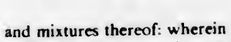
Y are divalent linking groups which can be the same or different selected from the group consisting of alkylene groups comprising about 1 to about 12 carbon atoms;

t is an integer of 0 to 10;

Z are monovalent moieties which can be the same or different selected from the group consisting of —OR and —R wherein R is an alkyl group comprising about 1 to about 3 carbon atoms; and

$R^3$is a monovalent alkyl group comprising about 1 to about 3 carbon atoms;

(b) about 0 to about 99 percent by weight of a component selected from the group consisting of compounds and polymers of the general Formula:


(ii)

hydrolysates thereof, and mixtures thereof, wherein

$R^3$is as previously defined;

A is a monovalent moiety selected from the group consisting of $—OR^3$, monovalent alkyl groups comprising about 1 to about 20 carbon atoms, and $—X—(Q)_p—[-D—Q]_t—(Y)_b—Si(OR^3)_3$, wherein

X, Q, t, Y and R^3 are as previously defined;

D is a divalent group which can be the same or different selected from the group consisting of alkylene groups comprising from about 2 to about 30 carbon atoms; aralkylene groups comprising from about 6 to about 30 carbon atoms; arylene groups comprising from about 6 to about 30 carbon atoms; and divalent polymeric segments having a number average molecular weight of about 500 to about 10,000 selected from the group consisting of polyether, polyolefin, polyester, polydiene, and mixtures thereof;

p is an integer of from 0 to 1;

b is an integer of from 0 to 1;

wherein when t is an integer of 1 to 10, b must equal 1 and p must equal 1;

wherein when t=0 and b=0, p must also equal 0;

wherein the weight percentages of (a) and (b) are based upon the total weight of (a) plus (b); and

(c) about 1 to about 15 percent by weight based upon the total weight of (a) plus (b) of a component selected from the group consisting of acids having pKas of less than about 3, anhydrides of acids having pKas of less than about 3, ammonium salts of acids having pKas of less than about 3, lower alkyl ammonium salts of acids having pKas of less than about 3, and mixtures thereof.

5,286,816

ORGANIC GLASS WITH IMPROVED IMPACT STRENGTH AND WITH A REFRACTIVE INDEX EQUAL OR SIMILAR TO THAT OF MINERAL GLASS

Franco Rivetti, Milan; Fiorenzo Renzi, Gorgonzola, and Claudio Gagliardi, San Donato Milanese, all of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Continuation of Ser. No. 858,013, Mar. 26, 1992, abandoned.
This application Apr. 20, 1993, Ser. No. 49,600
Claims priority, application Italy, Mar. 28, 1991, MI 91 A 000859
Int. Cl.[5] C08F *4/34, 226/06, 218/12, 216/12*
U.S. Cl. 526—230.5 **6 Claims**

1. Organic glass with an improved impact strength having a refractive index equal or similar to that of mineral glass (crown glass), composed of the product of the radicalic polymerization of a polymerizable liquid composition, obtained by the transesterification of a monomer composition consisting essentially of:

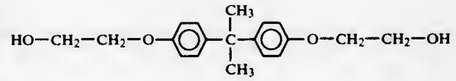
(A) diallyl carbonate:

TABLE 3

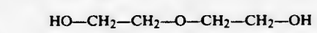
Glass No.	IV	V	VI
Density (23° C.)	1.3092	1.3124	1.3025
Shrinkage (%)	8.5	8.9	8.6
$[n^{20}_D]$	1.5217	1.5188	1.5216
Abbe Number	46.5	47.5	46.6
YI	1.90	2.0	1.85
Haze, %	0.38	0.35	0.22
Vis. transmittance (%)	92.2	92.3	92.5
Rockwell Hardness (M)	104	104	101
Izod (KJ/m^2)	15.2	17	19

with the mixture of polyols:

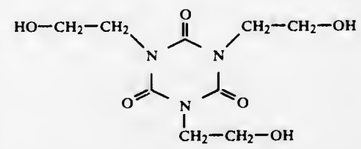
(B) bis(2-hydroxyethylether) of bisphenol-A:



(C) diethylene glycol



(D) tris(hydroxyethyl) isocyanurate:



where for every 100 parts by weight of the sum of polyols (B), (C) and (D), polyol (B) is present in a quantity of from 20 to 60% by weight, polyol (C) is present in a quantity of from 2 to 60% by weight and polyol (D) is present in a quantity of from 10 to 40% by weight; and where the molar ratio between the diallyl carbonate and the sum of polyols (A)/[(B)+(C)+(D)] is equal to or higher than 3/1.

5,286,817

POLY(ARYLENE SULFIDE)/POLY(ARYLENE SULFIDE SULFONE) BLOCK COPOLYMERS AND PREPARATION THEREOF

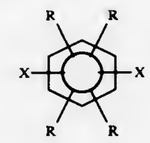
Dwayne R. Senn, Bartlesville, Okla., and Carlton E. Ash, Sugarland, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 5, 1993, Ser. No. 26,958
Int. Cl.[5] C08G *75/14*
U.S. Cl. 525—537 **20 Claims**

1. A process for preparing poly(arylene sulfide)/poly(arylene sulfide sulfone) block copolymer comprising:

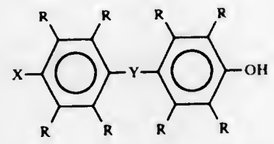
(1) contacting a dihaloaromatic compound, a phenolic compound, a polar organic compound, and a sulfur source under polymerization conditions to produce a poly(arylene sulfide) prepolymer;

wherein said dihaloaromatic compound is represented by the formula



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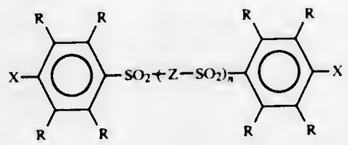
where each X is selected from the group consisting of fluorine, chlorine, bromine, and iodine and where each R is independently selected from the group consisting of hydrogen and a hydrocarbyl radical., the total number of carbon atoms in each molecule being within the range of 6 to 24; said phenolic compound is represented by the formula



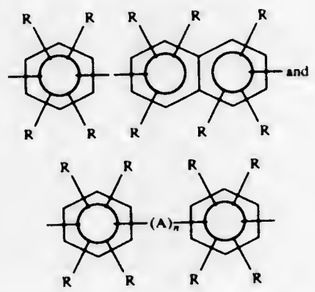
where Y is selected from the group consisting of $-SO_2-$ and $-CO-$, where X is selected from the group consisting of hydroxyl, chlorine, bromine, fluorine, and iodine, and where each R is independently selected from the group consisting of hydrogen and a hydrocarbyl radical, the total number of carbon atoms in each molecule being within the range of 12 to 24;

(2) contacting said poly(arylene sulfide) prepolymer, a dihaloaromatic sulfone, a sulfur source, and a polar organic compound under polymerization conditions;

where said dibaloaromatic sulfone is represented by the formula



where n is 0 or 1, each X is independently selected from the group consisting of fluorine, chlorine, bromine, and iodine, where each R is independently selected from the group consisting of hydrogen and an alkyl radical having 1 to 4 carbon atoms, and where Z is a divalent radical selected from the group consisting of



where n is 0 or 1, A is selected from the group consisting of oxygen, sulfur, sulfonyl, and CR_2, and where each R is independently selected from the group consisting of hydrogen and an alkyl radical having 1 to 4 carbon atoms, the total number of carbon atoms in all the R groups in the molecule being 0 to 12; and

wherein each said sulfur source is independently selected from the group consisting of an alkali metal sulfide and an alkali metal hydrosulfide.

5,286,818

POLYMERIZATION PROCESS EMPLOYING METAL HALIDE CATALYST AND POLYMER PRODUCED

Ted M. Pettijohn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 810,734, Dec. 18, 1991, Pat. No. 5,258,343. This application May 6, 1993, Ser. No. 59,049

Int. Cl.[5] C08F *4/646, 10/00*

U.S. Cl. 526—114 **10 Claims**

1. A process for the polymerization of olefin monomers comprising contacting said monomers under polymerization conditions with a catalyst system;

wherein said catalyst system is produced by a process comprising;

(1) contacting neodymium trichloride with 1,2-octanediol to form a solution;

(2) contacting the solution of (1) with titanium tetrachloride to form a catalyst; and

(3) contacting said catalyst with a diethylaluminum chloride cocatalyst to produce said catalyst system.

5,286,819

POLYMERIZATION PROCESS EMPLOYING TRANSITION METAL CATALYST AND POLYMER PRODUCED

Ted M. Pettijohn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 906,989, Jun. 30, 1992. This application May 6, 1993, Ser. No. 59,144

Int. Cl.[5] C08F *4/654, 10/00*

U.S. Cl. 526—125 **9 Claims**

1. A process for the polymerization of olefin monomers comprising contacting said olefin monomers under polymerization conditions with a catalyst system:

wherein said catalyst system is produced by a process comprising:

(1) contacting magnesium dichloride with 1,2-octanediol to form a solution;

(2) contacting the solution of (1) with titanium tetrachloride to form a catalyst; and

(3) contacting said catalyst with a diethylaluminum chloride cocatalyst to form said catalyst system.

5,286,820

USE OF SALTS OF SULFONATED ALKENYL OR ALKENYL(POLY)-OXYALKYL PHOSPHATES AS EMULSIFIERS FOR EMULSION POLYMERIZATION

Joachim Mueller-Borges, Monheim; Rainer Hoefer, Duesseldorf, and Bernd Fabry, Korschenbroich, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01988, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/08236, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 22, 1990, Ser. No. 852,255

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939839

Int. Cl.[5] C08F *2/26*

U.S. Cl. 526—193 **16 Claims**

1. In the emulsion polymerization of one or more monomers in which at least one of the monomers is substantially water insoluble, the improvement wherein the emulsion polymerization reaction mixture contains an emulsifying effective quantity of at least one salt of a sulfonated alkenyl or alkenyl (poly) oxyalkyl phosphate of formula I

$$[R^1O-(CH_nH_{2n}O)_x-][R^2O-(C_nH_{2n}O)_y-][R^3O-(C_nH_{2n}O)_z-]P=O \quad (I)$$

in which

R^1 is a group corresponding to formula IIa or IIb

$$CH_3-(CH_2)_a-CH(OH)-(CH_2)_b-CH(SO_3M-)-(CH_2)_c-CH_2- \quad (IIa)$$

$$CH_3-(CH_2)_a-CH(SO_3M)-(CH_2)_b-CH(OH-)-(CH_2)_c-CH_2- \quad (IIb)$$

or is a residue formed by elimination of one water molecule from the group corresponding to formula IIa or IIb,

R^2 and R^3 may be the same or different and represent hydrogen or a residue having the meaning given above for the group R_1,

n is the number 2 and/or 3,

x, y and z may be the same or different and represent numbers of 0 to 100

a, b and c are numbers of 0 to 18, the sum of a, b and c being a number of 12 to 18, and

M is an alkali metal ion, the ammonium ion, a protonated amine ion, or an equivalent of an alkaline-earth metal ion.

5,286,821

ACRYLIC ADHESIVE COMPOSITION AND ORGANOBORON INITIATOR SYSTEM

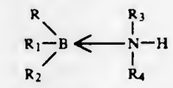
Martin M. Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 17, 1992, Ser. No. 852,855

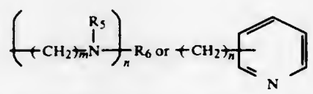
Int. Cl.[5] C08F *4/52, 20/10*

U.S. Cl. 526—196 **13 Claims**

1. A curable two-part adhesive composition wherein one part comprises a polymerizable acrylic monomer and an effective amount of a stabilized organoboron amine complex initiator of the formula:



where R, R_1 and R_2 are alkyl of 1 to 10 carbon atoms or phenyl, R_3 and R_4 are hydrogen or alkyl of 1 to 10 carbon atoms, or



where R_5 and R_6 are hydrogen or alkyl of 1 to 10 carbon atoms, m is 2 to 10 and n is 1 to 6; and the second part comprises an effective destabilizing amount of an organic aldehyde having the formula:

$$R(CHO)_x$$

where R is alkyl of 1 to 10 carbon atoms or aryl of 6 to 10 carbon atoms and x is 1 to 2.

5,286,822

PERFLUOROALKYL SULFIDE POLYMER SOLVENTS FOR FLUOROMONOMER POLYMERIZATION

Carl G. Krespan, and Robert C. Wheland, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 3, 1993, Ser. No. 12,692

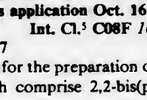
Int. Cl.[5] C08F *2/06*

U.S. Cl. 526—204 **15 Claims**

1. A polymerization process, comprising, contacting a fluoromonomer, a free radical source capable of initiating polymerization of said fluoromonomer, and a solvent wherein the solvent is selected from I and II:

$R_fSR'_f$

where R_f and R'_f have the composition $CF_3(C_nF_{2n})+$ or $HCF_2(C_nF_{2n})-$ where n=0 to 9, are the same or different, are either linear or a chain containing one or more branches, and optionally containing one or more ether oxygens; and



(II)

where m=0 or 1; R_f' and R_f''' are the same or different and have the formula $-C_xF_{2x}-$ where X=1 to 3;

provided that R_f' and R_f''' taken together contain at least 4 carbon atoms when m=0; and

further provided that the solvent is a fluid at polymerization temperature.

5,286,823

PREPARATION OF HIGHLY REACTIVE POLYISOBUTENES

Hans P. Rath, Gruenstadt, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 22, 1992, Ser. No. 902,204

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 4120662

Int. Cl.[5] C08F *4/14, 10/10*

U.S. Cl. 526—237 **1 Claim**

1. A process for preparing highly reactive polyisobutenes having a content of terminal vinylidene groups of more than 80 mol % and an average molecular weight of 500–5000 Dalton which comprises:

cationically polymerizing isobutene or an isobutene-containing hydrocarbon feed in the liquid phase in a polymerization apparatus at a temperature of from 0° to −60° C. in the presence of boron trifluoride as a catalyst and in the presence of a secondary alcohol having from 3–20 carbon atoms, wherein the mixing of boron trifluoride and the secondary alcohol in said polymerization apparatus generates boron trifluoride/secondary alcohol complexes in situ in the polymerization mixture, and thereafter working up the polymerization mixture.

5,286,824

PROCESS FOR THE PREPARATION OF HALOGENATED 2,2-BIS(TRIFLUOROMETHYL)-1,3-DIOXOLANES

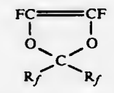
Leo E. Manzer, and Paul R. Resnick, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 759,095, Sep. 6, 1991, Pat. No. 5,177,224, which is a continuation of Ser. No. 399,100, Aug. 28, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 961,985

Int. Cl.[5] C08F *16/24*

U.S. Cl. 526—247 **3 Claims**

1. In a process for the preparation of a polymer formed from monomers which comprise 2,2-bis(perhaloalkyl)-1,3-dioxoles of the formula



where each R_f independently is perhaloalkyl in which the

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alpha carbon atom is substituted by at least one fluorine atom, the improvement comprising:

separating trans-2,2-bis(perhaloalkyl)-4,5-difluoro-4,5-dichloro-1,3-dioxolanes from a mixture of cis and trans isomers, and preparing the dioxoles by dehalogenating said trans isomers.

5,286,825

PARTIALLY FLUORINATED COMPOUNDS AND POLYMERS

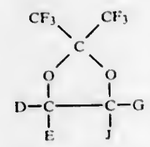
Douglas R. Anton, Claymont; William B. Farnham, Hockessin; Ming-Hong Hung, Wilmington; Ronald J. McKinney, Wilmington, and Paul R. Resnick, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 780,374, Oct. 21, 1991, Pat. No. 5,233,058, which is a continuation of Ser. No. 450,351, Dec. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 223,867, Jul. 25, 1988, abandoned. This application Jun. 14, 1993, Ser. No. 76,063

Int. Cl.[5] C08F *224/00*

U.S. Cl. 526—247 **3 Claims**

1. Copolymers of tetrafluoroethylene with at least one weight percent of the dioxolane of the formula



wherein E and J are $CH{=}CH_2$ and D and G are F.

5,286,826

PROCESS FOR MAKING HIGHLY CROSSLINKED POLYVINYLPYRROLIDONE HAVING A LOW SWELL VOLUME

Jenn S. Shih, Paramus, N.J., and Susan Y. Tseng, Staten Island, N.Y., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 5, 1993, Ser. No. 26,649

Int. Cl.[5] C08F *226/10, 2/10*

U.S. Cl. 526—264 **4 Claims**

1. A process for making highly crosslinked polyvinylpyrrolidone (PVP) polymer having a low swell volume and is white in appearance which comprises:

(a) heating a reaction mixture comprising vinylpyrrolidone (VP) monomer at a VP concentration of about 70–95%, by weight, in an aqueous strongly basic solution containing about a 0.3–1.5% base content, at a reaction temperature of 130°–170° C. and under an inert gas atmosphere, for a period of time sufficient to generate a crosslinker in situ,

(b) diluting the basic reaction solution with water to form a diluted reaction solution in which the VP concentration is about 5–30%, and

(c) polymerizing the diluted reaction solution at a polymerization temperature of about 100° C. to form a crosslinked PVP polymer having swell volume of <45 ml/10 g. and is white in appearance.

5,286,827

SUPERABSORBENT CROSSLINKED COPOLYMERS FORMED FROM AN AMPHOLYTIC ION PAIR (2-METHACRYLOYLOXYETHYLDIMETHYLAMMONIUM CATION (MEDMA)/SULFONATE ANION) COPOLYMERIZED WITH OTHER COMONOMERS

Iqbal Ahmed, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 596,180, Oct. 12, 1990, Pat. No. 5,130,389. This application Jul. 21, 1992, Ser. No. 918,307

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] C08F *228/00;* **A61F** *13/00*

U.S. Cl. 526—287 **58 Claims**

1. A method of absorbing an aqueous electrolyte solution comprising the step of contacting a polymer with the aqueous electrolyte solution wherein the polymer is formed by the copolymerization of an effective amount of each of the following components to produce a highly absorbent polymer:

(a) an ampholytic ion pair monomer comprising

(i) the ammonium cation 2-methacryloyloxyethyldimethylammonium and

(ii) a sulfonate anion selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and combinations of two or more thereof;

(b) at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof; and

(c) at least one crosslinking agent which has at least two polymerizable olefinic functionalities wherein each of the olefinic functionalities is suitable for crosslinking.

5,286,828

PREPARATION OF MELT-PROCESSABLE ACRYLONITRILE/METHACRYLONITRILE COPOLYMERS

Benedict S. Curatolo, Valley View, and George S. Li, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 633,655, Dec. 21, 1990, Pat. No. 5,106,925. This application Oct. 21, 1991, Ser. No. 780,167

Int. Cl.[5] C08F *220/48*

U.S. Cl. 526—342 **12 Claims**

1. A melt-processable polymer containing 50 to 90 weight percent polymerized acrylonitrile and at least 10 weight percent polymerized methacrylonitrile which is extrudable and stable as a melt.

5,286,829

BIOCOMPATIBLE POLYMER MATERIAL AND A PROCESS FOR PRODUCING SAME

Svyatoslav N. Fedorov, pereulok Dostoevskogo, 1/21, kv. 32; Sergei N. Bagrov, ulitsa Smolnaya, 21, korpus 2, kv. 368; Alexei V. Osipov, Leningradskoe shosse, 50, kv. 233; Elena A. Lisnik, ulitsa Degunisskaya, 17, kv. 36; Irina A. Maklakova, ulitsa 800-letia Moskvy, 6, kv. 213; Alexei N. Kosmynin, ulitsa Oktyabrskaya, 60, korpus 2, kv. 25, and Evgeny V. Larionov, ulitsa Seligerskaya, 25, kv. 5, all of Moscow, U.S.S.R.

Filed Jul. 6, 1990, Ser. No. 549,452

Claims priority, application U.S.S.R., Oct. 13, 1989, 4745668

The portion of the term of this patent subsequent to Nov. 15, 2009, has been disclaimed.

Int. Cl.[5] C08H *5/00;* **C08F** *2/46;* **C08G** *63/48, 63/91*

U.S. Cl. 527—201 **21 Claims**

1. A biocompatible polymer comprising the product of the graft-copolymerization of a water-soluble monomer selected from a vinyl monomer, an acrylate monomer, and mixtures thereof, with a sorption complex of polysilicic acid and collagen that has been pretreated to remove pigments, glycoproteins, and proteoglycans, said graft-copolymerization product containing up to 25 weight percent of polysilicic acid measured in terms of SiO_2 and up to 12 weight percent of protein.

5,286,830

SILICONE AMIDO TAURINE POLYMERS

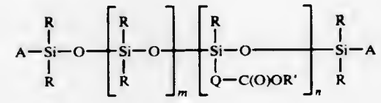
John Imperante, Lebanon, N.J., and Anthony J. O'Lenick, Jr., Lilburn, Ga., assignors to Siltech Inc., Norcross, Ga. and Phoenix Chemical, Somerville, N.J.

Filed Apr. 22, 1993, Ser. No. 51,097

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—28 **18 Claims**

1. A silicone taurine compound prepared by the reaction of a carboxy containing silicone compound conforming to the following structure:



wherein;

R is methyl;

Q is $(CH_2)_c$;

c is an integer from 3 to 17;

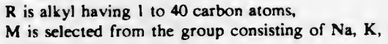
A is methyl;

R' is hydrogen;

n is an integer from 1 to 10;

m is an integer from 1 to 200;

with a taurine derivative conforming to the following structure:



wherein

R is alkyl having 1 to 40 carbon atoms,

M is selected from the group consisting of Na, K, Li, and NH_4.

5,286,831

AT LEAST SUBSTANTIALLY PORE-FREE POLYURETHANE MOLDING COMPOUNDS

Bernhard Hess, Moers; Klaus Prater, Krefeld; Heinrich Heine, Leverkusen; Joachim Franke, Cologne, and Hans-Dieter Jakob, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 9, 1989, Ser. No. 434,042

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1988, 3839334

Int. Cl.[5] C08G *18/06*

U.S. Cl. 528—49 **13 Claims**

1. An at least substantially pore-free polyurethane which is prepared by reacting at least one polyisocyanate, and a component comprising a partial carboxylic acid ester which is the reaction product of a carboxylic acid and an at least trihydric alcohol which is free from ether groups in quantities such that at least one of the hydroxyl groups of said alcohol is not esterified.

5,286,832

PROCESS AND RESIN COMPOSITION FOR THE MANUFACTURE OF CAST, INJECTION MOULDED OR COMPRESSION MOULDED PIECES

Ronald L. Verleg, Weesp, and Adrianus J. De Koning, Zwolle, both of Netherlands, assignors to Stamicarbon B.V.

Filed Mar. 20, 1991, Ser. No. 671,620

Claims priority, application Netherlands, Mar. 21, 1990, 9000659

Int. Cl.[5] C08G *18/34, 18/68;* **C08F** *20/06*

U.S. Cl. 528—75 **14 Claims**

1. A process for the manufacture of a cast, injection moulded or compression moulded article comprising; curing a resin composition in a desired shape using a catalyst; and

post-curing the shaped article at temperatures between 120° and 250° C. such that an HDT of at least 150° C. is obtained;

wherein the resin composition comprises an ethylenically unsaturated monomer, a vinyl ester compound and a polyisocyanate with at least 1.75 isocyanate groups per molecule on average, wherein said vinyl ester compound contains on average about 2 to about 6 (meth)acrylate groups and on average about two about 6 hydroxyl groups, and wherein said vinyl ester has a molecular weight higher than 300.

5,286,833

POLYBENZAZOLE FIBER WITH ULTRA-HIGH PHYSICAL PROPERTIES

Robert A. Bubeck, Midland; Stephen J. Nolan, Saginaw; Chieh-Chun Chau, Midland; Steven Rosenberg, Midland; Mark D. Newsham, Midland, and Myrna Serrano, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,060

Int. Cl.[5] C08G *73/00*

U.S. Cl. 528—183 **10 Claims**

1. A polybenzazole fiber with a tensile strength of at least 1,000 ksi.

5,286,834

MELT PREPARATION OF COPOLYCARBONATE WITH ALKALINE COMPOUND CATALYST AND BORIC ACID COMPOUND CATALYST

Takeshi Sakashita, Iwakuni; Tomoaki Shimoda, Kuga, and Kotaro Kishimura, Kwakuni, all of Japan, assignors to GE Plastics Japan, Ltd., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,377

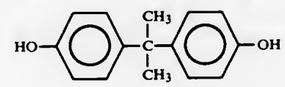
Claims priority, application Japan, Oct. 29, 1991, 3-283347

Int. Cl.[5] C08G *64/30*

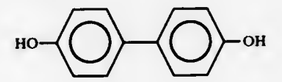
U.S. Cl. 528—198 **7 Claims**

1. A method of producing copolymerized polycarbonates comprising the steps of:

melt condensing a first aromatic dihydroxy compound having the formula



with a second aromatic dihydroxy compound having the formula



VOL 1159 ISS 3 FE 15 1994 UMI

with a carbonate diester in the presence of an alkaline compound catalyst and a boric acid compound catalyst.

5,286,835
PREPARATION OF VINYL ETHER TERMINATED POLYESTERS
George D. Green, Park Ridge; James R. Snyder, Chicago, and Darryl K. Barnes, Bellwood, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Aug. 24, 1992, Ser. No. 935,078
Int. Cl.[5] C08G 63/47
U.S. Cl. 528—272 17 Claims

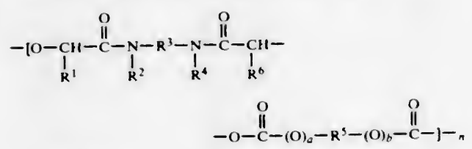
1. A method of preparing vinyl ether terminated polyesters comprising the steps of:
(a) reacting a polyol with a vinyl ether terminated polybasic ester in the presence of a transesterification catalyst to produce a vinyl ether terminated oligomer of said polyol and polybasic ester and as a by-product a hydroxy monovinyl ether, and
(b) continuously separating said by product hydroxy monovinyl ether during the reaction of (a).

5,286,836
PROCESS FOR FORMING POLYESTERS
Sang S. Park, Seoul; Hoi W. Yoo, Kyungki; Chung Y. Kim, and Hyun N. Cho, both of Seoul, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Continuation of Ser. No. 743,836, Aug. 2, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,553
Claims priority, application Rep. of Korea, Oct. 19, 1990, 16698/190
Int. Cl.[5] C08G 63/02, 63/78, 63/82
U.S. Cl. 528—275 19 Claims

1. A process for forming polyesters comprising esterifying either a terephthalic acid, a dicarboxylic acid containing terephthalic acid or derivatives thereof with either ethylene glycol or a glycol containing ethylene glycol, or derivatives thereof to produce an esterification product and polycondensing the obtained esterification product, wherein said esterification is conducted in the presence of a catalyst comprising one or more compounds of antimony and one or more compounds and titanium and wherein the weight ratio of the compound of antimony to the compound of titanium is 0.1 to 9.0.

5,286,837
PROCESS FOR INCREASING STABILITY OF POLY(ESTERAMIDES)
Thomas H. Barrows, Cottage Grove; Myhanh T. Truong, Blaine; Paul R. Suszko, Cottage Grove, and David W. Steginк, Mendota Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 821,406, Jan. 15, 1992, abandoned. This application Dec. 8, 1992, Ser. No. 986,665
Int. Cl.[5] C08G 73/10, 63/68
U.S. Cl. 528—291 39 Claims

1. A process for treating poly(esteramide) polymer to increase the stability thereof, said process comprising:
a) providing a polymer having the following formula:



wherein

1) R^1 and R^6 are identical or different and are hydrogen or methyl;
2) R^3 and R^5 are identical or different and are selected from the group consisting of the following, which are linear or branched, alkylene, alkylene having 1 or 2 nonadjacent catenary oxygen or sulfur atoms, alkenylene, cycloalkylene and arylene; said members of the group having up to 25 carbon atoms in the cyclic compounds and from 2 to 25 carbon atoms in the non-cyclic compounds;
3) R^2 and R^4 are identical or different and are hydrogen or alkyl having 1 to 4 carbon atoms or R^2 and R^4 together are linear or branched alkylene having one to four carbons forming with N—R^3—N a heterocyclic group having 5 or 6 ring atoms;
4) a and b are independently zero or one; and
5) n having an average value from about 10 to about 400;
b) treating said polymer with an amide group-containing solvent; and
c) separating said polymer from said amide group-containing solvent to yield stabilized polymer.

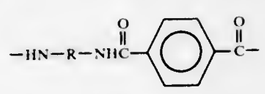
5,286,838
THERMOTROPIC LIQUID CRYSTALLINE POLYAMIDE
Jan G. Nel, Cumming, Ga., and Gert Boven, Arnhem, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands
Filed Nov. 12, 1992, Ser. No. 975,177
Int. Cl.[5] C08G 69/12
U.S. Cl. 528—331 19 Claims

1. A thermotropic liquid crystalline copolyamide which comprises:
(a) a thermoplastic, aliphatic polyamide; and
(b) a mesogen, comprising an amide-linked aromatic group segment containing aromatic groups, which is other than completely para-linked by an amide linkage of the formula —NH— C(O)— to an alkylene amide group contained in the mesogen.

5,286,839
CRYSTALLIZABLE COPOLYAMIDE HAVING TEREPHTHALAMIDE AND NAPHTHALAMIDE UNITS
Yu-Tsai Chen, Glen Ellyn, Ill., assignor to Amoco Corporation, Chicago, Ill.
Continuation of Ser. No. 585,734, Sep. 20, 1990, abandoned. This application Jan. 2, 1992, Ser. No. 816,765
Int. Cl.[5] C08G 69/26
U.S. Cl. 528—344 6 Claims

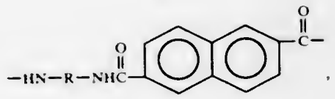
1. A crystallizable polyamide composition consisting of recurring units

A



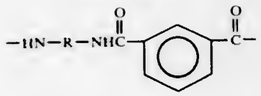
and

C



with or without

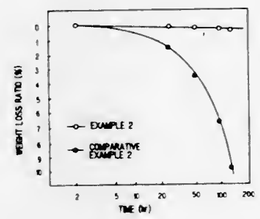
B



wherein R comprises a divalent aliphatic radical and the mole

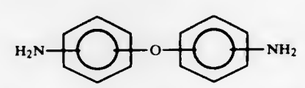
ratios of the dicarboxylic acid moieties of the A, C and B units are about 50-60:25-50:0-20, respectively.

5,286,840
THERMALLY STABLE POLYIMIDE AND PREPARATION PROCESS OF POLYIMIDE
Hideaki Oikawa; Nobuhito Koga; Akihiro Yamaguchi, and Shoji Tamai, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Nov. 21, 1991, Ser. No. 795,750
Claims priority, application Japan, Nov. 28, 1990, 2-323074
Int. Cl.[5] C08G 69/26, 73/10
U.S. Cl. 528—353 2 Claims



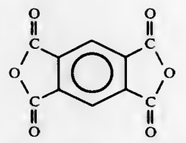
1. A process of preparing a thermally stable melt processable polyimide comprising reacting 1 mole of a diamine compound represented by the formula (I):

(I)



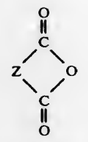
with from 0.9 to 1.0 mole of tetracarboxylic acid dianhydride of the formula (II):

(II)



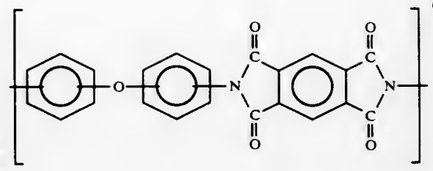
in the presence of from 0.001 to 1.0 mole of a dicarboxylic acid anhydride represented by the formula (III):

(III)



wherein Z is a divalent radical selected from the group consisting of monoaromatic radical which is substantially unsubstituted or substituted with a radical having no reactivity with amine or dicarboxylic acid anhydride and has from 6 to 15 carbon atoms, a condensed polyaromatic radical or a noncondensed aromatic radical connected each with a direct bond or a bridge member, to obtain a thermally stable polyimide having a fundamental skeleton represented by recurring structural units of the formula (IV):

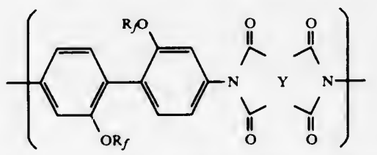
(IV)



5,286,841
FLUORINE-CONTAINING DIAMINES, POLYAMIDES, AND POLYIMIDES
Brian C. Auman, Newark, and Andrew E. Feiring, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 750,800, Aug. 27, 1991, Pat. No. 5,175,307. This application Sep. 14, 1992, Ser. No. 944,587
Int. Cl.[5] C08G 69/26, 73/10
U.S. Cl. 528—353 6 Claims

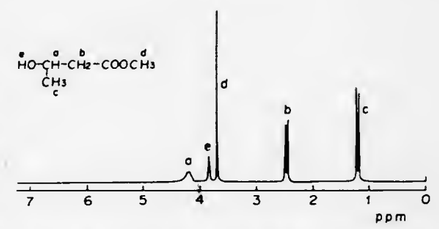
1. A polyimide structure comprising the repeat unit:

VI



wherein R_f is a linear or branched perfluorinated alkyl group containing 1-18 carbon atoms or where said perfluorinated alkyl group has one F atom replaced by hydrogen or where said perfluorinated alkyl group has one F atom replaced by chlorine, or where said perfluorinated group has one F atom replaced by hydrogen and another F atom replaced by chlorine, R_f optionally containing one or more ether oxygens between alkyl segments, and Y is a tetravalent hydrocarbyl group.

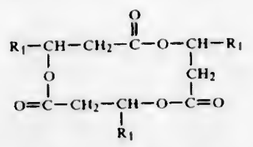
5,286,842
PROCESS FOR PRODUCING A BIODEGRADABLE POLYMER
Yoshiharu Kimura, Omihachiman, Japan, assignor to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed Jun. 30, 1992, Ser. No. 906,675
Claims priority, application Japan, Jul. 1, 1991, 3-160695; Jul. 1, 1991, 3-160696; Jul. 1, 1991, 3-160698
Int. Cl.[5] C08G 63/08
U.S. Cl. 528—354 6 Claims



1. A process for producing a biodegradable polymer, which

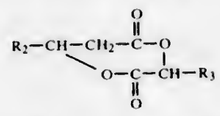
VOL 1159 ISS 3 FEB 15 1994 UMI

comprises subjecting a cyclic compound of the following formula (1) or (2) to ring opening polymerization:



(1)

wherein R_1 is a C_{1-10} alkyl group,



(2)

wherein R_2 is a C_{1-10} alkyl group, and R_3 is a hydrogen atom or a C_{1-10} alkyl group.

5,286,843

PROCESS FOR IMPROVING WATER-WHITENING RESISTANCE OF PRESSURE SENSITIVE ADHESIVES

Timothy G. Wood, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 22, 1992, Ser. No. 888,563
Int. Cl.[5] C08F *6/00*
U.S. Cl. 528—482 **4 Claims**

1. A process for improving the water-whitening resistance of a pressure sensitive adhesive containing an aqueous latex emulsion, where the pressure sensitive adhesive or the aqueous latex emulsion contain water-soluble ions, comprising:

(a) removing the water-soluble ions; and

(b) adjusting the pH of the pressure sensitive adhesive formulation to at least about 6.0.

5,286,844

METHOD OF PURIFYING POLYACRYLONITRILE

Kozi Nishida; Yukio Kasabo; Toshihiro Maxima; Yoshio Manabe, all of Otake, and Osamu Kato, Toyama, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,269
Claims priority, application Japan, Nov. 22, 1991, 03-307911; Dec. 9, 1991, 03-350330
Int. Cl.[5] C08F *6/08*
U.S. Cl. 528—482 **4 Claims**

1. A method of purifying a polyacrylonitrile which comprises removing iron compounds or ions thereof and aluminum compounds or ions thereof which can be contained as impurities in a polyacrylonitrile obtained by aqueous suspension polymerization using an inorganic redox initiator, from a solution consisting of said polyacrylonitrile and an organic solvent capahle of dissolving said polyacrylonitrile, by the use of a substance having ion-exchanging ability which is insoluble in said organic solvent.

5,286,845

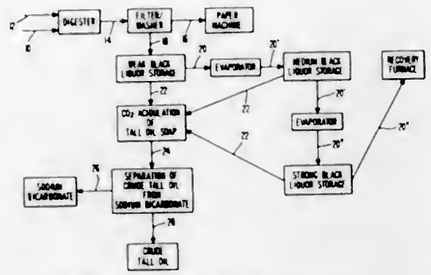
ACIDIFICATION OF TALL OIL SOAP USING CARBON DIOXIDE

Derk T. A. Huibers, Pennington, N.J.; James W. Gillis, Yardley, Pa., and Andrew Robbins, Trenton, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed May 20, 1992, Ser. No. 886,654
Int. Cl.[5] B01D *17/06*
U.S. Cl. 530—208 **28 Claims**

1. A process for preparing crude tall oil from tall oil soap, comprising:

contacting an aqueous tall oil soap solution with carbon dioxide, under a pressure of between about 50 and about 800 psig, to form crude tall oil and sodium bicarbonate; and



allowing said crude tall oil and said sodium bicarbonate to separate, under a pressure of between about 50 and about 800 psig, into a layer comprising crude tall oil and a layer comprising sodium bicarbonate.

5,286,846

AMINO ACID DERIVATIVE AND BROMOACETYL MODIFIED PEPTIDES FOR THE PREPARATION OF SYNTHETIC PEPTIDE POLYMERS, CONJUGATED PEPTIDES, AND CYCLIC PEPTIDES

John K. Inman, and Frank A. Robey, both of Bethesda, Md., assignors to The Government of the United States of America as represented by the Dept. of Health and Human Services, Washington, D.C.

Filed Jun. 14, 1991, Ser. No. 715,650
Int. Cl.[5] A61K *37/02*; C08G *63/48*
U.S. Cl. 530—300 **20 Claims**

1. A compound of the formula N^{α}-tert-butoxycarbonyl-N^{ϵ}-(N-bromoacetyl-β-alanyl)-L-lysine.

5,286,847

INTERLEUKIN-1 MUTEINS, THEIR PREPARATION AND METHOD OF USE TO INHIBIT INTERLEUKIN-1 ACTIVITY

Lee Gehrke, Framingham; Philip E. Auron, Ashland, and Lanny Rosenwasser, Weston, all of Mass., assignors to New England Medical Center Hospitals, Inc., Boston and Massachusetts Institute of Technology, Cambridge, both of Mass.

Continuation of Ser. No. 316,278, Feb. 27, 1989, abandoned. This application May 19, 1992, Ser. No. 887,118
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—351 **6 Claims**

1. A mutein of a biologically active IL-1β protein wherein said mutein has substantially reduced IL-1β activity but does bind to an IL-1β receptor, and wherein the mutein comprises an amino acid substitution wherein the arginine residue corresponding to position 11 of the mature form of IL-1β, or position 127 of the precursor, is replaced with glycine.

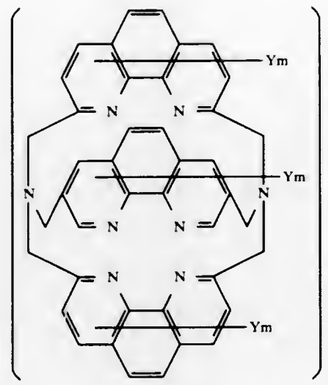
5,286,848

LANTHANIDE CRYPTATE OF TRISPHENANTHROLINE

Katsu Honzawa, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation of Ser. No. 519,594, May 7, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 51,819
Int. Cl.[5] C07K *3/08, 13/00*
U.S. Cl. 530—363 **2 Claims**

1. A protein labelled covalently with a lanthanide complex of europium cryptate of 2,2',2'',9,9',9''-bis[nitrilotri(methylene)]tris(1,10-phenanthroline) of the formula



wherein Y is a halosulfonyl functional group or Y is a phenyl group containing a halosulfonyl functional group, and wherein the total number of m is at least 1 and each m is 0, 1 or 2, and wherein said protein is bovine serum albumin.

5,286,849

PURIFICATION OF FACTOR IX

Steven W. Herring, San Dimas, Calif., assignor to Alpha Therapeutic Corporation, Los Angeles, Calif.

Filed Jul. 14, 1992, Ser. No. 913,666
Int. Cl.[5] A61K *35/16, 37/02*; C07K *3/20*
U.S. Cl. 530—381 **12 Claims**

1. A process for purifying Factor IX from an impure protein fraction containing Factor IX, the process comprising the steps of:

providing an aqueous solution of the impure protein fraction;

adding a solvent and a detergent to the impure protein fraction to form a solvent/detergent protein solution;

incubating the solvent/detergent protein solution to inactive any viral contaminants present in the solvent/detergent protein solution; and

further purifying Factor IX by applying the incubated solvent/detergent solution to a sulfated polyusaccharide resin wherein the solvent/detergent is removed from the Factor IX fraction by chromatography on the sulfated polysaccharide resin.

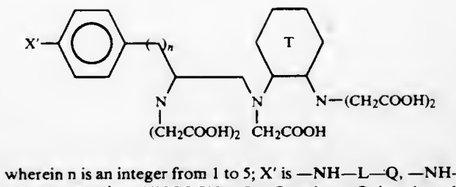
5,286,850

ANTIBODY DTPA-TYPE LIGAND CONJUGATES

Otto A. Gansow, Washington, D.C., and Martin W. Brechbiel, Annandale, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 498,319, Mar. 26, 1990, Pat. No. 5,124,471. This application May 11, 1992, Ser. No. 881,049
Int. Cl.[5] A61K *35/14*; C07K *3/00*
U.S. Cl. 424—1.45 **19 Claims**

1. An antibody-DTPA type ligand-conjugate comprising the general formula:



wherein n is an integer from 1 to 5; X' is —NH—L—Q, —NH-CS—L—Q, or —NHCOCH$_2$—L—Q, where Q is selected from the group consisting of monoclonal antibodies, chimeric antibodies, or antigen binding fragments thereof and L is a single bond or a covalent linking group; and T denotes the trans isomer of the cyclohexyldiamine substructure.

5,286,851

MONOCLONAL ANTIBODIES TO ANTHRACYCLINES

Andrea Balsari; Maria I. Colnaghi, and Mario Ghione, all of Milan, Italy, assignors to Istituto Nazionale Per Lo Studio E La Cura Dei Tumori, Milan, Italy

Filed Nov. 15, 1988, Ser. No. 271,948
Claims priority, application Italy, Nov. 17, 1987, 22661 A/87
Int. Cl.[5] A61K *35/14*
U.S. Cl. 530—388.9 **3 Claims**

1. Monoclonal antibodies able to selectively bind to anthracycline compounds.

5,286,852

ANTIBODIES SPECIFIC TOWARDS HIV-1 GP 48

Kurt B. Osther, Dallas, Tex., assignor to Verigen, Inc., Hopkinton, Mass.

Continuation of Ser. No. 376,247, Jul. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 215,867, Jul. 6, 1988, abandoned. This application Oct. 8, 1991, Ser. No. 772,604
Int. Cl.[5] C07K *15/28*; C12N *5/12, 5/26*
U.S. Cl. 530—388.35 **8 Claims**

1. An isolated HIV-1-specific antibody produced by active immunization, of a pig the HIV-1-specific antibody comprising a variable region which binds to a gp 48 epitope present in HIV-1 viral lysate.

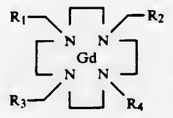
5,286,853

BORON-GADOLINIUM COMPOUNDS AND METHOD OF CONDUCTING IMAGING AND/OR NEUTRON CAPTURE THERAPY WITH SAME

Bernard F. Spielvogel, Cary, and Anup Sood, Durham, both of N.C., assignors to Boron Biologicals, Inc., Raleigh, N.C.

Filed Sep. 11, 1992, Ser. No. 943,920
Int. Cl.[5] C07F *5/02*
U.S. Cl. 534—16 **12 Claims**

1. A boron-gadolinium (^{10}B-^{157}Gd) compound of the formula



.xH$_2$O.

wherein:

R_1, R_2, and R_3 are independently selected from carboxyl, carboxylic salt groups, carboxylic ester groups, and carboxylate anion;

R_4 is a boron-containing group; and

x is a number from zero to 7.

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5,286,854

BASIC AZO DYES WITH A COUPLING COMPONENT OF THE HYDROXYNAPHTHALENECARBOXYLIC ACID SERIES

Erwin Hahn, Heidelberg; Heidi Hengelsberg, Mannheim, and Udo Mayer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

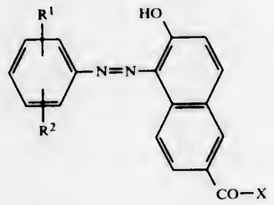
Filed Dec. 30, 1992, Ser. No. 998,570

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202566

Int. Cl.[5] **C09B** *44/06, 29/15;* **D06P** *1/41*

U.S. Cl. 534—603 **5 Claims**

1. A basic azo dye of the formula I



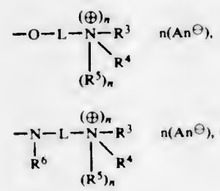
(I)

where

R^1 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or C_1-C_4-alkanoylamino,

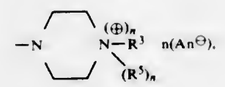
R^2 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or a radical of the formula CO-X, and

X is hydroxyl, C_1-C_4-alkoxy, amino, mono- or di(C_1-C_6-alkyl)amino or a radical of the formula



$n(An^{\ominus})$,

$n(An^{\ominus})$, or



$n(An^{\ominus})$,

where

n is 0 or 1,

R^3, R^4 and R^5 are identical or different and each is independently of the others hydrogen or unsubstituted or hydroxyl-substituted C_1-C_4-alkyl,

R^6 is hydrogen or C_1-C_4-alkyl,

L is C_2-C_6-alkylene, and

$An^{\ominus}$ is one equivalent of an anion,

with the proviso that at least one basic or quaternary radical is present in the molecule.

5,286,855

PROCESS FOR PRODUCING POLYHALOGENATED PHTHALOCYANINE

Yoshiyuki Nonaka; Junichi Tsuchida; Masami Shirao, and Michihika Hikosaka, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1991, Ser. No. 789,076

Claims priority, application Japan, Nov. 9, 1990, 2-305856

Int. Cl.[5] **C09B** *47/10*

U.S. Cl. 540—138 **5 Claims**

1. A process for producing a polyhalogenated phthalocyanine containing not more than 0.02 part by weight of water-insoluble inorganic impurities derived from aluminum chloride per 100 parts by weight of phthalocyanine before halogenation, which comprises the following steps A, B and C;

step A halogenating phthalocyanine in titanium tetrachloride in the presence of aluminum chloride,

step B evaporating titanium tetrachloride and sublimating aluminum chloride by heating the halogenation reaction mixture, thereby recovering aluminum chloride as a mixture with titanium tetrachloride and obtaining a polyhalogenated phthalocyanine, and

step C recycling aluminum chloride isolated from the mixture with titanium tetrachloride or said mixture to step A.

5,286,856

PRODUCTION OF CRYSTALLINE PENEM

Masayoshi Kaneko, Takarazuka, and Shigeo Yabuno, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 946,614

Claims priority, application Japan, Sep. 20, 1991, 241648

Int. Cl.[5] **C07D** *487/04*

U.S. Cl. 540—350 **21 Claims**

1. A method of crystallizing (1R,5S,6S)-2-[(6,7-dihydro-5H-pyrazolo[1,2-a][1,2,4]triazolium-6yl)(thio-6-[(R)-1-hydroxyethyl]-1-methyl-carbapenem-3carboxylate, which comprises maintaining an aqueous solution of the said compound at temperatures ranging from the eutectic temperature of the solution to temperatures lower than 0° C.

5,286,857

INTERMEDIATE FOR THE PREPARATION OF PENEMS

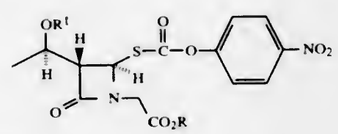
Brian T. O'Neill, Westbrook, and Douglas Phillips, Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 378,743, Jul. 11, 1989, Pat. No. 4,992,543, which is a continuation-in-part of Ser. No. 260,141, Oct. 19, 1988, Pat. No. 4,895,940. This application Oct. 9, 1990, Ser. No. 594,885

Int. Cl.[5] **C07D** *205/08*

U.S. Cl. 540—357 **6 Claims**

1. A compound of the formula



wherein

R is $-CH_2CX{=}CH_2$, $-CH_2CH_2Si(CH_3)_3$, p-nitrobenzyl, $-CHR^3OCOR^4$ or $-CHR^3OCO_2R^4$ where R^3 is hydrogen or methyl and R^4 is (C_1-C_8)alkyl;

X is H or Cl; and

R^1 is $SiR^5R^6R^7$ where R^5, R^6 and R^7 are independently (C_1-C_4)alkyl.

5,286,858

OPTICALLY ACTIVE THIENOTRIAZOLODIAZEPINE COMPOUNDS

Minoru Moriwaki, Oita; Syuji Yuasa, Fukuoka; Hiroyuki Kitani, and Michio Terasawa, both of Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

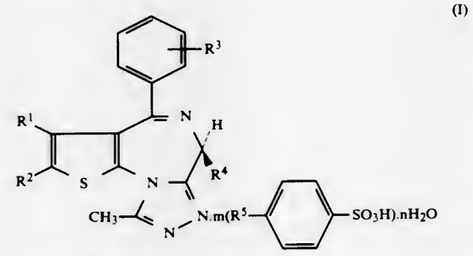
Filed Oct. 11, 1991, Ser. No. 774,945

Claims priority, application Japan, Oct. 12, 1990, 2-274451; Jul. 31, 1991, 3-214512

Int. Cl.[5] **C07D** *495/12, 495/14*

U.S. Cl. 540—560 **5 Claims**

1. Stable crystals of an acid addition salt of an optically active thienotriazolodiazepine compound or its hydrate of the formula



(I)

wherein R^1 is hydrogen, R^2 is 2-(4-isobutylphenyl)ethyl or 2-morpholinocarbonylethyl, R^3 is chlorine, R^4 is methyl, R^5 is hydrogen or methyl, m is 1-2, and n is 0-2.

5,286,859

METHOD OF FORMING A PHOTOGRAPHIC WASHOUT COUPLER (BARC) USING A STRONG BASE

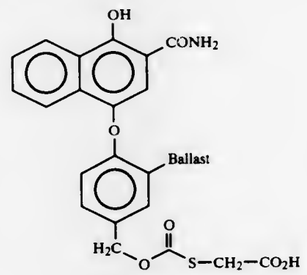
William J. Begley, Webster, and Donald Singleton, Jr., Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,245

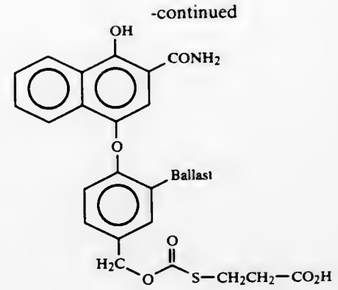
Int. Cl.[5] **C07D** *295/155;* **C07C** *329/06*

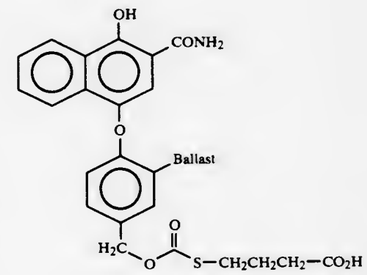
U.S. Cl. 544—140 **4 Claims**

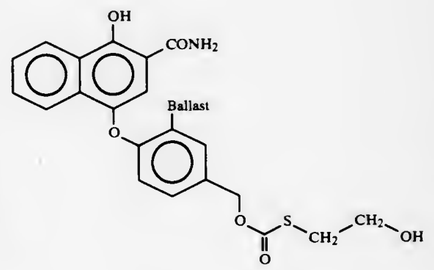
1. A method of forming a photographic coupler selected from the group consisting of

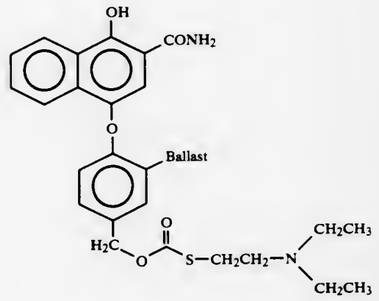


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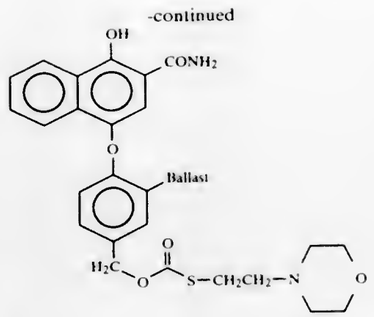






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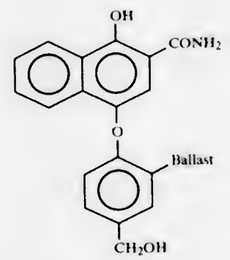
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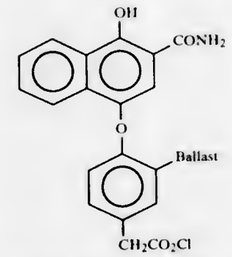
wherein:

Ballast is a photographic ballast;

the method comprising reacting phosgene with a compound having the formula

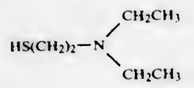


to form a chloroformate having the structure



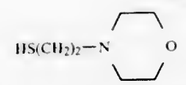
and reacting the chloroformate, in the presence of a strong base selected from the group consisting of triethylamine, N,N-diisopropylethylamine, and tetramethylguanidine, with a thiol selected from the group consisting of

$HSCH_2COOH$
$HSCH_2CH_2COOH$
$HS(CH_2)_3COOH$
$HS(CH_2)_2OH$



and

-continued



to form the photographic coupler.

5,286,860

CERTAIN ARYL SUBSTITUTED PYRROLOPYRAZINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

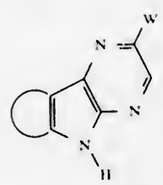
Charles Blum, Guilford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Nov. 12, 1992, Ser. No. 975,409

Int. Cl.[5] C07D *487/04, 487/10, 487/14, 487/20*

U.S. Cl. 544—230 **21 Claims**

1. A compound of the formula:

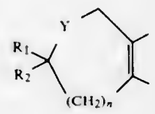


1

or the pharmaceutically acceptable non-toxic salts thereof wherein:



represents:



where n is 0, 1 or 2;

R_1 and R_2 are

the same or different and represent hydrogen or straight chain or branched lower alkyl having 1–6 carbon atoms;

W is

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms; and

Y is

C=O, CR_6OR_5, CR_6COR_5, $CR_6CO_2R_5$, CR_6OCOR_5, and CR_5R_6, where

R_5 is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms;

$CR_6CONR_7R_8$ or $CR_6(CH_2)_nNR_7R_8$ where n is 0, 1, or 2, and

R_6 and R_7 are the same or different and represent hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_8 is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or

NR_7R_8 is morpholyl, piperidyl, pyrrolidyl, or N-alkyl piperazyl;

$CR_6NR_9CO_2R_{10}$ where

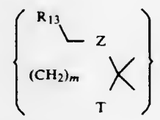
R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms, and

R_9 and R_{10} are the same or different and represent hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms;

$-CR_6C(OH)R_{11}R_{12}$ where R_{11} and R_{12} are the same or different and represent straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, and R_6 is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms; or

Y is

a group of the formula:



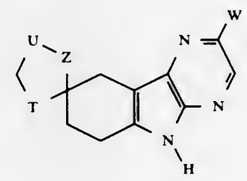
where m is 0, 1, or 2,

R_{13} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms;

Z is methylene, oxygen, NR_{14} or $CHCONR_{14}$ where R_{14} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl or pyridylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

T is methylene or oxygen.

3. A compound of the formula:



where

W is

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms; and

Z is

methylene, oxygen, NR_{14} or $CHCONR_{14}$ where R_{14} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl or pyridylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

T is methylene or oxygen; and

U is methylene or carbonyl.

5,286,861

PROCESS FOR PREPARING URACIL DERIVATIVES

Angelo Bedeschi, Milan; Walter Cabri, Rozzano; Ilaria Candiani, Busto Arsizio, and Tiziano Martinengo, Carpignano Sesia, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

PCT No. PCT/EP91/00324, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/13064, PCT Pub. Date Sep. 5, 1991

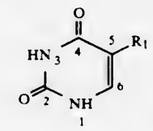
PCT Filed Feb. 21, 1991, Ser. No. 928,507

Claims priority, application United Kingdom, Feb. 22, 1990, 9004021.3

Int. Cl.[5] C07D *239/54, 239/545*

U.S. Cl. 544—309 **6 Claims**

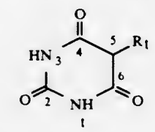
1. A process for preparing a compound of Formula I:



(I)

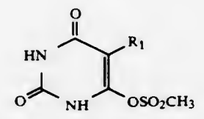
wherein R_1 is (i) hydrogen or halogen; (ii) C_{1-4} alkyl, or C_{1-4} alkyl substituted by at least one substituent selected from the group consisting of halogen, hydroxy, methoxy and ethoxy; (iii) phenyl, or phenyl substituted by methyl, ethyl and alkoxy; or (iv) $-(CH_2)_nAr$, wherein n equals 1 to 4 and Ar is phenyl or substituted phenyl as defined in (iii), which comprises:

reacting a methanesulfonic acid derivative, with a salt, with an organic base, of a compound of Formula II:



II

wherein R_1 is defined above, thereby producing a mesylate derivative of Formula III:



III

wherein R^1 is as defined above; and then

reducing the compound of Formula III with a reducing agent or with molecular hydrogen in the presence of a transition metal to give the desired compound of Formula I.

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5,286,862

PROCESS FOR THE PREPARATION OF ARYLDIMETHYL(3-ARYL-PROPYL)SILANES

Hans H. Schubert, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

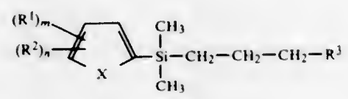
Filed Aug. 24, 1989, Ser. No. 398,058

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3828926

Int. Cl.[5] C07F *7/02*

U.S. Cl. 546—14 **3 Claims**

1. A process for the preparation of a compound of the formula I



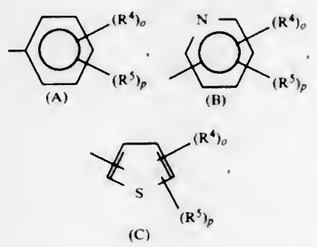
(I)

where

X is CH=CH, N=CH, CH=N or S,

R^1 and R^2 independently of one another are H, halogen, (C_1-C_4) alkyl, (C_1-C_4) alkoxy, (C_1-C_4) alkylthio, (C_1-C_4-)haloalkyl, (C_1-C_4) haloalkoxy, (C_1-C_4) haloalkylthio or the bivalent methylenedioxy group,

R^3 is a radical of the formula (A), (B) or (C)

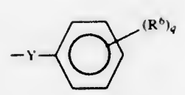


(A) (B)

(C)

where

R^4 and R^5 independently of one another are H, halogen, (C_1-C_4) alkyl, (C_1-C_3) alkoxy or a radical of the formula (D)



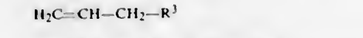
(D)

in which

R^6 is H or halogen and

Y is CH_2, O or S, and

m, n, o, p and q are 0, 1 or 2, which comprises reacting a compound of the formula II

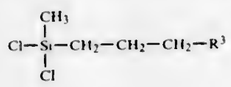


(II)

where R^3 is as defined in formula I,

with dichloromethylsilane in the presence of hexachloroplatinic acid as a catalyst, and

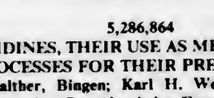
reacting the resulting intermediate of the formula III



(III)

where R^3 is as defined in formula I, in succession and without isolation of the resulting intermediate,

with a methylmagnesium halide and an arylmagnesium halide of the formula IV



(IV)

where R^1, R^2, m, n and X are as defined in formula I and Hal is halogen such that the first substitution of a halogen atom of the compound of formula III is carried out at a temperature from −20° C. to 30° C., and the second substitution of a halogen atom of the compound of formula III is carried out at a temperature from −20° C. to +20° C.

5,286,863

OXIDATION PROCESS FOR PREPARING QUINACRIDONE PIGMENTS

Fridolin Babler, Hockessin, and Edward E. Jaffe, Wilmington, both of Del., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 748,738, Aug. 22, 1991, abandoned. This application Dec. 18, 1991, Ser. No. 809,898

Int. Cl.[5] C09B *48/00*

U.S. Cl. 546—56 **20 Claims**

1. A process for preparing an unsubstituted or substituted quinacridone pigment or a solid solution of quinacridone pigments, which comprises the steps of:

(a) oxidizing a precursor of the quinacridone pigment or solid solution by introducing a gas containing at least 2 percent by weight of molecular oxygen, above or below the surface of a solution, at a temperature from 50° C. to 90° C., said solution consisting essentially of the precursor, dimethyl sulfoxide, an alkali metal hydroxide, water and a catalytically effective amount of a quinone catalyst, the precursor being a 6,13-dihydroquinacridone with the same substitution as said quinacridone pigment or a mixture of 6,13-dihydroquinacridones with the same substitution as the quinacridone pigments in said solid solution, said dimethyl sulfoxide being present in an amount ranging from 3 to 20 times the weight of the precursor, said water being present in a concentration of 0.2 to 3.0 parts per part, by weight, of the precursor, and the molar ratio of the precursor to said alkali metal hydroxide being 1:1.9 to 1:7;

(b) precipitating said quinacridone pigment or said solid solution from a solution resulting from step (a) by drowning in a C_1-C_4alkanol in the presence or absence of a particle growth inhibitor; and

(c) isolating said quinacridone pigment or said solid solution.

5,286,864

QUINUCLIDINES, THEIR USE AS MEDICAMENTS AND PROCESSES FOR THEIR PREPARATION

Gerhard Walther, Bingen; Karl H. Weber, Gau-Algesheim; Werner Stransky, Gau-Algesheim; Franz J. Kuhn, Gau-Algesheim; Enzio Muller, and Helmut Ensinger, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

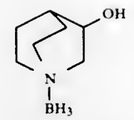
Division of Ser. No. 699,020, May 13, 1991, abandoned, which is a continuation of Ser. No. 435,892, Nov. 13, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 962,954

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1988, 3839385

Int. Cl.[5] C07D *453/02*; C07F *5/02*

U.S. Cl. 546—137 **1 Claim**

1. A process for preparing 3-(2-propynyloxy)-1-azabicyclo[2,2,2,]octane, wherein a compound of the formula



is reacted with sodium hydride, to yield the sodium salt, the salt is reacted with propargyl bromide, and, finally, the resulting intermediate is treated with a strong acid to remove the protecting group (BH_3).

5,286,865

NON-MIGRATING 1-HYDROCARBYLOXY HINDERED AMINE DERIVATIVES AS POLYMER STABILIZERS

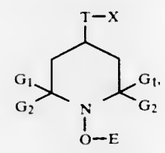
James P. Galbo, Hartsdale; Ramanathan Ravichandran, Nanuet, both of N.Y.; Peter J. Schirmann, Fairfield, and Andrew Mar, Norwalk, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 480,173, Feb. 14, 1990, Pat. No. 5,145,893, which is a continuation-in-part of Ser. No. 326,702, Mar. 21, 1989, abandoned. This application Jun. 24, 1992, Ser. No. 903,699

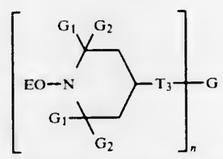
Int. Cl.[5] C07D *401/12, 211/94*

U.S. Cl. 546—188 **13 Claims**

1. A 1-hydrocarbyloxy substituted hindered amine compound having the formula I or II,



(I)

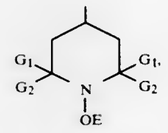


(II)

G_1 and G_2 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together are pentamethylene,

T is $-NR_1CO(CH_2)_m-$, $-O(CH_2)_y-$, $-[OCH_2CH(CH_3)]_y-$, $-OCO(CH_2)_m-$, $-NR_1COCONR_1CH_2CH_2-$ or $-NR_1COCONR_1CH_2CH(CH_3)-$ where R_1 is hydrogen or alkyl of 1 to 12 carbon atoms, m is 2 or 3, y is 2 to 10, and the hetero oxygen or nitrogen atom is attached to the piperidyl ring,

X is —OH, $-NHR_2$, —COOH, —NCO, or $Si(OR_1)_3$ where R_2 is hydrogen, alkyl of 1 to 12 carbon atoms, or



E is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 2 to 18 carbon atoms, cycloalkenyl of 5 to 12 carbon atoms or aralkyl of 7 to 15 carbon atoms, n is 2, and $-T_3-G-T_3-$ is $-OCH_2CHOHCH_2O-$.

5,286,866

PIPERIDINYL COMPOUNDS

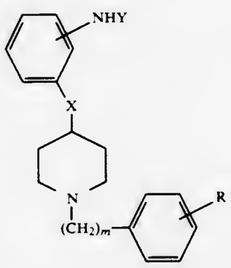
Albert A. Carr; John E. Koerner; Richard C. Dage; and Tung Li, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 797,643, Dec. 16, 1991, Pat. No. 5,166,211, which is a division of Ser. No. 237,600, Aug. 26, 1988, Pat. No. 5,093,341, which is a continuation-in-part of Ser. No. 134,406, Dec. 17, 1987, abandoned. This application Feb. 14, 1992, Ser. No. 837,462

Int. Cl.[5] C07D *211/32, 211/22*

U.S. Cl. 546—241 **3 Claims**

1. A 1,4-disubstituted piperidinyl compound having the formula:



wherein; Y is $CO(CH_2)_nCH_3$ in which n is an integer from 0–3; X is selected from the group consisting of C=O and CHOH; R is selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, 3,4-methylenedioxy and 3,4-ethylenedioxy; m is an integer from 1–5 and the pharmaceutically acceptable acid addition salts thereof.

5,286,867

SUBSTITUTED 1-SULFONYLOXY-2-PYRIDONES AND PROCESS FOR PREPARING THEM

Gerhard Lohaus, Kelkheim; Walter Spiess, Dieburg, and Georg Pawlowski, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

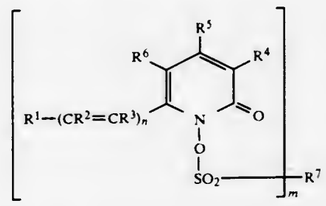
Filed Apr. 20, 1992, Ser. No. 870,920

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112967

Int. Cl.[5] C07D *213/89*

U.S. Cl. 546—249 **19 Claims**

1. A 1-sulfonyloxy-2-pyridone of the formula I



(I)

in which

R^1 is an alkyl, cycloalkyl, aryl, aralkenyl, heteroaryl or heteroaralkenyl radical,

R^2 is hydrogen, chlorine, bromine or an alkyl, cycloalkyl, aryl or heteroaryl radical, or

R^1 and R^2 together form a five- to eight-membered ring,

R^3 is hydrogen or an alkyl radical,

R^4 is hydrogen, halogen, nitro, acylamino, cyano, thi-

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ocyanato or an alkyl, alkenyl, alkynyl, aryl, aralkyl, alkylthio, arylthio or cycloalkylthio radical,
R^5 is hydrogen or an alkyl or aryl radical or
R^4 and R^5 together form a five- to eight-membered ring,
R^6 is hydrogen, halogen, nitro, acylamino, cyano, thiocyanato or an alkyl, alkenyl, alkoxyalkyl, aryl, aralkyl, alkylthio, cycloalkylthio or arylthio radical,
R^7 is an alkyl or cycloalkyl radical, a perfluorinated or highly fluorinated alkyl radical or an aryl, arylalkyl, heteroaryl, alkylene, or arylene radical,
m is 1 or 2, and
n is 1, 2 or 3.

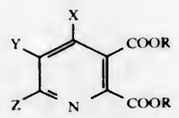
5,286,868

PROCESS FOR THE PREPARATION OF SUBSTITUTED AND UNSUBSTITUTED-2,3-PYRIDINEDICARBOXYLATES FROM CHLOROMALEATE OR CHLOROFUMURATE OR MIXTURES THEREOF

Albert A. Cevasco, Somerset; George A. Chiarello, Mercer, and William F. Rieker, Union, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

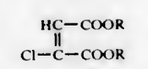
Continuation-in-part of Ser. No. 538,861, Jun. 15, 1990, Pat. No. 5,118,809. This application May 1, 1992, Ser. No. 877,286
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] C07D *213/69*
U.S. Cl. 546—250 **5 Claims**

1. A process for the preparation of a compound of formula I

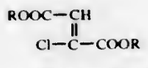


I

wherein R is C_1-C_6 alkyl; X is hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy or C_2-C_5 alkenyl and Y is hydrogen, halogen, C_1-C_6 alkyl optionally substituted with one to three halogens, hydroxy groups, C_1-C_4 alkoxy groups or C_1-C_4 alkylthio groups, C_1-C_4 alkoxycarbonyl, aminocarbonyl, phenylthio, phenoxy or phenyl and Z is hydrogen, C_1-C_4 alkyl or C_2-C_5 alkenyl which comprises reacting a compound of formula II or formula III or a mixture thereof

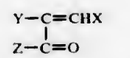


II



III

wherein R is C_1-C_6 alkyl with an ammonium salt in the presence of a solvent, optionally in the presence of ammonia, to form an intermediate, reacting said intermediate with an α,β-unsaturated aldehyde or ketone of formula IV



IV

wherein X, Y and Z are as described above in the presence of an acid to form the formula I pyridinedicarboxylate compound.

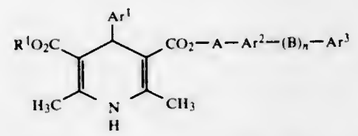
5,286,869

1,4-DIHYDROPYRIDINE DERIVATIVES

Hiroshi Ikawa; Akiyoshi Kadoiri, both of Tokyo, and Yasuo Sekine, Kanagawa, all of Japan, assignors to Fujirebio Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 285,095, Dec. 15, 1988, abandoned. This application Mar. 12, 1990, Ser. No. 492,951
Claims priority, application Japan, Jun. 17, 1989, 1-153591
Int. Cl.[5] C07D *401/12*
U.S. Cl. 546—278 **24 Claims**

1. A 1,4-Dihydropyridine derivative of formula (I):



(I)

wherein Ar^1 is phenyl or naphthyl which may be substituted by one or more substituents selected from the group consisting of nitro, trihalomethyl, cyano, halo, phenoxy, azido, amido, alkoxy having 1 to 4 carbon atoms, alkyl having 1 to 4 carbon atoms, alkylthio, alkoxycarbonyl, and alkylcarbonyl; R^1 is (a) a straight, branched or cyclic saturated or unsaturated hydrocarbon which may be substituted by alkoxy having 1 to 6 carbon atoms, thioalkoxyl oralkylthio having 1 to 6 carbon atoms, amino or mono-or di-alkyl amino, halo, cyano, nitro, nitrato, hydroxyl, phenoxy, or phenylthio, or (b) alkenyl which may be substituted by an unsubstituted or substituted phenyl; A is a straight, branched or cyclic unsaturated hydrocarbon group, which may be substituted by halo, phenyl, cyano, alkylcarbonyl, or alkoxycarbonyl; Ar^2 is phenylene (o-,m- or p-); B is alkylene or alkenylene which may be substituted by alkyl having 1 to 4 carbon atoms, cycloalkyl, phenyl, naphthyl, or benzyl; Ar^3 is imidazolyl, which may be substituted by alkyl having 1 to 4 carbon atoms; and n is 1.

5,286,870

PROCESS FOR THE PRODUCTION OF BIS-BENZTHIAZOLYL ALKYL SULFENIMIDES

Adolf Sicheneder, Dormagen, and Harro Schlesmann, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,205
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128682
Int. Cl.[5] C07D *417/12*
U.S. Cl. 548—157 **15 Claims**

1. A process for the production of bis-benzthiazolyl alkyl sulfenimides, wherein alkyl amines are reacted with optionally substituted 2-mercaptobenzthiazoles in the presence of oxygen or oxygen-containing gases and a copper compound consisting essentially of copper(I)benzthiazolyl-2-mercaptide, said process comprising:
forming a reaction mixture consisting of said alkyl amines, said optionally substituted 2-mercaptobenzthiazoles, said copper compound and at least one inert organic solvent; and contacting said reaction mixture with oxygen or oxygen-containing gases to form said bis-benzthiazolyl alkyl sulfenimides.

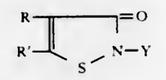
5,286,871

STABILIZED AQUEOUS SOLUTIONS OF 3-ISOTHIAZOLONES

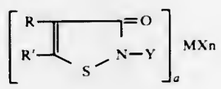
Hans-Jügen Schmidt, Speyer, Fed. Rep. of Germany, assignor to Thor Chemi GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 582,499, Sep. 14, 1990, Pat. No. 5,153,213. This application Apr. 14, 1992, Ser. No. 868,312
Claims priority, application European Pat. Off., Nov. 10, 1989, 89-120912.4
Int. Cl.[5] A01N *43/80*
U.S. Cl. 548—213 **12 Claims**

1. A stabilized composition comprising in intimate admixture:
(A) an aqueous solution comprising at least one 3-isothiazolone compound of the general Formula I or II.



(I)



(II)

wherein
Y is a hydrogen atom or an alkyl group of from 1 to 18 carbon atoms, an alkenyl or alkynyl group of from 2 to 8 carbon atoms, a cycloalkyl group of from 5 to 8 carbon atoms, an aralkyl group of from 7 to 11 carbon atoms or an aryl group of from 6 to 10 carbon atoms;
R and R' are each selected from hydrogen, halogen or an alkyl group of from 4 to 8 carbon atoms;
M is a cation selected from a metal cation, an ammonium cation or an ammonium cation substituted with at least one organic group, a pyridinium cation or a pyrimidinium cation;
X is an anion forming a compound with the cation M; and
a is 1 or 2 and n is a whole number which satisfies the valence of the cation M when completely reacted with anion X, alone, or in further combination with a stabilizer for I or II; and
(B) a small effective stabilizing amount for said 3-isothiazolone compound of at least 0.1 wt. %, based on the whole solution, of a manganese-free inorganic oxidizing agent comprising hydrogen peroxide, sodium perborate or a mixture thereof, in combination with a stabilizer for said oxidizing agent, with the proviso that the ratio of weight percent of hydrogen peroxide to weight percent of isothiazolone is no more than about 0.33 and the ratio of weight percent of sodium perborate to weight percent of isothiazolone is no more than about 1.33.

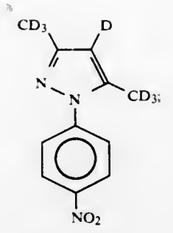
5,286,872

DEUTERATED PYRAZOLE COMPOUND

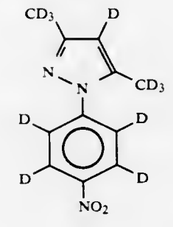
Masaki Okazaki; Nobuharu Nozaki, and Nobuhiko Uchino, all of Kanagawa, Japan, assignors to Fuji Film Co., Ltd., Kanagawa, Japan

Filed May 7, 1992, Ser. No. 879,350
Claims priority, application Japan, May 21, 1991, 3-144201
Int. Cl.[5] C07D *231/12*
U.S. Cl. 548—377.1 **3 Claims**

1. A 3,5-Dimethyl-1-(4-nitrophenyl) pyrazole selected from the group consisting of Compound 1 and Compound 3:



1.



3.

5,286,873

SUCCINIMIDE DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Stephen J. Cook, North Humberside, England, assignor to BP Chemicals (Additives) Limited, London, United Kingdom

Division of Ser. No. 583,451, Sep. 17, 1990, Pat. No. 5,145,984. This application May 12, 1992, Ser. No. 881,692
Claims priority, application United Kingdom, Sep. 21, 1989, 8921382
Int. Cl.[5] C07D *403/12*
U.S. Cl. 548—522 **11 Claims**

1. A product suitable as an oil dispersant additive which product is prepared by a process which comprises:
step (1) reacting compound (A), wherein compound (A) is a hydrocarbyl-substituted or a substituted hydrocarbyl-substituted succinic acid or anhydride or ester thereof, with compound B of formula (I)

$$H_2N(CHR^1CHR^2O)_nCHR^3CHR^4NH_2 \quad (I)$$

wherein one of R^1 and R^2 is hydrogen and the other is hydrogen or a lower alkyl group, n is an integer from 1 to 10, and one of R^3 and R^4 is hydrogen and the other is hydrogen or a lower alkyl group, each of the $-(CHR^1CHR^2O)-$ units being independently defined, to give a product (C) and
step (2) reacting product (C) with a diisocyanate (D) of formula (II)

$$OCN-R^5-NCO \quad (II)$$

wherein R^5 is a divalent hydrocarbyl group.

5,286,874

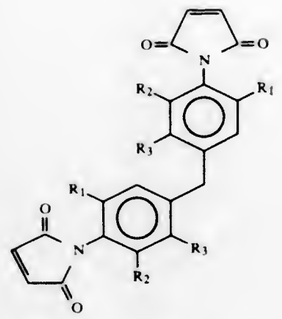
PROCESS FOR THE PRODUCTION OF BISMALEINIMIDE DERIVATIVES

Peter Hardt, Visp, and Theodor Völker, Reinach, both of, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Nov. 24, 1992, Ser. No. 981,060
Claims priority, application Switzerland, Nov. 28, 1991, 3486/91
Int. Cl.[5] C07D *207/24*
U.S. Cl. 548—522 **10 Claims**

1. A process for the production of a bismaleinimide derivative of formula:

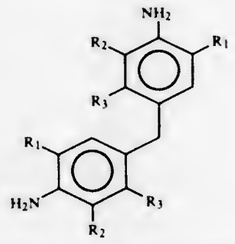
VOL 1159 ISS 3 FE 15 1994 UMI



wherein R_1 and R_2 are the same or different and each is a C_1–C_4-alkyl group, branched or unbranched and R_3 is a halogen or hydrogen atom, characterized in that, in a first step, maleic acid anhydride of formula:



is converted with a methylene-bis-aniline of formula:



wherein R_1, R_2 and R_3 have the above-mentioned meanings, in an unhalogenated aromatic hydrocarbon as solvent, into the corresponding amide acid and, in a second step, the amide acid is converted, without isolation, in the presence of an acid catalyst into the end product according to general formula I.

5,286,875

PREPARATION OF 5-HYDROXYETHYLPYRROLIDONES

Rolf Fischer, Heidelberg, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

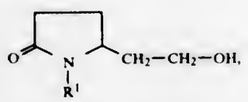
Filed Oct. 14, 1992, Ser. No. 960,776

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134303

Int. Cl.[5] **C07D** *207/26*

U.S. Cl. 548—547 **3 Claims**

1. A process for preparing a 5-hydroxyethylpyrrolidone of the general formula I



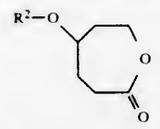
(I)

where

R^1 is hydrogen, C_1- to C_{12}-alkyl, C_3- to C_8-cycloalkyl, aryl or C_7- to C_{12}-aralkyl,

which comprises reacting

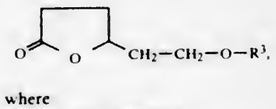
a) a caprolactone of the general formula II



(II)

or

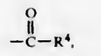
b) a butyrolactone of the general formula III



(III)

where

R^2 is C_1- to C_{12}-alkyl or



R^3 has the meaning of R^2 and is additionally hydrogen, and

R^4 is C_1- to C_8-alkyl or phenyl,

with ammonia or a primary amine of the general formula IV

(IV)

where R^1 has the abovementioned meanings, at from 150° to 450° C. and 10 to 350 bar.

5,286,876

PROCESS FOR OBTAINING 1-VINYL-3(E)-ETHYLIDENE PYRROLIDONE

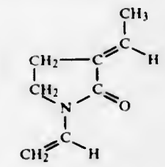
Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 31, 1993, Ser. No. 40,807

Int. Cl.[5] **C07D** *207/267, 207/263*

U.S. Cl. 548—552 **7 Claims**

1. A process for obtaining the isomeric compound 1-vinyl-3(E)-ethylidene pyrrolidone having the formula:



in a purity of at least 95%, in the form of white, needle-shaped, crystals having a melting point of 59°–61° C., which consists essentially of:

(a) forming a 2-phase reaction mixture by charging a reactor with an organic phase of vinylpyrrolidone in an amount of about 25–90% by weight of the mixture, and an aqueous phase which is a solution containing 2–50 wt. % of a strong base, under vigorous agitation, in an insert atmosphere,

(b) heating said mixture at about 120°–170° C. for about 0.5–10 hours, and

(c) recovering said compound from the reaction product.

5,286,877

SYNTHESIS OF 1,4-DIDEOXY-1,4-IMINO-L-ARABINITOL

James R. Behling, Lindenhurst; John R. Medich, Des Plaines; Kevin A. Babiak, Evanston, all of Ill., and George W. J. Fleet, Oxford, United Kingdom, assignors to G. D. Searle & Co., Skokie, Ill.

Filed Feb. 1, 1993, Ser. No. 12,077

Int. Cl.[5] **C07D** *207/12, 207/24, 207/36*

U.S. Cl. 548—556 **5 Claims**

1. A method for the chemical synthesis of 1,4-dideoxy-1,4-imino-L-arabinitol from D-lyxonolactone comprising:

a) introducing a protecting group at C-3 and C-5 by reacting D-lyxonolactone with benzaldehyde to give the corresponding benzylidine derivative,

b) esterifying the benzylidine derivative at C-2 with mesyl chloride to give the corresponding mesylate,

c) reducing the mesylate with lithium borohydride to open up the ring and give the corresponding D-lyxitol,

d) reacting the D-lyxitol with potassium carbonate in alcoholic solution to give the corresponding C-1/C-2 epoxide,

e) esterifying the epoxide with triflic anhydride to give the corresponding triflate ester,

f) introducing the azide group at C-4 in the triflate ester to give the corresponding azidoepoxide,

g) reducing the azide group of azidoepoxide by catalytic hydrogenation to provide the corresponding amine,

h) reacting the amine with tetrabutylammonium iodide to provide ring closure to the desired pyrrolidine structure and give the protected 1,4-dideoxy-1,4-imino-L-arabinitol,

i) removing the benzylidine protecting group of the protected 1,4-dideoxy-1,4-imino-L-arabinitol by acid hydrolysis to give the desired 1,4-dideoxy-1,4-imino-L-arabinitol.

5,286,878

CATALYTIC REDUCTION OF ORGANIC CARBONYLS

Stephen L. Buchwald, Somerville; Kristina A. Kreutzer, Cambridge, both of Mass., and Esther Spaltenstein, Raleigh, N.C., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 21, 1990, Ser. No. 616,892

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] **C07P** *207/06, 207/20;* **C07C** *33/22, 29/132, 29/147*

U.S. Cl. 548—577 **12 Claims**

1. A process for catalytically reducing organic carbonyl compounds, comprising the steps of:

providing a catalytic amount of an active species of a catalyst selected from the group consisting of a group 4, 5 or 6 metal which is capable of being converted to a complex in less than its maximum oxidation state, a complex of a group 4, 5 or 6 metal in less than its maximum oxidation state, and a group 4, 5 or 6 metal hydride;

adding to the catalyst a stoichiometric amount of a silane compound able to contribute a hydride ion during the reduction reaction;

reacting an organic carbonyl substrate selected from the group consisting of acyclic esters, cyclic esters, and amides with the silane compound in the presence of said catalyst at a temperature of between about room temperature and 60° C.; and

recovering and purifying the reaction product.

5,286,879

PROCESS FOR THE PREPARATION OF MONO-CONDENSATION DERIVATIVES OF ADIPIC ACID

James C. Letton, and Larry E. Miller, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 5, 1992, Ser. No. 956,926

Int. Cl.[5] **C07D** *305/00;* **C07C** *229/00, 205/00*

U.S. Cl. 549—231 **29 Claims**

1. A process for preparing mono-condensation derivatives of adipic acid comprising the following steps:

(a) forming at least about 85% pure cyclic monomeric adipic anhydride by depolymerization and concentration starting from the polymeric adipic anhydride; and

(b) adding a condensation reactant having a primary active hydrogen to the cyclic monomeric adipic anhydride to form a mono-condensation derivative of adipic acid;

wherein the molar ratio of cyclic monomeric adipic anhydride to the condensation reactant is from about 1:1 to about 1:0.7.

5,286,880

DIRECT FLUORINATION PROCESS FOR MAKING PERFLUORINATED ORGANIC SUBSTANCES

Michael G. Costello, and George G. I. Moore, both of Afton, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 278,965, Dec. 2, 1988, abandoned. This application Nov. 13, 1990, Ser. No. 612,306

Int. Cl.[5] **C07C** *53/21, 69/63*

U.S. Cl. 549—266 **11 Claims**

1. Perfluoro(2-ethoxy-2-ethoxyethyl acetate).

5,286,881

PROCESS FOR PRODUCING BENZODIFURANONE COMPOUNDS USEFUL FOR DYEING OR PRINTING HYDROPHOBIC FIBER MATERIALS

Junichi Sekihachi; Jun Yamamoto, both of Osaka, and Yutaka Kayane, Nara, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

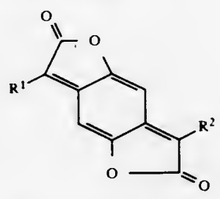
Continuation of Ser. No. 639,089, Jan. 9, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 953,767

Claims priority, application Japan, Jan. 12, 1990, 2-5223

Int. Cl.[5] **C07D** *307/91, 495/02, 403/12, 405/12*

U.S. Cl. 549—299 **16 Claims**

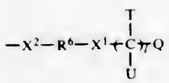
1. A process for producing benzodifuranone compound of the following formula (I),



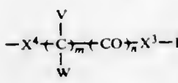
(I)

wherein R^1 and R^2 are each independently a naphthyl group, an unsubstituted phenyl group or a phenyl group substituted with one or more substituents selected from the group consisting of nitro, halo, alkyl, alkoxyl, phenyl, alkoxyphenyl, phenoxy, hydroxyl, cyano, carbgoxyl, alkoxycarbonyl, phenoxycarbonyl, carbamoyl, sulfo, chlorosulfonyl, alkoxysulfonyl, phenoxysulfonyl, sulfamoyl, mercapto, alkylthio, phenylthio, amino, alkylamino, acylamino, phospho, alkylphosphonyl, phenylphosphonyl, alkylsulfonyl, phenylsulfonyl, formyl, azo and a group represented by the formula (i) or (ii),

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(i)

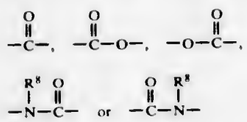


(ii)

wherein R^6 is a methylene group or a straight or branched C_2–C_6 alkylene group which may be substituted by hydroxyl group, an alkoxyl group or an alkylcarbonyloxy group, X^1 is a direct linkage or a divalent group of —O—, —S—, —SO—, $—SO_2—$,



in which R^8 is a hydrogen atom or an alkyl group,



in which R^8 is as defined above, X^2 is —O— or

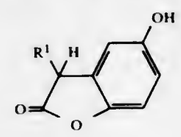


in which R^8 is as defined above, T and U are each independently a hydrogen atom or an alkyl group, l is 0 or an integer of 1 to 3, Q is a 5-, 6- or 7-membered saturated or unsaturated heterocyclic ring residue having from 1 to 3 hetero atoms, said hetero atom being selected from the group consisting of nitrogen, sulfur and oxygen, said heterocyclic ring residue being unsubstituted or substituted once or twice by halogen, hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylcarbonyl, C_1 to C_4 alkoxycarbonyl, cyano, or primary, secondary, or tertiary amine which is unsubstituted or substituted by C_1 to C_4 alkyl or keto, wherein said heterocyclic ring may be condensed with benzene or a 5- or 6-membered heterocyclic ring having 1 to 2 hetero atoms selected from the group consisting of nitrogen and sulfur, R^7 is an alkyl group, X^3 is —O— or —S—, X^4 is —— or



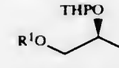
in which R^8 is as defined above, U and W are each independently a hydrogen atom or an alkyl group, m is an integer of 1 to 3, n is 0 or 1, provided that m+n is at least 2,

which process comprises allowing benzofuran compound of the following formula (II),



(II)

wherein R^1 is as defined above, to react with an acetonitrile compound of the following formula (III),



(III)

wherein R^2 is as defined above, and L is $—COR^3$, $—CO_2R^4$ or $—SO_2R^5$ in which R^3, R^4 and R^5 are each independently an alkyl or phenyl group, in the presence of at least one acid catalyst, followed by oxidation in the presence of at least one oxidizing agent.

5,286,882

POLYETHERCYCLICPOLYOLS FROM EPIHALOHYDRINS, POLYHYDRIC ALCOHOLS AND METAL HYDROXIDES OR EPOXY ALCOHOL AND OPTIONALLY POLYHYDRIC ALCOHOLS WITH ADDITION OF EPOXY RESINS

Anne H. Zuzich, and George C. Blytas, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 960,035
Int. Cl.[5] C07D *319/12*
U.S. Cl. 549—378 **5 Claims**

1. A method for forming a polyetherpolycyclicpolyol, comprising:

a) reacting an epihalohydrin, an alkali and/or alkaline earth metal hydroxide, and a polyol reactant selected from the group consisting of (1) a polyol having at least two hydroxyl groups, (2) precursors of the polyol, (3) cyclic derivatives of the polyol, and (4) mixtures thereof, wherein the said polyol reactant and the metal hydroxide are first mixed and heated to form a first mixture, the epihalohydrin is added to the first mixture to form a second mixture, an epoxy resin is added concurrently with or subsequently to the epihalohydrin addition to form a final mixture; and

b) heating of the final mixture is continued until the reaction is substantially complete.

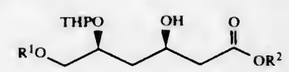
5,286,883

(3R,5S)-3,5,6-TRIHYDROXYHEXANOIC ACID DERIVATIVE AND PRODUCTION METHOD THEREOF

Kazutoshi Sakurai; Shigeru Mitsuhashi, and Hidenori Kumobayashi, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

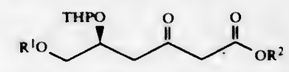
Filed Nov. 13, 1992, Ser. No. 976,498
Claims priority, application Japan, Aug. 13, 1992, 4-216070
Int. Cl.[5] C07D *309/12*
U.S. Cl. 549—420 **1 Claim**

1. A method of producing a (3R,5S)-3,5,6-trihydroxyhexanoic acid derivative represented by formula (1)



(1)

wherein R^1 represents a tert-butyl group or a benzyl group; R^2 represents a lower alkyl group; and THP represents a tetrahydropyranyl group, which comprises the step of enantioselectively hydrogenating an (S)-5,6-dihydroxy-3-oxohexanoic acid derivative represented by formula (2)

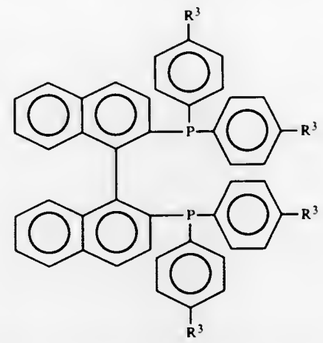


(2)

wherein R^1, R^2, and THP have the same meaning as described above, with a ruthenium-optically active phosphine complex represented by formula (3) as a catalyst

$$Ru_2X_4[(R)—R^3—BINAP]_2N(CH_2CH_3)_3 \quad (3)$$

[wherein R^3-BINAP represents a tertiary phosphine represented by formula (4)



(4)

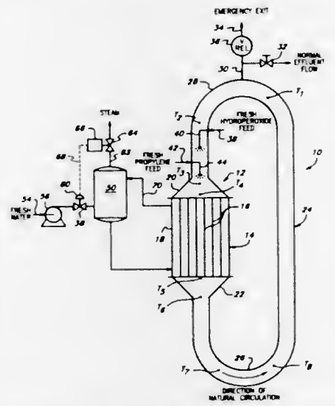
wherein R^3 represents a hydrogen atom or a lower alkyl group; and X represents a chlorine atom or a bromine atom.

5,286,884

THERMOSYPHONIC REACTION OF PROPYLENE WITH TERTIARY BUTYL HYDROPEROXIDE AND REACTOR

Roderick S. Cowley, The Hague, Netherlands, and Darrell D. Kinzler, Framingham, Mass., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 24, 1992, Ser. No. 918,108
Int. Cl.[5] C07D *301/19, 303/04*
U.S. Cl. 549—529 **10 Claims**



1. A method for continuously catalytically exothermically reacting propylene with tertiary butyl hydroperoxide in solution in tertiary butyl alcohol to form propylene oxide, additional tertiary butyl alcohol and by-products, which comprises:

a. continuously thermosyphonically circulating a reaction mixture stream comprising a tertiary butyl alcohol solution of catalyst, reacting propylene, reacting tertiary butyl hydroperoxide, propylene oxide and reaction by-products around a thermosyphonic reactor,

b. continuously removing heat from said circulating stream of reaction mixture in a heat exchange zone in said reactor,

c. continuously passing said circulating stream of reaction mixture through an adiabatic zone in said reactor to progressively increase the temperature of said circulating stream,

d. whereby the temperature of the circulating stream will be lower and the density of the circulating stream will be lower in said adiabatic zone than in said heat exchange zone to thereby provide thermosyphonic circulation of said stream,

e. continuously charging a hydroperoxide feed stream composed of a tertiary butyl alcohol solution containing a predetermined quantity of tertiary butyl hydroperoxide and catalyst and a propylene feed stream to said reactor upstream of said heat exchange zone at predetermined injection rates, and

f. continuously withdrawing or displacing a stream of said reaction mixture from said reactor upstream of said hydroperoxide feed stream and said propylene feed stream at a rate sufficient to maintain a predetermined volume of said reaction mixture in said reactor,

g. whereby continuous thermosyphonic circulation of said reaction mixture and continuous mixing of said feed streams with said reaction mixture can be accomplished without the use of externally driven mixers and circulators.

5,286,885

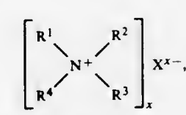
PROCESS FOR PREPARING GLYCIDE BY EPOXIDATION USING POLYMERIC ORGANOSILOXANE AMMONIUM SALTS OF OXOACIDS OF THE ELEMENTS V, NB, TA, MO, AND W

Peter Goetz, Rosbach; Stefan Wieland, Offenbach; Peter Panster, Rodenbach; Gustaaf Goor, Hanau, and Rainer Siegmeier, Bad Homburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 809,447, Dec. 19, 1991. This application Apr. 28, 1993, Ser. No. 53,248
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 4040568
Int. Cl.[5] C07D *301/12, 303/14*
U.S. Cl. 549—531 **14 Claims**

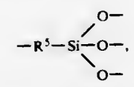
1. A process for preparing glycide by epoxidation of allyl alcohol, comprising:

contacting a mixture of allyl alcohol, water and hydrogen peroxide with a fixed catalytic bed to thereby form glycide, wherein the catalytic bed includes a polymeric organosiloxane ammonium salt of an oxo acid having a silica-like skeleton, the salt having units of Formula (I):



(I)

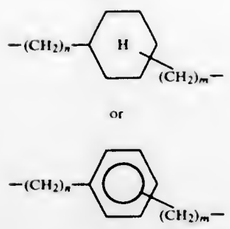
wherein R^1 and R^2 are identical or different and represent a group of Formula (II):



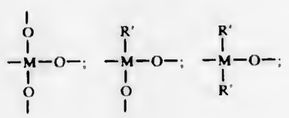
(II)

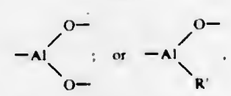
wherein the nitrogen atom in Formula (I) is connected via the R^5 group to the silicon atom in Formula (II), and R^5 is chosen from the group consisting of an alkylene group with 1 to 10 carbon atoms, a cycloalkylene group with 5 to 8 carbon atoms and a unit of one of the formulae:

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wherein n is a number from 1 to 6 and indicates the number of methylene groups in the nitrogen position and m is a number from 0 to 6; the free valences of the oxygen atoms bound to the silicon atom in Formula (II) are saturated by silicon atoms of additional groups of Formula (II) and/or with metal atoms of one or several of the cross-linking bridge-type cross links:





wherein M is a silicon, titanium or zirconium atom and R′ is a linear or branched alkyl group with 1 to 5 carbon atoms, and the ratio of the silicon atoms from the groups of Formula (II) to the metal atoms in the bridge-type cross links is from 1:0 to 1:10; wherein R^3 is selected from the group consisting of R^1, R^2, hydrogen, a linear or branched alkyl group of 1 to 20 carbon atoms, a cycloalkyl group having 5 to 8 carbon atoms, and a benzyl group; R^4 is selected from the group consisting of hydrogen, a linear or branched alkyl group with 1 to 20 carbon atoms, a cycloalkyl group, a benzyl group, an allyl group, a propargyl group, a chloroethyl group, a hydroxyethyl group, and a chloropropyl group; and X is an oxo anion with a charge number a, wherein X is an anion of a monooxoacid, an isopolyoxoacid or a heteropolyoxo acid of the elements vanadium, niobium, tantalum, molybdenum or tungsten, wherein one or several oxo groups of the anion may be replaced by a peroxo group, and wherein an element selected from the series of boron, silicon, germanium, phosphorus, arsenic, iodine, tellurium, tin, titanium, zirconium, hafnium and cerium functions as a heteroatom in the heteropolyoxy acids.

5,286,886

METHOD OF REFINING GLYCERIDE OILS

Robert L. Van de Sande, Prinsenbeek; Jacobus C. Segers, Nieuwekerk a/d IJssel, both of Netherlands, and Jannes G. Lammers, Retthorn Ganderkesee, Fed. Rep. of Germany, assignors to Van den Bergh Foods, Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 368,694, Jun. 20, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 22,801

Claims priority, application United Kingdom, Jun. 21, 1988, 8814732

Int. Cl.[5] C09F *5/10*

U.S. Cl. 554—192 **6 Claims**

1. A method of refining a degummed glyceride oil comprising the steps of (i) adding alkali to the degummed oil in an amount equivalent to about 0.01 to 100% of free fatty acids present in the degummed oil, and cooling to a temperature below 40° C. for such a time period as to cause agglomeration of undissolved particles, and (ii) thereafter removing the undissolved particles from the degummed oil.

5,286,887

POLYMERS OF MACROCYCLIC METAL CHELATORS AND METHODS FOR THE PREPARATION AND USE THEREOF

Teddy G. Traylor, La Jolla, and Young S. Byun, San Diego, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Sep. 24, 1991, Ser. No. 764,593

Int. Cl.[5] C07F *15/02*; C08G *65/22, 59/00, 73/06*

U.S. Cl. 556—1 **16 Claims**

1. A polymer comprising at least one macrocyclic metal chelator as a repeating monomeric unit, said macrocyclic metal chelator monomeric unit being derived from a monomer containing at least one leaving group substituent which is labile for aromatic nucleophilic substitution and at least one electronegative substituent.

5,286,888

RUTHENIUM-PHOSPHINE COMPLEX AND PROCESS FOR PRODUCING OPTICALLY ACTIVE 1-SUBSTITUTED-1,3-PROPANEDIOLS USING THE SAME AS A CATALYST

Noboru Sano; Noboru Sayo, and Hidenori Kumobayashi, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,904

Claims priority, application Japan, Oct. 22, 1991, 3-274008

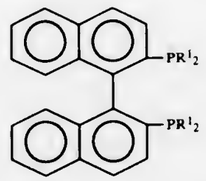
Int. Cl.[5] C07F *15/00, 9/50*

U.S. Cl. 556—21 **8 Claims**

1. A ruthenium-phosphine complex represented by formula (I):

$$[RuI(p\text{-cymene})(R^1\text{-BINAP})]I_3 \quad (I)$$

wherein R^1-BINAP represents a tertiary phosphine represented by formula (II):



(II)

wherein R^1 represents a phenyl group which may be substituted with a lower alkyl group or a fluorine, chlorine, bromine or iodine atom at the p-position, the m-position or both the p-position and the m-position.

5,286,889

TRANSMETALATIONS FROM ZIRCONIUM TO COPPER INTERMEDIATES

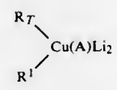
Bruce H. Lipshutz, and Edmund L. Ellsworth, both of Goleta, Calif., assignors to Regents of the University of California, Oakland, Calif.

Division of Ser. No. 932,091, Aug. 19, 1992, abandoned, which is a division of Ser. No. 747,772, Aug. 20, 1991, Pat. No. 5,166,382, which is a division of Ser. No. 504,370, Apr. 4, 1990, Pat. No. 5,072,010. This application Feb. 22, 1993, Ser. No. 20,492

Int. Cl.[5] C07F *1/08*; C07D *309/00*

U.S. Cl. 556—28 **6 Claims**

1. In a method for preparing a cuprate complex of general formula I



I

wherein

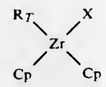
R_T is a 1-alkenyl ligand;

R^1 is different from R_T and is selected from the group consisting of alkyl, alkenyl, alkynyl, allylic, benzylic and heterocyclic moieties, $—BR^3$ wherein B is O or S and R^3 is an alkyl, alkenyl, alkynyl, allylic, aryl, benzylic or heterocyclic moiety, and $—NR^4R^5$ wherein R^4 and R^5 are the same or different and each is an alkyl, alkenyl, alkynyl, allylic, aryl, benzylic or heterocyclic moiety, said moieties being unsubstituted or substituted by non-interfering substituents; and

A is CN or SCN;

wherein R_T is derived from a corresponding 1-alkyne, the improvement which comprises:

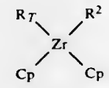
(a) reacting said 1-alkyne with a compound of the formula $Cp_2Zr(H)Cl$, wherein Cp represents a cyclopentadienyl moiety which is unsubstituted or substituted by non-interfering substituents, to form a zirconium intermediate of general formula II



II

wherein X is Cl, and Cp and R_T are as previously defined;

(b) reacting said zirconium intermediate of general formula II with a compound of general formula R^2Li, wherein R^2 is defined in the same manner as R^1 and may be the same as or different from R^1, to prepare an intermediate of general formula III



III

wherein R_T and R^2 are as previously defined; and

(c) reacting the intermediate of general formula III with a cuprate reagent of formula $R^1{}_2Cu(A)Li_2$, wherein R^1 and A are as previously defined, both R_1 being the same or different, to provide the compound of general formula I via ligand exchange from zirconium to copper.

5,286,890

AROMATIC AMINE TERMINATED SILICONE MONOMERS, OLIGOMERS, AND POLYMERS THEREFROM

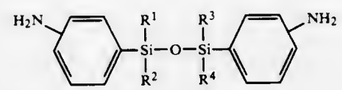
Thomas K. Dougherty, Playa Del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 16, 1992, Ser. No. 870,432

Int. Cl.[5] C07F *7/04, 7/10*

U.S. Cl. 556—425 **32 Claims**

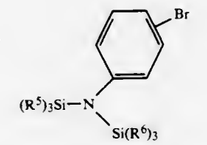
1. A process for forming a compound having Formula 1



Formula 1

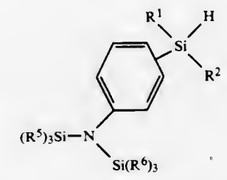
wherein R^1, R^2, R^3, and R^4 are independently C_1 to C_6 alkyl, phenyl, or phenyl substituted with one or more alkyl or halogen groups, comprising the steps of:

(a) reacting a bromoaniline compound with a chosen silating agent to form a compound having the formula

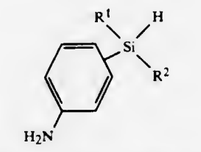


where R^5 and R^6 are each a C_1 to C_4 alkyl group or where the group $-NSi(R^5)_3Si(R^6)_3$ is 2,2,5,5-tetramethyl-1-aza-2,5-disilacyclopentane;

(b) reacting the compound formed in Step "a" with an alkyllithium compound or magnesium, followed by reaction with a chosen halogenated silane compound to form a compound having the formula

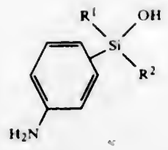


(c) hydrolyzing the compound formed in Step "b" in the presence of acid or base to form a compound having the formula



(d) hydrolyzing the compound formed in Step "c" to form a compound having the formula

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and

(e) condensing the compound formed in Step "d" to form the compound having Formula I.

5,286,891

HYDROXY-TERMINATED POLYSILANE AND PROCESS FOR MAKING

Eiichi Tabei, and Shigeru Mori, both of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,482
Claims priority, application Japan, Jan. 21, 1992, 4-030104
Int. Cl.[5] C07F 7/08
U.S. Cl. 556—430 **15 Claims**

1. A hydroxy-terminated polysilane of the formula:

$$OH[(R^1R^2Si)_n(R^3R^4Si)_m]_kOH$$

wherein R^1, R^2, R^3 and R^4 are independently monovalent hydrocarbon groups having 1 to 12 carbon atoms selected from substituted or unsubstituted alkyl and aryl groups,

letters n, m and k are numbers in the range: $0 \leqq n \leqq 10$, $0 \leqq m \leqq 10$, $n+m \geqq 10$, and $k \geqq 1$.

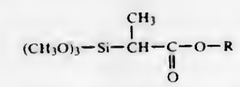
5,286,892

2-TRIMETHOXYSILYLPROPIONATE

Masatoshi Arai; Takafumi Sakamoto; Yoshifumi Inoue, and Kei Miyoshi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 985,868
Claims priority, application Japan, Dec. 4, 1991, 3-348138
Int. Cl.[5] C07F 7/08, 7/18
U.S. Cl. 556—438 **1 Claim**

1. A 2-trimethoxysilylpropionate represented by the following formula (1):



(1)

wherein R represents the 2-ethylhexyl group.

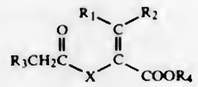
5,286,893

ALKENOIC ACID COMPOUNDS FOR MECHANISM-BASED INACTIVATION OF DEHYDROPEPTIDASE ACTIVITY

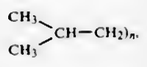
Shahriar Mobashery, Flint, Mich., assignor to Board of Governors of Wayne State University, Detroit, Mich.

Division of Ser. No. 651,465, Feb. 6, 1991, Pat. No. 5,112,751. This application Jan. 28, 1992, Ser. No. 826,996
Int. Cl.[5] C07C 255/17, 57/03
U.S. Cl. 558—445 **15 Claims**

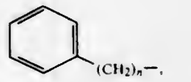
1. An alkenoic acid compound of the formula:



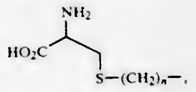
wherein R_1 is selected from the group consisting of hydrogen, $CH_3(CH_2)_n$— wherein n=0 to 7,



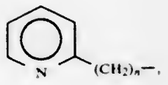
wherein n=1 to 6,
$CH_3S(CH_2)_n$—, wherein n=1 to 6,
$CH_3O(CH_2)_n$—, wherein n=1 to 6,



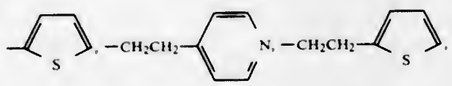
wherein n=0 to 6,
Y—$(CH_2)_n$—, wherein y=halide and n=0 to 6,

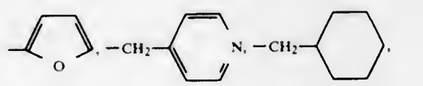


wherein n=0 to 4,

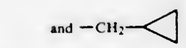


wherein n=0 to 6,





and



R_2 is hydrogen, R_3 is selected from the group consisting of cyano and halomethylene with halide selected from the group consisting of fluoro, chloro and bromo moieties, X is selected from the group consisting of —O—, —CH_2— and —NH— moieties, R_4 is hydrogen and wherein the compound inactivates a peptidase irreversibly.

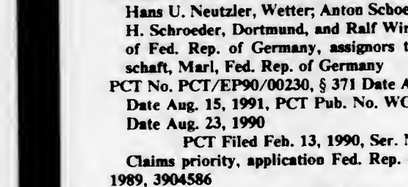
5,286,894

FUNGICIDES

Michael J. Bushnell; Kevin Beautement, both of Wokingham; John M. Clough, High Wycombe; Vivienne M. Anthony, Upminster; Paul deFraine, Wokingham, and Christopher Godfrey, Bracknell, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 786,803, Oct. 11, 1985. This application Jul. 2, 1992, Ser. No. 907,573
Claims priority, application United Kingdom, Oct. 19, 1984, 8426473; Dec. 20, 1984, 8432265; May 23, 1985, 8513104; May 23, 1985, 8513115
Int. Cl.[5] C07C 69/76
U.S. Cl. 560—55 **1 Claim**

1. A compound of the formula:



wherein R^1 is methyl; Y and Z are both hydrogen; and X is ortho to the $R^1O_2CC{=}CH_2$ group and is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, alkoxy, haloalkoxy or optionally substituted arylalkoxy, with the proviso that X is not CH_3O—.

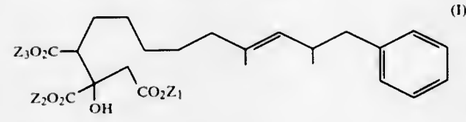
5,286,895

CHOLESTEROL LOWERING COMPOUNDS

Guy H. Harris, Cranford, N.J.; and Henry Joshua, Staten Island, N.Y., Deborah L. Zink, Manalapan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 837,799, Feb. 19, 1992, abandoned. This application Dec. 7, 1992, Ser. No. 987,094
Int. Cl.[5] C07C 69/76
U.S. Cl. 560—60 **13 Claims**

1. A compound of structural formula (I)



(I)

wherein

Z_1, Z_2 and Z_3 are each independently selected from;

a) H;

b) $C_{1\text{-}5}$alkyl;

c) $C_{1\text{-}5}$alkyl substituted with

a member of the group consisting of:

i) phenyl,

ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy; or

a pharmaceutically acceptable salt of a compound of of formula (I).

5,286,896

PROCESS FOR THE PRODUCTION OF DMT-INTERMEDIATE PRODUCT OF SPECIFIC PURITY

Hermann-Josef Korte, Niederkassel; Anton Miletic, Troisdorf; Hans U. Neutzler, Wetter; Anton Schoengen, Witten; Johann H. Schroeder, Dortmund, and Ralf Wirges, Niederkassel, all of Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

PCT No. PCT/EP90/00230, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO90/09367, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 13, 1990, Ser. No. 761,768
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904586
Int. Cl.[5] C07C 67/39
U.S. Cl. 560—77 **9 Claims**

1. A process for the production of a DMT intermediate product intended for working up to medium pure or pure dimethyl terephthalate (DMT) and/or medium pure or pure terephthalic acid (TA), the intermediate product having a total content of impurities of less than 1% by weight and a terephthalaldehydic acid methyl ester (TAE) content of less than 100 ppm, comprising:

(a) jointly oxidizing a mixture containing predominantly para-xylene (p-X) and paratoluic acid methyl ester (p-TE) in the liquid phase with an oxygen-containing gas;

(b) esterifying the acids produced in the oxidative step (a) with methanol;

(c) distilling the reaction mixture produced in the esterification step (b) into:

(I) a p-TE rich fraction,

(II) a fraction containing more than 99% by weight DMT and its isomers, and

(III) a high boiling residue fraction; and

(d) recycling the p-TE fraction I to oxidation step (a), wherein the residue fraction III has a DMT content of 15 to 70% by weight and the DMT fraction II is purified by single solvent recrystallization to the DMT intermediate product such that the amounts of hydroxymethyl-benzoic acid methyl ester (HM-BME) and terephthalaldehydic acid methyl ester (TAE) amount together to less than 200 ppm in the DMT intermediate product.

5,286,897

N-T-BUTYLOXYCARBONYL-3-CYCLOHEXYL-L-ALANINE METHYL ESTER IN CRYSTALLINE FORM

Masahiko Kurauchi, and Tohru Nakamura, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 813,692, Dec. 27, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 923,537
Claims priority, application Japan, Dec. 28, 1990, 2-418803
Int. Cl.[5] C07C 261/00
U.S. Cl. 560—115 **12 Claims**

1. A method for the production of crystalline N-t-butyloxycarbonyl-3-cyclohexyl-L-alanine methyl ester, comprising adding an organic solvent to oily N-t-butyloxycarbonyl-3-cyclohexyl-L-alanine methyl ester at a temperature of from greater than 20° C. to 50° C. to provide a mixture, cooling said mixture to a temperature of from 0° C. to 20° C., and separating said crystalline N-t-butyloxycarbonyl-3-cyclohexyl-L-alanine methyl ester.

5,286,898

LOW PRESSURE PROCESS FOR THE HYDROGENATION OF DIMETHYL BENZENEDICARBOXYLATES TO THE CORRESPONDING DIMETHYL CYCLOHEXANEDICARBOXLATES

Bruce L. Gustafson; Brent A. Tennant; Yeong-Jen Kuo, and Timothy W. Price, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1993, Ser. No. 76,675
Int. Cl.[5] C07C 69/74
U.S. Cl. 560—127 **8 Claims**

1. Process for the preparation of a dimethyl cyclohexanedicarboxylate which comprises contacting a dimethyl benzenedicarboxylate with hydrogen at a temperature of about 140° to 400° C. and a pressure of about 10 to 200 bars absolute in the presence of a supported catalyst comprising palladium and a second Group VIII metal selected from nickel, platinum, ruthenium or a mixture thereof deposited on an alumina support; wherein

(1) palladium comprises about 0.1 to 5.0 weight percent of the catalyst;

(2) the palladium dispersion is at least 15 percent;

(3) at least 90 weight percent of the palladium is located on the alumina at a depth less than 200 microns from the surface of the alumina;

(4) the second Group VIII metal selected from nickel, platinum, ruthenium or a mixture thereof comprises about 0.001 to 1 weight percent of the catalysts; and

(5) the crystalline phase of the alumina is alpha, theta, delta, gamma, eta or a mixture thereof.

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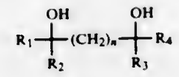
5,286,899

PROCESS FOR THE STEREOSELECTIVE TRANSFORMATION OF A DIOL TO AN ALCOHOL

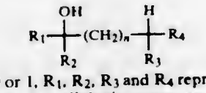
Yun Gao, Framingham, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 631,808, Dec. 21, 1990, Pat. No. 5,189,200. This application Aug. 27, 1992, Ser. No. 936,437
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] **C07C** *69/675, 29/132, 59/245*
U.S. Cl. 560—180 **30 Claims**

1. A method of transforming a compound of the formula I to a compound of the formula II



I



II

in which n=0 or 1, R_1, R_2, R_3 and R_4 represent independently a hydrogen atom, an aliphatic group, an aromatic group, an aromatic heterocyclic group selected from the group consisting of imidazolino, furanyl, thienyl, thiazolyl, pyridinyl and pyrazinyl, and an aliphatic heterocyclic group selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, morpholino, piperidinyl and pyrrolidino or a carbonyl-containing group of the formula COY in which Y represents a hydrogen atom, a halogen atom, any of the groups recited previously for R_1-R_4 or a group of the formula $W(R_5)m$
in which W represents a nitrogen atom, an oxygen atom or a sulfur atom and R_5 represents a hydrogen atom or any of the groups recited previously for R_1-R_4 provided that when W represents a nitrogen atom, m is equal to 2 and when W represents an oxygen atom or a sulfur atom, m is equal to 1 and R_5 may not be a hydrogen atom, comprising:

(a) allowing a compound of the formula I to react with a thionyl halide to form a cyclic sulfite;

(b) allowing said cyclic sulfite to react with a halide salt to form a halo-substituted acyclic sulfite; and

(c) allowing said halo-substituted acyclic sulfite to react with a reducing agent to provide a compound of the formula II.

5,286,900

PROCESS FOR PREPARING ACETIC ACID, METHYL ACETATE, ACETIC ANHYDRIDE OR MIXTURES THEREOF

John B. Hansen, Helsingor; Finn H. Joensen, Horsholm, and Haldor F. A. Topsoe, Vedbaek, all of Denmark, assignors to Haldor Topsoe A/S, Lyngby, Denmark

Continuation of Ser. No. 213,584, Jun. 30, 1988, Pat. No. 5,189,203. This application Sep. 4, 1992, Ser. No. 940,987
Claims priority, application Denmark, Jun. 30, 1987, 3348/87
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] **C07C** *67/36*
U.S. Cl. 560—232 **6 Claims**

1. A process for preparing an acetic acid product selected from the group consisting of acetic acid, methyl acetate, acetic anhydride and mixtures thereof by conversion of a synthesis gas comprising hydrogen and carbon oxides, said process comprising the steps of:

(i) introducing said synthesis gas into a first reactor at a pressure of 5–200 bar and a temperature of 150°–400° C., and converting said synthesis gas therein in the gas phase into methanol and dimethyl ether in the presence of a catalyst selected from the group consisting of a mixture of CuO-ZnO-Al_2O_3 having a composition of about 60 atom% Cu, 25 atom% Zn and 15 atom% Al, and a zeolite so as to obtain a mol proportion 0.1:1 to 3:1 of carbon monoxide to methanol plus dimethyl ether, said mol proportion being defined by the expression $CO/(CH_3OH+2\,CH_3OCH_3)$, and then

(ii) carbonylating the methanol and dimethyl ether formed in step (i) together by passing the effluent from the first reactor to a second reactor and converting methanol and dimethyl ether therein in a fluid phase to said acetic acid product at a pressure of 1–800 bar and a temperature of 100°–500° C. in the presence of a catalyst, the catalyst including a rhodium compound as a catalytic active material and the catalyst being promoted with methyl iodide and then

(iii) recovering from effluent of said second reactor at least one product stream, the product stream consisting of either the acetic acid, the methyl acetate, the acetic anhydride or mixtures thereof.

5,286,901

PRESCURSORS FOR AND SYNTHESIS OF MONO- AND DIFUNCTIONALIZED ACETYLENES AND DIFUNCTIONAL 1,3-DIYNES

Peter J. Stang; Charles M. Crittell; Bobby L. Williamson, and Viktor Zhdankin, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 491,328, Mar. 9, 1990, abandoned. This application Jul. 19, 1991, Ser. No. 732,663
Int. Cl.[5] **C07C** *309/00*
U.S. Cl. 562—40 **11 Claims**

1. A mixed iodonium sulfonate compound having the structure

$$\text{Phenyl-I}^{+}\text{(X)}\cdot{}^{-}\text{OSO}_2\text{R}$$

wherein R is selected form the group consisting of $-CF_3$, n-C_4F_9, and p-$CH_3C_6H_4$; and X is selected from the group consisting of OAc, NHAc, NCO, CN, and C≡CR'; wherein R' may be any one of the following, a lower alkyl group, a phenyl group, a halogen, a keto, arylketo, alkylketo, amidoketo, esterified keto, arylsulfone group, an amino group, an alkoxy group where the alkyl is a lower alkyl group, a silyl or tri-alkylsilyl where the alkyl is a lower alkyl group, an alkyl-O-CH_2 where the alkyl is a lower alkyl group, or an arylalkyl group or arylaklyl substituted with a functional group selected from the class consisting of a lower alkyl group, a phenyl group, a halogen, an amino group, a nitrate group, or a sulfonate group.

5,286,902

PROCESS FOR PREPARATION OF 2-(6-METHOXY-2-NAPHTHYL)PROPIONIC ACID AND INTERMEDIATES THEREFOR UTILIZING 2,6-DIISOPROPYLNAPHTHALENE

Dustin K. James; Andrew P. Komin, and John R. Siegman, all of Wichita, Kans., assignors to Koch Industries, Inc., Wichita, Kans.

Filed Apr. 15, 1991, Ser. No. 685,529
Int. Cl.[5] **C07C** *51/16*
U.S. Cl. 562—418 **36 Claims**

1. A process for making 2-(6-methoxy-2-naphthyl)propionic acid, said process comprising the steps of:

(A) hydroperoxidizing 2,6-diisopropylnaphthalene in the presence of oxygen and a catalyst to form the product 2-(1-hydroperoxy-1-methylethyl)-6-(1-methylethyl)naphthalene;

(B) converting said product of step (A) by heating said 2-(1-hydroperoxy-1-methylethyl)-6-(1-methylethyl)naphthalene in the presence of an acid catalyst to the product 2-hydroxy-6-(1-methylethyl)naphthalene;

(C) alkylating said product to step (B) in the presence of a base and a methyl donor to form the product 2-methoxy-6-isopropylnaphthalene;

(D) converting said product of step (C) to the product 2-(6-methoxy-2-naphthyl)-1-propylene oxide by hydroperoxidizing the product of step (C) is the presence of oxygen and a catalyst to form the peroxide derivative 2-methoxy-6-(1-hydroperoxy-1-methyethyl)naphthalene; and

converting said peroxide derivative 2-methoxy-6-(1-hydroperoxy-1-methylethyl)naphthalene to the epoxide derivative product 2-(6-methoxy-2-naphthyl)-1-propylene oxide by reacting said peroxide derivative with 2-methoxy-6-isopropenylnaphthalene to form 2-(6-methoxy-2-naphthyl)-1-propylene oxide plus the tertiary alcohol derivative 2-methoxy-6-(1-hydroxy-1-methylethyl)naphthalene;

(E) converting said product to step (D) to the product 2-(6-methoxy-2-naphthyl)propionaldehyde by heating said 2-(6-methoxy-2-naphthyl)-1-propylene oxide; and

(F) oxidizing said 2-(6-methoxy-2-naphthyl)propionaldehyde in the presence of a chromic acid solution to form 2-(6-methoxy-2-naphthyl)propionic acid.

5,286,903

PROCESS FOR THE PREPARATION OF CYCLOHEXANEDICARBOXYLIC ACIDS

Gether Irick, Jr., Gray; Michael Bellas, Kingsport, and Leslie S. LaForce, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,537
Int. Cl.[5] **C07C** *61/09*
U.S. Cl. 562—509 **2 Claims**

1. A non-catalytic process for the preparation of a cyclohexanedicarboxylic acid which comprises heating a mixture comprising (i) a dialkyl cyclohexanedicarboxylate and (ii) a carboxylic acid containing 2 to about 6 carbon atoms at about 250° to 300° C., wherein the alkyl residues of the dialkyl cyclohexanedicarboxylate contain up to about 4 carbon atoms.

5,286,904

PROCESSES AND INTERMEDIATES FOR N-(S-3-ALKYL-HEPTANOYL)-D-GAMMA-GLUTAMYL-GLYCYL-D-ALANINE

Charles W. Murtiashaw, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 852,599, Mar. 17, 1992, Pat. No. 5,245,079, which is a division of Ser. No. 346,118, Feb. 21, 1989, Pat. No. 5,134,225. This application Apr. 9, 1993, Ser. No. 45,004
Int. Cl.[5] **C07C** *53/00, 51/235, 51/245*
U.S. Cl. 562—512 **5 Claims**

1. A process for the preparation of S-3-methylheptanoic acid which comprises the steps of:

(a) reacting racemic trans-4-hexen-3-ol or trans-4-hepten-3-ol with the t-butyl hydroperoxide, in the presence of titanium tetraisopropoxide and L-(+)-diisopropyl tartrate, in an amount sufficient to oxidize the S-enantiomer and retain unreacted trans-R-4-hexen-3-ol or trans-R-4-hepten-3-ol;

(b) condensation of said trans-R-4-hexen-3-ol or trans-R-4-hepten-3-ol with a tri[(C_1–C_3)alkyl] orthoacetate in the presence of an acid to yield a (C_1–C_3)-alkyl R-3-methyl-4-heptenoate or R-3-ethyl-4-heptenoate; and either:

(c) ester hydrolysis of said (C_1–C_3)alkyl ester to form R-3-methyl-4-heptenoic acid or R-ethyl-4-heptenoic acid; and

(d) catalytic hydrogenation of said 4-heptenoic acid to produce said S-3-methylheptanoic acid or S-3-ethylheptanoic acid; or

(e) catalytic hydrogenation of said (C_1–C_3)alkyl ester to produce (C_1–C_3)alkyl S-3-methylheptanoate or S-3-ethylheptanoate; and

(f) ester hydrolysis of said S-3-methylheptanoate or S-3-ethylheptanoate ester to produce said S-3-methylheptanoic acid or S-3-ethylheptanoic acid.

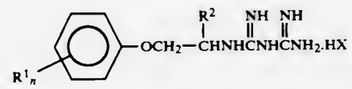
5,286,905

PROCESS FOR PRODUCING BIGUANIDE DERIVATIVE

Kazufumi Nakamura; Masahiro Nishii; Ryoichi Adachi; Masatoshi Uemura; Ichiro Nasuno; Izumi Terada; Takashi Mitsuyama, and Hidetoshi Koga, all of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

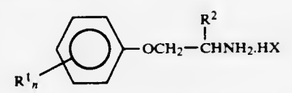
Filed Dec. 23, 1991, Ser. No. 812,755
Claims priority, application Japan, Dec. 28, 1990, 2-408631
Int. Cl.[5] **C07C** *277/00*
U.S. Cl. 564—234 **32 Claims**

1. A process for producing a biguanide compound of the formula (III),



(III)

wherein each of R^1 and R^2 is, independently, a C_1-C_4 alkyl group, n is an integer of 0 to 5, and X is a halogen atom, which comprises reacting a phenoxyalkylamine salt of the formula (I),



(I)

wherein R^1, R^2, n and X are as defined above, with dicyandiamide of the formula (II),

(II)

in a solvent containing a paraffinic hydrocarbon having 8 to 15 carbon atoms,

said phenoxyalkylamine salt of the formula (I) and said dicyandiamide of the formula (II) being in a phenoxyalkylamine salt/dicyandiamide molar ratio of 0.5/1 to 1.5/1 and the process being carried at a temperature of 120° C. to 200° C.

5,286,906

PROCESS FOR THE PREPARATION OF 3-AMINOMETHYL-3,5,5-TRIALKYLCYCLOHEXYLAMINE

Yoshinori Hara; Haruhiko Kusaka, both of Tokyo; Masamichi Onuki, Kanagawa, and Sugio Nishimura, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,688
Claims priority, application Japan, Sep. 25, 1991, 3-246115; May 22, 1992, 4-154160
Int. Cl.[5] **C07C** *209/22, 209/48*
U.S. Cl. 564—446 **19 Claims**

1. A process for the preparation of a 3-aminomethyl-3,5,5-trialkylcyclohexylamine, which comprises hydrogenating 3-cyano-3,5,5-trialkylcyclohexanone in the presence of ammonia and a ruthenium-cobalt catalyst.

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APPARATUS FOR REPRODUCING MUSICAL ACCOMPANIMENT INFORMATION

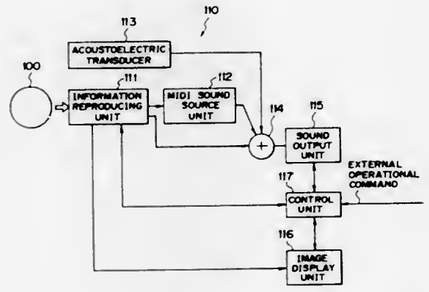
Mashiro Okamura; Masuhiro Sato; Naoto Inaba; Yoshiyuki Akiba, and Toshiki Nakai, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 775,147

Claims priority, application Japan, Oct. 12, 1990, 2-273733; Nov. 26, 1990, 2-321489

Int. Cl.[5] G10H *1/36*

U.S. Cl. 84—601 7 Claims



1. An apparatus for reproducing musical accompaniment information comprising:

information reproducing means for reproducing information including MIDI sound source control information from musical accompaniment information recording for recording a plurality of music pieces, said information reproducing means comprising:

a first information recording region for recording MIDI sound source control information for controlling said MIDI sound source means to generate the musical accompaniment information in conformity with the MIDI standard, said first information recording region including first jump start address information and first jump end address information being larger than said first jump start address information, said first jump address information and said first jump end address information being fixed information predetermined for each of said music pieces;

said MIDI sound source means for generating the first musical information by the MIDI sound source control information reproduced by said information reproducing means, said MIDI sound source control information being suppressed in time-base compared with the musical accompaniment information;

an acoustoelectric transducer for transforming a voice sung by a singer to an electric signal to be output as voice information;

mixing means for mixing the first musical information generated by said MIDI sound source means and the voice information to output mixed musical information;

sound output means for transforming the mixed musical information to sound to be output; and

control means for controlling said information reproducing means, when said first jump start address information is detected, to jump an information reproduction position from an information position of the first jump start address information to an information position of the first jump end address information so as to continue reproduction of the MIDI sound source control information from the information positon of the first jump end address information.

5,286,908

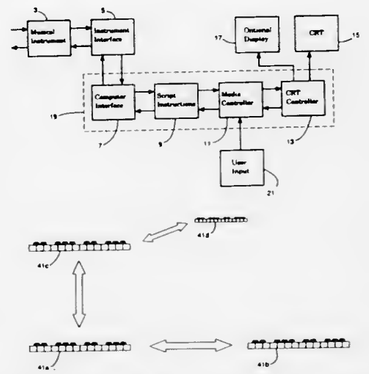
MULTI-MEDIA SYSTEM INCLUDING BI-DIRECTIONAL MUSIC-TO-GRAPHIC DISPLAY INTERFACE

Stanley Jungleib, 766 Allen Ct., Palo Alto, Calif. 94303-4110

Filed Apr. 30, 1991, Ser. No. 693,810

Int. Cl.[5] G10H *7/00*

U.S. Cl. 81—603 3 Claims



1. A bi-directional method in a computer system for controlling a computer graphic display with a musical instrument and for controlling a musical instrument with a graphic display, wherein the method for controlling the computer graphic display with a musical instrument comprises the steps of:

sampling an output of the musical instrument to extract a set of digital instrument parameters;

adding a reference time-code signal to the digital instrument parameters;

passing the instrument parameters and the reference time-code signal to the computer system;

calculating video information by using a stored algorithm, the stored algorithm using the digital instrument parameters as inputs to the stored algorithm; and

displaying the video information on the computer graphic display, the display of part of the video information being synchronized with the reference time-code signal; and

wherein the method for controlling a musical instrument using a graphic display comprises the steps:

passing a reference time-code signal tot he computer system;

translating the graphic display data into a set of musical parameter addresses;

addressing a set of stored musical parameters by using the translated musical parameter addresses;

and transmitting the addressed stored music parameters to the electronic musical instrument in synchronization with the reference time-code signal.

5,286,909

KEY-TO-BE-DEPRESSED DESIGNATING AND COMPARING APPARATUS USING A VISUAL DISPLAY

Takeo Shibukawa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 26, 1992, Ser. No. 841,419

Claims priority, application Japan, Mar. 1, 1991, 3-036422

Int. Cl.[5] G10H *7/00;* G04B *13/00;* A63H *5/00*

U.S. Cl. 84—609 19 Claims

1. A key-to-be-depressed designating apparatus, comprising:

a keyboard including a plurality of keys,

a sound circuit including a plurality of channels,

memory means for storing automatic performance data, the automatic performance data including a plurality of single

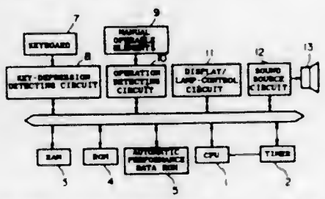
VOL 1159 ISS 3 FE 15 1994 UMI

event data portions, each single event data portion representing a musical tone and a key to be depressed which correspond to a particular part of the automatic performance,

register means for storing the single event data portions, and having a plurality of memory channels corresponding to the plurality of channels in the sound circuit,

read-out means for performing a read-out operation, the read-out operation including reading the automatic performance data stored in the memory means and sequentially assigning the musical tone and key corresponding to the single event data portion to a single idle memory channel within the register means,

designating means for designating the key to be depressed in accordance with the single event data portion stored in the single idle memory channel,



key-depression monitoring means for determining a musical tone corresponding to a depressed key, and for assigning the musical tone corresponding to the depressed key to one of the tone channels in the sound circuit,

comparison means for comparing the musical tone corresponding to the single event data portion stored in the single idle memory channel to the musical tone corresponding to the depressed key, and

control means for controlling the read-out means such that the read-out operation will be continued after the designated key should have been depressed until a predetermined period of time elapses, such that a depression of a non-designated key will be ignored, and such that the read-out operation will be terminated if the designated key is not depressed during the predetermined period.

5,286,910

ELECTRONIC MUSICAL INSTRUMENT HAVING AUTOMATIC CHANNEL-ASSIGNING FUNCTION

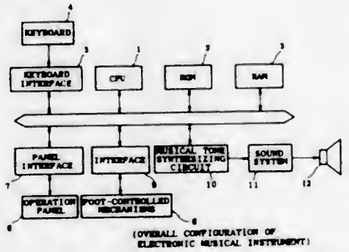
Masahiko Hasebe, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 27, 1992, Ser. No. 937,350

Claims priority, application Japan, Aug. 30, 1991, 3-220559

Int. Cl.[5] G10H *1/057, 1/22, 1/36*

U.S. Cl. 84—609 **8 Claims**



(OVERALL CONFIGURATION OF ELECTRONIC MUSICAL INSTRUMENT)

7. A channel-assignment method employed in an electronic musical instrument in which a manual-performance sound or an automatic-performance sound is assigned to one of a plurality of channels, said channel-assignment method comprising the steps of:

searching an unoccupied channel which is not occupied with a tone generation within said plurality of channels;

assigning a new musical tone to said unoccupied channel;

detecting a full-channel condition where all of said plurality of channels are occupied with the tone generation;

performing a manual-performance assignment when a new manual-performance sound is designated under the full-channel condition, thereby assigning the new manual performance sound to one of said plurality of channels which satisfies a first channel-selection condition, said first channel-selection condition selecting a channel having an envelope value which is the smallest among said plurality of channels; and

performing an automatic-performance assignment when a new automatic-performance sound is designated under the full-channel condition, thereby assigning the new automatic-performance sound to one of said plurality of channels which satisfies a second channel-selection condition, said second channel-selection condition selecting a channel which receives a key-off command and having an envelope value which is the smallest among the channels occupied with the tone generation of the automatic-performance sounds.

5,286,911

ELECTRONIC RUBBED-STRING INSTRUMENT

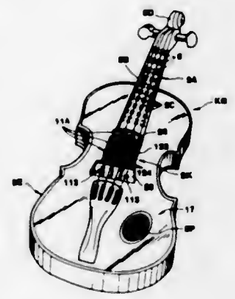
Yoshiyuki Murata, Tachikawa, and Tatsuya Dejima, Fussa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 806,855, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 409,038, Sep. 18, 1989, abandoned. This application Sep. 23, 1992, Ser. No. 949,749

Claims priority, application Japan, Sep. 20, 1988, 63-12331[U]; Nov. 30, 1988, 63-300960

Int. Cl.[5] G10D *1/02;* **G10H** *1/34*

U.S. Cl. 84—615 **4 Claims**



1. An electronic rubbed-string instrument including an instrument body, comprising:

manually operable means which is adapted to be operated for a bowing operation by an instrument player;

bowing speed detection means for successively detecting bowing operation speeds of said manually operable means operated by the instrument player and for successively outputting digital bowing speed data representing the detected bowing operation speeds;

a plurality of bowing direction detection means mounted on the instrument body, and provided for a plurality of bowing operation receiving portions respectively for receiving bowing operations performed with said manually operable means by the instrument player, said plurality of bowing direction detection means being arranged for successively detecting directions in which the bowing operation of said manually operable means are performed and for successively outputting digital bowing direction data representing the detected bowing directions;

tone volume designation means for successively designating tone volume of a musical tone to be generated, in accordance with said digital bowing speed data successively outputted from said bowing speed detection means; and

tone control means for successively controlling at least one of tone color, tremolo effect, reverberation effect, envelope effect, sound volume characteristic and tone pitch of a musical tone in accordance with the digital bowing direction data outputted from said plurality of bowing direction detection means, said musical tone having the tone volume designated by said tone volume designation means.

5,286,912

ELECTRONIC MUSICAL INSTRUMENT WITH PLAYBACK OF BACKGROUND TONES AND GENERATION OF KEY-ON PHRASE TONES

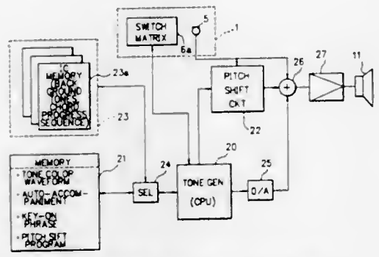
Masafumi Yamaguchi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Continuation of Ser. No. 856,698, Mar. 24, 1992, abandoned. This application Apr. 2, 1993, Ser. No. 41,881

Claims priority, application Japan, Mar. 29, 1991, 3-091410

Int. Cl.[5] G10H *7/00, 1/36*

U.S. Cl. 84—616 **14 Claims**



1. An electronic musical instrument comprising:

an instrument main body having a microphone and a plurality of phrase select key pads;

means for playing back background tones of a song;

memory means for storing note pattern data in the form of key-on phrase play data for a plurality of phrases, each phrase consisting of a series of phrase tones comprised of a plurality of bars per phrase for a rhythm, chord, melody or combination thereof; and

said phrase select key pads being operated at a time interval of said bars per phrase for automatically generating individual adlib play tones by a player lacking skills for the performance of rhythm, chord and melody using a keyboard, strings or a percussion instrument;

a tone generator for reading out the note pattern data of said phrases in response to selective operation of one or more of said key pads, and forming tone generation signals; and

means for mixing the output from said microphone, the playback signals of the background tones, and the tone generation signals of said phrases.

5,286,913

MUSICAL TONE WAVEFORM SIGNAL FORMING APPARATUS HAVING PITCH AND TONE COLOR MODULATION

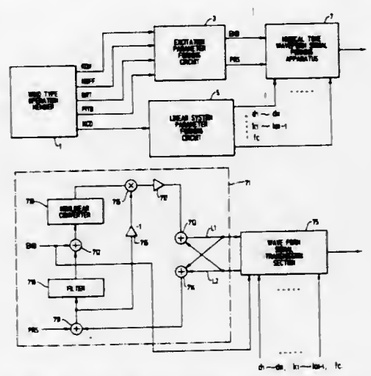
Iwao Higashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 12, 1991, Ser. No. 654,350

Claims priority, application Japan, Feb. 14, 1990, 2-31367

Int. Cl.[5] G10H *7/00, 1/06*

U.S. Cl. 84—622 **21 Claims**



1. A musical tone waveform signal forming apparatus having a modulation effect function comprising:

loop means forming a loop and including delay means for delaying a signal input thereto in accordance with a pitch of a musical tone to be generated and filter means for filtering said signal;

excitation means for generating an excitation signal to said loop means based upon an externally provided control signal and a signal output from the loop after delay so that a musical tone signal is formed in said loop means;

control means operated by a player for generating musical tone control information which is variable based on an operation by said player for controlling musical tone parameters including at least one of tone pitch and tone color of said musical tone signal;

filter control means for changing with time a characteristic of said filter means in accordance with variation of said musical tone control information by said player; and

output means for outputting from said loop means a musical tone signal having a desired pitch and tone color.

5,286,914

MUSICAL TONE WAVEFORM SIGNAL GENERATING APPARATUS USING PARALLEL NON-LINEAR CONVERSION TABLES

Toshifumi Kunimoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 14, 1990, Ser. No. 627,239

Claims priority, application Japan, Dec. 18, 1989, 327655

Int. Cl.[5] G10H *7/00, 1/08*

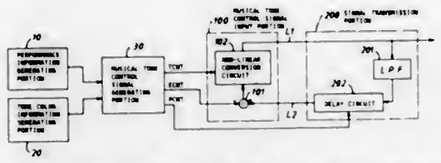
U.S. Cl. 84—625 **15 Claims**

1. A musical tone waveform signal generating apparatus in which a waveform signal is circulated to generate a musical tone waveform signal, the apparatus including means for producing a first control signal for excitation of the waveform signal and a second control signal for control of a tone color, an excitation portion having means for mixing the first control signal with the waveform signal and a non-linear conversion means for non-linearly converting the mixed waveform signal, and a signal transmission portion coupled with said excitation portion to feed back the converted waveform signal to said

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excitation portion for causing the waveform signal to have a resonance frequency corresponding to a pitch of a musical tone to be generated,

wherein said non-linear conversion means comprises a plurality of non-linear tables connected in parallel to one another to be respectively applied with the mixed wave-



form signal for effecting parallel non-linear conversion of the mixed waveform signal, first means for controlling the mixed waveform signal or at least one of outputs of said non-linear tables in accordance with the second control signal, and second means for mixing the plural outputs of said non-linear tables and applying the mixed output to said signal transmission portion.

5,286,915

ELECTRONIC MUSICAL INSTRUMENT WHICH SIMULATES PHYSICAL INTERACTION OF PIANO STRING AND HAMMER

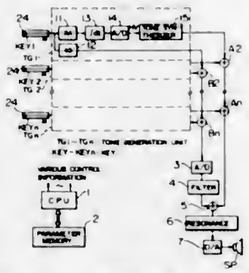
Takeshi Komano, and Toshifumi Kunimoto, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 25, 1992, Ser. No. 857,628

Claims priority, application Japan, Mar. 29, 1991, 3-091565

Int. Cl.[5] G10H *1/12, 1/18*

U.S. Cl. 84—658 **15 Claims**



1. An electronic musical instrument comprising:

a manipulator manipulated by a performer;

control signal generating means for generating a control signal in response to manipulation of said manipulator;

an acceleration detector means disposed in said manipulator for generating an acceleration signal corresponding to acceleration action on said manipulator;

an integration means for integrating said acceleration signal with respect to time and generating a velocity signal calculated in response to said control signal; and

a tone synthesizing means for synthesizing a musical tone on the basis of said velocity signal.

5,286,916

MUSICAL TONE SIGNAL SYNTHESIZING APPARATUS EMPLOYING SELECTIVE EXCITATION OF CLOSED LOOP

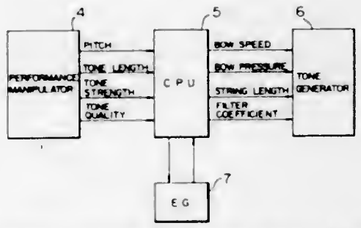
Akira Yamauchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 14, 1992, Ser. No. 820,573

Claims priority, application Japan, Jan. 16, 1991, 3-015845

Int. Cl.[5] G10H *1/057, 1/12*

U.S. Cl. 84—661 **29 Claims**



1. A musical tone signal synthesizing apparatus for an electronic musical instrument, comprising:

a manipulator for generating performance information corresponding to manipulation thereof;

envelope signal generating means for converting the performance information into an envelope signal, a value of which changes over time;

excitation means for generating an excitation signal on the basis of the envelope signal; and

a loop circuit for circulating the excitation signal inputted from the excitation means, the loop circuit having delay means which delays a signal circulating in the loop by a delay time corresponding to a tone pitch of a musical tone signal to be generated,

wherein the musical tone signal is extracted from at least one of the loop circuit and the excitation means.

5,286,917

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND DEVELOPING ROLLER THEREFOR

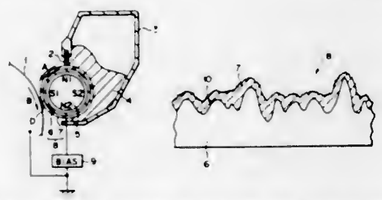
Akira Unno, Yokohama; Hiroto Hasegawa, Kawasaki, and Fumihiro Arahira, Ninomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,983

Claims priority, application Japan, Sep. 28, 1990, 2-260017

Int. Cl.[5] G03G *15/09*

U.S. Cl. 118—651 **38 Claims**



1. A developing apparatus for developing an electrostatic latent image, comprising:

a movable developer carrying member for carrying one component developer to a developing zone where said developer carrying member is opposed to a latent image bearing member for carrying the electrostatic latent image, said developer carrying member being effective to triboelectrically charge the developer to a polarity for developing the latent image;

a regulating member for regulating a thickness of a layer of the developer to be carried to the developing zone; and

a voltage source for applying a developing bias voltage to said developer carrying member;

wherein said developer carrying member comprises a base member having a surface sandblasted to have an average surface roughness Ra of 1.0–3.0 microns, and an outer layer thereon in which fine graphite particles are dispersed in a binder resin material, and wherein the outer layer has an average surface roughness Ra of 0.8–2.5 microns.

5,286,918

DEVELOPING APPARATUS USING A DEVELOPER CARRIER CAPABLE OF FORMING MICROFIELDS ON THE SURFACE THEREOF

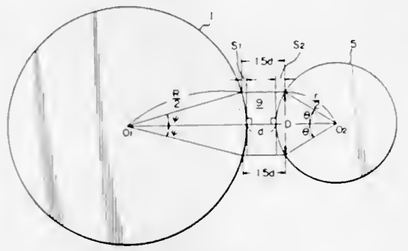
Naoki Iwata, Tokyo; Koji Suzuki, Yokohama; Shigekazu Enoki, Kawasaki; Hiroshi Takashima, Yono, and Yuichi Ueno, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 14, 1991, Ser. No. 715,771

Claims priority, application Japan, Jun. 14, 1990, 2-155826; Jun. 20, 1990, 2-159982; Jun. 1, 1991, 3-157542

Int. Cl.[5] G03G *15/06*

U.S. Cl. 118—653 **8 Claims**



1. A developing apparatus comprising:

a movable developer carrier which has a mixture of conductive surface, dielectric surface portions on the surface of said carrier and wherein said surface selectively holds a charge to thereby form a plurality of microfields and wherein said surface electrostatically retains a developer due to said plurality of microfields;

an image carrier wherein said image carrier faces said developer carrier in a developing region wherein in said developing region a latent image electrostatically formed on said image carrier is developed by said developer, wherein said developer carrier and said image carrier forming said developing region are spaced apart by a predetermined developing gap such that in said developing region, said developer retained on said surface of said developer carrier electrostatically flies to said latent image to develop said latent image wherein said surface of said developer carrier has a pattern with a pitch P_2 constituted by said conductive and dielectaric surface portions and, wherein said developer carrier and said image carrier each comprise a drum and satisfy a relation

$$P_1 \leqq \sqrt{Rrd} / \sqrt{2(R + r)}$$

where r and R are respectively diameters of said developer carrier and said image carrier, and d is said developing gap.

5,286,919

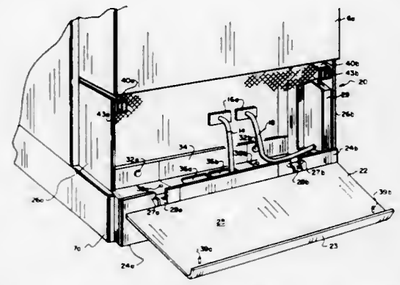
COMPUTER CABLE MANAGEMENT SYSTEM

John W. Benson, Westwood, Mass., and Donald T. Staffiere, Amherst, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 722,870

Int. Cl.[5] H02G *3/08;* **H05K** *5/00*

U.S. Cl. 174—50 **21 Claims**



1. A cable management apparatus for housing and routing one or more communication or power cables, said apparatus comprising:

cable enclosure means attached to a surface, the cable enclosure means having a door for gaining access to the interior of the enclosure means and having at least one opening opposite said door through which cables may enter said interior, the cable enclosure means including means for attaching to an appliance cabinet, wherein the cables to and from said appliance enter said interior through said opening; and

cable support means, disposed within said enclosure means, for supporting one or more cables in a generally horizontal orientation, said cable support means including one or more apertures for allowing cables from other than said appliance to enter said interior in a generally vertical orientation, and allowing cables supported by said cable support means and not plugging into said appliance to exit said interior in a generally vertical orientation.

5,286,920

ELECTRICAL SWITCHING DEVICE

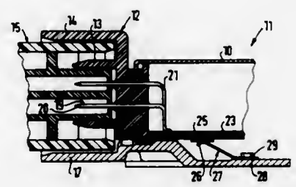
Reinhard Fassel, Oberasbach; Hartmut Zoebl, Fuerth; Werner Hofmeister, Muehlacker, and Olaf Zinke, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,912

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 9114287

Int. Cl.[5] H05K *5/02*

U.S. Cl. 174—51 **9 Claims**



1. An electrical switching device, comprising a housing composed of an electrically conductive material; at least one conductor plate having a region of an electrically conductive material and arranged in said housing; plug connection means

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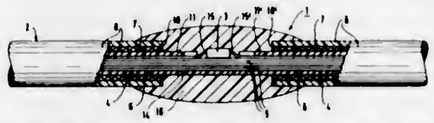
extending from said housing in a sealed manner; and means for electrically conductive connection of said conductor plate with said housing, said means for electrically conductive connection including a mechanically prestressed spring element, said spring element having one end abutting against said conductor plate in said region of an electrically conductive material and another end fixedly connected with said housing.

5,286,921

UNDERSEA ELECTRIC CABLE AND AN UNDERSEA MEASUREMENT CABLE

Michel Fontaine, Haybes, and Patrick Rofidal, Fumay, both of France, assignors to Filotex, Draveil, France

Filed Jun. 29, 1992, Ser. No. 905,818
Claims priority, application France, Jan. 28, 1991, 91 00873
Int. Cl.[5] H02G *15/08*
U.S. Cl. 174—84 R **10 Claims**



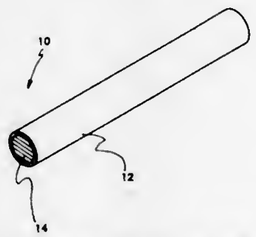
1. In an underwater electric cable comprising a central conductor core protected by an intermediate sealing sheath of insulating material, armoring surrounding said intermediate sheath, an outer sealing sheath of insulating material surrounding said armoring, said cable including an electrical joint in said central conductor core, said outer and intermediate sheaths and said armoring being cut and removed over said joint, and the cable further comprising an over-molding forming a sleeve around said joint and extending over said outer sheath on either side of said joint; the improvement wherein said armoring and said outer sheath are cut and removed over a portion of length greater than the portion over which said intermediate sheath is removed, and thereby defining , on either side of said joint, a shoulder and step between said intermediate sheath and said outer sheath, sand said over-molding engaging snugly over said shoulders and said steps and forming a watertight seal therewith.

5,286,922

FLUORESCENT COATED WIRE

Thomas E. Curtiss, 8512 S. Fordyce Rd., Mt. Pleasant, Mich. 48858

Filed Jul. 14, 1992, Ser. No. 913,037
Int. Cl.[5] H01B *7/36*
U.S. Cl. 174—112 **9 Claims**



1. An electrical wire having improved visibility, comprising:
an electrical conductor material, and
a coating layer covering said conductor material, said coating layer being a colored, electrically conductive paint which includes a substance which fluoresces under daylight, whereby said coating layer is capable of carrying an electric charge and improving the visibility of the wire.

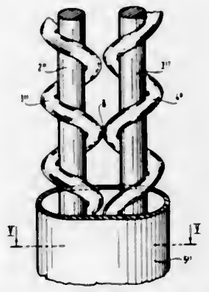
9. A method for improving visibility of electrical conductive wires comprising:
coating electrical conductive wires with a colored, electrically conductive fluorescent paint which is capable of carrying an electrical charge, wherein said paint improves the visibility of said electrical conductive wires.

5,286,923

ELECTRIC CABLE HAVING HIGH PROPAGATION VELOCITY

Daniel Prudhon, Pierrecloz; Victor Da Silva, and Pierre Frieden, both of Fumay, all of France, assignors to Filotex, Draveil, France

Filed Nov. 13, 1991, Ser. No. 791,234
Claims priority, application France, Nov. 14, 1990, 90-14171
Int. Cl.[5] H01B *11/00*
U.S. Cl. 174—113 R **4 Claims**



1. In an electric cable having high propagation velocity comprising a plurality of conductors and means for maintaining a predetermined distance between said conductors;
said means comprising at least one insulating rod helically wound with non-touching turns around at least one of the conductors, with the longitudinal axis of the helix coinciding with that of said conductor, and with each turn surrounding said conductor;
the improvement wherein said at least one rod comprises two insulating rods, and said two insulating rods surround respectively two adjacent said conductors and helically turn in opposite directions and are at different pitches that are not multiples of each other, thereby preventing said rods from interfitting.

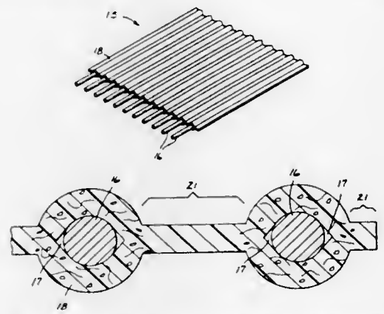
4. An electric cable having high propagation velocity comprising a plurality of conductors and means for maintaining a predetermined distance between said conductors, said means comprising insulation individually about said conductors and said plurality of conductors being twisted together, said cable further comprising an insulating rod in the form of a helical winding and having a right cross-section that is circular and being helically wound around the plurality of twisted together insulated conductors, an external insulating sheath surrounding said plurality of twisted together individually insulated conductors and said helical wound insulating rod for covering for protecting the cable as a whole, and an electrical screen interposed between said insulating sheath and said insulating rod, and extending about said plurality of twisted together individually insulated conductors.

5,286,924

MASS TERMINABLE CABLE

Harry A. Loder, Paradise, Calif.; Denis D. Springer, Austin, Tex., and John L. Roche, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 766,580, Sep. 27, 1991. This application Sep. 22, 1992, Ser. No. 949,457
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—117 F **17 Claims**



1. A cable for transmitting electromagnetic signals comprising:
a conductor, and
a layer of thermally stable, crush resistant, fibril microporous heat sealable thermoplastic crystallizable polymer dielectric surrounding said conductor, said dielectric having a void volume in excess of 70%, a propagation velocity of the insulated conductor greater than 85% the propagation velocity in air and the recovery rate after being under a 500 gram weight for 10 minutes greater than 92% of the initial thickness.

11. A process for making a cable comprising the steps of
placing a plurality of conductors in parallel close spaced relationship to form a row of conductors in transverse section,
positioning a web of thermally stable, crush resistant, fibril microporous dielectric thermoplastic polymer having a void volume in excess of 70%, with a propagation velocity of the insulated conductor greater than 85% the speed in air and the recovery rate after being under a 500 gram weight for 10 minutes of greater than 92% of the initial thickness, against each side of said row of conductors, and
bonding the webs together in the area between the conductors.

5,286,925

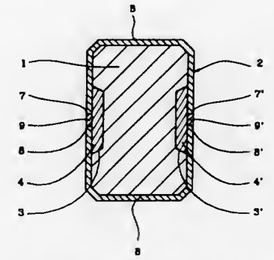
ELECTRICAL CONDUCTOR, PROCESS FOR MANUFACTURING AN ELECTRICAL CONDUCTOR AND ELECTRODE FOR AN ELECTROLYSIS CELL

Emile Cabaraux, Brussels, Belgium, and Edward Nicolas, Rosigxano, Italy, assignor to Solvay (Societe Annonyme), Brussels, Belgium

Filed Apr. 10, 1992, Ser. No. 866,759
Claims priority, application Belgium, Apr. 18, 1991, 09100361
Int. Cl.[5] H01B *5/00*
U.S. Cl. 174—126.2 **12 Claims**

1. An electrical conductor comprising; an electrically conductive metallic bar;
a sheath jacketing said metallic bar and made of a metal different from that of said metallic bar;
said metallic bar having at least one longitudinal groove containing a metallic weld bead made of a metal the same as the metal of said sheath and welded to the bar;
said sheath having an opening opposite said weld bead in registry therewith; and
said opening containing a metallic weld mass welded to said weld bead and to said sheath.

7. A method of manufacturing an electric conductor comprising;
making an electrically conductive metallic bar having at least one longitudinal groove along at least a length thereof and making an elongated metallic sheath for jacketing the metallic bar;
welding in said groove a length of metallic weld bead of a same metal as said metallic sheath;



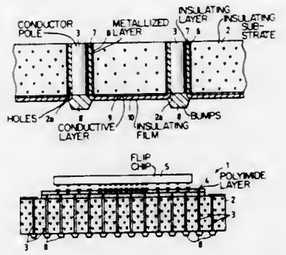
jacketing the bar with said metallic sheath by covering said bar extending longitudinally therein with said sheath having a longitudinal opening opposite to said weld bead; and
welding a length of a mass of weld metal to said weld bead on the bar through said longitudinal opening and at the same time welding said mass of weld metal to said sheath, thereby assembling the bar and jacketing sheath in fixed assembly.

5,286,926

INTEGRATED CIRCUIT PACKAGE AND PROCESS FOR PRODUCING SAME

Yukihiro Kimura; Nobuhiko Miyawaki, and Masao Kuroda, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Apr. 15, 1992, Ser. No. 868,568
Claims priority, application Japan, Apr. 16, 1991, 3-83942
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **16 Claims**



1. An integrated circuit package comprising:
an insulating substrate having through holes; conductor poles extending respectively through the substrate holes;
metallized layers disposed along said substrate holes and disposed about and shielding said conductor poles, said metallized layers being in direct contact with the walls of of said through holes; and
insulating layers located respectively intermediate said metallized layers and said conductor poles to insulate said metallized layers from said conductor poles.

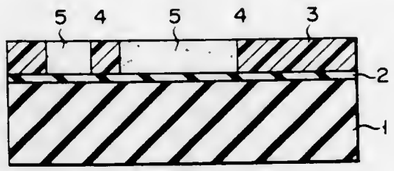
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,927

METHOD OF MANUFACTURING CIRCUIT BOARD AND CIRCUIT BOARD ITSELF MANUFACTURED BY SAID METHOD

Fumio Ueno, Yokohama; Mitsuo Kasori, Kawasaki; Yoshiko Goto, Tokyo, and Akihiro Horiguchi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 723,184, Jun. 28, 1991, Pat. No. 5,184,399.
This application Oct. 13, 1992, Ser. No. 959,618
Claims priority, application Japan, Jun. 29, 1990, 2-169918
Int. Cl.[5] H05K *01/00*
U.S. Cl. 174—257 9 Claims



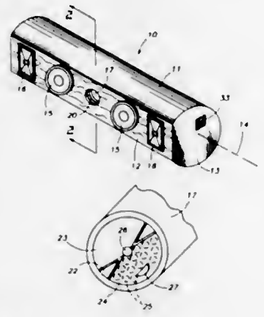
1. A circuit board comprising:
an insulating substrate having a groove shaped like a conductor pattern which is to be formed later; and
a conductor pattern formed in said groove of said substrate, said conductor pattern containing as a main component an electrically conductive metal selected from the group consisting of copper, silver and gold, and fine particles having a thermal expansion coefficient smaller than that of said electrically conductive metal.

5,286,928

TUNABLE SPEAKER TUBE

Nathan J. Borland, R.R. #3, Box 120, Barton, Vt. 05822

Filed Apr. 12, 1993, Ser. No. 44,809
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—153 3 Claims



1. A tunable speaker tube, comprising,
a semi-cylindrical first side wall, and
a planar second side wall, with the tube including spaced end walls defining enclosed tube cavity, the first side wall symmetrically oriented about a predetermined axis, with the second side wall parallel to said axis, and
at least one first speaker member and at least one second speaker member mounted into the second side wall in communication with the cavity, and
a tuning port having a predetermined diameter orthogonally directed medially of the second side wall extending into the cavity in a spaced adjacency relative to the axis, with the tuning port having a port entrance at the second side wall, and
an insert member mounted within the tuning port at the port entrance, with the insert member having a restricted opening for communication with the cavity through the tuning port, with the restricted opening less than said predetermined diameter, and
the insert member including a rotary first disc rotatably mounted relative to a fixed second disc, with the first disc and second disc mounted at the port entrance, the second disc including a second disc semi-cylindrical opening and a second disc matrix of apertures spaced from said second disc opening, with the first disc having a first disc opening of a complementary configuration to said second disc opening, with the first disc opening arranged for selective communication with the second disc opening and the apertures, with a disc axle rotatably mounting the first disc to the second disc, with the disc axle orthogonally oriented relative to the axis.

5,286,929

NOVEL SOUND ABSORBING MATERIALS

Shigenori Kazama, Yokohama; Hiroshi Sugawara, Zushi; Yugoro Masuda, Takatsuki, and Akira Dono, Osaka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Kanebo Ltd., Tokyo, both of Japan

Filed Dec. 22, 1992, Ser. No. 995,739
Claims priority, application Japan, Dec. 27, 1991, 3-346192
Int. Cl.[5] E04B *1/82*
U.S. Cl. 181—286 3 Claims

1. A sound absorbing material comprising a fiber gathered body shaped from at least 50% by weight of synthetic fiber staples having a yarn fineness of not more than 5 denier, and having a mean density of 0.02–0.2 g/cm^3, in which said fiber gathered body contains at least 30% by weight of irregular-shaped fibers having a sectional shape satisfying the following equation (1):

$$L = 1.2 \times (2\pi r) \quad (1)$$

when an outer peripheral length of the fiber is L, a sectional area of the fiber is S and a circle equivalent radius r is represented by the following equation:

$$r = \sqrt{(S/\pi)}$$

5,286,930

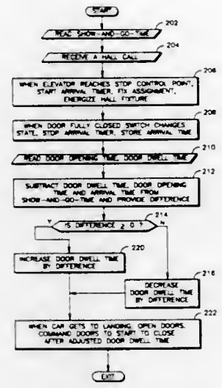
VARIABLE ELEVATOR DOOR DWELL TIME BASED UPON TIME OF NOTIFICATION OF ASSIGNED CAR

Joseph Bittar, Avon, and Zuhair S. Bahjat, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 2, 1992, Ser. No. 907,727
Int. Cl.[5] B66B *13/14*
U.S. Cl. 187—103 7 Claims

1. A method of controlling a door of an elevator, comprising:
energizing a hall fixture at a floor, in response to a hall call signal, for notifying a prospective elevator passenger that said elevator will arrive at said floor;
measuring a signal indicative of the time from when said hall fixture is energized to when a door of said elevator is fully open;
adjusting a signal indicative of a predetermined door dwell time, in response to said signal indicative of the time from when said hall fixture is energized to when said door is fully open for providing an adjusted door dwell time signal indicative of an adjusted door dwell time, wherein

said door dwell time is equal to the time that said door is in the open;



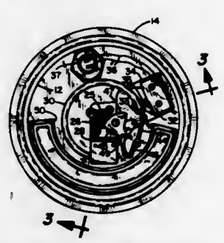
starting to close said door in response to said adjusted door dwell time signal and after expiration of said adjusted door dwell time.

5,286,931

GAUGE WITH INDICATOR SWITCH

Edward P. Murphy, Blaine, Minn., and Dennis Balogh, Garland, Tex., assignors to Graco Inc., Golden Valley, Minn.

Filed Mar. 23, 1993, Ser. No. 35,979
Int. Cl.[5] H01H *35/36*
U.S. Cl. 200—81.8 8 Claims



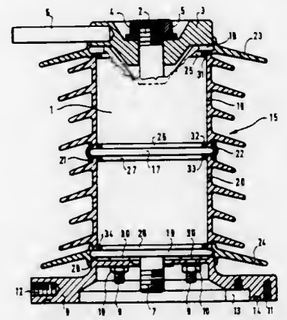
1. A pressure gauge and indicator apparatus, comprising:
a) a housing and a cover threadably attached to said housing to form a sealable compartment therebetween, said cover having a transparent window;
b) a Bourdon tube mounted to said housing in said compartment, said tube having a sealed end in said compartment and having an open end coupled to a liquid passage;
c) a fitting sealably mounted to said housing outside said compartment, said fitting having means for holding a diaphragm closure proximate an end and having passages coupled to said liquid passage;
d) a rotatable shaft mounted to said housing in said compartment, said shaft having a forward end connected to an indicator needle and having a gear affixed along the length of said shaft;
e) a pivotable gear plate mounted to said housing in said compartment, said plate having an edge with teeth engageable with said gear and having a mechanical linkage to said sealed end of the Bourdon tube;
f) an electrical switch mounted to said housing in said compartment, said switch having an actuator proximate said sealed end of said Bourdon tube, and electrical conductors connected to said switch; and
g) a connector plug on said housing, said connector plug having means in said compartment for connecting to said electrical conductors and means outside said compartment for providing electrical contact with said conductors outside said compartment.

5,286,932

VACUUM BULB PROVIDED WITH ELECTRICAL INSULATION

Robert Rouch, Pouyastruc, and Michel Descazeaux, Soues, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Jul. 24, 1992, Ser. No. 918,033
Claims priority, application France, Jul. 26, 1991, 91 09508
Int. Cl.[5] H01H *33/66*
U.S. Cl. 200—144 B 4 Claims



1. An insulated vacuum bulb for interrupting an electrical circuit comprising a bulb having a substantially cylindrical outer surface and having top and bottom terminals disposed at opposite ends of said bulb, a fixed electrical pole and a movable electrical pole extending through and connected to said terminals, respectively with interrupting contacts disposed on said poles within said bulb and outside insulator means disposed on said outer surface of said bulb and extending between said terminals for dielectrically reinforcing said bulb, wherein said insulator means is comprised of at least one polymer sheath heat-shrunk directly onto and covering said substantially cylindrical surface of said bulb.

5,286,933

VACUUM CIRCUIT-BREAKER EQUIPPED WITH SELF-DIAGNOSIS MEANS

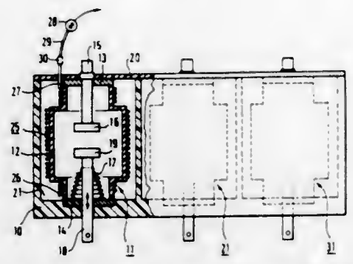
Van Doan Pham, Meyzieu, France, assignor to GEC Alsthom SA, Paris, France

Filed Nov. 16, 1992, Ser. No. 977,295
Claims priority, application France, Nov. 22, 1991, 91 14396
Int. Cl.[5] G01L *21/30*; G01R *31/32*; H01H *33/26*
U.S. Cl. 200—144 B 16 Claims

1. A vacuum circuit-breaker including, for each phase, at least one vacuum bottle housed inside a closed enclosure, said circuit-breaker further including at least one scintillation fiber

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disposed in a space between said enclosure and the outside surface of the vacuum bottle(s), said fiber being connected



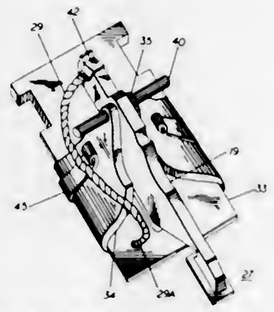
outside the circuit-breaker to an opto-electronic device, and wherein said scintillation fiber is common to all phases.

5,286,934

MOLDED CASE CIRCUIT BREAKER MOVABLE CONTACT ARM ARRANGEMENT

Jill C. Bellino, and Joseph P. Bellino, both of W. Simsbury, Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 23, 1991, Ser. No. 764,287
Int. Cl.[5] H01H *33/02*
U.S. Cl. 200—144 R **9 Claims**



1. A molded case circuit breaker comprising:

a plastic case and cover;

an operating mechanism within said case arranged for driving a movable contact arm to an open position upon occurrence of an overcurrent condition of predetermined magnitude through an associated protected circuit;

a fixed and a movable contact arranged within said case, said movable contact being attached to one end of said movable contact arm;

a support base within said case having first and second ends, said movable contact arm being pivotally mounted on said base, said base being electrically-connected with said movable contact arm by a flexible braid conductor; and

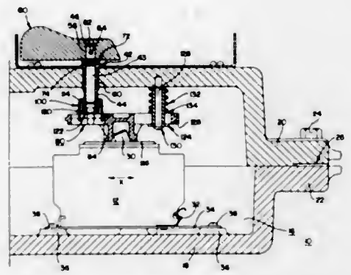
said braid conductor being directly connected to said first end of said base and being connected with an opposite end of said movable contact arm through an off-set connector plate, said off-set plate comprising a malleable metal formed into an L-shaped configuration having a top leg and a bottom leg, said top leg being off-set from said bottom leg to thereby locate said attached braid conductor away from said opposite end.

5,286,935

SELF-LOCATING, PREPOSITIONING ACTUATOR FOR AN ELECTRICAL SWITCH ENCLOSURE

Nabil L. Mina, Roselle, Ill., and James G. Johnson, Merrillville, Ind., assignors to Appleton Electric Company, Chicago, Ill.

Filed Apr. 22, 1993, Ser. No. 51,525
Int. Cl.[5] H01H *3/20*
U.S. Cl. 200—330 **17 Claims**



1. A self-locating, prepositioning operating means for an electric switch, comprising:

(a) a housing having an openable cover;

(b) a switch mounted in said housing, and having a toggle lever pivotably connected thereto for converting said switch between an energized state and a deenergized state;

(c) an actuator shaft passing through an aperture in the cover and rotatably mounted thereto, said shaft having a first end and a second end, the first end being connected in a fixed relationship to an externally viewed operator handle, a portion of said shaft located inside said housing and providing a bearing surface;

(d) an actuator plate having two parallel feet depending therefrom, a first and second longitudinal slot near respective ends of said plate that are positioned parallel to the direction of pivotable movement of the toggle lever, and a cam surface adjacent to the first longitudinal slot, said actuator shaft passing through the first longitudinal slot so that the bearing surface thereof may contact the cam surface of said actuator plate while said actuator plate may freely move with respect to said actuator shaft; and

(e) connection means passing through the second longitudinal slot for securing said actuator plate to the cover, while permitting movement of said actuator plate with respect thereto, whereby, upon closing of the cover, the feet of said actuator plate automatically locate the toggle lever of said switch and come into contact therewith, imparting rectilinear force in the toggle lever movement direction to said actuator plate, the cam surface of said actuator plate bearing against the bearing surface of said actuator shaft to translate the rectilinear movement of said actuator plate into rotational movement of said actuator shaft so that said operator handle is automatically prepositioned to indicate the energization state of said switch concealed in said housing.

5,286,936

CIRCUIT BREAKER DRIVING DEVICE

Shunichi Hatekeyama, Saitama, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 23, 1991, Ser. No. 780,634
Claims priority, application Japan, Oct. 25, 1990, 2-287618
Int. Cl.[5] H01H *5/00*
U.S. Cl. 200—400 **7 Claims**

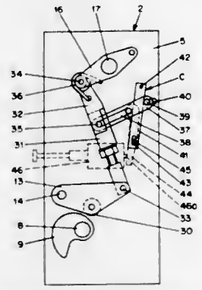
1. A circuit breaker driving device, convertible from break-after-make operation to break-during make operation for response to break commands received during circuit breaker setting operation, comprising:

tripping means for disengaging a movable contact to a shut-off position and for moving said movable contact to a contact position;

throw-in means for circuit making, including a driving lever which is alternatively set in a throw-in position for circuit making or released to a throw-out position for circuit breaking; and

coupling rod means for coupling said throw-in means to said tripping means for acting on said tripping means to move said movable contact to a contact position when said throw-in means is in said throw-in position, and for acting on said tripping means to disengage said movable contact to said shut-off position in response to a break command received during break-after-make operation, said coupling rod means acting as a trip-free mechanism for enabling break-during make operation, comprising:

compression member means having two sections mutually



pinned at a point for permitting unilateral articulation of said two sections, one section having an end located away from the mutually-pinned point coupled to the tripping means, and the other section having an end located away from the mutually-pinned point coupled to the driving lever;

spring means, coupled to said compression member means, for biasing said sections of said compression member means for inhibiting articulation of said compression member means; and

throw-out means, coupled to said compression member means, for overcoming said biasing by said spring means for causing said compression member to become articulated in response to a break-during make command for preventing said coupling rod means from pushing said tripping means to move said movable contact to a contact position.

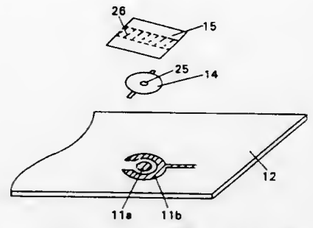
5,286,937

PANEL SWITCH AND METHOD FOR MAKING SAME

Kouichi Santo, Katano, and Nobuo Ogasawara, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 499,454, Jun. 27, 1990, Pat. No. 5,224,591.
This application May 3, 1993, Ser. No. 56,105
Claims priority, application Japan, Nov. 7, 1988, 63-280811
Int. Cl.[5] H01H *1/10*
U.S. Cl. 200—516 **1 Claim**

1. A panel switch which comprises an insulated substrate having at least a pair of contact points, an electrically conductive diaphragm secured to one of the contact points, and being connectable to the other contact point so as to effect electrical connection between the two contact points, the diaphragm being flexible and having a central aperture, a sheet for covering the diaphragm and securing same to the substrate with an adhesive layer formed on the under-surface of the sheet, the sheet having no adhesive at a spot that corresponds to the central aperture of the diaphragm, and an operating section for pressing the diaphragm whereby said diaphragm when flexed



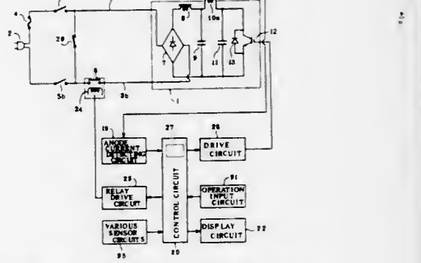
will cause peripheral edges of said aperture to effect a positive contact with said other contact point.

5,286,938

HIGH FREQUENCY HEATING APPARATUS

Tamotsu Takei, Seto, and Hisao Karino, Kaniehonmachi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 17, 1991, Ser. No. 716,019
Claims priority, application Japan, Jul. 24, 1990, 2-195823
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—715 **9 Claims**



1. A high frequency heating apparatus comprising:

a) an inverter circuit having a switching element and converting an ac power supply to a high frequency power supply by controlling "on" and "off" periods of the switching element;

b) a magnetron driven by the inverter circuit;

c) a control circuit including a counter cumulatively counting an energization period of time and a deenergization period of time of the magnetron, the control circuit generating a signal to control an on-off operation of the switching element of the inverter circuit; and

d) a drive circuit driving the switching element in response to the signal from the control circuit;

wherein the control circuit further includes first means for compensating a count-up quantity of the counter per counting operation in accordance with the heating power from the magnetron, second means for compensating the "on" period of the switching element based on a count valve of the counter so that an input power to the inverter circuit is rendered constant, and third means for causing the counter to start the counting operation from an initial value thereof when a first high frequency heating operation is initiated after the power supply is put to work.

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5,286,939

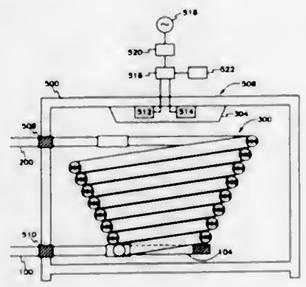
INVERTED FRUSTUM SHAPED MICROWAVE HEAT EXCHANGER USING A MICROWAVE SOURCE WITH MULTIPLE MAGNETRONS AND APPLICATIONS THEREOF

William A. Martin, 124 Elma-McCleary Rd., #38, Elma, Wash. 98541

Division of Ser. No. 547,181, Jul. 3, 1990, Pat. No. 5,179,259, which is a continuation-in-part of Ser. No. 187,723, Apr. 29, 1988, Pat. No. 4,956,534. This application Sep. 29, 1992, Ser. No. 953,090

Int. Cl.[5] **H05B** *6/68*

U.S. Cl. 219—718 **2 Claims**



1. A microwave source comprising:

Two or more magnetron sets, each of said magnetron sets having one or more magnetrons, each of said magnetrons having an operating temperature and a maximum safe operating temperature;

first sensing means for sensing when microwaves are required to be generated by said microwave source; and

means for limiting said operating temperature of said magnetrons comprising:

second sensing means for indirectly sensing said operating temperatures of said magnetrons by sensing a temperature associated with air which has passed by one of said magnetrons, and

means responsive to said first and second sensing means for sequentially activating and deactivating said magnetron sets in a cyclic pattern, such that said respective magnetron sets do not operate when said respective operating temperatures exceed said respective maximum safe operating temperatures.

5,286,940

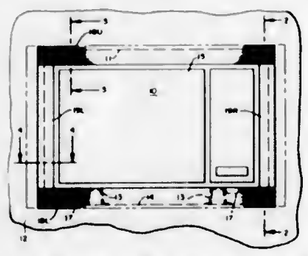
MICROWAVE OVEN BREAK AWAY ELEMENT TRIM KIT

Harlan S. Leeds, 7004 Creekbent, Dallas, Tex. 75252

Filed Aug. 28, 1992, Ser. No. 936,289

Int. Cl.[5] **H05B** *6/80*

U.S. Cl. 219—762 **8 Claims**



1. A facing kit for in the wall opening mounting of an appliance comprising: upper and lower elongate horizontal elements; opposite side elongate vertical elements; an appliance having a rectangular forward face, and an in the wall opening from a wall face being rectangular and having horizontal and vertical dimensions greater than the corresponding dimensions of the rectangular face of the appliance; said opposite side elongate vertical elements having inner edges abutting opposite sides of the rectangular forward face of the appliance and outer edges overlying side portions of said wall face adjacent said wall opening; and upper and lower elongate horizontal elements having inner edges abutting upper and lower edges of the rectangular forward face of the appliance and having outer edges overlying upper and lower portions of said wall face adjacent said wall opening and having opposite ends overlying opposite ends of said opposite side elongate vertical facing elements in a trim kit facing assembly around the front of an in the walls hole mounted appliance; wherein said upper and lower elongate horizontal elements are air vent facing elements with multiple vent openings; said upper and lower elongate horizontal elements include outer edges each with a inwardly extended projection approximating the thickness of said opposite side elongate vertical elements and in assembly enclosing opposite ends of said elongate vertical elements; said opposite side elongate vertical elements each have an outwardly extended projection at the outer edges thereof that in assembly enclose opposite ends of said upper and lower horizontal elements; and wherein said upper and lower elongate horizontal facing elements have notched break away strips both horizontally and vertically to provide adjusted width front trim facing above and below an appliance wall opening.

5,286,941

HIGH FREQUENCY HEATING GENERATOR HAVING AN IMPROVED MATCHING NETWORK BETWEEN A TETRODE AMPLIFIER AND A RESONANT CIRCUIT

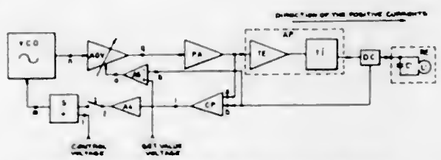
Claude Bel, Maxilly, France, assignor to Thompson Tubes Electroniques, Boulogne Billancourt, France

Filed Jan. 16, 1992, Ser. No. 821,196

Claims priority, application France, Jan. 18, 1991, 91 00572

Int. Cl.[5] **H05B** *6/04*

U.S. Cl. 219—778 **14 Claims**



1. A high frequency heating generator, comprising:

an amplifier having an input and an output, the output being connected to a resonant circuit that is electromagnetically coupled to a part to be heated;

a controlled frequency oscillator, connected to said amplifier, having an output terminal for outputting a high frequency signal to the input of the amplifier, wherein the amplifier includes at least one tetrode having a control gate; and

means for measuring a phase shift between a current output from said tetrode to the resonant circuit and a voltage across a pair of terminals of the resonant circuit, and for modifying the frequency signal output by the oscillator as a function of said phase shift, the means for measuring said phase shift having a first input connected to the control gate of the tetrode and a second input connected to the terminals of the resonant circuit.

5,286,942

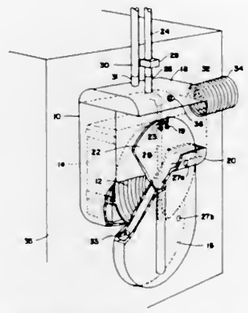
INDUCTION STEAM HUMIDIFIER

David H. McFadden, Lexington, Mass., and Gorm A. Bressner, Pawtucket, R.I., assignors to Arthur D. Little Enterprises, Inc., Cambridge, Mass.

Filed Oct. 24, 1991, Ser. No. 782,347

Int. Cl.[5] **H05B** *6/10*

U.S. Cl. 219—630 **26 Claims**



1. A humidification apparatus comprising, in combination:

(a) induction coil means for producing electromagnetic energy;

(b) target means, spaced apart from and fixed relative to said induction coil means, for producing heat in response to electromagnetic energy produced by said induction coil means sufficient to vaporize a humidifying fluid in contact therewith so as to produce a vapor;

(c) fluid holding means for containing a humidifying fluid, said fluid holding means comprising a chamber having interior surfaces that define said chamber, and an opening for receiving said humidifying fluid and said target, and for providing an outlet for said vapor created in said chamber, said chamber being sized so as to enclose said target means such that said target means is spaced from and independent of said interior surfaces of said chamber so that the portion of said target means disposed in said chamber can be completely immersed in said humidifying fluid when said chamber is filled with said humidifying fluid;

(d) hood means for containing and directing vapor provided from the top of said chamber; and,

means for holding said fluid holding means relative to said hood means so that said opening is disposed in fluid communication with said hood means, and for releasing said hood means relative to said fluid holding means so that said fluid holding means can be replaced.

5,286,943

SENSOR-CONTROLLED OVEN PYROLYSIS UTILIZING FUZZY LOGIC CONTROL

Uwe Has, Schwindegg, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeraete, Munich, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 932,304

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1991, 4127389

Int. Cl.[5] **F24C** *14/02*

U.S. Cl. 219—413 **5 Claims**

1. A stove with pyrolytic self-cleaning, comprising:

an oven having at least one wall region and an outgoing air path;

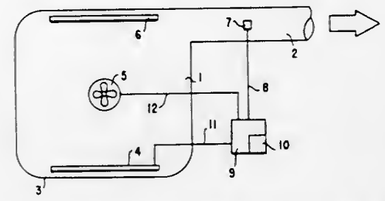
a heating element disposed in said at least one wall region for operating said oven;

a forced-air blower for venting said oven;

means for pyrolytically self-cleaning said oven;

a gas sensor disposed in said outgoing air path for issuing sensor signals;

an evaluation unit for pyrolytic self-cleaning being connected to said gas sensor, said evaluation unit having a logic system adapted to a pyrolysis operation for analyzing the sensor signals, and said evaluation unit using the sensor signals after a typical pyrolysis operating time to



determine a minimum pyrolysis temperature and an optimized total pyrolysis time being dictated by a type of soiling; and

wherein for expected peak oven temperatures higher than 470° C., said evaluation unit increases a sampling frequency of the sensor signals before a temperature raised above 470° C.

5,286,944

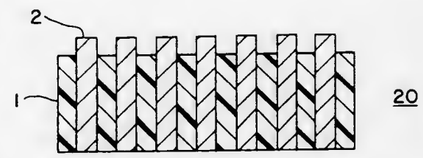
METHOD OF MANUFACTURING A MULTIPLE MICROELECTRODE ASSEMBLY

Hong Li, Cambridge, Mass., assignor to Panasonic Technologies, Inc., Cambridge, Mass.

Filed Mar. 25, 1992, Ser. No. 856,237

Int. Cl.[5] **B23K** *15/00, 26/00;* **H01R** *43/00;* **B23H** *5/10*

U.S. Cl. 219—69.15 **10 Claims**



1. A method of manufacturing a multiple microelectrode assembly said method comprising:

forming an electrode/base assembly using micromachining, said electrode/base assembly including a base and a plurality of rod-like protrusions, each of said rod-like protrusions separate from each other and extending substantially perpendicular from said base;

placing the electrode/base assembly into a container;

introducing a liquid insulating composition into the container;

allowing the liquid insulating composition to solidify;

separating the insulating composition and the electrode/base assembly from the container; and

removing the base of the electrode/base assembly to form the multiple microelectrode assembly.

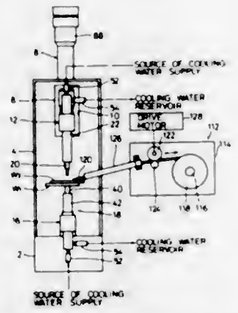
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,945

APPARATUS FOR HEATING WORKPIECES TO BOND THE SAME

Noriyoshi Abe, Hidakamachi, Japan, assignor to Kabushiki Kaisha Yosetsu Gijutsu Kenkyusho, Saitama and Kabushiki Kaisha Technosystems, Tokyo, both of Japan

Filed May 28, 1991, Ser. No. 706,285
Claims priority, application Japan, May 30, 1990, 2-140563
Int. Cl.[5] B23K *1/00*
U.S. Cl. 219—85.16 **18 Claims**



1. An apparatus for heating workpieces to bond the workpieces together, comprising:

a workpiece rest;

an electrode unit including a first electrode rod and a second electrode rod, the first electrode rod being capable of holding the workpieces at one end thereof in cooperation with the workpiece rest and the first electrode rod having another end, the second electrode rod having one end disposed in contact with one end portion of the first electrode rod and having another end, the first and second electrode rods each having a predetermined contact surface at which the first and second electrode rods contact each other;

cooling means for cooling the first and second electrode rods with a coolant;

current supply means connected to said another end of each of the first and second electrode rods, the current supply means supplying a predetermined electric current to the contact surfaces of the first and second electrode rods, to cause the first and second electrode rods, which are cooled by the cooling means, to generate heat by means of contact resistance at the contact surfaces;

actuating means for moving the electrode unit toward and away from the workpiece rest, the workpieces being held between said one end of the first electrode rod and the workpiece rest with a predetermined force when the electrode unit is moved to the workpiece rest; and

control means for controlling supply of the electric current from the current supply means to the first and second electrode rods in accordance with movement of the electrode unit when the electrode unit is moved toward the workpiece rest by the actuating means;

said control means comprising:

a sensor for outputting a detection signal when a distance between said one end of the first electrode rod and the workpieces on the workpiece rest becomes equal to a predetermined distance while the electrode unit is moved toward the workpiece rest; and

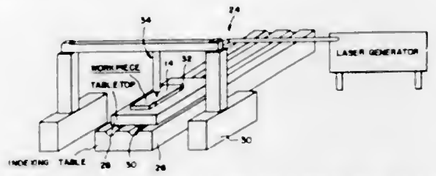
first switch means for initiating the supply of electric current from the current supply means to the first and second electrode rods to cause the first and second electrode rods to generate heat when said first switch means is supplied with the detection signal from the sensor.

5,286,946

METHOD AND APPARATUS FOR SECURING AN END OF A HEADBOX FLOW TUBE

David J. Will, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Sep. 2, 1992, Ser. No. 939,183
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **9 Claims**



1. A method for securing an end of a headbox flow tube to an end plate, said method comprising the steps of:

laser cutting the end plate such that the end plate defines an opening for the reception therein of the end of the flow tube;

positioning the end of the flow tube within the opening; and

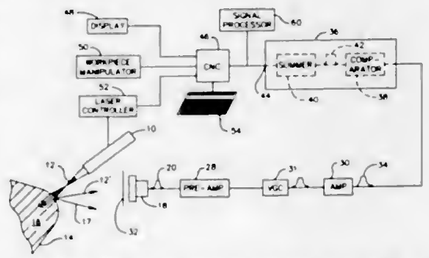
laser welding the end of the flow tube to the end plate in the vicinity of the opening for generating a water-tight seal between the end of the flow tube and the end plate.

5,286,947

APPARATUS AND METHOD FOR MONITORING MATERIAL REMOVAL FROM A WORKPIECE

Diana R. C. Clyde, West Chester; Ralph M. Somers, Cincinnati, and Jerry H. Carmichael, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 8, 1992, Ser. No. 941,625
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **31 Claims**



1. An apparatus for monitoring material removal from a workpiece by a beam of energy during a material processing operation, comprising:

a detector for sensing optical emissions caused by removal of material from the workpiece; and

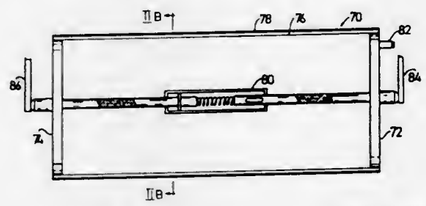
means for determining in real-time a quantity of material removed from said sensed optical emissions during the material processing operation.

5,286,948

FUSING APPARATUS AND METHOD

Benzion Landa, Edmonton, Canada; Naseem Yacoub, Herzelia, and Hanna Pinhas, Holon, both of Israel, assignors to Spectrum Sciences B.V., Rotterdam, Netherlands

Continuation of Ser. No. 735,801, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 293,431, Jan. 4, 1989, Pat. No. 5,157,238. This application Jun. 5, 1992, Ser. No. 895,169
Claims priority, application United Kingdom, Sep. 8, 1988, 8821107; Oct. 4, 1988, 8823258
Int. Cl.[5] G03G *15/20*
U.S. Cl. 219—216 **20 Claims**



1. Apparatus for fusing of an image onto a substrate comprising:

a fuser element; and

means for heating said fuser element,

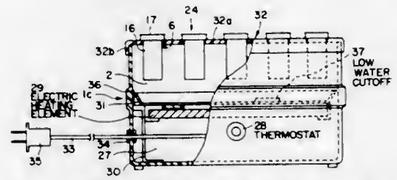
wherein said fuser element comprises a thin walled cylinder having end portions and a cylindrical fuser surface therebetween and wherein said thin walled cylinder has a thickness of less than 125 microns which is backed by a solid structural support at said end portions, which is unbacked by a solid structural support between said end portions and which is supported by gas pressure.

5,286,949

APPARATUS AND METHOD FOR HEATING AND MOISTENING HAIR ROLLERS USING STEAM AND HAIR ROLLERS FOR USE THEREWITH

Rosemary Simons, 18 St. Andrews Rd., Arden, N.C. 28704

Filed Oct. 16, 1991, Ser. No. 777,129
Int. Cl.[5] H05B *1/02, 6/80*; A45D *4/10, 7/02*
U.S. Cl. 219—222 **19 Claims**



1. A hair curling apparatus including a plurality of hair rollers in combination with means for heating and moistening said rollers, said heating and moistening means comprising a housing having a bottom and upstanding side walls forming an open top chamber, a removable and changeable hair roller support means in combination with said housing defining a steam chamber within said housing between said bottom and said hair roller support means, and bounded by said upstanding side walls, and having means to vertically suspend said hair rollers therefrom within said steam chamber said plurality of hair rollers being vertically suspended within said steam chamber by said hair roller support means and an openable lid covering said chamber,

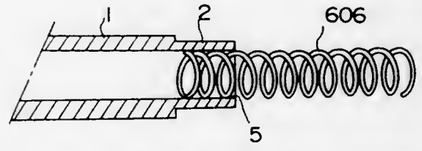
wherein said hair roller support means comprises a horizontal plate having an upper surface and a lower surface and a plurality of holes therein sized to allow the passage of said rollers through said plate and means to support said plate above the bottom of said housing a distance sufficient to permit said rollers to be vertically suspended from said plate above the bottom of said housing and within said steam chamber, each of said rollers having means cooperating with said plate to effect their suspension whereby a portion of each roller is maintained above said plate and outside of said steam chamber, and wherein said steam chamber is capable of containing a quantity of liquid capable of being heated to boiling thereby generating steam within said steam chamber which condenses on said rollers to heat and moisten said rollers, whereby said housing, said hair roller support means and said lid cooperate to retain heat and moisture around said suspended rollers until their removal from said apparatus.

5,286,950

FIXING DEVICE AND HEAT ROLLER THEREFOR

Yoshio Sakata, Kanagawa, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1992, Ser. No. 857,231
Claims priority, application Japan, Mar. 26, 1991, 3-026703[U]; Mar. 26, 1991, 3-026704[U]; Mar. 26, 1991, 3-087743; Aug. 20, 1991, 3-073816[U]; Aug. 20, 1991, 3-073817[U]; Aug. 20, 1991, 3-233988; Aug. 23, 1991, 3-074779[U]
Int. Cl.[5] B21B *27/06*; H05B *3/02*
U.S. Cl. 219—469 **7 Claims**



1. A heat roller for use in a fixing device, comprising a heating portion and shaft portions projecting respectively from both ends of said heating portion, wherein said heating portion and said shaft portions are integrally molded from the same material in the form of a molded member at least both end portions of which are hollow, and coiled conducting terminals are closely fitted into said end portions, respectively.

5,286,951

ACETATE SPECTACLE FRAME BRIDGE ADJUSTER

Mark A. Jones, 73 Greenhill Ave., Hamilton, Canada L8K 5C5

Filed Nov. 9, 1992, Ser. No. 973,495
Int. Cl.[5] H05B *3/06*; B25B *1/00*
U.S. Cl. 219—521 **16 Claims**

1. A heating apparatus adapted to permit heating a plastic spectacle frame, said apparatus comprising, in combination:

a heating pan within a plastic spectacle frame warmer retains a primary amount of particulate solid heat transfer medium therewithin;

a support device comprising:

a base portion adapted to maintain said device in substantially upright relation within said heating pan of said frame warmer;

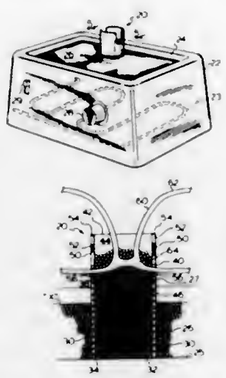
an intermediate portion supported by said base portion and extending substantially upwardly therefrom;

a receptacle portion supported by said intermediate portion and extending substantially upwardly therefrom, and receiving and retaining a secondary amount of solid particulate heat transfer medium therein above the level of said primary amount of solid particulate heat transfer medium, so as to permit the transfer of heat from said heating pan through said primary amount of solid heat transfer medium to said secondary amount of solid heat transfer medium; and,

a bridge receiving means associated with said receptacle portion and adapted to hold the bridge area of the plastic

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spectacle frame above said primary amount of solid particulate heat transfer medium in contacting heating relation with said secondary amount of solid heat transfer medium,



so as to permit the transfer of heat from said secondary amount of solid heat transfer medium to said bridge area of the plastic spectacle frame.

5,286,952

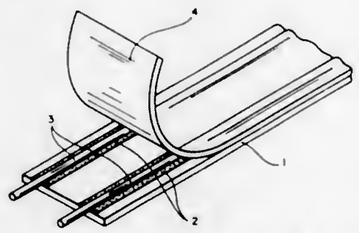
METHODS AND DEVICES WHICH MAKE USE OF CONDUCTIVE POLYMERS TO JOIN ARTICLES

Corey J. McMills, Los Altos; John R. Hughes, Atherton, both of Calif.; Hans Cordia, Pellenberg, Belgium; Johann D'Hondt, Hong Kong, Hong Kong; John A. Ross, Fremont, Calif.; Jeffrey A. Sampson, Redwood City, Calif.; Pradeep Barma, Fremont, Calif.; Barry Mathews, San Jose, Calif.; Robert Ritter, Fremont, Calif., and Julian S. Mullaney, Raleigh, N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 407,595, Sep. 15, 1989, Ser. No. 597,300, Oct. 12, 1990, and Ser. No. 299,915, Oct. 21, 1988, said Ser. No. 407,595, is a continuation of Ser. No. 210,054, Jun. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 61,259, Jun. 11, 1987, abandoned, Ser. No. 61,354, Jun. 11, 1987, abandoned, and Ser. No. 120,883, Nov. 16, 1987, abandoned, said Ser. No. 597,300, is a continuation of Ser. No. 428,487, Oct. 31, 1989, abandoned, which is a continuation of Ser. No. 249,733, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 61,259, Sep. 26, 1988. This application Dec. 18, 1990, Ser. No. 629,757

Int. Cl.[5] H05B *3/58, 3/34;* **B32B** *17/00, 31/00*

U.S. Cl. 219—535 **13 Claims**



1. An elongate article which is in the form of a tape, which is not heat-recoverable, and which comprises:

(a) a conductive polymer element which

(1) is in the form of a tape having a ratio of external surface area to polymer volume of at least 40 in^2/in^3, an average thickness of 0.01 to 0.05 inch, a ratio of width to thickness of at least 20, and a ratio of length to width of at least 3;

(2) is composed of a conductive polymer which

(i) comprises a sintered polymeric component which consists essentially of ultra high molecular weight polyethylene which has a molecular weight of at least about 1.5 million, and, distributed in the polymeric component, a conductive particulate filler which consists essentially of carbon black present in amount less than 9% by volume,

(ii) increases in volume by at least 10% when it is heated from 23° C. to the melting point of at least part of the polymeric component, and

(iii) has a resistivity of 23° C. of 0.5 to 10 ohm-cm and exhibits ZTC behavior in the temperature range from 23° C. to the melting point of at least part of the polymeric component; and

(3) has been prepared by skiving a sintered rod produced by ram extruding a dry blend of the polymeric component and the conductive filler; and

(b) elongated electrode which are placed at opposite edge portions of the conductive polymer element, which can be connected to a source of electrical power and which, when connected to a suitable source of power, cause current to flow through the conductive polymer element and to generate heat in a heated section thereof, substantially all of the current which flows through the heated section flowing parallel to the plane of the element, the heated section consisting essentially of the conductive polymer, and the heated section having an area of at least 4 $inch^2$.

5,286,953

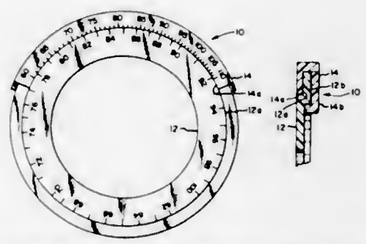
CARBURETOR JET SELECTION TOOL

Michael F. Marvonek, and Patricia Marvonek, both of P.O. Box 232, Stafford Springs, Conn. 06076

Filed Aug. 24, 1992, Ser. No. 933,792

Int. Cl.[5] G06C *27/00*

U.S. Cl. 235—78 R **2 Claims**



1. Apparatus for identifying the optimum jet for a carburetor which includes:

a general annular first member having a plurality of first graduations disposed about a peripheral portion thereof;

a general arcuate second member having a plurality of second graduations, said second member being disposed for cooperation with said first plurality of graduations;

means coupling said first and second members permitting relative rotation and selective alignment of said first and second pluralities of graduations;

one of said pluralities of graduations being arrayed on a linear scale corresponding to relative air density; and

the other of said pluralities of graduations being arrayed with nonlinear spacing therebetween and corresponding to respective jet identifying numbers and said means for coupling said first and second members includes a plurality of arms disposed at angularly space intervals; said plurality of arms being fixed to said arcuate member; said annular member includes an offset generally planar radially extending peripheral portion that is nested within said arms, said offset generally planar radially extending peripheral portion being substantially parallel to said annular member, said annular member being dimensioned and configured to fit around the circumference of an associated relative air density gauge.

5,286,954

BANKING TERMINAL HAVING CASH DISPENSER AND AUTOMATIC DEPOSITORY FUNCTIONS

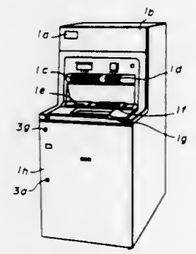
Yukie Sato; Tatsushi Miura; Masahiko Wada, and Kiyotaka Awatsu, all of Utsunomiya, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1991, Ser. No. 813,386

Claims priority, application Japan, Dec. 28, 1990, 2-408895

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **12 Claims**



1. A banking terminal comprising:

a plurality of locks provided at predetermined parts of the banking terminal and unlocked in response to instruction signals;

memory means for storing a table of attribute data in correspondence with one or a plurality of locks which are to be unlocked, the attribute data indicating levels of operations which are to be carried out with respect to the banking terminal;

reading means for reading information from a identification card which prestores at least attribute data; and

control means, coupled to said locks, said memory means and said reading means, for automatically unlocking one or a plurality of predetermined locks out of said locks by supplying instruction signals based on the attribute data read from the identification card by said reading means by referring to the table of said memory means.

5,286,955

METHOD FOR WIRELESS TRANSMISSION OF DATA TO A DATA CARRIER

Klaus Klosa, München, Fed. Rep. of Germany, assignor to Eurosil electronic GmbH, Eching, Fed. Rep. of Germany

Filed Feb. 21, 1992, Ser. No. 840,729

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1991, 4107311

Int. Cl.[5] G06K *17/00*

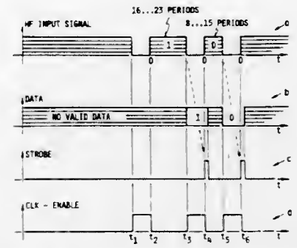
U.S. Cl. 235—380 **8 Claims**

1. A method for wireless transmission of data onto a data carrier having a semiconductor circuit (**1**), in particular onto a chip card or IC card, wherein the supply voltage of said semiconductor circuit (**1**) is generated by a high-frequency field (**10**) in which the data carrier has been placed, characterized by the following features:

a) for transmission of logic levels and command instructions said high-frequency field (**10**) is switched off and on such that the duration of the transmission intervals is constant whereas the transmission duration is of varying length depending on the logic levels and command instructions to be transmitted,

b) the transmission duration is determined from the number of periods transmitted of said high-frequency field (**10**),

c) to retrieve the data transmitted with said high-frequency field (**10**), the number of periods of said high-frequency field (**10**) transmitted between two transmission gaps is ascertained, stored and evaluated,



d) to ascertain the number of periods, a clock signal is generated exclusively during the transmission times,

e) to minimize the current consumption of said semiconductor circuit (**1**), the clock signal is off during the transmission gaps.

5,286,956

PRINTER HAVING PAGE-TURNING APPARATUS FOR PASSBOOKS AND WITH PAGE-TURNING CAPABILITY EVEN AFTER INITIAL DEFORMATION OF SHEETS TO BE TURNED

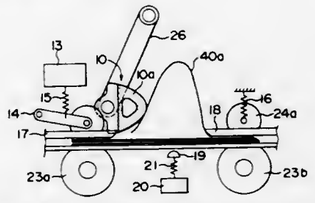
Akira Mochizuki, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,797

Claims priority, application Japan, May 30, 1990, 2-138220

Int. Cl.[5] B42D *9/04*

U.S. Cl. 235—432 **9 Claims**



1. A printer for passbooks or the like, comprising:

a transfer path having transfer means for transferring said passbook or the like;

printing means for printing on a specified page of said passbook or the like brought in on said transfer path;

means for processing an image of said passbook or the like to determine an amount of three-dimensional deformation of the passbook or the like prior to an initial deformation;

means for reading and writing magnetic information on said passbook or the like;

page-turning means, disposed in a vicinity of said transfer path for contacting and turning over a sheet of said passbook or the like; and

means disposed in a vicinity of said transfer path and in a position separate from a start position of turning over of a sheet by said page-turning means, for giving an initial deformation to said passbook or the like, wherein with said means for giving an initial deformation to said passbook or the like, the amount of initial deformation is variable in response to the determined amount of deformation of the three-dimensional pattern.

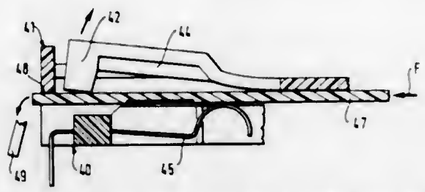
VOL 1159 ISS 3 FE 15 1994 UMI

5,286,957

SMART CARD READER

André Defrasne, Pontarlier, France, assignor to Alcatel Cit, Paris, France

Filed Apr. 23, 1992, Ser. No. 872,327
Claims priority, application France, Apr. 26, 1991, 91 05192
Int. Cl.[5] G06K 7/06
U.S. Cl. 235—441 10 Claims



1. In a smart card reader comprising a contact frame and a cover and having an inner end and an outer end, said outer end being provided with an orifice for insertion of a card to be read, said insertion occurring substantially along a first direction, said reader further comprising contact members, card guiding and positioning means including a card guide corridor defined by said contact frame and said cover, and an end of travel positioning abutment, said card guiding means determining a direction along which the card may be moved, said direction being substantially that of card insertion, said card guiding means establishing electrical connections between said contact members and conductive lands of a card inserted into said reader with a leading edge of said card bearing against said end of travel positioning abutment,

the improvement wherein; said reader comprises means for retracting the end of travel positioning abutment along a second direction substantially different from said first direction, and wherein said card guide corridor is open at said inner end of said card reader along said first direction and behind the rear of said retractable abutment for ejecting a foreign body within the card guide corridor upon a predetermined deflection of said end of travel positioning abutment in said second direction.

5,286,958

METHOD AND SYSTEM FOR RECORDING A NEW CODED MESSAGE IN PLACE OF AN OLD CODED MESSAGE RECORDED ON A MAGNETIC STRIPE CARRIED BY A SUPPORT DOCUMENT BY MANUAL DISPLACEMENT OF THE DOCUMENT

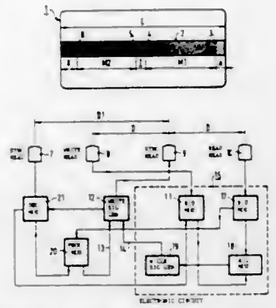
Jacques Smeets, La Ferte Alais, France, assignor to Compagnie Generale D'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Sep. 28, 1992, Ser. No. 952,681
Claims priority, application France, Oct. 4, 1991, 91 12241
Int. Cl.[5] G06K 7/08
U.S. Cl. 235—449 3 Claims

1. Method for recording a new coded message in place of an old coded message recorded on a magnetic stripe carried by a support document by manual displacement of said document past processor units, said old and new coded messages being produced by a coding system with its own clock signal and comprising a first part and a second part of substantially the same length separated by a gap, in which method

a) said first part of said new coded message is recorded on a first part of said stripe while reading said second part of said old message on a second part of said stripe, said reading being used to synchronize the writing of said first part of said new message to a clock signal obtained by reading said second part of said old message,

b) said second part of said new coded message is recorded on said second part of said stripe while reading said first part of said new coded message recorded in a) on said first part of said stripe, said reading being used to synchronize the writing of said second part of said new message to a clock



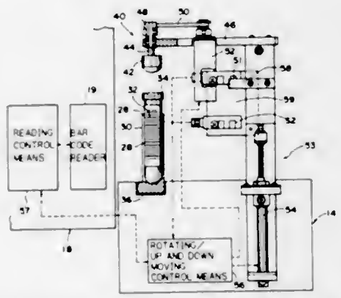
signal obtained by reading said first part of said new message.

5,286,959

APPARATUS FOR READING AN IDENTIFICATION CODE FROM A SAMPLE CONTAINER AS IT IS ROTATED

Takashi Demachi, Kobe, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Aug. 20, 1991, Ser. No. 747,665
Claims priority, application Japan, Oct. 5, 1990, 2-105318[U]
Int. Cl.[5] G06K 7/10; G01N 33/48
U.S. Cl. 235—462 2 Claims



1. Apparatus for reading an identification code of a container on a sample rack, said container having an identification code label attached on an outer wall thereof, said apparatus comprising:

an elastic member disposed on the upper side of said container;

means for rotating said elastic member;

means for moving said elastic member up and down;

first control means for controlling said rotary means and said up and down moving means;

an identification code reader for reading said identification code of said container;

second control means for controlling said identification code reader;

said means for rotating being effective for rotating said sample container first in a forward and then in a reverse direction by abutting said elastic member to an upper part of said container and rotating said elastic member;

whereby said identification code reader reads said identification code;

means for suppressing said rotating in said reverse direction when said identification code reader reads said identification code during said rotating in said forward direction;

a first sensor for detecting that said elastic member is located in a highest position;

said first sensor emitting a first output signal;

a second sensor for detecting that said elastic member is located in a lowest position;

said second sensor emitting a second output signal;

means for determining a one of the presence and absence of said sample container; and

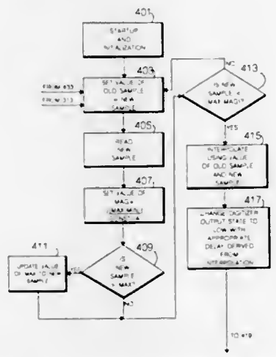
said means for determining being responsive to said first and said second output signal.

5,286,960

METHOD OF PROGRAMMABLE DIGITIZATION AND BAR CODE SCANNING APPARATUS EMPLOYING SAME

Andrew Longacre, Jr.; Charles M. Hammond, Jr.; William H. Havens, and John M. Pidhirny, all of Skaneateles, N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,534
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—463 29 Claims



1. A method of accurately reconstructing from a sampled analog signal bar-to-space and space-to-bar transition points in a symbol comprising the steps of:

accepting as input successive samples from an analog signal, said samples being representative of levels of reflectivity of a symbol being scanned;

determining a white value associated with a space and a black value associated with a bar on said symbol;

determining a threshold between said black value and said white value;

determining from said input a preceding sample and a succeeding sample having values that bracket said threshold; and

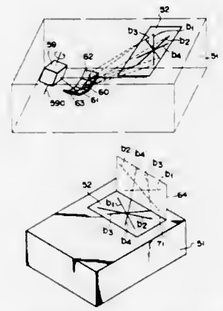
determining a transition point and an offset of said transition point from said preceding sample to define a first time interval therebetween by performing an interpolation that is limited to an interval between said preceding sample and said succeeding sample in the absence of upsampling.

5,286,961

BAR CODE READER PRODUCING TWO GROUPS OF VERTICAL SCAN LINES AND TWO GROUPS OF INCLINED SCAN LINES ON A PLANE NORMAL TO THE READ WINDOW

Shinji Saegusa, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 702,778, May 17, 1991, abandoned. This application May 26, 1992, Ser. No. 890,289
Claims priority, application Japan, May 23, 1990, 2-131269; Mar. 20, 1991, 3-056789
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—467 8 Claims



1. A bar code reading apparatus comprising:

laser beam source means for emitting a laser beam, said laser beam source means being disposed in a casing, said casing having a horizontal read window through which a laser beam is to be irradiated outward;

rotational mirror means for reflecting said laser beam emitted from said laser beam source means, for scanning with said laser beam; and

fixed scan mirror means disposed between said rotational mirror means and said horizontal read window for reflecting laser beams from said rotational mirror means to said horizontal read window, said fixed scan mirror means being fixed relative to said casing and consisting of four fixed mirror members arranged at given angles therebetween, said four fixed mirror members being arranged in such a manner that said laser beam reflected from said rotational mirror means provides four scan lines (b_1, b_2, b_3, b_4) in multiple directions on a plane of said horizontal read window and also four scan lines (b'_1, b'_2, b'_3, b'_4) in multiple directions on a normal plane which is normal to the plane of the horizontal read window,

said four scan lines (b_1, b_2, b_3, b_4) on the plane of the horizontal read window and said four scan lines (b'_1, b'_2, b'_3, b'_4) on the normal plane having one-to-one correspondence, and constituting a first group of scan lines (b_1, b_2, b'_1, b'_2) and a second group of scan lines (b_3, b_4, b'_3, b'_4),

one (b_1) of the two scan lines which are included in the first group and which are provided on the plane of the horizontal read window forming an angle of $b_1\theta$ (where $b_1\theta = 15°$ to $30°$) with respect to an intersecting line between said plane of said horizontal read window and said normal plane, and the other one (b_2) of said two scan lines forming an angle of $b_2\theta$ (where $b_2\theta = -b_1\theta$) with respect to said intersecting line,

one (b'_1) of the two scan lines which are included in the first group and which are provided on said normal plane forming an angle of $b'_1\theta$ (where $b'_1\theta = 15°$ to $40°$) with respect to said intersecting line, and the other one (b'_2) of said two scan lines forming an angle of $b'_2\theta$ (where $b'_2\theta = -b'_1\theta$),

one (b'_3) of the two scan lines which are included in the second group and which are provided on the plane of the horizontal read window forming an angle of $b_3\theta$ (where

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$b_3\theta = 55°$ to $80°$) with respect to said intersecting line, and the other one (b_4) of said two scan lines forming an angle of $b_4\theta$ (where $b_4\theta = -b_3\theta$),

one (b'_3) of the two scan lines which are included in the second group and which are provided on said normal plane forming an angle of $b'_3\theta$ (where $b'_3\theta = 80°$ to $105°$) with respect to said intersecting line, and the other one (b'_4) of said two scan lines forming an angle of $b'_4\theta$ (where $b'_4\theta = -b'_3\theta$),

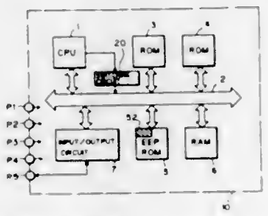
the scan lines of the first group being provided by two of said four fixed mirror members, and the scan lines of the second group being provided by a different two of said four fixed mirror members.

5,286,962

IC CARD FOR PREVENTION OF FRAUDULENT USE

Shuzo Fujioka, and Kenichi Takahira, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,764
Claims priority, application Japan, Dec. 14, 1990, 2-402220
Int. Cl.[5] G06K *5/02, 9/03*
U.S. Cl. 235—492 **11 Claims**



1. An IC card, comprising:

a CPU for outputting a test signal entering an active state in execution of a test program;

a first storage part storing said test program;

a second storage part storing an application program;

a readable and writable third storage part provided with at least a region for storing a code being specific to said IC card; and

switching means for receiving said test signal for bringing said third storage part into a readable and unwritable state when said test signal is in an inactive state.

5,286,963

PROJECTION EXPOSURE APPARATUS AND METHOD, A SEMICONDUCTOR DEVICE MANUFACTURING SYSTEM AND METHOD, AND A SEMICONDUCTOR DEVICE MANUFACTURED BY ILLUMINATING AN ORIGINAL HAVING A CIRCUIT PATTERN WHEN THE ORIGINAL AND A WAFER ARE IN A FOCUSED STATE

Makoto Torigoe, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

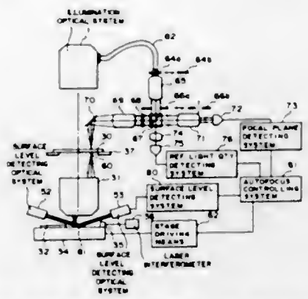
Filed Aug. 7, 1992, Ser. No. 925,878
Claims priority, application Japan, Aug. 9, 1991, 3-225220
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.2 **25 Claims**

1. A projection exposure apparatus, comprising:

an illumination optical system for defining an illumination light source for illuminating an original having a pattern, said illumination optical system including means for changing the shape of said illumination light source;

a projection optical system for projecting an image of the pattern, illuminated by said illumination light source, to a surface to be exposed;

a focus detecting system for detecting the state of focus of the original and the surface to be exposed; and



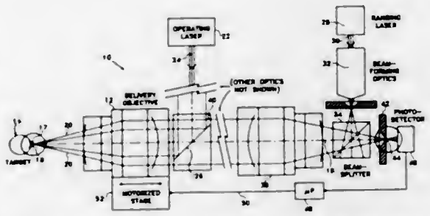
adjusting means for adjusting said focus detecting system in accordance with the change of the shape of said illumination light source by said changing means.

5,286,964

SYSTEM FOR DETECTING, CORRECTING AND MEASURING DEPTH MOVEMENT OF A TARGET

William D. Fountain, Fremont, Calif., assignor to Phoenix Laser Systems, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 655,919, Feb. 19, 1991, Pat. No. 5,162,641. This application Sep. 15, 1992, Ser. No. 945,207
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] G01S *17/08*
U.S. Cl. 250—201.2 **12 Claims**



1. A method for detecting and correcting for movements in a depth direction of a target at which a treatment laser beam is directed, comprising,

directing an illuminating light beam from an illuminating light source toward the target through an objective lens means, to a focus at the position of a reflective surface associated with the target,

providing a pinhole structure with a pinhole, in an optical system behind the objective lens means,

reflecting the illuminating light beam off the reflective surface associated with the target, and receiving the reflected light through the objective lens means and through the optical system to a rear focus or beam waist of the reflected light at the pinhole when the target is in a nominal position with the reflective surface at the focus of the illuminating light beam,

directing a treatment laser beam through the objective lens means to a treatment laser focus at the target, which may be a different focus from the focus of the illuminating light beam but in a known relationship thereto,

detecting the level of light passed through the pinhole with a photodetector means positioned behind the pinhole,

determining, in response to a reduction in light intensity sensed by the photodetector, which direction of travel of the objective lens means will result in a gain in light intensity, and

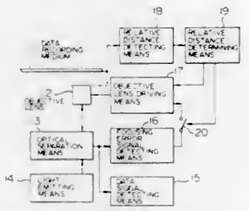
moving the objective lens means outwardly toward the target or inwardly away from the target in response to a reduction in light intensity sensed by the photodetector means behind the pinhole and in the appropriate direction as determined by the determining step, until the light level sensed at the photodetector means is maximized thereby indicating the location of the beam waist at the pinhole and the location of the reflective surface at the focus of the illuminating light beam, and thereby refocussing the treatment laser beam at the proper depth at the target.

5,286,965

ANTICOLLISION SYSTEM FOR OBJECTIVE LENS IN AN OPTICAL DATA RECORDING APPARATUS

Tsuyoshi Okada, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1992, Ser. No. 886,809
Claims priority, application Japan, Jun. 5, 1991, 3-134394
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.5 **4 Claims**



1. An anticollision system for an objective lens for use in an optical data reproducing apparatus, said optical data reproducing apparatus comprising:

a rotatable data recording medium having data recorded on a data recording surface thereof;

light emitting means for emitting a laser beam;

an objective lens positioned adjacent said data reading means, said objective lens condensing the laser beam emitted from said light emitting means on the data recording surface of said data recording medium;

optical separation means for separating the laser beam transmitted toward said data recording medium from a laser beam reflected therefrom;

data signal detecting means receiving the reflected laser beam from said optical separation means, detecting a data signal by reading in the form of light intensity variations the data signal recorded on said data recording medium, and outputting the detected data signal;

focusing error signal detecting means receiving the reflected laser beam from said optical separation means, detecting a focusing error on the basis of the reflected light beam, and outputting a focusing error signal at an output terminal thereof;

objective lens driving means having first and input terminals, said objective lens driving means receiving the focusing error signal from the output terminal of said focusing error signal detecting means at the first input terminal thereof and driving said objective lens in accordance with the focusing error signal, said objective lens thereby being focused on the data recording surface of said data recording medium;

a normally-closed switch interposed between the output terminal of said focusing error signal detecting means and the first input terminal of said objective lens driving means;

relative distance detecting means having an output terminal, said relative distance detecting means detecting a relative distance between said objective lens and said data recording medium; and

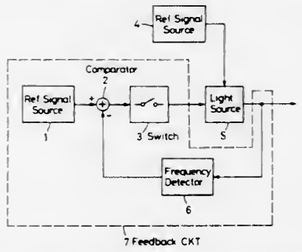
relative distance determining means having an input terminal connected to the output terminal of said relative distance detecting means, a first output terminal for delivering a first drive signal to said normally-closed switch, and a second output terminal for delivering a second drive signal to the second input terminal of said objective lens driving means, said relative distance determining means determining whether or not the relative distance between said objective lens and said data recording medium determined by said relative distance detecting means has a predetermined value or less and, upon determining that the detected relative distance represented by the output signal at the output terminal of said relative distance detecting means has the predetermined value or less, delivers the first drive signal from the first output terminal thereof to open said normally-closed switch and delivers the second drive signal from the second output terminal thereof to drive said objective lens away from the data recording surface of said data recording medium.

5,286,966

FREQUENCY STABILIZED LIGHT SOURCE

Satohi Matsuura; Tekken Ri, both of Tokyo; Tsuneo Horiguchi, and Mitsuhiro Tateda, both of Mito, all of Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,945
Claims priority, application Japan, May 10, 1991, 3-133319
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **2 Claims**



1. A frequency stabilized light source which is stabilized by frequencies of uniform intervals comprises:

a light source **5** whose light frequency is varied with a signal from a reference signal source **4**;

a frequency detector **6** for detecting the frequency of the output of the light source **5**, cycles of the said frequency detector being the same as said uniform intervals;

a comparator **2** for comparing the output of the frequency detector **6** with the output of a reference signal source **1**; and

a switch **3** having as its input the output of its comparator **2** for inputting the output to the light source **5**, said switch being so operated that when the frequency of the light source **5** is to be changed the switch is opened and the output of the reference signal source **4** is changed to set the output frequency of the light source **5** near the desired frequency and then the switch **3** is closed.

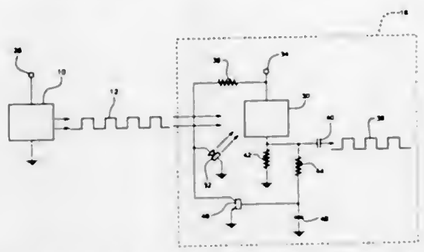
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5,286,967

METHOD AND APPARATUS FOR SELF-BIASING A LIGHT BEAM OBSTACLE DETECTOR WITH A BIAS LIGHT

Richard D. Bates, Ann Arbor, Mich., assignor to Stanley Home Automation, Novi, Mich.

Filed Dec. 4, 1992, Ser. No. 985,961
Int. Cl.[5] G01J *1/32*; H01J *40/14*; G01V *9/04*
U.S. Cl. 250—205 **9 Claims**



6. A method for automatically biasing a light beam obstacle detector for detecting the presence of an object in a defined area when the ambient light condition is variable comprising the steps of:

supplying current to an auxiliary light source to illuminate a light sensitive receiver;

transmitting a modulated light signal across a defined area;

receiving the auxiliary illumination, the modulated light signal, and the ambient light by the light sensitive receiver;

generating an electrical signal which corresponds to the light incident upon the receiver;

passing a frequency band of the electrical signal containing the information contained in the modulated light signal to an output;

passing low frequency components of the electrical signal generated by the receiver to a feedback circuit containing the auxiliary light source;

controlling the current available to the auxiliary light source, and indirectly the intensity of the auxiliary light source, in a manner inversely proportional to the amplitude of the low frequency components of the electrical signal generated by the receiver.

5,286,968

METHOD AND DEVICE FOR MULTICHANNEL ANALOG DETECTION

Daniele Fournier; Francois Charbonnier; Philippe Gleyzes, and Albert-Claude Boccara, all of Paris, France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR91/00514, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO92/00549, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 27, 1991, Ser. No. 834,226
Claims priority, application France, Jun. 29, 1990, 90 08255
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **13 Claims**

1. Method for multichannel analog detection of a signal to be detected in which:

the signal to be detected is modulated, producing a modulated signal S(P) of frequency (f) accompanied by noise;

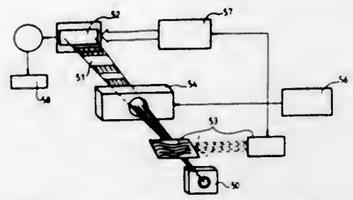
the modulated signal is subjected to a synchronous attenuation of phase Φ producing an attenuated modulated signal;

the modulated-attenuated signal is received by a multipoint receiver which produces, for each point, a primary analog electrical signal;

each primary analog signal is integrated over N periods producing, for each point (P), a value V(P,Φ);

the values V(P,Φ), for the set of points and for a fixed phase value Φ, are read, digitized, stored;

the phase Φ is successively increased (n−1) times by $2\pi/n$, and for each of these values the operations which make it possible to store the values V(P,Φ) are repeated;



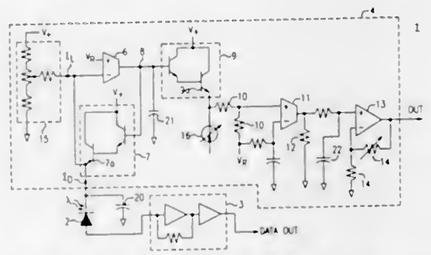
the n values V(P,Φ) obtained respectively for each point (P) are digitally processed in such a way as to produce a data item representative of the amplitude and of the phase of S(P).

5,286,969

APPARATUS FOR MEASURING OPTICAL POWER IN AN OPTICAL RECEIVER WITH A NON-LINEAR ELEMENT AND A TRANSCONDUCTANCE AMPLIFIER

James G. Roberts, Soest, Netherlands, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 28, 1993, Ser. No. 10,376
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **11 Claims**



1. An apparatus for monitoring the power of an optical signal received by a photodiode in an optical receiver, CHARACTERIZED BY:

a first transconductance amplifier having an inverting input and an output;

a first non-linear element, coupling between the inverting input and the output of the transconductance amplifier;

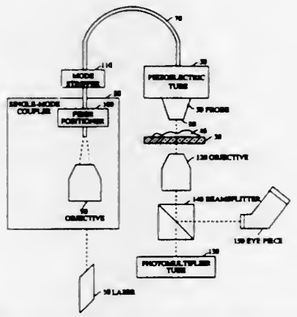
wherein the photodiode couples to the inverting input of the amplifier and the output of the amplifier provides a voltage that is proportional to the logarithm of the received optical signal power.

5,286,970

NEAR FIELD OPTICAL MICROSCOPIC EXAMINATION OF A BIOLOGICAL SPECIMEN

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,142
Int. Cl.[5] G02B *21/06*
U.S. Cl. 250—227.26 **5 Claims**



1. A method for examining a biological specimen, comprising the steps of: impinging incident light on the specimen; detecting light emitted from a first surface of the specimen at least at one emission wavelength; constructing a magnified image of a portion of the specimen from the detected light; and visually examining the magnified image; wherein the detecting step comprises the steps of:

a) admitting a portion of the emitted light into a waveguiding body through an aperture that is distant from the first surface by no more than the emission wavelength, and that is smaller, in at least one lateral dimension, than the emission wavelength;

b) exciting a guided metallic mode of electromagnetic radiation within the waveguiding body;

c) adiabatically converting a portion of the light within the waveguiding body from the metallic mode to at least one guided dielectric mode; and

d) receiving the adiabatically converted light at a photodetector.

5,286,971

DATA RECORDING USING A NEAR FIELD OPTICAL PROBE

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,235
Int. Cl.[5] G02B *21/06*
U.S. Cl. 250—227.26 **4 Claims**

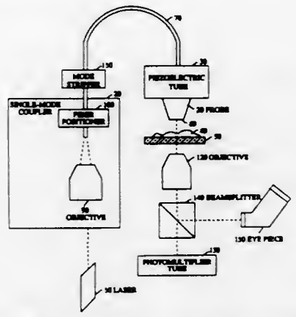
1. A method for recording digital data, comprising the steps of:

a) providing a recording medium which comprises a surface upon which a bit pattern can be impressed; and

b) impinging at least one small spot of electromagnetic radiation of at least a given wavelength on the surface such that a localized physical change occurs in the medium, such that an optical signal can be modulated by the physical change, the modulation carrying at least one bit of information,

wherein the impinging step comprises the further steps of:

c) admitting incident electromagnetic radiation of at least the given wavelength into an optical waveguiding body such that a guided dielectric mode is excited within the waveguiding body;



d) adiabatically converting a portion of the electromagnetic radiation from the guided dielectric mode to a guided metallic mode; and

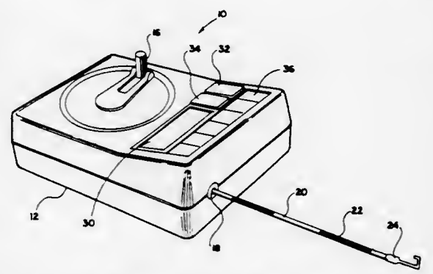
e) emitting a portion of the adiabatically converted radiation from an aperture that is distant from the surface by no more than the given wavelength, and that is smaller, in at least one lateral dimension, than the given wavelength.

5,286,972

PHOTOELECTRIC LINE MEASURING DEVICE WITH DIGITAL DISPLAY

David C. Falk, 6808 Greystone Dr., Raleigh, N.C. 27615, and Warren J. Jasper, 127 Donna Pl., Cary, N.C. 27513

Filed Mar. 5, 1993, Ser. No. 26,754
Int. Cl.[5] G01D *5/34*; G01B *3/10*
U.S. Cl. 250—231.16 **10 Claims**



1. An optical measuring device comprising:

(a) a casing;

(b) a reel mounted within the casing;

(c) a line wound on the reel and extending through an opening in the casing, said line having a plurality of elongated marks spaced at predetermined increments from one another;

(d) first and second sensors mounted within the casing for detecting the elongated marks on the line and producing detection signals as the line passes through the casing, wherein the spacing between the first and second sensors is such that elongated marks are detected by both sensors simultaneously as the line passes by said sensors;

(e) a comparator circuit operatively connected to the first

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and second sensors for processing the detection signals from the first and second sensors and producing an "up" signal when the marks on the line pass from the first sensor to the second sensor, and a "down" signal when the marks on the line pass from the second sensor to the first sensor;

(f) a counter circuit responsive to the "up" and "down" signals from the comparator circuit for maintaining a count indicative of the length of the line; and

(g) display means operatively connected to the counter circuit for displaying the length of the line.

5,286,973

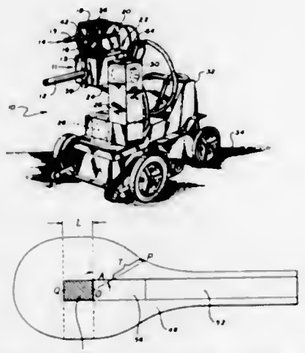
RADIATION MAPPING SYSTEM

George B. Westrom, Angelus Oaks; Robert E. Carlton, Seal Beach, and Lloyd R. Tripp, San Pedro, all of Calif., assignors to Odetics, Inc., Anaheim, Calif.

Filed Nov. 13, 1991, Ser. No. 791,461

Int. Cl.[5] G01V *5/00*

U.S. Cl. 250—253 **9 Claims**



1. A radiation detection and mapping system, comprising:

means for detecting radiation from sources of radiation within a restricted solid angle;

means for shielding said means for detecting radiation so that incident radiation is substantially uniformly attenuated over all directions other than the restricted solid angle, said means for shielding having a substantially uniform thickness when measured from points along a central axis of symmetry of said means for detecting radiation;

means for determining the distance between the means for detecting radiation and the sources of radiation;

means for visually imaging the sources of radiation and their environment; and

means for moving the detecting means, distance determining means and imaging means through a range of altitudinal and azimuthal angles.

5,286,974

CHARGED PARTICLE ENERGY ANALYZERS

Andrew R. Walker, Prestbury, and Simon C. Page, Hadfield, both of England, assignors to Kratos Analytical Limited, Urmston, England

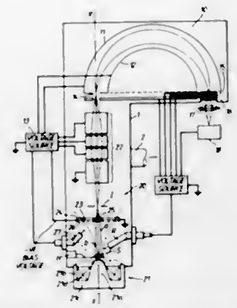
Filed Oct. 16, 1992, Ser. No. 962,250

Claims priority, application United Kingdom, Oct. 18, 1991, 9122161.4

Int. Cl.[5] H01J *49/44*

U.S. Cl. 250—305 **25 Claims**

1. A charged particle energy analyser comprising a magnetic lens, a source of radiation arranged to direct radiation onto a specimen to cause charged particles to be emitted therefrom, the specimen being immersed in the magnetic imaging field of the magnetic lens whereby emitted particles having energies in a predetermined energy range are brought to a focus by the magnetic imaging field and emitted particles having energies outside that energy range are unfocussed, analysing means for analysing the energies of the focussed particles and means for



enabling the magnetic imaging field to guide said unfocussed charged particles and/or charged particles derived from said unfocussed charged particles onto the specimen whereby to modify the charge thereon.

5,286,975

PYRO-ELECTRIC TYPE INFRARED-RAY SENSOR

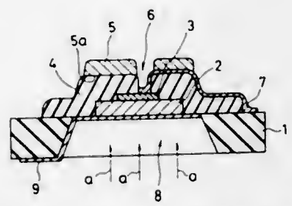
Toshiaki Ogura, Hirakata; Nahoko Shimamura, Kadoma, and Masaki Aoki, Mino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 29, 1992, Ser. No. 889,700

Claims priority, application Japan, May 29, 1991, 3-124134; Nov. 25, 1991, 3-308159

Int. Cl.[5] G01J *5/02*

U.S. Cl. 250—338.3 **4 Claims**



1. A pyro-electric type infrared-ray sensor comprising:

a pyro-electric thin film;

a first electrode thin film formed on a first surface of said pyro-electric thin film;

a second electrode thin film formed on a second surface of said pyro-electric thin film;

an organic thin film which covers the first surface of said pyro-electric thin film; and

an optical element for reflecting infrared-rays provided at least partially on the surface of the organic thin film.

5,286,976

MICROSTRUCTURE DESIGN FOR HIGH IR SENSITIVITY

Barrett E. Cole, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 7, 1988, Ser. No. 288,701

Int. Cl.[5] G01J *5/20, 5/22, 5/02*

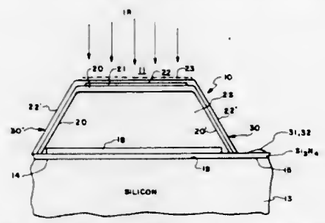
U.S. Cl. 250—349 **12 Claims**

1. A two-level microbridge infrared bolometer structure comprising:

a bolometer structure on a semiconductor substrate, said structure having a lower section on the surface of the substrate and a microbridge upper detector plane structure spaced from and immediately above the lower section;

an infrared-reflective thin film metal coating on the surface of said lower section;

said upper microbridge detector plane structure comprising a planar sandwich structure including a supporting dielectric thin film layer, and a thin film temperature responsive resistive element having first and second terminals;



downwardly extending dielectric leg portion means which are a downwardly extending continuation of said upper structure dielectric supporting said upper microbridge detector plane structure above said lower section so that a thermal isolation gap exists between said upper and lower sections; and,

electrically conductive paths included in said downwardly extending leg portion means connecting said first and second terminals to said lower section.

5,286,977

POSITIONING DEVICE

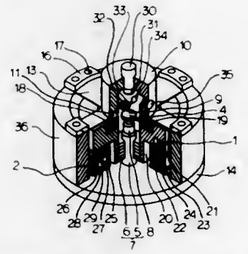
Kazuo Yokoyama, and Motoshi Shibata, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 25, 1993, Ser. No. 8,804

Claims priority, application Japan, Jan. 23, 1992, 4-010216

Int. Cl.[5] H01J *37/20*

U.S. Cl. 250—442.11 **17 Claims**



1. A positioning device comprising an X-Y scanning mechanism capable of scanning and driving in planar directions and a Z-scanning mechanism capable of scanning and driving in a direction perpendicular to the planar directions, said Z-scanning mechanism being disposed in the moving part of said X-Y scanning mechanism, wherein a sample table is fixed to the moving part of said Z-scanning mechanism, and wherein the housing of a probe head is mounted on the casing of the positioning device through a plate spring, thereby abutting against the plane formed in the moving part of said X-Y scanning mechanism through three point contact legs.

5,286,978

METHOD OF REMOVING ELECTRIC CHARGE ACCUMULATED ON A SEMICONDUCTOR SUBSTRATE IN ION IMPLANTATION

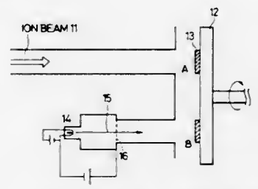
Yukimasa Yoshida, and Katsuya Okumura, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 600,768, Oct. 23, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 976,335

Claims priority, application Japan, Oct. 25, 1989, 1-276012

Int. Cl.[5] H01V *37/317*

U.S. Cl. 250—492.21 **6 Claims**



1. A method of removing electric charge accumulated on a semiconductor substrate during ion implantation, comprising the steps of:

implanting ions by irradiating an ion beam onto the semiconductor substrate to form an impurity layer therein; and

irradiating an accelerated electron beam onto a predetermined portion of the semiconductor substrate simultaneously with the ion beam;

wherein, the electron beam is accelerated with an acceleration voltage, the range of the acceleration voltage being from 1 to 50 KeV, the range of the current density of the electron beam being from approximately 70 to 141 $\mu A/cm^2$, and the electric charge being eliminated through the semiconductor substrate by an electron beam induced current caused by irradiating the accelerated electron beam.

5,286,979

PROCESS FOR ABSORBING ULTRAVIOLET RADIATION USING DISPERSED MELANIN

David L. Berliner, 380 Selby La., and Helen Leong, 146 Atherton Ave., both of Atherton, Calif. 94027

Continuation of Ser. No. 878,716, May 4, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 73,284

Int. Cl.[5] G21K *3/00*

U.S. Cl. 250—515.1 **14 Claims**

1. A method for absorbing ultraviolet radiation in the atmosphere comprising the step of introducing a dispersed composition comprising melanins into the path of the ultraviolet radiation.

5,286,980

PRODUCT DISCRIMINATION SYSTEM AND METHOD THEREFOR

Gerald R. Richert, Three Rivers, Calif., assignor to OMS-Optical Measuring Systems, Three Rivers, Calif.

Filed Oct. 30, 1992, Ser. No. 969,111

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **22 Claims**

1. A method for measuring size of a product unit, comprising

sensing size of the product unit more than one time using first sensors to measure the magnitude of selected spectra of reflected light from the product unit and, from each sensing time, accumulating a first value representative of size for the product unit;

determining a resultant value of size for the product unit from the first values representative of size;

sensing size of the product unit using a line scan camera

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adjacent to one of the first sensors and accumulating a second value representative of size for the product unit; recalibrating the resultant value by algebraically adding to



the resultant value the algebraic difference of the first value for the product unit accumulated from the first sensor adjacent to the line scan camera less the second value.

5,286,981

TURN-OFF POWER SEMICONDUCTOR COMPONENT, AND ALSO PROCESS FOR PRODUCING IT

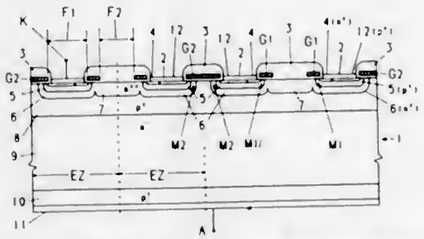
Klas Lilja, Fislisbach; Kenneth Johansson, Nussbaumen, and Thomas Stockmeier, Würenlingen, all of Switzerland, assignors to ASEA Brown Boveri Ltd., Baden, Switzerland

Filed Jun. 26, 1992, Ser. No. 903,947

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121375

Int. Cl.[5] H01L *29/74, 27/02, 29/10*

U.S. Cl. 257—132 **13 Claims**



1. A turn-off power semiconductor component comprising:

(a) a planar semiconductor substrate having two oppositely situated principal surfaces, of which the first is designed as an anode and the second as a cathode;

(b) in the semiconductor substrate between the anode and the cathode, a laterally continuous, n-type base layer which is n^--doped a p^+-doped anode layer which is embedded in the n-type base layer from the anode side and is provided with an anode contact on the first principal surface, and a p-type base layer which is p^+-doped and embedded in the n-type base layer from the cathode side;

(c) a multiplicity of unit cells arranged alongside to one another and electrically connected in parallel in the semiconductor substrate between the anode and the cathode; and

(d) a first MOSFET, which is provided for the purpose of turning off the component, arranged inside each unit cell on the cathode side;

wherein, inside each unit cell,

(e) an n^+-doped turn-off region is embedded in the p-type base layer, a p-type short-circuit region which is p^+-doped is embedded in its turn in the turn-off region and an n^+-doped first cathode region is embedded in its turn in the p-type short-circuit region, all from the cathode side, the p-type short-circuit region and the first cathode region being provided with a cathode contact on the second principal surface;

(f) an n^{++}-doped second cathode region which adjoins the turn-off region is embedded in the p-type base layer on one side of the turn-off region from the cathode side;

(g) a part of the p^+-doped short-circuit region emerges at the second principal surface on one side of the turn-off region between the first and second cathode regions;

(h) a part of the n^+-doped turn-off region emerges at the second principal surface on the other side of the turn-off region between the p-type short-circuit region and the p-type base layer;

(i) a first gate electrode and a second gate electrode are arranged alongside one another and in an insulated manner above the semiconductor substrate on the cathode side and are isolated from one another by a first window,

(aa) the first gate electrode spanning said part of the p-type short-circuit region which emerges at the second principal surface on one side of the turn-off region between the first cathode region and the second cathode region and forming together with said first and second cathode regions and said part of said p-type short-circuit region the first MOSFET; and

(bb) the second gate electrode spanning said part of the turn-off region which emerges at the second principal surface on the other side of the turn-off region between the p-type short-circuit region and the p-type base layer and forming together with said first and second cathode regions and said part of said turn-off region a second MOSFET; and

(j) the p-type short-circuit region and the turn-off region have been introduced into the semiconductor substrate through the first window.

5,286,982

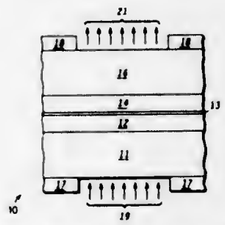
HIGH CONTRAST RATIO OPTICAL MODULATOR

Donald E. Ackley, Paradise Valley; Herbert Goronkin, Tempe, and Michael S. Lebby, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1991, Ser. No. 796,285

Int. Cl.[5] H01L *27/12, 29/161, 27/14*

U.S. Cl. 257—14 **10 Claims**



1. A high contrast ratio optical modulator comprising:

an aluminum gallium arsenide first confinement layer;

a gallium arsenide active layer on a first surface of the first confinement layer;

an aluminum gallium arsenide second confinement layer on the active layer wherein a first surface of the second confinement layer is in contact with the active layer; and

a transition layer within the active layer of the modulator wherein the transition layer forms a quantum well that substantially maintains alignment between an electron wave function and a hole wave function of the modulator for voltage values applied to the modulator that are less than a predetermined value which facilitates absorbing light within the active layer thereby blocking light from passing through the modulator, and wherein the transition layer facilitates shifting the electron wave function and the hole wave function at voltage values applied to the modulator that are greater than the predetermined value thereby transmitting light through the modulator.

5,286,983

THIN-FILM-TRANSISTOR ARRAY WITH CAPACITANCE CONDUCTORS

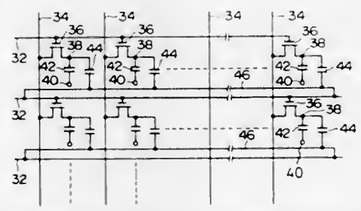
Takao Sakamoto; Kazuhiro Kobayashi; Masahiro Hayama, and Naoki Nakagawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,342

Claims priority, application Japan, Oct. 18, 1991, 3-270863

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—59 **14 Claims**



1. A thin-film-transistor (TFT) array for a display comprising:

an array of TFTs arranged in rows and columns, each TFT having a gate, a source, and a drain;

a plurality of spaced apart gate conductors, each gate conductor having opposed first and second ends, one of said gate conductors being provided for each row of said TFTs and connected to said gates of said TFTs in that row;

a plurality of spaced apart source conductors crossing over said gate conductors, one of said source conductors being provided for each column of said TFT's and connected to said sources of said TFTs in that column;

a matrix of pixel electrodes arranged in rows and columns corresponding to the rows and columns of said TFTs, said pixel electrodes in each of the rows being connected to said drains of corresponding TFTs in that row;

a matrix of display sections arranged in rows and columns corresponding to the rows and columns of said TFTs, each of said display sections including a storage capacitor having first and second terminals with the first terminal connected to said drain of a corresponding TFT; and

a plurality of storage capacitance conductors spaced from said gate conductors, said second terminals of said storage capacitors of said display section in each row being connected to corresponding storage capacitance conductors, the storage capacitance conductor connected through said storage capacitors to drains of TFTs for each row respectively being connected to the gate conductor connected to said gates of said TFTs in an adjacent row at at least one of said first and second ends of that gate conductor.

5,286,984

CONDUCTIVITY MODULATED MOSFET

Akio Nakagawa, Hiratsuka; Hiromichi Ohashi, Yokohama; Yoshihiro Yamaguchi, Urawa; Kiminori Watanabe, Kawasaki, and Thuneo Thukakoshi, Zushi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

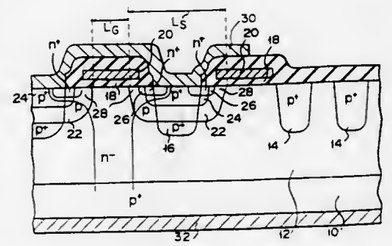
Continuation of Ser. No. 712,997, Jun. 10, 1991, Pat. No. 5,086,323, which is a continuation of Ser. No. 532,366, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 249,822, Sep. 27, 1988, abandoned, which is a continuation of Ser. No. 116,357, Nov. 4, 1987, Pat. No. 4,881,120, which is a continuation of Ser. No. 19,337, Feb. 26, 1987, Pat. No. 4,782,372, which is a continuation of Ser. No. 738,188, May 28, 1985, Pat. No. 4,672,407. This application Nov. 27, 1991, Ser. No. 799,311

Claims priority, application Japan, May 30, 1984, 59-110224; Sep. 29, 1984, 59-204427; Nov. 20, 1984, 59-244811

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] H01L *29/10, 29/78*

U.S. Cl. 257—139 **11 Claims**



1. A conductivity modulated metal oxide semiconductor field effect transistor, comprising:

a first conductivity type region having a first surface;

a high resistance semiconductor region of a second conductivity type having a second surface;

a base region of the first conductivity type which is formed in the second surface of said high resistance semiconductor region;

a source region of the second conductivity type which is formed in said base region;

a gate electrode formed at least on a gate insulating film which is formed on a channel region formed in said base region between said high resistance semiconductor region and said source region;

a source electrode ohmic-contacting said source and base regions; and

a drain electrode formed on said first surface of the first conductivity type region,

wherein said source region comprises a plurality of separated sections in a contact area between said source electrode and said base and source regions to set a specific drain current of said transistor at a value lower than a latch-up current of the transistor, the specific drain current being defined as a drain current when $10^2 \cdot d(V)$ is applied to said gate electrode and 100-V is applied to said drain electrode, wherein when a 100-V constant voltage source is directly connected between said source and drain electrodes of said conductivity modulated metal oxide semiconductor field effect transistor, a gate voltage is increased from 0 V to $10^2 \cdot d(V)$ within 200 nec to make said conductivity modulated metal oxide semiconductor field effect transistor turned on, said transistor is turned on 10 μsec, and thereafter the gate voltage is decreased from $10^2 \cdot d(V)$ to 0(V) within 200 nsec, said conductivity modulated metal oxide semiconductor field effect transistor is not latched up but turned off at a temperature of 25° C., wherein d is the thickness (μm) of the gate insulating film.

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5,286,985

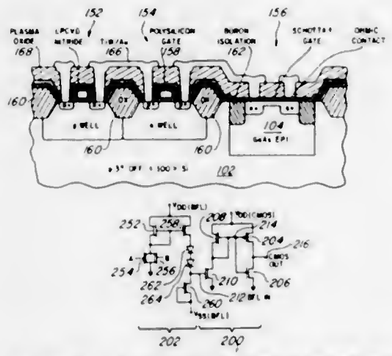
INTERFACE CIRCUIT OPERABLE TO PERFORM LEVEL SHIFTING BETWEEN A FIRST TYPE OF DEVICE AND A SECOND TYPE OF DEVICE

Albert H. Taddiken, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 714,797, Jun. 13, 1991, abandoned, which is a continuation of Ser. No. 612,178, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 267,063, Nov. 4, 1988, abandoned. This application Dec. 22, 1992, Ser. No. 996,483

Int. Cl.[5] **H01L** *29/161, 29/205, 29/225*

U.S. Cl. 257—200 **3 Claims**



1. An interface circuit between first and second types of devices, said interface circuit operable to perform level shifting of first signals generated by said first type of device to second signals compatible with said second type of device, said interface comprising:

(a) a first series path comprising at least two devices of a first type including two MESFETs in series either between a common bias supply and ground or between said common bias supply and a second bias supply; and

(b) a second series path comprising, either a third MESFET of said first type or a p-channel MOSFET of said second type and an n-channel MOSFET of said second type in series between said common bias supply and ground.

5,286,986

SEMICONDUCTOR DEVICE HAVING CCD AND ITS PERIPHERAL BIPOLAR TRANSISTORS

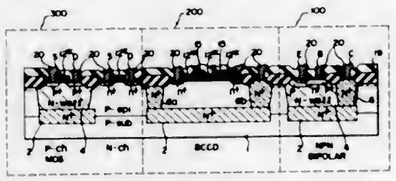
Kazuo Kihara, Yokohama, and Minoru Taguchi, Oomiya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 505,995, Apr. 9, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,091

Claims priority, application Japan, Apr. 13, 1989, 1-93607

Int. Cl.[5] **H01L** *29/78, 27/02, 29/72*

U.S. Cl. 257—215 **5 Claims**



1. A semiconductor device comprising:

a semiconductor chip;

a bipolar transistor formed in said semiconductor chip and including emitter, base, and collector regions;

a charge transfer device formed in said semiconductor chip;

a MOS device comprising at least one MOS transistor formed in said semiconductor chip, said charge transfer device arranged between said bipolar transistor and said MOS device;

a charge absorbing region of a first conductivity type spaced from said emitter, base, and collector regions of said bipolar transistor and surrounding said charge transfer device for preventing leakage of charge from said charge transfer device to said bipolar transistor, wherein a portion of said charge absorbing region separating said charge transfer device from said bipolar transistor has a first thickness and a portion of said charge absorbing region separating said charge transfer device from said MOS device has a second thickness less than the first thickness.

5,286,987

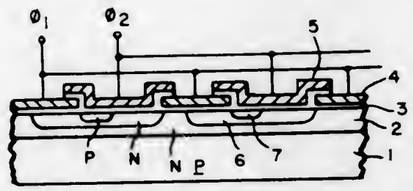
CHARGE TRANSFER DEVICE

Takashi Watanabe, Soraku, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,709

Int. Cl.[5] **H01L** *29/78*

U.S. Cl. 257—221 **12 Claims**



1. In a charge transfer device comprising pairs of a first transfer electrode and a second transfer electrode, said pairs being arranged along a transfer direction, said first and second transfer electrodes being respectively disposed at an upper stream portion and a lower stream portion of said transfer direction, and being formed over a semi-conductor substrate with an insulating layer therebetween, an upper stream end and a lower stream end of said second transfer electrodes being respectively extended over a lower stream end of said first transfer electrode of the respective transfer electrode pair and an upper stream end of the first transfer electrode of the succeeding electrode pair with an insulating layer therebetween, wherein said charge transfer device further comprises:

a first region implanted with a first conductivity type in said semiconductor substrate, said first region being formed in a surface of said semiconductor substrate, and being under a portion of said first transfer electrode and the entire of said second transfer electrode; and

a second region implanted with a second and different conductivity type in said first region, said second region being under a portion of said second transfer electrode.

5,286,988

CHARGE COUPLED DEVICE IMAGE SENSOR

Naoki Nishi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 902,666

Claims priority, application Japan, Jun. 21, 1991, 3-177177

Int. Cl.[5] **H01L** *29/796, 27/14, 31/00*

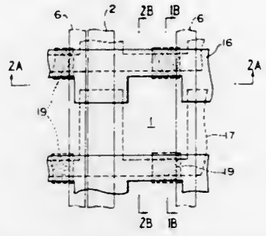
U.S. Cl. 257—223 **2 Claims**

1. A charge coupled device image sensor comprising:

a plurality of sensor elements each consisting of a hole accumulating layer of a first conductivity type and an electrical signal charge accumulating region of a second conductivity type underlying the hole accumulating layer, and arranged in vertical and horizontal rows at intervals;

vertical transfer registers each formed along and on one side of each vertical row of sensor elements to transfer electrical signal charges read from the sensor elements in the corresponding vertical row in a vertical direction; and

channel stopper regions of said first conductivity type each



formed along and on the other side of each vertical row of sensor elements to receive holes produced in the sensor elements;

wherein doped regions of said first conductivity type are each formed in areas between the sensor elements on each vertical row; and wherein the impurity concentration of the doped regions is higher than that of the channel stopper regions and is lower than that of the hole accumulating layer.

5,286,989

SOLID STATE IMAGING DEVICE

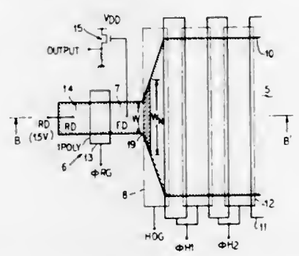
Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,099

Claims priority, application Japan, Jun. 19, 1991, 3-174627

Int. Cl.[5] **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 257—239 **4 Claims**



3. A charge transfer device formed on a semiconductor body comprising:

a charge detecting section including an electrically floating diffusion region having a fixed width, a floating diffusion amplifier connected to said floating diffusion region and a transistor for resetting said floating diffusion region to a predetermined potential;

a charge transfer section receiving a potential and including a charge transfer channel formed on said semiconductor body, a plurality of electrode means formed over said channel and insulated form said channel and an output gate electrode formed over one end of said charge transfer section, said charge transfer channel having a first channel portion beneath said electrode means that is wider than the fixed width of said floating diffusion region, a second channel portion beneath said output gate electrode that narrows from said first channel portion to said floating diffusion region, said second channel portion including a first impurity diffusion region adjacent to said floating diffusion region and a second impurity diffusion region located between said first channel portion and said first impurity diffusion region, wherein said first impurity diffusion region and said second impurity diffusion region have different impurity densities so that a potential of said first impurity diffusion region is deeper than that of said second impurity diffusion region, and wherein an apparent channel width at an outlet of said second channel portion is effectively enlarged to a channel width at a boundary between said first impurity diffusion region and said second impurity diffusion region, and an effective channel length of said second channel portion corresponds to a channel length of said second impurity diffusion region.

5,286,990

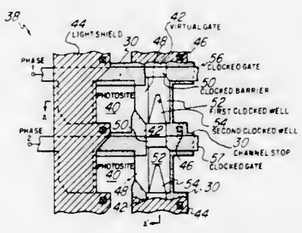
TOP BUSS VIRTUAL PHASE FRAME INTERLINE TRANSFER CCD IMAGE SENSOR

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 747,036, Aug. 19, 1991, Pat. No. 5,151,380. This application Jul. 1, 1992, Ser. No. 907,425

Int. Cl.[5] **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 257—247 **15 Claims**



1. A virtual phase image sensor wherein majority carriers are supplied to a virtual gate by a conductor overlying a portion of said image sensor, said virtual gate and said conductor each in contact with a conductive channel stop region.

5,286,991

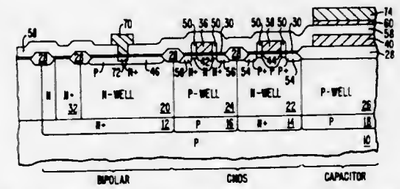
CAPACITOR FOR A BICMOS DEVICE

Chihung (John) Hui, Cupertino, and Roger Szeto, San Jose, both of Calif., assignors to Pioneer Semiconductor Corporation, San Jose, Calif.

Filed Aug. 26, 1992, Ser. No. 935,955

Int. Cl.[5] **H01L** *27/02, 21/44*

U.S. Cl. 257—306 **14 Claims**



14. A BICMOS device having at least a capacitor and a bipolar transistor formed in a substrate, wherein the capacitor comprises:

a first polysilicon terminal on an insulative region over a first portion of the substrate;

an oxide layer over the first polysilicon terminal;

a thin polysilicon layer over the oxide layer; and

a second polysilicon terminal over the thin polysilicon layer,

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the second polysilicon terminal being formed from a thick polysilicon layer deposited over the substrate and selectively etched, the thin polysilicon layer being substantially thinner than the first and second polysilicon terminals and the second polysilicon terminal being electrically insulated from the first polysilicon terminal;

and wherein the bipolar transistor comprises:

a base region formed in a second portion of the substrate laterally displaced from the first portion;

an emitter formed in a third portion of the substrate adjacent the base region; and

a polysilicon emitter contact overlying the emitter in electrical contact therewith, the emitter contact being formed from the thick polysilicon layer used to form the second polysilicon terminal of the capacitor.

5,286,992

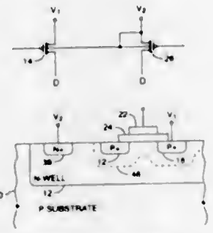
LOW VOLTAGE DEVICE IN A HIGH VOLTAGE SUBSTRATE

Michael G. Ahrens, Sunnyvale; Douglas C. Galbraith, Fremont, and Abdelshafy Eltoukhy, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 865,078, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 590,277, Sep. 28, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 38,550

Int. Cl.[5] **H01L** *29/68, 29/78*

U.S. Cl. 257—356 **3 Claims**



1. A semiconductor structure including:

a semiconductor substrate of a first conductivity type;

a well structure of a second conductivity type formed in said substrate;

a first MOS transistor in said well including spaced-apart first transistor source and drain regions of said first conductivity type in said well forming a first transistor channel region therebetween, a first transistor gate disposed above said first transistor channel region and separated therefrom by a first transistor gate dielectric having a first thickness, such that said first transistor can safely operate at a first gate-to-source voltage;

a second transistor in said well including spaced-apart second source and drain regions of said first conductivity type in said well forming a second transistor channel therebetween, a second transistor gate disposed above said second transistor channel region and separated therefrom by a second transistor gate dielectric having a second thickness which is greater than the thickness of said first transistor gate dielectric, such that said second transistor can operate at a second gate-to-source voltage, said second gate-to-source voltage having a magnitude sufficient to destroy said first transistor;

a first contact diffusion of said second conductivity type located at the edge of said well closest to said first transistor, connected to a voltage source having a magnitude selected to form a depletion layer at the surface of said well sufficient to limit the voltage across said first transistor gate dielectric to approximately the gate-to-source voltage of said first transistor;

a second contact diffusion of said second conductivity type located at the edge of said well closest to said second transistor, connected to said voltage source; and

said well maintained at a voltage potential equal to at least the voltage potential of any of said first and second source and drain regions in said well.

5,286,993

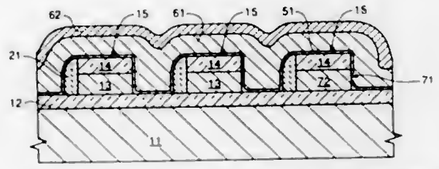
ONE-SIDED OZONE TEOS SPACER

Tyler A. Lowrey, and Ruojia Lee, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 760,026, Sep. 11, 1991, Pat. No. 5,126,290. This application Mar. 23, 1992, Ser. No. 855,810

Int. Cl.[5] **H01L** *27/02; G11C 17/00*

U.S. Cl. 257—390 **6 Claims**



1. A one time programmable structure in an integrated circuit comprising:

a) a patterned first conductor having an overlying patterned first dielectric;

b) a second dielectric adjacent the patterned sides of said first conductor and said first dielectric, said second dielectric being a thick dielectric spacer on a first patterned side of said first conductor and said first dielectric;

c) a third dielectric layer blanketing said thick dielectric spacer, said first dielectric and a second patterned side of said first conductor and said first dielectric; and

d) a patterned second conductor overlying said first conductor, said second conductor residing in intersecting angular fashion to said first conductor and said third dielectric being an interface therebetween.

5,286,994

SEMICONDUCTOR MEMORY TRAP FILM ASSEMBLY HAVING PLURAL LAMINATED GATE INSULATING FILMS

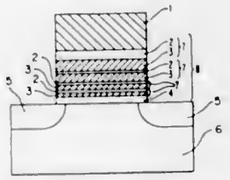
Takanori Ozawa, and Noriyuki Shimoji, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 23, 1992, Ser. No. 902,896

Claims priority, application Japan, Aug. 22, 1991, 3-210789

Int. Cl.[5] **H01L** *29/68, 29/78, 29/34*

U.S. Cl. 257—411 **4 Claims**



3. A trap film assembly of a semiconductor non-volatile memory for trapping charges to maintain a memory state of said semiconductor non-volatile memory, comprising:

a tunnel oxide film located on a semiconductor substrate;

plural stacked multilayer insulating film layers successively located between said tunnel oxide film and an electrode of the semiconductor non-volatile memory, each multilayer film layer including at least two layers of respectively different insulating films, wherein a vertical thickness in a direction between the semiconductor substrate and the electrode of each respective multilayer film layer is successively increased from a first one of said plural multilayer film layers located adjacent said tunnel oxide film to a last one of said plural multilayer film layers located adjacent the electrode, and wherein a electric charge centroid of said trap film assembly is located relatively closer to the semiconductor substrate than to the electrode.

5,286,995

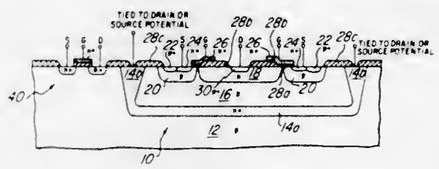
ISOLATED RESURF LDMOS DEVICES FOR MULTIPLE OUTPUTS ON ONE DIE

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 14, 1992, Ser. No. 913,570

Int. Cl.[5] **H01L** *29/00, 29/76, 29/94, 23/58*

U.S. Cl. 257—549 **4 Claims**



1. A power transistor, comprising:

a substrate;

an isolation region;

an epitaxial region formed within the isolation region;

a gate electrode formed on the epitaxial region; and

a source drift region formed within the epitaxial region whereby a power transistor with RESURF characteristics is formed and wherein the substrate and epitaxial region, a drain region, and a region are P type semiconductor material and the isolation region, the drain region and the drift region are N type semiconductor material.

5,286,996

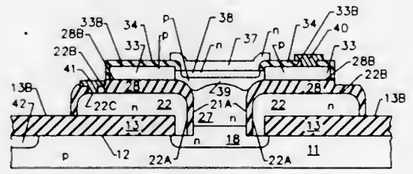
TRIPLE SELF-ALIGNED BIPOLAR JUNCTION TRANSISTOR

Gerold W. Neudeck, West Lafayette, Ind., and Rashid Bashir, Lubbock, Tex., assignors to Purdue Research Foundation, Hovde Hall, Ind.

Filed Dec. 31, 1991, Ser. No. 815,708

Int. Cl.[5] **H01L** *29/73, 29/04*

U.S. Cl. 257—586 **10 Claims**



9. A bipolar transistor comprising:

a semiconductor substrate having a first face;

a first insulating region on said face, said first insulating region having a top surface opposite said face, an opening therethrough for exposing a portion of said semiconductor substrate and a first sidewall adjacent said opening, extending between said face and the top surface;

an extrinsic collector region of first conductivity type in said substrate at said opening;

a polycrystalline conductive collector contact region of said first conductivity type on said first sidewall and defining a second sidewall, electrically contacting said extrinsic collector region;

a monocrystalline region in said opening, said monocrystalline region comprising an intrinsic collector region of first conductivity type electrically contacting said extrinsic collector region;

a second insulating region disposed between said monocrystalline intrinsic collector region and said conductive collector contact region, extending along said second sidewall;

a monocrystalline intrinsic base region in said monocrystalline region, forming a P-N junction with said monocrystalline intrinsic collector region;

a monocrystalline emitter region in said monocrystalline region, forming a P-N junction with said monocrystalline intrinsic base region; and

a monocrystalline extrinsic base region on said second insulating region, electrically connected to said monocrystalline intrinsic base region;

wherein said polycrystalline conductive collector contact region extends from said first sidewall onto the top surface of said first insulating region and includes a top surface, opposite the top surface of said first insulating region, and wherein said second insulating region extends from between said monocrystalline intrinsic collector region and said polycrystalline conductive collector contact region onto the top surface of said polycrystalline conductive collector contact region.

5,286,997

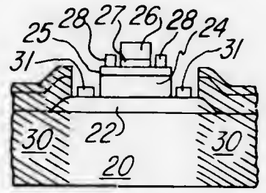
METHOD FOR FORMING AN ISOLATED, LOW RESISTANCE EPITAXIAL SUBCOLLECTOR FOR BIPOLAR TRANSISTORS

Darrell Hill, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1992, Ser. No. 860,843

Int. Cl.[5] **H01L** *29/34, 21/20*

U.S. Cl. 257—586 **20 Claims**



1. A method for forming a bipolar transistor comprising the steps of:

epitaxially depositing a subcollector layer on a substrate, said subcollector layer containing a co-deposited dopant;

forming a mesa, said mesa comprising a portion of said subcollector layer extending above said substrate, said mesa having sidewalls that define the bounds of an active region;

depositing a collector layer to cover said mesa and said sidewalls;

depositing a base layer atop said collector layer; and

depositing an emitter layer atop said base layer.

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5,286,998

SEMICONDUCTOR DEVICE HAVING TWO TRANSISTORS FORMING A MEMORY CELL AND A PERIPHERAL CIRCUIT, WHEREIN THE IMPURITY REGION OF THE FIRST TRANSISTOR IS NOT SUBJECTED TO AN ETCHING ATMOSPHERE

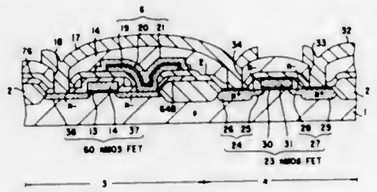
Taiji Ema, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 528,392, May 25, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 956,479

Claims priority, application Japan, May 31, 1989, 1-137861

Int. Cl.[5] **H01L** *29/68*

U.S. Cl. 257—637 **11 Claims**



1. A semiconductor device comprising:
a semiconductor substrate;
a first transistor formed on said semiconductor substrate, said first transistor having a first source diffusion region, a first drain diffusion region, and said first drain diffusion region being formed in said semiconductor substrate;
a second transistor formed on said semiconductor substrate adjacent to said first transistor, said second transistor having a second source diffusion region, a second drain diffusion region, and a second gate electrode having a sidewall portion, said second drain diffusion region being formed in said semiconductor substrate;
a field oxide layer formed on said semiconductor substrate for isolating said first and second transistors;
a first insulator layer which covers a surface of said semiconductor substrate including a surface of said first transistor but excluding a surface of said second transistor, said first insulator layer having a side wall portion; and
a second insulator layer which substantially covers said side wall portions but not the surfaces of said first insulator layer, said first gate electrode, and said second gate electrode.

5,286,999

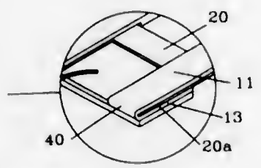
FOLDED BUS BAR LEADFRAME

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,596

Int. Cl.[5] **H01L** *23/48*

U.S. Cl. 257—666 **10 Claims**



1. A leadframe for attaching to a semiconductor device;
a plurality of lead fingers on said lead frame;
a strip of insulating material; and
a bus bar attached to at least two lead fingers, said bus bar folded at the point of attachment to said at least two lead fingers to underlie said lead fingers and insulated therefrom by said insulating material.

5,287,000

RESIN-ENCAPSULATED SEMICONDUCTOR MEMORY DEVICE USEFUL FOR SINGLE IN-LINE PACKAGES

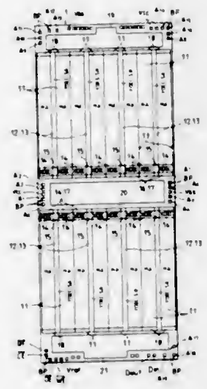
Yasushi Takahashi, Tachikawa; Kazuyuki Miyazawa, Iruma; Hidetoshi Iwai, Ohme; Masaya Muranaka, Akishima; Yoshitaka Kinoshita, Kokubunji, and Satoru Koshiba, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Continuation-in-part of Ser. No. 540,484, Jun. 19, 1990, abandoned, which is a continuation of Ser. No. 256,862, Oct. 12, 1988, Pat. No. 4,934,820, and a continuation of Ser. No. 531,313, May 31, 1990, abandoned. This application Mar. 26, 1991, Ser. No. 674,969

Claims priority, application Japan, Oct. 20, 1987, 62-264679; Jun. 5, 1989, 1-143676

Int. Cl.[5] **H01L** *23/48, 29/44, 27/10;* **H02G** *3/08*

U.S. Cl. 257—676 **11 Claims**



1 A semiconductor device comprising:
a semiconductor pellet having a rectangular main surface on which two memory cell arrays and a peripheral circuit including a row address decoder circuit are formed, wherein said two memory cell arrays are arranged in line along longer sides of said rectangular main surface, and said peripheral circuit is arranged between said two memory cell arrays;
a plurality of first bonding pads disposed between said two memory cell arrays and electrically connected with said row address decoder circuit which is located adjacently to said first bonding pads, and a plurality of second bonding pads disposed on said rectangular main surface;
a body comprised of resin and having a surface substantially vertical to the rectangular main surface of said semiconductor pellet;
a plurality of leads protruding out of said body only from said surface substantially vertical to the rectangular main surface of said semiconductor pellet, and extending in said body and having ends situated near said first and second bonding pads; and
means for electrically connecting said first and second bonding pads with said ends of said leads, wherein at least one of leads electrically connected to said first bonding pads is located across one of said longer sides of said rectangular semiconductor pellet.

5,287,001

COOLING STRUCTURES AND PACKAGE MODULES FOR SEMICONDUCTORS

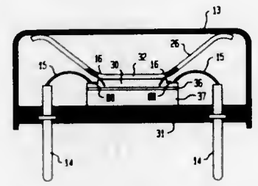
Peter Buchmann, Langnau am Albis, Switzerland; Peter Unger, Thalwil, Fed. Rep. of Germany; Peter Vettiger, Langnau am Albis, Switzerland, and Otto Voegeli, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1992, Ser. No. 874,246

Claims priority, application European Pat. Off., May 3, 1991, 91810342.5

Int. Cl.[5] **H01L** *23/02*

U.S. Cl. 257—719 **24 Claims**



1. A cooling structure for direct heat transfer between at least one electronic element formed in an active layer of a semiconductor chip and at least one heat sink comprising:
a) a current/voltage supply level formed on said active layer, said current/voltage supply level having at least one electrical current conductor as power supply line and/or signal line for said at least one electronic element, and further comprising at least one insulation spacer and-/or layer electrically isolating said at least one electrical current conductor,
b) an insulation layer covering at least a portion of said current/voltage supply level,
c) means for heat transfer formed on top of at least a portion of said insulation layer and on at least a portion of exposed upper portions of said current/voltage supply level, said means for heat transfer thermally connecting to at least a portion of said current/voltage supply level and providing at least one thermal contact area, and
d) at least one thermal bridge forming a thermal connection between said at least one thermal contact area and said at least one heat sink, wherein said current/voltage supply level, said insulation layer, said means for heat transfer, and said thermal bridge are arranged such that a low thermal resistance path is provided for directly transferring the heat developed in said at least one electronic elements via said at least one thermal bridge to said at least one heat sink.

5,287,002

PLANAR MULTI-LAYER METAL BONDING PAD

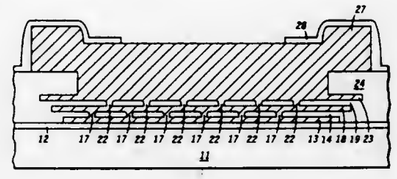
John L. Freeman, Jr., Mesa, and Clarence J. Tracy, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 716,454, Jun. 17, 1991, Pat. No. 5,149,674. This application May 29, 1992, Ser. No. 889,807

Int. Cl.[5] **H01L** *23/48, 29/40, 29/52, 29/46*

U.S. Cl. 257—781 **4 Claims**

1. A planarized multi-layer metal bonding pad on an integrated circuit comprising:
a first metal bonding pad layer defining a bonding pad;
a first dielectric layer with a multitude of vias that covers the first metal bonding pad layer, and wherein portions of the first metal bonding pad layer are exposed through the vias;
a second metal bonding pad layer that further defines the bonding pad that covers the vias in the first dielectric layer so that electrical contact is made between the first metal bonding pad layer and the second metal bonding pad layer through the vias;
a second dielectric layer with a multitude of vias that covers the second metal bonding pad layer, thereby exposing portions of the second metal bonding pad layer through the vias;
a third metal bonding pad layer further defining the metal bonding pad that covers the vias in the second dielectric layer so that electrical contact is made between the second metal bonding pad layer and the third metal bonding pad layer;



a third dielectric layer with an opening exposing a portion of the third metal bonding pad layer; and
a fourth metal bonding pad layer that further defines the bonding pad that covers the opening in the third dielectric layer so that electrical contact is made between the third and the fourth metal bonding pads layers.

5,287,003

RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE HAVING A PASSIVATION REINFORCEMENT HARD POLYIMIDE FILM

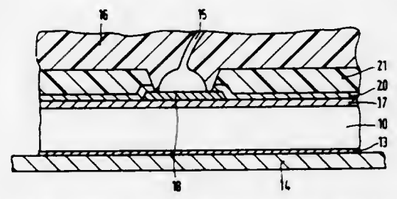
Maarten A. Van Andel, and Wilhelmus F. M. Gootzen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 840,369, Feb. 24, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 24,918

Claims priority, application Netherlands, Feb. 26, 1991, 9100337

Int. Cl.[5] **H01L** *23/48, 23/28*

U.S. Cl. 257—792 **3 Claims**



1. A semiconductor device comprising a semiconductor chip encapsulated in synthetic resin, said chip having a top surface comprising an electronic circuit and said chip being provided with a passivating film above its top surface and a polyimide film which is provided on top of the passivating film and beneath a portion of the synthetic resin, characterized in that the polyimide film has a modulus of elasticity of at least $1.0 \cdot 10^{10}$Pa.

5,287,004

AUTOMOBILE AIR AND GROUND EFFECTS POWER PACKAGE

Michael D. Finley, 26739 Isabella Pkwy. #203, Canyon Country, Calif. 91351

Filed Sep. 4, 1992, Ser. No. 941,207

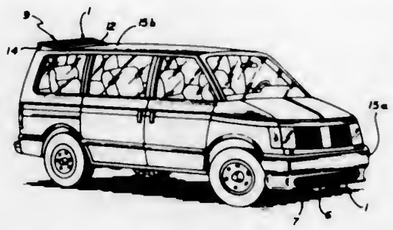
Int. Cl.[5] **B60L** *8/00;* **F03D** *3/04, 9/00*

U.S. Cl. 290—55 **3 Claims**

1. A horizontal-axis fixed-blade rotor with several horizontal blades running the length of the axis and extending symmetri-

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cally no more than a few inches from the axis, each blade being curved in the same direction, and the rotor being attached by short rods at both ends to electrical generators, embedded within an air dam attached to the lower front end of a motor



vehicle to prevent the formation of an air pocket beneath the vehicle, with a portion of the rotor exposed to the flow of air current or wind through a small horizontal vent at the bottom of which a gently sloping ramp directs the air current or wind to cool the engine or ventilate the passenger compartment.

5,287,005

ACTUATOR CONTROL DEVICE FOR AUTOMOBILE AIR CONDITIONERS

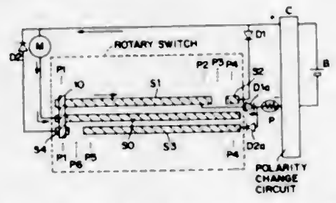
Masaki Shinkawa, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1991, Ser. No. 662,559

Claims priority, application Japan, Mar. 1, 1990, 2-50184

Int. Cl.[5] **H01H** *1/18;* **H01R** *23/00;* **H02P** *1/22, 3/00*

U.S. Cl. 307—10.1 **3 Claims**



1. A damper control device for an automobile air conditioner characterized in that said device comprises:

a movable contact which is moved together with a damper;

a first fixed contact and a second fixed contact which are installed discontinuously with respect to each other on a path along which said movable contact moves;

a third fixed contact and a fourth fixed contact which are installed discontinuously with respect to each other on a path along which said movable contact moves;

a motor coupled to said damper for moving said damper and said movable contact;

a power supply which supplies power to said motor via said movable contact and said first fixed contact and also supplies power to said motor via said movable contact and said third fixed contact;

a polarity switching circuit that switches the polarity of said power supply with respect to said motor;

a first diode which short-circuits said motor via said movable contact and said second fixed contact; and

a second diode which short-circuits said motor via said movable contact and said fourth fixed contact.

5,287,006

SELF-CONTAINED ANTI-THEFT DEVICE FOR MOTOR VEHICLES

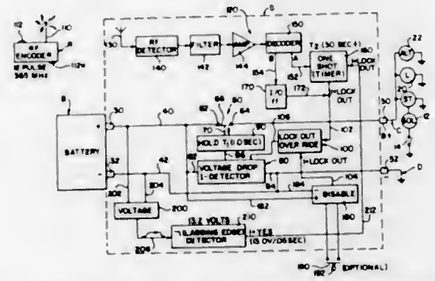
Louis D. Carlo, Cleveland, and Joey B. Adkins, Northfield, both of Ohio, assignors to James E. Winner, Sharon, Pa.

Continuation of Ser. No. 813,596, Dec. 26, 1991, Pat. No. 5,184,023, which is a continuation of Ser. No. 572,684, Aug. 27, 1990, Pat. No. 5,132,551, which is a division of Ser. No. 564,702, Dec. 23, 1983, Pat. No. 4,958,084. This application Jan. 25, 1993, Ser. No. 8,305

The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.

Int. Cl.[5] **B60R** *25/04*

U.S. Cl. 307—10.3 **3 Claims**



1. An anti-theft device used with a battery of a motor vehicle having a starting circuit, said battery having first and second outwardly extending electrode post members, said anti-theft device comprising a support member, means for attaching said support member onto said battery, a switching means on said support member having a first position electrically connecting one of said electrode post members with said starting circuit and a second position electrically disconnecting said one of said electrode post members from said starting circuit, means for shifting said switching means to said second position upon receipt of a specific external command signal, comprising: said switching means including a first electrical conductor having a terminal end and fixedly connected to a clamping receptacle means for fixedly clamping said first electrical conductor to said first electrode post member, a second electrical conductor having a terminal end spaced from said terminal end of said first conductor to define a gap and having a substitute electrode post member which is connected with said starting circuit, said switching means having a contact plate means for electrically connecting said terminal ends when said switching means is in said first position and a lock housing means for preventing unauthorized access to said clamping receptacle means and said switching means.

5,287,007

DEVICE FOR COUPLING ADDITIONAL EQUIPMENT TO A MACHINE

Anton Rodi; Udo Blasius, both of Leimen; Jürgen Reithofer, Nussloch; Michael Lehnert, and Werner Stadler, both of Heidelberg, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

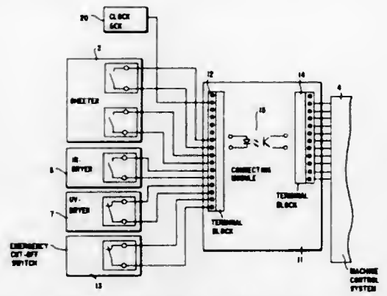
Filed Dec. 26, 1989, Ser. No. 456,363

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843966

Int. Cl.[5] **H02J** *3/00*

U.S. Cl. 307—38 **10 Claims**

1. A printing machine complex comprising a printing machine, at least one auxiliary device to the printing machine, a control system for controlling said printing machine and said auxiliary device, a central connection site for interconnecting said printing machine, said auxiliary device, and said control system; and metallic isolating means in said central connection



site for metallically isolating said auxiliary device, said printing machine, and said control system from each other.

5,287,008

ELECTROSTATIC DISCHARGE NOISE SUPPRESSION METHOD AND SYSTEM FOR ELECTRONIC DEVICES

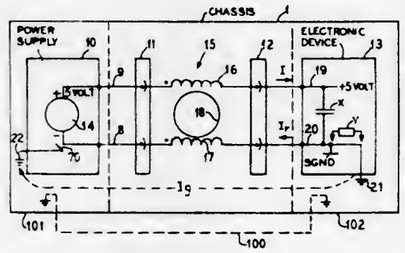
Per O. Pahr, Lier, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed May 10, 1991, Ser. No. 698,099

Claims priority, application European Pat. Off., Jul. 31, 1990, 90114727.2

Int. Cl.[5] **H04B** *15/00;* **H05F** *3/02*

U.S. Cl. 307—91 **24 Claims**



1. An electrostatic discharge noise suppression system, comprising:

an electronic device and a power supply for the electronic device;

chassis means for receiving the power supply and the electronic device and for providing chassis ground;

the power supply being located at one portion of the chassis means and having a DC power supply voltage output of a first polarity and a DC power supply voltage return of an opposite second polarity;

the electronic device being located at another portion of the chassis means and having a DC voltage input of said first polarity and a DC voltage return of said opposite second polarity;

a common mode inductor means for suppressing electrostatic discharge noise emanating from the power supply and having a common core and first and second windings thereon, the first winding connecting the power supply DC voltage output to the electronic device DC voltage input and the second winding connecting the power supply DC voltage return to the electronic device DC voltage return, and

means for preventing saturation of said common core by minimizing a difference in magnitude between a DC supply current flowing from the power supply to the electronic device through the first winding and a DC return current flowing from the electronic device back to the power supply through the second winding by minimizing a DC ground return current from flowing via chassis ground from said electronic device to said power supply, said means for preventing saturation DC separating said power supply opposite polarity DC voltage return from chassis ground at the location of the power supply.

5,287,009

CIRCUIT MODULE FAN ASSEMBLY

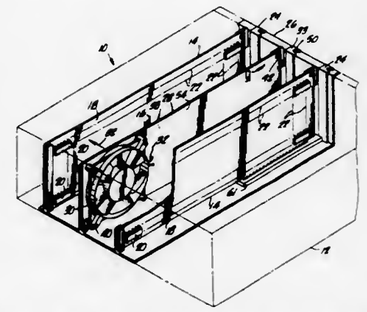
Lap-Yan Heung, 12565 Crenshaw Blvd., Hawthorne, Calif. 90250

Continuation of Ser. No. 771,154, Oct. 3, 1991, Pat. No. 5,191,230, which is a continuation of Ser. No. 303,642, Jan. 30, 1989, Pat. No. 5,079,438. This application Feb. 26, 1993, Ser. No. 23,557

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] **H05K** *7/20*

U.S. Cl. 307—141 **17 Claims**



1. A fan module for cooling a circuit module in an electronic system,

wherein the circuit module includes:

(i) a circuit module base board;

(ii) circuitry mounted to the circuit module base board; and

(iii) a circuit module board connector attached to the circuit module base board; and

wherein the electronic system includes an electrical circuit for providing electrical power to the electronic system, and a plurality of electrical connectors each for: (1) electrically connecting the circuitry to the electrical circuit in the electronic system, and (2) mechanically connecting the circuit module base board to the electronic system by the circuit module board connector;

the fan module comprising:

(a) a fan module base board having first and second planar surfaces and an edge;

(b) an electrical fan unit mounted to the first planar surface of the fan module base board for cooling the circuitry mounted to the circuit module base board;

(c) a driving circuit for electrically connecting the electrical circuit to the fan unit and for activating the fan unit when the fan module is mounted to the electronic system and the electronic system is powered on; and

(d) a fan module base board connector attached to the fan module base board for mechanically mounting the fan module base board to each of the electrical connectors interchangeably with the circuit module base board,

the fan unit having a depth such that the fan unit is spaced apart from the circuitry on the circuit module when the circuit module and the fan module are mounted to different ones of the electrical connectors.

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5,287,010

DEVICE FOR PREVENTING ERRONEOUS OPERATION WHEN THE CLOCK IS INTERRUPTED IN A CONTROLLER

Masao Hagiwara, c/o Kabushiki Kaisha Komatsu Seisakusho Research Institution, 1200, Manda, Hiratsuka-shi, Kanagawa 254, Japan, assignor to Masao Hagiwara, Japan

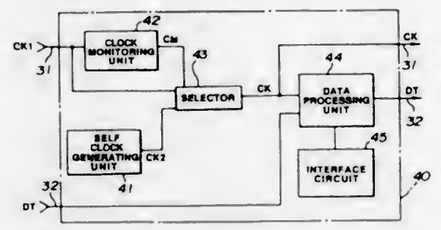
PCT No. PCT/JP90/01722, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/10176, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 27, 1990, Ser. No. 860,498

Claims priority, application Japan, Dec. 27, 1989, 1-343484; Jan. 31, 1990, 2-20966

Int. Cl.[5] H03K 5/13; H03L 7/00

U.S. Cl. 307—269 2 Claims



1. A device for preventing erroneous operation of a series control system when a clock in the system is stopped, the system including a plurality of controllers connected in series through a data signal line and a clock signal line, a first one of the plurality of controllers including within its interior a clock generation circuit for generating a clock signal, the first one of the controllers generating a data signal synchronized with the clock signal generated by the clock generation circuit, processing data on the basis of the data signal and transmitting the clock signal and the data signal to a subsequent stage controller through the clock signal line and the data signal line, the subsequent stage controller processing data by synchronizing the data signal transmitted from the first one of the controllers through the data signal line with the clock signal transmitted from the first one of the controllers through the clock signal line and transmitting the clock signal and the data signal respectively through the clock signal line and the data signal line to a further subsequent stage controller, each of the subsequent stage controllers comprising:

a clock generation circuit;

reception cessation detecting means for measuring a time taken from reception of the clock signal received from a previous stage controller through the clock signal line until reception of a next clock signal and when the measured time exceeds a predetermined time, for outputting a signal indicative of cessation of the reception;

change-over means for selecting the clock signal received from the previous stage controller through the clock signal line when the signal indicative of cessation of reception is not output from the reception cessation detecting means and selecting the clock signal issued from the clock generating circuit provided within the respective subsequent stage controller when the signal indicative of cessation of reception is output from the reception cessation detecting means; and

data processing means for processing the data by synchronizing the data signal transmitted from the previous stage controller through the data line with the clock signal output from the change-over means.

5,287,011

POWER-ON DETECTING CIRCUIT DESIRABLE FOR INTEGRATED CIRCUIT EQUIPPED WITH INTERNAL STEP-DOWN CIRCUIT

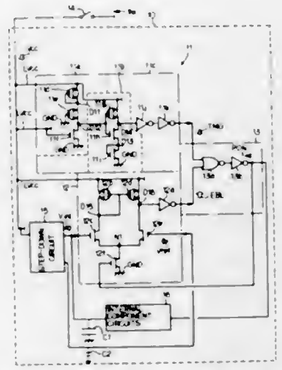
Yasuji Koshikawa; Takahiro Hara, and Tadahiko Sugibayashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,756

Claims priority, application Japan, Jul. 11, 1991, 3-170834

Int. Cl.[5] H03K 3/01

U.S. Cl. 307—272.3 10 Claims



1. A power-on detecting circuit operative to produce a power-on signal and associated with a step-down voltage generating circuit operative to produce a step-down power voltage level from a power voltage level on a power supply line, said step-down power voltage level rising to a first constant voltage level, said power voltage level rising to a second constant voltage level higher than said first constant voltage level, comprising:

a) a timing generating unit coupled with said power supply line, and having a threshold of a predetermined voltage level, said timing generating unit being operative to produce a timing signal when said power voltage level exceeds said threshold;

b) a monitoring unit operative to compare said step-down power voltage level with a reference voltage level produced from said power voltage level, said reference voltage level rising to said first constant voltage level earlier than said step-down power level, said monitoring circuit producing an enable signal when said step-down power voltage level becomes equal to said reference voltage level; and

c) a signal generating unit enabled with said enable signal, and producing said power-on signal while said enable signal and said timing signal or presence.

5,287,012

SEMICONDUCTOR INTEGRATED CIRCUIT EQUIPPED WITH DIAGNOSTIC CIRCUIT FOR CHECKING REFERENCE VOLTAGE SIGNAL SUPPLIED TO INTERNAL STEP-DOWN CIRCUIT

Yasuji Koshikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 901,689

Claims priority, application Japan, Jun. 25, 1991, 3-152684

Int. Cl.[5] H03K 5/24, 3/01

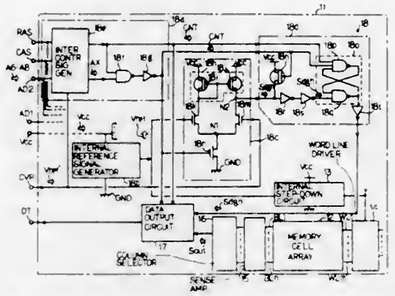
U.S. Cl. 307—296.1 4 Claims

1. An integrated circuit device fabricated on a semiconductor chip, comprising:

a) an internal reference signal generator operative to produce a reference voltage level from an external voltage level;

b) an internal step-down circuit responsive to said reference voltage level for producing a step-down voltage level with reference to said reference voltage, said step-down voltage level being distributed to predetermined component circuits of said integrated circuit device; and

c) a diagnostic circuit associated with said internal reference signal generator to see whether or not said reference voltage level is fallen within a target range, and comprising c-1) a control unit responsive to a plurality of external



signals for producing a plurality of internal control signals indicative of at least first and second phases of operation, c-2) a comparator unit activated in said first phase of operation, and operative to compare said reference voltage level with a variable voltage level supplied from the outside of said integrated circuit device for producing a diagnostic signal indicative of whether or not said reference voltage level is higher than said variable voltage level, and c-3) output means activated in said second phase of operation, and operative to supply said diagnostic signal to the outside of said integrated circuit device.

5,287,013

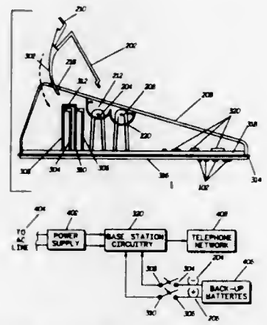
BATTERY COMPARTMENT SAFETY INTERLOCK

Gary E. Adair, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1992, Ser. No. 829,209

Int. Cl.[5] H01M 2/10; H01H 3/16

U.S. Cl. 307—328 8 Claims



1. An electronic device having circuitry and a battery compartment that includes a plurality of electrically conductive contacts at least one of which is a battery contact terminal, the plurality of electrically conductive contacts are electrically coupled to the electronic device's circuitry, the electronic device also having a battery compartment cover which is operable between a first position in which a user of the electronic device does not have access to the plurality of electrically conductive contacts and a second position in which the plurality of electrically conductive contacts are exposed to the user of the electronic device, the electronic device comprising:

a means for determining whether the battery compartment cover is in the first or the second position; and

a disconnection means for electrically disconnecting all of the plurality of electrically conductive contacts from the electronic device's circuitry when the battery compartment cover is in the second position.

5,287,014

HYSTERESIS CIRCUIT

Hitoshi Kinoshita, Kawasaki, Japan, assignor to Kabushiki Kaisha Tosbiba, Kanagawa, Japan

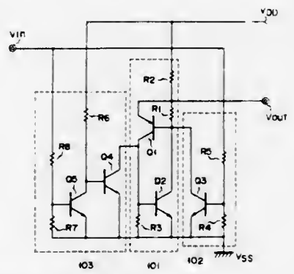
PCT No. PCT/JP91/00693, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/19354, PCT Pub. Date Dec. 12, 1991

PCT Filed May 23, 1991, Ser. No. 809,526

Claims priority, application Japan, May 25, 1990, 2-136704

Int. Cl.[5] H03K 3/295, 5/153, 17/72

U.S. Cl. 307—354 5 Claims



1. A hysteresis circuit comprising:

a thyristor circuit having first and second input terminals and an output terminal, the thyristor circuit outputting a low voltage from the output terminal when it is in an on-state, while outputting a high voltage from the output terminal when it is in an off-state;

a first switching circuit having a first threshold voltage and connected to the first input terminal, the first switching circuit turning on the thyristor circuit only when an input voltage exceeds the first threshold voltage of the first switching circuit; and

a second switching circuit having a second threshold voltage and connected to the second input terminal, the second switching circuit turning off the thyristor circuit only when the input voltage is lower than the second threshold voltage of the second switching circuit;

wherein said first switching circuit includes:

a third input terminal for receiving an input signal,

a first transistor having a base, a collector connected to the first input terminal, and an emitter connected to an earth terminal,

a first resistor having an end terminal connected to the base of the first transistor and another end terminal connected to the earth terminal, and

a second resistor having an end terminal connected to the base of the first transistor and another end terminal connected to the third input terminal; and

wherein said second switching circuit includes:

a fourth input terminal for receiving the input signal,

a second transistor having a base, a collector connected to the second input terminal and an emitter connected to the earth terminal,

a third resistor having an end terminal connected to the

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base of the second transistor and another end terminal connected to a power source terminal,

a third transistor having a base, a collector connected to the base of the second transistor and an emitter connected to the earth terminal,

a fourth resistor having an end terminal connected to the base of the third transistor and another end terminal connected to the earth terminal, and

a fifth resistor having an end terminal connected to the base of the third transistor and another end terminal connected to the fourth input terminal.

5,287,015

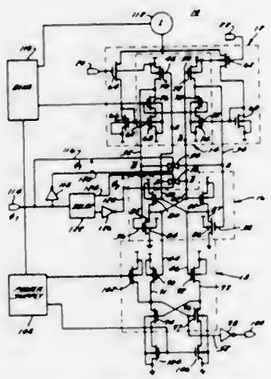
COMPARATOR CIRCUIT

Miki Z. Moyal, and Ryan E. Feemster, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 609,563, Nov. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 481,769, Feb. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 286,206, Dec. 19, 1988, abandoned. This application Jan. 22, 1992, Ser. No. 824,029

Int. Cl.[5] H03K *5/24, 17/16*

U.S. Cl. 307—355 **10 Claims**



1. An apparatus for comparing a first input signal with a second input signal and generating an output signal representative of said comparing in response to a clock signal; the apparatus comprising:

a plurality of amplifying means for amplifying signals;

a first amplifying means of said plurality of amplifying means being operatively connected to receive said first input signal and said second input signal and generating a pair of first amplifier signals at a pair of first amplifier outputs, said pair of first amplifier signals being representative of said first input signal and said second input signal; a second amplifying means of said plurality of amplifying means being operatively connected to receive said pair of first amplifier signals and generate a pair of second amplifier signals at a pair of second amplifier outputs, said pair of second amplifier signals being representative of said pair of first amplifier signals;

a delay means for delaying signals; said delay means receiving said clock signal and generating a delayed clock signal, said delayed clock signal following said clock signal by a predetermined interval;

a first switching means for making and breaking electrical continuity; said first switching means being operatively connected across said pair of first amplifier outputs, said first switching means being responsive to said clock signal; and

a second switching means for making and breaking electrical continuity; said second switching means being operatively connected across said pair of second amplifier outputs, said second switching means being responsive to said delayed clock signal; said predetermined interval being appropriate to facilitate substantial damping of noise introduced into said pair of first amplifier signals following opening of said first switching means.

5,287,016

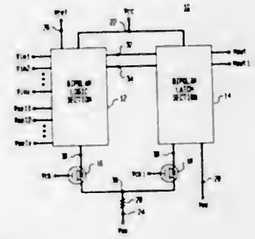
HIGH-SPEED BIPOLAR-FIELD EFFECT TRANSISTOR (BI-FET) CIRCUIT

Allan H. Dansky; John F. McCabe, both of Poughkeepsie, N.Y., and Kenny K. Shin, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1992, Ser. No. 861,755

Int. Cl.[5] H03K *19/08*

U.S. Cl. 307—446 **12 Claims**



1. In combination:

a first resistive element;

a logic section comprising bipolar transistors;

a first field effect transistor having a gate and first and second outputs, the first output of the field effect transistor being coupled to at least one of the bipolar transistors of the logic section;

the first field effect transistor, when fully turned on, being adapted to selectively enable the logic section so as to allow current flow through at least one of the bipolar transistors of the logic section and being adapted to selectively disable the logic section so as to cut off current flow through the transistors of the logic section;

a latch section comprising bipolar transistors;

a second field effect transistor having a gate and first and second outputs, the first output of the second field effect transistor being coupled to at least one of the bipolar transistors of the latch section;

the second field effect transistor being adapted to selectively disable the latch section while the logic section is enabled and, when fully turned on, to enable conduction through at least one of the bipolar transistors of the latch section when the logic section is disabled;

an output of the logic section being coupled to an input of the latch section; and

the second outputs of the first and second field effect transistors being coupled to the first resistive element, said first resistive element in combination with the bipolar transistors of the logic section, when enabled, and the bipolar transistors of the latch section, when enabled, functioning as a relatively constant current source.

5,287,017

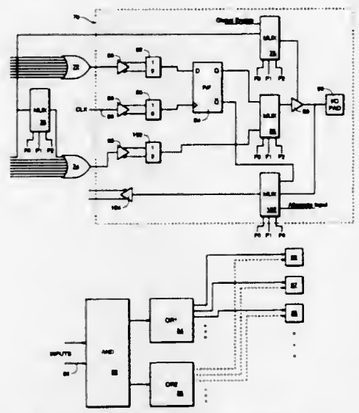
PROGRAMMABLE LOGIC DEVICE MACROCELL WITH TWO OR ARRAY INPUTS

Varadarajan L. Narasimhan; Kurt P. Douglas, and Paul S. Zagar, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 15, 1992, Ser. No. 884,489

Int. Cl.[5] H03K *19/173*

U.S. Cl. 307—465 **11 Claims**



1. A programmable logic device, comprising:

a) a programmable AND array;

b) exclusively a first and second programmable OR array, receiving inputs from the AND array;

c) a macrocell, receiving only a single input from each of the exclusive first and second OR arrays, including:

a first circuit path receiving a first electrical signal from the first OR array, consisting essentially of:

a first means for outputting a true and complement signal in response to receiving the first signal;

second means for receiving the true and complement signals, and for outputting a second signal which is either the true or complement signal;

register means for receiving the second signal, and for outputting a third signal;

third means for receiving the second signal and outputting the second signal;

tri-state means, receiving the second signal from the third means, for controlling the outputting of the third signal, and outputting the second signal; and

an output pad that receives the second signal from the tri-state means and outputting the second signal outside of the macrocell.

5,287,018

DYNAMIC PLA TIME CIRCUIT

Clark R. Williams, and William J. Podkowa, both of Plano, Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 827,552, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 587,953, Sep. 25, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 18,360

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **4 Claims**

1. A PLA, comprising:

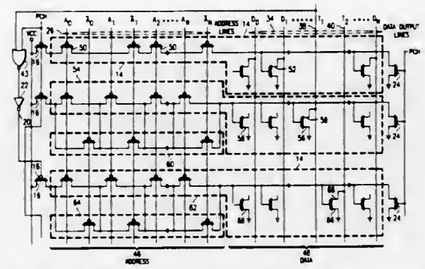
(a) a plurality of address lines;

(b) a plurality of data lines including a timing data line;

(c) a plurality of PLA lines including a timing PLA line and coupling said address lines and said data lines;

(d) a plurality of latches, each of said latches with data input connected to a corresponding one of said data lines except said timing data line couples to the clock inputs of said latches;

(e) charge circuitry for said PLA lines;



(f) wherein said charge circuitry charges said timing PLA line more slowly than all other PLA lines, and said timing PLA line couples to said timing data line to clock said latches.

5,287,019

ECL TO CMOS LEVEL CONVERSION CIRCUIT

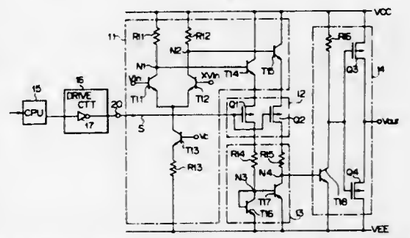
Kazuyuki Nonaka; Shinji Saito; Tetsuya Aisaka; Takehiro Akiyama, and Kouzi Takekawa, all of Kasugai, Japan, assignors to Fujitsu Limited, Kanagawa and Fujitsu VLSI Limited, Aichi, both of Japan

Filed Nov. 6, 1991, Ser. No. 788,369

Claims priority, application Japan, Nov. 6, 1990, 2-300701

Int. Cl.[5] H03K *19/092, 3/01*

U.S. Cl. 307—475 **28 Claims**



3. A level conversion circuit for converting an ECL logic level input signal to a corresponding output signal representative of a CMOS logic level, the level conversion circuit being selectively controlled to one of a working state and a stand-by state and comprising:

an ECL logic circuit comprising a current switch circuit having first and second transistors, each transistor having an emitter and collector and the first and second transistors having the respective emitters thereof coupled to each other and at least one of the first and second transistors receiving an input signal of ECL logic level, and having at least one output transistor coupled to the respective collector of at least one of the first and second transistors, the at least one output transistor having an output;

a current control circuit comprising a current mirror circuit having third and fourth transistors, at least one of the third and fourth transistors being coupled to the output of the output transistor and controlling the level of a current flowing through the output thereof to thereby carry out a level conversion of the input signal in producing, at the output of the output transistor, a CMOS level control signal;

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a control unit which determines whether the level conversion circuit is to be operating in a stand-by state or a working state and which produces a corresponding control output signal;

a drive unit connected to the control unit and responsive to the control output signal of the control unit and which generates a corresponding drive control signal, based on the control output signal of the control unit; and

a switch circuit, operatively coupled between the output of the output transistor and the current control circuit and responsive to the drive control signal generated by the drive unit and which controls the supply of the current or a break of the supply of the current from the output transistor to the current control circuit in accordance with the drive control signal indicating, respectively and selectively, that the level conversion circuit is to be operating in a working state or in a stand-by state.

5,287,020

INTERFACE DEVICE PROVIDING DESIRED TIMING RELATION BETWEEN TWO SIGNALS

Shigeki Kimura, Settsu; Hiroshi Kishi, Amagasaki, and Kouichi Shibata, Osaka, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

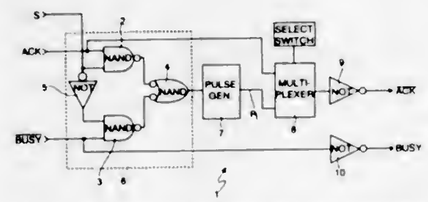
Filed Jul. 27, 1987, Ser. No. 77,795

Claims priority, application Japan, Jul. 28, 1986, 61-177285

The portion of the term of this patent subsequent to Jul. 15, 2006, has been disclaimed.

Int. Cl.[5] **G01R** *19/145;* **H03K** *5/13*

U.S. Cl. 307—518 **8 Claims**



1. An interface device of the Centronics type comprising:

switching means selectively outputting according to a level of a select signal, one of two input signals having a timing relationship such that only during the time one input signal is active, is the other input signal active;

pulse generating means outputting a signal for a predetermined time from the edge of a signal outputting from the switching means; and

signal selecting means outputting the other input signal and a signal outputted from the pulse generating means;

the one input signal and the signal outputted from the signal selecting means being held in a desired timing relationship.

5,287,021

LOW NOISE BICMOS CIRCUIT

Carlos D. Obregon, Phoenix; Eric D. Neely, Mesa, and Michael A. Wells, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1992, Ser. No. 880,109

Int. Cl.[5] **H03K** *17/60, 19/02, 19/20, 17/16*

U.S. Cl. 307—570 **11 Claims**

1. A low noise BICMOS circuit comprising:

a three-state input inverter having an input coupled to an input of the BICMOS circuit, a first output and a second output;

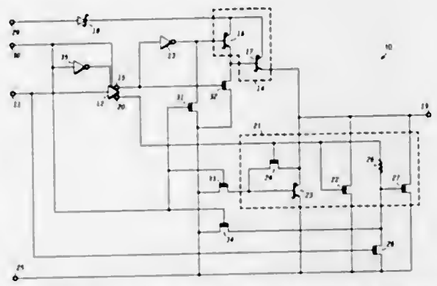
a phasing inverter having an input coupled to the first output of the three-state input inverter, and an output;

a first transistor having a control electrode coupled to the output of the phasing inverter, a first current electrode, and a second current electrode;

a second transistor having a control electrode coupled to the second current electrode of the first transistor, a first current electrode coupled to the first current electrode of the first transistor, and a second current electrode coupled to an output of the BICMOS circuit;

an output coupler transistor having a control electrode coupled to the second output of the three-state input inverter, a first current electrode coupled to the output of the BICMOS circuit, and a second current electrode;

a current sink transistor having a control electrode coupled to the second current electrode of the output coupler transistor, a first current electrode coupled to the output of the BICMOS circuit, and a second current electrode coupled to a voltage return;



a shaping transistor having a control electrode coupled to the control electrode of the output coupler transistor, a first current electrode coupled to the output of the BICMOS circuit, and a second current electrode coupled to the voltage return;

a resistor having a first terminal coupled to the control electrode of the shaping transistor, and a second terminal;

a transition transistor having a control electrode coupled to the input of the BICMOS circuit, a first current electrode coupled to the second terminal of the resistor, and a second current electrode coupled to the voltage return; and

a sustaining transistor having a control electrode coupled to the second terminal of the resistor, a first current electrode coupled to the output of the BICMOS circuit, and a second current electrode coupled to the voltage return.

5,287,022

METHOD AND CIRCUIT FOR CONTROLLING VOLTAGE REFLECTIONS ON TRANSMISSION LINES

Kenneth R. Wilsher, Palo Alto, Calif., assignor to Schlumberger Technologies, San Jose, Calif.

Continuation of Ser. No. 764,026, Sep. 23, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,507

Int. Cl.[5] **H03K** *5/08;* **H03F** *1/26*

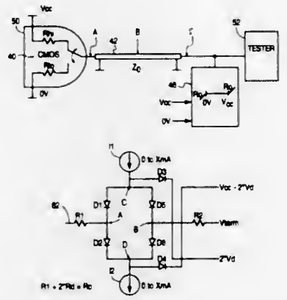
U.S. Cl. 307—542 **13 Claims**

1. A circuit comprising:

a transmission line having a first end for being connected to an output of an electrical device which is switchable between a low output state and a high output state, said electrical device having an output impedance approximately equal to or below a characteristic impedance of said transmission line, said electrical device outputting a first voltage level in said low output state and outputting an second voltage level in said high output state when connected to said transmission line;

a non-linear load circuit having an input terminal connected to a second end of said transmission line, said non-linear load circuit providing a substantially open circuit to said input terminal when a voltage at said input terminal is between said first voltage level and said second voltage level, said non-linear load circuit also providing a substantially constant first load resistance between said input terminal and a reference voltage terminal only when a voltage at said input terminal is below said first voltage level or above said second voltage level,

wherein said first load resistance is approximately equal to said characteristic impedance of said transmission line,



and wherein when said electrical device connected to said first end of said transmission line switches from said low output state to said high output state, a first positive forward voltage step is propagated on said transmission line toward said second end of said transmission line such that on arriving at said second end of said transmission line with non-linear load circuit provides a first positive reflected voltage on said transmission line of approximately fifty per cent of a difference between said second voltage level and said first voltage level.

5,287,023

REVERSE-BIAS CONTROL CIRCUIT FOR A VOLTAGE-DRIVEN SWITCHING ELEMENT

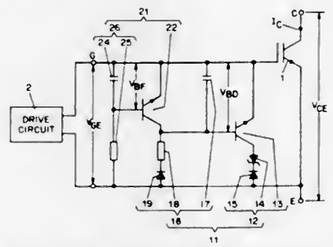
Tadashi Miyasaka, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 9, 1992, Ser. No. 973,575

Claims priority, application Japan, Nov. 7, 1991, 3-290266

Int. Cl.[5] **H03K** *17/687, 17/28*

U.S. Cl. 307—594 **10 Claims**



1. A reverse-bias control circuit for preventing voltage surges in a voltage-driven switching element which turns on upon a forward-bias voltage and turns off upon a reverse-bias voltage, and which has a characteristic turn-off delay, a characteristic total turn-off time and a characteristic fall time upon the application of said reverse-bias voltage, said characteristic turn-off delay and characteristic total turn-off time commencing at the application of said reverse-bias voltage, said total turn-off time being equal to the sum of the turn-off delay and the characteristic fall time of said voltage-driven switching element, comprising:

step-down circuit means for temporarily stepping down a reverse-bias voltage from a normal level after a delay corresponding to a first time interval substantially equal to the turn-off delay of said voltage-driven switching element to thereby prevent said voltage surges; and

recovery-circuit means for stopping operation of said step-down circuit means at the end of a second time interval substantially equal to the total turn-off time of said voltage-driven switching element to thereby restore the reverse bias voltage to the normal level.

5,287,024

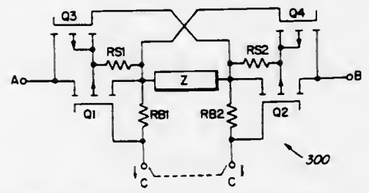
FET BIDIRECTIONAL SWITCHING ARRANGEMENTS AND METHODS FOR PREVENTING PN JUNCTIONS OF FETS FROM BEING FORWARD-BIASED

Douglas C. Wadsworth, Manotick, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 21, 1993, Ser. No. 6,407

Int. Cl.[5] **H03K** *17/687*

U.S. Cl. 307—571 **20 Claims**



1. A FET switching arrangement, comprising:

first and second FETs operable in response to a first bias condition to pass current in series through the FETs in either of two opposite directions, and operable in response to a second bias condition to block current through the FETs in both of the two opposite directions; and

a limiting arrangement connected to the FETs for sensing the direction of current flowing through the FETs, for limiting a forward bias on a first pn junction of the first FET when the current flows in a first direction of the two opposite directions to limit undesired current flow through the first pn junction of the first FET, and for limiting a forward bias on a first pn junction of the second FET when the current flows in a second direction of the two opposite directions to limit undesired current flow through the first pn junction of the second FET.

5,287,025

TIMING CONTROL CIRCUIT

Yoshito Nishimichi, Higashiosaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 22, 1992, Ser. No. 871,983

Claims priority, application Japan, Apr. 23, 1991, 3-092013; Nov. 13, 1991, 3-296924

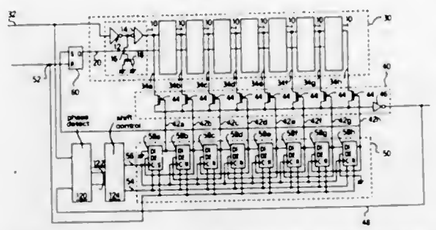
Int. Cl.[5] **H03K** *5/135*

U.S. Cl. 307—603 **5 Claims**

1. A timing control circuit comprising a delay circuit for having, connected in series by n number ($n \geqq 2$, n is an integer), delay circuit elements having a plurality of delay values for delaying, outputting by a constant time the given signals, a selecting circuit for selecting one of the outputs of the respective delay circuit elements so as to output it, a phase control circuit for deciding the output of the delay circuit elements to be selected so that the signal given to the delay circuit may agree in phase with the output signal of the selecting circuit, a delay control circuit for controlling the delay value of the delay circuit element itself, the delay control circuit being changed the delay value of the above described delay circuit

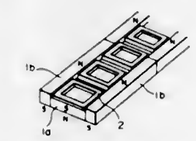
VOL 1159 ISS 3 FE 15 1994 UMI

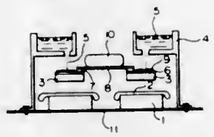
element so as to change the delay control range in the delay circuit when the phase control circuit has judged that the delay



in the whole delay circuit is insufficient at the phase synchronization.

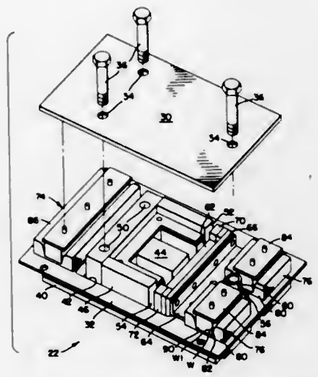
5,287,026
SUPERCONDUCTING MAGNETIC LEVITATION APPARATUS
Masahiro Ogihara, Amagasaki; Katsuzo Aihara, Hitachiota; Keiji Arai, Kitaibaraki, and Masaki Satoh, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1991, Ser. No. 783,779
Claims priority, application Japan, Oct. 29, 1990, 2-288536
Int. Cl.[5] H02K *41/00;* **B60L** *13/04;* **H01B** *12/00*
U.S. Cl. 310—12 **18 Claims**





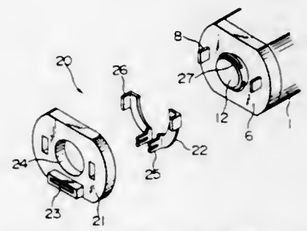
4. A superconducting magnetic levitation apparatus, comprising at least one floating body made of a high-T_c superconductor, at least one running track having at least one lifting magnet for generating a magnetic field necessary to put the floating body in a floating state, a device for cooling the floating body, and a plurality of propulsion coils for causing the at least one floating body to run along the running track, wherein said plurality of propulsion coils are disposed in close proximity to the at least one lifting magnet, the running track includes a plurality of lifting magnets each being fashioned as a long rod, a longitudinal direction of the long rod extends in parallel to the running direction of the floating body, the lifting magnet includes a plurality of magnets arranged in at least three rows, a central row of the three rows of magnets has a thickness less than a thickness of the remaining magnets to form a groove, and wherein the propulsion coils are disposed in the groove.

5,287,027
ELECTROMAGNETIC DRIVE FOR USE WITH VIBRATORY CONVEYORS
Kenneth M. Marshall; Arthur L. Dean, both of Indiana; Paul I. Sleppy, Penn Run, and Harold E. Patterson, Indiana, all of Pa., assignors to FMC Corporation, Chicago, Ill.
Filed Nov. 1, 1991, Ser. No. 786,669
Int. Cl.[5] H02K *33/00, 35/00*
U.S. Cl. 310—21 **9 Claims**



1. A drive system for imparting vibratory motion to a driven means, said drive system comprising:
- a center plate having a plurality of apertures and an armature fixedly mounted to said center plate;
- an electromagnet supported in a magnet housing passing through one of said apertures of said center plate;
- at least one top side elastomeric spring mounted on a first surface of said center plate and at least one bottom side elastomeric spring mounted on a second surface obverse to said first surface of said center plate;
- a top plate overlaying said top side elastomeric spring; and
- a bottom plate overlaying said bottom side elastomeric spring, whereby said top plate, said bottom plate and said electromagnet housing move together as a unit sand said center plate and armature move together as a unit.

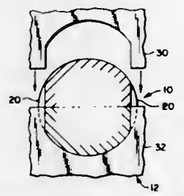
5,287,028
MINIATURE MOTOR
Satoshi Suzuki, and Naoshi Kajie, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan
Filed Oct. 19, 1992, Ser. No. 963,427
Claims priority, application Japan, Oct. 22, 1991, 3-273661
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—71 **7 Claims**



1. A miniature motor comprising a case formed into a bottomed hollow cylindrical shape and having a permanent mag-

net fixedly fitted to an inner circumferential surface thereof, an end plate engaged with an open end of said case and having input terminals, and a rotor rotatably supported by bearings provided on said case and said end plate; power being fed to said rotor from said input terminals via a printed-circuit board, connector pins made of an electrically conductive material, each of said connector pins being formed into a strip shape and having an end with a retainer piece for said printed-circuit board and an end with a contactor piece for said input terminals, said connector pins being fixedly fitted to a connector unit formed by fixedly fitting said connector pins to a connector-unit body made of an insulating material and formed into a substantially plate shape; insertion holes being provided in said connector-unit body in the vicinity of said retainer pieces, and electrical connections between said printed-circuit board and said input terminals being achieved by inserting said printed-circuit board into said insertion holes.

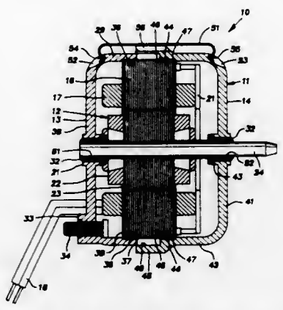
5,287,029
CASING WITH INTEGRAL MOUNTING FOR AN ELECTRIC MOTOR
Jeffrey E. Krouse, Carlisle, Pa., assignor to General Signal Corporation, Stamford, Conn.
Filed Oct. 9, 1991, Ser. No. 773,794
Int. Cl.[5] H02K *5/04;* **F16M** *13/00*
U.S. Cl. 310—89 **16 Claims**



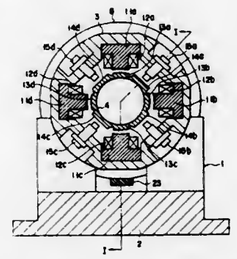
1. A motor apparatus for cooperation with an associated cradle assembly for holding the motor that includes at least a first rib which comprises:
- an electric motor, having an output shaft and a casing having a first exterior surface, said electric motor including at least one slot on said first exterior surface thereof, said slot having opposed generally planar walls that are disposed in generally parallel spaced relationship.

5,287,030
ELECTRIC MOTOR CONSTRUCTION
Robert G. Nutter, Fort Wayne, Ind., assignor to Electric Motors and Specialties, Inc., Garrett, Ind.
Filed Mar. 23, 1992, Ser. No. 855,533
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—89 **2 Claims**

1. An electric motor comprising a stator including a pair of opposed thermoplastic end housings, a stator core stack of laminations, a shaft bearing in each of said end housings, a rotor including a shaft, the rotor shaft being rotatably supported in both of the bearings, the stator core stack of laminations being sandwiched between the end housings, a plurality of spring clips extending axially between an external of the end housings, the spring clips being constructed and arranged to be snapped into an assembly position on the end housings wherein sufficient axial tension in the clips is developed to maintain the end housings in compression towards the stator core lamination stack to resist relative movement therebetween under normally expected service conditions.



5,287,031
DEVICE FOR SUPPORTING AND LINEARLY MOVING AN OBJECT
Toshikatsu Akiba, Yokohama; Shitta Shingu; Kenichi Takahara, both of Tokyo; Hiroshi Takahashi, and Arata Tanaka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 26, 1992, Ser. No. 935,874
Claims priority, application Japan, Aug. 26, 1991, 3-213617; Oct. 25, 1991, 3-279972; Oct. 25, 1991, 3-280059; Oct. 25, 1991, 3-280135; Oct. 25, 1991, 3-280136
Int. Cl.[5] H02K *7/09, 41/00*
U.S. Cl. 310—90.5 **18 Claims**



1. A device for supporting and linearly moving an object, said device comprising:
- a stationary body having a cylindrical internal bore and an inner peripheral portion;
- a movable member having an outer peripheral position and situated within the cylindrical internal bore to be axially movable in an axial direction in the cylindrical internal bore;
- a magnetic bearing device, situated between the stationary body and the movable member, for electromagnetically levitating the movable member in relation to the stationary body, said magnetic bearing device comprising:
- yokes having magnetic pole faces fixed on the inner peripheral portion of the stationary body at predetermined intervals in a circumferential direction of the inner peripheral portion of the stationary body, such that the magnetic pole faces of the yokes are directed to the movable member,
- coils mounted on the yokes, projecting magnetic poles formed on the outer peripheral portion of the movable member, such that projecting faces of the projecting magnetic poles, which are opposed to the magnetic pole faces

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of the yokes, are arranged at predetermined intervals in a circumferential direction of the outer peripheral portion of the movable member and extend in the axial direction of the movable member,

position detection faces formed of the outer peripheral portion of the movable member between the projecting magnetic poles, the position detections faces extending axially, and position detectors, disposed on the stationary body and opposed to the position detection faces, for detecting the positions of the position detection faces, thereby detecting the distance between the movable member and a predetermined position in a non-contact manner;

axial position detection means, disposed on the stationary body and the movable member, for detecting an axial position of the movable member in the cylindrical internal bore in a non-contact manner;

electromagnetic force generating means, disposed on the stationary body and the movable member, for generating an electromagnetic force to be applied to the movable member to move the movable member axially; and

control means for controlling the electromagnetic force generating means in relation to axial position data detected by the axial position detection means and externally supplied objective position data, thereby setting the axial position of the movable member in the cylindrical internal bore at a predetermined position.

5,287,033

VIBRATING SURFACE GYROSCOPES

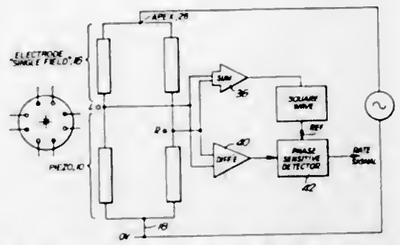
Donald F. Morton, Stevenage, assignor to British Aerospace Public Limited Company, London, England

Filed Aug. 22, 1991, Ser. No. 748,345

Claims priority, application United Kingdom, Aug. 24, 1990, 9018661

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—316 **32 Claims**



1. A vibrating surface gyroscope having a sensing axis, comprising:

excitation means for supplying a single phase supply signal;

a resonator structure of bi-poled piezoelectric material, the piezoelectric material including a plurality of pole regions of alternate polarity, said pole regions being responsive to said single phase supply signal for setting up local tensile or compressive strain in said resonator structure to establish a predetermined modal pattern of vibration; and

rotation determining means for determining a rotation of said gyroscope based on an electric field generated by the vibration of said resonator structure.

5,287,032

ELECTRIC MOTOR WITH TUBULAR HOUSING

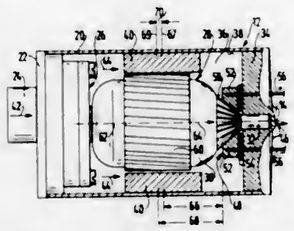
Ernst Zolda, Korntal-Muenchingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 3, 1992, Ser. No. 845,276

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4110971

Int. Cl.[5] H02K *13/00*

U.S. Cl. 310—219 **11 Claims**



1. An electric motor, comprising a housing having tubular housing part; permanent magnets arranged inside said housing part; a motor armature rotatable about an axis and provided with a collector having a conical running surface; a plurality of sliding brushes fixed on said housing and having sliding surfaces abutting against said conical running surface of said collector; and means for permanently loading said motor armature in direction of its rotary axis toward said fixed sliding brushes so that said conical running surface of said collector which in its projection is formed as an annular surface abuts against said sliding surfaces of said sliding brushes.

5,287,034

FLAT DISPLAY DEVICE FOR DISPLAYING AN IMAGE UTILIZING AN ELECTRON BEAM, WHICH IS PROVIDED WITH A SUPPORT ARRANGEMENT FOR SUPPORTING A SINGLE FACEPLATE

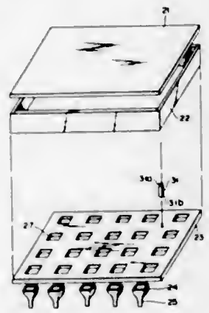
Eiji Kamohara, and Takashi Nishimura, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 14, 1991, Ser. No. 745,461

Claims priority, application Japan, Aug. 16, 1990, 2-216207; Aug. 28, 1990, 2-226288; Nov. 30, 1990, 2-336701

Int. Cl.[5] H01J *29/86*

U.S. Cl. 313—422 **20 Claims**



1. A display device comprising:

a vacuum envelope including a first flat plate which is substantially transparent and has an inner surface and a thickness t and a second flat plate faced to the inner surface of said first plate;

a fluorescent screen formed on the inner surface of said first flat plate;

means for generating first electron beams which dividedly scan said fluorescent screen, respectively; and

a plurality of support members for supporting said first and second plates, which possess wedge-shaped top ends and are provided between said first and second plates and are arranged on said screen at a predetermined interval P, wherein a ratio t/P is 0.05 or more.

5,287,035

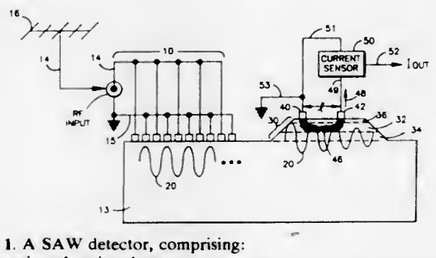
SAW DETECTOR

Roger D. Carroll, Willimantic, and Sears W. Merritt, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 5, 1992, Ser. No. 955,955

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 R **11 Claims**



1. A SAW detector, comprising:

a piezoelectric substrate;

SAW injection means, disposed on a surface of said substrate and having a frequency response characteristic, for injecting a SAW into said substrate;

charge transport means, made of semiconductor material, disposed above said substrate, and having a charge transport channel therein, for transporting mobile charge carriers along said charge transport channel in a continuum at the speed of electron flow in response to electric fields generated by said SAW, and for confining said mobile charge carriers to said channel; and

SAW detection means, for injecting said mobile charge carriers into said channel, for removing said mobile charge carriers from said channel, for detecting the flow of said mobile charge carriers through said channel, said flow of mobile charge carriers being indicative of a parameter of said SAW, and for providing a signal indicative of said frequency response characteristic of said SAW injection means.

5,287,036

METHOD AND APPARATUS FOR ACOUSTIC WAVE INDUCTANCE

David Penunuri, Fountain Hills, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,333

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 R **32 Claims**

1. A method for realizing a microelectronic filter comprising steps of:

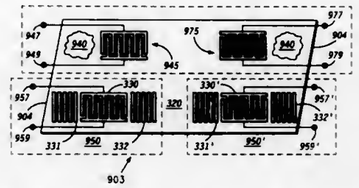
providing an acoustic wave propagating substrate;

coupling a first acoustic wave transducer to the acoustic wave propagating substrate to provide a microelectronic inductance, the first acoustic wave transducer having an effective length L_{eff} wherein:

$$L_{eff} \cong C_2 v_a / f_o k^2,$$

where C_2 is a numerical factor such that $C_2 \cong 2$, v_a represents an acoustic velocity, f_o represents an acoustic wave transducer center frequency and k^2 denotes an acoustic wave propagating substrate electromechanical coupling coefficient; and

disposing an acoustic wave filter on the acoustic wave propagating substrate, the acoustic wave filter including second and third acoustic wave transducers acoustically coupled to each other, the first acoustic wave transducer being electrically coupled to the second acoustic wave transducer and providing an electrical impedance match for the second acoustic wave transducer over at least a first frequency range.



5,287,037

METAL FERRULES FOR HERMETICALLY SEALING ELECTRIC LAMPS

Richard F. Malinowski, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1991, Ser. No. 802,024

Int. Cl.[5] H01J *17/18*

U.S. Cl. 313—623 **15 Claims**



5. A lamp comprising a glass envelope enclosing a source of electric light within wherein at least one nickel-plated, high nickel content iron alloy ferrule having a feathered edge is hermetically sealed to a portion of said glass envelope, wherein said nickel plate is at least 20 microinches thick on at least a portion of the exterior surface of said ferrule, and wherein said nickel plate is present on said feathered edge in an amount less than 100 microinches thick.

5,287,038

HIGH RESOLUTION ELECTRON GUN

Robert A. Hagar, Tempe, and Arthur J. Ingle, Chandler, both of Ariz., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 14, 1992, Ser. No. 884,523

Int. Cl.[5] H01J *29/46, 29/56*

U.S. Cl. 315—15 **20 Claims**

1. An electron gun of a cathode ray tube to project an electron beam onto a screen of said cathode ray tube, said electron gun comprising:

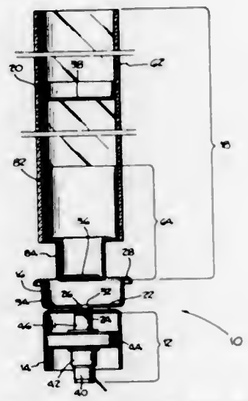
a cathode having an electron emitting surface, a first anode having a high positive voltage, and a control grid between said cathode and said first anode and aligned along an axis formed by said cathode and said first anode, intensity of said electron beam varying in response to a drive voltage applied to said control grid, said drive voltage being greater than 30% of a maximum cutoff voltage;

a second anode located beyond said first anode and aligned along said axis, said second anode having a relatively high

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positive voltage to accelerate said electron beam, said voltage at said second anode being substantially higher than said voltage at said first anode; and

a clipping aperture located within said anode aligned along said axis and receiving a centermost portion of said accelerated electron beam therethrough with an outer portion



of said beam being shunted off, said clipping aperture allowing transmission of less than 50% of said beam and being less than 0.070 inches in diameter;

wherein, said screen receives said centermost portion of said electron beam, and an increase in said drive voltage results in a corresponding decrease in line width of said beam measured at said screen.

5,287,039

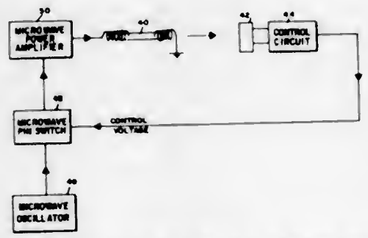
METHOD OF HOT RESTARTING ELECTRODELESS HID LAMPS

Philip D. Gregor, Acton, and Brian Dale, Lynnfield, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 12, 1990, Ser. No. 626,365

Int. Cl.[5] H05B *41/16*

U.S. Cl. 315—248 **7 Claims**



4. An apparatus for shutting off an arc discharge electrodeless lamp comprising:

a photodiode capable of sensing visible radiation and generating a signal corresponding to the visible radiation;

signal amplification means coupled to the photodiode and capable of generating a DC signal in response to a signal from the photodiode;

switch means coupled to the signal amplification means wherein the switch means provides an analog signal in response to the DC signal; and

A microwave power supply which supplies power to the electrodeless lamp and is coupled to said switch means so that power to the electrodeless lamp is reduced in response to the analog signal from said switch means.

5,287,040

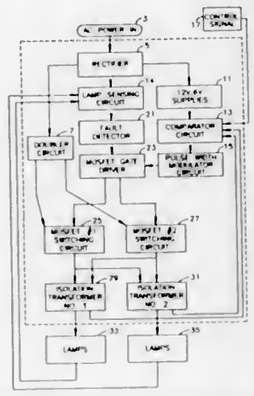
VARIABLE CONTROL, CURRENT SENSING BALLAST

Guy J. Lestician, Hamilton Township, Mercer County, N.J., assignor to Lestician Ballast, Inc., Robbinsville, N.J.

Filed Jul. 6, 1992, Ser. No. 908,986

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—291 **8 Claims**



1. An electronic ballast device for controlling the power to one or more gas discharge lamps, comprising:

(a) a housing unit to mount electronic circuitry and related components;

(b) electronic circuitry mounted on said housing unit, which includes:

(i) means for connecting and applying a.c. power input to said circuitry;

(ii) means for switching lamps on and off controlling said circuitry;

(iii) rectifying circuitry to convert a.c. power input to a plurality of d.c. outputs, including one or more low voltage outputs;

(iv) comparator circuitry which receives an external control signal and compares it to feedback from the output of the device, and thereby controls a Pulse Width Modulation [PWM] circuitry;

(v) said PWM circuitry which sends at least one timing signal to MOSFET gate driver circuit;

(vi) said MOSFET gate driver circuit which receives said timing signal from PWM circuitry and supplies switching control to two MOSFET's;

(vii) said MOSFET's which receive d.c. power from doubling rectifying circuitry and which are controlled by said MOSFET gate driver circuitry such that a high frequency voltage is output;

(viii) means to create an initial delay of MOSFET switching during initial power-up to improve lamp life and effectiveness;

(ix) two isolation transformers, with the outputs of said MOSFET's connected to the inputs of said transformers;

(x) lamp sensing circuitry receiving input from rectifier to detect lamp outage, and connected to shut down circuitry;

(xii) said shut down circuitry to at least partially decrease power when at least one lamp is missing, and;

(xii) means to connect power output from isolation transformers to lamps.

5,287,041

SIDE PIN CUSHION CIRCUIT

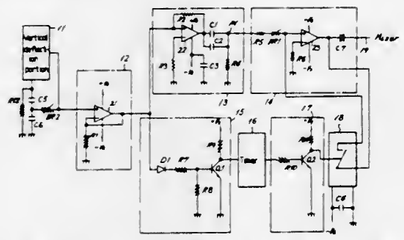
Kang Woo Lee, Anang, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 15, 1992, Ser. No. 913,425

Claims priority, application Rep. of Korea, Jul. 15, 1991, 1991 10913

Int. Cl.[5] G09G *1/04*; H01J *29/56, 29/72*

U.S. Cl. 315—371 **5 Claims**



1. A side pin cushion circuit in an image displaying device having a mixer for amplitude-modulating a horizontal deflection signal by a pin cushion signal and applying the amplitude modulated horizontal deflection signal to a deflection coil of a cathode ray tube comprising:

vertical deflection means for generating a saw-tooth signal whose period varies according to the frequency of a vertical synchronizing signal;

first amplifying means for amplifying the saw-tooth signal from said vertical deflection means and converting the amplified saw-tooth signal to a pin cushion signal;

second amplifying means for amplifying the pin cushion signal from said first amplifying means and supplying the amplified pin cushion signal to said mixer;

means for switching the pin cushion signal supplied to said mixer from said second amplifying means; and

switch controlling means for detecting the frequency of the vertical synchronizing signal by the voltage level of the saw-tooth signal supplied from said vertical deflection means and controlling said switching means every period corresponding to the frequency of the detected vertical synchronizing signal.

5,287,042

DISPLAY ASPECT RATIO ADAPTATION

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

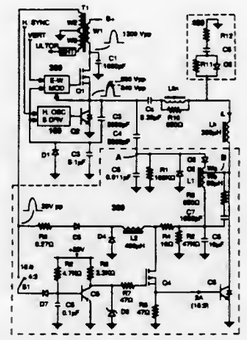
Filed Aug. 24, 1992, Ser. No. 934,377

Claims priority, application United Kingdom, Aug. 28, 1991, 9118425

Int. Cl.[5] G09G *1/04*; H01J *29/70*

U.S. Cl. 315—370 **20 Claims**

1. A cathode ray tube display system, comprising: a cathode ray tube and a deflection yoke positioned thereon; deflection means coupled to said yoke for generating deflection current therein to scan a raster on a screen of said tube, said deflection means having at least two selectable conditions each of deflection current amplitude and a deflection circuit parameter, where, in the first selectable condition, a first deflection amplitude and a first value of said parameter corresponds to a first aspect ratio of said raster, and in a second selectable condition, a second deflection amplitude and a second value of said parameter corresponds to a second aspect ratio, different than said first.



5,287,043

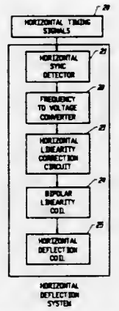
APPARATUS FOR AUTOMATICALLY GENERATING A CORRECT CRT DISPLAY REGARDLESS OF TIMING SIGNALS

Johan O. Brag, 1101 Green St., San Francisco, Calif. 94109

Continuation of Ser. No. 402,843, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 175,767, Mar. 31, 1988, abandoned. This application Nov. 26, 1991, Ser. No. 803,655

Int. Cl.[5] G09G *1/04*; H01J *29/56*

U.S. Cl. 315—371 **8 Claims**



1. An inductive raster scan system for producing a display on a flat face CRT suitable for photographing where the display includes control by horizontal timing signals including horizontal sync pulses having an incoming scan rate, said system comprising

horizontal deflection means for generating a system trigger pulse to provide a raster of constant width and horizontal linearity to be displayed on said CRT regardless of the timing of said horizontal timing signals, said horizontal deflection means including

a digital filtering circuit including dual non-retriggerable multivibrator devices and a low pass filter for detecting the leading edge of said horizontal sync pulses and for filtering out serration and equalizing pulses from said horizontal timing signals so as to produce said system trigger pulse having an onset in constant pulse relation to the onset of said leading edge of said horizontal sync

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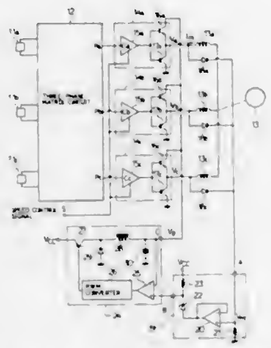
pulses regardless of any of said serration and equalizing pulses,
a power amplifier,
a frequency to voltage converter for providing a voltage for said power amplifier which is proportional to the incoming scan rate,
means for maintaining said constant width that may also be trimmed by manual control,
a bipolar inductor,
said power amplifier including means for driving said bipolar inductor to maintain a constant frequency to impedance ratio throughout the horizontal scan frequency range.

5,287,044

DRIVE CIRCUIT FOR BRUSHLESS MOTOR

Hirokazu Izawa, Aichi, and Kenichi Komiya, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1992, Ser. No. 968,387
Claims priority, application Japan, Oct. 31, 1991, 3-286005
Int. Cl.[5] H02P *7/14, 6/02*
U.S. Cl. 318—254 **2 Claims**



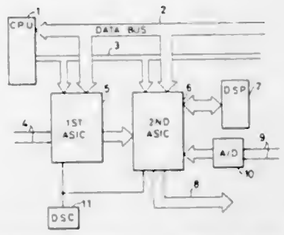
1. A drive circuit for a brushless motor comprising:
a) position detecting means for detecting a rotational position of a rotor of the brushless motor, thereby generating position detection signals;
b) a plurality of amplifier having respective transistors at least in respective output stages, the amplifiers feeding electric power to respective stator windings of the brushless motor through the respective transistors of the output stages timed in accordance with the position detection signals from the position detecting means respectively, each amplifier having a degree of amplification varied based on a speed control signal;
c) a detection resistance obtaining a voltage drop (V_m) when an output voltage from each output stage transistor is applied thereto;
d) reference voltage generating means including a series circuit of a resistance element connected between a direct current power supply terminal and the detection resistance, a Zener diode providing a Zener voltage (V_z) and a buffer amplifier, the reference voltage generating means generating a reference voltage equal to the sum of the voltage drop (V_m) and the Zener voltage (V_z); and
e) power supply adjusting means including a switching element which chops the output voltage from the direct current power supply terminal to thereby obtain an adjusted voltage (V_p), the switching element applying the adjusted voltage (V_p) to a collector of each output stage transistor, means for generating a pulse width modulation signal for controlling an on-off duty ratio of the switching element, and comparing means for comparing the adjusted voltage (V_p) applied to each output stage transistor with the reference voltage generated by the reference voltage generating means to thereby control the pulse width modulation signal so that the voltage (V_p) applied to the collector of each output stage transistor is substantially equal to the reference voltage.

5,287,045

FULLY DIGITAL APPARATUS FOR CONTROLLING OPERATION OF ELECTRIC MOTOR

Soukichi Uehara, Futyu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 658,250, Feb. 20, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 921,984
Claims priority, application Japan, Feb. 20, 1990, 2-37210
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—268 **8 Claims**



1. An apparatus for digitally controlling a speed of an electric motor, comprising:
micro-processor means for carrying out low speed control processings at low speed timings;
high speed digital processor means for carrying out high speed control processings at high speed timings faster than the low speed timings, the high speed digital processor means including,
interface register means for interfacing data transmission between the micro-processor means and the high speed digital processor means, where data to be interfaced by the interface register means contain no information concerning timings of the data transmission through the interface register means; and
timing circuit means for receiving access signals from the micro-processor means, and producing timing signals based on the high speed timings by using the access signals where the timing signals control the timings of the data transmission through the interface register means; and
means for controlling the speed of the electric motor according to the low speed control processings and the high speed control processings.

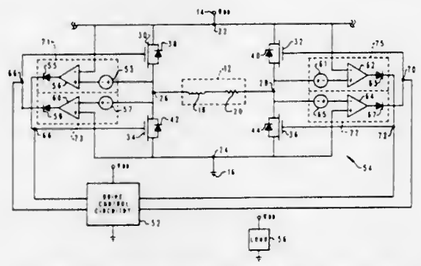
5,287,046

METHOD AND SYSTEM FOR ACTUATOR CONTROL FOR DIRECT ACCESS STORAGE DEVICES

Gary D. Carpenter, Endwell, N.Y.; Robert E. Jansen, Byron, Minn.; Eugene F. Plutowski, and John J. Stephenson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1992, Ser. No. 882,197
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—293 **11 Claims**

1. A method of supplying current from a power source to an inductive load from first and second output terminals of a bridge circuit, the bridge circuit having a transistor switching element in each of four arms and first and second input terminals connected to receive power at first and second voltage levels, respectively, from the power source, the method comprising the steps of:
turning on a first diagonally opposed pair of transistor switching elements to establish a first direction current from the first voltage level through the first output terminal, the inductive load and the second output terminal to the second voltage level;
after establishment of the first direction current, providing control signals to turn off the first diagonally opposed pair of transistor switching elements;
comparing a voltage level on the first output terminal with the second voltage level to determine excursions past the second voltage level in a first direction;
responsive to excursions of the voltage level on the first output terminal past the second voltage level, driving the transistor switching element in an arm of the bridge circuit



connecting the first output terminal to the power source at the first voltage level into active region operation to limit further change in the voltage level on the first output terminal in the first direction;
comparing a voltage level on the second output terminal with the first voltage level to determine excursions past the first voltage level in a second direction; and
responsive to excursions the voltage level on the second output terminal past the first voltage level, driving the transistor switching element in an arm of the bridge circuit connecting the second output terminal to the power source at the second voltage level into active region operation to limit further change in the voltage level on the second output terminal in the second direction.

5,287,047

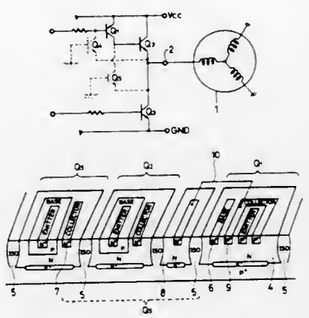
MOTOR DRIVE CIRCUIT AND MOTOR DRIVE SYSTEM USING THE SAME

Yorinobu Murayama, Moriguchi, and Keoji Otani, Kyoto, both of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 10, 1992, Ser. No. 847,275
Claims priority, application Japan, Mar. 15, 1991, 3-075855; May 30, 1991, 3-155798
Int. Cl.[5] H01L *25/00;* **H02P** *3/08*
U.S. Cl. 318—362 **25 Claims**

1. A motor drive circuit formed in an IC, comprising:
a first transistor at a drive stage and formed in a portion in common substrate or a common well of a substrate;
a second transistor at an output stage formed in the portion to be driven by said first transistor;
a third transistor for a short braking operation formed in the portion downstream of said second transistor; and
a region of either a P type or an N type formed in the portion and connected to said first transistor to form a parasitic transistor in which said region serves as emitter or collector and the portion serves as base.

9. A motor drive system, comprising:
a first transistor at a drive stage formed in a portion in a substrate or a well of a substrate;
a second transistor at an output stage formed in the portion and connected to be driven by said first transistor;
a motor connected to said second transistor;
a third transistor connected for a short braking operation formed in the portion and disposed downstream said second transistor; and



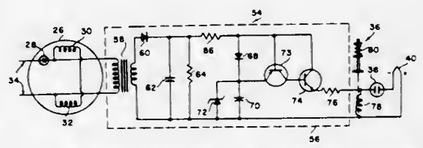
a region of a P type or an N type formed in the portion and internally connected to said first transistor to form a parasitic transistor with said region as an emitter or a collector and the portion as a base.

5,287,048

ELECTRONIC GAS VALVE POWER INTERRUPTION SWITCH

Bryan L. Lakin, Nixa, and David B. Hyppio, Springfield, both of Mo., assignors to Fasco Industries, Inc., Cassville, Mo.

Filed May 22, 1992, Ser. No. 888,058
Int. Cl.[5] F24H *3/02;* **H02H** *5/00*
U.S. Cl. 318—459 **26 Claims**



1. In a gas appliance having a fan motor for supplying a quantity of air, a gas supply valve having a mechanically biased and electrically held actuator, and a thermocouple in circuit with said gas supply valve, said thermocouple having means for sensing the heat of combustion of said appliance and generating sufficient electrical power in response thereto to hold said electrical actuator in a closed position, the improvement comprising a solid state circuit having means for sensing an interruption of electrical power to said fan motor and means for applying a turn off signal directly to said electrical actuator in response thereto to thereby affirmatively turn off said gas supply valve.

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5,287,049

METHOD FOR TRIGGERING SWITCHING OPERATIONS RELATED TO POSITION DURING A MACHINING PROCESS CARRIED OUT BY A ROBOT OR A MACHINE TOOL

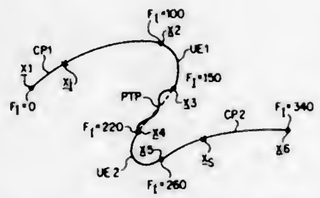
Jürgen Olomski, Herzogenaurach; Manfred Zäh, Forchheim; Christof Meier, Heroldsbach, and Norbert Settele, Petersdorf/Willprechtszell, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 937,811

Claims priority, application European Pat. Off., Sep. 6, 1991, 91115101.7

Int. Cl.[5] **G05B** *19/42*; **G06F** *15/46*

U.S. Cl. 318—568.1 **11 Claims**



1. A method for triggering a switching operation during a machining process carried out by a numerically controlled robot or a numerically controlled machine tool along a trajectory path including a plurality of travel sections, numerical control of said numerically controlled robot or numerically controlled machine tool calculating setpoint values of travel components from at least one motional function $F_\beta(t)$ for each of the plurality of travel sections, the method comprising the steps of:

deriving from one or more of the at least one motional function $F_\beta(t)$ a path parameter $F_\lambda(t)$, which is specific to an actual value, wherein different actual values of the path parameter $F_\lambda(t)$ correspond to different positions of the robot or tool such that the actual value of the path parameter rises or falls monotonically from a starting position to an end position for each of said travel sections; and

triggering the switching operation when the derived path parameter has reached a predetermined actual value corresponding to a predetermined position of the robot or tool along one of said travel sections.

5,287,050

METHOD OF SYNCHRONIZATION FOR AN INDICATING INSTRUMENT WITH ELECTROMAGNETICALLY CONTROLLED STEPPING MOTOR

Klaus Kronenberg, Schwalbach/TS; Matthias Giron, Frankfurt am Main; Robert Belz, Wiesbaden, and Wolfgang Obst, Schmitten, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,736

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1992, 4200551

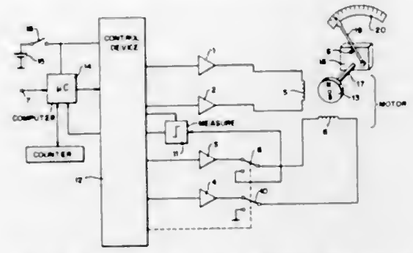
Int. Cl.[5] **H02P** *8/00*

U.S. Cl. 318—696 **8 Claims**

1. A method for synchronizing the counter of an electric control device with the zero position of a pointer of an indicating instrument the zero position being defined by a mechanical stop of the indicating instrument, the pointer being driven via a stepdown gearing by a stepping motor having two windings perpendicular to each other and a two-pole rotor, the method comprising:

connecting alternately the two windings to the source of voltage and to a measuring mechanism for determining a voltage induced in the winding not traversed by a current, the pointer being moved step-wise up to the mechanical stop and the counter being set to zero in the absence of an induction;

upon the assembling of the stepping motor and the indicating device, associating a given alignment of the two-pole motor with the zero position of the pointer;



bringing the rotor into the given alignment each time upon the start of the method;

rotating the rotor to a position for measurement of a voltage induced in the winding not traversed by a current, wherein the rotor position follows the given alignment by one step of the stepping motor; and

setting the counter to zero.

5,287,051

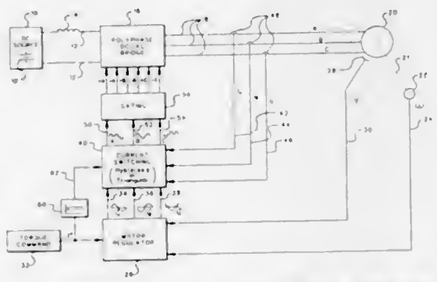
METHOD AND APPARATUS FOR IMPROVED EFFICIENCY IN A PULSE-WIDTH-MODULATED ALTERNATING CURRENT MOTOR DRIVE

Charles E. Konrad, and Richard W. Bootbe, both of Roanoke, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1992, Ser. No. 837,467

Int. Cl.[5] **H02P** *5/40*

U.S. Cl. 318—803 **19 Claims**



1. A polyphase alternating current electric motor drive comprising:

a) a polyphase motor;

b) a direct current power source;

c) a polyphase power conversion bridge for converting direct current power from said source to alternating current power for application to said motor;

d) means to provide a speed signal representing motor rotational speed;

e) means to provide current signals having values representing corresponding phase currents of the alternating current power applied to said motor;

f) means to provide a torque command signal having a value representing a desired torque of said motor; and

g) control means responsive to said speed, current and torque command signals for controlling said power conversion bridge in a pulse-width-modulated mode of operation, said control means comprising frequency modulation control means for enabling a variable number of modulating pulses in each half-cycle of the phase currents responsive to said torque command signal to provide a higher number of modulating pulses at values of said torque command signal representing lesser values of desired torque than at values of said torque command signal representing higher desired values of desired torque;

h) wherein the higher number of modulating pulses produce a power wave shape more closely approximating a sine wave thereby to lower harmonic heating of the motor when switching currents are lower, and the lower number of modulating pulses reduce switching losses of the power conversion bridge when switching currents are higher.

5,287,052

SIZE ADJUSTABLE BATTERY CHARGER

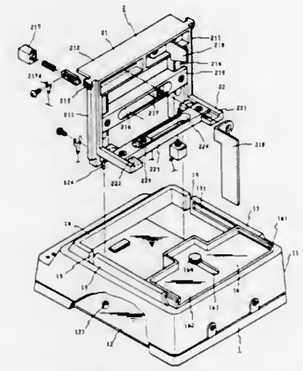
Fu C. Wang, 2F., No. 10, Alley 5, Lane 220, Wen Der Road, Taipei, Taiwan

Filed Apr. 2, 1993, Ser. No. 41,777

Claims priority, application China, Sep. 1, 1992, 92232503

Int. Cl.[5] **H02J** *7/00*

U.S. Cl. 320—2 **4 Claims**



1. A size adjustable battery charger comprising:

a rectangular casing having a charging circuit assembly supported above a bottom surface thereof, said charging circuit assembly having positive and negative output sockets, two grooved parallel rails longitudinally disposed on two opposite sides at the top of said casing, a fender transversely disposed relative to said parallel rails at one side of said casing and spaced from each of said parallel rails by a respective gap, a horizontal sliding frame for sliding in and out of said parallel rails and having a centrally disposed elongated slot therethrough, through which a hold-down screw is threadably engaged in said casing to hold said horizontal sliding frame in place; and

a rack formed of a horizontal frame connected to a vertical frame and received in said casing, said vertical frame comprising a horizontal top plate supported above two opposite side posts and a slide which is vertically adjustable and connected between said side posts, two horizontal contacts movably fastened in an elongated through hole on said slide and respectively connected to said positive and negative output sockets for charging rechargeable batteries, said horizontal frame comprising two parallel end bars perpendicularly connected to said side posts at a lower elevation and joined by a cross bar, and two vertical contacts movably fastened in an elongated through hole on said cross bar and respectively connected to said positive and negative output sockets.

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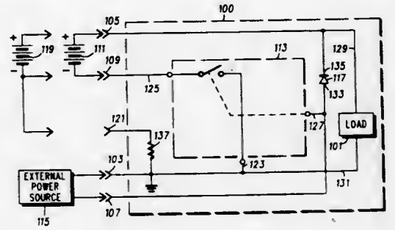
POWER SUPPLY WITH A BATTERY DISCONNECT

Kenneth S. Hutchinson, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1992, Ser. No. 909,272

Int. Cl.[5] **H02J** *7/10, 9/04, 9/06*

U.S. Cl. 320—2 **19 Claims**



1. A power supply with a battery disconnect comprising:

battery power terminal means, including separate positive, negative and charging terminals, said battery power terminal means for receiving battery power from a to be provided battery;

external power terminal means for receiving external power from a to be provided external power source;

charging means for providing a charge path between said external power terminal means and the charging terminal of said battery power terminal means;

gating means having an input, an output, and a control input, wherein the input is coupled to said external power terminal means, the output is coupled to one of the positive and negative terminals of said battery power terminal means, and the control input is coupled to said external power terminal means, and wherein the output is decoupled from the input responsive to connection of the external power source to the external power terminal means and wherein the output is coupled to the input, responsive to the disconnection of the external power source from the external power terminal means; and

means for combining the battery power terminal means, the external power terminal means, and the input of said gating means, said combining means for providing operative power to a load from either the external power source through said external power terminal means, or the battery through said battery power terminal means and the input of said gating means, and wherein said charging means permits the charging of a secondary battery coupled to the charging terminal and at least another one of the positive and negative terminals of said battery power terminal means responsive to the connection of the external power source, and wherein said gating means prevents the charging of a primary battery connected to the positive and negative terminals of said battery power terminal means, by disconnecting the input and output of said gating means responsive to the connection of the external power source to said external power terminal means.

5,287,054

ATTENUATING VOLTAGE FOLLOWER CIRCUIT

William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 5, 1993, Ser. No. 27,274

Int. Cl.[5] **G05F** *3/16*

U.S. Cl. 323—314 **25 Claims**

1. A voltage-follower circuit for generating an attenuated

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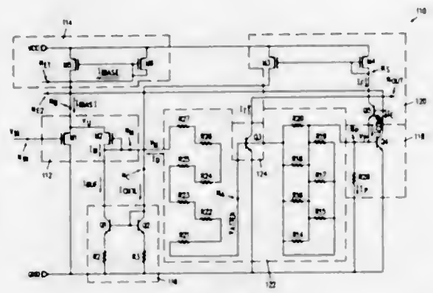
signal about a reference voltage, the voltage-follower circuit comprising:

an input stage that generates an intermediate voltage signal and that sources an intermediate current in response to an input voltage signal and an input stage bias current;

an input biasing stage connected to the input stage that sources the input stage bias current;

a reference stage that generates a pivot voltage and that sinks a substantially constant pivot current, the pivot current comprising a compensation current and a divider current so that when the intermediate voltage is greater than the pivot voltage, the compensation current equals the pivot current minus the divider current, when the intermediate voltage is less than the pivot voltage, the compensation current equals the pivot current plus the divider current, and when the intermediate voltage is equivalent to the pivot voltage, the compensation current is equal to the pivot current;

a correction stage connected to the input stage and to the reference stage and that sources the compensation current, that controls the magnitude of the compensation current by sensing the magnitude and direction of the divider current, and that sinks a buffer current in response to the compensation current, the buffer current comprising the intermediate current and the divider current so



that when the intermediate voltage is greater than a pivot voltage, the buffer current equals the intermediate current minus the divider current, when the intermediate voltage is less than the pivot voltage, the buffer current equals the intermediate current plus the divider current, and when the intermediate voltage is equivalent to the pivot voltage, the buffer current equals the intermediate current; and

a voltage divider stage connected to the input stage, the correction stage, and the reference stage and that generates an attenuated voltage signal and that sources the divider current in response to a difference between the intermediate voltage signal and the pivot voltage, the attenuated voltage signal being generated about the pivot voltage,

whereby when the intermediate voltage is greater than the pivot voltage, the divider current reduces the compensation current by an amount which causes the buffer current to be decreased by a corresponding amount, thereby resulting in a substantially constant intermediate current, and

whereby when the intermediate voltage is less than the pivot voltage, the compensation current increases by an amount to source both the divider current and the pivot current which causes the buffer current to be increased by a corresponding amount, thereby resulting in a substantially constant intermediate current.

5,287,055

CIRCUIT FOR MEASURING CURRENT IN A POWER MOS TRANSISTOR

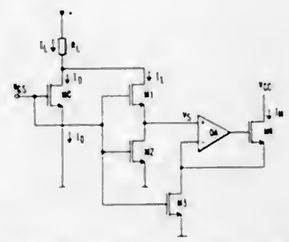
Carlo Cini; Domenico Rossi, both of Cornaredo, Italy, and Marc Simon, Tournefeuille, France, assignors to Siemens Automotive S.A., Toulouse Cedex, France and SGS-Thomson Microelectronics, Agrate Brianza, Italy

Filed Jan. 7, 1991, Ser. No. 637,919

Claims priority, application Italy, Jan. 9, 1990, 90 00401

Int. Cl.[5] **G01R** *1/30, 31/26*

U.S. Cl. 324—158 T **7 Claims**



1. A circuit for measuring current in a power MOS transistor, comprising:

second and third transistors in series with each other, being of the same type and same technology as, but having a smaller surface than, the power transistor and arranged in parallel with said power transistor, said series transistors having their gates connected to the gate of the power transistor, and

means for measuring current in said third transistor, said third transistor being connected to the same reference potential as the source of the power transistor,

wherein each said MOS transistor comprises a plurality of identical cells, said power MOS transistor having a different number of cells than said second and third transistors.

5,287,056

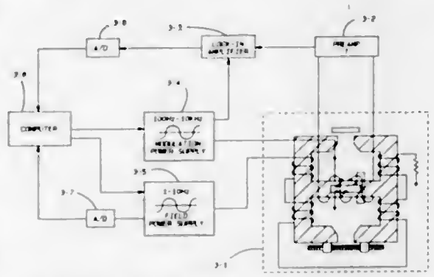
SURFACE MAGNETOMETER WITH MODULATED FLUX GATE SECTION

Leon D. Jackson, Bloomfield Hills, and Dan O. Morris, Troy, both of Mich., assignors to LDJ Electronics, Inc., Troy, Mich.

Filed May 14, 1992, Ser. No. 882,841

Int. Cl.[5] **G01N** *27/72;* **G01R** *33/12, 33/14*

U.S. Cl. 324—239 **16 Claims**



1. An apparatus for measuring the magnetic properties of a sample, said apparatus comprising:

a magnetic core having balanced opposite flux paths that share a common flux gate section;

drive means for generating magnetic flux lines through the balanced flux paths as well as through a sample when placed adjacent to the magnetic core;

modulating means for modulating the reluctance of the flux gate section at a preselected frequency, thereby causing a modulated flux within the flux gate section, and thereby saturating the flux gate section;

sensing means for measuring the modulated flux in the flux gate section and generating a modulated output signal; and

demodulating means for demodulating the modulated output signal to thereby generate an output associated with the magnetic properties of the sample.

5,287,057

SUPERCONDUCTING CIRCUIT HAVING A RECTIFIER FOR CONVERTING A BIPOLAR SIGNAL TO A UNIPOLAR SIGNAL

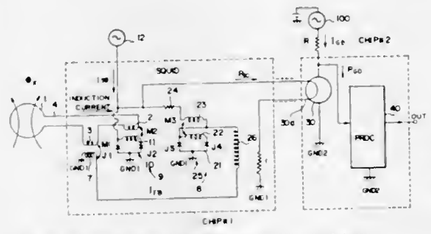
Kohtaroh Gotoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 850,918

Claims priority, application Japan, Mar. 19, 1991, 3-054270

Int. Cl.[5] **G01R** *33/035, 19/22;* **H03K** *3/38, 17/92*

U.S. Cl. 324—248 **8 Claims**



1. A superconducting circuit system, comprising:

biasing means for producing a bias current that changes periodically; and

a superconducting rectifier circuit, having a Josephson junction gate connected between said biasing means and a ground plane, the Josephson junction gate operatively connected to receive at an input thereof a first pulse train including therein positive and negative pulses in synchronization with the bias current,

a Josephson junction, biased by said bias current, included in said Josephson junction gate, causing a transition from a superconducting state to a finite voltage state in response to the pulses of the first pulse train,

said superconducting rectifier circuit rectifying the pulses of the first pulse train to produce at an output of said Josephson junction gate a second pulse train of unipolar pulses in response to the transition of the Josephson junction.

5,287,058

DIGITAL MAGNETIC FLUX MEASURING APPARATUS USING SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE WITH FLUX TRAPPING PREVENTION FEATURES

Takao Goto, Kawasaki; Yutaka Igarashi, Gotenba; Takehiko Hayashi, and Yoshiyasu Nakashima, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 655,835, Feb. 15, 1991, abandoned. This application May 26, 1992, Ser. No. 887,669

Claims priority, application Japan, Feb. 15, 1990, 2-34287; Jun. 15, 1990, 2-155270

Int. Cl.[5] **G01R** *33/02, 33/035*

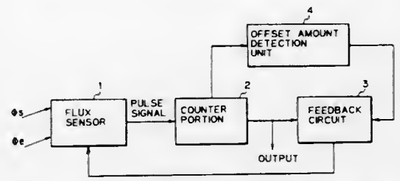
U.S. Cl. 324—248 **15 Claims**

1. A digital SQUID fluxmeter for detecting an external magnetic flux, comprising:

a flux sensor unit which detects external magnetic flux to be measured using SQUID ring and outputs pulse signals of corresponding directions and numbers;

a counter unit coupled to said flux sensor unit, which counts the number of pulse signals including an offset quantity output by said flux sensor unit inclusive of the directions thereof, in order to measure the external magnetic flux based on the counter result of said counter unit;

an offset quantity detection unit coupled to said counter unit, which detects the offset quantity of said counter unit



generated by the magnetic flux trapped by the SQUID ring to generate a detected offset quantity; and

a feedback unit coupled to said offset quantity detection unit and said flux sensor unit, that feeds back to said flux sensor unit a first signal responsive to the detected offset quantity and the counted result of said counter unit.

5,287,059

SATURABLE CORE MAGNETOMETER WITH A PARALLEL RESONANT CIRCUIT IN WHICH THE W3 DC LEVEL CHANGES WITH A CHANGE IN AN EXTERNAL MAGNETIC FIELD

Seigo Ando, Tokyo, and Yoshihiro Murakami, Mitaka, both of Japan, assignors to NKK Corporation, Tokyo, Japan

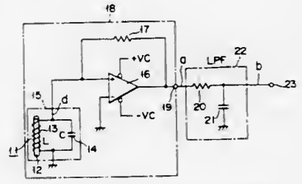
PCT No. PCT/JP91/00561, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/18299, PCT Pub. Date Nov. 28, 1991

PCT Filed Apr. 25, 1991, Ser. No. 807,863

Claims priority, application Japan, May 19, 1990, 2-128119; Oct. 19, 1990, 2-278918

Int. Cl.[5] **G01R** *33/04;* **G01C** *17/28*

U.S. Cl. 324—253 **4 Claims**



1. A device for sensing magnetism, comprising:

a magnetic sensor having a ferromagnetic core and a detection coil wound around said core;

a parallel resonance circuit comprising said detection coil of said magnetic sensor, and a capacitance element connected in parallel with said detection coil, said parallel resonance circuit providing an output signal;

a DC level of said output signal of said parallel resonance circuit changing in accordance with a change in an external magnetic field without changing a waveform of said output signal of said parallel resonance circuit;

an oscillation circuit including:

an amplifier having an output and an input; and

a feedback circuit comprising said parallel resonance circuit and a resistor coupled between said output and said input of said amplifier; and

a waveform change detecting circuit for detecting a change in a waveform of an output signal from said oscillation circuit, said waveform change detecting circuit comprising:

a signal separator for separating said output signal of said

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oscillation circuit into a first positive waveform component and a second negative waveform component;

a positive pulse width measuring circuit for measuring a width of said first positive waveform component separated by said signal separator;

a negative pulse width measuring circuit for measuring a width of said second negative wavefrom component separated by said signal separator; and

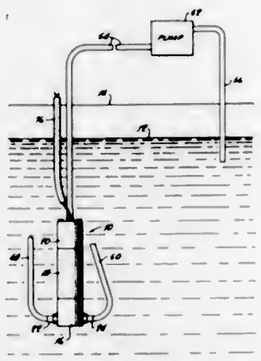
subtracting circuit means for subtracting a first pulse width measured by one of said positive and negative pulse width measuring circuits from a second pulse width measured by the other one of said positive and negative pulse width measuring circuits.

5,287,060

IN-TANK CONDUCTIVITY SENSOR

Vilambi N. Reddy, Lakewood; Bruce M. Eliash, Los Angeles; Frank A. Ludwig, Rancho Palos Verdes, and Nguyet H. Phan, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 17, 1992, Ser. No. 977,389
Int. Cl.[5] G01N *33/18*
U.S. Cl. 324—439 **23 Claims**



1. A conductivity sensor adapted for use in the conductimetric analysis of liquids, said conductivity sensor comprising:

a liquid flow control chamber comprising an inlet and an outlet;

a sensing chamber comprising an inlet and an outlet;

a liquid exit chamber comprising an inlet and an outlet;

first connection means for connecting said liquid flow control chamber outlet to said sensing chamber inlet to provide for flow of liquid from said liquid flow control chamber into said sensing chamber;

second connection means for connecting said sensing chamber outlet to said liquid exit chamber inlet to provide for flow of liquid from said sensing chamber into said liquid exit chamber;

a pair of conductivity electrodes located within said sensing chamber;

means for transporting a liquid from said liquid flow control chamber inlet to said liquid exit chamber outlet; and

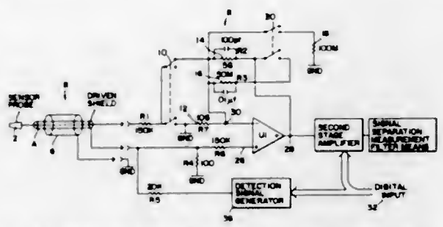
flow damper means for controlling the flow of liquid through said liquid flow control chamber, so that liquid entering said sensing chamber is substantially free of turbulence.

5,287,061

ON LINE TRIBOELECTRIC PROBE CONTAMINATION DETECTOR

Ronald L. Dechene, Boxford, and Robert E. Newtoo, Tewksbury, both of Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed May 19, 1992, Ser. No. 885,493
Int. Cl.[5] G01N *27/60*
U.S. Cl. 324—454 **12 Claims**



1. An improved triboelectric probe circuit comprising:

(a) a converter means, wherein a triboelectric signal is received from the probe and converted to an amplified signal,

(b) a triaxial cable connecting the probe to the converter, said triaxle cable containing a central conductor, an inner shield, an outer shield, and capacitance there between,

(c) means for introducing an AC signal into said converter wherein said AC signal is converted to an amplified AC signal by utilizing essentially the same components as used to convert said triboelectric signal, and wherein said amplified triboelectric and AC signals are combined into an output signal, and wherein said amplification is dependent upon the probe being uncontaminated,

(c) filter means for separating said amplified AC signal from the output signal, wherein said filter means comprises hardware, software, or combinations thereof.

(d) means for measuring said amplified AC signal wherein a change in said amplified AC signal indicates a contaminated probe,

(e) means for isolating said probe from said converter means, wherein a change in said AC signal output indicates a faulty circuit component,

(f) means for grounding said triboelectric signal input to aid converter and isolating said converter inputs wherein said converter output acceptable system zero, and

(g) means to drive said triaxial inner shield rendering said cable capacitance ineffective in distorting, or otherwise altering said output signal.

5,287,062

REFERENCE VOLTAGE MEASURING BRIDGE FOR A DEVICE FOR MONITORING AND MEASURING THE INSULATION OF A DC VOLTAGE ELECTRICAL MAINS SYSTEM

Christian Pellegrin, Coublevie; Luc Weynachter, Grenoble, and Patrice Allio, Meylan, all of France, assignors to Merlin Gerin, France

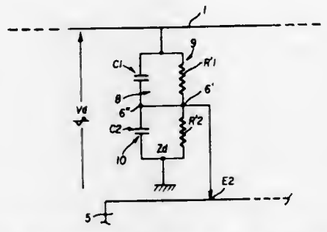
Filed Dec. 17, 1991, Ser. No. 808,750
Claims priority, application France, Dec. 26, 1990, 90 16404
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—551 **2 Claims**

1. An insulation monitor for monitoring and measuring the insulation of a DC voltage electrical power system, said monitor comprising:

input circuit means for injecting a reference AC signal having a low frequency of about 4 to 10 Hz into a line of said power system;

an AC voltage measuring device comprising a mixed bridge including a resistive dividing bridge comprising a first resistance connected in series with a second resistance between the line of said power system and an installation ground, a capacitive dividing bridge including a first capacitor connected in series with a second capacitor between the line of said power system and said installation ground, wherein said resistive and capacitive dividing bridges are connected in parallel and have intermediate output points that are coupled together; and

processing circuit means, having an input coupled to the intermediate output points of said resistive and capacitive dividing bridges, for performing a insulation measurement operation;



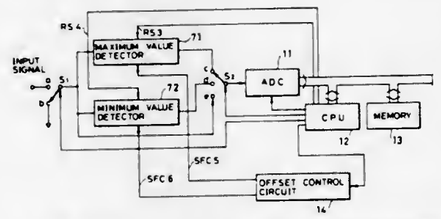
wherein the first resistive bridge has a total resistance which is very high with respect to the input impedance of said power system, and a dividing ratio of about one thousandth; the second capacitive bridge has a dividing ratio of about one half, and a low impedance with respect to that of the lower of the first and second resistances of the resistive bridge, at the frequency of the reference AC signal, so that a value of a DC voltage measured at said intermediate output points is low in relation to the value of the reference AC voltage measured on the same output points; and the DC impedance of said mixed bridge is high with respect to the input impedance of said power system.

5,287,063

CALIBRATION CIRCUIT AND METHOD FOR MAXIMUM AND MINIMUM VALUE DETECTION APPARATUS

Masao Izawa, Kawasaki, Japan, assignor to Kikusui Electronics Corporation, Kanagawa, Japan

Filed Oct. 16, 1991, Ser. No. 777,638
Claims priority, application Japan, Oct. 18, 1990, 2-277847
Int. Cl.[5] G01R *35/00*
U.S. Cl. 324—601 **16 Claims**



1. A calibration circuit for a maximum and minimum value detection apparatus comprising:

a maximum value detection circuit for detecting and outputting a maximum value of an input signal;

a minimum value detection circuit for detecting and outputting a minimum value of the input signal;

reference signal generating means for generating a reference signal of a fixed value which is inputted to said maximum value detection circuit and to said minimum value detection circuit upon initiation of a calibration mode; and

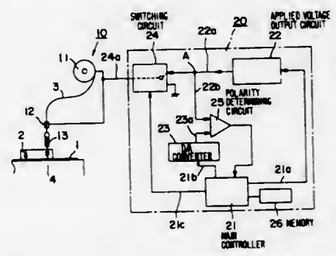
offset control means, responsive to initiation of said calibration mode, for automatically controlling an output offset voltage supplied to at least one of said maximum value detection circuit and said minimum value detection circuit without need for manual intervention so that said maximum value and said minimum value obtained in response to said reference signal become equal.

5,287,064

BONDING POINT POLARITY DETERMINING APPARATUS

Tooru Mochida, and Yoshimitsu Terakado, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed May 22, 1992, Ser. No. 887,067
Claims priority, application Japan, May 24, 1991, 3-148126
Int. Cl.[5] G01R *19/00*
U.S. Cl. 324—606 **2 Claims**



1. A bonding point polarity determining means comprising:

an applied voltage output circuit which outputs positive and negative voltages;

a switching circuit which, after a bonding wire passing through a bonding tool of a wire bonding machine is connected to a first bonding point, or when a probe is in contact with said first bonding point, applies voltage from said applied voltage output circuit to said wire or probe;

a D/A converter which outputs standard positive and negative voltages;

a polarity determining comparator which determines a polarity of said first bonding point by comparing a voltage detected on said wire or probe when voltage is applied to said wire or probe with said standard voltage; and

a memory which stores a result of said polarity determination for each bonding point.

5,287,065

AUTOMATIC BRIDGE BALANCING USING CONTROLLABLE IMPEDANCE IN CHARACTERIZING UNKNOWN IMPEDANCE

Lars P. Allfather, Boston, Mass., assignor to Doble Engineering Company, Watertown, Mass.

Filed Oct. 4, 1991, Ser. No. 771,770
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—651 **17 Claims**

1. Automatic bridge balancing apparatus comprising,

a reference impedance,

a measuring terminal pair for receiving an unknown impedance characterized by at least one parameter,

a source of a test signal coupled to said reference impedance and to said measuring terminal pair in parallel for energizing said reference impedance and said unknown impedance,

a measuring detector connected in series with said unknown impedance when said unknown impedance is connected to said measuring terminal pair for providing a measured signal representative of the current flowing through said unknown impedance when energized by said test signal,

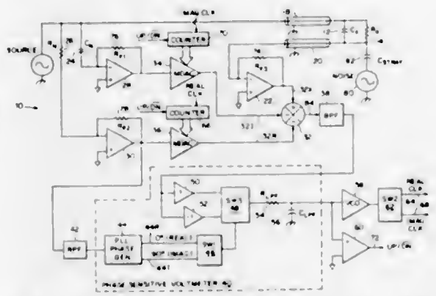
at least one reference detector connected in series with said reference impedance for providing a reference signal

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characteristic of the current flowing through said reference impedance when energized by said test signal,

a combiner having at least a measuring input and at least one reference input for combining the measured signal with the reference signal to provide at least one error signal,

each reference detector including an up/down counter coupled to a digital attenuator that is coupled to a reference input of said combiner,



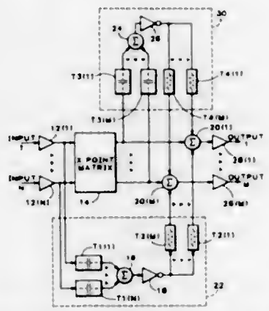
and a controller having an input coupled to said combiner and an output coupled to each up/down counter for controlling the count in each up/down counter so that the associated digital attenuator provides a signal to the associated reference input of said combiner that minimizes an associated error signal so that the count in the associated counter is then characteristic of an unknown impedance parameter.

5,287,066

CROSSTALK REDUCTION CIRCUIT FOR CROSSPOINT MATRIX

John E. Liron, Grass Valley; Grant T. McFetridge, Nevada City, and Kevin J. Shuholm, Grass Valley, all of Calif., assignors to The Grass Valley Group, Nevada City, Calif.

Filed May 15, 1992, Ser. No. 883,508
Int. Cl.[5] H03B *1/00*
U.S. Cl. 328—163 **7 Claims**



1. A crosstalk reduction circuit for a crosspoint matrix of the type receiving a plurality of input signals and selectively producing from the input signals a plurality of output signals comprising:

first means for generating a first compensation signal from the input signals;

second means for generating a second compensation signal from the output signals; and

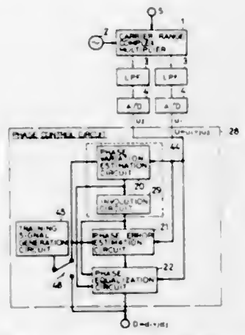
means for combining the first and second compensation signals with the output signals to produce compensated output signals with reduced crosstalk.

5,287,067

METHOD AND APPARATUS FOR DEMODULATION WITH ADAPTIVE PHASE CONTROL IN QUASI-COHERENT DETECTION

Satoshi Denno, and Yoichi Saito, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,239
Int. Cl.[5] H04L *27/22, 27/38*
U.S. Cl. 329—304 **40 Claims**



1. A method of demodulation with adaptive phase control, for obtaining demodulated complex signals from modulated complex input signals, comprising the steps of:

(a) estimating a frequency error in the modulated complex input signals by using a phase variation during one symbol due to the frequency error according to the modulated complex input signals and the demodulated complex signals obtained at the step (c) for present and immediately previous symbols;

(b) estimating an initial phase error in the modulated complex input signals, according to the modulated complex input signals, the demodulated complex signals obtained at the step (c), and the frequency error estimated at the step (a); and

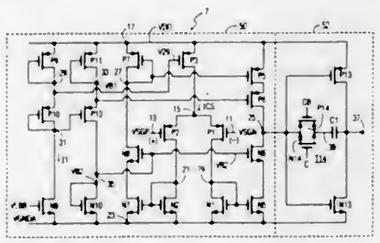
(c) obtaining the demodulated complex signals by applying optimum phase compensation determined according to the frequency error estimated at the step (a) and the initial phase error estimated at the step (b), to the modulated complex input signals.

5,287,068

COMPARATOR AMPLIFIER

John A. Olmstead, Cape May Court House, and Salomon Vulih, Neshanic St., both of N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 27, 1992, Ser. No. 936,596
Int. Cl.[5] H03F *1/02, 3/45*
U.S. Cl. 330—9 **14 Claims**



1. An amplifier comprising:

first and second amplifying stages;

said first amplifying stage having an inverting input, a non-inverting input and an intermediate output node at which is produced a signal responsive to signals applied to said inverting and non-inverting inputs;

said first amplifying stage including a differential amplifier stage having first and second inputs respectively connected to said inverting input and non-inverting input, said differential amplifier stage having first and second differential output nodes, said first amplifying stage also including a first branch coupled to and responsive to the signal at one of said differential output nodes for supplying a current into said intermediate node, and a second branch coupled to and responsive to the signal at the other one of said differential output nodes for drawing a current out of said intermedite node;

said second amplifying stage having an input connected to said intermediate output node and an output connected to an output terminal; and

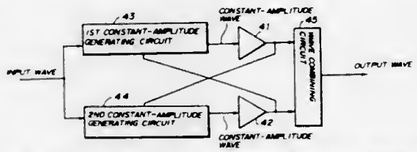
a selectively enabled transmission gate means connected in series with a capacitor between said input and said output of said second amplifying stage; said selectively enabled transmission gate means, when enabled, functioning as a resistance which in combination with the capacitor provides frequency compensation, and when disabled, functioning to disconnect one side of the capacitor and eliminating its loading effect on the amplifier stage whereby the amplification of said second amplifier stage is substantially greater than 1.

5,287,069

CONSTANT-AMPLITUDE WAVE COMBINATION TYPE AMPLIFIER

Naofumi Okubo, Kawasaki; Yoshihiko Asano; Hiroshi Kurihara, both of Tokyo; Yoshimasa Daido, Yokohama; Kazuhiko Kobayashi, Kawasaki; Shuji Kobayakawa, Yokohama, and Toru Maniwa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 652,415, Feb. 7, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,522
Claims priority, application Japan, Feb. 7, 1990, 2-27698; Feb. 7, 1990, 2-27699; Feb. 7, 1990, 2-27700
Int. Cl.[5] H03F *3/38, 3/68*
U.S. Cl. 330—10 **44 Claims**



1. A constant-amplitude wave combination type amplifier comprising:

a first amplifier outputting a first amplified output;

a second amplifier outputting a second amplified output;

first constant-amplitude wave generating means, coupled to said first and second amplifiers, for combining an input wave and said second amplified output from said second amplifier to generate a first constant-amplitude wave which is input to said first amplifier;

second constant-amplitude wave generating means, coupled to said first and second amplifiers, for combining said input wave and said first amplified output from said first amplifier to generate a second constant-amplitude wave; and

first wave combining means, coupled to said first and second amplifiers, for combining said first and second amplified outputs and for generating an output wave,

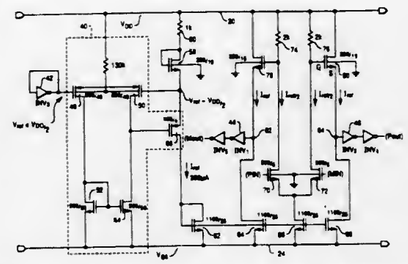
said first and second amplifiers being operated in a saturated area of operation.

5,287,070

BALANCED VOLTAGE COMPARATOR

Bob Thelen, and Donald M. Bartlett, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 2, 1992, Ser. No. 939,225
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **15 Claims**



14. A method for improving response time of a differential comparator, the comparator including a differential transistor stage having an output terminal coupled through a buffer stage to an output inverter, the method comprising the steps of:

developing a reference voltage corresponding to a trip point of the output inverter;

developing a reference current proportional to the reference voltage;

biasing the output inverter at the trip point with the reference current; and

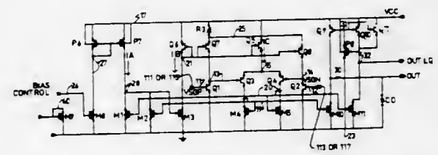
maintaining a constant current through each of the comparator and buffer stage.

5,287,071

AMPLIFIER WITH HIGH COMMON MODE REJECTION

John A. Olmstead, Cape May Court House, and Salomon Vulih, Neshanic, both of N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed Nov. 20, 1992, Ser. No. 980,570
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—258 **17 Claims**



1. The combination comprising:

a differential signal input terminals, first and second differential signal input terminals, first and second differential output terminals, a common node to which is connected a controllable current source supplying the tail current to the differential amplifier stage, the tail current flowing into and dividing between the two differential output terminals as a function of the voltage across the signal input terminals;

a current level setting current source connected to a summing node;

an amplifier and current mirroring means responsive to a difference in the current into and out of the summing node coupled to the controllable current source for setting the amplitude of the tail current; and

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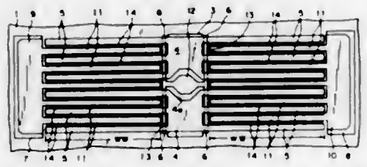
a current sensing and mirroring means coupled to the two differential output terminals for sensing the total current flowing in the output terminals and feeding back a current proportional thereto to the summing node for maintaining the tail current relatively constant over wide variations in the voltage applied to the signal input terminals.

5,287,072

SEMICONDUCTOR DEVICE FOR IMPROVING HIGH-FREQUENCY CHARACTERISTICS AND AVOIDING CHIP CRACKING

Masakazu Kojima; Yoshio Aoki, both of Kawasaki, and Seigo Sano, Yamanashi, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Yamanashi Electronics Limited, Yamanashi, both of Japan

Filed Jan. 6, 1992, Ser. No. 817,073
Claims priority, application Japan, Jan. 10, 1991, 3-001651
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—307 **12 Claims**



1. A semiconductor device having at least one transistor for amplifying signals and comprising:

a semiconductor layer;

a first pad of conductive material formed on said semiconductor layer;

a plurality of first groups of first electrodes in contact with said semiconductor layer and said first pad, each first group comprising plural first electrodes arranged in a comb-shape with corresponding spaces between the adjacent first electrodes, the plurality of first groups of first electrodes being electrically connected to and extending from said first pad in a plurality of respective and different first directions and each first electrode having a free end remote from the first pad;

a plurality of second gas pads of conductive material respectively corresponding to the plurality of first groups of first electrodes and formed on said semiconductor layer adjacent to the free ends of said first electrodes of said respectively corresponding first groups thereof;

a plurality of second groups of second electrodes in contact with said semiconductor layer and respectively associated with said plurality of second pads and the respectively corresponding plurality of first groups of first electrodes, each second group comprising plural second electrodes arranged in a comb-shape with corresponding spaces between the adjacent second electrodes, each second group of second electrodes being electrically connected to and extending from the respectively associated second pad in a second direction, opposite to the first direction of the plural first electrodes of the respectively associated first group, the respective first and second electrodes of respectively associated first and second groups being disposed in alternating relationship with the electrodes of one group disposed on the corresponding spaces between the adjacent electrodes of the other, respectively associated group;

a third pad of conductive material formed on said semiconductor layer within an inner region of said first pad and electrically isolated from said first pad; and

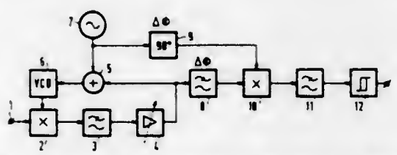
a plurality of third groups of third electrodes formed on said semiconductor layer and respectively corresponding to the respectively associated first and second pluralities of first and second groups of first and second electrodes, each third group comprising plural third electrodes connected so said third pad and extending in the first direction of the respectively associated first group of first electrodes, the third electrodes of each third group being disposed within the space between respective, adjacent first and second electrodes of the corresponding and respectively associated first and second groups thereof.

5,287,073

PHASE LOCKED LOOP USING PILOT SIGNAL FOR LOCK DETECTION

Gerard P. Den Braber, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1992, Ser. No. 909,249
Claims priority, application European Pat. Off., Jul. 15, 1991, 91201846
Int. Cl.[5] H03L *7/095*
U.S. Cl. 331—11 **4 Claims**



1. An arrangement comprising a phase-locked loop having a signal path incorporating a phase detector, a loop filter and a controlled oscillator, a pilot generator for generating a local auxiliary pilot which is applied to the controlled oscillator, and a pilot detector having an input coupled to the signal path of the loop and an output coupled to a level detector via a filter member, characterized in that the pilot detector is tuned to the frequency of the auxiliary pilot and has a first input coupled to the signal path of the loop between the phase detector and the controlled oscillator, and an output coupled to the filter member, said filter member comprising a low-pass filter, and said arrangement further comprises a controlled loop amplifier incorporated in said signal path, said controlled loop amplifier having an output coupled to the first input of the pilot detector and to an input of the controlled oscillator via an adder stage, an input of said adder stage being coupled to an output of the pilot generator.

5,287,074

ELECTRIC PARTS FOR SHIELDING ELECTROMAGNETIC NOISE

Toshiaki Meguro; Katuhiko Nishikawa, and Yasuhito Maeshima, all of Aichi, Japan, assignors to Sony Corporation, Tokyo, Japan

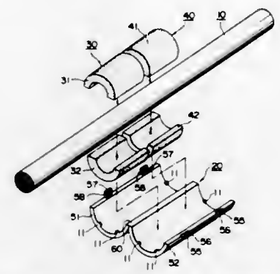
Filed Jul. 15, 1992, Ser. No. 914,815
Claims priority, application Japan, Jul. 20, 1991, 3-203166
Int. Cl.[5] H03H *7/01*
U.S. Cl. 333—12 **20 Claims**

1. An apparatus for shielding electromagnetic noise for use in conjunction with a signal line, comprising:

at least two magnetic elements which have respective characteristics to attenuate noise indifferent respective frequency bands; and

a common package for holding said at least two magnetic elements in series to form a magnetic element structure,

said structure further including a substantially straight channel extending therethrough wherein said signal line



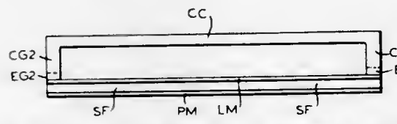
extends through said channel and has a substantially straight shape in said channel.

5,287,075

MICROWAVE PHASE SHIFTER

Francois Regnaudin, and Michel Cauterman, both of Saint-Cloud, France, assignors to Electronique Serge Dassault, Saint-Cloud, France

Filed Apr. 7, 1988, Ser. No. 177,575
Claims priority, application France, Apr. 7, 1987, 87 04903
Int. Cl.[5] H01P *1/18*
U.S. Cl. 333—158 **18 Claims**



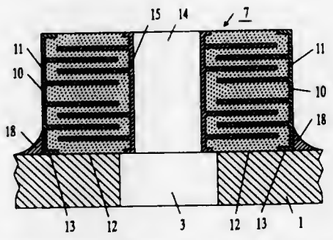
1. Microwave phase-shifter device comprising a microstrip transmission-line structure having a dielectric bar of variable magnetic permeability and having first and second opposite faces, there being provided a ground plane on its first face and a microstrip conductive line on said second face, said phase-shifter device including at least one magnetic command circuit equipped with a winding which interacts with said bar, said magnetic circuit being in direct contact with said bar.

5,287,076

DISCOIDAL ARRAY FOR FILTER CONNECTORS

Douglas M. Johnescu, Gilbertsville; Gary C. Toombs, Oneonta, and Leoanrd A. Krantz, Sidney, all of N.Y., assignors to Amphenol Corporation, Wallingford, Conn.

Filed May 29, 1991, Ser. No. 707,095
Int. Cl.[5] H03H *7/00*
U.S. Cl. 333—182 **20 Claims**



1. A filter assembly for an electrical connector, comprising:

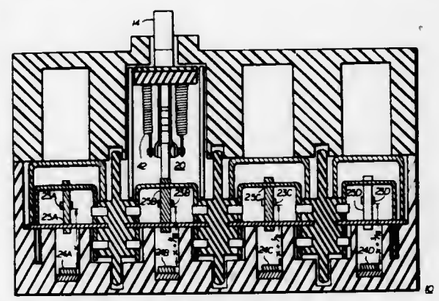
a metal ground plate of resilient conductive material including means defining a plurality of apertures in said ground plate; grounding means for electrically connecting said plate to a shell of a connector; and a plurality of discoidal filter elements affixed on a surface of said plate such that a principal axis of each of said filter elements extends through a center of a respective one of said apertures, wherein each of said discoidal filter elements comprises an inner electrode defining a central aperture of said filter element, and an outer electrode; and ground electrode connection means for electrically connecting each of said outer electrodes to said surface of said plate.

5,287,077

MOLDED CASE CIRCUIT BREAKER MULTI-POLE CROSSBAR ASSEMBLY

David Arnold, Chester, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 644,185, Jan. 22, 1991. This application Dec. 18, 1992, Ser. No. 992,795
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—8 **6 Claims**



1. A molded case circuit breaker comprising:

a plastic circuit breaker case and cover, said case comprising a plurality of separate compartments;

a corresponding pair of stationary and movable contacts within each of said compartments;

a first movable contact arm within a first of said compartments supporting a first one of said movable contacts at one end and interacting with said operating mechanism to drive said first movable contact toward a first of said fixed contacts;

bar within a first one of said compartments pivotally supporting said first movable contact arm within said first compartment, said first movable contact arm contacting a first surface on said crossbar at an end of said first movable contact arm opposite said first movable contact to set a first separation distance between said first stationary and said first movable contacts within said first compartment when said first stationary and said first movable contacts are in an opened condition;

an operating mechanism within one of said compartments interacting with said first movable contact arm to rotate said first movable contact arm into closed position at a first instant;

a second movable contact arm within a second of said compartments supporting a second of said movable contacts, said second movable contact arm contacting a second surface on said crossbar to set a second separation distance between said second movable contact and a second of said stationary contacts within said second compartment whereby said operating mechanism rotates said second movable contact arm into said closed position at a second instant following said first instant; and

a third movable contact arm within a third of said compart-

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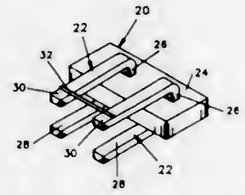
ments supporting a third of said movable contacts, said third movable contact arm contacting a third surface on said crossbar to set a third separation distance between said third movable contact and a third of said stationary contacts within said third compartment whereby said operating mechanism rotates said third movable contact arm into said closed position at a third instant following said second instant.

5,287,078

SAFETY FUSE APPARATUS FOR SOLID STATE POWER CONTROLLERS

Eric K. Larson, Narragansett, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1992, Ser. No. 985,407
Int. Cl.[5] H01H *85/02*
U.S. Cl. 337—184 **13 Claims**



1. Apparatus for providing back-up protection to selected circuits which will open the circuit in response to current in the circuit exceeding time versus percent overload current defined by the maximum trip curve of aircraft circuit breaker performance data in MS3320 comprising

a body formed of electrically insulative material,

first and second identical, generally U-shaped heater elements, having first and second legs joined by a bight portion, the bight portion being mounted on the body so that the U-shaped elements are spaced from one another and with the legs of the first element extending generally parallel to the legs of the second element, the first legs being adapted to be surface mounted to respective first and second traces on a substrate, the second legs extending in cantilever fashion beyond the body and having free distal end portions, and

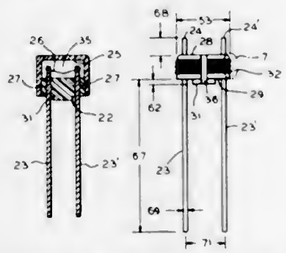
a fusing element connecting the first and second heater elements adjacent the free distal end portions thereof.

5,287,079

SUB-MINIATURE PLASTIC FUSE

Angelina M. Bernardi, St. Louis; James Cook, Glencoe; Leon Gurevich, St. Louis, all of Mo., and Ronald Peterson, Frome, England, assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 9, 1992, Ser. No. 973,790
Int. Cl.[5] H01H *85/02, 85/143*
U.S. Cl. 337—203 **15 Claims**



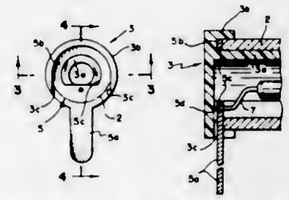
1. A subminiature fuse comprising a base, a pair of electrodes extending above and below the base, a fuse element extending between the electrodes above said base, a cover attached to said base, said cover enclosing said fuse element and a top surface of said base, said cover inner surface being spaced from said fuse element and defining a fuse chamber with said base, and at least one vent passageway formed in the periphery of said base extending from said top surface of said base to an opening below said cover.

5,287,080

BLOWN FUSE INDICATOR

John C. Linton, Potomac, and William Gingras, Friendship, both of Md., assignors to FIC Corporation, Rockville, Md.

Filed May 18, 1993, Ser. No. 62,208
Int. Cl.[5] H01H *85/32, 85/143*
U.S. Cl. 337—242 **8 Claims**



1. In a blown fuse indicator for a cartridge fuse wherein a lamp and associated resistors are housed within a tube, an end cap mounted on each end of said tube, and having an integral sleeve portion extending axially therefrom into the tube and engaging the inner wall surface thereof, and an integral outer annular flange portion provided on the cap concentric with the sleeve and extending over a portion of the outer peripheral wall surface of the tube, the improvement comprising a conductive bracket mounted at each end of the tube between the end of the tube and the cap, said conductive bracket being formed with a disc portion, an aperture provided in said disc portion, the cap sleeve extending through said aperture, said sleeve having a cross-section corresponding to the cross-section of said aperture, whereby the conductive bracket is fixedly mounted on the cap and associated sleeve, means for electrically connecting the resistor leads and lamp leads to the conductive brackets, and a depending blade integral with the disc portion of each conductive bracket adapted to engage a respective end wall of the cartridge fuse ferrule.

5,287,081

MULTILAYER THIN FILM MULTIJUNCTION INTEGRATED MICROPOTENTIOMETERS

Joseph R. Kinard, Darnestown; De-xiang Huang, Gaithersburg, and Donald B. Novotny, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 13, 1993, Ser. No. 3,911
Int. Cl.[5] H01C *7/10, 1/012*
U.S. Cl. 338—24 **24 Claims**

1. An integrated micropotentiometer, comprising:

a substrate formed of a predetermined thickness of a dielectric material, having a front surface and a rear surface with a through aperture of predetermined shape and size formed therebetween;

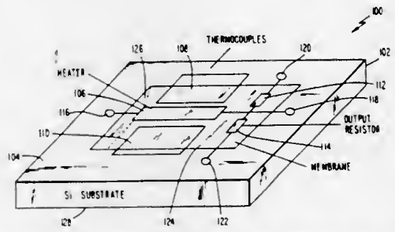
a first layer of SiO_2, formed on the front surface of the substrate to extend over the through aperture in the substrate;

a first layer of Si_3N_4, formed on the first layer of SiO_2, to also extend over the through aperture in the substrate;

a second layer of SiO_2, formed on the first layer of Si_3N_4 so as to also extend over the through aperture in the substrate and to provide a mounting surface;

a layer of an electrically resistive material provided on the mounting surface to form a thin elongate heater element having two longitudinal parallel sides and first and second ends, the heater element being shaped and sized to be entirely contained within a periphery of the through aperture in the substrate as defined at the front surface of the substrate in the lateral direction and to extend beyond the periphery of the aperture in the longitudinal direction;

a plurality of first serially-connected thin-film thermocouples, formed and disposed to have their respective cold junctions over the substrate and outside of said periphery of the through aperture and their respective hot junctions arrayed side-by-side overlying the through aperture;



a plurality of serially-connected second thin-film thermocouples, formed and disposed to have their respective cold junctions over the substrate and outside of the periphery of the through aperture on an opposite side thereof with respect to the hot junctions of the first thermocouples, with the respective hot junctions of the second thermocouples overlying the through aperture;

a plurality of resistor elements coupled in series at one end of said heater element, each said resister element having an electrical pad so that said micropotentiometer provides a plurality of output voltages; and,

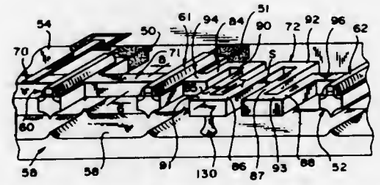
at least one current return path arranged parallel to said heater element.

5,287,082

SUBMICRON ISOLATED, RELEASED RESISTOR STRUCTURE

Susanne C. Arney; Noel C. MacDonald, and Jun J. Yao, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 2, 1992, Ser. No. 906,877
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—307 **18 Claims**



1. A submicron resistor element for integrated circuit structures, comprising:

a single crystal silicon substrate;

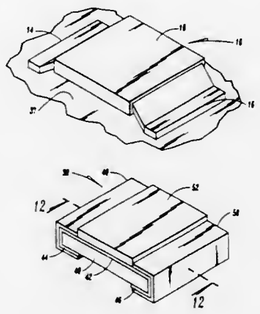
a doped, electrically isolated, released single crystal silicon resistive beam secured to said substrate, said released beam being surrounded by air and spaced sufficiently far from said substrate to substantially eliminate parasitic capacitance between the beam and the adjacent substrate.

5,287,083

BULK METAL CHIP RESISTOR

Herman R. Person, Columbus, Nebr., and Felix Zandman, Philadelphia, Pa., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Mar. 30, 1992, Ser. No. 860,403
Int. Cl.[5] H01C *1/148, 3/12*
U.S. Cl. 338—332 **19 Claims**



1. A resistor comprising:

an elongated resistor body having first and second opposite ends and a central portion therebetween, said resistor body being of unitary construction and being comprised of a resistance material shaped to produce a predetermined resistance value between said first and second opposite ends;

first and second terminals in electrical contact with said first and second ends respectively of said resistor body, said first and second terminals being formed of an electrically conductive material having an electrical conductivity higher than said resistance material of said resistance body, said first and second terminals being free from electrical contact with one another so that said resistor body forms the only electrical connection between said first and second terminals;

said first and second terminals each comprising a coating of said electrically conductive material on said first and second opposite ends of said resistor body;

said resistor element being formed of a material having sufficient thickness to be self supporting without the aid of a substrate.

5,287,084

THIN BUZZER

Takahiro Sone, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka, Japan

Filed Jan. 23, 1992, Ser. No. 824,352
Claims priority, application Japan, Feb. 1, 1991, 3-003295[U]
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—388.4 **6 Claims**

1. A thin buzzer comprising:

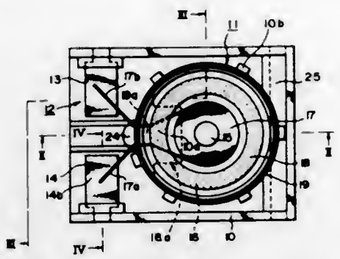
a buzzer case which incorporates a buzzer assembly including an exciting coil and a lead connecting chamber provided adjacent to the buzzer assembly, the lead connecting chamber being aligned with and opened to the buzzer assembly;

terminals for external connection each of which is integrally connected to the buzzer case with one end externally exposed and the other end extended to the lead connecting chamber;

the terminals of the exciting coil being connected to the

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terminals for external connection in the lead connecting chamber within the buzzer case.



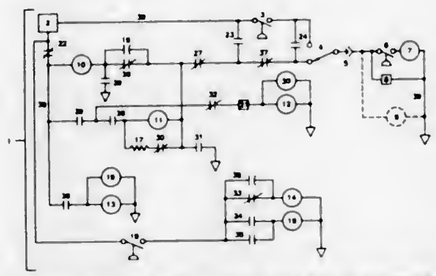
whereby said lead connecting chamber provides a resonance space for improving acoustic efficiency of said buzzer.

5,287,085

AUTOMATIC TEST AND CONNECT ELECTRICAL POWER SYSTEM FOR ANTI-LOCK AND CONVENTIONAL BRAKE EQUIPPED TRAILERS

Richard W. Smith, Salem, Ohio, assignor to At-A-Glance, Inc., Salem, Ohio

Filed Aug. 26, 1992, Ser. No. 935,204
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **3 Claims**



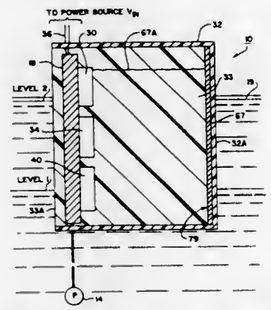
1. An automatic test and connect electrical power system for use on a tractor having a power source and a cord and connecting means with multiple circuits providing power from the tractor to a trailer or trailers wherein one of the circuits is a brake light circuit to sense the presence of and properly connect power to a trailer or trailers equipped with either a conventional brake system or an anti-lock brake system and having a pressure sensitive switch disposed in the trailer brake light circuit in the tractor responsive to air pressure in the brake lines of the tractor so that when the brakes of the tractor are applied power flows from the power source through the trailer brake light circuit and pressure sensitive switch disposed in the tractor and through the trailer brake light circuit of the cord and connecting means and the brake light circuit and brake lights of the trailer or trailers equipped with either a conventional brake system or an anti-lock brake system, comprising an electrical power source disposed in the tractor, a switch means disposed in the tractor, a cord and connecting means with multiple circuits disposed between the tractor and trailer or trailers, a pressure switch disposed in an anti-lock brake trailer relay valve, an electronic control unit disposed in the anti-lock brake trailer, or trailers, brake lights disposed in an anti-lock brake trailer or trailers, brake lights disposed in a conventional brake trailer or trailers, six relays disposed in the tractor, a resistor disposed in the tractor, two capacitors disposed in the tractor, a delay module disposed in the tractor, sixteen relay contacts disposed in the tractor, and wiring disposed in the tractor and trailer or trailers, so that when the cord and connector means is connected to anti-lock brake or conventional brake trailer or trailers a complete circuit to ground is established through either the electronic control unit of an anti-lock brake trailer or trailers or through the brake lights of a conventional brake trailer or trailers thereby enabling a test current to flow at a low level the electronic control unit of the anti-lock brake trailers or trailers or at a higher level through the brake lights of a conventional trailer or trailers which test current flowing at either level will energize a first relay causing a first set of contacts to open and disconnect the first relay from the test circuit and begin to charge a first capacitor parallel connected across the first set of contacts which charging current ensures the first relay's armature to fully transfer and close a second set of contacts that will hold on the first relay and so that a third and fourth set of contacts will close disposing a second relay in the test circuit and simultaneously, through a fifth set of contacts, will energize a time delay module so that the second relay, having a resistor in series with a sixth set of contacts connected across its coil acting as a current shunt, will energize only if a sufficiently higher current flow is sensed whereupon the sixth set of contacts will open disconnecting the second relay current shunt and closing a seventh set of contacts thereby holding on the second relay while simultaneously opening the fifth set of contacts deenergizing the time delay module and closing an eighth set of contacts energizing a third relay and a first indicator lamp thereby indicating the presence of a conventional brake trailer or trailers and so that the test current continues to flow at the low level the second relay will not operate and the time delay module will time out, energize and hold on a fourth relay and a second indicator lamp indicating the presence of an anti-lock brake trailer or trailers whereupon an eleventh set of contacts will open disconnecting test circuit from trailer brake light circuit while simultaneously closing a twelfth set of contacts thereby supplying continuous power from the power source through the twelfth set of contacts, the switch means, and the cord and connector means to the trailer brake light circuit, electronic control unit, a second pressure switch and the brake lights of an anti-lock brake trailer or trailers whereupon the electronic control unit will operate continuously and the brake lights will operate through the second pressure switch disposed in the anti-lock trailer brake relay valve responsive to trailer air brake pressure and so that upon pressurizing a third pressure switch disposed in the trailer protection valve, a fifth relay energizes opening a thirteenth set of relay contacts thereby deenergizing the first and/or second relays and effectively resetting the test circuit while simultaneously closing a fourteenth set of contacts thereby energizing a sixth relay that opens a fifteenth set of contacts that begins to charge a second capacitor parallel connected to the fifteenth set of contacts which delays release of the fifth relay and closes a sixteenth set of contacts to hold on the sixth relay ensuring sufficient release time for the first and/or second relays whereupon deenergizing the fifth relay closes the thirteenth set of contacts hence reenergizing the test circuit for testing successive trailers and so that when the switch means is in one position current flows from the power source through the thirteenth set of contacts, the first relay, first set of contacts, eleventh set of contacts, ninth set of contacts, tenth or twelfth set of contacts, switch means, and cord and connector means into the trailer brake light circuit to operate accordingly the electronic control unit and brake lights of an anti-lock brake trailer or trailers or brake lights of a conventional brake trailer or trailers and so that when the switch means is in a second position or bypass position current flows from the power source through the first pressure switch, switch means, cord and connector means, and into the trailer brake light circuit and provides for conventional operation of the trailer brake lights while simultaneously disconnecting the present invention from the trailer brake light circuit.

5,287,086

PROXIMITY DETECTION SYSTEM AND OSCILLATOR

Robert F. Gibb, San Diego, Calif., assignor to Raptor, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 459,546, Jan. 2, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 763,990
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—618 **12 Claims**



1. A system, operating in proximity to a conductive medium, for controlling an electrical device, comprising:

sensing means, having a variable capacitance, the capacitance of said sensing means having a very low capacitance value when in a first proximity to said conductive medium and changing to a substantially higher capacitance value when in a second proximity to said conductive medium; and

a dual mode oscillator, having an output providing an output control signal to said electrical device and being responsive to a change in the capacitance value of said sensing means, for switching from a first mode of operation, as a phase shift oscillator having a first duty cycle, to a second mode of operation, as an RC oscillator having a second duty cycle, to thereby control the operation of said electrical device in accordance with said first and second duty cycles of said output control signal.

5,287,087

SOLENOID ENERGIZATION INDICATOR

David C. Jeucks, Pleasant Ridge, and Larry A. Williamson, Farmington Hills, both of Mich., assignors to Detroit Coil Company, Ferndale, Mich.

Filed Jun. 15, 1992, Ser. No. 898,464
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—644 **4 Claims**

1. An energization indicator for use with a solenoid having an encapsulated coil assembly containing a solenoid coil for creating a flux field and an aperture extending axially through the coil and opening through opposite ends of the assembly for mounting on a solenoid plunger post having a threaded end, comprising:

an indicator lamp;

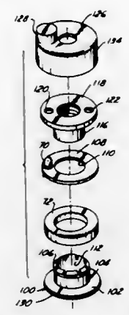
a lamp coil electrically connected to the lamp for illuminating the same when a flux field sweeps the lamp coil;

means protectively enclosing the lamp coil and providing support for the lamp;

said means defining an aperture extending axially through the lamp coil to allow telescoping engagement with said plunger post;

means threadedly engaged with the threaded end of the plunger post for holding the lamp coil and lamp on the plunger post; and

said means protectively enclosing the lamp coil being receivable over the plunger post to bear against the coil assembly and hold the same on the post with the lamp coil disposed in a position to be swept by the flux field of the solenoid coil whereby the lamp is illuminated when the solenoid coil is energized.

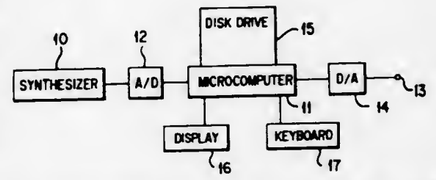


5,287,088

METHOD AND APPARATUS FOR MODIFYING SYNTHESIZED SOUND SIGNALS

Richard R. Sills, 1085 Park Ave., New York, N.Y. 10128

Filed Jul. 6, 1989, Ser. No. 376,335
Int. Cl.[5] G09G *5/00, 5/40, 5/34*
U.S. Cl. 345—112 **16 Claims**



12. A method for modifying synthesized sound signals while providing an indication of the modification, comprising displaying an image having first, second and third visually different characteristics, receiving first, second and third different operator signals, modifying first, second and third audibly different characteristics of said sound signals in response to said first, second and third operator signals, respectively, and simultaneously modifying said first, second and third characteristics of said image, respectively.

5,287,089

HAND MANIPULATABLE COMPUTER INPUT DEVICE

John A. Parsons, Cumberland, Md., assignor to Micro-Integration Corporation, Cumberland, Md.

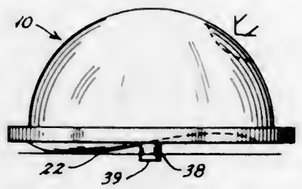
Filed May 13, 1992, Ser. No. 882,008
Int. Cl.[5] G06F *3/033;* H01C *10/10*
U.S. Cl. 345—156 **9 Claims**

1. In an energy conversion and transmission device having a first electrically propertied substrate which is substantially flexible and a second electrically propertied substrate, said first substrate being disposed in proximate relationship with, and moveable relative to, said second substrate in order to vary an electrical property in response to a force applied to said first substrate, and a nonconductive spacer disposed intermediate said first and second substrates and having an aperture with

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which said first and second substrates are in register and through which said first and second substrates may electrically communicate according to variations of said electrical property, and an actuator by which said force is applied to said first substrate, the improvement comprising:

said actuator comprising a button of elastically deformable material in engagement with said first substrate so as to elastically deform over a portion of said button in response to said applied force and to transfer a magnitude and direction of said force through said material so as to cause a corresponding deformation, commensurate with said magnitude and direction of said applied force, of another portion of said button and of a portion of said first substrate which is engaging said other button portion, said



force transfer being transmitted to said other portion through and via said elastically deformable material with said direction of said force applied to said portion being selectively variable in order to select various locations of said corresponding deformation of said other portion of said button;

said second substrate having an electrically propertied pattern by which said second substrate communicates with said first substrate, commensurate with said magnitude and direction of said applied force, to indicate direction via a location of said portion of said first substrate relative to said pattern and to indicate magnitude via size of an area of correspondence between said portion of said first substrate and said pattern.

5,287,090

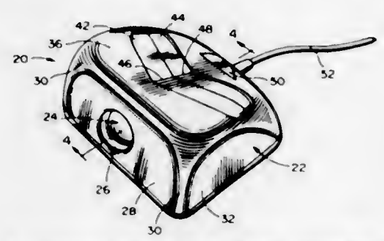
COMBINATION MOUSE AND TRACK BALL UNIT

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20815

Filed Sep. 30, 1992, Ser. No. 953,877

Int. Cl.[5] G09G *5/08*

U.S. Cl. 345—163 **14 Claims**



4. A combined mouse and track ball unit comprising:

a shell,

a roller ball rotatably mounted in said shell and extending through two openings in said shell,

shift means for shifting use of said roller ball between use as a mouse and use as a track ball, and

two pickup sensors contacting said roller ball and being movable dependent upon use of said roller ball as a mouse or as a track ball,

said shell being shaped symmetrically to align either hand of an operator cradling said shell in their palm so that the fingers are located on top of said shell and the thumb is located adjacent to one of said two openings in said shell with the thumb and the fingers located in a prehensile position.

5,287,091

PRINTER

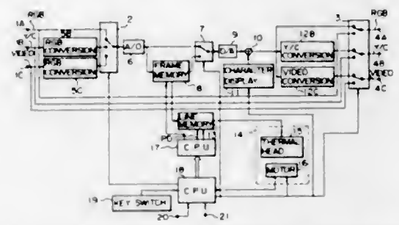
Masahiro Fujiwara, and Izumi Kariya, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 644,021, Jan. 22, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,365

Claims priority, application Japan, Jan. 20, 1990, 2-10924

Int. Cl.[5] G09G *5/12*

U.S. Cl. 345—146 **14 Claims**



1. A printer for printing image information with character information which is added to said image information, said printer comprising therein:

a video image input terminal for inputting a video image signal, which signal is for displaying or printing;

a memory for storing said video image signal;

a character generator for generating a plurality of kinds of said character information including a menu by means of which characters are registered for printing;

a display means including a display circuit for displaying said character information from said character generator on a display apparatus which is connected as a peripheral means, and displaying said video image signal for recognizing said image information which is printed;

a selecting means for selecting desired characters on a screen of said display means from said character information, said selecting means comprising a cursor displayed on said display means and keying means for operating said cursor;

a control means for controlling said display circuit to display a selected plurality of said character information on said screen, and for determining and storing said desired characters from said character generator selected on said screen by said selecting means, said control means configured to enter a mode during which said desired characters are selected, said control means configured to accept a command from said selection means to enter said mode;

an adder for adding said video image signal and said selected characters;

a print means for printing said video image information and said selected characters on a print medium; and

a housing within which the foregoing, except the display apparatus, are housed.

5,287,092

PANEL DISPLAY APPARATUS TO SATISFACTORILY DISPLAY BOTH CHARACTERS AND NATURAL PICTURES

Tai Shiraishi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1991, Ser. No. 789,040

Claims priority, application Japan, Nov. 9, 1990, 2-305009

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—137 **2 Claims**

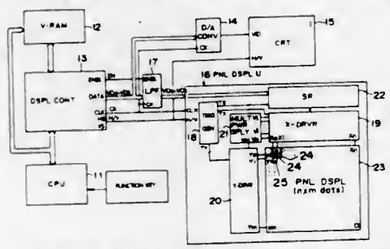
1. A panel display apparatus in which an image is displayed on panel display means under control of display control means

in accordance with digital video signals read from digital video signal storage means by the display control means, comprising:

filter means for receiving the digital video signals read from the digital video signal storage means by the display control means, and, under the control of the display control means, eliminating high frequency components in spatial frequency characteristic of the received digital video signals to feed the resulting digital video signals to the panel display means, wherein the filter means is a smoothing circuit comprising:

a first flip-flop which receives the digital video signals read from the digital video signal storage means and is controlled by a clock signal outputted from the display control means;

a first multiplexer which receives both an output of the first flip-flop and the digital video signals read from the digital video signal storage means as input data signals, and is



controlled by the filter enablement signal outputted from the display control means to determine which input data signal is selected;

a first adder which adds an output signal of the first multiplexer and the digital video signals read from the digital video signal storage means;

a second flip-flop which receives an output signal of the first adder and is controlled by the clock signal outputted from the display control means;

a second multiplexer which receives both an output signal of the second flip-flop and the output signal of the first adder as input data signals, and is controlled by the filter enablement signal outputted from the display control means to determine which input data signal is selected; and

a second adder which obtains and outputs an addition mean of an output signal of the second multiplexer and the output signal of the first adder to the panel display means.

5,287,093

IMAGE PROCESSOR FOR PRODUCING CROSS-FADED IMAGE FROM FIRST AND SECOND IMAGE DATA

Yoshinori Amano, Takatsuki; Misao Kato, Katano; Yoshio Hirauchi, Osaka, and Mari Kimura, Kishiwada, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 7, 1991, Ser. No. 712,039

Claims priority, application Japan, Jun. 11, 1990, 2-151935

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—139 **7 Claims**

1. An image process for generating third image data C from first n-bit image data A, second n-bit image data B, first m-bit control data α_1 and second m-bit control data α_2, wherein m and n are positive integers, comprising:

a first address generator for generating a first l-bit address signal made up of the upper $(n-k_{11})$ bits of the first n-bit image data A and the upper $(m-k_{12})$ bits of the first m-bit control data α_1,

wherein l is a positive integer,

wherein k_{11} and k_{12} are each integers having a value of at least zero,

wherein $l<(m+n)$,

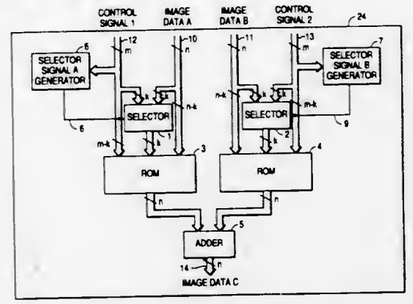
wherein $l=\{(n-k_{11})+(m-k_{12})\}$, and

wherein $k=k_{11}+k_{12}$ $(0\leqq k_{11}\leqq k,\ 0\leqq k_{12}\leqq k)$;

a second address generator for generating a second l-bit address signal made up of the upper $(n-k_{21})$ bits of the second n-bit image data B and the upper $(m-k_{22})$ bits of the second m-bit control data α_2,

wherein k_{21} and k_{22} are each integers having a value of at least zero,

wherein $l=\{(n-k_{21})+(m-k_{22})\}$, and



wherein $k=k_{21}+k_{22}(0\leqq k_{21}\leqq k,\ 0\leqq k_{22}\leqq k)$;

a read-only-memory having a look-up table for generating first product data $(A\cdot\alpha_1)$ and second product data $(B\cdot\alpha_2)$ in accordance with said first l-bit address data and said second l-bit address data applied thereto, respectively;

means for summing said first product data $(A\cdot\alpha_1)$ and said second product data $(B\cdot\alpha_2)$ to obtain the third image data C.

5,287,094

METHOD AND APPARATUS FOR PROCESSING A LINE-GRAPHIC IN A 2 BYTES CHARACTER MODE OF A DISPLAY ADAPTER UNIT

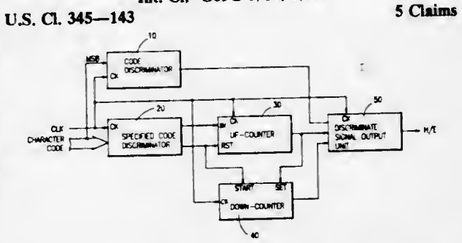
Kyoung K. Yi, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Jul. 28, 1992, Ser. No. 921,295

Claims priority, application Rep. of Korea, Jul. 29, 1991, 13018/1991

Int. Cl.[5] G09G *1/14, 1/06*

U.S. Cl. 345—143 **5 Claims**



1. A method of processing a line-graphic in a 2 bytes character mode of a display adapter unit, comprising:

a 1 byte or 2 bytes character code discriminating step including generating a 1 byte or 2 bytes character code discriminate signal depending on the most significant bit value of each of inputted character codes;

an up-counting step including decoding each of the inputted character codes and generating a line-graphic code discriminate signal if character codes of specified code values are inputted successively above a predetermined number of times in accordance with a decoded result, such that the character codes of the specified code values are processed as 1 byte character codes;

a down-counting step including checking said up-counting step, down-counting the predetermined number of times if it is found that the character codes of the specified code

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value are not inputted successively further after being inputted successively above the predetermined number of times and maintaining the line-graphic code discriminate signal naturally during the down-counting operation; and

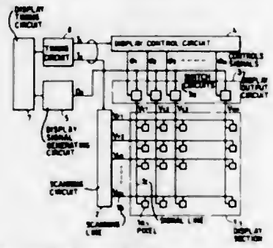
a discriminate signal output step including combining the 1 byte or 2 bytes character code discriminate signal with the line-graphic code discriminate signals and for outputting the combined signal as a final 1 or 2 bytes character code discriminate signal such that the character codes of the specified code values can be processed as the 1 byte character code.

5,287,095

DISPLAY DEVICE AND ITS DISPLAYING METHOD

Masaaki Kitazima, Hitachiohta; Masahiro Eto, Fujisawa, and Hiroshi Jitsukata, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 446,300, Dec. 5, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 803,909
Claims priority, application Japan, Dec. 9, 1988, 63-310029
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—99 **17 Claims**



1. A display device comprising:

matrix circuit including

a plurality of signal lines defining a plurality of columns,

a plurality of scanning lines intersecting said signal lines thereby defining a plurality of points of intersection, and

a pixel set up at a position corresponding to one of the points of intersection of said signal lines and said scanning lines; and

a plurality of switch circuits provided in correspondence to said signal lines, adapted to incorporate picture signals, and having an ON state and an OFF state,

wherein the ON operating time of each said switch circuits is longer than the ON operating time for any of said switch circuits preceding it within the plurality of columns.

5,287,096

VARIABLE LUMINOSITY DISPLAY SYSTEM

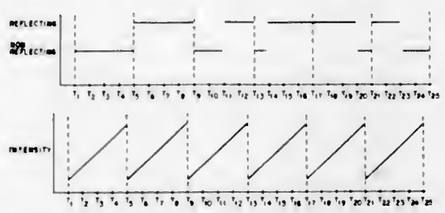
E. Earle Thompson, Dallas, and Thomas W. DeMond, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 709,090, May 30, 1991, abandoned, which is a continuation of Ser. No. 315,659, Feb. 27, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 947,902
Int. Cl.[5] G09G *3/34, 5/10*
U.S. Cl. 345—147 **21 Claims**

1. A variable luminosity visual display system comprising:

(a) a light source for generating light along an optical path; and

(b) a spatial light modulator located in said optical path, said spatial light modulator including a plurality of elements, each said element individually and digitally controlled between a first transferring state and second non-transferring state and then between said second non-transferring state and said first transferring state for an associated portion of said light at an operating frequency equal to or higher than the critical flicker frequency of the human eye, wherein said associated portion of said light is controlled by the total amount of time said element resides in said first transferring state.



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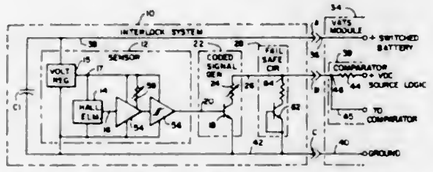
Patent Not Issued For This Number

5,287,098

FAIL SAFE SYSTEM FOR A MECHANICAL LOCK AND KEY SET WITH ELECTRICAL INTERLOCK

David C. Janssen, Whitefish Bay, Wis., assignor to Briggs & Stratton Corp., Millwaukee, Wis.

Continuation of Ser. No. 654,068, Feb. 11, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 946,017
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.31 **10 Claims**



1. A fail safe circuit adapted for preventing the deciphering of a coded electronic interlock for a mechanical lock, the lock having a rotatable cylinder and a mated key applicable in a normal mode for unlocking a system when the mated key is inserted in the cylinder and the key and cylinder are rotated from a locked position to an unlocked position, the interlock precluding enabling of the system until a preselected activation signal is generated in response to the rotation of the key and cylinder, the interlock including a sensor for determining the rotation of the cylinder and the key, and a signal generator having a preselected activation code controlled by the sensor for generating a system activation signal in response to the rotation of the cylinder and key, the fail safe circuit being in communication with said signal generator, said fail safe circuit adapted for preventing the unauthorized reading of the value of the preselected code when a mated key is not present in the cylinder of the mechanical lock, the fail safe circuit comprising:

a. a transistor switch circuit in communication with the signal generator and operable when the key is not present in the cylinder; and

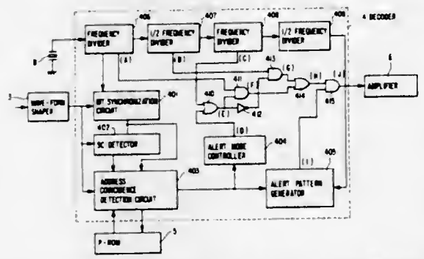
b. an amplifier circuit for receiving said activation signal when said transistor switch is operable, the amplifier circuit adapted for isolating the signal generator from the circuit and providing a false signal when an attempt is made to read the coded activation signal of the generator without inserting a mated key in the cylinder and rotating the key and cylinder.

5,287,099

MULTI-ALERT RADIO PAGING SYSTEM

Kazuyuki Tsunoda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 414,173, Sep. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 097,022, Sep. 16, 1987, abandoned. This application Dec. 12, 1991, Ser. No. 807,401
Claims priority, application Japan, Sep. 16, 1986, 61-217625
Int. Cl.[5] G08B *5/22*
U.S. Cl. 340—825.440 **8 Claims**



1. A multi-alert paging receiver having a plurality of addresses thereof comprising: first means for generating first and second signals respectively having first and second frequencies which are different from each other;

second means for detecting from a paging signal said plurality of addresses to produce a plurality of address detect signals corresponding to said plurality of said addresses, respectively;

third means coupled to the output of said second means for generating a plurality of ON/OFF signals having ON/OFF durations, the patterns of said ON/OFF durations corresponding to said plurality of address detect signals, respectively;

fourth means responsive to said address detect signals and to said ON/OFF signals for selectively passing therethrough said first and second signals during the ON durations of said ON/OFF signals to produce the passes signals as alert signals, at least of one of said alert signals including both said first and second signals; and

fifth means for transducing said alert signals into corresponding audible signals.

5,287,100

GRAPHICS SYSTEMS, PALETTES AND METHODS WITH COMBINED VIDEO AND SHIFT CLOCK CONTROL

Karl M. Guttag, Missouri City; Jeffrey L. Nye, Houston; Jerry R. Van Aken, Sugar Land; Carrell R. Killebrew, Jr., Sugar Land, and Michael D. Asal, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 27, 1990, Ser. No. 545,424
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—213 **41 Claims**

1. An integrated circuit for use with a plurality of clock oscillators, comprising:

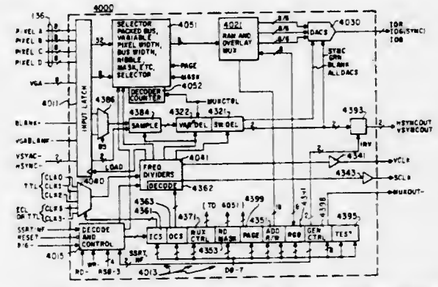
a semiconductor chip;

function performing circuitry fabricated on said semiconductor chip and responsive to clock pulses provided thereto;

a semiconductor chip package having pins connected to said function performing circuitry and a plurality of clock input pins including at least one pair of first and second selectable type clock input pins;

an input clock selection register accessible via said pins for external entry of input clock control information; and

a clock control circuit responsive to the clock control information entered in said input clock selection register and having inputs connected to said clock input pins for the clock oscillators, said function performing circuitry connected to said clock control circuit so that clock pulses are provided to said function performing circuit in accordance with the input clock control information entered in said input clock selection register, said clock control circuit selecting receipt of a first transistor transistor logic clock oscillator signal at said first selectable type clock input pin for supply to said function performing circuit in response to a first set of bits in said input clock selection register, selecting receipt of a second transistor transistor logic clock oscillator signal at said second selectable type clock input pin for supply to said function performing circuit in response to a second set of bits in said input clock selection register, and selecting receipt of a differential input emitter coupled logic clock oscillator signal between said first and second selectable type clock input pins for supply to said function performing circuit in response to a third set of bits in said input clock selection register.

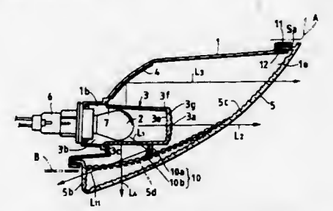


5,287,101

VEHICULAR TURN SIGNAL LAMP

Yukio Serizawa, Shizuoka, Japan, assignor to Koito Manufacturing Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 656,328, Feb. 19, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,895
Claims priority, application Japan, Mar. 15, 1990, 2-65703
Int. Cl.[5] G08B *5/00*
U.S. Cl. 340—815.76 **14 Claims**



1. A turn signal lamp for a vehicle, comprising:

a lamp body having a reflecting mirror surface formed on an inner surface thereof:

a light bulb mounted in a rear opening in said lamp body;

a translucent inner cap disposed around and cover said light bulb;

a reflector protruding from an outer side surface of said inner cap laterally and forwardly of said light bulb for

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reflecting light from said light bulb transmitted through said side surface of said inner cap such that said light is reflected rearwardly of said turn signal lamp;

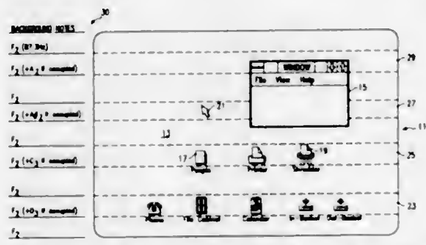
an outer lens engaged with a front opening of said lamp body and having a rear lens portion through which light reflected from said reflector passes without being reflected by said reflecting mirror surface, said rear lens portion extending outwardly beyond an adjacent side panel of said vehicle when said turn signal lamp is installed on said vehicle.

5,287,102

METHOD AND SYSTEM FOR ENABLING A BLIND COMPUTER USER TO LOCATE ICONS IN A GRAPHICAL USER INTERFACE

Frank A. McKiel, Jr., Trophy Club, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,507
Int. Cl.[5] G09B *21/00*
U.S. Cl. 340—825.19 **19 Claims**



1. A method of providing the user of a computer system, including a display screen, a pointing device for manually positioning a pointer on said screen, a left speaker, and a right speaker, with audio information regarding the position of said pointer on said screen, wherein said screen has displayed thereon a background and at least one row of spaced apart icons, said method comprising the steps of:

generating a first sound from at least one of said speakers whenever said pointer is located on said background; and

generating a second sound from at least one of said speakers whenever said pointer is located on said row.

5,287,103

METHOD AND APPARATUS FOR PROVIDING LOCAL AREA NETWORK CLIENTS WITH INTERNETWORK IDENTIFICATION DATA

Marion Z. Kasprzyk, Carol Stream, and Paul K. Wolfe, Jr., Naperville, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

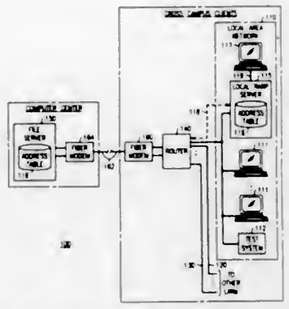
Filed Dec. 30, 1991, Ser. No. 814,129
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.52 **12 Claims**

1. A method for providing an internetwork identification to a client on a local area network (LAN), said LAN client comprising a node on said LAN that does not have a writable, non-volatile memory for storing said internetwork identification, said LAN being connected to other LANs by a router, said router being configured to not pass broadcast messages from said LAN to said other LANs, said method comprising:

receiving on said LAN a broadcast message from said LAN client during initialization of said LAN client, said broadcast message requesting an internetwork identification for use in subsequent communication with nodes on said other LANs and specifying an address of said LAN client;

translating said address of said LAN client into said internetwork identification; and

transmitting a message on said LAN to said LAN client containing said internetwork identification, whereby said internetwork identification of said LAN client is obtained



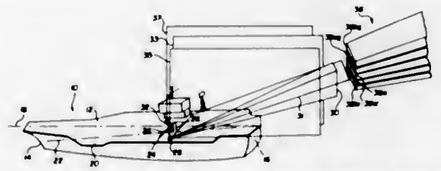
without said router passing said broadcast message to other LANs.

5,287,104

METHOD AND APPARATUS FOR AIDING A LANDING AIRCRAFT

David M. Shemwell, 2415 - 42nd Ave. E. Apt 398, Seattle, Wash. 98112

Filed Oct. 16, 1991, Ser. No. 778,325
Int. Cl.[5] B64F *1/20;* **G08G** *5/00*
U.S. Cl. 340—952 **49 Claims**



1. A signalling system to aid in directing a vehicle along a predetermined trajectory defined by the intersection of a glideslope plane and a second plane perpendicular to the glideslope plane, both the glideslope plane and the second plane intersecting a desired landing area, the glideslope plane having two sides, the signalling system comprising:

means for producing beams of laser light having first, second and third distinct colors having temporally constant intensities;

first means for directing the beam of laser light having the first distinct color to one side of the glideslope plane, the first means being substantially located in a third plane parallel to, but separated from, the second plane;

means for causing the intensity of the directed laser light beam having the first distinct color to decrease with angular separation from the third plane;

second means for directing the beam of laser light having the second distinct color substantially along the glideslope plane, the second means being substantially located in the third plane;

means for causing the intensity of the directed laser light beam having the second distinct color to decrease with angular separation from the third plane;

third means for directing the beam of laser light having the third distinct color to the other side of the glideslope plane, the third means being substantially located int he third plane; and

means for causing the intensity of the directed laser light beam having the third distinct color to decrease with angular separation from the third plane,

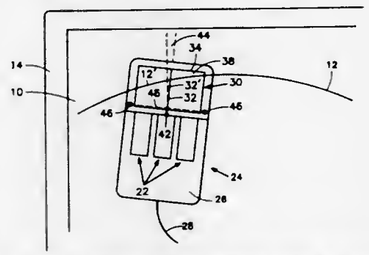
whereby the intensities of the laser light beams at the vehicle decrease as the vehicle approaches the landing area substantially along the predetermined trajectory.

5,287,105

AUTOMATIC TRACKING AND SCANNING CURSOR FOR DIGITIZERS

David L. Schlotterbeck, Anaheim, and Julio L. Guardado, Fullerton, both of Calif., assignors to CalComp Inc., Anaheim, Calif.

Filed Aug. 12, 1991, Ser. No. 743,801
Int. Cl.[5] H03M *11/00;* **C09G** *3/02;* **C06K** *9/22*
U.S. Cl. 341—20 **18 Claims**



1. In a hand-operated digitizing system wherein a cursor is hand-positioned at points to be digitized on a line contained in a drawing disposed on a tablet surface and the position of the cursor is determined by a sensed interaction between the cursor and the tablet, the improvement to allow easier positioning of the cursor at the points to be digitized comprising:

a) a quasi-sight window in the cursor comprising,

a1) sensing means for viewing a 2-dimensional area and developing an electrical signal output reflecting the contents of said 2-dimensional area, and

a2) display means connected to receive said electrical signal output for displaying the contents of said 2-dimensional area;

b) a positional line disposed across said display means;

c) positional signal generation means disposed in the cursor for continuously generating and outputting positional data from which a reference point position and the orientation of said positional line on the tablet surface can be dynamically determined; and,

d) position determination logic means for inputting said electrical signal output from said sensing means and said positional data from said positional signal generation means and for determining a point on the tablet surface where said positional line crosses a line contained in a drawing disposed on the tablet surface over which said quasi-sight window is positioned as a point to digitize.

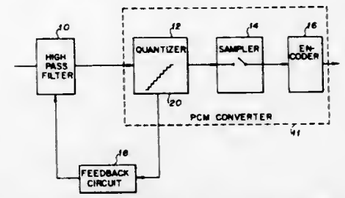
5,287,106

CIRCUIT FOR PCM CONVERSION OF AN ANALOG SIGNAL, WITH IMPROVEMENT IN GAIN-TRACKING

Daniel Senderowicz, Berkeley, Calif.; Germano Nicollini, Piacenza, Italy; Carlo Crippa, Merate, Italy, and Pierangelo Confalonieri, Canonica D'Adda, Italy, assignors to SGS-Thomson Microelectronics spa, Catania, Italy

Filed Apr. 28, 1988, Ser. No. 187,507
Claims priority, application Italy, May 7, 1987, 20421 A/87
Int. Cl.[5] H03M *1/06, 3/04, 1/00*
U.S. Cl. 341—118 **20 Claims**

1. In a system for the PCM conversion of an analog signal including a filter having an input at which the analog signal is applied, and a PCM converter circuit coupled from said filter and providing a quantized signal, said converter circuit including first circuit means for generating a quantized signal according to the received analog signal and second circuit means for generating a difference signal according to the difference between said quantized signal and the analog signal, the improvement comprising, feedback circuit means having an input connected to said second circuit means to feed back the differ-



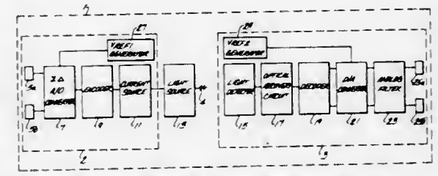
ence signal to a stage of said filter wherein the overall transfer function from the input of said feedback circuit means to the output of said filter is equivalent to a low pass filtering.

5,287,107

OPTICAL ISOLATION AMPLIFIER WITH SIGMA-DELTA MODULATION

David J. Gampell, Sunnyvale; Michael D. McJimsey, Mountain View; Ralph E. Lovelace, Los Gatos, and Randall Canha, Newark, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1992, Ser. No. 893,786
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—137 **23 Claims**



1. An optical isolation amplifier package comprising:

an input chip having a chopper-stabilized sigma-delta converter for converting an analog input signal to a digital signal;

a light source for optically transmitting the digital signal; and

an output chip having:

means for detecting the optically transmitted digital signal; and

means for converting the optically transmitted digital signal into an analog output signal substantially proportional to the analog input signal.

5,287,108

MULTISTEP ANALOG-TO-DIGITAL CONVERTER WITH SUCCESSIVE APPROXIMATION REGISTER CIRCUIT FOR LEAST SIGNIFICANT BIT RESOLUTION

Michael K. Mayes, Sunnyvale, and Sing W. Chin, Alameda, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 2, 1992, Ser. No. 908,231
Int. Cl.[5] H03M *1/14, 1/42*
U.S. Cl. 341—156 **10 Claims**

1. An analog-to-digital converter, said analog-to-digital converter generating an X-bit digital output signal representing an input signal's analog voltage, where X is an integer greater than six, said analog-to-digital converter comprising:

an input circuit that receives an input signal having an input voltage;

a resistor ladder circuit that generates a set of reference voltages;

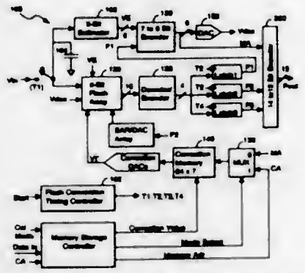
VOL 1159 ISS 3 FE 15 1994 UMI

initial conversion means for comparing said input voltage with at least a subset of said reference voltages to produce a first set of comparison signals;

a digital encoder, coupled to said initial conversion means, that encodes said first set of comparison signals to generate a first digital conversion value having X−J bits and a resolution of 2^J LSB, where J≧1 and 1 LSB is said X-bit digital output signal's resolution;

a multiplicity of parallel switched capacitor circuits that simultaneously generate a set of comparison voltages stepped in 1 LSB increments;

final conversion means for simultaneously comparing a first



voltage, corresponding to said input voltage, with said set of comparison voltages to produce a second set of comparison signals;

said digital encoder including means for encoding said second set of comparison signals to generate a second digital conversion value having Y bits, wherein Y−J>1, whereby Y−J additional bits are generated;

correction means for combining said Y−J additional bits with said first digital conversion value to generate a corrected first digital conversion value; and

output means for combining said corrected first digital conversion value and J bits of said second digital conversion value to produce said X-bit digital output signal.

5,287,109

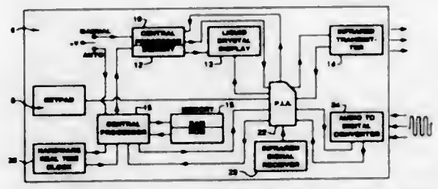
PROGRAMMABLE REMOTE CONTROL

David Hesse, 390 Dawes Road, Suite 1009, East York, Ontario, Canada M4B 2E5

Filed Jul. 5, 1991, Ser. No. 726,236

Int. Cl.[5] G08C *19/12*

U.S. Cl. 341—176 **4 Claims**



1. An electronic remote control device for controlling timed functions of an appliance responsive to said control device, said control device having a processor for controlling operation of said control device, an input for entering command and time of command information for a function to be performed, a memory for storing the information entered at said input, a real time clock, comparing means for comparing time on said real time clock with the time of command information in said memory, actuator means for effecting a command signal to be communicated to said appliance when the time of command information for a particular command matches the time on said time clock, and a feedback pickup sensitive to output from the appliance for receiving both on/off and level of output information from the appliance indicative of whether a command signal from the control device has been successfully communicated thereto, said feedback pickup having means to indicate a failed command signal and said control device being responsive to such feedback pickup to re-enter commands when said filed command signal is indicated by said feedback pickup.

5,287,110

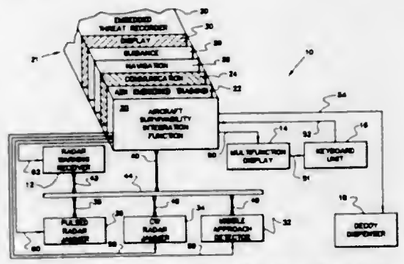
COMPLEMENTARY THREAT SENSOR DATA FUSION METHOD AND APPARATUS

My Tran, Albuquerque, N. Mex., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 17, 1992, Ser. No. 977,321

Int. Cl.[5] G01S *7/36, 7/38;* **H04K** *3/00*

U.S. Cl. 342—13 **20 Claims**



1. Complementary threat sensor data fusion apparatus comprising:

(a) a threat sensor data fusion process control means having a logical control processor, a sensor status input, a sensor data control output, and a fusion process control output;

(b) a threat ambiguity detector means having a control input connected to the sensor data control output and a radar warning receiver data input from a radar warning receiver, having an ambiguity data signal output wherein the sensor data control output switches the radar warning receiver data input;

(c) a radar emitter ID conversion process means having a pulsed radar jammer data input from a pulsed radar jammer, and a continuous wave radar data input from a continuous wave radar, controlled by the sensor data control output, having a converted jammer data output wherein the radar emitter ID conversion process means receives radar emitter IDs from a common radar emitter ID data base;

(d) a missile approach detector input from a missile approach detector, controlled by the sensor data control output having a missile approach detector output;

(e) a complementary threat data means having an input connected to the fusion process control output and a complementary threat data output;

(f) a threat ambiguity resolving means having an ambiguity input connected to the ambiguity data signal output and a threat ambiguity resolution data output;

(g) a functional sensor back-up means having an input connected to the converted jammer data output having a back-up data output; and

(h) an electronic countermeasures/countermeasures analyzer means having an input connected to the missile approach detector output and having a tactical electronic countermeasures/countermeasures command output.

d) an energy storage device for storing the energy received in said DC current from said control circuit.

5,287,111

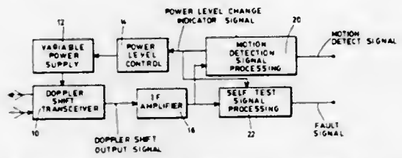
DOPPLER SHIFT MOTION DETECTOR WITH VARIABLE POWER

Pinhas Shpater, St-Laurent, Canada, assignor to Shmuel Hershkovitz, Quebec, Canada

Filed Aug. 24, 1992, Ser. No. 933,821

Int. Cl.[5] G01S *13/04*

U.S. Cl. 342—28 **26 Claims**



1. A Doppler shift motion detector comprising:

a Doppler shift transceiver for transmitting waves to a monitoring area, receiving reflected waves, and producing a Doppler shift output signal in response to a phase shift between said transmitted and said received waves, said output signal having a characteristic when there is a change in a power level supplied;

a power supply for supplying said level of power to the transceiver;

motion detection means for detecting a moving object in said area using said transceiver Doppler shift output signal, and for producing an alarm output;

means for causing a change in said level of power supplied to said transceiver; and

fault detection means for detecting said characteristic in said output signal and for generating a fault signal when said characteristic is not detected in said transceiver output signal during said change.

5,287,112

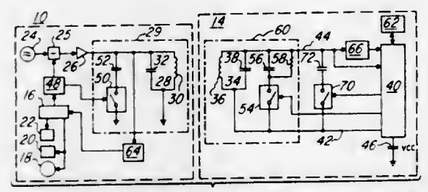
HIGH SPEED READ/WRITE AVI SYSTEM

Josef H. Schuermann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 14, 1993, Ser. No. 48,541

Int. Cl.[5] G01S *13/74*

U.S. Cl. 342—42 **16 Claims**



1. A transponder for communicating with an interrogator unit, said transponder comprising:

a) a high Q-factor resonant circuit of frequency f_1 for receiving RF powering signals;

b) a tuning circuit which when in electrical communication with said resonant circuit is operable to form a lower Q-factor resonant circuit of frequency f_3 for receiving RF communications from said interrogator unit;

c) a control circuit which is in electrical communication with said high Q-factor resonant circuit and said tuning circuit and is operable to connect said tuning circuit to said high Q-factor resonant circuit in order to form said lower Q-factor resonant circuit, said control circuit further operable to convert said RF powering signals to a DC current for storing energy, said control circuit still further operable to demodulate signals received by said lower Q-factor resonant circuit; and

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5,287,113

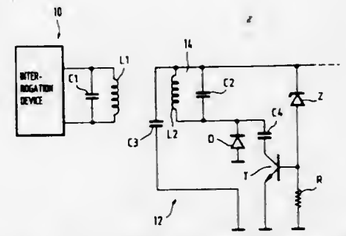
VOLTAGE LIMITING BATTERYLESS TRANSPONDER CIRCUIT

Herbert Meier, Moosburg, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Continuation of Ser. No. 849,781, Mar. 10, 1992, abandoned, which is a continuation of Ser. No. 654,478, Feb. 13, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,609

Int. Cl.[5] G01S *13/80*

U.S. Cl. 342—51 **6 Claims**



1. Circuitry for use with a batteryless transponder for limiting the energy absorbed from a received interrogation signal having a selected frequency comprising:

a resonant circuit comprising at least a first coil and a first capacitor, tuned to said selected frequency;

a rectifier for rectifying said interrogation signal;

an energy storage element operable to be charged by said rectified interrogation signal;

voltage limiting circuitry for limiting the voltage available from said energy storage element to a predetermined level;

a frequency dependent element distinct from the components making up said resonant circuit;

a switching device, for connecting or disconnecting said frequency dependent element with respect to said resonant circuit in response to a current flow through said voltage limiting circuitry for substantially detuning said resonant circuit so as to inhibit absorption of energy from said interrogation signal.

5,287,114

METHOD TO REDUCE FALSE ALARMS IN A RADAR

Guy Desodt, Massy, and Jean-Pierre Larvor, Chatenay Malabry, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 30, 1992, Ser. No. 954,889

Claims priority, application France, Oct. 11, 1991, 91 12567

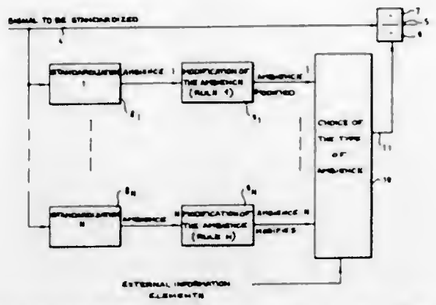
Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—91 **13 Claims**

1. A method for the adjusting of the detection threshold of a radar receiver, fitted out with a module enabling the computation of the mean value as a function of the distance of the ambient noise along an axis starting from the receiver for a plurality of zones, wherein, for each said zone, the detection

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threshold is raised by a zero value when the ambient noise is low and by a value that increases monotonically with the level



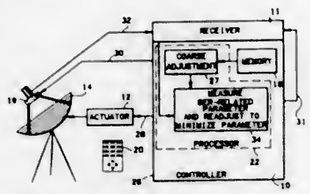
of the noise measured when the ambient noise is greater than a pre-determined threshold.

5,287,115

AUTOMATIC ADJUSTMENT OF RECEIVER APPARATUS BASED ON CHANNEL-BIT-ERROR-RATE-AFFECTED PARAMETER MEASUREMENT

Gordon K. Walker, Escondido, and Paul Moroney, Ollvenhain, both of Calif., assignors to General Instrument Corporation, Chicago, Ill.

Filed Jul. 10, 1992, Ser. No. 911,890
Int. Cl.[5] H01Q *3/00*
U.S. Cl. 342—359 **9 Claims**



1. A system for atuomatically adjusting an apparatus for receiving a broadcast communication signal that is forward-error-correction coded, comprising

means for processing a received forward-error-correction-coded signal to measure a channel-bit-error-rate-affected parameter for the received signal; and

means for adjusting the apparatus from an initial setting in response to said measurement until the measured parameter is minimized.

5,287,116

ARRAY ANTENNA GENERATING CIRCULARLY POLARIZED WAVES WITH A PLURALITY OF MICROSTRIP ANTENNAS

Hisao Iwasaki, Tokyo, and Hisashi Sawada, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawagawa, Japan

Filed May 29, 1992, Ser. No. 891,163
Claims priority, application Japan, May 30, 1991, 3-126403; Aug. 30, 1991, 3-220639; Sep. 27, 1991, 3-249909; Nov. 25, 1991, 3-309135
Int. Cl.[5] H01Q *1/38, 13/08, 21/22, 21/24*
U.S. Cl. 343—700 MS **5 Claims**

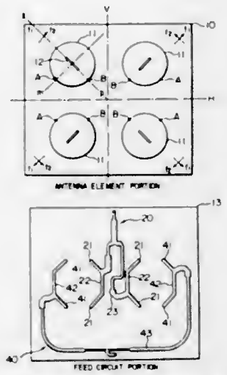
1. A microstrip antenna, comprising:

a substrate having a particular permittivity;

an even number of antenna elements disposed on said substrate in a radial pattern from a central point such that a center portion of each of the antenna elements is positioned on a radial line passing through the central point;

an even number of first feed lines for successively feeding a first high frequency signal to the antenna elements in order of a first rotational direction about the central point, each of the first feed lines extending along the radial lines to intersect with each of the antenna elements respectively; and

an even number of second feed lines for successively feeding a second high frequency signal to the antenna elements in



order of a second rotational direction about the central point, the frequency of the second high frequency signal being different from the frequency of the first high frequency signal, the second rotational direction being in reverse to the first rotational direction, each of the second feed lines extend along a line which is perpendicular to the respective radial lines along which the first feed lines extend, each of the second feed lines being line-symmetrical with respect to a straight line which extends through the central point to a midpoint between two adjacent antenna elements.

5,287,117

COMMUNICATION SYSTEM FOR TRANSMITTING DATA BETWEEN A TRANSMITTING ANTENNA UTILIZING A PHASED ARRAY ANTENNA AND A RECEIVE ANTENNA IN RELATIVE MOVEMENT TO ONE ANOTHER

Jerry C. Posluszny, Stickney, Ill., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

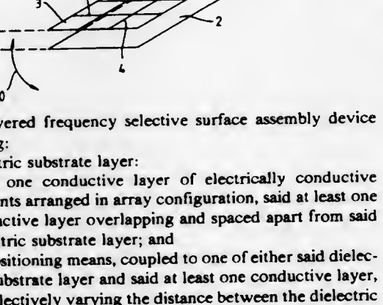
Continuation of Ser. No. 426,743, Oct. 26, 1989, abandoned. This application Aug. 27, 1992, Ser. No. 933,907
Int. Cl.[5] H01Q *1/44, 21/20;* A61B *6/03*
U.S. Cl. 343—763 **13 Claims**

1. A communication system for transmitting data between a transmitting platform and a receiving platform, the transmitting platform being maintained a first predetermined distance from the receiving platform, the transmitting and receiving platforms moving relative to each other, comprising:

a transmitting antenna located on the transmitting platform, the transmitting antenna being split into a number of small sections comprising a number of dipole elements and a matching network, the dipole elements in each small section being spaced apart one-half of an electrical wavelength of a frequency used by the communication system, the small sections being disposed to form a circle;

driving means for inputting the data in phase from a common source to each small section of the transmitting antenna;

a receive antenna located on the receiving platform; and



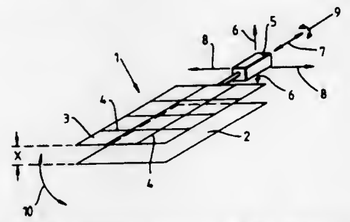
receiving means for receiving data from the receive antenna and for demodulating the received data.

5,287,118

LAYER FREQUENCY SELECTIVE SURFACE ASSEMBLY AND METHOD OF MODULATING THE POWER OR FREQUENCY CHARACTERISTICS THEREOF

Christopher Budd, Bristol, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Jun. 11, 1991, Ser. No. 713,263
Claims priority, application United Kingdom, Jul. 24, 1990, 9016231
Int. Cl.[5] H01Q *15/23*
U.S. Cl. 343—909 **12 Claims**



1. A layered frequency selective surface assembly device comprising:

a dielectric substrate layer:

at least one conductive layer of electrically conductive elements arranged in array configuration, said at least one conductive layer overlapping and spaced apart from said dielectric substrate layer; and

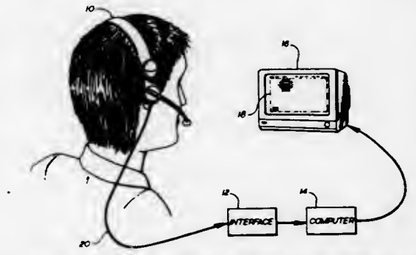
layer positioning means, coupled to one of either said dielectric substrate layer and said at least one conductive layer, for selectively varying the distance between the dielectric substrate layer and said at least one conductive layer so as to tune the layered frequency selective surface assembly device to a position where externally provided signals are either reflected or accepted in accordance with each signal's characteristics.

5,287,119

COMPUTER INPUT DEVICE USING AN ORIENTATION SENSOR

Donald E. Drumm, Billerica, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 588,499, Sep. 25, 1990, Pat. No. 5,068,645, which is a continuation of Ser. No. 267,413, Nov. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 108,176, Oct. 14, 1987, abandoned. This application Oct. 11, 1991, Ser. No. 775,674
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] G09G *1/00*
U.S. Cl. 345—158 **4 Claims**



1. A method for controlling a computer comprising the steps of:

sensing the magnitude and direction of angular displacement of a user-movable housing independently of external means for a continuous range of angles with respect to a reference axis passing through said housing for a continuous range of directions;

generating within said housing electrical signals representative of said magnitude and direction of angular displacement;

detecting and discriminating at least two user-generated vocal sounds, and generating second electrical signals representative thereof; and

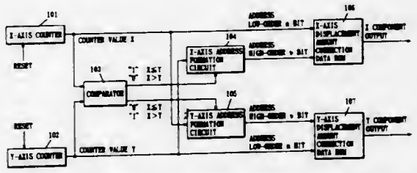
translating said first electrical signals into control signals and translating said second electrical signals into computer command signals for transmission to a computer.

5,287,120

COORDINATE DATA GENERATING APPARATUS

Satoru Okada; Hitoshi Yamagami, and Katsuya Yamano, all of Kyoto, Japan, assignors to Nintendo Company Limited, Kyoto, Japan

Filed Oct. 2, 1992, Ser. No. 955,455
Claims priority, application Japan, Oct. 14, 1991, 3-295043
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—163 **10 Claims**



1. A coordinate data generating apparatus which has a ball rotatable in any direction and which is for converting the quantity of the rotation of said ball into distance data about X-axis and Y-axis directions orthogonal to each other in a two-dimensional plane, comprising

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rotational quantity detecting means for detecting the quantities of the rotation of said ball in the X-axis and Y-axis directions for each predetermined period of time,

comparing means for comparing the quantity of the rotation of said ball in the X-axis direction for the predetermined period of time with the quantity of the rotation of said ball in the Y-axis direction for that period of time, both of which are detected by said rotational quantity detecting means, and

correcting means responding to comparison results from said comparing means for correcting displacements of said ball in the X-axis and Y-axis directions corresponding to the rotational quantities of said ball in the X-axis and Y-axis directions based upon only a first correction parameter determined in accordance with a variation in the rotational quantity of said ball in the X-axis direction when the rotational quantity of said ball in the X-axis direction for the predetermined period of time is larger than that in the Y-axis direction, or for correcting displacements of said ball in the X-axis and Y-axis directions corresponding to the rotational quantities of said ball in the X-axis and Y-axis directions based upon only a second correction parameter determined in accordance with a variation in the rotational quantity of said ball in the Y-axis direction when the rotational quantity of said ball in the Y-axis direction for the predetermined period of time is larger than that in the X-axis direction.

5,287,121

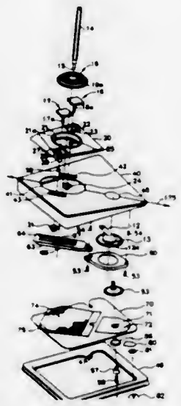
INTEGRATING GRAPHICS INPUT DEVICE

William M. Louis, 543 Cerro St., and Telford L. Dorr, 1438 Pegaso St., both of Encinitas, Calif. 92024

Continuation of Ser. No. 828,771, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 439,278, Nov. 20, 1989, Pat. No. 5,132,671. This application Oct. 29, 1992, Ser. No. 968,468

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—179 **10 Claims**



1. A graphics entry apparatus comprising:

a case assembly, the case assembly including:

a case top having two spaced-apart apertures; and

a case bottom fixed to the case top to form an enclosure therewith;

a carriage assembly positioned on the case top over a first aperture, the carriage assembly including a graphics entry aperture of predetermined shape which is substantially aligned with the first aperture;

a hand grip mounted to the case top over a second aperture;

means for slideably retaining the carriage assembly on the case top for movement substantially toward and away from the hand grip;

a stylus with a tip;

means acting between the case assembly and the graphics entry aperture for retaining the stylus in the case assembly for sliding two-dimensional movement within the graphics entry aperture;

a first flat, substantially two-dimensional sensing means enclosed in the case assembly for generating graphics input signals in response to movement of the stylus tip, the graphics input signals being indicative of a trace of the movement of the stylus tip on the first sensing means; and

the means for retaining further for retaining the stylus tip in sliding two-dimensional contact with the first sensing means;

second flat, substantially two-dimensional sensing means in the case assembly in contact with the hand grip through the second aperture for generating aperture relocation signals in response to pressure on the hand grip.

5,287,122

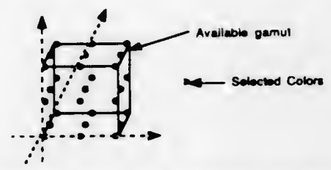
SYSTEM AND METHOD OF SELECTING THE REPRODUCIBLE COLORS IN A DISCRETE REPRODUCTION SYSTEM

Guy P. Vachon, Austin, Tex., assignor to Schlumberger Technology Corporation, Austin, Tex.

Filed Aug. 23, 1990, Ser. No. 572,205

Int. Cl.[5] B41J *2/36*

U.S. Cl. 346—1.1 **11 Claims**



1. A method of selecting colors from a color space for use in a discrete reproduction printing system having a maximum number of points that can be produced, comprising the steps of:

defining a gamut in the color space that can be produced by the printing system;

determining a maximum number of points that can be reproduced with the printing system;

plotting a certain number of color points, less than or equal to said maximum number, in the gamut with a perceived distance between adjacent color points maximized, achieving a distance approximately equal between all plotted color points to approximate equiperceptible increments between the plotted color points within the gamut.

5,287,123

PREHEAT ROLLER FOR THERMAL INK-JET PRINTER

Todd R. Medin, Escondido; Richard A. Becker, and Brent W. Richtsmeier, both of San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 878,186

Int. Cl.[5] B41J *2/01*

U.S. Cl. 346—140 R **15 Claims**

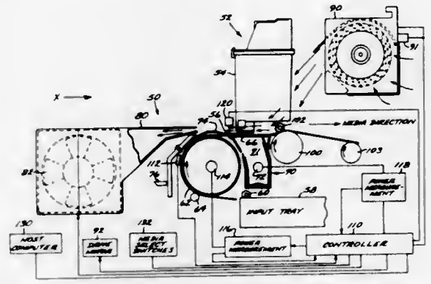
1. A thermal ink-jet printer for printing onto a print medium, comprising:

a printhead for printing on a print medium, said printhead comprising a plurality of thermal ink-jet nozzles disposed above a print zone for ejecting jets of ink onto the surface of said medium in a controlled fashion;

means for advancing the print medium via a medium path to said print zone during print operations, said advancing means comprising a drive roller for engaging said medium, wherein said medium path comprises a path about a portion of an external circumferential surface of said drive roller, wherein said medium is wrapped about said portion of said external surface of said roller in the course of advancement of said medium to said print zone, said print zone being spatially separated from said drive roller;

print heater means disposed at said print zone for heating a portion of said print medium disposed at said print zone during printing operations to dry ink ejected onto said medium, and

means for drying said print medium before said medium



reaches said print zone to prevent uneven shrinkage of a cellulose-based print medium due to heating said medium at said print zone by said print heater means, said drying means comprising means for heating said roller external surface;

means for controlling the operation of said drying means to set said roller surface at a predetermined temperature range during printing operations; and

means for controlling said print heater means to set said print heater at a heating range suitable for printing operations, and wherein said print heater means can be controlled to provide a higher temperature than said drying means.

5,287,124

COLOR VIDEO PRINTER HAVING A MULTICOLOR PRINTING MODE AND A MONOCHROMATIC PRINTING MODE

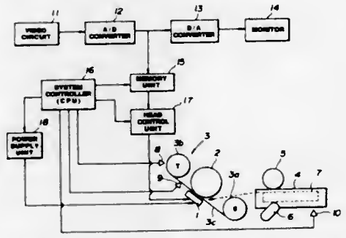
Kenichi Fukahori, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 959,049

Claims priority, application Japan, Oct. 23, 1991, 3-274386

Int. Cl.[5] B41J *2/32*

U.S. Cl. 346—76 PH **6 Claims**



1. A color video printing apparatus for printing a video image on a recording medium in one of multicolor and monochromatic printing modes, comprising:

a platen;

a thermal head disposed in opposed relation to said platen, said recording medium being delivered from a supply source to a space between said platen and said thermal head;

a first sensor for detecting said recording medium in said supply source and determining whether said recording medium is a thermalsensible one;

a second sensor detecting a color ink ribbon to be guided through said space, said color ink ribbon having a substrate and a plurality of color blocks formed on the substrate and spaced from each other by blank blocks;

means for driving said color ink ribbon relative to said thermal head; and

means for controlling said thermal head and said ink ribbon driving means depending upon detection results by said first and second sensors;

wherein said controlling means energizes said thermal head to print the video image on said recording medium when said first sensor detects said recording medium being a thermalsensible recording medium and said second sensor does not detect said color ink ribbon, while said controlling means causes said driving means to drive said color ink ribbon so as to locate one of said blank blocks in a position opposed to said thermal head and thereafter said controlling means energizes said thermal head to print the video image on said recording medium when said first sensor detects said recording medium being a thermalsensible recording medium and said second sensor detects said color ink ribbon.

5,287,125

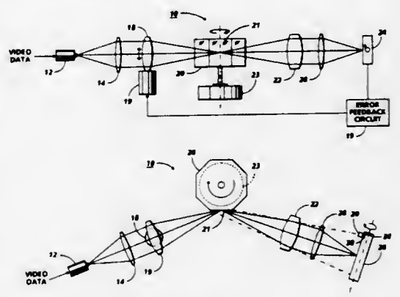
RASTER OUTPUT SCANNER WITH PROCESS DIRECTION SPOT POSITION CONTROL

James J. Appel, Brighton, and Kenneth R. Ossman, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 5, 1991, Ser. No. 740,543

Int. Cl.[5] H04N *1/21*

U.S. Cl. 346—108 **4 Claims**



1. A light scanning apparatus comprising:

means for generating a laser beam,

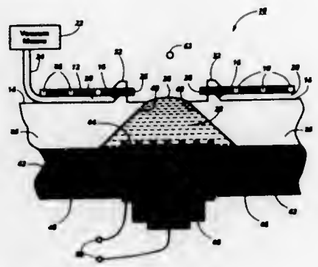
means for modulating the amplitude of the beam in accordance with input video data,

a multi-faceted reflector polygon positioned in the beam path,

means for rotating the polygon, the beam being reflected from successive facets of the polygon and sweeping along a scan path to provide successive scan lines along the surface of a photoreceptor moving in the process direction, the improvement comprising a cylinder lens located between said laser generating means and said polygon, said cylinder lens focusing the output of said laser in the process direction, and means for moving said cylinder lens in a plane parallel to the process direction to correct for scan line image motion quality errors occurring at the photoreceptor in the process direction.

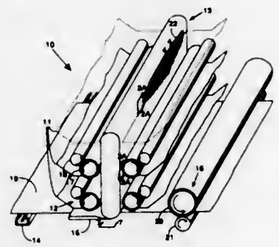
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,126
VACUUM CLEANER FOR ACOUSTIC INK PRINTING
Calvin F. Quate, Stanford, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 4, 1992, Ser. No. 893,300
Int. Cl.[5] B41J *2/185*
U.S. Cl. 346—140 R **4 Claims**



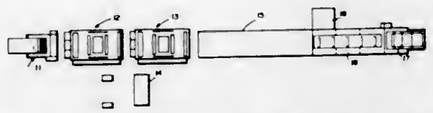
1. A droplet ejector comprised of:
an ink well for holding a marking fluid so that said marking fluid has a free surface;
a body proximate said ink well and having a channel surface;
a top cover plate having a plurality of air passages and an opening;
spacer for holding said top cover plate in a spaced apart relationship to said channel surface such that said opening substantially axially aligns with said ink well and such that a volume is defined between said top cover plate and said channel surface; and
vacuum means for drawing air, dirt, debris, and ink droplets through said air passages and into said defined volume.

5,287,127
ELECTROSTATIC PRINTING APPARATUS AND METHOD
Peter C. Salmon, 70 Angela Dr., Los Altos, Calif. 94022
Filed Feb. 25, 1992, Ser. No. 842,004
Int. Cl.[5] G01D *15/06;* **G03G** *15/01*
U.S. Cl. 346—154 **23 Claims**



1. A color printing apparatus for printing on an image receiving member comprising:
a plurality of toner particle sources each of a different color;
a particle conveyor means that conveys toner particles from loading points adjacent said toner particle sources to an imaging point, in response to control voltages;
a toner loading means associated with each toner particle source for loading lines of toner from said toner particle sources to loading points on said particle conveyor means;
means for controlling said toner loading means to couple and decouple said toner sources to the particle conveyor means to selectively load lines of toner to the loading points on said particle conveyor means;
an image writing member positioned opposite side imaging point with means to attract particles in discrete packets from said lines of toner on said particle conveyor means, and then release them in response to control voltages;
an image receiving member adjacent said image writing member;
means to transfer said released particles from the image writing member to corresponding pixel sites on said image receiving member; and
means for applying control voltages to said particle conveyor means and said image writing member to deliver a predetermined amount of toner of each color to each of said corresponding pixel sites on the image receiving member.

5,287,128
METHOD TO MANUFACTURE MULTIPLE PART IMAGED DOCUMENTS
Ivan G. Doane, Erie, and Franklin L. Burket, Grand Island, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Aug. 28, 1992, Ser. No. 936,339
Int. Cl.[5] G01D *15/06;* **B65D** *27/10*
U.S. Cl. 346—159 **20 Claims**

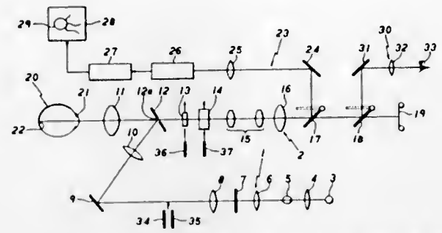


1. A method of producing multiple part documents, each part having common non-variable information, and at least some parts having variable information, comprising the steps of:
(a) on a continuous web, sequentially printing each part of the multiple part document with common non-variable information;
(b) on the continuous web, sequentially printing variable information on the multiple parts in a procedure distinct from step (a); then
(c) separating and intelligently gathering the parts of the multiple part document; and then
(d) sealing the multiple parts of each document together along one edge thereof.

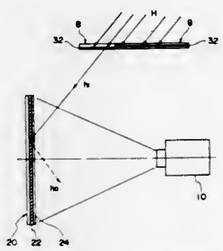
5,287,129
FUNDUS CAMERA
Eiichi Sano, and Hiroshi Minegishi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan
Filed Nov. 4, 1991, Ser. No. 786,467
Claims priority, application Japan, Nov. 5, 1990, 2-297258
Int. Cl.[5] A61B *3/02, 3/14;* **G02B** *5/22*
U.S. Cl. 351—233 **9 Claims**

1. A fundus camera having an optical path for a photographic system and fluorescent photographing means for photographing a patient's eye fundus following intravenous injection of a fluorescent agent, the fundus camera comprising:
a visible light barrier filter disposed in the optical path when photographing the fundus according to fluorescence excited by illuminating the funds with visible light;
an infra-red light barrier filter disposed in the optical path in place of the visible light barrier filter when photographing the fundus according to fluorescence excited by illuminating the fundus with infra-red light; and
an infra-red light optical device disposed in the optical path

in place of the infra-red light barrier filter when observing the fundus, the infra-red light optical device being equivalent in optical path length to the infra-red light barrier filter.



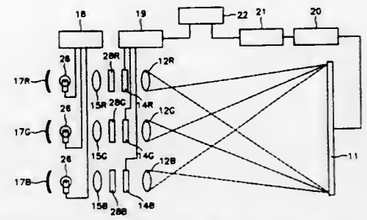
5,287,130
PICTURE PROJECTING DEVICE
Katsuhiko Umeda, Tokyo, Japan, assignor to Jamco Corporation, Tokyo, Japan
Filed Dec. 14, 1992, Ser. No. 990,187
Claims priority, application Japan, Jan. 28, 1992, 4-035865
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—20 **9 Claims**



1. A picture projecting device, comprising:
an optical projector;
a screen having a polarizing film on a surface where a picture is projected;
means for transmitting light from an outer incident light source;
a second polarizing film proximate said means for transmitting light which polarizes light transmitted through said means for transmitting light;
wherein said second polarizing film has a plane of polarization with a phase differing from that of the polarizing film on the screen by 90°.

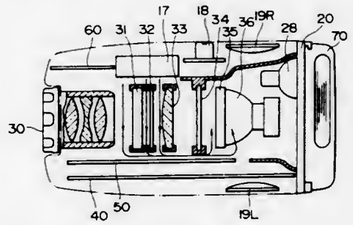
5,287,131
COLOR LCD SYSTEM OF PROJECTION TYPE
Jongcheon Lee, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea
Filed Nov. 25, 1992, Ser. No. 981,861
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25223
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—31 **10 Claims**

7. A color LCD system of a projection type comprising:
a reflecting liquid crystal panel screen;
a plurality of white light sources for emitting light;
a plurality of focusing lenses for focusing the light emitted from each corresponding light source;
a plurality of color filters for filtering only a specific color light corresponding to the respective focusing lens;
a plurality of light shutters for periodically permitting passage of incident light beams of the specific color light corresponding to a respective one of the color filters, such passage of each specific color light being successive; and



a plurality of diffusing lenses, each disposed in front of a respective corresponding light shutter to project incident unicolor light beams to the reflecting liquid crystal panel screen, the screen being disposed at a predetermined distance apart from the diffusing lens in order to selectively reflect the light beams according to information to be displayed of the same color as that of the unicolor light beam projected through the diffusing lens.

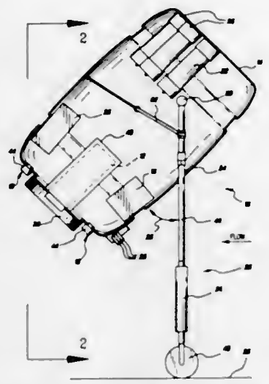
5,287,132
VIDEO PROJECTOR
Shinji Suzuki; Hidemi Sasaki, and Norio Kato, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Continuation of Ser. No. 833,731, Feb. 11, 1992, abandoned.
This application Jun. 14, 1993, Ser. No. 75,923
Claims priority, application Japan, Feb. 16, 1991, 3-022447
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—119 **12 Claims**



7. A video projector, comprising:
a cabinet divided into two upper and lower or right and left parts;
a projection lens, transmission-type display means for displaying an image in accordance with a video signal, and a projector light source, respectively disposed within said cabinet; and
a cover disposed removably in the rear of said cabinet for replacing a lamp forming said projector light source, said cover including on the back surface thereof a battery mounting portion for mounting a battery for driving said projector, wherein said cover includes therein a lamp mounting portion for mounting a spare lamp.

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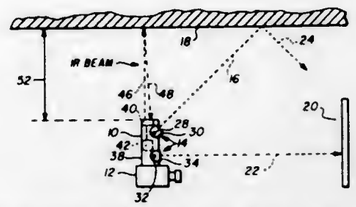
5,287,133
SELF-ORIENTING PIPE INSPECTION APPARATUS AND METHOD
David C. Bohley, Vermilion, Ohio, assignor to Bohley's Diving Service, Inc., Vermilion, Ohio
Filed Nov. 27, 1991, Ser. No. 799,314
Int. Cl.[5] G03B *37/00, 17/08*
U.S. Cl. 354—63 **14 Claims**



1. A device for transporting a camera through a pipeline containing flowing fluid for making a photographic recording of the pipeline's interior, said device comprising:
a vessel connected to said camera, said vessel being substantially smaller than the interior area of a pipeline to be photographed such that fluid may flow freely past the vessel between the vessel and a wall of said pipeline;
a leg connected to said vessel, said leg having a proximal end connected to an off-center position of said vessel and a distal end adapted to contact said pipeline wall;
lighting means connected to the vessel for illuminating the pipeline interior; and
battery means for powering the lighting means and the camera;
wherein the device is adapted to be conveyed in a downstream direction by fluid flowing inside the pipeline and wherein said device includes vane means for rotating said vessel about said leg, said vane means having an equilibrium position with respect to the direction of said fluid flow such that said vessel is oriented and stabilized in a predetermined position.

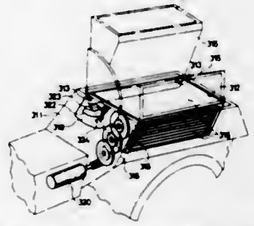
5,287,134
PHOTOGRAPHIC FLASH APPARATUS
J. David Cocca, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 28, 1992, Ser. No. 996,998
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—132 **25 Claims**

1. A capacitive discharge flash apparatus for a camera comprising:
a first energizable flash tube arranged to project light in a first direction to directly illuminate a scene;
a second energizable flash tube arranged to project light in a second direction to indirectly illuminate the scene;
power supply means for providing a source of charging energy;
first and second high voltage discharge capacitors coupled to said first and second flash tubes, respectively;
control means for first coupling charging energy from the power supply means to said first high discharge voltage discharge capacitor and for then coupling charging energy from said power supply means to said second high voltage discharge capacitor; and



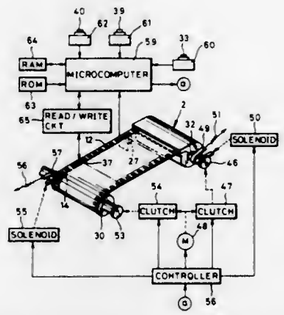
interrupt means for disabling the charging of said second high voltage discharge capacitor and for discharging said first high voltage discharge capacitor through said first energizable flash tube.

5,287,135
BUILT-IN FLASH SYSTEM
Akihiro Arai, and Tetsuji Sbono, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Japan
Continuation of Ser. No. 696,642, May 7, 1991, abandoned, which is a division of Ser. No. 626,230, Dec. 11, 1990, abandoned, which is a continuation of Ser. No. 490,001, Mar. 7, 1990, abandoned, which is a division of Ser. No. 306,436, Feb. 3, 1989, Pat. No. 4,920,368, which is a continuation of Ser. No. 143,488, Jan. 13, 1988, abandoned. This application Sep. 22, 1992, Ser. No. 948,474
Claims priority, application Japan, Jan. 13, 1987, 62-5815; Jan. 13, 1987, 62-5816; Jan. 13, 1987, 62-5817; Feb. 6, 1987, 62-16209[U]; Feb. 9, 1987, 62-27898; Feb. 9, 1987, 62-27899
The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.
Int. Cl.[5] G03B *15/05*
U.S. Cl. 354—149.1 **12 Claims**



1. A built-in flash apparatus in a camera, comprising:
a flash unit provided at an upper portion of the camera and arranged to be movable between a normal light emission position where said flash unit is operational to emit light with a light emission surface looking in a first direction toward an object and another position where said flash unit is retracted into said camera and where the light emission surface looks in a second direction different from said first direction, and at least a third position between said normal light emission position and said other position, with said flash unit being operational to emit light at said third position; and
drive means for moving said flash unit between said normal light emission position, said other position and said third position, said drive means including position detecting means for detecting at least said normal light emission position, said other position and said third position of said flash unit.

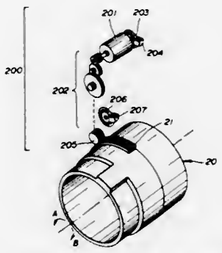
5,287,136
PHOTOGRAPHIC CAMERA HAVING AN IMPROVED FILM TRANSPORT MECHANISM
Kiichiro Kitagawa, and Hideaki Kataoka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Jan. 9, 1992, Ser. No. 818,285
Claims priority, application Japan, Jan. 10, 1991, 3-13847; Jan. 10, 1991, 3-13848
Int. Cl.[5] G03B *1/18, 17/24*
U.S. Cl. 354—173.1 **23 Claims**



1. A photographic camera in which a photographic film take-up chamber and a cassette receiving chamber are disposed on both lateral sides of an aperture frame of an exposure aperture, a fork is disposed in said cassette receiving chamber for being coupled to a spool core of a photographic film cassette inserted therein, and a take-up reel is disposed in said photographic film take-up chamber for winding thereon photographic film drawn out of said photographic film cassette, said photographic camera comprising:
a recording head disposed between said photographic film take-up chamber and said cassette receiving chamber for at least one of reading and writing data on said photographic film;
a first drive system operatively engaged with said take-up reel so as to wind said photographic film which has been drawn out of said photographic film cassette, around said take-up reel;
a second drive system operatively engaged with said fork so as to rotate said spool core, via said fork, in a winding direction so as to rewind said photographic film form said take-up reel into said photographic film cassette; and
a first load applying device comprising a U-shaped first brake member disposed around said fork and a first solenoid connected to one end of said first brake member so as to engage said first brake member with said fork when said first solenoid is activated and so as to disengage said first brake member from said fork when said first solenoid is not activated so as to apply a load to said fork relative to a direction of transporting said photographic film during a one-frame feeding of said film.

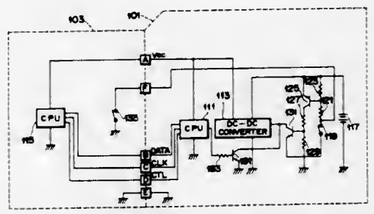
5,287,137
ENCODER DEVICE
Minoru Hara, Hachioji, and Kazuhiro Satoh, Sagamihara, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 13,106
Claims priority, application Japan, Feb. 3, 1992, 4-17917
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 **54 Claims**

1. An encoder device for a camera comprising:
a zoom lens having a plurality of lens groups,
a drive cylinder for moving a plurality of said lens groups in a predetermined positional relationship,
a motor for rotating said drive cylinder,
a gear train for transmitting a drive force of said motor to said drive cylinder,
first pulse generating means provided on a member which is driven with rotation of said motor after reduction in speed, for generating a coarse pulse signal corresponding to rotation of said motor,
second pulse generating means provided on a member which is driven with rotation of said motor and produces a higher rotational speed than that related to said first pulse generating means, for generating a fine pulse signal corresponding to rotation of said motor,
first count means for counting said coarse pulse signal from a reset position,



second count means for counting said fine pulse signal,
operation means for instructing a zooming direction of said zoom lens,
drive/control means for driving said motor upon start of an operation through said operation means, and stopping driving of said motor upon completion of an operation through said operation means, and
focal length detecting means for determining a focal length of said zoom lens upon completion of driving of said motor based on a number of said coarse pulse signals counted by said first count means and a number of said fine pulse signals counted by said second count means after a final one of said coarse pulse signals has been output.

5,287,138
CAMERA SYSTEM
Yoshiharu Shiokama, Chiba, and Shozo Yamano, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Mar. 11, 1992, Ser. No. 849,587
Claims priority, application Japan, Mar. 14, 1991, 3-74622
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—286 **7 Claims**



1. A camera system in which by the mounting of a removably mountable lens, a plurality of electrical contacts between a camera body and the lens are brought into contact with one

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another and the transmission of information is effected between the camera body and the lens, including:

a camera body having a circuit power source;

a lens having no power source;

a mechanical switch member provided in said lens; and

power source actuating means for transmitting the operated state of said mechanical switch member to said camera body through said electrical contacts when said mechanical switch member is operated in a state in which the circuit power source of said camera body is disabled, thereby enabling said circuit power source.

5,287,139

DRIVE MECHANISM

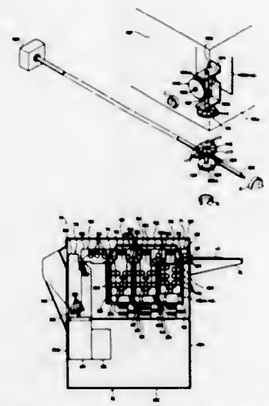
Yuji Inoue, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 18, 1991, Ser. No. 779,315

Claims priority, application Japan, Oct. 19, 1990, 2-282295

Int. Cl.[5] G03D *3/08*

U.S. Cl. 354—320 **21 Claims**



1. A drive mechanism for conveying an article within a housing, comprising:

a conveying means for conveying said article located inside said housing;

a first magnetic member, facing an inner surface of said housing, and located at one end of said conveying means;

a second magnetic member, facing said first magnetic member, located outside said housing, and transmitting a rotating force to said first magnetic member by means of a magnetic force; and

a driving source provided outside said housing, which supplies a rotating force to said second magnetic member for conveying said article in the housing by transmitting a rotating force to said conveying means via said first and second magnetic members, wherein the rotating force of the second magnetic member is transmitted to the first magnetic member without direct contact between said first and second magnetic members separated by one of the walls of said housing.

5,287,140

CONTROL UNIT FOR A PROGRAM SHUTTER

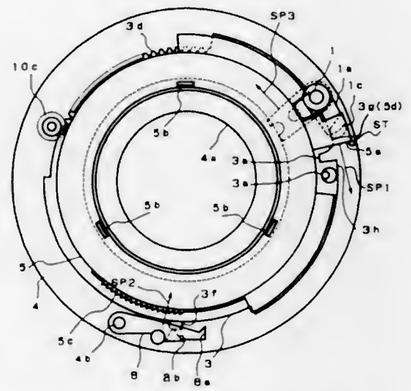
Takanori Kohno, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,686

Claims priority, application Japan, Apr. 30, 1991, 3-126919

Int. Cl.[5] G03B *7/08, 9/08*

U.S. Cl. 354—439 **7 Claims**



1. A control unit for a program shutter, comprising:

a plurality of shutter blades;

a blade opening and closing member connected with said plurality of shutter blades for opening and closing said shutter blades;

means for urging said blade opening and closing member to open said shutter blades;

an electric motor;

a cam member connected to said electric motor and engaged with said blade opening and closing member for rotation by said electric motor to selectively open and close said shutter blades;

brightness measuring means for measuring the brightness of an object to be photographed and producing an output value corresponding to the brightness;

a shutter blade position detecting means for generating a trigger signal when said shutter blades pass through a predetermined point during an opening operation of said shutter blades;

an exposure control means for generating an exposure end signal when a time corresponding to said output value of said brightness measuring means has elapsed, said time starting when said blade position detecting means generates said trigger signal;

brightness decision means for determining one of a plurality of areas of brightness of the object corresponding to said output value of said brightness measuring means; and

motor control means for controlling said electric motor such that when said electric motor rotates said cam member to open said shutter blades, said cam member is moved in the direction of closing of said shutter blades to a predetermined position corresponding to said area brightness determined by said brightness decision means before said exposure control means generates said exposure end signal while still allowing said blade opening and closing member to open said shutter blades to a desired aperture position, and for controlling said electric motor such that said cam member is rotated to close said shutter blades in response to said exposure end signal being generated by said exposure control means.

5,287,141

PRINT PROCESSING METHOD, PHOTOGRAPHIC PRINTER, AND PRINT STACKING DEVICE AND METHOD

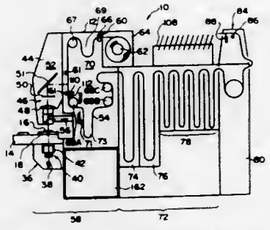
Sumio Yoshikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 907,575, Jul. 2, 1992. This application Jun. 11, 1993, Ser. No. 75,281

Claims priority, applicatioo Japan, Jul. 12, 1991, 3-172079; Jul. 12, 1991, 3-172080

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—40 **2 Claims**



1. A photographic printer able to print a plurality of images having different aspect ratios onto a photographic paper, comprising:

a detection means for detecting aspect ratios of said plurality of images;

a calculating means for calculating cumulative numbers of prints for each aspect ratio detected by said detection means; and

a printing means for printing for each aspect ratio the cumulative numbers of prints, which are cumulative until a time of calculation and are calculated by said calculating means, onto the photographic paper on which said plurality of images is printed.

5,287,142

PROJECTION EXPOSURE APPARATUS

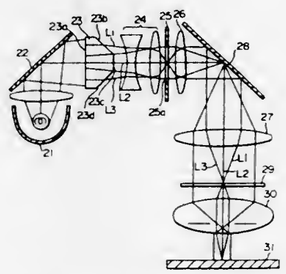
Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 972,293

Claims priority, application Japan, Dec. 10, 1991, 3-326158

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **5 Claims**



1. A projection exposure apparatus comprising:

an incoherent light source for emitting incoherent light;

a polyhedral prism for splitting the incoherent light from said light source into a plurality of rays of light;

a condensing lens system for condensing the plurality of rays of light into overlapping rays to illuminate a mask having a circuit pattern; and

a projection lens system for condensing the light transmitted through said mask on the surface of a wafer.

5,287,143

IMAGE FORMING APPARATUS WITH MOVEABLE COVER

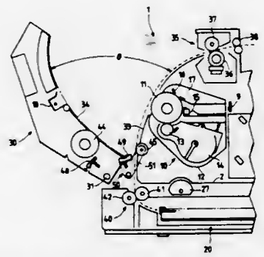
Shoji Hirota, and Hiromitsu Koizumi, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,055

Claims priority, application Japan, Apr. 30, 1991, 3-126810

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **10 Claims**



1. An image forming apparatus comprising:

a body frame;

an image forming unit having at least a photoreceptor and being detachably contained in said body frame;

means for forwarding a sheet to said image forming unit, said forwarding means having at least first and second members for forwarding said sheet to said image forming unit, said first and second members being disposed adjacent to said body frame;

a cover moveable to first and second open positions, said cover being disposed farther from said body frame when said cover is in said second open position than when said cover is in said first open position; and

coupling means for coupling said cover with said forwarding means so that when said cover is moved to said first open position, said first member of said forwarding means is moved away from said body frame, and when said cover is moved to said second open position, said second member of said forwarding means is moved away from said body frame.

5,287,144

IMAGE FORMING APPARATUS HAVING TRANSFER CHARGER WHICH IS CONTROLLED ACCORDING TO AMBIENT CONDITIONS

Atsushi Takeda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,239, Jul. 5, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 48,057

Claims priority, application Japan, Jul. 5, 1989, 1-173407

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **51 Claims**

1. An image forming apparatus, comprising:

an image bearing member;

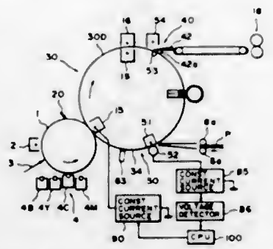
means for forming a toner image on said image bearing member;

transfer material carrying means for carrying a transfer material to an image transfer position to receive the toner image from said image bearing member, said transfer material carrying means including a transfer material carrying member for carrying the transfer material;

contacting member contactable to said transfer material carrying member at a side of said member that is contactable to the transfer material;

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discharging means for applying electric charge to the transfer material carried on the transfer material carrying means; and



control means for controlling an output of said discharging means in accordance with an electric current which flows through said contacting member when the transfer material passes between said transfer material carrying member and said contacting member.

5,287,145

PROCESS KIT OF IMAGE FORMING APPARATUS

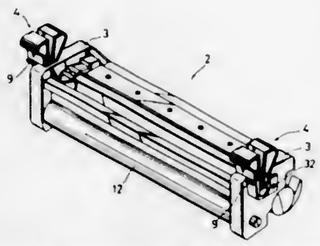
Yoshinori Ohtsuka, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 45,623

Claims priority, application Japan, Apr. 16, 1992, 4-096378

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **8 Claims**



1. A process kit of image forming apparatus comprising a bar unit for composing an image forming apparatus, bar unit supporting means for supporting the bar unit horizontally in the longitudinal direction, and a handle member disposed in the bar unit supporting means, so that the process kit may be mounted from above the image forming apparatus main body, wherein

the handle member is provided at both ends of the bar unit supporting means, and position fixing means for fixing the process kit in the specified mounting position of the image forming apparatus main body is provided in the handle member.

5,287,146

CONTACT TYPE CHARGING DEVICE HAVING VOLTAGE LIMITER

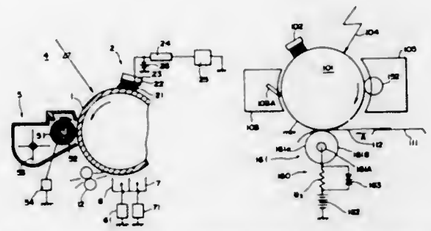
Koji Uno, Kawasaki; Yasuo Tanaka, Machida; Tateki Oka, Atsugi, and Hitoshi Saito, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1992, Ser. No. 906,458

Claims priority, application Japan, Jul. 1, 1991, 3-186896; Jul. 3, 1991, 3-162586

Int. Cl.[5] G03G *15/00, 15/16*

U.S. Cl. 355—219 **16 Claims**



1. A contact type charging device which makes contact with a surface of a charge bearing member so as to apply an electric charge to the surface in an image forming apparatus, the contact type charging device comprising:

a contact member for making contact with the charge bearing member;

a resistor serially connected to the contact member;

voltage applying means for applying a voltage to said contact member via said resistor; and

regulating means for regulating an upper limit of an absolute value of the voltage applied to said contact member.

5,287,147

ORIGINAL SCANNING APPARATUS WITH FIXED LIGHT SOURCE

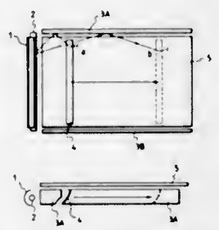
Motomu Fukasawa, Tokorozawa; Kazuo Fujibayashi, Kawasaki, and Keisuke Araki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 824,782

Claims priority, application Japan, Jan. 25, 1991, 3-25722; Feb. 18, 1991, 3-46153; Aug. 1, 1991, 3-216066

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—233 **35 Claims**



27. An original scanning apparatus, comprising:

original support means on which an original is rested;

elongated light source means comprised of a plurality of luminous bodies arranged in a line;

reflection means fixedly provided for reflecting light from said elongated light source;

movable reflection means for reflecting the light reflected by said fixedly provided reflection means toward said original support means;

a pair of side reflection means disposed at both longitudinal ends of said elongated light source means and extending along a shifting direction of said movable reflection means;

said elongated light source means being fixedly provided and said reflection means being shiftably provided, so that the original rested on said original support means is scanned by shifting said movable reflection means;

said fixed reflection means having a cylindrical surface for collecting the light from said elongated light source.

5,287,148

MAGNETIC SEAL FOR A DEVELOPING APPARATUS

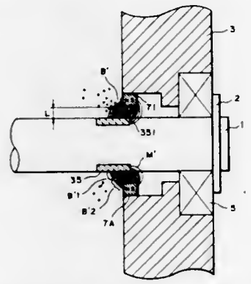
Yuji Sakemi, Yokohama; Masahiro Itoh, Sagamihara, and Akira Watanabe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,547

Claims priority, application Japan, Jul. 10, 1990, 2-183172

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **8 Claims**



1. A developing apparatus for developing an electrostatic latent image, comprising:

a container for containing a developer comprising magnetic material;

a rotatable member rotatable in said container in contact with the developer, said rotatable member being supported on bearings; and

a stationary magnet member disposed at a position inside of said container and adjacent to the bearing with a clearance from said rotatable member, said stationary magnet member enclosing said rotatable member and being magnetized in a longitudinal direction of said rotational member;

wherein said rotatable member has a ferromagnetic member faced to said stationary magnet member, wherein an end of said ferromagnetic member adjacent the bearing is arranged further inside of said container than an end of said stationary magnet member adjacent the bearing and is enclosed by said stationary magnet member, and wherein a magnetic brush of the developer is formed in a clearance between said stationary magnet member and said rotatable member by a magnetic field formed between said stationary magnet member and said ferromagnetic member.

5,287,149

IMAGE FORMING APPARATUS HAVING IMAGE TRANSFER ELECTRODE CONTACTABLE TO TRANSFER MATERIAL

Norihisa Hoshika, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 949,214

Claims priority, application Japan, Apr. 3, 1992, 4-112221

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **8 Claims**

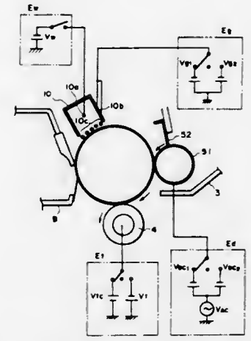
1. An image forming apparatus comprising:

an image bearing member for bearing a toner image, movable along an endless path;

an original supporting platen for supporting an original;

an illumination source for illuminating an original on said supporting platen;

image forming means including charging means, an exposure optical system including a reciprocable part for directing a light image of the original on said supporting platen, developing means and transfer means, wherein the reciprocable part moves in a first direction, during image formation, in which the light image is directed to said image



bearing member for image formation thereon and in a second direction, during non-image-formation, for returning the part;

wherein said illumination source emits light both during the image formation and during the non-image-formation to direct the light image to said image bearing member, and wherein a developing bias voltage in said developing means is switched depending on whether said apparatus is in the image formation or in the non-image-formation so that an image formed on said image bearing member is not developed by the developing means during the non-image-formation.

5,287,150

DEVELOPING DEVICE INCLUDING ROTATABLE RESILIENT ROLLER FOR SUPPLYING DEVELOPER TO AND REMOVING DEVELOPER FROM A DEVELOPER BEARING MEMBER

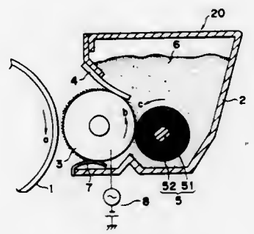
Masahide Kinoshita, Yokohama, and Yoshiaki Kobayashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,725

Claims priority, application Japan, Sep. 6, 1991, 3-254279; Jun. 25, 1992, 4-190158; Jul. 28, 1992, 4-201007

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—259 **5 Claims**



1. A developing device, comprising;

VOL 1159 ISS 3 FE 15 1994 UMI

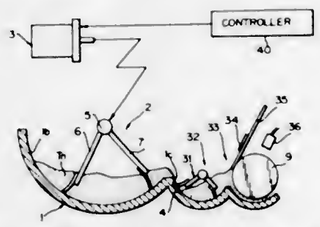
a vessel for containing one-component developer;
a rotatable developer bearing member for bearing one-component developer from said vessel to a developing portion for supplying the developer to an electrostatic latent image bearing member;
a regulating member for regulating a thickness of a layer of the one-component developer conveyed by said developer bearing member to said developing portion; and
a rotatable resilient roller disposed within said vessel upstream of said regulating member with respect to a rotational direction of said developer bearing member and arranged to contact said developer bearing member, for supplying the developer to a surface of said developer bearing member proceeding toward the regulating member and the developing portion, and for removing the developer from the surface of said developer bearing member after the developer passes through said developing portion and returns into said vessel;
wherein said resilient roller is an independently-porous foam rubber roller having an Asker C hardness of 8° to 15° supported on a core member.

5,287,151

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS USING A DRY DEVELOPER

Toshihiro Sugiyama, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,739
Claims priority, application Japan, Feb. 19, 1991, 3-45426; Oct. 30, 1991, 3-284571
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **10 Claims**



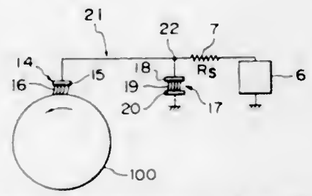
1. A developing device having a developing roller for supplying a dry developer to an image carrier included in an image forming apparatus, comprising:
a developing roller;
a developer container containing the developer adjacent to said developing roller for supplying developer to said developing roller;
an agitating member mounted on a rotary shaft in said developer container for agitating the developer wherein agitating movement of said agitating member causes developer to be supplied to said developing roller;
control means for controlling the amount of the developer to be fed from said developer container to said developing roller in association with the amount of said developer present in said developer container;
said control means including a coupling arrangement connected to said rotary shaft which automatically changes a driving relationship of said rotary shaft with respect to a plurality of gears such that a change in load upon said rotary shaft causes said coupling arrangement to establish a driving engagement with a different gear of said plurality of gears.

5,287,152

ELECTRIC CHARGE SUPPLYING DEVICE AND SYSTEM EMPLOYING THE SAME

Tateki Oka, Atsugi; Kazuyoshi Hara, Isehara; Koji Uno, Kawasaki; Hitoshi Saito, and Yasuo Tanaka, both of Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1992, Ser. No. 990,503
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—274 **34 Claims**



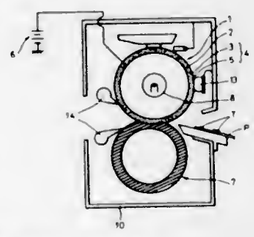
1. An electric charge supplying device for supplying electric charges to a body to be charged, comprising
a constant-voltage power supply for producing a predetermined constant voltage,
a charge-supplying member connected to said power supply and being in contact with said body to be charged,
a first resistance inserted between said power supply and said charge-supplying member, and
a second resistance electrically connected in series with said first resistance but in parallel with a circuit of a current flowing from said charge-supplying member to said body to be charged, said second resistance having the same environmental dependency of resistance that said charge-supplying member has.

5,287,153

FIXING APPARATUS WITH BIASING MEANS TO PREVENT OFFSET

Hisaaki Senba, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1990, Ser. No. 618,399
Claims priority, application Japan, Dec. 20, 1989, 1-328162
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—284 **6 Claims**



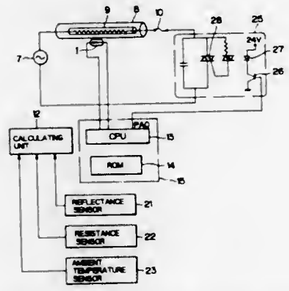
1. A fixing device comprising:
a fixing feed member comprising an electrically conductive layer and a releasing surface layer on the electrically conductive layer, said fixing feed member contactable to an unfixed toner image on a supporting material, and said releasing surface layer having a volume resistivity of from 10^6 to 10^{13} Ωcm;
a back up member;
said fixing feed member and said back up member being arranged for grasping and feeding the supporting material supporting said unfixed toner image and for fixing said unfixed toner image; and
a facilitating means for facilitating a transfer of electric charges, having a polarity opposite to the polarity of said unfixed toner image, from the surface of said releasing surface layer to said electrically conductive layer.

5,287,154

THERMAL TONER IMAGE FIXING DEVICE WHICH USES FUZZY LOGIC

Hitoshi Nakai, and Makoto Suzuki, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 11, 1991, Ser. No. 757,647
Claims priority, application Japan, Sep. 12, 1990, 2-241862
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **8 Claims**



1. A device for thermally fusing and fixing a toner image on a sheet, comprising:
an energy source for supplying an energy;
heating means connected to said energy source for generating heat to be applied to an image-formed sheet;
detecting means for detecting a quality of the sheet, a electric resistance of the sheet, and an ambient temperature of the sheet;
storage means for storing control rules used for determining a fixing parameter corresponding to the quality of the sheet, the electric resistance of the sheet, and the ambient temperature of the sheet; and
processing means for determining the fixing parameter according to fuzzy logic operations based on the quality of the sheet, the electric resistance of the sheet, and the ambient temperature of the sheet as detected by said detecting means and the control rules read from said storage means, heat generated from said heating means being controlled in response to the fixing parameter determined by said processing means.

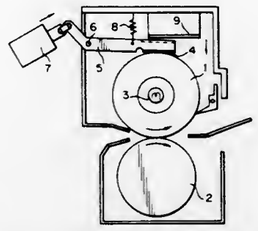
5,287,155

TEMPERATURE CONTROL METHOD FOR A FIXING DEVICE

Atsushi Arai, Ichikawa, and Hirobumi Yoshino, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 810,859
Claims priority, application Japan, Dec. 21, 1990, 2-413165
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **7 Claims**

1. A temperature control method for a fixing device incorporated in image forming equipment and having a heat roller which has a heater contained therein and a thermistor for sensing a surface temperature of said heat roller, said method comprising the steps of:
(a) moving said thermistor between a contact position contacting the surface of said heat roller, and a non-contact position spaced apart from said surface of said heat roller;
(b) on/off controlling said heater of said heat roller in response to a temperature measured at said non-contact position;
(c) correcting said temperature measured in step (b) by comparing temperatures measured at said non-contact position and said contact position, respectively; and
(d) stopping energizing said heater when a difference between said temperatures measured at said contact position and said non-contact position in step (c) does not lie in a predetermined range, thereby indicating that an error has occurred.

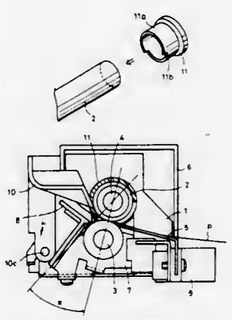


5,287,156

FIXING DEVICE CAPABLE OF SEPARATING AN END PORTION OF A RECORDING MATERIAL BY A BEARING

Makoto Shikada, Kawasaki, and Otoya Kosugiyama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,164
Claims priority, application Japan, Mar. 19, 1991, 3-054447
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—285 **11 Claims**



1. An image fixing device, comprising:
a fixing roller;
a bearing for rotatably supporting said fixing roller, wherein a portion of said bearing extends into a maximum recording material passage area of said fixing roller; and
a backup member which forms a nip with said fixing roller.

5,287,157

SHEET STRAIGHTENING DEVICE

Kazuhiko Miyazato; Yoshio Shoji; Koichi Makiyama; Kazuo Asaka; Kengo Taneda; Yoshiyuki Takaishi, and Takahiko Kobayashi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,278
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 **22 Claims**

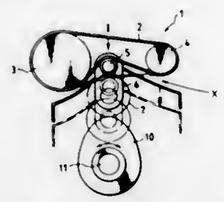
1. A sheet straightening device for decreasing curl of a sheet caused when a toner image is fixed thereon, said device comprising:
an endless belt;

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endless belt driving means for driving said endless belt in a predetermined direction;

depressing means for contacting a surface of said endless belt to form a first nipping portion through which said sheet is passed;

force varying means for changing a depressing force applied to the surface of said endless belt contacted by said depressing means;



means for providing information corresponding to sheet curling characteristics of at least one of said sheet and the toner image; and

control means for controlling said depressing force varying means in accordance with provided information corresponding to sheet curling characteristics.

5,287,158

IMAGE FORMING APPARATUS WITH IMAGE READING UNIT

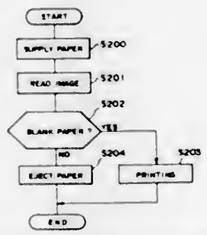
Hiroyuki Nagashima, Yokohama, and Akira Suga, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,529

Claims priority, application Japan, Dec. 16, 1991, 3-332249

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—309 **12 Claims**



1. An image forming apparatus comprising;

printing means for printing an image on a paper;

a paper feed means for feeding a paper to said printing means;

paper supply means, coupled to said paper feed means, for forwarding papers, one by one, to said paper feed means;

detecting means for detecting whether or not a surface of each paper, fed to said printing means by said paper feed means, is blank; and

ejecting means, coupled to said detecting means, for ejecting a paper from said paper feed means without printing an image thereon when said detecting means detects that the surface of the paper is not blank, so that only papers having blank surfaces are fed to said printing means.

5,287,159

IMAGE FORMING APPARATUS HAVING A FUNCTION OF AUTOMATICALLY DETECTING AN ORIGINAL SIZE AND DIRECTION

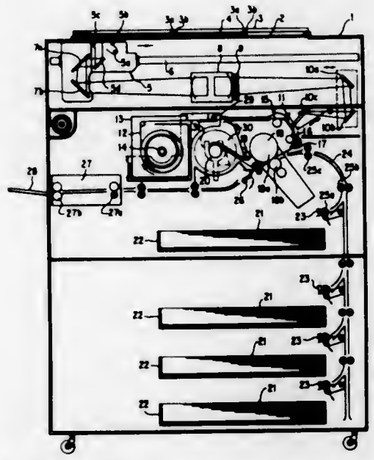
Kenji Sakakibara, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 19, 1990, Ser. No. 630,187

Claims priority, application Japan, May 16, 1990, 2-127761

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—311 **31 Claims**



1. An image forming apparatus comprising:

image formation processing means for forming an image of an original according to information carried by light reflected from said original;

a plurality of paper feed cassettes, each paper feed cassette accommodating one of a plurality of kinds of output papers, each of the plurality of kinds of output papers differing from the others of the plurality of kinds of output papers in at least one of a different size and a different direction;

paper designating means for designating at least two kinds of output papers from said plurality of kinds of output papers;

means for selecting an output paper to be supplied from said paper feed cassettes to said image formation processing means, the selected output paper being selected from said designated kinds of output papers;

means for supplying the selected output paper from said paper feed cassettes to said image formation processing means, said image of said original being formed on said selected output paper by said image formation processing means;

original size/direction detecting means for automatically detecting a size and a direction of said original when said original is in an image recording position;

magnification selecting means for selecting at least one of an enlarging, reducing and 100% magnification of an image output from said image formation processing means with respect to said image of said original; and

paper feed control means for controlling a paper feed to provide an optimum output paper as said supplied selected output paper, the optimum output paper being one of said at least two kinds of output papers designated by said paper designating means according to the selected magnification and the detected original size and direction.

5,287,160

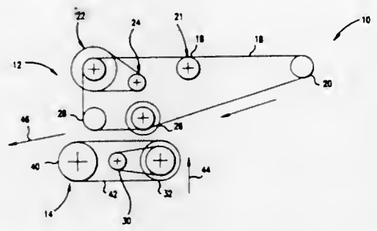
REGISTRATION IMPROVEMENT BY COMPONENT SYNCHRONIZATION IN COLOR PRINTERS

Richard M. Dastin, Fairport, and Vittorio R. Castelli, Yorktown Heights, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 17, 1991, Ser. No. 731,599

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **14 Claims**



1. A color printer which performs a plurality of color separations for an image, said color separations being superposed on one another in registered relationship to form said image, said color printer comprising:

receptor means for receiving a different image for each color separation, said receptor means being provided on at least one roller, a leading edge of successive images on said receptor means being spaced by a predetermined pitch distance, a circumference of each said roller on which said receptor means is provided being one of equal to and a submultiple of said pitch distance; and

transfer means cooperating with said receptor means for transferring each said image to an output sheet in superposed, registered relationship.

5,287,161

COLOR IMAGE FORMING APPARATUS WITH A MULTICOLOR DETACHABLE PROCESS UNIT

Shunji Matsuo; Shizuo Morita; Satoshi Haneda; Masakazu Fukuchi; Seiko Naganuma; Masahiko Itaya, and Fumiaki Hiraike, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

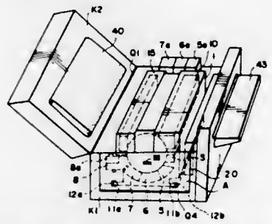
Continuation of Ser. No. 516,046, Apr. 27, 1990, abandoned.

This application Jul. 30, 1991, Ser. No. 741,192

Claims priority, application Japan, May 9, 1989, 1-117124; May 29, 1989, 1-135334; Jul. 29, 1989, 1-197657

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **1 Claim**



1. A color image forming apparatus for forming a color image comprising:

an image retainer for carrying said color image,

a charging means for charging a surface of said image retainer,

a means for forming a latent image on the charged surface of said image retainer,

a multicolor developing means for developing said latent image,

a black developing means for developing said latent image,

a means for conveying a transfer sheet and transferring said developed latent image onto said transfer sheet,

a cleaning means for cleaning a residual developer on the surface of said image retainer,

a plurality of toner tanks positioned along a line which is parallel to an axis of said image retainer,

a toner supplying means for supplying a plurality of color toners from said toner tanks to said multicolor developing means and said black developing means,

a body means having an upper half member which is pivotally movable by a hinge means between an open position, where said detachable cartridges are capable of being removed from said apparatus, and a closed position, and

means for coupling said toner supplying means to said toner tanks, wherein said coupling means releases said toner supplying means when said upper half member is at said open position.

5,287,162

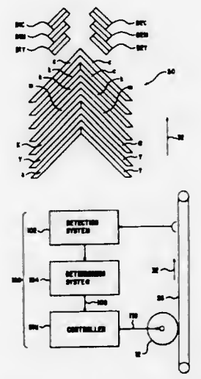
METHOD AND APPARATUS FOR CORRECTION OF COLOR REGISTRATION ERRORS

Joannes N. M. de Jong, Suffern; Vittorio R. Castelli, Yorktown Heights, both of N.Y.; Harold M. Anderson, Rancho Palos Verdes, Calif., and Lloyd Williams, Mahopac, N.Y., assignors to Xerox Corporation, N.Y.

Filed Jun. 16, 1992, Ser. No. 899,187

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **22 Claims**



1. An alignment system for a color output terminal comprising:

sensing means for sensing an alignment error between a first printer having a first drum and a second printer having a second drum, the sensing means including,

marking means for applying to a process medium a first chevron from the first printer, a second chevron from the second printer and a third chevron from both the first printer and the second printer, the third chevron having a first element applied from the first printer and a second element applied from the second printer,

detection means for detecting a matrix of times comprising three pluralities of times, each of the three plurality of times corresponding to a respective time of passage of said first, second and third chevrons by said detection means, and

determining means for determining the alignment error based on a function of the three pluralities of times; and,

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control means for minimizing the alignment error, the control means including,

calibrating means for producing a calibration table representative of a repeatable component of the alignment error as a function of a rotation phase angle, and

correction means for minimizing the alignment error based on a function of the calibration table.

5,287,163

OVERLAID IMAGE FORMING APPARATUS WITH COORDINATED TRANSFER BIAS AND ATTRACTION BIAS VOLTAGE SOURCES

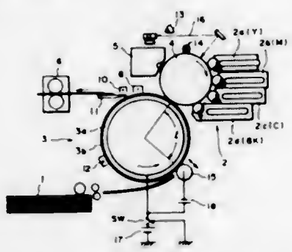
Toshiaki Miyashiro, Machida; Shinkichi Takahashi, Yokohama, and Tatsuya Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 832,311, Feb. 7, 1992, abandoned. This application Oct. 29, 1992, Ser. No. 968,260

Claims priority, application Japan, Feb. 8, 1991, 3-039201

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **42 Claims**



1. A superposed image forming apparatus wherein toner images are superposedly transferred onto a transfer material, comprising:

an image bearing member;

means for forming a toner image on said image bearing member;

a transfer material carrying member, disposed opposed to said image bearing member, for carrying a transfer material in synchronism with the toner image on said image bearing member;

transfer material supplying means for supplying the transfer material to said transfer material carrying member;

a transfer bias voltage source for applying to said transfer material carrying member a bias voltage for image transfer from said image bearing member to the transfer material;

an attraction member for urging the transfer material to said transfer material carrying member to hold the transfer material on said transfer material carrying member;

an attraction bias voltage source for applying a bias voltage to said attraction member;

the bias voltage applied to the attraction member is changed in association with on-and-off of the bias voltage application to said transfer material carrying member so as to maintain a constant surface potential of said transfer material carrying member.

5,287,164

PAPER TRAY CAPABLE OF SIMULTANEOUSLY HOLDING SHEETS OF DIFFERENT SIZES

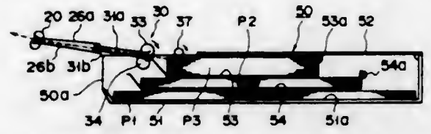
Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 4, 1991, Ser. No. 787,677

Claims priority, application Japan, Nov. 30, 1990, 2-340222

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—311 **15 Claims**



1. A feeding apparatus for feeding image bearing members comprising:

a plurality of container means for storing image bearing members respectively, said container means being stacked on one another;

means for holding all of said container means so as to allow access to the image bearing members contained in each container means, said holding means being detachably mounted in the feeding apparatus and all of said container means being integrally detachable from the apparatus as a single unit when said holding means is detached from the apparatus; and

means for individually taking out image bearing members contained in each container means when said holding means is mounted in the feeding apparatus.

5,287,165

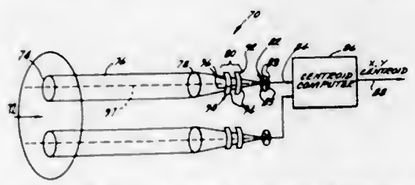
HIGH SENSITIVITY-WIDE DYNAMIC RANGE OPTICAL TILT SENSOR

Bobby L. Ulich, and Rudolph E. Radau, Jr., both of Tucson, Ariz., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Sep. 30, 1991, Ser. No. 769,351

Int. Cl.[5] G01J *1/00*

U.S. Cl. 356—121 **30 Claims**



1. A wavefront sensor having improved sensitivity and dynamic range, comprising:

subaperture means for dividing an optical input beam into a plurality of subaperture beams;

lenslet means for focusing one of said subaperture beams and for providing a converging subaperture beam and a resulting image spot;

field optic means for inducing an aberration in said converging subaperture beam, said field optic means having a pair of opposed optical surfaces, one of which receives said converging subaperture beam, said aberration and position of said image spot being dependent on wavefront tilt of said subaperture beam, said field optic means providing an aberrated subaperture beam; and

detector means for converting photon energy from said aberrated subaperture beam impinged thereon into one or more electrical signals indicative of centroid position.

5,287,166

DISPLACEMENT METER WITH STARED DISPLACEMENT VALUES

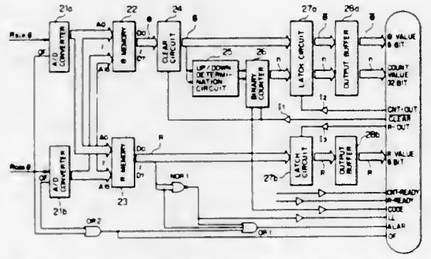
Shigeru Hosoe, Sagamihara, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,649

Claims priority, application Japan, Jul. 20, 1990, 2-192752; Jul. 20, 1990, 2-192753; Jul. 23, 1990, 2-195998

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—358 **9 Claims**



1. A displacement meter for measuring a displacement of an object, comprising:

means for generating a displacement signal corresponding to a displacement of said object;

means for generating a first signal corresponding to $R\sin\theta$ value of said displacement signal, and a second signal corresponding to $R\cos\theta$ value of said displacement signal, wherein R represents an amplitude and θ represents a phase of said displacement signal;

means for storing a displacement value defined by said first signal and said second signal, where θ is between 0 and 2π;

means for transferring a position signal corresponding to said displacement value from said storing means according to said first signal and said second signal;

means for counting a number, being defined as dividing θ by 2π, corresponding to said displacement signal; and

means for determining said displacement of sad object according to said number of said position signal.

5,287,167

METHOD FOR MEASURING INTERSTITIAL OXYGEN CONCENTRATION

Hiroshi Shirai, Kanagawa; Mikio Watanabe, Sagae, and Shinichiro Takasu, Tokyo, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,043

Claims priority, application Japan, Jul. 31, 1990, 2-203415; Jul. 31, 1990, 2-203416; Aug. 2, 1990, 2-205611; Aug. 27, 1990, 2-224711; Aug. 27, 1990, 2-224712; Aug. 27, 1990, 2-224713; Aug. 27, 1990, 2-224714; Aug. 29, 1990, 2-227457

Int. Cl.[5] G01J *4/00;* **G01N** *21/00*

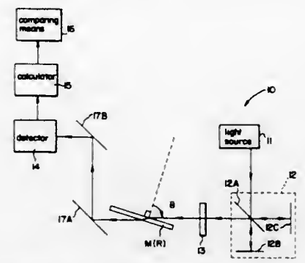
U.S. Cl. 356—364 **23 Claims**

1. A silicon wafer measuring method including:

(a) a first step of measuring a light transmission characteristic (I_{OBS}) of a pulled silicon wafer by utilizing parallel polarized light incident at the Brewster angle into the pulled silicon wafer;

(b) a second step of measuring a light transmission characteristic (I_O) of a floating zone silicon wafer functioning as a reference silicon wafer both front and rear faces of which are mirror polished, by utilizing parallel polarized light incident at the Brewster angle into the floating zone silicon wafer; and

(c) a third step of directly calculating an interstitial oxygen concentration throughout said pulled silicon wafer on the basis of the light transmission characteristic (I_{OBS}) of the pulled silicon wafer measured during the first step and the



light transmission characteristic (I_O) of the floating zone silicon wafer measuring during the second step.

5,287,168

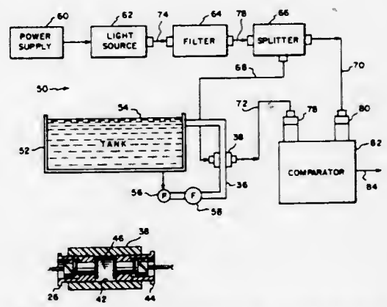
SENSOR FOR MONITORING SOLUTE IN A LIQUID STREAM

David Poucher; Chilengi Madhusudhan, both of Torrance, and Joaquin M. Otero, Carson, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 785,727, Oct. 31, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,668

Int. Cl.[5] G01N *21/53, 21/09*

U.S. Cl. 356—436 **12 Claims**



4. An optical sensor for detecting the concentration of a particular material in solution by absorption spectroscopy comprising:

a light source providing light at an absorption peak of the material in solution, said light source being connected to a beam splitter which provides first and second light beams of proportional intensity;

a comparator having first and second photodetectors, said second beam being connected to said second photodetector;

a sensor carrier made of synthetic polymer composition material, a sensor opening in said sensor carrier, said sensor opening defining a sensor axis, said sensor opening having screw threads thereon around said sensor axis, a liquid passage through said sensor carrier and intersecting said sensor axis;

first and second sensor bodies mounted within said sensor opening in said sensor carrier, said first and second sensor bodies each being threaded on the exterior thereof so that they are in threaded engagement with said threaded sensor opening in said sensor carrier so that said first and second bodies are adjustable along said axis to adjust the gap therebetween, said sensor bodies being made of syn-

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thetic polymer composition material, each of said sensor bodies having a recess therein extending along said axis, a window on each of said sensor bodies closing one end of said opening therein, said windows being adjacent each other to define the gap therebetween;

first and second lens assemblies respectively mounted in said recesses in said first and second sensor bodies, each of said first and second lens assemblies being made of metallic material and having a recess therethrough, a lens in each said lens assembly body to close one end of said recess, external screw threads on the other end of said lens assembly body for detachable connection of a fiber optic cable thereto, said sensor carrier being configured to hold said first and second lens assemblies in a position so that they face each other on said axis to define a fluid gap therebetween with both said first and second lens assemblies lying on the same optical axis so that light from one of said lens assemblies passes across the gap and impinges on the other of said lens assemblies and some of the light is absorbed in the fluid in said gap and the fluid gap length can be adjusted in accordance with the fluid in said gap, said first beam being connected to said first sensor body and said second sensor body is connected to said first photodetector, each of said connections between said light source, said splitter, said sensor and said first and second photodetectors being by disconnectable, interchangeable fiber optic connectors.

5. The system of claim 4 wherein said fiber optic connectors between said splitter, said sensor and said photodetectors have connectors thereon for disconnectable connection to said splitter, said sensor and said photodetectors so that fiber optic cables of different length and built to carry different light wavelengths can be installed in accordance with the fluid in said gap.

5,287,169

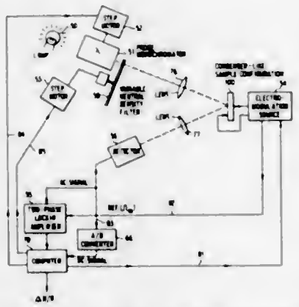
CONTRACTLESS MODE OF ELECTOREFLECTANCE

Fred H. Pollak, New York, and Xiaoming Yin, Brooklyn, both of N.Y., assignors to Brooklyn College Research and Development Foundation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 695,019, May 3, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 861,104

Int. Cl.[5] **G01N** *21/55*

U.S. Cl. 356—445 **34 Claims**



1. An apparatus for obtaining information concerning material characteristics of a sample by contactless electroreflectance, comprising first means forming a condenser-like structure having two electrode means and means for holding a sample out of contact with at least one of said electrode means in such a manner that there is nothing in direct contact with the surface of said sample facing said one electrode means but any surrounding gaseous medium having insulating properties, means for directing a probe beam of light onto the sample through the electrode means located in front of the sample as viewed in the direction of incidence of the probe beam, electromodulation source means operatively connected with said electrode means for applying thereto a modulating voltage, means for detecting the beam upon reflection from, respectively, transmission through the sample, and further means for obtaining a signal from said detector means which contains the information.

5,287,170

BROADCASTING SIGNAL DETECTING CIRCUIT FOR SECAM AND PAL SIGNAL FORMATS

Yong-jin Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 13, 1992, Ser. No. 851,205

Claims priority, application Rep. of Korea, Aug. 17, 1991, 91-13013

Int. Cl.[5] **H04N** *11/20, 9/47*

U.S. Cl. 348—641 **6 Claims**



1. A broadcasting signal detecting circuit for detecting a first TV broadcasting signal amongst said first TV broadcasting signal which includes a first color sync signal which has a predetermined width spaced apart from a horizontal sync signal by a predetermined interval, and has alternately differing frequencies per each horizontal period, and a second TV broadcasting signal which includes a second color sync signal which has a constant width, spaced apart from a horizontal sync signal by a predetermined interval, within said predetermined width of said first color sync signal of said first TV broadcasting signal, and has an identical frequency per horizontal period, said circuit comprising:

outputting means for outputting a burst gate pulse delayed by a predetermined time from said horizontal sync signal, such that said burst gate pulse occurs completely inside said first color sync signal and completely outside said second color sync signal;

separating means for separating said first color sync signal of said first TV broadcasting signal in response to said burst gate pulse of said outputting means;

integrating means for integrating the output of said separator to be a DC level; and

comparing means for comparing the DC output level from said integrating means with a predetermined reference level, to determine whether the signal is said first TV broadcasting signal or said second TV broadcasting signal.

5,287,171

JITTER PROCESSING CIRCUIT FOR DIGITAL CAMERA PROCESSING

Hiroyasu Ohtsubo, Yokohama, and Kazuhiro Koshio, Chigasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,995

Claims priority, application Japan, Oct. 31, 1990, 2-292012; Nov. 5, 1990, 2-297299

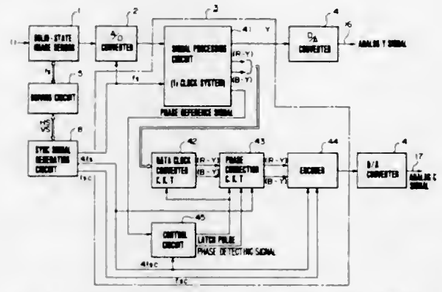
Int. Cl.[5] **H04N** *9/077*

U.S. Cl. 348—500 **3 Claims**

1. A video camera in which an output signal from a solid-state image sensor is converted into a corresponding digital signal at a horizontal reading cycle of an output signal, said corresponding digital signal being digital-processed with a first predetermined clock (fs) synchronous with the reading cycle to provide a luminance signal and a color difference signal, comprising:

data clock converter means for latching said color difference signal generated in synchronism with said first clock with a data latch clock synchronous with a second clock (4 fsc) having a frequency four times as large as that of a color subcarrier (fsc) thereby to convert said color difference signal;

control means for detecting a phase of a changing point of said color difference signal generated in synchronism with said first clock (fs) for said second clock (4 fsc) to provide a phase detecting signal and for supplying said data latch clock, to which color difference signal is latched synchronously, with said second clock (4 fsc) at a stable point after said changing point of said color difference signal generated in synchronism with said first clock (fs);



phase correction means for receiving said color difference signal after conversion from said data clock converter means, and producing a phase-corrected color difference signal by selecting, in accordance with said phase detecting signal from said control means, one of said color difference signal having an intermediate phase obtained by interpolating before and after said changing point of the received color difference signal and said color difference signal after conversion; and

modulation means for quadrature-balanced-modulating the color difference signal supplied from said phase correction means to provide a modulated color signal.

5,287,172

AUTOMATIC ON-SCREEN COLOR CONVERTING CIRCUIT FOR A COLOR TELEVISION

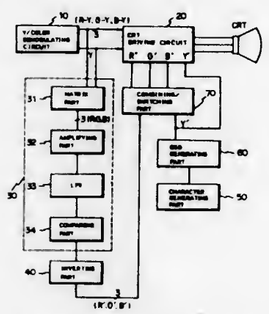
Bong S. Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 451,162, Dec. 15, 1989, Pat. No. 5,130,702. This application Oct. 16, 1991, Ser. No. 777,132

Claims priority, application Rep. of Korea, Jul. 13, 1989, 10138/89

Int. Cl.[5] **H04N** *9/74*

U.S. Cl. 348—578 **20 Claims**



1. An automatic on-screen color converter for a color television comprising a luminance-chrominance demodulating circuit for demodulating luminance signals and color-difference signals from video signals, an on-screen display generating circuit for generating an on-screen display blanking signal, and driving circuit for driving a visual display of the video signals and on-screen display color signals, said automatic on-screen color converter comprising:

level detecting means for detecting levels of color components of said luminance signals and said color-difference signals to provide a plurality of color level signals respectively representative of the color components of said luminance and color-difference signals;

inverting means for inverting each of said plurality of color level signals to provide a plurality of color inverted signals; and

combining/switching means for combining said plurality of color inverted signals and said on-screen display blanking signal, so as to supply said driving circuit with said on-screen display color signals having a color complementary to the color components of the video signals of said luminance-chrominance demodulating circuit.

5,287,173

SYSTEM AND METHOD FOR ADJUSTING WHITE BALANCE OF PROJECTOR TYPE COLOR DISPLAY DEVICE

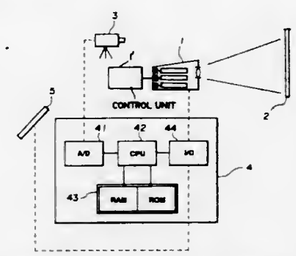
Hideki Onuma, Kanagawa, and Shigeto Funado, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,367

Claims priority, application Japan, Nov. 18, 1991, 3-301915

Int. Cl.[5] **H04N** *9/73, 9/74, 9/31*

U.S. Cl. 348—655 **13 Claims**



1. A system for adjusting white balance of a projector type color display device which includes three single color chathode ray tubes from which single color beams are projected onto a screen to form a colored image on the screen, comprising:

first means for feeding a selected one of the three cathode ray tubes with an all white signal to cause the selected cathode ray tube to project a single color image on said screen;

second means for detecting a luminance value of said single color image on said screen;

third means for storing reference luminance ratios based on three reference color temperatures between three respective color images projected on the screen when the three color tubes are turned on individually;

fourth means for deriving luminance values of the other two single color images from the detected luminance value and said stored luminance ratios; and

fifth means for controlling the selected cathode ray tube in such a manner that the derived luminance values of the other single color images are put in a tolerance which is provided for dealing with a noise of said second means.

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5,287,174

VERTICAL RESOLUTION CORRECTING CIRCUIT FOR VIDEO SIGNAL

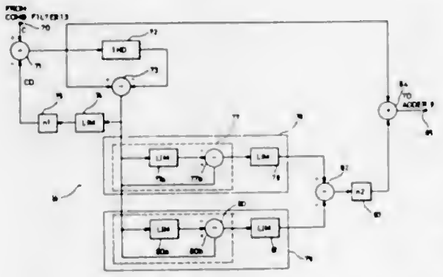
Hiroshi Iizuka, Daito, and Mitsuzou Shirai, Habikino, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 27, 1992, Ser. No. 858,549

Claims priority, application Japan, Apr. 5, 1991, 3-73118; Apr. 10, 1991, 3-77859

Int. Cl.[5] **H04N** *9/64*

U.S. Cl. 348—624 **13 Claims**



1. A vertical resolution correcting circuit for a video signal, comprising:

means for supplying a luminance signal included in the video signal;

means for detecting a noncorrelation component in a vertical direction of said luminance signal; and

means for emphasizing the level of said luminance signal with a predetermined characteristic, which increases and decreases according to the level of said detected noncorrelation component over a predetermined intermediate range included in the whole range which can be taken by said detected noncorrelation component and provides a zero correction for said chroma signal level for detected values of said noncorrelation component above and below said predetermined intermediate range.

5,287,175

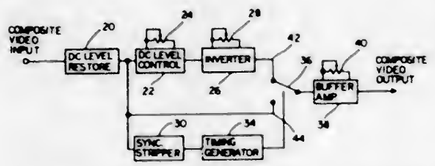
METHOD AND APPARATUS FOR NEGATIVE-TO-POSITIVE VIDEO CONVERSION

Gang Fang, 771 University Village, Salt Lake City, Utah 84108

Filed Apr. 5, 1993, Ser. No. 42,673

Int. Cl.[5] **H04N** *9/11*

U.S. Cl. 348—97 **11 Claims**



1. A method of electronically processing a negative composite video signal, such as is produced by a video camera scanning an image from a negative film, to convert the negative composite video signal to a positive composite video signal without separating the luminance component and chrominance component from the negative composite video signal, said method comprising the steps of

simultaneously feeding the negative composite video signal to an inverter, to a switching means and to a timing control means;

feeding the inverted composite video signal from the inverter to said switching means;

generating a control signal by the timing control means that has two distinguishing states corresponding to blanking periods and image periods, respectively; and

using the control signal to control said switching means so that (1) horizontal blanking portions of the negative composite video signal are fed through said switching means as they are received by the switching means, and (2) image portions of the inverted composite video signal between adjacent horizontal blanking portions are fed through the switching means as they are received by the switching means, whereby an output positive composite video signal comes from said switching means and consists of the horizontal blanking portions of said negative composite video signal and the inverted image portions of said inverted composite video signal that are fed through said switching means.

5,287,176

AUTOMATIC CONTRAST AND BRIGHTNESS CONTROL FOR THERMAL IMAGE APPARATUS INTEGRATED INTO AN AIRCRAFT

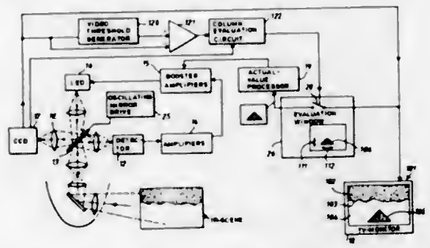
Edwin Stolle, Oberkochen; Jügen Nolting, Aalen-Wasseralfingen, and Günter Eck, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,897

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211133

Int. Cl.[5] **H04N** *5/33, 5/235, 5/57*

U.S. Cl. 378—98.7 **6 Claims**



1. Process for the automatic contrast and brightness control for thermal imaging apparatus of a forward-looking infrared (FLIR) system integrated into an aircraft, which is used for the formation of the actual value of the contrast and the brightness of an evaluation window of the FLIR image, fixes the shape of said evaluation window for a control system and determines the position of said evaluation window in said FLIR image in dependence on the content of said FLIR image, comprising:

utilizing "n" vertical image columns for evaluation of said FLIR image,

converting the average brightness of said FLIR image into an analog voltage signal,

comparing said analog voltage signal with a video signal of said FLIR image,

summing the results of the comparison in the vertical image columns of said FLIR image such that a sum value results for each image column,

determining the position of the horizon from the amounts of the sum values, and

in the case of column sums that differ from each other,

determining the optimum position of said evaluation window in the horizontal direction from the sum values of the columns such that the surface center of gravity of said rating window lies on the column with the maximum column sum, and

determining the optimum position of said evaluation window in the vertical direction from this column sum such that the uppermost boundary of said evaluation window in this column does not exceed the determined height of the horizon.

5,287,177

CIRCUIT FOR GENERATING MOVING IMAGE TRACKING CURSOR

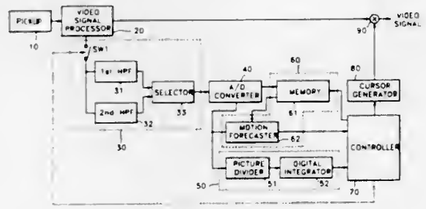
Hyeong-kwon Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 19, 1992, Ser. No. 901,105

Claims priority, application Rep. of Korea, Jun. 19, 1991, 91-10324

Int. Cl.[5] **H04N** *5/225*

U.S. Cl. 348—169 **1 Claim**



1. A circuit for generating a moving image tracking cursor in a camera, comprising:

pickup means for converting optical information about an object into an electrical signal;

video signal processor means for separating the picked-up signal into luminance and color signals to output them as a composite video signal;

filter means for filtering only a high-band component of the separated luminance signal;

converter means for converting the filtered signal into a digital signal;

detector means for receiving the digital signal by predetermined picture intervals, dividing the receiving signal into a plurality of subscreens, and integrating it by the subscreens to detect the region having the largest integration;

motion forecasting means for calculating the difference between a current signal output from said converter and a precedingly detected signal to predict the amount of movement of the object;

cursor generator means for variably designating the location of a cursor in the subscreen where the largest integration is detected proportional to the predicted amount of movement of the object so as to generate a cursor signal; and

signal converter means for mixing the cursor signal and composite video signal.

5,287,178

RESET CONTROL NETWORK FOR A VIDEO SIGNAL ENCODER

Alfonse A. Acampora, Staten Island, N.Y., and Richard M. Bunting, Hamilton Square, N.J., assignors to General Electric Company, Princeton, N.J.

Filed Jul. 6, 1992, Ser. No. 909,489

Int. Cl.[5] **H04N** *7/12, 5/2, 7/04*

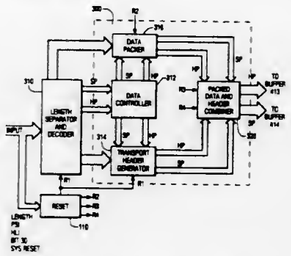
U.S. Cl. 348—384 **9 Claims**

1. A video signal encoding system comprising:

means responsive to a video signal for providing encoded video signal data;

signal processing means, including a plurality of signal processing components, responsive to said encoded video data for providing segmented transport blocks of video data comprising groups of packed data and headers identifying associated ones of said groups, said components subject to exhibiting a reset condition wherein normal signal processing operation is inhibited, and exhibiting said normal operation when said reset condition is released; and

resetting means coupled to said signal processing means for causing certain ones of said components to exhibit said reset condition; wherein



said resetting means releases said certain components from said reset condition in a prescribed non-simultaneous sequence such that said certain components are uninhibited in said prescribed non-simultaneous sequence, respectively, to thereby exhibit normal operation in said non-simultaneous sequence.

5,287,179

IMAGE DISPLAY SYSTEM

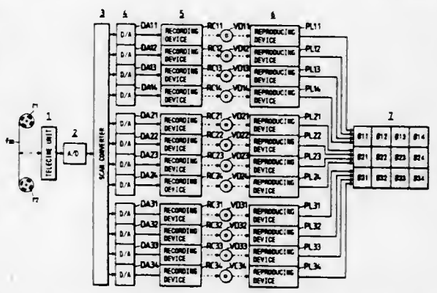
Hitoshi Senso; Yoshio Arai, and Masao Fukuda, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 424,000, Oct. 19, 1989, abandoned. This application May 31, 1991, Ser. No. 992,237

Claims priority, application Japan, Feb. 27, 1989, 1-43172

Int. Cl.[5] **H04N** *7/01*

U.S. Cl. 348—445 **17 Claims**



1. An image display system for displaying an image on a screen comprising a plurality of standard television system receivers, comprising:

means for inputting an input image having a certain aspect ratio;

means for converting said input image into a high definition television system video signal;

means for converting said high definition television system video signal into a plurality of standard television system video signals;

means for displaying said plurality of standard television system video signals on a plurality of standard television system receivers; and

means for shifting a position of said plurality of standard television system video signals displayed on said plurality of standard television system receivers in a horizontal

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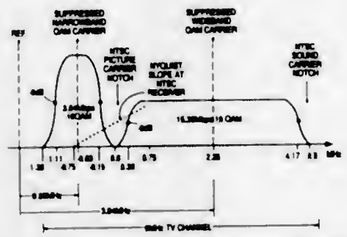
direction when an aspect ratio of said input image is smaller than an aspect ratio of the high definition television system and a vertical direction when an aspect ratio of said input image is larger than an aspect ratio of the high definition television system.

5,287,180

MODULATOR/DEMODULATER FOR COMPATIBLE HIGH DEFINITION TELEVISION SYSTEM

Hugh E. White, Pennington, N.J., assignor to General Electric Company, Princeton, N.J.

Filed Feb. 4, 1991, Ser. No. 650,329
Int. Cl.[5] H04N *7/00*
U.S. Cl. 348—484 **39 Claims**



1. A system for processing a high definition television signal providing greater image definition than a standard definition television signal, comprising:

means for modulating a first carrier with first television signal information to produce a modulated first carrier;

means for modulating a second carrier with second television signal information to produce a modulated second carrier, said second information exhibiting a smaller amplitude than said first information; and

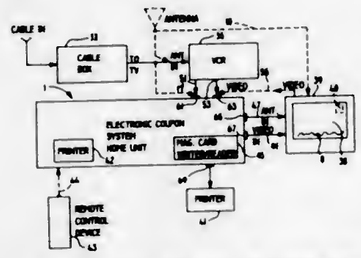
means for combining said modulated first and second carriers to produce a composite modulated signal containing high definition television information, said composite signal exhibiting a bandwidth compatible with the bandwidth of a standard definition television signal channel, and having a modulation frequency spectrum exhibiting signal attenuation at frequencies associated with high energy information in said standard definition television signal.

5,287,181

ELECTRONIC REDEEMABLE COUPON SYSTEM AND TELEVISION

Michael J. Holman, 45 Ranch View Rd., Rolling Hills Estates, Calif. 90274

Filed Aug. 20, 1992, Ser. No. 932,799
Int. Cl.[5] H04N *7/08*
U.S. Cl. 348—473 **42 Claims**



36. An electronic redeemable coupon selection apparatus, for use with a television set including decoding means for decoding digital data transmitted with the picture information of a standard television signal transmission, said television signal transmission including digitally encoded coupon-related data, said apparatus comprising:

means coupled to said decoding means for selecting at least portions of said coupon-related data; and

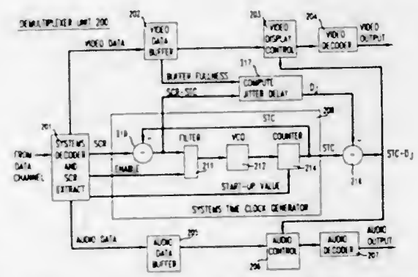
recording means for recording representations of said selected portions of said decoded coupon-related data on a recording medium for subsequent readout and redemption.

5,287,182

TIMING RECOVERY FOR VARIABLE BIT-RATE VIDEO ON ASYNCHRONOUS TRANSFER MODE (ATM) NETWORKS

Barin G. Haskell, Tinton Falls, and Amy R. Reibman, East Windsor, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1992, Ser. No. 907,943
Int. Cl.[5] H04N *5/04, 7/04*
U.S. Cl. 348—500 **16 Claims**



1. Apparatus for recovering timing in a receiver comprising:

means for receiving an asynchronous digital signal including system clock reference (SCR) values, an initially received SCR value being a start-up SCR value;

means for extracting said SCR values from said received asynchronous digital signal;

phase locked loop means having an input and an output for locking to said extracted SCR values being supplied to said input to generate a system timing clock (STC) signal at said output;

means within said phase locked loop means in circuit with said output and being directly supplied with said start-up SCR value for setting said STC signal at said output to said start-up SCR value upon start-up; and

means for supplying said start-up SCR value directly to said means for setting.

5,287,183

SYNCHRONOUS IMAGING SYSTEM

Robert L. Thomas; Lawrence D. Favro, both of Huntington Woods, and Pao-Kuang Kuo, Troy, all of Mich., assignors to Wayne State University, Detroit, Mich.

Filed Mar. 5, 1990, Ser. No. 488,310
Int. Cl.[5] H04N *5/14*
U.S. Cl. 348—571 **37 Claims**

1. A method for producing images synchronous and in-phase with the periodicity of an object field (12) utilizing a video camera (14, 14', 14'', 14''') for producing a video signal comprising frames of the image, the method including the steps of; producing and directing a synchronous reference signal to the object field causing the periodicity of the object field (12), detecting radiation from the object field (12) for producing a video signal of the full image at a set time, acquiring a first full image at a predetermined first time delay from the synchronizing pulse including in-phase and active image components and

passive background image components, acquiring a second full image at a predetermined second time delay from the synchronizing pulse including substantially only passive background

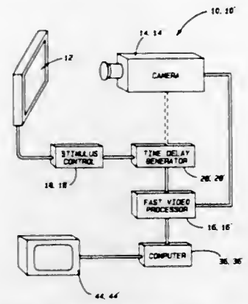


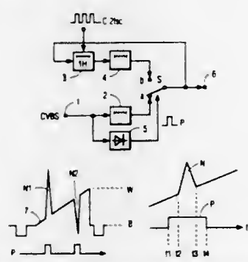
image components, and subtracting the second full image from the first full image to produce an image signal representing the active image synchronous and in-phase with the periodicity of the object field (12).

5,287,184

TELEVISION RECEIVER FOR MICROWAVE RECEPTION WITH PROVISIONS FOR REDUCING INTERFERENCE

Edric H. Field, Chelmsford, Great Britain, assignor to Ferguson Limited, Enfield, Great Britain

Filed Nov. 21, 1991, Ser. No. 796,725
Claims priority, application United Kingdom, Nov. 27, 1990, 9025754
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—615 **7 Claims**



1. In a receiver for receiving television satellite signals at an input terminal, a circuit for eliminating interference in said television signals, apparatus comprising:

switch means having at least first, second and third switchable contacts and an output terminal;

level detection means responsive to said television signals for providing interference representative pulses for causing said switch means to switch between said first, second and third contacts in response to amplitude changes in said television signals whereby said amplitude changes are prevented from being applied to said output terminal, said interference representative pulses having time durations greater than the time durations of said amplitude changes;

first means coupled between said input terminal and said first switchable contact for coupling said television signals to said first contact;

second means coupled between said output terminal and said second contact for delaying said television signals for one line period and for applying said one line period delayed television signals to said second switchable contact; and

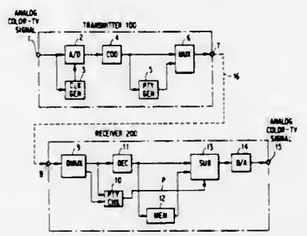
third means coupled between said output terminal and said third contact for delaying said television signals for two line periods and for applying said two line period delayed television signals to said third switchable contact.

5,287,185

METHOD OF CORRECTING TRANSMISSION ERROR IN DIGITAL COLOR-TELEVISION COMMUNICATION SYSTEM AND DIGITAL COLOR-TELEVISION COMMUNICATION SYSTEM TO WORK SAID METHOD

Fujio Cho, and Shinji Koike, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,340
Claims priority, application Japan, Mar. 14, 1991, 3-73721
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—624 **6 Claims**



1. A method of correcting a transmission error in a color-television communication system provided with error detecting means, the system having a transmitter for converting an externally supplied analog color-television signal to a digital color-television signal and transmitting it by means of digital communication and a receiver for receiving the digital color-television signal to convert it to an analog color-television signal, the method comprising steps of

supplying the digital color-television signal transmitted from the transmitter to a memory provided in the receiver and storing the digital color-television signals in the last at least two frame periods,

when a transmission error is detected in the digital color-television signal in the present horizontal scanning period, reading first signals from the memory, the first signals being the digital color-television signals in the N horizontal scanning periods two frame periods before, wherein the N horizontal scanning periods correspond to the present and subsequent N-1 horizontal scanning periods in the present frame period, and N is a predetermined positive integer including 1; converting the first signals to analog color-television signals in lieu of second signals which are the digital color-television signals in the present and subsequent N-1 horizontal scanning periods; and storing the first signals in the memory in lieu of the second signals.

5,287,186

VIDEO SWITCHER APPARATUS WITH BACK-UP SYSTEM

Tsutomu Takamori, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,809
Claims priority, application Japan, Aug. 30, 1991, 3-220409
Int. Cl.[5] H04N *5/268*
U.S. Cl. 348—705 **5 Claims**

1. A switcher apparatus for selectively supplying video signals, said switcher apparatus comprising:

a main switching unit operative for receiving a plurality of input video signals and for selecting a desired video signal therefrom;

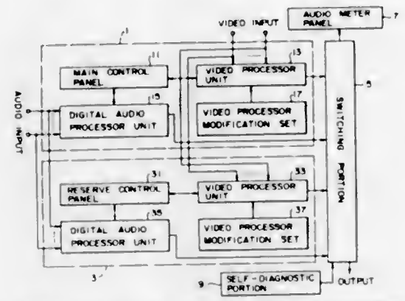
a back-up switching unit operative for receiving said plural-

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ity of input video signals and for selecting a desired video signal therefrom;

switching means receiving the selected desired video signals from said main switching unit and said back-up switching unit for supplying one of the received selected video signals therefrom; and

a housing for securing said main switching unit and said



back-up switching unit and for enabling removal therefrom and installation therein of one of said main switching unit and said back-up switching unit while the other of said main switching unit and said back-up switching unit operates so as to provide continuous selecting of a desired video signal and supplying of the same by at least one of said main switching unit and said back-up switching unit to said switching means.

5,287,187

VIDEO SIGNAL PROCESSING APPARATUS DISPLAYING IMAGE AND PROCESS INFORMATION

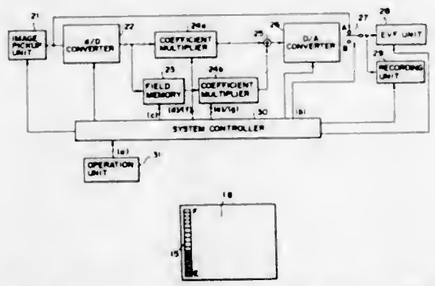
Chikara Sato, Kawasaki; Hisataka Hirose; Yoshihiro Nakatani, both of Yokohama; Tadayoshi Nakayama, Tokyo; Tsutomu Fukatsu, Yokohama, and Kyoji Tamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1990, Ser. No. 522,811

Claims priority, application Japan, May 15, 1989, 1-122620; Jan. 22, 1989, 1-158234

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—595 **15 Claims**



1. A video signal processing apparatus for processing video signals, comprising:

(A) multiplexing means for multiplexing a second video signal with a first video signal to provide a multiplexed video signal;

(B) control means for controlling a multiplexing ratio of the first and second video signals in said multiplexing means; and

(C) display means for simultaneously displaying at least a part of a video image of the first video signal and a part of an image corresponding to the multiplexed video signal being provided by said multiplexing means under control of said control means.

13. An image pickup apparatus for photographing an object and generating a pickup image signal corresponding to the object, comprising:

(A) fading means for fading-in or fading-out the pickup image signal;

(B) control means for controlling the fading operation of the pickup image signal in the fading means; and

(C) display means for simultaneously displaying at least a part of a video image of the pickup image signal and a part of an image corresponding to the pickup image signal being faded-in or faded-out by said fading means under control of said control means.

14. An image pickup apparatus for photographing an object and generating a pickup image signal corresponding to the object, comprising:

(A) fading means for fading-in or fading-out the pickup image signal;

(B) control means for controlling the fading operation of the pickup image signal in the fading means; and

(C) display means having a first display section and a second display section, for displaying at least a part of a pickup video image corresponding to the pickup image signal at said first display section and displaying a fading state of the pickup image signal whose fading operation by said fading means is being controlled by said control means, at said second display section.

15. An image pickup apparatus for photographing an object and generating a pickup image signal corresponding to the object, comprising:

(A) fading means for fading-in or fading-out the pickup image signal;

(B) control means for controlling the fading operation of the pickup image signal in the fading means; and

(C) an electric view finder having a first display area and a second display area, and for displaying at least a part of a pickup video image corresponding to the pickup image signal at said first display area and displaying at said second display area a part of a fade video image corresponding to the pickup image signal which was faded by the fading means.

5,287,188

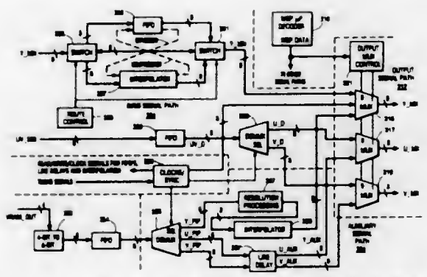
HORIZONTAL PANNING FOR WIDE SCREEN TELEVISION

Timothy W. Saeger, Indianapolis, and Nathaniel H. Ersoz, Brownsburg, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jan. 7, 1992, Ser. No. 817,685

Int. Cl.[5] H04N *5/262, 3/223*

U.S. Cl. 348—565 **22 Claims**



1. A horizontal panning system for a television apparatus, comprising:

means having a wide format display ratio for displaying a processed video signal;

signal processing means for generating said processed video signal by manipulating data in at least one input video signal representative of a picture, said signal processing means having memory means with asynchronous write and read ports for selectively cropping said picture in at least one display mode in which a first area of said picture is cropped and a second area of said picture is represented in said processed video signal; and,

means for generating writing control signals for said memory means, said writing control signals having a selectable phase relative to a synchronizing component of said at least one input video signal and having selectable time durations, for determining which portion of said picture forms said second area in said at least one display mode.

5,287,189

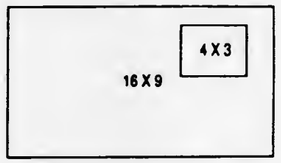
DISPLAYING AN INTERLACED VIDEO SIGNAL WITH A NONINTERLACED VIDEO SIGNAL

Nathaniel H. Ersoz, Brownsburg, and Timothy W. Saeger, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 21, 1992, Ser. No. 933,284

Int. Cl.[5] H04N *5/46, 7/01, 5/45*

U.S. Cl. 348—588 **16 Claims**



1. An apparatus, comprising:

video display means synchronized with a first video signal;

means for detecting whether said first video signal has more than one field type;

means for combining a second video signal having more than one field type with said first video signal in a simultaneous display on said video display means; and,

video signal processing means responsive to said detecting means, having a first mode of operation when said first video signal has more than one field type, in which all fields of said second video signal are an output to said combining means for said simultaneous display, and having a second mode of operation when said first video signal has only one field type, in which only one field type of said second video signal is an output to said combining means for said simultaneous display.

9. An apparatus, comprising:

video display means synchronized with a first video signal;

means for detecting whether said first video signal is interlaced or noninterlaced;

means for combining a second video signal having odd and even interlaced fields with said first video signal in a simultaneous display on said video display means; and,

video signal processing means responsive to said detecting means, having a first mode of operation when said first video signal is interlaced, in which both odd fields and even fields of said second video signal are an output to said combining means for said simultaneous display and having a second mode of operation when said first video signal is noninterlaced, in which only all even fields or only all odd fields of said second video signal are an output to said combining means for said simultaneous display.

16. The apparatus of claim 9, wherein said display means has a format display ratio of approximately 16:9.

5,287,190

POWER SWITCH FOR MULTIPLE OPERATING SECTIONS OF TELEVISION SET

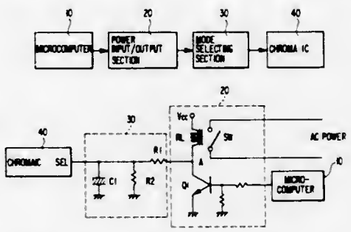
Dong J. Ko, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 30, 1992, Ser. No. 969,579

Claims priority, application Rep. of Korea, Oct. 30, 1991, 91-19110

Int. Cl.[5] H04N *5/63*

U.S. Cl. 348—730 **10 Claims**



1. A power switch for supplying and cutting off power to multiple operating sections of a television set in accordance with ON and OFF operating states of a power switch button of the television set, said power switch comprising:

control means for generating a predetermined control signal according to an operating state of the power switch button;

a power input/output section having a power input terminal for receiving external power and a power output terminal for supplying said external power to each operating section of the television set, said power input/output section changing operating states to supply and cut off the external power supplied through said output terminal in response to said control signal from said control means;

mode selecting means, coupled with said power input/output section, for outputting predetermined high and low level signals in accordance with the operating state of the input/output section; and

a chroma IC which is converted between an OSD mode and a TV signal mode in response to a level of said predetermined signal output by said mode selecting means.

5,287,191

CABLE CONNECTOR FOR SEPARABLE TYPE CAMERA HEAD

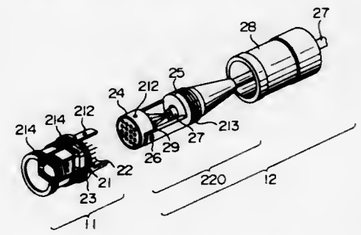
Takahisa Suzuki, and Tatsuki Tsukada, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 8, 1992, Ser. No. 879,903

Claims priority, application Japan, May 20, 1991, 3-114767

Int. Cl.[5] H04N *5/30, 5/225*

U.S. Cl. 348—375 **1 Claim**



1. A separable type camera head comprising:

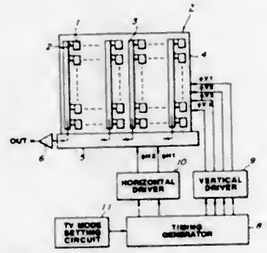
VOL 1159 ISS 3 FE 15 1994 UMI

a cable clamp and a body chassis each having a through-hole;
a female connector fixed to said cable clamp;
a cable connected to cable-connecting terminals of said female connector via said through-holes of said body chassis and said cable clamp;
an image sensing device module including: (i) an image sensing device chip having an electrode, (ii) a metallic lead, (iii) device driving boards, said electrode being connected through said metallic lead to electrodes disposed on side surfaces of said device driving circuit boards, and (iv) lead terminals disposed on said device driving circuit board, a signal of said image sensing device chip being transmitted to said cable when said lead terminals are inserted into said female connector;
a sheath chassis encasing said image sensing device module; and
means for fastening said sheath chassis and said female connector together, said body chassis including a first screw thread formed inwardly of said body chassis and said cable clamp having a second screw thread formed in an outer periphery of said cable clamp, said body chassis and said cable clamp being fastened to one another via screwable engagement of said first and second threads to cause said body chassis to be united with said sheath chassis.

5,287,192
SOLID-STATE IMAGER FOR USE WITH TWO DIFFERENT TV SYSTEMS

Tetsuya Iizuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,369
Claims priority, application Japan, Jul. 15, 1991, 3-201234
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—311 **6 Claims**

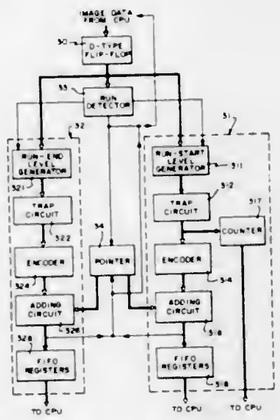


1. An imaging system comprising:
a photosensitive imaging section;
a first charge transfer section for receiving signal charge from said imaging section, said first charge transfer section comprises a first vertical shift register for transferring signal charges in a vertical direction from one storage location to a final storage location;
a second charge transfer section for receiving the signal charges from said first charge transfer section, said second charge transfer section comprises a first horizontal shift register for transferring the signal charges in a horizontal direction;
an output section for receiving the signal charges from said second transfer section and generating voltage signals;
a selector section for producing one of a first TV mode selection signal and a second TV mode selection signal; and
a driver section for driving said first and second transfer sections to control charge motion, said driver section being connected with said selector section, said driver section driving said first vertical shift register in a first driving mode to transfer a signal charge from the final storage location of said first vertical register to a first storage location of said second transfer section after said second register section has transferred a previous signal charge from said first storage location to a next storage location when said first TV mode selection signal is present, and in a second driving mode to transfer a signal charge from said final storage location of said first transfer section to said first storage location of said second transfer section while a previous signal charge remains in said first storage location when said second TV mode selection signal is present.

5,287,193
PARALLEL PROCESSING ARCHITECTURE OF RUN-LENGTH CODES

Yung-Chung Lin, Taipei, China, assignor to Industrial Technology Research Institute, Taiwan

Filed Jun. 14, 1991, Ser. No. 715,819
Claims priority, application China, Apr. 10, 1991, 80102843
Int. Cl.[5] H04N *1/419*
U.S. Cl. 358—261.1 **19 Claims**



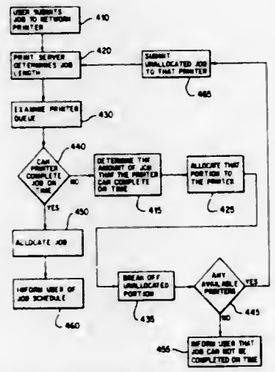
1. A run-length code processing method of generating in parallel run-start row addresses and run-end row addresses of all black runs in a row of digitized image data, the image data being input by unit of N-bit words wherein N is an integer and relates to a storage unit of a computer, the metnod comprising the steps of:
(1) first inputting all bits of a word in a row of image data with control of a central processing unit of a computer, and indicating a word start address of said word in the row of image data;
(2) detecting presence of a run-start bit and presence of a run-end bit in said word in parallel;
(3) generating run-start levels from said bits of the word in the row of image data on detection of the presence of a run-start bit in said word by designating each of run-start bits as a first binary level and each of the other bits in the word as a second binary level;
(4) generating run-end levels from said bits of the word in the row of image data on detection of the presence of a run-end bit in said word by designating each of run-end bits as a first binary level and each of the other bits in the word as a second binary level; said run-start levels and said run-end levels being generated in parallel;
(5) converting in parallel the run-start levels and the run-end levels to a plurality of trapped run-start word position pulses each corresponding to the position of a run-start bit in the word and a plurality of trapped run-end word position pulses each corresponding to the position of a run-end bit in the word;

(6) encoding in parallel said plurality of trapped run-start word position pulses and said plurality of trapped run-end word position pulses to generate serial run-start word addresses each indicative of the position of a run-start bit in the word and serial run-end word addresses each indicative of the position of a run-end bit in the word;
(7) adding said run-start word addresses and said run-end word addresses with the word start address respectively to generate the run-start row addresses and the run-end row addresses;
(8) storing the run-start row addresses and the run-end row addresses serially into first and second memory means.

5,287,194
DISTRIBUTED PRINTING

Martin F. Lobiondo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1992, Ser. No. 981,717
Int. Cl.[5] H04N *1/23;* **G03G** *15/00*
U.S. Cl. 358—296 **6 Claims**

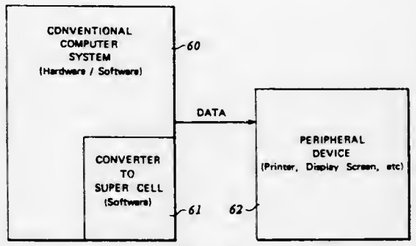


1. An automated scheduling method for a network having a plurality of printers located at various locations within said network, an input means, a scheduling means, and a communication link to connect said plurality of printers with each other and to said input means and said scheduling means, the network being capable of scheduling a complex of remote and local printers located on the network, the method comprising the steps of:
inputting from said input means a plurality of criteria relating to a print job requested by a user to said scheduling means, said criteria including at least the number of copies of said job requested, locations within said network where said job is to be printed, and a requested completion time for said job;
electronically analyzing said plurality of printers to determine availability of one or more of said plurality of said printers at each of said locations;
automatically electronically scheduling printing of said job at said locations;
electronically prompting said user if any of said locations cannot complete said job; and
electronically prompting said user of an estimate of when completion of said print job can be expected.

5,287,195
IMAGE DISPLAY APPARATUS AND METHOD USING HALFTONE SUPER CELLS

Thomas P. Blumer, Cambridge, Mass., assignor to Phoenix Technologies Ltd., Norwood, Mass.

Continuation of Ser. No. 583,445, Sep. 12, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,241
Int. Cl.[5] H04N *1/21, 1/46, 1/40*
U.S. Cl. 358—298 **6 Claims**

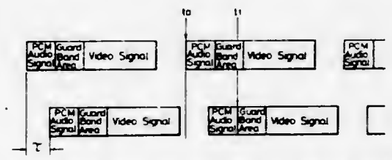


1. A method of displaying images defined by illuminating binary pixels in an arrangement of halftone cells for each of a plurality of primary color components, each of said halftone cells having N binary pixels, comprising the steps of:
combining a plurality of adjacent said halftone cells into a halftone super cell for each of said plurality of primary color components;
selecting an overall order of illumination for said binary pixels in said super cell responsive to a first order of illumination for said binary pixels in each of said halftone cells and a second order of illumination for said halftone cells in said super cell; and
illuminating said binary pixels responsive to said selected order.

5,287,196
METHOD AND APPARATUS FOR RECORDING VIDEO INFORMATION SIGNALS TO AVOID INTERFERENCE DURING AFTER-RECORDING

Keitaro Yamashita, Tokyo, and Etsurou Sakamoto, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 6, 1991, Ser. No. 741,078
Claims priority, application Japan, Aug. 8, 1990, 2-209488; Aug. 10, 1990, 2-212598
Int. Cl.[5] H04N *9/89*
U.S. Cl. 358—320 **54 Claims**



1. A method of recording video and information signals in video and information sections of slant tracks on a magnetic tape having a wrap angle of no more than about 180°, wherein plural tracks are scanned simultaneously to record signals in locations in said plural tracks, said method comprising the steps of:
timebase converting at least the video signal;
time division multiplexing the timebase converted video signal and the information signal, providing a guard band therebetween;
supplying the time division multiplexed signals to plural recording heads angularly separated by Θ for substantially simultaneously recording the plural tracks, wherein the

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time division multiplexed signals supplied to one of said plural recording heads is delayed by an amount τ corresponding to Θ and wherein the guard band is recorded in an angular extend Θ_{AV} of a track, where $\Theta_{AV} \geqq \Theta$; and

recording the time division multiplexed signals sequentially in a length of track less than said wrap angle to align the positions of the video and information sections of the simultaneously scanned plural tracks with each other and to position the timebase converted video signal and the information signal in adjacent tracks relative to each other such that when said adjacent tracks are subsequently scanned simultaneously to after-record a new information signal in one track and to reproduce a previously recorded timebase converted video signal from an adjacent track, the information section in said one track is located at a position sufficiently shifted from the video section in the adjacent track so that such recording and reproducing do not occur concurrently.

5,287,197

SIGNAL DEMODULATION DEVICE

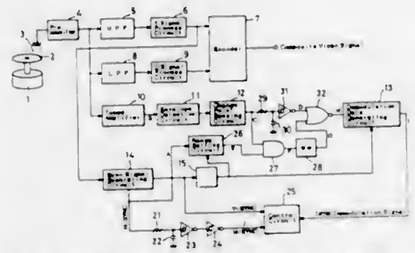
Koichi Sato, Itabashi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1991, Ser. No. 685,673

Claims priority, application Japan, Apr. 20, 1990, 2-105602; Apr. 20, 1990, 2-105603; Apr. 20, 1990, 2-105604; Apr. 20, 1990, 2-105605; Apr. 20, 1990, 2-105606

Int. Cl.[5] H04N *9/88, 5/94*

U.S. Cl. 358—336 **19 Claims**



1. A signal demodulation device which obtains a differential phase shift keying (DPSK) signal from an input signal and demodulates said DPSK signal, comprising:

a DPSK separation circuit for separating said DPSK signal from said input signal;

an envelope detection circuit for detecting an envelope of an output of said DPSK separation circuit;

a change point sensing circuit for sensing a change point of an output of said envelope detection circuit;

a demodulation data generating circuit for generating demodulation data of said DPSK signal in accordance with an output of said change point sensing circuit; and

means for processing a signal of said demodulation data generating circuit to obtain normal demodulation data not influenced by a drop out in said DPSK signal.

5,287,198

IMAGE READING APPARATUS

Haruhiko Fukuda, Kawasaki, and Kohtaroh Yonenaga, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 24, 1991, Ser. No. 719,500

Claims priority, application Japan, Jun. 25, 1990, 2-164057; Mar. 26, 1991, 3-084333

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—401 **4 Claims**

1. An apparatus for reading an image, comprising:

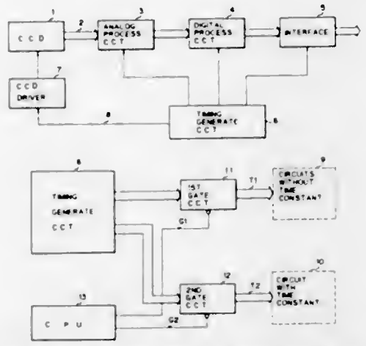
first image processing means including image reading elements having a time constant;

second image processing means having no time constant;

timing signal generating means for feeding a timing signal to each of said first and second image processing means; and

a scanner loaded with at least said image reading elements;

said second image processing means being driven only at the



time of image reading, said first image processing means being driven earlier by taking account of the time constant, and

wherein said scanner is held in a halt for a predetermined period of time while in a returning movement after scanning and before starting on a next reading operation, said first image processing means starts to be driven for said next reading operation while said scanner is in said halt.

5,287,199

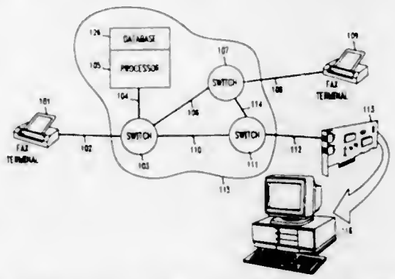
FACSIMILE MESSAGE PROCESSING AND ROUTING SYSTEM

Susan M. Zoccolillo, Howell, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 27, 1992, Ser. No. 842,840

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—402 **25 Claims**



14. A system of routing through a communication switching complex a facsimile message transmitted by a sender, said system comprising:

a processor and an associated database;

means for receiving said facsimile message in said processor;

means for retrieving from said database a stored profile indicating the type and location of information to be recognized in said facsimile message;

means for recognizing said information in said facsimile message content;

means for deriving from said profile destination information

associated with said information recognized in said facsimile message; and

means for routing said message to at least one destination device indicated by said destination information.

5,287,200

BLOCK ADAPTIVE LINEAR PREDICTIVE CODING WITH MULTI-DIMENSIONAL ADAPTIVE GAIN AND BIAS

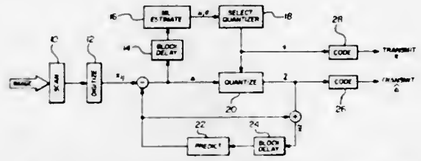
James R. Sullivan, Spencerport, and Craig M. Smith, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 522,763, May 14, 1990, abandoned.

This application May 24, 1993, Ser. No. 66,645

Int. Cl.[5] H04N *7/415*

U.S. Cl. 358—433 **11 Claims**



1. An improved block adaptive predicative coding method comprising the steps of:

a) forming a set of error differences by subtracting pixel prediction values from actual image pixel values for each pixel of a particular multi-dimensional block;

b) computing statistical parameters of the error differences for said particular multi-dimensional block;

c) selecting one of a finite set of quantizers in accordance with said computed statistical parameters for said particular multi-dimensional block;

d) quantizing the error differences of step a) utilizing the selected quantizer of step c) to form quantized error differences; and

e) forming a code representing said quantized error differences formed in step d and said set of quantizers selected in step c.

5,287,201

CALL RECEIVING METHOD AND APPARATUS

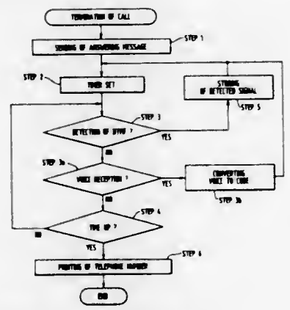
Kazuo Soumiya, Kyoto, and Tatsuaki Okada, Uji, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 15, 1991, Ser. No. 641,529

Claims priority, application Japan, Jan. 17, 1990, 2-7317

Int. Cl.[5] H04N *1/32*

U.S. Cl. 358—434 **5 Claims**



3. A facsimile device, comprising:

modem means for receiving image data;

character generator means for generating a character corresponding of the image data;

message means for sending a message to a calling party in response to a reception of a call;

voice receiving means for receiving a voice signal from the calling party; and

conversion means converting the received voice signal into image data such that a charger corresponding to the received voice signal may be generated by the character generator means.

5,287,202

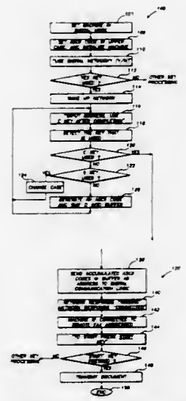
METHOD AND APPARATUS FOR A FACSIMILE MACHINE HAVING ASCII CODE ADDRESSING CAPABILITY

Kumar N. Kumarappan, Fremont County, Calif., assignor to Ricoh Co., Ltd., Tokyo, Japan and Ricoh Corporation, San Jose, Calif.

Filed Jun. 23, 1992, Ser. No. 903,232

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—440 **33 Claims**



1. A facsimile machine for transmitting and receiving data over a digital network, comprising:

first selecting means for selecting ASCII addressing codes for addressing a second facsimile machine coupled to said digital network; and

first generating means for generating said ASCII addressing codes in response to selections made with said first selecting means.

5,287,203

APPARATUS FOR ENCODING AND DECODING INFORMATION ON RECORDING MEDIUM

Yoshiyuki Namizuka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jan. 15, 1993, Ser. No. 5,112

Claims priority, application Japan, Jan. 17, 1992, 4-006799

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—443 **11 Claims**

1. An apparatus for encoding and decoding information on a recording medium, said apparatus comprising:

reading means for optically reading out an image from an original image on a recording medium;

conversion means for converting said read-out image of said reading means into a digital image;

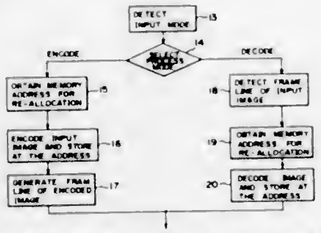
first storage means for storing said digital image from said conversion means;

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input means for inputting an instruction and a password number, said instruction indicating whether an encoding process or a decoding process is to be performed for said digital image;

encoding means for transforming said digital image, stored in said first storage means, to an encoded image when the performing of the encoding process for said digital image is selected according to the instruction from said input means;

decoding means for transforming said digital image, stored in said first storage means, to a decoded image when the performing of the decoding process for said digital image is selected according to the instruction from said input means;



second storage means for storing said encoded image in accordance with a memory address determined based on said password number from said input means when the performing of the encoding process is selected, and for storing said decoded image in accordance with the memory address determined based on said password number from said input means when the performing of the decoding process is selected; and

output means for outputting either said encoded image or said decoded image, stored in said second storage means, onto a recording medium so that either an image encoded from said original image or an image decoded from said encoded image is recorded.

5,287,204

IMAGE RECOGNITION APPARATUS FOR JUDGING BETWEEN MONOCHROMIC AND COLOR ORIGINALS

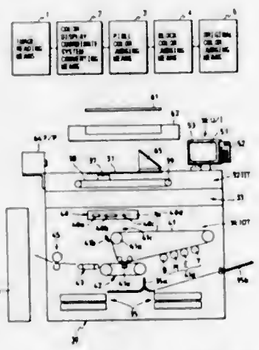
Hiroshi Koizumi; Katuyuki Kouno; Yoshiyuki Sorimachi; Yuzuru Suzuki, and Yoshinori Awata, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,128

Claims priority, application Japan, May 14, 1991, 3-109184

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—538 **16 Claims**



1. A color image recognition apparatus having an image reading means for reading an image data of an original to detect a color of said original, comprising:

color display coordinate system converting means for converting the image to L, a, b image data including luminance data and color difference data;

pixel color judging means for judging a pixel color of each pixel based upon the luminance data and the color difference data;

means for counting a number of color pixels and a number of black pixels contained in each of a plurality of pixel blocks in the original;

block color judging means for comparing the number of color pixels with the number of black pixels contained in each block to judge the color of each block; and

original color judging means for counting the number of color blocks over the original to judge the color of the original.

5,287,205

GRADATION METHOD FOR DRIVING LIQUID CRYSTAL DEVICE WITH RAMP AND SELECT SIGNAL

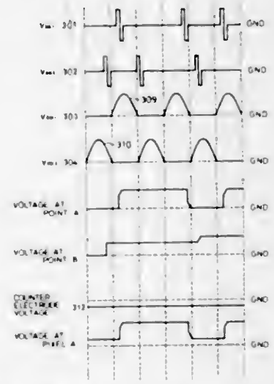
Shunpei Yamazaki, Tokyo; Akira Mase, Aichi, and Masaaki Hiroki, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Mar. 25, 1992, Ser. No. 857,597

Claims priority, application Japan, Mar. 26, 1991, 3-087780

Int. Cl.[5] G02F *1/137*

U.S. Cl. 359—57 **24 Claims**



1. An electro-optical device comprising:

a substrate;

an electro-optical modulating layer provided on said substrate;

a pixel electrode provided on said substrate;

a first signal line provided on said substrate;

a p-channel transistor provided on said substrate and connected to said pixel electrode at one of source and drain terminals of said p-channel transistor, to said second signal line at the other one of the source and drain terminals, and to said first signal line at a gate terminal of said p-channel transistor;

an n-channel transistor provided on said substrate and connected to said pixel electrode at one of source and drain terminals of said n-channel transistor, to said second signal line at the other one of the source and drain terminals of said n-channel transistor, and to said first signal line at a gate terminal of said n-channel transistor;

means for applying a reference signal whose signal level varies through a range of voltages during a duration of T

of said reference signal to one of said first and second signal lines; and

means for supplying a select signal to said complementary transistor pair through the other one of said first and second signal lines which supply gradation information by controlling the time at which said select signal is applied to the other one of said first and second signal lines during the period T of said reference signal, wherein a gradation voltage is supplied to said electro-optic modulating layer by the voltage level of said reference signal at the time of application of said select signal.

5,287,206

ACTIVE MATRIX DISPLAY DEVICE

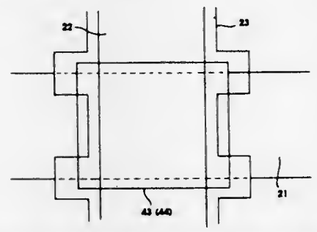
Yuzuru Kanemori, Tenri; Masaya Okamoto, Nara; Katsuhiro Kawai, Yamatotakada; Mitsuaki Hirata; Takehisa Sakurai, both of Tenri, and Hideji Marumoto, Kashiba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 27, 1991, Ser. No. 798,722

Claims priority, application Japan, Nov. 30, 1990, 2-338881

Int. Cl.[5] G02F *1/1333, 1/1343*

U.S. Cl. 359—59 **4 Claims**



1. An active matrix display device comprising a substrate, a first group of buses formed on said substrate, a second group of buses crossing the first group of buses, conductive film wirings formed on the second group of buses, a first layer of a-Si(i) and a second layer of SiNx both between the first and second group of buses,

wherein each of said conductive film wirings being widened where said wiring steps over an edge of the first group of buses, and the conductive film wirings being wider than said second group of buses,

wherein the width of each of said conductive film wirings is greatest where the first group of buses step over the second group of buses, and the width of conductive film wirings at the position of said first and second layers is narrower than that of said first and second layers.

5,287,207

DOUBLE TN CELL LCD DISPLAY WITH DIFFERENT GOOCH & TARRY EXTREMES

Johannes C. H. Mulkens, and Ingrid E. J. R. Heynderickx, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

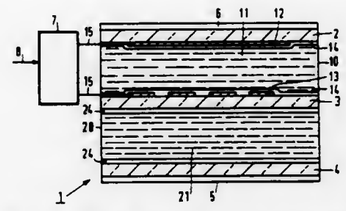
Filed Sep. 2, 1992, Ser. No. 939,279

Claims priority, application European Pat. Off., Sep. 17, 1991, 91202383.5

Int. Cl.[5] G02F *1/133, 1/1335, 1/13*

U.S. Cl. 359—73 **27 Claims**

1. A liquid crystal display device comprising a first liquid crystal cell and a compensating layer between two polarizers, the first cell comprising a twisted neumatic layer of liquid crystalline material having a twist angle ϕ_1, a thickness d_1, an anisotropy Δn_1, and an optical path length difference $d_1.\Delta n_1$ for incident light having a central wavelength λ_0, the compensating layer comprising an optically anisotropic material having a twist angle ϕ_2 in the opposite direction of that of ϕ_1, a thickness d_2, an anisotropy Δn_2 and an optical path length difference $d_2.\Delta n_2$ for incident light having a central wavelength λ_0, characterized in that the twist angle ϕ_1 is between 65° and 115° and the value of $d_1.\Delta n_1/\lambda_0$ for the first liquid crystal cell is determined by a Gooch & Tarry extremum,



while the twist angle ϕ_2 is between −115° and −65° for the compensating layer and the value of $d_2.\Delta n_2/\lambda_0$ is determined by a Gooch & Tarry extremum of a different order than that of the first cell.

5,287,208

LIQUID CRYSTAL DEVICE WITH BENZOCYCLOBUTENE ALIGNMENT LAYER AND PROTECTIVE COATING FOR ELECTRODES

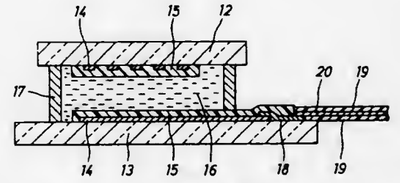
Tadanori Shimoto, and Koji Matsui, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 839,904

Claims priority, application Japan, Feb. 22, 1991, 3-050704

Int. Cl.[5] G02F *1/1337*

U.S. Cl. 359—75 **4 Claims**



1. A liquid crystal display device based on liquid crystal cells having a pair of substrates separated by a sealed-in liquid crystal material and having on each of the opposed surfaces of the substrates a transparent electrode film; conductive interconnection for transmitting a liquid crystal cell driving signal to said transparent electrode film in said liquid crystal cells; and an alignment layer for aligning said liquid crystal material, said alignment layer being made of benzocyclobutene resin, wherein the benzocyclobutene resin comprises polyorganosiloxane crosslinked bisbenzocyclobutene monomer.

5,287,209

IMAGE FORMING DEVICE FOR ENHANCING TONE REPRODUCTION BY CHANGING DOT SIZE

Seiichiro Hiratsuka; Yuji Toyomura, and Keiichi Nakashima, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 7, 1991, Ser. No. 772,829

Claims priority, application Japan, Oct. 9, 1990, 2-271098; Jan. 21, 1991, 3-5458; Jan. 21, 1991, 3-5468; Feb. 25, 1991, 3-29895; Mar. 11, 1991, 3-45164

Int. Cl.[5] G06F *3/12, 15/66*

U.S. Cl. 395—109 **30 Claims**

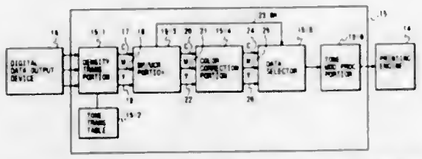
16. An image forming device for performing gradational recording by changing the size of each individual dot according to input image data comprising:

a block partitioning means for partitioning the input image

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data into a plurality of blocks in such a manner that each of the blocks has a plurality of pixels; and

a tone modulation processing means for determining the size of dots which should be printed, by making different input-image-tone-level-to-output-level characteristics cor-



respond to the positions of the pixels of each of the blocks and then determining an output level of a dot corresponding to each pixel of each block corresponding to an input image tone level thereof according to the corresponding characteristic and for printing the dot of each of the pixel of each block.

5,287,210

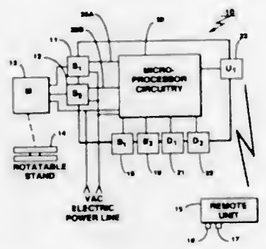
SMART INFRARED CONTROLLER

Siavash Sefidvash, 2950 Sombrosa St., Carlsbad, Calif. 92009

Filed Jan. 13, 1992, Ser. No. 820,752

Int. Cl.[5] H04B *10/10*

U.S. Cl. 359—147 **1 Claim**



1. A motorized television stand, comprising:

a rotatable television stand having means in the form of an electric motor for driving the stand in a clockwise direction and in a counterclockwise direction and means in the form of an infrared controller device for controlling the motor according to infrared signals emitted by an infrared transmitter;

the infrared controller device including means in the form of an infrared detector for detecting infrared signals from the infrared transmitter;

the infrared controller device including means in the form of microprocessor circuitry responsive to the infrared detector for producing first and second outputs, for switching the first output from an OFF state to an ON state if a detected infrared signal has a first predetermined waveform, and for switching the second output from an OFF state to an ON state if a detected infrared signal has a second predetermined waveform;

the infrared controller device being connected to the motor so that the first output causes the motor to drive the rotatable stand in one of the clockwise and counterclockwise directions and the second output causes the motor to drive the rotatable stand in the other one of the clockwise and counterclockwise directions;

the microprocessor circuitry being configured to operate in a first LEARNING MODE in which the microprocessor circuitry produces and stores a first set of LEARNED DATA indicative of the waveform of any infrared signal detected while the microprocessor circuitry is in the first LEARNING MODE;

the microprocessor circuitry being configured to operate in a second LEARNING MODE in which the microprocessor circuitry produces and stores a second set of LEARNED DATA indicative of the waveform of any infrared signal detected while the microprocessor circuitry is in the second LEARNING MODE; and

the microprocessor circuitry also being configured to operate in a WORKING MODE in which the microprocessor circuitry (a) produces a set of WORKING DATA for any detected infrared signal detected while the microprocessor circuitry is in the WORKING MODE such that the WORKING DATA is indicative of the waveform of any such detected infrared signal, (b) switches the first output from an OFF state to an ON state if the set of WORKING DATA matches the first set of LEARNED DATA, and (c) switches the second output from an OFF state to an ON state if the set of WORKING DATA matches the second set of LEARNED DATA.

5,287,211

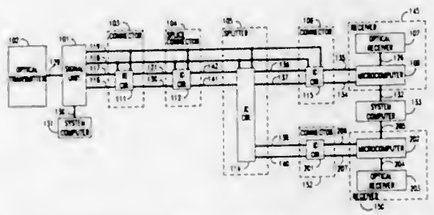
MULTIPATH OPTICAL TRANSMISSION SYSTEM CONTROLLER

Gary J. Grimes, Thornton, and John C. Moran, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 800,672

Int. Cl.[5] H04B *10/12*

U.S. Cl. 359—161 **17 Claims**



1. An apparatus for adjusting optical transmitting means and optical receiving means interconnected by an optical communication means, comprising:

an electrical communication means corresponding to the optical communication means;

electrical transmitting means associated with the optical transmitting means for transmitting an initial packet on the electrical communication means;

means connected to the electrical communication means and responsive to the initial packet for modifying the initial packet to insert characteristics of the optical communication means into the initial packet;

electrical receiving means associated with the optical receiving means for receiving the modified initial packet, for storing the characteristics, and for retransmitting the modified packet to the electrical transmitting means;

the electrical transmitting means responsive to the retransmitted packet for calculating an adjustment to adjust the optical transmitting means and for transmitting the adjustment in an adjustment packet to the electrical receiving means via the electrical communication means; and

the electrical receiving means responsive to the adjustment in the transmitted adjustment packet and to the stored characteristics for adjusting the sensitivity of the optical receiving means.

5,287,212

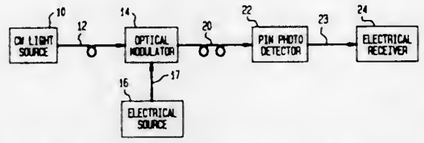
OPTICAL LINK

Charles H. Cox, 31 Berry Corner Rd.; Leonard M. Johnson, 61 Ember La., both of Carlisle, Mass. 01741, and Gary E. Betts, 173 Depot Rd., Westford, Mass. 01886

Division of Ser. No. 411,077, Sep. 7, 1989, abandoned. This application Feb. 11, 1991, Ser. No. 653,885

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—173 **17 Claims**



1. A link for providing a communication path for an electrical signal between an electrical signal source and an electrical signal receiver, the link comprising:

an optical source for providing light;

an optical modulator having an optical input port for receiving light from the optical source, an electrical input port for receiving the electrical signal from the electrical signal source, and an optical modulator output port for providing modulated light;

a photodetector, having an optical input port for receiving the modulated light, and having an electrical output port connected to said receiver for providing a detected electrical output signal;

means for efficient coupling of the modulated light to the optical input port of the photodetector; and

said optical source having a power level, and said modulator having an electrical-to-optical sensitivity in combination such that the electrical transfer efficiency between the electrical input port of said modulator and said electrical output port of said detector is greater than one.

5,287,213

BARIUM STRONTIUM TITANATE PHOTOREFRACTIVE DEVICE AND METHOD FOR MAKING THE SAME

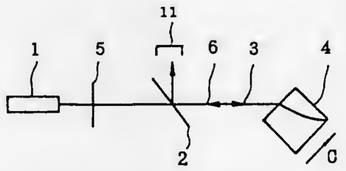
Jian Zhuang; Gansheng Li; Xiancheng Gao; Xibin Guo; Yihao Huang; Zhenzhu Shi; Yaying Weng, and Jian Lu, all of Fuzhou, China, assignors to Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, China

Continuation of Ser. No. 730,558, Jul. 16, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 17,350

Claims priority, application China, Jul. 26, 1990, 90 1 04945.X

Int. Cl.[5] G02B *5/14, 5/23;* **G03H** *1/02*

U.S. Cl. 359—244 **1 Claim**



1. A photorefractive device comprising means to direct at least one incident laser beam into at least one crystal having photorefractive properties to change the space distribution of the refractive index in said crystal whereby a phase conjugate beam is produced using self-pumped mechanism, wherein said crystal is a barium strontium titanate single-domain crystal, of which the chemical composition substantially is $Ba_{1-x}Sr_xTiO_3$ with $0.01<x<0.1$, said crystal being grown by using Czochralski technique and poled by the steps of mechanically applying uniaxial pressure on a polished crystal along the direction of each a-axis of the crystal alternatively, heating said crystal to a temperature of 1–10° C. lower than Curie temperature Tc, applying a DC electric field of 1–7 KV/cm, then cooling said crystal to room temperature in the presence of said electric field, and then removing the electric field.

5,287,214

FABRY-PEROT OPTICAL FILTERS

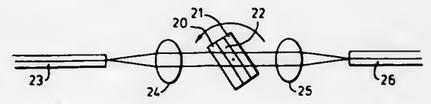
Alexander J. Robertson, Dunmow, and Stephen Day, Harlow, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 8, 1992, Ser. No. 865,306

Claims priority, application United Kingdom, Apr. 12, 1991, 9107819

Int. Cl.[5] G02B *27/28;* **G01B** *9/02*

U.S. Cl. 359—260 **4 Claims**



1. An optical filter including a filter element which is such that a light beam including polarisation noise and input to the optical filter undergoes two filter element transitions with a transformation to an orthogonal polarisation state between said two transitions before being output from the optical filter, whereby to suppress the polarisation noise, wherein the filter element is a Fabry-Perot etalon element, and wherein the etalon element is mounted with provision for rotation about a single axis.

5,287,215

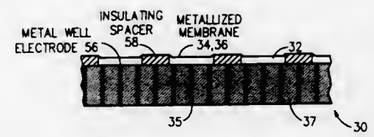
MEMBRANE LIGHT MODULATION SYSTEMS

Cardinal Warde, Newtonville; Thomas N. Horsky, Acton; Craig M. Schiller, Arlington, and George J. Genetti, Beverly, all of Mass., assignors to Optron Systems, Inc., Bedford, Mass.

Filed Jul. 17, 1991, Ser. No. 734,289

Int. Cl.[5] G02B *26/00, 26/08*

U.S. Cl. 359—293 **14 Claims**



1. A membrane light modulator comprising, a charge transfer plate having rear and front surfaces, a multiplicity of conductors extending from the rear surface to the front surface of said plate, said conductors being supported in an insulating matrix, the front surface of said transfer plate having thereon a plurality of potential wells defined by insulating walls, each said potential well constituting a pixel, a plurality of said multiplicity of conductors being provided for each pixel, a deformable reflecting membrane comprising a metal layer spanning said potential wells, means providing an electric potential on said metal layer, means providing a source of electrons for impacting the rear surface of said charge transfer plate, and means providing an image defining charge distribution to one of said last two means to provide an image defining deformation to said metal layer at each pixel.

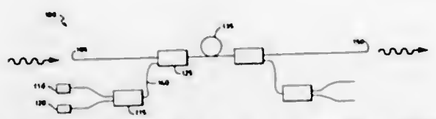
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5,287,216

FIBER AMPLIFIER WITH MULTIPLE PUMPS

Jagannath Chirravuri, Medfield; Ta-Sheng Wei, Wayland, and William J. Miniscalco, Sudbury, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 990,225, Dec. 14, 1992. This application Dec. 16, 1992, Ser. No. 991,001
Int. Cl.[5] H01S *3/30*; H04J *1/00*
U.S. Cl. 359—341 4 Claims



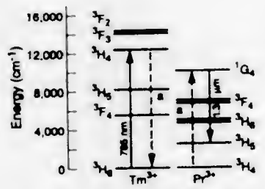
1. A fiber optic amplifier of an optical input signal comprising:
doped fiber means for amplifying said input signal at a first wavelength;
a first pump source means for generating a first optical wave at a first pump wavelength and coupled to said doped fiber means;
a second pump source means for generating a second optical wave at a second pump wavelength and coupled to said doped fiber means;
wherein the first and second pump wavelengths are approximately equal, differing by no more than 5% of the mean of the first and second pump wavelengths and the first and second pump wavelengths are wavelength multiplexed to produce a multiplexed pumping wave prior to combining the first optical wave with the multiplexed pumping wave in the doped fiber means.

5,287,217

OPTICAL AMPLIFICATION AT THE 1.31 WAVELENGTH

Nigel J. Cockroft, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,676
Int. Cl.[5] H01S *3/17*
U.S. Cl. 359—341 6 Claims



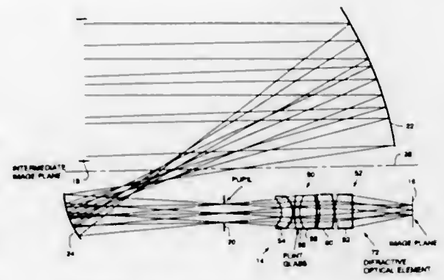
1. An amplifier for a 1.31 μm wavelength comprising:
an optical fiber doped with Tm^{3+} ions and Pr^{3+} ions; and
laser means for pumping said Tm^{3+} ions at a wavelength of approximately 785 nm;
wherein said Tm^{3+} ions transfer energy to said Pr^{3+} ions which amplify signals at said 1.31 μm wavelength.

5,287,218

RE-IMAGING OPTICAL SYSTEM INCLUDING REFRACTIVE AND DIFFRACTIVE OPTICAL ELEMENTS

Chungte W. Chen, Irvine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,858
Int. Cl.[5] G02B *17/08, 27/44, 5/10*
U.S. Cl. 359—365 11 Claims



1. A re-imaging optical system comprising:
an objective including a primary and secondary mirror, said primary and secondary mirrors having conic or higher order aspheric surfaces, said primary mirror receiving and projecting a radiation beam of a viewed object, said secondary mirror positioned to receive and reflect said radiation beam from said primary mirror, said primary mirror forming an intermediate image of said viewed object;
a relay means including a refractive optical element and a diffractive optical element positioned to receive said radiation beam from said secondary mirror to re-image said intermediate image onto an image plane.

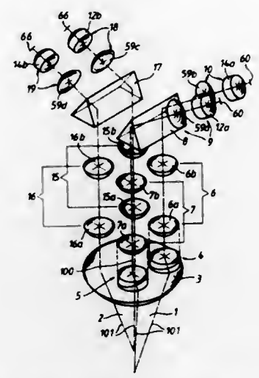
5,287,219

MICROSCOPE FOR TWO OR MORE OPERATORS

Klaus Hildebrand; Klaus-Peter Zimmer, both of Heerbrugg; Heinz Suhner, Rebstein; Juergen Metz, Balgach, and Luitpold Schulz, Widnau, all of Switzerland, assignors to Leica Heerbrugg AG, Heerbrugg, Switzerland

Filed Apr. 22, 1991, Ser. No. 688,090
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1990, 4012552
Int. Cl.[5] G02B *21/22*
U.S. Cl. 359—368 44 Claims

1. A microscope comprising:
a main objective lens having an optical axis;
at least two mutually independent stereoscopic observation beam paths;
a lens system disposed in each stereoscopic observation beam path in parallel with the optical axis of said main objective lens;
said lens system having magnification means for selecting a magnification level;
said magnification means including a first pair of lenses disposed below a second pair of lenses in overlapping configuration;
at least one of said lens systems having focusing means for adjusting a focus plane of an object image;
said focusing means including a first pair of overlapping, rotatable wedges disposed between a first lens of said first pair of lenses and said main objective lens and a second pair of overlapping, rotatable wedges disposed between a second lens of said first pair of lenses and said main objective lens,
wherein said first and second pair of rotatable wedges are mechanically and adjustably associated with said first and second lenses of said first pair of lenses, respectively, for movement along and in parallel with said optical axis of said main objective lens for selecting a plane of focus of an object image.

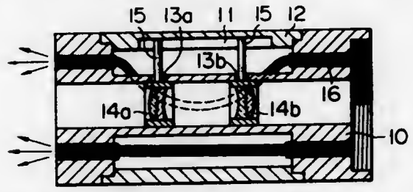


5,287,220

ZOOM LENS HAVING AN ILLUMINATION SYSTEM INCORPORATED THEREIN

Junichi Arai, and Osamu Nakada, both of Yono, Japan, assignors to Moritex Corp., Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 788,538
Claims priority, application Japan, Nov. 7, 1990, 2-116227
Int. Cl.[5] G02B *21/06, 15/14*
U.S. Cl. 359—385 14 Claims



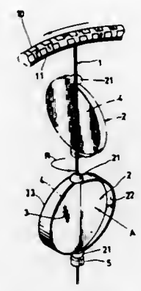
1. A zoom lens and illumination system, comprising:
an inner tube having at least one first cam groove formed therein, said inner tube having first and second opposing ends;
an operating ring having at least one second cam groove formed therein, said operating ring being rotatably mounted to said inner tube;
at least one variable power lens retaining ring axially slidably mounted in said inner tube;
at least one pin extending from said at least one retaining ring and engaged in said at least one first cam groove and said at lest one second cam groove; and
at least one illumination element extending between said inner tube and said operating ring from said first end of said inner tube to said second end of said inner tube.

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DYNAMIC FLASHING REFLECTOR ROTATABLY MOUNTED ON VEHICLE WHEEL

Chih-Kuo Sun, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed May 18, 1993, Ser. No. 62,207
Int. Cl.[5] G02B *5/12*
U.S. Cl. 359—523 5 Claims



1. A flashing reflector comprising:
a rotor disk detachably rotatably mounted on a spoke of a vehicle wheel;
at least a limiting retainer detachably secured on said spoke for limiting said rotor disk on said spoke;
the rotor disk including a retroreflective surface formed on a first surface of the rotor disk capable of reflecting any incident light projecting onto the retroreflective surface for forming a bright surface on the first surface of the rotor disk, a light-absorptive surface formed on a second surface of the rotor disk opposite to the first surface, capable of absorbing incoming lights projecting onto the light-absorptive surface for forming a dark surface, a first blade circumferentially formed on a first semi-peripheral edge portion of the rotor disk and protruding outwardly in a first direction from the retroreflective surface to be generally perpendicular to the retroreflective surface, and a second blade circumferentially formed on a second semi-peripheral edge portion of the rotor disk and protruding outwardly in a second direction from the light-absorptive surface to be generally perpendicular to the light-absorptive surface and opposite to the first blade by an angle of 180 degrees; whereby upon a driving rotation of the vehicle wheel, the rotor disk will face a wind force and will be rotated about a longitudinal axis existing in said spoke to orient the bright surface of the retroreflective surface and then subsequently orient the dark surface of the light-absorptive surface towards an observer's eyes to cause a flashing operation of the rotor disk by continuously repeating a rotation cycle of the bright and dark surfaces on two opposite surfaces of said disk.

5,287,222

GRADED INDEX TYPE PLASTIC OPTICAL TRANSMISSION MEDIUMS AND THE MANUFACTURING METHOD THEREOF

Yoshihiro Uozu; Kouzou Mise; Nobuhiko Toyoda, and Yoshihiko Hoshide, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

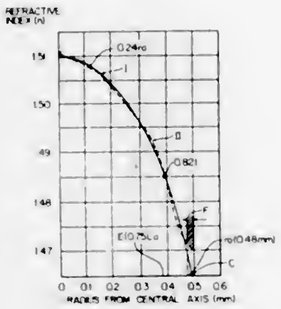
PCT No. PCT/JP92/00210, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/15901, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 26, 1992, Ser. No. 949,479
Claims priority, application Japan, Mar. 1, 1991, 3-057672
Int. Cl.[5] G02B *3/00*
U.S. Cl. 359—654 3 Claims

1. Graded index type optical transmission mediums charac-

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terized by being optical transmission mediums which have a circular cross section with a radius r_o in the range of 0.45±0.1 mm, and characterized by a refractive index distribution in the range of at least 0.25 r_o~0.85 r_o going from a central axis portion to a peripheral surface of said optical transmission medium that provides a refractive index distribution close to the refractive index distribution curve stipulated in Formula (1) below:

$$n(r)=n_o(1-(g^2/2)r^2), \quad (1)$$



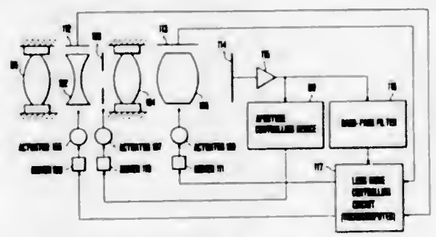
wherein the above described formula, n_o is the refractive index of the central axis portion of said optical transmission medium, and has an approximate value in the range of 1.5±0.1; n(r) indicates the refractive index of the portion positioned at a distance r in the direction of the outer periphery from the central axis portion of said optical transmission medium; g indicates the refractive index distribution constant of said optical transmission medium and is a value of 0.3~0.7; and r indicates the distance in the peripheral direction from the central axis portion of said optical transmission medium.

5,287,223

LENS DRIVE CONTROLLING APPARATUS

Masahide Hirasawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1991, Ser. No. 694,883
Claims priority, application Japan, May 10, 1990, 2-122037; May 28, 1990, 2-139037; May 28, 1990, 2-139038
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—697 **27 Claims**



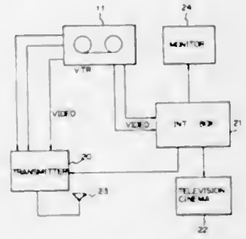
1. A lens driving apparatus comprising:
(A) a first lens;
(B) a second lens driven in follow-up relation to a movement of said first lens on the basis of a predetermined characteristic;
(C) speed detecting means for detecting a driving speed of said first lens; and
(D) controlling means for determining a driving speed of said second lens on the basis of a detection result provided by said speed detecting means.

5,287,224

APPARATUS FOR RECORDING A VIDEO SIGNAL HAVING PROGRAMS AND CONTROL DATA

Kazuhisa Tsuchiya, Tokyo, and Michio Mita, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 542,904, Jun. 25, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,741
Claims priority, application Japan, Jun. 30, 1989, 2-168583
Int. Cl.[5] G11B *27/02*
U.S. Cl. 360—14.3 **6 Claims**



1. A video signal recording apparatus supplied with at least one video signal having vertical blanking intervals and constituting a plurality of programs, and with information data relating to the contents of the respective programs, comprising:
first time code generating means for generating first time code data including bits in which a material code indicative of an attribute of a respective one of said programs is formed, said attribute being selected from a group consisting of a title and a sponsor of said respective one of said programs;
inserting means receiving said video signal and said first time code data for providing an output signal in which said first time code data are inserted into a predetermined period in at least a selected one of said vertical blanking intervals of said video signal;
second time code generating means for generating second time code data including bits in which stop control data are formed; and
recording means for recording said output signal of said inserting means on a video track of a master recording medium and for recording said second time code data on a longitudinal track of said master recording medium such that said stop control data are positioned on the longitudinal track in a predetermined relation to a location on said video track in which said material code is recorded by the recording means such that, when said stop control data are read during a reproducing operation said attribute is reliably displayed.

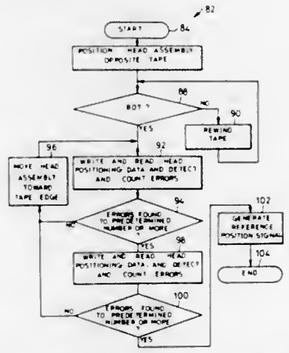
5,287,225

SYSTEM FOR POSITIONING A HEAD IN A TRANSVERSE REFERENCE POSITION ON A MULTITRACK DIGITAL MAGNETIC TAPE

Motoyuki Sukigara, Tokyo, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 738,127
Claims priority, application Japan, Jul. 31, 1990, 2-203342
Int. Cl.[5] G11B *27/36*
U.S. Cl. 360—31 **10 Claims**

1. In a drive unit having a record/playback head assembly for digital data transfer with a multitrack data storage tape, the head assembly being positionable transversely of the tape extending along a transport path in the drive unit, a method of positioning the record/playback head assembly in a transverse reference position on one edge of the multitrack data storage tape in order to enable control over the subsequent positioning of the head assembly with respect to a plurality or multiplicity of record tracks on the tape, which method comprises:
(a) positioning the record/playback head assembly on the tape in a selected transverse position intermediate a pair of opposite edges of the tape;
(b) recording a stream of transverse head positioning data longitudinally in the selected transverse position on the tape by the record/playback head assembly;
(c) reading the recorded stream of transverse head positioning data by the record/playback head assembly;
(d) checking the read stream of transverse head positioning data for errors;
(e) counting errors found in the read stream of transverse head positioning data;



(f) determining whether the errors found in the read stream of transverse head positioning data are less than a predetermined number or not;
(g) moving the record/playback head assembly a unit distance toward one of the opposite edges of the tape if the errors found in the read stream of transverse head positioning data are less than the predetermined number; and
(h) repeating steps (b) through (g) until errors are found in the read stream of transverse head positioning data to the predetermined number or more, the record/playback head assembly being in a transverse reference position on said one edge of the tape when errors are found in the read stream of transverse head positioning data to the predetermined number or more.

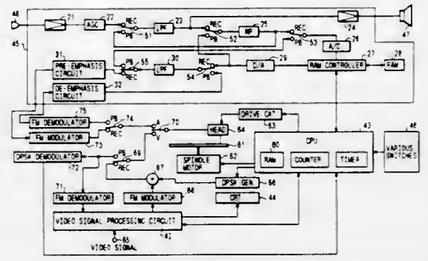
5,287,226

RECORDING AND REPRODUCING SYSTEM FOR RECORDING AND REPRODUCING VIDEO SIGNALS CORRESPONDING TO AN AUDIO SIGNAL

Yoshiaki Sato and Nobuya Sakai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,161
Claims priority, application Japan, Feb. 20, 1990, 2-39367
Int. Cl.[5] H04N *5/781*; G11B *5/02*
U.S. Cl. 360—35.1 **10 Claims**

1. A recording device having an audio/video mode in which a plurality of video signals corresponding to an audio signal are recorded on coaxial tracks on a recording disk, comprising:
a switching means which is operated during receiving the corresponding audio signal to initiate recording of each of the video signals on the disk;
a measuring means for measuring a video signal interval ending with each operation of said switching means;
a recording means for recording the video signals and the corresponding audio signal selectively to the coaxial tracks of the recording disk; and
a control means for controlling said recording means so as to record the video signal when said switching means is operated, together with a next video track data representing presence or absence of a following video track wherein a next video signal corresponding to the audio



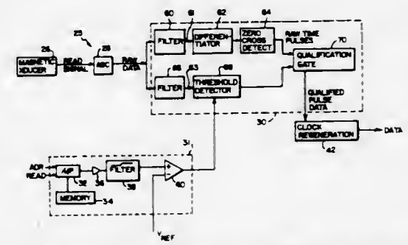
signal is to be recorded and the measurement data of said measuring means, said control means controlling said recording means so as to record the audio signal together with a start video track data as to a start video track where a first of said plurality of video signals is to be recorded.

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TRACK DEPENDENT VARIABLE LEVEL QUALIFICATION PULSE DETECTOR

Robert D. Cronch, Oklahoma City, Okla.; Larry J. Koudele, Louisville, Colo., and Stephen R. Genheimer, Mustang, Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 433,477, Nov. 8, 1989, abandoned. This application Jul. 14, 1992, Ser. No. 913,776
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—45 **14 Claims**



1. An apparatus for qualifying signal pulses from a raw data signal generated by relative movement of a magnetic transducer with respect to addressable portions having stored data disposed in a plurality of radially concentric tracks on a magnetic disk in a disk drive, the apparatus comprising:
a high resolution signal processing channel having a terminal end;
a low resolution signal processing channel having a terminal end;
a qualification gate taking its inputs at the terminal ends of the high resolution and the low resolution signal processing channels and providing a qualified output;
clock and data regeneration means for recovering data and clock signals from the qualified output and providing the data to a host system;
means for applying the raw data signal to the high resolution and low resolution signal processing channels;
the high resolution signal processing channel including zero cross detect means for generating raw timing pulses at the terminal end of the channel;
the low resolution signal processing channel including a

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threshold detector passing initially qualifying pulses to the terminal end of the channel;

a qualification level generator circuit generating a qualification level signal which varies in value depending upon the addressed portion of the magnetic disk, the generator circuit comprising: memory for storing data indicating optimized qualification level signals for a plurality of reference tracks; and a processor unit for receiving address information for an addressed track, for accessing the memory for the optimized qualification level signals and for generating a qualification level generation signal; and

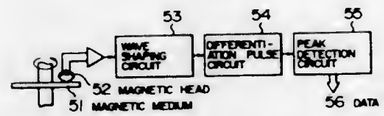
the threshold detector taking the raw data signal and the qualification level generation signal as its inputs for determining initially qualifying pulses from the raw data signal.

5,287,228

PEAK DETECTION METHOD AND APPARATUS THEREFOR

Hideki Sawaguchi, Kodaira; Yasuhide Ouchi, Kodaira, and Hajime Aoi, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,627
Claims priority, application Japan, Aug. 1, 1990, 2-202440
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—57 **35 Claims**



1. A method for peak detection of a magnetic reproducing signal, comprising:

a first detection step of detecting the time interval/amplitude level differences between sequential peaks in waveform of first reproducing signals from a recording medium;

a step of storing the detected time interval/amplitude level differences in a storage corresponding respectively to a plurality of different bit patterns in the signals;

a second detection step detecting the time interval/amplitude level difference between peaks in a waveform of a second reproducing signal from the recording medium; and

a step of comparing the detected time interval/amplitude level difference of the second reproducing signal with the time interval/amplitude level differences stored in the storage to thereby perform peak detection in the waveform of the second reproducing signal continuously on a real time basis.

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METHOD OF AVOIDING ACCIDENTAL OVERWRITING ON MAGNETIC TAPE

Shuichi Saito, Tachikawa; Tatsuo Mori, and Kazuhiko Nakagawara, both of Mitaka, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,816
Claims priority, application Japan, Aug. 30, 1990, 2-229253
Int. Cl.[5] G11B *15/04*
U.S. Cl. 360—60 **8 Claims**

1. A method of writing successively on at least two track locations (T_0, T_2) on a magnetic recording tape so as to avoid accidental overwriting, the tape having a longitudinal reference position (A_0) adjacent one extremity thereof, which method comprises:

(a) providing head means comprising a write head and a read head aligned longitudinally of the tape extending along a predetermined transport path, with the write head disposed upstream of the read head, with a predetermined center to center distance (d) therebetween, with respect to a predetermined traveling direction of the tape along the transport path;

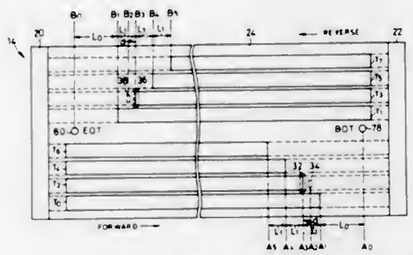
(b) positioning the write head and the read head on a first track location (T_0) on the tape;

(c) driving the tape in the predetermined direction along the transport path;

(d) causing the write head to start writing on the first track location at a first point (A_1) spaced a predetermined distance (L_0) upstream from the longitudinal reference position (A_0) with respect to the predetermined traveling direction of the tape;

(e) positioning the write head and the read head on a second track location (T_2) on the tape;

(f) again driving the tape in the predetermined direction along the transport path;



(g) determining whether the tape bears prewritten data on the second track location or not, on the basis of an output from the read head scanning the tape from the first point (A_1) to a second point (A_2) spaced another predetermined distance upstream from the first point with respect to the predetermined traveling direction of the tape;

(h) causing the write head to start writing on the second track location at a third point (A_3) spaced the center to center distance (d) between the write head and the read head upstream from the second point (A_2) with respect to the predetermined traveling direction of the tape, if the tape has proved to bear no prewritten data on the second track location; and

(i) inhibiting writing on the second track location if the tape has proved to bear prewritten data on the second track location.

5,287,230

VIDEO SIGNAL REPRODUCING APPARATUS WITH INDEX INFORMATION DISPLAY

Kazuya Kamide, Kanagawa, and Noboru Motoyoshi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

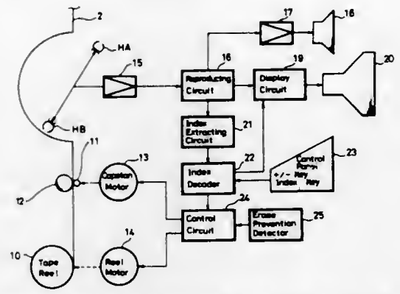
Filed Oct. 8, 1992, Ser. No. 958,425
Claims priority, application Japan, Oct. 14, 1991, 3-265005
Int. Cl.[5] G11B *15/04, 19/04, 15/18, 17/00*
U.S. Cl. 360—60 **4 Claims**

1. A video signal reproducing apparatus for reproducing a signal recorded along inclined tracks on a magnetic video tape in a tape cassette having an erase prevention member, said video signal reproducing apparatus comprising:

detecting means for detecting whether a further signal can be recorded on the magnetic video tape or not based on the status of the erase prevention member;

reproducing means for reproducing the recorded signal from the magnetic video tape for a predetermined period of time when said detecting means detects that no further signal can be recorded on the magnetic video tape;

decoding means for decoding index information contained in the reproduced signal; and



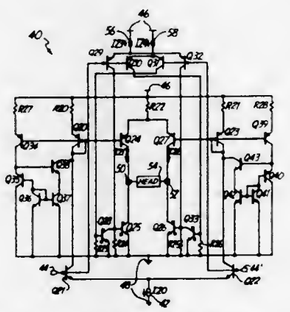
displaying means for displaying the decoded index information in response to a predetermined control command.

5,287,231

WRITE CIRCUIT HAVING CURRENT MIRRORS BETWEEN PREDRIVER AND WRITE DRIVER CIRCUITS FOR MAXIMUM HEAD VOLTAGE SWING

John S. Shier, Apple Valley; Tuan V. Ngo, Eden Prairie, and Douglas R. Peterson, Minnetonka, all of Minn., assignors to VTC Inc., Bloomington, Minn.

Filed Oct. 6, 1992, Ser. No. 957,612
Int. Cl.[5] G11B *5/02, 5/09*
U.S. Cl. 360—68 **19 Claims**



1. A write preamplifier for driving a magnetic head in a magnetic storage system, the write preamplifier comprising:

first and second voltage supply terminals;

first and second head contact terminals for connection to the magnetic head;

a data input for receiving data input signals;

means for generating a predriver current, which is connected to the second supply terminal;

a predriver circuit connected to the data input and having first and second predriver current paths connected between the first supply terminal and the means for generating a predriver current, wherein the predriver circuit directs the predriver current through the first and second predriver current paths as a function of the data input signals;

a write driver circuit having first and second write current paths connected between the first and second supply terminals and connected across the head contact terminals, wherein the first write current path directs current through the head contact terminals in a first direction and the second write current path directs current through the head contact terminals in a second direction, opposite to the first direction; and

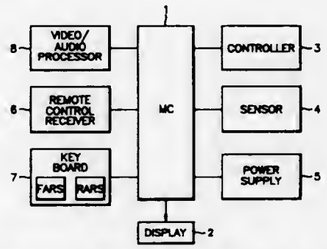
means connected between the predriver circuit and the write drive circuit for mirroring the predriver current in the first and second predriver current paths into the first and second write driver current paths, respectively, such that the means for generating a predriver current is connected with the first and second predriver current paths and separate from the first and second write current paths.

5,287,232

AUTOMATIC TAPE SEARCHING METHOD

Jong-Sam Woo, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 25, 1989, Ser. No. 412,005
Claims priority, application Rep. of Korea, Dec. 31, 1988, 1988-18096
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—69 **10 Claims**



1. An automatic tape searching method in a video tape recorder system having a microcomputer, a mechanism controller, a forward auto random search key, and a rewind auto-random search key, said automatic tape searching method comprising the steps of:

initializing ports of said microcomputer;

initializing contents of a memory in said microcomputer;

setting various initial values of the system;

controlling interrupts of the system after power on reset of said system;

checking for a key actuation;

determining if said key actuation is from an auto-random search key and, if said key input is from an auto-random search key, performing an auto-random search function for a first predetermined time period;

automatically switching to a play mode and playing a tape in said system for a second predetermined time after said first predetermined time period has elapsed; and

repeating said steps of performing an auto-random search and switching to a play mode until a key actuation other than one of said auto-random search keys is detected.

5,287,233

DIGITAL DATA STORAGE MAGNETIC TAPE SYSTEM COMPRISING A SINGLE CHIP PROCESSOR TO CONTROL A TAPE TENSION SERVO, AND A HEAD DRUM SERVO

David R. Lee, San Jose; Horatio H. Lo, Milpitas, and Theodore D. Rees, Mountain View, all of Calif., assignors to R-Byte Inc., San Jose, Calif.

Filed Aug. 6, 1991, Ser. No. 741,089
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—73.14 **11 Claims**

1. In a digital data storage magnetic tape system having a supply reel coupled to a supply reel motor, a take-up reel coupled to a take-up reel motor, a capstan, a tape tension servo-control system comprising:

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tension transducer means for generating a measured tape tension signal responsive to the tape tension;

analog-to-digital converter (ADC) means, coupled to said tension transducer means, for converting the measured tape tension signal to digital representation;

first adder means, coupled to said ADC means, for comparing the measured tape tension signal to a target tension, and for generating a tension error value therefrom;

motor driver means, coupled to the supply reel motor, for driving the supply reel motor;

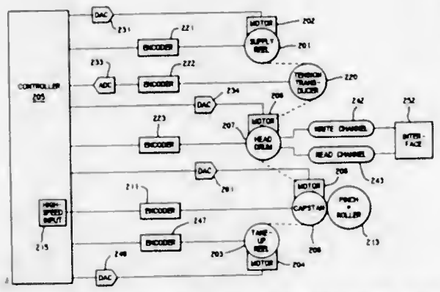
proportional term generating means, coupled to said second adder means, for generating a proportional adjusting term for said motor driver means, said proportional term generating mean having proportional term scaler means for scaling said tension error value,

proportional term limiter means, coupled to said proportional term scaler means, for limiting said scaled tension error value within predetermined upper and lower thresholds to prevent arithmetic overflow;

integral term generating means, coupled to said first adder means, for driving small long-term signal errors to zero;

scaler means for scaling a tape speed being entered thereto and for generating a tape speed feed forward term representative of the tape speed and the amount of tape pack on the supply reel;

second adder means, coupled to said proportional term



generating means, to said integral term gene;ating means, and to said scaler means, and further coupled to said motor driver means, for adding said proportional term, said integral term, and said tape speed feed forward term, and generating therefrom a direction signal for transmission to said motor driver means, and a drive value signal;

third adder means, having a motor energy loss term entered thereto, coupled to said second adder means, for adding said motor energy loss term to said drive value signal and thereby generating a motor energy loss-compensated drive value signal;

limiter means, coupled to said third adder means, for limiting said motor energy loss-compensated drive value signal;

digital-to-analog converter (DAC) means, coupled to said limiter means and to said motor driver means, for converting said motor energy loss-compensated drive value signal to an analog signal and transmitting said analog signal to said motor driver means, which in turn sets a torque responsive to said motor energy loss-compensated limited drive value on the supply reel motor; and

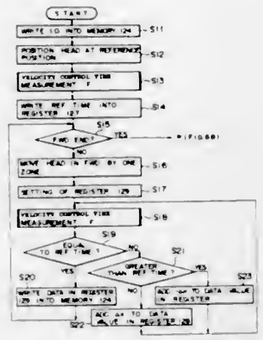
controller means, coupled to said tension transducer means, to said first, second, and third adder means, to said scaler means, to said limiter means, to said proportional term generating means, to said integral term generating means, and to said motor driver means, and having inputs for the tape speed, target tension, and motor energy loss, for controlling the tape tension.

5,287,234

SPEED GAIN CONTROL BASED UPON ACCESS TIME FOR EACH CYLINDER

Nobuyuki Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Dec. 20, 1991, Ser. No. 811,798
Claims priority, application Japan, Dec. 21, 1990, 2-412639
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—78.04 **10 Claims**



1. A servo control method for a magnetic disk apparatus having at least one magnetic disk, at least one head and a motor driving the head, said servo control method comprising the steps of:

(a) measuring a reference velocity control time necessary for a seek operation between two predetermined tracks among a plurality of tracks of the magnetic disk said two predetermined tracks being located at seek starting and ending positions;

(b) measuring a plurality of velocity control times necessary for a plurality of seek operations in which the head moves a distance equal to a distance between said two predetermined tracks, said plurality of seek operations respectively having seek starting positions;

(c) generating a plurality of compensation data for each of said seek operations, which controls the velocity control times obtained at step (b) so that the velocity control times are each equal to said reference velocity control time, said compensation data compensating for variations in a magnetic constant of the motor based on positions of the head; and

(d) adjusting a seek current supplied to the motor located in a servo control loop on the basis of the compensation data generated at step (c).

5,287,235

SLIDER AIR BEARING SURFACE WITH ANGLED RAIL CONFIGURATION

Earl A. Cunningham, and Richard F. Harwood, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

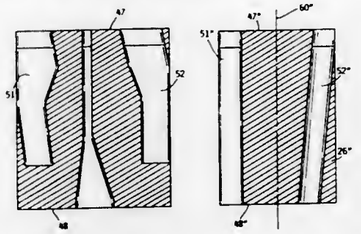
Filed Oct. 28, 1991, Ser. No. 783,477
Int. Cl.[5] C11B *5/60, 15/64, 17/32*
U.S. Cl. 360—103 **41 Claims**

1. An air bearing slider for supporting a recording transducer in relation to a moving recording medium, comprising:

a support structure having side edges, leading and trailing edges, wherein said leading and trailing edges are relative to the motion of said medium, and a longitudinal axis disposed along the length of said support structure from said leading edge to said trailing edge, said longitudinal axis being at a skew angle ranging from zero to positive and negative values with respect to the direction of motion of said recording medium at said support structure;

a pair of side rails disposed along said side edges of said support structure facing said medium;

said side rails being substantially nonidentical and nonsymmetrical about said longitudinal axis, for providing air pressurization when said skew angle is from zero to large



negative or positive values whereby said slider flies at a close and substantially uniform spacing from said moving recording medium; and

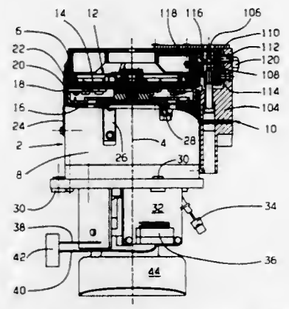
a center rail positioned between said pair of side rails, wherein at least a portion of said center rail is angled with respect to said longitudinal axis.

5,287,236

METHOD APPARATUS FOR RECORDING AND/OR READING INFORMATION ON A MAGNETIC TAPE

Richard Juncker, Chaville, and Pierre Abeille, Antony, both of France, assignors to Schlumberger Industries, Montrouge, France

Filed Jun. 11, 1992, Ser. No. 897,115
Claims priority, application France, Jun. 12, 1991, 91 07133
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—107 **17 Claims**



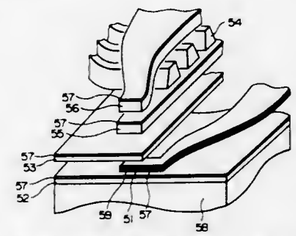
1. Apparatus for recording and/or reading information on a magnetic tape, the apparatus comprising a cylinder provided with a slot and a support for rotary magnetic heads mounted inside said cylinder and enabling said magnetic heads to be positioned relative to the slot of said cylinder, wherein the magnetic head support comprises a turntable and a countertable sharing a common axis of rotation, each being substantially in the form of a disk and each including a peripheral support zone and a central support surface, said turntable including said magnetic heads around its periphery, and means for putting the peripheral support zones into contact with each other and for putting the central support surfaces into contact with each other.

5,287,237

ANTIFERROMAGNETIC FILM SUPERIOR IN CORROSION RESISTANCE, MAGNETORESISTANCE-EFFECT ELEMENT AND MAGNETORESISTANCE-EFFECT HEAD INCLUDING SUCH THIN FILM

Masahiro Kitada, Tokyo; Noboru Shimizu, Tokorozawa; Hideo Tanabe, Higashimurayama; Ryoichi Nakatani, Akigawa; Isamu Yuito, Ome, and Naoki Koyama, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 668,069
Claims priority, application Japan, Mar. 16, 1990, 2-064180; Oct. 26, 1990, 2-287000; Nov. 2, 1990, 2-295326
Int. Cl.[5] G11B *5/30, 5/147;* B32B *15/00*
U.S. Cl. 360—113 **12 Claims**



1. A thin antiferromagnetic film formed of an Fe-Mn-X alloy consisting essentially of Fe, Mn and a third alloying element X and disposed adjacent to a thin permalloy film in order to control a magnetic domain structure of the thin permalloy film, the thin antiferromagnetic film including Fe and Mn with an atomic percentage ratio of Mn to Fe being within a range of from 15/85 to 70/30, wherein:

the element X is Ir and the Fe-Mn-Ir alloy contains Ir within a range of from 4 to 15 atomic %; and

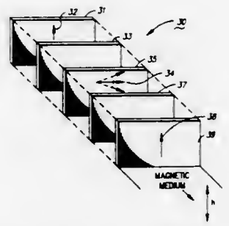
the Fe-Mn-Ir alloy further contains at least one element selected from Ru, Rh and Pt in addition to Ir by 4 to 15 atomic % in total.

5,287,238

DUAL SPIN VALVE MAGNETORESISTIVE SENSOR

Peter M. Baumgart, San Jose, Calif.; Bernard Dieny, Grenoble Credex, France; Bruce A. Gurney, Santa Clara, Calif.; Jean-Pierre Nozieres, Corenc, France; Virgil S. Speriosu, San Jose, and Dennis R. Wilhoit, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1992, Ser. No. 973,106
Int. Cl.[5] G11B *5/39*
U.S. Cl. 360—113 **36 Claims**



1. A magnetoresistive sensor comprising:

a substrate; and

a layered structure formed on said substrate comprising, a first, a second and a third layer of ferromagnetic material, each of said layers of ferromagnetic material separated

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from the adjacent layer of ferromagnetic material by a layer of non-magnetic metallic material, said second layer of ferromagnetic material disposed between said first and third layers of ferromagnetic material, the direction of magnetization being fixed in said first and third layers of ferromagnetic material, the direction of magnetization in said second layer of ferromagnetic material being substantially perpendicular to said fixed directions of magnetization in said first and third layers of ferromagnetic material at zero applied magnetic field.

5,287,239

MAGNETIC HEAD USING HIGH SATURATED MAGNETIC FLUX DENSITY FILM AND MANUFACTURING METHOD THEREOF

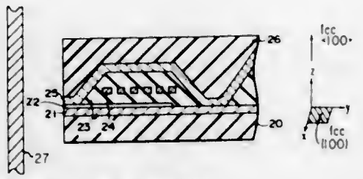
Hitoshi Iwasaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1990, Ser. No. 547,028

Claims priority, application Japan, Jul. 5, 1989, 1-171967; Nov. 1, 1989, 1-282924

Int. Cl.[5] G11B *5/147*; B32B *9/00*

U.S. Cl. 360—126 **12 Claims**



12. A magnetic head, comprising:

a substrate;

a first magnetic film formed on the substrate and containing a polycrystalline Co-rich Fe alloy, which is composed of mostly a face-centered cubic phase having the <100> axis oriented in a direction perpendicular to a surface of the first magnetic film and is composed of partially a body-centered cubic phase;

an insulating film formed on the first magnetic film;

coils buried in the first insulating film for forming a magnetic field; and

a second magnetic film formed on the insulating film, wherein the polycrystalline Co-rich Fe alloy has an X-ray diffraction peak intensity of a face-centered cubic phase (200) plane at least 7 times as high as an X-ray diffraction peak intensity of a body-centered cubic phase (110) plane in a plane parallel with the surface of the first magnetic film.

5,287,240

TAPE CASSETTE

Osamu Koizumi; Kengo Saito; Kazuo Sasaki, and Masayuki Itabashi, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 639,225, Feb. 15, 1991, Pat. No. 5,204,796. This application Feb. 3, 1993, Ser. No. 12,757

Claims priority, application Japan, Dec. 12, 1988, 63-313485; Dec. 15, 1988, 63-317355; Jan. 9, 1989, 64-000929[U]; Jan. 9, 1989, 64-000930[U]

Int. Cl.[5] G11B *23/02*

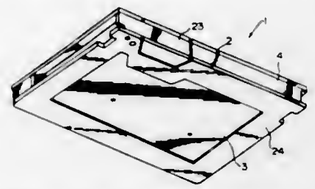
U.S. Cl. 360—132 **4 Claims**

1. A tape cassette comprising:

a pair of reels mounted side by side, on which tape is wound;

a cassette casing for rotatably enclosing said pair of reels therein, said casing partially including an electrically conductive section constructed such that a portion of said conductive section is exposed outside of a recording and/or reproducing apparatus in a state wherein said tape cassette is set to a predetermined loaded position;

an insulating member for electrically insulating said conductive section, for preventing static electricity from being



introduced through an exposed portion of said conductive section into the apparatus; said insulating member comprising the outer wall of said casing surrounding the outer perimeter of said conductive section.

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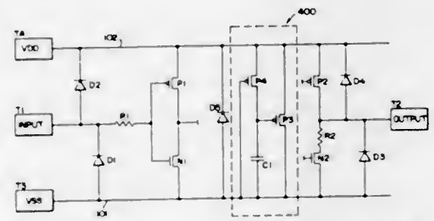
SHUNT CIRCUIT FOR ELECTROSTATIC DISCHARGE PROTECTION

Deepraj S. Puar, Sunnyvale, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Feb. 4, 1992, Ser. No. 830,715

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 **17 Claims**



1. A transient protection circuit for an integrated circuit, at least part of which is a CMOS circuit having a VDD power supply rail and a VSS power supply rail supplying power to said CMOS circuit, comprising:

a first P-channel MOS transistor having a source coupled to said VDD supply rail, a drain coupled to said VSS supply rail, and a gate;

a second MOS transistor having a drain coupled to the gate of the first transistor, a source coupled to said VDD supply rail, and a gate coupled to said VSS supply rail; and,

a capacitor having a first capacitor connection to said gate of said first transistor and a second capacitor connection coupled to said VSS supply rail.

5,287,242

DEGAUSSING APPARATUS

Shigemasa Kamimura, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,347

Claims priority, application Japan, May 1, 1991, 3-128351

Int. Cl.[5] H01F *13/00*

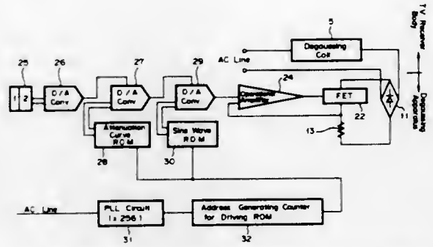
U.S. Cl. 361—150 **7 Claims**

1. A degaussing apparatus comprising:

(a) first memory means for storing therein a signal of an attenuation curve;

(b) second memory means for storing a signal of a sine wave;

(c) multiplying means for multiplying said signal of attenuation curve output from said first memory means and said sine wave signal output from said second memory means; and



(d) driving means for driving a degaussing coil in response to an output of said multiplying means.

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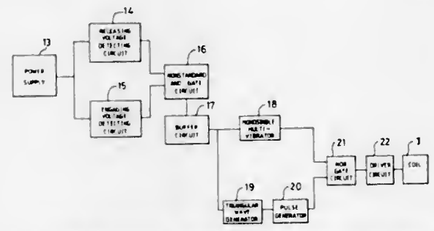
CIRCUIT DEVICE FOR ELECTROMAGNETIC SWITCH

Tien-Cheng Hu, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 25, 1991, Ser. No. 674,876

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—152 **4 Claims**



1. A circuit device for an electromagnetic switch having a magnetic core and a coil to be energized by a power supply which is connected to an AC power source, comprising:

a releasing voltage detecting circuit connected to said power supply for detecting voltage of said power supply and determining whether said power supply voltage has reached a predetermined nonzero releasing voltage, said releasing voltage detecting circuit is adapted to send a "HIGH", i.e., "ON", output signal when said power supply is greater than or equal to said releasing voltage;

an engaging voltage detecting circuit connected to said power supply for detecting said power supply voltage and determining whether said power supply voltage has reached a predetermined engaging voltage, said engaging voltage being greater than said predetermined releasing voltage and said engaging voltage detecting circuit is adapted to send a "HIGH", i.e., "ON", output signal when said power supply is greater than or equal to said engaging voltage;

a gate circuit comprising a nonstandard AND gate connected to said releasing voltage detecting circuit and said engaging voltage detecting circuit, said gate circuit contains a standard AND means by which said gate circuit is designed to be turned "ON", i.e., becomes conducting, when both said releasing voltage detecting circuit and said engaging voltage detecting circuit send a "HIGH" signal thereto, said gate circuit also contains a nonstandard AND means by which said gate circuit maintains "ON" after it is initially turned "ON" until both said releasing voltage detecting circuit and said engaging voltage detecting circuit send a "LOW" signal, at which time said gate circuit will be turned "OFF"; and

a coil-holding circuit, connected to said gate circuit and said coil, for energizing said coil when said gate circuit is turned "ON", and for de-energizing said coil when said gate circuit is turned "OFF".

5,287,244

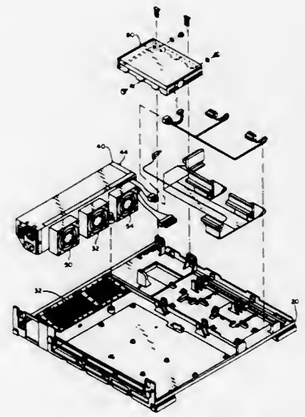
COMPUTER HOUSING WITH LOW NOISE COOLING SYSTEM

Vincent P. Hileman; Robert J. Lajara, both of San Jose; Thomas E. J. Stewart, Sunnyvale; Nagaraj P. R. Mitty, San Jose; Joseph A. Tombari, Mountain View; William L. Gronell, San Ramon; Clifford B. Willis, Tracy; Steven J. Furuta, Santa Clara; Lawreece E. Piercey, San Jose, and Loren R. Davidson, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View

Filed May 19, 1992, Ser. No. 885,527

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—687 **18 Claims**



1. A computer housing with a low noise cooling system comprising:

a base, said base having disposed upon it intake hole means for intaking air;

a cover coupled to said base, said cover having a first surface, a second surface, a third surface, a fourth surface, and a fifth surface, wherein said first surface is perforated with a first plurality of vents and said second surface is perforated with a second plurality of vents;

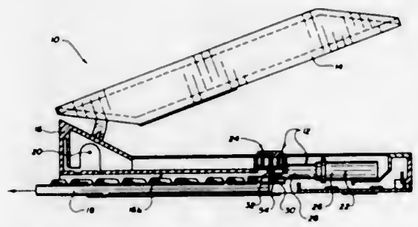
a power source for providing power, said power source coupled to said base, said power source having a first side and a second side, wherein said second side is physically disposed over said intake hole means;

a plurality of computer components disposed upon said base;

a plurality of fans linearly disposed upon said first side of said power source such that said plurality of fans, when operating, cause air to flow through said intake hole means and said first plurality of vents, channeled under said power source, across said second side of said power source, then blow across said plurality of computer components, and output through said second plurality of vents.

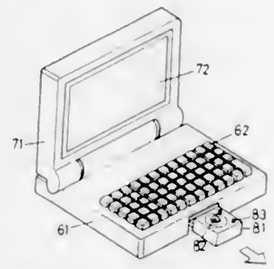
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,245
COMPUTER HAVING EJECTABLE KEYBOARD EJECTED BY DAMPING DEVICE
Samuel A. M. Lacente, Stamford, Conn.; Richard F. Sapper, Milan, Italy; Atsuhisa Naitoh, Ebina, Japan; Seita Horikoshi, Zama, Japan; Mikio Kurihara, Yokohama, Japan, and Kazuhide Yoshihara, Machida, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1992, Ser. No. 975,845
Int. Cl.[5] H05K *7/14;* **G06F** *1/16*
U.S. Cl. 361—680 **25 Claims**



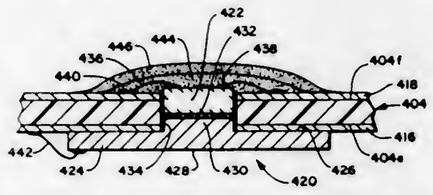
1. A laptop computer having an ejectable keyboard, comprising:
a laptop enclosure;
an ejectable keyboard slidably contained within said laptop enclosure; and
a latching system for lockingly securing said ejectable keyboard within said laptop enclosure, said latching system including a damping device for ejecting said ejectable keyboard from within said enclosure and a mechanical latching device for securing said ejectable keyboard within said enclosure.

5,287,246
DRAWER TYPE TRACK BALL FOR PORTABLE COMPUTERS
Tooy Sen, Taipei, Taiwan, assignor to Orete Systems, Inc., Taipei, Taiwan
Filed May 27, 1992, Ser. No. 888,718
Int. Cl.[5] H05K *7/02;* **G06F** *1/16;* **H05K** *7/14*
U.S. Cl. 361—683 **1 Claim**



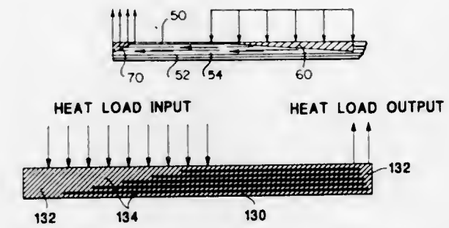
1. A drawer type cursor controller for a computer, comprising:
a drawer-like casing, received in a lower part of a housing of a computer below a keyboard thereof, for accommodating an input means therein;
means for slidably supporting said drawer-like casing; and
input means disposed in the drawer-like casing to be conveniently pushed into said lower part when said cursor controlling means is not in use and being able to be conveniently pulled out of said lower part when said cursor controlling means is to be manipulated, said input means consisting of a track ball,
wherein said casing is supported to be slidable to a pulled out position centrally in front of the keyboard that permits an operator to use either right or left thumb to smoothly move said track ball without hindering operation on said keyboard by said operator with other fingers of either hand.

5,287,247
COMPUTER SYSTEM MODULE ASSEMBLY
Geard D. Smits, Los Gatos, and Leonardo Valoesencher, Sunnyvale, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.
Division of Ser. No. 586,770, Sep. 21, 1990. This application Aug. 26, 1992, Ser. No. 935,541
Int. Cl.[5] H05K *7/20*
U.S. Cl. 367—707 **11 Claims**



1. Assembly of a semiconductor device to a printed circuit board, comprising:
an unpackaged semiconductor device generating heat when operating;
a printed circuit board having two faces;
a first conductive layer disposed on one face of the PCB having conductive paths for making multiple connections to the semiconductor device;
a second conductive layer disposed on the opposite face of the PCB;
a heat sink for dissipating heat generated by the semiconductor device when operating;
wherein the heat sink comprises:
a flat, thin plate of thermally conductive material having an area substantially larger than the semiconductor device;
a button extending from a surface of the plate and having an area approximately equal to that of the semiconductor device;
wherein:
the unpackaged semiconductor device is mounted to the button;
the PCB has a through hole extending from one face to the opposite face;
the semiconductor device, mounted to the heat sink, is inserted through the through hole from the opposite face of the PCB towards the one face of the PCB, and is connected to the first conductive layer;
the surface of the plate is in contact with and electrically connected to the second conductive layer;
the heat sink forms a biasing connection for the semiconductor device mounted to the button;
when the heat sink and device mounted thereto are assembled to the PCB, the button extends in the through hole partially towards the one face of the PCB; and
when the sink and device mounted thereto are assembled to the PCB, the semiconductor device extends from within the through hole to above the one face of the PCB.

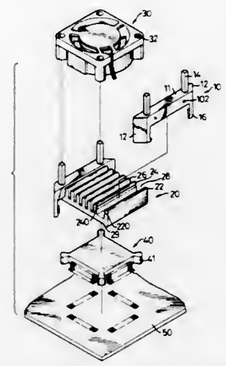
5,287,248
METAL MATRIX COMPOSITE HEAT TRANSFER DEVICE AND METHOD
Mark J. Montesano, Fairfax, Va., assignor to E-Systems, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 686,604, Apr. 17, 1991, Pat. No. 5,111,359. This application May 1, 1992, Ser. No. 877,203
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—708 **17 Claims**



1. A lightweight electronic component mounting board suitable for use in an airborne environment comprising:
(a) a generally flat core adapted to receive an electronic component in a heat transfer relationship to a mounting surface, said core (1) having a depth relatively small when compared to the length and width thereof and (2 being comprised of heat conducting fibers in a metal matrix, said conducting fibers being disposed generally parallel to said mounting surface with their longitudinal axis generally parallel to the length of said core;
(b) a first wedge carried by said core and adapted to be in a heat transfer relationship to a heat generating electronic component when such component is mounted on said board, said first wedge extending into the depth of said core in a heat transfer relationship with said conducting fibers embedded therein; and
(c) a second wedge carried by said core adjacent one longitudinal end thereof, said second wedge (1) being adapted to transfer heat to a heat sink, (2) extending across the width of said core a distance substantially the same as the width of said first wedge, (3) extending into the depth of said core a distance substantially the same as the depth of said first wedge, and (4) being in a heat transfer relationship with said conducting fibers embedded therein,
whereby heat generated by a component mounted on said board may be conducted by said first wedge into the depth of said core into contact with said conducting fibers therein and to said second wedge for transfer to a heat sink.

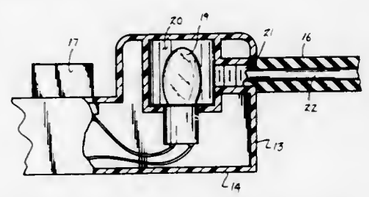
5,287,249
FIN ASSEMBLY FOR AN INTEGRATED CIRCUIT
Chien-Chang Chen, Yi Lan Hsien, Taiwan, assignor to Global Win Technology Co., Ltd. and Huei Bin Enterprise Corp., both of Taiwan
Filed Jul. 7, 1993, Ser. No. 88,845
Int. Cl.[5] H05H *7/20*
U.S. Cl. 361—718 **4 Claims**

1. A fin assembly for dissipating heat generated by an integrated circuit comprising:
a fin including a bottom surface for contacting an upper surface of an integrated circuit and an upper surface from which a plurality of ridges extend, each two adjacent said ridges defining a channel therebetween; and
a mounting piece removably mounted in said channel defined by each outermost said ridge and its corresponding adjacent said ridge for releasably mounting said fin to the integrated circuit, each said mounting piece including a base and two beveled sides each extending downward to form a distal snapping end adapted to releasably engage with a protrusion projecting from each of four corners of



the integrated circuit, and a pair of pins extending upward from a top of the base for mounting a fan.

5,287,250
MUZZLE-LOADER BORE LIGHT APPARATUS
Robert D. McAllister, HCR 1, Box 64, Fort Jackson, N.Y. 12965
Filed Apr. 12, 1993, Ser. No. 44,831
Int. Cl.[5] F21L *7/00, 15/02;* **F21V** *8/00*
U.S. Cl. 362—32 **2 Claims**



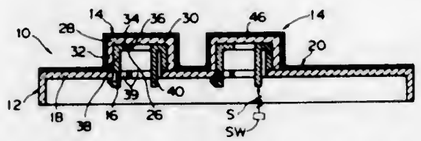
1. A muzzle-loader bore sight apparatus, comprising,
a housing, the housing having a top wall spaced from a bottom wall, and a front wall, and
a battery member contained within the housing, and
and on/off switch mounted to the housing in electrical communication with the battery, and
an elongate tube mounted to the front wall, and
the tube having a tube forward end spaced from the housing and tube rear end arranged for abutment with the front wall, and
illumination means in operative communication with the housing for directing illumination from the tube forward end, and
the illumination means includes an illumination bulb mounted within the housing, and wherein the housing includes a bulb cavity compartment within the housing having an illumination bulb contained therewithin, with the illumination bulb in electrical communication with the on/off switch and the battery, and the tube rear end arranged for reception within the bulb cavity, and the illumination means further including a fiber optic cable coextensive with the tube extending from the tube rear end to the tube forward end, with the fiber optic cable arranged in adjacency to the illumination bulb for directing illumination from the tube forward end, and
the tube rear end further includes an externally threaded portion arranged for threaded reception through the hous-

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ing permitting removal of the tube relative to the housing for storage and transport of the tube and the housing, and

the tube includes a tube first leg and a tube second leg, wherein the tube first leg and the tube second leg are arranged in an oblique angle relative to one another, and the tube having a clamp member mounted to the second leg in adjacency to the first leg, the clamp member including a support rod fixedly mounted to the clamp member, the support rod including a spherical rod end spaced from the second leg, and a socket mounted to the spherical rod end, and the socket having a mirror plate fixedly mounted to the socket, with the second leg having a second leg axis, and the mirror plate oriented at an acute included angle relative to the axis permitting viewing within a barrel bore when the second leg is directed into the barrel bore.

5,287,251
CONTROL PANEL
Tokichi Kato, Kanagawa, Japan, assignor to Marui Industry Co., Ltd., Kanagawa, Japan
Filed Feb. 4, 1993, Ser. No. 13,377
Claims priority, application Japan, Feb. 5, 1992, 4-010971[U]
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—85 **2 Claims**



1. A control panel including a cover plate and at least one cap-shaped control key or button which is movable on the cover plate to operate an electrical circuit installed behind the cover plate, in which, when the key is actuated, a light set behind the key is turned on to illuminate the key from the backside thereof so as to light up an indication sign formed on the front surface of the key, said cover plate including a plastic substrate having at least one opening and a light-block coating formed on the surface of the substrate, said key including a cap-shaped plastic substrate and a light-block coating formed on the outer surface of the generally cap-like shaped substrate, the light-block coating on the top surface of the cap-shaped substrate being partly removed to form said indication sign which permits the light illuminated from the backside of the key to pass therethrough, the side wall of the cap-shaped substrate including a light-block cylindrical portion for preventing the light from leaking out through the side wall.

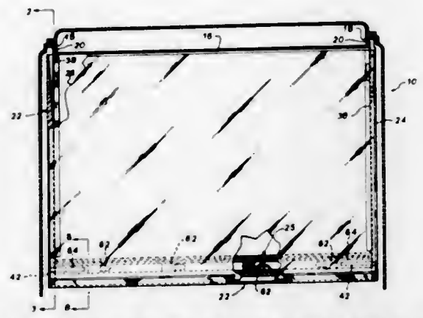
5,287,252
ADJUSTABLE ILLUMINATED REFRIGERATOR SHELF
Jerome Caruso, Lake Forest, Ill., assignor to Sub-Zero Freezer Company, Inc., Madison, Wis.
Filed Jan. 14, 1993, Ser. No. 4,757
Int. Cl.[5] F25D *27/00*
U.S. Cl. 362—92 **9 Claims**

1. In a refrigerator having a cabinet and a back wall having vertical standards forming recesses on each side of the back wall, a number of slots in each of said standards and an adjustable shelf assembly adapted to be mounted on the back wall, said shelf assembly comprising:

a pair of brackets mounted on the standards in the back wall,

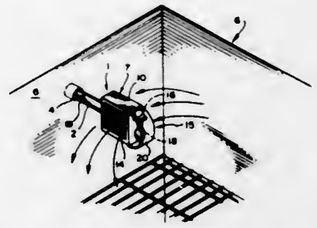
an electrically conductive strip mounted on each of said brackets,

each strip including a formed tab at one end for engaging one of the slots in each of the recesses,



a panel supported by said brackets to form a shelf in the cabinet and a light assembly mounted on the front edge of said panel.

5,287,253
COMBINED LIGHT AND FAN ASSEMBLY
Kurt T. Blorstad, 5207 Grenock Dr., Lothian, Md. 20711
Filed Mar. 25, 1993, Ser. No. 38,826
Int. Cl.[5] F27D *21/02*
U.S. Cl. 362—92 **6 Claims**



1. A combined light and fan assembly comprising, a housing having an elongated neck portion, a threaded electrical plug on one end of the elongated neck portion adapted to be threaded into an electrical socket, a cage assembly on the other end of said elongated neck portion, a motor driven fan mounted in said cage assembly, and a lamp fixture mounted on the exterior of said cage assembly, said motor driven fan and lamp fixture being electrically connected to said electrical plug.

5,287,254
ILLUMINATED WRITING TABLE
Richard D. Solman, 499 Main St., Apt. #1, Caribou, Me. 04736
Filed Jan. 25, 1993, Ser. No. 8,150
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—98 **1 Claim**

1. An illuminated writing table, comprising,

a housing, with the housing having a floor, a first end wall of a first height spaced from a second end wall of a second height, wherein the second height is greater than the first height, and spaced trapezoidal side walls, and a top wall perimeter frame mounted over the first side wall, the second end wall, and the side walls, with the top wall perimeter frame having a central opening directed therethrough, and the top wall perimeter frame canted from the second end wall towards and downwardly to the first end wall relative to the floor, wherein the central opening includes a central opening flange projecting into the central opening from the top wall perimeter frame below a top surface of the top wall, and

a transparent plate is arranged for mounting upon the central opening flange coextensively within the central opening, and

the housing includes a housing cavity between the top wall perimeter frame and the floor, with an illumination bulb mounted within the housing cavity, and an on/off switch directed through the housing for selective illumination of the illumination bulb, and

the transparent plate includes a first transparent plate spaced from a second transparent plate, and a medial transparent plate coextensive with and medially of the first transparent plate and the second transparent plate, and the medial transparent plate having opaque first and second spaced margin lines arranged in a parallel relationship, and opaque guide lines are orthogonally directed between the first and second margin lines, and

a first spring clip mounted to the top wall perimeter frame in adjacency to one of the side walls extending over the transparent plate, and a second spring clip mounted to the top wall perimeter frame extending over the transparent

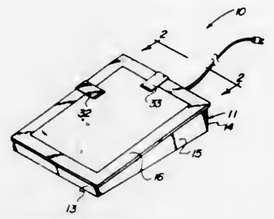


plate to secure a document between the first spring clip and the second spring clip relative to the first transparent plate, and

one of the side walls includes a side wall opening directed therethrough, and a further transparent plate is arranged for sliding reception through the housing side wall from within the housing cavity for replacement of the plate, and

a lap plate, the lap plate having a plurality of lap plate openings, and the floor having a plurality of resilient boss members, and the resilient boss members are received within the lap plate openings for mounting the housing onto the lap plate, the lap plate further including a first wing plate and a second wing plate mounted on opposed sides of the lap plate, with the first wing plate and the second wing plate coplanar with the lap plate, the first wing plate and the second wing plate including respective first and second arcuate saddle members mounted to the first wing plate and the second wing plate, wherein the first and second arcuate saddle members include respective first and second semi-cylindrical cavities for positioning the first and second arcuate saddle members upon an individual's legs.

5,287,255
COMBINATION FLASHLIGHT-BATON
Forrest E. Strodtman, P.O. Box 1237, Channelview, Tex. 77530
Filed Mar. 3, 1992, Ser. No. 845,219
Int. Cl.[5] F21L *1/00*; **A45B** *3/04, 3/12*; **A63B** *15/02*
U.S. Cl. 362—102 **21 Claims**



1. A combination flashlight-baton for use as a flashlight and a self-defense baton comprising;

a flashlight barrel for containing a battery source of power;

a flashlight head assembly connected at one end of said flashlight barrel including a substantially parabolic reflector, a planar lens, a lamp bulb receptacle, and a lamp bulb carried therein;

a switch positioned adjacent one end of said flashlight barrel and operatively connected with said battery source of power and said lamp bulb to energize said lamp bulb;

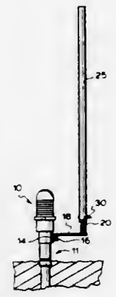
a tubular adapter member removably secured substantially in said flashlight barrel;

at least one tubular member having an inward end and a distal end and slidably disposed within said tubular adapter member and movable between a retracted position substantially within said tubular adapter member and an extended position extending outwardly therefrom;

retaining spring means within said tubular adapter member for releasably engaging said at least one tubular member inward end and retaining said at least one tubular member in the retracted position; and

said at least one tubular member being disengaged from said retaining spring means and extended outwardly by centrifugal force acting thereon upon a slinging motion of said flashlight barrel for use as a self-defense baton.

5,287,256
MARKER FOR EDGE LIGHTS
Reginald S. Bennett, Toronto, and Gary Hretsina, Ajax, both of Canada, assignors to Reginald Bennett International Inc., Ajax, Canada
Filed Apr. 6, 1993, Ser. No. 46,266
Int. Cl.[5] F21S *1/14*
U.S. Cl. 362—152 **20 Claims**



1. Edge light marker, comprising:

an upwardly extending standard,

means for attaching said standard in upright attitude to an aviation edge light mount, and extending thereabove, a sleeve slidable longitudinally onto and off said standard,

said sleeve being dimensioned to be supported by said standard,

the outer surface of said sleeve being retroreflective.

5,287,257
HAZARD WARNING DEVICE
J. Alan Schier, Tujunga, Calif.; Karl G. Thompson, Willowdale, Canada, and Gregg F. Thompson, Dallas, Tex., assignors to G. A. Thompson Company, Inc., Dallas, Tex.
Continuation of Ser. No. 880,055, May 7, 1992, Pat. No. 5,203,624. This application Feb. 8, 1993, Ser. No. 18,451
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—186 **3 Claims**

1. A portable electric warning light, comprising:

an elongated housing including electrically conductive

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means, two ends and an internal chamber adapted for receiving battery means;

closure means for closing one end of said housing and for activating said warning light, said closure means connected to said housing at said one end thereof so that said closure means is movable between first and second positions relative to said housing and so that movement of said closure means to said second position causes the battery means to be electrically connected to said electrically conductive means of said housing;

a gas discharge flash tube connected to the other end of said housing;



a cover overlying said gas discharge flash tube and connected to said housing at said other end thereof, said cover having a side wall and an end wall both of material which permits passage of visible light therethrough; and

electronic means, connected to said gas discharge flash tube and said housing, for causing said gas discharge flash tube to emit flashes of light visible through said cover when the battery means is received in said chamber and said closure means is connected to said housing at said second position, wherein said electronic means includes a flash capacitor disposed in said housing.

5,287,258

HEADLAMP FOR MOTOR VEHICLES

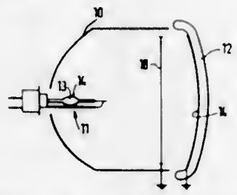
Bodo Remus, Reutlingen/Altenburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 777,282, Nov. 27, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 15,472

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1990, 4010829; Jan. 22, 1991, 4101722

Int. Cl.[5] **F21M** *3/14*

U.S. Cl. 362—256 **9 Claims**



1. A headlamp for motor vehicles, comprising a reflector having a light output opening; a gas discharge lamp arranged in said reflector; a screen covering said light output opening; and means for shielding off interference radiation emitted by said gas discharge lamp and including a transparent interference-radiation-absorbing metallic coating located between said gas discharge lamp and said light output opening.

5,287,259

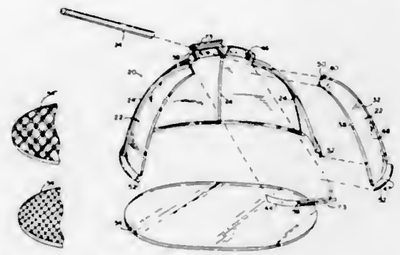
LIGHT REFLECTOR ASSEMBLY

Terry L. Lautzenheiser, Grand Haven, Mich., assignor to Lorin Industries, Inc., Muskegon, Mich.

Continuation-in-part of Ser. No. 802,007, Nov. 27, 1991, abandoned. This application Dec. 19, 1991, Ser. No. 810,478

Int. Cl.[5] **F21V** *7/00, 1/06*

U.S. Cl. 362—341 **32 Claims**



1. A reflector for a luminaire, comprising:

a plurality of segments each having side edges with flanges thereon, a top edge with a flange thereon, a bottom edge, and a reflective inner surface, said plurality of segments being arranged to form a geometrically shaped hollow shell with said bottom edges arranged to form an outlet opening at one end for emitting light therethrough, said geometrically-shaped hollow shell defining a central axis;

collar means for positioning and retaining said reflector to a light source on said central axis relative to said reflective inner surfaces, said collar means attaching to said flanges of said top edges; and

interconnecting means for interconnecting said flanges of said side edges, said interconnecting means including a plurality of extrusions each removably engaging the opposing flanges on adjacent side edges of said segments to retain said segments against said connector so as to orient said reflective inner surfaces of said segments relative to each other, whereby said plurality of segments can be shipped and stored in an unassembled state and assembled and repaired on site.

5,287,260

GTO RECTIFIER AND INVERTER

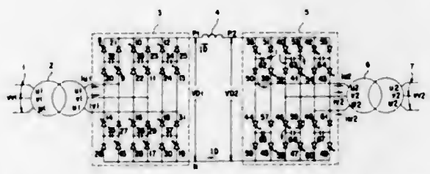
Hiroshi Uchino, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 21, 1992, Ser. No. 964,075

Claims priority, application Japan, Oct. 21, 1991, 3-272908; Oct. 28, 1991, 3-280258

Int. Cl.[5] **H02M** *7/155, 7/515*

U.S. Cl. 363—58 **19 Claims**



1. A power converting apparatus for controlling switching of self turn-off type semiconductor devices each having a cathode, an anode, and a gate, comprising:

conversion means having a plurality of switch units and performing power conversion,

the switch units each having first and second self turn-off type semiconductor devices, first and second diodes, and a capacitor,

the cathode of the first self turn-off type semiconductor device being connected to the anode of the first diode, the cathode of the second diode being connected to the anode of the second self turn-off type semiconductor device, a first junction including a common junction between the cathode of the first self turnoff type semiconductor device and the anode of the first diode, a second junction including a common junction between the cathode of the second diode and the anode of the second self turn-off type semiconductor device, one electrode of the capacitor being connected to the first junction, the other electrode of the capacitor being connected to the second junction.

5,287,261

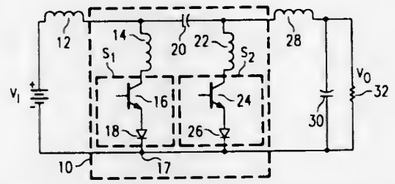
POWER CONVERSION USING ZERO CURRENT SOFT SWITCHING

Mehrdad Ehsani, Bryan, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Jun. 23, 1992, Ser. No. 902,872

Int. Cl.[5] **H02M** *3/135*

U.S. Cl. 363—124 **23 Claims**



1. A zero-current soft switching power converter, comprising:

a link capacitor having a first and a second electrode, said link capacitor operable to store and discharge electric charge;

a source switch coupled to said first electrode and operable to switch when substantially zero current passes through said source switch; and

a load switch coupled to said second electrode and operable to switch when substantially zero current passes through said load switch,

said source and load switches switched in a switching cycle such that voltage generated across said link capacitor reverses polarity each switching cycle to effect the substantially zero current switching conditions of said source switch and said load switch.

5,287,262

HIGH VOLTAGE RESONANT INVERTER FOR CAPACITIVE LOAD

Jurgen Klein, Aachen, Fed. Rep. of Germany, assignor to Heraeus Lasersonics, Inc., Milpitas, Calif.

Filed Apr. 13, 1992, Ser. No. 867,737

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1991, 4112161

Int. Cl.[5] **H02M** *7/538*

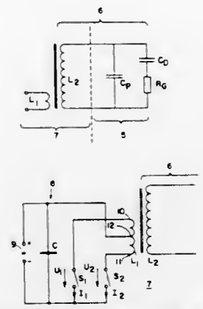
U.S. Cl. 363—134 **5 Claims**

1. A high voltage generator for an electrical load having capacitive components, comprising:

a main inductor connector across and in parallel with the electrical load, said main inductor and the load constituting a resonant circuit;

an auxiliary inductor magnetically coupled to the main inductor;

a drive circuit including the auxiliary inductor and a pair of parallel connected switches connected across an alternating current source having a peak current to energize periodically the electrical load; and



means for opening and closing the pair of parallel switches alternately in push pull relationship at times to apply to the auxiliary inductor a current below the peak current of the current source.

5,287,263

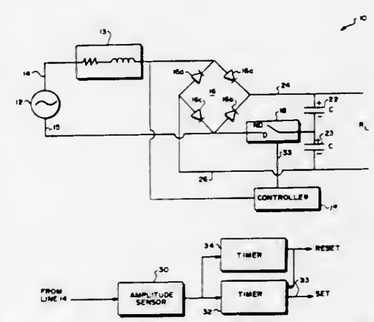
INRUSH CURRENT CONTROL CIRCUIT

Marcel Shilo, Framingham, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1992, Ser. No. 907,378

Int. Cl.[5] **H02M** *7/19*

U.S. Cl. 363—143 **3 Claims**



1. A power supply for use with an AC power source, the power supply including:

A. a rectifying bridge with input lines for connecting to the AC power source, the bridge rectifying an input from the AC power source;

B. bulk capacitors connected to the rectifying bridge;

C. a switch connected with a first end connected between the capacitors and a second end connected to the rectifying bridge, the switch having a non-conducting state which allows the capacitors to charge in series during each half-cycle of the AC input and a conducting state which allows the capacitors to charge separately during a positive half-cycle and during a negative half-cycle; and

D. a switch controller for maintaining the switch in the non-conducting state for a predetermined time after connection of the rectifying bridge to the AC power source, the switch controller then setting the switch to the conducting state if the AC input provided by the AC power source is 110–120 volts, the switch controller including

i. a first timer for counting the time since connection of the

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AC power source to the rectifying bridge, the first timer timing-out after a predetermined time;

ii. an amplitude sensor for determining the voltage range of the AC input and resetting the first timer if the amplitude sensor determines that the AC input is within a voltage range of 220–240 volts;

iii. switch setting means for setting the switch to the conducting state in response to the first timer timing-out;

iv. a second timer for counting the time since the AC input signal from the AC power source fell below a predetermined minimum level; and

v. the switch setting means sets the switch to the non-conducting state in response to the second timer timing-out.

5,287,264

MULTICONTROLLER APPARATUS, MULTICONTROLLER SYSTEM, NUCLEAR REACTOR PROTECTION SYSTEM, INVERTER CONTROL SYSTEM AND DIAGNOSTIC DEVICE

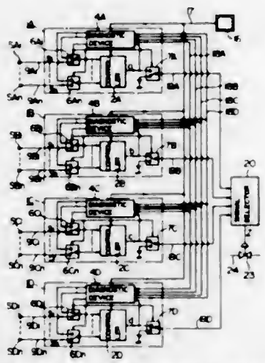
Setsuo Arita, Hitachiota, and Tetsuo Ito, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 387,982, Aug. 1, 1989, abandoned. This application Apr. 7, 1993, Ser. No. 44,897

Claims priority, application Japan, Aug. 5, 1988, 63-194435

Int. Cl.[5] G06F *15/46*; **G21C** *17/00*

U.S. Cl. 364—184 **16 Claims**



1. A multicontroller apparatus having a plurality of control units each including a controller and a diagnostic device for making a diagnosis of said controller, said diagnostic device comprising:

a judging unit for judging states of other control units of said control units based on output signals of diagnostic devices of said other control units; and

a diagnosing unit for executing a diagnosis of said controller which is an object of diagnosis made by said diagnostic device when said judging unit judges that more than a predetermined number of control units of said other control units are in a control state.

5,287,265

INTERFACING METHODS FOR USE IN INPUTTING OPERATOR-SELECTABLE CONTROL PARAMETERS TO A CENTRIFUGE INSTRUMENT

Richard A. Hall, Southbury, and Gary J. Mello, Naugatuck, both of Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

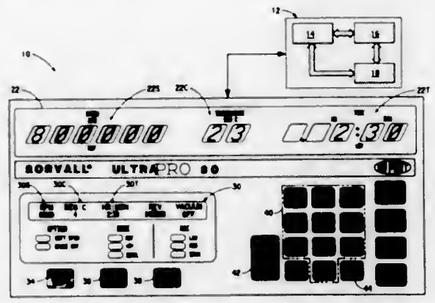
Filed Feb. 7, 1992, Ser. No. 832,539

Int. Cl.[5] G05B *15/00*; **B04B** *13/00*

U.S. Cl. 364—188 **15 Claims**

1. In a method for inputting an operator-selectable value for an operational parameter of a centrifuge instrument, the value of the operational parameter being an N-significant digit number having a first subset of n significant digits and a second subset of significant digits, with $n<N$, the method comprising the steps of:

(a) for the entry by an operator of the first subset of significant digits, causing the value of the first subset of significant digits to be displayed as the product of a first multiplier; and



(b) starting with the entry by an operator of one of the digits in the second subset of significant digits, causing each digit of the first subset along with the digits of the second subset as each digit in the second subset is being entered to be displayed as a product of a second, different, multiplier.

5,287,266

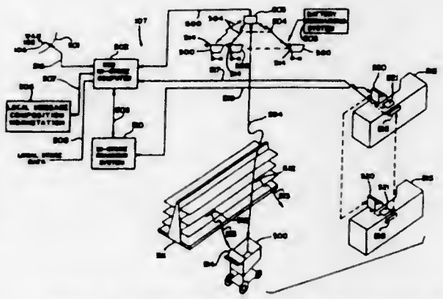
INTELLIGENT SHOPPING CART SYSTEM HAVING CART POSITION DETERMINING CAPABILITY

John Malec, Chicago, and Joseph P. Moser, Glendale Heights, both of Ill., assignors to VideOcart, Inc., Chicago, Ill.

Continuation of Ser. No. 435,500, Jul. 13, 1989, which is a continuation-in-part of Ser. No. 99,288, Sep. 21, 1987, Pat. No. 4,973,952. This application Apr. 12, 1993, Ser. No. 45,826

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **6 Claims**



1. A system for determining the position of a shopping cart within a retail establishment comprising:

means at a first location in said retail establishment for spontaneously transmitting a position signal;

means associated with said shopping cart for receiving said position signal;

means for generating positional data from said position signal, wherein said positional data are representative of the position of said shopping cart within said retail establishment;

means for storing said positional data; and

means for analyzing said stored positional data to determine the path taken by said shopping cart within said retail establishment.

5,287,267

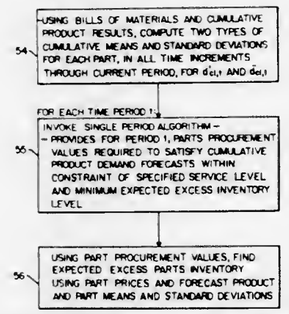
METHODS FOR PARTS PROCUREMENT QUANTITY DETERMINATION WHERE DEMAND IS UNCERTAIN FOR THE PRODUCT IN WHICH THE PARTS ARE USED

Rangarajan Jayaraman, Hopewell Junction; Robin Roundy, Ithaca, and Ramesh Srinivasan, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1991, Ser. No. 698,632

Int. Cl.[5] G06F *15/24*

U.S. Cl. 364—403 **7 Claims**



1. A stochastic method for determining, over a series of time periods, parts procurement requirements for products, certain said parts used in a plurality of products, wherein actual demand for said products is unknown, said method adapted to meet a specified service level for all products and to minimize expected excess part inventories, the method having inputs comprising, lists of parts for each said product, prices for said parts, and forecasts of demands for each said product in each time period, the method comprising computer implemented steps of:

a. deriving a first cumulative demand $D'_{ci,t}$ for each part c_i through a current time period t, and a second cumulative demand $\bar{D}_{ci,t}$ for each part c_i through a time period $t-1$, added to the demand for each part in current time period t, modified by a specified volume fraction of actual demand for each part in period t that is to be satisfied in period t, each cumulative demand expressed by a mean and standard deviation;

b. determining a minimum cumulative procurement quantity $q'^{\bullet}_{ci,t}$ for each part through time period t that meets said specified service level, from a demand distribution function $F_{Dci,t}$ from said second cumulative demand;

c. finding a factor (λ), for each part, at said determined minimum cumulative procurement quantity, that satisfies equation 6_t:

$$P_{ci}F_{D'ci,t}(q'^{\bullet}_{ci,t}) - \lambda^{\bullet}_{t}\frac{f_{Dci,t}(q'^{\bullet}_{ci,t})}{\bar{F}_{Dci,t}(q'^{\bullet}_{ci,t})} = 0, \quad i: \qquad [6_t]$$

where:

c_i is part i,

P_{ci} is the cost of part i,

t is the time period,

$q'_{ci,t}$ is the cumulative procurement of part i up to period t,

$F_{D'ci,t}(q'_{ci,t})$ is the cumulative distribution function of the random variable $q'_{ci,t}$,

$^{\bullet}$ means, at optimality,

λ_t is the LaGrange Multiplier for time period t,

$f_{Dci,t}(q'_{ci,t})$ is the density function of the random variable $q'_{ci,t}$,

$\bar{F}_{Dci,t}(q'_{ci,t})$ is the cumulative distribution function of the random variable $q'_{ci,t}$,

i means for all i, i.e., $i=1,2,\ldots$

d. employing a maximum value factor (λ) found in step c to derive for each part, a new cumulative procurement quantity from equation 6_t over all time periods through t, and based thereon, an overall service level for each part, said overall service level for each part determined by taking the product of cumulative demand distribution functions for all parts, as determined from said second cumulative demands, evaluated at said new cumulative procurement quantity;

e. finding if said new cumulative procurement quantities for all parts provide a service level equal to said specified service level, and, if not, revising said factor (λ), and repeating steps d and e employing the revised factor (λ) until said specified service level is achieved; and

f. employing resultant procurement quantities that enable achievement of the service level for acquisition of said parts.

5,287,268

CENTRALIZED CONSUMER CASH VALUE ACCUMULATION SYSTEM FOR MULTIPLE MERCHANTS

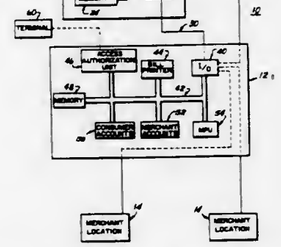
Patrick D. McCarthy, 4384 Bowling Blvd., Louisville, Ky. 40207

Continuation of Ser. No. 797,401, Nov. 26, 1991, which is a continuation of Ser. No. 510,466, Apr. 18, 1990, Pat. No. 5,117,355, which is a continuation of Ser. No. 303,319, Jan. 27, 1989, Pat. No. 4,941,090. This application Nov. 16, 1992, Ser. No. 976,965

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

Int. Cl.[5] G07G *1/12*; **G06F** *15/00, 15/20*

U.S. Cl. 364—405 **13 Claims**



1. A method of consumer cash value accumulation based upon point-of-sale transactions between consumers and merchants, the method comprising:

a. at the point-of-sale, obtaining from the consumer an account number unique to the consumer;

b. at a merchant location, determining a credit value for the transaction;

c. electronically providing, for each transaction, from the merchant location to a central system the consumer's account number and the credit value;

d. for each transaction, accumulating, at the central system, cash value in a consumer account associated with that consumer's account number by increasing the cash value in that consumer account in relation to the credit value.

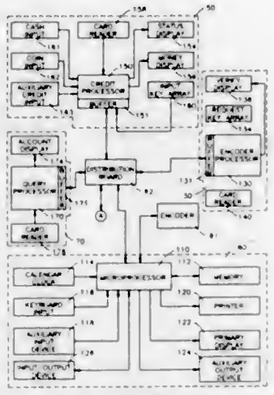
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,269

APPARATUS AND METHOD FOR ACCESSING EVENTS, AREAS AND ACTIVITIES

John Dorrough, Colorado Springs, and Steven M. Renfrow, Pueblo, both of Colo., assignors to Boardwalk/Starcity Corporation, Colorado Springs, Colo.

Filed Jul. 9, 1990, Ser. No. 550,251
Int. Cl.[5] G06F *15/30, 15/28*
U.S. Cl. 364—408 26 Claims



1. An access control system for use in a facility having activities, such as events, areas, devices and the like, to which customers may be granted access, comprising:

a plurality of access cards providing an account file identifier corresponding to said customers, each of said access cards encoded with an account file identifier for a respective customer;

comptroller processor means for processing data according to command instructions and for creating customer account files correlated to said account file identifiers, said comptroller processor means having data storage means associated therewith for storing said customer account files and having verification means for inquiring into each said customer account file to determine an availability of credit therein and issuing an approval status signal when credit is available and a disapproval status signal when credit is not available in the respective customer account file;

a credit station including a first card reader operative to read the account file identifiers on said access cards and to generate a first account file signal corresponding to a selected access card and including credit input means for receiving payment from a customer and for generating credit data signals having credit data indicating a credit payment by the customer, said credit input means including payment allocation means for allowing the customer to allocate said payment between a plurality of different types of credit and operative to generate separate credit data signals for the different types of credit, said comptroller processor means operative in response to said first account file signal to open the respective customer account file corresponding to the respective account file identifier and operative in response to said credit data signals to create credit sub-accounts in the respective customer account file in one-to-one correspondence with the different types of credit allocated by the respective customer and to increase the credit in the respective customer account file according to said credit data signals;

a plurality of access stations, there being an access station associated with each said activity for controlling access to the respective activity, each access station including a second card reader operative to read the account file identifiers on said access cards and to generate a second account file signal corresponding to the account file identifier on the selected access card, said comptroller processor means responsive to said second account file signal to open the respective customer account file corresponding to the respective account file identifier;

debit means associated with each said access station for generating a debit signal corresponding to a selected cost debit for the respective activity, said comptroller processor mans responsive to said debit signal to decrease the credit in the respective customer account file according to said cost debit, said controller processor means generating an approval signal where the respective customer account file has credit in an amount at least equal to the selected cost debit for the respective activity and generating a disapproval signal where the respective customer account file has credit less than the selected cost debit for the respective activity; and

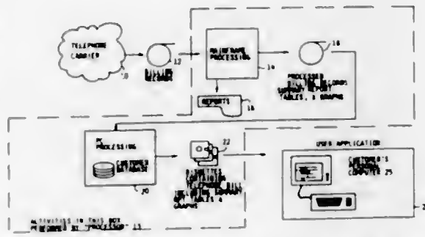
receiving means associated with said access station for receiving said approval and disapproval signals from said comptroller processor and for granting and denying the customer access to the respective activity.

5,287,270

BILLING SYSTEM

Robert M. Hardy, Carmel; John M. Cauffman; Lynn S. Cauffman, both of Indianapolis; Robert C. Lovell, Jr., Greenwood; Murray B. Frazier, Indianapolis; Michael L. Johnson, Indianapolis, and James W. Dohrenwend, Jr., Indianapolis, all of Ind., assignors to Compucom Communications Corp., Indianapolis, Ind.

Continuation of Ser. No. 393,699, Aug. 14, 1989. This application Dec. 2, 1992, Ser. No. 984,374
Int. Cl.[5] G06F *15/20;* G06G *7/52*
U.S. Cl. 364—408 85 Claims
MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 454 Pages)



1. A system for presenting information concerning the actual cost of a service provided to a user by a service provider, said system comprising:

storage means for storing individual transaction records prepared by said service provider, said transaction records relating to individual service transactions for one or more service customers including said user, and the exact charges actually billed to said user by said service provider for each said service transaction;

data processing means comprising respective computation hardware means and respective software programming means for directing the activities of said computation hardware means;

means for transferring at least a part of said individual transaction records from said storage means to said data processing means;

said data processing means generating preprocessed summary reports as specified by the user from said individual transaction records transferred from said storage means and organizing said summary reports into a format for storage, manipulation and display on a personal computer data processing means;

means for transferring said individual transaction records including said summary reports from said data processing means to said personal computer data processing means; and

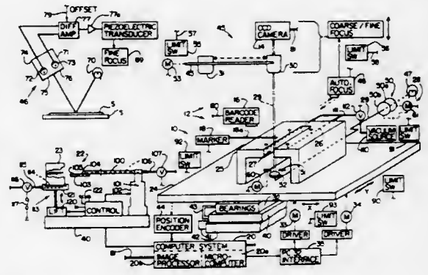
said personal computer data processing means being adapted to perform additional processing on said individual transaction records which have been at least in part preprocessed by said data processing means utilizing said summary reports for expedited retrieval of data, to present a subset of said selected records including said exact charges actually billed to said user.

5,287,272

AUTOMATED CYTOLOGICAL SPECIMEN CLASSIFICATION SYSTEM AND METHOD

Mark R. Rutenberg, Monsey, N.Y.; Thomas L. Hall, Pasadena, Calif.; Robert Domes, Newbury Park, Calif.; Richard Chaban, Ventura, Calif.; Thomas Dulak, Newhall, Calif.; James M. Herriman; John Porzio, both of New York, N.Y.; Randall L. Luck, Brooklyn, N.Y., and James Knapp, New York, N.Y., assignors to Neuromedical Systems, Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 179,060, Apr. 8, 1988, Pat. No. 4,965,725. This application Oct. 11, 1989, Ser. No. 420,105
Int. Cl.[5] G06F *15/18, 15/42;* G06K *9/62*
U.S. Cl. 364—413.01 27 Claims



1. A cytological specimen classifier, comprising:

a) microscope means for obtaining a view of at least part of a cytological specimen,

b) camera means for creating an image of such view,

c) image digitizing means for producing a digital representation of such image,

d) a primary classifier for identification of objects in such digital representation based on a detectable feature, and

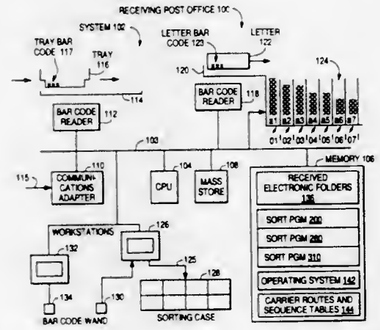
e) secondary adaptive classifier means for recognition of cells having patterns atypical of patterns in cells expected in the specimen among the objects identified by the primary classifier.

5,287,271

DATA PROCESSING SYSTEM FOR OPTIMIZED MAIL PIECE SORTING AND MAPPING TO CARRIER WALK SEQUENCE USING REAL TIME STATISTICAL DATA

Walter S. Rosenbaum, Bethesda, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 22, 1991, Ser. No. 748,983
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—409 18 Claims



1. A data processing system to optimize the sorting of mail, comprising:

a data communications receiver at a destination postal region, connected to a data communications network, for receiving addressee data for mail pieces to be delivered to said destination postal region;

a data processor coupled to said data communications receiver, for processing said addressee data to compute addressee volume values for mail addressed to addressees at said destination postal region;

a mail piece sorter coupled to said data processor, having a plurality of pockets, said data processor assigned individual ones of said pockets to respective ones of said addressees in an order related to said addressee volume values;

said mail piece sorter having a plurality of M pockets, said data processor assigning a subplurality of N of said pockets to N addresses having the N highest addressee volume values;

said data processor assigning an additional pocket of said plurality of M pockets for mail pieces addressed to a second plurality addressees who have addressee volume values less than those of said N addressees having the N highest addressee volume values.

5,287,273

FUNCTIONAL ORGAN IMAGES

Sherman Kupfer, New York, and Peter Stritzke, White Plains, both of N.Y., assignors to Mount Sinai School of Medicine, New York, N.Y.

Continuation-in-part of Ser. No. 494,121, Mar. 15, 1990. This application Mar. 23, 1990, Ser. No. 498,820
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.07 9 Claims



1. A noninvasive method of determining a linear response function of a target organ of a subject selected from the group consisting of animals including man comprising the steps of:

(a) introducing into the subject's circulatory system a tracer suitable for use in medical imaging;

(b) obtaining a calibration factor F_G;

(c) obtaining a plurality of time sequenced measurements of the counts per unit time of the tracer in the target organ with a measuring system capable of monitoring the tracer;

(d) multiplying the measurement obtained in step (c) by F_G

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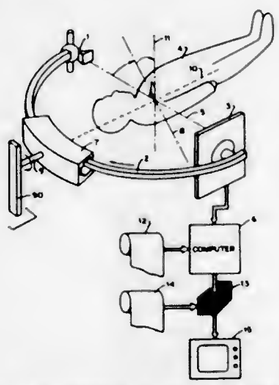
to obtain a corrected measured absolute activity per volume, output function A(t);
(e) obtaining with a measuring system capable of monitoring the tracer, concurrently with step (c), a plurality of time sequenced measurements of the tracer within the subject's heart or great vessels;
(f) withdrawing from the subject one blood sample after the tracer injection at time t_1;
(g) normalizing timewise the measured tracer in the heart or great vessels with respect to the value at time t_1;
(h) measuring the amount of the tracer in the blood sample with a measuring system capable of monitoring the tracer;
(i) converting the measured tracer in the blood sample as absolute tracer activity/volume by means of a calibration factor F_w computed from (g) and (h) above;
(j) multiplying the activity obtained in step (g) by F_w to obtain an input function B(t); and
(k) deconvolving the combination of A(t) and B(t) thereby deriving h(t), the linear response function of the target organ.

5,287,274

METHOD FOR ACQUISITION OF RADIOLOGICAL DATA IN MULTIPLE ORTHOGONAL ORIENTATIONS USING A 2D DETECTOR RELATING TO A BODY IRRADIATED WITH X-RAYS AND FOR RECONSTRUCTION OF STRUCTURES CORRESPONDING TO SAID BODY USING AN ALGEBRAIC ALGORITHM

Didier Saint Felix, Boulogne; Yves Trousset, Paris; Catherine Picard, Boulogne, and Anne Rougee, Fontenay aux Roses, all of France, assignors to General Electric CGR SA, Issy Les Moulineaux, France

Filed Mar. 15, 1990, Ser. No. 493,818
Claims priority, application France, Mar. 20, 1989, 89 03606
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.15 **13 Claims**



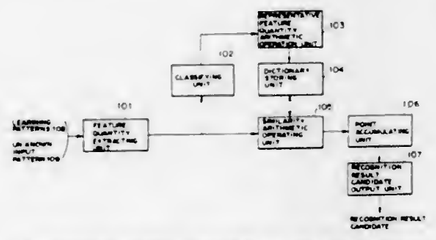
1. A method for acquisition of radiological data relating to a body irradiated with x-rays and for reconstruction of images of structures corresponding to said body in order to display said images of said structures, wherein, for the purpose of acquisition, said method comprises the steps of:
a) directing a flux of x-rays to the body by means of a transmitter, said flux having a principal direction of irradiation with regard to said body,
b) detecting a first view relating to a first given orientation of the principal direction with respect to the body by means of a two dimensional detector which is maintained opposite to the transmitter, said first view being constituted by a collection of data which are a function of the coordinates of loci on said detector and a function of the attenuation within the body of that portion of the x-rays which terminates at said loci,
c) reiterating, prior to reconstruction, the preceding steps a) and b) for second and third principal directions, for producing second and third collections of data, said first, second, and third directions oriented so that a plane formed by any two of said directions, intersects the remaining principal direction,
d) and wherein, for the purpose of reconstruction, an algebraic reconstuction algorithm is employed utilizing said first, second, and third collections of data to reconstruct one image.

5,287,275

IMAGE RECOGNITION APPARATUS AND METHOD FOR RECOGNIZING A PATTERN WITHIN AN IMAGE

Masayuki Kimura, Sendai, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 14, 1989, Ser. No. 393,623
Claims priority, application Japan, Aug. 20, 1988, 63-205685; Aug. 20, 1988, 63-205686; Aug. 20, 1988, 63-205687
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.01 **18 Claims**



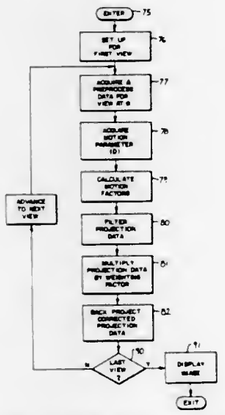
1. A pattern recognition apparatus for recognizing an input pattern by extracting feature quantities from the input pattern and matching the input pattern with statistical information about said feature quantities each obtained by classifying a plurality of learning patterns, said pattern recognition apparatus comprising:
feature quantity extracting means for dividing said input pattern into a plurality of regions and for extracting feature quantities from each of said plurality of regions of said input pattern based upon said plurality of learning patterns;
classifying means for sequentially selecting each of said regions and for classifying said plurality of learning patterns in each said respective region into a predetermined number of classes based on the feature quantities of said respective region extracted from said feature quantity extracting means for each of said plurality of learning patterns;
representative feature quantity operating means for calculating statistical information about said feature quantities of respective classes;
a dictionary storing means for storing said statistical information about said feature quantities of said respective classes and for storing different types of learning patterns in said respective classes;
similarity operating means for determining a statistical similarity between the feature quantities of respective regions extracted from the feature quantity extracting means for the input pattern which is unknown, and statistical information about the feature quantity of corresponding respective classes in said dictionary storing means;
point accumulating means for accumulating a number of similarities corresponding to an order of the class of respective learning patterns included in classes of predetermined upper orders of similarity with regard to the respective regions, after searching said dictionary storing means; and
recognition result candidate output means for outputting recognition result candidates from a highest to a lowest number of accumulated similarities of the learning pattern after an accumulation operation is completed by said point accumulating means for respective regions.

5,287,276

LOCALIZED MOTION ARTIFACT REDUCTION IN PROJECTION IMAGING

Carl R. Crawford, Milwaukee, Wis., and Cameron J. Ritchie, Seattle, Wash., assignors to General Electric Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 615,778, Nov. 19, 1990, Pat. No. 5,251,128. This application Oct. 22, 1992, Ser. No. 964,335
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.19 **9 Claims**



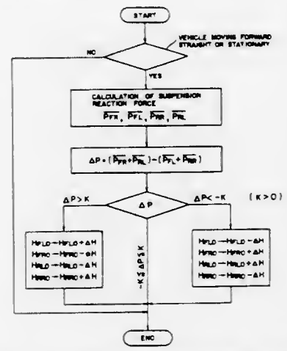
1. A method for producing an image of a moving patient composed of a plurality of voxels, each voxel having reference coordinate defined at a reference time while the patient is in motion, and a displaced coordinate which at the reference time may equal the reference coordinate, but at other times may not equal the reference coordinate, the steps comprising:
performing a scan in which a plurality of projections of a projection data set are acquired at different times and throughout a range of different projection angles (θ), each projection measuring physical characteristic of the voxels at their displaced coordinates;
acquiring a motion parameter with each projection of the projection set, each acquired motion parameter being indicative of the movement of the patient as the projection set is acquired; and
back projecting the set of projections to produce the image of the patient using a back projection formula which is modified to account for the displacement of the voxels from their reference coordinates at the time of the projection is acquired, the modification being according to a predetermined warping function that relates the displaced coordinates of the voxels to their reference coordinates as a function of the motion parameter;
whereby artifacts produced in the image by movement of the patient from projection-to-projection during the scan are reduced.

5,287,277

METHOD AND APPARATUS FOR CONTROLLING HEIGHT OF A VEHICLE

Atsushi Mine; Katsuyoshi Kamimura, and Yutaka Hiwatashi, all of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 963,016, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 470,768, Jan. 26, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,167
Claims priority, application Japan, Feb. 3, 1989, 1-25300; Feb. 8, 1989, 1-29476
Int. Cl.[5] B60G *17/015*
U.S. Cl. 364—424.05 **19 Claims**



1. A method for controlling the height of a vehicle having vehicle height adjusting means, wherein suspension strokes of wheel suspension units are detected and the heights of said wheel suspension units are controlled in response to the detected suspension strokes of each unit so as to attain respective reference vehicle height, independently, said method comprising the steps of:
judging that the vehicle is either moving straight forward or is stationary;
calculating an imbalance amount representing the degree of imbalance among actual contact loads of all the wheels on a ground surface when the vehicle is stationary or is moving straight;
determining whether said imbalance amount exceeds a predetermined value; and
changing said reference vehicle heights for at least two of said suspension units when said imbalance amount exceeds said predetermined value, the vehicle height adjusting means independently controls each of said suspension units based on the changed reference vehicle heigth.

5,287,278

METHOD FOR EXTRACTING COMPANY NAMES FROM TEXT

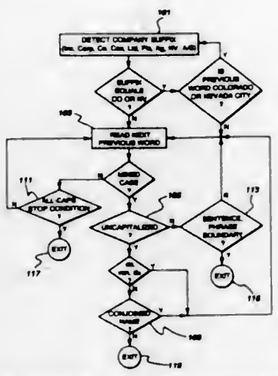
Lisa F. Rau, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 27, 1992, Ser. No. 825,896
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.1 **3 Claims**

1. A method, for practice on a computer, for extracting company names from text comprising the steps of:
scanning said text for a company name indicator;
reading words backwards through said text until a stop

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condition comprising reading a word which is on a stop list occurs; and



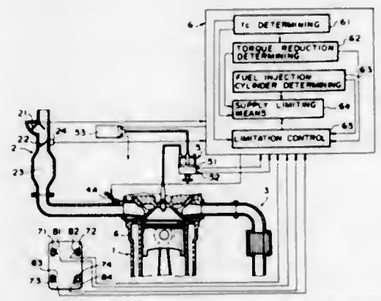
extracting the words read by said computer, before the stop condition occurred.

5,287,279

ENGINE OUTPUT TORQUE CONTROL SYSTEM

Yoshiaki Anan, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 15, 1991, Ser. No. 792,937
Claims priority, application Japan, Nov. 30, 1990, 2-339115
Int. Cl.[5] B60K *28/16*
U.S. Cl. 364—426.02 **10 Claims**



1. An engine output torque control system for a multiple cylinder engine comprising

a torque reduction determining means for determining whether a predetermined torque-reduction condition has been satisfied and determining an amount of the engine output torque reduction to be performed when the torque-reduction condition has been satisfied,

a fuel supply limiting means for limiting fuel supply to at least one selected cylinder of the engine when the torque reduction determining means determines that the engine output reduction is to be performed,

a fuel limiting level determining means for determining the number of cylinders to which fuel supply is to be limited according to the engine output torque reduction amount,

a fuel injection cylinder determining means for determining which one of the cylinders is about to undergo fuel injection, and

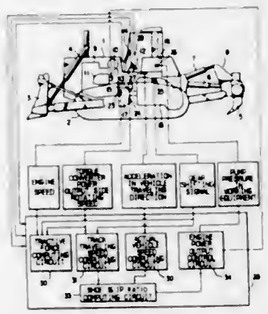
a fuel supply limitation control means for causing the fuel supply limiting means to limit fuel supply to the cylinder which first undergoes fuel injection after the torque reduction determining means determines that the engine output torque reduction is to be performed at least in the fuel injection timing immediately after the determining, and for causing the fuel supply limiting means to limit the fuel supply to the cylinders which are selected according to the number of cylinders determined by the fuel limiting level determining means.

5,287,280

METHOD AND APPARATUS FOR CONTROLLING SHOE SLIP OF CRAWLER VEHICLE

Shigeru Yamamoto, Osaka; Hideki Yamada, Kyoto, and Shinji Takasugi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP88/00932, § 371 Date May 11, 1990, § 102(e) Date May 11, 1990, PCT Pub. No. WO89/02520, PCT Pub. Date Mar. 23, 1989
Continuation of Ser. No. 764,976, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 465,236, May 11, 1990, abandoned. This PCT application Sep. 14, 1988, Ser. No. 877,362
Claims priority, application Japan, Sep. 14, 1987, 62-230826; Sep. 17, 1987, 62-23116; Sep. 17, 1987, 62-231115
Int. Cl.[5] B60T *8/58*
U.S. Cl. 364—426.03 **7 Claims**



4. An apparatus for controlling shoe slip of a crawler vehicle having an engine initially operating at a predetermined specific engine power output mode and endless tracks, said apparatus comprising:

an acceleration detecting means for detecting acceleration of said crawler vehicle in a traveling direction;

a track traveling speed computing means for computing a track traveling speed of the endless tracks of said crawler vehicle;

an actual vehicle speed computing means connected to said acceleration detecting means for computing an actual vehicle speed of said crawler vehicle on the basis of the detected rate of acceleration, said actual vehicle speed computing means comprising an acceleration integration means for integrating the detected vehicle acceleration after removal of a frequency wave component due to vibrations of the vehicle body, and a correction means for subsequently compensating for an influence of gravity due to an inclination of the vehicle;

a shoe slip ratio computing means connected to said actual vehicle speed computing means and said track traveling speed computing means for computing a shoe slip ratio of said crawler vehicle on the basis of the actual vehicle speed and the track traveling speed of said crawler vehicle, and

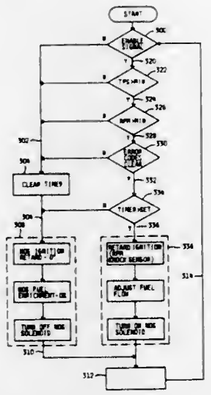
an engine power output control means connected to said shoe slip ratio computing means for selecting an engine power output node for the engine of said crawler vehicle according to the computed shoe slip ratio.

5,287,281

COMPUTER CONTROLLED FLOW OF NITROUS OXIDE INJECTED INTO AN INTERNAL COMBUSTION ENGINE

John D. Meaney, Hartland, Mich., assignor to Echlin Inc., Branford, Conn.

Filed Feb. 27, 1991, Ser. No. 661,898
Int. Cl.[5] F02D *19/08;* **F02B** *13/10*
U.S. Cl. 364—431.05 **35 Claims**



1. An internal combustion engine system wherein the density of a combustible mixture provided to the cylinders of an engine is selectively enhanced by delivering a supplemental oxidizing agent and additional fuel to said combustible mixture provided to the cylinders of said engine, said system comprising:

a set of fuel injectors having an adjustable duty cycle for delivering a quantity of fuel to each of the cylinders;

supplemental oxidizing agent delivery means;

first means for activating said supplemental oxidizing agent delivery means in order to commence the addition of said supplemental oxidizing agent to said combustible mixture;

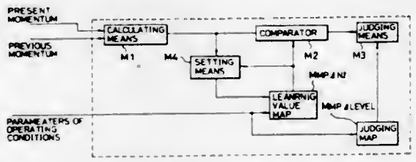
third means for adjusting fuel flow into said combustible mixture by transmitting appropriate signals to the set of fuel injectors extending or reducing the duty cycle of the fuel injectors, said fuel flow being adjusted at least in accordance with the flow rate of said supplemental oxidizing agent to prevent a lean fuel-air mixture.

5,287,282

MISFIRE DIAGNOSIS APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Ryuichiro Imai, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,388
Claims priority, application Japan, Jul. 10, 1990, 2-183525
Int. Cl.[5] G06F *15/20;* **F02D** *41/04*
U.S. Cl. 364—432.08 **1 Claim**



1. In a misfire diagnosis apparatus for an internal combustion engine with a crankshaft for outputting power and a camshaft for actuating valves having, a crank plate connected to said crankshaft for indicating a crank angle, a crank angle sensor for detecting said crank angle of said crankshaft and for generating a crank angle signal, a cam plate connected to said camshaft for indicating a cam position, a cam angle sensor for detecting said cam position of said camshaft and for producing a cam angle signal, and control means responsive to said crank angle and said cam angle for controlling an ignition timing of said engine, an improvement in the apparatus which comprises:

a plurality of even numbers of slits provided on a periphery of said crank plate for indicating said crank angle, said slits being diametrically and symmetrically arranged on said periphery and each pair of said slits being spaced apart by at least three different specific angles;

a plurality of cam slits provided on a periphery of said cam plate and spaced angularly apart at a predetermined angle on said periphery for indicating said cam position;

momentum change rate calculating means for comparing a momentum of a section in which no work is done by previous combustion and a momentum of a section in which no work is done by present combustion, thereby to calculate a momentum change rate of a cylinder at a combustion stroke held between the sections;

momentum change rate comparing means for reading out an average momentum change rate learning value corresponding to operating conditions from an average momentum change rate learning value map of the pertinent combustion stroke cylinder, and for comparing said momentum change rate with said average momentum change rate learning value;

discriminating means responsive to said crank angle signal and said cam angle signal for discriminating a cylinder number at a combustion stroke and for producing a cylinder number signal;

misfire judging means responsive to an acceleration signal, said cylinder number signal, said crank angle signal and said cam angle signal for comparing a compared result of said comparing means with a misfire judgement level corresponding to said operating conditions read out from a misfire judgement level map of said pertinent combustion stroke cylinder, thereby to judge a misfire state every cylinder and to generate a misfire signal;

average momentum change rate learning value setting means for setting an average momentum change rate learning value on the basis of a momentum change rate of said pertinent combustion stroke cylinder in normal state and the first-mentioned average momentum change rate learning value, and for updating said first-mentioned average momentum change rate learning value stored in the operating region of said average momentum change rate learning value map of said pertinent combustion stroke cylinder; and

warning means responsive to said misfire signal for storing a number of said misfire corresponding to said cylinder number and for indicating a malfuction of said internal combustion engine.

5,287,283

FAILURE DIAGNOSIS DEVICE FOR AN ENGINE WHICH COMPARES AIRFUEL RATIO AND EXHAUST PRESSURE WITH A PREDETERMINED VALUE

Ikuo Musa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 679,977
Claims priority, application Japan, Apr. 4, 1990, 2-91289
Int. Cl.[5] F02D *41/22*
U.S. Cl. 364—431.11 **3 Claims**

1. A failure diagnosis device for an engine comprising:

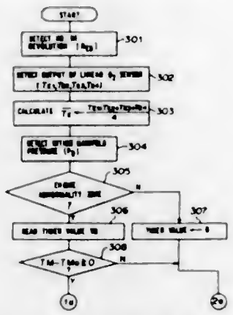
means, disposed at an exhaust pipe for one of each cylinder and each cylinder group of the engine, for detecting air-fuel ratios for one of each cylinder and each cylinder group of the engine and for outputting corresponding air-fuel ratio signals;

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means for detecting a running condition of the engine based on various characteristics of the engine;

means for determining whether the running condition of the engine falls in a predetermined running condition domain which is defined by various characteristics of the engine and in which the air-fuel ratio of the engine is stabilized for a predetermined period of time; and

means for determining abnormality in one of a cylinder and



a cylinder group of the engine by detecting whether the running condition of the engine falls in said predetermined running condition domain, by determining whether the air-fuel ratio signal of one of a cylinder and a cylinder group of the engine is at least, different from one of an average air-fuel ratio based on the air-fuel ratios of all the cylinders and an average air-fuel ratio based on the air-fuel ratios of all the cylinder groups of the engine, by a predetermined value.

5,287,284

PRODUCT SPECIFICATION COMPLEX ANALYSIS SYSTEM

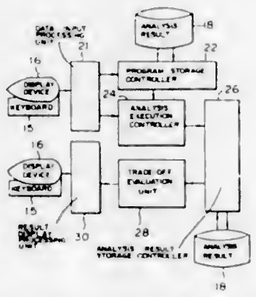
Kazuhiro Sugiso, Yokohama; Shingo Akasaka, Zushi; Hiroko Imanishi; Junichi Saeki, both of Yokohama; Kunihiko Nishi, Kokubunji, and Asao Nishimura, Ushiku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 792,160

Claims priority, application Japan, Nov. 14, 1990, 02-306153; Nov. 30, 1990, 02-328908

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **12 Claims**



1. A product specification complex analysis system comprising:

means for inputting product specifications, design parameters determined by analysis and evaluation of said specifications, the range of changes of said parameters, and a plurality of items to be estimated;

memory means for storing evaluation programs corresponding to said items to be estimated, respectively;

means for obtaining analysis results corresponding to the changes of said design parameters within designated ranges of changes by executing said evaluation program called from said memory means; and

means for evaluating a trade-off between said plurality of analysis results by changing said design parameters by the use of predetermined evaluation functions on the basis of said plurality of analysis results corresponding to said plurality of items to be estimated, and for thus obtaining optimum design parameters.

5,287,285

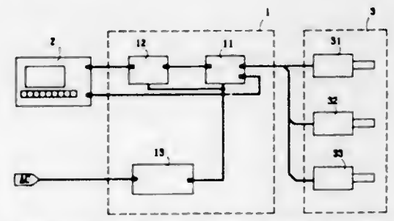
ELECTRONIC MULTI-SHAFT ABSOLUTE POSITION DETECTING DEVICE

You-Kung Tsai; Yuh-Jian Wang; Yaw-Shen Lie, and Yie-Wen Chen, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed May 24, 1991, Ser. No. 705,649

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.37 **4 Claims**



1. An electronic multi-shaft absolute position detecting device for coupling a measuring system not having absolute position detecting capability and a numerical control system of a numerical control machine tool to act as a transmission medium therebetween, said device comprising:

an absolute position recording circuit for coupling to a plurality of measuring devices of said measuring system to receive increment position signals produced thereby and to convert said increment position signals into absolute position signals representative of a position value of said machine tool; and

an interface circuit, coupled to said absolute position recording circuit, for coupling to said numerical control system to execute a clear command when said clear command is provided by said numerical control system and to provide said absolute position signals to said numerical control system to enable said numerical control machine tool to operate in accordance with said absolute position signals.

5,287,286

LOW-BATTERY STATE DETECTING SYSTEM AND METHOD FOR DETECTING THE RESIDUAL CAPACITY OF A BATTERY FROM THE VARIATION IN BATTERY VOLTAGE

Ryozi Ninomiya, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 951,338, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 545,542, Jun. 29, 1990, abandoned. This application Jun. 8, 1993, Ser. No. 73,987

Claims priority, application Japan, Jul. 31, 1989, 1-198362

Int. Cl.[5] G01R *19/165;* **G06F** *15/20*

U.S. Cl. 364—481 **8 Claims**

1 A low-battery detection warning method comprising the steps of:

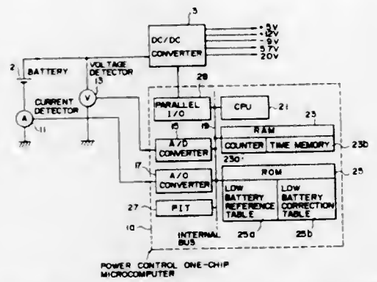
a) generating a discharge current signal related to a discharge current value outputted from a battery;

b) generating a low-battery detection reference voltage from the discharge current signal;

c) generating a first and a second voltage signal related to a first and a second voltage value of the battery determined at sequential times;

d) employing electronic processing means to determine a difference between the first and second voltage signals;

e) employing said electronic processing means to modify the low-battery detection reference voltage in accordance with the determined difference and battery voltage characteristic curves corresponding to different charge time



periods, so as to make constant a time period from the time a low-battery stage was determined to the time when a device driven by the battery fails to operate normally, irrespective of a charge time for the battery;

f) employing said electronic processing means to compare the modified low-battery detection reference voltage with the first voltage signal, and determining the low-battery state when the first voltage signal is lower than the modified low-battery detection reference voltage; and

g) generating a detection warning signal when the low-battery state has been determined to exist.

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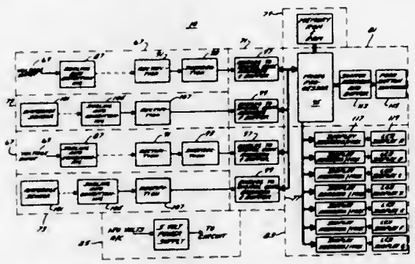
POWER CONSUMPTION RATE DISPLAY DEVICE

Edward N. Chamberlain, Racine, and Mark Grossmeyer, Cedarburg, both of Wis., assignors to Energy Audit Corporation, Racine, Wis.

Filed Sep. 14, 1990, Ser. No. 582,676

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—483 **21 Claims**



1. A device for displaying power consumption rates including:

a register for storing the cost of a unit of power;

a detection circuit which detects power consumption;

a calculating circuit, connected to said register, and to said detection circuit, which calculates the instantaneous rate at which power is being consumed and the cost of power consumed over an elapsed time period and which projects the total costs of power to be consumed over time periods which are presently running but which have not yet elapsed;

a first display, connected to said calculating circuit, for indicating the cost of power consumed over a first, elapsed time period;

a second display, connected to said calculating circuit, for indicating the cost of power projected to be consumed over a second, presently running time period;

a third display, connected to said calculating circuit, for indicating the cost of power projected to be consumed over a third, presently running time period; and

a fourth display, connected to said calculating circuit, for indicating the instantaneous rate at which power is being consumed;

the device thereby displaying information relating to the rate and to the actual and projected costs of power consumption.

5,287,288

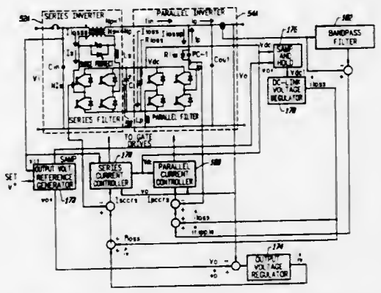
ACTIVE POWER LINE CONDITIONER WITH LOW COST SURGE PROTECTION AND FAST OVERLOAD RECOVERY

Michael B. Brennen, and Steven A. Moran, both of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 969,137

Int. Cl.[5] H02M *7/54, 7/505, 7/521*

U.S. Cl. 364—483 **19 Claims**



1. An active power line conditioner of the type which includes a secondary transformer winding coupled to a series inverter, said series inverter being further coupled to a parallel inverter through an energy storage link, wherein the improvement comprises:

a fault condition shorting circuit coupled to said secondary transformer winding which includes:

a diode bridge which conveys diode bridge current only in the presence of an overvoltage or overcurrent condition;

a first threshold device, coupled to said diode bridge, which conducts first threshold device current in response to said diode bridge current; and

a first thyristor with a gate coupled to said first threshold device, said first thyristor being fired by said first threshold device current so as to short said secondary transformer winding from said series inverter in the presence of an overvoltage or overcurrent condition.

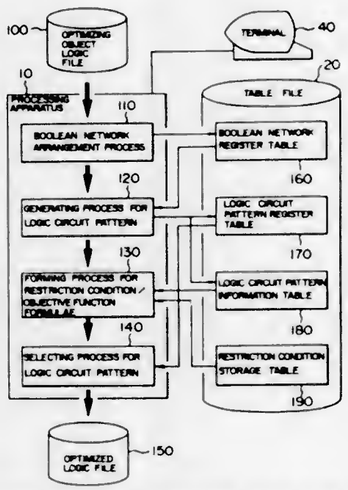
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5,287,289

LOGIC SYNTHESIS METHOD

Naohiro Kageyama, Koganei; Chihei Miura, Kanagawa, and Tsuguo Shimizu, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,608
Claims priority, application Japan, Apr. 13, 1990, 2-096405; Nov. 9, 1990, 2-302400
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **7 Claims**



1. A method, executed by a computer, of modifying a digital logic circuit represented by a Boolean expression comprised of a plurality of portions each of which is represented by a Boolean expression, said method comprising the steps of:

forming a plurality of groups of logic circuits each represented by a Boolean expression, where each group corresponds to one of said plurality of portions, wherein Boolean expressions which represent logic circuits of each group are equivalent in function to a Boolean expression which represents one of said corresponding portions and are formed by modifying said Boolean expression which represents the corresponding portion, so that one of the logic circuits of each group will have a delay time and a gate number which is different from others of said logic circuits of said each group, in a case where the logic circuits of each group are realized by logic gates of predetermined kinds;

forming, as candidates for a digital logic circuit after modification, plural combinations each comprised of a plurality of logic circuits each represented by a Boolean expression, each logic circuit representing a Boolean expression corresponding to one of said portions and being selected from a group of logic circuits formed for said corresponding portion by said forming a plurality of groups step;

evaluating a delay time and a total number of logic gates of each combination, in a case where the logic circuits represented by Boolean expressions which constitute said each combination are realized by logic gates of said predetermined kinds; and

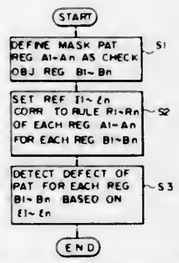
selecting one of the combinations which will have a delay time which is less than or equal to a predetermined delay time and a total number of logic gates which is minimized among said combinations, as a new digital logic circuit after modification of said digital logic circuit.

5,287,290

METHOD AND APPARATUS FOR CHECKING A MASK PATTERN

Katsuji Tabara, and Satoshi Akutagawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 491,108, Mar. 9, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,459
Claims priority, application Japan, Mar. 10, 1989, 1-058152
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—489 **5 Claims**



1. A method of checking a mask pattern having a plurality of contiguous mask pattern regions, each of the mask pattern regions formed based on different design pattern rules, said method comprising the steps of:

(a) respectively assigning the contiguous mask pattern regions to different contiguous check object regions;

(b) setting a different defect detection reference for each of the different contiguous check object regions which correspond to respective ones of the different design pattern rules;

(c) individually detecting presence or absence of defects in a relatively large one of the check object regions based on a relatively coarse defect detection reference corresponding to the relatively large check object region; and

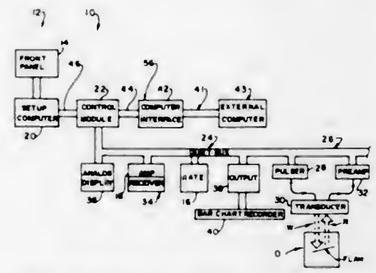
(d) based on the results of the detecting of said step (c), individually detecting presence or absence of defects in a relatively small one of the check object regions based on a relatively fine defect detection reference corresponding to the relatively small check object region.

5,287,291

QUIET BUS FOR THE BUSING OF ANALOG AND DIGITAL DATA

John W. Cuffe, State College, and Alan D. Weiner, New Bloomfield, both of Pa., assignors to Krautkramer-Branson, Incorporated, Lewistown, Pa.

Filed Sep. 3, 1991, Ser. No. 753,816
Int. Cl.[5] G06F *15/20*; G01N *29/18*
U.S. Cl. 364—507 **15 Claims**



1. Testing apparatus for performing non-destructive testing of an object to determine if it has flaws or defects comprising:

wave means for generating an ultrasonic wave, for directing the wave at the object, for receiving a return wave reflected by the object, and for analyzing the return wave to determine if a flaw or defect is present in the object;

means for converting the return wave to a digital data signal for analysis;

bus means over which the digital data signal is routed, and,

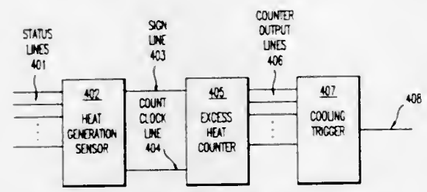
control means for controlling the routing of digital data signals over the bus means, the control means inhibiting flow of digital signals over the bus means during that portion of an operational cycle of the apparatus during which the wave means is operating, and allowing transmission of digital signals over the bus means when the wave means is not operating, wherein the ultrasonic portion of the apparatus is effectively isolated from the bus means to prevent digital noise from effecting test information developed by the ultrasonic portion.

5,287,292

HEAT REGULATOR FOR INTEGRATED CIRCUITS

John D. Kenny, Sunnyvale, and Emilia V. Lei, Union City, both of Calif., assignors to Picopower Technology, Inc., San Jose, Calif.

Filed Oct. 16, 1992, Ser. No. 962,437
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—550 **15 Claims**



1. An apparatus for regulating a temperature of a circuit comprising:

(a) a circuit activity monitor for providing a measure of the mode of operation of the circuit;

(b) an excess heat counter coupled to the activity monitor for keeping a temperature count in response to the mode of operation of the circuit, the temperature count changing as a function of time at a rate selected to match net heat generation in the circuit at a desired temperature; and

(c) a cooling trigger coupled to the excess heat counter, the cooling trigger causing the circuit to cool in response to the temperature count reaching a trigger value.

5,287,293

METHOD AND APPARATUS FOR INSPECTING THE CONTOURS OF A GEAR

Hsien-Yei Chen; Chung-Mu Hwang; Jung-Lung Chang; Chieh-Yu Lin; Ruey-Yang Wang, and Jyh-Jye Jeng, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

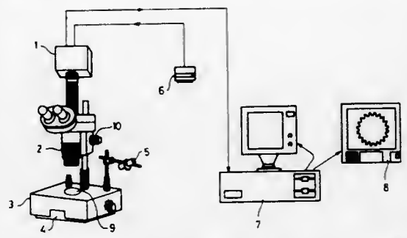
Continuation of Ser. No. 636,119, Dec. 31, 1990, abandoned. This application Jun. 14, 1993, Ser. No. 76,085
Int. Cl.[5] G06F *15/46, 15/70*
U.S. Cl. 364—551.01 **33 Claims**

1. A method for inspecting contours of a gear to determine manufacturing errors of the gear, comprising the steps of:

(a) imaging the gear to form a gear image on an imaging surface and generating a first digitized image using a CCD camera, the first digitized image indicative of the gear image, the first digitized image comprising a plurality of pixels each having a gray value and each having first coordinates representing a first location of the pixel within the first digitized image;

(b) classifying each pixel into a first or second class by comparing the gray value thereof to a predetermined threshold value;

(c) determining, based on the class of each pixel, the first coordinates of pixels corresponding to contours of the gear;



(d) determining second coordinates of pixels corresponding more precisely to the contours of the gear than the first coordinates; and

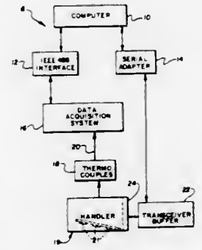
(e) comparing the second coordinates of pixels to a standard gear pattern to determine the manufacturing errors.

5,287,294

APPARATUS AND METHOD FOR AUTOMATICALLY CALIBRATING FOR TEMPERATURE AN INPUT TRAY OF AN INTEGRATED CIRCUIT HANDLER

Victor R. Baert, Ramsey; Scott D. Elfstrom, North St. Paul, and Teddy P. Williams, St. Paul, all of Minn., assignors to Micro Component Technology, Inc., Minneapolis, Minn.

Filed May 20, 1991, Ser. No. 702,945
Int. Cl.[5] G01K *13/04*
U.S. Cl. 364—557 **3 Claims**



1. Apparatus for calibrating for temperature an input tray of an integrated circuit handling device, comprising:

(a) a plurality of fixed sensors mounted at locations along the input tray of the handling device, said fixed sensors adapted to sense temperatures within defined zones corresponding to the locations of the fixed sensors;

(b) means, corresponding to the various fixed sensors, for adjusting temperature within the defined zones in response to temperature readings sensed by said fixed sensors;

(c) a plurality of thermocouple sensors, each thermocouple sensor received within an integrated circuit body and being positionable at a location along the input tray of the handling device closely proximate the location of a fixed sensor to sense the actual temperature to which an integrated circuit device passing along the input tray would be exposed as it passes through a zone defined by a corresponding fixed sensor; and

(d) means for correcting for temperature each fixed sensor in response to the actual temperature sensed by a corresponding thermocouple sensor, regardless of the temperature reading sensed by the fixed sensor.

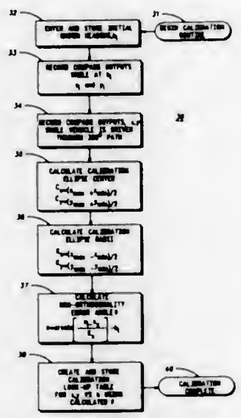
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5,287,295

METHOD AND APPARATUS FOR CALIBRATING AN ELECTRONIC COMPASS TO ACCOUNT FOR ALIGNMENT ERRORS IN THE COMPASS WINDINGS

Martin D. Ives, Lake Zurich, and Elisha M. Kozikaro, Chicago, both of Ill., assignors to Motorola, Schaumburg, Ill.

Filed May 30, 1991, Ser. No. 707,716
Int. Cl.[5] G01C *25/00*
U.S. Cl. 364—571.01 **36 Claims**



12. A method for calibrating an electronic compass comprising the steps of:

(a) providing an electronic compass having x and y sense windings disposed nominally orthogonal with respect to one another;

(b) orienting the electronic compass in an initial known heading direction (h_i);

(c) measuring and storing as data at least one output of the sense windings provided for the known initial heading direction;

(d) measuring and storing, as data outputs of the sense windings, outputs of the sense windings provided for a number of other compass headings;

(e) calculating at least one coordinate of the center and at least one radii of an ellipse formed by a locus of said stored outputs of each of said sense windings plotted against one another;

(f) calculating a non-orthogonal error difference angle (ϕ) between the sense windings by using the calculated center and radii data and the initial heading and initial output winding data; and

(g) creating and storing a look-up table relating actual compass heading to the outputs of sense windings by using said calculated error difference angle;

whereby said look-up table can be used for calibrating the compass to compensate for non-orthogonal alignments of the sense windings.

5,287,296

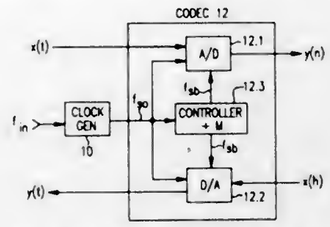
CLOCK GENERATORS HAVING PROGRAMMABLE FRACTIONAL FREQUENCY DIVISION

Laurence E. Bays, Allentown, and Steven R. Norsworthy, Emmaus, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 22, 1992, Ser. No. 871,945
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—703 **9 Claims**

1. A clock generator for generating an output clock signal at an output frequency from an input clock signal at an input frequency, comprising:

means for dividing said input frequency by one of two first integers in each of a plurality of successive time intervals so as to generate said output frequency which is not an integral multiple of said input frequency, and



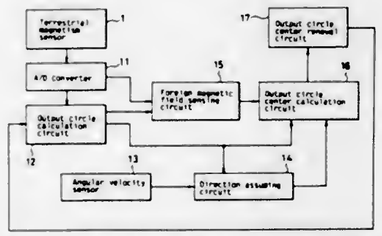
means for alternating between said two first integers in a sequence determined by the quotients of the Euclidean theorem for determining the greatest common divisor of two second integers.

5,287,297

MAGNETIC DIRECTION FINDER WITH CORRECTING CIRCUIT

Yasuhiro Ihara, Neyagawa; Yoshiki Ueyama, Sakai, and Mitsuhiro Yamashita, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 605,789, Oct. 30, 1990. This application Sep. 9, 1992, Ser. No. 942,336
Claims priority, application Japan, Nov. 2, 1989, 1-287003
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—571.02 **3 Claims**



1. A direction finding apparatus for a vehicle comprising:

a terrestrial magnetism sensor mounted on the vehicle, having two sensor elements arranged orthogonally to each other and mounted on the vehicle in a vertical plane with respect to one another for detecting a terrestrial magnetism and producing a signal indicative of terrestrial magnetism;

magnetization intensity data storing means for determining a first intensity of magnetization of said vehicle on the basis of outputs of said two sensor elements of said terrestrial magnetism sensor in an X-Y coordinate system based on a 360° turning of said vehicle on the ground and for storing said first intensity as a magnetization intensity;

foreign magnetic field sensing means for sensing a direction of a foreign magnetic field which is caused by a current flowing through electricity transmission lines, such as a railroad track, when the vehicle passes through said foreign magnetic field;

course finding means for determining a course of said vehicle on the basis of the signal indicative of terrestrial magnetism and the intensity of magnetization;

direction determining means for determining an assumed direction based on the course of said vehicle determined by said course finding means and said first intensity of magnetization calculated before said vehicle passed through said foreign magnetic field after each time the vehicle has passed through said foreign magnetic field;

magnetization intensity determining means for determining a new intensity of magnetization after each time the vehicle passes through said foreign magnetic field by deriving an intersection of a first straight line, representing the direction of the foreign magnetic field detected by said foreign magnetic field sensing means and a second straight line, representing a course of said vehicle after said vehicle has passed through said foreign magnetic field detected by said direction determining means, on a plane including an output circle of a terrestrial magnetism, at which a center of said output circle of the terrestrial magnetism is positioned,

data renewal means for storing the new intensity of magnetization obtained by said magnetization intensity determining means in said magnetization intensity data storing means as a new magnetization intensity after each time the vehicle has passed through said foreign magnetic field, and

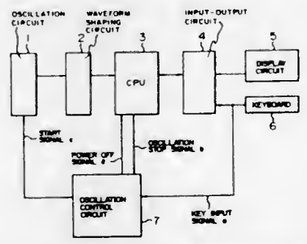
output means connected to the output of the direction determining means for continuously outputting data indicative of a direction of the vehicle based on the signal indicative of terrestrial magnetism and the magnetization intensity.

5,287,298

OSCILLATION CONTROL APPARATUS FOR A PORTABLE BATTERY-DRIVEN TERMINAL

Tetsuro Urushima, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 778,282, Oct. 17, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 985,521
Claims priority, application Japan, Oct. 23, 1990, 2-285297
Int. Cl.[5] G06F *1/04*
U.S. Cl. 364—707 **1 Claim**



1. A low power consumption portable terminal comprising:

an input device for generating an input signal;

a CPU adapted to be powered by a direct current supply means;

an oscillation control means, operatively associated with at least said input device, for receiving said input signal and generating a first start signal in response to said input signal; and

an oscillation circuit, operatively associated with said CPU and said oscillation control means, for receiving said first start signal and generating and supplying an oscillation signal to said CPU in response to said first start signal,

wherein:

said oscillation control means is operatively associated with said CPU;

said CPU further comprises:

means for performing at least one operation in response to said oscillation signal, and

means for generating and supplying a stop signal to said oscillation control means, after completion of said at least one operation;

said oscillation control means further comprises means for ceasing said first start signal in response to said stop signal; and

whereby said oscillation circuit ceases said oscillation signal in an absence of said first start signal, and

wherein said oscillation control means further comprises:

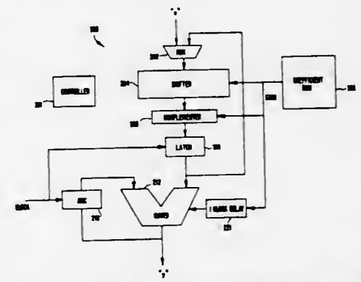
a timer unit comprising means for monitoring an amount of time between generation of said stop signal and an input signal, means for comparing said amount of time with a predetermined threshold, and means for generating and supplying a DC power shut off signal to said CPU when said amount of time is greater than said predetermined threshold; whereby said DC power shut off signal shuts off said CPU.

5,287,299

METHOD AND APPARATUS FOR IMPLEMENTING A DIGITAL FILTER EMPLOYING COEFFICIENTS EXPRESSED AS SUMS OF 2 TO AN INTEGER POWER

Kun Lin, Tucson, Ariz., assignor to Monolith Technologies Corporation, Tucson, Ariz.

Filed May 26, 1992, Ser. No. 889,134
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—759 **20 Claims**



1. An apparatus for generating indicia of the product of a data word x and a binary coefficient b, the coefficient b being expressible as a sum of L terms each of the form $f2^{-P}$, where $f=+1, -1$, or o and p is a positive integer, said apparatus comprising:

a coefficient memory configured to store indicia of said coefficient b;

a shifter comprising shifter input means for loading data into said shifter, said shifter being coupled to said coefficient memory to selectively shift the contents of said shifter in accordance with one of said terms;

a feedback link disposed to apply data output from said shifter to said shifter input means; and

summing means configured to receive data output from said shifter, for successively summing L data values output from said shifter to thereby generate said indicia of said product of said data word x and said coefficient b.

5,287,300

THREE-DIMENSIONAL MAGNETIC BUBBLE MEMORY SYSTEM

Henry L. Stadler, La Canada; Romney R. Katti, Pasadena, and Jiin-Chuan Wu, San Gabriel, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 4, 1992, Ser. No. 893,823
Int. Cl.[5] G11C *19/08*
U.S. Cl. 365—10 **15 Claims**

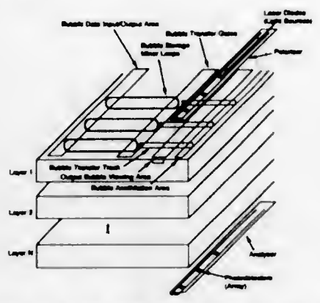
1. A three-dimensional magnetic bubble memory comprising:

a three-dimensional stack formed of a plurality of magnetic bubble memory modules stacked in contiguous abutting relation, one immediately adjacent another without intermediate non-memory layers;

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a source of linearly polarized light positioned at one end of said stack; and

a detector of Faraday-rotated light positioned at an opposite end of said stack;



each such module having a magnetic bubble viewing area in line with said light source and said detector and having a storage area and an output track for transferring a bubble replication from said storage area to said viewing area for detection therein.

5,287,301

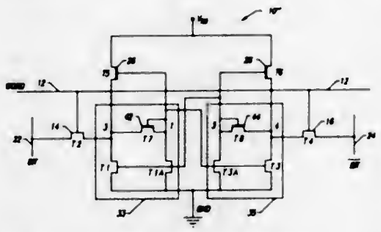
STATIC RAM CELL

Jason Redgrave, Mountain View, Calif., assignor to Vitesse Semiconductor Corporation, Camarillo, Calif.

Filed Nov. 25, 1991, Ser. No. 797,228

Int. Cl.[5] G11C *11/00*

U.S. Cl. 365—154 **13 Claims**



1. An improved static RAM cell comprising:

first and second driver elements (**33** and **35**), each element having a first (T1A or T3A) and a second (T1 or T3) transistor and resistive means (**42** or **44**) for providing a resistance, each transistor having first, second and third terminals, said second terminals being the input terminals thereof, a first terminal of said first transistor (T1A) of said first driver element (**33**) being connected to the resistive means (**42**) thereof at a first node and a first terminal of said first transistor (T3A) of said second driver element being connected to the resistive means (**44**) thereof at a second node, a first terminal of said second transistor (T1) of said first driver element (**33**) being connected to the resistive means (**42**) thereof at a third node and a first terminal of said second transistor (T3) of said second driver element being connected to the resistive means (**44**) thereof at a fourth node, said input terminals of said first and second transistors (T1A and T1) of said first driver element (**33**) being connected to said second node and said input terminals of said first and second transistors (T3A and T3) of said second driver element (**35**) being connected to said first node, and said third terminals of said first and second transistors of said first and second driver elements being connected to a first source of common potential;

a first load device (**26**), connected to a second source of common potential on one end thereof and being connected to said third node on a second end thereof and

a second load device (**28**), connected to said second source of common potential on one end and to said fourth node on the second end thereof.

5,287,302

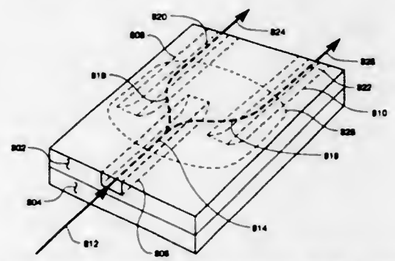
SUPERCONDUCTING OPTICALLY RECONFIGURABLE MAGNETIC DEVICE

Joseph E. Brandelik, New Carlisle, Ohio, and Andrew H. Suzuki, Kihei, Hi., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 22, 1992, Ser. No. 902,257

Int. Cl.[5] H03K *17/92;* **H01L** *39/00;* **G11B** *11/10*

U.S. Cl. 365—161 **19 Claims**



1. Optically controllable superconductor signal processing apparatus comprising the combination of:

superconductor memory means including a superconductor material first film layer having selectable pattern areas magnetic flux present and remaining pattern areas magnetic flux absent Meissner effect related superconducting memory capability;

a layer of magnetic flux controllable second material disposed adjacent said superconductor material first film layer, said second layer material having predetermined electromagnetic energy signal flow influencing characteristics susceptible of magnetic flux presence and absence control by magnetic flux from said adjacent first film layer superconducting material;

superconductor film memory writing means including means for disposing a magnetic field in predetermined writing orientation with respect to said superconductor material first film layer; and

optical energy generating means for disposing temperature increasing optical energy, determinative of a configuration for said selectable pattern areas, onto a superconducting temperatured surface of said first layer superconductor material, concurrently with said writing means magnetic field, for generating superconductivity-remembered, via superconductivity magnetic flux being present, of said pattern areas in the optically heated and subsequently recooled portions of said superconductor material and superconductivity-remembered, via superconductivity magnetic flux being absent, of said pattern areas in the non optically heated portions of said superconductor material.

5,287,303

SCR TYPE MEMORY APPARATUS

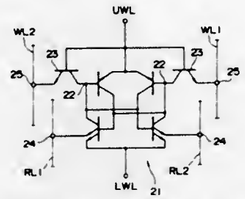
Takayuki Mogi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 931,799

Claims priority, application Japan, Aug. 21, 1991, 3-233846

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—179 **3 Claims**



1. A semiconductor memory apparatus, comprising:

(a) a plurality of SCR type memory cells each including a pair of pnp transistors and a pair of double emitter transistor operatively coupled together and forming a voltage holding node at the base of each pnp transistor;

(b) at least two word selecting lines;

(c) a pair of npn transistors provided for each of said SCR type memory cells and serving as transistors provided only for writing information into the SCR memory cell, each collector of each npn transistor of said pair of npn transistors being individually connected to a respective voltage holding node of the SCR memory cell and the bases of both npn transistors of said pair of npn transistors being commonly connected to one of said word selecting lines;

(d) a pair of write bit lines, each emitter of said npn transistors in each SCR type memory cell being separately connected to a respective write bit line; and

(e) a pair of read bit lines, one emitter of each double emitter transistor of each SCR type memory cell being separately connected to a respective read bit line.

5,287,304

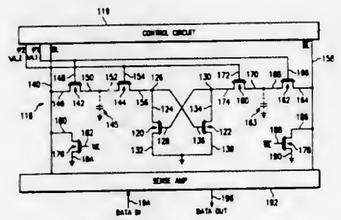
MEMORY CELL CIRCUIT AND ARRAY

Mark G. Harward, Dallas; Shivaling S. Mahant-Shetti, Richardson, and Howard Tigelaar, Allen, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1990, Ser. No. 636,518

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—189.01 **12 Claims**



1. A memory array comprising:

a plurality of cells, wherein each cell is operable in two modes wherein the first mode comprises a storage mode and wherein the second mode comprises an access mode in which binary information is either read from or written to a memory cell, each of said plurality of cells comprises:

a first series-coupled pair of transistors;

a second series-coupled pair of transistors; and

a pair of cross-coupled transistors coupled between said first and second pair of series-coupled transistors and wherein each of the two modes is effected through the combination of a first and second clocking signals;

a first conductive wordline is operable to transmit the first clocking signal from a control circuitry to a first control electrode of said first and second series-coupled pair of transistors; and

a second conductive wordline is operable to transmit the second clocking signal from said control circuitry to a second control electrode of said first and second series-coupled pair of transistors; and wherein in the storage mode each series-coupled pair of transistors operate as respective switched capacitive configuration and wherein the first series-coupled pair of transistors between the cross-coupled transistors and a bitline, and the second series-coupled pair of transistors between the cross-coupled transistors and an inverted bitline provide an equivalent resistance; and wherein in the access mode each of said first and second series-coupled pair of transistors act as pass transistors for reading or writing data provided on said bitline and inverted bitline.

5,287,305

MEMORY DEVICE INCLUDING TWO-VALUED/N-VALUED CONVERSION UNIT

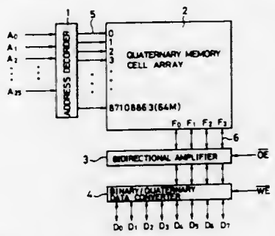
Yukihiro Yoshida, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1992, Ser. No. 904,577

Claims priority, application Japan, Jun. 28, 1991, 3-158698

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—189.01 **35 Claims**



12. A memory device comprising:

a memory cell array including a plurality of memory cells each for storing a digital n-valued (n is integer of 3 or larger) datum;

means for converting a binary digital data applied thereto into an n-valued digital data using a plurality of logic operating circuits when the binary digital data is written into said memory cell array;

means for converting an n-valued digital data into a binary digital data using a plurality of logic operating circuits when the n-valued digital data is read out from said memory cell array; and

means for decoding an n-valued logic address applied thereto and for outputting a signal decoded from the n-valued logic address to said memory cell array.

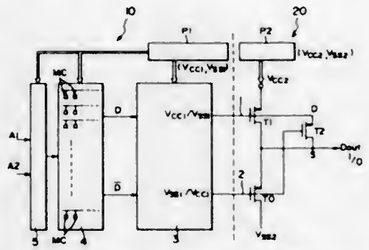
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5,287,306

SEMICONDUCTOR MEMORY DEVICE

Shinji Miyamoto, and Shigeo Ohshima, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 20, 1991, Ser. No. 718,449
Claims priority, application Japan, Jun. 22, 1990, 2-164677
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.05 **18 Claims**



1. A semiconductor memory device comprising:
a first power source having a non-ground potential V_{cc1} terminal and a ground potential V_{ss1} terminal;
an internal circuit being supplied with power from said first power source dedicated to said internal circuit, said internal circuit selecting a memory cell of a memory cell array in accordance with an inputted address and having a first output terminal and a second output terminal, and said first output terminal outputting one of said pair of potentials V_{cc1} and V_{ss1} and said second output terminal outputting the other of said pair, in accordance with the data in said selected memory cell;
a second power source having a non-ground potential V_{cc2} terminal and a ground potential V_{ss2} terminal; and
an output circuit being supplied with power from said second power source dedicated to said output circuit, said output circuit having first and second switching means serially connected between said V_{cc2} terminal and V_{ss2} terminal, the first and second switching means having first and second control terminals, the control terminals of said first and second switching means being connected to said first and second output terminals respectively, and having third switching means being connected between an interconnection between said first and second switching means connected to a data output terminal from which data is externally outputted, and said first output terminal, and a third control terminal of said third switching means being connected to said second output terminal.

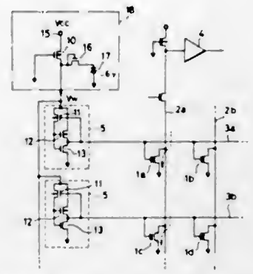
5,287,307

SEMICONDUCTOR MEMORY DEVICE

Minoru Fukuda; Yojiro Kamei, and Akihisa Nakano, all of Ikeda, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 25, 1991, Ser. No. 645,575
Claims priority, application Japan, Feb. 27, 1990, 2-46999
Int. Cl.[5] G11L 7/02
U.S. Cl. 365—189.06 **12 Claims**

1. A semiconductor memory device, in which data stored in memory elements each comprising a MOS transistor are read out by applying a reading voltage onto a plurality of word lines, each of said plurality of word lines being driven by a word line driving circuit, said device comprising a single clamping circuit, connected to a plurality of said word lines through corresponding word line driving circuits, for clamping said reading voltage so as to prevent said reading voltage from exceeding a relatively high threshold voltage of said memory elements when a source voltage is greater than said



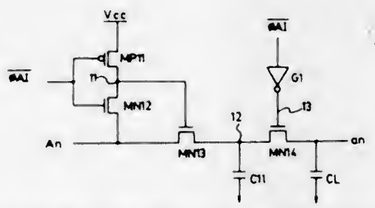
relatively high threshold voltage, said clamping circuit including a circuit having a diode connected to ground.

5,287,308

UNDERSHOOT RESISTING INPUT CIRCUIT FOR SEMI-CONDUCTOR DEVICE

Jong H. Oh, Icheonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Icheonkun Kyoungkido, Rep. of Korea

Filed Jun. 20, 1991, Ser. No. 717,986
Claims priority, application Rep. of Korea, Jun. 27, 1990, 1990-9579
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.06 **2 Claims**



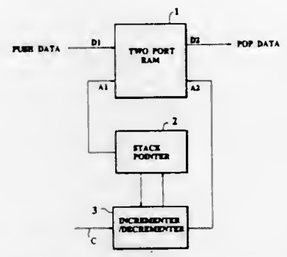
1. An undershoot resisting input circuit for a semiconductor device having a first terminal for a power supply, a second terminal for an external input, and an internal holding node in the semiconductor device, comprising:
a p-channel MOSFET having a gate connected to receive an address input signal, a source connected to the first terminal, and a drain;
a first n-channel MOSFET having a gate connected to receive the address input signal, a drain connected to said drain of said p-channel MOSFET, and a source connected to the second terminal;
a second n-channel MOSFET having a gate connected to said drain of said p-channel MOSFET, a drain connected to the second terminal, and a source;
an inverter for inverting the address input signal, said inverter having an output terminal; and
a third n-channel MOSFET having a gate connected to said output terminal of said inverter, a drain connected to said source of said second n-channel MOSFET, and a source connected to the internal holding node.

5,287,309

HIGH-SPEED STACK MEMORY

Naoyuki Kai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1991, Ser. No. 731,764
Claims priority, application Japan, Jul. 19, 1990, 2-189463
Int. Cl.[5] G11C 8/00
U.S. Cl. 365—189.04 **17 Claims**



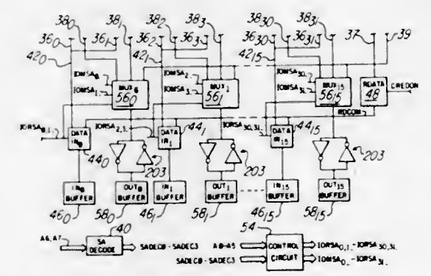
1. A stack memory comprising:
a stack pointer for holding an address for use in storing push data and reading pop data;
a two port RAM having first and second ports;
means connected with said RAM for supplying a first address to said RAM for storing push data through said first port and for supplying a second address smaller than said first address by one, to said RAM, for reading pop data through said second port, said storing and said reading being performed at the same time; and
means connected to said pointer for selectively incrementing or decrementing the address in said stack pointer in order to make effective only one of said storing and said reading.

5,287,310

MEMORY WITH I/O MAPPABLE REDUNDANT COLUMNS

John F. Schreck, and Phat C. Troung, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 594,531, Oct. 9, 1990, abandoned. This application May 6, 1993, Ser. No. 57,405
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.05 **5 Claims**



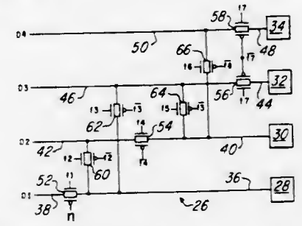
1. A memory, comprising:
an array of memory cells arranged in a plurality of rows and columns, said columns being arranged in a plurality of subarrays;
a plurality of column decoder circuits, each said column decoder circuit selecting a single column out of the columns in said subarray in response to a column address signal;
a plurality of redundant columns;
a redundant column decoder for selecting a single redundant column in response to at least a portion of said column address signal;
an input buffer and an output buffer for each of said subarrays, each input buffer and output buffer being connectable to a said column in said subarray;
a plurality of switching means, each switching means coupling a said input and a said output buffer either to a selected column in response to first control signals or to a selected redundant column in response to second control signals; and
a control circuit for storing the addresses of defective columns and information identifying the input and output buffers capable of coupling each defective column, said control circuit supplying first control signals to all of said switching means when a received column address signal does not match a stored address and supplying second control signals to said switching means capable of coupling each said defective column and first control signals to the remaining switching means when a received column address matches a stored address.

5,287,311

METHOD AND APPARATUS FOR IMPLEMENTING X2 PARITY DRAM FOR 16 BIT SYSTEMS FROM X4 PARITY DRAM

Jim C. Tso, Sugarland; Vipul Patel, and Kenneth A. Poteet, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1991, Ser. No. 708,594
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—201 **16 Claims**



1. A memory device, comprising:
plural quadrants of memory arrays,
plural access inputs, there being one access input for each quadrant, and each access input is coupled to one quadrant of the plural quadrants of memory arrays;
steering circuitry for coupling the access input of an unrepairable memory quadrant to an alternative quadrant; and
circuitry for masking out for-selected quadrants.

5,287,312

DYNAMIC RANDOM ACCESS MEMORY

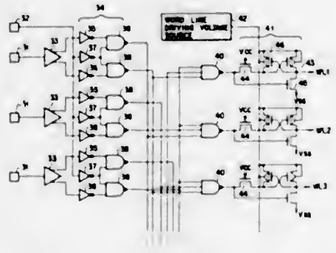
Junichi Okamura, Yokohama, and Tohru Furuyama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,492
Claims priority, application Japan, Dec. 26, 1990, 2-418371
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—201 **8 Claims**

1. A semiconductor memory device, comprising:
dynamic memory cells arranged in a row and column array, each of said dynamic memory cells comprising a transfer MOS transistor of a first conductivity type and a capacitive element coupled to said transfer MOS transistor for storing data;
word lines each connecting the dynamic memory cells in one row of said array;
bit lines each connecting the dynamic memory cells in one column of said array;

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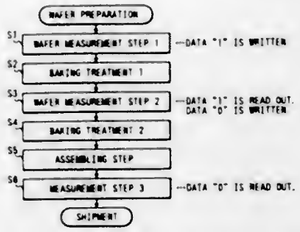
pads for receiving external address signals;
address amplifying circuits coupled to said pads and responsive to the external address signals for generating first internal address signals for selecting a first number of said word lines in a normal operation mode;
a control circuit responsive to a voltage stress test control signal for generating second internal address signals for selecting a second number of said word lines in a voltage stress test mode, the second number being greater than the first number;
word line selecting circuits responsive to the first and second internal address signals for outputting word line selecting signals to select ones of said word lines;
a word line driving voltage source for outputting a word line driving voltage; and
word line driving circuits each coupled between corresponding ones of said word lines and said word line selecting circuits and responsive to said word line selecting signals for driving selected word lines, each of said word line driving circuits including:
a first transistor of the first conductivity type having a first



current terminal coupled to the corresponding one of said word line selecting circuits, a second current terminal, and a control terminal coupled to a power supply potential;
a second transistor of a second conductivity type opposite the first conductivity type having a first current terminal coupled to said word line driving voltage source, a second current terminal coupled to the corresponding one of said word lines, and a control terminal coupled to said second current terminal of said first transistor;
a third transistor of the first conductivity type having a first current terminal coupled to the corresponding ones of said word lines, a second current terminal coupled to a ground potential, and a control terminal coupled to the corresponding one of said word line selecting circuits; and
a fourth transistor of the second conductivity type having a first current terminal coupled to said word line driving voltage source, a second current terminal coupled to said control terminal of said second transistor, and a control terminal coupled to the corresponding one of said word lines.

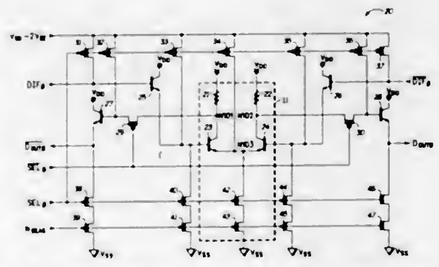
5,287,313
METHOD OF TESTING DATA-HOLDING CAPABILITY OF A SEMICONDUCTOR MEMORY DEVICE
Susumu Okajima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Jun. 24, 1992, Ser. No. 903,739
Claims priority, application Japan, Aug. 7, 1991, 3-223424
Int. Cl.[5] H01L *21/66, 29/78*
U.S. Cl. 365—201 **3 Claims**

1. A method of testing a data-holding capability of a semiconductor memory device, comprising the steps of:
writing first test data into respective semiconductor memory devices formed on a semiconductor substrate;
baking the semiconductor substrate in a high-temperature atmosphere for a predetermined period;
reading the first test data from the respective semiconductor memory devices; and



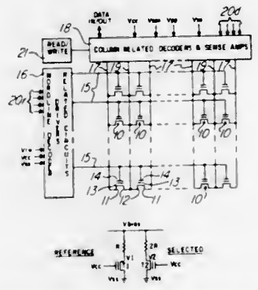
checking based on the readout test data whether the first test data is held by the respective semiconductor memory devices in a correct manner.

5,287,314
BICMOS SENSE AMPLIFIER WITH REVERSE BIAS PROTECTION
Stephen T. Flannagan, and Taisheng Feng, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 26, 1992, Ser. No. 887,968
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—208 **22 Claims**



18. A sense amplifier for an integrated circuit memory, comprising:
a differential amplifier including first and second bipolar transistors having bases for receiving first and second input signals, respectively, an emitter of said first bipolar transistor coupled to an emitter of said second bipolar transistor, collectors of said first and second transistors respectively providing first and second internal signals, and a first current source coupled to said emitters of said first and second bipolar transistors;
an emitter-follower transistor having a base for receiving said first internal signal, and an emitter for providing an output signal;
a second current source coupled to said emitter of said emitter-follower transistor;
coupling means for coupling said base of said emitter-follower transistor to said collector of said first bipolar transistor in response to a select signal being in a first logic state, and decoupling said base of said emitter-follower transistor from said collector of said first bipolar transistor in response to said select signal being in a second logic state; and
reverse-bias protection means for providing a predetermined voltage to said bases and said emitters of said first and second bipolar transistors, and to said base and said emitter of said emitter-follower transistor in response to said select signal being in said second logic state, said reverse-bias protection means decoupling said first current source from said coupled emitters, and said second current source from said emitter-follower transistor in response to said select signal being in said second logic state, said reverse-bias protection means preventing said first, second bipolar transistors, and emitter-follower transistors from being excessively reverse-biased when said select signal is in said second logic state.

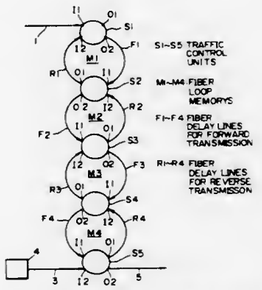
5,287,315
SKEWED REFERENCE TO IMPROVE ONES AND ZEROS IN EPROM ARRAYS
John F. Schreck, Houston; Debra J. Dolby, Sugarland; David J. McElroy, Lubbock; Eddie H. Breashears, Lubbock, and John H. MacPeak, Lubbock, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 648,105, Jan. 31, 1991, abandoned. This application May 7, 1993, Ser. No. 57,435
Int. Cl.[5] G11C *7/02, 11/34*
U.S. Cl. 365—210 **6 Claims**



1. A device for improving the sense margin of non-volatile memories, comprising:
an array of rows and columns of floating gate memory cells; and
a sense amplifier responsive to said array, said sense amplifier having an unprogrammed reference memory cell with a longer channel length and a higher threshold voltage than that of a selected memory cell of said array.

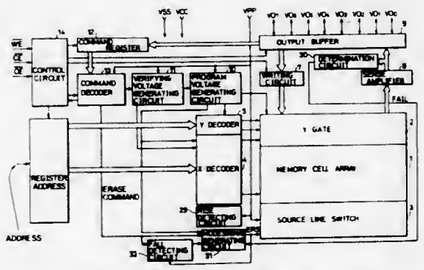
5,287,316
OPTICAL FIFO BUFFER
Shigeo Urushidani, Hachioji; Koji Sasayama, Iruma, and Jun Nishikido, Kodaira, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed May 24, 1991, Ser. No. 705,387
Claims priority, application Japan, May 25, 1990, 2-136766
Int. Cl.[5] G11C *19/30, 13/04*
U.S. Cl. 365—215 **7 Claims**

1. An FIFO buffer for holding signals and supplying held signals to a device connected thereto, said FIFO buffer comprising:
plural loop means for holding a signal introduced therein via feedback, wherein each loop means includes a delay element, and said plural loop means are connected to one another between an input portion and an output portion in a cascade manner; and
plural traffic control means for controlling the signal traffic between said plural loop means, each traffic control means having an input side and an output side connected to the output portion and input portion of respective loop means so that each traffic control means is commonly included in two neighboring loop means, the controlling function of each traffic control means is based on fed back and new signals which come thereto from neighboring loop means on the output side and input side, respectively,
whereby in the case where no signal is fed back to said traffic control means from said output side and a new signal is transmitted to said traffic control means from said input side, said traffic control means transmits said new signal to said loop means which is on said output side; in the case where any signal is fed back to said traffic control means from said output side and a new signal is transmitted to



said traffic control means from said input side, said traffic control means transmits said fed-back signal to said loop means which is on said output side again and transmits said new signal to said loop means which is on said input side; and in the case where any signal is fed back to said traffic control means from said output side and also no signal is transmitted to said traffic control means from said input side, said traffic control means transmits said fed back signal to said loop means which is on said output side again.

5,287,317
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH OVER-ERASING PREVENTION
Kazuo Kobayashi, and Makoto Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1991, Ser. No. 721,773
Claims priority, application Japan, Jul. 3, 1990, 2-176895
Int. Cl.[5] G11C *7/00, 11/34*
U.S. Cl. 365—218 **9 Claims**



1. A non-volatile semiconductor memory device comprising:
a plurality of memory cells arranged in an array of rows and columns and including electrically erasable non-volatile memory transistors to which information can be programmed,
row selecting means for decoding externally inputted ad-

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dress signals to select memory cells in a row direction among said plurality of memory cells,

column selecting means for decoding externally inputted address signals to select memory cells in a column direction among said plurality of memory cells,

erase state determining means for determining whether or not data subjected to erasing from said memory cells is erased, and

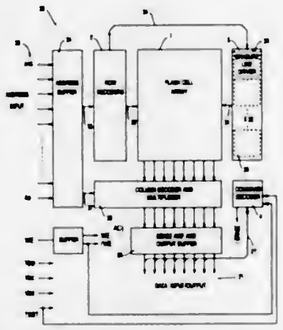
mode signal generating means responsive to a determination by said erase state determining means that said data is erased for outputting an erase-inhibit mode signal and responsive to a determination that said data is not erased for outputting an erase-enahle mode signal.

5,287,318

SEMICONDUCTOR MEMORY

Masaru Kuki, Osaka, and Yukio Kitaguchi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1992, Ser. No. 836,023
Claims priority, application Japan, Feb. 15, 1991, 3-21879
Int. Cl.[5] G11C *7/00, 16/00*
U.S. Cl. 365—218 **2 Claims**



1. A semiconductor memory comprising:

an EEPROM cell array having a plurality of blocks each consisting of a plurality of EEPROM cells;

an erasure line driver array having a plurality of erasure line drivers corresponding one-to-one to said blocks for selectively erasing the contents of the EEPROM cells in the corresponding blocks; and

a row decoder for decoding an external address signal and thereby selecting a particular EEPROM cell during a read operation and driving a selected erasure line driver during a block erasure operation, said row decoder having an erasure block decoder which, when an external test signal is given, outputs a signal for simultaneously driving a first plurality of said erasure line drivers in said erasure line driver array, or a signal for simultaneously driving a second plurality of said erasure line drivers in said erasure line driver array, according to an externally applied address signal;

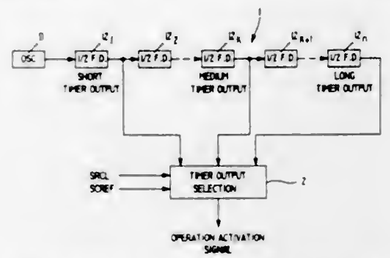
said first plurality of said erasure line drivers comprising all even-numbered erasure line drivers, and said second plurality of said erasure line drivers comprising all odd-numbered erasure line drivers.

5,287,319

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Katsumi Fukumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1991, Ser. No. 704,425
Claims priority, application Japan, May 23, 1990, 2-132965
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **5 Claims**



1. A semiconductor memory device comprising: a plurality of memory cells each of which comprises volatile memory means and nonvolatile memory means; and a plurality of word lines,

said semiconductor memory device further comprising:

an internal timer circuit for generating at least two timer outputs, the cycles of said timer outputs being different to each other; and

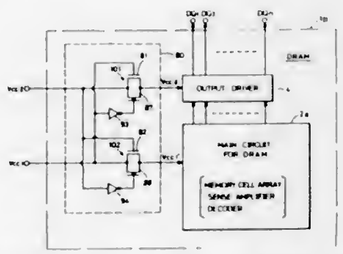
a timer output selection circuit for receiving said timer outputs, and for selectively supplying one of said timer outputs to said word lines as a word line activation signal.

5,287,320

TIMING COINCIDING CIRCUIT SIMULTANEOUSLY SUPPLYING TWO POWER SUPPLY VOLTAGES APPLIED IN DIFFERENT TIMING

Yukinobu Adachi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,115
Claims priority, application Japan, Jun. 4, 1991, 3-132924
Int. Cl.[5] G11C *11/34;* **H01L** *23/58*
U.S. Cl. 365—226 **12 Claims**



8. A semiconductor memory device energized by externally applied at least first and second power supply voltages, comprising:

data storing means supplied with said first power supply voltage for storing a data signal;

data read out means supplied with said first power supply voltage for reading out the data signal stored in said data storing means in response to an externally applied read out control signal;

data output terminals for providing the data signal read out from said data read out means;

driving circuit means supplied with said second power supply voltage for driving said data output terminals in response to the data signal read out by said data reading out means,

said driving circuit means has a tendency to consume much current in response to an unstable output signal provided from said data read out means when said second power supply voltage only is applied; and

timing coinciding means responsive to the supply-timing of one of the first and second voltages received for making the other supply-timing of the first and second power supply voltages coincide with said one,

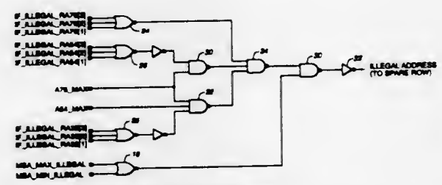
said first and second power supply voltages being respectively applied to said data storing means and data read out means, and said driving circuit means through said timing coinciding means.

5,287,321

ILLEGAL ADDRESS DETECTOR FOR SEMICONDUCTOR MEMORIES

James D. Shiffer, II, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 24, 1992, Ser. No. 825,489
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 **10 Claims**



1. A memory apparatus comprising:

N+1 memory rows where N is not a power of two;

means for receiving a memory row address;

decoder means for causing a unique memory row to be addressed for each memory row address having a value not greater than N−1; and

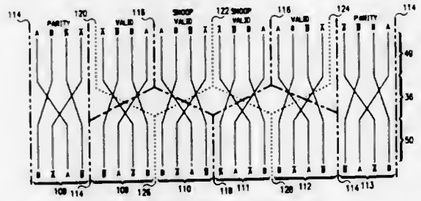
illegal address detector means for causing a common memory row to be addressed for all memory row addresses having a value greater than or equal to N.

5,287,322

INTEGRATED CIRCUIT DUAL-PORT MEMORY DEVICE HAVING REDUCED CAPACITANCE

Bahador Rastegar, Austin, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 17, 1991, Ser. No. 731,802
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.05 **18 Claims**



1. A dual port memory device, comprising:

an array of memory cells, said array divided into a first part and a second part along a line in a first direction; and

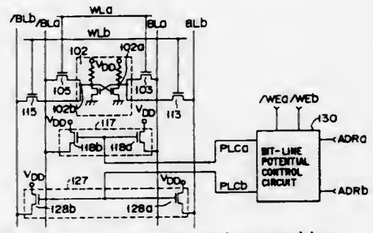
a plurality of bit lines traversing the array in a second direction perpendicular to the first direction, said bit lines being grouped into a first group corresponding to a first port and a second group corresponding to a second port, with each cell of the array being accessible by bit lines from both the first and second groups, and wherein bit lines in the first group cross over bit lines in the second group in a cross-over region between the first and second memory parts.

5,287,323

SEMICONDUCTOR MEMORY DEVICE

Makoto Takahashi, and Toshinari Takayanagi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

PCT No. PCT/JP91/00858, § 371 Date Mar. 18, 1992, § 102(e) Date Mar. 18, 1992
PCT Filed Jun. 26, 1991, Ser. No. 834,231
Claims priority, application Japan, Jun. 27, 1990, 2-166615
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.05 **5 Claims**



1. A semiconductor memory device comprising:

memory means for storing data statically;

a first transfer means for transferring the data stored in said memory means to a first bit line, in accordance with the potential of a first word line;

a second transfer means for transferring the data stored in said memory means to a second bit line, in accordance with the potential of a second word line;

potential-holding means connected between said first and second bit lines, on the one hand, and a power-supply potential, for holding the potentials of said bit lines at the power-supply potential; and

potential-holding control means for controlling said potential-holding means in accordance with a plurality of address signals and a plurality of control signals, said potential-holding control means further including:

a circuit which generates a signal for turning off said potential-holding means, when said first and second bit lines are selected by an address signal and data-writing is allowed on one of said first and second bit lines, in accordance with a write-enable signal.

5,287,324

MULTIPORT DRAM

Ichiro Nagashima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1992, Ser. No. 858,090
Claims priority, application Japan, Mar. 29, 1991, 3-067265
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.05 **3 Claims**

1. A multiport DRAM comprising:

a DRAM cell array;

a sequential access memory (SAM) for inputting data of a specific length to the DRAM cell array and transmitting that data to an external device;

a SAM address counter for counting the addresses of the data in the SAM;

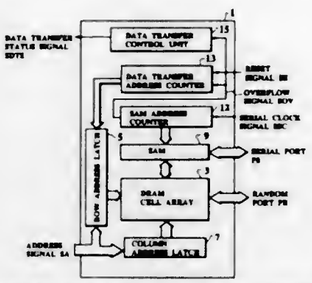
a serial port connected to the SAM for transmitting the data in the SAM to an external device;

a data transfer address counter, the contents of which is cleared by inputting an external reset signal and is counted

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up by inputting an overflow signal which is output from the SAM address counter; and

a data transfer control unit for outputting a data transfer



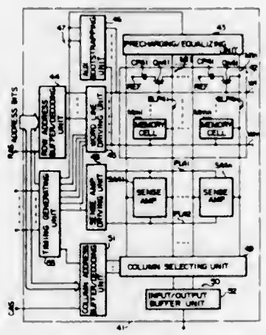
status signal which indicates that data transmission is in progress when overflow data corresponding to said overflow signal in the DRAM cell array designated by the data transfer address counter is transmitted to the SAM.

5,287,325

SEMICONDUCTOR MEMORY DEVICE HAVING A DRIVER UNIT FOR BOOSTING A WORD LINE TWICE

Yasukazu Morita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 712,751
Claims priority, application Japan, Jun. 8, 1990, 2-151287
Int. Cl.[5] G11C *07/00*
U.S. Cl. 365—230.06 **8 Claims**



1. A semiconductor memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of memory cells arranged in rows and columns and respectively storing data bits in the form of electric charges, said plurality of memory cells having switching transistors, respectively;

b) a plurality of word lines respectively associated with said rows of said memory cells and coupled to gate electrodes of said switching transistors of the associated rows of said memory cells;

c) a row selecting unit responsive to a row address strobe signal and operative to decode row address bits for designating one of said word lines;

d) a plurality of bit line pairs respectively associated with the columns of said memory cells for propagating said data bits read out from said memory cells coupled to one of said word lines, the data bits being read out from said memory cells through said switching transistors for producing small differential voltages on said associated bit line pairs in said first phase, said second phase taking place after said small differential voltages are developed by sense amplifier circuits respectively coupled to said bit line pairs, said third phase taking place so as to restore said data bits on said bit line pairs to said memory cells coupled to said one of said word lines; and

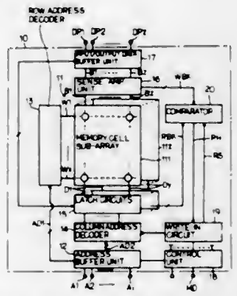
e) word line driving means driving said one of said word lines for allowing said data bits to be read out from said memory cells coupled to said one f said word lines through said switching transistors to said bit line pairs, said word line driving means boosting said one of said word lines to a first voltage level widely spaced from a threshold level of said switching transistors in a first phase of a read-out operation, said word line driving means shifting said one of said word lines to a second voltage level closer to said threshold level than said first voltage level in a second phase following said first phase, said word line driving means boosting said one of said word lines to a third voltage level widely spaced from said threshold level rather than said second voltage level in a third phase following said second phase, said word line driving means comprising e-1) a main bootstrapping circuit for producing said first voltage level, e-2) a selecting circuit selectively coupling a common node to said main bootstrapping circuit and a source of low voltage level, e-3) a plurality of transferring circuits respectively coupled to said word lines and selectively coupled to said common node under the control of said row selecting unit, e-4) a discharging circuit for discharging said common node from said first voltage level to said second voltage level, and e-5) an auxiliary bootstrapping circuit for boosting said common node from said second voltage level to said third voltage level.

5,287,326

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE SELECTIVELY SKIPPING MEMORY CELLS IN PROGRAMMING

Masayoshi Hirata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,009
Claims priority, application Japan, Sep. 27, 1991, 3-277192
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.03 **9 Claims**



1. A non-volatile semiconductor memory device having an erasing mode, a programming mode and a read-out mode of operation, comprising:

a) a memory cell array having a plurality of memory cells selectively entering erased state and write-in state for storing data bits, logic levels of each data bit being corresponding to said erased state and said write-in state, respectively;

b) an addressing means operative to select at least one memory cell from said memory cell array for at least said programming mode and said read-out mode of operation;

c) a read-out means operative to read out at least one data bit from said at least one memory cell;

d) a controlling means storing at least one write-in data bit supplied from the outside thereof in said programming mode, and comparing said at least one write-in data bit with said at least one data bit to see whether or not the logic level of said at least one write-in data bit is inconsistent with the logic level of said at least one data bit, said controlling means being further operative to produce a prohibiting signal when said at least one write-in data bit is inconsistent with said at least one data bit, and

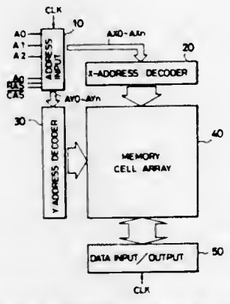
e) a write-in means operative to write said at least one write-in data bit into said at least one memory cell in the absence of said prohibiting signal, said write-in means being prohibited from write-in of said at least one write-in data bit in the presence of said prohibiting signal.

5,287,327

SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,388
Claims priority, application Japan, Nov. 20, 1990, 2-316523
Int. Cl.[5] G11C *8/04*
U.S. Cl. 365—230.02 **25 Claims**



13. A synchronous dynamic random-access memory that provides data output in response to first and second address signals, first and second control signals and a clock signal comprising:

a memory cell array having a plurality of memory cells each of which stores predetermined data;

a first latch signal output circuit for outputting a first latch signal in response to said clock signal and said first control signal;

a second latch signal output circuit for outputting a second latch signal in response to said clock signal and said second control signal;

a first latch circuit coupled to said first latch signal output circuit for latching said first address signal in response to the first latch signal;

a second latch circuit coupled to said second latch signal output circuit for latching said second address signal in response to the second latch signal;

a decoding circuit coupled to said memory cell array and said first and second latch circuits for selecting one of the memory cells in said memory cell array in response to said first and second address signals each of which is latched by said first and second latch circuits; and

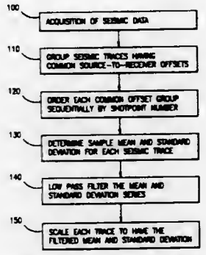
an output circuit coupled to said memory cell array for outputting the data stored in the memory cell which is selected by said first and second address signals in response to said clock signal and said first and second control signals.

5,287,328

METHOD FOR REMOVING RANDOM SOURCE AND RECEIVER NOISE FROM SEISMIC TRACES

John E. Anderson, Richardson; Michael A. Jervis, Austin, and Robert G. Keys, Dallas, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 28, 1993, Ser. No. 10,097
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—38 **9 Claims**



4. Method for removing amplitude variations in recorded seismic signals due to random noise effects of receiver calibration differences and source strength differences, comprising the steps of:

a) recording seismic reflection signals from subsurface formations along a line of exploration on the earth's surface wherein a plurality of seismic energy sources and a plurality of seismic receivers are spaced-apart along said line of exploration, said seismic reflection signals being recorded as seismic traces,

b) gathering said seismic traces into common source-to-receiver offset groups,

c) determining a mean and a standard deviation for each seismic trace within each common offset group of said seismic traces,

d) applying to the mean and standard deviations for each seismic trace a filter designed to eliminate high frequency amplitude variations due to random receiver calibration differences and source strength differences without distorting low frequency amplitude variations caused by said subsurface formations, and

e) scaling each seismic trace such that its standard deviation is equal to the filtered mean and standard deviation for said trace, thereby removing amplitude variations due to receiver calibration differences and source strength differences from said trace.

5,287,329

DOPPLER-EFFECT VEHICLE GROUND SPEED DETECTING APPARATUS WITH MEANS FOR ADJUSTING FREQUENCY OF GENERATED WAVE

Shinji Ikeda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

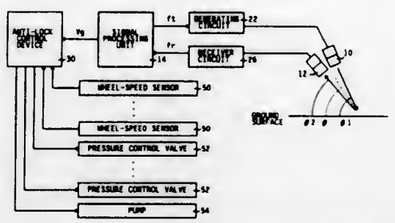
Filed Apr. 19, 1993, Ser. No. 47,280
Claims priority, application Japan, May 13, 1992, 4-146405
Int. Cl.[5] G01S *13/00*
U.S. Cl. 367—91 **10 Claims**

1. A Doppler-effect speed detecting apparatus for detecting a ground speed of a motor vehicle, including (a) a transmitter for transmitting a wave towards a ground surface, (b) a receiver for receiving a portion of the transmitted wave which is reflected by the ground surface, (c) output means for producing an output indicative of the ground speed of the vehicle, according to a Doppler effect on the basis of a frequency of said transmitted wave as transmitted from said transmitter and a frequency of the reflected wave as received by said receiver, and (d) frequency changing means for changing the frequency of said transmitted wave so that a sensitivity of said receiver is

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held within a predetermined optimum range, wherein the improvement comprises:

said frequency changing means including restricting means



for restricting a change in the frequency of said transmitted wave due to deterioration of a condition of said ground surface which causes said sensitivity to be lowered.

5,287,330

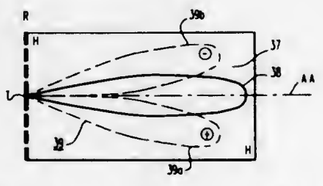
SONAR APPARATUS

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1993, Ser. No. 89

Int. Cl.[5] **G01S** *15/00*

U.S. Cl. 367—103 **10 Claims**



1. Sonar apparatus having a linear transmitting transducer and a linear receiver transducer transverse thereto arranged in a Mills Cross array comprising:

a) transmitting means, including said transmitting transducer, for projecting pulses of acoustic energy and operable to project a first pulse having a predetermined beam pattern followed thereafter, by a time delay δ, a second pulse having a different beam pattern;

b) one of said beam patterns being a sum and the other being a difference beam pattern; and

c) receiver means, including said receiver transducer, for receiving and processing reflections of projected acoustic energy according to a sum and difference receiving beam pattern.

5,287,331

AIR COUPLED ULTRASONIC TRANSDUCER

David W. Schindel, Kingston, Canada, and David A. Hutchins, Kenilworth, England, assignors to Queen's University, Kingston, Canada

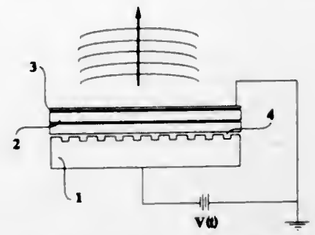
Filed Oct. 26, 1992, Ser. No. 966,649

Int. Cl.[5] **H04R** *17/00*

U.S. Cl. 367—140 **23 Claims**

1. An acoustic transducer operable in air up to at least 2 MH_z, comprising: a substrate having at least one conducting surface and having a plurality of pits of selected size and shape distributed in a selected pattern over at least one surface thereof;

at least one dielectric film superimposed over said pits in said one surface of said substrate so as to provide a plurality of air pockets between said substrate and said dielectric film; and



a conducting upper electrode superimposed on said dielectric film.

5,287,332

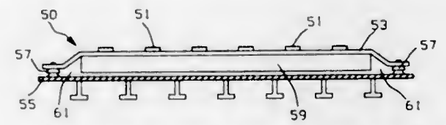
ACOUSTIC PARTICLE ACCELERATION SENSOR AND ARRAY OF SUCH SENSORS

John D. Lea, Huntington, N.Y., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 24, 1992, Ser. No. 903,428

Int. Cl.[5] **H04R** *17/00*

U.S. Cl. 367—153 **14 Claims**



1. An apparatus for sensing acoustic waves adjacent to an acoustic noise radiating surface of the type including an acoustic baffle having alternate layers of high and low acoustic impedance, the acoustic baffle constructed and arranged to be positioned with one surface adjacent to the acoustic noise radiating surface, comprising:

acoustic sensors mounted on a mounting surface on said acoustic baffle, said mounting surface positioned opposite said one surface and constructed to provide high flexural stiffness; and

vibration isolators having a first end coupled to said mounting surface and a second end constructed for coupling to said acoustic noise radiating surface;

said mounting surface and vibration isolators constructed and arranged to decouple said acoustic sensors from vibrations of said acoustic noise radiating surface.

5,287,333

NOTIFICATION SYSTEM WITH VOICE IN AN AUDIO SYSTEM

Hitoshi Hirata, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 27, 1991, Ser. No. 675,769

Claims priority, application Japan, Apr. 28, 1990, 2-112829

Int. Cl.[5] **G08B** *1/08;* **H04B** *1/20;* **G11B** *31/00*

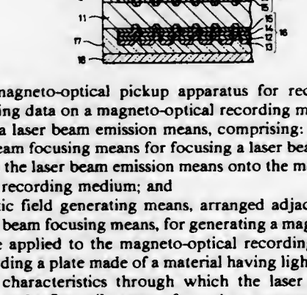
U.S. Cl. 369—4 **2 Claims**

1. A notification system in an audio system having an FM tuner, a recording medium reproducing device, and stereo modulator means for modulating an audio signal from the recording medium reproducing device to produce a composite signal so as to be received by the FM tuner for reproducing the audio signal, the notification system comprising:

control means for changing a function of the recording medium reproducing device and for producing a control signal;

a muting circuit, connecting to said control means and responsive to the control signal, for producing an audio signal of reduced level from the recording medium reproducing device;

speech information producing means, connected to said control means and responsive to the changing of the function of the recording medium reproducing device, for producing speech information corresponding to the changed function; and



combining means, connected to the muting circuit and speech information producing means, for combining the speech information with said reduced level audio signal and for applying the combined audio and speech information signal to the stereo modulator means to create said composite signal.

5,287,334

MAGNETO-OPTICAL PICKUP APPARATUS AND MAGNETO-OPTICAL RECORDING/REPRODUCING APPARATUS

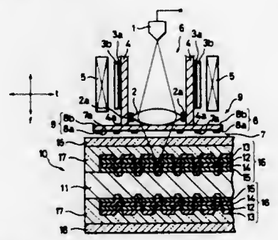
Kietsu Iwabuchi; Koji Sasaki, both of Miyagi; Tetsu Watanabe, Tokyo; Tamotsu Yamagami, Kanagawa, and Yoshio Aoki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 553,785, Jul. 13, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 808,077

Claims priority, application Japan, Jul. 29, 1989, 1-197349; Jan. 30, 1990, 2-19989

Int. Cl.[5] **G11B** *5/127*

U.S. Cl. 369—13 **14 Claims**



1. A magneto-optical pickup apparatus for recording or reproducing data on a magneto-optical recording medium, for use with a laser beam emission means, comprising:

laser beam focusing means for focusing a laser beam emitted from the laser beam emission means onto the magneto-optical recording medium; and

magnetic field generating means, arranged adjacent to the laser beam focusing means, for generating a magnetic field to be applied to the magneto-optical recording medium, including a plate made of a material having light transmission characteristics through which the laser beam can pass, and a flat coil pattern, formed on one surface of the plate, for generating the magnetic field.

5,287,335

OPTICAL DISK DEVICE FOR RECORD AND REPRODUCTION OF ADDITIONAL INFORMATION BESIDES REPRODUCTION OF BASIC ONE

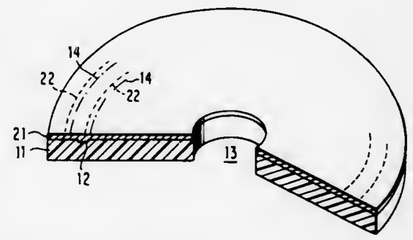
Yoshikazu Ichiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 759,810, Sep. 16, 1991, Pat. No. 5,166,913, which is a continuation of Ser. No. 302,277, Jan. 27, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 917,977

Claims priority, application Japan, Jan. 27, 1988, 63-179101

Int. Cl.[5] **G11B** *11/00*

U.S. Cl. 369—13 **3 Claims**



1. An optical disk device for reproducing and recording information comprising:

an optical disk including a substrate disk having a surface formed with a series of pits and lands along a basic recording track for recording basic information including address information and data information, and an additional recording layer formed on said surface and said substrate disk for recording additional information along an additional recording track, positioned above said basic recording track, in an additional form different from said series of pits and lands, said additional recording layer being a write-once recording medium;

an optical head for irradiating an optical beam to said optical disk along said basic recording track and for receiving a reflected beam reflected from said optical disk to produce a reading signal including a basic information signal representative of a beam intensity of said reflected beam varied by said series of pits and lands and an additional information signal by detecting said additional form in said reflected beam;

a basic information reproducing circuit connected to said optical head via switching means for reproducing said basic information in response to said basic information signal;

an additional information recording and reproducing circuit connected to said optical head via said switching means for causing said optical head to record said additional information along said additional recording track by means of said optical beam in said additional form so as to add said additional information to said basic information, and for reproducing said additional information in response to said additional information signal; and

control means for causing said switching means to connect said optical head to one of said basic information reproducing circuit and said additional information recording and reproducing circuit.

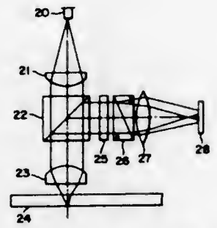
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5,287,336

OPTICAL PICKUP USING SPLIT BEAMS IMPINGING ON DIFFERENT PHOTO-DETECTOR AREAS

Kiyonobu Endo; Kazuya Matsumoto, and Tetsuro Kawayama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 658,428, Feb. 20, 1991, which is a continuation of Ser. No. 349,963, May 8, 1989, abandoned, which is a continuation of Ser. No. 832,651, Feb. 25, 1986, abandoned. This application Sep. 30, 1992, Ser. No. 953,979
Claims priority, application Japan, Feb. 28, 1985, 60-039050; Feb. 28, 1985, 60-039051; Apr. 8, 1985, 60-072733
Int. Cl.[5] G11B *11/00, 7/00*
U.S. Cl. 369—13 25 Claims



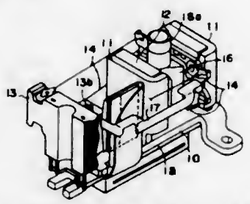
1. A light pick-up apparatus, comprising:
means for projecting a light beam polarized in a predetermined direction toward a recording medium where information is magnetically recorded;
separation means for dividing a light beam reflected by said recording medium with modulation of its polarization state in accordance with the recorded information into first and second light beams which are polarized in directions perpendicular to each other;
first and second light detectors for respectively detecting said first and second light beams; and
a single lens located between said separation means and said first and second light detectors for converging said first and second light beams.

5,287,337

OPTICAL PICKUP HAVING FLEXIBLE WIRING PLATE WITH FOCUSING EFFECTIVE LENGTH WHICH ELIMINATES PLATE RESTORING FORCE INDUCE PICKUP TILT DURING FOCUSING

Taichi Akiba; Yoshitsugu Araki, and Toshihiko Kurihara, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,653
Claims priority, application Japan, May 26, 1990, 2-135726; Dec. 17, 1990, 2-417868; Dec. 17, 1990, 2-417869
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—44.15 4 Claims



1. An optical pickup having a suspension base, a holder suspended from the suspension base by four wires in a form of a cantilever, coils provided on the holder to move the holder in a focusing direction and in a tracking direction, an optical system provided in the holder and having a mirror and an objective mounted in a body, a flexible wiring plate connected between the holder and the suspension base, and a circuit substrate, wherein
a focusing effective length of the flexible wiring plate is approximately equal to an effective length of one of said suspension wires;
a pair of horizontal planes perpendicular to the focusing direction are provided on both end portions of the focusing effective length of said flexible wiring plate;
a vertical plane perpendicular to a tracking direction is provided between the horizontal planes of said flexible wiring plate, said vertical plane connecting said horizontal planes along said focusing effective length;
circuit means including a light emitting element for emitting a laser beam, a light receiving element for receiving a reflected beam from a disk, said circuit means being mounted on the holder;
first wiring means is provided for supplying exciting currents to the coils on the holder from the circuit substrate through the four wires; and
second wiring means is provided for applying a voltage from the circuit substrate through the flexible wiring plate to the light emitting element, and for receiving a voltage from the light receiving element through the flexible wiring plate.

5,287,338

ERROR SIGNAL GENERATION FOR LIGHT BEAM REFLECTED FROM OPTICAL DISK WITH PLURALITY OF LIGHT DETECTING ELEMENTS

Kenichi Sato, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 889,613
Claims priority, application Japan, May 30, 1991, 3-127922
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.23 5 Claims

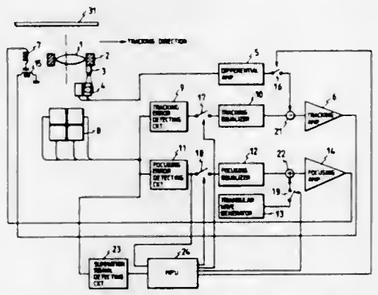
1. An error signal generator comprising:
converging means for causing a first reflected light resulting from a light beam being reflected from an optical disk to converge on a first focal point, said optical disk having a continuous groove formed thereon;
light splitting means, for splitting said first reflected light having passed through said converging means, and for causing a second reflected light to converge on a second focal point;
first light detecting means comprising a plurality of light-sensitive elements for detecting said first reflected light, said plurality of light sensitive elements being configured such that the plurality of light-sensitive elements has at least two boundaries, that is at least a first boundary and a second boundary;
second light detecting means comprising a plurality of light-sensitive elements for detecting said second reflected light, said plurality of light-sensitive elements being configured such that the plurality of light-sensitive elements has at least two boundaries, that is at least a third boundary and a fourth boundary; and
operating means for generating an error signal by performing an arithmetic operation on outputs of said first and second light detecting means, wherein said error signal represents an error of a status of illumination of said light beam on said optical disk with respect to a specified predetermined status,;
wherein said converging means, said light splitting means, said first light detecting means, and said second light detecting means are disposed so that the length of the light beam running from said converging means to said second light detecting means is different from the length of the light beam running from said converging means to said first light detecting means; and
further wherein said converging means, said light splitting means, first light detecting means and second light detecting means are disposed so that, when said first reflected light is incident on said first light detecting means, a line located within the illumination area formed on said first light detecting means, which line corresponds to a center line of an information recording track formed on said optical disk, is substantially superimposed on said first boundary formed on said first light detecting means, said illumination area being crossed by said second boundary at predetermined distance from the center point of said illumination area; and,
when said second reflected light is incident on said second light detecting means, a line located within the illumination area formed on said second light detecting means, which line corresponds to the center line on the information recording track formed on said optical disk, is substantially superimposed on said third boundary formed of said second light detecting means, said illumination area being crossed by said fourth boundary at some distance from the center point of said illumination area.

5,287,339

OPTICAL INFORMATION PROCESSING APPARATUS FOR HOLDING A LENS AT A PREDETERMINED POSITION ALONG A TRACKING PATH AT PULLING-IN OF FOCUSING CONTROL

Yoshihiko Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 312,655, Feb. 21, 1989, abandoned.
This application Feb. 1, 1993, Ser. No. 13,227
Claims priority, application Japan, Feb. 23, 1988, 63-038727
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.25 17 Claims



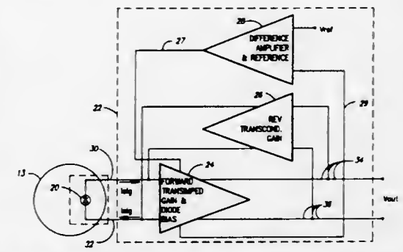
1. An optical information processing apparatus for irradiating a focused light beam to an optical recording medium to record and/or reproduce information, said apparatus comprising:
a light source for emitting a light beam;
a lens for focusing the light beam emitted from said light source to irradiate the recording medium;
detecting means for detecting light from the recording medium when irradiated by the light beam and for generating a focusing error signal and a tracking error signal;
focus control means for receiving the focusing error signal and for moving said lens along an optical axis to control focus of the light beam relative to the recording medium;
focus pull-in means for generating a focus control signal and for moving said lens along the optical axis to effect focus pull-in of the light beam relative to the recording medium in accordance with the focus control signal;
tracking control means for receiving the tracking error signal and for moving said lens in a direction perpendicular to the optical axis to control tracking of the light beam relative to the recoridng medium;
hold means for determining a center of a movable range of said lens and for causing said tracking control means to hold the light beam at the center of the movable range; and
active state control means for generating an active state control signal, and for selectively effecting one of operation and non-operation of said focus control means, focus pull-in means, tracking control means and hold means in accordance with the active state control signal, wherein said active state control means effects the non-operation of said focus control means and tracking control means and the operation of said hold means upon operation of said focus pull-in means.

5,287,340

DIFFERENTIAL AMPLIFIER FOR OPTICAL DETECTORS IN AN OPTICAL DATA STORAGE SYSTEM

Dale B. Chapman; Michael O. Jenkins, both of San Jose; Stephen A. Jove, Watsonville, and Jacobus C. L. van Peppen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1992, Ser. No. 835,153
Int. Cl.[5] G11B *7/00;* H03F *3/08*
U.S. Cl. 369—44.41 8 Claims



1. In an optical data storage system, circuitry for sensing digital data from a data storage medium, comprising:
a photodiode for sensing the intensity of an optical input signal generated by data on the medium and providing a differential output signal current;
a supply voltage source; and
an amplifier connected to said source and having a differential voltage output for providing an output voltage signal corresponding to the data, said amplifier including:
(i) a broadband feedback circuit comprising a forward transimpedance gain and diode bias stage that receives the differential output signal current, to increase signal-to-noise ratio of the output voltage signal, and a reverse transconductance gain stage that provides feedback currents to the forward stage to insure low input impedance to the amplifier and minimize differential offset of said differential voltage output;
(ii) a low frequency feedback circuit comprising said forward stage and a difference amplifier/reference stage for controlling shot noise generated by the amplifier, and

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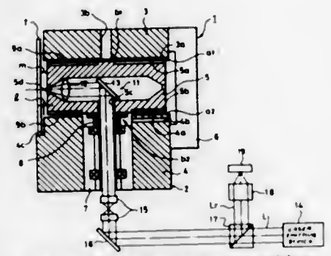
(iii) means including said feedback circuits for reverse biasing the photodiode with a voltage and isolating the photodiode from noise from said voltage source.

5,287,341

ROTATING OPTICAL HEAD APPARATUS

Tadashi Ozue; Yoshiteru Kamatani, and Takuya Kaeriyama, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,546
Claims priority, application Japan, Mar. 1, 1991, 3-036237
Int. Cl.[5] G11B *3/74*
U.S. Cl. 369—97 **2 Claims**



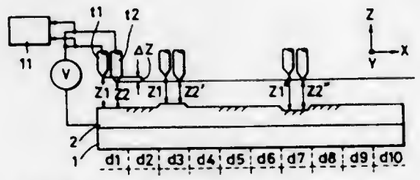
1. A rotating optical head apparatus comprising:
a pair of upper and lower stationary drums disposed on the same axis with a predetermined spacing therebetween in the axial direction; and
a rotating member disposed between said stationary drums and having an optical head to record and/or reproduce an information signal, wherein a diameter of said rotating member is selected to be smaller than those of said pair of stationary drums, said rotating member and said pair of stationary drums have surfaces opposing each other with a very small spacing and spiral grooves of a pump-out type for exhausting air in an inside space to the outside are formed on upper and lower surfaces of said rotating member opposing said very small spacing, wherein said upper stationary drum is tapered such that its diameter is continuously reduced in the upward direction and said lower stationary drum is tapered such that its diameter is continuously reduced in the downward direction.

5,287,342

APPARATUS AND METHOD FOR REPRODUCING INFORMATION

Etsuro Kishi, Kawasaki; Ryo Kuroda, Machida; Takahiro Oguchi, Atsugi; Akihko Yamano, Yokohama, and Toshihiko Miyazaki, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,159
Claims priority, application Japan, Oct. 4, 1991, 3-283792
Int. Cl.[5] G11B *9/00*
U.S. Cl. 369—126 **10 Claims**



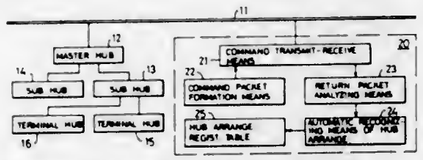
1. An apparatus for reproducing information recorded on a recording medium, comprising:
a probe facing the recording medium said recording medium comprising a plurality of data unit areas;
means for applying a voltage between the recording medium and the probe;
means for obtaining a plurality of kinds of information from each of said plurality of data unit areas of the recording medium; and
means for reproducing the information recorded on said recording medium corresponding to each of said plurality of kinds of information obtained,
wherein said plurality of kinds of information are obtained under respective different conditions.

5,287,343

NETWORK ADMINISTRATION SYSTEM

Yutaka Nakamura; Tadashi Satake; Takashi Suzuki, and Yoko Ishida, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 24, 1992, Ser. No. 840,279
Claims priority, application Japan, Feb. 25, 1991, 3-030448; Nov. 15, 1991, 3-300871
Int. Cl.[5] H04J *3/14*; H04B *17/00*
U.S. Cl. 370—13.1 **6 Claims**



1. A network administration system comprising:
a network including a plurality of repeaters in a cascade connection;
a plurality of functioning terminal units connected to the plurality of repeaters;
an administrative terminal connected through a transmission path to a topmost one of the repeaters in the cascade connection;
a command packet forming means provided in said administrative terminal for forming a command packet to be transmitted through the transmission path to said network of repeaters for recognizing an actual connection arrangement of said repeaters and said terminal units;
means provided in respective ones of said repeaters for forming a return packet to be transmitted from one of the repeaters in response to the command packet received; and means provided in said administrative terminal for analyzing said return packet to recognize data contained in the return packet.

5,287,344

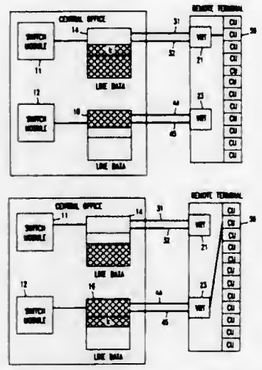
TRANSFERRING LINES IN A DIGITAL LOOP CARRIER TRANSMISSION SYSTEM

Peter L. Bye, Livingston; James H. Miller, Randolph Township, Morris County; Eva Rounen, Ocean Township, Monmouth County, and Steven P. Spencer, Livingston, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1991, Ser. No. 710,474
Int. Cl.[5] H04Q *11/00*
U.S. Cl. 370—16 **10 Claims**

1. In a digital loop carrier transmission system, a method for transferring at a remote terminal a customer line at said remote terminal between terminations at a central office comprising the steps of:
providing at least first and second virtual terminals at the remote terminal, each virtual terminal including a separate data link to an associated central office termination;
mapping the customer line to both of said virtual terminals, the mapping to only the first virtual terminal being active

to provide voice and data transmission between the customer line and the central office termination associated with the first virtual terminal; and
deactivating the mapping to said first virtual terminal and



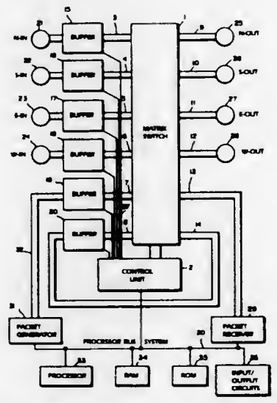
activating the mapping to said second virtual terminal so that only the mapping to said second virtual terminal provides voice and data transmission between the customer line and the central office termination associated with the second virtual terminal.

5,287,345

DATA HANDLING ARRAYS

Peter E. Osmon, and Paul Anderson, both of London, United Kingdom, assignors to The City University, London, England

PCT No. PCT/GB89/00106, § 371 Date Jul. 31, 1990, § 102(e) Date Jul. 31, 1990, PCT Pub. No. WO89/07298, PCT Pub. Date Aug. 10, 1989
PCT Filed Feb. 3, 1989, Ser. No. 548,979
Claims priority, application United Kingdom, Feb. 4, 1988, 8802447; Sep. 28, 1988, 8822785
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **15 Claims**



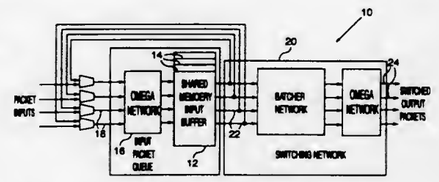
1. A multiprocessor computer including a wafer scale integrated circuit array which comprises:
a plurality of node units formed in a single slice of semiconductor material, each node unit including a communication circuit for routing messages, each message including a component representing the address of a destination node unit in the array, and;
a network of interconnections between the communications circuits of the node units, wherein each communications circuit comprises
input circuits for interconnections to the communications circuits of other node units, output circuits for interconnections to the communications circuits of other node units,
switching means for selectively joining one of the input circuits to one of the output circuits, and
control means for controlling the switching means responsive to the component of a received message to route the message to an appropriate output circuit whereby the message is transferred to a following node unit on a route to the destination node unit,
said multiprocessor computer also including a plurality of other circuits formed separately from the wafer scale integrated circuit, a plurality of respective interface control circuits each connecting a respective other circuit to a node unit of the wafer scale integrated circuit, each other circuit comprising digital data message generation means for generating digital data messages, digital data message reception means for receiving digital data messages, and a CPU;
the array comprising a plurality of memory nodes each including a section of random access memory, the CPUs being arranged to concurrently access the wafer scale integrated circuit to write data to the memory nodes as messages, and to read data from the memory nodes as messages.

5,287,346

PACKET SWITCH

Ronald P. Bianchini, Jr., and Hyong S. Kim, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Oct. 16, 1991, Ser. No. 777,737
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **31 Claims**



9. An architecture for switching packets comprising:
A. an input queue for storing received packets at ordered addresses of a shared memory, comprising:
i. N≧3 input ports for receiving packets,
ii. means for simultaneously generating unique sequentially ordered addresses for each of said received packets,
iii. a shared memory having K interleaved banks for consecutively storing addressed packets,
iv. a switching network for connecting said input ports to said shared memory, said switching network for connecting said input ports to said shared memory being an omega network;
B. an output switching network for transmitting packets to their specified output port comprising:
i. M≧3 output ports for transmitting packets,
ii. a switching network for connecting the output of said shared memory to said output ports, said switching network for connecting the output of said shared memory to said output ports being an omega network,
iii. means for detecting a packet from said shared memory to its proper output port; and

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C. a feedback network for restoring at sequential addresses in said shared memory of said input queue packets blocked from said output switching network, comprising:

i. F≧0 feedback channels,

ii. a switching network for connecting said output of said shared memory and said input, said switching network for connecting said output of said shared memory and said input being an omega network,

iii. means for simultaneously generating unique sequentially ordered addresses for each of the feedback packets, such that no null spaces exist between consecutively stored packets,

where N, K, M, and F are integers.

5,287,347

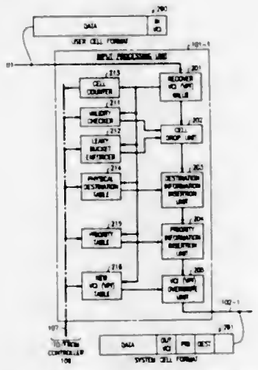
ARRANGEMENT FOR BOUNDING JITTER IN A PRIORITY-BASED SWITCHING SYSTEM

Ronald A. Spanke, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 11, 1992, Ser. No. 897,200

Int. Cl.[5] H04L *12/54*

U.S. Cl. 370—60 **14 Claims**



3. In a switching system serving a plurality of users, a method comprising

receiving one or more parameters concerning the traffic expected on a call from a first one of said users to a second one of said users, and

transmitting information to said second user during said call based on said expected traffic parameters and with less than a maximum jitter,

wherein said transmitting comprises

determining a priority based on said expected traffic parameters for said call, and

transmitting said information to said second user during said call based on said priority and with less than said maximum jitter,

wherein said determining comprises

selecting said priority from a priority table where some statistical calls are given higher priority than some constant bit rate calls.

5,287,348

TELECOMMUNICATION NETWORK

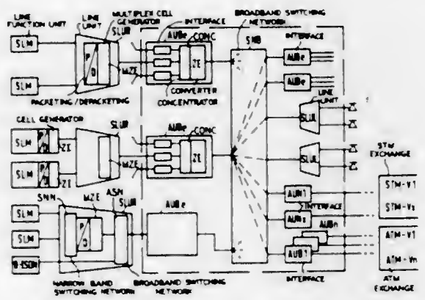
Lothar Schmidt, Fuerstenfeldbruk; Alfred Jugel, Geretaried, both of Fed. Rep. of Germany; Andy Mallinson, Poole, Great Britain, and Peter Rau, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany and GPT Limited Coventry, London, England

Filed Aug. 19, 1992, Ser. No. 932,317

Claims priority, application European Pat. Off., Aug. 19, 1991, 91307637.8

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **17 Claims**



11. A telecommunication network having a plurality of switching centers composed of ATM exchanges and STM exchanges, the ATM exchanges of said plurality of switching centers operating on the basis of asynchronous through-connection of message packets in standard message cells of fixed length via virtual connections and the STM exchanges of said plurality of switching centers operating on the basis of synchronous circuit-switched through-connection, at least one predetermined ATM exchange of the ATM exchanges being capable of being connected to transmission lines connected to STM exchanges and/or subscriber lines connected to terminal equipment transmitting and receiving STM information in a STM mode, the STM information being in a plurality of time channels, comprising:

means for receiving STM information in the plurality of time channels;

in the predetermined ATM exchange, means for packeting received STM information having a destination of one of an STM exchange or an STM terminal equipment in at least one of short message cells and composite message cells, the short message cells being shorter than standard message cells transmitted between ATM exchanges of the plurality of switching centers, each short message cell having at least an information part containing message parts of one of the incoming time channels wherein the STM information is transmitted,

the composite message cells having the same length as the standard message cells transmitted between ATM exchanges of the plurality of switching centers, each composite message cells having at least an internal cell header and having an information part containing message parts of a plurality of incoming time channels that have a common destination of a switching network output of the predetermined ATM exchange, and means for multiplexing the message parts into the information part of the composite message cell;

means for interconnecting a plurality of subscriber lines carrying STM information to a multiplex line via a respective plurality of line units, the multiplex line being connected to said predetermined ATM exchange, and a plurality of means for packeting/depacketing STM information and a plurality of means for cell generation, a respective means for packeting/depacketing and a respective means for cell generation connected to said respective means for packeting/depacketing forming a function unit of the plurality of function units that are individually allocated to subscriber lines connected to said means for interconnecting, said means for interconnecting having means for multiplex cell generation; and

in the predetermined ATM exchange, converter means connected to said multiplex line for converting said external message cells into one of said short message cells, said composite message cells with multiplexed message parts of time channels having a common destination, and said standard message cells.

5,287,349

ATM EXCHANGE SYSTEM

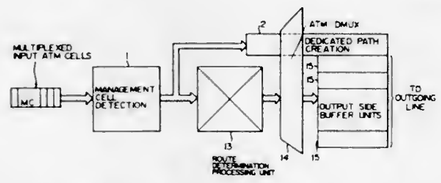
Ryuji Hyodo; Susumu Eda; Kenji Tanaka; Katsumi Oomuro; Osamu Sekihata; Hiroyuki Hatta; Reiko Furuya; Hirokazu Minou; Tetsuo Nishino, and Eisuke Iwabuchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 5, 1992, Ser. No. 831,791

Claims priority, application Japan, Feb. 5, 1991, 3-14236

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **16 Claims**



1. An ATM exchange system comprising:

a route determination processing unit for receiving multiplexed ATM cells from incoming lines and, for each of the ATM cells, determining a route to which said each ATM cell is to be switched;

an ATM demultiplexing unit, coupled to said route determination processing unit, for receiving the ATM cells from said route determination processing unit and demultiplexing same;

output side buffer units, coupled to said ATM demultiplexing unit, for momentarily storing the corresponding ATM cells sent from said ATM demultiplexing unit and transmitting the ATM cells over outgoing lines;

first means located at the input side of said route determination processing unit for detecting a management cell amount the multiplexed ATM cells; and

second means for creating a dedicated path, when said first means detects the management cell, for a transfer of only the detected management cell over a selected outgoing line.

5,287,350

SUB-RATE TIME SWITCH

Kazuhiko Ito, Kawasaki; Kiyohiro Shimokawa, and Tetsuo Ehara, both of Fukuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,386

Claims priority, application Japan, Sep. 28, 1990, 2-260179

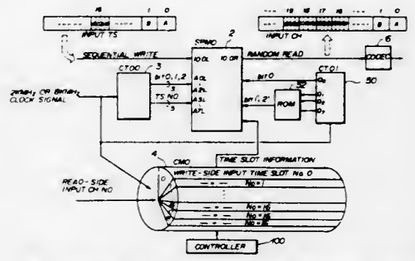
Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—66 **13 Claims**

1. A sub-rate time switch for switching a digital multiplexed signal which is input thereto and which has plural time slots, a basic-rate signal being included in a first time slot thereof and N sub-rate signals being included in a second time slot thereof, where N is an integer, each of the sub-rate signals having a sub-rate which is equal to 1/N times a basic rate of the basic rate signal, the sub-rate time switch comprising:

a speech path memory which temporarily stores the digital multiplexed signals, as input to the sub-rate time switch, a channel signal as read out from the speech path memory having plural channels corresponding to the plural time slots of the digital multiplexed signal; and

control means, coupled to said speech path memory, for controlling write and read operations of said speech path memory so that said channel signal read out therefrom includes N consecutive channels, each including N identical sub-rate signals, each of said N identical sub-rate signals corresponding to one of said N sub-rate signals included in said second time slot of the digital multiplexed signal, said control means comprising:



write counter means, coupled to said speech path memory, for generating a write address of said speech path memory so that said digital multiplexed signal is sequentially written into said speech path memory,

control memory means, coupled to said speech memory, for specifying an area of said speech path memory in which said N sub-rate signals in said second time slot are stored during a time when said N consecutive channels are addressed, and

read address generating means, coupled to said speech path memory, for generating a read address indicating one of said N sub-rate signals which is to be repeatedly read out from said speech path memory during a time when one of said N consecutive channels is addressed.

5,287,351

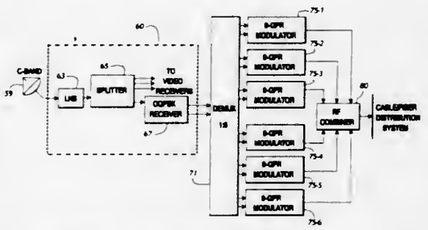
METHOD AND APPARATUS FOR MINIMIZING ERROR PROPAGATION IN CORRELATIVE DIGITAL AND COMMUNICATION SYSTEM

William E. Wall, Jr., Atlanta, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 618,744, Nov. 27, 1990, Pat. No. 5,239,540. This application Mar. 16, 1992, Ser. No. 851,588

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—77 **5 Claims**



5. An apparatus for minimizing error propagation in a quadrature partial response communication system having a plurality of channels, said apparatus comprising:

a demultiplexer which sequence bits from a plurality of channels having an even number into pairs of quadrature phases I, Q;

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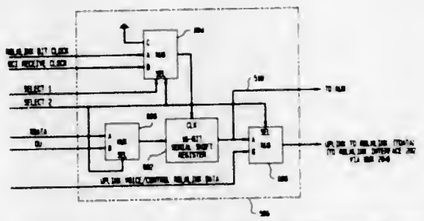
means for inserting a spacing bit at the end of each sequence for the plurality of channels;
a modulator for modulating the phases I, Q on the quadrature phases of a carrier to produce independent I, Q data streams;
a communication channel;
a quadrature partial response demodulator for receiving said I, Q data streams from said communication channel and demodulating said I, Q data streams; and
multiplexer for multiplexing said I, Q data streams into the original bit sequence.

5,287,352

METHOD AND APPARATUS TO REDUCE REGISTER OVERHEAD IN A SERIAL DIGITAL INTERFACE

Andrew W. Jackson, and Long V. Nguyen, both of Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.

Filed Jul. 17, 1992, Ser. No. 916,054
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—82 **9 Claims**



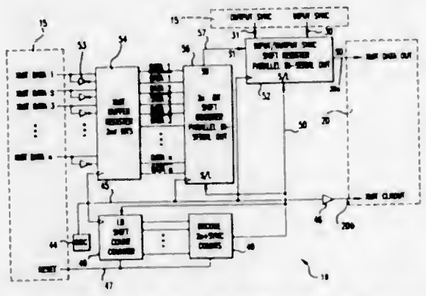
1. A method of transferring data between telephony communications lines having different frame transmission rates, comprising the steps of:
(a) collecting, in a first register, a field of data within a first downlink data frame being transmitted at a first data rate;
(b) injecting the data collected in the first register, into a second downlink data frame having a second data rate different than the first data rate; and,
(c) simultaneously with the injecting, collecting in the first register, a second field of data from an uplink data frame being transmitted at said second rate.

5,287,353

APPARATUS FOR GENERATING AND SENDING A SERIAL DATA PACKET FOR CONTROLLING A NETWORK OF SINGLE POINT I/O DEVICES

Paul R. Buda, Raleigh, and Kelvin Peele, Cary, both of N.C., assignors to Square D Company, Palatine, Ill.

Filed Dec. 23, 1991, Ser. No. 812,149
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.1 **9 Claims**



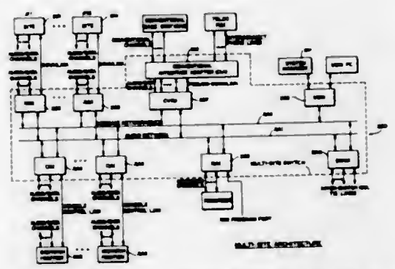
1. A transmitter module for transferring data between a microprocessor based device and a network of I/O repeater modules over a synchronous serial communications network, said transmitter module comprising:
(A) a buffer register coupled to a data bus in said microprocessor based device, said buffer register for storing data bits generated by said microprocessor based device;
(B) an oscillator for generating a clock pulse and a clock rate for said synchronous serial communications network;
(C) counter/decoder means for generating a shift/load line based on said clock rate and a data packet length based on the total number of said repeater modules connected to said synchronous serial communications network;
(D) a first shift register coupled to said buffer register, said first shift register for storing said data bits coupled from said buffer register and for converting said data bits into a first serial data packet, said conversion at a rate controlled by said shift/load line;
(E) a second shift register for receiving said first serial data from said first shift register, said second shift register for inserting an input sync byte and an output sync byte in series with said first serial data packet to produce a second serial data packet synchronized with said shift/load line; and
(F) wherein said second serial data packet is coupled to said synchronous serial communications network for transmission to said I/O repeater modules.

5,287,354

DATA PROTOCOL AND MONITORING SYSTEM FOR RF TRUNKING MULTISITE SWITCH GLOBAL SERIAL CHANNEL

James L. Teel, Jr., Goode; Philip C. Gulliford, Forest; Charles P. Brame, Forest, and Wim A. Imron, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Continuation-in-part of Ser. No. 573,977, Aug. 28, 1990, abandoned. This applicatioo Feb. 22, 1991, Ser. No. 658,641
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—85.7 **8 Claims**



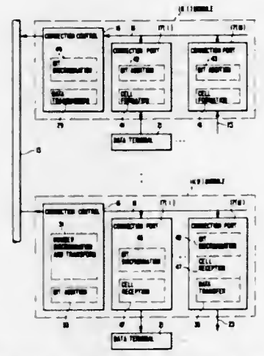
1. In a radio frequency multisite system of the type having a multisite switch comprising a local area network of nodes each having one or more microprocessor supported audio cards connected to a slotted audio bus within the switch, and a controller card operatively coupled to said audio cards and to a message bus within said switch, a method of communicating audio slot assignments within the multisite switch, said method comprising the steps of:
generating an audio slot assignment message in a first node of said nodes having a first byte designating the message as a slot assignment message and one or more bytes identifying an audio slot;
broadcasting the slot assignment message on the message bus;
another node receiving and processing the slot assignment message from the message bus.

5,287,355

MODULE COMPRISING IN AN ATM EXCHANGE CONNECTION PORTS, EACH TRANSMITTING A CELL INDICATIVE OF A DESTINATION MODULE IN A CELL HEADER

Kiyoh Takahashi; Hiroshi Shimizu; Yoshihiko Itou, and Osamu Yamato, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,587
Claims priority, application Japan, Jul. 8, 1991, 3-166074; Dec. 26, 1991, 3-345661
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.13 **22 Claims**



18. An asynchronous time division exchange system comprising a plurality of modules and a highway bus connecting said modules, said exchange system transferring transmission data among said modules, each module comprising a connection control unit connected to said highway bus, a plurality of connection ports, and a module bus connecting said connection ports to said connection control unit, each connection port being responsive to a transmission signal, wherein each of said connection ports in a first one of said modules is for transferring said transmission signal to the module bus of said one of the modules as a cell with header data indicating a destination module number as a virtual path identifier when said transmission signal is directed to a different one of said modules and a destination port number as the virtual path identifier when said transmission signal is directed to one of the connection ports of said first module.

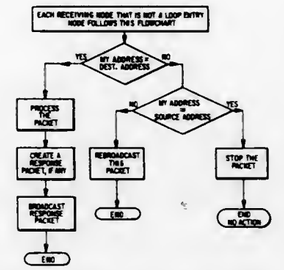
5,287,356

AUTOMATIC TERMINATION OF LOOP CIRCULATING MESSAGES

Mehr A. Parkhideh, Half Moon Bay, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 10, 1992, Ser. No. 833,233
Int. Cl.[5] H04L *12/42;* **H04J** *3/24*
U.S. Cl. 370—85.12 **17 Claims**

1. A method for terminating the transmission of a message sent in two directions along a first circulating loop, including a plurality of node stations comprising the steps of:
a. transmitting a message packet to a first node station in said first circulating loop, from a second node station located outside said first circulating loop;
b. receiving said message packet at said first node station;
c. placing the identification of said first node station within said message packet;
d. transmitting said message packet from said first node station to said plurality of node stations in said first circulating loop in a first direction around said first circulating loop and in a second direction around said first circulating loop opposite to said first direction.
e. receiving said message packet, transmitted in said first direction at said first node station, detecting said identification of said first node station placed in said message packet, and terminating said transmission in said first direction of said message packet;



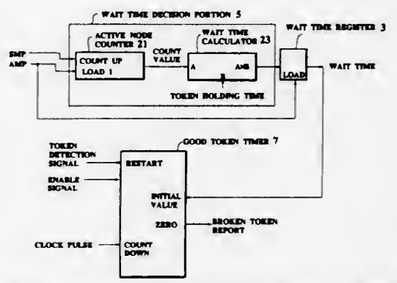
f. receiving said message packet transmitted in said second direction, at said first node station, detecting said identification of said first node station placed in said message packet and terminating the transmission in said second direction of said message packet.

5,287,357

COMMUNICATION CONTROL DEVICE HAVING A APPARATUS FOR DETECTING THE ABSENCE OF A CONTROL DATA ON A RING COMMUNICATION NETWORK

Koichi Tanaka, Kawasaki; Akira Kanuma, and Katsuhito Fujimoto, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1991, Ser. No. 751,109
Claims priority, application Japan, Aug. 29, 1990, 2-225407
Int. Cl.[5] H04J *3/16;* **H04L** *12/42*
U.S. Cl. 370—85.5 **18 Claims**



1. A communication control device for receiving and transmitting control data and/or communication data through a ring communication network to which said communication control device and other communication control devices are connected for communication, comprising:
(a) wait time decision means for deciding, according to the number of communication control devices actually operating in the network, a wait time for detecting disappearance of the control data circulating through the network;
(b) wait time holding means for holding the wait time decided by said wait time decision means; and
(c) time counting means for counting time from a reception of the control data and providing a broken control data report signal if the control data is not again received within the wait time held in said wait time holding means.

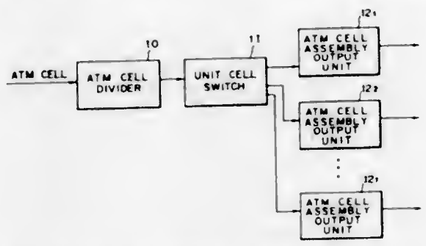
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,358

ATM SWITCH CIRCUIT CONFIGURATION SYSTEM

Mikio Nakayama, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1991, Ser. No. 747,602
Claims priority, application Japan, Aug. 20, 1990, 2-217099
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 **16 Claims**



1. An asynchronous transmission mode, ATM, switch circuit configuration system comprising:

ATM cell dividing means for receiving input ATM cells and dividing an ATM cell, comprising a header part and an information part except header error control data separately, by a divisor equal to a number of data bits of the header part to produce a plurality of unit cells comprising a 1-bit header part and a divided information part and for outputting the unit cells from a number of ATM cell dividing means output terminals equal to the divisor;

unit cell switching means comprising a plurality of unit cell switching means input terminals corresponding one-to-one to a group of said ATM cell dividing means output terminals for outputting unit cells received from said ATM cell dividing means to either of two unit cell switching means output terminals corresponding to each of said unit cell switching means input terminals according to a value of the header of a unit cell; and

ATM cell assembly output means provided at each of t output lines of said ATM switch circuit, said ATM cell assembly output means comprising ATM cell assembly output means input terminals equal in number to the bits in the header part of the ATM cells, said ATM cell assembly output means for receiving an output of two unit cell switching means output terminals each corresponding to the data at each of the bit positions of the of the header part and being connected to a unit cell switching means input terminal to which said unit cells whose header part is provided with said data at each of the bit position of each ATM cell header part according to each header value of an ATM cell are applied so as to output an ATM cell to each of the t output lines of said ATM switch circuit, wherein all unit cells are assembled to be outputted as an ATM cell when all of the ATM cell assembly output means input terminals have received unit cells from said unit cell switching means.

5,287,359

SYNCHRONOUS DECODER FOR SELF-CLOCKING SIGNALS

Willem Engelse, Townsend, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

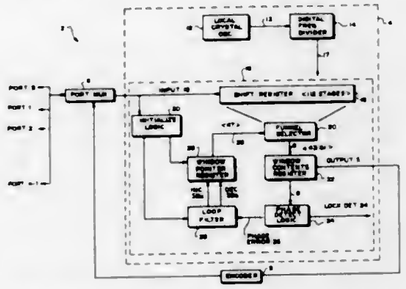
Filed Apr. 8, 1991, Ser. No. 682,059
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—100.1 **20 Claims**

1. A synchronous decoder for decoding a self-clocking incoming signal in a packet-type communication system, the synchronous decoder comprising:

means for providing a reference clock signal having a clock rate much greater than the clock rate of the incoming signal and for providing a local clock signal independent of the incoming signal and having a clock rate approximately equal to the clock rate of the incoming signal;

a shift register, having a plurality of stages, for storing samples of the incoming signal in synchronism with the reference clock signal;

means for selecting, at times defined by the local clock signal, a contiguous subset of the samples stored in the



shift register from a selected window position of the shift register;

means, responsive to the contiguous subset of samples from the shift register, for detecting and accumulating any phase error in the contiguous subset of the samples; and

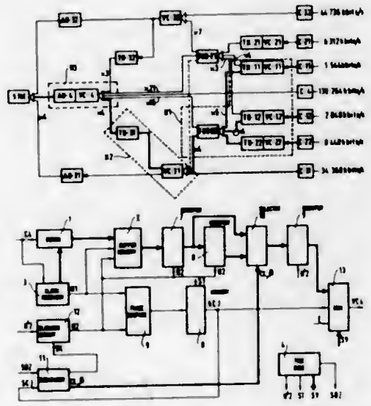
means, responsive to the accumulated phase error, for adjusting the selected window position from which the contiguous samples are selected.

5,287,360

DEVICE FOR INSERTING INFORMATION BITS INTO A SPECIFIC FRAME STRUCTURE

Philippe Regent, Dourdan, France, assignor to Alcatel Cit, Paris, France

Continuation of Ser. No. 633,860, Dec. 26, 1990, abandoned.
This application Mar. 1, 1993, Ser. No. 26,115
Claims priority, application France, Dec. 27, 1989, 89 17256
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—112 **7 Claims**



1. A device for inserting information bits into a specific frame structure at specific locations at least one of which may contain at least one justification opportunity bit, said device comprising:

means for dividing the incoming digital bit stream with bit rate D1 into N bit streams with a reduced bit rate D1/N,

a buffer memory into which are written at the bit rate D1/N and read at the bit rate D2/N successive words of n bits from said dividing mean, where D2/N denotes a reduced insertion bit rate at which said words are inserted in the outgoing frames, associated with justification control means adapted to compare the read and write bit rates of said buffer memory and generate a justification command,

an elastic memory having a capacity determined to contain at each time defined by the reduced insertion bit rate D2/N a variable number of bits of words read in said buffer memory and not yet inserted or not yet reinserted into the outgoing frames, said variable number varying according to previously generated justification commands,

means for selecting at each time defined by the reduced insertion bit rate D2/N, and according to previously generated justification commands, n bits contained in said elastic memory which are to be inserted or are to be reinserted at this time,

means for providing a signal representing a present value of said variable number, and

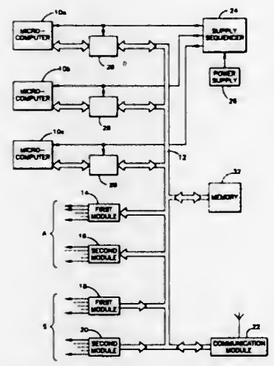
means responsive to said signal for temporarily blocking the clock for reading said buffer memory if the justification command generated at a given time is such that the number of bits to be stored in said elastic memory exceeds a predetermined limit value.

5,287,361

PROCESS FOR EXTENDING THE OPERATING PERIOD OF A CIRCUIT WITH MOS COMPONENTS EXPOSED TO GAMMA RADIATION

Francis Joffre, Bures sur Yvette, France, assignor to Commissariat a l'Energie Atomique, France

Filed May 30, 1991, Ser. No. 707,612
Claims priority, application France, Jun. 12, 1990, 90 07287
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—8.1 **4 Claims**



1. Process for extending an operating period of a circuit having MOS components exposed to gamma radiation, the circuit having at least two identical MOS component systems (10A, 10B, 10C) said process comprising the steps of:

alternately switching on for a predetermined period each system constituting the said circuit, the on period being shorter than a threshold period beyond which the system is completely deteriorated; and,

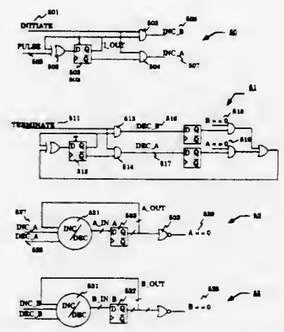
isolating each system which is switched off from the remainder of the circuit.

5,287,362

MECHANISM FOR IMPLEMENTING MULTIPLE TIME-OUTS

Bjorn Liencres, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 18, 1992, Ser. No. 885,120
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—16.3 **13 Claims**



1. A time-out detector for a computer system to record any number of time-out events with a predetermined period, each of said time-out events being caused by not detecting an initiating event and terminating event communicated from a transmission medium within said predetermined period after detecting said initiating event, said predetermined period being a multiple of a prescaled period, the beginning and end of said prescaled period being marked by a prescale pulse, said time-out detector comprising:

A-counter coupled to said transmission medium for incrementing in response to an initiating event and decrementing in response to a terminating event;

B-counter coupled to said transmission medium for incrementing in response to an initiating event and decrementing in response to a terminating event;

I-state bit coupled to said A- and B- counters for toggling between logic 0 and logic 1 states at each prescale pulse, said logic 0 state causing said A-counter to increment by 1 count at each initiating event; said logic 1 state causing said B-counter to increment by 1 count at each initiating event;

T-state bit coupled to said A- and B- counters for toggling between logic 0 and logic 1 states; said logic 0 state causing said A-counter to decrement by 1 at each terminating event, and if the contents of said A-counter is then equal to 0, said T-state bit being set to 1; said logic 1 state causing said B-counter to decrement by 1 at each terminating event, and if the contents of said B-counter is then equal to 0, said T-state bit being reset to 0,

whereby said A-counter records the number of time-out events when said I-state bit is logic 1 and said B-counter records the number of time-out events when said I-state bit is logic 0.

5,287,363

SYSTEM FOR LOCATING AND ANTICIPATING DATA STORAGE MEDIA FAILURES

Paul I. Wolf, San Diego, and Norman B. Ivans, La Jolla, both of Calif., assignors to Disk Technician Corporation, San Diego, Calif.

Filed Jul. 1, 1991, Ser. No. 723,942
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—21.1 **62 Claims**

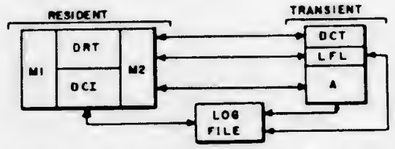
1. An apparatus for locating and anticipating media failures in a data storage device capable of storing data on a rotating

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medium in a plurality of storage locations and which is responsive to a request to retrieve data from the medium to perform an operation for retrieving at least a portion of the data from the rotating storage medium, comprising:

a timer which provides timing information; and

a disk call interceptor which intercepts requests to retrieve data from the medium, and which determines, in response to an interception of a request to retrieve data from the



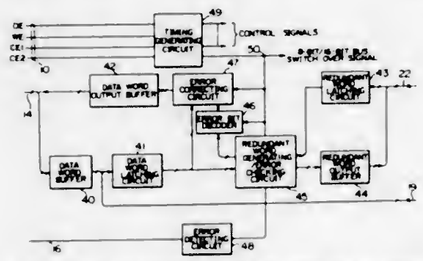
rotating storage medium, an elapsed time of the operation performed for retrieving the data from the rotating storage medium using the timing information, and which includes means for determining, from the elapsed time for the operation performed, whether an error condition occurred during the operation, by comparing the elapsed time to an elapsed time for one or more previously performed operations for retrieving data from the rotating storage medium.

5,287,364

PORTABLE SEMICONDUCTOR DATA STORAGE DEVICE

Masatoshi Kimura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,527
Claims priority, application Japan, Jan. 24, 1991, 3-22713
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.4 **4 Claims**



1. A portable semiconductor data storage device comprising:

data word storage means for storing data words each data word having one of a first data bit length and a second data bit length, wherein the second data bit length is longer than the first data bit length;

redundant word storage means for storing redundant words corresponding to the data words, the redundant words having a first redundant word length and a second redundant word length respectively corresponding the first data bit length and the second data bit length, the redundant words of the first and second redundant word lengths containing error detection and error correction data, wherein the second redundant word length is longer than the first redundant word length;

a timing generating circuit, coupled to an external control bus, for generating a first/second length switch-over signal indicative of whether a data word has the first data bit length or the second data bit length;

error detection means, coupled to the data word storage means, the redundant word storage means, and the timing generating circuit, for receiving the first/second length switchover signal and for detecting an erroneous bit in a data word stored in the data word storage means using that data word and the corresponding redundant word stored in the redundant word storage means and from the first/second length switch-over signal; and

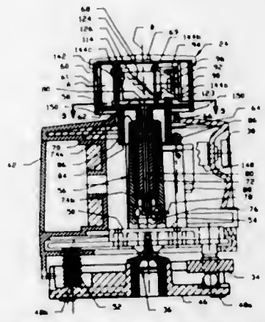
error correction means for correcting the erroneous bit detected by the error detection means.

5,287,365

COMPACT LASER APPARATUS

Edward G. Nielsen; Willard G. Vogelaar, both of Grand Rapids, and Philip O. Gerard, Lowell, all of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed Mar. 5, 1992, Ser. No. 847,772
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—9 **29 Claims**



1. A compact laser construction instrument comprising:

a laser generator including a laser diode that generate coherent light and optic means for forming said light into a first beam of collimated light that is directed along a given axis;

a rotating platform means for supporting said laser generator for rotation of said beam of collimated light in a plane parallel to said given axis and about a rotation axis that is perpendicular to said given axis to thereby generate a plane of light;

an optical means mounted to rotate with said platform, said optical means producing a second beam of coherent collimated light along said rotation axis to thereby generate a narrow beam along the axis of rotation of light that is perpendicular to said plane.

5,287,366

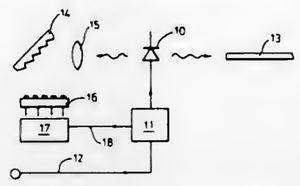
BINARY MODULATION OF INJECTION LASERS

Richard E. Epworth, Sawbridgeworth, and Peter J. Anslow, Bishop's Stortford, both of United Kingdom, assignors to Northern Telecom Europe Limited, Montreal, Canada

Filed May 28, 1992, Ser. No. 890,566
Claims priority, application United Kingdom, May 29, 1991, 9111552
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 **19 Claims**

1. A method of binary modulation of an injection laser in which the laser is driven with a first, relatively lower, drive current for data bits of one data significance, and with a second, relatively higher, drive current for data bits of the other data significance, in which the laser drive current of the lower

drive current bits is regulated at least in part by a feedback control loop which derives at least a part of its feedback con-



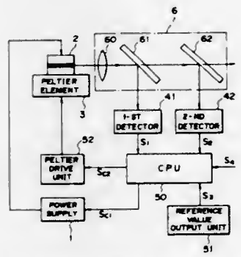
trol signal from a measure of the spectral purity of the optical output of the injection laser.

5,287,367

APPARATUS FOR CONTROLLING SEMICONDUCTOR LASER

Naoharu Yanagawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 14, 1992, Ser. No. 883,153
Claims priority, application Japan, May 27, 1991, 3-121331
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—31 **11 Claims**



1. An apparatus for controlling a semiconductor laser comprising:

a semiconductor laser for generating and emitting a laser beam;

a power supply for delivering, to said semiconductor laser, a current for generating a laser beam;

a temperature control element arranged adjacently to said semiconductor laser for carrying out emission on absorption of heat with respect to said semiconductor laser;

laser beam detection means for detecting wavelength of a laser beam emitted from said semiconductor laser to output a detection signal; and

temperature control means for controlling emission or absorption of heat by said temperature control element on the basis of the detection signal, said laser beam detection means comprising:

a filter for transmitting only a light beam of a specific wavelength;

a first detector for detecting a laser beam reflected by the filter and outputting a first detection signal; and

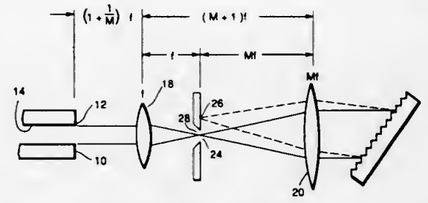
a second detector for detecting a laser beam transmitted through the filter and outputting a second detection signal, wherein said temperature control means discriminates a shift of wavelength of the laser beam emitted from said semiconductor laser based on changes of the first detection signal and the second detection signal, and said temperature control means controls the temperature control element on the basis of the shift of the wavelength.

5,287,368

HIGH RESOLUTION SPECTRAL LINE SELECTOR

David Fink, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 21, 1992, Ser. No. 871,878
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 **13 Claims**



6. A spectral line selector for a laser comprising:

means for imaging a beam of radiation exiting an end of a laser waveguide, said means for imaging having a focal length f and a magnification factor M associated therewith, said means for imaging introducing a first phase curvature upon the image;

means for phase compensating said image, said means for phase compensating being operable for introducing a second phase curvature upon said beam, the second phase curvature having an equal and opposite magnitude to the first phase curvature;

means for selectively reflecting the phase compensated beam such that a beam of the desired spectral line is reflected back through said phase compensating and imaging means towards the end of said laser waveguide; and

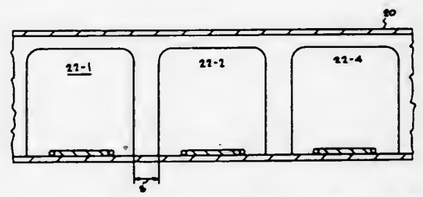
means for blocking reflected spectral lines other than the desired spectral line such that only the beam of the desired spectral line reenters said waveguide with a phase and amplitude energy distribution substantially equal to that of the exiting beam whereby the laser is caused to lase at the desired spectral line.

5,287,369

LASER BEAM GENERATING APPARATUS

Bruce E. Warner, Livermore, and David B. Duncan, Auburn, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 915,205, Sep. 25, 1986, abandoned. This application Aug. 18, 1988, Ser. No. 241,221
Int. Cl.[5] H04L *1/14*
U.S. Cl. 372—34 **8 Claims**



1. Apparatus for generating a series of laser beam pulses, said apparatus comprising

a generally tubular metal vapor laser structure operating in high temperature ranges and in a near vacuum for generating said series of laser pulses, said structure including means for applying a pulsating electric field longitudinally to said structure so as to generate said series of laser pulses, said structure further including septum segment means including a plurality of septum segments disposed

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longitudinally within the optical path of said tubular laser structure for radiatively dissipating heat buildup at predetermined locations inside said tubular structure.

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LASER APPARATUS

Arthur Maitland, St. Andrews; Ewan S. Livingstone, Kinross, both of Scotland, and Brian P. Condon, Maidstone, United Kingdom, assignors to EEV Limited, Chelmsford, United Kingdom

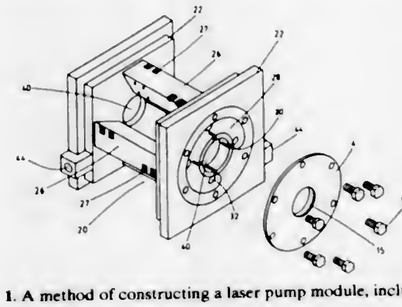
PCT No. PCT/GB91/02010, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO92/09125, PCT Pub. Date May 29, 1992

PCT Filed Nov. 14, 1991, Ser. No. 916,836

Claims priority, application United Kingdom, Nov. 14, 1990, 9024733

Int. Cl.[5] H01S *3/04, 3/045*

U.S. Cl. 372—35 **15 Claims**



1. Metal vapour laser apparatus comprising a laser tube within which laser action occurs during operation of the apparatus and means for applying a liquid metal coolant to the tube.

5,287,371

LASER PUMP MODULE

Patrick A. Bournes, Reston, Va., assignor to Fibertek, Inc., Herndon, Va.

Continuation of Ser. No. 835,825, Feb. 18, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,125

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—35 **1 Claim**

1. A method of constructing a laser pump module, including the steps of:

a. providing a monolithic housing having internally formed coolant passageways;

b. installing a sleeve coated with an anti-reflectant and transmissive to light energy in said housing forming an additional coolant passageway;

c. providing sealing means between said housing and said sleeve to prevent coolant leakage therebetween

d. installing a laser rod in said housing within said sleeve;

e. providing sealing means between said housing and said laser rod to prevent coolant leakage therebetween;

f. mounting a plurality of rod excitation means on portions of said housing close to said internally formed passageways; and,

g. providing a coolant flow through said internally formed passageways and said sleeve to simultaneously cool said rod excitation means and said laser rod.

5,287,372

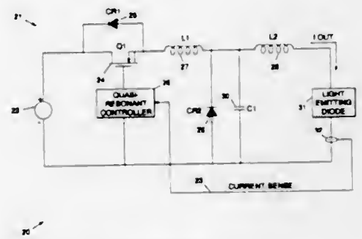
QUASI-RESONANT DIODE DRIVE CURRENT SOURCE

Joe A. Ortiz, Garden Grove, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 24, 1992, Ser. No. 873,464

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—38 **7 Claims**



1. A current source comprising:

a power source;

a light emitting diode;

a quasi-resonant converter coupled between the power source and the light emitting diode for providing pulsed current to the light emitting diode;

sensing means for sensing current flowing through the light emitting diode; and

control means coupled to the sensing means for regulating the amplitude of the pulsed current supplied to the light emitting diode.

5,287,373

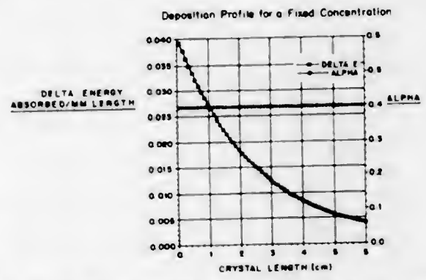
GRADIENT DOPED SOLID STATE LASER GAIN MEDIA

William R. Rapoport, Bridgewater; Michael L. Shand, Morristown, and Dave Narasimhan, Flemington, all of N.J., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Filed Aug. 17, 1992, Ser. No. 929,857

Int. Cl.[5] H01S *3/16*

U.S. Cl. 372—41 **10 Claims**



1. A solid state laser gain medium comprising a Cr^+ doped crystal of the composition $XYZF_6$ wherein X is selected from Li^+, Na^+, K^+ and Rb^+; Y is selected from Ca^{2+}, Sr^{2+}, Ba^{2+}, Cd^{2+} and Mg^{2+}; and Z is selected from Al^{3+}, Ga^{3+} and Sc^{3+}; characterized in having a gradient chromium doping level, so that the chromium doping is higher at one end, thereby producing a more evenly distributed heat generation throughout the length of the host such that said host can handle higher average power levels of the medium than on its opposite end.

5,287,374

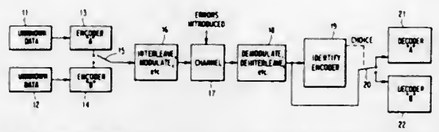
IDENTIFICATION OF ENCODER TYPE THROUGH OBSERVATION OF DATA RECEIVED

Michael I. Parr, San Diego, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 30, 1992, Ser. No. 876,319

Int. Cl.[5] G06F *11/10;* **H03M** *13/12;* **H03D** *1/00;* **H04L** *27/06*

U.S. Cl. 371—43 **12 Claims**



1. A receiver for use in communication systems in which data may be encoded with any one of a plurality of encoding algorithms, encoded data having only a limited number of valid sequences less than a total number of possible combinations for a given input bit pattern, said receiver comprising:

demodulator means for recovering a transmitted encoded data stream;

a plurality of decoders, one for each of said plurality of encoding algorithms;

switch means for selectively directing said encoded data stream from said demodulator means to one of said plurality of decoders; and

control means responsive to said encoded data stream for determining the type of data transmitted without decoding the data by examining code patterns and comparing with valid code patterns for each of said plurality of encoding algorithms and controlling said switch means depending on which of said plurality of encoding algorithms was used to encode transmitted data.

5,287,375

APPARATUS FOR DRIVING A LASER DIODE ARRAY

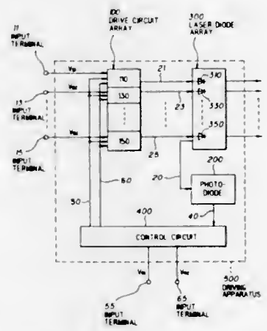
Takashi Fujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 16,937

Claims priority, application Japan, Feb. 12, 1992, 4-24939

Int. Cl.[5] H01S *3/096*

U.S. Cl. 372—38 **4 Claims**



1. An apparatus for driving a laser diode array operating as an electric to optical converter array in a multi-channel parallel communication apparatus, comprising:

a laser diode array comprising a plurality of laser diode integrated by a monolithic structure;

a laser diode drive circuit array comprising a plurality of laser diode drive circuits integrated by a monolithic structure, each of said laser diode drive circuits comprising a DC bias current drive circuit being supplied with an oscillation threshold value control voltage of a corresponding laser diode of said laser diodes and supplying said corresponding laser diode with a current proportional to said oscillation threshold value control voltage, and a pulse current supply circuit supplying said corresponding laser diode with a signal drive current dependent on an ON and OFF control voltage at a time when an input signal is high and said signal drive current of zero dependent on said ON and OFF control voltage at a time when said input signal is low;

means for supplying a reference signal having a frequency lower than a maximum usable frequency to said pulse current drive circuit in one laser diode drive circuit of said laser diode drive circuits;

means for detecting an output light of one laser diode corresponding to said one laser diode drive circuit; and

a control circuit for generating said oscillation threshold value control voltage and said ON and OFF control voltage determining said signal drive current in accordance with a predetermined calculation of maximum and minimum values supplied from said detecting means, said oscillation threshold value being supplied to said DC current supply circuit of all said laser diode drive circuits, and said ON and OFF control voltage being supplied to said pulse current supply circuits of all said laser diode drive circuits.

5,287,376

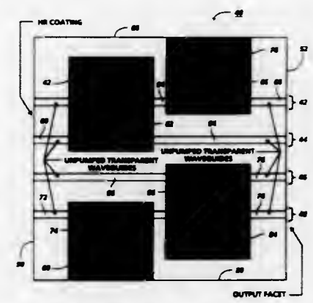
INDEPENDENTLY ADDRESSABLE SEMICONDUCTOR DIODE LASERS WITH INTEGRAL LOWLOSS PASSIVE WAVEGUIDES

Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,135

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—43 **15 Claims**



1. A semiconductor laser array comprising:

a monolithic semiconductor structure having a plurality of semiconductor heterostructure layers disposed over a substrate, at least one of said layers being an active layer for light generation and propagation;

means, electrically coupled for applying an electrical forward bias to said active layer;

a first and a second laser mirror disposed at opposing ends of said monolithic semiconductor structure, perpendicular to said plurality of semiconductor heterostructure layers and said active layer, said first and second mirrors defining a resonant laser cavity with optical output from at least one laser mirror;

a plurality of substantially parallel generation waveguides, disposed in said active layer, with each of said generation

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waveguides having a predetermined width and length for generating and amplifying lightwaves at a given wavelength in response to said electrical forward bias;

a first plurality of substantially parallel, low-loss, passive waveguides disposed in said active layer, each passive waveguide oriented co-axially to a corresponding generation waveguide and co-extensively coupled at one end to said first laser mirror and at the other end to said corresponding generation waveguide for guiding lightwaves generated and amplified in said generation waveguide;

and a second plurality of substantially parallel, low-loss, passive waveguides disposed in said active layer, each passive waveguide oriented co-axially to a corresponding generation waveguide and co-extensively coupled at one end to said corresponding generation waveguide and at the other end to said second laser mirror for guiding said lightwaves generated and amplified in said corresponding coupled generation waveguide;

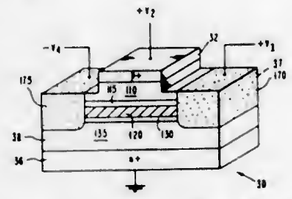
wherein said adjacent generation waveguides are laterally offset within said active layer.

5,287,377

COUPLED QUANTUM WELL TUNABLE LASER

Tadashi Fukuzawa, Tokyo, Japan; Ling Y. Liu, White Plains, and Emilio E. Mendez, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 807,922, Dec. 16, 1991, abandoned.
This application May 6, 1993, Ser. No. 58,997
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **16 Claims**



1. A semiconductor laser for producing light, comprising:

a longitudinal cavity formed by a longitudinal active region interposed between at least two reflective facets formed substantially perpendicular to said longitudinal cavity;

said longitudinal active region consisting of two coplanar quantum well layers forming two quantum wells, said quantum well layers having a thickness of less than approximately 60 Angstroms, and said longitudinal active region having a barrier layer interposed between said quantum well layers, said barrier layer having a thickness of less than approximately 35 Angstroms, said barrier layer being coplanar with said quantum well layers;

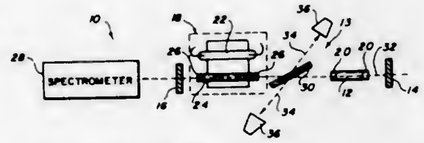
said longitudinal active region being interposed between an N-type and a P-type contact layer, said N-type and P-type contact layers creating a built-in electric field substantially perpendicular to said longitudinal active region and corresponding to a built-in voltage, said N-type contact layer being coupled to a first voltage and said P-type contact layer being coupled to a second voltage, said first voltage having a value greater than said second voltage minus said built-in voltage.

5,287,378

HOLMIUM QUASI-TWO LEVEL LASER

Steven R. Bowman, Davidsooville, Md., and Barry J. Feldman, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1992, Ser. No. 998,347
Int. Cl.[5] H01S *3/14*
U.S. Cl. 372—68 **21 Claims**



1. A laser system comprising:

a holmium laser having an output laser emission at a wavelength of about 2.1 μm; and

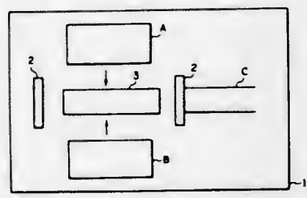
a pumping laser having an output emission at a wavelength of about 2 μm for directly pumping said holmium laser.

5,287,379

METHOD OF PRODUCING A SMALL BEAM EXPANSION OF LASER LIGHT

Akira Ohzu; Masaaki Kato; Yoichiro Maruyama, and Takashi Arisawa, all of Tokai, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,431
Claims priority, application Japan, Oct. 2, 1991, 3-322288
Int. Cl.[5] H01S *3/091, 3/102*
U.S. Cl. 372—69 **1 Claim**



1. A method of producing a small expansion of laser light comprising, in a pulse laser apparatus, producing a small preliminary laser light by pumping a laser medium, and then, after an appropriate time lag, producing a laser light which is higher in intensity than the preliminary laser light by performing a pumping which is higher in intensity than the first pumping, thereby producing a laser light which is smaller in beam expansion than in case there is not a preliminary pumping, due to the population inversion occurring in a small beam expansion part of pulse laser light obtained by the preliminary pumping.

5,287,380

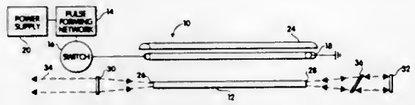
METHOD AND APPARATUS FOR GENERATING LONG OUTPUT PULSES FROM FLASHLAMP-EXCITED LASERS

James C. Hsia, Andover, Mass., assignor to Candela Laser Corporation, Wayland, Mass.

Filed Feb. 19, 1993, Ser. No. 20,118
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 **13 Claims**

1. A method of generating a pulsed beam of laser light of long duration from a flashlamp-excited laser, comprising:

generating a ramp pulse having an amplitude which generally increases with time during substantially the entire



duration of a pulsed beam of laser light produced by a flashlamp-excited laser, and

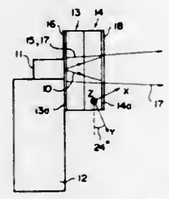
driving the flashlamp-excited laser with the ramp pulse.

5,287,381

LASER-DIODE-PUMPED SOLID-STATE LASER

Hiraoki Hyuga, and Yoji Okazaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1992, Ser. No. 849,299
Claims priority, application Japan, Mar. 12, 1991, 3-46896
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—75 **4 Claims**



1. A laser-diode-pumped solid-state laser comprising:

i) a semiconductor laser for emitting a pumping laser beam;

ii) a solid-state laser crystal of an ion crystal of a paramagnetic substance doped with neodymium, for producing a laser beam in response to being pumped by said pumping laser beam;

iii) a resonator for oscillating the laser beam produced by said solid-state laser crystal, and

iv) an optical wavelength converter in said resonator for converting the wavelength of the oscillated laser beam into another wavelength;

v) said solid-state laser crystal having a neodymium ion concentration higher than 3 at %.

5,287,382

WALL ELECTRODE FOR A DC ELECTRIC METALLURGICAL FURNACE

Philippe Destannes, Metz; Jean-Claude Grosjean, Valenciennes; Ghislain Maurer, Chatel Saint Germain, and Christian Lebrun, Valenciennes, all of France, assignors to Unimetal, Metz, France

Filed Sep. 24, 1992, Ser. No. 950,150
Claims priority, application France, Sep. 30, 1991, 91 12001
Int. Cl.[5] H05B *7/00*
U.S. Cl. 373—72 **4 Claims**

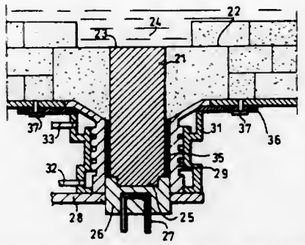
1. Wall electrode for a dc electric metallurgical furnace comprising:

a metal bar extending through a wall of said furnace,

a water-cooled sleeve made of a material which is a conductor of heat and electricity coaxial with said bar and surrounding said bar along part of a length portion of said bar outside said wall with a radial clearance whereby there is provided an annular space between said bar and said cooled sleeve,

an end member composed of a material which is a conductor of heat and electricity in contact with said cooled sleeve and with said bar at an end thereof outside said wall, and

an annular member composed of a metal having a low melting point surrounding the bar in a disposition such that



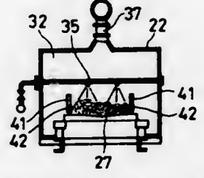
said heavy metal in the liquid state spreads into said annular space when said annular member is melted.

5,287,383

METHOD AND APPARATUS FOR PRODUCING ACTIVE CARBON USING CARBON-CONTAINING MATERIAL

Yoji Hirai, Omiya, Japan, assignor to Heiyo Shoji Kabushiki Kaisha, Omiya, Japan

Division of Ser. No. 746,114, Aug. 15, 1991, Pat. No. 5,190,901.
This application Oct. 6, 1992, Ser. No. 957,227
Int. Cl.[5] H05B *3/00*; F27D *3/00*
U.S. Cl. 373—112 **4 Claims**



3. An apparatus for producing an active carbon using a used active carbon as a raw material, comprising:

a carbonizing unit for heating, without intake of environmental air, said used active carbon to allow said used active carbon to be converted into its active state while exhibiting electric conductivity; and

an activating treatment unit downstream of said carbonizing unit for activating said used active carbon in an atmosphere composed of steam with an application of electric power to induce electric discharge whereby said carbonized material is self heated and said self heated is a function of the electrical resistance of the carbonized material, and wherein said activating treatment unit includes a spirally extending screw conveyor, a plurality of discharge electrodes arranged around said screw conveyor in a substantially equally spaced relationship for inducing an electric discharge between adjacent discharge electrodes, and a rotary steam supply pipe having a plurality of spray nozzles attached thereto to allow steam to be sprayed therethrough toward the carbonized material thereby to generate an atmosphere of steam.

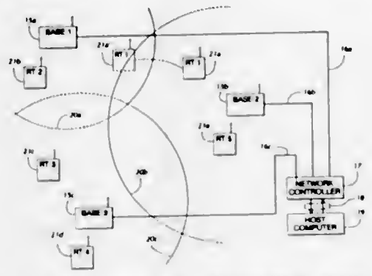
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,384

FREQUENCY HOPPING SPREAD SPECTRUM DATA COMMUNICATIONS SYSTEM

John W. Avery, Lawrenceville; W. Burchall Cooper, Duluth; Kenneth P. Nelson, Norcross, and Donald A. Jones, Alpharetta, all of Ga., assignors to LXE Inc., Norcross, Ga.

Filed Oct. 15, 1992, Ser. No. 961,787
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **26 Claims**



1. In a radio frequency data communication system of the type comprising at least one base station and a plurality of terminals, said system employing a media access protocol of the type that defines a plurality of discrete time slots generated locally at each of said plurality of terminals and at said base station in response to a slot synchronizing signal broadcast from said base station, the improvement comprising in combination therewith:

a frequency hopping spread spectrum transmitter at said base station for transmitting an information signal for a predetermined hop period on each of a predetermined plurality of carrier frequencies in a predetermined sequence;

time mark generating means at said base station for generating a time mark frame that is provided as at least a part of said information signal for at least some of said plurality of carrier frequencies, said time mark frame including information for synchronizing a receiver at each of said plurality of terminals to receive said information signal on each of said predetermined plurality of carrier frequencies in said predetermined sequence;

terminal slot synchronizing means at each of said plurality of terminals for defining the start of a next one of said discrete time slots a predetermined period of time after receipt of each said time mark frame;

whereby said time mark frame serves as said slot synchronizing signal and synchronizes both said discrete time slots and said predetermined sequence of said plurality of carrier frequencies between said base station and said plurality of terminals.

5,287,385

VITERBI DECODING SYSTEM INCLUDING VARIABLE-ORDER EQUALIZER

Takao Sugawara; Yoshifumi Mizoshita; Hiroshi Mutoh; Kiichirou Kasai, and Takenori Obshima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

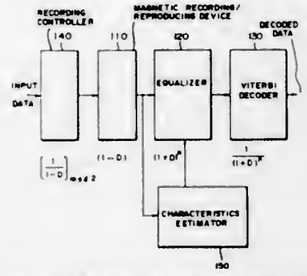
Filed Dec. 19, 1991, Ser. No. 810,069
Claims priority, application Japan, Dec. 20, 1990, 2-411925
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—12 **17 Claims**

1. A Viterbi decoding system comprising:

characteristic estimating means for estimating a characteristic of a system;

equalizer means, coupled to said characteristic estimating means and said system, for receiving an input signal from said system and for equalizing a waveform of said input signal so that an equalized waveform of said input signal is varied based on the characteristic of said system estimated by said characteristic estimating means; and

Viterbi decoding means, coupled to said equalizer means, for generating an output signal showing a maximum-likelihood path by using the equalized waveform of said input signal from said equalizer means, wherein



said equalizer means includes means for equalizing the waveform of said input signal to a waveform having a characteristic of $(1+D)^n$ where D is a unit delay time and n is an integer, and

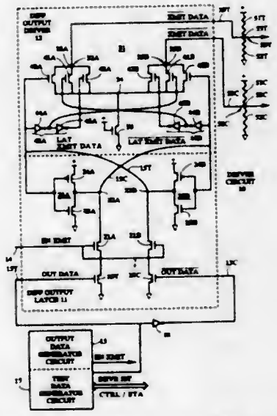
said characteristic estimating means includes changing means for changing an order n of $(1+D)^n$ on the basis of the characteristic of said system.

5,287,386

DIFFERENTIAL DRIVER/RECEIVER CIRCUIT

Jon P. Wade, Cambridge, and David S. Wells, Bolton, both of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Mar. 27, 1991, Ser. No. 676,132
Int. Cl.[5] H04B *3/00*
U.S. Cl. 375—36 **8 Claims**



1. A driver for use in transmitting a differential signal pair over a pair of output lines in response to a true and complement data signal comprising:

A. a differential mode signal generating circuit including true and complement signal generating elements for generating said differential signal pair in tandem for transmission over said pair of output lines, each of said true and complement signal generating elements including an actuable high-gain element and at least one actuable low-gain element which cooperate to generate one signal of said differential signal pair; and

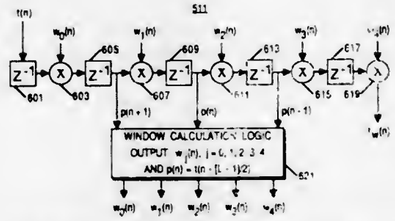
B. a delay circuit responsive to the true and complement data signal for iteratively controlling the high-gain element and low-gain element of each of said true and complement signal generating elements to effect the generation of the differential signal pair, the delay circuit controlling the actuation of said high-gain element with a delay relative to the actuation of said low-gain element to shape transitions of said differential signal pair to thereby reduce ringing in the differential signal pair.

5,287,387

LOW SPLATTER PEAK-TO-AVERAGE SIGNAL REDUCTION

Mark A. Birchler, Roselle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1992, Ser. No. 847,535
Int. Cl.[5] H04L *25/49*
U.S. Cl. 375—60 **15 Claims**



7. An apparatus for windowed clipping of a signal comprised of samples in a linear communication system, comprising:

means for delaying the signal by a predetermined number of samples;

means, coupled to said means for delaying, for triggering computation of windowed-clipping values;

means, coupled to said means for triggering, for computing said windowed-clipping values; and

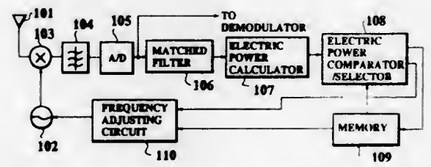
means, coupled to said means for delaying, for combining said windowed-clipping values with said delayed signal.

5,287,388

FREQUENCY OFFSET REMOVAL METHOD AND APPARATUS

Koji Ogura, and Mutsumu Serizawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 25, 1991, Ser. No. 720,694
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—97 **13 Claims**



1. A frequency-offset removal apparatus, comprising:

a receiving section for receiving a signal including training sequence:

a first local oscillator for generating a first oscillating signal to synchronize with the signal received in the receiving section;

a first shifter for shifting the signal received in the receiving section by the oscillating signal generated in the first local oscillator;

a plurality of second shifters for re-shifting the signal shifted the frequency thereof in the first shifter by each second oscillating signal generated in each second local oscillator, a group of frequencies of the second oscillating signals ranging from high frequency to low frequency through a specific frequency by which the frequency-offset between the second oscillating signal and the carrier frequency of the signal received in the receiving section becomes zero;

a plurality of matched filters for producing matched signals from the frequency re-shifted signals, the strength of each matched signal being changed according to the value of the frequency offset of the frequency-shifted-signal generated in the second shifter and reaching the largest value when the value of the frequency offset is zero;

a plurality of electric power calculators for calculating each electric power value of the matched signal generated in the matched filter; and

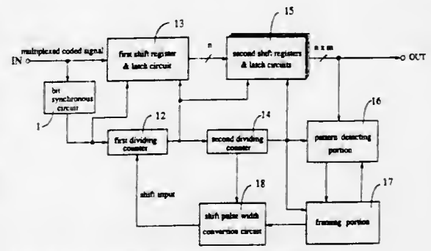
a selecting section for selecting one frequency re-shifted signal with the maximum electric power, the frequency-reshifted-signal being sent to a demodulator.

5,287,389

FRAME ALIGNMENT CIRCUIT

Hiroshi Ichibangase, and Kiwami Matsushita, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,149
Claims priority, application Japan, Oct. 15, 1990, 2-275980
Int. Cl.[5] H04J *3/06;* **H04L** *7/08*
U.S. Cl. 375—114 **14 Claims**



7. A frame alignment circuit, comprising:

a first dividing counter, receiving and dividing a clock signal to generate a first divided clock signal;

a second dividing counter, receiving and dividing the first divided clock signal to generate a second divided clock signal;

a first shift register and latch circuit, receiving and shifting a multiplexed coded signal by using the first divided clock signal to generate n-parallel signals;

an assembly of second shift registers and second latch circuits, receiving the second divided clock signal, receiving the n-parallel signals, and shifting the n-parallel signals using the second divided clock signal to generate $(n \times m)$ parallel signals;

a pattern detecting circuit, receiving the $(n \times m)$ parallel signals, receiving the second divided clock signal, detecting a frame pattern, and determining a phase difference to generate a phase difference signal;

a framing circuit, using the phase difference signal and the second divided clock signal to generate a first number of first shift pulses, each first shift pulse having a width equal to the width of a pulse of the second divided clock signal, the first number corresponding to the phase difference; and

a shift pulse width conversion circuit, converting the first number of first shift pulses to a corresponding greater

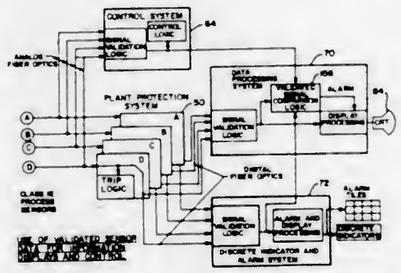
VOL 1159 ISS 3 FE 15 1994 UMI

number of second shift pulses, each second shift pulse having a width equal to the width of the first divided clock signal.

5,287,390
ALARM SYSTEM FOR A NUCLEAR CONTROL COMPLEX

Kenneth Scarola; David S. Jamison, Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 430,792, Nov. 2, 1989. This application Aug. 6, 1992, Ser. No. 927,057
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—216 **12 Claims**



7. An alarm system in the operator's control room of a nuclear power plant, comprising:

a first number of discrete, activatable alarm tiles clustered within a display area of the control room;

means for storing a second number of discrete messages corresponding respectively to a second number of possible abnormal conditions of a like number of operating parameters in the power plant and associating each message with one of the alarm tiles such that at least some of the alarm tiles have a plurality of messages associated therewith;

means for monitoring the condition of each said parameter and activating the alarm tile upon the occurrence of an abnormal condition;

wherein an activated alarm tile can be in one of the four statuses consisting of

a new alarm associated with an abnormal condition and unacknowledged tile,

an existing alarm associated with an abnormal condition and acknowledged tile,

a cleared alarm associated with a normal condition and unacknowledged tile, and

a reset alarm associated with a normal condition of an acknowledged alarm;

means for alerting the operator by audible tone that a new alarm has been activated in the display area;

means for informing the operator about the nature of the abnormal condition, by presenting a brief cue to the operator on the activated alarm tile;

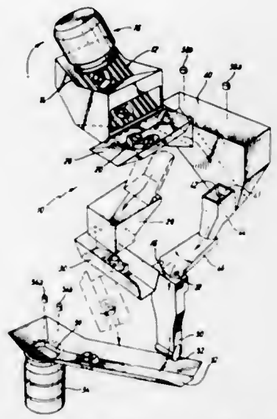
means for the operator to acknowledge the new alarm, by touching the activated alarm tile;

means responsive to the acknowledgement touch, for guiding the operator toward corrective action by presenting in the display area, each message that is associated with the existing alarm status of the tile that was acknowledged, and thereafter confirming whether correction of the abnormal condition has occurred by presenting in the display area, each message associated with the reset alarm status of the tile that was acknowledged.

5,287,391
METERING SYSTEM

Stephen N. Shelley, Cheshire, England, assignor to British Nuclear Fuels plc, Cheshire, United Kingdom

Filed Feb. 16, 1993, Ser. No. 19,179
Claims priority, application United Kingdom, Feb. 15, 1992, 9203268
Int. Cl.[5] G21C *19/36*
U.S. Cl. 376—261 **6 Claims**



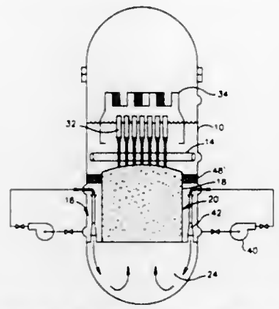
1. A system for metering the feed of portions of nuclear fuel assemblies, the system comprising a declivitous screen for receiving the portions and for separating the portions into larger and smaller components thereof, a first receptacle for collecting the larger components falling from the screen and for discharging the larger components into a collecting receptacle, the collecting receptacle being controllable so as to discharge the larger components therein on to means for directing the larger components into a container, means for sensing the level of the portions in the container, a buffer chamber for receiving the smaller components passing through the screen, a discharge port of the buffer chamber for discharging the smaller components from the buffer chamber into an oscillatable trough adapted to oscillate around the longitudinal axis thereof to discharge a metered quantity of the smaller components therefrom, and means for receiving the smaller components discharged from the trough and for feeding said smaller components to the container.

5,287,392
INTERNAL PASSIVE WATER RECOMBINER/HYDROGEN PEROXIDE DECOMPOSER FOR A BOILING WATER REACTOR

Robert Lee Cowan II; Robert J. Law, both of Livermore; James E. Charnley, Gilroy, and Robert J. Brandon, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 981,667
Int. Cl.[5] G21C *19/317*
U.S. Cl. 376—301 **13 Claims**

1. In a nuclear reactor comprising a core of nuclear fuel elements, a downcomer annulus between a pressure vessel and said core, means for feeding feedwater into said pressure vessel, means for forcing said feedwater to flow through said core to cool said fuel elements, and means for separating steam and water phase in the mixture exiting said core, said water phase flowing from said steam/water separating means to said downcomer annulus, the improvement wherein catalytic means are arranged downstream of said steam/water separating means, said catalytic means comprising catalytic material arranged in an open structure which allows water phase to flow therethrough, said catalytic means being disposed so that substantially all of the water phase exiting said steam/water separating means flows therethrough, and said catalytic material having a surface area-to-volume ratio sufficiently high enough to ensure

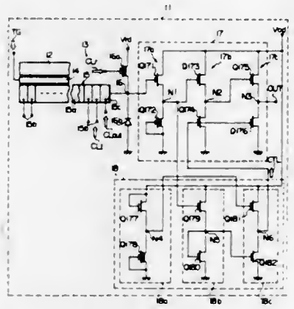


that substantially all of the water phase passing through said catalytic means flows close enough to a surface of said catalytic material to enable said catalytic material to catalyze the decomposition of hydrogen peroxide molecules dissolved in said water phase exiting said steam/water separating means into water and oxygen molecules.

5,287,393
CHARGE TRANSFER DEVICE EQUIPPED WITH CHARGE SIGNAL DETECTOR IMPROVED IN SENSITIVITY AS WELL AS IN VOLTAGE AMPLIFICATION

Kazuo Miwada, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,751
Claims priority, application Japan, Jan. 18, 1991, 3-4193
Int. Cl.[5] H01L *219/76*; G11C *19/28*
U.S. Cl. 377—60 **10 Claims**



1. A charge transfer device comprising:

a) a charge transfer line for transferring a charge packet to a final stage thereof,

b) a floating diffusion region electrically connectable with said final stage, and allowing a voltage level thereat to vary with said charge packet,

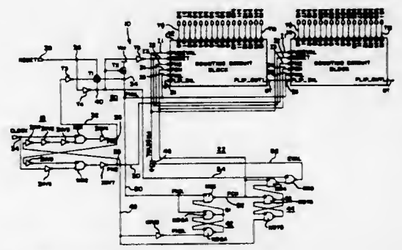
c) a driving unit coupled between said floating diffusion region and an output terminal, and implemented by a plurality of source follower circuits coupled in cascade, a source follower circuit with an output node serving as an initial stage of said driving unit being gated by said floating diffusion region for producing an output signal from said voltage level of said floating diffusion region at the output node thereof, the others of said plurality of source follower circuits being respectively implemented by series combinations of driving transistors, output nodes and load transistors coupled between a first source of power voltage level and a second source of power voltage level, each of said output nodes of said plurality of source follower circuits being coupled with a gate electrode of said driving transistor of the next stage, an output node of a source follower circuit serving as a final stage being coupled to said output terminal, so as to produce one of a secondary output signal for controlling said driving transistor of the next stage, similar to said output signal, and a final output signal at said output terminal, and

d) means coupled with gate electrodes of said load transistors and said output node of said source follower circuit serving as said initial stage for varying channel conductances of said load transistors complimentarily with respect to those of said driving transistors on the basis of said output signal.

5,287,394
FAST COUNTER WITH UNIFORM DELAY STRUCTURES

Pranay Gaglani, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 22, 1993, Ser. No. 34,955
Int. Cl.[5] H03K *23/42, 21/16*
U.S. Cl. 377—104 **18 Claims**



1. A fast counter comprising:

clock generating means (**18**) for generating non-overlapping first and second clock phase signals;

control circuit means (**22**) responsive to the complement of said first clock phase signal and said second clock phase signal for generating a precharge signal and an evaluation signal;

counting means (**12, 14**) being formed of at least one uniform delay structure (**12*a*, 12*b***) and being responsive to said precharge signal and said evaluation signal for generating output bit signals;

said uniform delay structure being formed of a plurality of counter bit cells (**58, 60**) each having a corresponding output bit and a flip node, and a plurality of ladder networks (**62**) each operatively connected between the output of one bit cell and the flip node of the next higher order bit cell;

said flip nodes of each counter bit cell being precharged to a high level when said precharge signal is at a low value;

said flip node of each counter bit cell being responsive to a corresponding one of said ladder networks and being evaluated to either maintain the flip node charged or to discharge the flip node when said evaluation signal is at a high value; and

each counter bit cell being responsive to said corresponding value of said flip node so as to flip or not flip the current state of the output bit signal when said first clock phase signal is at a high value.

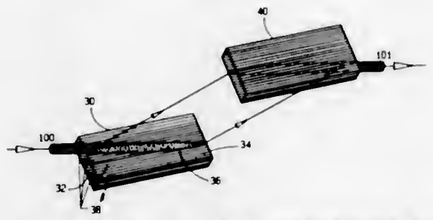
VOL 1159 ISS 3 FEB 15 1994 UMI

5,287,395

INCLINED MONOCHROMATOR FOR HIGH HEAT-LOAD SYNCHROTRON X-RAY RADIATION

Ali M. Khounsary, Lisle, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 6, 1992, Ser. No. 909,323
Int. Cl.[5] G21K *7/00*
U.S. Cl. 378—85 **3 Claims**



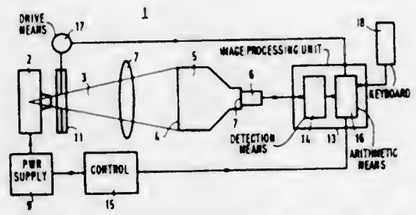
1. A method for increasing the area of the footprint of an incident beam on a diffraction crystal, comprising cutting said crystal such that the normal to the diffraction plane of interest makes an angle less than 90 degrees with the surface normal, and the incident and diffracted beams make the same angle with respect to the crystal surface normal.

5,287,396

X-RAY EXAMINATION APPARATUS

Herman Stegehuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,687
Claims priority, application Netherlands, Jan. 9, 1991, 9100019
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—98.2 **10 Claims**



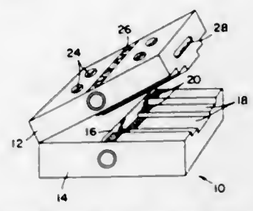
1. An X-ray examination apparatus, comprising an X-ray source for emitting an X-ray beam, an X-ray detector facing the X-ray source and responsive to incident X-rays from said beam to form an X-ray image of an object positioned between the X-ray source and the X-ray detector, a power supply system connected to the X-ray source to supply current and voltage to the X-ray source, absorption means which is both rotatable and linearly translatable to respective rotational and translational positions between the X-ray source and the X-ray detector to attenuate portions of the X-ray beam intercepted by said absorption means, and image processing means coupled to the X-ray detector for storing X-ray image absorption values in a matrix, said image processing means comprising detection means for determining a contour in the X-ray image outside of which the absorption values of sub-areas of the X-ray image are below a predetermined threshold value, arithmetic means for determining both the rotational and translational positions of the absorption means which would result in the absorption values in the sub-areas of the X-ray image outside said contour being increased to at least a predetermined value and the area of the rest of the image being minimum, and drive means coupled to the arithmetic means for rotating and translating the absorption means to the respective rotational and translational positions determined by the arithmetic means.

5,287,397

RADIOGRAPH EMBOSSER

Thomas C. Dumsha, 1 Nayborly Ct., Catonsville, Md. 21228

Filed Mar. 5, 1993, Ser. No. 26,747
Int. Cl.[5] B26F *1/00*
U.S. Cl. 378—162 **11 Claims**



1. An embossing device for use in marking x-ray films with patient identification indicia after said x-ray film has been developed, comprising, an upper member, a lower base member, indicia selection means, and embossing means;

said upper member being pivotally attached to said lower base member, said upper member being spring biased to an open position, said upper member being rotated about an axis upon the application of an adequate force to urge the lower surfaces of said upper member together with and essentially parallel to the upper surfaces of said lower member,

said lower member having a plurality of film guiding slots arranged on vertically offset horizontal planes, said lower member having a film stop at one end of said film guiding slots,

said indicia selection means disposed on either said upper member or on said lower member, said indicia selection means allowing for the choosing of identifying letters and/or numbers to be placed on said x-ray film by said embossing means,

said embossing means including a number of positive embossing plates on the lower surfaces of said upper member, said positive embossing plates registering letters and/or numbers in the form of small protrusions, the number of said positive embossing plates equal to the number of said film guiding slots on said lower base member, said embossing means further including a number of negative embossing plates on said lower base member, said negative embossing plates registering letters and/or numbers in the form of small cavities, the number of said negative embossing plates equal to the number of said positive embossing plates on said upper member, said positive embossing plates and said negative embossing plates arranged so as to be essentially parallel to and thereby mate with one another upon the rotation of said upper member about and together with said lower base member, said positive embossing plates and said negative embossing plates geared together so as to register the same letters and/or numbers chosen with said indicia selection means.

5,287,398

REMOTELY ACCESSIBLE SECURITY CONTROLLED AUDIO LINK

Nigel C. Briault, 6460 Gibbons Dr., Richmond, B.C., Canada V7C 2C8 , assignor to Nigel C. Briault; Diane F. Briault, both of Richmond; Floyd C. Marlatt and Frances R. Marlatt, both of Surrey, all of Canada

Filed Nov. 20, 1991, Ser. No. 795,037
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—38 **46 Claims**

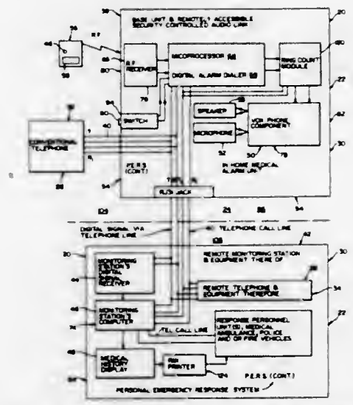
21. A remotely accessible security controlled audio link which, when in operation, allows a person at a remote telephone location to place and to terminate a duplex telephone call to a person in his or her domicile, and under certain conditions, to turn on or off a microphone and/or a loudspeaker in the domicile, so a hands free duplex telephone conversation can take place with the person in the domicile, who does not have to lift or replace a receiver of a telephone set in the domicile, comprising:

a. a housing;

b. a printed circuit board positioned in the housing having circuits and having mounting places for electrical and electronic components;

c. a telephone jack having at least six pin capability connected to the circuit board to selected circuits of the printed circuit board, and to receive telephone line connectors of telephone lines of the telephone system components located in the domicile, and to receive electrical energy circuit line connectors of an electrical energy 12 volt DC circuit, which supplies the operating electrical energy needed by this remotely accessible security controlled audio line and to receive alarm triggered signals from ancillary alarm devices;

d. a ring count module mounted on the printed circuit board and connected to selected circuits of the printed circuit board to detect each ring occuring, when a person at a



remote telephone places a telephone call to a person in the domicile, and to send and to receive a signal to and from a microprocessor;

e. a microprocessor mounted on the printed circuit board to receive and to send signals from and to the ring count module, to send and to receive signals to and form a dual tone multiple frequency decoder, to send and to receive signals to and from a microphone, to send and to receive signals to and from a speaker, to send and to receive signals to open and to close the domicile telephone, and to send and to receive alarm mode signals coming from the telephone jack connected to alarm devices;

f. a dual tone multiple frequency decoder mounted on the printed circuit board and connected to selected circuit of the printed circuit board to determine, when a correct pulse tone code is received from the remote telephone location, and thereafter send a signal to the microprocessor to in turn activate or deactivate a microphone and/or speaker;

g. a microphone mounted on the printed circuit board and connected to selected circuits, and to be turned on and off upon receiving signals from the microprocessor; and

h. a speaker mounted on the printed circuit board and connected to selected circuits, and to be turned on and off upon receiving signals from the microprocessor;

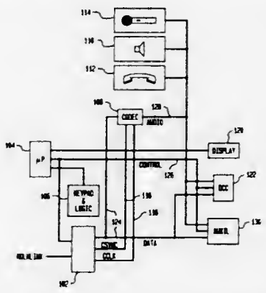
whereby, in the normal mode of operations of this remotely accessible security controlled audio link, a receiver of a phone set in the domicile may be lifted before a preset number of rings and regular telephone communications may be undertaken; however, if a preset number of rings is exceeded, then the telephone is partially answered, and if during a limited following time, a correct pulse tone code is received from the remote telephone location, then the microphone and/or speaker are turned on, so hands free duplex telephone communications may be carried on or terminated between the person in the domicile and a person located at a remote telephone location, and if no person in the domicile answers, or if a person in the domicile does not answer and needs help, the person at the remote telephone location makes arrangements for someone to assist the person in the domicile, as soon as possible and upon completion of the communication, the person placing the telephone call at the remote location, terminates the telephone call connection, which otherwise would remain open, by entering a preselected pulse tone or tones, which are recognized by the remotely accessible security controlled audio link, which operates to, in effect, hang up the receiver, which in reality had never been raised, to place the regular telephone system back into normal operation.

5,287,399

METHOD AND APPARATUS FOR PROCESSING DOWNLINK DIGITAL VOICE DATA

Andrew W. Jackson; Long V. Nguyen, and Larry A. Stell, all of Austin, Tex., assignors to ROLM Company, Santa Clara, Calif.

Filed Jul. 17, 1992, Ser. No. 916,058
Int. Cl.[5] H04M *11/00*; H04B *1/38*
U.S. Cl. 379—58 **20 Claims**



19. In a digital telephone for receiving a plug-in auxiliary device, an internal bus which carries data frames having a plurality of fields; and, a coder/decoder coupled to the internal bus, the improvement comprising:

control means for detecting presence and absence of an auxiliary data processing device, the control means including position indication means for generating a control signal indicative of a position of a first one of the fields when the absence of the auxiliary data processing device is detected and for generating a signal indicative of a second one of the fields when the presence of the auxiliary data processing device is detected; and,

a coder/decoder coupled to the telephony link interface and the control means, the coder/decoder including means for selecting a field from the data frames in accordance with the control signal and for converting contents of the field into an analog signal.

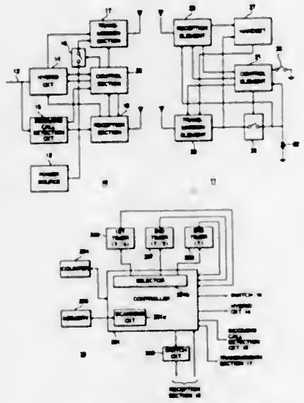
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,400

COMMUNICATION CONTROL DEVICE CAPABLE OF QUICKLY SEARCHING FOR AN IDLE SPEECH CHANNEL IN A STANDBY MODE IN A CORDLESS TELEPHONE SYSTEM

Noboru Saegusa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,724
Claims priority, application Japan, Jul. 30, 1991, 3-190263
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **4 Claims**



1. A communication control device for use in connecting a plurality of cordless telephone sets to a subscriber line through a plurality of radio speech channels and a radio control channel, said communication control device comprising:

switching means for switching said radio speech channels form one to another at a monitoring period;

monitoring means for successively monitoring said plurality of the radio speech channels to detect whether or not each of the radio speech channels is put into an idle state and to successively produce an idle channel signal each time when the idle state of each radio speech channel is detected by said monitoring means;

memory means coupled to said monitoring means for successively memorizing said idle channel signal at each radio speech channel;

scanning means coupled to said memory means for successively scanning said memory means to count said idle channel signals memorized in said memory means and to produce a count signal representative of a count of said idle channel signals memorized in said memory means; and

modifying means coupled to said scanning means and said switching means for modifying said monitoring period in accordance with said count signal and informing said switching means of said monitoring period which is modified by said modifying means.

5,287,401

APPARATUS AND METHOD FOR A MODEM FOR DETECTING A CALL WAITING SIGNAL

Jin-Ilen Lin, Rancho Cordova, Calif., assignor to Intel Corporation, Santa Clara, Calif.

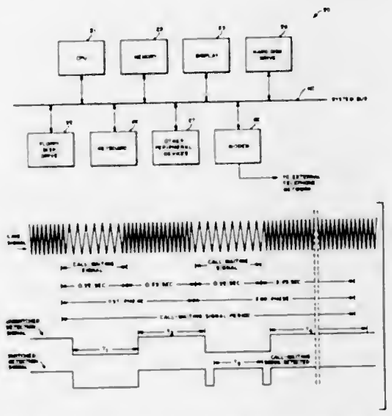
Filed Mar. 15, 1993, Ser. No. 31,549
Int. Cl.[5] H04M *11/00, 3/42*
U.S. Cl. 379—98 **20 Claims**

1. An apparatus for having a modem detect a call waiting signal from a telephone network, comprising:

(A) first signal detection circuitry for detecting a carrier signal from the telephone network, wherein the first signal detection circuitry generates a first signal when detecting the carrier signal, and generates a second signal when not detecting the carrier signal;

(B) second signal detection circuitry for detecting energy in a call progress bandwidth from the telephone network, wherein the call waiting signal is within the call progress bandwidth, wherein the second signal detection circuitry generates a third signal when detecting the energy in the call progress bandwidth;

(C) monitoring circuitry coupled to the first and second detection circuitry for controlling the first and second signal detection circuitry to detect the call waiting signal from the telephone network, wherein the monitoring circuitry causes the first signal detection circuitry to be



disconnected from the telephone network and the second signal detection circuitry to be connected to the telephone network when the first signal detection circuitry generates (1) the second signal for a first predetermined time interval and (2) the first signal for a second predetermined time interval subsequent to the first predetermined time interval, wherein the monitoring circuitry generates a signal indicative of receipt of the call waiting signal to a data processing system when (3) the second signal detection circuitry generates the third signal for a third predetermined time interval subsequent to the second predetermined time interval and (4) the second signal detection circuitry does not generate the third signal after the third predetermined time interval.

5,287,402

DATA COMMUNICATION APPARATUS

Toshifumi Nakajima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

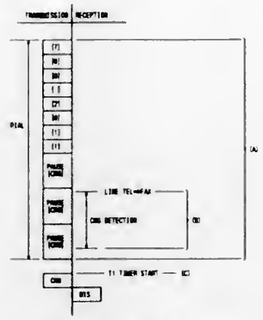
Filed Aug. 9, 1991, Ser. No. 743,024
Claims priority, application Japan, Aug. 13, 1990, 2-211668
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **14 Claims**

1. A data communication apparatus comprising:

generator means for generating numerical data and pause data; and

transmission means for transmitting a dial signal corresponding to the numerical data generated by said generator means and transmitting a predetermined signal after a transmission of the dial signal is terminated,

wherein said transmission means is adapted to transmit the predetermined signal by a number of times corresponding to the pause data generated by said generator means be-



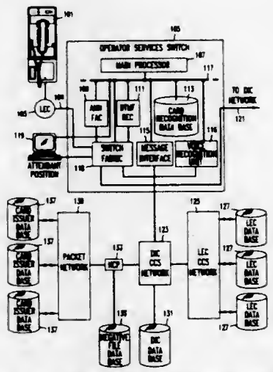
tween the transmission of the dial signal and a transmission of one additional said predetermined signal.

5,287,403

METHOD AND APPARATUS FOR PROCESSING TELEPHONE CALLS CHARGED TO CREDIT CARDS

Jean Atkins, Naperville, Ill.; Richard M. Harris, Hoboken; Julie M. Ladieu-Walton, Freehold, both of N.J., and David C. McChristian, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 22, 1992, Ser. No. 918,726
Int. Cl.[5] H04M *15/00, 17/00*
U.S. Cl. 379—144 **3 Claims**



1. A method for processing a telephone call to a called telephone station from a caller at a calling telephone station, said telephone call to be charged to a card issued by a card issuer, said card having an associated card number comprised of a string of digits, said method characterized by the steps of:

receiving an indication that said call is to be charged to a card;

receiving a signal that indicates which of a plurality of telephone stations is the called telephone station;

prompting said caller to supply the digits of said card number of said card to which said call is to be charged;

receiving signals originated by said caller indicating the digits of said card number of the card to which said call is to be charged if, in response to said prompting, such signals are caused to be supplied from said calling station by said caller;

receiving digits to be used as the card number of the card to which said call is to be charged, an attendant having collected said digits from said caller if said signals are not caused to be supplied from said calling station by said caller in response to said prompting;

determining a protocol to be used in validating said received card number;

using said determined protocol to query at least one data base as to the validity of said card number;

receiving a response to said query from said at least one data base indicating the validity of said card number; and

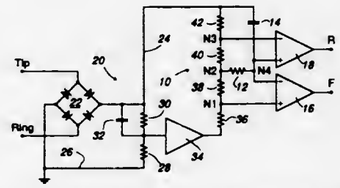
announcing the name of said card issuer to said caller if signals were received from said caller and said response indicated that said card is valid.

5,287,404

TELEPHONE SUBSCRIBER LINE VOLTAGE CHANGE DETECTION

David A. Pepper, Kemptville; Robert J. Miller, Lambeth; Richard J. Malyszka, Dorchester, and Andre J. Robert, London, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 20, 1990, Ser. No. 631,255
Int. Cl.[5] H04M *3/22;* **H03K** *5/24*
U.S. Cl. 379—377 **25 Claims**



1. Apparatus for detecting changes in a subscriber line voltage between two wires of a telephone subscriber line, comprising:

a potential divider having first, second, and third tapping points, the second tapping point being between the first and third tapping points;

means for supplying to the potential divider a voltage dependent upon the subscriber line voltage;

a low pass filter circuit having an input connected to the second tapping point;

a first voltage comparator, having inputs connected to the first tapping point and an output of the low pass filter circuit, for producing an output pulse in response to a fall in the subscriber line voltage; and

a second voltage comparator, having inputs connected to the third tapping point and the output of the low pass filter circuit, for producing an output pulse in response to a rise in the subscriber line voltage.

5,287,405

CALLED PARTY RESPONSE DETECTING APPARATUS

Yoshiki Sano, Kanagawa, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Jan. 2, 1991, Ser. No. 636,859
Claims priority, application Japan, Feb. 21, 1990, 2-38413
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—386 **12 Claims**

1. A called party response detecting apparatus of a terminal equipment connected to a telephone line from which a signal representing a called party response is not sent, comprising:

an input terminal;

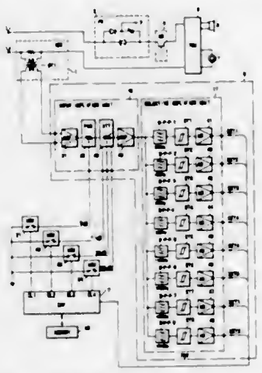
timing means for establishing a fundamental time period, a plurality of partial analysis time periods each comprising a plurality of fundamental time periods, and an analysis time period comprising said plurality of partial analysis time periods;

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a plurality of filter units, each having an input commonly connected to said input terminal, for detecting specific frequency components included in and corresponding to a plurality of signal tones coming from said telephone line during each of said plurality of fundamental time periods;

a memory unit for storing the presence/absence of each output from said filter units for each of said plurality of fundamental time periods;

determining means for determining a signal type on the basis of a predetermined output pattern by checking data representing the presence/absence of each output from said



filter units for each of said plurality of fundamental periods; and

analyzing means for analyzing various signal tones and a called party response on the basis of occurrences of signal type outputs during said analysis time period, said analyzing means including partial analyzing means for determining temporary signal types by a partial analyses performed during each partial analysis time period by a plurality of units analyzing means, and total analyzing means for determining a representative signal type on the basis of a majority of the temporary signal types determined by said partial analyzing means.

5,287,406

HYBRID CIRCUIT HAVING A TWO-WIRE/FOUR-WIRE CONVERTING FUNCTION

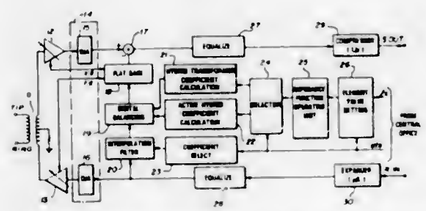
Mitsuo Kakuishi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 3, 1991, Ser. No. 725,838

Claims priority, application Japan, Jul. 6, 1990, 2-177339

Int. Cl.[5] H04M 9/00

U.S. Cl. 379—404 **27 Claims**



1. A hybrid circuit, comprising:

two-wire/four-wire conversion means for forming an interface between a two-wire line and a four-wire line, said four-wire line having a signal receiving terminal and a signal sending terminal; and

digital balancing means, operatively connected to said two-wire/four-wire conversion means, for canceling a return echo passing through an echo return route including said two-wire/four-wire conversion means,

said digital balancing means comprising:

first means for determining values of elements of a ladder type circuit including resistors and capacitors, said ladder type circuit corresponding to an original equivalent circuit having an impedance obtained by viewing said two-wire line from said two-wire/four-wire conversion means;

second means, operatively connected to said first means, for generating an impedance function of said original equivalent circuit in a form of a z function in accordance with a bilinear transform using an over-sampling frequency;

third means, operatively connected to said second means, for generating filter coefficients of a digital filter by inserting said impedance function into a transfer function of said echo return route; and

fourth means, connected to said third means including said digital filter, for generating, from a signal transferred via said signal receiving terminal, an echo cancel signal using said digital filter having the filter coefficients generated by said third means and for canceling said return echo using said echo cancel signal.

5,287,407

COMPUTER SOFTWARE PROTECTION

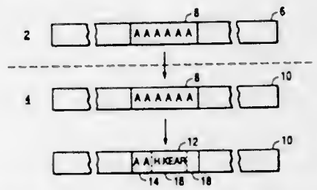
Keith Holmes, Dublin, Ireland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1991, Ser. No. 704,757

Claims priority, application European Pat. Off., May 31, 1990, 90305964.0

Int. Cl.[5] H04L 9/00

U.S. Cl. 380—4 **13 Claims**



1. A method of producing a copied file from a master file in a data processing system comprising the steps of:

copying a master file to produce a copied file,

searching to locate a predetermined block of data within said copied file, and

overwriting said predetermined block of data with data identifying said copied file.

5,287,408

APPARATUS AND METHOD FOR SERIALIZING AND VALIDATING COPIES OF COMPUTER SOFTWARE

Peter R. Samson, San Francisco, Calif., assignor to Autodesk, Inc., Sausalito, Calif.

Filed Aug. 31, 1992, Ser. No. 938,278

Int. Cl.[5] H04L 9/00

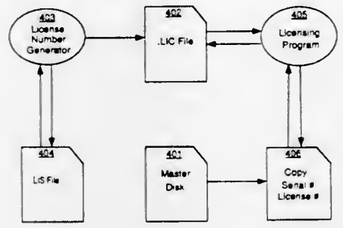
U.S. Cl. 380—4 **23 Claims**

1. A method of disabling an unauthorized copy of a computer program comprising the steps of:

defining a set of numbers which are generated according to a first mathematical function and which can be validated by a second mathematical function;

specifying a location of said computer program wherein one number of said set of numbers is written to said location in an authorized copy of said computer program;

reading a number from a copy of said computer program at said location;



determining whether said read number is valid according to said second mathematical function;

disabling said copy if said read number is not valid.

5,287,409

METHOD AND APPARATUS FOR FRUSTRATING VERTICAL INTERVAL DETECTION IN SCRAMBLED TELEVISION SIGNALS

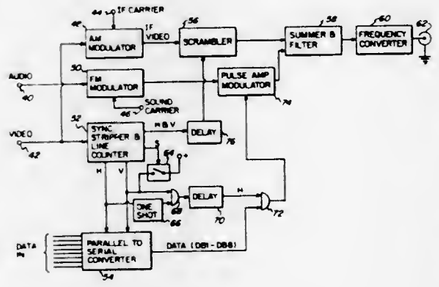
Richard Westerfer, Blue Bell, Pa., and Henry S. Landgraf, Haddon Township, Camden County, N.J., assignors to General Instrument Corporation, Hatboro, Pa.

Continuation of Ser. No. 714,674, Jun. 13, 1991, abandoned.

This application Feb. 10, 1993, Ser. No. 15,900

Int. Cl.[5] H04N 7/167

U.S. Cl. 380—15 **17 Claims**



1. A method for enhancing the scrambling security of a television signal that is scrambled by suppressing synchronization information during a video portion thereof and is provided with synchronization recovery timing data in an audio portion thereof, said timing data having a VBI gap therein during a vertical blanking interval of said television signal, comprising the steps of:

identifying the vertical blanking interval in said scrambled television signal; and

in response to said identifying step, inserting diversionary pulse information in the VBI gap of said timing data carried by said audio portion, said diversionary pulse information establishing first and second subgaps within said VBI gap, said first subgap ending at the commencement of said diversionary pulse information and said second subgap beginning immediately after said diversionary pulse information;

wherein said second subgap has a width sufficient to enable it to be falsely detected as the commencement of a new VBI gap, thereby preventing the occurrence of said vertical blanking interval from being accurately detected in said audio portion for use in recovering synchronization data present in said video portion during said occurrence.

5,287,410

Patent Not Issued For This Number

5,287,411

SYSTEM FOR DETECTING THE SIREN OF AN APPROACHING EMERGENCY VEHICLE

James L. Hill, 11207 N. 39th St., and John W. Sloan, 2541 E. Yucca, both of Phoenix, Ariz. 85028

Continuation of Ser. No. 560,883, Jul. 27, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,843

Int. Cl.[5] G10L 5/00

U.S. Cl. 381—36 **1 Claim**

1. A system for detecting the presence of sound signals varying in frequency in a predetermined manner over a predetermined spectrum and for determining the direction from which said sound signal are emanating, said variation in audio frequency defining a sound pattern, said system including in combination

(a) a plurality of directional sound pickup means each connected to a sound selection input and each facing in a different selected direction to produce input signals representative of the volume and frequency of said sound signals;

(b) signal selection means for monitoring said sound selection inputs and for at any given time producing digital output signals derived from only one of said sound selection inputs and consisting of a stream of counts;

(c) first counting means responsive to said digital output signals to

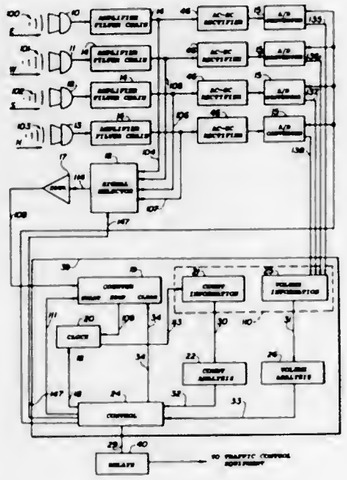
VOL 1159 ISS 3 FE 15 1994 UMI

(i) detect sound frequencies by continuously repeatedly taking time samples which indicate the time required for said first counting means to receive a pre-selected number of the counts in said digital output signals, and

(ii) produce frequency output signals representing the time measured during each of said time samples,

said time measured during each of said time samples indicating the time elapsed from initiation of counting until the instant the required number of counts is received by said first counting means;

(d) second counting means responsive to said frequency output signals of said first counting means to obtain at least four (4) successive frequency samples;



(e) means for storing said successive frequency samples;

(f) random pattern recognition means for recalling said successive frequency samples and, when said samples include at least two successive increasing samples each having a frequency randomly falling in said predetermined audio spectrum followed by at least two decreasing frequency samples each having a frequency randomly falling in said predetermined audio spectrum, for producing a pattern recognition output signal, said random sound pattern recognition means producing said pattern recognition output signal without requiring that said successive frequency samples

(i) correspond to and fit a pre-selected series of specific reference values defining a specific pre-selected sound pattern,

(ii) each fit within one of a pre-selected stepped series of specific frequency bands within said predetermined audio spectrum,

(iii) correspond to a pre-selected sequence of frequencies each lying within a pre-selected stepped series of specific frequency bands within said predetermined audio spectrum.

5,287,412

ARRANGEMENT FOR REPRODUCING BASS TONES IN A VEHICLE

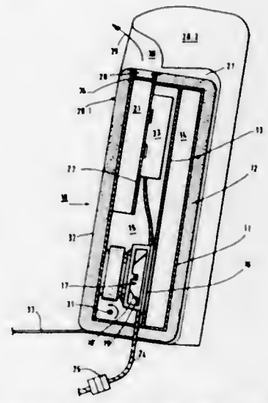
Hubert Etzel, Landau a.d. Isar; Jörg Prokisch, Schwarzach; Rüdiger Fleischer, Grafling, and Edgar Kirk, München, all of Fed. Rep. of Germany, assignors to Nokia (Deutschland) GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 905,282

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121408

Int. Cl.[5] H04B 1/00

U.S. Cl. 381—86 **5 Claims**



1. An arrangement for reproducing bass tones in a passenger compartment of a vehicle, comprising:

a housing defining an enclosure, and being arranged in an armrest of a vehicle, said housing including a sound outlet orifice positioned thereon so as to provide a sound pressure outlet from said enclosure to the passenger compartment of the vehicle;

a partition, within said housing, dividing said enclosure of said housing into a first chamber and a second chamber, said partition including an aperture therein;

a loudspeaker positioned adjacent to said aperture of said partition;

means for mounting said armrest in the vehicle for movement between a first position and a second position; and

a seat element, within the passenger compartment of the vehicle, having a recess therein, said recess being dimensionally sized to allow placement of said armrest therein when said armrest is in said second position, said recess including a cavity adjacent to said sound outlet orifice when said armrest is placed in said second position within said recess so as to prevent the covering of said orifice by said seat element.

5,287,413

DUAL VOICE COIL SOUND REPRODUCING DEVICE

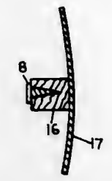
William J. Ashworth, 1012 Ashworth Cove, Altamonte Springs, Fla. 32714

Filed Apr. 24, 1992, Ser. No. 873,257

Int. Cl.[5] H04R 25/00

U.S. Cl. 381—194 **2 Claims**

1. A magnetic type audio transducer having two separate voice coils wound together on the same magnatizable core mounting means, wherein separate electrical signal means are supplied to each separate voice coil with said separate signals being magnetically mixed together to activate vibratile magnetizable means located in a spaced relation to said magnetizable core with said vibratile magnetizable means being attached to vibratile sounding board means, whereby said separate coils are positioned on said magnetizable core means where said coils act in electrical opposition to each other, with said electrical opposition being substantially equal in each said coil when



the same electrical signal frequency is applied to each said coil and the said electrical opposition being unequal when a different electrical signal is applied to each said coil.

5,287,414

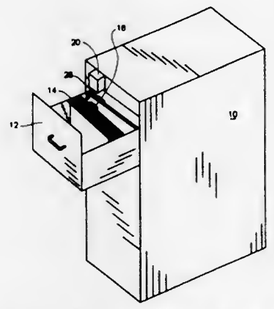
CODED FILE LOCATOR SYSTEM

A. Eugene Foster, Yarmouth Port, Mass., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Jun. 21, 1991, Ser. No. 718,607

Int. Cl.[5] G06K 9/00

U.S. Cl. 382—1 **24 Claims**



1. An automated file locator system for at least one file holder, said file holder having a housing and at least one folder carrier for holding a plurality of folders, said folder carrier being movable between an open and a closed position, comprising:

a machine-readable code mounted on each of said folders;

at least one code-reading means mounted on said housing adjacent said carrier, said code-reading means positioned on said housing such that movement of said carrier between the open and closed positions causes said code-reading means to automatically scan the machine-readable codes on said folders, said code-reading means generating signals corresponding to said codes in response to the scanning thereof; and

control means for receiving the signals from said code-reading means and indicating that a folder with a particular code is located in said folder carrier.

5,287,415

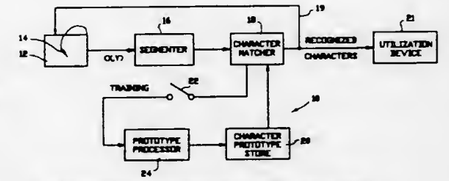
ELASTIC PROTOTYPE AVERAGING IN ONLINE HANDWRITING RECOGNITION

Thomas E. Chefalas, Jackson Heights, and Charles C. Tappert, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1991, Ser. No. 782,215

Int. Cl.[5] G06K 9/00

U.S. Cl. 382—3 **12 Claims**



1. A handwriting recognition system comprising:

a handwriting transducer for measuring the position of a stylus during each of a series of successive time intervals to produce a series of position signals representing the positions;

a stroke segmenter for identifying a series of position signals corresponding to a discrete handwriting stroke;

a character prototype store for storing a plurality of character prototype signals, each character prototype signal representing a character; and

a character matcher for comparing a series of position signals corresponding to a first handwriting stroke with the stored character prototype signals to identify the character prototype signal which is best matched to the first handwriting stroke, and for outputting the best matched character prototype signal as a recognized character;

wherein the handwriting recognition system further comprises an apparatus for generating character prototype signals comprising:

means for identifying at least two sampled series of position signals from the stroke segmenter corresponding to handwriting strokes of a given character;

means for identifying one sampled series of position signals corresponding to the given character as an anchor series based on the number of position signals in the sampled series;

means for elastically aligning each sampled series of position signals corresponding to the given character with the anchor series of position signals corresponding to the given character; and

means for averaging the anchor series of position signals corresponding to the given character with each aligned sample series of position signals corresponding to the given character to produce a character prototype signal representing the given character.

5,287,416

PARALLEL PIPELINED IMAGE PROCESSOR

Joseph M. Capo, West Bloomsfield; Robert D'Aoust, Detroit; Debora Y. Grosse, Ann Arbor; Robert Klein, Farmington; Ravi K. Nigam, Ann Arbor; George E. Reasoner, Jr., Tecumseh, and David C. Williams, Ann Arbor, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 419,528, Oct. 10, 1989, abandoned.

This application Aug. 17, 1992, Ser. No. 931,654

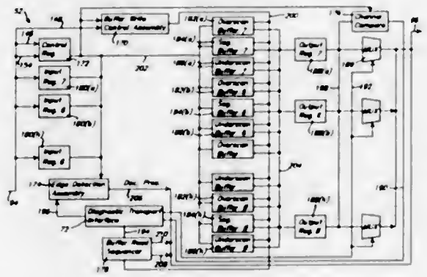
Int. Cl.[5] G06K 9/36

U.S. Cl. 382—41 **5 Claims**

1. A pipelined image processor for generating and processing data corresponding to an image of first and second sides of a document, the first side of the document being partitioned into columns each having a plurality of segments, said pipelined image processor comprising:

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(a) a first pipe for generating and processing information related to the image of said first side of said document, said first pipe including:
- a first camera assembly for generating a plurality of pixel segments in response to image information contained in said first side of said document,
- a first image digitizer for generating digitized pixel segment information from said pixel segments generated by said camera assembly,
- a first resequencer for expanding each pixel segment by adding overscan and underscan pixel data to both ends of the pixel segment for avoiding discontinuities in the image data at pixel segment boundaries, the first resequencer further comprising means for combining data from adjacent segments as the overscan and underscan pixel data, the means for combining data from adjacent segments comprising a plurality of buffer groups, each of said buffer groups comprising a segment buffer operable to store data corresponding to a first segment of a selected column of said first side of said document, a segment underscan buffer operable to store a portion of the data corresponding to a second segment within said selected column which is adjacent to said first segment, and a segment overscan buffer operable to store a portion of the data corresponding to a third segment within said selected column which is adjacent to said first segment,
- a first image data processor for generating processed information from the expanded pixel segments generated by said first resequencer,



- a first transposer/compressor assembly for generating transposed and compressed information from said processed information from said first image data processor, and
- a first compressed data buffer for storing said transposed and compressed information generated by said first transposer/compressor assembly; and

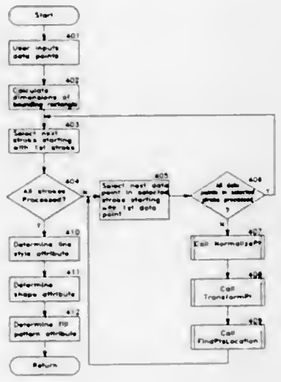
(b) a second pipe for processing information contained on said second side of said document, said second pipe including:
- a second camera assembly for generating a plurality of pixel segments in response to image information contained in said second side of said document,
- a second image digitizer for generating digitized pixel segment information from said pixel segments generated by said second camera assembly,
- a second resequencer for expanding each pixel segment by adding overscan and underscan data to both ends of the pixel segment for avoiding discontinuities in the image data at pixel segment boundaries,
- a second image processor for generating processed information from the expanded pixel segments generated by said second resequencer,
- a second transposer/compressor assembly for generating transposed and compressed information from said processed information from said second image processor, and
- a second compressed data buffer for storing said transposed and compressed information generated by said second transposer/compressor assembly.

5,287,417

METHOD AND SYSTEM FOR RECOGNIZING A GRAPHIC OBJECT'S SHAPE, LINE STYLE, AND FILL PATTERN IN A PEN ENVIRONMENT

Marlin Eller, Seattle; Christopher Leyerle, Issaquah, and Shishir P. Pardikar, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Sep. 10, 1992, Ser. No. 942,952
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—41 **20 Claims**



1. A method of recognizing a graphic object in a computer system, the computer system comprising a handwriting instrument and an electronic tablet, the graphic object comprising a shape attribute, a line style attribute, and a fill pattern attribute, the method comprising the steps of:

drawing the graphic object on the electronic tablet with the handwriting instrument to produce a plurality of data points, the data points comprising shape-defining data points and interior-defining data points, the shape-defining data points representative of the shape attribute and the line style attribute and the interior-defining data points representative of the fill pattern attribute, each data point having an x-coordinate and a y-coordinate;

segmenting the plurality of data points into one or more strokes, wherein each stroke comprises one or more data points in a path traveled by the handwriting instrument after the handwriting instrument touches the electronic tablet and before the handwriting instrument is lifted off of the electronic tablet, the strokes comprising shape-defining strokes and interior-defining strokes, each shape-defining stroke having only shape-defining data points and each interior-stroke having only interior-defining data points;

for selected ones of the data points

mapping the data point to a normalized data point, the normalized data point having an x-coordinate and a y-coordinate that are within a predetermined range of values; and

transforming the normalized data point into a transformed data point by rotating the normalized data point a preselected angle;

determining an average number of data points per stroke;

based on the average number of data points per stroke, determining the line style attribute of the graphic object;

based on the largest and smallest x-coordinate of the data points, the largest and smallest y-coordinate of the data points, the largest and smallest x-coordinate of the transformed data points, and the largest and smallest y-coordinate of the transformed data points, determining the shape attribute of the graphic object;

based on the largest and the smallest y-coordinate of the transformed data points, determining the slope of the shape attribute of the graphic object when the shape attribute is determined to be equal to a line;

based on the x-coordinate and y-coordinate of the interior-defining data points, determining the fill pattern attribute of the graphic object; and

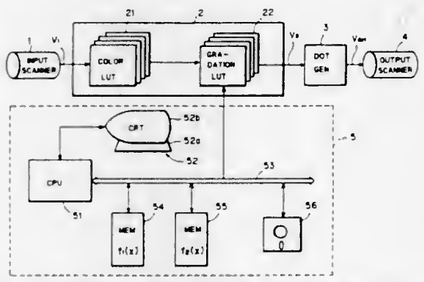
selecting a representation of the graphic object corresponding to the determined line style attribute, the determined shape attribute, and the determined format attribute.

5,287,418

METHOD AND APPARATUS FOR PRODUCING A CORRECTED IMAGE FROM AN ORIGINAL IMAGE

Yoshihiro Kishida, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 603,540, Oct. 25, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 933,967
Claims priority, application Japan, Oct. 25, 1989, 1-277396
Int. Cl.[5] G06K 9/38
U.S. Cl. 382—50 **23 Claims**



1. A method of producing a corrected image from an original image, comprising the steps of:

(a) preparing and storing a plurality of reference tone curve signals corresponding to a plurality of gradation characteristics;

(a-1) scanning said original image to produce an original image signal;

(b) designating a plurality of image region signals from said original image, corresponding to image regions within said original image;

(c) selecting respective reference tone curve signals for said designated image region signals from among said plurality of reference tone curve signals;

(d) designating weight values for said respective reference tone curve signals which were selected;

() combining said respective reference tone curve signals in cooperation with said weight values to thereby obtain a combined tone curve signal;

(f) setting said combined tone curve signal in a signal converter;

(g) converting said original image signal through said combined tone curve signal set in said signal converter to produce a converted image signal;

(h) generating a halftone dot signal as a function of said converted image signal; and

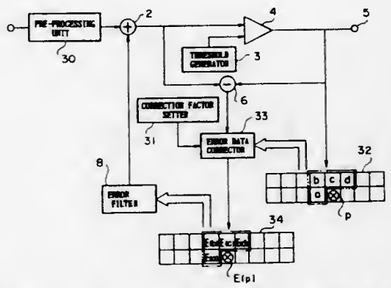
(i) recording a halftone dot image on a photosensitive material as a function of said halftone dot signal, to thereby produce a corrected image signal representing said corrected image.

5,287,419

IMAGE SIGNAL PROCESSER REPRODUCING HALFTONE IMAGES IN A RECORDING SYSTEM PRINTED THICKENED OR THINNED DOTS

Shinichi Sato, Yokohama, and Kazuto Kobayashi, Tokyo, both of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Division of Ser. No. 767,719, Sep. 30, 1991. This application Feb. 4, 1993, Ser. No. 17,579
Claims priority, application Japan, Oct. 9, 1990, 2-271145; Oct. 9, 1990, 2-271146
Int. Cl.[5] G06K 9/38
U.S. Cl. 382—50 **7 Claims**



1. An image signal processor for equalizing the sum of densities of output image signals to the sum of densities of input image signals in pixels of a localized area in a recording system in which an actual size of a recording dot designated by one of the output image signals is larger or smaller than a theoretical size of the recording dot, comprising:

binarizing means for binarizing input image signals of a pixel of interest and pixels adjoining the pixel of interest to produce output image signals of the pixel of interest and the pixels adjoining the pixel of interest, each of the input image signals being in a halftone level, and each of the output image signals being in a binarized level such as a white level or a black level;

error data producing means for subtracting the output image signal of the pixel of interest for subtracting the output image from the input image signal of the pixel of interest to produce error data of the pixel of interest;

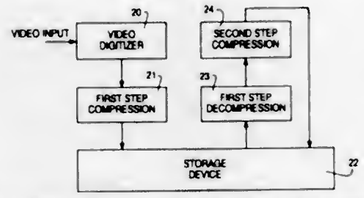
output image signal storing means for storing the output image signals binarized by the binarizing means;

recording dot correction factor setting means for setting a correction factor relating to a difference between the actual size of the recording dot and the theoretical size of the recording dot; and

error data correcting means for calculating a differential area between an actual size of a recording dot designated by the output image signal of the pixel of interest and a theoretical size of the recording dot with the correction factor set by the recording dot correction factor setting means while considering the white and black levels of the output image signal stored in the output image signal storing means, calculating amount of correction with the differential area, and correcting the error data produced by the error data producing means with the amount of correction to equalize the sum of the densities of the output image signals to the sum of densities of the input signals in the pixels of the localized area, the density of an output image signal being defined as a product of the white or black level of the output image signal and the actual size of a recording dot designated by the output image signal, and the density of an input image signal being defined as a product of a halftone level of the input image signal and the theoretical size of the recording dot.

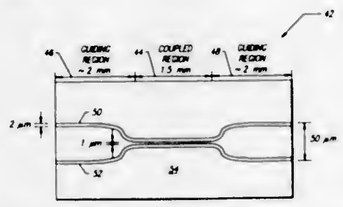
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,420
METHOD FOR IMAGE COMPRESSION ON A PERSONAL COMPUTER
Peter T. Barrett, Palo Alto, Calif., assignor to SuperMac Technology, Sunnyvale, Calif.
Filed Apr. 8, 1992, Ser. No. 865,085
Int. Cl.[5] G06K 9/36; H04N 7/12
U.S. Cl. 382—56 **9 Claims**



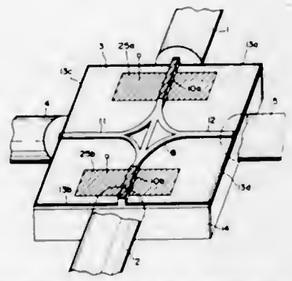
1. A method of compressing color image data signals, comprising the steps of:
a) receiving, under foreground control of a processor and in real time, a sequence of the color image data signals representing a color image;
b) digitizing the data signals, thereby forming digitized data signals;
c) compressing the digitized data signals in real time to a first compression ratio using a first data compression algorithm under foreground control of the processor, thereby forming first compressed image data;
d) storing the first compressed image data in real time in a first quantity of digital memory under foreground control of the processor;
e) upon completion of step d), retrieving from storage the first compressed image data and decompressing the first compressed image data under background control of the processor, thereby forming a decompressed digital signal;
f) compressing the decompressed digital signal to a second compression ratio under background control of the processor, thereby forming second compressed image data; and
g) storing the second compressed image data in a second quantity of the digital memory wherein the second quantity of the digital memory is less than the first quantity.

5,287,421
ALL-OPTICAL MODULATION IN CRYSTALLINE ORGANIC SEMICONDUCTOR WAVEGUIDES
Stephen R. Forrest, Princeton, N.J., and De Yu Zang, Irvine, Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Jan. 11, 1993, Ser. No. 3,021
Int. Cl.[5] G02B 6/02
U.S. Cl. 385—5 **17 Claims**



1. An improved method of modulating light in at least one waveguide, comprising:
(a) providing said at least one waveguide;
(b) introducing light from a first source into said waveguide;
(c) introducing light from a second source at an angle to said waveguide to cause modulation of said light from said first source,
wherein the improvement comprises fabricating said waveguide from a crystalline organic aromatic semiconductor compound having a resonant non-linear coefficient of at least 10^{-6} cm^{-2}/W at room temperature and grown in a quasi-epitaxial structure.

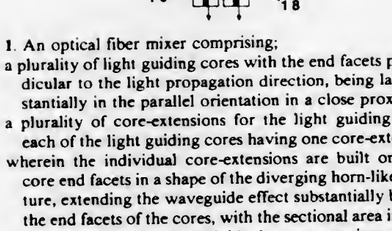
5,287,422
INTEGRATED TYPE OPTICAL NODE AND OPTICAL INFORMATION SYSTEM USING THE SAME
Uuichi Handa, Atsugi; Hidetoshi Nojiri, Hadano, and Hajime Sakata, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 814,444, Dec. 30, 1991, Pat. No. 5,272,163, which is a continuation of Ser. No. 718,927, Jun. 25, 1991, Pat. No. 5,109,444, which is a continuation of Ser. No. 415,763, Oct. 2, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 35,249
Claims priority, application Japan, Oct. 4, 1988, 63-251453
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—14 **34 Claims**



1. An integrated type optical node comprising:
a substrate;
a light waveguide formed on said substrate formed on said substrate and coupled to transmission lines of an optical information system;
an amplifying portion formed on a portion of said waveguide for amplifying light transmitted in said transmission lines;
a laser light source integrated with said waveguide formed on said substrate; and
a light branching-off portion for coupling light emitted from said laser light source to said transmission lines through said waveguide.

5,287,423
MULTIPLEXER FOR USE WITH A DEVICE FOR OPTICALLY ANALYZING A SAMPLE
Michael Anthony, Gaithersburg, Md., assignor to L. T. Industries, Inc., Rockville, Md.
Filed Jan. 31, 1991, Ser. No. 647,631
Int. Cl.[5] G02B 6/36, 7/26
U.S. Cl. 385—26 **7 Claims**

4. A multiplexer for introducing light to multiple samples, comprising:
a multiplexer housing,
a first means for transmitting light,
means for rotating said first means for transmitting light,
wherein said first means for transmitting light is fixed relative to said means for rotating,
a plurality of outlets disposed on said housing,

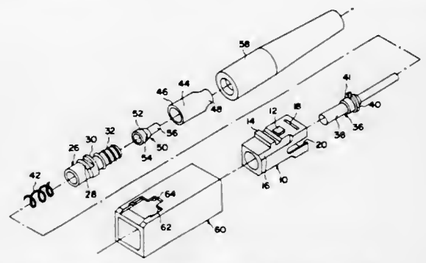


a plurality of inlets disposed on said housing,
so that light is selectively transmitted through said outlets and said inlets.

5,287,424
OPTICAL FIBER COUPLER WITH OVERLAPPING CORE-EXTENSIONS, AND MANUFACTURING METHODS OF THE SAME
Sang K. Sheem, and Susan K. Sheem, both of P.O. Box 2141, Livermore, Calif. 94551-2141
Filed Jul. 6, 1992, Ser. No. 908,466
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—39 **19 Claims**

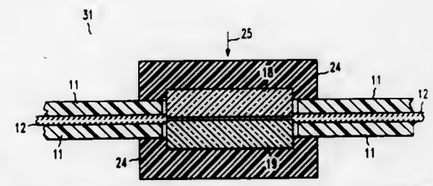
1. An optical fiber mixer comprising;
a plurality of light guiding cores with the end facets perpendicular to the light propagation direction, being laid substantially in the parallel orientation in a close proximity;
a plurality of core-extensions for the light guiding cores, each of the light guiding cores having one core-extension;
wherein the individual core-extensions are built onto the core end facets in a shape of the diverging horn-like structure, extending the waveguide effect substantially beyond the end facets of the cores, with the sectional area increasing gradually as the individual core-extensions extend further from the core end facets over a sufficient distance so as to make the maximum diameter of the each horn-like structure at the farthest end larger than the distance between two neighboring cores, thus allowing the individual core-extensions from the individual cores to merge together to form a common core-extension for light mixing, and have an index of refraction greater than that of the surrounding medium so as to possess light confining function.

5,287,425
OPTICAL FIBER SC TYPE CONNECTOR ASSEMBLY WITH PARTLY PRE-ASSEMBLED COMPONENTS
Peter C. Chang, Mountain View, Calif., assignor to Foxconn International, Inc., Sunnyvale, Calif.
Filed Feb. 26, 1993, Ser. No. 23,925
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—81 **12 Claims**



1. An optical fiber connector assembly comprising:
a square hollow front housing and a tubular rear housing interconnected to each other by means of protrusions of the rear housing captured by corresponding apertures of the front housing;
an alignment ferrule positioned within an interior of the front housing and the rear housing with a spring providing a biased force, a rear end of the alignment ferrule protruding out of a rear end of the rear housing a distance;
an auxiliary spacer abutting against the rear end of the rear housing;
a crimping ferrule circumferentially covering a rear portion of the rear housing and the spacer;
a boot generally coaxially covering the crimping ferrule; and
a coupling nut being axially movable with regard to the connected front housing and the rear housing.

5,287,426
METHODS FOR MAKING OPTICAL FIBER CONNECTORS
Muhammed A. Shahid, Ewing Township, Mercer County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 22, 1993, Ser. No. 20,931
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—85 **18 Claims**



1. A method for applying a connector to an optical fiber ribbon comprising a parallel array of optical fibers held in position and encapsulated by a plastic ribbon encapsulation, said method comprising the steps of:
selectively removing the ribbon encapsulation from a middle portion of the optical fiber ribbon while leaving intact separated ribbon portions and first optical fiber portions extending between said separated ribbon portions;
containing the first optical fiber portions between a pair of first optical fiber support members on opposite sides thereof;
cutting transversely to the first optical fiber portions

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through the first support members and the first optical fiber portions;

polishing exposed ends of the first optical fiber portions;

and aligning and abutting second optical fibers contained between opposite second optical fiber support members with said first optical fiber portions such that optical energy can be transmitted from the first optical fiber portions to the second optical fibers.

5,287,427

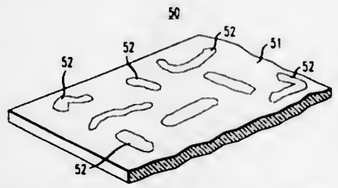
METHOD OF MAKING AN ARTICLE COMPRISING AN OPTICAL COMPONENT, AND ARTICLE COMPRISING THE COMPONENT

Robert M. Atkins, Millington; Paul J. Lemaire, Madison; Victor Mizrahi, Bedminster, and Kenneth L. Walker, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 878,802, May 5, 1992, Pat. No. 5,235,659. This application Jan. 28, 1993, Ser. No. 10,237

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—124 **18 Claims**



1. Method of making an article that comprises an optical component, the method comprising

a) providing a body that comprises oxide glass,

b) contacting at least a portion of the glass with an atmosphere comprising gas selected from the group consisting of H_2 and D_2, said gas to be designated the "sensitizing" gas; and

c) exposing at least a part of said portion of the glass to actinic radiation such that the refractive index of said exposed part is changed; wherein

d) step b) comprises contacting the glass at a temperature of at most 250° C., with the atmosphere having a sensitizing gas partial pressure greater than 1 atmosphere, such that irradiation can result in a normalized index change (Δ) of at least 10^{-5}.

5,287,428

OPTICAL FIBER CABLE DISTRIBUTION APPARATUS

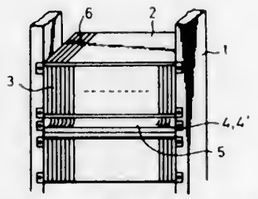
Mitsuhiro Shibata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 15, 1992, Ser. No. 961,308

Claims priority, application Japan, Oct. 16, 1991, 3-267586

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—135 **7 Claims**



1. An optical fiber cable distribution apparatus, comprising:

a plurality of modules for distribution of optical fiber cables accommodated on a shelf in a vertical position and parallel to each other; and

a fiber tray, arranged horizontally directly beneath or above the shelf, for the preparation for introducing first optical fiber cables coming from outside of said apparatus and second optical fiber cables connected with an equipment into the modules, a front section of the fiber tray being used as a guiding path for the first optical fiber cables, a rear section of the fiber tray being used as a guiding path for the second optical fiber cables, and a middle section between the front and rear areas being used as an excess length accommodation space for the first and second optical fiber cables to be introduced into the respective modules,

wherein said shelf and fiber tray are combined with each other to form a unit.

5,287,429

HIGH SPEED RECOGNITION OF A STRING OF WORDS CONNECTED ACCORDING TO A REGULAR GRAMMAR BY DP MATCHING

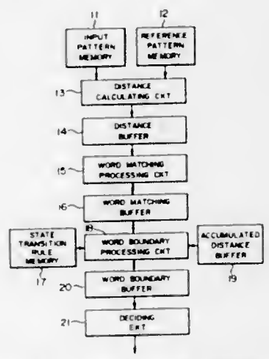
Takao Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,080

Claims priority, application Japan, Nov. 28, 1990, 2-327061

Int. Cl.[5] G10L *9/02*

U.S. Cl. 395—2.48 **1 Claim**



1. A method of recognizing, as an optimum one of word concatenations, an input string of words represented by an input sequence of input pattern feature vectors, said input string of words being selected from a word set of first through N-th words and continuously uttered in compliance with a regular grammar, where N represents an integer greater than one, each concatenation being a string of words selected from said word set and concatenated in compliance with said grammar, said grammar specifying a set of transition rules of said first through said N-th words and a set of final states of said concatenations, an n-th word optionally selected from said first through said N-th words of said word set appearing in a plural number K of said transition rules as said n-th word of first through K-th occurrence, each of the n-th word of said first through said K-th occurrence defining a combination of said n-th word and a state pair consisting of a start and an end state of said n-th word, said method comprising the steps of:

memorizing reference pattern feature vectors representative of said first through said N-th words, the reference pattern feature vectors representative of said n-th word being feature vectors representative of said n-th word being consecutively numbered as first through J-th feature vectors according to utterance of said n-th word, where J represents an integer greater than one;

generating a basic timing signal successively specifying first through I-th periods assigned to the respective input pattern feature vectors, a word specifying signal specifying, while an i-th period is specified as each of said first through said I-th periods, said first through said N-th words, and a state specifying signal specifying, while said i-th period is specified, the state pairs of said first through said N-th words, where I represents an integer greater than one;

selecting in response to the input sequence and the base timing, the word specifying, and the state specifying signals, while said n-th word is specified in said i-th period, one of the n-th word of said first through said K-th occurrence as a selected n-th word;

calculating in response to the input sequence and the base timing, the word specifying, and the state specifying signals, while said n-th word is specified in said i-th period, a plurality of distances between the input pattern feature vector assigned to said i-th period and said first through said J-th feature vectors only for said selected n-th word;

calculating in response to the base timing, the word specifying, and the state specifying signals, while said n-th word and each state pair of said n-th word are specified in said i-th period, a recurrence value g(n, i, j) only for said selected n-th word and the state pair for said selected n-th word under a boundary condition iteratively in correspondence to said first through said J-th feature vectors by using the distance calculated for said selected n-th word before said i-th period, where n represents said n-th word, i represents said i-th period, and j represents a j-th feature vector representative of each of the first through the J-th feature vectors, said last-mentioned calculating step estimating the recurrence value for said selected n-th word by using the recurrence value for said selected n-th word and the boundary conditions for said selected and said nonselected n-th word, said nonselected n-th word being a remaining one of the n-th word of said first through said K-th occurrence that is not selected by said selecting step, said last-mentioned calculating step finding, while said i-th period is specified, a minimum T(q, i) of the recurrence values obtained for the words having state pairs including said end state q of said each state pair, said last-mentioned calculating step deciding that particular word and that particular start state of said particular word for which said minimum is found, said boundary conditions being given by T(p, 1), where p represents the start state of said each state pair;

selecting in response to the basic timing, the word specifying, and the state specifying signals, while said i-th period is specified, a particular period from said first through said (i—1)-th periods with reference to said particular start state and said particular word; and

deciding the optimum concatenation by referring, after lapse of said I-th period, to the minima found in said first through said I-th periods, respectively, and to those particular words, those particular start states, and those particular start periods which are decided in said first through said I-th periods;

said first-mentioned selecting step being for selecting, as said selected n-th word, said one of the n-th word of said first through said k-th occurrence that has a minimum value of the boundary conditions T(p, i—1)'s.

5,287,430

SIGNAL DISCRIMINATION DEVICE USING NEURAL NETWORK

Masafumi Iwamoto; Takamitsu Okada; Takahiko Fujisaka, and Michimasa Kondoh, all of Kamakura, Japan, assignors to Mirsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,460

Claims priority, application Japan, Apr. 15, 1991, 3-082330

Int. Cl.[5] G06F *15/18;* **H03M** *1/00*

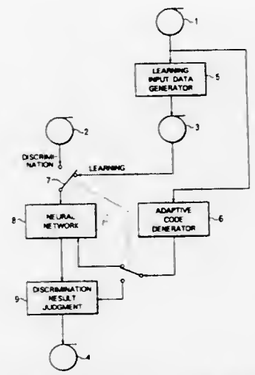
U.S. Cl. 395—22 **7 Claims**

1. A signal discrimination device using a neural network for classifying input data signals into a plurality of categories, said signal discrimination device comprising:

input means for supplying input data signals;

parameter supply means for supplying distinct values of parameters for characterizing respective categories into which said input data signals are classified;

adaptive code generator means coupled to said parameter supply means to receive the distinct values of parameters supplied from said parameter supply means, and for generating codes for representing said respective categories on the basis of said values of said parameters supplied from said parameter supply means, wherein distances between said codes correspond to degrees of affinity between said respective categories;



neural network means coupled to said input means and responsive to said codes from said adaptive code generator means for outputting discrimination signals in response to said input data signals, wherein said discrimination signals correspond to said codes for representing said respective categories; and

discrimination result judgment means coupled to said neural network means and responsive to said codes for respective categories from said adaptive code generator, for determining said categories corresponding to respective input data signals by comparing said discrimination signals with said codes for respective categories.

5,287,431

NEURAL NETWORK USING LIQUID CRYSTAL FOR THRESHOLD AND AMPLIFIERS FOR WEIGHTS

Sunao Takatori, Tokyo, Japan, assignor to Yozan, Inc., Tokyo, Japan

Continuation of Ser. No. 871,709, Apr. 21, 1992, abandoned. This application Jun. 18, 1993, Ser. No. 77,966

Claims priority, application Japan, Apr. 26, 1991, 3-125189

Int. Cl.[5] G02F *1/135, 1/1343, 15/18*

U.S. Cl. 395—25 **4 Claims**

1. A data processing system modeled on a neural network generating an optical outputs which correspond to normalized weighted sums optical inputs comprising:

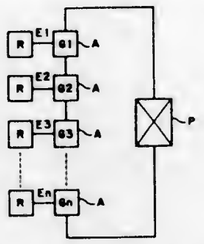
light receiving means, including a plurality of light receiving elements, for receiving an optical pattern and each said light receiving element generating a corresponding electrical signal, said light receiving means thereby generating a plurality of electrical signals each capable of assuming any of a range of values;

amplifying means, including a plurality of amplifying units each coupled to said plurality of light receiving elements the gain of which represents weights, respectively, for amplifying each said electrical signal and generating a total amplified electrical signal proportional to a bias

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voltage of zero or any value plus the sum of said amplified electrical signals; and

a liquid crystal structure, including a plurality of liquid crystal elements, wherein one of said liquid crystal ele-



ments is energized by said total amplified electrical signal and changes state when said total amplified electrical signal is greater than or equal to a predetermined value effecting a normalized optical response to said total amplified signal.

5,287,432

METHOD AND APPARATUS FOR EFFECTING FUZZY CONTROL

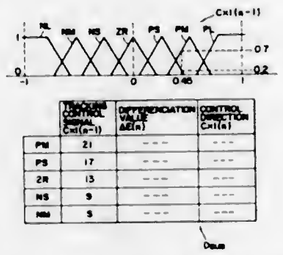
Tadafusa Tomitaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 579,974, Sep. 10, 1990. This application Sep. 29, 1992, Ser. No. 952,969

Claims priority, application Japan, Sep. 16, 1989, 2-240399; Sep. 16, 1989, 2-240400; Sep. 16, 1989, 2-240401

Int. Cl.[5] G05B *13/02*; G11B *5/008*; G06F *9/44*

U.S. Cl. 395—61 **8 Claims**



1. A method of adjusting the tracking of a playback head relative to a medium, comprising the steps of:

detecting a value of a previous tracking control adjustment signal;

identifying at least one membership function of a set of membership functions that the value of said previous tracking control adjustment signal is within, each of the membership functions in said set having a characteristic with identifying data common to plural membership functions in said set;

providing position data which locates a respective position of each of said membership functions in said set which the value of said previous tracking control adjustment signal is within;

generating a present tracking control adjustment signal in response to said identifying data and said position data; and

altering the tracking of said head in response to said present tracking control adjustment signal.

5,287,433

DEVICE FOR CONTROL OF A ROBOT MANIPULATOR FOR A METAL SHEET BENDING INSTALLATION

Gianpaolo Prunotto, and Marco Prada, both of Turin, Italy, assignors to Amada Company Limited, Kanagawa, Japan

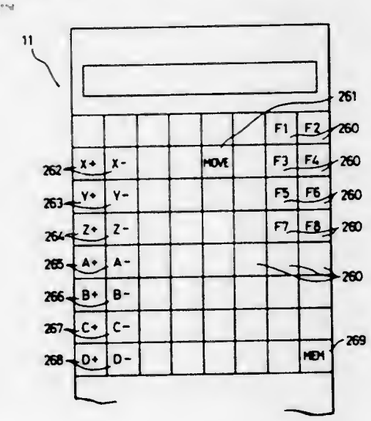
PCT No. PCT/JP90/01648, § 371 Date Aug. 7, 1991, § 102(e) Date Aug. 7, 1991, PCT Pub. No. WO91/08869, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 18, 1990, Ser. No. 741,436

Claims priority, application Italy, Dec. 18, 1989, 68115 A/89; Dec. 18, 1989, 68116 A/89; Dec. 18, 1989, 68117 A/89

Int. Cl.[5] B25J *9/16*; G05B *19/405*

U.S. Cl. 395—99 **6 Claims**



4. A device for control of a metal sheet bending installation, including a bending press and a robot manipulator for feeding a workpiece, comprising a metal sheet, into the bending press and removing the metal sheet from the bending press, the robot manipulator adapted to be located at a stand-by position away from the bending press while a bending operation is performed on a metal piece, the stand-by position being defined as the position of the robot manipulator while a bending operation is performed on a workpiece, the control device comprising:

first means for inputting a first instruction for carrying out a bending operation on the workpiece by said bending press;

second means for inputting a second instruction for moving said robot manipulator from the stand-by position to a position close to said bending press;

said second means further comprising means for inputting, after said second instruction, a third instruction for moving said robot manipulator from the position close to the bending press, to a position where the robot manipulator can grip the workpiece clamped between a punch and die of the bending press, after a bending operation is completed; and

an electronic unit, said electronic unit comprising means adapted to insert, between said second and said third instructions, a synchronization and control signal having a predetermined delay time, the electronic unit being adapted to associate with said first instruction signal, a further instruction between said first instruction and said synchronizing and control signal, said further instruction to be processed at the same time as said first instruction is processed, said further instruction moving said robot manipulator toward the workpiece clamped between the punch and die while a bending operation by the punch and die of the bending press is performed.

5,287,434

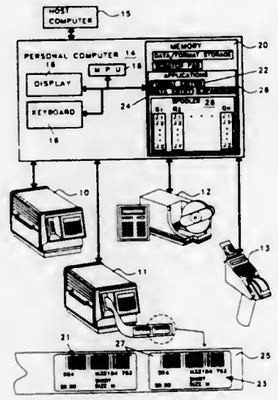
BARCODE IDENTIFICATION SYSTEM SPOOLER

James M. Bain, Beavercreek; David J. Best, Miamisburg; James E. Globig, Hamilton; Dale E. Lamprecht, Jr., Dayton; James G. Markham, Spring Valley, and Debra A. Stellwag, Dayton, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Oct. 28, 1991, Ser. No. 783,765

Int. Cl.[5] G06F *3/08, 3/12*

U.S. Cl. 395—101 **29 Claims**



20. A barcode identification system comprising:

a plurality of queues, each queue providing a prioritized list of jobs to be printed;

a plurality of printers each assigned to a queue, at least one of said queues having multiple printers assigned thereto wherein each printer assigned to said one queue need not be capable of printing every job listed in said one queue; and

a spooler distributing a job to a printer, said spooler searching each of said queues for the highest priority job capable of being printer by said printer.

5,287,435

THREE DIMENSIONAL MODELING

Nissan Cohen, Kiryat Nordau; Gill Barequet, Herzlia; Daniel Barnea, Tel Baruch; Barry Ben-Ezra, Ramat Hasharon; Yehoshua Dollberg, Ra'anana; Shalev Gilad, Hod Hasharon; Varda Herskowits, Petach Tikva; Herbert Meininger, Ramat Hasharon; Itzik Pomerantz, Kfar Saba; Benjamin Sas, Rehovot; Yehoshua Sheinman, Tel Aviv; Mark Shlick, Kiryat Ono; Michael Wasserstein, Tel Aviv, and Nachshon Yeshurun, Mobile Post Shomron, all of Israel, assignors to Cubital Ltd., Herzlia, Israel

Continuation-in-part of Ser. No. 57,366, Jun. 19, 1987, Pat. No. 4,961,154, and Ser. No. 290,318, Dec. 22, 1988, Pat. No. 5,031,120. This application Aug. 23, 1990, Ser. No. 572,214

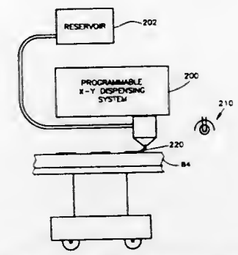
Claims priority, application Israel, Jul. 10, 1990, 95034

Int. Cl.[5] G06F *15/00*; G06K *9/00*; B28B *17/00*

U.S. Cl. 395—118 **30 Claims**

1. Apparatus for producing a three-dimensional model comprising:

means for selective dispensing of a photopolymer materials, layer upon layer, in a pattern matter configuration; and



means for radiation curing each said photopolymer layer following deposition thereof and prior to deposition thereon of a succeeding layer of photopolymer.

5,287,436

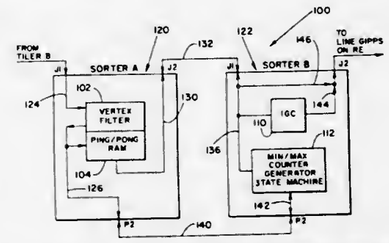
POLYGON SORT ENGINE

Douglas A. Fischer; Bradley D. Peterson; Keith L. Jackson, all of Albuquerque, N. Mex., and Glenn M. Courtright, Clay, N.Y., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 514,723, Apr. 26, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,348

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—119 **3 Claims**



1. A polygon sort engine for sorting a polygon comprising a plurality of vertices received from a source of vertices wherein each vertex of the plurality of received vertices comprises an X coordinate, a Y coordinate, and a Z coordinate, and wherein the polygon includes a MIN vertex, a LAST MIN vertex, a LAST MAX vertex and a MAX vertex wherein the MIN vertex comprises a minimum Y and minimum X coordinate, the LAST MIN vertex comprises a minimum Y and maximum X coordinate, the MAX vertex comprises a maximum Y and minimum X coordinate and the LAST MAX vertex comprises a maximum Y and maximum X coordinate, the polygon sort engine comprising:

(a) means operably connected to the source of vertices for filtering the plurality of received vertices of the polygon, said filtering means having a vertex data output for providing filtered vertex data;

(b) pointer means for determining addresses, said pointer means comprising logic means connected to receive from the source of vertices the X and Y vertex coordinates of the received vertices, said logic means comparing the X and Y vertex coordinates to determine the MIN vertex, the LAST MIN vertex, the LAST MAX vertex and the MAX vertex and providing a plurality of control signals, each control signal corresponding to a different one of the MIN vertex, the LAST MIN vertex, the LAST MAX vertex and the MAX vertex, said pointer means further comprising first address means for storing an address corresponding to the MIN vertex, second address means

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for storing an address corresponding to the LAST MIN vertex, third address means for storing an address corresponding to the LAST MAX vertex and fourth address means for storing an address corresponding to the MAX vertex wherein said first, second, third and fourth address means store the addresses in response to the corresponding control signals and wherein each said first, second, third and fourth address means has an address output;

(c) edge generation means connected to said address output of the first, second, third and fourth address means for receiving from said address output the MIN vertex address, LAST MIN address, LAST MAX address and MAX address, said edge generation means generating therefrom addresses of vertex points along the edges of the polygon by counting addresses bounded by the MIN vertex address, LAST MIN address, LAST MAX address and MAX address, said edge generation means having a polygon address output;

(d) a PING input buffer having an input and an output, said input being coupled to said vertex data output of said filtering means to receive and store filtered vertex data;

(e) a PONG input buffer having an input and an output, said input being coupled to said output of said filtering means to receive and store filtered vertex data;

(f) PING RAM means for storing vertex data having a bus coupled to said output of said PING input buffer, said PING RAM means having a read address input connected to said polygon address output; and

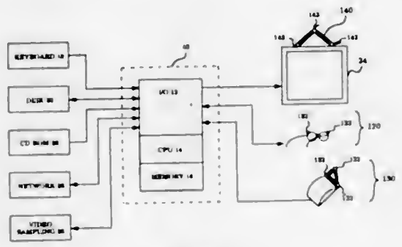
(g) PONG RAM means for storing vertex data having a bus coupled to said output of said PONG input buffer, said PONG RAM means having a read address input connected to said polygon address output of said edge generation means, whereby said PING RAM means and said PONG RAM means read out filtered vertex data corresponding to the addresses of vertex points along the edges of the polygon generated by said edge generation means.

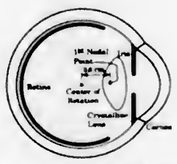
5,287,437

METHOD AND APPARATUS FOR HEAD TRACKED DISPLAY OF PRECOMPUTED STEREO IMAGES

Michael Deering, Los Altos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 2, 1992, Ser. No. 893,196
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—127 **16 Claims**





9. An apparatus for generating a head tracked stereo image, comprising:

means for generating precomputed images corresponding to a set of predetermined viewpoints of a virtual object, such that the predetermined viewpoints and the virtual object are defined in a display plate coordinate space registered to a display screen of a display device;

means for determining a time index for displaying the precomputed images in stereo on the display device;

means for predicting an eye first nodal point for each eye of a viewer corresponding to the time index, such that the eye first nodal points are located in the display plate coordinate space;

means for determining the predetermined viewpoints having the closest proximity in the display plate coordinate space to the eye first nodal points;

means for accessing the precomputed images corresponding to the predetermined viewpoints having the closest proximity in the display plate coordinate space to the eye first nodal points, and transferring the precomputed images to a frame buffer;

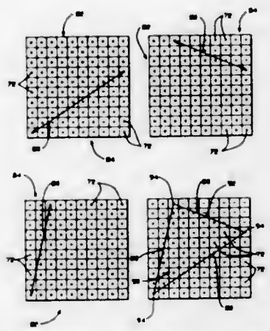
means for displaying the precomputed images in the frame buffer in stereo on the display device.

5,287,438

SYSTEM AND METHOD FOR DRAWING ANTIALIASED POLYGONS

Brian M. Kelleher, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 438,356, Nov. 17, 1989, abandoned.
This application Aug. 13, 1992, Ser. No. 929,845
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—132 **24 Claims**



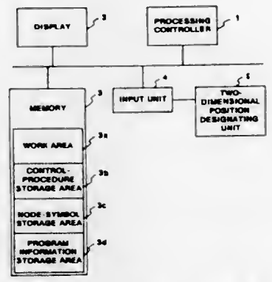
1. A system for drawing antialiased polygons, which comprises a host data processor, a memory connected to said host data processor by a bus, a graphics processor connected to said bus, a display including a plurality of pixels for displaying the polygons, and a frame buffer connected between said graphics processor and said display, said graphics processor including a program for calculating values of an image array, said image array being selectively reconfigurable by said program to comprise either a plurality of the pixels or a plurality of subpixels within one of the pixels, lines of the polygons being determinable with said program by dividing a plane of the display surface into geometric half spaces with the lines and categorizing the half spaces by which side of the lines on which the half spaces are located, said graphics processor comprising a plurality of array registers and a plurality of comparators, each of said plurality of array registers being connected to one of said plurality of comparators, said registers and comparators for storing and comparing said values calculated by said program to determine in which said half space said pixels or subpixels in said image array reside.

5,287,439

GRAPHIC EDITING ESPECIALLY SUITABLE FOR USE IN GRAPHIC PROGRAMMING, FLOW CHARTS, ETC.

Eiji Koga, Hadano; Takashi Nakamura, Hiratsuka; Kunitaka Ozawa, Isehara; Tsuneaki Kadosawa, Ninomiya, and Hitoshi Watanabe, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1991, Ser. No. 711,317
Claims priority, application Japan, Jun. 11, 1990, 2-149814
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 **12 Claims**



1. A figure editing apparatus for editing figure sets each comprising at least one figure, the apparatus comprising:

display means for displaying figure sets;

first memory means for storing relationships between each figure set and figures contained in that figure set;

second memory means for storing areas on said display means, each area corresponding to at least one respective figure set;

third memory means for storing areas on said display means, each area corresponding to at least one respective figure;

editing means for editing a figure or a figure set displayed on the display means by referring to the first memory means;

designating means for designating a position on the display means;

judging means for referring to said second and third memory means and judging which of an area corresponding to a figure or an area corresponding to a figure set contains the position designated by said designating means;

first control means for, if said judging means judges that an area corresponding to a figure contains the designated position, controlling said editing means to initiate editing of the figure corresponding to the area which contains the designated position; and

second control means for, if said judging means judges an area corresponding to a figure set contains the designated position, controlling said editing means to initiate editing of all figures included in the figure set corresponding to the area which contains the designated position.

5,287,440

GRAPHIC PROCESSING METHOD FOR DRAWING AN AREA DEFINED BY CLIPPING OF A VARIABLE SHAPE AND APPARATUS FOR DOING THE SAME

Kimiya Yamaashi; Shuuichi Miura, both of Hitachi; Yuji Taki, Takasaki, and Atsushi Kawabata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1990, Ser. No. 491,826
Claims priority, application Japan, Mar. 20, 1989, 1-66215
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—134 **12 Claims**

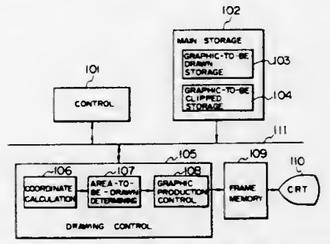
3. A graphic drawing device comprising:

graphic-to-be-drawn storage means for storing data relative to coordinates of a graphic-to-be-drawn;

graphic-to-be-clipped storage means for storing data relative to coordinates of a graphic-to-be-clipped specifying an area-to-be-drawn for said graphic-to-be-drawn;

coordinate calculation means for scanning successively by a scanning line said data relative to coordinates of the graphic-to-be-drawn said data relative to coordinates of the graphic-to-be-clipped read out from both of said storage means, thereby calculating coordinates of intersecting points of said scanning line with said graphic-to-be-drawn and coordinates of intersecting points of said scanning line with said graphic-to-be-clipped for each position of said scanning line,

said coordinate calculation means adds attribute data indicating whether said intersecting points belong to said graphic-to-be-drawn or said graphic to be clipped to said calculated coordinate data of intersecting points;



area-to-be-drawn determination means for determining an overlapping area of said graphic-to-be-drawn and said graphic-to-be-clipped based upon said coordinates of intersecting points of said scanning line with said graphic-to-be-drawn and said coordinates of intersecting points of said scanning line with said graphic-to-be-clipped,

said area-to-be-drawn determination means determines an overlapping area of said graphic-to-be-drawn and said graphic-to-be-clipped based upon said coordinates of intersecting points as well as said attribute data; and

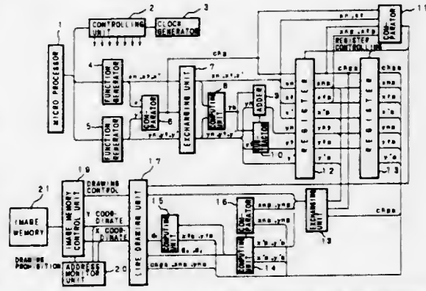
graphic drawing means for drawing said overlapping area of said graphic-to-be-drawn and said graphic-to-be-clipped.

5,287,441

METHOD AND APPARATUS FOR DISPLAYING A PARAMETRIC CURVE

Kazuo Nakamura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,452
Claims priority, application Japan, Oct. 12, 1989, 1-267029
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—142 **18 Claims**



1. A method of displaying a representation of a parametric curve in a two-dimensional space where a location of a point in the two-dimensional space is specified uniquely by an x coordinate and a y coordinate, the parametric curve being a representation of all points with x and y coordinates satisfying a first equation, $x=f(t)$, and a second equation, $y=g(t)$, for at least

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one value of t, t being a real number within a predetermined range bounded by a first t value and a last t value, where f and g represent predetermined functions of t, said method comprising steps of:

determining a resolution of an output device such that each point capable of being displayed as a mark by said output device is representable by an x coordinate value which is an integer multiple of a distance u and a y coordinate value which is an integer multiple of a distance v;

selecting a display color;

selecting a plurality of t values, each within the predetermined range;

identifying, for each t value of said plurality of t values, a grid point of said output device, comprising the steps of:

calculating a location of an actual point specified by an x and a y coordinate which satisfy the first and second equations, respectively, for said t value;

locating a grid line described by a third equation, $x=p^*u$, when an absolute value of a derivative of g(t) with respect to f(t) at said t value is less than one and described by a fourth equation, $y=q^*v$, when said absolute value is greater than one, wherein p and q are integers resulting from rounding said x and y coordinates of said actual point to nearest integer multiples of u and v, respectively;

locating a cross point, said cross point being an intersection of said grid line and a tangent to the parametric curve, where said tangent passes through said actual point; and

locating a grid point, said grid point being a point on said grid line nearest said cross point, wherein grid points are characterized by x and y coordinates which are integer multiples of u and v, respectively; and

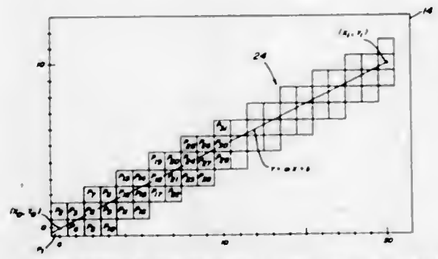
sending a signal to said output device, said signal instructing said output device to show each grid point identified in said identifying step as a mark on said output device in said display color.

5,287,442

SERPENTINE RENDERING OF ANTIALIASED VECTORS IN A COMPUTER GRAPHICS SYSTEM

Byron Alcorn, and Forrest E. Norrod, both of Ft. Collins, Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jan. 10, 1991, Ser. No. 639,626
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—143 **18 Claims**



1. In a computer graphics system, a method for rendering an antialiased vector, wherein "rendering" refers to writing pixel data to locations defined by coordinates along a major axis and a minor axis of a display associated with the computer graphics system, comprising the steps of:

(a) rendering, at a first major axis step, a first set of pixels in a first direction along a minor axis, said first major axis step being a first point along said major axis;

(b) rendering, at a second major axis step, a second set of pixels in a second direction along said minor axis, said second direction being opposite to said first direction, said second major axis step being a second point along said major axis; and

(c) rendering, at a third and subsequent major axis steps, corresponding third and subsequent sets of pixels along said minor axis in respective directions that reverse with each major axis step, said third and subsequent major axis steps being a third and subsequent point along said major axis;

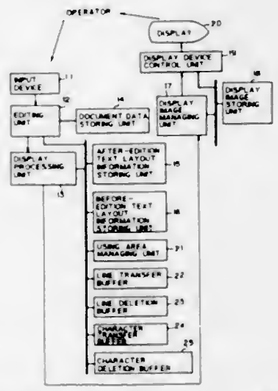
wherein said first, second, third, and subsequent sets of pixels define said antialiased vector.

5,287,443

APPARATUS FOR EDITING DOCUMENTS ADAPTED TO REDUCE A PROCESS TIME OF REFRESHING THE DOCUMENTS

Kenji Mameda, Kashihara; Shigeru Yoshida, Kita-Katsuragi; Shuichiro Ono, Soraku, and Noboru Kubo, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1991, Ser. No. 705,038
Claims priority, application Japan, May 24, 1990, 2-135122
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—146 **19 Claims**



1. An apparatus for editing documents input from an input device, the apparatus being adapted to reduce a process time of refreshing said documents to be displayed on a display device and adapted to increase a displaying speed of said refreshed documents during an editing process, said apparatus comprising:

a document storing means for storing document data;

a layout information storing means for storing layout information separately in accordance with a preceding time and a succeeding time with respect to an editing operation, said layout information indicating positions of said document data on said display device at a time when said document data are displaying;

a display image storing means for storing image data, said image data being used for displaying said document data stored in said document storing means on said display device in accordance with said layout information in said preceding time stored in said layout information storing means;

an editing means for producing said layout information in said succeeding time by utilizing both said layout information in said preceding time stored in said layout information storing means and said document data stored in said document storing means in accordance with an indication input from said input device; and

a processing means for updating said image data stored in said display image storing means in accordance with a process of displaying characters and a process of transmitting said image data to said display device,

said processing means being further adapted to divide said layout information to be redisplayed into a plurality of parts,

said plurality of parts including a part to be deleted, a part to be newly displayed, a part to be moved on image, a part to be redisplayed, and a part to be left intact,

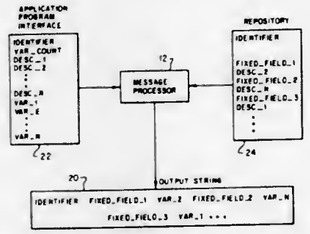
said processing means being further adapted to register said layout information in said part to be redisplayed, into said part to be deleted and said part to be newly displayed, respectively, and further adapted to group said layout information in said part to be deleted as blocks and to delete said layout information in said part to be deleted from an area of said image data so that spatially separated areas of said document image are grouped together and then the group is deleted from said text.

5,287,444

MESSAGE PROCESSING SYSTEM

Michael A. Enescu, Sunnyvale; James Lum; Ronald L. Obermarck, both of Redwood City, and Kurt A. Shoens, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1989, Ser. No. 393,133
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—148 **8 Claims**



1. In a digital data processing system, a system for generating messages in a selected national language, comprising:

a plurality of message repositories accessible to the data processing system, each repository corresponding to a single national language and having a plurality of entries, each entry having an identifier and defining fixed field and syntax information for a single message;

an application executing on the data processing system, wherein the application generates data corresponding to a selected message in a selected national language, wherein the generated data includes a message identifier, and further includes a plurality of paired variable values and variable descriptors;

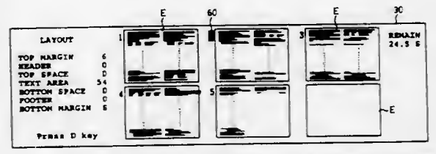
a message processor executing on the data processing system, wherein the message processor accepts the message data generated by the application, selects an entry in a selected repository corresponding to the message identifier, generates a message containing fixed fields for the selected entry and the variable values, wherein the location of the variable values within the message is determined by matching the variable descriptors with the syntax information for the message, and wherein the message processor returns the generated message to the application.

5,287,445

LAYOUT DISPLAYING APPARATUS FOR A WORD PROCESSOR

Misao Kataoka, Mie; Yuri Usami, Nagoya; Manami Yamada, Seto; Kayoko Harada, and Chiharu Hori, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 19, 1990, Ser. No. 615,404
Claims priority, application Japan, Feb. 2, 1990, 2-24904
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—148 **20 Claims**



16. A layout displaying apparatus for a word processor comprising:

input means for inputting document data;

storing means for storing a plurality of pages of document data input from the input means;

display means capable of simultaneously displaying a plurality of layout display regions thereon;

setting means for setting a layout display mode in which layouts of a plurality of pages of the document data are to be displayed on said display means; and

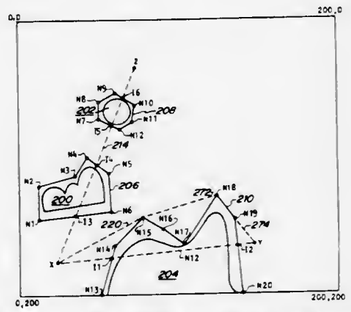
extension layout display control means for adjacently displaying a plurality of layouts, each of the plurality of layouts corresponding to at least two adjacent pages of the plurality of pages of the document data stored in the storing means and being displayed within each of the plurality of layout display regions when said setting means sets the layout display mode.

5,287,446

SYSTEM AND METHODS FOR INTELLIGENT MOVEMENT ON COMPUTER DISPLAYS

Kenneth A. Williams, Bass Lake; David C. Iden, and Larry L. Scott, both of Oakhurst, all of Calif., assignors to Sierra On-Line, Inc., Oakhurst, Calif.

Filed Oct. 15, 1990, Ser. No. 598,174
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—152 **20 Claims**



6. A method for establishing a contiguous path of movement between a beginning position and a selectable position for a computer-controlled display, said method comprising the steps of:

(1) providing coordinates for the beginning position and the selectable position;

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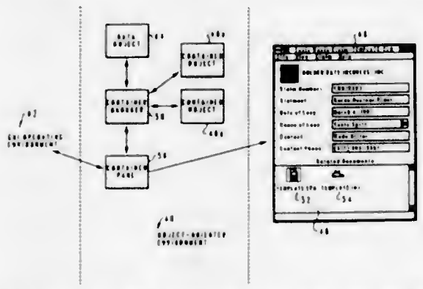
(2) defining a polygon about each impassable object, where each of said polygons are closed and not intersecting;
(3) calculating a direct trajectory between the beginning position and the selectable position;
(4) comparing the direct trajectory to the polygon for intersections therebetween and for each polygon determining a first intersection closest to the beginning position and a second intersection closest to the selectable position; and
(5) establishing a locus of points intermediate the beginning position and the selectable position by:
a) forming a path of points along the direct trajectory until the selectable position or an intersection between the direct trajectory and a polygon is reached;
b) forming a path of points along the polygon until another intersection between the direct trajectory and the polygon is reached; and
c) returning to forming the path of points in accordance with the first forming step a).

5,287,447

METHOD AND SYSTEM FOR PROVIDING CONTAINER OBJECT ATTRIBUTES TO A NON-CONTAINER OBJECT

Patrice R. Miller; Wade A. Miller, both of Keller, and John K. Rayborn, Dallas, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,086
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—157 **9 Claims**



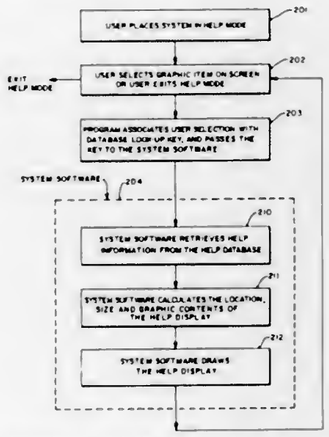
6. A data processing system using a graphic user interface operating environment for providing a non-container object with an appearance of a container object comprising:
a container manager, said container manager associated with said non-container object in an object-oriented environment; and
a container pane, said container pane associated with said container manager, in communication with said container manager and a list control in said graphic user interface operating environment, and displaying within said non-container object an area with container object attributes and relaying user input to said container manager, said container pane and said container manager providing said non-container object with the appearance of said container object.

5,287,448

METHOD AND APPARATUS FOR PROVIDING HELP INFORMATION TO USERS OF COMPUTERS

Anne Nicol, Palo Alto; Lawrence A. Kenyon; Annette Wagner, both of Sunnyvale, and James T. Sulzen, Montara, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 824,734, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 347,745, May 4, 1989, abandoned. This application Mar. 24, 1993, Ser. No. 36,216
Int. Cl.[5] G06F *3/14, 15/40*
U.S. Cl. 395—159 **18 Claims**



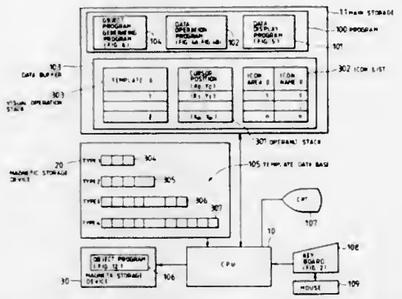
1. In a computer system having a video display and a graphic interface, a method of providing help information to a user of said computer system comprising the steps of:
associating a first help message and a second help message with a first pictorial icon having a first pointer sensitive area on a video display of said computer system;
activating a concurrent help mode of said computer system in response to a first user input to said computer system, said concurrent help mode functioning without taking precedence over another program operating in said computer system, said computer system remaining in the concurrent help mode until deactivated;
moving a pointer on said graphic interface over said first pointer sensitive area associated with said first pictorial icon;
selecting one of the first help message and the second help message associated with said first pictorial icon from a help message database stored in said computer's memory based upon a context of the computer system, the context being determined based upon factors including sophistication of the user and a current status of the computer system;
calculating the size of a graphic bubble to contain the selected help message;
locating a selected portion of said graphic interface having a size sufficient to accommodate said graphic bubble;
displaying said selected help message to said user in said graphic bubble on said video display while said pointer is over said first pointer sensitive area, display of said selected help message not preempting operation of another program operating within said computer system, said graphic bubble being positioned within said selected portion; and
removing said selected help message and said graphic bubble from said video display when said pointer is no longer over said first pointer sensitive area.

5,287,449

AUTOMATIC PROGRAM GENERATION METHOD WITH A VISUAL DATA STRUCTURE DISPLAY

Keiji Kojima, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 266,079, Nov. 2, 1988, abandoned. This application Oct. 9, 1990, Ser. No. 595,747
Claims priority, application Japan, Nov. 6, 1987, 62-279215
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—161 **12 Claims**



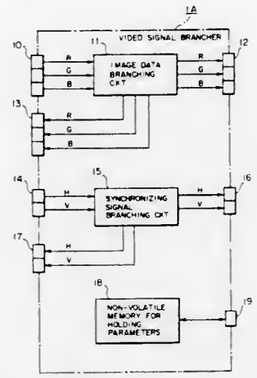
1. A program generation method of generating a program for processing an array by a processing device in response to various commands inputted by an operator through keys of a keyboard and selection thereby of icons displayed on a screen of a display device, comprising the steps, executed by said processing device, of:
(a) in response to input of each of a plurality of commands each designating one of plural data to be processed by the program, storing a first kind of data indicative of said designated one of the plural data, and displaying a first kind of icon indicative of said designated one of the plural data, wherein at least one particular data within said plural data comprises array data of said array, said array data comprises a set of data elements each of which is designated by a name of the array data and a value of an index assigned to said each data element, the index being common to the set of data elements;
(b) in response to input of at least one particular command which requires selection of a data element which satisfies a data selection condition designated by the particular command, within said array data, storing a second kind of data indicative of a first part of the array data which comprises one data element which satisfies the data selection condition, within said array data, storing a third kind of data indicative of a second part of this array data which comprises one or plural data elements which do not satisfy the data selection condition, within said array data, and storing a fourth kind of data indicative of the data selection condition and displaying a second icon indicative of the first part of the array data and a third icon indicative of the second part of the array data;
(c) in response to input of each of said commands each designating an operation to be executed and selection of at least one of said second and third icons displayed on said display device, storing a fifth kind of data indicative of execution of the operation on one data corresponding to the selected one icon, and storing a sixth kind of data indicative of a resulting data of the operation, and displaying a fourth icon indicative of the resulting data; and
(d) in response to input of a command requiring generation of a program for processing said array, storing a program which executes a sequence of processings on said array required by commands inputted on the plural data to be processed, based upon data already stored in the steps (a) to (c).

5,287,450

VIDEO SIGNAL BRANCHER

Yasuhiro Yoshimoto, and Kiyoshi Takakuwa, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 375,926, Jul. 7, 1989, abandoned. This application Feb. 10, 1992, Ser. No. 831,754
Claims priority, application Japan, Sep. 29, 1988, 63-242241
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—163 **7 Claims**



1. A video signal brancher for facilitating transmission of video signals between a host computer and a printer, comprising:
an image data branching circuit for branching image data contained in the video signals input from image data input terminals and sending the data to first image data output terminals and to second image data output terminals;
a synchronizing signal branching circuit for branching synchronizing signals contained in the video signals input from synchronizing signal input terminals and sending the synchronizing signals to first synchronizing signal output terminals and to second synchronizing signal output terminals; and
parameter storage means for storing video signal parameters, said parameter storage means having an output terminal in communication with a printer which outputs the stored parameters which enable the printer to print video images corresponding to the image data and the synchronizing signals of the video signal.

5,287,451

METHOD OF PRESENTING IMAGES ON A HARDWARE SCREEN AND A SYSTEM FOR IMPLEMENTING THE METHOD

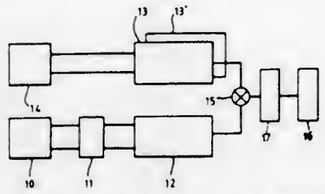
Jean-Jacques Favot; Michael Martinez, both of Martignas sur Jalle, and Jean-Noel Perbet, Eysines, all of France, assignors to Sextant Avonique, France

Filed Aug. 22, 1991, Ser. No. 748,430
Claims priority, application France, Aug. 23, 1990, 90 10587
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **8 Claims**

1. Method of presenting an image on a matrix screen of pixels from an image generator, in which, for each point of the image with coordinates x, y, one of a series of predetermined pixel microregions stored in a microregion generating unit is selected, in order to correlate it in x, y with the microregions previously presented before writing it in a screen memory and presenting it on the screen, characterized by the fact that, the screen memory being organized according to a matrix of memory cells in a manner identical to that of the microregion pixels, the corresponding addresses of the memory cells are deter-

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mined, from the coordinates of a point to be presented, in order to address the memory cells respectively simultaneously, as in a matrix, and to read the memory cells' data which are correlated with those of the corresponding new microregion selected, the microregion which is a result of the correlation is written in the screen memory and the screen memory is read in order to display the image on the screen.

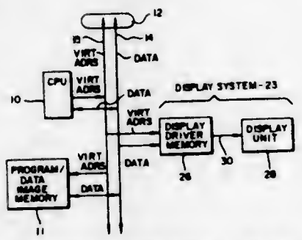


5,287,452

BUS CACHING COMPUTER DISPLAY SYSTEM

Gary H. Newman, Concord, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1990, Ser. No. 498,031
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—166 32 Claims



1. A display system for connection to a bus in a digital display processing system having a system memory storing data in response to system memory addresses, said display system comprising:

A. a display memory for storing image data;

B. a display for receiving stored image data from said display memory and for generating a displayed image;

C. an interface for receiving image data and address data from said bus, said address data specifying addresses in said system memory, said interface determining in response to said address data whether the image data relates to image data for an image stored in said display memory and in response thereto controlling storage of the image data in the display memory simultaneously with storage of the image data in the system memory.

5,287,453

FAST REMOTE FILE ACCESS FACILITY FOR DISTRIBUTING FILE ACCESS REQUESTS IN A CLOSELY COUPLED COMPUTER SYSTEM

William F. Roberts, Acton, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

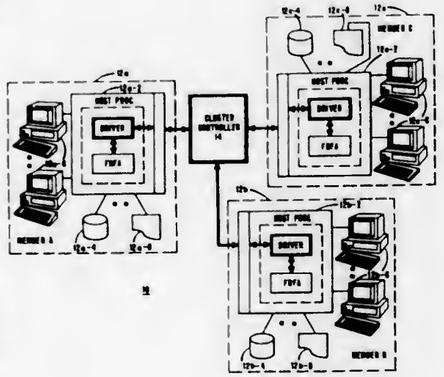
Filed Sep. 18, 1990, Ser. No. 584,544
Int. Cl.[5] H04L *12/44*; G06F *13/00*
U.S. Cl. 395—200 23 Claims

1. A data processing computer system comprising:

a plurality of separately bootable computer systems, each computer system including a different plurality of peripheral devices from which data is transferred and received;

a cluster controller for interconnecting each of said systems to be closely coupled the other remaining systems for rapidly transferring information therebetween and said each computer system further including identical monitor call operating system facilities for receiving monitor system calls from application programs running under control of said each computer system, and including means for returning the results to said application programs as a consequence of processing said monitor system calls, said monitor call operating system facilities further including file management facilities for controlling the access of files within said each computer system through a plurality of local drivers for corresponding ones of said plurality of peripheral devices and each computer system further including fast remote facility (FRFA) module means, said FRFA module means including;

input means within each computer system responsive to a start command for enabling said system to operate in a cluster mode of operation concurrent with normal processing operation; and



a cluster file manager (CFM) section included within said monitor call operating system facilities for responding to a number of cluster system calls generated by application programs within any one of said computer systems requesting access to said plurality of said peripheral devices located on other ones of said computer systems enabled for operating in said cluster mode, and;

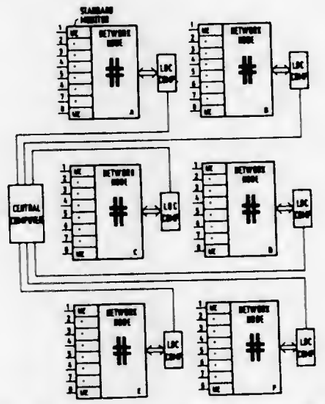
driver means coupled to said FRFA module means for enabling a rapid communication of cluster system calls through said cluster controller and corresponding ones of said FRFA module means in a predetermined manner so that said application programs in each system has access to all of said plurality of peripheral devices in other systems operating in said cluster mode of operation as if said all of said plurality of peripheral devices were accessible by system calls made to said monitor call facilities through said local drivers.

5,287,454

METHOD FOR ACQUIRING NETWORK KNOWLEDGE ABOUT A DIGITAL TRANSMISSION NETWORK

Martin Diekmeier, Dieburg; Eckhart Flor, Reinheim; Klemens Hahn, Weiterstadt; Gerhard Himmel, Weinheim, and Helmut Wolf, Pfungstadt, all of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang; Hans Kolbe & Co. Nachrichtenubertragungstechnik, Bad Salzdetfurth; Krone Aktiengesellschaft, Berlin; Quante Aktiengesellschaft, Wuppertal; Siemens Aktiengesellschaft, Munich; Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart and U.S. Philips Corporation, New York

PCT No. PCT/DE89/00488, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991
PCT Filed Jul. 26, 1989, Ser. No. 646,783
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1988, 3825265
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 13 Claims



12. A digital transmission network for digital signals comprising:

network nodes operating as terminal or tandem nodes that contain electronic distributors having circuits that have network knowledge available to them;

digital signal sections connected between the network nodes;

local computers connected to the network nodes;

a central computer connected to the local computers;

digital signal connections that can be switched and monitored from a starting terminal node via tandem nodes to a destination terminal node;

transmitting means in the local computers of the starting terminal node and the destination terminal node for repeatedly transmitting in the direction of the opposite terminal node a telegram having a start character, having starter data containing an identification of type of signal and operating mode as well as an identification of both terminal nodes, and having an end character;

storage means in the local computers of each tandem node for storing the telegram;

control means in the local computers of both terminal nodes for reporting with reference to incoming telegrams a correct switch of the digital signal connection to the central computer having control means for initiating the through-connection of the digital signal; and

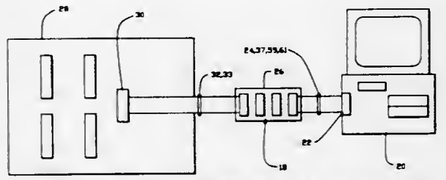
control means in the local computers of the network nodes for, given outage of the central computer, through-connecting the digital signal dependent on the stored information of the received telegrams.

5,287,455

ROM SOCKET COMMUNICATION DEVICE FOR DATA TRANSFER BEWEEN A HOST COMPUTER AND A MICROPROCESSOR BASED SYSTEM

Lawrence D. Rosenthal, 6845 Aiken Dr., Oakland, Calif. 94611

Continuation-in-part of Ser. No. 81,908, Aug. 5, 1987, abandoned. This application May 2, 1991, Ser. No. 694,944
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—200 15 Claims



1. A data transfer device for loading data into a target microprocessor based system with ROM address and data space from a host computer having a parallel printer port, wherein the host computer generates host command signals on the parallel printer port, the data transfer device comprising:

control logic for generating control signals, wherein the control logic is responsive to host command signals and an assertion of a predetermined ROM address by the target microprocessor based system;

a buffer memory, responsive to the control signals, for receiving data from the host computer parallel printer port and outputting the data; and

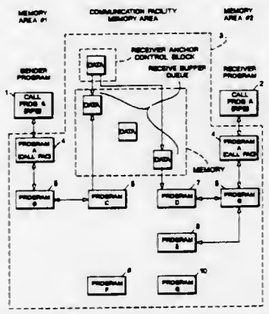
connecting means, coupled to the buffer memory and the target microprocessor based system ROM data space, for transferring the data from the buffer memory to the target microprocessor based system ROM data space.

5,287,456

COMMUNICATION SYSTEM FOR FACILITATING IN FULL DUPLEX COMMUNICATION MODE AND WITHOUT PREVIOUSLY DEFINING SESSIONS BETWEEN SENDER AND RECEIVER PROGRAMS

Murden C. Rhodes, and Jen S. Wang, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 261,212, Oct. 24, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 698,351
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—200 8 Claims



1. In a computer system having an addressable memory, a processor, and a plurality of resident executable processor programs, a method of communicating data in a full duplex mode without previously defining a session between said pro-

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cessor programs from a first of said processor programs acting as a sender to at least a second of said processor programs acting as a receiver, said method comprising the steps of:

storing a communication facility program in said addressable memory;

calling said communication facility program from said second receiver program, said second receiver program identifying both itself and its function as a would-be receiver to said communication facility program;

calling said communication facility program from said first sender processor program in said computer system and delivering simultaneously to said communication facility program data and an indication of a requested function; and

requesting, by said second receiver processor program having said requested function, delivery by said communication facility program of any data for said second receiver processor program.

5,287,457

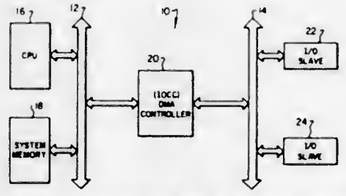
COMPUTER SYSTEM DMA TRANSFER

Ravi K. Arimilli, Round Rock; Sudhir Dhawan, Austin; James O. Nicholson, Austin, and David W. Siegel, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 640,510, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 297,774, Jan. 13, 1989, abandoned. This application Apr. 15, 1992, Ser. No. 870,159

Int. Cl.[5] G06F *13/14, 15/16*

U.S. Cl. 395—200 **10 Claims**



1. A system for transferring data in a digital computer system, comprising:

a first bus having address lines, data lines, and control lines;

a second bus having address lines, data lines, and control lines;

a master subsystem connected to the first bus;

a slave subsystem connected to the second bus;

controller means connected to the first and second busses for transferring addresses, data and control signals between the first bus and the second bus;

a clock line in the second bus for communicating a normal clock signal;

a high speed line in the second bus for communicating a high speed clock signal, wherein the second bus high speed clock signal has a higher frequency than the second bus normal clock signal;

a high speed line in the first bus for communicating a high speed clock signal, wherein the first bus high speed clock signal has the same frequency as the second bus high speed clock signal;

a transfer rate line in the first bus for communicating a transfer rate signal;

a transfer rate line in the second bus for communicating a transfer rate signal, wherein the first and second bus transfer rate lines are connected together through the controller means;

first means in the slave subsystem for signalling on the second bus transfer rate line whether the slave subsystem can support a high speed data transfer, wherein the signal on the second bus transfer rate line is communicated to the first bus transfer rate line;

second means in the master system for detecting, from the first bus transfer rate line, whether the slave subsystem can support a high speed data transfer; and

third means for, if the slave system can support a high speed data transfer, generating a high speed clock signal on the first bus high speed line and on the second bus high speed line, and transferring data between the master subsystem and the slave subsystem under the control of the first and second bus high speed clock signals, and for, if the slave system cannot support a high speed data transfer, transferring data between the master subsystem and the controller means over the first bus, and transferring data between the controller means and the slave subsystem over the second bus under the control of the normal clock signal.

5,287,458

BUFFERED ASYNCHRONOUS COMMUNICATIONS ELEMENTS WITH RECEIVE/TRANSMIT CONTROL AND STATUS REPORTING

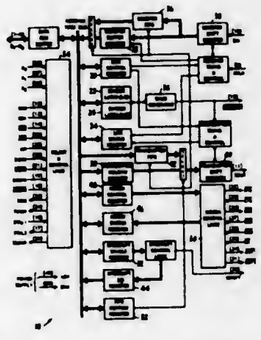
Martin S. Michael, San Jose; Prashant A. Kanhere, Santa Clara; Richard P. Burnley, Mountain View; Franco Iacobelli, Sunnyvale, and Ta-Wei Chien, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 703,572, May 17, 1991, Pat. No. 5,241,660, which is a continuation of Ser. No. 462,841, Dec. 22, 1989, abandoned, which is a continuation of Ser. No. 295,610, Jan. 10, 1989, abandoned, which is a divisio of Ser. No. 924,797, Oct. 30, 1986, Pat. No. 4,823,312. This application Mar. 26, 1993, Ser. No. 38,713

The portion of the term of this patent subsequent to Apr. 18, 2006, has been disclaimed.

Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—250 **10 Claims**



1. A data communications system comprising:

(a) a data processing system;

(b) a data character source/destination station;

(c) serial receiver means connectable to the source/destination station for receiving data characters from the source/destination station in serial format and performing serial-to-parallel conversion on said received data characters;

(d) receiver storage element means connected to the serial receiver means for receiving data characters from the serial receiver means in parallel format and having storage capacity for only a single data character received from the serial receiver means, and connectable to the data processing system for transferring said single data character to the data processing system in parallel format, the receiver storage element means comprising a first receiver data path between the source/destination station and the data processing system;

(e) receiver memory means connected to the serial receiver means for receiving data characters therefrom in parallel format and including a plurality of storage locations, the receiver memory means being responsive to a receiver enable signal for storing a plurality of data characters received from the serial receiver means in parallel format and connectable to the data processing system for transferring data characters to the data processing system in parallel format, the receiver memory means comprising a second receiver data path between the source/destination station and the data processing system;

(f) receiver control means connectable to the data processing system and responsive to an enable control signal received therefrom for generating the receiver enable signal; and

(g) receiver select means connected to the first and second receiver data paths and responsive to the receiver enable signal for disabling the first receiver data path and enabling the second receiver data path such that data characters transferred from the serial receiver means are transferred to the data processing system via the receiver memory means.

5,287,459

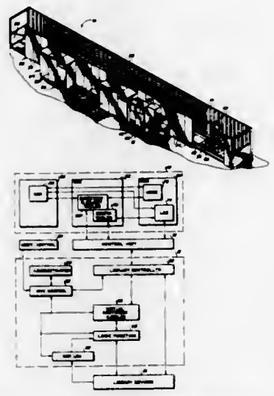
METHOD AND APPARATUS FOR REDUCING RESPONSE TIME IN AUTOMATED LIBRARY DATA RETRIEVAL SYSTEMS

John J. Gniewek, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1991, Ser. No. 770,377

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—275 **28 Claims**



1. In a library data storage system including a plurality of unit cartridges containing storage media stored in a library unit storage subsystem, a picker means for retrieving the unit cartridges from the storage subsystem, a recorder/reproducer means for at least retrieving data from the storage media of the unit cartridges, and a managing controller for managing the data stored on the media in the unit cartridges in the storage system, the improvement comprising:

a multiple virtual cartridge controller (MVCC) for creating, managing and deleting multiple copies of data of each unit cartridge;

an administrator under control of said MVCC to select whether one or more copies of the data in one unit cartridge are to be automatically copied at any selected data end, and to select whether one or more duplicated copies or data shifted copies are to be made;

a log data accumulator under control of said MVCC for maintaining a use pattern indication criteria of each copy of the data stored on the media in the plurality of unit cartridges;

a unit cartridge catalog under control of said MVCC for maintaining a listing of all data and unit cartridges stored in the library storage subsystem; and

a logic function under control of said MVCC for receiving a request for data from the managing controller for selecting the unit cartridges from which the data is retrieved in the shortest period of time using the storage location of each unit cartridge, recorder/reproducer means availability, picker means location and availability, and any queues already in place for the data requested.

5,287,460

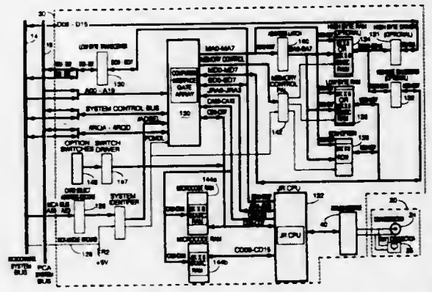
BUS INTERFACE CIRCUIT FOR DUAL PERSONAL COMPUTER ARCHITECTURE PERIPHERAL ADAPTER BOARD

Derek S. Olsen, San Jose; Richard D. Cavaness, Fremont, and Gail R. Snyder, San Jose, all of Calif., assignors to Digital Communications Associates, Inc., Alpharetta, Ga.

Division of Ser. No. 339,186, Apr. 14, 1989. This application Oct. 22, 1991, Ser. No. 781,502

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—275 **26 Claims**



1. A peripheral interface adapter operative in a plurality of different computer system bus architectures, comprising:

peripheral function circuit means for carrying out a peripheral function for a host computer system in response to connecting said peripheral interface adapter to said host computer system;

first connector means for connecting to a first one of a plurality of said computer bus architectures;

second connector means for connecting to a second one of said plurality of said computer bus architectures;

means for detecting whether said first connector means is connected to a first computer bus of said first computer bus architecture or whether said second connector means is connected to a second computer bus of said second computer bus architecture and for providing a bus architecture identification signal corresponding to the detection of either said first computer bus architecture or said second computer bus architecture;

bus interface circuit means connected to both said first and said second connector means for receiving instructions or data from said host computer system for said peripheral function circuit means and for transmitting instructions or data from said peripheral function circuit means to said host computer system,

said bus interface circuit means including a common circuit for executing computer interface functions common to both said first computer bus architecture and said second computer bus architecture, a first bus circuit for executing functions unique to said first computer bus architecture, and a second bus circuit for executing functions unique to said second computer bus architecture; and

means responsive to said bus architecture identification signal for enabling operation of either said first bus circuit or said second bus circuit.

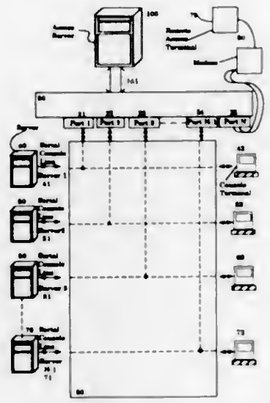
VOL 1159 ISS 3 FE 15 1994 UMI

5,287,461

METHOD AND APPARATUS FOR REMOTELY ACCESSING A PLURALITY OF SERVER CONSOLES

Gregory J. Moore, Pepperell, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 31, 1991, Ser. No. 786,091
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—275 **8 Claims**



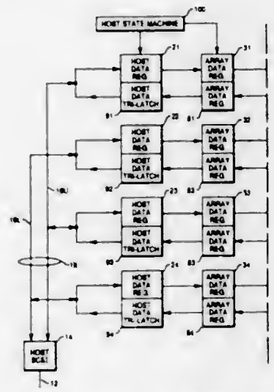
3. A network comprising:
a remote access terminal;
a plurality of servers;
a plurality of console access terminals;
an access server having a plurality of serial ports, each of said serial ports associated with each of said servers, each of said servers associated with each of console access terminals;
a remote console serial port, said remote console serial port connected between said access server and said remote access terminal, said remote access terminal selectively transmitting a signal identifying a selected server; and
connection means for connecting each of said servers with each of said console access terminals and for connecting said selected server with said remote access terminal; with
said access server receiving said signal from said remote access terminal and responsively controlling said connection means to connect said remote access terminal to said selected server identified by said signal, said connection means then routing signals from said remote access terminal to said selected server and from said selected server to both said remote access terminal and said console access terminal associated with said selected server;
wherein each serial port of said access server includes a receive signal line, a common signal line and a transmit signal line, each server includes a receive signal line, a common signal line and a transmit signal line, and each console access terminal includes a receive signal line, a common signal line and a transmit signal line, and wherein said connection means includes
an OR-gate, a first inverter and a second inverter,
said OR-gate having first and second inverted inputs and having an output,
said first inverter connected between said first inverted input of said OR-gate and said transmit signal line of said serial port, and
said second inverter connected between said second inverted input of said OR-gate and said transmit signal line of said console access terminal,
with said output of said OR-gate connected to said receive signal line of said server, said transmit signal line of said server connected to said receive signal line of said serial port and to said receive signal line of said console access terminal, and said common signal line of said sever connected to said common signal line of said serial port and to said common signal line of said console access terminal.

5,287,462

BUFFERLESS SCSI TO SCSI DATA TRANSFER SCHEME FOR DISK ARRAY APPLICATIONS

Mahmoud K. Jibbe, and Craig C. McCombs, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 20, 1991, Ser. No. 811,481
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **12 Claims**



1. Apparatus for coupling a host bus associated with a host computer system with a plurality of array busses associated with an array of disk drives, comprising:
a first register associated with each one of said plurality of array busses, each one of said first registers being connected to said host bus for receiving data therefrom;
a second register associated with each one of said plurality of array busses, each one of said second registers being connected to a corresponding first register for receiving data therefrom and connected to its associated array bus for providing data thereto; and
a third register associated with each one of said plurality of array busses, each one of said third registers being connected to its associated array bus for receiving data therefrom and connected to said host bus for providing data thereto.

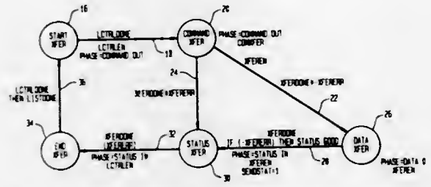
5,287,463

METHOD AND APPARATUS FOR TRANSFERRING INFORMATION OVER A COMMON PARALLEL BUS USING A FIXED SEQUENCE OF BUS PHASE TRANSITIONS

Robert C. Frame, Westboro, and Fernando A. Zayas, Stow, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 192,659, May 11, 1988, abandoned.
This application Jul. 19, 1990, Ser. No. 562,433
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **120 Claims**

1. A method for transferring information between at least two devices coupled to a common parallel bus during information transfer phases of a bus protocol controlling the parallel bus, one of the devices being an initiator and another being a target, the bus having separate data and control lines and operating according to a sequence of bus phases including the information phases, the information phases comprising a first information phase allowing the transfer of header information over the bus, a second information phase allowing the transfer of data information over the bus, and a third information phase allowing the transfer of status information over the bus, the method of transferring information during the information transfer phases consisting of the steps of:
(a) placing a first control signal on one or more control lines indicating the bus is in the first information phase, and transferring header information over the bus from the initiator to the target;
(b) placing a second control signal on one or more control lines indicating the bus is in the second information phase, the bus having transitioned from the first information phase, and transferring data information over the bus from the initiator to the target; and



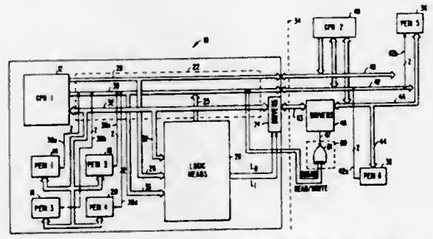
(c) placing a third control signal on one or more control lines indicating the bus is in the third information phase, the bus having transitioned from the second information phase to the third information phase, and transferring status information over the bus from the target to the initiator;
(d) performing the steps of placing the control signals on one or more control lines only in the order of placing the first control signal, followed by placing the second control signal, followed by placing the third control signal to cause all transfers of information between at least two devices during the information transfer phases, always to occur only in the order of header information from the initiator to the target, data information from the initiator to the target and status information from the target to the initiator, the order being independent of the configuration of the initiator and the target and independent of the type of information transfer.

5,287,464

SEMICONDUCTOR MULTI-DEVICE SYSTEM WITH LOGIC MEANS FOR CONTROLLING THE OPERATIONAL MODE OF A SET OF INPUT/OUTPUT DATA BUS DRIVERS

Niraj Kumar, Fremont; Ravi Narayanaswami, Newark; Hanumanthrao Nimishakavi, San Jose, and Ikuji Nobugaki, Campbell, all of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Oct. 24, 1990, Ser. No. 602,502
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **15 Claims**



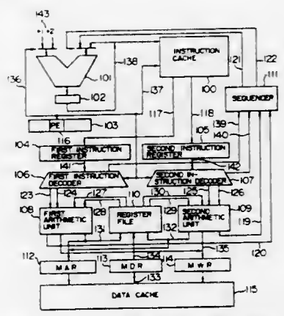
1. A semiconductor multi-device system incorporated on a single semiconductor chip capable of interacting with off-chip peripherals, said multi-device system comprising:
bus means for carrying address signals, data signals and control signals;
at least one on-chip peripheral connected to said bus means;
an on-chip processing unit connected to said bus means for generating onto said bus means, a read control signal and an address signal uniquely associated with one of said on-chip or off-chip peripherals;
logic means connected to said bus means, for receiving said read control signal and said address signal from said processing unit, and generating at least two logic signals in response thereof;
a plurality of data bus drivers responsive to said at least two logic signals generated by said logic means and connected to said bus means for driving data signals on and off said bus means, said plurality of data bus drivers selectably operating in one of at least three modes in response to said at least two logic signals; and
a plurality of terminating conductors connected to said plurality of data bus drivers, said plurality of terminating conductors providing connections for said off-chip peripherals;
wherein said at least three modes of said plurality of data bus drivers include: (1) an output mode wherein data signals received from said bus means are driven onto said plurality of terminating conductors, (2) an input mode wherein data signals appearing on said terminating conductors are driven onto said bus means, and (3) a high impedance mode wherein said bus means is electrically isolated from said terminating conductors; and
wherein said at least two logic signals generated by said logic means cause said data bus drivers to operate in high impedance mode when said processing unit generates a read control signal and an address signal corresponding to a read operation to read data from at least one of said on-chip peripherals.

5,287,465

PARALLEL PROCESSING APPARATUS AND METHOD CAPABLE OF SWITCHING PARALLEL AND SUCCESSIVE PROCESSING MODES

Kenichi Kurosawa; Shigeya Tanaka; Yasuhiro Nakatsuka, all of Hitachi, and Tadaaki Bandoh, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 433,368, Nov. 8, 1989, Pat. No. 5,233,694. This application Jul. 9, 1990, Ser. No. 549,916
Claims priority, application Japan, Jul. 7, 1989, 1-173914
Int. Cl.[5] G06F *9/00*
U.S. Cl. 275—375 **22 Claims**



1. A parallel processing apparatus comprising:
a program counter for indicating instructions to be read out from a memory;

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m instruction registers for respectively storing m instructions therein indicated by said program counter;

a register file for storing data therein;

m arithmetic units sharing said register file and executing arithmetic operations;

means for controlling said m arithmetic units to effect either parallel processing of m consecutive instructions read out from an address of the memory indicated by said program counter in said m arithmetic units, or successive processing of consecutive instructions, read out from an address of the memory indicated by said program counter, in one of said m arithmetic units, in response to a processing state alteration instruction;

conditional branch instruction processing means responsive to satisfaction of a condition of a conditional branch instruction included in m instructions read out by said program counter for preventing execution of instructions located after an address of an instruction to be executed and included in said m instructions; and

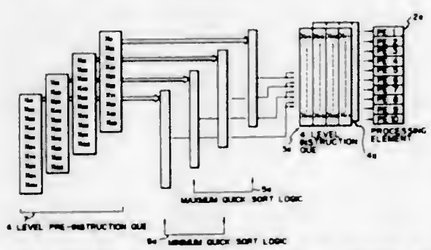
unconditional branch instruction processing means responsive to an unconditional branch instruction included in m instructions read out by said program counter for preventing execution of instructions located after an instruction to be executed and included in said m instructions.

5,287,466

METHOD AND APPARATUS FOR PARALLEL LOADS EQUALIZING UTILIZING INSTRUCTION SORTING BY COLUMNS BASED ON PREDICTED INSTRUCTION EXECUTION TIME

Takashi Kodama, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1991, Ser. No. 674,689
Claims priority, application Japan, Jul. 17, 1990, 2-188997
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—375 **14 Claims**



10. A data feed method, for use in a parallel computer having n processing elements for simultaneously processing a group of instructions in the form of a matrix of m rows and n columns in units of columns, comprising the steps of:

(a) accepting a plurality of columns of instructions;

(b) dividing the plurality of columns of instructions into a plurality of blocks, each block including a plurality of first alternate columns and a plurality of second alternate columns;

(c) sorting said first plurality of alternate columns simultaneously in descending order according to instruction execution predict count information associated with a given instruction to produce a first output;

(d) sorting said second plurality of alternate columns simultaneously in ascending order according to instruction execution predict count information associated with a given instruction to produce a second output;

(e) feeding said first output and said second output alternately as a third output in units of columns to said processing elements; and

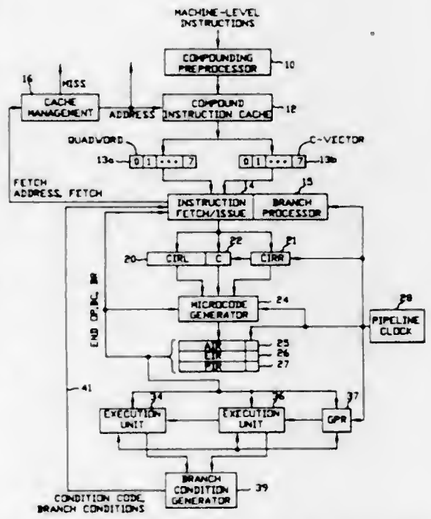
(f) executing steps (a) to (e) simultaneously.

5,287,467

PIPELINE FOR REMOVING AND CONCURRENTLY EXECUTING TWO OR MORE BRANCH INSTRUCTIONS IN SYNCHRONIZATION WITH OTHER INSTRUCTIONS EXECUTING IN THE EXECUTION UNIT

Bartholomew Blaner, Newark Valley; Thomas L. Jeremiah, Endwell; Stamatis Vassiliadis, and Phillip G. Williams, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1991, Ser. No. 687,309
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 **19 Claims**



1. In a digital computer which includes an instruction source for providing instructions to be executed, an execution pipeline for executing a stream of instructions, and a condition determination means connected to the execution pipeline for providing condition signals indicating results of executed instructions, a combination for branch instruction processing, the combination comprising:

instruction issue means coupled to the instruction source and to the execution pipeline for providing a stream of instructions to be executed; and

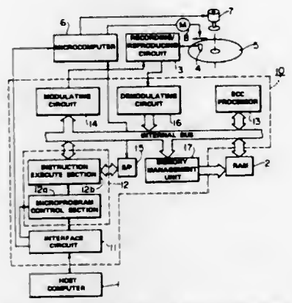
branch instruction processing mean s for searching all instruction text of a current instruction sequence of said instruction stream to detect all branch instructions in said instruction sequence and determine the text and location of each of said detected branch instructions, for removing ones of said detected branch instructions not requiring execution in the execution pipeline from the instruction sequence before said instruction sequence is loaded into the execution pipeline, for decoding and predicting whether or not a branch will be taken by using the branch instruction location as an address for the branch in a branch history cache, for initiating a necessary fetch or prefetch according to said prediction, and for concurrently executing a plurality of said removed branch instructions substantially in parallel with other ones of said instructions of said instruction sequence executing in the execution pipeline.

5,287,468

METHOD AND APPARATUS FOR PROCESSING INFORMATION DATA

Makoto Furuhashi, Kanagawa, and Katsumi Yamaoka, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 201,414, Jun. 2, 1988, abandoned. This application Oct. 30, 1991, Ser. No. 784,144
Claims priority, application Japan, Jun. 3, 1987, 62-139122; Jun. 3, 1987, 62-139124; Aug. 13, 1987, 62-201031
Int. Cl.[5] G06F *9/22, 13/00*
U.S. Cl. 395—375 **1 Claim**



1. A data processing apparatus of the type having an external data storage medium, said apparatus comprising:

a host computer for generating macrocommand instructions for initiating data transfer between said host computer and said storage medium, each macrocommand instruction representing a series of predetermined instructions to be executed as a microprogram routine;

microprogram control means responsive to a macrocommand instruction from said host computer for generating a respective set of microprogram instruction steps determined by said macrocommand instruction;

memory means for storing data from said host computer for subsequent recording on said storage medium and for storing data reproduced from said storage medium for subsequent supply to said host computer;

recording and reproducing means for recording the data supplied from said memory means on said storage medium and for reproducing the data stored on said storage medium for supply to said memory means; and

memory control means responsive to a respective set of microprogram instruction steps for controlling the supply of said data to and from said memory means and including control data storage means for storing control data indicating a start address in said memory means and a desired number of data to be transferred, the data transferred to and from said memory means being stored in and retrieved from, respectively, addresses in said memory means starting from said start address and having a number corresponding to said number of data to be transferred.

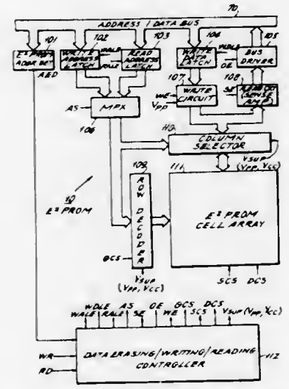
5,287,469

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE MEMORY (EEPROM), WHEREIN WRITE PULSES CAN BE INTERRUPTED BY SUBSEQUENTLY RECEIVED READ REQUESTS

Toshihide Tsuboi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 27, 1989, Ser. No. 457,245
Claims priority, application Japan, Dec. 27, 1988, 63-331713
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **5 Claims**

1. A microcomputer comprising an electrically erasable and programmable nonvolatile memory, a central processing unit for executing a program and issuing a data write request and a data read request to said nonvolatile memory, said data write request including a write address and write data and said read request including a read address, and a control circuit coupled to said nonvolatile memory and said central processing unit, said control circuit including timer means for preforming a time-counting operation to generate an operation end signal, first means responsive to said data write request for performing a data write process in which data stored in a first memory cell of said nonvolatile memory designated by said write address is first erased by applying a high voltage and said write data is then written in said first memory cell by applying said high voltage, second means responsive to said operation end signal for causing said first means to terminate said data write process, third means responsive to said data read request issued while said first means is applying said high voltage to said first



memory cell in said data write process, for commanding said first means to stop applying said high voltage to said first memory cell to suspend said data write process, for reading out data from a second memory cell of said nonvolatile memory designated by said read address and thereafter for allowing said first means to reapply said high voltage to resume the suspended data write process and fourth means for commanding said timer means to suspend said time-counting operation in response to said data read request issued while said first means is applying said high voltage to said first memory cell in said data write process and for allowing said timer means to resume said time-counting operation after said third means reads out data from said second memory cell, said timer means thereby delaying the generation of said operation end signal.

5,287,470

APPARATUS AND METHOD FOR COUPLING A MULTI-LEAD OUTPUT BUS TO INTERLEAVED MEMORIES, WHICH ARE ADDRESSABLE IN NORMAL AND BLOCK-WRITE MODES

Richard D. Simpson, Bedord, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 28, 1989, Ser. No. 457,992
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **14 Claims**

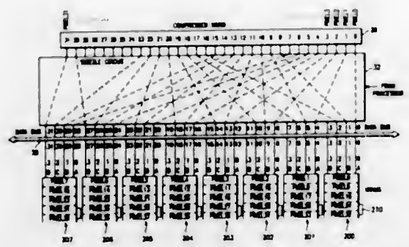
1. A processing system, supporting block-write functions, comprising:

first and second interleaved banks of memories, said first and second interleaved banks of memories each including an identical predetermined number of memories, each memory having a block-write data register, each memory addressable in a normal mode and a block-write mode and each memory having a plurality of input nodes for receiving data in said normal mode, a first subset of said input nodes operable to receive control data in said block-write mode controlling writing of data into said memory from

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said block-write data register and a second subset of said input nodes not used in said block-write mode;

a multi-lead output bus; and



coupling circuitry operable to couple ones of said output bus leads to input nodes of said first subset of said first bank of memories and to inputs nodes of said second subset of said second bank of memories.

5,287,471

DATA TRANSFER CONTROLLER USING DIRECT MEMORY ACCESS METHOD

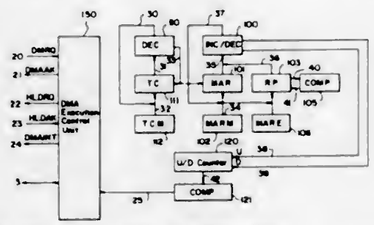
Tsuyoshi Katayose, and Yukio Machashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 24, 1990, Ser. No. 556,484

Claims priority, application Japan, Jul. 24, 1989, 1-191747

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **14 Claims**



1. A data transfer controller comprising:

a first register for storing address information relative to a predetermined address of a memory area used for a DMA data transfer;

a second register for storing a number of data to be transferred;

means for performing said DMA data transfer between said memory area and a peripheral unit by use of at least said second register;

a third register for storing data used for accessing said memory area;

means for updating the data of said third register each time a memory access to said memory area is performed using said third register, said memory access being different and distinct from an access for said DMA data transfer;

means including storage means for performing one of incrementing and decrementing operations on contents of said storage means each time said DMA data transfer is performed and for performing the other of said incrementing and decrementing operations on said contents of said storage means each time said memory access to said memory area is performed using said third register,

said contents of said storage means representing, for DMA transfer into said memory area, the number of data transferred by said DMA data transfer means from said peripheral unit to said memory area but not read out from said memory area using said third register.

5,287,472

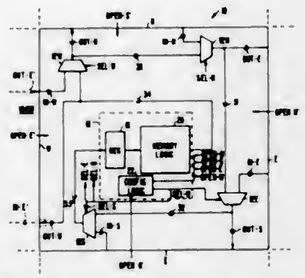
MEMORY SYSTEM USING LINEAR ARRAY WAFER SCALE INTEGRATION ARCHITECTURE

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 346,203, May 2, 1989, Pat. No. 5,203,005. This application Aug. 22, 1990, Ser. No. 570,937

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **29 Claims**



1. A wafer scale integrated memory system, comprising:

a plurality of memory cells formed on a semi-conductor wafer, each of the memory cells including:

(a) connection means for selecting a communication path between such memory cell and an adjacent memory cell for communicating data and instructions, the instructions including first and second control instructions;

(b) memory means coupled to the connection means for storing data;

(c) first circuit means responsive to the first control instructions for placing such memory cell in a first state;

(d) second circuit means operable in the first state to respond to the second control instructions for accessing the memory means to store or retrieve data from the memory;

whereby selected ones of the plurality of memory cells are placed in the first state for responding to the second control instructions.

5,287,473

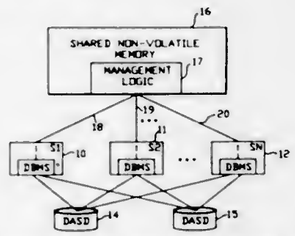
NON-BLOCKING SERIALIZATION FOR REMOVING DATA FROM A SHARED CACHE

Chandrasekaran Mohan, San Jose, and Inderpal S. Narang, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1990, Ser. No. 627,315

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—425 **7 Claims**



4. In a multi-computer, data sharing system including a relatively high-speed cache, management means for controlling access to blocks of data in the cache and for deleting blocks of data from the cache, a relatively low speed storage facility, and a plurality of computer systems connected to the storage facility, to the management means, and to the cache, a method for controlling removal of data from the cache, including the steps of:

a first computer system reading a block of data from the cache for entry into the storage facility;

if the block of data is changed in the cache by a second computer system while the first computer system is entering it into the storage facility, the management means preventing deletion of the block of data from the cache; otherwise,

the management means deleting the block of data from the cache.

5,287,474

SYSTEM FOR CLEARING A MEMORY OF A VIRTUAL MACHINE

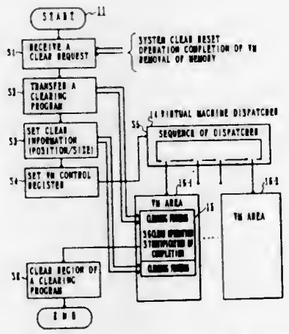
Minoru Uchino, Numazu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 28, 1991, Ser. No. 662,019

Claims priority, application Japan, Feb. 27, 1990, 2-046789

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **14 Claims**



1. A system for clearing a memory of a virtual machine (VM) comprising:

means for storing a clearing program for clearing a memory of a virtual machine in a memory area of the virtual machine, said clearing program being stored in response to a request for clearing a memory area assigned to the virtual machine;

means for causing the virtual machine to execute the clearing program; and

means for clearing the memory area portion of the virtual machine in which the clearing program is stored, after a completion of the clearing program,

whereby the clearing program is caused to operate on the virtual machine which is the subject of the clear operation and the memory area assigned to the virtual machine is cleared.

5,287,475

DATA PROCESSING APPARATUS OPERABLE IN EXTENDED OR UNEXTENDED VIRTUAL ADDRESS SPACES WITHOUT SOFTWARE MODIFICATION

Hideo Sawamoto, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

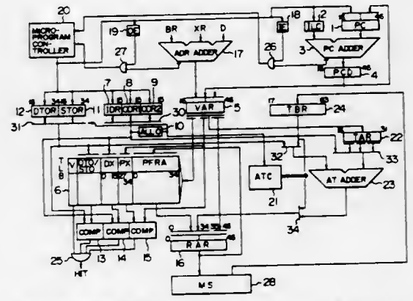
Continuation of Ser. No. 252,815, Oct. 3, 1988, Pat. No. 5,023,777. This application Mar. 4, 1991, Ser. No. 664,099

Claims priority, application Japan, Oct. 5, 1987, 62-250913

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] G06F *12/08, 12/00*

U.S. Cl. 395—425 **9 Claims**



1. An information processing apparatus with an address extension function comprising:

address adders for performing address addition with respect to a first fraction of an address of an operand having an extended bit portion and an unextended bit portion, said first fraction corresponding to the unextended bit portion of said address;

a virtual address register for storing a virtual address obtained by said address addition;

a set of first registers each for storing a second fraction of said address of the operand, said second fraction corresponding to the extended bit portion of said address; and

a main storage for storing a set of address translation tables for use in the case where address extension is not made, and an extension address translation table to be added for use in the case where address extension is made; wherein if an address is not to be extended, address translation of the content of the virtual address register is performed using said address translation tables and if an address is to be extended, address translation of the content of the virtual address register is performed using said address translation table based on the content of one of said set of first registers selected in response to an instruction executed by the information processing system.

5,287,476

PERSONAL COMPUTER SYSTEM WITH STORAGE CONTROLLER CONTROLLING DATA TRANSFER

Don S. Keener, and Gregory J. Moore, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 7, 1991, Ser. No. 712,237

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—425 **5 Claims**

1. A personal computer system comprising:

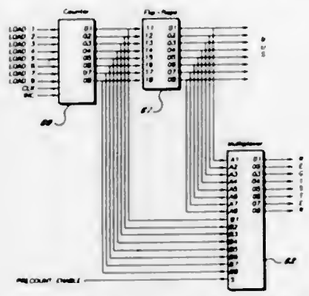
a high speed local processor data bus;

at least one logical processor device coupled directly to said high speed local processor data bus, said processor device being capable of signalling through said high speed local processor data bus an occurrence of the transfer of blocks of data; and

a storage controller coupled directly to said high speed local

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processor data bus for regulating communications between said processor device and storage memory devices, said storage controller having a counter for tracking at least one of address and count data for blocks of data being transferred and being capable of signalling through said high speed local processor data bus the state of the counter, said storage controller further having a bi-stable device interposed between said counter and said high speed local processor data bus for enabling delivery to



said high speed local processor data bus of data representing an initial state of said counter at the beginning of a transfer to blocks of data and for continuing delivery of initial state data throughout a transfer of blocks of data, said counter and said bi-stable device cooperating for permitting a change in the state of said counter during transfer of blocks of data while avoiding changes in counter state data delivered to said high speed local processor data bus during transfer of blocks of data.

5,287,477

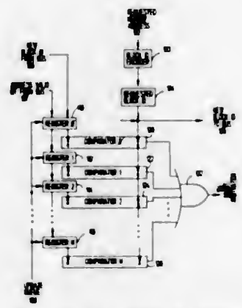
MEMORY-RESOURCE-DRIVEN ARBITRATION

Leith L. Johnson; Russell C. Brockmann, and William S. Jaffe, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1991, Ser. No. 741,703

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—425 **10 Claims**



1. In a computer system, a method for improving bus utilization, the method comprising the steps of:

(a) storing a memory address identification into an address storage when a memory transaction is initiated;

(b) removing said memory address identification from said address storage when said memory transaction is completed;

(c) checking the contents of said address storage before initiating a subsequent memory transaction to determine if a target memory address is busy;

(d) initiating said subsequent memory transaction only if said target memory address is not busy; and

(e) repeating steps (a) and (b) if said subsequent memory transaction is initiated.

5,287,478

DIGITAL DATA TAPE STORAGE SYSTEM UTILIZING PLURALITY OF READ/WRITE HEADS WITH SYSTEM DIAGNOSTIC CAPABILITY

Ross W. Johnston, Santa Cruz; Theodore D. Rees, Mountain View, and Edward J. Rhodes, San Jose, all of Calif., assignors to R-Byte, Inc., San Jose, Calif.

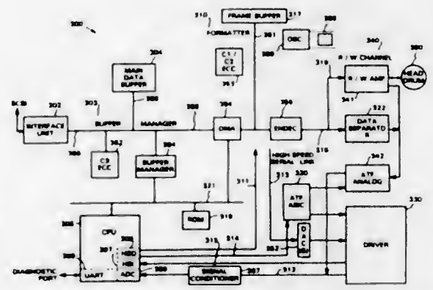
Filed Aug. 6, 1991, Ser. No. 741,783

Int. Cl.[5] G06F *12/00, 13/10;* G11B *21/02*

U.S. Cl. 395—425 **46 Claims**

MICROFICHE APPENDIX INCLUDED

(23 Microfiche, 5 Pages)



1. A magnetic tape digital data storage (DDS) system comprising:

interface means for communication with a host unit;

buffer manager means for managing data to and from said interface means;

main data buffer means, coupled to said buffer manager means, for buffering data;

frame buffer means for buffering data in frame format;

head drum means for reading and writing on magnetic tape, said head drum means including read heads and write heads;

channel means for channeling data to and from said head drum means;

a serial bus;

a formatter bus coupled to said channel means;

formatter means for formatting and transferring data from said buffer manager means to said frame buffer means and from said frame buffer means to said buffer manager means, said formatter means coupled to said formatter bus so that data from said formatter means is transmitted over said formatter bus to said channel means;

said formatter means coupled to said serial bus and including oscillator means for selecting any transfer data rate independent of a host unit clock while maintaining compatibility with DDS standard format;

a digital-to-analog converter, coupled to said serial bus;

drive means for driving magnetic tape, said drive means coupled to said formatter means by said serial bus through said digital-to-analog converter;

converter bus means for transmitting analog signals from said drive means to a central processing unit;

follower means for controlling relative position of said read and write heads with regard to data tracks on magnetic tape, said follower means being coupled to said serial bus, said channel means and said drive means, said read heads providing positioning information to said follower means; and

said central processing unit coupled to said buffer manager means, said formatter means, said follower means, said drive means, and to said converter bus means.

5,287,479

FLYBACK TRANSFORMER

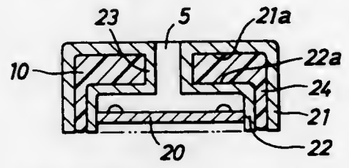
Omura Masaru; Nagai Tadao, and Naitou Kenji, all of Kyoto, Japan, assignors to Murata Mfg. Co. Ltd., Kyoto, Japan

Filed Apr. 14, 1992, Ser. No. 868,764

Claims priority, application Japan, Apr. 15, 1991, 3-33957[U]

Int. Cl.[5] H01J *29/70;* G09G *1/04*

U.S. Cl. 323—359 **6 Claims**



3. A focus pack mounted on a transformer case of a flyback transformer comprising:

an inner case housing a ceramic board including a resistor circuit having a first resistive element for setting a focus adjusting voltage and a second resistive element for setting a screen adjusting voltage;

an outer case disposed about said inner case;

a coupling portion integrally formed with said inner case and outer case for coupling said cases to each other, the coupling portion being located at a central part of the cases and defining gaps between said inner and outer cases;

a focus shaft insertion hole formed in said coupling portion extending through said inner and outer cases and adapted to receive a rotatable focus shaft;

a screen shaft insertion hole formed in said coupling portion extending through said inner and outer cases and adapted to receive a rotatable screen shaft; and

an insulating resin injected into said gaps for preventing electrical discharge from said resistor circuit to outside of said outer case.

5,287,480

CACHE MEMORY FOR INDEPENDENT PARALLEL ACCESSING BY A PLURALITY OF PROCESSORS

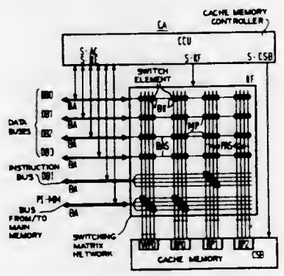
Alfons-Josef Wahr, Fuerstenfeldbruck, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 26, 1991, Ser. No. 765,818

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 4030435

Int. Cl.[5] G06F *13/00, 13/40*

U.S. Cl. 395—425 **11 Claims**



1. A computer structure comprising:

a plurality (m) of data buses including data bus lines;

a cache memory including a plurality (k) of cache memory read ports for reading data therefrom, where $k<m$, and a plurality (p) of cache memory write ports for writing data thereinto, where $p<m$;

each of said read ports and write ports including port lines extending to cross said data bus lines to form crosspoints therewith;

a switching matrix network including said crosspoints and a plurality of controllable switches with at least one of said controllable switches at selected ones of said crosspoints; and

a cache memory controller connected to and operable to selectively control said controllable switches for data transfer between said cache memory and said plurality of data buses, wherein each of said ports of said cache memory comprises a word width of i words and each of said buses comprises a width of j words where $i>j$ and further wherein a maximum of i words can be switched in parallel to said cache memory from a plurality of processors.

5,287,481

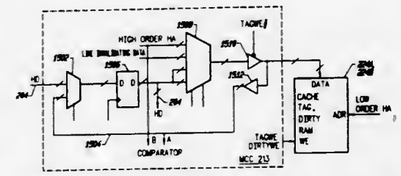
AUTOMATIC CACHE FLUSH WITH READABLE AND WRITABLE CACHE TAG MEMORY

Fong-Lu Lin, San Jose, Calif., assignor to OPTi, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 812,074, Dec. 19, 1991. This application May 4, 1992, Ser. No. 878,730

Int. Cl.[5] G06F *12/00, 13/00*

U.S. Cl. 395—425 **8 Claims**



1. Cache memory control apparatus for use with a cache memory having a plurality of tag data leads, with a memory bus having a plurality of bus address leads and being a first source of tag data and with a second source of tag data different from said memory bus address leads, comprising:

a plurality of cache memory control apparatus tag data leads, each coupled to a respective one of said cache memory tag data leads;

a plurality of cache memory control apparatus address leads, each coupled to a respective one of a subset of said bus address leads; and

a multiplexer having a first input, a second input and an output, said first input being coupled to said control apparatus address leads, said second input being coupled to said second source of tag data and said multiplexer output being coupled to said control apparatus tag data leads.

5,287,482

INPUT/OUTPUT CACHE

Ravi K. Arimilli, Round Rock; Sudhir Dhawan, Austin; James O. Nicholson, Austin, and David W. Siegel, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 702,440, May 16, 1991, abandoned, which is a continuation of Ser. No. 297,712, Jan. 13, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 912,043

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **7 Claims**

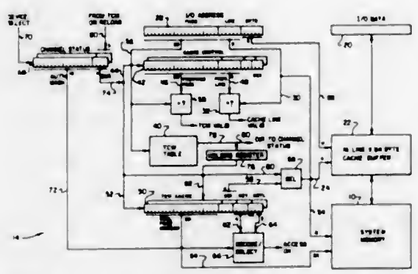
1. An input/output cache for use in a digital computer system having a plurality of input/output devices connected to an input/output bus, the cache comprising:

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a cache buffer connected to an input/output bus and to a main system memory, wherein the cache buffer is organized as a plurality of lines;

a cache control register file having a plurality of registers, each cache control register corresponding to one of the cache buffer lines and containing a main memory address corresponding to the corresponding cache buffer line;

a channel status register file having a plurality of channel status registers, each corresponding to a single input/output device attached to the input/output bus, and each channel status register containing a control field for selecting one of the cache control registers and its corresponding cache buffer line;



means for selecting one of the channel status registers when the corresponding input/output bus;

a comparator for comparing an address placed on the input-/output bus, by an input/output device performing a data access, with the address contained in the cache control register selected by the selected channel status register control field, and for generating a cache hit signal if they match, else generating a cache hit signal; and

means for, if a cache hit signal is generated, causing the input/output device to perform a data access of the corresponding cache buffer line.

5,287,483

PREFETCHED OPERAND STORING SYSTEM FOR AN INFORMATION PROCESSOR

Tohru Utsumi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 376,232, Jul. 6, 1989, abandoned. This application Jul. 14, 1992, Ser. No. 914,037

Claims priority, application Japan, Jul. 6, 1988, 63-166855

Int. Cl.[5] G06F *13/00*

U.S. Cl. 393—425 **6 Claims**

1. A prefetched operand storing system for an information processor, comprising:

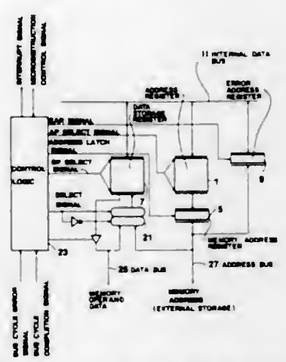
(a) a first register for storing a plurality of addresses of operands, said first register being provided with a memory address register for holding an address transmitted from said first register and used for fetching data corresponding to the address;

(b) a second register for successively storing a plurality of operands to be prefetched in accordance with said addresses stored in said first register;

(c) a data bus for transferring said operands;

(d) a selector connected to said second register, said memory address register and a data bus in order to selectively transfer said address held in said memory address register or an operand fetched on said data bus and corresponding to said address held in said memory address register;

(e) a control circuit connected to said first and second registers and said selector, said control circuit receiving a bus cycle error signal for indicating whether data provided on said data bus has been read out with a bus cycle error signal, said control circuit controlling said selector such that when said bus cycle error signal is not received, said operand fetched on said data bus and corresponding to said address held in said emory address register is input to said second register and when said bus cycle error is received, said address held in said memory address regis-



ter being input to a location of said second register, as an error address, where said operand fetched on said data bus and corresponding to said address held in said memory address register is otherwise to be stored.

5,287,484

MULTI-PROCESSOR SYSTEM FOR INVALIDATING HIERARCHICAL CACHE

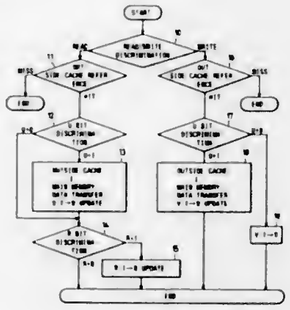
Osamu Nishii, Kokubunji; Kunio Uchiyama; Hirokazu Aoki, both of Hachioji; Takashi Kikuchi, Akishima, and Yasuhiko Saigou, Fuchu, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan

Continuation of Ser. No. 540,860, Jun. 20, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 976,645

Claims priority, application Japan, Jun. 21, 1989, 1-156804

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 **10 Claims**



1. A multi-processor system comprising:

(1) a first processor for generating a first address to a first processor address line;

(2) a first inside cache memory to be accessed by said first processor in accordance with the first address on said first processor address line;

(3) a first outside cache memory to be accessed by said first processor in accordance with the first address on a first cache address line between said first inside cache memory and said first outside cache memory;

(4) a second processor for generating a second address to a second processor address line;

(5) a second inside cache memory to be accessed by said second processor in accordance with the second address on said second processor address line;

(6) a second outside cache memory to be accessed by said second processor in accordance with the second address on said second cache address line between said second inside cache memory and said second outside cache memory;

(7) an address bus connected to said first and second outside cache memories by bidirectional first and second connections, respectively, and to which the first address transmitted from said first processor can be therein received via said first outside cache memory and the second address transmitted from said second processor can be therein received via said second outside cache memory;

(8) a data bus for transmitting data and connected to said first outside cache memory for communicating the data to said first processor and said first inside cache memory and connected to said second outside cache memory for communicating the data to said second processor and said second inside cache memory;

(9) memory means connected to said address bus and said data bus, said memory means being accessed by said first address which is transmitted from said first processor via said first processor address line, said first inside cache memory, said first cache address line, said first outside cache memory and said bidirectional first connection to said address bus and accessed by said second address which is transmitted from said second processor via said second processor address line, said second inside cache memory, said second cache address line, said second outside cache memory and said bidirectional second connection to said address bus; and

(10) first and second paths for respectively directly connecting said address bus with said first inside cache memory and said second inside cache memory for direct reception of addresses at the inside cache memories form the address bus by circumventing said first outside cache memory and said second outside cache memory,

wherein said first inside cache memory and said second inside cache memory operate in a write through system,

wherein said first outside cache memory and said second outside cache memory operate in at least one of a copy back system in which no address of write access is transmitted to said address bus at the time of cache hit and a write once system in which no address of write access is transmitted to said address bus when data of a specific address is modified more than once, and

wherein an invalidation address on said address bus which is generated in accompaniment with rewriting of said memory means is transmitted to said first cache inside memory, said second inside cache memory, said first outside cache memory and said second outside cache memory through said first path, said second path, said bidirectional first connection and said bidirectional second connection, respectively.

5,287,485

DIGITAL PROCESSING SYSTEM INCLUDING PLURAL MEMORY DEVICES AND DATA TRANSFER CIRCUITRY

Leonard J. Umina, Marlboro, and Robert A. Anselmo, Stow, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 696,741, May 7, 1991, abandoned, which is a division of Ser. No. 288,168, Dec. 24, 1988, Pat. No. 5,031,146. This application Mar. 31, 1993, Ser. No. 41,129

Int. Cl.[5] G06F *13/00;* **G11C** *11/413*

U.S. Cl. 395—425 **3 Claims**

1. A digital processing system, comprising:

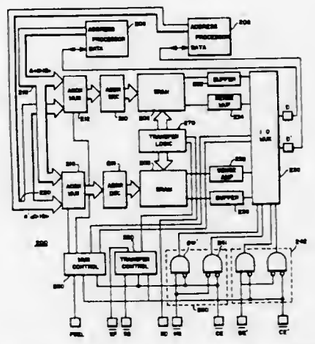
first processor means for processing digital data in accordance with programmed instructions;

second processor means for processing digital data in accordance with programmed instructions;

a first random access memory (RAM) comprising a first plurality of memory cells for storing digital data;

a second RAM comprising a second plurality of memory cells for storing digital data;

input/output (I/O) means, responsive to external I/O signals, for providing access by said first processor means to the digital data stored in said first RAM and for providing access by said second processor means to the digital data stored in the second RAM; and



control means, responsive to a plurality of transfer control signals, for copying selected segments of one of said first and second RAMs into segments of the other of said first and second RAMs, said control means including

an enable register having a plurality of bit positions loaded by respective ones of said transfer control signals, with respective bit positions of said enable register corresponding to different ones of said segments and each bit having a first state to enable copying and a second, different state to inhibit copying of corresponding segments of said first and second RAMs.

5,287,486

DMA CONTROLLER USING A PROGRAMMABLE TIMER, A TRANSFER COUNTER AND AN OR LOGIC GATE TO CONTROL DATA TRANSFER INTERRUPTS

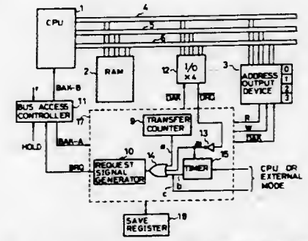
Takashi Yamasaki, and Sachie Kuroda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 592,098, Oct. 3, 1990, abandoned. This application May 20, 1993, Ser. No. 65,511

Claims priority, application Japan, Oct. 5, 1989, 1-260637

Int. Cl.[5] G06F *12/00, 13/00*

U.S. Cl. 395—425 **1 Claim**



1. In a direct memory access controller for an information processor having a central processing unit, a memory, input-/output devices, and buses for alternately connecting said memory to said central processing unit and said input/output devices, said direct memory access controller being responsive

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to a DMA request signal from one of said input/output devices to disconnect said central processing unit from said buses and normally connect a requesting one of said input/output devices to said buses during a burst mode until a predetermined length of data has been transferred, the improvement comprising:

a programmable timer circuit having a first input for receiving a time-up value from said central processing unit, a second input for receiving a timer start signal in the form of a DMA request signal from one of said input/output devices, and an output for generating a time up signal;

a transfer counter circuit for monitoring the progress of a DMA transfer, said transfer counter circuit having an output for generating an end of transfer signal;

an OR circuit having a plurality of inputs for receiving said DMA request signal from one of said input/output devices, said time-up signal from said programmable timer circuit, a bus request signal from said central processing unit, and an external resume signal, and an output for generating a bus control signal;

a request signal generator having an input coupled to the output of said OR circuit and an output for generating a bus request signal; and

a bus access controller coupled to the output of said request signal generator and responsive to said bus request signal for outputting a bus available signal to either said central processing unit or said input/output device,

said request signal generator being responsive to successive output signals from said OR circuit to assert the bus request signal in response to the receipt by the OR circuit of the DMA request signal, to de-assert the bus request signal in response to the subsequent receipt by the OR circuit of the time-up signal, to re-assert the bus request signal in response to the receipt by the OR circuit of the external resume signal, and to de-assert the bus request signal in response to the receipt by the OR circuit of the end of transfer signal.

5,287,487

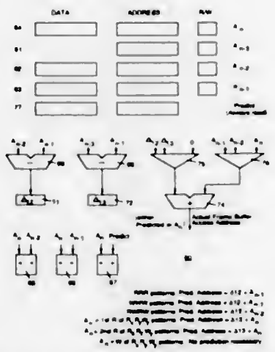
PREDICTIVE CACHING METHOD AND APPARATUS FOR GENERATING A PREDICTED ADDRESS FOR A FRAME BUFFER

Curtis Priem, Fremont; Chris Malachowsky, Santa Clara; Robert Rocchetti, Cupertino, and David Rosenthal, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 576,672, Aug. 31, 1990. This application Jun. 9, 1993, Ser. No. 74,703

Int. Cl.[5] G06F *12/02, 13/00*

U.S. Cl. 395—425 **5 Claims**



3. In a computer system comprising a central processing unit, a main memory, a frame buffer and a cache memory coupled to said frame buffer, a computer implemented method for generating a predicted address for said frame buffer comprising the steps of:

storing, in a plurality of address registers, three addresses for said three previous accesses to said main memory such that a first address designates a first previous access to said main memory, a second address designates a second previous access to said main memory and a third address designates a third previous access to said main memory;

storing, in a plurality of access type registers, three access types for said three previous accesses to said main memory wherein each access type specifies either a read or a write operation to said main memory such that a first access type specifies a read or write operation of said first previous access, said second access type specifies a read or write operation of said second previous access and a third access type specifies a read or write operation of said third previous access;

ordering, in a sequence, said first, second and third access types so as to generate an operation pattern;

subtracting said first address from said second address to generate a first stride when said operation pattern comprises a read, read, read (RRR) or write, write, write (WWW) pattern;

subtracting said third address from said first address to generate a second stride when said operation pattern comprises write, read, write (WRW) or read, read, write (RRW) pattern;

selecting said third address when said operation pattern comprises a read, read, read (RRR) or write, write, write (WWW) pattern;

selecting said second address when said operation pattern comprises a write, read, write (WRW) pattern; and

generating said predicted address by adding said stride calculated for said operation pattern to said address selected;

reading data in said main memory at said predicted address; and

storing said data in said cache memory.

5,287,488

SOFTWARE DESIGN SUPPORTING METHOD FOR CLASSIFYING PORTIONS POSSIBLY AFFECTED BY A MODIFICATION INTO THOSE PORTIONS THAT CAN AND CANNOT BE AUTOMATICALLY MODIFIED

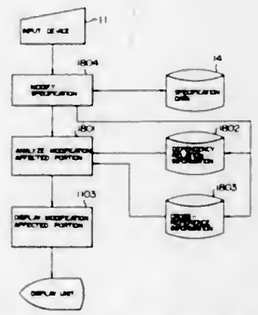
Junko Sakata, Ichikawa; Toshio Kinoshita, Kawasaki; Takanobu Shimono, Kodaira, and Hiroyuki Maezawa, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1990, Ser. No. 500,257

Claims priority, application Japan, Mar. 31, 1989, 1-78216; Jun. 23, 1989, 1-159522

Int. Cl.[5] G06F *15/60*

U.S. Cl. 395—500 **26 Claims**



1. A computer software design supporting method in an information processing system for designing a general purpose computer program specification from a plurality of software modules represented by a plurality of software module specifications of various types, the modules being modified using said information processing system which includes a supervisory CPU, an input device connected to the CPU, a specification data table connected to the CPU and an output terminal connected to the CPU, the design supporting method comprising the steps of:

inputting into the information processing system through the input device correlation information for correlating i) items to be described in the general purpose computer program specification with ii) said plurality of software module specification of various types;

storing the inputted correlation information in said specification data table;

inputting into the information processing system through the input device a modify command for modification of a content of a first item of a one of said plurality of software modules described in said computer program specification; and,

analyzing said computer program specification using said CPU to generate a signal representative of a first portion of said computer program specification possibly affected by said modification of said content of said first item described in the computer program specification based on the inputted correlation information when such modification is made, the analyzing step including a step of classifying, with the CPU, the first portion possibly affected by said modification into one of: i) a first classified portion automatically modified by the information processing system, ii) a second classified portion needing modification by the information processing system but whose content of modification cannot be analyzed, and iii) a third classified portion related to the modified portion but whose need for modification cannot be analyzed by the information processing system.

5,287,489

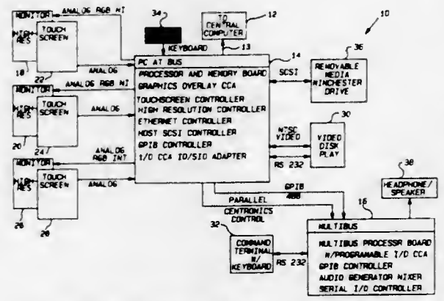
METHOD AND SYSTEM FOR AUTHORING, EDITING AND TESTING INSTRUCTIONAL MATERIALS FOR USE IN SIMULATED TRAILING SYSTEMS

George Nimmo, Covina; Mark Johnson, Upland, and Peter Hedger, Yorba Linda, all of Calif., assignors to Hughes Training, Inc., Arlington, Tex.

Filed Oct. 30, 1990, Ser. No. 605,625

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—500 **9 Claims**



1. A method for authoring a training courseware, including instructional materials, for a training system, the training system including a simulation of an operating environment in which a student is to be trained, said operating environment having manipulable controls, said simulation including a database containing audio, video, graphics and procedure elements, said video elements simulating said operating environment and said graphics simulating said manipulable controls, said method comprising computer implemented steps of:

analyzing the training courseware required, including establishing the extent of any new training courseware or any changes required to previously authored portions of said training courseware, and developing a plan for implementation;

implementing the plan specified in the step of analyzing, including creating the training courseware required in conjunction with the training system simulation and performing changes to the audio, video and graphics elements;

testing said created training courseware and performed changes to the audio, video and graphics elements;

changing the training system procedure element by integrating said tested training courseware and audio, video and graphics changes into the training system procedure element; and

approving said training courseware and said changes and releasing said training courseware and said changes to a control librarian.

5,287,490

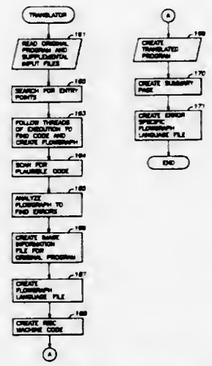
IDENTIFYING PLAUSIBLE VARIABLE LENGTH MACHINE CODE OF SELECTING ADDRESS IN NUMERICAL SEQUENCE, DECODING CODE STRINGS, AND FOLLOWING EXECUTION TRANSFER PATHS

Richard L. Sites, Boylston, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 7, 1991, Ser. No. 666,216

Int. Cl.[5] G06F *5/00*

U.S. Cl. 395—500 **26 Claims**



26. A method of operating a digital computer having an addressable memory, said addressable memory containing a computer program, said computer program including instructions and data at respective address locations of said addressable memory, each of said instructions consisting of contents of a variable number of contiguous ones of said address locations depending upon an operation specified by said each of said instructions, said method identifying address locations of said addressable memory that appear to contain said instructions of said computer program, said method comprising the steps of:

a) selecting program addresses in numerical sequence, and attempting to decode an instruction in said addressable memory at each program address until an initial instruction is decoded; and when said initial instruction is decoded, then

b) attempting to decode a string of instructions immediately following said initial instruction until an execution transfer instruction is decoded, and when an attempt to decode an instruction fails, continuing said selecting program addresses and said attempting to decode an instruction at each program address as set out in said step a), and when an execution transfer instruction is decoded, then

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c) attempting to decode an instruction at a destination address of the decoded execution transfer instruction, and when the attempt to decode an instruction at the destination address of the decoded execution transfer instruction fails, continuing said selecting program addresses and said attempting to decode an instruction at each program address as set out in step a), and when the attempt to decode an instruction at the destination address of the decoded execution transfer instruction succeeds, then identifying, as said address locations of said addressable memory that appear to contain said instructions of said computer program, the address locations including said initial instruction and said string of instructions including said execution transfer instruction,

wherein some program addresses of said computer program are known to contain instructions, and wherein said step a) skips over the program addresses that are known to contain instructions,

wherein the decoding of an instruction is not permitted when an instruction being decoded partially overlaps program addresses known to contain an instruction, and

wherein said step a) skips over a program address containing a value that is included in a predefined set of values, regardless of whether an attempt to decode an instruction starting at the program address would be successful, wherein said set of values includes values that indicate instructions having a length of one program address location, said set of values includes opcodes of privileged instructions, and said set of values includes the value of zero, and

wherein said step a) skips over a program address that is the first address of a string of at least four printable ASCII alphanumeric characters.

5,287,491

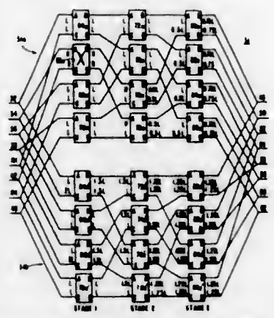
NETWORK REARRANGEMENT METHOD AND SYSTEM

Yarsun Hsu, Plessantville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1989, Ser. No. 335,916

Int. Cl.[5] G06F *11/20, 13/36*

U.S. Cl. 395—575 **2 Claims**



1. A fault tolerant system for increasing traffic uniformity of a network system comprising a plurality of interconnected processors having first and second multistage networks coupling said processors to a plurality of nodes, wherein one of said first and second networks serves as a backup network for the other network said first and second multistage networks connected in parallel to transfer data in the same direction as the other between said processors and said nodes, said first multistage network distributed in an omega configuration and said second network distributed in a reverse omega configuration.

5,287,492

METHOD FOR MODIFYING A FAULT-TOLERANT PROCESSING SYSTEM

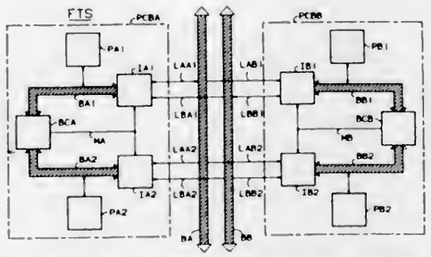
Paul T. M. Reynders, Deurne, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 3, 1991, Ser. No. 710,175

Claims priority, application European Pat. Off., Jun. 3, 1990, 90201393.7

Int. Cl.[5] G06F *11/20, 15/40*

U.S. Cl. 395—575 **22 Claims**



1. Method for modifying a fault-tolerant processing system including a fair pair of processors and a second pair of processors operating in microsynchronization at a first processing frequency and respectively connected to first and second busses, both the busses operating under the control of a same bus clock signal having a same predetermined bus clock frequency substantially lower than said first processing frequency, said method comprising the steps of:

selecting said first bus for operation as a system bus;

while said first pair of processors is operating at said first processing frequency, replacing said second pair of processors by a third pair of processors operating at a second processing frequency different from said first processing frequency and substantially higher than said bus clock frequency;

after said third pair of processors is installed and operating at said second processing frequency, executing during an initial bus clock cycle of said bus clock signal a predetermined initial number of processor cycles both by said first pair of processors operating at said first processing frequency and connected to said first bus and by said third pair of processors operating at said second processing frequency and connected to said second bus;

generating a first synchronization signal after the first pair of processors has executed said predetermined initial number of processor cycles during said initial bus clock cycle;

generating a second synchronization signal after the second pair of processors has executed said predetermined initial number of processor cycles during said initial bus clock cycle; and

increasing the system speed by

executing during a following bus clock cycle by said first pair of processors operating at said first processing frequency, an increased number of processor cycles equal to the number of processor cycles executed during the preceding bus clock cycle increased by a predetermined increment of processor cycles and then generating another first synchronization signal, and

executing during said following bus clock cycle by said third pair of processors operating at said second processing frequency, said increased number of processor cycles and then generating another second synchronization signal; and

repeating the increasing step if said another first synchronization signal and said another second synchronization signal are both generated during said following bus clock cycle.

5,287,493

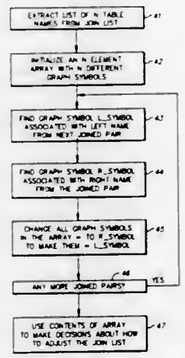
DATABASE INTERACTIVE PROMPTED QUERY SYSTEM HAVING NAMED DATABASE TABLES LINKED TOGETHER BY A USER THROUGH JOIN STATEMENTS

Thomas W. Jacopi, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,022

Int. Cl.[5] G06F *15/40, 15/419*

U.S. Cl. 395—600 **15 Claims**



1. A computer-implemented method for analyzing a set of join statements logically joining database table names in a database having a plurality of named database tables, the method comprising the steps of:

(a) creating a join list of joined pairs of the database table names, the joined pairs having been entered by a user and one or more of the joined pairs having been deleted by the user after having been entered;

(b) analyzing the join list to determine groups of separately linked database table names by creating a graph array, elements of the graph array being associated on a one to one basis with the database table names referenced in the set of join statements and each said element in the graph array being initialized with a unique associated graph symbol, the join statements referencing one of the joined pairs of the database table names, the joined pair having a left entry and a right entry, then repeatedly adjusting the graph array so that the right entry of the joined pair of the database table names is associated with the graph symbol associated with the left entry of the joined pair by sequentially processing each said join statement; and

(c) adjusting the join list to contain only a selected group of the linked database table names by deleting all the database table names not in the selected group.

5,287,494

SORTING/MERGING TREE FOR DETERMINING A NEXT TOURNAMENT CHAMPION IN EACH CYCLE BY SIMULTANEOUSLY COMPARING RECORDS IN A PATH OF THE PREVIOUS TOURNAMENT CHAMPION

Leslie C. Garcia; David B. Lindquist, and Gerald F. Rollo, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1990, Ser. No. 599,609

Int. Cl.[5] G06F *7/36, 7/22*

U.S. Cl. 395—600 **3 Claims**

1. An apparatus for sorting and merging database records, whereby a tournament champion is determined in each cycle, the apparatus comprising:

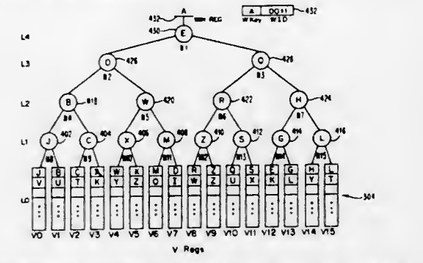
a root register;

a plurality of node registers coupled to the root register in a logical tree configuration so as to form a plurality of data paths;

a plurality of base registers, each of the base registers being coupled to one of the node registers;

a champion key register, coupled to the root register, having a first field for holding a key and a second field for holding address data identifying one of said base registers from which the key originated;

path selection means, coupled to the champion key register, for selecting one of the data paths, responsive to the address data held in the champion key register for a current tournament champion;



simultaneous compare means operating with the node registers in a currently selected path of the tree and the champion key register for determining in a single cycle of comparison, a next tournament champion among data represented in the node registers which form the currently selected data path selected by the path selection means, and for writing the key of the next tournament champion and the address data identifying the base register of origin into the champion key register; and

update means, coupled to the path selection means, for updating the data in the node registers forming the data path selected by the path selection means.

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Patent Not Issued For This Number

5,287,496

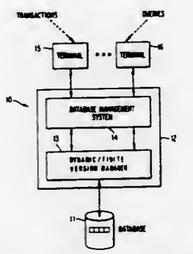
DYNAMIC, FINITE VERSIONING FOR CONCURRENT TRANSACTION AND QUERY PROCESSING

Ming-Syan Chen; Kun-Lung Wu, both of Yorktown Heights, and Philip Shi-lung Yu, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1991, Ser. No. 661,046

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **28 Claims**



1. In a data processing system supporting concurrent transaction and query processing of a database, a method performed by said data processing system for accessing said database in which there is no interference between transactions and queries and no quiescence of either transactions or queries for allowing queries to access a more up-to-date version of said database, wherein the logical versions that a physical page

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copy represents change implicitly over time said method comprising the steps of:

dynamically maintaining a plurality of finite logical versions of each page in said database and allowing for a physical page copy to represent simultaneously a plurality of logical versions of a page;

maintaining time-invariant information, including a time-stamp and a transaction identifier, with each physical page copy when it is created, said time-stamp recording a time at which a physical page is updated by a transaction and said transaction identifier recording an identifier of a transaction last updating the physical page;

maintaining, in memory, time-varying information which represents a system state, including a time-stamp of a current query snapshot time, a transaction list recording active transactions at a time when said current query snapshot was taken, and a transaction list recording active transactions currently in progress;

using said time-varying information to generate a transaction-consistent query snapshot of said database for accesses by queries without quiescing either transaction or query processing, a query snapshot being identified by a time-stamp and an active transaction list at a time when said snapshot was taken; and

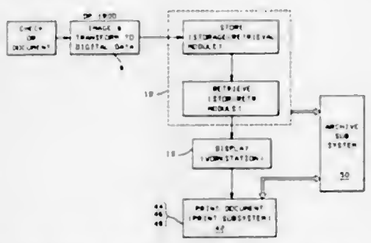
using said time-invariant information kept with each physical page copy and said time-varying information maintained in memory to dynamically identify appropriate version pages of said database for transaction and query accesses to avoid transaction and query interference.

5,287,497

IMAGE STATEMENT PRINTING SYSTEM WITH DOCUMENT STORAGE/RETRIEVAL USING OPTICAL MEDIA

Bailochan Behera, Farmington Hills, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 15, 1991, Ser. No. 670,541
Int. Cl.[5] G06F *15/30*
U.S. Cl. 395—600 **10 Claims**



1. In a document image capture and storage system, which transforms original bank check documents into digital document image data items, an archival storage, retrieval and printing subsystem comprising:

(a) archival storage means for storage of said digital document image data items captured over a 2 month period;

(b) retrieval means for retrieval of 2 months accumulation of said image data items of said stored digital document image data items;

(c) temporary storage means for temporary storage of one (1) days accumulation of said items;

(d) sorting means for organizing said one days accumulation into a sequentially ordered file;

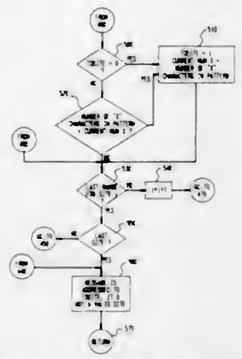
(e) printing means for printing copies, on a daily basis, of said digital document image data items in said sequentially ordered file.

5,287,498

MESSAGE TRANSMITTING SYSTEM WHEREIN RECIPIENT SITE IS DETERMINED USING INFORMATION CONCERNING THE RELATIONSHIP BETWEEN THE SENDER AND RECIPIENT SITES

Roberto Perelman, Sunnyvale; Chris Yuan, Fremont; Bipin Patel; Jack J. Ahn, both of San Jose, and Mark E. Kaminsky, Sunnyvale, all of Calif., assignors to Rolm Company, Santa Clara, Calif.

Filed Apr. 2, 1991, Ser. No. 679,376
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—600 **8 Claims**



8. Method for use in a network of sites in transmitting a message from a message sender at a message sender site to a message recipient at a message recipient site, the message recipient site being collocated with or being remote with respect to the message sender site, which method comprises the steps of:

storing the following information for the network in a database which comprises the steps of:

storing site information in the database for a site within the network, which information identifies whether the site is collocated or remote with respect to other sites in the network;

storing address information in the database for a particular site within the network, which information comprises: (a) information which identifies groups of network addresses, associated with the particular site, a specific group of said groups of network addresses being referred to as a network address extension range, and (b) information which identifies local extension addresses associated with each of the network addresses extension ranges, each of said local extension addresses being referred to as a local mailbox number; and

storing user information which identifies, for each user in the network, which information comprises a specific network address and a specific local extension address associated with the user being referred to as a user's local mailbox number; and

in response to an interaction with the message sender, receiving the specific network address of the message recipient, and accessing the stored user information for determining a message sender site identifier; and

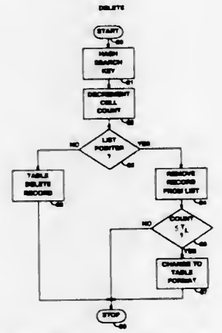
accessing the stored address information and comparing network address extension ranges for the network sites stored therein with the network address of the message recipient for determining if the network address of the message recipient is within a particular one of said network address extension ranges and for determining a message recipient site identifier, wherein the comparing further comprises accessing the stored site information using a site identifier for a specific site for determining whether the specific site is collocated or remote with the message sender site and, if the message sender site and the specific site are collocated the step of comparing utilizes the local extension addresses associated with the particular network address extension range for comparing else if remote the step of comparing utilizes the network address for comparing.

5,287,499

METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL UTILIZING A METHOD OF HASHING AND DIFFERENT COLLISION AVOIDANCE SCHEMES DEPENDING UPON CLUSTERING IN THE HASH TABLE

Richard M. Nemes, Brooklyn, N.Y., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 326,976, Mar. 22, 1989, abandoned.
This application May 16, 1991, Ser. No. 702,444
The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—600 **3 Claims**



1. An information storage and retrieval system for data records using a portion of each said data record for generating a hashed storage address in said system, said system comprising

storage means for storing a collision count for each set of said data records having identical hashed storage addresses,

first means responsive to said storage means for locally resolving collisions by open addressing when said collision count in said storage means is below a preselected threshold, and

second means responsive to said storage means for locally resolving collisions by external chaining when said collision count in said storage means is equal to or greater than said preselected threshold.

5,287,500

SYSTEM FOR ALLOCATING STORAGE SPACES BASED UPON REQUIRED AND OPTIONAL SERVICE ATTRIBUTES HAVING ASSIGNED PIORITIES

Peter Stoppani, Jr., Woodinville, Wash., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 3, 1991, Ser. No. 709,626
Int. Cl.[5] G06F *13/10*
U.S. Cl. 395—600 **2 Claims**

1. A file system for use with a computer system having a multiplicity of distinct data storage devices, comprising:

service class table means for storing data, including a plurality of service class values, each service class value designating a separate service class; wherein each said service class value comprises a set of N (where N>3) binary values associated with at least one of said distinct storage devices;

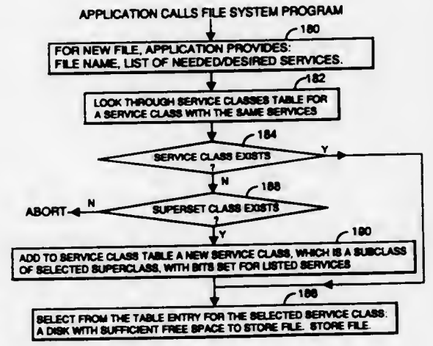
schema means for characterizing operational characteristics of data storage devices with a set of service attributes, and for associating each service attribute with a selected one of said N binary values in each said service class value; said service attributes including required service attributes and optional service attributes wherein said optional service attributes have assigned priorities;

said service class table means denoting which of said required service attributes and which of said optional service attributes are applicable to each of said distinct storage devices;

supplementing means, coupled to said service class table means and said schema means, for adding data to said service class table means when additional data storage devices are added to said computer system;

usage status means for providing space availability data indicating availability of space in each said storage device for storing additional files; and

storage device selection means, coupled to said service class table means and said usage status means, for responding to file allocation requests specifying a requested service class



value, said requested service class value specifying a set of required service attributes and a set of optional service attributes, by comparing said requested service class value with said data stored in said service class table means and selecting one of said data storage devices in accordance with predefined service class value matching criteria; said predefined service attribute matching criteria used by said storage device selection means including criteria requiring that said space availability data in said usage status means indicate sufficient available space in the selected data storage device to store an additional file;

wherein said predefined service attribute matching criteria used by said storage device selection means include criteria requiring that the required service attributes of the selected data storage device, as denoted in the service class table means, match all required service attributes specified by said requested service class value, as well as criteria for selecting a data storage device with optional service attributes, as denoted in the service class table means, which most closely matches said optional service attributes specified in said file allocation request in accordance with said assigned priorities if a plurality of said data storage devices have the required service attributes specified in said file allocation request.

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5,287,501

MULTILEVEL TRANSACTION RECOVERY IN A DATABASE SYSTEM WHICH LOSS PARENT TRANSACTION UNDO OPERATION UPON COMMIT OF CHILD TRANSACTION

David B. Lomet, Westford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 11, 1991, Ser. No. 728,661
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **37 Claims**



19. A database system comprising:

A) transaction means for performing transactions, including compensation transactions, on database resources at different levels of abstraction, some transactions, called subtransactions, being constituent operations of other, higher-level, parent transactions;

B) logging means for maintaining a common durable operation log into which, in response to loggable events in a transaction's performance, including the commitment of the transaction and the updating of a database resource with the results of a constituent operation in that transaction, the logging means enters log records that include a transaction ID identifying that transaction, a record-type field identifying the record type, and, in response to at least some operations, redo information identifying redo-operation routines for redoing those operations, the common operation log receiving log records in response to loggable events in the performance of transactions at all levels, which records are ordered in accordance with the occurrences of the events that they document, the log record entered into the durable operation log in response to a forward subtransaction's commitment including that subtransaction's parent transaction's transaction ID and undo information identifying an undo-operation routine at the parent transaction's level for undoing that subtransaction, the log record entered into the durable log in response to the commitment of a compensation transaction performed to undo an aborted parent transaction's committed subtransaction including the transaction IDs both of the compensation transaction and of the parent transaction, the contents of the record-type field of a log record entered in response to updating a database resource with the results of a compensation transaction's constituent operation when that compensation transaction has not aborted being the same as those of the record-type field of a log record entered in response to updating a database resource with the results of a constituent operation of a transaction that is not a compensation transaction when that compensation transaction has not aborted, the record-type field in a log record entered into the durable operation log in response to an undo operation distinguishing it as a compensation log record, the log record entered into the durable operation log in response to performance of at least some of a compensation transaction's constituent operations omitting the aborted parent transaction's transaction ID; and

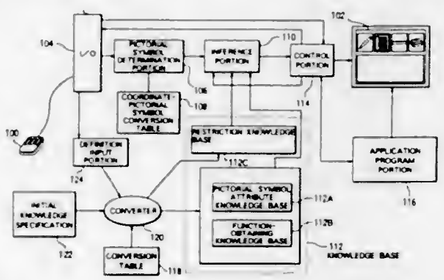
C) recovery means for recovering from an abort of a transaction by, first, scanning forward through the operation log and causing the transaction means to perform redo operations in accordance with redo information contained in log records encountered in the forward scan, and then, for each transaction level, performing a separate backward transaction-log scan associated with that level and causing the transaction means to perform undo operations in accordance with the contents of log records encountered in the scan that include the transaction IDs of aborted transactions at the associated level but to refrain from undoing the undo operations that the compensation log records document.

5,287,502

COMPUTER SYSTEM FOR EXECUTING APPLICATION PROGRAMS BY A COMBINATION OF PICTURE SYMBOLS

Satomi Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 11, 1991, Ser. No. 757,801
Claims priority, application Japan, Sep. 12, 1990, 2-241707
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **6 Claims**



1. A computer system, comprising:

application-program-storage means for storing application programs;

attribute-storage means for storing attributes corresponding to pictorial symbols, ones of the pictorial symbols having more than one attribute and each attribute having one or more object attributes and one or more function attributes;

rule-storage means for storing rules for selecting a one of the application programs to be executed in accordance with a relation between the stored attributes and a relation between one of the object attributes and one of the function attributes;

display means for displaying the pictorial symbols;

selection means for selecting one or more pictorial symbols from the pictorial symbols displayed on the display means;

rule-selection means for specifying attributes corresponding to the one or more pictorial symbols selected by the selection means from among the attributes stored in the attribute-storage means, and for selecting the application program to be executed in accordance with the rules relating to the specified attributes; and

application-program-execution means for reading the application program selected by the rule-selection means from the application-program-storage means and for executing the application program.

5,287,503

SYSTEM HAVING CONTROL REGISTERS COUPLED TO A BUS WHEREBY ADDRESSES ON THE BUS SELECT A CONTROL REGISTER AND A FUNCTION TO BE PERFORMED ON THE CONTROL REGISTER

Charles E. Narad, Santa Clara, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

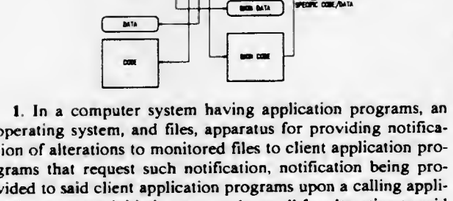
Filed Sep. 27, 1991, Ser. No. 767,122
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **26 Claims**

1. In a computer system having a multiplicity of processors coupled to a bus, an atomic access control register system comprising:

register means comprising a plurality of control registers coupled to said bus for storing a plurality of bits, wherein a plurality of functions may be performed on each one of said control registers, each of said control registers identified by a plurality of addresses, each one of said plurality of addresses selecting a particular control register and a particular function to be performed upon said particular control register;

address means coupled to said bus and to said register means for accessing said bits stored in said control registers;

said address means receiving an address instruction issued by a particular processor, said address instruction comprising one of said addresses and a data value;



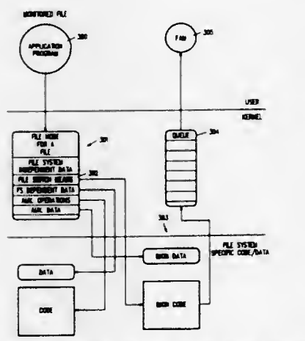
said address means connecting said particular processor to a particular control register, said address means accessing only particular bits of said particular control register and enabling a particular function on said particular bits, wherein said particular control register and said particular function are determined according to said one of said addresses, and said particular bits of said particular control register are determined according to said data value contained in said address instruction.

5,287,504

FILE ALTERATION MONITOR FOR COMPUTER OPERATING AND FILE MANAGEMENT SYSTEM

J. Wiltse Carpenter, Palo Alto; Brendan O. Eich, Santa Clara; Bruce D. Karsh, Los Altos, and Eva Manolis, San Francisco, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 389,928, Aug. 1, 1989, abandoned. This application Dec. 31, 1991, Ser. No. 882,998
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **31 Claims**



1. In a computer system having application programs, an operating system, and files, apparatus for providing notification of alterations to monitored files to client application programs that request such notification, notification being provided to said client application programs upon a calling application program initiating a procedure call for alteration to said monitored file, said apparatus comprising:

first storage means for storing an imon function pointers list including imon function pointers for pointing to executable code;

first pointer means coupled to said first storage means for selecting executable code from said imon function pointers list;

second storage means for storing a system code function pointers list including code for altering said files;

second pointer means coupled to said second storage means for selecting code for altering files;

imon means coupled to said first and second storage means for intercepting said procedure call;

an event queue resident in said imon means for storing a record of the initiation of said procedure call for alteration to said monitored file,

request storing means resident in said imon means for storing said request for notification of alteration to said monitored file;

means for alteration detection resident in said imon means for correlating said request for notification of alteration to said monitored file with said record of the initiation of said procedure call for alteration to said monitored file; and

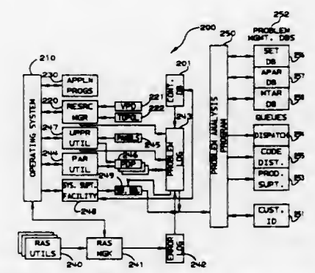
means resident in said imon means for providing notification to said client application program of said procedure call for alteration to said monitored file; said imon means first rerouting said intercepted procedure call through said imon function pointers list, and then rerouting said procedure call to its original destination for executing said procedure call to alter said monitored file.

5,287,505

ON-LINE PROBLEM MANAGEMENT OF REMOTE DATA PROCESSING SYSTEMS, USING LOCAL PROBLEM DETERMINATION PROCEDURES AND A CENTRALIZED DATABASE

Nathaniel Calvert; John J. Eakins; Earl W. Emerick; David L. Johnston; John L. Koehler; Gerald P. Miller; James R. Morcomb; Beau T. Sinclair; George B. Scarborough, and Sandra D. Westling, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 169,516, Mar. 17, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 20,187
Int. Cl.[5] C06F *15/40*
U.S. Cl. 395—600 **13 Claims**



1. A method for automated analysis and resolution of problems in a computer system connected to a central service system, said method comprising the machine executed steps of:

in said computer system,

detecting a problem in said computer system;

automatically executing a problem determination procedure to analyze said problem after aid problem is detected by said detecting step;

said problem determination procedure generating a list of replaceable components of said computer system that may have caused said problem;

building a symptom string by appending an identification of said problem determination procedure to said list of re-

VOL 1159 ISS 3 FE 15 1994 UMI

placeable components generated by said problem determination procedure;

building a service request by appending machine information about said computer system to said symptom string, said machine information uniquely identifying said computer system;

transmitting said service request to said central service system;

in said central service system,

receiving said service request from said computer system;

searching a database for a matching database entry that matches said symptom string portion of said service request;

finding a matching database entry, said matching database entry containing an indication of a solution software component; and

transmitting said solution software component to said computer system.

5,287,506

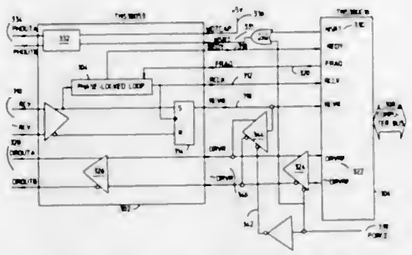
TOKEN RING NETWORK PROTOCOL ANALYZER

Charles H. Whiteside, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1991, Ser. No. 777,987

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—650 **2 Claims**



1. A method performed by an adapter, for forcing insertion of an analyzer into a token ring network even when there are problems occurring in the network; wherein an insertion switch, controlled by an insertion switching signal, switches incoming data from the network to the analyzer and outgoing data from the analyzer to the network; wherein the analyzer incorporates a protocol processor which has a processor insertion output signal and a processor data output signal; the method comprising the following steps:

(a) switching the insertion switching signal to the processor insertion output signal;

(b) inserting the analyzer into the network through the insertion switch by the processor insertion output signal;

(c) forcing the analyzer to remain inserted into the network by switching the insertion switching signal from the processor insertion output signal to a force signal; and

(d) switching the outgoing data to the network, from the processor data output signal to the incoming data from the network.

5,287,507

METHOD AND APPARATUS FOR PORTABLE OBJECT HANDLES THAT USE LOCAL CACHES

Graham Hamilton, Palo Alto, and Michael N. Nelson, San Carlos, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 27, 1992, Ser. No. 858,788

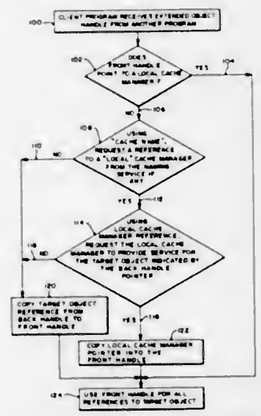
Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—650 **31 Claims**

1. In a computer system adapted for using object oriented programming and software caching techniques in a distributed computing environment, a method for a receiving client to use a local cache manager in making reference to a target object, said method comprising the steps of:

a) receiving an augmented object handle by said receiving client which comprises a reference to said target object and a reference to a first cache manager;

b) fabricating a new augmented object handle by replacing said reference to said first cache manager with a reference to a second cache manager local to said receiving client if said first cache manager is not on a same machine as is said receiving client;



c) fabricating a new augmented object handle by replacing said reference to said first cache manager with a reference to said target object itself if said first cache manager is not on a same machine as is said receiving client and if there is no suitable cache manager available to provide caching services for said target object on said same machine; and

d) using said new augmented object handle to invoke operations on said target object.

5,287,508

METHOD AND APPARATUS FOR EFFICIENT SCHEDULING IN A MULTIPROCESSOR SYSTEM

Donald J. Hejna, Jr., Sunnyvale, and Barry P. Medoff, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 7, 1992, Ser. No. 864,681

Int. Cl.[5] G06F *9/46*

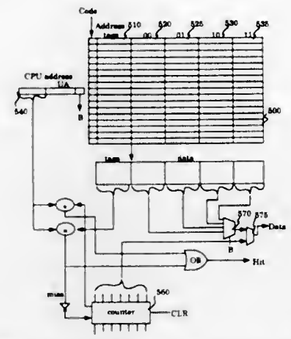
U.S. Cl. 395—650 **21 Claims**

1. In a computer system comprising multiple processors and at least one resource associated with, and coupled to, each processor, each processor executing in the context of a schedulable unit for a time slice before switching to execute in the context of another schedulable unit, an apparatus for efficiently scheduling schedulable units to be executed on the processors, said apparatus comprising:

a process table comprising resource warmth information regarding each schedulable unit, each processor being identified by a processor ID and, if said schedulable unit has previously executed in a processor, said resource warmth information comprising information indicating the processor ID of the processor on which the schedulable unit was previously executed;

a process scheduler, said process scheduler coupled to said process table and to each said processor, said process scheduler comprising a comparator to compare the processor ID of a schedulable unit to be scheduled with the corresponding processor ID stored in the process table,

such that, if the schedulable unit has executed previously, the schedulable unit is scheduled with the corresponding



processor the ID of which matches the processor ID stored in the process table.

5,287,509

MULTITASKING SYSTEM FOR IN-PROCEDURE LOOPS

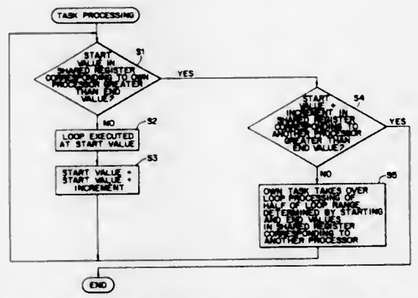
Shouichirou Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 605,459, Oct. 30, 1990, abandoned. This application May 26, 1993, Ser. No. 66,927

Claims priority, application Japan, Nov. 7, 1989, 1-289337

Int. Cl.[5] G06F *15/16, 9/38*

U.S. Cl. 395—650 **10 Claims**



1. An apparatus for reducing contention to shared registers in multitasking program loops, said apparatus comprising:

a plurality of individual processors for executing segments of each program loop;

a plurality of shared registers each corresponding to one of said plurality of individual processors, wherein each of said plurality of shared registers store start and end values, each of said start and end values representing different segments of a range of loop variables pertaining to said program loops;

each of said plurality of individual processors including

executing means connected to said corresponding shared register for executing a program loop pertaining to said start value within said corresponding shared register and for incrementing to a next value of said loop variables and for executing a program loop pertaining to said next value and for iteratively continuing through said segment of loop variables until said end value stored in said corresponding shared register is executed;

decision means, operative after said end value is reached, for referring to a shared register corresponding to a different individual processor, and for deciding whether or not there remain any unprocessed loops to be processed by said different individual processor; and

continuing means responsive to a decision by said decision means that said different individual processor has unprocessed loops remaining, for processing a plurality unprocessed loops by transferring to its corresponding shared register a new start and end value corresponding to said plurality of said unprocessed loops and by indicating a new start and end value in said shared register corresponding to said different individual processor corresponding to a part of said unprocessed loops not transferred thereby reducing contention to said shared register corresponding to said different individual processor.

5,287,510

METHOD FOR IMPROVING THE EFFICIENCY OF ARITHMETIC CODE GENERATION IN AN OPTIMIZING COMPILER USING MACHINE INDEPENDENT UPDATE INSTRUCTION GENERATION

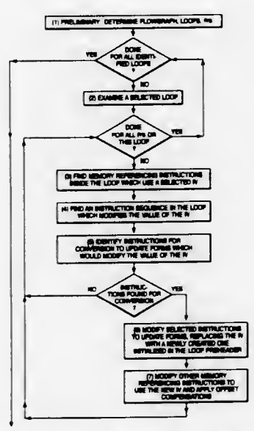
Charles B. Hall, Toronto, Canada; Peter W. Markstein, Austin, Tex., and J. Kevin O'Brien, Scarborough, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 11, 1991, Ser. No. 653,842

Claims priority, application Canada, Feb. 14, 1990, 2010056

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—700 **45 Claims**



1. An improved method for operating a data processing system to compile a computer program written in a source code, by operating on said source code program using a compiler to generate a program in object code for performance by a suitable processor, said compiler being designed to enable said compiled program to perform any of an automatic pre-increment, automatic post-increment, automatic pre-decrement or automatic post-decrement instructions, comprising the steps performed by said process system of:

providing said compiler with information as to which of said increment and decrement instructions can be performed by said suitable processor; and

compiling said source code program, said compiling further comprising the step of converting an automatic increment or decrement instruction unacceptable to said processor to automatic increment or decrement instructions acceptable to said processor.

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5,287,511

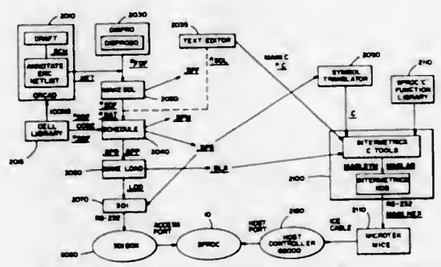
ARCHITECTURES AND METHODS FOR DIVIDING PROCESSING TASKS INTO TASKS FOR A PROGRAMMABLE REAL TIME SIGNAL PROCESSOR AND TASKS FOR A DECISION MAKING MICROPROCESSOR INTERFACING THEREWITH

Jeffrey I. Robinson, New Fairfield, Conn.; Keith Rouse, Lebanon; Andrew J. Krassowski, Long Valley, both of N.J., and Terry F. Moatlick, Bethlehem, Conn., assignors to Star Semiconductor Corporation, Warren, N.J.

Continuation-in-part of Ser. No. 217,616, Jul. 11, 1988, Pat. No. 5,068,823, and a continuation-in-part of Ser. No. 474,742, Jul. 10, 1989, and a continuation-in-part of Ser. No. 525,977, May 18, 1990, abandoned, and a continuation-in-part of Ser. No. 583,508, Sep. 17, 1990, and a continuation-in-part of Ser. No. 34,586, Mar. 22, 1993. This application Oct. 15, 1991, Ser. No. 776,161

Int. Cl.[5] G06F *9/44, 9/45*

U.S. Cl. 395—700 **32 Claims**



1. Apparatus for providing program code for a real time signal processor means having a memory means, and for concurrently generating memory access code for use by a host processor means so that the host processor means can change the contents of the memory of the signal processor means, wherein object code for the signal processor means and the host processor means are separately compiled by a respective signal processor compiler and a host processor compiler, and the signal processor means and the host processor means each include means for interfacing with each other, said apparatus comprising:

means for describing a block diagram representing a processing task for the signal processor means with a plurality of high level signal processing functional block means and a plurality of connections between said high level signal processing functional block means, each functional block means having a name, at least one of said functional block means having a parameter, and at least one of said functional block means having an indication of being accessible by the host processor means;

signal processor cell library means containing a plurality of source code blocks, each source code block representing at least a portion of a corresponding high level signal processing functional block means, at least one of said source code blocks containing a named variable for receiving a value for said parameter; and

signal processor compiler means coupled to said means for describing and to said signal processor cell library means, for analyzing said block diagrm, for obtaining code blocks from said signal processor cell library means needed to implement said block diagram, for associating said named variable with said parameter, and for compiling said code blocks to provide program code and data code for the memory means of the signal processing means, and a correspondence table associating at least one signal processor means memory location with said named cell variable, said correspondence table being for the host processor means such that said correspondence table of a translation thereof is used by the host processor compiler in the compiling of the object code for the host processor means, and the object code for the host processor means causes the host processor means to access the memory location of the signal processor means via the interface means of the host processor means and the signal processor means so that the host processor means can change said parameter value,

wherein said program code and data code will cause the signal processor means to implement said processing task for the signal processor means, with said program code controlling the functioning of the real time signal processor means, and said data code providing initial parameter values for the signal processor means and initial sample data values for memory locations in the memory means of the signal processor means, and wherein said parameter values represent values of parameters of said functional block means.

5,287,512

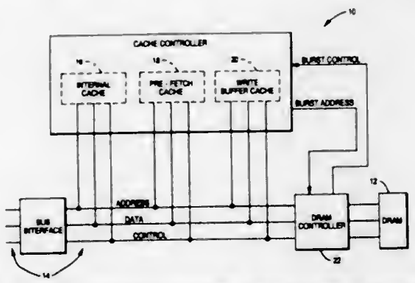
COMPUTER MEMORY SYSTEM AND METHOD FOR CLEANING DATA ELEMENTS

Jackson L. Ellis, Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 6, 1990, Ser. No. 563,217

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **11 Claims**



9. A high performance computer memory system comprising:

a system memory for storing data elements accessible by a bus master;

a bus connecting said memory with said bus master for transferring data elements;

a cache connected to said bus; and

a register connected to said bus for holding a dirty data element transferred between said cache and bus master;

wherein said register is connected to said bus so that said dirty data element is transferred to said register from said bus.

5,287,513

MULTIPLEX DATA RING TRANSMISSION

Stephen P. Ferguson, Coventry, England, assignor to GPT Limited, England

Filed Mar. 9, 1992, Ser. No. 848,382

Claims priority, application United Kingdom, Mar. 22, 1991, 9106101

Int. Cl.[5] H04J *1/10*

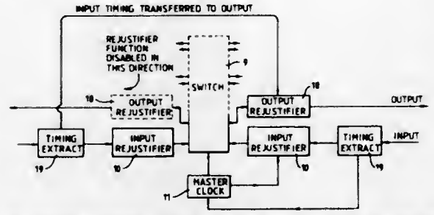
U.S. Cl. 370—55 **4 Claims**

1. A data transmission system for Synchronous Digital Hierarchy multiplexed data, comprising:

an add-drop multiplex having a pair of multiplexers for bi-directional transmission of said data, a switch connected to the multiplexers and having switch inputs and switch outputs, input tributaries connected to the switch inputs for adding traffic to said data, and output tributaries connected to the switch outputs for dropping traffic from said data;

a plurality of input rejustifiers each connected to a respective switch input for adjusting for timing of said data entering the switch;

a plurality of timing extracts each connected to a respective input rejustifier for generating respective timing signals; and



an output rejustifier connected to one of the switch outputs for adjusting for timing of said data exiting the switch, said output rejustifier being connected to one of the timing extracts to receive one of the timing signals along a path bypassing the switch, thereby providing a timing reference for data entering one of the switch inputs at said one switch output.

5,287,514

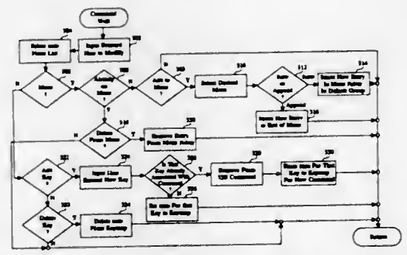
METHOD AND SYSTEM FOR CUSTOMIZING A USER INTERFACE IN A COMPUTER SYSTEM

Raymond D. Gram, Issaquah, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 461,775, Jan. 8, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 819,194

Int. Cl.[5] G06F *15/40, 15/403*

U.S. Cl. 395—700 **9 Claims**



8. A method executed in a computer system of customizing a user interface for a computer program, the method comprising the steps of:

starting the execution of the computer program, the computer program having a plurality of predefined menu names and a plurality of predefined commands, and having computer code to implement a menu selecting mode and a menu customizing mode, wherein the customizing mode computer code cannot execute independently of the execution of the computer program;

invoking the customizing computer code under control of the executing computer program;

displaying on a display device a plurality of the menu names for the computer program;

identifying a displayed menu name, in response to an input;

displaying on the display device a plurality of the commands for the computer program;

identifying a displayed command, in response to an input;

associating the identified command with the identified menu name for accessing the identified command when a menu associated with the menu name is displayed; and

storing in a computer storage device the association of the command and the menu name.

5,287,515

CROSS-SOFTWARE DEVELOPMENT/MAINTENANCE SYSTEM

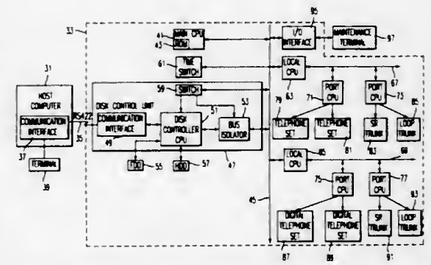
Toshio Murai, Ichikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 412,991, Sep. 26, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 946,823

Claims priority, application Japan, Oct. 24, 1988, 63-267498

Int. Cl.[5] G06F *15/00, 9/00*

U.S. Cl. 395—700 **38 Claims**



1. A cross-software development/maintenance system having a host computer system having a software development environment, said cross-software development/maintenance system comprising:

a target computer comprising a system bus, a main central processing unit coupled to the system bus and including an initial program loader, a secondary storage device for said main central processing unit and for storing a software file which is developed i said host computer system and is to be executed by said main central processing unit of said target computer system, and a secondary storage device control means, connected to said secondary storage means and said host computer system, for controlling the transfer of said software file between said host computer system and said secondary storage device while the secondary storage device is disconnected from the main central processing unit;

means, coupled to said secondary storage device control means and to the system bus, for disconnecting the secondary storage device from the system bus; and

means for transferring the software file from said secondary storage device to said main central processing unit when said initial program loader is started.

5,287,516

DEMODULATION PROCESS FOR BINARY DATA

Thomas Schaub, Cham, Switzerland, assignor to Landis & Gyr Betriebs AG, Zug, Switzerland

Filed Nov. 26, 1991, Ser. No. 798,618

Claims priority, application Switzerland, Jan. 10, 1991, 00 051/91

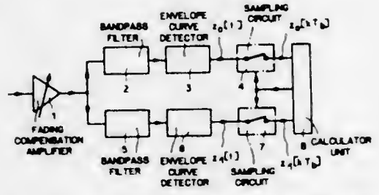
Int. Cl.[5] H03D *3/00;* **H04L** *27/14*

U.S. Cl. 375—88 **4 Claims**

1. A demodulation process for binary data which are transmitted by means of a frequency shift keying process by way of a transmission channel, wherein two shifted transmitted sinusoidal signals ($s_0(t)$, $s_1(t)$ of different frequencies (f_0, f_1), after reception, are first separated from each other in terms of frequency using bandpass filter means (2, 5) and then separately amplitude-modulated using envelope curve detection means (3, 6) for the purposes of producing two envelope curve signals ($z_0(t)$, $z_1(t)$), characterized in that the values of the frequencies

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(f_0, f_1) of the two signals ($s_0(t)$, $s_1(t)$) are selected to be so far apart that the latter are disturbed independently of each other and that at least one of the two frequencies (f_0, f_1) lies in a weakly disturbed frequency range of the transmission channel, that the two envelope curve signals ($z_0(t)$, $z_1(t)$) are sampled once per bit using a sampling circuit means (4, 7) for the purpose of producing their sample values ($z_0(kT_b)$, $z_1(kT_b)$), that the sample values ($z_0(kT_b)$, $z_1(kT_b)$), are passed to a calculator unit (8) in whose memory values of a decision table are stored, which values are derived from the values of a probability table, that for the purposes of drawing up the probability table the value range of the sample values ($z_0(kT_b)$ and $z_1(kT_b)$) of each respective envelope curve signal ($z_0(t)$ and $z_1(t)$) is each in itself divided by means of threshold values ($w_{0,i}$ with i=0,1,2, . . . , N_0 and w_{1j} with j=0,1,2, . . . , N_1) into a plurality (N_0 and N_1 respectively) of quantisation intervals which are plotted along respective ones of two coordinate axes of the probability table for the purposes of forming the table areas (i;j) thereof, that for each table area (i;j) of the probability table a first probability value ($P_0(i,j)$) and a second probability value



($P_1(i,j)$) is calculated and specified in the respective table area (i;j), wherein the first probability value ($P_0(i,j)$) is the probability that the sample values ($z_0(kT_b)$, $z_1(kT_b)$) lie in the respective table (i;j) if the first signal ($s_0[t]$) were sent and the second probability value ($P_1(i,j)$) is the probability that the sample values ($z_0(kT_b)$, $z_1(kT_b)$ lie in the respective table area (i;j) if the second signal ($s_1(t)$) were sent, that a first logic value ("0") representing the first signal ($s_0(t)$) is set down in a table area (i;j) of the decision table which has the same threshold values ($w_{0,i}$, $w_{1,j}$) and as many ($N_0.N_1$) table areas (i;j) as the probability table if the first probability value ($P_0(i,j)$) is greater than the second probability value ($P_1[i,j]$), and a second logic value ("1") representing the second signal ($s_1(t)$) is set down if the first probability value ($P_0(i,j)$) is less than or equal to the second probability value ($P_1(i,j)$), and that the calculator unit (8) ascertains in which table area (i;j) of the decision table the supplied sample value ($z_0(kT_b)$), $z_1(kT_b)$) lie, whereupon it is then deduced from the logic value ("0" or "1") contained in the respective table area (i;j) of the decision table whether the first or the second signal ($s_0(t)$ or $s_1(t)$) was most probably sent and is therefore to be considered as the received signal.

5,287,517

SELF-COMPENSATING VOLTAGE LEVEL SHIFTING CIRCUIT

Barry A. Maakaa, Sterling; Jeffrey A. Metzger, Leominster, and George J. Harris, Framingham, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 874,322
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—475 **29 Claims**

1. A voltage level shifting circuit, comprising:

a trigger portion that provides a first trigger signal when a first voltage level to be shifted is input to the trigger portion and provides a second trigger signal when a second voltage level to be shifted is input to the trigger portion;

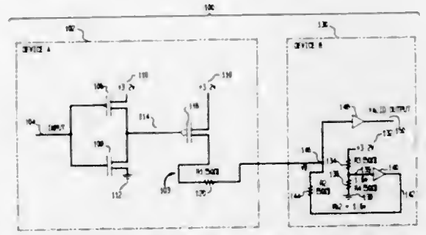
a shifted voltage level generating portion that further includes a first section that is responsive to the first trigger signal such that when the first trigger signal is asserted, the first section generates a first shifted voltage level that is output from the circuit and a second section that is responsive to the second trigger signal such that when the second trigger signal is asserted, the second section generates a second shifted voltage level that is output from the circuit;

the trigger portion further including:

input means;

first switch means that is connected to the input means, the first switch means for providing a first signal to a first line when the second voltage level is input at the input means;

second switch means that is connected to the input means, the second switch means for providing a second signal to the first line when the first voltage level is input at the input means;



third switch means that is connected to the first line, the third switch means for connecting first voltage supplying means to a circuit output, the first voltage supplying means and the circuit output being disposed in the shifted voltage level generating portion of the circuit, for providing a first shifted voltage level at the circuit output; and

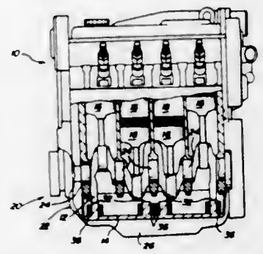
fourth switch means that is connected to the first line, the fourth switch means for connecting second voltage supplying means to the circuit output, the second voltage supplying means being disposed in the shifted voltage level generating portion of the circuit, for providing a second shifted voltage level at the circuit output.

5,287,518

ENGINE CRANKSHAFT VARIABLE RELUCTANCE ALTERNATOR

John M. Miller, Saline, and Roy E. Diehl, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 12, 1992, Ser. No. 897,636
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—61 **25 Claims**



1. An apparatus, for use in a vehicle having an internal combustion engine with a crankcase an a battery, for converting mechanical energy into electrical energy for charging the battery, the apparatus comprising:

a stator disposed within the crankcase of the engine and having at least one tooth having a coil wound thereabout and electrically connected to the battery; and

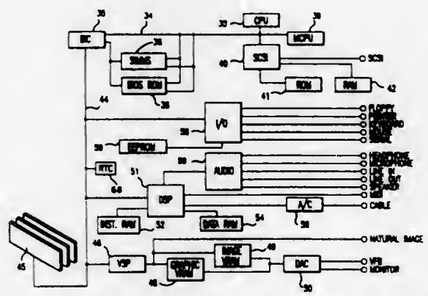
a rotor disposed within the engine crankcase for rotation relative to the stator, the rotor including at least one lobe which moves into proximity with the at least one stator tooth upon rotation of the rotor, thereby inducing a current in the coil for charging the battery.

5,287,519

LAN STATION PERSONAL COMPUTER SYSTEM WITH CONTROLLED DATA ACCESS FOR NORMAL AND UNAUTHORIZED USERS AND METHOD

Richard A. Dayan, Boca Raton; Kimthanh D. Le, Boynton Beach; Matthew T. Mittelstedt, Lantana; Palmer E. Newman, Boca Raton; Dave L. Randall, Pompano Beach; Lisa A. Ruotolo, Lake Worth, and JoAnna B. Yoder, Delray Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 947,019
Int. Cl.[5] G06F *13/14, 7/04*
U.S. Cl. 395—700 **4 Claims**



1. A LAN station personal computer system for exchanging data with a network and capable of securing data accessible to the system against unauthorized access, the system comprising:

a user input device for user entry of commands,

a normally closed enclosure,

an enclosure lock for normally maintaining said enclosure in a securely locked condition denying access to the interior of the enclosure apart from possession of a key for said enclosure lock,

an erasable memory element mounted within said enclosure for selective activation to active and inactive states and for receiving and storing password data,

an option switch mounted and accessible solely from within said enclosure and operatively connected with said erasable memory element for setting said erasable memory element to the active and inactive states,

a system processor mounted within said enclosure and operatively connected with said user input device for executing programs and processing data during operation of the system and exchanging data with a network with which the system is associated as directed by user input through said user input device, said system processor being operatively connected with said erasable memory element for distinguishing between the active and inactive states of said memory element and for enabling modification of password data stored in said erasable memory element by user input through said user input device when said erasable memory element is in the active state,

a read only memory (ROM) device mounted within said enclosure and operatively connected with said system processor for storing said programs for operation of the personal computer system,

a prioritized initial loading program stored in said ROM device and being executed by said system processor for enabling initial loading of an operating system from a selected one of a plurality of sources accessible through the network with which the personal computer system is associated, and

a security utility program stored remotely from the system for limited access through the network with which the personal computer system is associated and stored inaccessibly to either of a normal user and an unauthorized user of the personal computer system, said security utility program being executed by said system processor for enabling one of a system owner and an authorized user to (a) selectively modify said prioritized initial loading program by specifying a number and priority for selecting among said plurality of sources and (b) selectively modify password data stored in said erasable memory element by user input through said user input device,

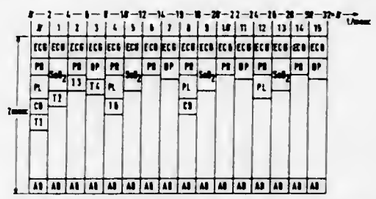
whereby one of a system owner and an authorized user can select which one of a plurality of operating systems otherwise possibly available for initial loading into the system is to be loaded and thereby secure data otherwise possibly accessible to a user of the system from being accessed by one of a normal user and an unauthorized user of the system.

5,287,520

MONITOR SYSTEM HAVING LIST OF ITEMS WITH FIXED TIME SLICES FOR TRANSMITTING TIMING SIGNALS AT THE END OF A COMMUNICATION BETWEEN MASTER PROCESSOR AND SLAVE PROCESSORS

Winfried Kaiser, Nufringen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 3, 1989, Ser. No. 389,000
Claims priority, application European Pat. Off., Aug. 6, 1988, 88112861.5
Int. Cl.[5] G06F *1/04, 13/00*
U.S. Cl. 395—725 **12 Claims**



1. A method for exchanging data between a master processor and a multiplicity of slave processors of a configurable medical monitoring system, said master processor being able to transmit equidistant timing signals of different intervals to slave processors requiring different sampling periods, wherein each said slave processor has a corresponding communication format and controls an analog to digital conversion of a sampled parameter, said method comprising the steps of:

a) providing a list of items associated with fixed time slices; each item of said list specifying a set of communications with certain ones of said slave processors during a time slice and each successive item of said list being associated with successive time slices, and

b) effecting communications between said master processor and slave processors in accordance with each successive item in said list until said list is exhausted, said effecting communications step including transmitting a control word from said master processor to said slave processors, said slave processors using said control word for initiating an analog to digital conversion cycle;

wherein each communication between said master processor and a particular one of said slave processors is in a format that is specified in at least one item in said list and is identical to the format of other communications between the master processor and said particular slave processor; and

wherein items of the list provided in step a) are generated by

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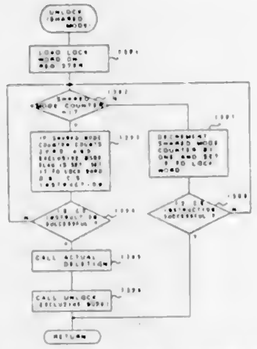
ranking the set of communications with certain ones of said slave processors such that communications with slave processors controlling the analog to digital conversion of a sampled parameter requiring shorter sampling periods are entered ahead of communications with slave processors controlling the analog to digital conversion of a sampled parameter requiring longer sampling periods.

5,287,521

METHOD AND APPARATUS FOR RELEASING AND OBTAINING SHARED AND EXCLUSIVE LOCKS

Jun Nitta, Yokohama; Shigeru Yoneda, Ebina, and Shoji Yamamoto, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 537,908
Claims priority, application Japan, Jun. 15, 1989, 1-153509
Int. Cl.[5] G06F *13/14, 12/16, 12/14*
U.S. Cl. 395—725 **2 Claims**



1. A data processing method for serializing an access to a shared data list being concurrently processed among processes in a data processing device having a lock/unlock feature with a shared mode lock and an exclusive mode lock for serializing access to a data list among concurrently operating processes, in a multiprocessing or multiprogramming environment, said method comprising the steps of:

providing a lock word containing an exclusive mode lock flag and a shared mode lock counter, said exclusive mode lock flag being set as a result of decrementing the shared mode lock counter to zero;

obtaining the shared mode lock for processes;

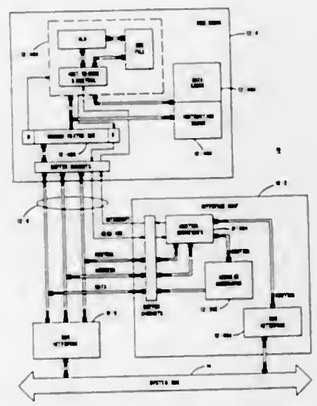
both, releasing the shared mode lock and simultaneously obtaining the exclusive mode lock, by a single task, if no other process of the processes obtains the lock/unlock feature as a result of releasing said process out of the shared mode lock, and logically deleting a data list element, and actually deleting the data list element when the shared mode lock is released and simultaneously the exclusive mode lock is obtained.

5,287,522

EXTERNAL PROCEDURE INVOCATION APPARATUS UTILIZING INTERNAL BRANCH VECTOR INTERRUPTS AND VECTOR ADDRESS GENERATION, IN A RISC CHIP

Richard P. Brown, Acton; Thomas F. Joyce, Westford, both of Mass., and Steven S. Smith, Nashua, N.H., assignors to Bull HN Information Systems, Inc., Billerica, Mass.

Filed Jun. 29, 1990, Ser. No. 546,347
Int. Cl.[5] G06F *13/14, 9/00*
U.S. Cl. 395—725 **14 Claims**



1. A system for processing requests received from a system bus, said system comprising:

an interface chip including vector address generation means coupled to said system bus for receiving requests, said vector address generation means in response to a predetermined type of request generating a branch vector address;

a microprocessor chip including:

an instruction cache for storing instructions including branch vector instructions, of a number of procedures fetched from said system bus as required for executing processing operations for handling the requests;

a branch vector register for storing said branch vector address;

a read indicator and a write indicator associated with said register;

bidirectional bus interconnecting said interface chip address generation means and microprocessor chip register and read/write indicators the read indicator and the write indicator for transferring of information between said chips using a standard protocol; and,

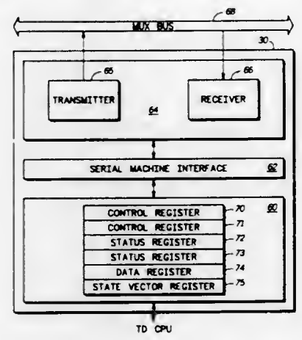
said microprocessor chip further including instruction decode and control means operatively coupled to said branch vector register and to said read indicator and said write indicator said microprocessor instruction decode and control means upon detecting a branch vector instruction in a procedure under execution specifying said vector register as a source of a branch address, being operative to test said write indicator for causing said microprocessor chip to branch to one of said number of procedures specified by said branch vector address when said write indicator is in an active state for processing said predetermined type of request and said microprocessor chip switching said read indicator to an active state upon having processed the request signaling said interface chip through said bidirectional bus that said interface chip can transfer to a new vector address through said bidirectional bus for processing another predetermined type of request.

5,287,523

METHOD FOR SERVICING A PERIPHERAL INTERRUPT REQUEST IN A MICROCONTROLLER

Nigel J. Allison; Janice L. Benzel, both of Austin, Tex., and Joseph F. Kowalski, Warren, Mich., assignors to Motorola, Inc., Schaumburg, Ill. and Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1990, Ser. No. 597,464
Int. Cl.[5] G06F *9/20*
U.S. Cl. 395—725 **8 Claims**



3. In a data processing system comprising:

a processor;

an internal communications bus coupled to said processor;

a memory coupled to said internal communications bus, said memory storing a plurality of table entries for a plurality of interrupt service routines;

a predetermined number of peripheral devices coupled to said processor, via said internal communications bus, a selected peripheral device having a plurality of addressable registers for storing control information, for providing status information, and for allowing the exchange of a plurality of data bytes to and from said processor;

a method for servicing an interrupt request received by said processor for an interrupting peripheral, comprising the steps of:

storing a current state identifier, for a state machine which controls said interrupting peripheral device, in a first bit field in a first addressable register in said interrupting peripheral device;

storing an interrupt priority identifier in a second bit field in said first addressable register, said interrupt priority identifier signifying a source in said interrupting peripheral device of said interrupt service request, according to an interrupt priority scheme;

storing a value in a third bit field of said first addressable register, said value being based upon an incremental byte boundary determined by alignment in said memory of each of said plurality of table entries for said plurality of interrupt service routines;

updating, during execution by said processor of said interrupt service routine, said current state identifier stored in said first addressable register with a next state identifier, in response to said state machine changing states, said next state identifier, said interrupt priority field, and said third bit field forming an index offset value in said first addressable register; and

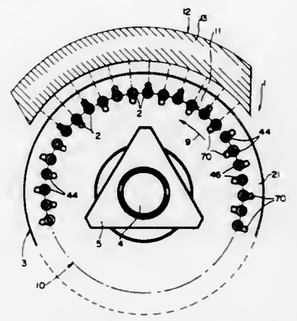
providing said index offset value to said processor, said index offset value being used by said processor as an index into said plurality of table entries in said memory, said processor executing a corresponding one of said plurality of interrupt service routines to clear said interrupt service routine.

5,287,524

EXTERNAL CIGARETTE CHECKING METHOD AND DEVICE

Salvatore Rizzoli, Bologna, and Bruno Belvederi, S. Martino Di Monte S. Pietro, both of Italy, assignors to G. D Societa' Per Azioni, Bologna, Italy

Filed Jun. 3, 1992, Ser. No. 893,046
Claims priority, application Italy, Jun. 6, 1991, B091A 000198
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—86 **18 Claims**



1. A method for externally checking cigarettes, said method comprising the steps of:

feeding the cigarettes housed inside respective seats on a conveyor, in a travelling direction and along a predetermined path, one portion of said predetermined path being a check path along which external characteristics of each of said cigarettes is checked;

checking the external characteristics via optical detecting means located along said check path;

detaching each of said cigarettes from a respective seat as it travels along said check path; and

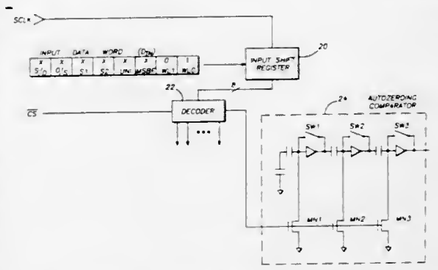
rotating each of said cigarettes at least 360° about its axis as it travels along said check path, wherein each of said cigarettes are rotated about its axis while being detached from its respective seat.

5,287,525

SOFTWARE CONTROLLED POWER SHUTDOWN IN AN INTEGRATED CIRCUIT

Sammy S. Lum, Alameda, and William C. Rempfer, Santa Clara, both of Calif., assignors to Linear Technology Corporation, Palo Alto, Calif.

Continuation of Ser. No. 780,524, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 442,846, Nov. 29, 1989, abandoned. This application Jan. 28, 1993, Ser. No. 10,477
Int. Cl.[5] G06F *1/00, 1/32*
U.S. Cl. 395—750 **4 Claims**



1. A method for providing an internal power shutdown

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signal in an integrated circuit in response to a multi-bit circuit configuration word received by said integrated circuit, said integrated circuit being enabled to receive said configuration word upon receipt of a chip select signal, wherein said circuit configuration work includes at least one configuration bit used by said integrated circuit to configure said integrated circuit for operation, said method comprising the steps of:

(a) serially clocking said circuit configuration word into said integrated circuit, said circuit configuration word including at least one word length bit for defining lengths of output words produced by said integrated circuit;

(b) decoding said at least one configuration bit of said circuit configuration word into a first data value and configuring said integrated circuit into an operative mode in accordance with said first data value and said chip select signal;

(c) decoding said at least one word length bit of said configuration word into a second data value and comparing said second data value with a predefined value representative of a power shutdown command;

(d) generating a power shutdown signal on the basis of said comparison of said second data value with said predefined power shutdown command, said power shutdown signal being reset by the chip select signal received by said integrated circuit; and

(e) shutting down power in response to generation of said power shutdown signal.

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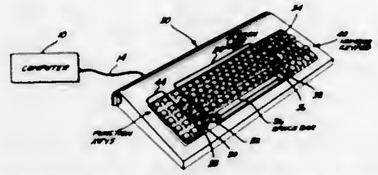
SYSTEM FOR SELECTIVELY MODIFYING CODES GENERATED BY A TOUCH TYPE KEYBOARD UPON DETECTING PREDETERMINED SEQUENCE OF MAKE/BREAK CODES AND EXPIRATION OF PREDEFINED TIME INTERVAL

Chris L. Wolf, 23454 - 25th Ave. South, Des Moines, Wash. 98198; Michael F. Maikowski, Des Moines, Wash.; Winston N. Martin, Bellevue, Wash., and Walter E. Lindsley, Jr., Selah, Wash., assignors to Chris L. Wolf, Des Moines, Wash.

Continuation-in-part of Ser. No. 853,302, Apr. 14, 1986, Pat. No. 4,937,778. This application Jun. 22, 1990, Ser. No. 542,482

Int. Cl.[5] G06F *3/03, 15/20*

U.S. Cl. 395—800 **24 Claims**



1. In a computer keyboard system comprising a plurality of keys and code generation means for producing a make code when a key is depressed and a break code when a key is released, an improvement comprising processing means coupled to receive the codes produced by the code generation means, the processing means comprising:

detection means for detecting a sequence of codes serially including a make code of a trigger key, a make code of a target key different from the trigger key, and a break code of the target key;

timing means, coupled to the detection means and including means for defining a predetermined non-zero triggering interval, said timing means determining whether a code sequence interval between the trigger key make code and the target key break code exceeds the predetermined non-zero triggering interval; and

output means, coupled to the timing means and the detection means, for modifying the codes produced by the code generation means to produce modified codes when the sequence of codes has been detected and the triggering interval has been exceeded, and for outputting the modified codes.

5,287,527

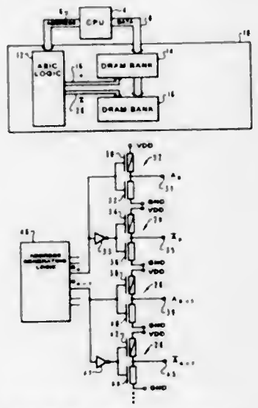
LOGICAL SIGNAL OUTPUT DRIVERS FOR INTEGRATED CIRCUIT INTERCONNECTION

Gary S. Delp, and Brian A. Schueike, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1992, Ser. No. 997,380

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.01 **13 Claims**



1. A memory storage device comprising:

first and second banks of integrated circuit storage devices;

an address signal generator for providing an address and a complement of the address;

a first logic bus connected between the address signal generator and the first bank of integrated storage devices for for applying the address to the first bank;

a second logic bus connected between the address signal generator and the second bank of integrated storage devices for applying the complement of the address to the second bank; and

a data bus for accessing a location in the first bank in response to application of the address and a location in the second bank in response to application of the complement of the address to read or write a dataword divided between the locations.

5,287,528

IEEE 488 INTERFACE FOR MESSAGE HANDLING METHOD

Robert Canik, Cedar Park; Brian K. Odom, and William C. Nowlin, Jr., both of Austin, all of Tex., assignors to National Instruments Corporation, Austin, Tex.

Filed Jul. 3, 1990, Ser. No. 548,293

Int. Cl.[5] G06F *13/42*

U.S. Cl. 395—800 **12 Claims**

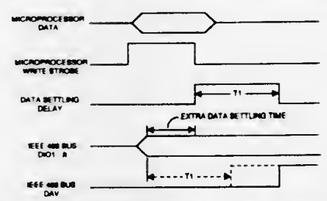
1. A bus interface which couples a microprocessor to an IEEE 488 bus, the interface comprising:

a microprocessor port which transmits and receives data to and from said microprocessor; said microprocessor port including microprocessor data bus lines and a write line for receiving write pulses from said microprocessor; each said write pulses having a predefined duration and a trailing edge;

an IEEE 488 bus; said IEEE 488 bus including data lines and a data valid (DAV) line;

talker circuit means, coupled to said microprocessor port and said IEEE 488 bus, for asserting data received by said microprocessor port onto said IEEE 488 bus; said talker circuit means including a transparent latch for asserting and latching data received from said microprocessor port onto said IEEE 488 bus such that data received from said microprocessor port is asserted onto said IEEE 488 bus before the trailing edge of said write pulses; and

source handshake means, coupled to said talker circuit means and said IEEE 488 bus, for asserting a signal on said



DAV line of said IEEE 488 bus after said talker circuit has asserted data on said IEEE 488 bus for a first predefined minimum settling period; said source handshake means including speedup means that, when enabled, asserts said signal on said DAV line of said IEEE 488 bus after said talker circuit has asserted data on said IEEE 488 bus for a second predefined settling period that is less than said first predefined minimum settling period;

whereby speed of transmission of data by said microprocessor is improved by reducing said settling period.

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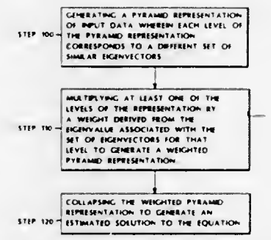
METHOD FOR ESTIMATING SOLUTIONS TO FINITE ELEMENT EQUATIONS BY GENERATING PYRAMID REPRESENTATIONS, MULTIPLYING TO GENERATE WEIGHT PYRAMIDS, AND COLLAPSING THE WEIGHTED PYRAMIDS

Alex P. Pentland, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 21, 1990, Ser. No. 570,521

Int. Cl.[5] G06F *15/31, 15/32*

U.S. Cl. 395—800 **18 Claims**



1. An apparatus for estimating a solution to a finite element and/or regularization analysis equation, the apparatus comprising:

an analysis filter circuit generating a pyramid representation of input data, each level of said pyramid representation corresponding to a different set of similar eigenvectors;

a multiplier circuit connected to said analysis filter circuit, said multiplier circuit receiving the pyramid representation of input data and multiplying at least one of said levels of said representation by a weight derived in part from an eigenvalue associated with the set of eigenvectors for that level to generate a weighted pyramid representation; and

a synthesis filter circuit connected to said multiplier circuit, said synthesis filter receiving said weighted pyramid representation and collapsing said weighted pyramid representation to generate an estimated solution to the equation wherein said analysis filter circuit comprises a plurality of quadrature mirror analysis filter, each of said plurality of quadrature mirror analysis filters generating a low frequency output and a high frequency output and wherein each level of the pyramid representation above a lowest level is derived by applying the corresponding quadrature mirror analysis filter to the low frequency output of a next lower level.

5,287,530

MULTICAST SERVER APPARATUS

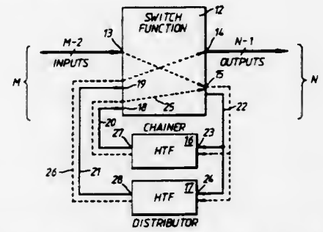
Simon P. Davis, Romsey, and Ian B. Stewart, North Baddesley, both of Great Britain, assignors to Roke Manor Research Limited, Romsey, Great Britain

Filed Apr. 2, 1992, Ser. No. 862,662

Claims priority, application United Kingdom, Apr. 16, 1991, 9108088

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **2 Claims**



1. Multicast server apparatus operative to effect the onward transmission of data cells to a plurality of different addresses, comprising a switch function unit having an input port, an output port and a transfer port, data cells for multicasting being routed from the input port to the transfer port, first and second header translation units each having an input terminal and an output terminal, which translation units serve respectively as a chainer and as a distributor, the input terminals of the chainer and the distributor respectively being coupled to the transfer port of the switch function unit to receive data for multicasting, the chainer being effective to change address data associated with each data cell fed thereto to a form recognizable by the distributor and to feed back such data cell together with its changed address data to the said transfer port, and the distributor being effective to convert recognizable address data associated with data cells fed thereto to corresponding route address tags and to feed cells having such address tags to the output port of the switch function unit, whereby a data cell for multicasting is distributed by the multicasting server apparatus separately to the said plurality of different addresses as identified by the said address tags.

5,287,531

DAISY-CHAINED SERIAL SHIFT REGISTER FOR DETERMINING CONFIGURATION OF REMOVABLE CIRCUIT BOARDS IN A COMPUTER SYSTEM

Harry R. Rogers, Jr., Spring; John A. Landry, Tomball, and Javier F. Izquierdo, Houston, all of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Filed Oct. 31, 1990, Ser. No. 606,165

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—800 **8 Claims**

1. A computer system having a means for determining computer system configuration, the computer system comprising:

a system bus for transferring addresses and data;

a system board containing circuitry forming portions of the computer system, having said system bus located thereon and including means for performing a serial to parallel

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conversion of data, said means for performing serial to parallel conversion having a serial input and parallel outputs, said parallel outputs coupled to said system bus to allow reading of said parallel outputs, said means for performing serial to parallel conversion having a given read address;

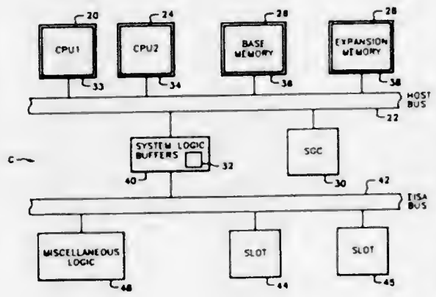
a processor coupled to said system bus;

a plurality of slots for receiving removable circuit boards containing circuitry forming portions of the computer system, said slots being connected to said system bus, each of said slots further including a load connection, a configuration serial input connection and a configuration serial output connection, said configuration serial input connections and configuration serial output connections connected together to form a daisy chain, with a last configuration serial output connection being coupled to said system board means for performing serial to parallel conversion serial input and a first configuration serial input connection being coupled to a fixed level;

at least one removable circuit board for insertion in one of said slots, said removable circuit board including shift register means for performing parallel to serial conversion of data having a load input, a serial input, a serial output and a plurality of parallel inputs, said load input of said shift register means for performing parallel to serial conversion on said removable circuit board being connected to said load connection of said one of said slots, said serial input of said shift register means for performing parallel to serial conversion on said removable circuit board being connected to said configuration serial input connection of said one of said slots, said serial output being connected to said configuration serial output connection of said one of said slots and said parallel inputs receiving removable circuit board configuration information;

means for loading data into said shift register means for performing parallel to serial conversion on said removable circuit board, said means for loading data including means for developing a load signal having an output connected to said load connection of each of said slots, said means for developing a load signal being coupled to said system bus and having a given write address and said load signal being developed when said processor writes to said means for developing a load signal; and

means for clocking data through said shift register means for performing parallel to serial conversion on said removable circuit board to said means for performing serial to parallel conversion of data on said system board when said processor requests a read operation of said means for performing serial to parallel conversion of data on said system board.



5,287,532

PROCESSOR ELEMENTS HAVING MULTI-BYTE STRUCTURE SHIFT REGISTER FOR SHIFTING DATA EITHER BYTE WISE OR BIT WISE WITH SINGLE-BIT OUTPUT FORMED AT BIT POSITIONS THEREOF SPACED BY ONE BYTE

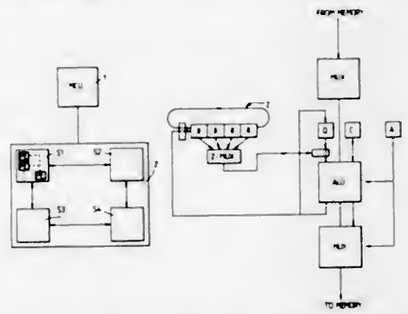
David J. Hunt, Wokingham, England, assignor to AMT (Holdings) Limited, Reading, England

Filed Nov. 14, 1990, Ser. No. 613,217

Claims priority, application United Kingdom, Nov. 14, 1989, 8925723

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—800 8 Claims



1. A processor array employing an SIMD architecture, said processor array comprising a plurality of single-bit processor elements, each said single bit processor element including an arithmetic unit and at least one operand register connected to an input of said arithmetic unit, wherein each said single-bit processor element further comprises shift register means having a multi-byte structure and configured for shifting data either byte-wise or bite-wise, said shift register means having an input connected to receive an output of said arithmetic unit, a plurality of single-bit shift register data outputs formed in said shift register means at bit positions thereof spaced by one byte, multiplexer means having a plurality of single-bit inputs and a single-bit output, said single-bit shift register data outputs being connected to said single-bit inputs of said multiplexer means, and said single bit output of said multiplexer means being connected to an input of said arithmetic unit, said multiplexer means thereby communicating a single bit of data from a selected one of said single-bit shift register data outputs to said arithmetic unit, said single-bit output from said multiplexer means being multiplexed with said at least one operand register at said input of said arithmetic unit, said shift register means thereby providing an alternative operand register for said arithmetic unit.

5,287,533

APPARATUS FOR CHANGING INDIVIDUAL WEIGHT VALUE OF CORRESPONDING SYNAPTIC CONNECTION FOR SUCCEEDING LEARNING PROCESS WHEN PAST WEIGHT VALUES SATISFYING PREDETERMINED CONDITION

Shin Kamiya, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 723,495

Claims priority, application Japan, Jun. 28, 1990, 2-172051

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—800 18 Claims

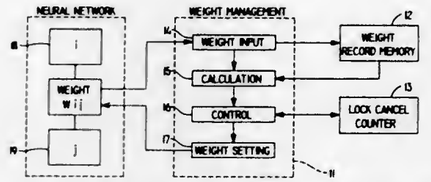
1. An apparatus for controlling the learning of a neural network, said apparatus monitoring weight values of synaptic connections between units of said neural network, said weight values being able to be set in a learning process,

said apparatus comprising:

weight record store means for storing past records of weight values which have been set in a predetermined number of preceding learning processes, each of said past records being defined for synaptic connection;

control means for receiving said past records from said weight record store means, for judging whether or not said received past records satisfy a predetermined condition, and for, when one of said received past records satisfies said predetermined condition, generating a signal to identify a synaptic connection which corresponds to said one of said received past records; and

weight setting means for resetting the weight value of said identified synaptic connection to a predetermined value based on said signal in one or more succeeding learning processes.



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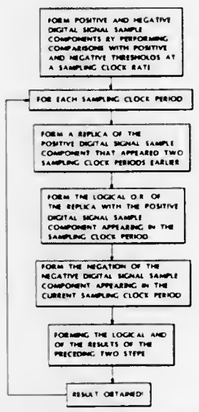
CORRECTING CROSSOVER DISTORTION PRODUCED WHEN ANALOG SIGNAL THRESHOLDS ARE USED TO REMOVE NOISE FROM SIGNAL

Thomas Reuther, Palo Alto, Calif.; Neil Bloomberg, Bowie; William J. Gist, Jr., Merrimack, and Albra M. Welch, Bedford, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 650,457, Feb. 4, 1991, abandoned, which is a continuation of Ser. No. 461,122, Jan. 4, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 775,681

Int. Cl.[5] H03M *1/00*

U.S. Cl. 395—800 2 Claims



2. Apparatus for removing crossover distortion to derive a processed digital signal from positive and negative digital signal sample components that were formed by positive and negative threshold comparisons, said crossover distortion manifested by periods during which both said negative and said positive digital signal sample components have a logic zero value, comprising;

A. digital circuit means for forming a replica of said positive digital signal sample component which is delayed by a predetermined time period,

B. digital circuit means for forming a first intermediate signal representing a logical OR of said replica with said positive digital signal sample component,

C. digital circuit means for forming a second intermediate signal representing a negative of said negative digital signal sample component, and

D. digital circuit means for forming a logial AND of said first and second intermediate signals, to form said processed digital signal.

5,287,535

SWITCHING NODE IN LABEL MULTIPLEXING TYPE SWITCHING NETWORK

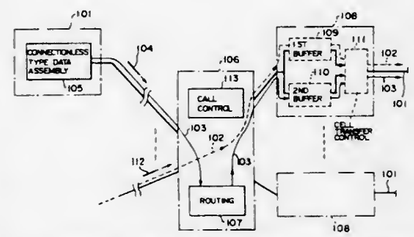
Kazuo Sakagawa; Teruhisa Nakamura, and Ichiro Iida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 7, 1992, Ser. No. 880,066

Claims priority, application Japan, May 7, 1991, 3-101550; Sep. 19, 1991, 3-240013

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 21 Claims



1. A switching node in a label multiplexing type switching network, comprising:

switch means for selectively coupling input logical communication paths and output logical communication parts with each other, m permanent logical communication paths being included in said input logical communication paths where m is an integer larger than or equal to 1, n permanent logical communication paths being included in said output logical communication paths where n is an integer larger than or equal to 1;

call control means, coupled to said switching means, for receiving connection-oriented type information through any of the input logical communication paths and for controlling said switch means so that the connection-oriented type information are selectively transferred to said output logical communication paths via the switch means on the basis of routing address information related to the connection-oriented type information;

routing means, coupled to said switch means, for receiving connectionless type information through any of the m permanent logical communication paths and for controlling said switch means so that the connectionless type information are selectively transferred to the n permanent logical communication paths via the switch means on the basis of routing address information related to the connectionless type information; and

a plurality of ports which connect said switch means to a plurality of transmission media provided in the label multiplexing type switching network, wherein:

each of the output logical communication paths is formed on one of the transmission media, and

each of said ports comprises:

first buffer means, coupled to said switch means and

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said one of the transmission media, for storing the connection-oriented type information from said switch means;

second buffer means, coupled to said switch means and said one of the transmission media, for storing the connectionless type information from said switch means; and

transfer control means, coupled to said first and second buffer means and said one of the transmission media, for transferring either the connection-oriented type information in said first buffer means or the connectionless type information in said second buffer means on the basis of a quantity of information stored in at least one of said first and second buffer means.

5,287,536

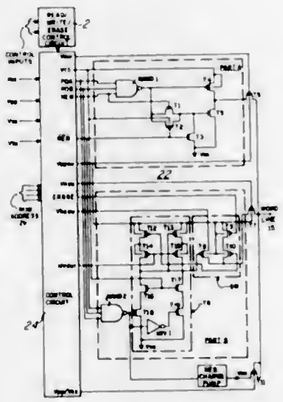
NONVOLATILE MEMORY ARRAY WORDLINE DRIVER CIRCUIT WITH VOLTAGE TRANSLATOR CIRCUIT

John F. Schreck; Phat C. Truong; Benjamin H. Ashmore, Jr., and Harvey J. Steigler, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 787,706, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 513,534, Apr. 23, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 9,276

Int. Cl.[5] G11C *16/06, 5/14*

U.S. Cl. 365—230.06 **22 Claims**



1. A circuit for selectively applying a supply voltage and a programming voltage to a wordline of a nonvolatile memory array, said circuit comprising:

a supply voltage terminal for supplying said supply voltage;

a control circuit for respectively providing a reading control signal, a programming control signal, and a programming voltage output for supplying said programming voltage;

a read mode subcircuit having an input connected to said supply voltage terminal and having a read mode output for selectively outputting said supply voltage in response to said reading control signal;

a program mode subcircuit having an input connected to said programming voltage output and having a program mode output for selectively outputting said programming voltage in response to said programming control signal;

a second signal-transistor switch connected between said program mode output and said wordline, said second single-transistor switch having a control input connected to a program enable signal output of said control circuit.

5,287,537

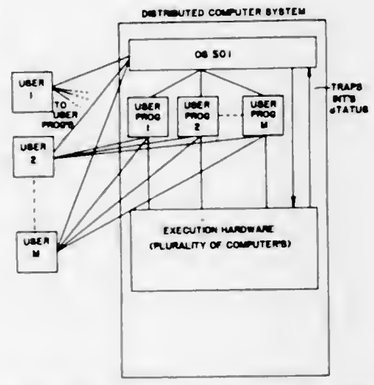
DISTRIBUTED PROCESSING SYSTEM HAVING PLURAL COMPUTERS EACH USING IDENTICAL RETAINING INFORMATION TO IDENTIFY ANOTHER COMPUTER FOR EXECUTING A RECEIVED COMMAND

Rona J. Newmark, Northboro; Rosemarie Alicandro, Millbury; Peter C. Blxby, Northboro; Donald D. Burn; Eric H. Enberg, both of Westboro; Paul K. Marino, and Paul W. Woodbury, both of Hopkinton, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 652,460, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 175,459, Mar. 30, 1988, abandoned, which is a division of Ser. No. 798,665, Nov. 15, 1985, Pat. No. 4,920,483. This application Sep. 21, 1992, Ser. No. 948,071

Int. Cl.[5] G06F *15/76*

U.S. Cl. 395—800 **2 Claims**



1. A distributed computer system comprising a plurality of digital computer systems interconnected by a bus means, each digital computer system having:

(a) a CPU for running one or more programs,

(b) means for communicating with one or more user terminals,

(c) means for receiving commands from the user terminals and from each other digital computer system, the commands including

commands to any device in any of the digital computer systems and

commands to any of the programs running on any of the digital computer systems,

(d) means for determining whether a received command can be fulfilled in that digital computer system,

(e) means, responsive to the determining means, for fulfilling commands which can be fulfilled in that digital computer system,

(f) means for retaining information identifying which programs are running on each of the other digital computer systems in the distributed computer system and which devices are connected to each of the other digital computer system in the distributed computer system;

(g) means, responsive to the information retaining means, for identifying which other digital computer system in the distributed computer system is capable of fulfilling a command system, and

(h) means, responsive to the identifying means, for forwarding commands from the user terminals which cannot be fulfilled in that digital computer system to the other digital computer system identified by the identifying means.

5,287,538

WORD PROCESSOR FOR REFORMATTING A CHARACTER GROUP BY LOCATING LINE FEED CODES AND SELECTING THE BEGINNING AND END OF THE TEXT WHEN THE LINE FEED CODES CANNOT BE LOCATED

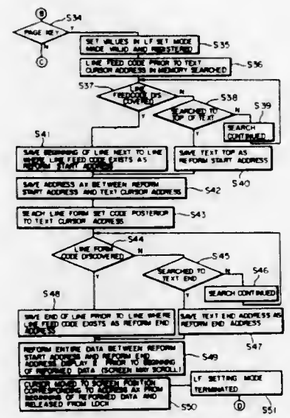
Yasushi Kawakami, Nagoya; Fukue Obata, Yokkaichi, and Kayoko Makihara, Kamagori, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 614,013, Nov. 14, 1990, abandoned, which is a continuation of Ser. No. 73,729, Jul. 15, 1987, abandoned. This application Dec. 10, 1992, Ser. No. 989,957

Claims priority, application Japan, Jul. 15, 1986, 61-165773

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—800 **6 Claims**



1. In a word processor comprising a keyboard for inputting character codes, function codes, and text format codes, a display device for displaying at least the input character codes on a screen, memory means for storing said input character codes, a processing device for preparing a text with a plurality of lines comprising the input codes stored in said memory means and displaying the text on said display device, and designating means for designating a position on said screen at which one of said character codes is to be inputted,

an improvement which comprises that said processing device is provided with format setting means for setting a text format,

search means coupled to said designating means and said memory means for searching for the beginning and end of a character data group of said text having at least two lines based upon the position designated by said designating means, said character data group being defined between first and second line feed codes;

said search means searches backward from the designated position to the beginning of the text to locate said first line feed code; if said line feed code is located, selecting the beginning of the next line following said first line feed code as the beginning of said character data group and if said first line feed code is not located, selecting the beginning of the text as the beginning of said character data group;

said search means further searches forward from the designated position to the end of the text to locate said second line feed code; if said second line feed code is located, selecting the end of the line preceding said second line feed code as the end of said character data group and if said second line feed code is not found, selecting the end of the text as the end of said character data group; and

reforming means for reforming at least said character data group of said text displayed on said display means in accordance with a newly set text format set by the format setting means without requiring a repositioning of said designate means.

5,287,539

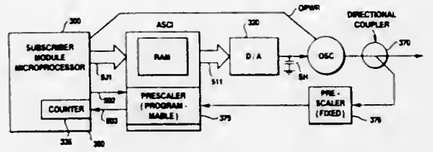
INTERDICTION PROGRAM DENIAL SYSTEM FOR JAMMING AUDIO AND VIDEO SIGNALS

Lamar E. West, Jr., Maysville, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 166,302, Mar. 10, 1988, Pat. No. 4,912,760. This application Feb. 21, 1990, Ser. No. 483,451

Int. Cl.[5] H04K *3/00*

U.S. Cl. 455—1 **36 Claims**



16. A method of selectively jamming programming comprising video signals and associated audio signals transmitted to a subscriber in a cable television system comprising the steps of:

generating at least one jamming signal having a jamming signal carrier frequency substantially equal to the sum of a video carrier frequency and a fraction 1/N of the difference between said video carrier frequency and an associated audio carrier frequency of a cable television channel, wherein N is an integer greater than one and less than ten, combining said jamming signal carrier with at least a portion of a broadband cable television spectrum to produce a combined signal, and

transmitting said combined signal to said subscriber to prevent unauthorized reception of said audio and video signals.

5,287,540

DIGITAL DETECTOR

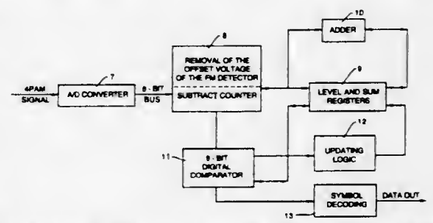
Tero Kuusinen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 28, 1992, Ser. No. 967,512

Claims priority, application Finland, Nov. 1, 1991, 915179

Int. Cl.[5] H03D *3/00*

U.S. Cl. 375—89 **12 Claims**



1. A digital detector to convert an audio frequency signal into a digital signal, characterized in that the detector comprises:

an Analogue/Digital (A/D) converter (7), for producing a first binary word (W_o) corresponding to the offset voltage of the detector, and a second binary word (W_s) corresponding to each detected signal;

offset voltage removal means (8), in which the first binary word (W_o) corresponding to the offset voltage of the detector is subtracted from each second binary word (W_s) corresponding to each received signal to provide a plural-

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ity of third binary words (W_{33}) representing modified signal symbols corresponding to each received signal;

means for comparing each third binary word (W_{33}) with a set of predetermined decision levels to determine an output symbol; and

means for updating the set of predetermined decision levels responsive to changes in the received audio frequency signals as represented in changes in the third binary words (W_{33}).

5,287,541

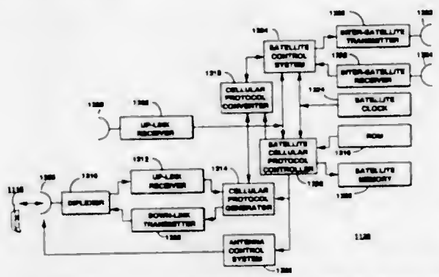
GLOBAL SATELLITE COMMUNICATION SYSTEM WITH GEOGRAPHIC PROTOCOL CONVERSION

Walter L. Davis, Coral Springs, and Philip P. Macnak, West Palm Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 431,105, Nov. 3, 1989, Pat. No. 5,008,952. This application Apr. 15, 1991, Ser. No. 685,808

Int. Cl.[5] H04B *7/185*

U.S. Cl. 455—12.1 **16 Claims**



1. A satellite communication system providing geographic protocol conversion for message delivery between communication transceivers operating within at least two geographic areas, said satellite based communication system comprising:

a first communication transceiver, providing two-way message delivery within a first radiotelephone network located within at least a first geographic area, the two-way message being encoded in a first predetermined message transmission protocol, said first communication transceiver further enabling two-way message delivery with a communication satellite, the message also being encoded in the first predetermined message transmission protocol;

said communication satellite, comprising

a satellite transceiver, for enabling the two-way delivery of the message encoded in the first predetermined message transmission protocol with said first communication transceiver,

protocol converting means, for converting the message encoded in the first predetermined message transmission protocol into a message encoded in a second predetermined message transmission protocol, and

said satellite transceiver further for enabling two-way delivery of the message encoded in the second predetermined message transmission protocol with at least a second communication transceiver operating within a second geographic area.

5,287,542

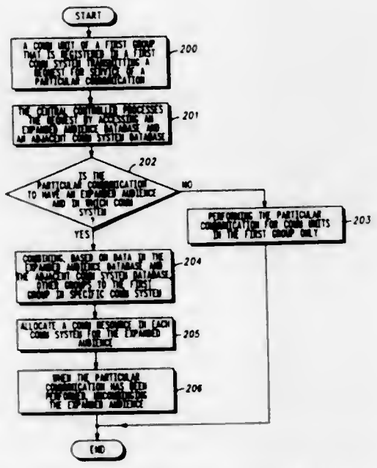
METHOD TO EXPAND AN AUDIENCE IN A COMMUNICATION SYSTEM NETWORK

Gregory N. Hesse, Hanover Park, and John W. Maher, Woodstock, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1992, Ser. No. 841,696

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—13.1 **4 Claims**



1. In a network of communication systems that are operably coupled via a central controller, wherein each communication system includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via a limited number of repeaters, and a communication resource allocator that allocates via the central controller the limited number of communication resources among the plurality of communication units, a method that expands an audience of a predetermined communication, the method comprises the steps of:

a) transmitting, by a communication unit of a first communication group within a first communication system, a predetermined communication request to the central controller via the communication resource allocator of the first communication system;

b) when the request is received by the central controller, accessing, by the central controller, an expanded audience database to determine communication groups that are to be combined with the first communication group based on the predetermined communication request to produce combined communication groups;

c) when the audience of the predetermined communication is to be expanded, accessing, by the central controller, an adjacent communication system database to determine communication systems that are adjacent to the first communication system to produce adjacent communication systems; and

d) when the audience of the predetermined communication is to be expanded, combining, by the central controller, the combined communication groups but only in the adjacent communication systems such that only communication units in the first communication system and communication units in the adjacent sites of the combined communication groups participate in the predetermined communication.

5,287,543

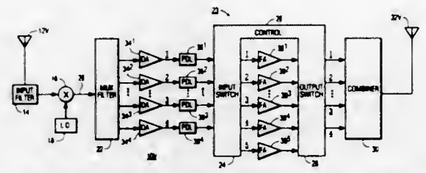
MULTICHANNEL COMMUNICATION SYSTEM WITH AN AMPLIFIER IN EACH CHANNEL

Herbert J. Wolkstein, Livingston, N.J., assignor to General Electric Co., East Windsor, N.J.

Filed Oct. 7, 1991, Ser. No. 772,207

Int. Cl.[5] H04B *7/185*

U.S. Cl. 455—13.3 **10 Claims**



1. A multichannel amplifying arrangement including a multiplicity of channels, said arrangement comprising:

a plurality N of sources of signal, each of said sources of signal being operative at a different frequency range, said different frequency ranges cumulatively covering a predetermined total bandwidth, each of said sources of signal being coupled to the input of one of said channels;

a plurality of at least N power amplifiers, each including an input port and an output port, and each for amplifying signal applied to said input port and for generating amplified signal at said output port, each of said power amplifiers having a bandwidth substantially equal to said total bandwidth, and each of said power amplifiers being subject to nonlinearities at certain operating levels;

utilization means coupled to an output port of each of said channels for using amplified signal therefrom;

controllably switchable interconnection means coupled to said input and output ports of each of said plurality of power amplifiers, and by way of said channels to said N sources and to said utilization means, for coupling each of said power amplifiers in one of said channels, with any of said plurality of power amplifiers which are in excess of the number of active channels being held in reserve, and in case of degradation of one of said power amplifiers associated with a particular channel, for selectively switching said degraded power amplifier out of said particular channel, and for switching into said particular channel an operational one of said power amplifiers, the bandwidth of which includes the frequency range of said particular channel, whereby said operational one of said power amplifiers amplifies signals in said particular channel; and

a plurality N of linearization means adapted for compensating said nonlinearities, each of said linearization means being fixedly associated with one of said channels and switchably associated with that one of said power amplifiers coupled by said switchable interconnection means in said one of said channels, whereby each of said linearization means must have a bandwidth sufficient to cover only one of said frequency ranges, and not said total bandwidth.

5,287,544

METHOD OF CHANNEL ASSIGNMENT BY MATCHING CHANNEL INTERFERENCE W.TH CHANNEL LINK LOSS

Barry J. Menich, Schaumburg, and Jeffrey D. Bonta, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1991, Ser. No. 777,950

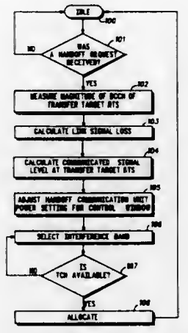
Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 **11 Claims**

8. A method for reducing interference within a cellular communication system, the method comprising the steps of:

A) grouping unallocated channels having more similar than dissimilar measured interference characteristics;

B) determining a communicated signal level at a base site from a calculated link loss and a communication unit power level and



C) allocating a channel of the grouped unallocated channels to a communication unit based, at least in part, upon the calculated link signal loss and the interference grouping to produce a desired carrier to interference ratio.

5,287,545

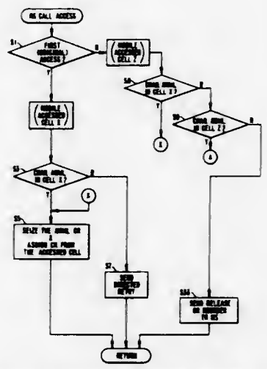
METHOD OF AND APPARATUS FOR ADVANCED DIRECTED RETRY

Harald Kallin, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 17, 1991, Ser. No. 808,778

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 **18 Claims**



1. A call access method in a cellular mobile radiotelephone system having a plurality of established cells each in communication with an exchange, comprising the steps of:

sending a directed retry message in response to an attempted call access in a first cell experiencing congestion;

detecting as a directed retry call access attempt a subsequent retry in a second cell of said attempted call access; and

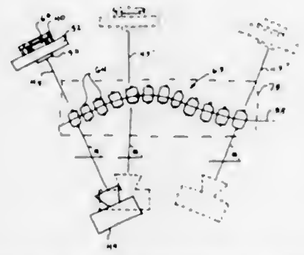
if a traffic channel allocated to said first cell is available, assigning from said second cell said traffic channel allocated to said first cell.

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5,287,546
PATIENT POSITIONING APPARATUS FOR BONE SCANNING

Mike M. Tesic, Verona; Richard B. Mazess, Madison; James A. Hanson, Madison, and James G. Delubery, Madison, all of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 944,626, Sep. 14, 1992, Pat. No. 5,228,068. This application Nov. 16, 1992, Ser. No. 976,797
Int. Cl.[5] A61B 6/00
U.S. Cl. 378—54 5 Claims



1. A method of making measurements of vertebrae of a patient's spine with a densitometer having an opposed radiation source and detector, the source and detector moving to a first and second angle about the spine and at each angle scanning to obtain a two dimensional array of pixels representing the attenuation of radiation at corresponding locations through the patient, comprising the steps of:

positioning the source and detector at the first angle and scanning the vertebrae along a first axis to obtain the first array of pixels;

analyzing the first array of pixels to determine center of bone mass values at a plurality of points along an axis of the array corresponding to the first axis;

positioning the source and detector at a second angle substantially perpendicular to the first angle;

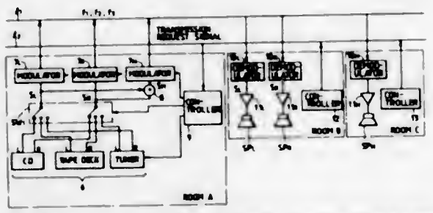
scanning along the first axis of the patient to obtain the second array of pixels;

adjusting the position of the detector with respect to the patient during the scanning at the second angle in accordance with the determined center of bone mass values of the first array of pixels.

5,287,547
TRANSMISSION AND RECEPTION SYSTEM

Hidenori Hidaka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 450,880, Dec. 14, 1989, abandoned. This application Nov. 18, 1992, Ser. No. 978,072
Claims priority, application Japan, May 11, 1989, 1-116185
Int. Cl.[5] H04H 1/00
U.S. Cl. 455—4.2 10 Claims

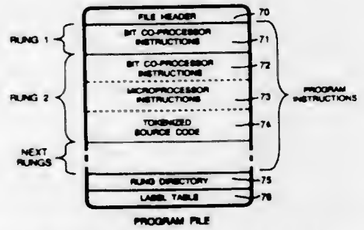


10. A home bus system for transmitting entertainment source information at predetermined frequencies from plural signal sources located at a transmitting station to receivers located at receiving stations located in separate locations from said transmitting station, said transmitting station also including a controller which selects amongst said sources and activates control functions of said sources, said system comprising means associated with said receivers for generating a request signal identifying a selected signal source and a signal format to be sent to an associated receiver, and means included in said controller responsive to said request signal for selecting and enabling said selected signal source identified in said request signal and for causing a signal therefrom to be transmitted to said receiver in accordance with said signal format identified in said request signal.

5,287,548
PROGRAMMABLE CONTROLLER HAVING A STORED PROGRAM WITH BOTH MACHINE LANGUAGE INSTRUCTIONS AND SOURCE CODE DATA

Mark A. Flood; Michael D. Kalan, both of Mayfield Heights; Charles M. Rischar, Painsville; Robert R. Sepsi, Richmond Heights, and Jack F. Toma, Parma, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Feb. 29, 1988, Ser. No. 161,484
Int. Cl.[5] G06F 9/30, 9/45
U.S. Cl. 395—375 18 Claims



1. In a programmable logic controller for use in executing an object code control program including a plurality of contiguous program data sectors which correspond to sequential program steps and which include a first section containing general purpose processor instructions and a second section containing tokenized source code information statements for accurately reconstructing source code instructions corresponding to said general purpose processor instructions for program editing purposes, a method for processing said control program at run time for control execution and during program decompiling for full source code reconstruction comprising the steps of:

A) processing each of said control program sectors at run time by:

1) executing said general purpose processor instructions in the first section in each of said sectors, and

2) jumping over said tokenized source code information statements in the second section in each of said sectors; and

B) processing each of said control program sectors during decompiling by:

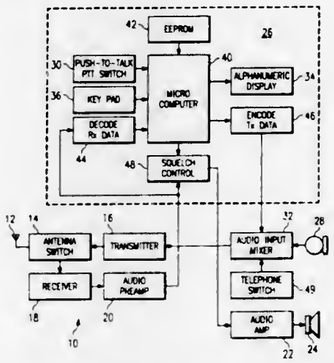
1) skipping over said general purpose processor instructions in the first section in each of said sectors, and

2) generating source code instructions from said tokenized source code information statements in the second section of each of said sectors.

5,287,549
COMMUICATION DEVICE AND METHOD USING TRANSCEIVER SQUELCH CONTROL

Michael R. Roehrs, 20331 Bluffside, #115, Huntington Beach, Calif. 92646, and Robert E. Gorney, 5710 Felspar, Riverside, Calif. 92509

Continuation of Ser. No. 386,023, Jul. 26, 1989, Pat. No. 5,058,205, which is a continuation-in-part of Ser. No. 152,769, Feb. 5, 1988, abandoned. This application Oct. 15, 1991, Ser. No. 776,618
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.
Int. Cl.[5] H04B 1/10
U.S. Cl. 455—35.1 17 Claims



1. A squelch control circuit for use with a first and a second transceiver, each of said transceivers having a unique address said squelch control circuit comprising:

(a) means to encode, electronically coupled to each of said transceivers, for creating and generating the unique address associated therewith; and

(b) computer means, electronically coupled to said means to encode and to each of said radio transceivers, for causing:

(i) a first control message containing the unique address of the first transceiver, the unique address the second transceiver, and a flag bit that is set, to be communicated to said second transceiver from said first transceiver;

(ii) said second radio transceiver to thereafter communicate to said first transceiver a second control message containing said address of said first transceiver and having a flag bit that is set;

(iii) said first transceiver to communicate the combination of a third control message and said transmitted audio signal output of said first transceiver to said second transceiver, wherein said third control message contains said unique address of said second transceiver and having a flag bit that is off;

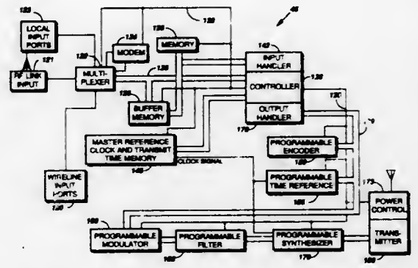
(iv) said second transceiver to communicate the combination of a fourth control message and said transmitted audio signal output of said second transceiver to said first transceiver, wherein said fourth control message contains said unique address of said first transceiver; and

(v) said squelch circuits of each of said first and second transceivers to turn off their respective squelch circuits in response to said third and fourth control message respectively, thereby causing said first and second transceivers to exclusively communicate each of said transmitted audio signal outputs of said first and second transceivers therebetween.

5,287,550
SIMULCAST SCHEDULER

Robert D. Fennell, Coral Springs, and David R. Petreye, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1990, Ser. No. 632,575
Int. Cl.[5] H04B 7/005
U.S. Cl. 455—51.2 1 Claim



1. A method for broadcasting selective call message received from a first selective call system and a second selective call system comprising the steps of:

receiving first messages and corresponding message reservation times from said first selective call system;

storing said first messages and said message reservation times;

broadcasting said first messages at first transmission times determined in response to said message reservation times corresponding to said first transmission times;

storing said second messages when received if the second messages are received at the second transmission times corresponding to said first transmission times; and

broadcasting said stored second messages at third transmission times not corresponding to said first transmission times if the second messages are received at the second transmission times corresponding to said first transmission times.

5,287,551
RADIO COMMUNICATION APPARATUS AND METHOD FOR VOICE CHANNEL BUSY CALL BACK

Leslie G. Gustafson, Jr., Oakwood Hills; Sewim F. Ablay, Hoffman Estates, and Mark L. Shaughnesy, Algonquin all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 612,052, Nov. 13, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,578
Int. Cl.[5] H04B 7/00
U.S. Cl. 455—54.1 15 Claims

1. A radio communication system having at least one resource controller which is able to allocate a plurality of communication resources and issue a busy signal, via a control resource, to a communication unit when a requested communication resource is unavailable, the communication unit being able to request access to a first communication resource in order to participate in a first communication, the radio communication system comprising:

means at the communication unit for receiving the busy signal on the control resource, thereby producing a denied communication unit and placing said denied communication unit in a wait state upon receipt of the busy signal;

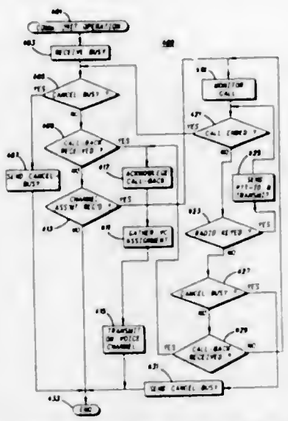
means at the resource controller for allowing said denied communication unit to monitor a second communication on a second communication resource;

means at said denied communication unit for participating in said second communication, while remaining in said wait state; and

means at the resource controller for issuing, when a communication resource of the type requested by said denied

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communication unit becomes available, a call-back signal directed to said denied communication unit during the



second communication, thereby giving the denied communication unit access to the available communication resource.

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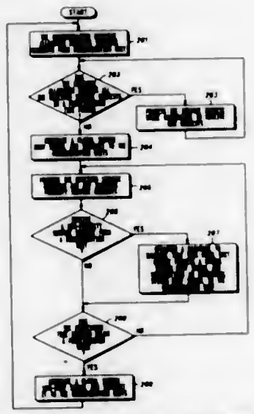
METHOD FOR MORE EFFICIENT SERVICE REQUEST PROCESSING

Michael D. Sasuta, Mundelein, and Jian-Cheng Huang, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1992, Ser. No. 828,327

Int. Cl.[5] H04Q *7/02*

U.S. Cl. 455—54.2 **9 Claims**



1. In a trunking communication system that comprises a plurality of communication units, a limited number of communication resources that are transceived via a predetermined number of repeaters, and a communication resource allocator that allocates the limited number of communication resources among the plurality of communication units based upon service requests by the communication units, a method that allows the communication resource allocator to process an overloading of service requests, the method comprises the steps of:

a) determining whether received service requests, which are either processed upon receipt or stored in a service request waiting queue will be processed within a predetermined period of time;

b) when the communication resource allocator will not process all of the received service requests in the predetermined period of time, generating a global system busy signal that indicates that the communication resource allocator cannot individually process or acknowledge the received service requests within the predetermined period of time and will temporarily process only priority service requests;

c) transmitting the global system busy signal to the plurality of communication units, wherein the plurality of communication units that receive and process the global system busy signal will only transmit priority service requests for the duration of the global system busy signal; and

d) processing the received service requests and received priority service requests while not processing non priority service requests until processing time of the received service requests and the received priority service requests is at least a portion of the predetermined period of time.

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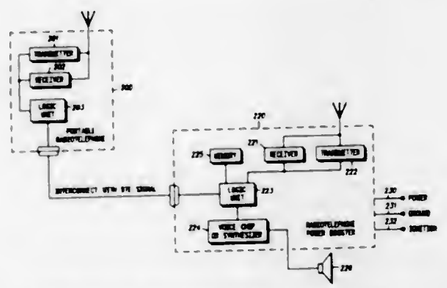
METHOD FOR DETECTING THE ABSENCE OF A PORTABLE RADIOTELEPHONE FROM A MOBILE RADIOTELEPHONE SYSTEM

George M. Korycan, Union, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 13, 1992, Ser. No. 928,591

Int. Cl.[5] H04B *1/38*

U.S. Cl. 455—89 **1 Claim**



1. A method for generating a voice or visual alert in response to a portable radiotelephone not being connected to a mobile radiotelephone power booster apparatus, the portable radiotelephone generating a connect signal, the method comprising the steps of:

applying power to the mobile radiotelephone power booster apparatus;

determining if the connect signal is present;

applying power to the portable radiotelephone if the connect signal is present;

generating the voice or visual alert if the connect signal is not present;

waiting a predetermined time after generating the voice or visual alert; and

repeating the voice or visual alert after the predetermined time has expired.

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PORTABLE RADIO COMMUNICATION EQUIPMENT

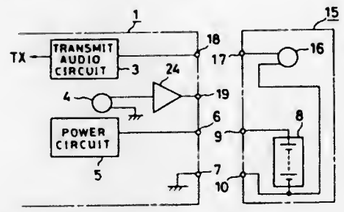
Kenichi Furuno, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 747,962

Claims priority, application Japan, Aug. 24, 1990, 2-88731[U]

Int. Cl.[5] H04B *1/38*

U.S. Cl. 455—89 **8 Claims**



1. A portable radio equipment, comprising:

a radio equipment main unit (1) containing

a transmit audio circuit (3) modulating a transmission speech signal and sending it to a transmitter section;

a first microphone (4) into which speech is input for generating the transmission speech signal; and

a power circuit (5) receiving power and distributing the power within the main unit;

a first power unit (11) structured so that it can be mounted to and removed from the radio equipment main unit, and containing

a short-circuiting member (12) connecting, when said first power unit is mounted to the radio equipment main unit, said first microphone to said transmit audio circuit; and

a power source (8A) providing, when said first power unit is mounted to the radio equipment main unit, power to said power circuit; and

a second power unit (15) structured so that it can be mounted to and removed from said radio equipment main unit, and containing

a second microphone (16) for generating said transmission speech signal in response to inputted speech, connected to said transmit audio circuit when said second power unit is mounted to said radio equipment main unit, and a power source (8B) providing power to said power circuit, when said second power unit is mounted to the radio equipment main unit;

each of said first power unit and said second power unit being selectively mountable to said radio equipment main unit to the exclusion of the other power unit.

5,287,555

POWER CONTROL CIRCUITRY FOR A TDMA RADIO FREQUENCY TRANSMITTER

Gregory P. Wilson, Lake Zurich; Donald B. Lemersal, Jr., Park Ridge; Rashid M. Osmani, Carol Stream; Dale G. Schwent, Hoffman Estates, and John C. Johnson, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1991, Ser. No. 733,797

The portion of the term of this patent subsequent to Mar. 9, 2000, has been disclaimed.

Int. Cl.[5] H03G *3/20*; H04B *1/04*

U.S. Cl. 455—115 **24 Claims**

1. Power control circuitry responsive to a transmit signal, level control signals, a timing signal defining a series of transmit time intervals, and a supply voltage from a signal source for maintaining during the transmit time intervals the average magnitude of a radio frequency (RF) output signal at a power level selected from a plurality of power levels by the level control signals, said supply voltage having a magnitude between a predetermined minimum voltage and a predetermined maximum voltage, said power control circuitry comprising:

a memory for storing the value of a gain control signal;

adjusting circuitry having variable gain for adjusting the transmit signal during the transmit time intervals substantially in proportion to the stored value of the gain control signal to produce an adjusted transmit signal, said adjusting circuitry substantially blocking the transmit signal at times other than those during the transmit time intervals;

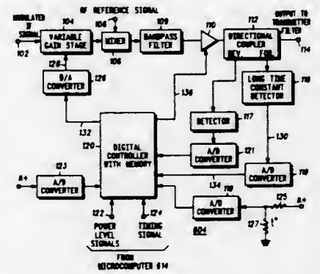
an amplifier coupled to the supply voltage for amplifying the adjusted transmit signal to produce the RF output signal;

an antenna coupled to the amplifier for transmitting the RF output signal;

a voltage detector for detecting the magnitude of the supply voltage;

a temperature detector for detecting the temperature of the power control circuitry;

a first power detector coupled to the RF output signal for generating a first output signal having a value related to the magnitude of the forward power of the RF output signal; and



control circuitry coupled to the first power detector for sampling the value of the first output signal substantially at the end of each transmit time interval, adjusting the value of the gain control signal in response to the difference between the sampled value of the first output signal and the selected power level, and storing the adjusted value of the gain control signal in the memory, said control circuitry further being coupled to the temperature detector for adjusting the gain control signal by a first predetermined amount substantially at the beginning of each transmit time interval when the detected temperature is greater than a predetermined temperature, and said control circuitry further being coupled to the voltage detector for adjusting the gain control signal by a second predetermined amount substantially at the beginning of at least the initial transmit time interval when the detected magnitude of the supply voltage is less than a predetermined magnitude.

5,287,556

INTERFERENCE REDUCTION USING AN ADAPTIVE RECEIVER FILTER, SIGNAL STRENGTH, AND BER SENSING

Stephen V. Cahill, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1990, Ser. No. 590,415

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—266 **5 Claims**

1. A radio receiver having a variable bandwidth received channel filter to pass a desired signal having a plurality of time slots and reject an undesired signal, the radio receiver comprising:

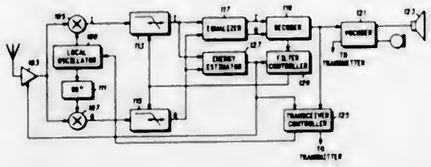
means for producing a first signal having a value related to the signal strength of the desired signal received by the receiver;

means for determining a bit error rate of the desired signal during a first one of the plurality of time slots;

means for comparing said first signal value to a predeter-

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mined threshold value and for comparing said determined bit error rate to a predetermined bit error rate and for producing an output signal when said first signal value crosses said predetermined threshold value and said determined bit error rate exceeds said predetermined bit error rate; and



means, responsive to said output signal, for adjusting the bandwidth of the variable bandwidth received channel selectivity filter for passage of a second one of the plurality of time slots.

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FM RECEIVER

Jens Hansen, Berlin, Fed. Rep. of Germany, assignor to H.u.C. Elektronik GmbH, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE89/00356, § 371 Date Oct. 30, 1990, § 102(e) Date Oct. 30, 1990, PCT Pub. No. WO89/12352, PCT Pub. Date Dec. 14, 1989

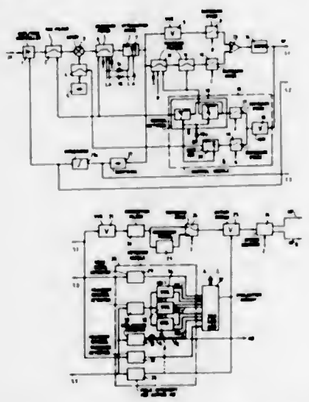
PCT Filed May 30, 1989, Ser. No. 601,745

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818751

The portion of the term of this patent subsequent to Aug. 31, 2000, has been disclaimed.

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—296 **25 Claims**



1. An improved FM receiver which includes an IF unit having a plurality of stages and an LF unit having a plurality of stages, the IF including a relatively narrowbanded IF filter having a controllable center frequency, wherein the improvement comprises:

at least one stage of the IF unit has a control input port and at least one stage of the LF unit has a control input port;

the FM receiver additionally includes a control moudle means, responsive to an LF signal, for controlling the center frequency of the IF filter, the control module means having at least one control input port; and

the FM receiver further includes a transmission characteristic change means for changing the signal transmission characteristic of at least one of the IF and LF units, said means including

a signal detector module (**28**) including detector circuits (**29** to **33**) for detecting values characteristic of receiving and interference states, with the inputs of said detector circuits each being connected with a stage of the IF or LF carrying a signal to be processed, and outputs for signals characteristic of receiving and interference states, respectively;

a signal processing unit (**600**) for the signals characteristic of receiving and interference states, respectively, including at least one threshold circuit whose input is connected with an output of the signal detector module; and

a signal output unit (**200, 400**) for outputting processed signals characteristic of receiving and interference states, respectively, as control signals to influence the processing characteristic of at least one of the IF and LF units, with inputs of the signal output unit being connected with outputs of the signal processing unit and the outputs of the signal output unit being connected with control input ports of the IF and LF unit, respectively,

wherein the control signals include at least one control signal which is supplied to the at least one control input port of the control module means and which influences the control of the IF filter.

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FM RECEIVER

Jens Hansen, Berlin, Fed. Rep. of Germany, assignor to H.u.C. Elektronik GmbH, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE89/00358, § 371 Date Oct. 30, 1990, § 102(e) Date Oct. 30, 1990, PCT Pub. No. WO89/12354, PCT Pub. Date Dec. 14, 1989

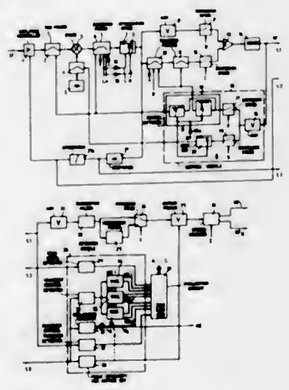
PCT Filed May 30, 1989, Ser. No. 601,746

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818753

The portion of the term of this patent subsequent to Aug. 3, 2000, has been disclaimed.

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—296 **9 Claims**



1. An improved FM receiver which includes an IF unit having a plurality of stages and an LF unit having a plurality of stages, the stages of the IF unit including a relatively narrowbanded IF filter having a controllable center frequency, wherein the improvement comprises:

at least one stage of the IF unit has a control unit port and at least one stage of the LF unit has a control input port; and

the FM receiver additionally includes transmission characteristic change means for changing the signal transmission characteristic of at least one of the IF and LF units, said means including

a signal detection module (**28**) including detector circuits (**29** to **33**) for detecting values characteristic of receiving and interference states, with the inputs of said detector circuits each being connected with a stage of the IF or LF unit carrying a signal to be processed, and outputs for signals characteristic of receiving and interference states, respectively,

a signal processing unit (**600**) for the signals characteristic of receiving and interference states, respectively, including at least one threshold circuit whose input is connected with an output of the signal detection module, and

a signal output unit (**200, 400**) for outputting processed signals characteristic of receiving and interference states, respectively, as control signals to influence the processing characteristic of at least one of the IF and LF units, with inputs of the signal output unit being connected with outputs of the signal processing unit and the outputs of the signal output unit being connected with control input ports of the IF and LF units, respectively, the signal output unit including signal linkage unit means for generating the control signals from the signals outputted by the signal processing unit in accordance with at least one truth table.

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DESIGN PATENTS

GRANTED FEB. 15, 1994

ERRATA

For CLASS	See PATENT NO.
012-416	D 344,180
025-124	D 344,332
026-041	D 344,348
024-112	D 344,355
006-629	D 344,386
003-312	D 344,387

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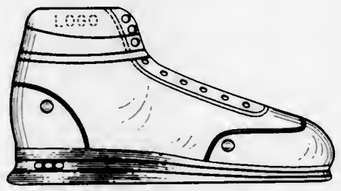
DESIGNS

FEBRUARY 15, 1994

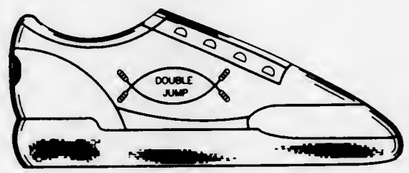
D 344,168

Patent Not Issued For This Number

344,169
CONVERTIBLE TENNIS SHOE
Arthur L. Brown, and Sue E. Brown, both of P.O. Box 493, Hitchcock, Tex. 77563
Filed May 1, 1991, Ser. No. 694,058
Term of patent 14 years
U.S. Cl. D2—902



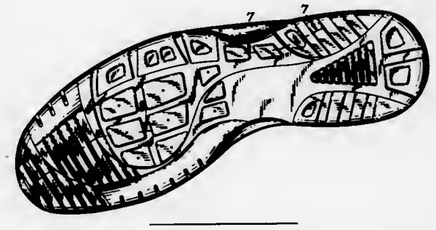
344,170
TENNIS SHOES
Roy B. Acoff, 2774 25th Ave., Oakland, Calif. 94601
Filed Nov. 18, 1991, Ser. No. 793,668
Term of patent 14 years
U.S. Cl. D2—897



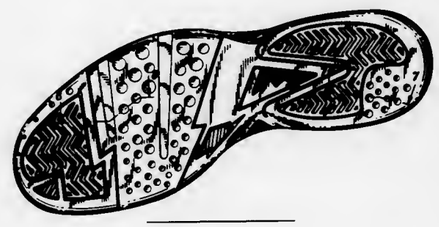
344,171
SHOE UPPER
Kristin N. Cotsidas, Manhattan Beach, Calif., assignor to L. A. Gear, Inc., Santa Monica, Calif.
Filed Jul. 24, 1992, Ser. No. 920,223
Term of patent 14 years
U.S. Cl. D2—970



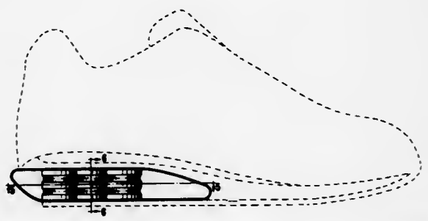
344,172
OUTSOLE
Dennis Dolinsky, Morristown, N.J., assignor to E. S. Originals, Inc., New York, N.Y.
Filed Dec. 14, 1992, Ser. No. 2,483
Term of patent 14 years
U.S. Cl. D2—957



344,173
FOOTWEAR OUTSOLE
Dennis Dolinsky, Morristown, N.J., assignor to E. S. Originals, Inc., New York, N.Y.
Filed Dec. 14, 1992, Ser. No. 2,484
Term of patent 14 years
U.S. Cl. D2—953



344,174
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,927
Term of patent 14 years
U.S. Cl. D2—964



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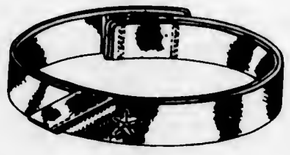
344,175
SOCK WITH A POCKET
Todd P. Decker, 32252 Concord Dr., Apt. 13-D, Madison Heights, Mich. 48071
Continuation of Ser. No. 484,200, Feb. 23, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,740
Term of patent 14 years
U.S. Cl. D2—992



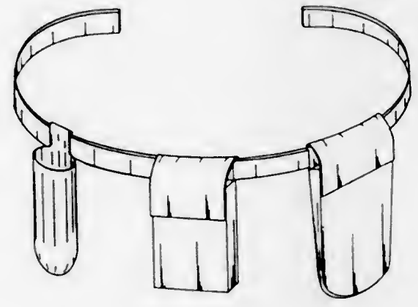
344,176
COMBINED HEADBAND AND PONYTAIL HOLDER
Gary D. Lawrence, Ft. Worth, Tex., assignor to Globestar, Inc., Fort Worth, Tex.
Filed Nov. 27, 1991, Ser. No. 800,568
Term of patent 14 years
U.S. Cl. D2—875



344,177
WRIST BAND
Mary J. H. Meanie, 2051 Alta Vista Drive, Ottawa, Ontario, Canada K1H 7L2 , and Mary M. Carton, 1995 Alta Vista Drive, Ottawa, Ontario, Canada K1H 7K9
Filed Oct. 24, 1991, Ser. No. 782,266
Claims priority, application Canada, Apr. 26, 1991, 26-04-91-1
Term of patent 14 years
U.S. Cl. D2—610



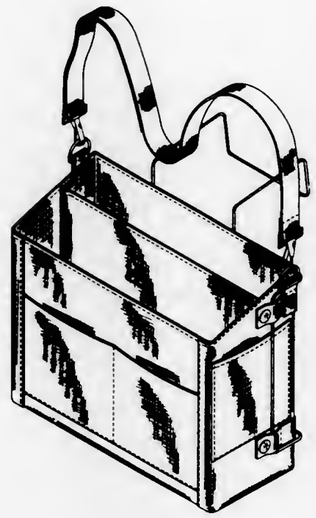
344,178
COMBINED BELT AND POUCHES
Kevin J. Zinck, 50 Phoenix Crescent, Lower Sackville, N.S., Canada
Filed May 14, 1991, Ser. No. 699,567
Claims priority, application Canada, Nov. 20, 1990, 20-11-90-8
Term of patent 14 years
U.S. Cl. D2—630



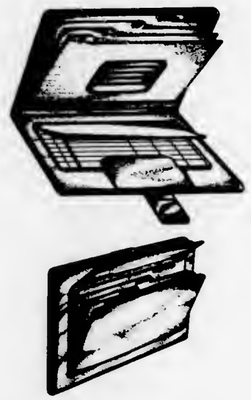
344,179
BOBBIN HOLDER
Paul L. Jacobsen, 11 N. Union St., Elgin, Ill. 60123
Filed Apr. 16, 1991, Ser. No. 685,708
Term of patent 14 years
U.S. Cl. D3—25



344,180
VEHICLE DOCUMENT ORGANIZER BAG
Christopher R. Garcia, R.R. 1, Box 16C, Adel, Iowa 50003
Filed Feb. 25, 1991, Ser. No. 659,930
Term of patent 14 years
U.S. Cl. D12—416



344,181
PARTITIONED WALLET AND COIN PURSE
Nereida Guzman-Rosario, 8 Davis Ct., Pemberton, N.J. 08068
Filed Jul. 31, 1992, Ser. No. 922,963
Term of patent 14 years
U.S. Cl. D3—249



344,182
PARTITIONED WALLET AND COIN PURSE
Nereida Guzman-Rosario, 8 Davis Ct., Pemberton, N.J. 08068
Filed Jul. 31, 1992, Ser. No. 922,964
Term of patent 14 years
U.S. Cl. D3—56



344,183
KEY FOB
Gregor J. M. Anderson, Ware, United Kingdom, assignor to Glaxo Group Limited, Greenford, United Kingdom
Filed Oct. 29, 1991, Ser. No. 784,816
Claims priority, application United Kingdom, Apr. 30, 1991, 2014463
The portion of the term of this patent subsequent to Jun. 22, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—207



344,184
BAG
R. Marshall Barker, 2170 Bankston Cir., Snellville, Ga. 30278
Filed Mar. 24, 1992, Ser. No. 856,940
Term of patent 14 years
U.S. Cl. D3—231

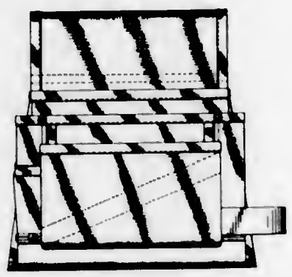


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344,185
DECORATIVE ACCESSORY FOR A CARRYING BAG
Vicente Vela, Madrid, Spain, assignor to Loewe, S.A., Madrid, Spain
Filed Apr. 13, 1992, Ser. No. 867,733
Claims priority, application Spain, Oct. 16, 1991, I.M.126.047
Term of patent 14 years
U.S. Cl. D3—318



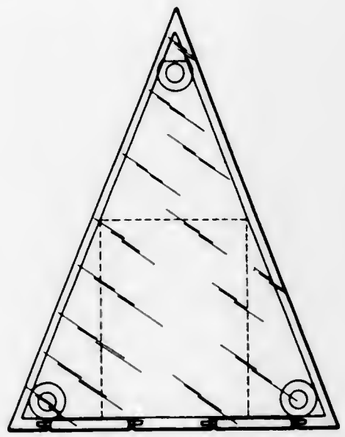
344,186
TEN POCKET NAIL AND TOOL CARRIER
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Aug. 9, 1991, Ser. No. 742,932
The portion of the term of this patent subsequent to Mar. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—228



344,187
TAPE MEASURE CLEANING DEVICE
James M. Haskins, 65 High Ridge Rd. #341, Stamford, Conn. 06902
Filed Apr. 24, 1992, Ser. No. 873,072
Term of patent 14 years
U.S. Cl. D4—120



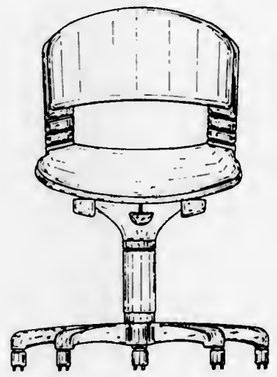
344,188
PICTURE FRAME
Cary Dominguez, and Leo Dominguez, both of 13230 SW. 25th Ter., Miami, Fla. 33175
Filed Aug. 20, 1992, Ser. No. 933,040
Term of patent 14 years
U.S. Cl. D6—303



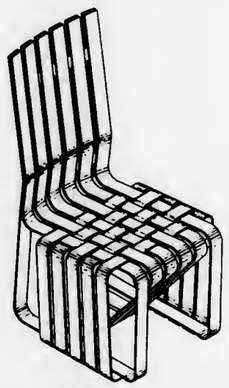
344,189
HIGHCHAIR
Douglas J. Golenz, Westminster; Roy E. Knoedler, Bouider, and T. Brent Freese, Westminster, all of Colo., assignors to Gerry Baby Products Company, Denver, Colo.
Filed Sep. 4, 1991, Ser. No. 754,704
Term of patent 14 years
U.S. Cl. D6—339



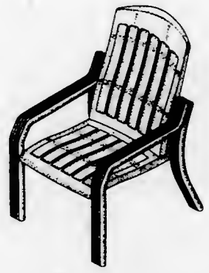
344,190
OFFICE CHAIR
Renato Fulcheri, Turin, Italy, assignor to Press S.p.A., Bra, Italy
Filed Jun. 14, 1991, Ser. No. 716,612
Claims priority, application Italy, Apr. 24, 1991, T091 O 000109
Term of patent 14 years
U.S. Cl. D6—366



344,191
DINING CHAIR
Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 587,369, Sep. 24, 1990, Pat. No. 334,488. This application Nov. 25, 1991, Ser. No. 797,475
The portion of the term of this patent subsequent to Apr. 6, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—369



344,192
ARM CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed May 1, 1992, Ser. No. 878,301
Term of patent 14 years
U.S. Cl. D6—370



344,193
ARM CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed May 1, 1992, Ser. No. 877,025
Term of patent 14 years
U.S. Cl. D6—371



344,194
CHAIR
Terence Gibbs, Grandview, N.Y., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed Jan. 31, 1991, Ser. No. 649,882
Term of patent 14 years
U.S. Cl. D6—373



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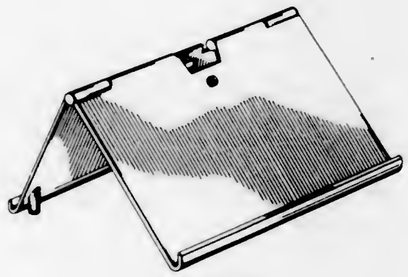
344,195
CHAIR
Robert S. Hare, 20-22 Ravine St., Kingston, N.Y. 12401
Filed Apr. 15, 1991, Ser. No. 685,020
Term of patent 14 years
U.S. Cl. D6—375



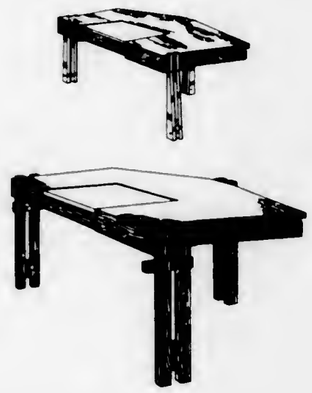
344,196
CHAIR
Warren H. Snodgrass, 2105 Shelter Bay Ave., Mill Valley, Calif. 94941-3024, and Charles P. Roth, San Rafael, Calif., assignors to Warren H. Snodgrass, Mill Valley, Calif.
Filed Apr. 24, 1992, Ser. No. 874,352
Term of patent 14 years
U.S. Cl. D6—380



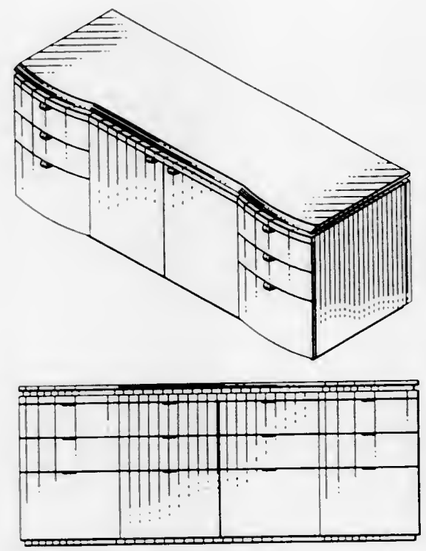
344,197
BOOK STAND
Jody I. Numbers, Tempe, Ariz., assignor to Smythe-Withcomb & Graeves, Ltd., Phoenix, Ariz.
Filed Mar. 16, 1992, Ser. No. 852,419
Term of patent 14 years
U.S. Cl. D6—419



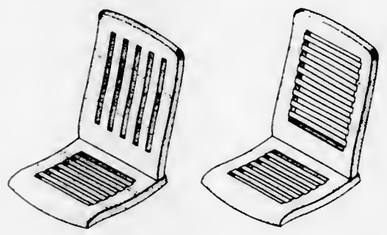
344,198
DESK
Edward D. Weinberger, 411 W. End Ave., New York, N.Y. 10024
Filed Jun. 1, 1990, Ser. No. 532,087
Term of patent 14 years
U.S. Cl. D6—428



344,199
CREDENZA
William I. Stephens, Hereford Township, Berks County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 797,767, Nov. 21, 1991. This application Jun. 21, 1993, Ser. No. 9,669
Term of patent 14 years
U.S. Cl. D6—446



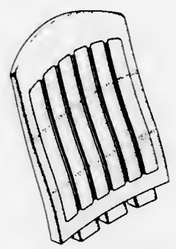
344,200
CHAIR SEAT AND BACK
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed Jan. 28, 1992, Ser. No. 827,953
Term of patent 14 years
U.S. Cl. D6—500



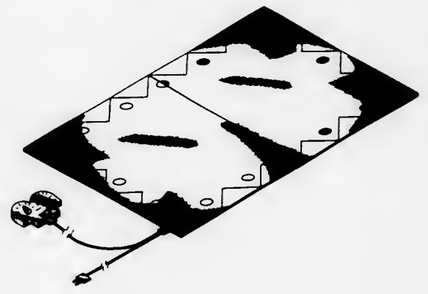
344,201
SIDE FRAME FOR AN ARM CHAIR
Larry A. Schwartz, Franklin, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed Sep. 16, 1991, Ser. No. 760,230
Term of patent 14 years
U.S. Cl. D6—501



344,202
BACK SUPPORT FOR A CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed May 15, 1992, Ser. No. 884,082
Term of patent 14 years
U.S. Cl. D6—502

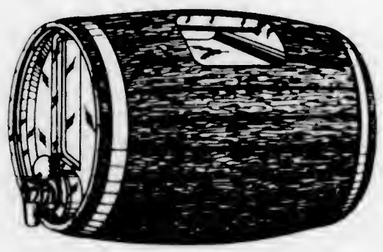


344,203
ELECTRIC BLANKET HAVING SEPARATE TOP AND BOTTOM CONTROLS
Ruth B. McElrath, 26900 E. Colfax, #394, Aurora, Colo. 80011
Filed May 20, 1991, Ser. No. 702,715
Term of patent 14 years
U.S. Cl. D6—603

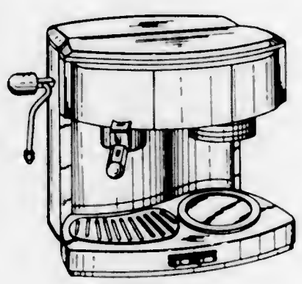


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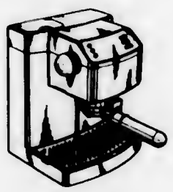
344,204
BEVERAGE DISPENSER
Robert M. Dixon, Darien, Conn., assignor to Dixon & Partners, Inc., Norwalk, Conn.
Filed Sep. 9, 1991, Ser. No. 756,752
Term of patent 14 years
U.S. Cl. D7—301



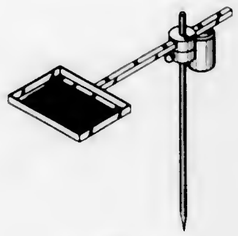
344,205
COMBINED ESPRESSO AND DRIP COFFEE MAKER
Philippe Saltet, Chateaufort, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Jun. 24, 1992, Ser. No. 903,665
Claims priority, application France, Dec. 24, 1991, 918,132
Term of patent 14 years
U.S. Cl. D7—309



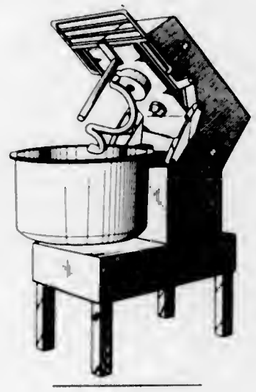
344,206
COFFEE MAKER
María P. A. Azpiri, Durango, Spain, assignor to Oficina de Investigacion Agrupada, S.A., Eibar, Spain
Filed Oct. 1, 1990, Ser. No. 591,010
Claims priority, application Spain, May 28, 1990, 122180
Term of patent 14 years
U.S. Cl. D7—309



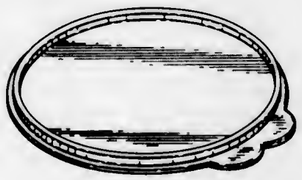
344,207
CAMPFIRE COOKER
Paul E. Bauman, 548 Archbald St., Scranton, Pa. 18504
Filed Jun. 14, 1991, Ser. No. 715,215
Term of patent 14 years
U.S. Cl. D7—336



344,208
SPIRAL KNEADER
Joel Musseau, Aubusson, France, assignor to Dito-Sama, Aubusson, France
Filed Dec. 12, 1991, Ser. No. 805,925
Claims priority, application France, Jul. 12, 1991, 914.416
Term of patent 14 years
U.S. Cl. D7—376



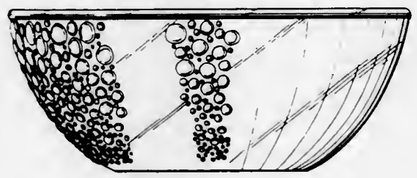
344,209
SEAL
Morison S. Cousins, Winter Park, and Brian L. Aiken, Orlando, both of Fla., assignors to Dart Industries, Inc., Deerfield, Ill.
Filed Mar. 13, 1992, Ser. No. 851,153
Term of patent 14 years
U.S. Cl. D7—392.1



344,210
BOWL AND SEAL
Morison S. Cousins, Winter Park, and Brian L. Aiken, Orlando, both of Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Mar. 13, 1992, Ser. No. 851,355
Term of patent 14 years
U.S. Cl. D7—538



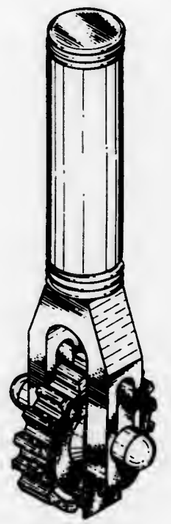
344,211
SALAD BOWL
Pierre-Andre Froger, Boigny S/Brionne, France, assignor to Les Verreries de Saint-Gobain, La Chapelle Saint-Mesmin, France
Filed Nov. 19, 1991, Ser. No. 794,213
Claims priority, application France, Jul. 19, 1991, 914568
Term of patent 14 years
U.S. Cl. D7—565



344,212
VACUUM JUG
David Morgan, London, England, assignor to Chia Jung Co., Ltd., Taipei, Taiwan
Filed Jun. 22, 1992, Ser. No. 894,803
Term of patent 14 years
U.S. Cl. D7—608



344,213
DOUGH PRESS
George N. Johns, 859 Baldwin St., Pittsburgh, Pa. 15234
Filed Jun. 25, 1992, Ser. No. 903,188
Term of patent 14 years
U.S. Cl. D7—672

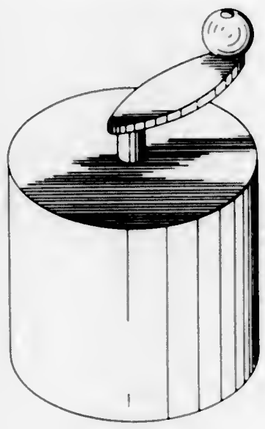


344,214
CONDIMENT MILL
Carsten Jorgensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Mar. 16, 1992, Ser. No. 851,363
Claims priority, application Denmark, Sep. 16, 1991, 939/91
Term of patent 14 years
U.S. Cl. D7—679



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344,215
CONDIMENT MILL
Carsten Jorgensen, Kriens, Switzerland, assignor to P1-Design AG, Triengen, Switzerland
Filed Mar. 16, 1992, Ser. No. 851,361
Claims priority, application Denmark, Sep. 16, 1991, 940/91
Term of patent 14 years
U.S. Cl. D7—679



344,216
HOTDOG/MARSHMALLOW ROASTER
Dennis L. Shepherd, and Pebbles D. Carpenter, both of R.R. #2 - Box 458, Lexington, Ind. 47138
Filed Aug. 5, 1992, Ser. No. 924,665
Term of patent 14 years
U.S. Cl. D7—683



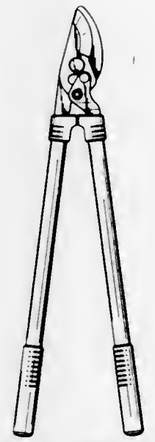
344,217
PLANT WATERING WAND
Ilan Weiss, 11 Ralph Ave., Copiague, N.Y. 11726
Filed May 18, 1992, Ser. No. 884,555
Term of patent 14 years
U.S. Cl. D8—2



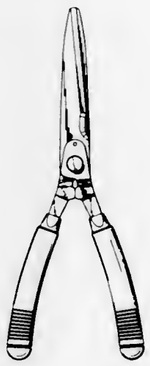
344,218
LOPPERS
Stephen Wensley, Llantwit Major; Alan S. Merrick, Cowbridge, and Andrew P. Brian, Bridgend, all of Wales, assignors to Fiskars Oy Ab, Helsinki, Finland
Filed Mar. 10, 1993, Ser. No. 5,719
Claims priority, application United Kingdom, Sep. 11, 1992, 2025664
Term of patent 14 years
U.S. Cl. D8—5



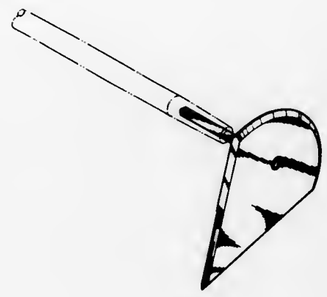
344,219
LOPPERS
Stephen Wensley, Llantwit Major; Alan S. Merrick, Cowbridge, and Andrew P. Brian, Bridgend, all of Wales, assignors to Fiskars Oy Ab, Helsinki, Finland
Filed Mar. 10, 1993, Ser. No. 5,714
Claims priority, application United Kingdom, Sep. 11, 1992, 2025663
Term of patent 14 years
U.S. Cl. D8—5



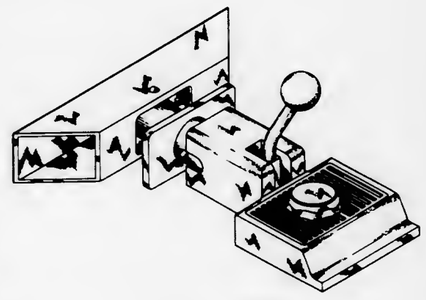
344,220
SHEARS
Stephen Wensley, Llantwit Major; Alan S. Merrick, Cowbridge, and Andrew P. Brian, Bridgend, all of Wales, assignors to Fiskars Oy Ab, Helsinki, Finland
Filed Mar. 10, 1993, Ser. No. 5,716
Claims priority, application United Kingdom, Sep. 11, 1992, 2025661
Term of patent 14 years
U.S. Cl. D8—5



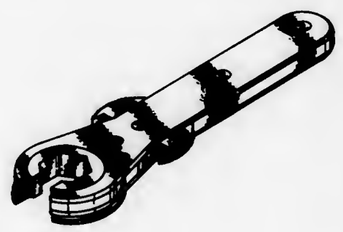
344,221
GARDEN HOE BLADE
Jimmy W. Allbright, 3943 Richmond, Odessa, Tex. 79762
Filed Mar. 5, 1993, Ser. No. 5,581
Term of patent 14 years
U.S. Cl. D8—11



344,222
CARPET STRETCHER
Michael J. White, 1705 12th St., Los Osos, Calif. 93402
Filed Feb. 6, 1992, Ser. No. 833,392
Term of patent 14 years
U.S. Cl. D8—15



344,223
OPEN END RATCHET WRENCH
Edward L. Kubicek, 237 Morris, DeSoto, Tex. 75115-4929
Filed Sep. 1, 1992, Ser. No. 937,661
Term of patent 14 years
U.S. Cl. D8—25

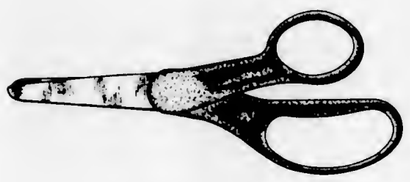


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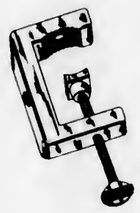
344,224
PLIERS
Joseph M. Imhoff, El Paso, Colo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 25, 1990, Ser. No. 603,187
Term of patent 14 years
U.S. Cl. D8—52



344,225
CHILDREN'S SCISSORS
Paul F. Hendon, Schofield, and Charles S. Ramsey, Wausau, both of Wis., assignors to Fiskars Oy Ab, Helsinki, Finland
Filed Jul. 13, 1992, Ser. No. 912,737
Term of patent 14 years
U.S. Cl. D8—57



344,226
RIBBED SIGN HOLDER CLAMP
John J. Glynn, Plymouth, Minn., assignor to Glynn Company, Inc., Minnetonka, Minn.
Continuation-in-part of Ser. No. 933,053, Aug. 19, 1992. This application Jul. 30, 1993, Ser. No. 11,217
Term of patent 14 years
U.S. Cl. D8—73



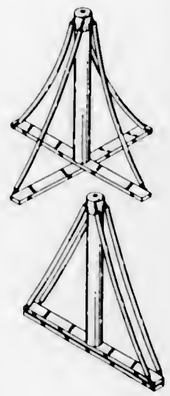
344,227
LETTER OPENER
Nick Hsu, 2nd Fl., 9-1, Lane 161, Hsing An Road Sec. 1, Taichuog, Taiwan
Filed Oct. 21, 1991, Ser. No. 780,266
Term of patent 14 years
U.S. Cl. D8—102



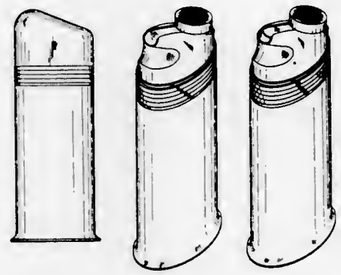
344,228
PULL FOR DRAWERS AND DOORS
Donald L. Woolf, 4051 Old Highway, Mariposa, Calif. 95338
Filed Nov. 14, 1991, Ser. No. 791,640
Term of patent 14 years
U.S. Cl. D8—320



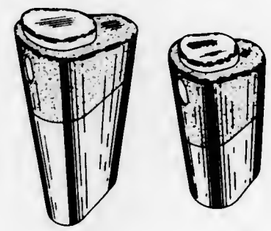
344,229
WIRE REEL
Lee E. Nelson, P.O. Box 2186, Kirkland, Wash. 98083
Filed Mar. 17, 1992, Ser. No. 854,970
Term of patent 14 years
U.S. Cl. D8—358



344,230
CAPPED PUMP DISPENSER
Peter Bertolini, Shelton, Conn., assignor to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.
Filed Apr. 22, 1992, Ser. No. 873,067
Term of patent 14 years
U.S. Cl. D7—300



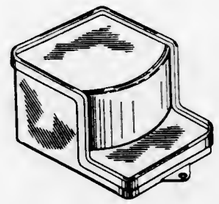
344,231
SPRAY BOTTLE
Mario Gagnon, Ville Mont-Royal, Canada, assignor to Ronor Innovations Inc., Montreal, Canada
Filed May 7, 1992, Ser. No. 879,267
Term of patent 14 years
U.S. Cl. D9—300



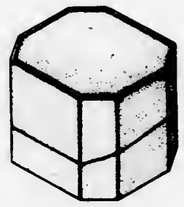
344,232
COMBINED BOTTLE AND DISPENSER
Richard C. Granville, Royal Oak; James C. Mourlas, St. Michaels, and Michael K. Patrick, Greensboro, all of Md., assignors to Celeste Industries Corporation, Easton, Md.
Filed Apr. 3, 1992, Ser. No. 863,727
Term of patent 14 years
U.S. Cl. D9—300



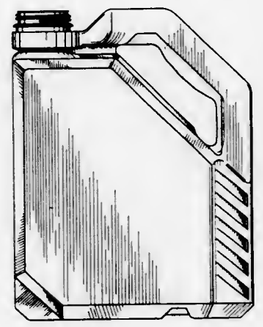
344,233
BASEBALL CAP CARRYING CASE
Terry M. Peters, 1515 Alta, Wichita, Kans. 67216
Filed Jul. 10, 1992, Ser. No. 911,309
Term of patent 14 years
U.S. Cl. D9—415



344,234
JEWELRY PRESENTATION CASE
Myril Kaplan, 125 E. 144th St., Bronx, N.Y. 10451
Filed Feb. 14, 1990, Ser. No. 479,753
Term of patent 14 years
U.S. Cl. D9—423



344,235
BOTTLE
Peter E. W. Bridger, Berkshire, England; John T. Klette, Annandale, Va.; Jule G. Lambeck, Wayne, Ill., and Elena Portoles, Alexandria, Va., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Jul. 31, 1991, Ser. No. 738,501
The portion of the term of this patent subsequent to Oct. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—528

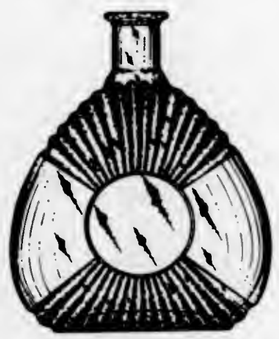


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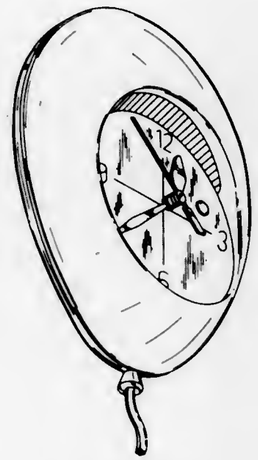
344,236
BOTTLE
Jack Drouaau, Cherves Richemont, France, assignor to Martell & Co., Cognac, France
Filed Oct. 30, 1992, Ser. No. 987
Term of patent 14 years
U.S. Cl. D9—545



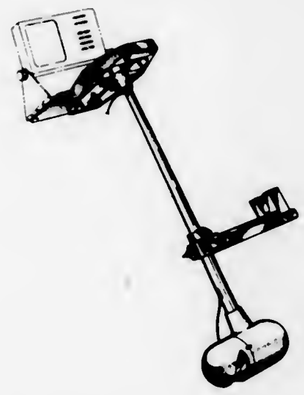
344,237
BOTTLE
Michel Dauscourt, Cognac, France, assignor to Camus La Grande Marque, Cognac, France
Filed Sep. 3, 1992, Ser. No. 939,634
Term of patent 14 years
U.S. Cl. D9—545



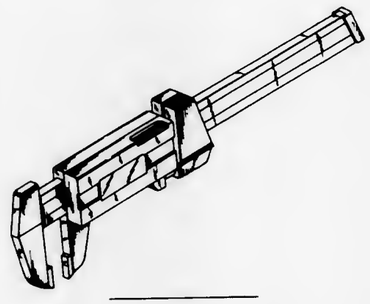
344,238
WALL CLOCK
Yitshak Oren, 35 Yehuda Hanassy Street, Herzlia 46448, Israel
Filed Apr. 25, 1991, Ser. No. 691,127
Claims priority, application Israel, Nov. 12, 1990, 17094
Term of patent 14 years
U.S. Cl. D10—7



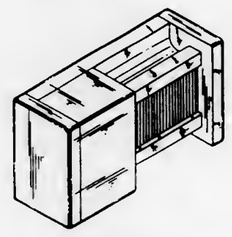
344,239
SONAR TRANSDUCER MOUNTING AND POINTING APPARATUS
Kenneth Suggs, 714 S. 3rd St., Rogers, Ark. 72756
Filed Sep. 14, 1992, Ser. No. 948,721
Term of patent 14 years
U.S. Cl. D10—65



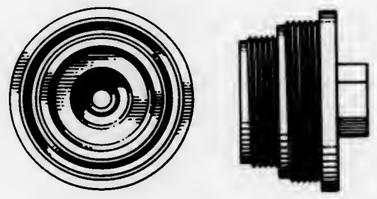
344,240
SLIDE CALIPER
Urs Schnyder, Bevilard, Switzerland, assignor to Melius S.A., Crissier, Switzerland
Filed Jun. 24, 1992, Ser. No. 903,666
Claims priority, application Hague, Jan. 8, 1992, DM/021640
Term of patent 14 years
U.S. Cl. D10—73



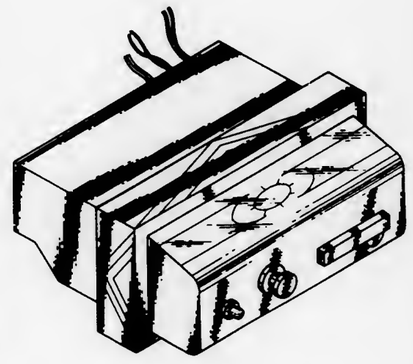
344,241
STATUS INDICATING DEVICE
Franklin Kaunitz, 28 N. Summit St., Southington, Conn. 06489
Filed Apr. 14, 1992, Ser. No. 868,584
Term of patent 14 years
U.S. Cl. D10—77



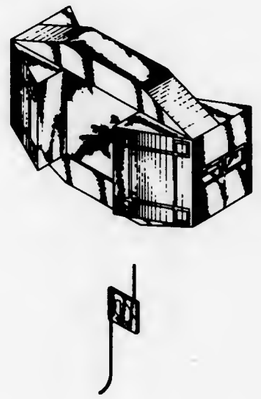
344,242
SKIMMER TEST PLUG
Gary K. Weise, Irvine; Gary H. Kermoian, Corona; Fredrick B. Reyhan, Diamond Bar, and Richard J. Kesl, Yorba Linda, all of Calif., assignors to Thermocraft Industries, Inc., Corona, Calif.
Filed Sep. 4, 1992, Ser. No. 940,712
Term of patent 14 years
U.S. Cl. D10—80



344,243
EMERGENCY VEHICLE WARNING SIGNAL FOR AUTOMOBILES
Frank Peraino, and Peraino Matthew, both of 32494 Knollwood, Warren, Mich. 48092
Filed Feb. 21, 1992, Ser. No. 838,007
Term of patent 14 years
U.S. Cl. D10—104

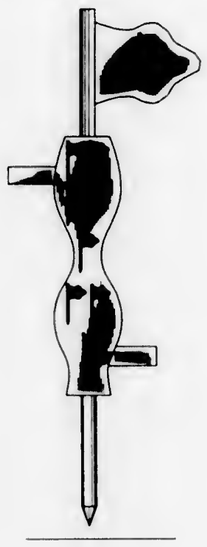


344,244
TOILET COVER AND SEAT POSITION SIGNAL COMBINED WITH A SENSOR
Wallace M. Jones, and Linda Jones, both of 12 Ash Ct., Hempstead, N.Y. 11550
Filed Dec. 7, 1990, Ser. No. 624,247
Term of patent 14 years
U.S. Cl. D10—104

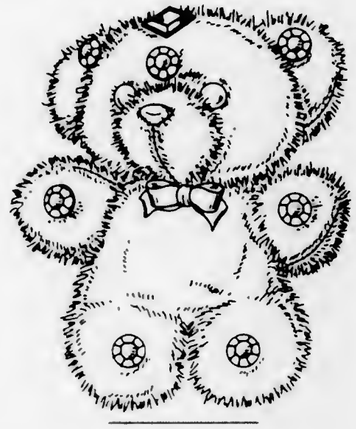


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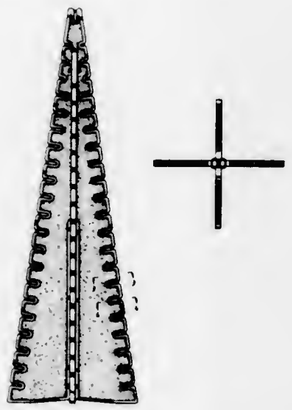
344,245
FLAG IT
William M. Eichelberger, 875 Piketown Rd., Harrisburg, Pa. 17112
Filed Oct. 22, 1992, Ser. No. 677
Term of patent 14 years
U.S. Cl. D10—109



344,247
BROOCH
Algirdars Milaknis, Ortenberg, Fed. Rep. of Germany, assignor to Milaknis GmbH, Fed. Rep. of Germany
Filed May 7, 1992, Ser. No. 880,354
Term of patent 14 years
U.S. Cl. D11—49



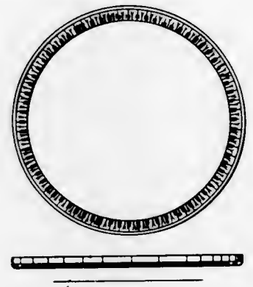
344,248
CHRISTMAS CARD HOLDER
Brook C. Wiggins, Houston, Tex., assignor to Flexease, Inc., Houstoe, Tex.
Filed Sep. 4, 1992, Ser. No. 940,728
Term of patent 14 years
U.S. Cl. D11—117



344,246
BICYCLE SAFETY REFLECTOR
Lloyd Craver, and Carol Craver, both of 6970 S. Platte Canyon Rd., Littleton, Colo. 80123
Filed Jan. 23, 1992, Ser. No. 824,465
Term of patent 14 years
U.S. Cl. D10—111

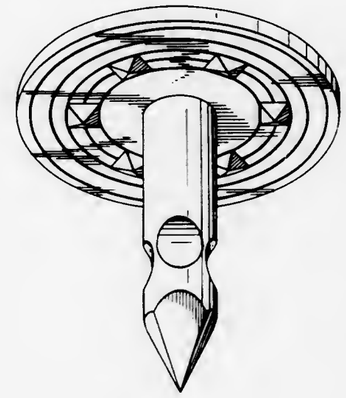


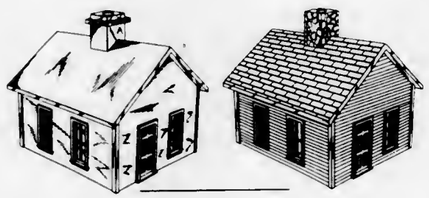
344,249
SUPPORT RING FOR A WREATH
Thomas Carmichael, P.O. Box 195, Tracyton, Wash. 98393
Filed Nov. 6, 1990, Ser. No. 611,094
Term of patent 14 years
U.S. Cl. D11—120



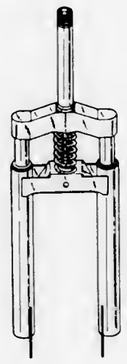
344,250
CHRISTMAS TREE STAND
Robert L. Johnson, and Judy A. Johnson, both of Kalamazoo, Mich., assignors to Judy's Enterprises, Inc., Kalamazoo, Mich.
Filed Sep. 28, 1992, Ser. No. 952,176
Term of patent 14 years
U.S. Cl. D11—130.1

344,252
STUD FOR USE IN SECURING A BUTTON
Leung Y. Choi, Hong Kong, Hong Kong, assignor to Ching Fung Metal Manufacturing Factory Ltd., Hong Kong
Filed Dec. 4, 1991, Ser. No. 802,442
Claims priority, application United Kingdom, Jun. 5, 1991, 2015128
Term of patent 14 years
U.S. Cl. D11—222





344,253
BICYCLE FRONT FORK
Stephen J. Bishop, Celina; Andrew J. Bean, Cincinnati; Timothy J. Dietz, Springboro; Michael D. Melton, Farmersville, and Ronald J. Schneider, Cleves, all of Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Oct. 15, 1992, Ser. No. 465
Term of patent 14 years
U.S. Cl. D12—118

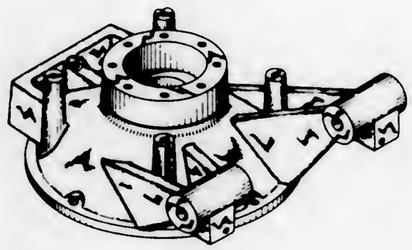


344,251
AFRICAN AMERICAN FLAG
Michael A. Holmes, 12066 Paramount Blvd., #N, Downey, Calif. 90242
Filed Aug. 14, 1992, Ser. No. 930,211
Term of patent 14 years
U.S. Cl. D11—176

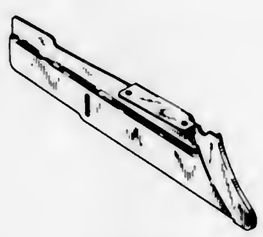


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344,254
BELL HOUSING COMPONENT FOR INDEPENDENT REAR SUSPENSION SYSTEM
Wade Zimmerman, 1212 Santa Paula St., Santa Paula, Calif. 93060
Filed Nov. 19, 1992, Ser. No. 1,628
Term of patent 14 years
U.S. Cl. D12—159



344,255
MOTORCYCLE BELT GUARD COVER
Douglas G. Opitz, West Bend, Wis., assignor to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Nov. 16, 1992, Ser. No. 1,520
Term of patent 14 years
U.S. Cl. D12—126



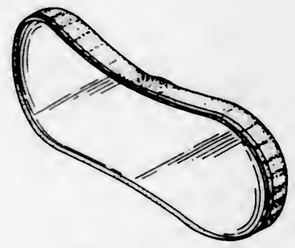
344,256
MOTORCYCLE TIRE
Shigehiko Suzuki, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jul. 19, 1991, Ser. No. 745,081
Claims priority, application Japan, Jan. 21, 1991, 3-1082
The portion of the term of this patent subsequent to Jun. 8, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—151



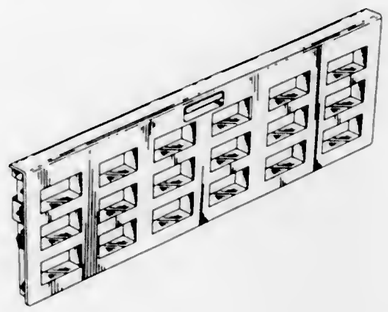
344,257
TRAILER HITCH COVER
Philip F. Eppard, Camp Springs, Md., assignor to Ad Options, Camp Springs, Md.
Filed Oct. 9, 1992, Ser. No. 308
Term of patent 14 years
U.S. Cl. D12—162



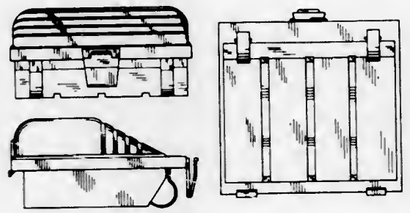
344,258
REARVIEW MIRROR
Sidney H. Magid, Da-An Road, Sec 1, 169 Lane No. 10 - 4F, Taipei, Taiwan
Filed May 18, 1992, Ser. No. 885,205
Term of patent 14 years
U.S. Cl. D12—187



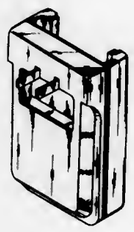
344,259
VENTILATED TAILGATED FOR PICKUP TRUCKS
Robert S. Long, 1407 W. Fifth St., Lee's Summit, Mo. 64063
Filed Jul. 1, 1992, Ser. No. 907,215
Term of patent 14 years
U.S. Cl. D12—196



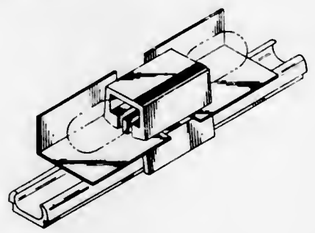
344,260
RECHARGEABLE BATTERY PACK
Steven G. Leiserson, 10845 Wheatlands Ave., Ste. C, Santee, Calif. 92071, and Helmut Ochner, Torrance, Calif., assignors to Steven G. Leiserson, Santee, Calif.
Division of Ser. No. 793,122, Nov. 18, 1991, Pat. No. 5,225,760.
This application Oct. 27, 1992, Ser. No. 876
Term of patent 14 years
U.S. Cl. D13—103



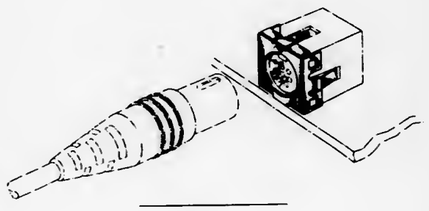
344,261
BATTERY CHARGER FOR A CELLULAR PHONE BATTERY
Hirotoshi Watanabe, Tokyo, Japan, assignor to Funai Electric Engineering Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 900,341
Claims priority, application Japan, Dec. 20, 1991, 3-38262
Term of patent 14 years
U.S. Cl. D13—107



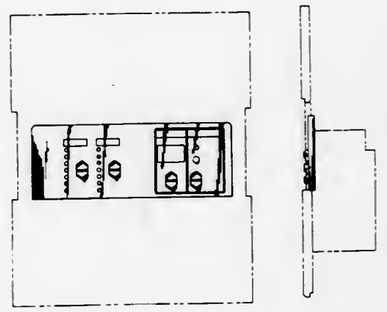
344,262
COMBINED LAMP SOCKET AND TRACK FOR LOW-VOLTAGE ACCENT LIGHT
Douglas R. Bray, Medford, N.J., assignor to Sea Gull Lighting, Riverside, N.J.
Filed Jan. 22, 1992, Ser. No. 825,717
Term of patent 14 years
U.S. Cl. D13—134



344,263
PLUG-RECEIVING METAL FITTING
Masami Seido, 4-3, Ikegami 5-chome, Ohta-ku, Tokyo, Japan
Filed May 13, 1992, Ser. No. 882,631
Claims priority, application Japan, Nov. 15, 1991, 3-34381
Term of patent 14 years
U.S. Cl. D13—154

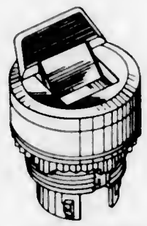


344,264
CONTROL PANEL FOR A LIGHTING CONTROL UNIT
Michael J. D'Aleo, Erwinna; Noel Mayo, Philadelphia; Joel S. Spira, Coopersburg; Craig D. DeBoeser, Allentown; Darryl W. Tacker, Fogelsville, and Simo P. Hakkarainen, Bethlehem, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Continuation-in-part of Ser. No. 743,244, Aug. 9, 1991, Pat. No. 5,191,265, and a continuation-in-part of Ser. No. 743,554, Aug. 9, 1991, and a continuation-in-part of Ser. No. 743,556, Aug. 9, 1991, and a continuation-in-part of Ser. No. 743,120, Aug. 9, 1991. This application Aug. 7, 1992, Ser. No. 927,937
Term of patent 14 years
U.S. Cl. D13—164

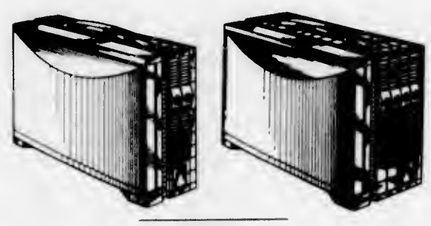


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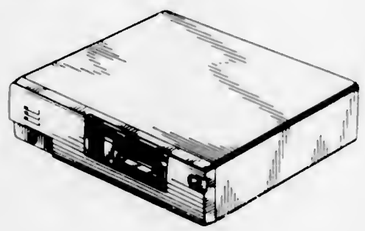
344,265
ELECTRICAL SWITCH ACTUATOR
Maurice Schaeffer, Strasbourg, France, assignor to BACO Constructions Electriques - Anct. Banmgarten S.A., France
Filed Jan. 13, 1992, Ser. No. 820,043
Term of patent 14 years
U.S. Cl. D13—169



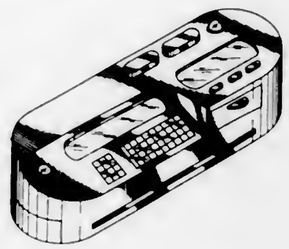
344,266
PORTABLE COMPUTER
Barry Wingate, San Jose, Calif., assignor to Dolch American Instruments, Inc., Milpitas, Calif.
Filed Oct. 17, 1991, Ser. No. 778,605
Term of patent 14 years
U.S. Cl. D14—100



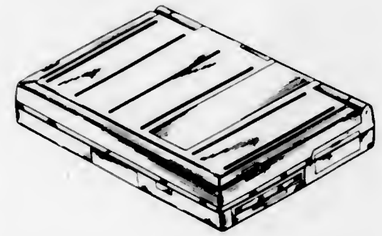
344,267
ARITHMETHIC CONTROL UNIT FOR AN ELECTRONIC COMPUTER
Hiroshi Ueda; Taneaki Chiba, both of Tokyo; Akiyo Iizuka, Niigata, and Kimio Nobeashi, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 25, 1991, Ser. No. 721,862
Claims priority, application Japan, Dec. 25, 1990, 2-43177
The portion of the term of this patent subsequent to Dec. 17, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—100



344,268
CHECK WRITING DEVICE
Theodore W. Mitchum, Rte. 1, Box 187, Ridge Spring, S.C. 29129
Filed Nov. 4, 1991, Ser. No. 786,975
Term of patent 14 years
U.S. Cl. D14—105



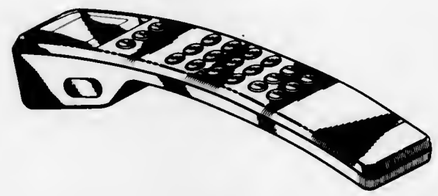
344,269
COMPUTER HOUSING
Peter K. Toedter, Trabuco Canyon; Kevin D. Simmons, San Diego, and Charles S. Curbbun, Leucadia, all of Calif., assignors to AST Research, Inc., Irvine, Calif.
Filed Aug. 18, 1992, Ser. No. 932,011
Term of patent 14 years
U.S. Cl. D14—106



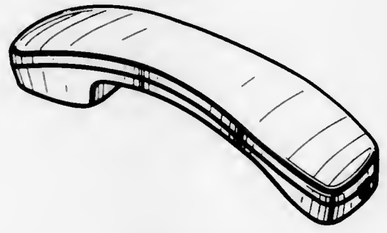
344,270
DISC DRIVE
Kenji Matsumoto, Houya; Hiroshi Takemoto, Huchuu, and Yoshiaki Sakai, Higashikurume, all of Japan, assignors to TEAC Corporation, Japan
Filed Apr. 13, 1992, Ser. No. 867,925
Claims priority, application Japan, Oct. 29, 1991, 3-32921
Term of patent 14 years
U.S. Cl. D14—109



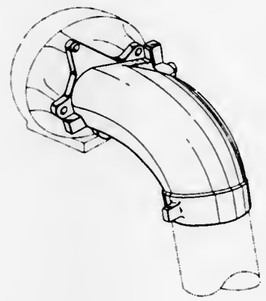
344,271
TELEPHONE HANDSET HOUSING
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 4, 1992, Ser. No. 940,707
Term of patent 14 years
U.S. Cl. D14—148



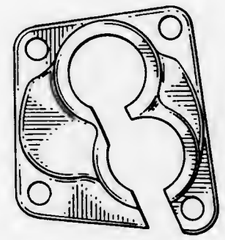
344,272
TELEPHONE HANDSET
Guy E. Desbarats, London, United Kingdom, assignor to British Telecommunications plc, London, United Kingdom
Filed Jan. 21, 1992, Ser. No. 823,424
Claims priority, application United Kingdom, Jul. 18, 1991, 2016066
Term of patent 14 years
U.S. Cl. D14—248



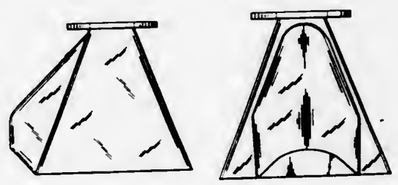
344,273
TURBO EXHAUST OUTLET
Steven R. Benson, 5919 S. 350 West, Murray, Utah 84107
Filed Jun. 2, 1992, Ser. No. 892,345
Term of patent 14 years
U.S. Cl. D15—5



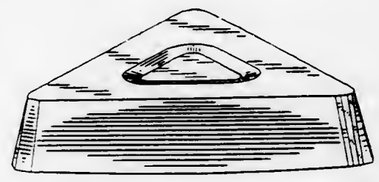
344,274
TAPPET BLOCK COVER
Ignatius J. Panzica, Morgan Hill, Calif., assignor to Custom Chrome, Inc., Morgan Hill, Calif.
Filed Sep. 23, 1991, Ser. No. 764,397
Term of patent 14 years
U.S. Cl. D15—5



344,275
TRANSPARENT HOOD FOR CREEL CLEANING SYSTEMS
Preston A. Dunn, 147 Lynn Haven Ave., Henderson, N.C. 27536
Filed Mar. 6, 1992, Ser. No. 846,445
Term of patent 14 years
U.S. Cl. D15—78

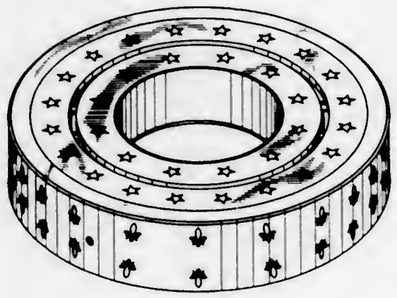


344,276
CUTTING INSERT FOR MILLING CUTTERS
Lars Markusson; Hans Lindberg, and Lars-Gunnar Wallstrom, all of Sandviken, Sweden, assignors to Sandvik AB, Sweden
Filed Jul. 17, 1992, Ser. No. 914,141
Claims priority, application Sweden, Jan. 17, 1992, 92-0113
Term of patent 14 years
U.S. Cl. D15—139

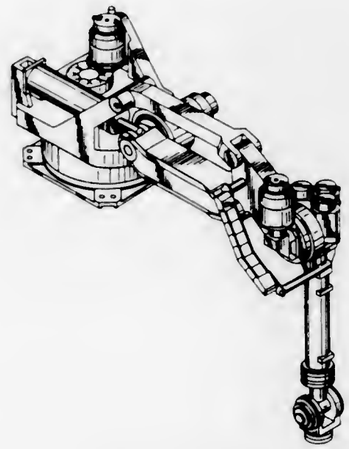


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344,277
DECORATIVE RING BEARING FOR VISIBLE USE APPLICATIONS
Nisan Kenig, 12415 Grove Meadow Dr., Stafford, Tex. 77477
Filed Nov. 29, 1990, Ser. No. 620,335
Term of patent 14 years
U.S. Cl. D15—143



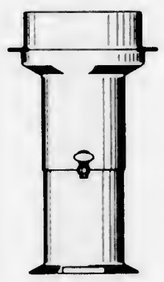
344,279
INDUSTRIAL ROBOT
Masataka Koyama, Hyogo, and Hirofumi Tanaka, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Jul. 13, 1992, Ser. No. 912,639
Claims priority, application Japan, Jan. 17, 1992, H.4-945
Term of patent 14 years
U.S. Cl. D15—199



344,280
INDUSTRIAL ROBOT
Masataka Koyama, and Shinji Fujita, both of Hyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Jul. 13, 1992, Ser. No. 912,640
Claims priority, application Japan, Jan. 17, 1992, 4-944
Term of patent 14 years
U.S. Cl. D15—199



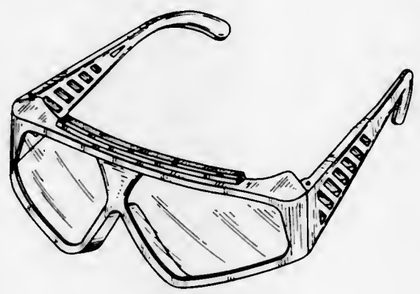
344,278
CONTAINER FOR COLLECTING OIL
Tommy D. Cole, 4606 Misty Valley W., Wichita Falls, Tex. 76310-2216
Filed Dec. 3, 1992, Ser. No. 2,091
Term of patent 14 years
U.S. Cl. D15—150



344,281
EYEGLASSES
James H. Jannard, San Juan Capistrano, and George Tackles, Lake Elsinore, both of Calif., assignors to Oakley, Inc., Irvine, Calif.
Filed Jan. 29, 1992, Ser. No. 825,491
Term of patent 14 years
U.S. Cl. D16—102



344,282
SAFETY SPECTACLES
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Dec. 4, 1992, Ser. No. 2,209
Term of patent 14 years
U.S. Cl. D16—102



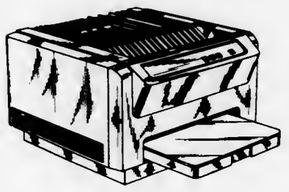
344,283
EYE COVERING
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Aug. 19, 1991, Ser. No. 747,256
Term of patent 14 years
U.S. Cl. D16—107



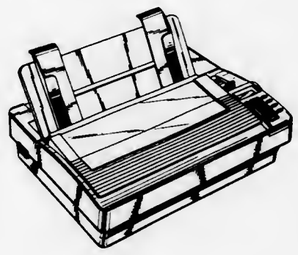
344,284
TONER BOTTLE FOR COPYING MACHINE
Noriyuki Suzuki, Yokohama, and Yutaka Ban, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 14, 1991, Ser. No. 744,787
Claims priority, application Japan, Feb. 19, 1991, 3-4162
Term of patent 14 years
U.S. Cl. D18—43



344,285
PRINTER
Midori Yonezawa; Masaharu Sawatani, both of Kanagawa, and Hisashi Nakamura, Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Sep. 6, 1991, Ser. No. 757,914
Claims priority, application Japan, Mar. 8, 1991, 3-6283
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—55

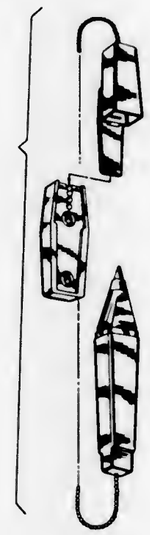


344,286
PRINTER FOR ELECTRONIC COMPUTER
Isao Sugimoto, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1992, Ser. No. 867,611
Claims priority, application Japan, Jan. 30, 1992, 4-2103
Term of patent 14 years
U.S. Cl. D18—55

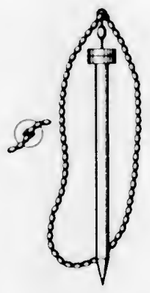


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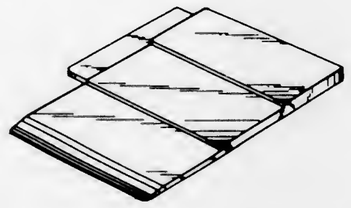
344,287
COMBINED PEN, CHAIN AND WALL-MOUNTABLE BRACKET THEREFOR
David B. Johnson, Rickmansworth, England, assignor to CDS & Co. Manufacturing Limited, England
Filed Jan. 3, 1992, Ser. No. 817,256
Claims priority, application United Kingdom, Jul. 3, 1991, 2015743
Term of patent 14 years
U.S. Cl. D19—36



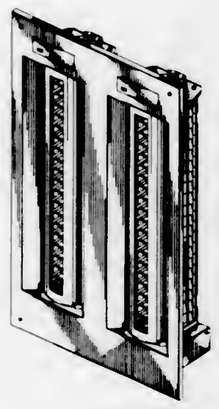
344,288
COMBINED MAGNETIC WRITING INSTRUMENT AND CHAIN
Daniel W. Dodson, 964 St. Andrews, Apt. 202, Wilmington, N.C. 28412
Filed Oct. 29, 1991, Ser. No. 786,914
Term of patent 14 years
U.S. Cl. D19—44



344,289
COLOR CHIP FOR A KIT TO OBJECTIVELY DEMONSTRATE COLOR CHARACTERISTICS
Kenneth G. Roberts, East Greenwich, R.I., assignor to International Color Standard, LP, East Greenwich, R.I.
Filed Nov. 18, 1992, Ser. No. 1,427
Term of patent 14 years
U.S. Cl. D19—62



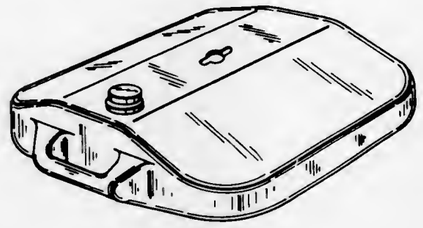
344,290
CARTRIDGE INPUT/OUTPUT STATION
Martin J. Marotti, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1992, Ser. No. 871,632
Term of patent 14 years
U.S. Cl. D20—8



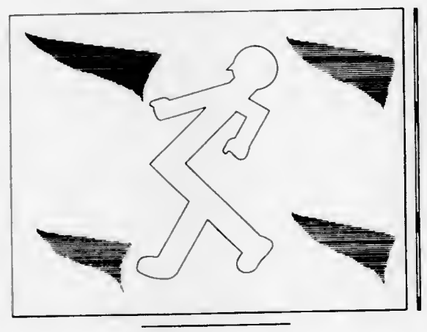
344,291
VERTICAL HOLDER FOR INSERTS
Karen E. Burgess, Branford, Conn., assignor to Gastro-Gnomes, Inc., West Hartford, Conn.
Filed Jul. 21, 1992, Ser. No. 918,391
Term of patent 14 years
U.S. Cl. D20—40



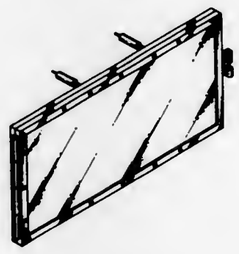
344,292
PORTABLE BASE FOR A POST SUPPORTED SIGN
James M. Dinan, Irvington, N.Y., and Paul J. Dinan, Westfield, N.J., assignors to Dinaco, Inc., Irvington-on-Hudson, N.Y.
Filed May 8, 1992, Ser. No. 882,095
Term of patent 14 years
U.S. Cl. D20—41



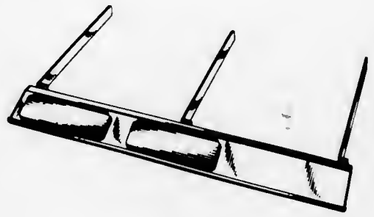
344,293
INSERT FOR EXIT SIGNS
Joseph S. Wegrzyn, Stratford, Conn., assignor to General Signal Corporation, Stamford, Conn.
Filed May 14, 1992, Ser. No. 883,411
Term of patent 14 years
U.S. Cl. D20—42



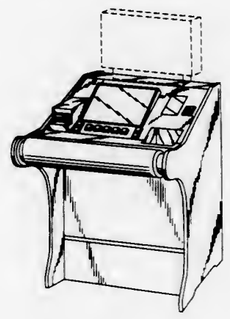
344,294
SIGN HOLDER
Rodney A. Foust, 1001 H Pineland St., Greensboro, N.C. 27407
Filed Mar. 6, 1992, Ser. No. 845,473
Term of patent 14 years
U.S. Cl. D20—42



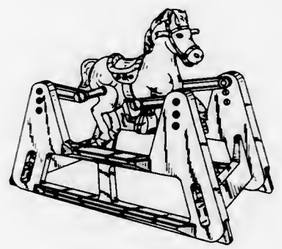
344,295
ADVERTISING DISPLAY PANEL FOR SHELVING
Richard Markson, Goshen, N.Y., assignor to Markson Rosenthal & Company, Edgewater, N.J.
Filed Sep. 24, 1992, Ser. No. 951,696
Term of patent 14 years
U.S. Cl. D20—43



344,296
SLANT-TOP GAMING MACHINE
Linn A. McKay, Henderson; Michael O. Parham, and Frank C. DeSimone, both of Las Vegas, all of Nev., assignors to Sigma Game, Inc., Las Vegas, Nev.
Filed Jun. 12, 1992, Ser. No. 904,521
Term of patent 14 years
U.S. Cl. D21—37

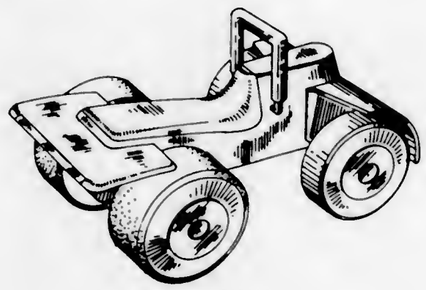


344,297
ROCKING HORSE
James D. Amburgey, Richardson, and Peter C. Hill, Dallas, both of Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,460
Term of patent 14 years
U.S. Cl. D21—66

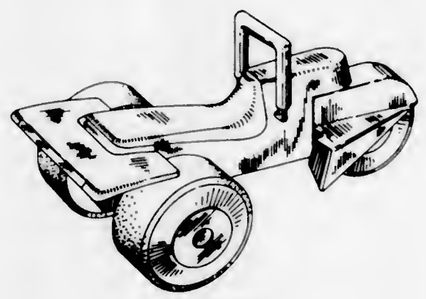


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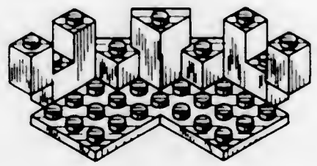
344,298
RIDING TOY
Robert L. Gault, 7317 Tanbark Way, Raleigh, N.C. 27615
Filed Sep. 24, 1992, Ser. No. 948,791
Term of patent 14 years
U.S. Cl. D21—76



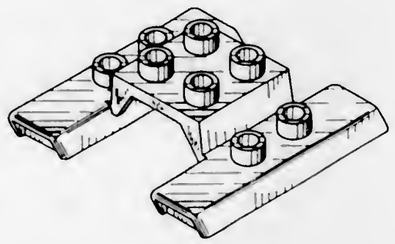
344,299
RIDING TOY
Robert L. Gault, 7317 Tanbark Way, Raleigh, N.C. 27615
Filed Sep. 24, 1992, Ser. No. 948,801
Term of patent 14 years
U.S. Cl. D21—76



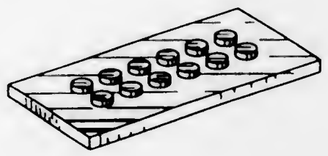
344,300
ELEMENT FOR A TOY BUILDING SET
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,906
Term of patent 14 years
U.S. Cl. D21—108



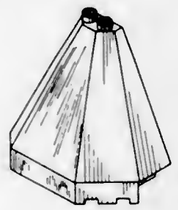
344,301
ELEMENT FOR A TOY BUIDLING SET
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,896
Term of patent 14 years
U.S. Cl. D21—108



344,302
ELEMENT FOR A TOY BUIDLING SET
Torben Plagborg, Grindsted, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,898
Term of patent 14 years
U.S. Cl. D21—108



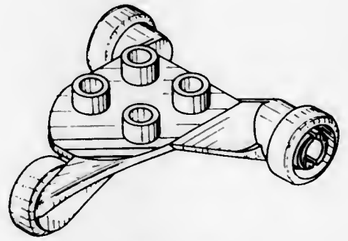
344,303
ELEMENT FOR A TOY BUILDING SET
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,904
Term of patent 14 years
U.S. Cl. D21—108



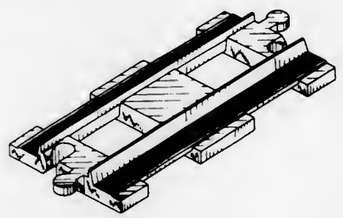
344,304
COMBINED MONORAIL TRAIN AND TRACK TOY
Richard J. Hemmelsbach, 17530 N. Shore Estates, Spring Lake, Mich. 49456
Filed Mar. 24, 1992, Ser. No. 856,950
Term of patent 14 years
U.S. Cl. D21—129



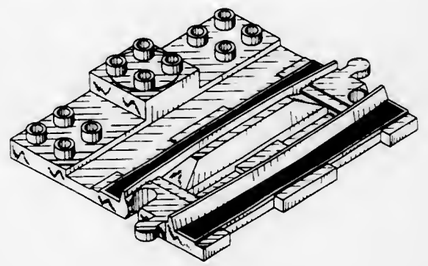
344,305
WHEEL SET FOR A TOY VEHICLE
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,907
Term of patent 14 years
U.S. Cl. D21—141



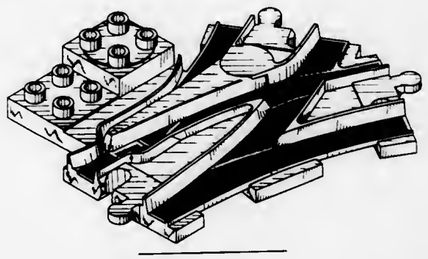
344,306
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,799
Term of patent 14 years
U.S. Cl. D21—143



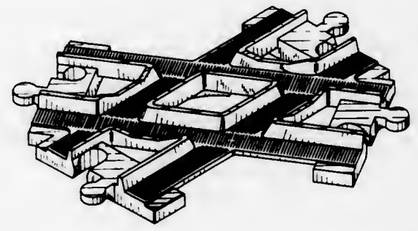
344,307
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,816
Term of patent 14 years
U.S. Cl. D21—143



344,308
SWITCH FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,809
Term of patent 14 years
U.S. Cl. D21—143

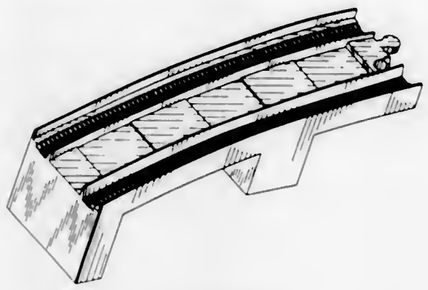


344,309
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,821
Term of patent 14 years
U.S. Cl. D21—143

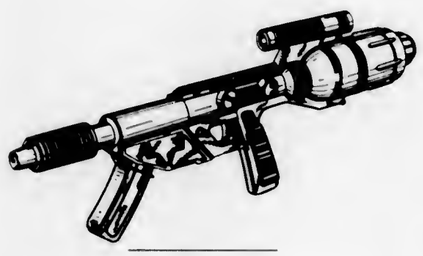


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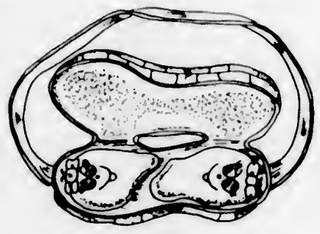
344,310
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Kobenhavn, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,916
Term of patent 14 years
U.S. Cl. D21—143



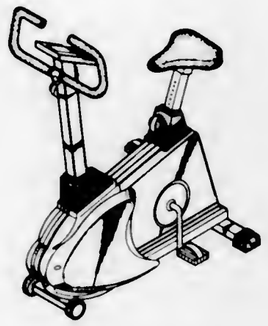
344,311
WATER RIFLE
Woug S. Liu, Kowloon, Hong Kong, assignor to Arco Toys, Ltd., Kowloon, Hong Kong
Filed Sep. 24, 1992, Ser. No. 951,695
Term of patent 14 years
U.S. Cl. D21—147



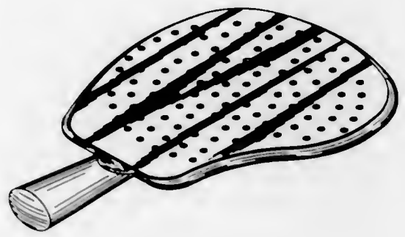
344,312
COMBINED PEANUT DOLLS AND CASE
Keith B. Lamb, 5421 - 10th Ave. N/W, Salmon Arm, B.C., Canada V1E 4M2
Filed Feb. 11, 1991, Ser. No. 657,301
Term of patent 14 years
U.S. Cl. D21—155



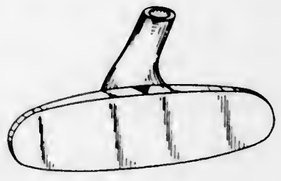
344,313
EXERCISE BIKE
Mu-Chuan Wu, No. 23, Hai Huan Street, Tainan, Taiwan
Filed Dec. 17, 1991, Ser. No. 810,022
Term of patent 14 years
U.S. Cl. D21—194



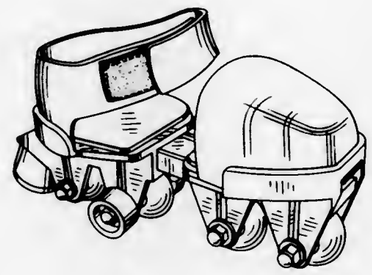
344,314
TABLE TENNIS PADDLE
Jean-Pierre Malkoun, R.R. 1 - Box 400, Honesdale, Pa. 18431
Filed Oct. 7, 1992, Ser. No. 203
Term of patent 14 years
U.S. Cl. D21—213



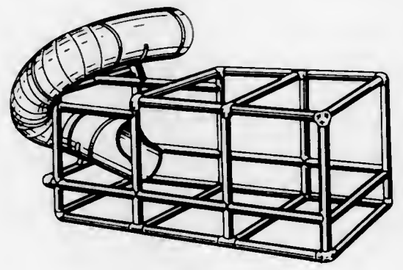
344,315
PUTTER HEAD
William J. Kelley, 116 Claridge Dr., Coraopolis, Pa. 15108
Filed Nov. 13, 1992, Ser. No. 1,504
Term of patent 14 years
U.S. Cl. D21—219



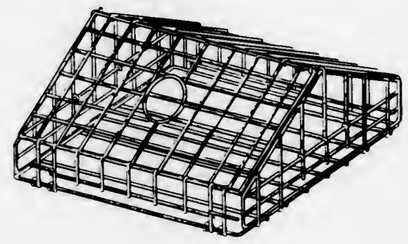
344,316
ROLLER SKATE
Robert Gertler, 23-10A Cpl. Kennedy Ave., Bayside, N.Y. 11360
Filed May 21, 1991, Ser. No. 703,352
Claims priority, application United Kingdom, Nov. 28, 1990, 2011337
Term of patent 14 years
U.S. Cl. D21—226



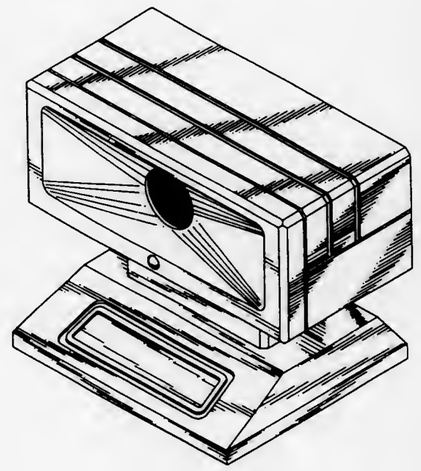
344,317
COMBINED SLIDE AND PLAY ENCLOSURE
Richard J. Petersheim, Charlotte, N.C., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Feb. 11, 1992, Ser. No. 834,506
Term of patent 14 years
U.S. Cl. D21—244



344,318
CRAB TRAP
Kenneth Steinman, Birmingham, Mich., assignor to Walker International, Inc., Detroit, Mich.
Filed May 6, 1992, Ser. No. 879,221
Term of patent 14 years
U.S. Cl. D22—121



344,319
ULTRASONIC MOUSE REPELLER
Michael Liu, Fl. 4, No. 59-1,Tsao Di Wei, Shen Keng Hsiang, Taipei Hsien, Taiwan
Filed Jan. 14, 1992, Ser. No. 820,389
Term of patent 14 years
U.S. Cl. D22—120

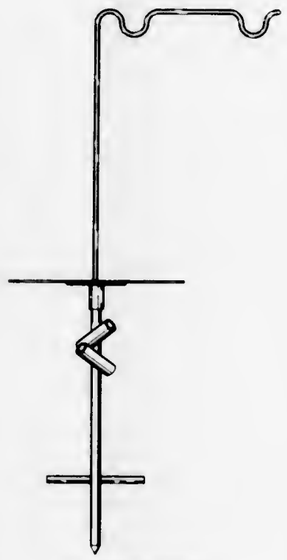


344,320
INSECT SWATTER
Donald A. Zepp, R.R. 4, Box 33 Golfclub Rd., Sewell, N.J. 08080
Filed Apr. 11, 1991, Ser. No. 683,654
Term of patent 14 years
U.S. Cl. D22—124

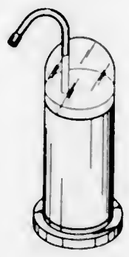


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344,321
COMBINED FISHING ROD HOLDER, LANTERN HANGER AND TABLE
Boyd DeWitt, P.O. Box 373, Edgerton, Wyo. 82635
Filed Oct. 9, 1992, Ser. No. 261
Term of patent 14 years
U.S. Cl. D22—148



344,322
WATER FILTER
Stewart Kasner, 2997 Lakewood La., Hollywood, Fla. 33021, and Bram Wiseberg, 6552 Kildare, Montreal, Quebec, Canada H3W 1B5
Filed Oct. 9, 1991, Ser. No. 773,305
Term of patent 14 years
U.S. Cl. D23—209



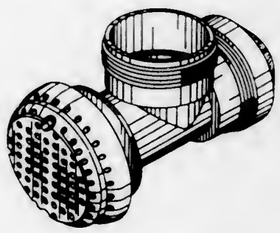
344,323
CONTAINER
David Raffo, Chester, England, assignor to Nomix-Chipman Limited, Bristol, United Kingdom
Filed May 23, 1991, Ser. No. 704,442
Claims priority, application United Kingdom, Dec. 4, 1990, 2011506
Term of patent 14 years
U.S. Cl. D23—225



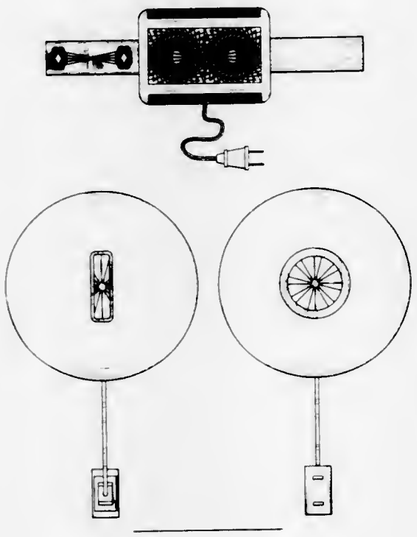
344,324
WATER FAUCET
Hans-Werner Mattis, Darmstadt, Fed. Rep. of Germany, assignor to Knebel & Rottger GmbH & Co., Iserlohn, Fed. Rep. of Germany
Filed Aug. 22, 1991, Ser. No. 748,894
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1991, M 91 01 309.7
Term of patent 14 years
U.S. Cl. D23—238



344,325
COMBINED SUCTION ASSEMBLY AND LIGHT FOR A WHIRLPOOL BATH
Philip E. Chalberg, Costa Mesa, Calif., assignor to Hydrabaths, Inc., Santa Ana, Calif.
Filed Sep. 3, 1991, Ser. No. 753,681
Term of patent 14 years
U.S. Cl. D23—261



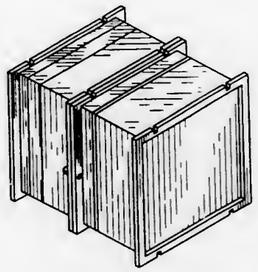
344,326
AIR CLEANER FOR A BATHROOM
David E. Smith, and Nina L. Smith, both of 14089 N. Elms Rd., Montrose, Mich. 48457
Filed Jun. 22, 1992, Ser. No. 902,048
Term of patent 14 years
U.S. Cl. D23—364



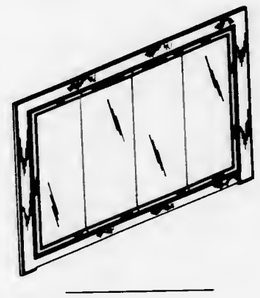
344,327
SCENTED AIR FILTER
Constance G. Tavasso, Rte. 1, Box 489, Greenville, N.C. 27834
Filed Jan. 29, 1993, Ser. No. 4,191
Term of patent 14 years
U.S. Cl. D23—365



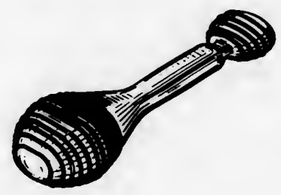
344,328
AIR FILTER CARTRIDGE
Michael D. Price, 1615 Quiet Hills Dr., Oceanside, Calif. 92056
Filed Aug. 12, 1991, Ser. No. 743,587
Term of patent 14 years
U.S. Cl. D23—365



344,329
FIREPLACE SCREEN UNIT
Amit V. Patel, 1636 W. 135th St., Gardena, Calif. 90249
Filed Sep. 28, 1992, Ser. No. 951,710
Term of patent 14 years
U.S. Cl. D23—406

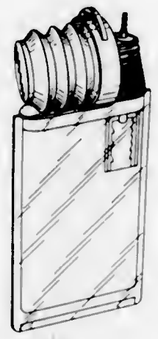


344,330
SOFTGEL CAPSULE
Greg Schurig, 2725 Scherer Dr., St. Petersburg, Fla. 33616-1016, assignor to R. P. Scherer Corporation, Troy, Mich.
Filed Apr. 24, 1992, Ser. No. 873,746
Term of patent 14 years
U.S. Cl. D24—104

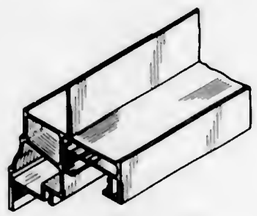


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344,331
SUCTION DRAINAGE RECEPTACLE
Alexander Poloyko, Morton Grove; Jeffrey T. Williams, Round Lake Beach; Paul H. Hubbard, Chicago, and Lev Melinyshyn, Buffalo Grove, all of Ill., assignors to Uresil Corporation, Skokie, Ill.
Filed Mar. 3, 1992, Ser. No. 844,698
Term of patent 14 years
U.S. Cl. D24—118



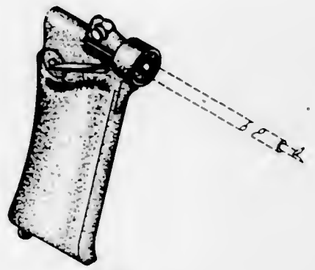
344,332
FRAME HEAD JAMB
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,817
Term of patent 14 years
U.S. Cl. D25—124



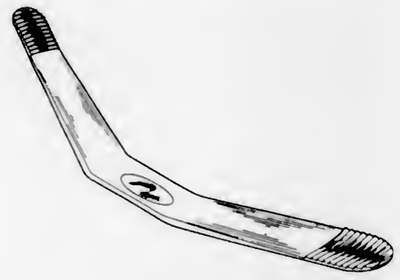
344,333
PANTY LINER
Esther Paddock, 24903 Moulton Fkwy. #426, Laguna Hills, Calif. 92653-6427
Filed Oct. 7, 1991, Ser. No. 772,018
Term of patent 14 years
U.S. Cl. D24—125



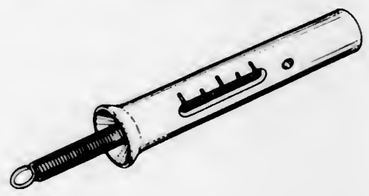
344,334
SURGICAL INSTRUMENT ACTUATOR HANDLE
David H. Dulebohn, Tonka Bay; Arlen L. Johnson, Maple Grove, both of Minn.; Mark K. Dana, and Sharon F. Dana, both of Atlanta, Ga., assignors to Davinci Medical, Inc., Plymouth, Minn.
Filed Apr. 15, 1992, Ser. No. 869,034
Term of patent 14 years
U.S. Cl. D24—133



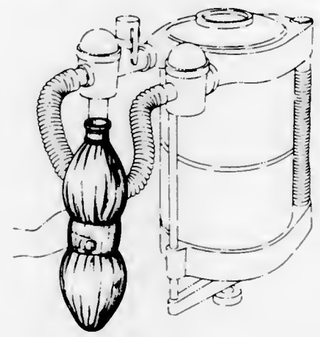
344,335
TONGUE DEPRESSOR
Benjamin Elisha, 248 Dandenong Road, East St. Kilda, Victoria 3183, Australia
Filed May 19, 1992, Ser. No. 885,561
Term of patent 14 years
U.S. Cl. D24—136



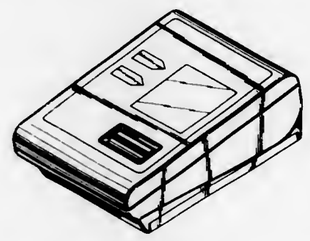
344,336
BENDING TOOL FOR SUCTION TUBE FOR DENTAL AND SURGICAL USE
Ernst Orsing, Missionsgatan 12, S-253 70 Helsingborg, Sweden
Filed Apr. 13, 1992, Ser. No. 868,373
Term of patent 14 years
U.S. Cl. D24—152



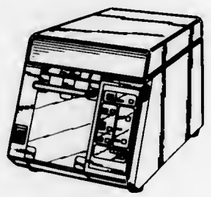
344,337
SURGICAL BREATHING BAG
Michael J. Mayer, 1419 Gregory Apt. 13, Ypsilanti, Mich. 48197
Filed May 5, 1992, Ser. No. 878,504
Term of patent 14 years
U.S. Cl. D24—164



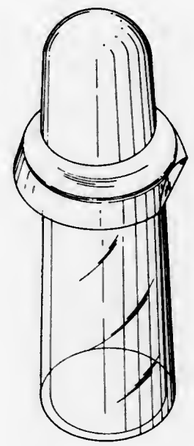
344,338
ELECTRIC SPHYGMOMANOMETER
Hideo Yoshikawa, Tokyo, and Koji Sanaka, Fuji, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1992, Ser. No. 838,089
Claims priority, application Japan, Aug. 23, 1991, 3-25074
Term of patent 14 years
U.S. Cl. D24—165



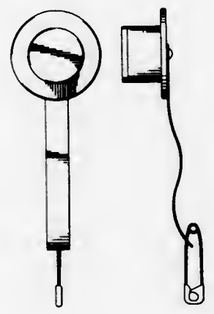
344,339
AUTOMATIC BLOOD SEPARATOR
Masashi Yoshikawa, Tokyo; Nobukazu Tanokura, Fujinomiya; Fumiaki Inaba, and Noriaki Hirano, both of Fuji, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1992, Ser. No. 838,146
Claims priority, application Japan, Aug. 23, 1991, 3-25078
Term of patent 14 years
U.S. Cl. D24—169



344,340
BABY BOTTLE
Jean-Paul Allegre, Saint Etienne, France, assignor to Allegre Puericulture Hygiene S.A., Saint Etienne, France
Filed Feb. 20, 1992, Ser. No. 838,086
Claims priority, application Int'l Pat. Institute, Aug. 22, 1991, DM/020462
Term of patent 14 years
U.S. Cl. D24—197

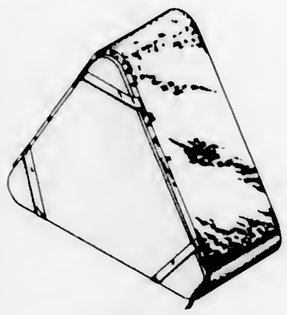


344,341
BULBOCAVERNOSUS MUSCLE TRAINER FOR STRENGTHENING AND TONING THE VAGINAL-SPHINCTER MUSCLE
Robert H. Smith, Hood River, Oreg., assignor to Helen Claire Smith, Hood River, Oreg.
Filed Jun. 30, 1992, Ser. No. 906,541
Term of patent 14 years
U.S. Cl. D24—200

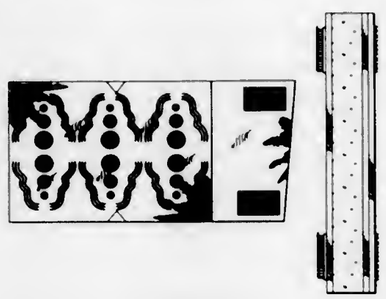


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344,342
HEATING PAD
Stanley J. Raljaki, 72 Cooper St., Pringle, Pa. 18704
Filed Nov. 15, 1991, Ser. No. 792,748
Term of patent 14 years
U.S. Cl. D24—206



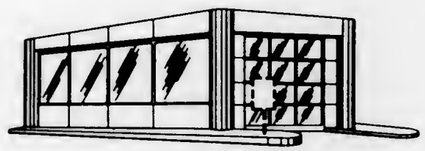
344,343
THERMAL WRAP
James H. McNew, 715 Ethel St., Poplar Bluff, Mo. 63901
Filed Feb. 7, 1992, Ser. No. 831,300
Term of patent 14 years
U.S. Cl. D24—206



344,344
CONTOURED VIBRATOR
Terry E. Nish, and Cecil R. McCray, both of Salt Lake City, Utah, assignors to Servi-Tech, Inc., Salt Lake City, Utah
Filed Jun. 19, 1992, Ser. No. 901,461
Term of patent 14 years
U.S. Cl. D24—215



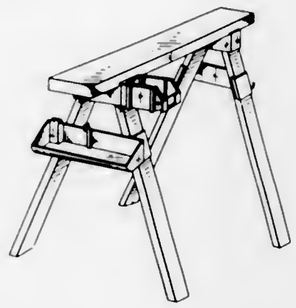
344,345
CAR WASH BUILDING
Alan E. Goldberg, New Canaan, Conn., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Jan. 10, 1992, Ser. No. 819,526
Term of patent 14 years
U.S. Cl. D25—34



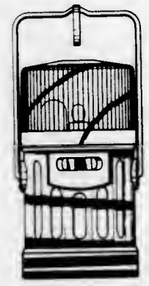
344,346
DEER STAND
Joseph E. Lobozzo, 22 Cornwall Rd., New Castle, Del. 19720
Filed Mar. 27, 1992, Ser. No. 858,765
Term of patent 14 years
U.S. Cl. D25—62



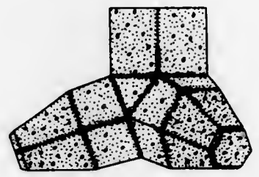
344,347
SAWHORSE
Boyd Wittman, Shorewood, Minn., assignor to Empak, Inc., Chanhassen, Minn.
Filed Jan. 30, 1991, Ser. No. 648,341
Term of patent 14 years
U.S. Cl. D25—67



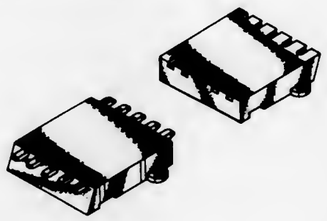
344,348
CAMPING LANTERN
Kai-Bun Lo, Room 1117, Peninsula Centre, 67 Mody Road, Tsimshatsui East, Kowloon, Hong Kong
Filed May 1, 1992, Ser. No. 877,600
Claims priority, application United Kingdom, Nov. 4, 1991, 2018743
Term of patent 14 years
U.S. Cl. D26—41



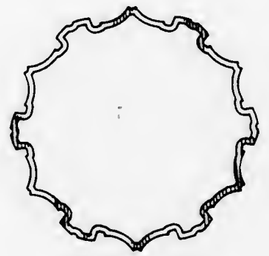
344,349
WAVE ENERGY DISSIPATION BLOCK
Masako Ohta, 17-10, Kataseyama 3-Chome, Fujisawa-shi, Kanagawa-ken, Japan
Filed Dec. 7, 1992, Ser. No. 2,432
Claims priority, application Japan, Jun. 16, 1992, 4-17560
Term of patent 14 years
U.S. Cl. D25—113



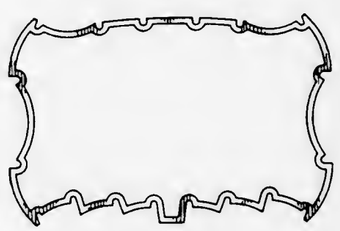
344,350
MOLDED BUILDING BLOCK
Joseph P. DePascale, 34 Caldwell Rd., Valley Stream, N.Y. 11580, and William Finger, 1920 New Haven Ave., Far Rockaway, N.Y. 11691
Filed Oct. 31, 1990, Ser. No. 607,353
Term of patent 14 years
U.S. Cl. D25—113



344,351
DECORATIVE EXTRUSION
Peter M. Stagl, Morris Plains, N.J., assignor to Avnet, Inc., Great Neck, N.Y.
Filed Sep. 1, 1992, Ser. No. 939,358
Term of patent 14 years
U.S. Cl. D25—122



344,352
DECORATIVE EXTRUSION
Peter M. Stagl, Morris Plains, N.J., assignor to Avnet, Inc., Great Neck, N.Y.
Filed Sep. 1, 1992, Ser. No. 939,357
Term of patent 14 years
U.S. Cl. D25—122

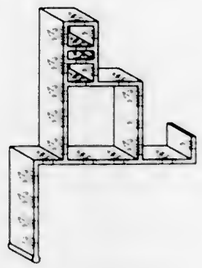


344,353
CASEMENT WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 18, 1991, Ser. No. 687,531
The portion of the term of this patent subsequent to May 18, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



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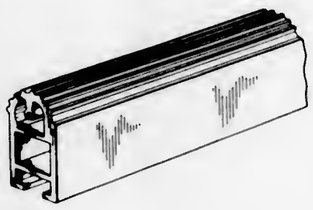
344,354
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 7, 1992, Ser. No. 880,352
Term of patent 14 years
U.S. Cl. D25—124



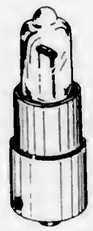
344,355
SAFETY SYRINGE
Daniel A. Taloan, University City, and Alan B. Ranford, Creve Coeur, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 627,062, Mar. 1, 1991, Pat. No. 5,147,326, which is a continuation-in-part of Ser. No. 212,528, Jun. 28, 1988, Pat. No. 5,053,018. This application May 15, 1992, Ser. No. 884,779
Term of patent 14 years
U.S. Cl. D24—112



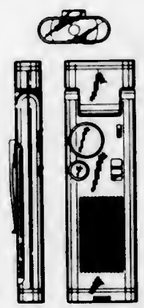
344,356
BOX EXTRUSION
James E. Clark, Newark, N.J., assignor to Outwater Plastics-/Industries, Inc., Wood Ridge, N.J.
Continuation of Ser. No. 319,551, Mar. 6, 1989, abandoned. This application Mar. 12, 1991, Ser. No. 668,317
The portion of the term of this patent subsequent to Jan. 2, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



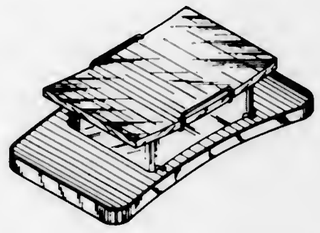
344,357
ELECTRIC LAMP BULB
Mark Gottlieb, 3495 Pence Ct., Annandale, Va. 22003
Filed Feb. 12, 1993, Ser. No. 4,743
Term of patent 14 years
U.S. Cl. D26—2



344,358
COMBINED ADJUSTABLE FLASHLIGHT AND RADIO
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 29, 1992, Ser. No. 875,702
Claims priority, application United Kingdom, Oct. 30, 1991, 2018653
Term of patent 14 years
U.S. Cl. D26—38



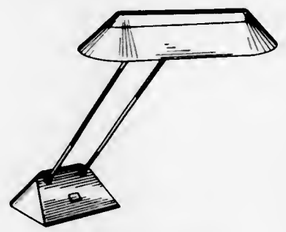
344,359
LAMP FIXTURE
Victor M. Matos, Audubon Post Office 515 W165, New York, N.Y. 10032
Filed Dec. 13, 1991, Ser. No. 806,422
Term of patent 14 years
U.S. Cl. D26—93



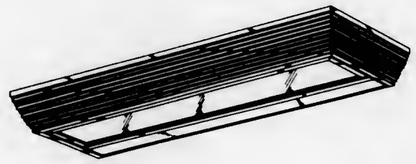
344,360
FLOOR LAMP
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266
Filed Nov. 9, 1992, Ser. No. 1,257
Term of patent 14 years
U.S. Cl. D26—106



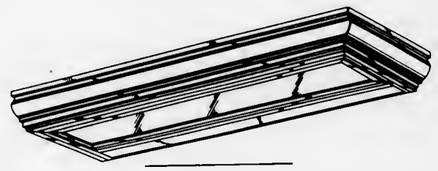
344,361
DESK LAMP
Frank Friedman, Portland, Oreg., and Charles E. Bain, West Dundee, Ill., assignors to Reflector Hardware Corporation, Melrose Park, Ill.
Filed Apr. 3, 1992, Ser. No. 864,916
Term of patent 14 years
U.S. Cl. D26—107



344,362
HOSPITAL ROOM LAMP
Joseph D. Engle, Naperville, Ill., assignor to Alkco Manufacturing Company, Franklin Park, Ill.
Filed Sep. 21, 1992, Ser. No. 948,881
Term of patent 14 years
U.S. Cl. D26—72



344,363
HOSPITAL ROOM LAMP
Joseph D. Engle, Naperville, Ill., assignor to Alkco Manufacturing Company, Franklin Park, Ill.
Filed Sep. 21, 1992, Ser. No. 948,885
Term of patent 14 years
U.S. Cl. D26—72



344,364
HOSPITAL ROOM LAMP
Joseph D. Engle, Naperville, Ill., assignor to Alkco Manufacturing Company, Franklin Park, Ill.
Filed Sep. 21, 1992, Ser. No. 948,882
Term of patent 14 years
U.S. Cl. D26—72

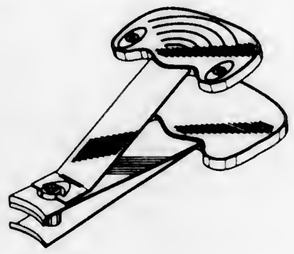


344,365
COMBINED RAZOR AND SHAVING CREAM DISPENSER
Luciano G. Mondo, 68 Duer St., N. Plainfield, N.J. 07060
Filed Mar. 6, 1991, Ser. No. 665,168
Term of patent 14 years
U.S. Cl. D28—46

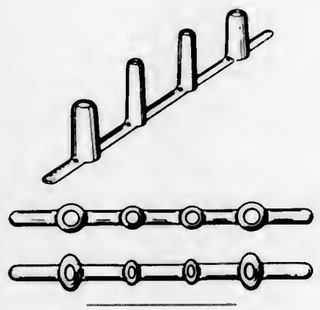


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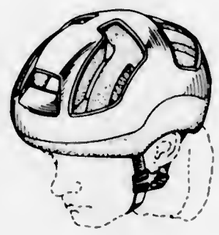
344,366
NAIL CUTTER
Rodrigo A. Soriano, 639 Newark Ave., Jersey City, N.J. 07306
Filed Aug. 12, 1992, Ser. No. 928,205
Term of patent 14 years
U.S. Cl. D28—60



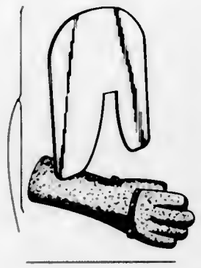
344,367
TOE SPACER
Anthony Santore, 346 Third Ave., Pelham, N.Y. 10803
Filed Mar. 10, 1992, Ser. No. 849,692
Term of patent 14 years
U.S. Cl. D28—61



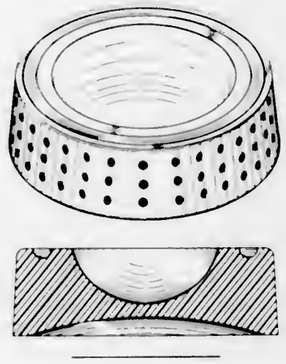
344,368
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1991, Ser. No. 705,267
Claims priority, application Japan, Jan. 24, 1991, 3-1320
Term of patent 14 years
U.S. Cl. D27—12



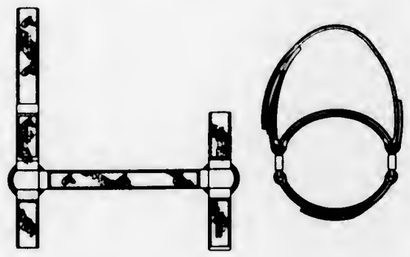
344,369
PROTECTIVE GLOVE FOR PUMPING GASOLINE
James J. Brown, 2 Whippoorwill Rd., Bethel, Conn. 06801
Filed Apr. 24, 1992, Ser. No. 873,056
Term of patent 14 years
U.S. Cl. D29—20



344,370
ANT PROOF PET FEEDER
Donna S. Dryden, and Harvey D. Dryden, both of P.O. Box 8334, Lumberton, Tex. 77711
Filed Apr. 1, 1991, Ser. No. 677,886
Term of patent 14 years
U.S. Cl. D30—129



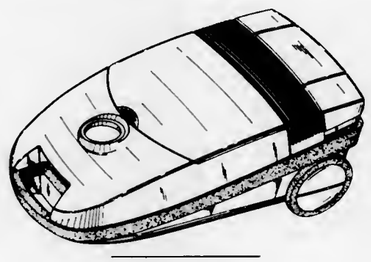
344,371
SAFETY HALTER
Sharon K. Renfro, 5105 Tralee La., Anderson, Calif. 96007
Filed Jan. 14, 1992, Ser. No. 868,256
Term of patent 14 years
U.S. Cl. D30—137



344,372
CAT CARRIER BAG
Lynda A. Maddix, 4270 Sundance Rd. RR #3, Nelson, B.C., Canada V1L 5P6
Filed Mar. 23, 1992, Ser. No. 856,925
Term of patent 14 years
U.S. Cl. D30—144



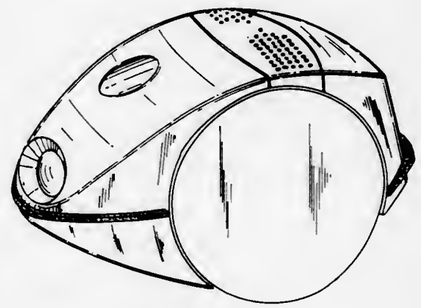
344,373
VACUUM CLEANER OF THE CANISTER TYPE
Helmut Haverkamp, Hunxe, Fed. Rep. of Germany, assignor to Moulinex S.A., Bagnolet, France
Filed Jul. 24, 1992, Ser. No. 918,018
Claims priority, application France, Jan. 24, 1992, 920426
Term of patent 14 years
U.S. Cl. D32—21



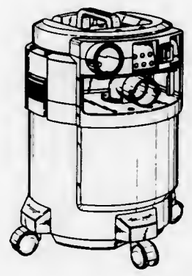
344,374
COMBINED WET AND DRY VACUUM CLEANER
Richard E. Wulff, Maple Plain, Minn., assignor to Castex Industries, Inc., Holland, Mich.
Filed Jan. 28, 1992, Ser. No. 825,725
Term of patent 14 years
U.S. Cl. D32—21



344,375
VACUUM CLEANER FOR HOUSEHOLD USE
Philippe Piret, Ifs, France, and Guillen Berazaluce, Pamplona, Spain, assignors to Moulinex S.A., Bagnolet, France
Filed Jul. 24, 1992, Ser. No. 918,019
Claims priority, application France, Jan. 24, 1992, 920429
Term of patent 14 years
U.S. Cl. D32—21

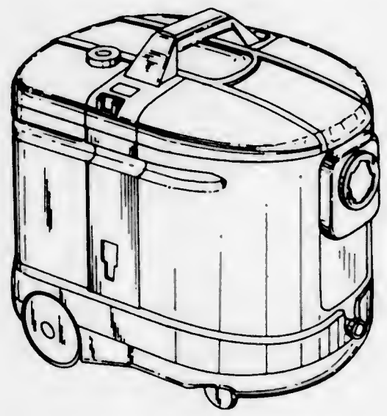


344,376
VACUUM CLEANER
Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland
Filed Jun. 4, 1992, Ser. No. 894,783
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, M 92 00 669.8
Term of patent 14 years
U.S. Cl. D32—23

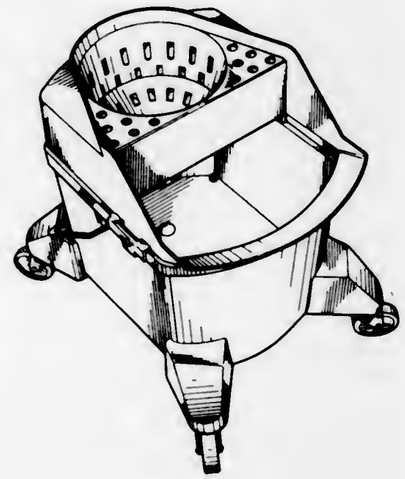


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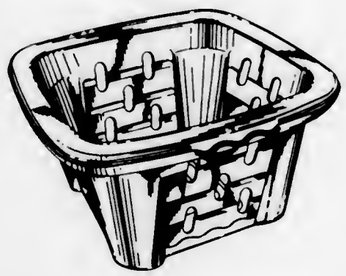
344,377
COMBINED VACUUM CLEANER AND WASHER FOR CLEANING FLOORS
Gilbert A. P. Thomas, Soliers, France, assignor to Moulinex Societe Anonyme, Bagnolet, France
Filed Jun. 15, 1992, Ser. No. 898,406
Claims priority, application France, Dec. 18, 1991, 918006
Term of patent 14 years
U.S. Cl. D32—23



344,379
COMBINED PORTABLE MOP BUCKET AND COVER WITH WRINGER
Frank T. Clark, Jr., Girard, Pa., assignor to Emsco, Inc., Girard, Pa.
Filed Jun. 17, 1992, Ser. No. 900,105
Term of patent 14 years
U.S. Cl. D32—53



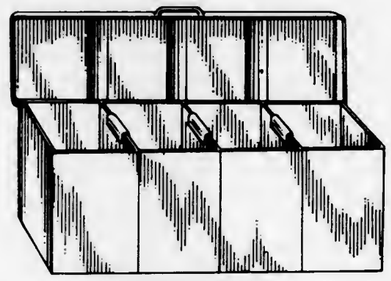
344,378
CLOTHES BASKET
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 21, 1992, Ser. No. 948,951
Term of patent 14 years
U.S. Cl. D32—37



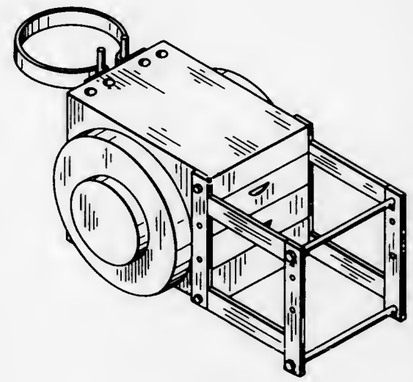
344,380
PAINT STIRRER
George Hippler, 2442 Rice St. #90, Little Canada, Minn. 55113
Filed May 30, 1989, Ser. No. 357,871
Term of patent 14 years
U.S. Cl. D32—54



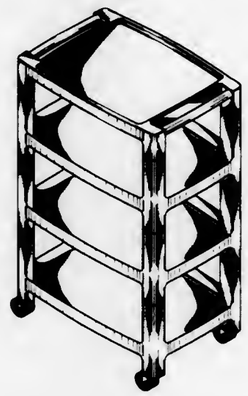
344,381
BIN FOR RECYCLABLE MATERIAL
Cecelia M. Martin; Sonia T. Martin, and Tony J. Martin, all of P.O. Box 3027, Onekawa, Napier, New Zealand
Filed Jun. 15, 1992, Ser. No. 898,886
Term of patent 14 years
U.S. Cl. D34—7



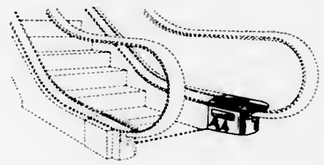
344,383
GARDEN CADDY
J. Edwin Ek, 5161 S. Marion, Tulsa, Okla. 75135
Filed May 4, 1992, Ser. No. 878,883
Term of patent 14 years
U.S. Cl. D34—25



344,382
SHELF CART
Brian J. Conaway, Wooster, and Tyrone M. Keyes, Mason, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 8, 1992, Ser. No. 909,819
Term of patent 14 years
U.S. Cl. D34—21

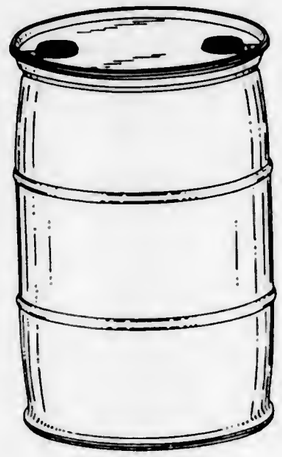


344,384
ESCALATOR CONTROL BOX
Noboru Yamamoto, Kodaira; Shinji Shibuya, Sagamihara; Akira Omachi, Komae; Yoko Ichikawa, Fuchuu; Norio Kamoshita, Iruma, and Chuichi Saito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,326
Claims priority, application Japan, May 25, 1992, 4-14824
Term of patent 14 years
U.S. Cl. D34—30

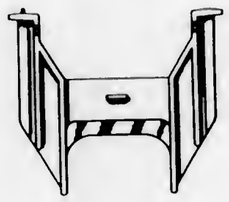


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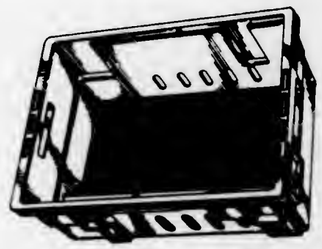
344,385
DRUM
Dietmar Przytulla, Kerpen, Fed. Rep. of Germany, assignor to Mauser-Werke GmbH, Brühl, Fed. Rep. of Germany
Filed Nov. 29, 1990, Ser. No. 620,591
Claims priority, application Fed. Rep. of Germany, May 31, 1990, M9003705.7
The portion of the term of this patent subsequent to Aug. 13, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D34—39



344,386
WAFER BASKET
Nobuyoshi Ogino, Tokyo, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Japan
Filed Jan. 28, 1991, Ser. No. 724,319
The portion of the term of this patent subsequent to Aug. 31, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—629

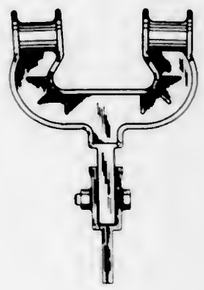


344,387
CONTAINER
Hubert J. Holliday, Abingdon, United Kingdom, assignor to Perstorp Form Limited, United Kingdom
Filed Jan. 14, 1992, Ser. No. 820,398
Claims priority, application United Kingdom, Jul. 23, 1991, 2016163
Term of patent 14 years
U.S. Cl. D3—312

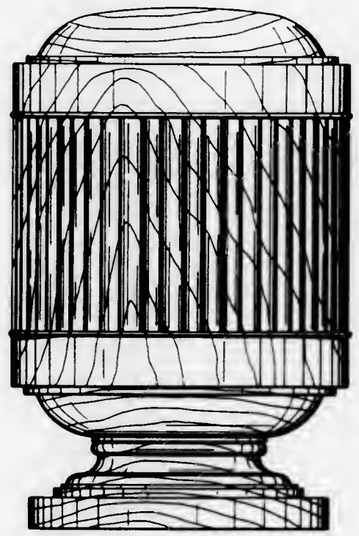


344,388
CARGO NET
Theodore A. Fellion, P.O. Box 1928, Freemont, Calif. 94538
Filed Feb. 28, 1992, Ser. No. 843,286
Term of patent 14 years
U.S. Cl. D34—35

344,389
CONVEYOR TROLLEY BRACKET AND ATTACHMENT
Clayton C. McDonald, and Brian G. Stewart, both of Howell, Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.
Filed Sep. 18, 1992, Ser. No. 948,947
Term of patent 14 years
U.S. Cl. D34—35



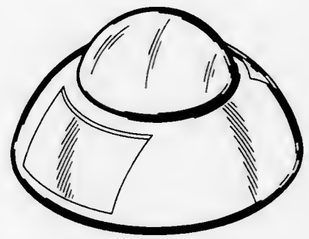
344,390
CREMATION URN
Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Sep. 22, 1992, Ser. No. 948,787
Term of patent 14 years
U.S. Cl. D99—5



344,391
CREMATION URN
Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Sep. 22, 1992, Ser. No. 948,788
Term of patent 14 years
U.S. Cl. D99—5



344,392
MAIL BOX
Donald W. Gardner, 2920 Clark Rd., #103, Sarasota, Fla. 34231
Filed Mar. 4, 1993, Ser. No. 5,437
Term of patent 14 years
U.S. Cl. D99—29



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF FEBRUARY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Carter Inc.: *See—*
Doyne, Richard A.; Benson, Rio H.; and El-Shiekh, Aly, 5,285,712, Cl. 87-57.000.

A. B. Chance Company: *See—*
Hoyt, Robert M.; and Hamilton, Daniel V., 5,286,142, Cl. 405-244.000.

A-Dec, Inc.: *See—*
Austin, George K.; Johannes, Sandor; and Rolleston, Ronald A., II, 5,286,065, Cl. 285-23.000.

A. S. Ringdal Patenter: *See—*
Ringdal, Jan O.; and Ringdal, Lars, 5,286,080, Cl. 296-185.000.

AAI Microflite Simulation International: *See—*
Fuller, John J.; Bratt, Charles J.; Blackwell, Wayne; and Mueller, Paul E., 5,286,203, Cl. 434-45.000.

AB Mecman: *See—*
Pettersson, Hans; and Merz, Peter, 5,285,814, Cl. 137-556.000.

Abass, Hazim H.; Hedayati, Saeed; and Venditto, James J., to Halliburton Company. Method and apparatus for determining orientation of a wellbore relative to formation stress fields. 5,285,683, Cl. 73-155.000.

ABB Vetco Gray Inc.: *See—*
Eckert, Lawrence A.; and Boehm, Carl F., Jr., 5,285,853, Cl. 166-382.000.

Abbott Laboratories: *See—*
Hughes, Timothy J., 5,285,796, Cl. 128-668.000.

Abe, Fumio; Harada, Takashi; and Mizuno, Hiroshige, to NGK Insulators, Ltd. Method of operating catalytic converter. 5,286,460, Cl. 422-174.000.

Abe, Jun: *See—*
Leung, Donald Y. M.; Kotzin, Brian; and Abe, Jun, 5,286,623, Cl. 435-6.000.

Abe, Noriyoshi, to Kabushiki Kaisha Yosetsu Gijutsu Kenkyusho; and Kabushiki Kaisha Technosystems. Apparatus for heating workpieces to bond the same. 5,286,945, Cl. 219-85.160.

Abeille, Pierre: *See—*
Juncker, Richard; and Abeille, Pierre, 5,287,236, Cl. 360-107.000.

Ablay, Sewim F.: *See—*
Gustafson, Leslie G., Jr.; Ablay, Sewim F.; and Shaughnesy, Mark L., 5,287,551, Cl. 455-54.100.

Abler, Norman C., to OScar Mayer Foods Corporation. Method for transfer of food material slices. 5,286,507, Cl. 426-420.000.

Abraham, Dennis J.; and Swetz, Linda, to SKF USA Inc. Unitized seal for heavy duty application. 5,286,038, Cl. 277-35.000.

Abrasion Engineerng Company Limited: *See—*
Barabash, Michael, 5,286,036, Cl. 273-429.000.

Acampora, Alfonse A.; and Bunting, Richard M., to General Electric Company. Reset control network for a video signal encoder. 5,287,178, Cl. 348-384.000.

Ace Novelty Co., Inc.: *See—*
Greenwood, W. Loren; and Poll, Harry, 5,286,062, Cl. 283-106.000.

Ackley, Donald E.; Goronkin, Herbert; and Lebby, Michael S., to Motorola, Inc. High contrast ratio optical modulator. 5,286,982, Cl. 257-14.000.

Ackroyd, Gordon W., to Joy Manufacturing Company (Africa) Limited (PTY). Drive train. 5,285,866, Cl. 180-248.000.

Acosta, Anabel A.: *See—*
Rodriquez, Silva; Sosa, Selman H.; Nieto, Guillen; Martinez, Saturnino H.; Maso, Julio R. F.; Perez, Lidia I. N.; Grillo, Juan M.; Cordova, Vivian M.; Blanco, Sonia G.; Santos, Beatriz T.; del Valle Rosales, Jesus A.; Menendez, Evelin C.; Acosta, Anabel A.; Rodriquez, Edelgis C.; Leon, Silian C.; and Lasa, Alexis M., 5,286,484, Cl. 435-252.330.

A'Court, Richard; Fox, William J.; Hamlin, John E.; and O'Connor, Sean P., to BP Chemicals Limited. Carbamates, their production and use as fuels additives. 5,286,265, Cl. 44-387.000.

Actar Airforce, Inc.: *See—*
Epstein, Herbert J.; Reilly, John W.; Brault, Richard A.; and Croteau, Dianne B., 5,286,206, Cl. 434-265.000.

Actel Corporation: *See—*
Ahrens, Michael G.; Galbraith, Douglas C.; and Eltoukhy, Abdelshafy, 5,286,992, Cl. 257-356.000.

ActiMed Laboratories, Inc.: *See—*
Law, Wai T.; and Ertingshausen, Gerhard, 5,286,626, Cl. 435-19.000.

Actino S.A.: *See—*
Tyerman, David W., 5,286,547, Cl. 428-195.000.

Acuson Corporation: *See—*
Arenson, James W.; Guracar, Ismayil M.; Clark, Janna G.; and Weinshenker, Marc D., 5,285,788, Cl. 128-660.050.

Adachi, Kenro: *See—*
Ito, Kenichiro; Nojiri, Hiromi; and Adachi, Kenro, 5,286,239, Cl. 475-231.000.

Adachi, Ryoichi: *See—*
Nakamura, Kazufumi; Nishii, Masahiro; Adachi, Ryoichi; Uemura, Masatoshi; Nasuno, Ichiro; Terada, Izumi; Mitsuyama, Takashi; and Koga, Hidetoshi, 5,286,905, Cl. 564-234.000.

Adachi, Yukinobu, to Mitsubishi Denki Kabushiki Kaisha. Timing coinciding circuit simultaneously supplying two power supply voltages applied in different timing. 5,287,320, Cl. 365-226.000.

Adair, Gary E., to Motorola, Inc. Battery compartment safety interlock. 5,287,013, Cl. 307-328.000.

Adami, Arthur E.; Amberg, Christopher P.; and Pendergrass, William B., to Sweetheart Cup Company Inc. Sanitary can carriers and multiple beverage can packages including the same. 5,285,892, Cl. 206-151.000.

Adams, Neil J., to Motorola, Inc. Air-fuel ratio measurement apparatus and method therefor. 5,285,676, Cl. 73-23.320.

ADC Telecommunications, Inc.: *See—*
Dewey, James D.; Stasny, John M.; Pfeffer, George B.; and Beaudet, Ernest R., 5,286,215, Cl. 439-188.000.

Addor, Roger W.: *See—*
Henegar, Kevin E.; and Addor, Roger W., 5,286,742, Cl. 514-423.000.

Adir et Compagnie: *See—*
Vincent, Michel; Remond, Georges; Portevin, Bernard; Herve, Yolande; Lepagnol, Jean; and de Nanteuil, Guillaume, 5,286,732, Cl. 514-299.000.

Adkins, Joey B.: *See—*
Carlo, Louis D.; and Adkins, Joey B., 5,287,006, Cl. 307-10.300.

Advanced Belt Technology: *See—*
Susi, Michael F.; and Pramuka, Thomas E., 5,286,542, Cl. 428-58.000.

Advanced Environmental Recycling Technologies, Inc.: *See—*
Goforth, Billy D.; Goforth, Charles L.; Brooks, Joe G.; and Brooks, J. Douglas, 5,285,973, Cl. 241-36.000.

Advanced Micro Devices, Inc.: *See—*
Gaglani, Pranay, 5,287,394, Cl. 377-104.000.
Moyal, Miki Z.; and Feemster, Ryan E., 5,287,015, Cl. 307-355.000.

Advanced Products, Inc.: *See—*
Buckley, Michael S.; and Bowns, Richard E., 5,286,415, Cl. 252-502.000.

Agency of Industrial Science and Technology: *See—*
Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, 5,286,701, Cl. 502-332.000.
Murase, Yoshio; and Iga, Takeo, 5,286,687, Cl. 501-128.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
Kaneko, Hiroko; Kaneko, Keiji; Ihara, Hideo; and Negishi, Akira, 5,286,711, Cl. 505-1.000.

Agfa-Gevaert, N.V.: *See—*
Verbeeck, Ann L., 5,286,621, Cl. 430-567.000.

Ahmed, Iqbal, to Phillips Petroleum Company. Superabsorbent crosslinked copolymers formed from an ampholytic ion pair (2-methacryloyloxyethyldimethylammonium cation (MEDMA)/sulfonate anion) copolymerized with other comonomers. 5,286,827, Cl. 526-287.000.

Ahn, Jack J.: *See—*
Perelman, Roberto; Yuan, Chris; Patel, Bipin; Ahn, Jack J.; and Kaminsky, Mark E., 5,287,498, Cl. 395-600.000.

Ahrens, Frank: *See—*
Ostholt, Rudiger; and Ahrens, Frank, 5,285,886, Cl. 198-370.000.

Ahrens, Michael G.; Galbraith, Douglas C.; and Eltoukhy, Abdelshafy, to Actel Corporation. Low voltage device in a high voltage substrate. 5,286,992, Cl. 257-356.000.

Aihara, Katsuzo: *See—*
Ogihara, Masahiro; Aihara, Katsuzo; Arai, Keiji; and Satoh, Masaki, 5,287,026, Cl. 310-12.000.

Ainsworth, Oliver C., to Dow Chemical Company, The. Thermoplastic elastomer based upon chlorosulfonated polyethylene and a crystalline olefin polymer. 5,286,795, Cl. 525-195.000.

Air Products and Chemicals, Inc.: *See—*
Holzl, Robert A.; Magnotta, Vincent L.; Dyer, Paul N.; and Withers, Howard P., Jr., 5,286,565, Cl. 428-408.000.

Aisaka, Tetsuya: *See—*
Nonaka, Kazuyuki; Saito, Shinji; Aisaka, Tetsuya; Akiyama, Takehiro; and Takekawa, Kouzi, 5,287,019, Cl. 307-475.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Hayashi, Masamichi; Kawabata, Yasuhiro; Machida, Shiro; and Kamiya, Takanori, 5,285,840, Cl. 164-132.000.

Aitken, Bruce G., to Corning Incorporated. Alkali metal, copper phosphate glasses. 5,286,683, Cl. 501-45.000.

Aizatulov, Rafik; Galperine, Grigori; Gitman, Gregory; Grenader, Jakov; and Kustov, Boris, to Zaptech Corporation. Method for producing steel. 5,286,277, Cl. 75-523.000.

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Ajinomoto Co., Inc.: *See—*
Kurauchi, Masahiko; and Nakamura, Tohru, 5,286,897, Cl. 560-115.000.

Akagawa, Midori; Hayashi, Yachiko; Mori, Toshio; Sugiyama, Satoshi; and Andoh, Tohru, to Asahi Breweries, Ltd.; and Torii & Co., Ltd. Monoclonal antibodies to mite allergen and the use thereof. 5,286,628, Cl. 435-7.210.

Akagi, Kosuke, to Osaka Gas Co., Ltd. Fuel cell. 5,286,579, Cl 429-33.000.

Akao, Mutsuo: *See—*
Ishizaki, Keiichi, Takeuchi, Takashi, Akao, Mutsuo, Osanai, Hiroyuki; and Fujii, Shinichi, 5,286,614, Cl. 430-501.000.

Akasaka, Shingo: *See—*
Sugino, Kazuhiro; Akasaka, Shingo; Imanishi, Hiroko; Saeki, Junichi; Nishi, Kunihiko; and Nishimura, Asao, 5,287,284, Cl. 364-468.000.

Akbar, Shahzad; Chu, Jack O.; Cunningham, Brian; Fitzgibbon, Gregory; and Ratanaphanyarat, Somnuk, to International Business Machines Corporation. Nonselective germanium deposition by UHV/CVD. 5,286,334, Cl. 156-62.000.

Akebono Brake Industry Co., Ltd.: *See—*
Kakizaki, Hideki, 5,286,101, Cl. 303-113.200.
Kaneda, Naoki, 5,285,872, Cl. 188-71.500.
Nakamura, Hirotaka, 5,286,102, Cl. 303-113.200
Okubo, Satomi, 5,286,098, Cl. 303-100.000.

Akeel, Hadi A.; McCann, Richard A.; and Hager, James S., to FANUC Robotics North America, Inc. Method and system for constraining and for opening, holding and closing a hinged magnetic member of a body. 5,286,160, Cl. 414-744.300.

Akerman, Jan: *See—*
Hartzell, E. Torbjorn; Akerman, Jan; and Fischer, Udo K. R., 5,286,549, Cl. 428-212.000.

Akiba, Taichi; Araki, Yoshitsugu; and Kurihara, Toshihiko, to Pioneer Electronic Corporation. Optical pickup having flexible wiring plate with focusing effective length which eliminates plate restoring force induce pickup tilt during focusing. 5,287,337, Cl. 369-44.150.

Akiba, Toshikatsu; Shingu, Shitta; Takahara, Kenichi; Takahashi, Hiroshi; and Tanaka, Arata, to Kabushiki Kaisha Toshiba. Device for supporting and linearly moving an object. 5,287,031, Cl. 310-90.500.

Akiba, Yoshiyuki: *See—*
Okamura, Mashiro; Sato, Masuhiro; Inaba, Naoto; Akiba, Yoshiyuki; and Nakai, Toshiki, 5,286,907, Cl. 84-601.000.

Akiyama, Takehiro: *See—*
Nonaka, Kazuyuki; Saito, Shinji; Aisaka, Tetsuya, Akiyama, Takehiro; and Takekawa, Kouzi, 5,287,019, Cl. 307-475.000

Akona Corp.: *See—*
Howell, George E.; and Wright, Charles D., 5,286,399, Cl. 252-88.000.

Akou, Tatsushi: *See—*
Ichikawa, Shigeji; Arai, Katsunori; Morita, Hideyo; Ueno, Kouhei, and Akou, Tatsushi, 5,286,776, Cl. 524-449.000.

A.G. (Patents) Limited: *See—*
Townsley, Robert C., 5,285,825, Cl. 141-9.000.

Akutagawa, Satoshi: *See—*
Tabara, Katsuji; and Akutagawa, Satoshi, 5,287,290, Cl. 364-489.000.

AKZO N.V.: *See—*
Cairns, James; Gibson, Samuel G.; and Rae, Duncan R., 5,286,722, Cl. 514-211.000.
Nel, Jan G.; and Boven, Gert, 5,286,838, Cl. 528-331.000.

Albrecht, John W., to C.V.D. System Cleaners Corporation. Chemical vapor deposition system cleaner. 5,286,301, Cl. 134-8.000.

Alcan International Limited: *See—*
Fulford, George D., 5,286,472, Cl. 423-625.000.

Alcatel Cit. *See—*
Defrasne, Andre, 5,286,957, Cl. 235-441.000.
Regent, Philippe, 5,287,360, Cl. 370-112.000.

Alcatel N.V.: *See—*
Reynders, Paul T. M., 5,287,492, Cl. 395-575.000.

Alcock, C. Benjamin: *See—*
Carberry, James J.; and Alcock, C. Benjamin, 5,286,698, Cl 502-303.000.

Alcorn, Byron; and Norrod, Forrest E., to Hewlett-Packard Co. Serpentine rendering of antialiased vectors in a computer graphics system. 5,287,442, Cl. 395-143.000.

Alden Laboratories, Inc.: *See—*
Hanson, Chris A., 5,286,082, Cl. 297-201.000

Aleven, Albertus A. W., to Terra Nova Shoes Ltd. Puncture resistant insole for safety footwear. 5,285,583, Cl. 36-44.000.

Alfa Costruzioni Meccaniche S.p.A.: *See—*
Orlandi, Ireneo, 5,286,333, Cl. 156-570.000.

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Lee, Jongcheon, to Samsung Electron Devices Co., Ltd. Color LCD system of projection type. 5,287,131, Cl. 353-31.000.

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Sakurai, Kazutoshi; Mitsuhashi, Shigeru, and Kumobayashi, Hidenori, to Takasago International Corporation. (3R,5S)-3,5,6-trihydroxyhexanoic acid derivative and production method thereof. 5,286,883, Cl. 549-420.000.

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Salmon, Peter C. Electrostatic printing apparatus and method. 5,287,127, Cl. 346-154.000.

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Samson, Peter R., to Autodesk, Inc. Apparatus and method for serializing and validating copies of computer software. 5,287,408, Cl. 380-4.000.

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Sartor, Dietmar; and Groeschel, Friedrich, to Hilti Aktiengesellschaft. Corrosion-resistant nail for driving into hard materials. 5,286,153, Cl. 411-441.000.

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Sato, Chikara; Hirose, Hisataka; Nakatani, Yoshihiro; Nakayama, Tadayoshi; Fukatsu, Tsutomu; and Tamura, Kyoji, to Canon Kabushiki Kaisha. Video signal processing apparatus displaying image and process information. 5,287,187, Cl. 348-595.000.

Sato, Junichi; Hasegawa, Toshiaki; and Komatsu, Hiroshi, to Sony Corporation. Multi-chamber wafer process equipment having plural, physically communicating transfer means. 5,286,296, Cl. 118-719.000.

Sato, Kenichi, to Teac Corporation. Error signal generation for light beam reflected from optical disk with plurality of light detecting elements. 5,287,338, Cl. 369-44.230.

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Sato, Koji, to Kabushiki Kaisha Shinkawa. Tape feeding apparatus. 5,285,943, Cl. 226-149.000.

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Sato Yoshiaki; and Sakai, Nobuya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Recording and reproducing system for recording and reproducing video signals corresponding to an audio signal. 5,287,226, Cl. 360-35.100.

Sato, Yukie; Miura, Tatsushi; Wada, Masahiko; and Awatsu, Kiyotaka, to Fujitsu Limited. Banking terminal having cash dispenser and automatic depository functions. 5,286,954, Cl. 235-379.000.

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Yamazaki, Shunpei; Mase, Akira; and Hiroki, Masaaki, to Semiconductor Energy Laboratory Co., Ltd. Gradation method for driving liquid crystal device with ramp and select signal. 5,287,205, Cl. 359-57.000.

Yanagawa, Naoharu, to Pioneer Electronic Corporation. Apparatus for controlling semiconductor laser. 5,287,367, Cl. 372-31.000.

Yanagi, Kinzaburo; and Takizawa, Isao, to Singer Company NV, The. Horizontal spool pin supporting device for a sewing machine. 5,285,740, Cl. 112-258.000.

Yanagida, Noboru; Saeki, Sakiko; Ogawa, Ryohei; Kamogawa, Kouichi; Hayashi, Yoshiyuki; and Sawaguchi, Kazunari, to Nippon Zeon Co., Ltd. Recombinant avipoxvirus. 5,286,639, Cl. 435-235.100.

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Deyrup, Edward J., to Du Pont de Nemours, E. I., and Company. Plastic composite barrier structures. Re. 34,546, Cl. 525-674.000.

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Komorowski, Jacek S., to Litens Automotive Partnership. Belt tensioner with releasable belt load damping. Re. 34,543, Cl. 474-135.000.

Kreiger, Kurt. Method of operating a gas-infrared radiator, and the gas-infrared radiator. Re. 34,541, Cl. 431-1.000.

Kroeker, James. Artificial habitat for aquatic [animals] *worms*. Re. 34,545, Cl. 119-6.700.

Litens Automotive Partnership: *See*—
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Rockenfeller, Uwe, to Rocky Research. Chemical energy storage system. Re. 34,542, Cl. 165-104.120.

Rocky Research: *See*—
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Spears, J. Richard, to Beth Israel Hospital Association, The. Method of treatment of artherosclerosis and balloon catheter the same. Re. 34,544, Cl. 604-20.000.

Weldy, Derrell J., to Hein, Lewis; Weldy, Derrell J.; and Weldy, Michael D. Wall board joint reinforcing system. Re. 34,547, Cl. 52-288.100.

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Reiter, Friedemann: *See*—
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Resendez, Gilbert N., 8,600, Cl. 67.300.
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Resendez, Gilbert N., to Monrovia Nursery Company *Lagerstroemia indica* cv. Moned. 8,600, 2-15-94, Cl. 67.300.
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CLASSIFICATION OF PATENTS

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89.1 5,285,916
212.5 5,285,917
265 5,285,918
271 5,285,919
444 5,285,920
5,285,921
553 5,285,922
601 5,285,923
694 5,285,924

CLASS 221

1 5,285,925
2 5,285,926
22 5,285,927
75 5,285,928
212 5,285,929

CLASS 222

1 5,285,930
61 5,285,931
137 5,285,932
148 5,285,933
595 5,285,934

CLASS 224

31 5,285,935
42.01 5,285,936
42.03 B 5,285,937
42.45 R 5,285,938
250 5,285,939
270 5,285,940
282 5,285,941
328 5,285,942

CLASS 226

149 5,285,943

CLASS 227

179 5,285,944
5,285,945

CLASS 228

9 5,285,946
49.3 5,285,947
104 5,285,948
179.1 5,285,949
189 5,285,950
214 5,285,951

CLASS 229

1.5 H 5,285,953
1.5 R 5,285,952
125.14 5,285,954
137 5,285,955
191 5,285,956
199 5,285,957
305 5,285,958

CLASS 235

78 R 5,286,953
379 5,286,954
380 5,286,955
432 5,286,956
441 5,286,957
449 5,286,958
462 5,286,959
463 5,286,960
467 5,286,961
472 B1 4,816,660
492 5,286,962

CLASS 236

11 5,285,959
44 E 5,285,960
47 5,285,961

CLASS 237

2 A 5,285,963
9 R 5,285,962

CLASS 238

7 5,285,964

CLASS 239

80 5,285,967
273 5,285,968
288 5,285,965
321 5,285,966
463 5,285,969
533.12 5,285,970
686 5,285,971

CLASS 241

19 5,285,972
36 5,285,973
194 5,285,974

CLASS 242

18 R 5,285,975
55 5,285,976
56 R 5,285,977
58.1 5,285,978
65 5,285,979
71.1 5,285,980
86.50 R 5,285,981
107 5,285,982
5,285,983
239 5,285,984
302 5,285,985

CLASS 244

97 5,285,986

CLASS 248

27.8 5,285,987
95 5,285,988
146 5,285,989
156 5,285,990
311.2 5,285,991
421 5,285,992
429 5,285,993
477 5,285,994
550 5,285,995
687 5,285,996

CLASS 250

201.2 5,286,963
5,286,964
201.5 5,286,965
205 5,286,966
5,286,967
208.1 5,286,968
214 A 5,286,969
227.26 5,286,970
5,286,971
231.16 5,286,972
253 5,286,973
305 5,286,974
338.3 5,286,975
349 5,286,976
442.11 5,286,977
492.21 5,286,978
515.1 5,286,979
560 5,286,980

CLASS 251

95 5,285,997
144 5,285,998
252 5,285,999
339 5,286,000
366 5,286,001
368 5,286,002

CLASS 252

26 5,286,393
36 5,286,394
45 5,286,395
48.2 5,286,396
56 S 5,286,397
68 5,286,398
88 5,286,399
5,286,400
102 5,286,401
121 5,286,402
136 5,286,403
174.12 5,286,404
174.17 5,286,405
5,286,406
188.28 5,286,407
299.01 5,286,408
299.61 5,286,409
5,286,410
299.63 5,286,411
352 5,286,412
500 5,286,413
5,286,414
502 5,286,415
512 5,286,416
518 5,286,417
585 5,286,418

CLASS 254

103 5,286,003

CLASS 257

14 5,286,982
59 5,286,983
132 5,286,981
139 5,286,984
200 5,286,985
215 5,286,986
221 5,286,987
223 5,286,988
239 5,286,989
247 5,286,990
306 5,286,991
356 5,286,992
390 5,286,993
411 5,286,994
549 5,286,995
586 5,286,996
5,286,997
637 5,286,998
666 5,286,999
676 5,287,000
719 5,287,001
781 5,287,002
792 5,287,003

CLASS 264

1.3 5,286,419
5,286,420
5,286,421
1.7 5,286,422
13 5,286,423
16 5,286,424
23 5,286,425
31 5,286,426
40.1 5,286,426
5,286,427
45.3 5,286,428
51 5,286,429
112 5,286,430
134 5,286,431
155 5,286,432
176.1 5,286,433
205 5,286,435
210.2 5,286,436
211 5,286,437
220 5,286,438
272.15 5,286,439
333 5,286,440

CLASS 266

44 5,286,004
77 5,286,005
5,286,006
96 5,286,007
217 5,286,008
236 5,286,009

CLASS 267

64.24 5,286,010
140.12 5,286,011
140.13 5,286,012
220 5,286,013
293 5,286,014

CLASS 270

52 5,286,015
57 5,286,016

CLASS 271

3.1 5,286,017
147 5,286,018

CLASS 273

32 B 5,286,019
58 BA 5,286,020
73 H 5,286,022
73 R 5,286,021
138 A 5,286,023
148 B 5,286,024
148 R 5,286,025
155 5,286,026
167 A 5,286,027
176 FA 5,286,028
181 F 5,286,029
242 5,286,030
320 5,286,031
339 5,286,032
377 5,286,033
401 5,286,034
422 5,286,035
429 5,286,036
460 5,286,037

CLASS 275

375 5,287,465

CLASS 277

35 5,286,038
180 5,286,039
207 A 5,286,040

CLASS 279

60 5,286,041
133 5,286,042

CLASS 280

11.22 5,286,043
28.5 5,286,044
47.131 5,286,047
47.18 5,286,045
47.38 5,286,046
91 5,286,048
163 5,286,049
477 5,286,050
607 5,286,051
675 5,286,052
728 B 5,286,055
734 5,286,053
738 5,286,054
777 5,286,056
808 5,286,057
840 5,286,058
5,286,059

CLASS 281

42 5,286,060

CLASS 283

95 5,286,061
106 5,286,062

CLASS 285

11 5,286,063
15 5,286,064
23 5,286,065
5,286,066
38 5,286,067
114 5,286,068
5,286,069
197 5,286,070
226 5,286,071
247 5,286,072

CLASS 290

55 5,287,004

CLASS 292

216 5,286,073
336.3 5,286,074
339 5,286,075

CLASS 296

65.1 5,286,076
107 5,286,077
153 5,286,078
181 5,286,079
185 5,286,080
190 5,286,081

CLASS 297

201 5,286,082
230.12 5,286,083
238 5,286,084
250.1 5,286,085
5,286,086
284.8 5,286,087
353 5,286,088
452.26 5,286,089
473 5,286,090
487 5,286,091

CLASS 301

37.37 5,286,092
5,286,093

CLASS 303

7 5,286,094
9 5,286,095
15 5,286,096
99 5,286,097
100 5,286,098
103 5,286,099
111 5,286,100
113.2 5,286,101
5,286,102

CLASS 307

10.1 5,287,005
10.3 5,287,006
38 5,287,007
91 5,287,008
141 5,287,009
269 5,287,010
272.3 5,287,011
296.1 5,287,012
328 5,287,013
354 5,287,014
355 5,287,015
446 5,287,016
465 5,287,017
5,287,018
475 5,287,019
5,287,517
518 5,287,020
542 5,287,022
570 5,287,021
571 5,287,024
594 5,287,023
603 5,287,025

CLASS 310

12 5,287,026
21 5,287,027
71 5,287,028
89 5,287,029
5,287,030
90.5 5,287,031
219 5,287,032
313 R 5,287,035
5,287,036
316 5,287,033

CLASS 312

9.46 5,286,103

CLASS 313

422 5,287,034
623 5,287,037

CLASS 315

15 5,287,038
248 5,287,039
291 5,287,040
370 5,287,042
371 5,287,041
5,287,043

CLASS 318

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268 5,287,045
293 5,287,046
362 5,287,047
459 5,287,048
568.1 5,287,049
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803 5,287,051

CLASS 320

2 5,287,052
5,287,053
61 5,287,518

CLASS 323

314 5,287,054
359 5,287,479

CLASS 324

158 T 5,287,055
239 5,287,056
248 5,287,057
5,287,058
253 5,287,059
439 5,287,060
454 5,287,061
551 5,287,062
601 5,287,063
606 5,287,064
651 5,287,065

CLASS 328

163 5,287,066

CLASS 329

304 5,287,067

CLASS 330

9 5,287,068
10 5,287,069
253 5,287,070
258 5,287,071
307 5,287,072

CLASS 331

11 5,287,073

CLASS 333

12 5,287,074
158 5,287,075
182 5,287,076

CLASS 335

8 5,287,077

CLASS 337

184 5,287,078
203 5,287,079
242 5,287,080

CLASS 338

24 5,287,081
307 5,287,082
332 5,287,083

CLASS 340

388.4 5,287,084
438 5,287,085
618 5,287,086
644 5,287,087
815.76 5,287,101
825.19 5,287,102
825.31 5,287,098
825.440 5,287,099
825.52 5,287,103
952 5,287,104

CLASS 341

20 5,287,105
118 5,287,106
137 5,287,107
156 5,287,108
176 5,287,109

CLASS 342

13 5,287,110
28 5,287,111
42 5,287,112
51 5,287,113
91 5,287,114
359 5,287,115

CLASS 343

700 MS 5,287,116
763 5,287,117
909 5,287,118

CLASS 345

99 5,287,095
112 5,287,088
137 5,287,092
139 5,287,093
143 5,287,094
146 5,287,091
147 5,287,096
156 5,287,089
158 5,287,119
163 5,287,090
5,287,120
179 5,287,121
213 5,287,100

CLASS 346

1.1 5,287,122
76 PH 5,287,124
108 5,287,125
140 R 5,287,123
5,287,126
154 5,287,127
159 5,287,128

CLASS 348

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97 5,287,175
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311 5,287,192
375 5,287,191
384 5,287,178
445 5,287,179
473 5,287,181
484 5,287,180
500 5,287,171
5,287,182
565 5,287,188
571 5,287,183
578 5,287,172
588 5,287,189
595 5,287,187
615 5,287,184
624 5,287,174
5,287,185
641 5,287,170
655 5,287,173
705 5,287,186
730 5,287,190

CLASS 351

233 5,287,129

CLASS 353

20 5,287,130
31 5,287,131
119 5,287,132

CLASS 354

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132 5,287,134
149.1 5,287,135
173.1 5,287,136
195.12 5,287,137
286 5,287,138
320 5,287,139
439 5,287,140

CLASS 355

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53 5,287,142
200 5,287,143
208 5,287,144
210 5,287,145
219 5,287,146
233 5,287,147
245 5,287,148
246 5,287,149
259 5,287,150
260 5,287,151
274 5,287,152
284 5,287,153
285 5,287,154
5,287,155
5,287,156
309 5,287,157
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311 5,287,159
5,287,164
326 R 5,287,160
5,287,161
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CLASS 356

121 5,287,165
358 5,287,166
364 5,287,167
436 5,287,168
445 5,287,169

CLASS 358

261.1 5,287,193
296 5,287,194
298 5,287,195
320 5,287,196
336 5,287,197
401 5,287,198
402 5,287,199
433 5,287,200
434 5,287,201
440 5,287,202
443 5,287,203
538 5,287,204

CLASS 359

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59 5,287,206
73 5,287,207
75 5,287,208
147 5,287,210
161 5,287,211
173 5,287,212
244 5,287,213
260 5,287,214
293 5,287,215
341 5,287,216
5,287,217
365 5,287,218
368 5,287,219
385 5,287,220
523 5,287,221
654 5,287,222
697 5,287,223

CLASS 360

14.3 5,287,224
31 5,287,225
35.1 5,287,226
45 5,287,227
57 5,287,228
60 5,287,229
5,287,230
68 5,287,231
69 5,287,232
73.14 5,287,233
78.04 5,287,234
103 5,287,235
107 5,287,236
113 5,287,237
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126 5,287,239
132 5,287,240

CLASS 361

56 5,287,241
150 5,287,242
152 5,287,243
680 5,287,245
683 5,287,246
687 5,287,244
708 5,287,248
718 5,287,249

CLASS 362

32 5,287,250
85 5,287,251
92 5,287,252
5,287,253
98 5,287,254
102 5,287,255
152 5,287,256
186 5,287,257
256 5,287,258
341 5,287,259

CLASS 363

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124 5,287,261
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143 5,287,263

CLASS 364

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188 5,287,265
401 5,287,266
403 5,287,267
405 5,287,268
408 5,287,269
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409 5,287,271
413.01 5,287,272
413.07 5,287,273
413.15 5,287,274
413.19 5,287,276
419.01 5,287,275
419.1 5,287,278
424.05 5,287,277
426.02 5,287,279
426.03 5,287,280
431.05 5,287,281
431.11 5,287,283
432.08 5,287,282
468 5,287,284
474.37 5,287,285
481 5,287,286
483 5,287,287
5,287,288
489 5,287,289
5,287,290
507 5,287,291
550 5,287,292
551.01 5,287,293
557 5,287,294
571.01 5,287,295
571.02 5,287,297
703 5,287,296
707 5,287,298
759 5,287,299

CLASS 365

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154 5,287,301
161 5,287,302
179 5,287,303
189.01 5,287,304
5,287,305
189.04 5,287,309
189.05 5,287,306
5,287,310
189.06 5,287,307
5,287,308
201 5,287,311
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5,287,313
208 5,287,314
210 5,287,315
215 5,287,316
218 5,287,317
5,287,318
222 5,287,319
226 5,287,320
230.01 5,287,321
5,287,527
230.02 5,287,327
230.03 5,287,326
230.05 5,287,322
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230.06 5,287,325
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190 5,286,106
325 5,286,107

CLASS 367

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140 5,287,331
153 5,287,332
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5,287,335
5,287,336
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44.41 5,287,340
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CLASS 370

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16 5,287,344
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60 5,287,345
5,287,346
5,287,347
5,287,535
60.1 5,287,348
5,287,349
66 5,287,350
77 5,287,351
82 5,287,352
85.1 5,287,353
85.12 5,287,356
85.13 5,287,355
85.5 5,287,357
85.7 5,287,354
94.1 5,287,358
5,287,530
100.1 5,287,359
112 5,287,360

CLASS 371

8.1 5,287,361
16.3 5,287,362
21.1 5,287,363
40.4 5,287,364
43 5,287,374

CLASS 372

9 5,287,365
26 5,287,366
31 5,287,367
32 5,287,368
34 5,287,369
35 5,287,370
5,287,371
38 5,287,372
5,287,375
41 5,287,373
43 5,287,376
45 5,287,377
68 5,287,378
69 5,287,379
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CLASS 373

72 5,287,382
112 5,287,383

CLASS 374

49 5,286,108
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CLASS 375

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12 5,287,385
36 5,287,386
55 B1 4,592,072
60 5,287,387
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CLASS 376

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261 5,287,391
301 5,287,392

CLASS 377

60 5,287,393
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CLASS 378

54 5,287,546
85 5,287,395
98.2 5,287,396
98.7 5,287,176
162 5,287,397

CLASS 379

38 5,287,398
58 5,287,399
5,287,400
98 5,287,401
100 5,287,402
144 5,287,403
377 5,287,404
386 5,287,405
404 5,287,406

CLASS 380

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5,287,408
15 5,287,409
23 5,287,410

CLASS 381

36 5,287,411
86 5,287,412
194 5,287,413

CLASS 382

1 5,287,414
3 5,287,415
41 5,287,416
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50 5,287,418
5,287,419
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CLASS 383

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62 5,286,111
86 5,286,112

CLASS 384

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121 5,286,114
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271 5,286,116
513 5,286,117
545 5,286,118
571 5,286,119

CLASS 385

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26 5,287,423
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81 5,287,425
85 5,287,426
124 5,287,427
135 5,287,428

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CLASS 395

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25 5,287,431
61 5,287,432
99 5,287,433
101 5,287,434
109 5,287,209
118 5,287,435
119 5,287,436
127 5,287,437
132 5,287,438
133 5,287,439
134 5,287,440
142 5,287,441
143 5,287,442
146 5,287,443
148 5,287,444
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152 5,287,446
157 5,287,447
159 5,287,448
161 5,287,449
163 5,287,450
164 5,287,451
166 5,287,452
200 5,287,453
5,287,454
5,287,455
5,287,456
5,287,457
250 5,287,458
275 5,287,459
5,287,460
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325 5,287,463
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375 5,287,466
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500 5,287,488
5,287,489
5,287,490
575 5,287,491
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5,287,502
5,287,504
5,287,505
650 5,287,506
5,287,507
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700 5,287,510
5,287,511
5,287,514
5,287,515
5,287,519
725 5,287,520
5,287,521
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5,287,523
750 5,287,525
800 5,287,526
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5,287,529
5,287,531
5,287,532
5,287,533
5,287,534
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196.1 5,286,122
247 5,286,123
661 5,286,124
715 5,286,125

CLASS 401

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199 5,286,127

CLASS 402

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CLASS 403

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108 5,286,138

CLASS 405

128 5,286,140
5,286,141
244 5,286,142

CLASS 408

211 5,286,143
224 5,286,144
226 5,286,145

CLASS 409

201 5,286,146
218 5,286,147
219 5,286,148

CLASS 410

26 5,286,149
103 5,286,150

CLASS 411

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45 5,286,152
441 5,286,153

CLASS 414

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139.4 5,286,155
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273 5,286,157
504 5,286,158
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744.3 5,286,160
786 5,286,161

CLASS 415

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121.2 5,286,163
199.3 5,286,164
204 5,286,165

CLASS 416

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CLASS 417

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269 5,286,173
356 5,286,174
375 5,286,175
413 R 5,286,176
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490 5,286,178

CLASS 418

55.1 5,286,179
5,286,180

CLASS 419

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CLASS 420

40 5,286,442
418 5,286,443
491 5,286,444
530 5,286,445
588 5,286,446

CLASS 422

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48 5,286,449
56 5,286,450
68.1 5,286,451
73 5,286,452
100 5,286,453
102 5,286,454
110 5,286,455
117 5,286,456
135 5,286,457
168 5,286,458
170 5,286,459
174 5,286,460
249 5,286,461
305 5,286,462

CLASS 423

23 5,286,463
89 5,286,464
106 5,286,465
220 5,286,466
239.1 5,286,467
249 5,286,468
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 19, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,993,076 through 4,995,113
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 17, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,642,814 through 4,644,587
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 15, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,373,211 through 4,374,438
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 12, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 32,458	06/859,507	7/14/87
(4,557,395)	(06/717,439)	(12/10/85)
Re 32,629	06/929,618	3/29/88
(4,557,052)	(06/577,709)	(12/10/85)
4,305,446	06/216,697	12/15/81
4,305,729	06/237,224	12/15/81
4,305,910	06/223,237	12/15/81
4,305,941	06/222,618	12/15/81
4,305,960	06/219,415	12/15/81
4,306,060	06/216,735	12/15/81
4,306,067	06/217,863	12/15/81
4,306,160	06/226,325	12/15/81
4,306,293	06/071,044	12/15/81
4,556,991	06/648,072	12/10/85
4,556,994	06/571,504	12/10/85
4,556,996	06/520,499	12/10/85
4,557,010	06/431,959	12/10/85
4,557,011	06/497,860	12/10/85
4,557,015	06/539,705	12/10/85
4,557,018	06/629,031	12/10/85
4,557,020	06/520,111	12/10/85
4,557,022	06/610,633	12/10/85
4,557,028	06/490,254	12/10/85
4,557,032	06/613,947	12/10/85
4,557,036	06/479,135	12/10/85
4,557,037	06/681,498	12/10/85
4,557,045	06/677,784	12/10/85
4,557,053	06/627,412	12/10/85
4,557,054	06/552,058	12/10/85
4,557,058	06/612,808	12/10/85
4,557,059	06/465,023	12/10/85
4,557,063	06/603,073	12/10/85
4,557,066	06/612,259	12/10/85
4,557,071	06/617,985	12/10/85
4,557,074	06/630,389	12/10/85
4,557,077	06/691,441	12/10/85
4,557,079	06/623,070	12/10/85
4,557,088	06/601,790	12/10/85
4,557,096	06/477,172	12/10/85
4,557,097	06/530,339	12/10/85
4,557,099	06/519,082	12/10/85
4,557,100	06/491,952	12/10/85
4,557,102	06/536,998	12/10/85
4,557,105	06/643,652	12/10/85
4,557,113	06/621,323	12/10/85
4,557,117	06/633,899	12/10/85
4,557,119	06/605,269	12/10/85
4,557,124	06/493,235	12/10/85
4,557,125	06/622,752	12/10/85
4,557,126	06/427,339	12/10/85
4,557,128	06/725,306	12/10/85
4,557,133	06/533,453	12/10/85
4,557,143	06/553,273	12/10/85
4,557,145	06/513,329	12/10/85
4,557,147	06/609,967	12/10/85
4,557,149	06/491,113	12/10/85
4,557,155	06/558,854	12/10/85
4,557,158	06/496,095	12/10/85
4,557,159	06/541,088	12/10/85
4,557,160	06/642,078	12/10/85
4,557,161	06/554,009	12/10/85
4,557,163	06/629,700	12/10/85
4,557,166	06/465,396	12/10/85
4,557,175	06/592,226	12/10/85
4,557,178	06/514,938	12/10/85

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4,557,185	06/634,821	12/10/85
4,557,189	06/616,405	12/10/85
4,557,190	06/589,438	12/10/85
4,557,191	06/631,192	12/10/85
4,557,197	06/595,208	12/10/85
4,557,205	06/642,159	12/10/85
4,557,212	06/607,566	12/10/85
4,557,218	06/612,353	12/10/85
4,557,225	06/571,803	12/10/85
4,557,230	06/689,816	12/10/85
4,557,231	06/402,555	12/10/85
4,557,233	06/666,053	12/10/85
4,557,234	06/607,306	12/10/85
4,557,236	06/566,902	12/10/85
4,557,240	06/729,694	12/10/85
4,557,242	06/597,865	12/10/85
4,557,248	06/689,439	12/10/85
4,557,249	06/694,879	12/10/85
4,557,253	06/440,869	12/10/85
4,557,258	06/543,903	12/10/85
4,557,259	06/521,683	12/10/85
4,557,267	06/496,771	12/10/85
4,557,270	06/525,628	12/10/85
4,557,271	06/493,707	12/10/85
4,557,273	06/453,744	12/10/85
4,557,283	06/602,804	12/10/85
4,557,284	06/671,097	12/10/85
4,557,285	06/571,807	12/10/85
4,557,290	06/673,866	12/10/85
4,557,299	06/593,021	12/10/85
4,557,306	06/621,656	12/10/85
4,557,310	06/485,182	12/10/85
4,557,312	06/662,540	12/10/85
4,557,318	06/723,972	12/10/85
4,557,320	06/433,693	12/10/85
4,557,321	06/572,577	12/10/85
4,557,323	06/520,460	12/10/85
4,557,324	06/637,793	12/10/85
4,557,326	06/690,171	12/10/85
4,557,328	06/606,632	12/10/85
4,557,329	06/417,996	12/10/85
4,557,339	06/454,591	12/10/85
4,557,340	06/660,104	12/10/85
4,557,346	06/590,333	12/10/85
4,557,348	06/444,298	12/10/85
4,557,350	06/713,898	12/10/85
4,557,351	06/634,390	12/10/85
4,557,352	06/549,064	12/10/85
4,557,368	06/586,248	12/10/85
4,557,376	06/501,209	12/10/85
4,557,377	06/541,829	12/10/85
4,557,378	06/554,398	12/10/85
4,557,387	06/605,191	12/10/85
4,557,390	06/528,685	12/10/85
4,557,392	06/610,256	12/10/85
4,557,397	06/686,885	12/10/85
4,557,398	06/642,054	12/10/85
4,557,401	06/557,078	12/10/85
4,557,403	06/600,275	12/10/85
4,557,405	06/485,348	12/10/85
4,557,406	06/573,284	12/10/85
4,557,407	06/638,525	12/10/85
4,557,408	06/634,224	12/10/85
4,557,411	06/545,470	12/10/85
4,557,413	06/598,714	12/10/85
4,557,420	06/529,164	12/10/85
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4,557,473	06/561,488	12/10/85
4,557,476	06/632,645	12/10/85
4,557,477	06/551,602	12/10/85
4,557,479	06/627,663	12/10/85
4,557,482	06/669,467	12/10/85
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4,557,504	06/458,528	12/10/85
4,557,509	06/613,873	12/10/85
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4,557,522	06/558,530	12/10/85
4,557,527	06/676,605	12/10/85
4,557,528	06/552,200	12/10/85
4,557,533	06/707,525	12/10/85
4,557,553	06/317,662	12/10/85
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4,557,586	06/556,213	12/10/85
4,557,590	06/416,777	12/10/85
4,557,591	06/467,482	12/10/85
4,557,593	06/641,670	12/10/85
4,557,595	06/510,316	12/10/85
4,557,603	06/438,897	12/10/85
4,557,606	06/575,815	12/10/85
4,557,608	06/608,740	12/10/85
4,557,609	06/247,216	12/10/85
4,557,612	06/610,253	12/10/85
4,557,614	06/539,279	12/10/85
4,557,617	06/549,261	12/10/85
4,557,618	06/452,050	12/10/85
4,557,622	06/586,898	12/10/85
4,557,627	06/348,650	12/10/85
4,557,629	06/606,964	12/10/85
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4,557,646	06/533,719	12/10/85
4,557,652	06/554,902	12/10/85
4,557,654	06/638,542	12/10/85
4,557,657	06/538,411	12/10/85
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4,557,660	06/558,474	12/10/85
4,557,661	06/418,931	12/10/85
4,557,666	06/537,749	12/10/85
4,557,667	06/677,410	12/10/85
4,557,679	06/676,922	12/10/85
4,557,680	06/683,086	12/10/85
4,557,682	06/535,241	12/10/85
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4,557,699	06/598,731	12/10/85
4,557,701	06/582,383	12/10/85
4,557,703	06/316,436	12/10/85
4,557,704	06/666,913	12/10/85
4,557,708	06/616,020	12/10/85
4,557,712	06/452,951	12/10/85
4,557,715	06/556,928	12/10/85
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4,557,726	06/656,085	12/10/85
4,557,727	06/531,822	12/10/85
4,557,728	06/600,840	12/10/85
4,557,730	06/611,322	12/10/85
4,557,732	06/538,800	12/10/85
4,557,736	06/665,794	12/10/85
4,557,737	06/655,523	12/10/85
4,557,738	06/382,447	12/10/85
4,557,741	06/579,512	12/10/85
4,557,744	06/597,989	12/10/85
4,557,749	06/420,907	12/10/85
4,557,751	06/242,174	12/10/85
4,557,752	06/634,487	12/10/85
4,557,753	06/485,832	12/10/85
4,557,756	06/567,282	12/10/85
4,557,758	06/638,481	12/10/85
4,557,766	06/586,467	12/10/85
4,557,768	06/673,016	12/10/85
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4,557,777	06/530,512	12/10/85
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4,557,806	06/692,086	12/10/85
4,557,812	06/635,579	12/10/85
4,557,815	06/653,047	12/10/85
4,557,826	06/483,529	12/10/85
4,557,833	06/520,643	12/10/85
4,557,835	06/691,360	12/10/85
4,557,839	06/685,196	12/10/85
4,557,840	06/609,366	12/10/85
4,557,844	06/575,362	12/10/85
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4,557,851	06/632,276	12/10/85
4,557,852	06/598,103	12/10/85
4,557,855	06/664,301	12/10/85
4,557,858	06/474,989	12/10/85
4,557,859	06/514,899	12/10/85
4,557,861	06/355,182	12/10/85
4,557,867	06/639,285	12/10/85
4,557,869	06/601,874	12/10/85
4,557,871	06/609,858	12/10/85
4,557,874	06/613,101	12/10/85
4,557,876	06/568,004	12/10/85
4,557,882	06/549,455	12/10/85
4,557,899	06/660,784	12/10/85
4,557,901	06/437,691	12/10/85
4,557,902	06/376,186	12/10/85
4,557,907	06/499,038	12/10/85
4,557,908	06/603,267	12/10/85
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4,887,033	07/163,577	12/12/89
4,887,038	07/257,399	12/12/89
4,887,040	07/305,593	12/12/89
4,887,043	06/927,483	12/12/89
4,887,051	07/299,398	12/12/89
4,887,058	07/375,218	12/12/89
4,887,066	07/061,333	12/12/89
4,887,070	07/246,465	12/12/89
4,887,074	07/145,898	12/12/89
4,887,077	07/151,511	12/12/89
4,887,078	07/190,367	12/12/89
4,887,091	07/170,506	12/12/89
4,887,107	07/333,861	12/12/89
4,887,108	07/199,201	12/12/89
4,887,115	07/259,897	12/12/89
4,887,119	07/211,176	12/12/89
4,887,122	07/267,446	12/12/89
4,887,127	07/016,757	12/12/89
4,887,167	07/005,411	12/12/89
4,887,171	07/177,369	12/12/89
4,887,173	07/262,327	12/12/89
4,887,180	07/206,723	12/12/89
4,887,182	07/348,142	12/12/89
4,887,184	06/571,387	12/12/89
4,887,187	07/206,603	12/12/89
4,887,190	07/253,496	12/12/89
4,887,191	07/259,268	12/12/89
4,887,194	07/294,889	12/12/89
4,887,200	07/248,554	12/12/89
4,887,201	07/256,202	12/12/89
4,887,219	07/151,434	12/12/89
4,887,226	06/687,597	12/12/89
4,887,231	07/137,701	12/12/89
4,887,249	07/183,120	12/12/89
4,887,261	07/128,158	12/12/89
4,887,266	07/002,763	12/12/89
4,887,268	07/137,597	12/12/89
4,887,271	07/233,758	12/12/89
4,887,275	06/837,564	12/12/89
4,887,282	07/119,094	12/12/89
4,887,286	07/217,190	12/12/89
4,887,290	07/083,496	12/12/89
4,887,291	07/076,750	12/12/89
4,887,295	07/059,629	12/12/89
4,887,299	07/120,286	12/12/89

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,745,133, Re. S.N. 08/130,564, Oct. 1, 1993, Cl. 521/128, FLAME RETARDANT POLYURETHANE FOAMS, Egils Grinbergs, Owner of Record: *BASF Corporation, Wyandotte, Mich.*, Attorney or Agent: Bryan H. Davidson, Ex. Gp.: 1503

4,816,484, Re. S.N. 08/157,564, Nov. 23, 1993, Cl. 514/563, HYPOGLYCEMIC AGENT, Shigeshi Toyoshima, et. al., Owner of Record: *Ajinomoto Co., Inc., Tokyo, Japan*, Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1205

4,962,144, Re. S.N. 08/166,968, Dec. 15, 1993, Cl. 524/118, COMPOSITION, Robert C. Babillis, et. al., Owner of Record: *General Electric Company, New York, N.Y.*, Attorney or Agent: Boris Haskell, Ex. Gp.: 1511

5,034,484, Re. S.N. 08/093,733, July 20, 1993, Cl. 526/119, CATALYTIC SOLID FOR USE IN THE POLYMERISATION OF ALPHA-OLEFINES, PROCESS FOR PREPARING IT AND PROCESS FOR THE POLYMERISATION OF ALPHA-OLEFINES IN THE PRESENCE OF A CATALYST SYSTEM CONTAINING THIS SOLID, Leopold Demiddeleer, et. al., Owner of Record: *Solvay & Ice (Societe Anonyme), Brussels*, Belgium, Attorney or Agent: John W. Schneller, Ex. Gp.: 1505

5,039,484, Re. S.N. 08/105,802, Aug. 12, 1993, Cl. 422/34, STERILANT MIXTURE, Simon Chippett, et. al., Owner of Record: *Praxair Technology, Inc., Danbury, Conn.*, Attorney or Agent: Robert Schaffer, Esq., Ex. Gp.: 1801

5,072,841, Re. S.N. 08/166,744, Dec. 14, 1993, Cl. 215/001, PLASTIC CONTAINERS, Aziz A. Okhai, Owner of Record: *Norderney Investients Limited, Saint Helier, United Kingdom*, Attorney or Agent: Steven R. Trybus, Ex. Gp.: 2401

5,128,035, Re. S.N. 08/168,472, Dec. 16, 1993, Cl. 210/251, FLUID FLOW CONTROL DEVICE FOR WATER TREATMENT SYSTEM, Robert A. Clark, et. al., Owner of Record: *Clark Corporation, Windsor, Wis.*, Attorney or Agent: Timothy E. Newholm, Ex. Gp.: 1306

5,167,477, Re. S.N. 08/168,059, Dec. 15, 1993, Cl. 409/178, CHAMFERING DEVICE AND TOOL HOLDER THEREFOR, Rickard Falkensson, et. al., Owner of Record: *Rickard Falkensson & Goran Linderoth, Goteborg, Sweden*, Attorney or Agent: Robert C. Faber, Ex. Gp.: 3202

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D.327,636, Reexam. No. 90/003,287, Dec. 23, 1993, Cl. D8/347, PORTION OF A KEY BLADE BLANK, Walter E. Best, et. al., Owner of Record: *Best Lock Corp., Indianapolis, Ind.*, Attorney or Agent: William R. Coffey, Barnes & Thornburg, Indianapolis, Ind., Ex. Gp.: 2901, Requester: Owner

4,670,857, Reexam. No. 90/003,286, Dec. 22, 1993, Cl. 380/004, CARTRIDGE-CONTROLLED SYSTEM WHOSE USE IS LIMITED TO AUTHORIZED CARTRIDGES, Michael I. Rackman, Owner of Record: *Inventor, Brooklyn, N.Y.*, Attorney or Agent: Michael I. Rackman, Gottlieb, Rackman & Reisman, New York, N.Y., Ex. Gp.: 2202, Requester: Inventor

4,792,717, Reexam. No. 90/003,289, Dec. 17, 1993, Cl. 313/113, WIDE ANGLE WARNING LIGHT, Robert A. Ferenc, Owner of Record: *Whelen Technologies, Inc., Deep River, Conn.*, Attorney or Agent: Guy D. Yale, Chilton, Alix & Van Kirk, Hartford, Conn., Ex. Gp.: 2604, Requester: Tomar Electronics, Inc., Gilbert, Ariz.,

4,866,329, Reexam. No. 90/003,290, Dec. 27, 1993, Cl. 313/113, WIDE ANGLE WARNING LIGHT, Robert A. Ferenc, Owner of Record: *Whelen Technologies, Inc., Deep River, Conn.*, Attorney or Agent: Guy D. Yale, Chilton, Alix & Van Kirk, Hartford, Conn., Ex. Gp.: 2604, Requester: Tomar Electronics, Inc., Gilbert, Ariz.,

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Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 03, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
90,889	71/067,491	4/01/1913
302,062	71/321,905	3/28/1933
302,078	71/332,251	3/28/1933
302,101	71/332,129	3/28/1933
302,108	71/332,540	3/28/1933
302,116	71/332,473	3/28/1933
302,118	71/332,875	3/28/1933
302,124	71/328,622	3/28/1933
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572,471	71/548,084	3/31/1953
572,476	71/563,917	3/31/1953
572,484	71/584,251	3/31/1953
572,486	71/586,807	3/31/1953
572,489	71/592,868	3/31/1953
572,494	71/599,969	3/31/1953
572,496	71/602,413	3/31/1953
572,507	71/607,481	3/31/1953
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572,575	71/621,211	3/31/1953
572,577	71/621,440	3/31/1953
572,587	71/622,305	3/31/1953
572,588	71/622,342	3/31/1953
572,591	71/622,591	3/31/1953
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572,597	71/623,449	3/31/1953
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572,785	71/608,211	3/31/1953
572,794	71/620,671	3/31/1953
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955,999	72/405,349	3/27/1973
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956,003	72/400,560	3/27/1973
956,004	72/401,189	3/27/1973
956,005	72/406,476	3/27/1973
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956,010	72/372,888	3/27/1973
956,011	72/403,463	3/27/1973
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956,031	72/420,977	3/27/1973
956,033	72/420,543	3/27/1973
956,034	72/436,400	3/27/1973
956,035	72/416,677	3/27/1973
956,037	72/415,090	3/27/1973
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956,046	72/390,860	3/27/1973
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956,056	72/416,862	3/27/1973
956,057	72/416,962	3/27/1973
956,060	72/404,033	3/27/1973
956,064	72/365,592	3/27/1973
956,068	72/408,268	3/27/1973
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956,072	72/370,870	3/27/1973
956,078	72/394,338	3/27/1973
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956,080	72/397,743	3/27/1973
956,081	72/397,910	3/27/1973
956,085	72/407,546	3/27/1973
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956,114	72/407,515	3/27/1973
956,117	72/413,965	3/27/1973
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956,147	72/406,836	3/27/1973
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956,173	72/379,585	3/27/1973
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956,177	72/366,524	3/27/1973
956,178	72/370,527	3/27/1973
956,181	72/367,894	3/27/1973
956,187	72/404,270	3/27/1973
956,194	72/408,027	3/27/1973
956,196	72/410,342	3/27/1973
956,197	72/410,601	3/27/1973
956,200	72/420,670	3/27/1973
956,201	72/423,688	3/27/1973
956,203	72/398,734	3/27/1973
956,204	72/404,166	3/27/1973
956,206	72/416,556	3/27/1973
956,207	72/419,643	3/27/1973
956,210	72/420,055	3/27/1973
956,214	72/405,907	3/27/1973
956,217	72/414,568	3/27/1973
956,218	72/414,569	3/27/1973
956,221	72/420,832	3/27/1973
956,224	72/398,694	3/27/1973
956,225	72/398,695	3/27/1973
956,227	72/402,492	3/27/1973
956,228	72/412,122	3/27/1973
956,229	72/412,482	3/27/1973
956,234	72/413,514	3/27/1973
956,235	72/413,531	3/27/1973
956,237	72/166,968	3/27/1973
956,238	72/352,228	3/27/1973
956,239	72/407,284	3/27/1973
956,246	72/378,517	3/27/1973
956,250	72/404,218	3/27/1973
956,253	72/415,515	3/27/1973
956,261	72/338,742	3/27/1973
956,262	72/353,351	3/27/1973
956,263	72/382,219	3/27/1973
956,264	72/385,645	3/27/1973
956,268	72/403,933	3/27/1973
956,271	72/412,650	3/27/1973
956,275	72/388,070	3/27/1973
956,276	72/415,139	3/27/1973
956,278	72/371,588	3/27/1973
956,281	72/412,116	3/27/1973
956,287	72/420,175	3/27/1973
956,288	72/420,267	3/27/1973
956,289	72/420,359	3/27/1973
956,290	72/420,360	3/27/1973
956,293	72/407,149	3/27/1973
956,295	72/378,632	3/27/1973
956,296	72/401,153	3/27/1973

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Grant of Certificate of Interim Extension of the term of U.S. Patent No. 4,005,196; Olestra

Agency: Patent and Trademark Office, Commerce
Action: Notice of Patent Term Extension
Summary: The Patent and Trademark Office has issued a certificate under 35 U.S.C. § 156(d)(5) for a one-year interim extension of the term of U.S. Patent No. 4,005,196 that claims the food additive known as olestra.
For Further Information Contact: Gerald A. Dost by telephone at (703) 305-8813; or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.
Supplementary Information: Section 156 of Title 35, United States Code, generally provides that the term of a patent may be extended for a period of up to 5 years if the patent claims a product, or a method of making or using a product, that has been subject to certain defined regulatory review. Under section 156, a patent is eligible for term extension only if regulatory review of the claimed product was completed before the original patent term expired.

On December 3, 1993, section 156 was amended by Pub. L. No. 103-179 to provide that if the owner of the record of the patent or its agent reasonably expects the applicable regulatory review period to extend beyond the expiration of the patent, the owner or its agent may submit an application to the Commissioner of Patents and Trademarks for an interim extension of the patent term. If the Commissioner determines that, except for permission to market or use the product commercially, the patent would be eligible for a statutory extension of the patent term, the Commissioner shall issue to the applicant a certificate of interim extension for a period of not more than one year.

On January 7, 1994, Procter & Gamble Company, owner of record in the Patent and Trademark Office of U.S. Patent No.4,005,196, filed an application for interim extension of the term of this patent under 35 U.S.C § 156(d)(5). The application states that the patent claims a composition of matter comprising the food additive product olestra. The application indicates that the product is currently undergoing a regulatory review before the Food and Drug Administration for permission to market or use the product commercially. The original term of the patent is set to expire on January 25, 1994. Applicant requests an interim extension of the term of the patent for a period of one year

Review of the application indicates that, except for permission to market or use the product commercially, the subject patent would be eligible for an extension of the patent term under 35 U.S.C. § 156. Since it is apparent that the regulatory review period may extend beyond the expiration of the original patent term, an interim extension of the patent term under 35 U.S.C. § 156(d)(5) is appropriate. Accordingly, an interim extension under 35 U.S.C. § 156(d)(5) of the term of U.S. Patent No. 4,005,196 has been granted for a period of one year from the original expiration date of the patent.

Jan. 14, 1994

MICHAEL K. KIRK
Acting Assistant Secretary of Commerce and Acting Commissioner of Patents and Trademarks

Facsimile Numbers For Sending Correspondence And Ordering Products Or Services

Facsimile Transmission of Missing Parts Correspondence

The Application Processing Division began accepting facsimile transmissions on November 22, 1993. See **Changes in Signature and Filing Requirements for Correspondence Filed in the Patent and Trademark Office** 58 FR 54494 (October 22, 1993) and 1156 OG 61 (November 16, 1993). Please refer to the rule changes to determine which documents are acceptable by ficsimile transmission. The facsimile number for the Application Processing Division is (703) 305-9863.

Applicants and practioners sending missing parts of a previously filed application by facsimile transmission to the Application Processing Division are advised to send the missing parts **only after** receipt of the Notice to File Missing Parts.

Customers using facsimile transmissions should not concurrently **mail** a copy of their response to the Notice to File Missing Parts.

General Guidelines for Facsimile Transmision Orders for PTO Products or Services

PTO customers using deposit accounts often find it convenient to place orders for products and/or make payments through telephone facsimile transmission. This reduces the amount of time for the PTO to receive, process and return completed orders or post payments.
Customers using facsimile should not concurrently mail a copy of their order to the PTO. This practice results in duplicate orders being filled and additional charges being posted against deposit accounts. Customers seekin confirmation of receipt of an urgent facsimile transmission should request so in their transmission cover sheet.

General PTO Facsimile Transmission Numbers

The capability exists to use facsimile transmission for certain requests or submissions of information as follows:

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Assignment Processing

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Deposit Accounts

TM (703) 308-3491 for deposit account inquiries.

Filing Receipts

TM (703) 308-2840 for requests for corrected filing receipts, questions about communications received regarding missing parts or incomplete applications, and status inquires.

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Board of Patent Appeals and Interference Correspondence

TM (703) 557-8642

Patent Examining Corps Correspondence

TM (703) 305-3599 (Group 1100)
TM (703) 308-4556 (Group 1200)
TM (703) 305-3601 (Group 1300)
TM (703) 305-3596 (Group 1500)
TM (703) 305-3014 (Group 1800)
TM (703) 305-3431 (Group 2100)
TM (703) 305-3603 (Groups 2200 and 2900)
TM (703) 305-9564 (Group 2300)
TM (703) 305-3588 (Group 2400)
TM (703) 305-3594 (Group 2500)
TM (703) 305-9508 (Group 2600)
TM (703) 305-7687 (Group 3100)
TM (703) 305-3579 (Group 3200)
TM (703) 305-3590 (Group 3300)
TM (703) 305-3463 (Group 3400)
TM (703) 305-3597 (Group 3500)

Patent Maintenance Fees

TM (703) 308-7110 for maintenance fee payment fee payments (FOR DEPOSIT ACCOUNT CUSTOMERS ONLY), status inquires, and general information requests regarding maintenance fees.

Refunds

TM (703) 305-8007 for request for refunds or refund documentation.

Trademark Examining Corps Correspondence

TM (703) 308-9099

January 12, 1994

THERESA A. BRELSFORD
Assistant Commissioner for Public Services and Administration

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Adverse Decisions In Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,552,927, Leslie F. Warren, CONDUCTING ORGANIC POLYMER BASED ON POLYPYRROLE, Interference No. 103,175, final judgement adverse to the patantee rendered December 14, 1993, as to claims 1-10.

Patent No. 4,641,650, Walter Y.W. Mok, PROBE-AND-FIRE LASERS, Interference No. 103,028, final judgement adverse to the patentee rendered January 4, 1994, as to claims 1-8.

Patent No. 4,693,994, Thomas F. McCutchan, Richard Wistar, Jr., PROTECTIVE SYNTHETIC PEPTIDE AGAINST MALARIA AND ENCODING GENE, Interference No. 102,421, final judgement adverse to the patentee rendered December 16, 1993, as to claim 1-4.

Patent No. 4,709,533, Steven Ausnit, METHOD AND APPARATUS FOR MAKING RECLOSABLE BAGS IN A FORM, FILL AND SEAL MACHINE, Interference No. 102,361, final judgement adverse to the patentee rendered January 10, 1994, as to claims 1-17.

Patent No. 4,838,253, Nigel J. Brassington, John A. Gilbert, SILICONE GEL COATED PERMEABLE WOUND DRESSING, Interference No. 102,565, final judgement adverse to the patentee rendered September 16, 1993, as to claim 1-10.

Patent No. 4,851,254, Minoru Yamamoto, Nobuei Ito, Hiroshi Uesugi, Tadashi Hattori, METHOD AND DEVICE FOR FORMING DIAMOND FILM, Interference No. 102,806, final judgement adverse to the patentee rendered December 21, 1993, as to claims 1-3, 6-7 and 9-11.

Patent No. 4,851,254, Minoru Yamamoto, Nobuei Ito, Hiroshi Uesugi, Tadashi Hattori, METHOD AND DEVICE FOR FORMING DIAMOND FILM, Interference No. 103,234, final judgement adverse to the patentee rendered December 21, 1993, as to claim 8.

Patent No. 4,921,638, Douglas A. Livingston, Bruce A. Pearlman, Scott Denmark, Joel E. Huber, 17BETA-CYANO-9ALPHA, 17ALPHA-DIHYDROXYANDROST-4-EN-3-ONE, Interference No. 102,967, final judgement adverse to the patentee rendered January 13, 1994, claim 1.

Patent No. 4,924,378, Antoinette F. Hershey, Andrew H. French, Christopher P. Boire, LICENSE MANAGEMENT SYSTEM AND LICENSE STORAGE KEY, Interference No. 102,655, final judgement adverse to the patentee rendered January 4, 1994, as to claim 19 and 23.

Patent No. 4,948,052, Edwin J. Hunter, REVERSIBLE GEAR OSCILLATING SPRINKLER WITH CAM CONTROLLED SHIFT RETAINER, Interference No. 103,092, final judgment adverse to the patentee rendered January 11, 1994, as to claims 1-26.

Patent No. 5,038,620, Harvey N. Rogers, Jr., Nicholas Cook, II, IMPROVED CORIOLIS MASS FLOW METER, Interference No. 103,075, final judgment adverse to the patentee rendered January 4, 1994, as to claims 1-21.

Patent No. 5,076,324, Seymour Herman, Matthew A. McCluskey, QUICK DISCONNECT COUPLING, Interference No. 103,143, judgment adverse to the patentee rendered January 5, 1994, as to claims 1 and 2.

Patent No. 5,089,146, Raleigh A. Carmen, Edward J. Nelson, PRESTORAGE FILTRATION OF PLATELETS, Interference No. 103,199,final judgment adverse to the patentee rendered December 16, 1993 as to claims 1-6.

NANNIE B. HENRY, *Deputy Clerk*
Board of Patent Appeals & Interferences
(703) 603-3298

Certificates of Corrections Week of February 22, 1994

B1 3,684,560	4,983,958	5,057,075	5,105,776
PP 8,261	4,989,568	5,060,266	5,106,517
RE 34,226	4,990,505	5,070,560	5,107,444
RE 34,433	4,999,160	5,071,764	5,109,154
DES 327,644	4,999,718	5,072,731	5,110,880
DES 335,199	5,000,569	5,073,587	5,115,041
4,454,551	5,001,162	5,075,287	5,115,495
4,645,828	5,001,692	5,077,506	5,118,358
4,770,725	5,002,888	5,079,274	5,124,030
4,822,363	5,003,801	5,080,143	5,125,960
4,824,439	5,006,917	5,084,442	5,127,197
4,871,856	5,010,242	5,087,401	5,131,571
4,874,963	5,013,841	5,091,770	5,132,115
4,888,779	5,021,180	5,092,164	5,132,316
4,920,033	5,028,590	5,093,230	5,134,243
4,957,393	5,028,737	5,096,700	5,135,309
4,957,878	5,032,445	5,097,558	5,135,363
4,959,498	5,034,399	5,101,016	5,136,281
4,970,906	5,037,729	5,101,580	5,136,547
4,973,302	5,039,837	5,101,839	5,139,853
4,977,980	5,050,132	5,102,474	5,140,024
4,980,863	5,053,945	5,103,228	5,140,108
4,982,179	5,055,481	5,104,639	5,142,562
5,143,952	5,181,971	5,203,870	5,220,030
5,146,001	5,182,040	5,204,034	5,220,279
5,148,266	5,182,157	5,204,087	5,220,604
5,149,164	5,182,255	5,204,592	5,220,989
5,149,780	5,182,278	5,204,762	5,221,015
5,150,181	5,182,580	5,204,858	5,221,107
5,151,493	5,182,581	5,205,500	5,221,173
5,151,734	5,182,608	5,205,588	5,221,283
5,152,315	5,182,650	5,206,267	5,221,947
5,153,461	5,182,738	5,206,747	5,222,208
5,153,688	5,182,834	5,207,073	5,222,248
5,153,839	5,183,455	5,207,212	5,222,659
5,154,872	5,184,526	5,207,637	5,223,285
5,157,687	5,185,258	5,207,935	5,223,875
5,157,709	5,185,615	5,208,108	5,223,903
5,160,118	5,187,038	5,208,827	5,224,028
5,160,858	5,187,494	5,209,011	5,224,360
5,162,162	5,187,547	5,209,060	5,224,409
5,162,253	5,187,737	5,209,373	5,224,494
5,162,254	5,188,363	5,209,598	5,224,585
5,162,431	5,188,925	5,209,634	5,224,953
5,162,435	5,189,853	5,209,741	5,225,055
5,162,656	5,189,923	5,209,783	5,225,928
5,162,818	5,190,016	5,211,451	5,225,980
5,163,426	5,191,023	5,211,483	5,226,304
5,164,427	5,191,243	5,212,178	5,226,666
5,164,992	5,191,357	5,212,214	5,226,900
5,166,172	5,191,401	5,212,516	5,228,139
5,166,958	5,192,421	5,212,592	5,228,434
5,167,792	5,192,985	5,212,695	5,228,517
5,167,855	5,193,167	5,212,926	5,228,824
5,168,044	5,193,423	5,213,460	5,228,924
5,168,309	5,193,868	5,213,605	5,229,549
5,168,512	5,194,431	5,213,675	5,230,022
5,168,720	5,194,610	5,214,020	5,234,755
5,169,133	5,194,722	5,214,046	5,235,134
5,169,298	5,195,013	5,214,333	5,235,977
5,169,500	5,195,129	5,214,673	5,235,978
5,169,714	5,196,064	5,214,749	5,236,798
5,170,184	5,196,711	5,214,983	5,237,117
5,171,101	5,197,004	5,215,404	5,240,917
5,171,353	5,197,118	5,215,476	5,241,234
5,171,415	5,197,155	5,215,519	5,241,380
5,171,845	5,198,269	5,215,942	5,241,907
5,171,919	5,198,347	5,215,959	5,244,230
5,172,142	5,198,466	5,216,086	5,246,290
5,172,165	5,198,736	5,216,122	5,246,684
5,174,858	5,199,068	5,216,174	5,247,819
5,174,875	5,199,832	5,216,303	5,248,352
5,175,070	5,199,942	5,216,623	5,248,755
5,175,161	5,200,343	5,216,942	5,250,932
5,175,445	5,200,485	5,217,437	5,252,198
5,175,565	5,200,517	5,217,479	5,252,711
5,176,122	5,200,645	5,217,499	5,254,410
5,176,802	5,200,713	5,217,755	5,254,736
5,177,520	5,200,727	5,217,959	5,256,146
5,178,502	5,201,219	5,218,416	5,256,458
5,179,269	5,201,581	5,218,728	5,259,115
5,179,356	5,201,995	5,219,218	5,262,060
5,179,897	5,202,264	5,219,365	5,262,138
5,180,327	5,202,410	5,219,367	5,263,292
5,180,367	5,203,373	5,219,383	5,264,527
5,180,738	5,203,404	5,219,500	5,266,667
5,181,179	5,203,514	5,219,887	
5,181,773	5,203,862	5,219,930	

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Summary of Final Decisions
issued by the
Trademark Trial and Appeal Board
December 27-30, 1993

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
12-28	EX	74/096,709	Greg Noll	2(d)		Refusal Affirmed	Design of man and surfboard [T-shirts, knit shirts, swimsuits, sweatshirts, etc.]	PURE BEACH (with design of man and surfboard) [men's and women's T-shirts, sweat, swimwear, knit shirts, etc.	No
12-30	EX	74/165,578	Charles T. Schlieder	2(d)		Refusal Affirmed	PUTTING WAND (PUTTING disclaimed) [golf club accessories, namely, stroke practice aids]	WOOD WAND [golf clubs, namely, putters]	No
12-30	EX	74/236,720	Mercel Corp.	2(e)(1)		Refusal Affirmed	RHINO-PAK [packing for use after nasal surgery]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING CROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	2/13/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	12/31/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/23/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	10/23/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	3/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/21/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/03/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	2/17/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	5/27/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	4/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/27/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/23/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/28/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/16/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/08/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/31/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	3/11/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents The patents within the range of numbers indicated below expire during Jan. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,000,520 to 4,005,493 inclusive
Plant Patents ..... 4,000 to 4,012

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of January 1, 1994

Law Office	Oldest Date New*	Oldest Date Amend-ment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	12/15/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	11/18/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/23/93	10/08/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/18/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	9/15/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	10/10/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/11/93	10/18/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/21/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/20/93	11/01/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	11/24/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/19/93	11/10/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/16/93	11/11/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/13/93	11/11/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	10/02/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

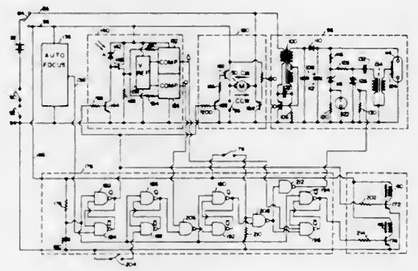
FEBRUARY 22, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 29,599 (2220th)
CONTROL CIRCUIT FOR PHOTOGRAPHIC APPARATUS

Francis T. Ogawa, Lakewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Reexamination Request No. 90/003,004, Mar. 9, 1993.
Reexamination Certificate for Reissue Patent Re. 29,599, issued Mar. 28, 1978, Ser. No. 698,384, Jun. 21, 1976.
Int. Cl.[5] G03B *3/00, 13/18, 7/00, 15/03, 7/08*
U.S. Cl. 354—400



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 3, 4, 5, 6** and **7** is confirmed.

Claim **2** was previously cancelled.

1. In an automatic photographic camera featuring a plurality of automatic functions, a control system for controlling the sequence and actuation of said automatic functions, said control system comprising:

means for producing a plurality of parametric signals representative of parameters related to said automatic functions,

a binary logic control circuit responsive to said parametric signals for producing a plurality of control signals,

said binary logic control circuit including means for establishing the selection and sequence of the actuation of said automatic functions,

means responsive to said control signals to effect the actuation of said automatic functions,

said control system including an automatic exposure control means for controlling the operation of the shutter of said camera,

said control means including an integrating light sensing means,

voltage reference means,

signal comparator means connected to said light sensing means and to said voltage reference means for producing one of said parametric signals as a function of the comparison of the outputs of said voltage reference means and said light sensing means,

said binary logic control circuit including gating means responsive to said one parametric signal for controlling the operation of the shutter of said camera,

said automatic functions including an automatically controlled electronic flash means, said automatic exposure control means including means for sampling the ambient light at a point in time early in the opening phase of the shutter of said camera,

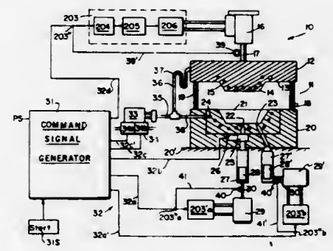
means for producing a further parametric signal representative of the result of the sampling of said ambient light, and

said binary logic control circuit includes means responsive to said further parametric signal to control the actuation of said electronic flash means, in accordance with the value of its ambient light whereby said electronic flash means is actuated to produce a flash whenever said ambient light is below a predetermined value and to block the actuation of said electronic flash means whenever the ambient light is above said predetermined value.

B1 3,616,495 (2221st)
MOLDING APPARATUS

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Reexamination Request No. 90/002,867, Oct. 29, 1992.
Reexamination Certificate for Patent No. 3,616,495, issued Nov. 2, 1971, Ser. No. 721,401, Apr. 15, 1968.
Continuation-in-part of Ser. No. 421,860, Dec. 29, 1964, abandoned, and a continuation-in-part of Ser. No. 421,817, Dec. 29, 1964, abandoned, which is a continuation-in-part of Ser. No. 439,549, Mar. 15, 1965, abandoned, said Ser. No. 734,340, is a continuation-in-part of Ser. No. 142,405, Oct. 2, 1961, Pat. No. 3,422,648
Int. Cl.[5] B29C *45/77*
U.S. Cl. 425—155



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11, 14, 15** is confirmed.

Claims **12, 13, 16** are cancelled.

1. An automatic molding apparatus comprising in combination:

(a) a mold composed of first and second mold members defining a molding cavity when said mold members are operatively assembled together for molding,

(b) means for guiding at least one of said mold members into operative relation with each other for molding an article therebetween,

(c) first power means for driving said one mold member into operative relation with respect to the other, said first power means also operative for separating said mold members to permit removal of the molded article therebetween,

(d) first control means for said first power means to control the opening and closing of said mold,

(e) passageway means through which molding material may be flowed to said cavity,

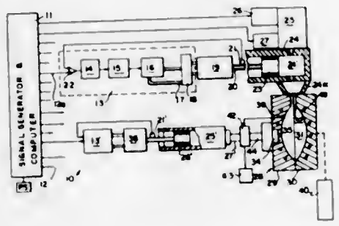
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(f) second power means for causing molding material to flow through said passageway means to said molding cavity,
(g) second control means for said second power means operative to control the flow of molding material to said mold,
(h) variably adjustable master control means having a plurality of control circuits and means for generating a respective control signal on said circuits which may be varied in their timed relationship to each other, said master control means being operatively connected to said first and second control means for said first and second power means and operative to predeterminately control the operation of each power means in a cycle which includes predeterminately variable controlling both the closure of said molds and the operation of said injection means, the opening and closing of the molds and the injection of molding material into the cavity being program controlled and predeterminately varied during a molding cycle.

B1 3,820,928 (2222nd)
CONTROL SYSTEM FOR MOLDING

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Reexamination Request No. 90/002,868, Oct. 29, 1992.
Reexamination Certificate for Patent No. 3,820,928, issued Jun. 28, 1974, Ser. No. 297,452, Oct. 13, 1972.
Continuation of Ser. No. 849,014, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495, which is a continuation-in-part of Ser. No. 421,860, Dec. 29, 1964, abandoned, which is a continuation-in-part of Ser. No. 421,817, Dec. 29, 1964, Pat. No. 3,462,594, which is a continuation-in-part of Ser. No. 439,549, Mar. 15, 1965, abandoned, which is a continuation-in-part of Ser. No. 734,340, May 9, 1958, Pat. No. 3,173,175
Int. Cl.[5] B29C *45/77*
U.S. Cl. 425—146



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6** and **9** is confirmed.

Claims **1-5**, **7**, **8**, **10** and **11** are cancelled.

9. Molding apparatus in accordance with claim **1** including means for flowing a heat transfer fluid to control the temperature of the material being molded, control means for flow of said heat transfer fluid, and a master control means for controlling the operation of said means for controlling said molding material flow control means and said control means for the flow of said heat transfer fluid.

B1 4,407,832 (2223rd)
PROCESSING OF MUSHROOMS WITH REDUCED WEIGHT LOSS

Andrew M. Ferguson, Alexandria, Va., and Howard M. Malick, West Chester, Pa., assignors to Mushroom Associates, Kennett Square, Pa.

Reexamination Request No. 90/002,971, Feb. 23, 1993.
Reexamination Certificate for Patent No. 4,407,832, issued Oct. 5, 1981, Ser. No. 308,681, Oct. 4, 1983.
Int. Cl.[5] A23L *1/212*
U.S. Cl. 426—281

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

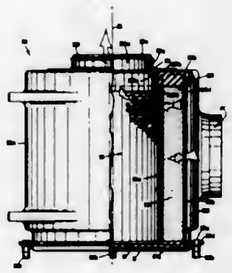
The patentability of claims **1-15** is confirmed.

1. A method for processing mushrooms for reducing shrinkage during subsequent cooking comprising the steps of:
introducing the mushrooms into a sealable container whose contents include a water suspension of an effective amount of an edible microscopic sized heat stable non water soluble solid particulate hydrophilic material, with an average particle size of less than 2 microns
subjecting the contents of the container to at least one application of a pressure whose value is sufficiently above atmospheric pressure to cause compression of the air entrained between the mycellular strands of the mushrooms tissue
wherein, the pressure is at least 10 psi above atmospheric pressure, and the microscopic particulate material is at least 0.5% by weight of the suspension
submerging the mushrooms in said water suspension while rapidly restoring the pressure in the container to atmospheric pressure, at a rate rapid enough to cause a portion of the compressed air entrained between the mycellular strands to be expelled from the mushrooms
said expelled air being replaced within the mushrooms by a quantity of the water suspension, and removing the mushrooms from the container.

B2 4,720,292 (2224th)
CYLINDRICAL AIR FILTER WITH LIGHTWEIGHT HOUSING AND RADIALLY DIRECTED SEAL

Donald F. Engel, Prior Lake, and Steven S. Gieseke, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Reexamination Request No. 90/002,950, Jan. 29, 1993.
Reexamination Certificate for Patent No. 4,720,292, issued Jul. 14, 1986, Ser. No. 884,992, Jan. 19, 1988.
Reexamination Certificate B1 4,720,292, issued Sep. 10, 1991.
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—337



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1-10** were previously cancelled.

Claims **11** and **24** are determined to be patentable as amended.

Claims **12-23** and **25-28**, dependent on an amended claim, are determined to be patentable.

New claims **29-50** are added and determined to be patentable.

B1 4,839,039 (2225th)
AUTOMATIC FLOW-CONTROL DEVICE

Natan E. Parsons, Brookline, and Joel S. Novak, Sudbury, both of Mass., assignors to Recurrent Solutions Limited Partnership, Cambridge, Mass.

Reexamination Request No. 90/003,010, Apr. 5, 1993.
Reexamination Certificate for Patent No. 4,839,039, issued Jun. 13, 1989, Ser. No. 834,741, Feb. 28, 1986.
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[5] B01D *36/00*; E03C *1/05*
U.S. Cl. 210—143



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **25-30** is confirmed.

Claims **1**, **2**, **5**, **9**, **12**, **19-20**, **22-24**, **31-33** and **36** are determined to be patentable as amended.

Claims **3**, **4**, **6-8**, **10**, **11**, **13-18**, **21**, **34** and **35**, dependent on an amended claim, are determined to be patentable.

New claim **37** is added and determined to be patentable.

33. For controlling the flow of fluid through a faucet, a flow-control device comprising:
A. a housing having a device inlet and first and second device outlets;
B. a first fluid conduit disposed in the housing for conducting fluid from the inlet to the outlet;
C. a second fluid conduit disposed in the housing for conducting fluid from the inlet to the second device outlet;
D. mounting means on the housing for mounting the device on the faucet with the device inlet in fluid communication with the faucet outlet;
E. sealing means for sealing the device inlet to the faucet outlet when the mounting means mounts the housing on the faucet so that fluid can flow from the faucet only by flowing through the flow-control device;
F. an electric valve interposed in the conduit and operable by application of control signals thereto to switch between an open state, in which the valve permits fluid flow through the first conduit, and a closed state, in which the valve prevents flow through the first conduit;
G. a filter element interposed in the second conduit andpresenting enough flow resistance so that fluid does not flow through the second conduit when the valve permits fluid flow in the first conduit, the filter element permitting fluid flow therethrough when the valve is closed so that filtered water flows through the second outlet; and
H. a sensor circuit *operable* for sensing the presence of objects in the vicinity of the second outlet and to close the valve when it senses an object near the second outlet, the flow-control device thereby permitting flow of unfiltered water through the first-mentioned outlet when no object is sensed near the first outlet and directing fluid flow through the filter element so that filtered water issues through the second outlet when an object is near the second outlet.

B1 4,867,808 (2226th)
HEAT TREATING A METALLIC WORKPIECE BY QUENCHING UNDER COOLING GAS UNDER ABOVE ATMOSPHERIC PRESSURE AND SPECIFIED CIRCULATION RATE

Paul Heilmann, Maintal; Friedrich Preisser, Buedingen, and Rolf Schuster, Hanau, all of Fed. Rep. of Germany, assignors to Leybold durferrit GmbH, Cologne, Fed. Rep. of Germany

Reexamination Request No. 90/003,135, Jul. 22, 1993.
Reexamination Certificate for Patent No. 4,867,808, issued Sep. 16, 1989, Ser. No. 261,927, Oct. 25, 1988.
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1987, 3736501
Int. Cl.[5] C21D *1/00*
U.S. Cl. 148—633

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **4** is cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2-3** and **5** dependent on an amended claim, are determined to be patentable.

1. **[**A**]** *In a* process for the heat treatment of metallic workpieces in a vacuum furnace by heating the workpieces and subsequently quenching them in a coolant gas under above-atmospheric pressure **[**and with**]** *by controlling*, coolant-gas circulation **[**, wherein**]** *by a motor-driven fan in said vacuum furnace, the improvement in achieving higher quenching intensity without having to increase the power of the motor for the coolant gas circulation comprising the steps of using as the coolant gas* helium, hydrogen, mixtures of helium and hydrogen or mixtures of helium and/or hydrogen with up to 30 volume percent inert gas **[**are used as the coolant gas**]**, *setting* the coolant gas pressure "p" in the furnace **[**is set**]** during the quenching at values between 1 and 4 MPa, and *selecting* the coolant gas rate "v" **[**is selected such that the product p.v has a**]** *provided by the motor-driven fan having the product p.v at* value between 10 and 250 m. MPa. sec^{-1}.

B1 4,918,454 (2227th)
COMPENSATED CAPACITORS FOR SWITCHED CAPACITOR INPUT OF ANALOG-TO-DIGITAL CONVERTER

Adrian B. Early, Buda, and Baker P. L. Scott, III, Austin, both of Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Reexamination Request No. 90/002,883, Nov. 10, 1992.
Reexamination Certificate for Patent No. 4,918,454, issued Apr. 17, 1990, Ser. No. 257,477, Oct. 13, 1988.
Int. Cl.[5] H03M *1/00*
U.S. Cl. 341—172

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims **7–40** is confirmed.

Claims **1–6** are cancelled.

7. A delta-sigma modulator for an analog-to-digital converter, the delta-sigma modulator having at least one stage of integration and a switched capacitor input sampling circuit, the switched capacitor input circuit comprising:

a first charge/redistribution circuit operating over a first charge/redistribution cycle and having a first switched capacitor of capacitance MX with first and second terminals oriented in the first polarity;

a second charge/redistribution circuit for operating over a second charge/redistribution cycle and having a second switched capacitor of capacitance NX with first and second terminals oriented in a second polarity opposite to said first polarity;

each of said first and second charge/redistribution circuit having:

first switching circuitry for connecting the first terminal of said associated first or second switching capacitor to an input voltage and the second terminal thereof to a reference voltage during a charging cycle within the associated one of said charge/redistribution cycles, and

second switching circuitry for connecting the second terminal of said associated first and second switching capacitors to the input of the delta-sigma modulator on the input of at least one stage of integration and the first terminal of the associated one of the first and second switching capacitors connected to a reference voltage during the charge redistribution cycle;

clock means for controlling the delta-sigma modulator and generating control signals for said first and second switch circuitries in the associated one of said charge/redistribution circuits such that the charge/redistribution cycle for said first charge/redistribution circuit occurs N times during the same time as M samples of said second charge/redistribution cycle;

each of said first and second switching capacitors comprising:

a lower electrode;

an upper electrode disposed over said lower electrode;

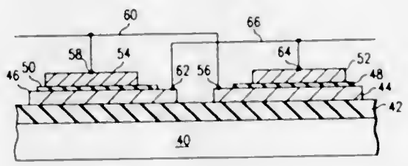
a layer of capacitor dielectric disposed between said lower and upper electrodes;

at least one of said upper and lower electrodes fabricated from a semiconductor material;

said lower electrodes of said first and second switching capacitors being substantially identical;

said upper electrodes of said first and second switching capacitors being substantially identical;

said polarity of said first and second switching capacitors determined by whether said upper electrode is connected to said input voltage or said lower electrode is connected to said input voltage during the charge cycle.



B1 4,960,165 (2228th)

METHOD AND APPARATUS FOR ADJUSTING A MOLD DURING CASTING IN A CONTINUOUS METAL CASTING PROCESS

Helmut Eidinger, Schoenering, and Werner Scheurecker, Linz, both of Austria, assignors to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H, Linz, Austria

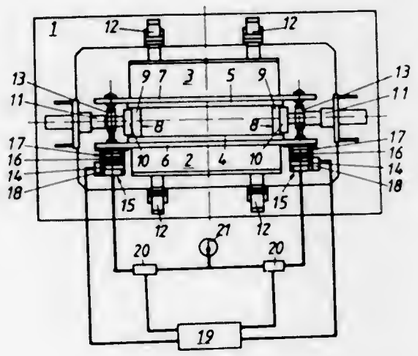
Reexamination Request No. 90/002,899, Dec. 2, 1992.

Reexamination Certificate for Patent No. 4,960,165, issued Oct. 2, 1990, Ser. No. 433,312, Nov. 8, 1989.

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3838010

Int. Cl.[5] **B22D** *11/04, 11/16*

U.S. Cl. 164—491



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–5** are determined to be patentable as amended.

Claim **6** dependent on an amended claim is determined to be patentable.

New claims **7** and **8** are added and determined to be patentable.

1. A method for adjusting a mold during a continuous metal casting process, the mold having first and second, relatively smaller end walls clamped between first and second, relatively larger side walls by biasing the side walls with a predetermined clamping force against the end walls, the mold being adjusted by *relieving the clamping force and* moving the end walls to a desired casting width, the method comprising the steps of:

continuously measuring *a momentary position of the side walls as determined by* the thermal expansion of the end walls during at least the start-up period of the continuous casting process *and while the clamping force is applied*[,] ;

storing [a] *the* measured [expansion] *momentary position* [value,] *of the side walls;*

releasing the clamping force[,] ;

thereafter moving the [large] side walls away from each other *to a displaced position which is displaced from said stored measured momentary by an amount such as* to form a gap of predetermined width between the thermally expanded end walls and the side walls[,] ;

thereafter moving the end walls to the desired casting width[,] ; and

thereafter re-applying the predetermined clamping force to the larger side walls.

B1 5,014,434 (2229th)

KITCHEN TOOL

Robert Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Springville, N.Y.

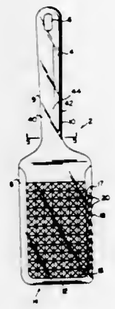
Reexamination Request No. 90/002,724, May 15, 1992.

Reexamination Certificate for Patent No. 5,014,434, issued May 14, 1991, Ser. No. 437,696, Jan. 2, 1990.

Continuation of Ser. No. 286,325, Dec. 19, 1988, Pat. No. 4,937,942

Int. Cl.[5] **A47J** *43/28*

U.S. Cl. 30—345



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A kitchen tool comprising a handle, a work end, a section connecting the handle and work end, wherein said handle work end and connecting section are integrally formed in a single piece consisting essentially of a polyetherimide.

B1 5,033,271 (2230th)

REFRIGERANT RECOVERY AND PURIFICATION SYSTEM

Kenneth W. Manz, Paulding, and Roger D. Shirley, W. Unity, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

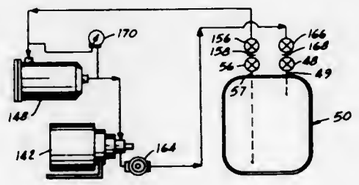
Reexamination Request No. 90/003,088, Jun. 7, 1993.

Reexamination Certificate for Patent No. 5,033,271, issued Jul. 23, 1991, Ser. No. 577,336, Sep. 4, 1990.

Division of Ser. No. 528,252, May 24, 1990, Pat. No. 5,038,578, which is a division of Ser. No. 319,618, Mar. 3, 1989, Pat. No. 4,938,031, which is a division of Ser. No. 204,675, Jun. 9, 1988, Pat. No. 4,809,520, which is a division of Ser. No. 117,098, Nov. 4, 1987, Pat. No. 4,768,347

Int. Cl.[5] **F25B** *43/00*

U.S. Cl. 62—125



B1 5,038,578 (2231st)

REFRIGERANT RECOVERY AND PURIFICATION SYSTEM

Kenneth W. Manz, Paulding, and Roger D. Shirley, West Unity, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Reexamination Request No. 90/003,089, Jun. 7, 1993.

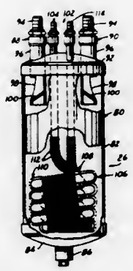
Reexamination Certificate for Patent No. 5,038,578, issued Aug. 13, 1991, Ser. No. 528,252, May 24, 1990.

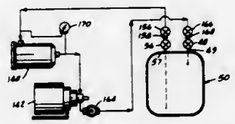
Division of Ser. No. 319,618, Mar. 3, 1989, Pat. No. 4,938,031, which is a division of Ser. No. 204,675, Jun. 9, 1988, Pat. No. 4,809,520, which is a division of Ser. No. 117,098, Nov. 4, 1987, Pat. No. 4,768,347

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] **F25B** *45/00*

U.S. Cl. 62—292





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are determined to be patentable as amended.

Claims **2**, **4**, and **5**, dependent on an amended claim, are determined to be patentable.

New claim **6** is added and determined to be patentable.

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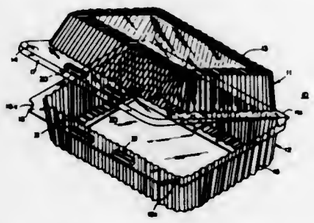
1. A self-contained refrigerant recovery system comprising: a refrigerant compressor having an inlet and an outlet; means including evaporator means for connecting said compressor inlet to a [refrigerant] *refrigeration* system from which refrigerant is to be recovered; refrigerant storage means; means including refrigerant condenser means for feeding refrigerant from said compressor outlet to said refrigerant storage means; filter means for removing contaminants from refrigerant passing therethrough; [and] means for selectively circulating refrigerant in a closed path through said filter means from and to said refrigerant storage means; *and means operatively coupled to said filter means and responsive to flow of refrigerant through said filter means for indicating operative condition of said filter means.*

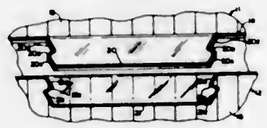
B1 5,046,659 (2232nd)

LATCHING STRUCTURE FOR FOOD CONTAINER

Richard T. Warburton, Canandaigua, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Reexamination Request No. 90/003,016, Mar. 22, 1993.
Reexamination Certificate for Patent No. 5,046,659, issued Sep. 10, 1991, Ser. No. 611,576, Nov. 13, 1990.
Int. Cl.[5] B65D *1/22*
U.S. Cl. 229—2.5 R





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

New claims **13–19** are added and determined to be patentable.

14. A container for food or other articles comprising:
a lid having a horizontal flange extending around the periphery thereof,
a base having a horizontal flange extending around the periphery thereof and adapted for engagement with the horizontal flange of said lid when said container is in closed condition,
means for latching said lid to said base, said latching means including:
at least one substantially rectangular male rib depending from said horizontal flange of said lid, the opposite ends of said rib having outwardly extending shoulder structure, the sides of said rib being substantially straight,
at least one substantially rectangular female recess in said flange of said base dimensioned to receive a cooperating said male rib in said lid, the opposite ends of said female recess having inwardly extending shoulder structure adapted to mate with said outwardly extending shoulder structure of said male rib in said lid, said sides of said female recess being substantially straight, said ends of said male rib and said ends of said female recess being constructed and arranged to deflect with respect to each other so that when said male rib is pressed into said female recess said shoulder structure on said male rib will snap into position beneath said shoulder structure in said female recess and interlock therewith to latch said lid to said base, said cooperating male rib and female recess being in isolation from any other male rib or female recess of said latching means.

B1 5,180,605 (2233rd)

GLOVES, THEIR MANUFACTURE AND USE

Richard Milner, Bishops Stortford, United Kingdom, assignor to Smith & Nephew plc, London, United Kingdom

Reexamination Request No. 90/003,150, Jul. 3, 1993.
Reexamination Certificate for Patent No. 5,180,605, issued Jan. 19, 1993, Ser. No. 686,177, Apr. 16, 1991.
Division of Ser. No. 341,946, Apr. 20, 1989, Pat. No. 5,031,245
Claims priority, application Japan, Apr. 23, 1988, 63-8809660; Apr. 23, 1988, 63-8809661; Apr. 25, 1988, 63-8809709
Int. Cl.[5] A01N *1/02*
U.S. Cl. 427—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. A method for the manufacture of an antimicrobial medical natural rubber glove, which comprises incorporating an antimicrobially effective amount of 2,4,4'-trichloro-2'-hydroxydiphenyl ether into the glove material prior to forming the glove.

REISSUES

FEBRUARY 22, 1994

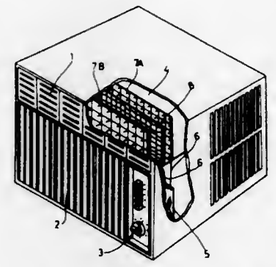
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,549

PURIFYING AIR CONDITIONER

Shin-Ching Sun, 3F., No. 32 Lane 132, Hu-Lin St., Taipei, Taiwan

Original No. 5,009,683, dated Apr. 23, 1991, Ser. No. 383,481, Jul. 24, 1989. Application for reissue Oct. 5, 1992, Ser. No. 956,329
Int. Cl.[5] B03C *3/00*
U.S. Cl. 96—66 **4 Claims**



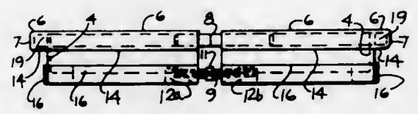
2. An improved air conditioning system for purifying air by removing dust particles therefrom, comprising in combination: a negative ion-filtering device disposed within the air blow direction path of said air conditioning system after the air has been treated for changing its temperature, said negative ion-filtering device comprising high voltage leads connecting a PC board to high voltage electric sheets in order to cause production of negative ions and a positive charge providing dust collecting mesh disposed between said high voltage electric sheets to cause floating dust particles in air passing after temperature adjustment to carry negative charges so that negative charged floating dust particles are drawn into attachment to said positive charged dust mesh, and any dust particles passing said positive charged dust mesh are negatively charged and allowed to fall in attachment to positive ground charges as the air exits the air conditioning system.

Re. 34,550

STURDY ADJUSTABLE MANHOLE COVER SUPPORT

Harold M. Bowman, 188670 N. Valley Dr., Fairview Park, Ohio 44126

Original No. 4,867,601, dated Sep. 19, 1989, Ser. No. 207,266, Jun. 15, 1988. Continuation of Ser. No. 578,007, Aug. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 76,668, Jul. 23, 1987, Pat. No. 4,834,574, which is a continuation-in-part of Ser. No. 201,573, Jun. 1, 1988, Pat. No. 4,867,600. Application for reissue Jun. 11, 1992, Ser. No. 897,282
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—26 **58 Claims**



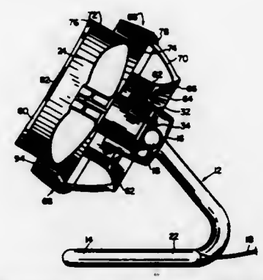
1. A manhole cover support comprising a body having a base portion with a cover seat portion, and a lateral keeper portion integral with the base portion, the keeper portion *being made of relatively thin metal* projecting upwardly from the seat portion, the base portion having at least one adjustable joint means for adjusting the base in peripheral dimension, the transverse wall thickness of the keeper portion being substantially less than the corresponding transverse thickness of the base, the cover support being adapted for raising the effective grade of an existing manhole cover receiving structure wherein the base portion of the support body rests on [the] *a* sill of the receiving structure, [the] *an* outer wall of the base portion faces [the] *an* upwardly-extending shoulder surface of the receiving structure, and expansion of the joint *means* presses the outer wall of the base portion against the shoulder surface of the receiving structure, the cover support including a *relatively rigid, metal* reinforcing wale that is integral with and substantially coextensive with [the] *and adjacent to an* upper part of the keeper portion, *the wale projecting outwardly and downwardly from the upper part of the keeper portion such that at least a portion thereof is in engagement with a confronting surface of the keeper portion and having a width in a lateral direction greater than said transverse wall thickness and extending downwardly from an upper end of said keeper portion for a relatively substantial distance sufficient to provide stiffness against deformation that would occur in conventional, 12–18 ga. steel keepers having very little outward flanging at the top.*

Re. 34,551

DUCTED FAN

Michael C. Coup; Gary P. Israel, both of Wichita; Glen W. Ediger, Newton, and Donald J. Moore, Wichita, all of Kans., assignors to Vornado Air Circulation Systems, Inc., Wichita, Kans.

Original No. 4,927,324, dated May 22, 1990, Ser. No. 294,780, Jan. 9, 1989. Application for reissue May 21, 1992, Ser. No. 886,230
Int. Cl.[5] F04D *29/70*
U.S. Cl. 415—121.2 **24 Claims**



21. A ducted fan comprised of a base member including a motor and a bladed propeller operatively attached thereto, an entry duct concentrically positioned upstream of the bladed propeller and connected to said base member, an outer member concentrically positioned relative to and connected to said entry duct so as to be spaced therefrom, duct means for enclosing the bladed propeller and having a portion removably connected to allow access to the interior of said ducted fan.

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Re. 34,552

TWO MATERIAL THREE/FIVE LAYER PREFORM

Suppayan M. Krishnakumar, Nashua; Thomas E. Nahill, Amherst; Steven L. Schmidt, and Wayne N. Collette, both of Merrimack, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Original No. 4,954,376, dated Sep. 4, 1990, Ser. No. 292,440, Dec. 30, 1988. Application for reissue Oct. 7, 1991, Ser. No. 772,447

Int. Cl.[5] **B65D** *23/00*; **B32B** *1/08*

U.S. Cl. 438—35.7 **20 Claims**

11. An injection molded plastic preform for blow molding to form a container, said preform being in part formed in three layers and in part five layers, said preform comprising a neck finish portion, a shoulder forming portion, a body forming portion, and a base forming portion, at least said body forming portion and said base forming portion having inner and outer layers formed of a primary material and separated by a layer of secondary material; said preform being improved in that in said base forming portion a central part of said secondary material is replaced by a core layer of material other than said secondary material, thus producing said five layer part, said preform at least in said body forming portion being formed of only three layers with said secondary material forming a relatively thick core layer.



PLANT PATENTS

GRANTED FEBRUARY 22, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,602

ROSE PLANT KEIBELMI

Seizo Suzuki, Yachiyo, Japan, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jan. 30, 1992, Ser. No. 830,210

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its distinctive red and white bicolor flowers, its healthy dark green, glossy and disease-resistant foliage, its abundance of flowers, its dwarf miniature habit of growth, its seven leaflet leaves and its pleasant, light fragrance.

8,603

MINIATURE ROSE PLANT NAMED BENMAGIC

Frank Benardella, Old Tappan, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Dec. 7, 1992, Ser. No. 986,242

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,604

ROSE PLANT KORTENSES

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Mar. 29, 1993, Ser. No. 40,157

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright, glossy green, disease-resistant foliage; bright red, semi-double flowers; ease of production using softwood cuttings; and vigorous, compact, well-branched habit of growth.

8,605

ROSE PLANT JACAPRI

Jack E. Christensen, Ontario, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jan. 7, 1992, Ser. No. 817,734

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its distinctive and unusual yellow-orange flower color, its moderate bloom fragrance, the profusion of glands on stipules, peduncles, leaf axils and upper rachises, vigorous upright habit growth, and large long-lasting blooms.

8,606

CHRYSANTHEMUM PLANT NAMED REGAL DESIREE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 27, 1992, Ser. No. 826,067

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Regal Desiree, as described and illustrated.

8,607

CHRYSANTHEMUM PLANT NAMED BARBARA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 7, 1992, Ser. No. 986,531

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Barbara, as described and illustrated.

8,608

CHRYSANTHEMUM PLANT NAMED TEIDE

Barrie J. Machin, Lee-on-Solent, England, assignor to Goldstock Breeding Limited, Hants, England

Filed Sep. 29, 1992, Ser. No. 952,976

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named Teide, as described and illustrated.

8,609

CHRYSANTHEMUM PLANT NAMED TRACY

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 7, 1992, Ser. No. 986,518

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—82.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Tracy, as described and illustrated.

8,610

CHRYSANTHEMUM PLANT NAMED YELLOW CHANTAL

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers Inc., Barberton, Ohio

Filed Jan. 27, 1992, Ser. No. 826,069

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Chantal, as described and illustrated.

8,611

CHRYSANTHEMUM PLANT NAMED CREAM CHANTAL

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 27, 1992, Ser. No. 826,066

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Cream Chantal, as described and illustrated.

8,612

ANTHURIUM PLANT NAMED LOLLIPOP

Ann E. Lamb, and Robert D. Hartman, both of Lake Placid, Fla., assignors to Twyford International, Inc., Sebring, Fla.

Filed Mar. 1, 1993, Ser. No. 24,347

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named Lollipop, as illustrated and described.

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8,613

GUZMANIA PLANT NAMED RED STAR

Luc Pieters, and Caroline DeMeyer, both of Koewegstraat 4, 9270 Laarme, Belgium

Filed Mar. 2, 1993, Ser. No. 25,244

Claims priority, application Belgium, Jul. 9, 1992, S1422; Netherlands, Jul. 15, 1992, BRM28

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.8 1 Claim

1. A new and distinct variety of Guzmania named "Red Star", as illustrated and described.

PATENTS

GRANTED FEB. 22, 1994

ERRATA

For CLASS	See PATENT NO.
070-014	5,287,710
074-040	5,287,728
074-471	5,287,743
084-391	5,287,785
108-144	5,287,804
211-012	5,287,971
211-064	5,287,972
211-113	5,287,973
211-184	5,287,974
298-023	5,288,137
606-014	5,288,288
501-093	5,288,676
436-018	5,288,678
505-001	5,288,679
008-639	5,288,680
148-413	5,288,683
118-722	5,288,684
436-027	5,288,695
435-199	5,288,696
264-040	5,288,698
429-111	5,288,700
210-640	5,288,712
210-696	5,288,713
156-522	5,288,714
430-531	5,288,715
210-729	5,288,728
430-022	5,288,729
148-113	5,288,736
210-195	5,288,737
430-579	5,288,738
502-063	5,288,739
521-058	5,288,740
525-159	5,288,741
430-237	5,288,745
252-095	5,288,746
521-040	5,288,760
435-243	5,288,789
252-025	5,288,792
524-504	5,288,817
210-640	5,288,818
252-172	5,288,819

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ERRATA—CONTINUED

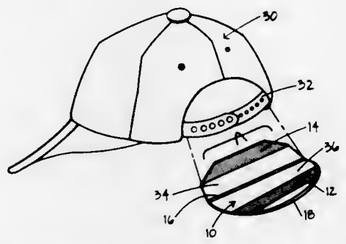
536-024	5,288,845
435-172	5,288,846
252-008	5,288,847
422-146	5,288,920
530-399	5,288,931
345-281	5,289,169
345-144	5,289,170
345-076	5,289,171
345-108	5,289,172
345-087	5,289,173
345-098	5,289,174
345-097	5,289,175
342-058	5,289,188
342-095	5,289,189
345-124	5,289,205
348-223	5,289,268
348-264	5,289,269
358-512	5,289,270
348-001	5,289,271
348-008	5,289,272
348-121	5,289,273
348-208	5,289,274
348-154	5,289,275
348-469	5,289,276
348-441	5,289,277
348-473	5,289,278
348-571	5,289,279
348-571	5,289,280
348-571	5,289,281
348-624	5,289,282
348-607	5,289,283
348-561	5,289,284
348-738	5,289,285
348-223	5,289,286
348-766	5,289,287
348-578	5,289,305
361-001	5,289,332
360-103	5,289,341
367-082	5,289,354
364-140	5,289,362
368-073	5,289,452
379-052	5,289,521

PATENTS

GRANTED FEBRUARY 22, 1994

GENERAL AND MECHANICAL

5,287,559
CAP STRAP COVER COMFORTER
David M. Christiansen, and Jeffrey A. Murray, both of St. Paul, Minn., assignors to CM Marketing Group, Inc., Edina, Minn.
Filed Jun. 18, 1992, Ser. No. 900,112
Int. Cl.[5] A42B *5/00*
U.S. Cl. 2—181 **2 Claims**



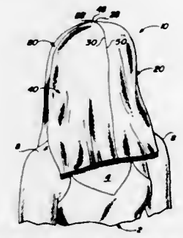
1. A cap strap cover device and cap combination having a hemispheric opening adjacent the sizing strap, the cover comprising:

a multiple-ply padded structure having a first portion and a second portion, the first and second portions being joined by a hinge formed by a plurality of generally parallel stitched seams for allowing the first and second portions to fold relative to one another into a folded position around the cap sizing strap in a semicircular pattern substantially covering the hemispheric opening in the cap;

fastening means for holding the padded structure in the folded position around the cap sizing strap, the fastening means including a hook and loop fastener having a first strip attached at a lower end of the second portion of the padded structure and a second strip, generally parallel to the first strip, attached to a central area of the first portion of the padded structure so the first and second strips contact one another when in the folded position;

the padded structure including a display surface having a symbol displayed thereon, the display surface being located on the padded structure so that the symbol is visible when the padded structure is in the folded position.

5,287,560
HAIR AND GARMENT PROTECTOR APPARATUS
Susan Garcia, 12435 W. Hidalgo, Avondale, Ariz. 85323
Filed May 4, 1992, Ser. No. 877,747
Int. Cl.[5] A42B *1/04, 1/18*
U.S. Cl. 2—202 **5 Claims**



1. Hair and garment protector apparatus for protecting a user's head, comprising, in combination:

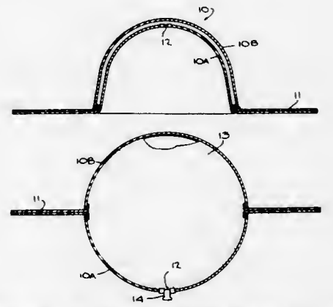
a dome portion disposed on the top of a user's head;

front panel means extending downwardly from the dome portion for covering the user's face and neck to protect makeup on the face while the user puts on and takes off clothing;

back panel means extending downwardly from the dome portion for covering the back of the user's head and neck, with the front panel means extending downwardly slightly longer than the back panel means; and

open slots between the front and back panel means for receiving the user's shoulders.

5,287,561
CONVERTIBLE FABRIC HAT AND PACKAGE THEREFOR
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Continuation-in-part of Ser. No. 840,022, Feb. 24, 1992, which is a continuation-in-part of Ser. No. 793,190, Nov. 13, 1991, Pat. No. 5,135,222, which is a continuation-in-part of Ser. No. 743,279, Aug. 9, 1991, which is a continuation-in-part of Ser. No. 345,405, May 1, 1989, Pat. No. 5,138,721, which is a continuation-in-part of Ser. No. 205,477, Jun. 13, 1988, Pat. No. 4,834,382. This application Jan. 22, 1993, Ser. No. 7,918
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—209.11 **6 Claims**



1. A fabric hat and balloon combination which is convertible into a flying play object that can be thrown and caught like a Frisbee, said convertible fabric hat and balloon combination comprising:

(a) a pair of dome-shaped sections, each having a circular rim, one nested within the other to define a hat crown having an inner liner, one of said sections having a slit therein;

(b) a rubber balloon provided with a stem, said balloon in a collapsed state being disposed in a space between said sections with the stem projecting from the slit;

(c) an annular disc joined at its inner periphery to the rims of the sections to define a hat brim, said hat being convertible by inflating said balloon through said stem to blow up the balloon to transform the crown into a ball whose equator is encircled by said annular disc to create said flying object, after which the stem is tied and pushed under the slit.

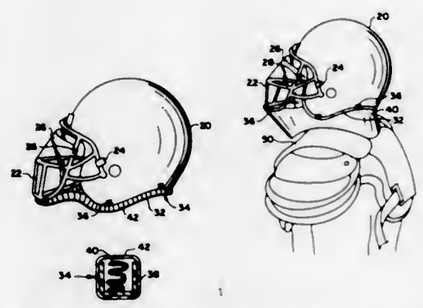
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5,287,562

HELMET TO PROTECT CERVICAL SPINE AGAINST AXIAL IMPACT FORCES

Gus A. Rush, III, 1800 12th St., Meridian, Miss. 39301

Continuation-in-part of Ser. No. 818,840, Jan. 10, 1992, abandoned. This application Oct. 22, 1992, Ser. No. 964,875
Int. Cl.[5] A42B 3/00
U.S. Cl. 2—413 28 Claims



10. A helmet for specific protection of the cervical spine of a wearer against axial compressive force sufficient to cause serious injury, comprising:

a rigid helmet having a lower rim partially encircling the head of a wearer behind the face;

extensible means attached to both sides of said helmet and normally not projecting substantially below said rim but being extendable therebelow to engage the shoulders of a wearer and substantially transfer to the shoulders the force of an external impact on the crown area of said helmet, said extensible means comprising inflatable bag means attached to said lower rim, said bag means being normally deflated and restrictedly folded so as to not impede normal movements of the head and neck of the wearer, but constructed and arranged to fill the gap between said lower rim and the shoulders of a wearer when inflated;

gas-operable means carried by said helmet for extending said extensible means to engage the shoulders of a wearer within approximately 25 milliseconds of an external impact on said gas-operable means, said gas-operable means including means carried by said helmet for almost instantaneously generating gas for operating said gas-operable means and sensor means located in the crown area of said helmet for operating said gas-generating means on an external impact on said crown area with a predetermined force to substantially instantaneously extend said extensible means to engage the shoulders of a wearer so as to transfer the impact force to the shoulders instead of directly through said helmet and head of the wearer generally axially to the cervical spine of the wearer, said gas generating means being operable to almost instantaneously generate inflating gas and communicate it to said bag means; and

a protective face guard attached to the helmet and extending over at least the eyes and nose of the wearer and wherein the bag means is also attached to the lower portion of said face guard and completely encircles a wearer, and a generally oval, channel-like shell which opens in a direction opposite a crown region of said helmet so as to allow said bag means to expand toward a wearer's shoulders when inflated wherein the bag means is folded and packed and wrapped with a rupturable membrane.

5,287,563

HYGIENIC URINAL

Scott W. Peters, 7730 Candle Green, Houston, Tex. 77071

Filed May 18, 1992, Ser. No. 884,011
Int. Cl.[5] E03D 13/00
U.S. Cl. 4—310 2 Claims



1. A standing-type hygienic urinal comprising

an outer body consisting of a vertical rear wall and two vertical side walls each of which is connected along its rear edge to a side edge of the vertical rear wall, a top surface and a floor surface;

a receptor cavity consisting of a vertical rear inner wall, a generally horizontal upper surface and two vertical inner side walls each of which is connected along its front edge to the front edges of a side wall of the outer body;

a deflector consisting of at least two joined deflector surfaces, each of said deflector surfaces extending downwardly from the top of the urinal;

shield means consisting of at least two shield members, each of said shield members extending angularly outward from the receptor cavity;

flushing means consisting of a water supply conduit, a water control valve operatively connected to the said water supply conduit, a discharge conduit for discharging water from the water control valve to the receptor cavity;

drain means consisting of an aperture provided in the floor of said urinal operatively connected to a sewer discharge conduit;

each of said at least two shield members extending angularly from the inner rear wall such that it is positioned approximately parallel and adjacent to a deflector surface; and

each of said at least two shield members extending angularly from the inner rear wall a distance greater than said deflector surfaces extend from the inner rear wall.

5,287,564

MULTI-PURPOSE WATER PRESSURE PLUNGER

Clyde F. Davenport, 405 Oakwood St., Greenwood, S.C. 29646

Continuation of Ser. No. 709,835, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 498,287, Mar. 23, 1990, Pat. No. 5,020,166. This application Mar. 29, 1993, Ser. No. 39,506
Int. Cl.[5] E03D 11/00
U.S. Cl. 4—255.05 4 Claims

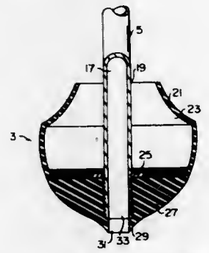
1. A multi-purpose water pressure plunger which sanitarily, efficiently, and dependably utilizes water pressure to clear clogged bathroom drains and the like, the improvement comprising:

a resilient, generally cone-shaped member for sealing against and partially extending into a drain opening, said cone-shaped member including an agile top portion and a solid, occlusive bottom portion, said bottom portion defining a nipple-shaped end which partially extends into a drain,

said cone-shaped member having an open central passage therethrough which defines an inner wall therethrough in said bottom portion which terminates in a first opening in said nipple-shaped end;

said cone-shaped member being exteriorly rounded defining a convex shape in cross-section, in increasing diameter from said first opening to an area of maximum diameter where said agile top portion begins, said agile top portion extending to define a second opening opposite and coaxial with said first opening, said agile top portion also being exteriorly rounded defining a concave shape in cross-section and decreasing in diameter from said area of maximum diameter to said second opening;

a firm, elongated handle extending through said second opening and being attached to said cone-shaped member in said bottom portion thereof, adjacent said nipple-shaped end, said handle having a lengthwise aperture therethrough and having an open end which extends into said central passage;



said open end of said handle terminating proximate said nipple-shaped end and said handle and its open end that extends into said central passage being embedded in said inner wall of said bottom portion;

an adjustable leak-proof valve made of non-corrosive material for controlling a flow of water, said adjustable valve including a ball component and a regulating lever, said ball component positioned inside said firm, elongated handle and communicating with said aperture, said regulating lever being positioned externally of said handle and governing said ball component, said adjustable valve located on opposite end of said handle element from said cone-shaped member;

a means on said handle element for connection to a pressurized water source so that said water, regulated by said adjustable valve, is supplied to said central passage through said lengthwise aperture.

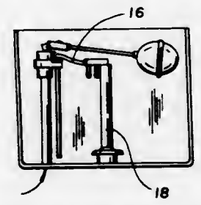
5,287,565

WATER SAVING DISPENSING DEVICE

C. David Auman, and Jack L. Martin, both of Belleville, Ill., assignors to Aqua Smart, Inc., Belleville, Ill.

Continuation-in-part of Ser. No. 624,599, Dec. 10, 1990, abandoned, and a continuation-in-part of Ser. No. 824,997, Jan. 27, 1992, abandoned. This application Dec. 14, 1992, Ser. No. 990,652
Int. Cl.[5] E03D 1/00
U.S. Cl. 4—415 20 Claims

1. In a flush closet including a toilet bowl and a toilet tank for supplying flush water to the bowl, the tank having a main conduit for supplying water from a water supply source to the tank and bowl after each flush, the main conduit feeding a first supply line for supplying the tank with water after a flush and a second supply line for supplying the toilet bowl with water after a flush, the second supply line dispensing water into a spill tube in fluid communication with the bowl, the improvement comprising a water saving device for dividing the flow of water from the second supply between the spill tube and the tank, said device comprising an elongate manifold having an inlet connected to the end of the second supply line, an elongate chamber in fluid communication with the inlet for receiving water from the inlet, and a plurality of outlet ports arranged in a row extending generally lengthwise of the manifold and spaced at intervals along the length of the manifold in fluid communication with the chamber, the manifold having a plurality of outlet tubes extending laterally from the manifold at spaced intervals, one for each port of the manifold, along the length of the manifold, said outlet tubes having spaces therebetween with each space having a width greater than the thickness of the wall of the spill tube for interfitting of the device



with the upper end of the spill tube, said outlet tubes having means on the outside thereof for frictionally gripping the wall of the spill tube for holding the device in a generally secure position with respect to the spill tube, the device as applied to the upper end of the spill tube having at least one of the outlet tubes extending down into the upper end of the spill tube with the wall of the spill tube extending into the space between said at least one outlet tube and an adjacent one of the outlet tubes and being engaged by said engagement means, said outlet tubes delivering a portion of the water from the second supply line into the spill tube and delivering the remainder into the tank.

5,287,566

SANITARY BIDET CONVERSION KIT FOR CONVENTIONAL TOILET BOWLS

Teodoro C. Azada, 922 Abington Rd., Cherry Hill, N.J. 08034

Filed Jun. 18, 1993, Ser. No. 77,927
Int. Cl.[5] E03D 9/08
U.S. Cl. 4—420.4 3 Claims



1. A sanitary bidet conversion kit for toilets having a toilet bowl, a toilet tank and a pressurized water supply for the tank, said sanitary bidet conversion kit comprising:

means for deviating water from said water supply;

a hose fluidly connected to said water deviating means to receive water flow therefrom;

means for selectively controlling said flow of water through said hose between flow and non-flow conditions;

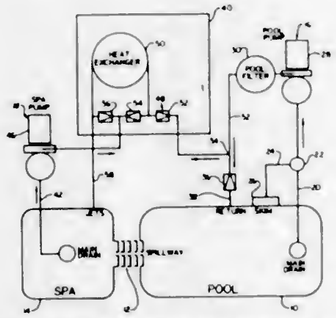
a bidet nozzle fluidly connected to said flow controlling means, said nozzle having a cover pivotally connected thereto and freely movable between a first position covering the outlet of said nozzle and a second position spaced from said outlet to allow water flow therefrom; and

means for mounting said nozzle within said toilet bowl such

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that said nozzle is directed upwardly causing said cover to assume said first position under the influence of gravity;
whereby when said flow condition of said flow controlling means is selected, waster flow through said nozzle causes said cover to be pivoted upwardly to allow water to flow from said nozzle.

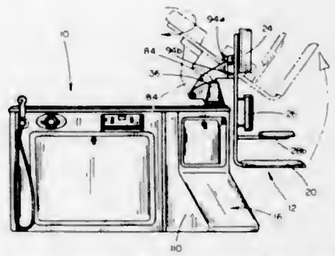
5,287,567
HYDRAULIC ISOLATION MANIFOLD
Willard L. Eash, Valrica, and Paul F. Fulmer, Plantation, both of Fla., assignors to Horner Equipment of Florida, Inc., Ft. Lauderdale, Fla.
Filed Mar. 12, 1993, Ser. No. 30,564
Int. Cl.[5] E04H 4/12
U.S. Cl. 4—493 **10 Claims**



1. A water flow control system for a swimming pool and a spa, said system including:
a water heater having a first flow rate for water between a water inlet and a water outlet;
first means including a pump for supplying water from said swimming pool at a second flow rate which is at least equal to said first flow rate;
second means including a pump for supplying water from said spa at a third flow rate which is greater than said first flow rate;
a flow control header having a water supply duct communicating with the water inlet of said water heater between spaced apart water inlet ducts communicating with said first and second means;
first valve means responsive to a water pressure difference between said first flow rate and said second flow rate for causing a partial flow of pool water to said water heater and a diverted flow of pool water to a first return line which communicates between the header and the pool; and
second valve means responsive to a water pressure difference between said first flow rate and said third flow rate for causing a partial flow of spa water to said water heater and a diverted flow of spa water to a second return line which communicates between the header and the spa.

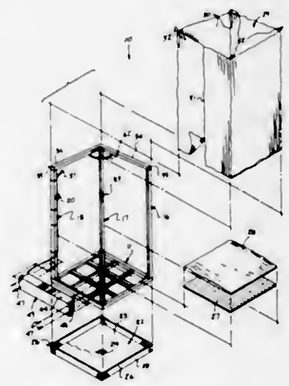
5,287,568
TILT LIFT BATHING SYSTEM
Gene D. Mohrmann, 224 SE. Calle Columbo, Columbus, Nebr. 68601
Filed Dec. 7, 1992, Ser. No. 986,623
Int. Cl.[5] A47K 3/12
U.S. Cl. 4—561.1 **18 Claims**

1. A tilt lift bathing system for supporting and lifting an individual into and from a bathtub having at least one wall with interior and exterior surfaces, comprising:
a base adapted to be mounted adjacent said one wall of said bathtub;
central support means mounted on and extending upwards from said base;
chair means having a back portion and a seat portion;
said chair means being mounted on said central support means for pivotal movement about a generally horizontal pivot axis between a lowered upright position adjacent either said interior or said exterior surface of said bathtub and a raised recumbent position above said central support means;
said chair means being supported on said base for rotational movement about a substantially vertical rotational axis situated behind said back portion thereof for pivoting said chair means about said substantially vertical axis; and



power means on said base for pivoting said chair means between said lowered upright positions and said raised recumbent position, whereby upon mounting of said base adjacent one wall of a bathtub, said chair means is pivotable upwardly adjacent from said exterior surface to the raised recumbent position by said power means, rotatable over said said one wall toward the bathing cavity of said bathtub and pivotable downwardly by said power means to the lowered upright position adjacent said interior surface of the tub for bathing an occupant of said chair means.

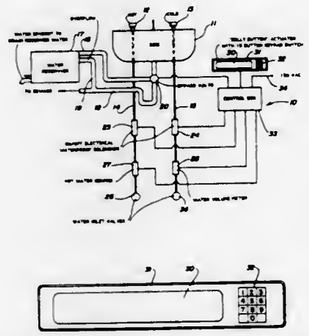
5,287,569
PORTABLE SHOWER APPARATUS
Wayne G. Johnson, 180 Clarke Rd., Vicksburg, Miss. 39180
Filed Nov. 9, 1992, Ser. No. 973,658
Int. Cl.[5] A47K 3/23
U.S. Cl. 4—599 **5 Claims**



1. A portable shower apparatus, comprising,
a framework having a base, with the base having base openings directed therethrough, and

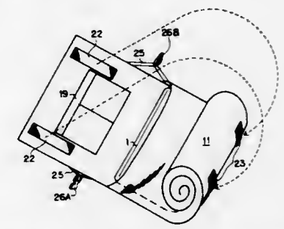
the framework further including a plurality of first post members, a plurality of second post members, a plurality of third post members, and a plurality of fourth post members, with the fourth post members including a first tubular post and a second tubular post, the first tubular post having a first conduit directed therethrough, the second tubular post having a second conduit directed therethrough, with the first and second conduits arranged for fluid communication relative to one another, and
a connector conduit directed into the first conduit, and
a roof assembly mounted to the post members, the roof assembly including a plurality of roof braces joined at an intersection, with the intersection having a mounting plate thereon, the mounting plate including a shower head, and one of said roof braces including a roof brace conduit in fluid communication with the second conduit, and the roof brace conduit being in fluid communication with the shower head, and
fluid supply means mounted to the fourth post members and the third post members for directing fluid into the second tubular post through the connector conduit, and
a flexible ground shield container positioned below the base, with the ground shield container having a container floor, the container floor having a drain opening directed therethrough, and the container further including container walls, the container walls each having a wall upper distal end, and each wall upper distal end includes a zipper means, wherein the zipper means of each container wall is arranged for selective securement relative to one another for securing the container walls together to receive the rectilinear base therewithin.

5,287,570
CONTROL SYSTEM FOR WATER FAUCETS
Donald A. Peterson, 13204 Myford Rd., Tustin, Calif. 92680, and Bryan J. Broussard, 1139 Charleston St., Costa Mesa, Calif. 92626
Filed Feb. 26, 1992, Ser. No. 841,537
Int. Cl.[5] E03C 1/00
U.S. Cl. 4—626 **3 Claims**



1. A system for controlling flow of hot and cold water, comprising:
a water faucets for supplying hot and cold water, respectively;
b inlet hot and cold water lines connected to the water faucets for supplying hot and cold water to the corresponding hot and cold water faucets;
c sink means for collecting outlet water from the water faucets, the sink means being disposed underneath and adjacent to the water faucets, and the inlet water lines being disposed under the sink means;
d a first drain line connected to, and downwardly from the sink means for draining water in the sink to sewage;
e a second drain line connected to, and downwardly from the sink means for draining water therefrom, the first and second drain lines forming a connection therebetween;
f a water reservoir for receiving water from the second drain line;
g an overflow drain line from the water reservoir and connecting to sewage;
h a by-pass valve mounted between the first and second drain lines in the connection therebetween and adapted to divert water from the first drain line to the second drain line, thereby draining to the water reservoir;
i a temperature sensor mounted within the inlet hot water line;
j a water volume meter mounted within the inlet cold water line and adapted to control the flow rate of the cold water;
k on-off solenoid valves mounted within the inlet hot and cold water lines;
l a microprocessor, including a programming and command keyboard input, and an electrically actuated control box connected thereto for controlling operation of the by-pass valve, water flow rates, water temperature, and the on-off solenoid valves which control hot and cold water flow, the control box being electrically connected to the microprocessor, by-pass valve, on-off solenoid valves, temperature sensor and water volume meter;
m an on-off control switch connected to the microprocessor and positioned in close proximity to the sink, the control switch being adapted to turn on the microprocessor and control box, and thereby turn on the system when depressed by a user's body when the user is in close proximity to the sink, and to turn off the system when pressure of the user's body is removed from the vicinity of the sink and away from contact with the control switch; and,
n solenoid actuatuable inlet valves mounted within the respective inlet hot and cold water lines for turning hot and cold water on and off.

5,287,571
SLEEPING BAG CARRYING AND STORAGE ENCLOSURE WITH AUTOMATIC CLOSURE MEANS
Debora L. Rademacher, 348 Sue Rd., Pocatello, Id. 83204
Filed Oct. 6, 1992, Ser. No. 957,352
Int. Cl.[5] A47C 29/00; B65D 33/24
U.S. Cl. 5—413 **9 Claims**



1. A sleeping bag carrying and storage enclosure for holding a sleeping bag in both rolled up and unrolled states, in combination with a sleeping bag, which comprises:
a sleeping bag;
elongated enclosure means being configured to receive and hold a sleeping bag in an unrolled state, wherein the elongated enclosure is formed from a fabric panel being folded along a centerline and sewn along two edges to form a generally rectangular enclosure having shorter foot and head ends and longer sides, the folded panel further defining a bottom panel half including a ground facing surface, and a head panel portion extending coplanarly from the bottom panel half at the shorter head end, the head panel portion including both a ground facing surface and a sky facing surface, and the shorter head end being open for receiving the sleeping bag into the enclosure;
a string pocket panel, having a perimeter edge defining its

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shape and being attached around a majority of its perimeter, but unattached along one edge, to the enclosure proximate the enclosure's foot end to form a string pocket;

the enclosure having a pair of string holes through it at points proximate the string pocket panel for receiving sleeping bag tie strings and holding them within the string pocket and securing the sleeping bag to the enclosure; and

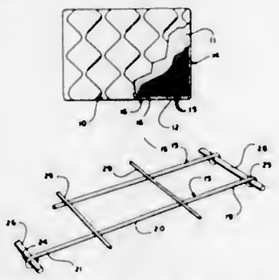
automatic closure means, including a latch being positioned on the enclosure means and configured to close in response to the sleeping bag being rolled up, for holding the sleeping bag in a rolled up state.

5,287,572

LEVER SUPPORTING SYSTEM FOR FOAM MATTRESS

Mark J. Strobel, 3131 Industrial Pkwy., Jeffersonville, Ind. 47130

Filed Mar. 5, 1993, Ser. No. 26,862
Int. Cl.[5] A47C *27/16, 27/20*
U.S. Cl. 5—464 **9 Claims**



1. A mattress having a sleeping surface, a head end and a foot end, said mattress comprising an upper pad juxtaposed on a lower pad, and a layer of levers between said upper pad and said lower pad, said layer of levers comprising a plurality of groups of levers, each group of said plurality of groups of levers including a plurality of independent levers having first ends and second ends, each lever in said layer of levers extending in a direction perpendicular to said head end and said foot end and lying in a plane parallel to said sleeping surface, each lever of said plurality of independent levers being independently movable so that a downward force on said sleeping surface will cause a downward movement of said first end of at least one lever of said plurality of levers and consequent upward motion of the second end of said at least one of said plurality of levers.

5,287,573

DIVIDED BED SHEETS FOR DOUBLE BEDS

Susan C. Ritacco, 3 Edgewood Dr., Holmdel, N.J. 07733

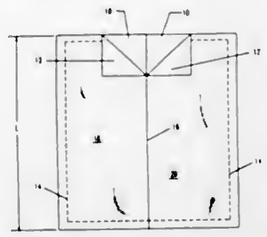
Filed Mar. 26, 1993, Ser. No. 37,311
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—486 **6 Claims**

1. In a double bed covering for two users desiring differing warmth characteristics;

a first fitted sheet, composed of a flannel section and a separate cotton-polyester blend material section affording differing warm the characteristics; and

a second flat sheet overlying said first fitted sheet, similarly composed of a flannel section and a separate cotton-polyester blend material section affording differing warmth characteristic;

and with said flannel section and said cotton-polyester blend material section of each said sheet being permanently joined together along their respective lengths at an adjacent edge thereof all said sections being of generally similar sizes and shapes, whereby two uses of the double bed



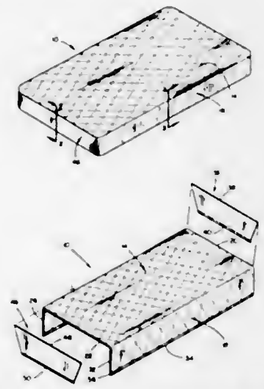
covering, lying side by side between the fitted and flat sheets could be accommodated.

5,287,574

FITTED BED SHEET OR MATTRESS PAD WITH ELASTICIZED HEAD AND FOOT PANELS

Virgil L. Kardell, and Janet L. Kardell, both of Wayne, Nebr., assignors to Restful Knights, Wayne, Nebr.

Filed May 12, 1993, Ser. No. 62,436
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—499 **3 Claims**



1. An improved bed clothing capable of accommodating various sizes of a conventional innerspring mattress and a waterbed mattress for any given size classification comprising:

a first panel of a quilted material including a top portion and first and second side portions for covering the top and sides of the mattress,

said top portion having head and foot edges extending between said first and second side edges,

said first and second side portions each having head, foot, and bottom edges,

a highly stretchable head panel secured to said head edge of said top portion and to said head edge of said first and second side portions,

a highly stretchable foot panel secured to said foot edge of said top portion and to said foot edges of said first and second side portions,

said head panel including a top edge, a bottom edge, and first and second side edges,

said bottom edge of said head panel having a shorter length than said top edge of said head panel, said first and second side edges of said head panel extending downwardly and inwardly from said top edge of said head panel to said bottom edge of said head panel,

said foot panel including a top edge, a bottom edge and first and second side edges,

said bottom edge of said foot panel having a shorter length than said top edge of said foot panel, said first and second side edges of said foot panel extending downwardly and inwardly from said top edge of said foot panel to said bottom edge of said foot panel,

said top edge of said head panel being secured to said head edge of said top portion,

said first side edge of said head panel being secured to said head edge of said first side portion,

said second side edge of said head panel being secured to said head edge of said second side portion,

said top edge of said foot panel being secured to said foot edge of said top portion,

said first side edge of said foot panel being secured to said foot edge of said first side portion,

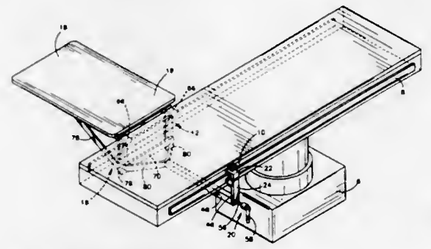
said second side edge of said foot panel being secured to said foot edge of said second side portion.

5,287,575

HAND TABLE

Allen R. Daniel, Newbury, and Yury Keselman, Woodmere Village, both of Ohio, assignors to Allen Medical Systems, Bedford Hts., Ohio

Filed Nov. 9, 1992, Ser. No. 973,407
Int. Cl.[5] A61G *13/00*
U.S. Cl. 5—623 **17 Claims**



1. An auxiliary hand table, comprising:

first and second mounting means for releasably mounting said hand table to first and second rails provided by a surgical table, said first mounting means providing a force adjustment means; and,

a bar extending between said first and second mounting means, said force adjustment means being in contact with said bar whereby adjustment of said force adjustment means increases the force between said first and second mounting means and more firmly mounts said hand table to said main table, said bar cooperating with said first and second mounting means to maintain said hand table in a generally horizontal position.

5,287,576

HEAD SUPPORT

Lance G. Fraser, 1509 Windermere Ct., Palmdale, Calif. 93551

Filed Feb. 8, 1993, Ser. No. 14,861
Int. Cl.[5] A47G *9/00*; A61G *13/12*
U.S. Cl. 5—637 **12 Claims**

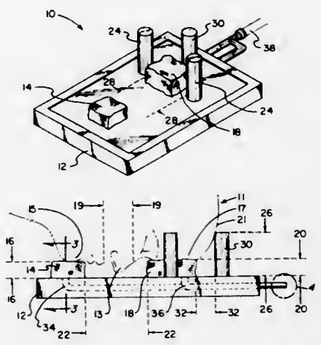
1. A new and improved head support apparatus for a person's head, comprising:

a substantially planar base member;

a nonrigid chin rest member supported by said base member and projecting from said base member a first vertical distance which is longer than a nose of the person when a chin of the person is resting on said chin rest member;

a nonrigid forehead rest member supported by said base member and projecting from said member a second vertical distance which is longer than the nose of the person when a forehead of the person is resting on said forehead rest member, and wherein said forehead rest member is spaced from said chin rest member, on said base member by a first horizontal distance which is greater than a height of the nose of the person; and

at least two peripheral guide members supported substantially orthogonally by said base member and projecting from said base member a third vertical distance which is longer than said first and second vertical distances and, and wherein said at least two peripheral guide members are spaced from one another on said base member by a second horizontal distance which is sufficient to permit the person's head to be restrained between said peripheral guide members when the forehead of the person is resting on said forehead rest member.

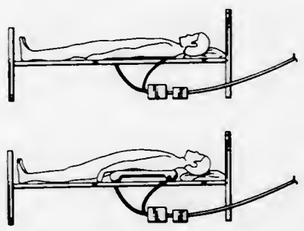


5,287,577

APPARATUS AND METHODS FOR ELEVATING A PATIENT TO FACILITATE X-RAY PHOTOGRAPHY

Ross L. Bremer, 1107 Margaret St., Jacksonville, Fla. 32204, and David A. Clayman, 2730 Forest Cir., Jacksonville, Fla. 32257

Filed Jan. 11, 1993, Ser. No. 3,014
Int. Cl.[5] A47C *27/08*; A61G *7/10*
U.S. Cl. 5—644 **13 Claims**



1. Inflatable apparatus for elevating a patient from a surface sufficiently to insert an X-ray plate under the patient, comprising:

a plurality of generally parallel, longitudinally extending inflatable tubes disposed in side-by-side relation relative to one another;

a pair of inflatable end tubes at the respective opposite ends of said plurality of tubes and extending laterally thereof, said end tubes having a shape, when inflated, such that portions of said end tubes lie below the undersides of said

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plurality of tubes to define a recess between said end tubes, the undersides of said plurality of tubes and the surface accessible from at least one side of said apparatus and sufficient in size to receive an X-ray plate; and

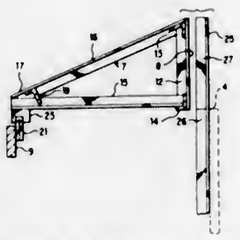
means for inflating said tubes, said tubes being formed of a radiolucent material.

5,287,578

WIND BREAKUP MEANS FOR SUSPENSION BRIDGES

John E. Lovret, 908 Orange St., Clint, Tex. 79836

Filed Dec. 2, 1992, Ser. No. 984,552
Int. Cl.[5] E01D *11/00*
U.S. Cl. 14—18 **9 Claims**



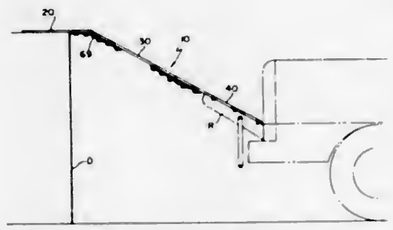
5. Wind breakup means adapted to be mounted to a sidewall of a suspension bridge, the means comprising: a pair of posts adapted to be mounted vertically and in laterally spaced relation to each other to the sidewall in such manner that lower portions of the posts are secured to the sidewall and upper portions of the posts extend up from the sidewall; and a metal frame mounted to the posts, the frame having a vertically extending rectangular back section disposed above the lower portions of the posts and secured at its vertical sides to the upper portions of the posts, a rectangular base section extending at right angles in a horizontal plane from a bottom end of the back section, and a rectangular metal plate pivoted along its top to an outer end of the base section, the plate depending from the base section in spaced relation to and parallel to the lower portions of the posts and having a vertical length complementing that of the sidewall but shorter than the distance spacing the plate by the base section away from the posts and from the sidewall in a mounted condition of the means to the sidewall, whereby the plate when subjected to a driving wind is adapted to swing back and forth and to dissipate energy of the wind as it swings.

5,287,579

LOADING AND BRIDGE RAMP FOR PICK-UP TRUCKS

Orestes Estevez, Jr, 13320 S.W. 79th St., Miami, Fla. 33183

Filed Sep. 29, 1992, Ser. No. 953,159
Int. Cl.[5] B65G *69/28*
U.S. Cl. 14—71.1 **2 Claims**



1. A loading and bridging ramp removably mounted to the rear tail gate of pick-up trucks, comprising:

A. first, second and third rectangular flat members contiguously disposed and said flat members further including four edges each and wherein said second flat member is centrally disposed with respect to said first and third flat members so that said first and third flat members have each one abutting edge with said second flat member;

B. first hinge means for hingedly connecting said first and second flat members said first hinge means further includes a first shaft member and at least two first hinge leaf members and said first hinge means being mounted so that said first shaft member is parallel to and offset from the abutting edges of said first and second flat members wherein one of said first hinge leaf members is partially on said first and second flat members and further includes a bend substantially coinciding with the abutting edges of said first and second flat members so that said first and second flat members can open up to a predetermined angle;

C. second hinge means for hingedly connecting said second and third flat members said second hinge means further includes a second shaft member and at least two second hinge leaf members and said second hinge means being mounted so that said second shaft member is parallel to and offset from the abutting edges of said second and third flat members wherein one of said second hinge leaf members is partially on said first and second flat members and further includes a bend substantially coinciding with the abutting edges of said second and third flat members so that said first and second flat members can open up to a predetermined angle wherein said abutting edges include cooperative angled terminations that cause said contiguously hinged flat members to open up to said predetermined angle; and

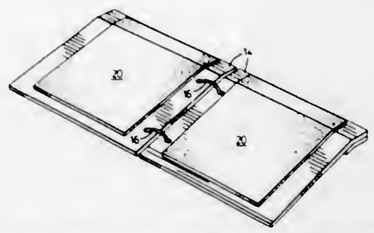
D. means for removably mounting said first flat member to said rear tail gate.

5,287,580

FOLDING PORTABLE RAMP

Steven H. Nelson, 4 Knightsbridge Rd., Apt. 406, Brampton, Ontario L6T 5L5, Canada

Filed Dec. 20, 1991, Ser. No. 810,861
Claims priority, application Canada, Dec. 21, 1990, 2032918
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—71.3 **18 Claims**



1. A lightweight portable ramp for use in allowing a wheeled vehicle to traverse between a first upper level and a second lower level, said ramp comprising:

two rigid planar ramp members having a hinging means therebetween; wherein each rigid planar ramp member has a bent first end adapted for operative engagement with said first upper level and a second end adapted for operative engagement with said second lower level; said ramp members being adapted to supportingly span between said first upper level and said second lower level and being of a small size and low weight so as to be maneuverable in to and out of place by a person using one hand; and

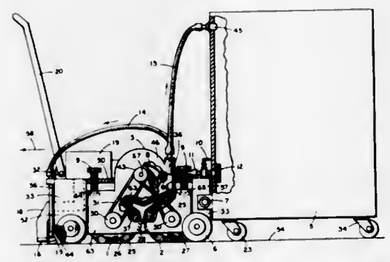
wherein said hinging means connects said two rigid planar ramp members in side-by-side adjacent relation to each other between said bent first end and said second end, so that said portable ramp may be changed between a transportable position whereat said two ramp members are folded against one another and an in-use position whereat said ramp members are pivoted outwardly so as to be generally co-planar.

5,287,581

CLEANING DEVICE HAVING AT LEAST ONE ROTATING CYLINDRICAL SPONGE

Kam C. Lo, 934 Everett St. #6, Los Angeles, Calif. 90026

Filed Nov. 2, 1992, Ser. No. 970,183
Int. Cl.[5] A47L *11/292*
U.S. Cl. 15—52 **10 Claims**



1. A device for cleaning a work surface, comprising a housing having a front end and a rear end; wheels carried by said housing for rollably supporting said housing said housing in spaced relation to the work surface; said housing having a movement axis parallel to the wheel movement planes; means for applying a film of cleaning fluid to the work surface as the housing moves therealong; an axially elongated rotary cylindrical brush carried by the housing for rotational motion around an axis transverse to the housing movement axis; said rotary brush being located behind the fluid applying means, whereby said brush exerts a scrubbing action on the fluid and work surface during movement of the housing; at least one rotary cylindrical sponge supported for rotational movement around an axis transverse to the housing movement axis; each said rotary sponge being located behind the rotary brush, whereby each said sponge removes cleaning fluid and loosened dirt from the work surface incident to movement of the housing along the work surface; sponge compression means engageable with an upper surface area of each said sponge to remove dirt-laden fluid from the sponge while the sponge is rotating; said sponge compression means comprising a perforated plate extending along the axial length of each said sponge, whereby the plate exerts a compressing action on the sponge, such that dirt-laden fluid is forced out of the sponge through the plate perforations; each said sponge comprising a rigid cylinder concentric with the sponge rotational axis, a plurality of segmental sponge elements radiating outwardly from said cylinder, and a plurality of flexible partitions extending outwardly from said cylinder between adjacent ones of said sponge elements, whereby fluid absorbed by any given sponge element is prevented from migrating into adjacent sponge elements.

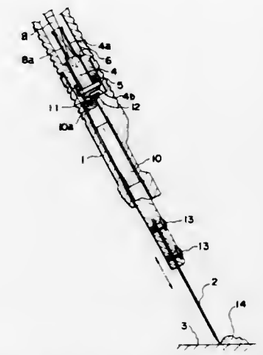
5,287,582

ADHERING SUBSTANCE PEELING APPARATUS

Norio Kawai, and Yoshiki Kitamura, both of Yokosuka, Japan, assignors to Oppama Kogyo Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 755,661, Sep. 6, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,488
Claims priority, application Japan, Sep. 8, 1990, 2-94717
Int. Cl.[5] A47L *13/08, 11/12*
U.S. Cl. 15—93.1 **1 Claim**

1. A mechanical scraper for removing objects adhered to a floor surface comprising an elongated portable hollow housing manipulatable by the user, a prime mover mounted within said housing, a cam rotatably connected to said prime mover and having a concavo-convex cam surface, a freely axially movable support rod mounted in said housing having an inner end facing said concavo-convex cam surface and a scraper blade fixed at its outer end and normally extending outwardly of said



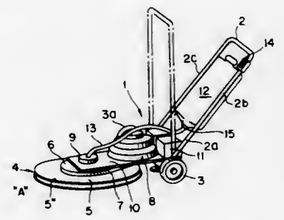
housing and retractable into said housing on engagement with said floor surface, the inner end of said support rod having a conical recess concentric with the axis of said supporting rod in which is received a freely movable ball, said ball engaging the concavo-convex cam surface when said supporting rod is retracted into said housing to cause said support rod to move with a predetermined axial stroke with a minimum of friction.

5,287,583

MACHINE FOR TREATING FLOOR SURFACES

Bo V. Lilja, Lorensviksvägen 14, 183 63 Täby, Sweden

PCT No. PCT/SE90/00133, § 371 Date Sep. 6, 1991, § 102(e) Date Sep. 6, 1991, PCT Pub. No. WO90/10415, PCT Pub. Date Sep. 20, 1990
PCT Filed Feb. 27, 1990, Ser. No. 752,478
Claims priority, application Sweden, Mar. 9, 1989, 8900836-1; Aug. 21, 1989, 8902782-5
Int. Cl.[5] A47L *11/282, 11/34, 11/40*
U.S. Cl. 15—98 **19 Claims**



1. A floor treatment machine, comprising:

a frame;

a handle mounted to said frame by means of an attachment means;

wheels mounted to said frame;

a rotatable floor treatment pad mounted on said frame;

said attachment means including:

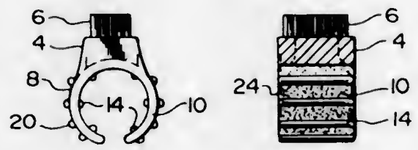
a first part that is attached to said frame so as to enable said first part to rotate with respect to said frame about a first axis;

a second part pivotably attached to said first part so as to

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enable said second part to pivot with respect to said first part about a second axis;
means for mounting said handle to said second part.

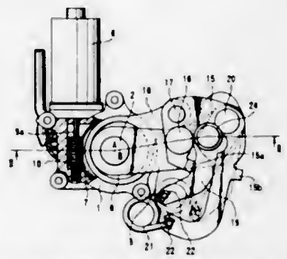
5,287,584
TOOTHBRUSH
John R. Skinner, West Vancouver, Canada, assignor to Practical Products Ltd., North Vancouver, Canada
Filed Jun. 23, 1992, Ser. No. 902,980
Int. Cl.[5] A46B 9/04
U.S. Cl. 15—167.1 **10 Claims**



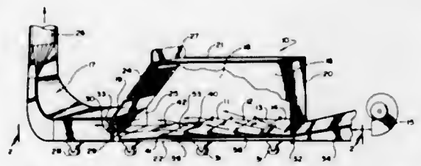
1. A reusable finger toothbrush, comprising:
(a) a solid base having an exterior face, an interior face and first and second sides opposite to one another;
(b) a plurality of parallel bristles secured in and protruding as a bunch from the exterior face of the base;
(c) a first curved finger gripping means having interior and exterior surfaces, the gripping means extending from the first side of the base in a direction away from the bristles, a distal end of the means curving over the interior face of the base;
(d) a second curved finger gripping means having interior and exterior surfaces, the gripping means extending from the second side of the base in a direction away from the bristles, a distal end of the second means curving over the interior face of the base towards the first finger gripping means, an interior concave surface of the second finger gripping means facing an interior concave surface of the first finger gripping means;
(e) a plurality of friction enhancing twist retarding longitudinal surfaces parallel to a finger-receiving channel defined by the base and the first and second curved finger gripping means and spaced from one another, and formed in and displaced from the respective interior concave facing surfaces of the first and second gripping means; and
(f) a plurality of friction enhancing longitudinal surfaces formed on the exterior surfaces of the first and second curved finger gripping means.

5,287,585
WIPER APPARATUS WITH MOTOR ADJUSTABLE LIMIT POSITIONS
Tokihiko Yamamoto, Kariya; Ryoichi Fukumoto, Nagoya; Kazuhiro Sumiya, Hekinan, and Masao Ohhashi, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 27, 1991, Ser. No. 675,968
Claims priority, application Japan, Mar. 31, 1990, 2-85897
Int. Cl.[5] B60S 1/04; A47L 1/00
U.S. Cl. 15—250.13 **4 Claims**

1. A wiper apparatus for a vehicle, comprising:
an elongated main shaft rotatably supported for rotation about a shaft axis;
a wiper blade supporting wiper arm secured to said main shaft;
a main lever secured to one end of said main shaft;
a eccentric member rotatable about said shaft axis;
a plate turnably supported on said main lever by a first pin spaced from said shaft axis;
a subordinate lever having one end supported by said eccentric member and another end connected to said plate by a second pin spaced from said first pin and said shaft axis so that rotation of said eccentric member about said main shaft axis moves said second pin relative to said first pin to change the position of said plate;
a drive arm turnably supported on said plate by a third pin and having a joint portion connected to a reciprocating drive mechanism;
a turnover spring operative between said plate and said drive arm for holding said drive arm at one of a first position, at which said wiper arm is accommodated in a fully concealed state in normal operation of said wiper arm, and a second position at which said wiper arm is accommodated in a semi-concealed state when an excessive load is applied to said wiper arm and said wiper blade by the reciprocating drive mechanism; and
motor means including a motor coupled to said cam for rotating said eccentric cam through a selected angle in response to one of vehicle speed and wiper blade speed to change a pivot position of the main lever relative to the drive arm by movement of the subordinate lever.



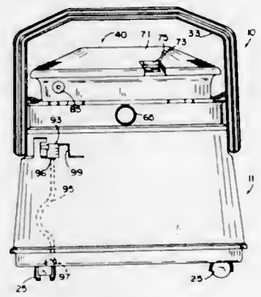
5,287,586
MATERIAL COLLECTING/REMOVAL APPARATUS
Thomas E. Dentzau, Springfield, Mass., assignor to Waldorf Corporation, St. Paul, Minn.
Filed Apr. 9, 1992, Ser. No. 865,864
Int. Cl.[5] A47L 5/34
U.S. Cl. 15—303 **22 Claims**



1. A waste collecting/removal apparatus for connection with a vacuum waste system and an air flow source, said apparatus comprising:
a bin having a closed bottom, an at least partially open top, a pair of sides joining said top and bottom and a front end and a rearward end joined with said sides;
a front opening at said front end for connection with a vacuum waste system;
a rearward opening at said rearward end for connection with an air flow source;
a plurality of adjustable air flow louvres extending across said bin, each of said louvres having a rearward end fixed to said bin and spaced above said bottom and a forward end being vertically adjustable, each of said louvres being inclined forwardly and upwardly relative to said bin bottom;
adjustment means associated with each of said louvres for adjusting the vertical position of the forward end thereof; and

an air flow plenum in communication with said rearward opening and positioned below said plurality of louvres.

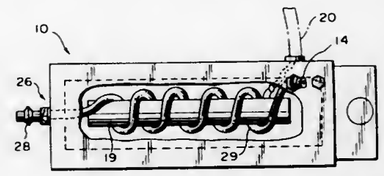
5,287,587
SELF-CONTAINED, COMPACT VACUUM/EXTRACTOR
Robert A. Yonkers, 3565 Apache Ct., Grandville, Mich. 49418; Brenda L. Reath, 472 Crescent, NE., Grand Rapids, Mich. 49503, and Michael R. Blase, 2903 Montreat, NE., Grand Rapids, Mich. 49505
Filed Sep. 10, 1991, Ser. No. 757,249
Int. Cl.[5] A47L 7/00
U.S. Cl. 15—320 **3 Claims**



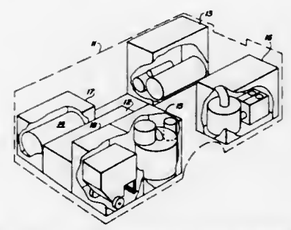
1. A vacuum extractor, comprising:
a tank assembly comprising a solution tank for holding cleaning solution and a recovery tank for holding spent cleaning solution, dirt, and debris recovered from a surface being cleaned;
a cover assembly;
a vacuum source and a liquid pump in said cover assembly;
an input hose connection in communication with said recovery tank and said vacuum source providing a passage into said recovery tank for recovered cleaning solution, dirt, and debris;
an external quick connect/disconnect input connector on the outer surface of said cover assembly connected to said liquid pump for supplying cleaning solution from said solution tank to said liquid pump and an external output connector on said cover assembly for connecting the output of said liquid pump to an external cleaning device; and
an extendable plug-in solution feed extending out of an aperture in a side of said solution tank for conveying the contents of said solution tank to said external quick connect/disconnect input connection for said liquid pump, said plug-in solution feed terminating in a quick connect-/disconnect connector which is adapted to be reversibly and releasably connected to said external quick connect-/disconnect input connector for said liquid pump on said cover assembly;
wherein said recovery tank can be emptied by tilting said tank assembly in a first direction and both said recovery and solution tanks can be emptied by tilting said tank assembly in a second direction opposite to said first direction.

5,287,588
UPHOLSTERY AND CARPET CLEANING EQUIPMENT INCLUDING EXTERNAL HEAT EXCHANGER
Bernard Gurstein, and Russell Gurstein, both of Hayden Lake, Id., assignors to U.S. Products, Inc., Hayden Lake, Id.
Continuation-in-part of Ser. No. 304,254, Jan. 31, 1989, Pat. No. D. 326,545. This application Feb. 18, 1992, Ser. No. 836,471
Int. Cl.[5] A47L 11/03
U.S. Cl. 15—321 **3 Claims**

1. In a machine for cleaning upholstery or carpets and comprising means for discharging a hot cleaning liquid to the upholstery or carpet to be cleaned including a pump, the improvement comprising:
a heat exchanger in a closed housing separate from said discharging means, said heat exchanger having an electric heating core and a coiled pipe in heat exchange relationship with said electric heating core, said coil having an inlet upstream end and an outlet downstream end each passing through said closed housing, means for connecting a hose from said cleaning machine to said inlet upstream end, and means for connecting a cleaning liquid delivery hose to said downstream outlet tend, and an electric cord for passing electrical energy from an electric outlet to said electrical heating core.



5,287,589
SELF-CONTAINED CLEANING AND RETRIEVAL APPARATUS
Joel Hughes, Wilmington, N.C., assignor to Container Products Corp., Wilmington, N.C.
Filed Aug. 31, 1992, Ser. No. 937,147
Int. Cl.[5] A47L 7/00
U.S. Cl. 15—321 **17 Claims**



1. A self-contained cleaning apparatus including cleaning tools that dispense and vacuum spent cleaning liquid and unwanted debris, waste and contaminants from remote surfaces being cleaned, wherein the improvement comprises:
a) a platform-like body,
b) means dividing said body into separate compartments,
c) a cleaning liquid supply tank in one of said compartments,
d) means in another of said compartments for heating and pumping cleaning liquid from said tank to a remote cleaning tool,
e) means in a different compartment for creating a vacuum for the recovery of spent cleaning liquid and debris, waste and contaminants from the surface being cleaned,
f) means in yet another compartment separating and filtering the vacuumed spent cleaning liquid from recovered solid wastes,
g) a remote cleaning liquid dispenser and wet/vacuum recovery tool in communication with said cleaning liquid heating and pumping means and said separating and filtering means, and
h) means providing cooperative inter-connections between said compartments consisting of a conduit circuit between said tank in said one compartment and said separating and filtering means in said yet another compartment, and other conduits between said tank in said one compartment and

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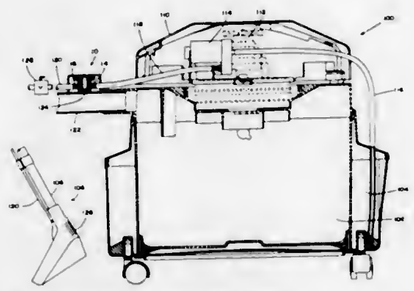
said liquid heating and pumping means in said another compartment, and different conduits between said vacuum creating means in said different compartment and said separating and filtering means in said yet another compartment, with said remote cleaning liquid dispenser and vacuum recovery tool having a cord-like connection with said heating and pumping means in said another compartment and said separating and filtering means in said yet another compartment.

5,287,590

WET VACUUM/EXTRACTOR WITH VACUUM PRIMING SYSTEM

Robert A. Yonkers, 3565 Apache Ct., Grandville, Mich. 49418; Richard L. Norwood, 100 W. Division St., and Jonathan L. Miner, 50 S. Lincoln St., both of, Rockford, Mich. 49341

Filed Sep. 2, 1992, Ser. No. 939,320
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—321 **47 Claims**



1. A wet vacuum/extractor comprising:
(a) a vacuum fan for generating a vacuum;
(b) a cleaning solution tank;
(c) a cleaning tool and vacuum flow path defining means operably connecting said cleaning tool to said vacuum fan whereby debris and liquid can be removed from a surface to be cleaned through said cleaning tool;
(d) a non-self-priming pump operatively connected with said cleaning solution tank for pumping cleaning solution from said tank to said cleaning tool;
(e) a fluid flow line extending from said pump to said cleaning tool to deliver cleaning solution from said tank to said cleaning tool; and
(f) valve means for switchably connecting said fluid flow line to said vacuum flow path means whereby said vacuum causes said cleaning solution to flow from said tank through said non-self-priming pump to prime said pump.

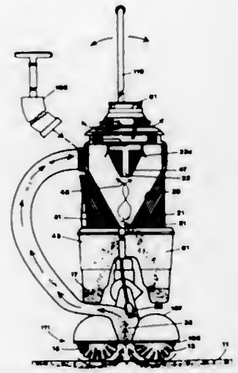
5,287,591

CARPET CLEANING MACHINE WITH CONVERTIBLE-USE FEATURE

Geoffrey B. Rench, Racine, Wis.; Stephen Jacobs, Eureka, and Frank Jolly, Arcata, both of Calif., assignors to Racine Industries, Inc., Racine, Wis.

Filed Mar. 30, 1992, Ser. No. 860,689
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—328 **11 Claims**

1. A carpet cleaning machine for brush-aided carpet cleaning and for carpet vacuuming, the machine including:
a machine shroud;
a motor mounted atop the shroud;
a pair of powered brushes attached to the machine beneath the shroud and driven by the motor, the brushes contacting the carpet for stroking substantially dry cleaning particles through the carpet and the machine being entirely supported by the brushes;
a vacuum nozzle mounted on the shroud between the brushes;
a vacuum pod including a motor in the pod for generating suction force, the pod being detachably connected to the machine;
the pod including a port in flow communication with the pod interior;



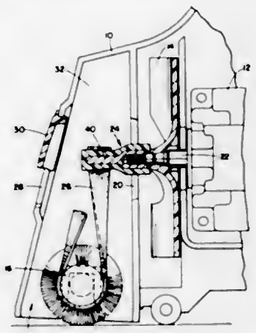
a hose releasably attached to the port and to the vacuum nozzle for directing air flow from the nozzle into the pod, the air flow including entrained particles removed from a carpet; and,
first and second particle-removing media mounted in the pod for removing particles from the air flowing through the pod.

5,287,592

ELECTRICALLY INSULATING BELT DRIVE FOR VACUUM CLEANER MOTOR ASSEMBLY

James J. Kopco, Mentor-on-the-Lake, Ohio, assignor to Royal Appliance Mfg. Co., Cleveland, Ohio

Filed Jan. 8, 1993, Ser. No. 2,212
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—339 **7 Claims**



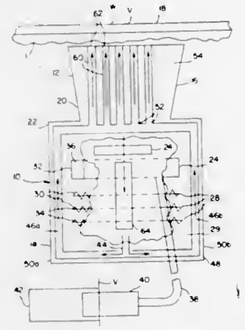
1. A vacuum cleaner motor assembly including a motor and a drive shaft extending therefrom, particularly adapted for electrically insulating a drive belt from the motor comprising:
a belt drive member affixed in axial alignment to an end of the motor shaft and having a relatively rigid insert member and an electrically insulating annular sheath,
the insert member having a first portion including a recess sized to closely receive a terminal end portion of the motor shaft and a second portion, axially depending therefrom, comprising a means for rigidly supporting the sheath,
the sheath being disposed over the insert and comprising a sheath first portion encompassing the insert member first portion and having an end opening accommodating access of the motor shaft into the insert member recess, and a sheath second portion encompassing the insert member second portion and having an axially tapering outer surface comprising a radially expanding circumference in a direction away from the sheath first portion, whereby the drive belt nests on the tapering outer surface while being electrically insulated from the motor shaft.

5,287,593

SNOW AND ICE REMOVER

Tamae Sprunger, 20 Woodview La., Algonquin, Ill. 60102

Continuation of Ser. No. 628,630, Dec. 17, 1990, Pat. No. 5,189,756. This application Mar. 1, 1993, Ser. No. 22,675
Int. Cl.[5] B60S *1/54*
U.S. Cl. 15—401 **14 Claims**



1. A snow and ice remover for a surface, comprising:
a housing having an outer end;
a scraper mounted on the outer end of the housing for contacting the ice on the surface, and having an elongated relatively wide flat blade having an outer scraping edge;
means in the housing for passing air along the scraper and onto the ice; and
means in the housing for heating the air and directing the heated air through a central portion of the blade past the outer edge to melt the ice and facilitate removal of the ice.

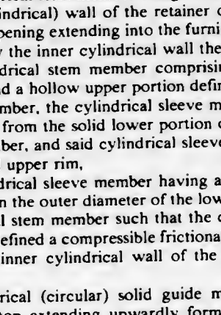
5,287,594

SHOPPING CART SWIVEL YOKE ASSEMBLY WITH PLASTIC BEARING RACES

Jimmy L. Hicks, 15654 Olive Branch, La Mirada, Calif. 90638

Filed Jun. 8, 1992, Ser. No. 895,116
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—20 **10 Claims**

1. An improved swivel yoke assembly for use on shopping carts of the type having a wheel-supporting, steel yoke with two downwardly depending forks and a generally horizontal base between the forks, said base having an upper surface and a lower surface, a caster supporting king pin extending upwardly from said base, said base being supported between a lower set of ball bearings and an upper set of ball bearings, said upper set of ball bearings being held between an upper race and a lower race, and said lower set of ball bearings being held between an upper race and a lower race, wherein the improvement comprises:
a polymeric lower race under the upper set of ball bearings, said polymeric lower race under the upper set of ball bearings being supported on the upper surface of said generally horizontal base of said steel yoke; and



a polymeric upper race over the lower set of ball bearings, said polymeric upper race over the lower set of ball bearings being supported on the lower surface of said generally horizontal base of said steel yoke.

5,287,595

FURNITURE GLIDE AND PINTLE

William H. Y. Stevens, Jr., Madison, N.J., assignor to Robert E. Miller & Co., Inc., Newark, N.J.

Filed Sep. 2, 1992, Ser. No. 939,616
Int. Cl.[5] A47B *91/06*
U.S. Cl. 16—42 T **1 Claim**

1. A one piece molded plastic article comprising a combination glide and pintle for use on a furniture member having a (cylindrical) circular retainer opening extending into the furniture member defined by an inner cylindrical wall therein for receiving a pintle, said article (having) being a combination circular glide base and (a) pintle, said pintle comprising a cylindrical stem member having a (smaller diameter circulate stem) diameter smaller than that of the circular glide base and extending upwardly from the circular glide base.
a) the cylindrical stem member being sized smaller than the (inner cylindrical) wall of the retainer opening) circular retainer opening extending into the furniture member and defined by the inner cylindrical wall therein,
b) the cylindrical stem member comprising a solid lower portion and a hollow upper portion defining a cylindrical sleeve member, the cylindrical sleeve member extending upwardly from the solid lower portion of the cylindrical stem member, and said cylindrical sleeve member having a rounded upper rim,
c) the cylindrical sleeve member having an outer diameter larger than the outer diameter of the lower portion of the cylindrical stem member such that the cylindrical sleeve member defined a compressible frictional engaging means with the inner cylindrical wall of the circular retainer opening,
d) a cylindrical (circular) solid guide member having a rounded top extending upwardly form the solid lower portion of the cylindrical stem member through the hol-

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low upper portion above the solid lower portion of the cylindrical stem member within the cylindrical sleeve member and beyond the rounded upper (edge) rim o the cylindrical sleeve member (and), the cylindrical solid guide member having a diameter smaller than the inside diameter of the cylindrical sleeve member so as to define an annular channel between the cylindrical solid guide member and the cylindrical sleeve member, and

e) the circular guide base and the pintle, including the cylindrical stem member, the cylindrical sleeve member and the cylindrical guide member being integrally molded.

5,287,596

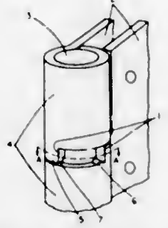
HINGE WITH ADJUSTABLE STOP AND HOLD MECHANISM

Haw-Renn Chen, and Feichu H. Chen, both of 4057 Little Hollow Pl., Moorpark, Calif. 93021

Continuation of Ser. No. 563,830, Aug. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 346,347, May 1, 1989, abandoned, which is a continuation of Ser. No. 174,113, Mar. 28, 1988, abandoned. This application Jan. 24, 1992, Ser. No. 824,882

Int. Cl.[5] **E05D** *11/10*

U.S. Cl. 16—331 **3 Claims**



1. An improved universal hinge for performing stop function with adjustable stop angles comprising a hinge body embodied with a self-locking spring-bushing assembly in between two hinge knuckles, which comprises a C-spring, which is a conically-shaped ring with an axial opening cut and with teeth formed on the radially wider rim, and a step-configured ring bushing which is a ring with a conical inner surface and two vertical step edges on the upper rim, in which said C-spring and said step-configured ring bushing are installed on the hinge pin in a way that said vertical step edges on said step-configured ring bushing are placed adjacent to a hinge knuckle having matching vertical step edges while said teeth on said C-spring are placed adjacent to the other hinge knuckle having matching teeth such that said conically-shaped outer surface of said C-spring is contacting and is being contracted in said conical inner surface of said step-configured ring bushing so that said step-configured ring bushing and said C-spring are pushed away from each other toward said adjacent hinge knuckles respectively to have said self-locking spring-bushing assembly couple to said other hinge knuckle adjacent to said C-spring through said teeth and hence, said self-locking spring-bushing assembly move's along with said other hinge knuckle adjacent to said C-spring and, then, said vertical step edges on said step-configured ring bushing and said adjacent hinge knuckle form a stop mechanism.

5,287,597

APPARATUS FOR COLLECTING LAP PIECES FROM A COMBING MACHINE

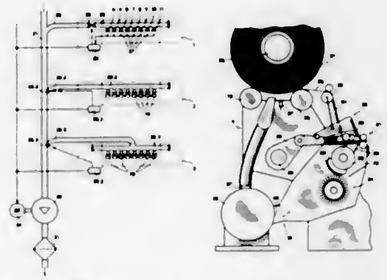
Giancarlo Mondini, Winterthur, and Andreas Jorg, Neftenbach, both of Switzerland, assignors to Reiter Machine Works, Ltd., Winterthur, Switzerland

Filed May 22, 1992, Ser. No. 887,539

Claims priority, application Switzerland, May 22, 1991, 01515/91-8

Int. Cl.[5] **D01G** *19/00*

U.S. Cl. 19—115 B **14 Claims**



1. In combination

a plurality of combing machines, each combing machine having a plurality of combing heads; a plurality of conduits, each conduit being disposed relative to a respective combing head to receive noil combed from a lap during a combing operation; and a plurality of suction nozzles, each suction nozzle being disposed relative to a combing head to receive lap pieces severed from a lap during a lap changing operation;

a collecting pipe connected in common to said combing machines and to said suction nozzles of said machines to receive lap pieces therefrom;

a plurality of shut-off means, each shut-off means being connected between said suction nozzles of a respective combing machine and said collecting pipe for selectively opening and closing said suction nozzles relative to said collecting pipe;

a control device to open said shut-off means of one of said combing machines while maintaining said shut-off means of the other of said combing machines closed whereby to allow delivery of lap pieces to said collecting pipe from only one combing machine at a time; and

a fan and separator connected to said collecting pipe downstream of said suction nozzles relative to a flow of lap pieces in said collecting pipe.

5,287,598

SLIVER CHANNEL

Mahrt Günter, and Oexler Rudolf, both of Ingolstadt, Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 2, 1992, Ser. No. 984,997

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1991, 4139910

Int. Cl.[5] **D04H** *11/00*

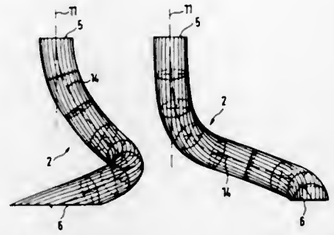
U.S. Cl. 19—159 R **6 Claims**

1. A sliver channel for use with a sliver preparation machine for depositing fiber sliver into a container, said sliver channel comprising:

an inlet having a substantially infinite gradient;

a first portion immediately adjacent said inlet, said first portion describing a predetermined arc angle and having an increasingly flattening gradient from the infinite gradient of said inlet;

a second portion immediately adjacent said first portion, said second portion comprising a helix having a constant gradient; and



an outlet formed at the end of said second portion, said outlet being substantially parallel to a horizontal plane through said channel, said constant gradient of said second portion and said outlet forming a deposit angle with the horizontal plane within a predetermined range.

5,287,599

DUCTWORK WITH SENSOR AND PIVOTING GATE FOR FIBER IMPURITY REMOVAL

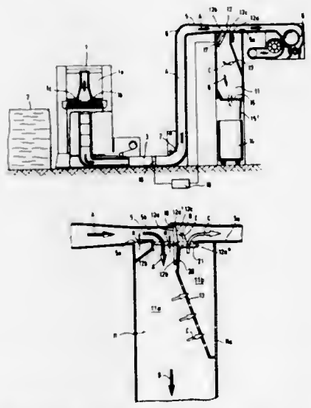
Ferdinand Leifeld, Kempen 1, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Möchengladbach, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 946,647

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131188

Int. Cl.[5] **D01G** *23/08, 9/08*

U.S. Cl. 19—205 **19 Claims**



1. An apparatus for separating foreign matter from a pneumatically conveyed stream of textile fibers, comprising

(a) a pneumatic duct in which the textile fibers are conveyed by an air stream; said pneumatic duct having a first length portion and an adjoining second length portion;

(b) a waste container adjacent said pneumatic duct;

(c) means defining a first coupling opening for maintaining communication between said waste container and said second length portion of said pneumatic duct;

(d) means defining a second coupling opening for maintaining communication between said waste container and said first length portion of said pneumatic duct;

(e) a gate pivotally supported in said pneumatic duct; said gate having a first position maintaining open a direct passage between said first and second length portions and obturating said first and second coupling openings for allowing the fiber material to be conveyed by the air stream directly from said first length portion into said second length portion; said gate having a second position obturating the direct passage between said first and second length portions and maintaining open said first and second coupling openings for directing the fiber material and the air stream from said first length portion of said pneumatic duct through said second coupling opening into said waste container and for allowing conveying air to pass from said waste container into said second length portion of said pneumatic duct;

(f) a detector situated upstream of said second coupling opening as viewed in a direction of advance of said fiber material in said pneumatic duct, for detecting impurities in the fiber material; and

(g) control means connected to said detector and said gate for pivoting said gate from said first position into said second position upon detection of foreign matter by said detector.

5,287,600

METHOD AND A DEVICE FOR CONTROLLING AN OPENING PROCESS, FOR EXAMPLE AT A CARD

Walter Wespi, Sursee, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

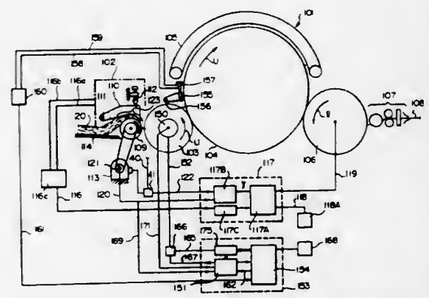
PCT No. PCT/CH91/00130, § 371 Date Mar. 4, 1992, § 102(e) Date Mar. 4, 1992, PCT Pub. No. WO90/14644, PCT Pub. Date Nov. 29, 1990

PCT Filed Jun. 10, 1991, Ser. No. 834,560

Claims priority, application Switzerland, Jun. 12, 1990, 4018803

Int. Cl.[5] **D01G** *23/06, 9/16*

U.S. Cl. 19—300 **19 Claims**



1. A method of controlling the opening of a fiber feed at an opening machine of one of a cleaning machine and a card, in which an opening element is moved past a fiber feed for loosening and taking over of fibers, simultaneously attenuating the fiber feed, and determining an output signal corresponding to the degree of opening of said fiber feed, comparing said output signal with one of a reference and set signal for adjusting at least one opening parameter selected from the group consisting of:

(a) the relative speed of the opening element past said fiber feed;

(b) the mutual distance of said opening element and said fiber feed;

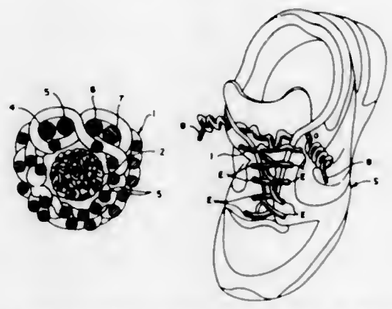
(c) the position of the needles of a clothing of said opening element;

operating said opening machine following said adjustment;

checking said adjustment with a subsequent output signal after adjustment; and providing further adjustment in a same direction or an adjustment in an opposite direction no adjustment.

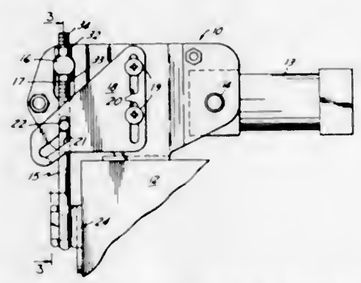
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,601
NOVELTY TIE
Erwin B. Schweitzer, and Philip G. Simpfendorfer, both of Edithvale, Australia, assignors to It's Smart Pty Ltd, Victoria, Australia
Filed Jul. 29, 1992, Ser. No. 921,329
Int. Cl.[5] A43C 9/00
U.S. Cl. 24—715.3 11 Claims



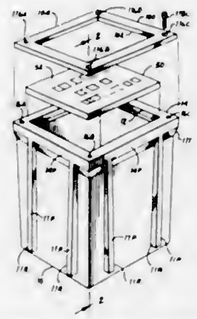
1. A flexible elasticized tie comprising a central flexible core member, an outer cover enclosing said core member, and at least two spaced elastomeric members secured to at least one of said outer cover and said core member and extending in closely spaced substantially parallel relationship along a line extending helically of the tie for at least a substantial part of its length, said elastomeric members being secured in an elastomerically extended condition sufficient to cause the tie to adopt a generally helical form in its relaxed state while still allowing stretching of the tie from its helical state to an extended state whereby said tie is adapted for threading through eyelets and the like.

5,287,602
POWERED TOGGLE LATCH CLAMP
Henry Dykstra, Milford, Mich., assignor to Delaware Capital Formation, Inc., Wilmington, Del.
Filed Nov. 13, 1992, Ser. No. 975,837
Int. Cl.[5] E05C 3/00
U.S. Cl. 24—463 10 Claims



1. Power toggle latch clamp comprising a pair of sheet metal stamping side brackets, clamp frame means for separate mounting on base, toggle U-bolt latch actuating linkage pivotally mounted on said frame, pressure power cylinder means mounted on said frame, powered means mounted on said frame for reversibly actuating said linkage between release and clamping position, and U-bolt means pulled by said linkage into clamping position, including guide slots in said side brackets and a latch U-bolt pin extending through said slots.

5,287,603
STORAGE CONTAINER FOR HUMAN REMAINS AND METHOD THEREFOR
David C. Schorman, 8256 E. Arabian Trail #141, Scottsdale, Ariz. 85258
Filed Mar. 17, 1992, Ser. No. 853,075
Int. Cl.[5] A61G 17/00
U.S. Cl. 27—1 25 Claims

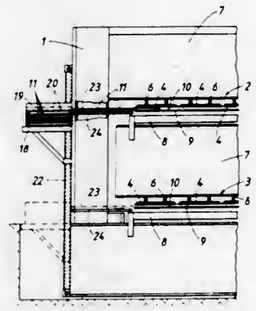


1. A storage container for human remains comprising:
bottom means for forming the bottom of said container;
a plurality of wall means, each of said wall means having an outer surface, a bottom edge coupled to said bottom means, a first side edge coupled to an adjacent wall means, a second side edge coupled to adjacent wall means and a top edge for forming the walls of said container, each of said plurality of wall means having at least one external protruding rib integrally connected to an edge portion of said wall means and extending between said bottom means and said top edge;
rim means having an outer periphery, and a inner periphery which includes a recessed portion, said rim means coupled to said top edges of said plurality of wall means for forming the rim of said container;
cover means adapted to fit within said recessed portion for forming the cover which seals the top of said container;
retaining means having an outer periphery which physically corresponds to said outer periphery which physically corresponds to said outer periphery of said rim means for retaining said cover means within said recessed portion; and
fastening means coupled to said retaining means and said rim means for fastening said retaining means to said cover means;
said container containing ashed human remains; and
rim buttress means coupled to said rim means and coupled to said wall means for provided a structural transition between said rim means and said wall means.

5,287,604
DEVICE FOR CHANGING THE NEEDLE BOARDS OF AN APPARATUS FOR NEEDLING NONWOVEN WEBS
Günther Feyerl, Linz, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria
Filed Jul. 24, 1992, Ser. No. 920,139
Claims priority, application Austria, Jul. 31, 1991, A 1523/91
Int. Cl.[5] D04H 18/00
U.S. Cl. 28—115 8 Claims

1. In the combination of an apparatus for needling nonwoven webs by a plurality of needle boards and of a device for changing said needle boards, wherein
said apparatus comprises
a plurality of vertically movable board carriers arranged in a row extending across said apparatus and detachably connectable to respective ones of said needle boards,

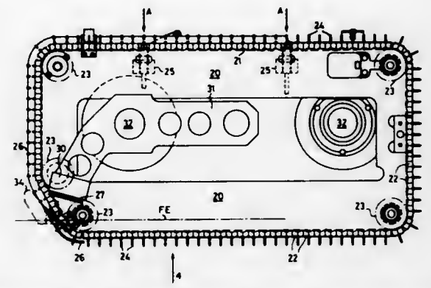
tension-resisting coupling means for interconnecting said needle boards, and
an assembling track extending along said row on both sides thereof for supporting said needle boards and guiding them to and from positions under said board carriers when said needle boards are disconnected from said board carriers, and
said device for changing said needle boards comprising a magazine comprising a plurality of vertically spaced apart slide tracks for supporting respective needle boards and assuming an operative position for delivering and receiving needle boards to and from said assembling track, said device comprising



the improvement including
a board conveyor including a board track extending between said assembling track and said magazine when the magazine is in said operative position,
said slide track being vertically movable in unison to selectively move each of said slide tracks into longitudinal horizontal alignment with said board tracks, and
said board conveyor being operable to move one of said needle boards at a time in either direction on said board track between said assembling track and any one of said slide tracks when said board conveyor is in longitudinal horizontal alignment with said board track.

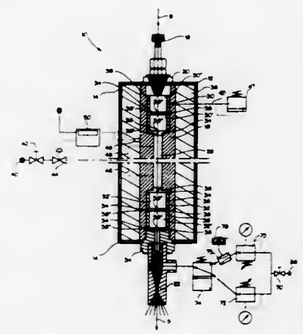
5,287,605
DEVICE FOR MANIPULATING HEALDS OR DROP WIRES IN A WARP-THREAD DRAWING-IN MACHINE
Markus Badertscher, Seewis, and Hermann Eglseer, Uster, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland
PCT No. PCT/CH91/00190, § 371 Date May 11, 1992, § 102(e) Date May 11, 1992, PCT Pub. No. WO92/05303, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 3, 1991, Ser. No. 856,031
Claims priority, application Switzerland, Sep. 17, 1990, 0300090
Int. Cl.[5] D03J 1/14
U.S. Cl. 28—207 23 Claims

1. Device for manipulating harness members in a warp-thread drawing-in machine from a place at which the harness members are separated from a stack to a place where the harness members are transferred to supporting members for being arranged in a weaving machine, comprising holding means for receiving separated harness members and for transporting them to a drawing-in station at which warp threads are drawn-in with respect to the harness members and a transfer station at which the harness members are transferred to the supporting members, positioning means arranged adjacent the drawing-in station for positioning the harness members to have a warp thread drawn-in, and transfer means arranged adjacent the transfer station for transferring the harness members having a drawn-in warp thread to the supporting members, said holding means including a movably driven endless member and spaced apart holding members mounted on the endless member for receiving a plurality of harness members, said endless member



transporting the plurality of harness members received on the holding members to the drawing-in station and to the transfer station.

5,287,606
APPARATUS FOR TREATING TRAVELING TEXTILE MATERIAL IN A PRESSURIZED FLUID
Helmut Ruef, Charlotte, N.C., assignor to Soft Blast, Inc., Charlotte, N.C.
Continuation-in-part of Ser. No. 849,287, Mar. 10, 1992, abandoned. This application Jul. 7, 1992, Ser. No. 910,716
Int. Cl.[5] D02G 1/00; F26B 3/00; B08B 3/12
U.S. Cl. 28—219 21 Claims



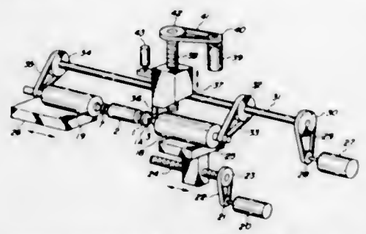
1. An apparatus for treating a traveling extended-length textile material in a pressurized fluid comprising housing means defining a series of chambers for traveling movement of the strand successively therethrough without intentional contact of the strand with said housing means, said chambers comprising in series an upstream sealing chamber, a treatment chamber, and a downstream sealing chamber, said housing means including means defining a constricted material passageway to each opposite end of each chamber for fluid communication and flow between said chambers, and means communicating with said treatment chamber for delivering a supply of a pressurized material treating fluid thereto, each said sealing chamber being sufficiently enlarged in volume in relation to each constricted passageway at its opposite ends for sufficient expansion within said sealing chambers of said pressurized treating fluid escaping thereinto from said treatment chamber to generally seal said housing means from substantial loss of said pressurized treating fluid and to substantially maintain pressurization of said treatment chamber.

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5,287,607
METHOD FOR FINISHING SURFACE OF COMMUTATOR

Nobuhisa Hongo, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co. Ltd., Gunma, Japan

Continuation of Ser. No. 501,249, Mar. 28, 1990, Pat. No. 5,177,842. This application Aug. 6, 1992, Ser. No. 925,124
Int. Cl.[5] B23P *13/00*; **B23B** *1/00*
U.S. Cl. 29—27 R **5 Claims**

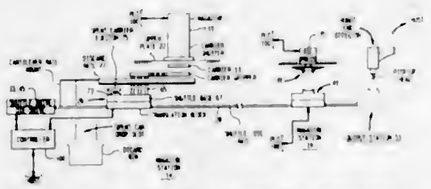


1. A method of finishing an end surface of a flat type commutator of a motor including a shaft, a core provided on the shaft, a coil wound around the core and a flat type commutator pressed onto the shaft and to which the coil is connected comprising,
a) measuring in advance the initial longitudinal distance between the unfinished end surface and an end face of a shaft of the commutator opposite the unfinished end surface,
b) determining in advance the final longitudinal distance between the finished end surface and the end face of the shaft opposite the unfinished end surface based on a predetermined amount of cut,
c) setting a finishing tool at the final longitudinal distance from the end face of the shaft opposite the unfinished end surface for engagement with the unfinished end surface and arranging the finishing tool to cut the unfinished end surface while the unfinished end surface is rotated about a central longitudinal axis, and
d) laterally moving the finishing tool with respect to the unfinished end surface while maintaining the finishing tool at the final longitudinal distance from the end face of the shaft opposite the unfinished end surface to remove material of the commutator from the unfinished end surface such that all portions of the finished end surface are at the final distance form the end face of the shaft opposite the unfinished end surface.

5,287,608
TAPE AUTOMATED BONDING FEEDER AND LEAD FORMING APPARATUS

J. Gregg Ellis, Indian Harbour Beach, Fla., assignor to Microtek Industries, Palm Bay, Fla.

Division of Ser. No. 616,328, Nov. 21, 1990, Pat. No. 5,133,390. This application Jan. 28, 1992, Ser. No. 827,702
Int. Cl.[5] B23P *19/00*; **B23Q** *7/10*
U.S. Cl. 29—33 K **22 Claims**

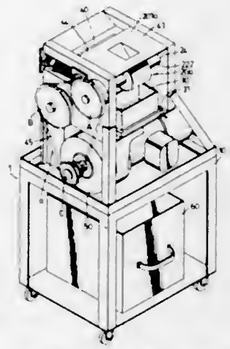


1. A device for transporting a workpiece comprising:
a gripper mechanism having first and second horizontally extending gripper fingers, and a gripper finger displacement unit which is operative to controllably horizontally translate said gripper fingers toward and away from each other, each horizontally extending gripper finger having a horizontally extending support portion upon which a workpiece is supportable, and an overhang portion that partially overlaps said support portion, so as to allow a workpiece vertically presented toward said horizontally extending gripper fingers, for a first horizontal separation therebetween, to pass by the overhang portions of said horizontally extending gripper fingers and come to rest upon and be supported by said support portions thereof and, for a second horizontal separation between said gripper fingers, wider than said first horizontal separation, to allow said workpiece that has been placed upon said support portions of said horizontally extending gripper fingers, to be translated past said support portions thereof;
a shuttle base which is controllably translated along a shuttle transport path from a first station, at which said workpiece is presented to said gripper mechanism, to a second station; and
a gripper mechanism displacement unit which supports and vertically translates said gripper mechanism with respect to said shuttle base.

5,287,609
SYRINGE DISPOSAL SYSTEM

Chin-Ming Chang, No. 7, Lane 218, Chung-Shan Rd., Sha-Lu Chen, Taichung Hsien, Taiwan

Filed Jun. 10, 1993, Ser. No. 74,787
Int. Cl.[5] B23Q *41/00*
U.S. Cl. 29—33 R **7 Claims**

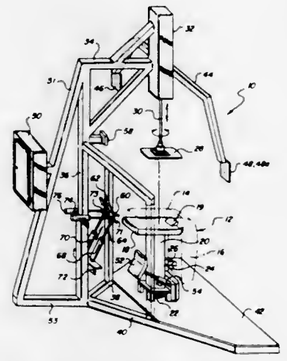


1. A syringe disposal system for disposing a syringe which has a needle and a barrel portion, said syringe disposal system comprising frame body and a separation device which is mounted in said frame body for separating said needle from said barrel portion, said separation device including:
an upper cover which is mounted on said frame body and which is formed with a needle guiding port, said needle guiding port having a diameter which is larger than the diameter of said needle but smaller than the diameter of said barrel portion;
a driving gear which is rotatably mounted on said frame body below said cover and which is formed with a plurality of spaced teeth;
a driven gear which is rotatably mounted on said frame body below said cover and which is positioned parallel to said driving gear, said driven gear being formed with a plurality of spaced teeth which mesh with said teeth on said driving gear, said teeth on said driving gear and said driven gear being able to pull said needle downward from said barrel portion when said needle is inserted between said driving gear and said driven gear via said needle guiding port on said cover, and
a container which is placed below said driving gear and said driven gear for receiving the separated needle.

5,287,610
SEAT ASSEMBLY WORK STATION AND METHOD OF OPERATION OF SAME

Frederick Gomolak, Cadillac; George Altman, Boon, and Tim Swinehart, Lake City, all of Mich., assignors to Mitchell Corporation of Owosso, Owosso, Mich.

Filed Dec. 28, 1992, Ser. No. 974,612
Int. Cl.[5] B68G *7/00, 15/00*
U.S. Cl. 29—91.1 **15 Claims**



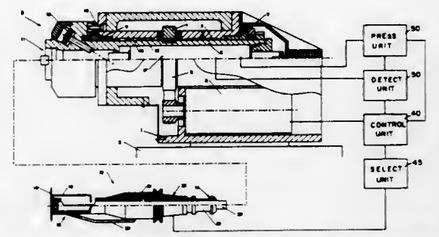
14. A method assembling trim components to a previously partially assembled seating unit having a seat frame, a bottom cushion and a backrest cushion comprising the steps of:
a) applying a backrest cushion cover and a bottom cushion cover to the partially assembled unit;
b) placing the plurality assembled unit with the backrest and bottom cushion covers on a rotatable pedestal in an inverted orientation and a first angular position;
c) activating a first power means thereby compressing the bottom cushion against the pedestal and, simultaneously, securing the seating unit to the pedestal;
d) mechanically securing the bottom cushion cover to the seat frame;
e) rotating the pedestal with the seating unit secured thereto about a vertical axis to a second angular position;
f) compressing at least a portion of the backrest cushion while in the second position; and
g) thereafter mechanically securing bottom edges of the backrest cushion cover to the seat frame.

5,287,611
RIVETING ANVIL POSITIONING DEVICE WITH INTERCHANGEABLE ANVIL FOR RIVETING OPERATIONS PERFORMED BY AUTOMATIC MACHINE TOOLS

Roberto Muselli, Piacenza, Italy, assignor to JOBS S.p.A., Piacenza, Italy

Filed Nov. 16, 1992, Ser. No. 977,108
Claims priority, application Italy, Dec. 2, 1991, PC91-A-000017
Int. Cl.[5] B21J *15/22*
U.S. Cl. 29—243.53 **5 Claims**

1. An anvil positioning device for an automatic machine tool which performs a rivet operation on a rivet, the device comprising:
a chuck (3) movably connected to the machine tool (2);
control means (40) for controlling the movement of the chuck (3);
a block (17) slidably mounted axially inside of the chuck (3);

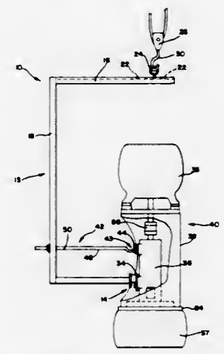


an interchangeable anvil (12) engageable with the chuck (3), the anvil having a rod (20) slidably mounted within the anvil for pressing a rivet; and
pressing means (30) for pressing the block against the rod (20) of the anvil (12).

5,287,612
APPARATUS FOR REMOVAL OF A BEARING FRAME ASSEMBLY

Douglas Paddock, Penn Yan; Peter J. Ruzicka, Auburn, and George Wilson, Skaneateles, all of N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.

Filed Feb. 27, 1992, Ser. No. 842,487
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 29—256 **10 Claims**



1. An apparatus for safely removing a bearing assembly from a vertical pump system comprising:
an elongated upright rigid frame; pivot attachment means removably connected between said frame and said bearing assembly defining a pivot point having a general horizontal axis proximate said bearing assembly; force means removably attached to an upper portion of said bearing assembly at a position vertically disposed of said pivot point; said force means applying force to said assembly to rotate said assembly about said pivot point and clear remaining portions of said vertical pump system.

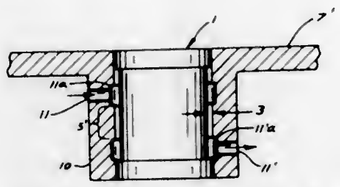
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,613

METHOD OF MANUFACTURING AN ANNULAR SLIT RESTRICTOR USING A SHRINK FIT OPERATION

Eugene L. Dahl, Excelsior, Minn., assignor to Professional Instruments Co., St. Louis Park, Minn.

Filed May 8, 1992, Ser. No. 880,695
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—447 **1 Claim**



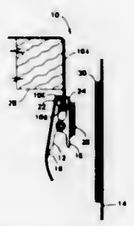
1. A method of manufacturing an annular slit restrictor comprising:
forming to predetermined accurate radial dimensions an annular plug having radially projecting spaced end walls forming a recessed annular surface therebetween,
forming to a predetermined accurate lesser radial dimension than that of said end walls, an annular hole in a flow control body, said flow control body including an inlet port and an outlet port,
heating said flow control body to increase the radial of the annular hole such that said plug is insertable therein,
inserting said annular plug into said radially increased annular hole, and
allowing said flow control body to cool, thereby forming a shrink fit between said annular plug and said annular hole, where
said spaced end walls and adjacent wall surfaces of said annular hole form contact regions which maintain said annular plug and said annular hole in coaxial alignment,
said recessed annular surface between said contact region forms a concentric annular slit passage,
said inlet port extends from the outer surface of said flow control body into said slit passage, and
said output port extends from said slit passage to the outer surface of said control body.

5,287,614

TABLE SKIRT-ATTACHING METHOD AND ATTACHING CLIP

Paul Ehrlich, 241 Mill St., Lawrence, N.Y. 11559

Filed Mar. 10, 1993, Ser. No. 29,174
Int. Cl.[5] B32B *3/06*
U.S. Cl. 29—450 **1 Claim**



1. A method of attaching a skirt for decorating a table in depending relation about the peripheral edge of a tablecloth in covering relation over said table using a clip of the type having pivotally interengaged grips, and a spring urging opposing object-engaging ends of said grips into a normally closed position and having a Velcro patch adhesively secured to one said grip, said method comprising the steps of clipping plural said clips in spaced relation to said tablecloth peripheral edge so that each clip initially extends in lateral relation therefrom with said Velcro patch thereon in a horizontally oriented plane, pivoting each said clip through an angular traverse so as to position each said Velcro patch thereon in a vertically oriented plane and in an outwardly facing relation from said table, and attaching to said clips, Velcro patches and a cooperating Velcro strip on said skirt, to thereby correspondingly attach said skirt to said tablecloth in suspended relation about said table.

5,287,615

PROCESS FOR JOINING A HOLLOW SHAFT AND ELEMENTS SLID THEREON

Helmut Swars, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Emitech Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 735,170, Jul. 23, 1991, abandoned, which is a continuation of Ser. No. 532,110, May 30, 1990, abandoned, which is a continuation of Ser. No. 278,838, Dec. 2, 1988, abandoned. This application Jan. 22, 1993, Ser. No. 8,055
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1987, 3742480
Int. Cl.[5] B23P *19/04*; **B21D** *39/00*
U.S. Cl. 29—523 **12 Claims**

1. A process for producing a connection at ambient temperature between a hollow shaft and design elements, comprising the steps of:
providing a hollow shaft;
providing the design elements, each of said design elements having an aperture with a circumferential surface which corresponds to an outer diameter of the hollow shaft;
sliding the design elements onto the hollow shaft;
eliminating oxide layers on a surface of the aperture of the design element and an outer surface of the hollow shaft by one of machining said oxide layers, applying a reducing atmosphere to said oxide layers, and applying a reducing bath to said oxide layers; and
hydraulically expanding the hollow shaft, thereby plastically deforming said hollow shaft and causing permanent elastic pretension in a surface layer of the circumferential surfaces of the apertures of the design elements, said design elements being deformed only elastically, said expanding step including increasing the hydraulic pressure depending on the condition of corresponding surfaces of the apertures of the design elements and on the hollow shaft to such an extent that permanent laminar adhesion forces between the surface layer of the aperture of the design element and the plastically deformed hollow shaft are effected without the use of constraining dies, thereby joining said design elements to said hollow shaft.

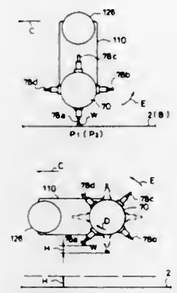
5,287,616

ELECTRONIC COMPONENT MOUNTING APPARATUS

Hisao Suzuki, Tokyo; Takatomo Izume, Saitama; Etuo Minamihama, Mie, and Yasuharu Ujile, Tokyo, all of Japan, assignors to Japan Tobacco Inc., Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Sep. 25, 1992, Ser. No. 950,716
Claims priority, application Japan, Sep. 26, 1991, 3-248060
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—740 **12 Claims**

11. A component mounting apparatus comprising:
a component supply section disposed along a predetermined transportation path and having a plurality of supply positions;
a component mounting section disposed at a distance from the supply section along the transportation path;
a carrier movable along the transportation path;
a component head mounted upon said carrier for movement therewith, said component head including a distal end which holds a component as said carrier moves said component head from the component supply section to the component mounting section, with said distal end releasing said component at a desired position at said mounting section;
revolving means for causing said component head to revolve



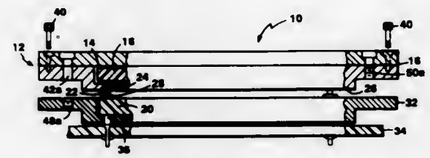
about an axis of revolution, while maintaining a predetermined angular position of said distal end with respect to the transportation path and said carrier such that said distal end moves in a cycloidal path; and
means for offsetting the angular position of said distal end with respect to said transportation path and said carrier.

5,287,617

APPARATUS FOR EXTRACTING AN INTEGRATED CIRCUIT PACKAGE INSTALLED IN A SOCKET ON A CIRCUIT BOARD

James V. Murphy, Warwick, R.I., assignor to Advanced Interconnections Corporation, West Warwick, R.I.

Filed Aug. 11, 1992, Ser. No. 928,520
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—741 **16 Claims**



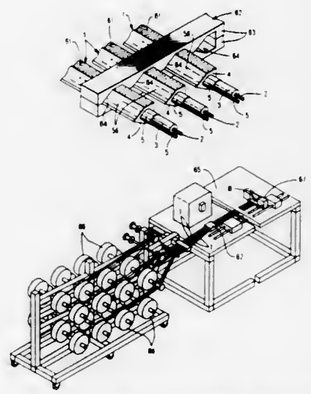
1. An apparatus for extracting an IC package having pins for mating with corresponding terminals disposed in a socket installed in a circuit board, the apparatus comprising:
a package support member configured to receive said package and positioned between said package and socket, said support member having a portion adapted to receive an extraction member to extract said support member and package from said socket and thru apertures to permit said pins of said package to extend through said member to engage said terminals of said socket; and
a retaining element mechanically coupled to said package support member, for maintaining said package within said package support member.

5,287,618

METHOD FOR ORIENTATION OF AN ELECTRICAL CABLE

Keith S. Koegel, Linglestown; Robert E. Beamenderfer, Palmyra; Reuben E. Ney, Mount Joy, and William D. Miknis, Lancaster, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 492,694, Mar. 13, 1990, Pat. No. 5,038,001.
This application Mar. 20, 1991, Ser. No. 672,299
Int. Cl.[5] H01B *13/06*
U.S. Cl. 29—828 **7 Claims**



1. A method for orienting discrete coaxial cables comprising the steps of:
providing a profile along the length of a discrete coax cable,
orienting a signal wire and a ground wire of the cable with respect to a longitudinal axis of the cable by passing the profile against a fixture conforming to the shape of the profile,
connecting the signal wire oriented by the fixture to a housing block and connecting the ground wire oriented by the fixture to the housing block, without combining the fixture with the housing block.

5,287,619

METHOD OF MANUFACTURE MULTICHIP MODULE SUBSTRATE

W. David Smith, Abington; John A. Olenick, Thompson; Carlos L. Bartoň, Brooklyn; Jane L. Cercena, Ashford; Daniel J. Navarro, Putnam; Kathleen R. Olenick, Thompson; Angela M. Kneeland; Thomas S. Kneeland, both of Putnam, all of Conn.; Mark F. Sylvester, Pawtucket, R.I.; Curtis H. Kempton, Mesa, Ariz.; Scott E. Derosier, Rogers, Conn.; Lynn E. Burdick, Hampton, Conn.; Richard T. Traskos, Brooklyn, Conn.; Robert B. Huntington, Tempe, Ariz.; James S. Rivers, Ballouville, Conn.; Samuel Gazit, West Hartford, Conn.; Jeffrey B. Ott, Brooklyn, Conn., and William P. Harper, Tempe, Ariz., assignors to Rogers Corporation, Rogers, Conn.

Filed Mar. 9, 1992, Ser. No. 847,895
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **21 Claims**

1. A method of forming a multichip module substrate comprising the steps of:
selecting a planar platform having opposed mutually parallel surfaces;
forming first via sites on a first of said surfaces of said platform;
plating in said via sites to form first vias in said via sites to define a first subassembly;
laminating a first sheet of filled fluoropolymeric composite

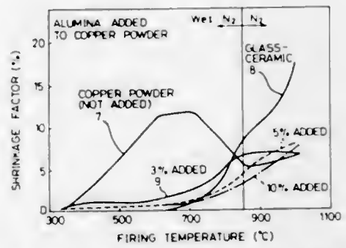
VOL 1159 ISS 4 FE 22 1994 UMI

material onto said first subassembly to define a laminated first subassembly;
planarizing said laminated first subassembly to expose selected ones of said first vias and to define a first planarized surface;
depositing a first thin metallized seed layer on said first planarized surface;
forming "y" circuit line sites and second via sites on said first seed layer;
plating "y" circuit lines and second vias in said "y" circuit line sites and said second via sites, respectively;
selectively flash etching said first seed layer to define a second subassembly;
laminating a second sheet of filled fluoropolymeric composite material onto said second subassembly;
planarizing said laminated second subassembly to expose selected ones of said second vias and define a second planarized surface;
depositing a second thin metallized seed layer on said second planarized surface;
forming "x" circuit line sites and third via sites on said second seed layer;
plating "x" circuit lines and third vias in said "x" circuit line sites and said third via sites, respectively;



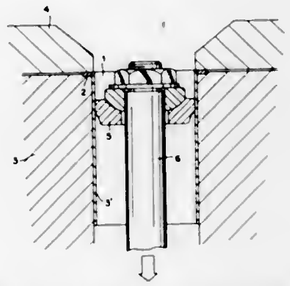
selectively flash etching said second seed layer to define a third subassembly;
laminating a third sheet of filled fluoropolymeric composite material onto said third subassembly;
planarizing said laminated third subassembly to expose selected ones of said third vias and define a third planarized surface;
depositing a third thin metallized seed layer on said third planarized surface;
forming voltage plane sites and fourth via sites on said third seed layer;
plating a voltage plane on said third seed layer and plating fourth vias in said fourth via sites;
selectively flash etching said third seed layer to define a fourth subassembly;
providing a cover layer on said fourth subassembly;
planarizing said covered fourth subassembly to expose selected ones of said fourth vias on a fourth planarized surface;
depositing a fourth thin metallized seed layer on said fourth planarized surface;
forming pad sites on said fourth seed layer;
plating pads in said pad sites; and
selectively flash etching said fourth seed layer.

5,287,620
PROCESS OF PRODUCING MULTIPLE-LAYER GLASS-CERAMIC CIRCUIT BOARD
Hitoshi Suzuki; Wataru Yamagishi; Koichi Niwa; Kaoru Hashimoto, and Nobuo Kamehara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 8, 1992, Ser. No. 894,984
Claims priority, application Japan, Jun. 18, 1991, 3-146136
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **7 Claims**



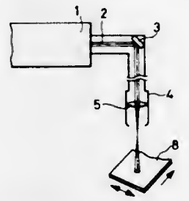
1. A process of producing a multiple-layer glass-ceramic circuit board having a copper conductor, comprising the steps of:
forming throughholes in a glass-ceramic green sheet at sites where via-contacts will be formed;
filling said throughholes with a powder mixture of a copper powder blended with a ceramic powder, said copper powder and said ceramic powder having a powder particle size providing a packing density substantially equal to or greater than that of said glass-ceramic green sheet when filled in said throughholes;
printing a conductor paste on said green sheet having said throughholes filled with said powder mixture, to form a circuit conductor pattern on said green sheet;
laminating a plurality of said green sheets having said conductor pattern formed thereon, to form a laminate body;
heating said laminate body thereby removing a binder from the laminate body while also preliminary-firing the laminate body.

5,287,621
CYLINDER LINER MANUFACTURING PROCESS
Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan
Filed Feb. 1, 1993, Ser. No. 12,034
Claims priority, application Japan, Feb. 12, 1992, 4-58901
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.061 **8 Claims**



1. A cylinder manufacturing process comprising the steps of: providing a cylindrical steel tube having opposed ends, an outer circumference defining an initial external diameter and an inner circumference defining an initial internal diameter; pressing an annular member of steel onto the outer circumference of one said end of the cylindrical tube; soldering the annular member to the tube with a metal solder to form a flange wall; inserting the cylindrical tube into a mold which has an internal diameter slightly larger than the initial external diameter of said tube; fixing said flange wall externally on said mold; providing a plug which has a slightly larger diameter than the initial internal diameter of said tube; urging said plug through the tube for increasing the internal and external diameters of the tube; and finishing the end of said tube opposite the flange wall.

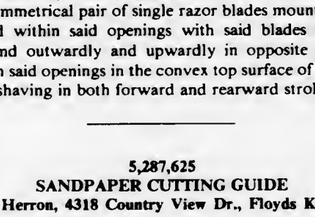
5,287,622
METHOD FOR PREPARATION OF A SUBSTRATE FOR A HEAT-GENERATING DEVICE, METHOD FOR PREPARATION OF A HEAT-GENERATING SUBSTRATE, AND METHOD FOR PREPARATION OF AN INK JET RECORDING HEAD
Haruhiko Terai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 477,169, Feb. 8, 1990, abandoned, which is a continuation of Ser. No. 132,894, Dec. 14, 1987, abandoned. This application Sep. 2, 1992, Ser. No. 938,525
Claims priority, application Japan, Dec. 17, 1986, 61-298885
Int. Cl.[5] B32B *31/26*
U.S. Cl. 29—890.1 **25 Claims**



1. A method for preparing a laminated product, the method comprising the steps of:
irradiating high density energy onto a surface of a plate member so that the surface irradiated with said high density energy enters a molten state and solidifies to form an insulating layer having a smooth surface with a surface roughness of not more than Ra0.1 μm; and
mounting an energy transducing device on said insulating layer.

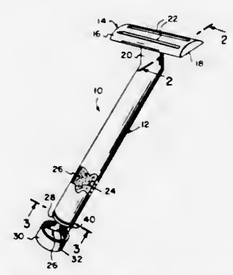
5,287,623
BEARING SPLIT OUTER RING AND METHOD OF ASSEMBLY
Thomas M. Francis, Litchfield, and Gary T. Schick, Goshen, both of Conn., assignors to The Torrington Company, Torrington, Conn.
Continuation of Ser. No. 2,569, Jan. 11, 1993, abandoned, which is a division of Ser. No. 825,233, Jan. 24, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 74,503
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—898.062 **8 Claims**

1. A method of assembly of a housed bearing, the method comprising the steps of:
providing a split outer ring, said outer ring being split into two unequal portions, the first of said portions subtending at least 185 degrees of arc and the second of said portions subtending no more than 175 degrees of arc;
retaining said split outer ring over an inner raceway with rolling elements therebetween to provide a subassembly, said portions of the outer ring having ends aligned relative to each other such that a uniform annular outer raceway is formed;
positioning said subassembly in a housing base such that the ends of the outer ring portions are all contained within the housing base, the housing base subtending approximately 180 degrees of arc; and



thereafter, mounting a housing cover over said subassembly and against the housing base, the housing base and housing cover being dimensioned to provide an interference fit with said split outer ring.

5,287,624
VERY EASY
Luciano G. Mondo, 450 Little Pl. #51, No. Plainfield, N.J. 07060, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279
Filed Jan. 4, 1993, Ser. No. 13
Int. Cl.[5] B26B *19/44, 21/08*
U.S. Cl. 30—41 **3 Claims**



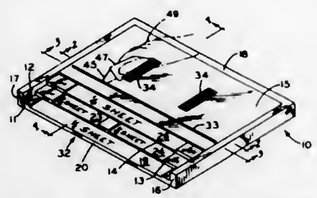
1. A disposable safety razor which comprises:
a) an elongated handle;
b) a head with an external cavity having symmetrical spaced openings in a convex top surface attached to an upper end of said elongated handle; and
c) a symmetrical pair of single razor blades mounted in said head within said openings with said blades angled to extend outwardly and upwardly in opposite directions from said openings in the convex top surface of said head, for shaving in both forward and rearward strokes.

5,287,625
SANDPAPER CUTTING GUIDE
John R. Herron, 4318 Country View Dr., Floyds Knobs, Ind. 47119
Filed Mar. 8, 1993, Ser. No. 27,659
Int. Cl.[5] B26B *29/02;* **B25B** *5/14*
U.S. Cl. 30—289 **17 Claims**

1. An abrasive sheet cutting guide assembly comprising, a rectangular base member having a rectangular recess contiguous with a side of the base, said recess having a size for receiv-

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ing at least a portion of a sheet of abrasive material, a cover attached to said base member to partially cover said recess, and



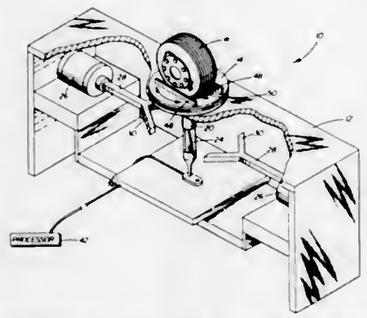
said cover having a slit parallel to an inner edge of said recess for guiding a cutter while cutting said sheet.

5,287,626

APPARATUS AND METHOD FOR MEASURING ROTATION ANGLE

Dennis A. Reich, P.O. Box 402, Georgetown, Ky. 40324

Filed Nov. 16, 1992, Ser. No. 976,530
Int. Cl.[5] G01B *7/315*
U.S. Cl. 33—1 N **17 Claims**



1. An apparatus for measuring the relative change in position of an object in two or three dimensions including angle of rotation as said object is moved between a first, home position and a second, relatively rotated position, comprising:

a frame;

a floating rotary support for the object for which rotation angle is to be measured, said support being mounted to said frame and allowing free lateral movement relative to said frame in X and Y coordinate directions;

means for positioning said support into the home position, said positioning means including a centering shaft mounted to and extending from said support in a Z coordinate direction, said centering shaft including a segment of square cross-section and a pair of opposed cylinders mounted to said frame, each cylinder including a rod having a substantially V-shaped distal end for engaging said segment of said centering shaft having a square cross-section and moving said rotary support to said home position;

a cooperating cursor and digitizer tablet to identify X and Y coordinates of at least said second, relatively rotated position of said object, one of said cursor and digitizer tablet being fixed to said rotary support for movement therewith, the other of said cursor and digitizer tablet remaining stationary; and

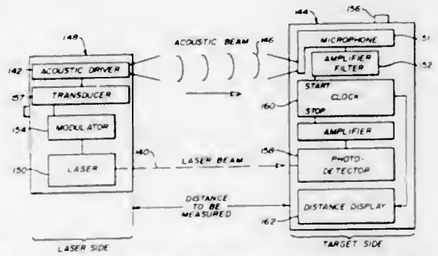
means for calculating the rotation angle of said object from the X and Y coordinates of at least the second, relatively rotated position.

5,287,627

AUTOMATIC PLUMB AND LEVEL TOOL WITH ACOUSTIC MEASURING CAPABILITY

Joseph F. Rando, Los Altos Hills, Calif., assignor to Spectra-Physics Laserplane, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 714,240, Jun. 12, 1991, Pat. No. 5,182,863, which is a continuation-in-part of Ser. No. 602,353, Oct. 22, 1990, Pat. No. 5,075,977. This application Dec. 2, 1992, Ser. No. 984,320
Int. Cl.[5] G01C *1/02*
U.S. Cl. 33—227 **19 Claims**



1. A laser beam projecting device for plumbing, leveling, alignment and distance measuring, comprising,

a hand-carryable housing,

at least one laser source means mounted within the housing, for producing at least one collimated beam of visible laser light,

at least one laser beam exit window in the housing,

beam directing means in the housing for directing at least one beam from the at least one laser source means at a predetermined angular orientation out of the housing through at least one exit window when said housing is in a first position,

tilt compensation means in the housing and associated with the beam directing means for correcting for relatively small tilt angles of the housing when in positions other than a true first position, and for projecting the at least one beam through the at least one exit window in substantially the true predetermined angular orientation despite such relatively small tilt angles,

means associated with the laser beam projecting device for distance measuring, including:

means for characterizing at least one collimated beam of visible laser light produced at said at least one laser source means, so that a modulated or pulsed beam is projected from said hand-carryable housing,

means for projecting an acoustic signal from said hand-carryable housing for use in distance measuring generally along said at least one collimated beam in substantially a true predetermined angular orientation.

5,287,628

OMNI RANGE INCLINO-COMPASS

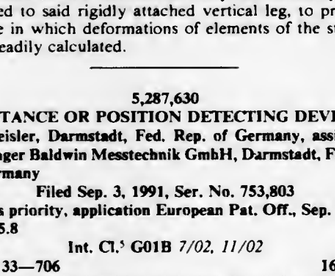
Takao Yamaguchi, 22-19, Ouizumi-cho 1-chome, Nerima-ku, Tokyo; Hajime Nishizawa, Urayasu, and Toshimi Kumakura, Tokyo, all of Japan, assignors to Takao Yamaguchi, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,903
Claims priority, application Japan, Jul. 9, 1991, 3-168245
Int. Cl.[5] G01C *17/28*
U.S. Cl. 33—361 **1 Claim**

1. A solid-state omni range inclino-compass comprising:

(a) a gravity sensor and a geomagnetic flux sensor provided on each of three orthogonal axes established on a moving body;

(b) means for generating a mathematic horizontal compass by making a gimbal mechanism as a mathematic equation on the basis of outputs from said gravity sensor located on each of said three orthogonal axes;



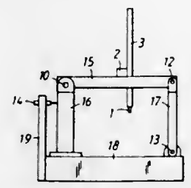
(c) means for calculating an azimuth angle of said moving body on the basis of two orthogonal axes on said mathematic horizontal compass.

5,287,629

MACHINE STAND, PARTICULARLY FOR SO-CALLED COORDINATE MEASURING MACHINES, AND A METHOD FOR CONSTRUCTING THE STAND

Bo Pettersson, Torshälla, Sweden, assignor to C. E. Johansson AB, Eskilstuna, Sweden

Filed Jul. 1, 1992, Ser. No. 907,316
Claims priority, application Sweden, Jul. 9, 1991, 9102153
Int. Cl.[5] G01B *7/03, 11/03, 21/04*
U.S. Cl. 33—503 **24 Claims**



1. A machine stand, particularly a machine stand for so-called coordinate measuring machines, comprising: a base, at least one vertical leg supported by the base, a horizontal beam supported by said at least one vertical leg, a bar attached to the horizontal beam, and a measuring head carried by the bar, wherein said measuring head is movable to any selected point within a three-dimensional space volume defined by the stand by moving said beam and said bar in relation to the base, wherein one vertical leg is non-rotatably and flexurally rigidly attached to said base, measuring means for measuring lateral bending deformation of the rigidly attached vertical leg, and wherein said beam is not non-rotatably and flexurally rigidly connected to said rigidly attached vertical leg, to provide a structure in which deformations of elements of the structure can be readily calculated.

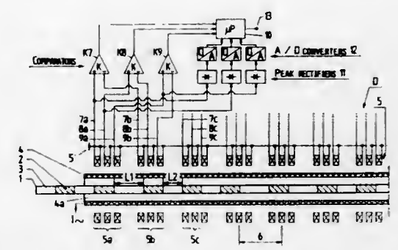
5,287,630

DISTANCE OR POSITION DETECTING DEVICE

Peter Geisler, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 3, 1991, Ser. No. 753,803
Claims priority, application European Pat. Off., Sep. 3, 1990, 90116865.8
Int. Cl.[5] G01B *7/02, 11/02*
U.S. Cl. 33—706 **16 Claims**

1. A distance and position detecting device for providing a position information signal representing a distance or a position of a movable member relative to a stationary member, comprising hollow detector means forming said stationary member for detecting position information, said movable member consisting of a single movable measuring ruler which is movable into and out of said hollow detector means for generating said position information in said hollow detector means, said single movable measuring ruler consisting of a single row of ruler sections along its length having discernible different characteristics along said length of said single movable measuring ruler, so that said different characteristics of a limited number of neighboring ruler sections together provide an encoding which represents said position information signal in the form of an absolute position indication, whereby said movable measuring ruler itself is a measuring scale for an absolute measurement without any reference marker.

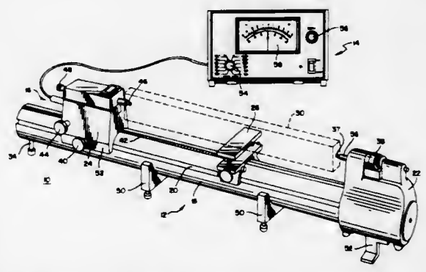


5,287,631

PRECISION EXTENDED-LENGTH MICROMETER WITH DISPLACEMENT METER PROBE ADAPTER

Ronald J. Stade, 60 Beech Dr., Apt. #117, Schaumburg, Ill. 60193, assignor to Ronald J. Stade, Ill.

Filed Dec. 16, 1991, Ser. No. 807,991
Int. Cl.[5] G01B *3/18*
U.S. Cl. 33—823 **35 Claims**



1. A cylindrical beam-type micrometer comprising:

a cylindrical beam having its longitudinal axis oriented parallel to and spaced from a planar surface, said beam having first and second end portions and a middle portion, and having first and second foot means disposed approximately at said first and second end portions, respectively, for supporting said first and second end portions on said planar surface, said beam having at least one slot extending longitudinally along the outside surface of said beam over at least said middle portion;

a headstock fixedly attached to said beam at approximately the second end portion, said headstock having a measuring anvil and a rotatable spindle with a graduated dial which cooperate to move said headstock anvil along its longitudinal axis and substantially parallel to the longitudinal axis of said beam;

a tailstock having a base moveably attached to said cylindri-

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cal beam at said middle portion, said tailstock base including means for clamping said tailstock to said beam by engaging with said beam slot, said tailstock base surrounding only a first portion of the circumference of said beam when moved longitudinally along the axis of and over the surface of said beam, said tailstock including a measuring anvil having its longitudinal axis positioned substantially in line with the longitudinal axis of said headstock anvil; and

pedestal means for supporting said cylindrical beam on said planar surface at said middle portion, said pedestal means contacting said beam only at a second portion of the circumference of said beam other than said first portion such that said tailstock is adapted to be moved over the surface of said beam throughout said middle portion without contacting said pedestal means.

27. A method for adapting a cylindrical beam-type mechanical micrometer for use with an electronic displacement meter having a remote probe, said remote probe having a body and a moveable tip, said micrometer having a cylindrical beam, a headstock fixedly attached to said beam, a tailstock moveably attached to said beam, said tailstock having a housing, a measuring anvil assembly disposed with said housing, and a cover enclosing said anvil assembly, said tailstock anvil assembly having a fixed base coupled to an elongated moveable anvil head wherein said anvil head is positioned such that its longitudinal axis is parallel to the longitudinal axis of said beam and such that said anvil head is adapted to move along its longitudinal axis, the method comprising the steps of:

removing the cover from the tailstock housing;

removing the anvil assembly from the tailstock housing,

gluing a contact block to one surface of the anvil head such that a major surface of the contact block is disposed perpendicular to both the surface of the anvil head and to the longitudinal axis of said anvil head;

providing an aperture for a remote probe within the tailstock housing;

attaching a probe clamp to the outside of the tailstock housing;

replacing the anvil assembly within the tailstock housing;

clamping the body of the probe to the outside of the tailstock housing with the probe clamp such that the tip of the probe extends within the housing and engages the major surface of the contact block, and such that the axis of movement of the probe tip is perpendicular to the major surface of the contact block; and

replacing the cover on the tailstock housing.

5,287,632

SUPERCRITICAL FLUID AND NEAR CRITICAL GAS EXTRACTION OF ORGANIC SOLVENTS FROM FORMED ARTICLES

Lawrence B. Helt, Basel, Switzerland, and James M. Clevenger, Glen Gardner, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 388,095, Jul. 31, 1989, abandoned. This application Jul. 24, 1990, Ser. No. 557,283

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—9 **20 Claims**

1. A process for extracting residual solvent from a solid article selected from the group consisting of capsules and film coated tablets, said process consisting of exposing that solid article to an inert phase of a fluid under supercritical conditions, transferring a portion of the residual solvent from the solid article to the inert phase of the fluid and removing the inert phase enriched with solvent from the solid article depleted of solvent, wherein said film coated tablets have a film coating comprising a film-forming member selected from the group consisting of cellulose ethers, cellulose esters, gelatin, pharmaceutical glaze, polyethylene glycol, polyvinyl acetate phthalate, sucrose, carnauba wax, microcrystalline wax, (meth-)acrylic acid/(meth)acrylic ester copolymers, and other vinylic polymers and copolymers.

5,287,633

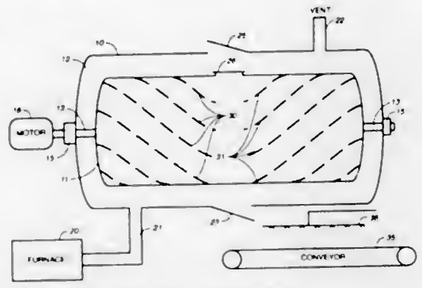
COFFEE ROASTING PROCESS AND APPARATUS

Kerry Sachs, 1462 Tanforan Way, Woodland, Calif. 95695

Filed Oct. 19, 1992, Ser. No. 963,186

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—13 **3 Claims**



1. A coffee roasting device comprising

a stationary outer vessel;

a single rotatable inner drum having a gas impervious wall positioned within and spaced from said outer vessel to form a hot gas space;

an inlet through said outer vessel to pass hot gas into said hot gas space, and an outlet through said outer vessel to remove gas from said hot gas space;

a closable green coffee bean inlet into said inner drum;

first internal baffles forming a helical path adjacent a first axial length of a rotating wall of said inner drum, said helical path pitched to drive particulate material in said drum in a first axial direction upon rotation of said drum;

second internal baffles forming a helical path adjacent a second axial length of rotating wall of said inner drum, said second baffles pitched to drive particulate material in an axial direction opposite said first axial direction upon rotation of said drum; and

means to reversibly rotate said inner drum whereby green coffee beans tumbled within a driven alternately toward the ends of said inner drum and toward the center of said inner drum and in contact with said rotating wall.

5,287,634

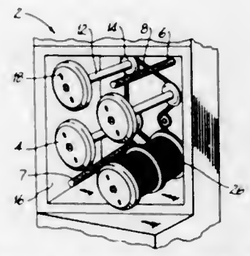
REMOVAL OF VAPORIZABLE COMPONENTS FROM POLYMERIC PRODUCTS

Matthew Hain, New Haven, and Michael P. Chesterfield, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 832,791, Feb. 7, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 71,333

Int. Cl.[5] F26B *5/04*

U.S. Cl. 34—16 **39 Claims**



34. A method for removing vaporizable impurities from bioabsorbable polymeric materials comprising:

(i) providing a bioabsorbable polymeric material;

(ii) enclosing said bioabsorbable polymeric material in a chamber;

(iii) causing gas to flow into the chamber through multi-port source gas dispersion means;

(iv) contacting said bioabsorbable polymeric material with said gas;

(v) vaporizing vaporizable components contained by said bioabsorbable polymeric material; and

(vi) transporting said vaporizable components out of the chamber.

5,287,635

AIR DIFFUSERS

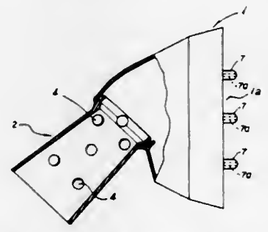
Wing-Kin Chan, Kowloon, Hong Kong, assignor to China Pacific Trade Limited, Hong Kong

Division of Ser. No. 727,912, Jul. 10, 1991. This application May 14, 1993, Ser. No. 61,040

Claims priority, application United Kingdom, Jul. 24, 1990, 9016236

Int. Cl.[5] A45D *20/00*

U.S. Cl. 34—97 **2 Claims**



1. A locking mechanism for attaching an accessory to a hairdryer, said accessory comprising a neck for connection to said hairdryer, said neck tapering outwardly toward one end for receiving the barrel of the hairdryer, said neck having slots formed therein, said slots extending parallel to the axis of the neck and tapering outwardly toward said one end, a rotatable collar provided about said neck, and means for causing said collar to move axially along said neck toward said one end upon rotation of said collar whereby the diameter of said one end of said neck is caused to be constricted to grip the hairdryer barrel.

5,287,636

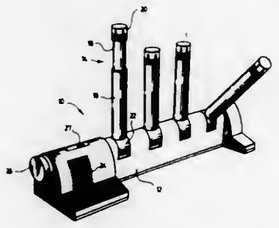
TUBULAR DRYING APPARATUS FOR FOOTWEAR OR HANDWEAR

André Lafleur, Boucherville, and Réal Lanoix, Laval, both of Canada, assignors to Colette Laferriere, St-Lambert-de-Lévis and Lise Laferriere, St-Georges-de-Windsor, both of Canada

Filed Jan. 25, 1993, Ser. No. 8,133

Int. Cl.[5] F26B *25/00*

U.S. Cl. 34—104 **16 Claims**



1. A footwear drying apparatus comprising:

a hot air supply;

a plurality of air conducting tubes connected to the hot air supply for conducting hot air into footwear; and

a plurality of nozzles provided at ends of said tubes, said nozzles having at least two outlets substantially diametrically opposed for blowing air in a first direction towards a toe of the footwear and in a second opposite direction towards a heel of the footwear, said outlets providing substantially more air flow towards said toe than towards said heel, the nozzles each comprising a fixed member fixed with respect to said nozzles and an adjacent rotating member rotatable with respect to said tubes, said outlets being provided by an intersection of corresponding openings in each said fixed member and each said rotating member, rotation of said rotating member reducing said intersection to zero, whereby by rotating said rotating member of any one of said nozzles, air flow can be controlled from no air flow to maximum air flow.

5,287,637

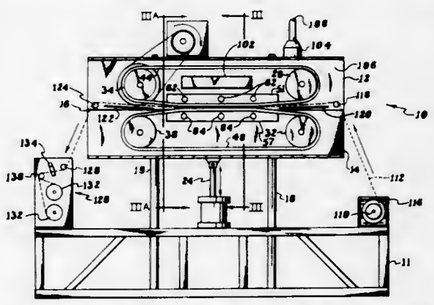
APPARATUS TO DRY/HEAT TREAT CONTINUOUS WEB STOCK OF FILM

Thuan P. Dixit, Midland, and Paul T. Louks, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 27, 1992, Ser. No. 859,177

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—158 **17 Claims**



1. An apparatus for exposing a continuous web stock of film which contains a solvent to a heated gas for the purpose of separating the solvent from the film comprising

a) a mechanism which grasps a film by its edges, with said mechanism being at least two rows of parallel pressure plated on one side of the film and at least two rows of parallel pressure plates on the other side of the film, with said pressure plates on opposite sides of said film being aligned in opposition to each other, and where said mechanism operates to move said film through a

b) drying zone, wherein said drying zone is created by inclusion of a heating element within the apparatus and with said pressure plates holding said film taut without penetrating the film and without causing substantial stretching of said film in the drying zone, and

c) a means to remove the solvent which is separated from the film in the drying zone from said apparatus.

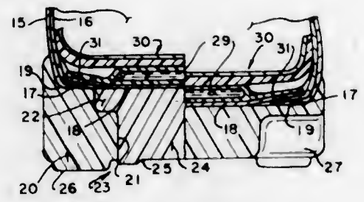
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,638

WATER MASSAGE AND SHOCK ABSORPTION SYSTEM FOR FOOTWEAR

John C. Preston, Manchester, Mo., assignor to Brown Group, Inc., St. Louis, Mo.

Filed Jan. 28, 1992, Ser. No. 826,841
Int. Cl.[5] A43B *13/18, 13/37, 13/38*
U.S. Cl. 36—28 3 Claims



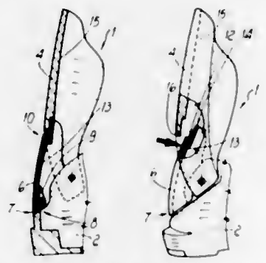
1. An article of footwear comprising:
a) an upper formed to receive and support a foot and having a marginal flange;
b) a fabric liner stitched to said upper along a line set inwardly of said upper marginal flange thereby leaving said marginal flange to be lasted over said fabric inwardly of said stitch line;
c) an outsole secured to said upper to enclose said lasted margin of said upper, said outsole having a heel area and a forepart area and a shallow cupped configuration to permit said outsole to form a mating line with said upper and extending around the footwear;
d) a fluid containing inner sole positioned on said fabric liner to conform substantially to the shape of said line of stitching of said liner to said upper;
e) a sock lining seated upon said fluid containing inner sole to present an exposed surface to receive a foot, said sock lining having an under surface presented to said fluid containing inner sole, said under surface being formed with a raised margin surrounding the margins thereof and vent passages formed in said raised margin; and
f) shock absorber means carried in said outsole in position to absorb the shock of the footwear heel area in walking.

5,287,639

SPORTS SHOE WITH QUICK-RELEASE QUARTER

Valerio Tonel, Biadene, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Dec. 14, 1992, Ser. No. 989,663
Claims priority, application Italy, Dec. 20, 1991, TV91A000131
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 10 Claims



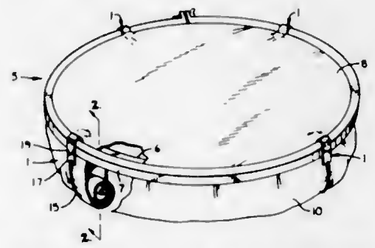
1. Sports shoe, comprising at least one quarter associated with a shell, said quarter being provided with a recess in a downward and rear position thereof, the sports shoe further comprising a flap which is articulated to said shell and affects said recess, said flap being provided with an engagement means for engaging said at least one quarter for rear support, said flap being disengageable from said at least one quarter by the user by pressing the flap toward the leg, said flap having an upper perimetric edge at which are arranged said engagement means, a grip means for gripping said engagement means being formed on a lower perimetric edge of said at least one quarter, said engagement means comprising at least one groove forming a step from which a wing protrudes in a direction towards said at least one quarter, said wing abutting on an inner lateral surface of said quarter in a closed position of said quarter.

5,287,640

EXCESS MATERIAL SUPPORTING STRAP FOR CRAFT FRAME

Robert E. Morgan, 2255 NE. Porter Rd., Blue Springs, Mo. 64014

Filed Jun. 12, 1992, Ser. No. 898,129
Int. Cl.[5] D06C *3/08;* D05C *1/02*
U.S. Cl. 38—102.2 4 Claims



1. A fabric holding device for use with a craft frame comprising a first craft frame member and a second craft frame member and wherein craft material is positioned over said first craft frame member and secured between said first craft frame member and said second craft frame member such that excess material extends below said craft frame; said fabric holding device comprising:
(a) a flexible strip having a first end and a second end;
(b) a first hook member including a hook portion and fastening means for securing said first end of said flexible strip to said first hook member; said hook portion being removably attachable to a first craft frame member;
(c) a second hook member including a hook portion and fastening means for securing said second end of said flexible strip to said second hook member; said hook portion being removably attachable to a second craft frame member.

5,287,641

COLLECTIBLE CARD DEVICE

Jon J. Showers, Glenolden, Pa., assignor to Neet Ideas Incorporated, Broomall, Pa.

Filed Sep. 5, 1991, Ser. No. 755,107
Int. Cl.[5] G09F *1/12, 7/00*
U.S. Cl. 40—488 2 Claims

1. A personalized card device, comprising:
a photo having a predetermined size;
an elongated blank folded on a single fold to form a front and a back panel, and including fastening means to form a card with one unsealed end;
a customized die cut opening in said front panel having a predetermined size and shape, said front panel having printing thereon to convey a predetermined visual pattern in cooperation with said die cut opening;
an insert sized to be inserted between the front and back panels through said unsealed end to be completely received within said card, said insert forming a photo template for defining the size of said photo to control insertion of said photo between said front and back panels through said unsealed end and centered to cooperate with said fastening means to prevent movement of said photo and to



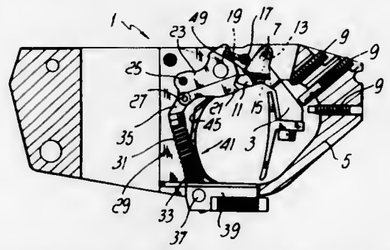
align said photo for cooperative interaction with said predetermined visual pattern to thereby provide a personalized card device having a visual cooperation between said photo and said card, whereby said photo replaces said insert photo template.

5,287,642

SAFETY DEVICE FOR TRIGGER MECHANISMS, IN PARTICLAR FOR FIREARMS

Sergio Scaramucci, Gallo di Petriano, Italy, assignor to Benelli Armi S.p.A., Urbino, Italy

Filed May 12, 1992, Ser. No. 881,619
Claims priority, application Italy, Jun. 13, 1991, MI91A0001632
Int. Cl.[5] F41A *17/80*
U.S. Cl. 42—70.08 9 Claims



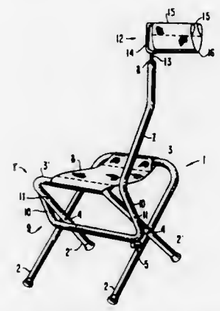
1. Safety device for trigger mechanisms for firearms having a body comprising a trigger, a striking mass pivoted to the body of the firearm by means of a first pivot, a sliding element slidably formed on the firearm body, and an elastic firing element having a first end associate with said striking mass by means of a second pivot, a second end associated with the firearm body by means of a third pivot, and a generally longitudinal axis between said ends; said striking mass having at least two positions; a first cocking position and a second percussion position; said elastic element being directly and rigidly secured to said second pivot and acting on said second pivot with a force, said force having a component adapted to actuate said striking mass in order to move it in a percussion direction from said cocking position to said percussion position; wherein said third pivot of said elastic element is disposed on said sliding element and can substantially controllably slide on the firearm body so as to re-position at least said third pivot with respect to said first pivot and vary the angle formed by the axis of said elastic element and said component of said force; thereby defining a safety position of said elastic element wherein said component of said force is at least cancelled, said elastic element resting on said sliding element during transfer from said cocking position to said safety position.

5,287,643

FOLDABLE HUNTING SEAT

Roberto Arizpe-Gilmore, Av. San Angel No. 138, Col. Valle De San Angel, Sec. Jardin, San Pedro Garza Garcia, Mexico

Filed Jan. 28, 1993, Ser. No. 10,288
Int. Cl.[5] F41A *23/06;* F16M *11/38*
U.S. Cl. 42—94 2 Claims



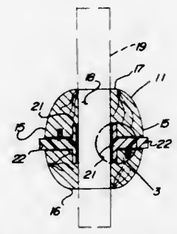
1. A scissor type foldable hunting seat, comprising a pair of "U" shaped tubular members, each having a middle portion and a pair of vertical legs jointed by a horizontal upper fastening edge, both tubular members are coupled through the middle portion of their vertical legs; at least one of the vertical legs having stop means coupled near its middle portion; a seat of flexible and resistant material grasped to the fastening edges of the tubular members; and a weapon support arm having a "U" shaped horizontally bent lower end presenting two branches articulately fastened to the vertical legs of the tubular members and a horizontal connecting member which rests in the stop member of the vertical leg, to maintain the weapon support arm in a hunting position and be folded when folding the seat.

5,287,644

CAMERA RIFLE ORGANIZATION

Bruce L. Bolduc, 215 Main St., Danville, N.H. 03819

Filed Oct. 13, 1992, Ser. No. 959,645
Int. Cl.[5] F41G *1/41*
U.S. Cl. 42—106 4 Claims



1. A camera rifle organization, comprising,
an elongate rifle stock, the rifle stock having a rifle barrel, and
the rifle stock having spaced side walls, a bottom wall, and a top wall spaced from the bottom wall,
and
a trigger guard mounted to the bottom wall, and a trigger pivotally mounted within the rifle stock extending into the

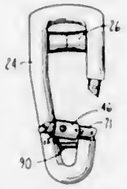
VOL 1159 ISS 4 FE 22 1994 UMI

rifle stock through the bottom wall and positioned within the trigger guard,
and
a camera receiving slot directed through the rifle stock and extending between the side walls and directed through the top wall and the bottom wall, with the camera receiving slot orthogonally oriented relative to the rifle barrel,
and
a camera mounted within the camera receiving slot,
and
actuator means in operative association with the trigger for effecting selective actuation of the camera,
and
the camera includes a camera lens oriented parallel to the rifle barrel and oriented above the top wall, and each said side wall includes a clamp plate rod slidably directed through each said side wall, and each said clamp plate rod includes a clamp plate, and each said clamp plate includes a matrix of resilient nodes extending into the camera receiving slot for clamping the camera within the camera receiving slot.

5,287,645
PURSE RING

John F. Gois, La Mesa, Calif., assignor to Gemini Capital Group, Inc., San Diego, Calif.

Continuation of Ser. No. 741,150, Aug. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,741, Sep. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 394,070, Aug. 15, 1989, abandoned. This application Jul. 31, 1992, Ser. No. 924,379
Int. Cl.[5] A01K *73/12*
U.S. Cl. 43—14 **5 Claims**



1. A purse ring engageable with the bridle line of a seine for pursing the seine with a purse line during deep-sea fishing operations which comprises:
an oblong-shaped frame member having an aperture therethrough;
a first roller mounted across said frame to bridge said aperture;
a second roller mounted across said frame to bridge said aperture wherein said first and second roller are substantially parallel, said first roller, said second roller and portions of said frame between said first and second rollers defining a periphery around a passageway of said aperture for receiving said purse line therethrough, said purse line being engageable with said first roller to reduce friction therebetween during deployment and retrieval of said seine, and said purse line being engageable with said second roller to protect said bridle line, said periphery further defining plane;
a cable release arm pivotally mounted as a portion of said frame between said first and second rollers to partially define said periphery, said cable release arm being canted, pivotable and operable to interrupt said periphery for insertion and removal of said purse line relative to said passageway, said cable release arm comprising a pivot pin attached to said periphery of said frame, and a pivot member with a first end and a second end, said first end being pivotably attached to said pivot pin for movement of said pivot member out of said plane;
a sleeve slidably attached to said pivot member for engagement and disengagement with said frame, said sleeve having an extended and a retracted position, said sleeve engaging said frame and preventing movement of said pivot member out of said plane when in said extended position, said sleeve being formed with an opening; and
a sleeve locking means slidably attached to said frame for maintaining said sleeve in engagement with said frame, said locking means being engageable with said opening formed in said sleeve to prevent movement of said sleeve from said extended position to said retracted position wherein said sleeve locking means comprises a slot defined by said frame, a pin slidingly received by said slot, said pin being extendable from said slot to engage opening in said sleeve, and a spring in said slot, said spring urging said pin to extend from said slot.

5,287,646
SPRING BOBBER FOR FISHING RODS

Donald J. Kuhlman, 15570 Comstock St., Grand Haven, Mich. 49417

Filed Dec. 17, 1992, Ser. No. 992,163
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **5 Claims**



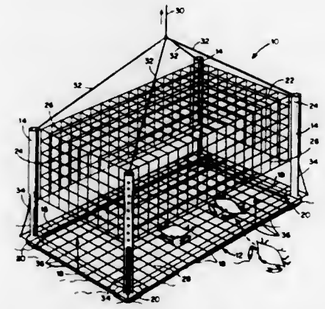
1. A spring bobber for use with a fishing rod comprising: a fish bite sensing member consisting of a single strand of stainless steel wire and having a distal end portion forming a loop through which a fishing line passes, a central flexible loop portion, and a terminal end portion defined by parallel positioned end segments of said wire for attachment to said fishing rod; means for securing said terminal end portion to said fishing rod, said securing means comprising a pin member having parallel end segments terminating in a U-shaped portion perpendicularly positioned with respect to said parallel segments; and a coil spring member surrounding both the terminal end portions of said sensing member and said pin member parallel end segments.

5,287,647
CRAB TRAP

James J. Longo, 1101 Lakewood Dr., Carrcroft, Wilmington, Del. 19803

Filed Jan. 28, 1993, Ser. No. 10,672
Int. Cl.[5] A01K *69/10*
U.S. Cl. 43—105 **3 Claims**

1. A crab trap having an open configuration prior to trapping a crab and into which a crab can crawl to retrieve bait placed therein, said trap also having a closed configuration for trapping a crab therein, said trap comprising:
a generally rectangular frame assembly comprising a base frame having two hollow bottom side connecting tubes and two hollow bottom end connecting tubes, said bottom side connecting tubes being parallel to one another and said bottom end connecting tubes being parallel to one another, said bottom side connecting tubes and bottom end connecting tubes being perpendicular to each other and said bottom side connecting tubes and said bottom end connecting tubes being joined by a plurality of corner elbow connectors; a plurality of hollow vertical corner posts being inserted in the corner elbow connectors and perpendicular to said bottom side connecting tubes and bottom end connecting tubes connected at the corner elbow connectors, said vertical corner posts each containing a longitudinal slotted opening extending downwardly from approximately the center point of the vertical corner post along the length of the vertical corner post; said bottom, side connecting tubes, bottom end connecting tubes and vertical corner posts contain a plurality of openings; said frame assembly having
a mesh covering comprising a top mesh, two mesh ends, two mesh sides, and a bottom mesh, said top mesh covering the area formed by the plane between the top ends of said vertical corner posts, the said mesh ends and mesh sides covering the planes formed from the top ends of said vertical corner posts to the approximate mid-point of the



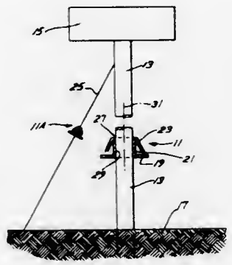
hollow vertical corner posts, said top mesh, mesh ends, and mesh sides being connected to said frame at a plurality of, strategic locations by retainers, said bottom mesh resting on said base frame; said frame assembly including
a plurality of draw cords, one end of each draw cord being tied to said bottom mesh and threaded through the opening in one of the said vertical corner posts and exiting at the upper end of said vertical corner post, said plurality of draw cords joined together at a common point above the frame assembly and attached thereat to a single draw cord extending to the water surface such that, when the single draw cord is pulled, the plurality of draw cords slide within said vertical corner posts and the bottom mesh rises upwardly to engage the lower edges of said mesh end and mesh sides thereby trapping any crab within the trap.

5,287,648
ELECTRICAL SUPPORT STRUCTURE AND METHOD AND APPARATUS FOR PREVENTING CRAWLING INSECTS OR OTHER CRAWLING PESTS FROM ENTERING ELECTRICAL DEVICES MOUNTED ON SUPPORT STRUCTURES ABOVE GROUND

Herbert H. Hand, 223 Tram Rd., Columbia, S.C. 29201, and Herbert G. Hand, 601 Mack St., Gaston, S.C. 29053

Continuation-in-part of Ser. No. 434,411, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 271,040, Nov. 15, 1988, Pat. No. 4,905,629, which is a continuation-in-part of Ser. No. 133,171, Dec. 11, 1987, Pat. No. 4,784,086, which is a continuation-in-part of Ser. No. 914,335, Oct. 2, 1986, abandoned. This application Aug. 1, 1990, Ser. No. 561,375
Int. Cl.[5] A01M *1/10*
U.S. Cl. 43—121 **33 Claims**

1. A pad support structure for mounting an electrical device and for preventing a crawling pest capable of climbing a gap of a predetermined size from reaching the electrical device without the need for chemical repellants, said structure comprising;
a pad for resting on the ground;
a sleeve having an inside surface for receiving the pad in relative close fit tolerance and having an outer surface, said sleeve having a ground side end and an upper end, and said sleeve being disposed above ground on said pad;
a projecting member secured to the ground side end of said sleeve and extending outwardly from said outer surface of said sleeve, said projecting member having an underside surface and an edge surface and a topside surface, said underside surface, said edge surface and said topside surface and said outer surface forming a first pathway for movement therealong by the crawling pest leading from beneath said projecting member to the upper end of said sleeve;

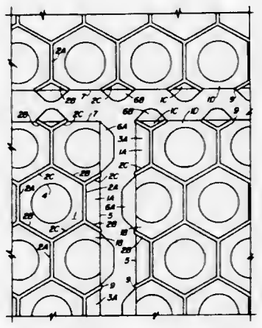


an obstacle member secured to the upper end of said sleeve and circumscribing the upper end of said sleeve for blocking movement of a pest along said first pathway, said obstacle member having an inside surface ending in an edge separated from said topside surface by a distance greater than said predetermined size, said inside surface providing a second pathway leading in a direction away from said upper end of said sleeve and away from said first pathway.

5,287,649
GRID PLATE

Eugen Prestele, Albert-Greiner-Strasse 73, D-8900 Augsburg/FRG, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,612
Claims priority, application Austria, Jun. 7, 1991, 1154/91
Int. Cl.[5] A01G *9/02*; **E01C** *5/20*
U.S. Cl. 47—33 **17 Claims**



1. A grid plate comprising a base and vertical side walls integral to the base which form chambers open to the top, the bottom of each chamber being provided with a drainage hole and the base having projections on a plate rim which protrude beyond the plate rim and grip the base area of an adjacent grid plate, the plate rim of the grid plate intersecting the rim-bordering side walls of at least every second rim-bordering cham-

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ber to form intersected laterally open chambers, the intersected laterally open chambers being completed by rim-bordering side walls of adjacent grid plates to additional laterally closed chambers, the rim-bordering side walls of adjacent grid plates being in contact only along vertical edges of the side walls intersected by the plate rim.

5,287,650

STRUCTURED MEDIUM FOR THE CULTIVATION OF GREENERY AND A WATERPROOFING SYSTEM TO FACILITATE THE INSTALLATION OF SAID MEDIUM ON BUILDINGS

Goro Moriguchi; Seiichiro Ishihara, both of Osaka; Masatosi Kubo, Hyogo; Akira Tsubota, and Takeshi Nakai, both of Shiga, all of Japan, assignors to Asanuma Corporation, Osaka, Japan

Filed Oct. 8, 1991, Ser. No. 776,587

Claims priority, application Japan, Oct. 8, 1990, 2-271010; Oct. 26, 1990, 2-290089; Nov. 30, 1990, 2-339070; Mar. 14, 1991, 3-75604

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—59 **20 Claims**



1. A structured medium for the cultivation of greenery comprising:

three vertically stacked layers of which at least the top two consist primarily of synthetic fibers;

the topmost layer being an unpartitioned cultivation layer which does not contain soil and which facilitates germination and cultivation of greenery such as turf, and having fiber density, ventilation and moisture retention characteristics which lie in between those of the other two layers;

the middle layer being a protection layer supporting roots of said greenery and providing an adequate level of ventilation and having fiber density and moisture retention characteristics greater than those of the other two layers; and

the bottom layer being a drainage layer supporting said cultivation layer and said protection layer and providing a level of ventilation higher than that of the other two layers, as well as considerable drainage capacity and a measure of elasticity.

5,287,651

APPARATUS FOR BULB PLANT CULTIVATION

Martien de Graaf, Vijfhuizen, France, assignor to Isover Saint-Gobain, Courbevoie, France

Filed Jan. 31, 1991, Ser. No. 648,965

Claims priority, application France, Jan. 31, 1990, 90 01114

Int. Cl.[5] A01G *9/02*

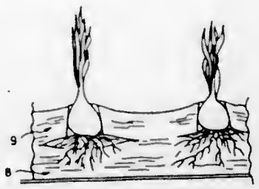
U.S. Cl. 47—66 **9 Claims**

1. An apparatus for cultivating bulbs comprising:

a rigid tray;

a two layer hydrophilic mineral wool felt placed on the tray;

a plurality of pockets formed at regular intervals in only an upper one of the layers of the felt, each pocket having only one opening located at a first face of the felt, each said opening having a diameter slightly smaller than a maximum diameter of a bulb intended to be cultivated in the pocket, and each pocket having a depth sufficient to



receive a bulb at least up to the level of the maximum diameter of the bulb.

5,287,652

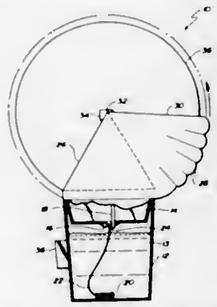
HYDROPONIC APPARATUS

Reinard C. Delp, P.O. Box 123, Laytonville, Calif. 95454

Filed Feb. 28, 1992, Ser. No. 843,308

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—79 **12 Claims**



1. A hydroponic apparatus for growing plants comprising:

a tank portion for containing a quantity of water and dissolved nutrients;

a plant tray portion supported above said tank portion, said plant tray portion including a drain to said tank portion;

a pump member conditioned to deliver a portion of said water and dissolved nutrients from said tank portion to said plant tray portion;

a frame member adjacent said plant tray portion, said frame member bearing a movable cover portion for placement over said plant tray portion and including at least one motor for driving said movable cover portion; and

a controller portion enabling selective placement of said cover portion over said plant tray portion.

5,287,653

STORAGE CABINET WITH SLIDING DOORS

Nelson Young, 112 Cuba Hill Rd., Greenlawn, N.Y. 11740

Filed Jul. 21, 1992, Ser. No. 917,836

Int. Cl.[5] E05D *15/20*

U.S. Cl. 49—130 **18 Claims**

1. A sliding door arrangement comprising:

frame means;

first and second tracks;

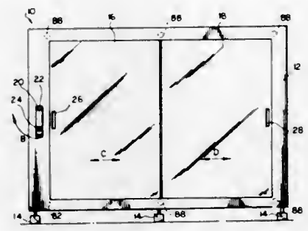
mounting means for mounting said first and second tracks on said frame means, said mounting means being arranged and constructed to allow movement of said tracks in a direction perpendicular to said tracks;

a first door slidably mounted on said first track;

a second door slidably mounted on said second track; and

a handle mounted on said frame and movable between a first handle position and a second handle position;

shifting means coupled to said handle for shifting in response to movement of said handle between said handle positions



at least one of said tracks between a first track position wherein said doors are sealed against said frame means and a second track position wherein said doors are offset thereby permitting said at least of said doors to slide in a respective track.

5,287,654

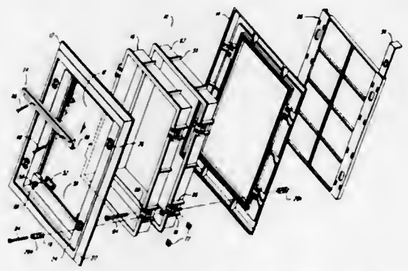
PET ACCESS DOOR FRAME MODULAR UNIT

George N. Daviantes, 21457 Iglesia Dr., Woodland Hills, Calif. 91364

Filed Oct. 15, 1991, Ser. No. 776,664

Int. Cl.[5] E06B *11/00*

U.S. Cl. 49—169 **9 Claims**



1. A pet access door unit for insertion into a hole cut in a door or wall, comprising:

two exterior frame elements each completely defining an opening, for mounting at an edge of said hole, on opposite sides of said hole, at least one of said exterior frame elements including attachment means for attaching a pet access door,

at least one spacer frame completely defining an opening, for insertion in said hole between said exterior frames,

said spacer frame being in telescoping arrangement with at least one of said exterior frame elements, and

means for fastening said exterior frame elements to said spacer frame.

5,287,655

ROLLER ARRANGEMENT FOR SLIDING PANELS

Daniel H. Harvey, Placentia, Calif., assignor to Metal Industries, Inc., Elizabehtville, Pa.

Filed Mar. 1, 1993, Ser. No. 24,374

Int. Cl.[5] E05D *13/00*

U.S. Cl. 49—425 **10 Claims**

1. A roller arrangement for a sliding panel of the type including a pair of parallel, elongated, spaced side members having top and bottom ends and defining a panel length and top and bottom parallel members secured to the top and bottom ends, respectively, of the side members and defining a panel width, said roller arrangement comprising:

a first expander extending along the top member and disposed partially therewithin, said first expander supporting a pair of rollers, one near each end of said first expander;

first resilient means captures between the first expander and the top member for exerting a force against said first expander;

a second expander extending along the bottom member and disposed partially therewithin, said second expander supporting a pair of rollers, one near each end of said second expander;

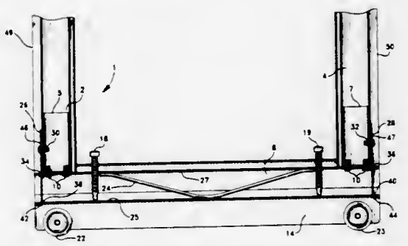
second resilient means captures between the second expander and the bottom member for exerting a force against said bottom member;

first displacing means for displacing the first expander inwardly and outwardly of the top member against the force exerted by the first resilient member;

second displacing means for displacing the second expander inwardly and outwardly of the bottom member against the force exerted by the second resilient member;

first retaining and limiting means for retaining the first expander partially within the top member and for limiting the displacement of said first expander outwardly of said top member;

second retaining and limiting means for retaining the second expander partially within the bottom member and for limiting the displacement of said second expander outwardly of said bottom member;



the top and bottom members being in the from of a channel having a base;

the first and second expanders being H-shaped in cross-section, said H-shaped cross-section having a cross bar;

the first resilient means being disposed within and abutting the base of the channel of the top member and abutting the cross bar of the first expander so that said first resilient means is captured between the top member and the first expander;

the second resilient means being disposed within and abutting the base of the channel of the bottom member and abutting the cross bar of the second expander so that said second resilient means is captured between the bottom member and the second expander; and

the first displacing means including a first screw in threaded engagement with the top member near one end of said top member and extending through said top member, and abutting the cross-bar of the H-shaped section of the first expander near one end of said cross-bar, a second screw in threaded engagement with the top member near an opposite end of said top member and extending through said top member, and abutting the cross-bar of the H-shaped section of the first expander near an opposite end of said cross-bar, and said first and second screws being displaced inwardly so that the first expander is displaced outwardly of the top member at the one and the opposite ends of said top member, whereby the force exerted by the first resilient means on said first expander is decreased, and being displaced outwardly so that said first expander is displaced

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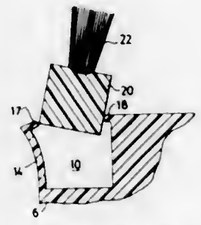
inwardly of said top member at said one and opposite ends, whereby the force exerted by the first resilient means on said first expander is increased.

5,287,656

WEATHERSTRIP ASSEMBLY

Larry E. Johnson, Victor, N.Y., assignor to Ultrafab Inc., Farmington, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,023
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—489.1 **6 Claims**



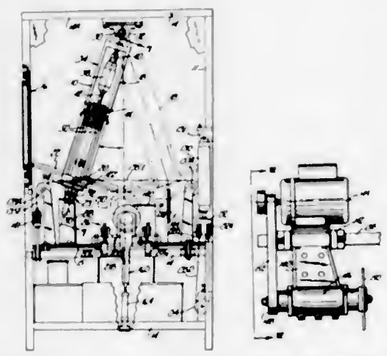
1. A weatherstrip assembly comprising:
an elongated channel having a rectangular cross-sectional area defined by a base and a pair of walls spaced apart and extending vertically from said base and an opening in said channel opposite said base, wherein at least one of said walls is flexible for temporarily expanding the cross-sectional area of said channel so that a weatherstrip member may be inserted into or removed form said channel, said weatherstrip member providing said weatherstrip assembly when inserted into said channel.

5,287,657

SKATE SHARPENING MACHINE AND METHOD

Rudolph R. Tschida, Anoka, and Donald Norqual, Roseville, both of Minn., assignors to Contract Design, Inc., Minneapolis, Minn.

Filed May 22, 1992, Ser. No. 887,684
Int. Cl.[5] B24B *53/06, 9/04*
U.S. Cl. 51—5 D **13 Claims**



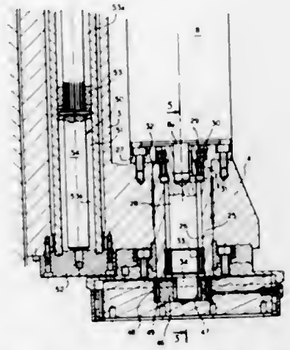
1. A skate sharpening machine for sharpening the bottom edge of a blade of an ice skate, comprising a grinding wheel having a periphery;
a skate support positioned to move relative to the periphery of the grinding wheel;
a clamp for holding a skate in the skate support as the support moves relative to the grinding wheel while the grinding wheel engages the bottom edge of a skate blade of such skate; and
means for dressing the grinding wheel periphery to a selected one of a plurality of desired cross-sectional configurations prior to moving the skate relative to the grinding wheel wherein the grinding wheel will engage the skate blade wherein said dressing means comprises a support, means to pivotally mount the support about an axis perpendicular to an axis of rotation of the grinding wheel at a known position relative to the periphery of the grinding wheel, a dressing member slidably mounted on the support for movement substantially radially of the pivot axis of the support, and a power operated control for changing the length of the radius of pivoting of said dressing member for use during dressing of the grinding wheel to obtain the plurality of different selectable cross-sectional shapes of the periphery of the grinding wheel and of the bottom of a skate blade being sharpened.

5,287,658

POLISHING MACHINE HAVING COMBINED ALTERNATING TRANSLATIONAL AND ROTATIONAL TOOL MOTION

Claude Attanasio, Chalon Sur Saone, and Jean-Claude Seigue, Virey Le Grand, both of France, assignors to SEVA, Chalon Sur Saone, France

Continuation of Ser. No. 889,440, May 28, 1992. This application Jun. 11, 1993, Ser. No. 75,282
Claims priority, application France, Jun. 4, 1991, 9106754
Int. Cl.[5] B24B *7/02, 7/07*
U.S. Cl. 51—56 R **8 Claims**



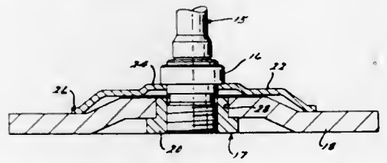
1. A machine for polishing horizontally movable objects, comprising: a frame (**1**), a support column (**3**) movable in relation to the frame and supporting a polishing unit comprising a tool holder (**9**) carried by a slide (**41**) driven in translational motion by eccentric-equipped means driven by an electric motor (**8**) to impart a reciprocating translation movement to the tool holder, and presser means for pressing the tool holder against the object to be polished with a constant but adjustable force, wherein the means for imparting a reciprocating translation movement comprises an internal connecting rod-crank assembly (**34, 46**) mounted in the slide, wherein said machine further comprises a tool (**10**) mounted in the tool holder, and means (**16, 19, 20, 21**) coupled to said tool for continuously rotating said tool, and wherein the internal connecting rod-crank assembly comprises a crank pin (**34**) forming an extension on a shaft (**28**) driven by the electric motor (**8**), the crank pin cooperating with an eccentric ring (**46**) having an axis, relative to an outer circumference of the ring, parallel to an axis of the motor driven shaft, the eccentric ring axis undergoing reciprocating translational, back and forth movement in a plane parallel to a direction of movement of the slide, and the eccentric ring being rotatably mounted in a recessed housing (**45**) defined in the slide.

5,287,659

TOOL ELEMENT SUBASSEMBLY AND METHOD OF MANUFACTURING SAME

Russell M. Timmons, Lutherville, and Vladimir S. Karnicki, Baltimore, both of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation-in-part of Ser. No. 832,147, Feb. 6, 1992, Pat. No. 5,207,028, which is a continuation-in-part of Ser. No. 702,274, May 17, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,127
Int. Cl.[5] B24B *45/00*; B24D *13/20*
U.S. Cl. 51—168 **15 Claims**



1. An abrasive disc subassembly for a grinder having an externally threaded, motor-driven spindle, comprising:
an abrasive disc having a centrally located noncircular bore formed therethrough and defining a working front side and a backside; and
a collar nut having a hub portion adapted to fit into said bore in said abrasive disc and configured so as to preclude relative rotation therebetween and an enlarged head portion engaging the front side of said abrasive disc, said collar nut having an internally threaded bore formed therethrough that is adapted for threadably engaging said spindle in a rotational direction opposite the direction of rotation of said motor-driven spindle, and said enlarged head portion including means for receiving a torque-applying tool for enabling the tightening of said subassembly onto said spindle and the susequent removal of said tightened subassembly from said spindle;
wherein driving torque is transferred from said spindle to said abrasive disc through said collar nut.

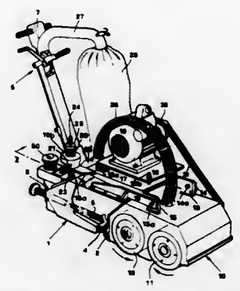
5,287,660

PLANING MACHINE FOR WOOD FLOORS

Olga Bellati, Via Provinciale, 114, 46030 Serravalle PO (Prov. of Mantova), Italy, and Francesco Debiasi, Via Sanguinetto, 10b, 46026 Quistello (Prov. of Mantova), Italy

Continuation of Ser. No. 922,405, Jul. 31, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 73,905
Int. Cl.[5] B24B *23/00*; B27C *1/02*
U.S. Cl. 51—176 **6 Claims**

1. Planing machine for wooden floors comprising:
a truck having a front portion and a rear portion, said truck defining in use a direction of motion;
a pair of retractable floor resting wheels connected to said front portion of said truck;
a single floor resting wheel connected to said rear portion of said truck;
a plane of lay defined by said planing machine;
means connected to said single floor resting wheel for automatically varying said plane of lay of said planing machine upon changing said directions of motion;
a grip handle extending upwardly from said rear portion of said truck;
a treatment head articulated to said truck about an articulation axis, said articulation axis being transverse with respect to said direction of motion;
two rollers connected to said truck for supporting abrasive paper, said rollers being driven to define different directions of rotation;
a contact portion defined by said treatment head;
elastic biasing and positioning means fixed to said truck and contacting said contact portion of said treatment head;
a collection bag connected to said planing machine;



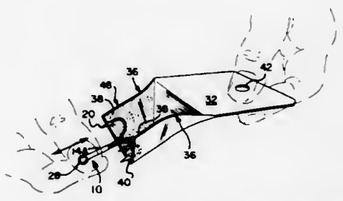
an aspirator for conveying wood dust produced during operation of said planing machine into said collection bag, and
at least one electric motor for powering said two rollers and said aspirator.

5,287,661

DEVICE FOR SHARPENING MULTIPLE FISH HOOKS

Robert L. Benner, c/o TBW Industries, Forest Grove Rd., Furlong, Pa. 18925

Filed Jun. 30, 1993, Ser. No. 83,605
Int. Cl.[5] B24D *15/06*
U.S. Cl. 51—205 WG **2 Claims**



1. A hand-held device for simultaneously sharpening multiple fish hooks having a plurality of individual hook points disposed around a common shaft means, each of said individual fish hooks having a spear and a point; said device being formed from sheet metal and comprising:
a) hook sharpening means,
b) handle means, and
c) intermediate means connecting said hook sharpening means and handle means;
said hook sharpening means having a V-shaped cross section formed by a pair of opposed, spaced apart, planar walls meeting to form a channel at the bottom of said V-shaped cross section;
said planar walls diverging upwardly and outwardly from said channel at an angle such that at least two points of a multiple hook placed in said hook sharpening means simultaneously contact said planar walls;
the inner surfaces of said planar walls and channel being abrasive;
said intermediate connecting means comprising a pair of opposed spaced apart side walls diverging inwardly from said handle means and integral with the opposed spaced

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hook sharpening means, and a generally triangular rear wall integral with said handle means and extending downwardly therefrom, said rear wall also being disposed between and integral with the side walls of said connecting means.

5,287,662

ABRASIVE BODY

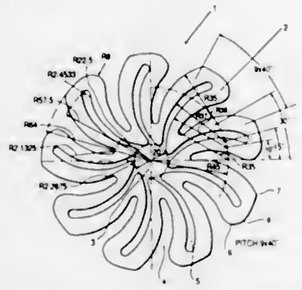
Günter Weis, Wattens, and Johann Pfister, Hart im Zillertal, both of Austria, assignors to D. Swarovski & Co., Wattens, Austria

Filed Apr. 8, 1991, Ser. No. 682,266

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4011960

Int. Cl.[5] **B24D** *7/10, 11/00;* **B24B** *13/02*

U.S. Cl. 51—209 R **6 Claims**



1. An abrasive body for abrading a workpiece, said abrasive body being adapted to operate in a predetermined direction of movement relative to the workpiece, said abrasive body including a plurality of wings each having two edges and a wing tip, each of said wings having a center line defined by a line equidistant from each edge of said wing, said wings being configured such that a portion of said center line adjacent to said wing tip points generally in the predetermined direction of movement of said abrasive body, said abrasive body including a central opening and coolant ducts, said coolant ducts extending from said central opening toward said wing tips.

5,287,663

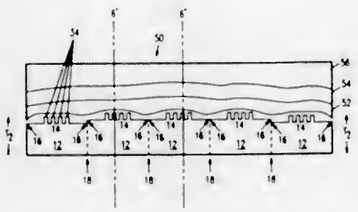
POLISHING PAD AND METHOD FOR POLISHING SEMICONDUCTOR WAFERS

John M. Pierce, Palo Alto, and Peter H. Renteln, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 824,709, Jan. 21, 1992, abandoned. This application Apr. 28, 1992, Ser. No. 874,823

Int. Cl.[5] **B24D** *11/00*

U.S. Cl. 51—401 **7 Claims**



1. A polishing pad for selectively polishing and planarizing a semiconductor wafer having regions of device integration density formed on a surface of the semiconductor wafer, the regions of device integration density being separated from one another by lateral gaps on the surface of the semiconductor wafer, the polishing pad comprising:

(a) a polishing layer having a nonabrasive polishing surface for polishing and planarizing the surface of the wafer;

(b) a substantially nonelastic rigid layer of selected rigidity positioned adjacent to the polishing layer; and

(c) a resilient layer positioned adjacent to the rigid layer;

wherein the substantially nonelastic rigidity of the rigid layer is established by selecting a material therefor with a modulus of elasticity and thickness whereby a substantially uniform pressure applied to the resilient layer causes the resilient layer and the rigid layer together to apply an elastic flexure pressure to the polishing layer such that the polishing pad has a leveling length equal to the largest lateral gap on the surface of the wafer.

5,287,664

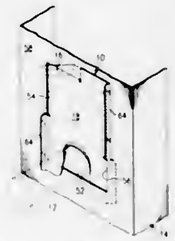
METAL STUD INTERLOCKING CONDUIT STRAP

Reuben W. Schiller, 1612 S. 33rd, Temple, Tex. 76504, and Valerian J. Schiller, Rte. 3, Box 3212, Belton, Tex. 76513

Filed Oct. 28, 1992, Ser. No. 967,435

Int. Cl.[5] **E04B** *1/38*

U.S. Cl. 52—220.1 **4 Claims**



1. A strap for bracing conduit passing through a rectangular hole in a metal stud, comprising:

(a) a generally rectangular sheet of flexible material, adapted to fit within the hole in the metal stud, and having a top edge, a right edge, a bottom edge, a left edge, a front face, and a back face;

(b) the top edge having a slot dividing it into a top-right tab and a top-left tab;

the top-right tab running in a direction coincident with the top edge;

the slot running in a direction approximately perpendicular to the top edge;

the top-left tab running from the slot downwards at an angle to the left edge, the tab having its uppermost portion bent in a backwards direction such that a permanent displacement exists between the top-right tab and the top-left tab viewed in the plane of the sheet;

(c) the right edge having a slot dividing it into a right-upper tab and a right-lower tab;

the right-upper tab running in a direction coincident with the right edge;

the slot running in a direction approximately perpendicular to the right edge;

the right-lower tab running in a direction parallel with the right edge, the tab having its rightmost portion bent in a backwards direction such that a permanent displacement exists between the right-upper tab and the right-lower tab when viewed in the plane of the sheet;

(d) the bottom edge having an indentation dividing it into bottom-right tab and bottom-left tab;

the bottom-right tab and bottom-left tab running in a direction coincident with the bottom edge;

the indentation having a width greater then the diameter of the conduit to be braced, the indentation tapering smoothly inwards and having a semicircular upper boundary such that the overall depth of the indention is greater than the diameter of the conduit to be supported.

(e) the left edge having a slot dividing it into a left-upper tab and a left-lower tab;

the left-upper tab running in a direction parallel with the left edge, the tab having its leftmost portion bent in a backwards direction such that a permanent displacement exists between the left-upper tab and the left-lower tab when viewed in the plane of the sheet;

the slot running in a direction approximately perpendicular to the left edge;

the left-lower tab running in a direction parallel with the left edge, the tab having its leftmost portion bent in a backwards direction such that a permanent displacement exists between the right-upper tab and the right-lower tab when viewed in the plane of the sheet.

5,287,665

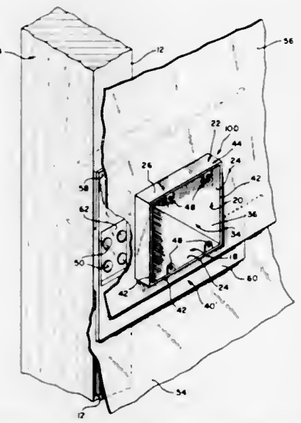
WATERPROOF FLANGED EXTERIOR WALL OUTLET SECURED TO A BUILDING FRAMEWORK

Robert Rath, Jr., 18412 Maria Pl., Cerritos, Calif. 90701

Filed Mar. 31, 1992, Ser. No. 860,886

Int. Cl.[5] **E04F** *17/08;* **H02G** *3/08*

U.S. Cl. 52—220.8 **10 Claims**



1. A combination of a building framework having an outlet box secured thereto comprising:

(a) a building framework having an outwardly facing exterior building framework surface,

(b) an outlet box fastened to said building framework at said outwardly facing exterior building framework surface and formed as a unitary structure with laterally enclosing walls having interior and exterior surfaces and with a back having an interior surface and an exterior surface, said interior surfaces of said walls and said interior surface of said back defining a receptacle wherein said walls have exposed edges remote from said back which form an open mouth of said receptacle, said open mouth facing outwardly away from said back, said exterior surfaces of said walls defining an outer perimeter of said receptacle, said outlet box further comprising an integrally formed flat flange that extends laterally from said exterior surfaces of all of said walls entirely about said outer perimeter of said receptacle and wherein said flange is located between said exposed edges of said walls and said back,

(c) a lower sheet of waterproof material disposed beneath said outwardly facing open mouth of said receptacle and extending downwardly below said flange and located between said flange of said box and said outwardly facing exterior building framework surface, and

(d) an upper sheet of waterproof material fastened to said outwardly facing exterior building framework surface above said flange and overlying said flange and extending below said outwardly facing open mouth of said receptacle, said upper sheet of waterproof material having an opening therein surrounding said open mouth of said receptacle so as to leave said outwardly facing open mouth of said receptacle uncovered.

5,287,666

OFFICE FURNISHING UNIT FRAMEWORK

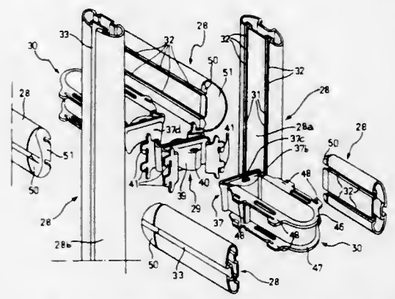
Francesco Frascaroli; Paolo Consolini, both of Bologna, and Carlo Biondi, San Giovanni in Persiceto, all of Italy, assignors to C.O.M. S. Coop. A.R.L., San Giovanni in Persiceto, Italy

Filed May 21, 1991, Ser. No. 703,650

Claims priority, application Italy, May 21, 1990, 67365 A/90

Int. Cl.[5] **E04B** *2/76*

U.S. Cl. 52—239 **6 Claims**



1. An office furnishing unit comprising a framework including a plurality of cross members and upright members interconnected with each other, characterised in that each of the cross members and each of the upright members comprises two parallel, metal profiled sections, spaced apart and interconnected in at least two spaced-apart regions by first and second connectors, the first and second connectors associated with the upright members and with the cross members respectively having complementary mutual-engagement surfaces for interconnecting the cross members and the upright members quickly.

5,287,667

WATER PROOF TILE FOR TUB AND TILE CORNERS

Tara C. Singhal, P.O. Box 5075, Torrance, Calif. 90510

Continuation-in-part of Ser. No. 798,530, Nov. 27, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 992,541

Int. Cl.[5] **E04F** *13/08*

U.S. Cl. 52—392 **7 Claims**



1. A tile useful for sealing the junction of a tiled surface of

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thickness T and a non-tiled surface, such as a tub or counter top, the tile comprising;

(a) a body having a top, bottom, back, front, left and right sides;

(b) the top side being rectangular and having a width of W and a thickness of T;

(c) the bottom side being rectangular and having a width of W and a thickness which is greater than T, wherein (1) the bottom side has a corrugated surface, (2) the bottom side is disposed parallel to the top side and (3) the distance between the top and bottom side is H;

(d) the back side being rectangular and having a width of W and a height of H and being perpendicular to the top and bottom sides;

(e) the front side having the width of W; and

(f) the left and right sides each having the height of H, wherein (1) the left and right sides are disposed perpendicular to the top, bottom, back and front sides, (2) the left and right sides are parallel and (3) the distance between the left and right sides is W;

(g) the front side is curved by varying the thickness of the tile, wherein;

(1) the thickness of the tile is T at the top side,

(2) the thickness of the tile is less than T between the top and bottom sides and

(3) the thickness of the tile is greater than T at the bottom side;

(h) the front side of the tile is finished/glazed;

(i) thickness of grout/space between the tile and other tiles on the tiled surface is G.

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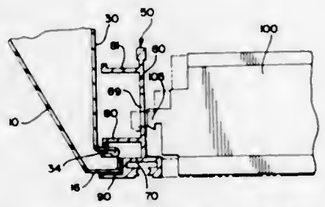
APPARATUS AND METHOD FOR REFURBISHING A CEILING GRID TO PERMIT INSTALLATION OF CEILING PANELS

David L. Dall, Marietta, Ga., and Jeff Limp, Naperville, Ill., assignors to Capaul Corporation, Plainfield, Ill.

Filed Jul. 15, 1992, Ser. No. 913,849

Int. Cl.[5] E04B *9/00*

U.S. Cl. 52—488 **12 Claims**



9. In combination with an existing light fixture support having a lip and a light fixture support having a ledge bracket for mounting ceiling panels supports without removing and any asbestos insulation, said bracket comprising:

a base portion;

a tee portion attached to said base, said tee for mounting the ceiling panel;

a first leg extending from said base portion, said leg for attaching the bracket to the existing light fixture support;

a first flange extending from said tee portion in substantially the same direction as said first leg, said first flange being spaced a predetermined distance from said first leg, said first flange engaging the lip of the existing light fixture.

5,287,669

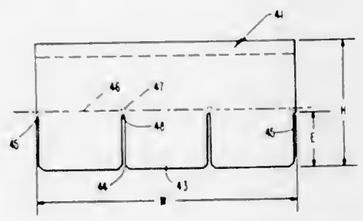
ROOFING SHINGLE

Marcia G. Hannah, Wayne; George W. Mehrer, Jenkintown; Michael J. Noone, Wayne; Kermit E. Stahl, North Wales, and Joseph Quaranta, Yardley, all of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 515,601, Apr. 27, 1990, Pat. No. 5,181,361. This application Apr. 9, 1991, Ser. No. 682,611

Int. Cl.[5] E04D *1/12*

U.S. Cl. 52—518 **12 Claims**



1. A roof surfaced with shingles each having upper ends and lower ends and each having 18 inch overall height, and being laid-up in partially overlapping courses to leave lower ends of shingles exposed to a predetermined exposed height, with successive courses of said shingles overlapping upper ends of next underlying courses of shingles in amounts sufficient to provide 8 inch exposed height at lower ends of applied shingles.

5,287,670

DOUBLE ROOFING ROOF STRUCTURE

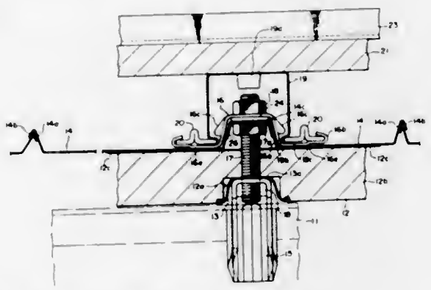
Motokatsu Funaki, Kanagawa, Japan, assignor to Gantan Beauty Industry, Co., Ltd., Kanagawa, Japan

Filed Mar. 19, 1991, Ser. No. 671,442

Claims priority, application Japan, Oct. 18, 1990, 2-277717; Dec. 19, 1990, 2-403674

Int. Cl.[5] E04D *1/34*

U.S. Cl. 52—544 **17 Claims**



1. A double roofing structure comprising:

a water-proof drain plate set on at least one backing;

a rafter fixed on the backing through the drain plate with a fixing member that has a pushing plate having a substantial channel shape;

a roof member placed and fixed on the rafter;

a spacing layer, communicating with an opening at an eave of the roofing structure, formed between the drain plate set on the backing and the roof member;

a projection formed on a part of the drain plate contacting with the fixing member, the projection of the drain plate being formed in substantially a same sectional shape as the pushing plate of the fixing member contacting with the projection; and

a water-proof member positioned between the pushing plate of the fixing member and an upper surface of the projection of the drain plate.

5,287,671

CONSTRUCTION PANEL WITH EDGES ADAPTED TO BE COUPLED TOGETHER

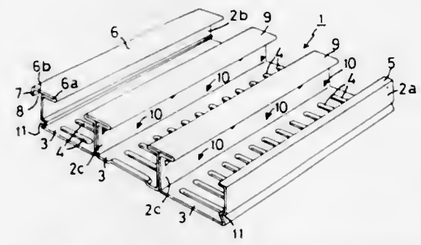
Katsuo Ueki, Tokyo, Japan, assignor to Ueki Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,218

Claims priority, application Japan, Mar. 26, 1992, 4-098474

Int. Cl.[5] E04C *3/00*

U.S. Cl. 52—588 **19 Claims**



1. A construction panel to be used in forming a horizontal structure, comprising:

a flat plate having two ends;

two edge ribs respectively formed at the two ends of said flat plate each edge rib having a single plate thickness and a flat head;

two connecting members respectively formed at said two edge ribs for connecting said construction panel to another like construction panel;

at least one central rib having a flat head, said central rib having a double plate thickness, and said central rib flat head being co-planar with said edge rib flat heads;

a grove disposed on an outer side of each of said two edge ribs, grooves of adjacent edge ribs forming a guide rail adapted for holding suspension fittings when two construction panels are joined together, said groove being formed to cause a space to exist between bottom edges of the grooves of the joined two construction panels; and

a fitting insertable into said guide rail when faced in a first direction but not removable from said guide rail when faced in a second direction perpendicular to said first direction, said fitting including biasing means for biasing said fitting against said guide rail when said fitting is facing said second direction.

5,287,672

REINFORCEMENT BAR TRUSSING STRUCTURE AND METHOD OF MAKING THE SAME

B. L. Moore, Lebanon, Okla., assignor to Oklahoma Steel & Wire Co., Madill, Okla.

Filed Apr. 16, 1991, Ser. No. 686,045

Int. Cl.[5] E04C *5/16*

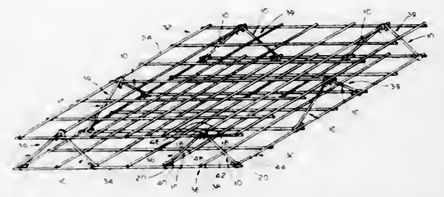
U.S. Cl. 52—654.1 **4 Claims**

1. A re-mesh trussing system for constructing a three-dimensional wire re-mesh structure comprising:

at least two sheets of wire re-mesh in a parallel spaced relationship; and

a plurality of trussing members, each trussing member including a planar elongate body having a linear elongate center portion of a predetermined length, the elongate center portion having two opposite ends, a U-shaped portion at each end of the center portion defining a reinforcing bar receiving cavity, a first bend defining an obtuse angle between the center portion and each U-shaped portion and a second bend at each end of the body defining a tab at an obtuse angle from the U-shaped portion, whereby the tab diverges from the center portion;

each of the reinforcing bar receiving cavities of each trussing member being deformed about parallel but laterally off-set wires of adjacent re-mesh sheets, the center portion of each trussing member extending perpendicularly from the wire of the re-mesh sheet to which it is attached and obliquely between the adjacent re-mesh sheets to which it is attached.



5,287,673

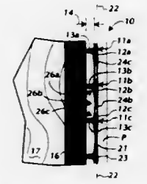
LATH FOR PLASTER AND THE LIKE

John E. Kreikemeier, 175 Ranchette Rd., Alpharetta, Ga. 30201

Filed Feb. 6, 1992, Ser. No. 831,947

Int. Cl.[5] E04C *2/42*

U.S. Cl. 52—664 **5 Claims**



1. A wall or ceiling construction comprising:

a substrate;

a lath mounted to said substrate and comprising a substantially planar grid including first portions extending laterally in a first direction and second portions extending laterally and generally transversely of said first portions, said grid having a generally smooth side, and said first portions and said second portions defining a plurality of openings extending traversely through said grid, said lath further comprising a plurality of spacer means positioned opposite said generally smooth side of said grid for spacing said grid away from said substrate; and

a surface treatment layer of plaster, stucco, or like material spread over and through said lath and in substantial contact with said substrate.

5,287,674

METHOD AND APPARATUS FOR CONTAINING INSULATION USING A BARRIER ASSEMBLY

Henry Sperber, 8 Red Fox La., Englewood, Colo. 80111

Filed Aug. 13, 1991, Ser. No. 744,428

Int. Cl.[5] E04B *1/74*

U.S. Cl. 52—743 **11 Claims**

1. A method for placing loose fill insulation in a support frame of a building in which the insulation includes fibers having fiber portions, comprising:

forming a support frame for receiving loose fill insulation;

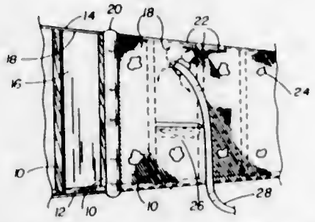
providing filter means including a plurality of fibers joined together using heat to define a fabric wherein said fabric is

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a light, thin material having by itself insufficient strength to hold the loose fill insulation in said support frame, said filter means having first sized passages for controlling the passage of fiber portions therethrough and permitting passage of air;

providing netting means having a plurality of netting holes with said netting holes having second sized passages greater than said first sized passages of said filter means wherein at least some of said first sized passages overlie said second sized passages, said netting means being made separately from said filter means with said netting means connected to said filter means to define barrier means;

attaching said barrier means to said support frame;



forming at least a first access hole in said barrier means;

feeding the loose fill insulation between said barrier means and a portion of said support frame using said first access hole;

permitting air to escape through said barrier means preventing substantially the escape of fiber portions of the loose fill insulation through said barrier means using said filter means;

observing that a sufficient amount of loose fill insulation has been fed between said barrier means and said portion of said support frame; and

discontinuing said feeding of the loose fill insulation.

5,287,675

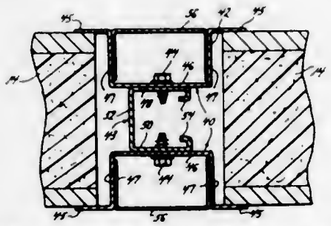
WALL STUD ASSEMBLY

Wayne R. McGee, Chesterfield, Mo., assignor to Porta-Fab Corporation, Chesterfield, Mo.

Filed Oct. 7, 1991, Ser. No. 772,338

Int. Cl.[5] E04B *2/60*

U.S. Cl. 52—770 **13 Claims**



1. In a vertical column between and connecting vertical wall panels of a wall wherein the wall includes wall panels and interfitting wall stud assemblies, a wall stud assembly comprising:

first and second generally parallel, elongate, vertical stud members, each of which being generally U-shaped in cross-section and having an open side and an opposite base side; and

an elongate strut positioned vertically between and generally parallel to the first and second stud members and affixed to the base sides of the stud members, with the open sides of the stud members facing outwardly;

each stud member having first and second laterally extending flanges, the first flanges of the stud members being in spaced-apart generally parallel relation to form jaws of a clamp pinching and sandwiching a vertical edge of a first wall panel extending therebetween, and the second flanges of the stud members being in spaced-apart, generally parallel relation to form jaws of a clamp pinching and sandwiching a vertical edge of a second wall panel extending therebetween, the strut being located wholly between the vertical edges of the first and second wall panels.

5,287,676

DEVICE FOR HANDLING RADIOACTIVE WASTE

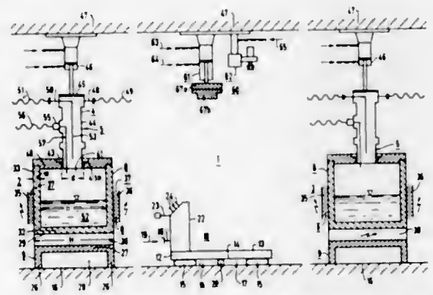
Dietmar Erbse, Rodenbach; Reinhard Thiele, Frankfurt, and Helmut Walter, Offenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,477

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1990, 4023163

Int. Cl.[5] G21F *9/08*; **B60V** *1/06*

U.S. Cl. 53—127 **15 Claims**



1. A device for handling liquid radioactive waste, comprising:

a main heater for heating and drying liquid radioactive waste being poured into a container;

a pallet for receiving the container;

a ground vehicle for transporting said pallet; and

a supplementary heater being part of said pallet.

5,287,677

APPARATUS AND METHOD FOR HIGH SPEED ASSEMBLY OF BOTTLES INTO PACK CARRIERS

Charles M. Hunter, Columbus, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Feb. 26, 1993, Ser. No. 23,495

Int. Cl.[5] B65B *27/04*

U.S. Cl. 53—398 **15 Claims**

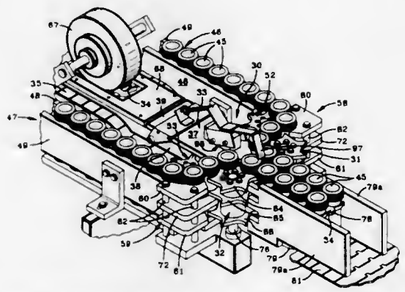
1. Apparatus for high speed assembly of capped bottles into pack carriers therefor, each bottle being filled with a composition and having a substantially cylindrical pack carrier-receiving body or neck portion that is smaller in diameter than the portion of the bottle immediately thereabove and the bottles being of uniform size and shape, and the pack carriers each having opposed linear arrays of laterally opening clips or pockets in which the pockets are aligned in back to back pairs and into which the bottles are resiliently inserted and held, comprising:

(a) a pack carrier loading station having a substantially enclosed zone with open upstream and downstream ends, lateral walls serving as guide members, a cover serving as an upper, hold-down guide member, and a lower base guide member extending from the downstream end for supporting bottles in pack carriers after the pack carriers emerge from the enclosed zone during loading at the downstream end, the lower base guide member having an upper flat surface on which the bottles in a loaded pack carrier are slidable to a discharge point;

(b) spaced apart first and second rotatable application starwheels immediately adjacent the downstream end of the loading station at laterally opposed sides of the enclosed zone, respectively, and the lower base guide member extending under both of the adjacent application starwheels, each application starwheel having an upstream intake side and each starwheel having an associated curved guide means extending along an arc on the upstream side toward the loading station;

(c) spaced apart first and second rotatable metering starwheels immediately adjacent the upstream intake side of respective application starwheels and each spaced outwardly therefrom and having an upstream intake side and corner guide means for directing respective bottles to the adjacent application starwheel;

(d) first and second chutes each leading respectively to the upstream intake side of one of the starwheels, each chute having opposed lateral sides with top edges, the top edges being spaced closer together than the diameter of the bottle body portions immediately above the substantially cylindrical pack carrier-receiving body or neck portions whereby bottles pushed through the respective chutes are slidingly suspended on the top edges, the lateral sides



being spaced apart sufficiently for ready movement therebetween of any larger body portions of the bottles below the substantially cylindrical pack carrier-receiving body or neck portions;

(e) first and second spaced apart conveyor means each extending from a source of the bottles to a respective chute, and each being adapted for simultaneously advancing a respective single file series of the bottles to a respective chute, wherein neither chute has a floor sufficiently shallowly located, so that when the bottles in each series are shoved through their respective chute by the action of the respective conveyor means on bottles that follow, the bottles in the chutes are suspended by the lower edges, of the bottle body portions immediately above the smaller diameter pack carrier-receiving substantially cylindrical body or neck portion, riding on the top edges of the lateral sides of the chute wherein they move;

(f) third conveyor means extending from a source of the pack carriers in between the first and second conveyor means to the upstream end of the loading station, and being adapted for advancing to the loading station a single file series of pack carriers coordinately with sufficient of both bottle series to completely fill each successive pack carrier, the pack carriers being advanceable by the conveyor means with the pockets opening laterally with respect to the line of advancement of the conveyor means;

(g) the enclosed zone of the loading station having extending longitudinally therethrough between the ends thereof a substantially flat, level surface on which the pack carriers are slideably and contiguously receivable from the third conveyor means and on which the pack carriers are slidable just prior to loading, and during loading while emerging from the loading station, the flat, level surface extending substantially between the lateral walls, below the upper hold-down guide member, and above the lower base guide member;

(h) each starwheel having drive means therefore adapted to controllably coordinately rotate each metering starwheel counter to the adjacent application starwheel;

(i) the respective metering starwheels and application starwheels each having at least an upper and a lower coaxial star-shaped element with equally spaced arms with pockets between the arms and the upper star-shaped elements each having perimeter top edges, the metering starwheels being each adapted to serially receive each bottle, supplied thereto by a respective chute, and to carry each bottle between a pocket of the metering starwheel and the associated curved guide means to the associated application starwheel during rotation of the starwheels, the bottles being carried during movement of the starwheels by the portion of each bottle above the substantially cylindrical pack carrier-receiving portion overlapping the perimeter top edge of a pocket and adjacent arms of an upper star-shaped element of a starwheel;

(j) the spacing between each metering starwheel and its associated application starwheel being such and the coordination of rotation of the starwheels being controllable such that the bottles delivered to the application starwheel are, during a portion of the coordinated rotation of the respective starwheels, confined serially in aligned pockets defined by the arms of opposed star-shaped elements;

(k) each application starwheel being adapted during rotation to move each of a series of bottles received consecutively from its associated metering starwheel between a pocket of the application starwheel and the associated curved guide means upstream thereof to a consecutive series of pack carriers emerging from the loading zone and, together with the application starwheel on the opposed side, simultaneously laterally insert consecutive bottles into consecutive back to back pockets of each pack carrier, the pockets of the star-shaped elements of the application starwheel being shaped to have a cam-like action for inserting the bottles, and the arms of the application starwheels on respective sides being adapted to bear against bottles just inserted and to cooperatively move each pack carrier along as each back to back pocket is filled, and to slide the pack carrier out of the enclosed zone as loading is being completed and thence out of the loading station; and

(l) the star-shaped elements of the respective application starwheels being spaced apart sufficiently to readily permit movement therebetween of the continuous series of pack carriers just below the level of the respective uppermost star-shaped elements while being sufficiently close for the arms and pockets thereof to force successive bottles into successive nesting pockets on both sides of each pack carrier whereby each pocket is loaded with a bottle, each starwheel rotating upon a substantially vertical axis, and, a portion of each application starwheel star-shaped element extending into the loading zone and such portion moving during rotation in the downstream direction;

at least one of the pack carriers as a group and the bottles as a group being formed of a resilient material.

5,287,678

WRAPPING MACHINE

Leon J. Leitzel, R.R. 2, Box 126A, Middleburg, Pa. 17842

Filed Dec. 1, 1992, Ser. No. 983,651

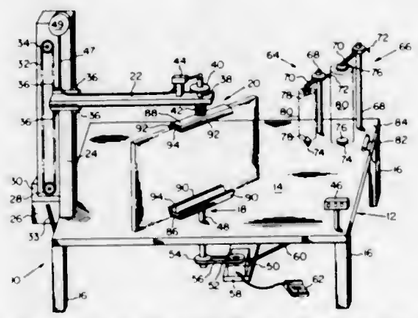
Int. Cl.[5] B65B *11/00*

U.S. Cl. 53—399 **15 Claims**

15. A method of wrapping a narrow workpiece using a wrapping machine including:

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an elevated platform;
a pair of opposed clamping members adapted to hold a thin workpiece being wrapped therebetween, each said clamping member including a substantially horizontal flat base and a pair of diverging sides extending beyond said base for centering and holding said thin workpiece between said clamping members, wherein each said pair of sides diverges from each other in a direction extending away from said horizontal base for centering said thin workpiece, and wherein said clamping members are rotatably mounted;
one of said pair of clamping members rotatably coupled to said platform configured to support said thin workpiece, and the other of said clamping members positioned vertically above said one clamping member and coupled to a vertically movable arm;
a vertical support supporting said vertically movable arm;



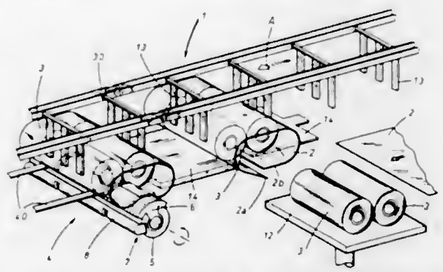
a first drive means rotatably driving one of said pair of clamping members; and
a second drive mans for moving said movable arm on said support to position said pair of clamping members with respect to said thin workpiece;
said method comprising the steps of:
placing said thin workpiece on said one clamping member which is coupled to said platform, wherein said one clamping member supports said thin workpiece;
driving said second drive means whereby said movable arm is moved closer to said platform and said thin workpiece is centered and held between said clamping members;
driving said first drive means to rotate said clamping member and said thin workpiece; and
wrapping said thin workpiece simultaneously with said driving of said first drive means.

5,287,679
DEVICE FOR INDUCING SLACK IN A WRAPPING FILM, ASSOCIATED WITH MEANS FOR HEAT SEALING PACKS OF ROLLS

Davide Dall'Omo, Bologna, Italy, assignor to Wrapmatic S.p.A., Bologna, Italy

Filed Oct. 14, 1992, Ser. No. 960,719
Claims priority, application Italy, Oct. 31, 1991, BO91A000409
Int. Cl.[5] B65B *11/00*
U.S. Cl. 53—466 **4 Claims**

4. A method of folding and heat sealing plastic film material to form a wrapping around a pack of rolls, comprising:
a first step of directing the rolls upward from an assembly station to an overhead conveyor holder including a pair of spaced, downwardly extending vertical restraints to partially wrap said pack of rolls in a wrapping sheet and compress and hold said pack of rolls between said vertical restraints;
folding said wrapping sheet around the partially wrapped pack of rolls to provide two overlapping edges of the sheet flattened against a face of said pack of rolls while said pack of rolls is maintained between said vertical restraints;
contacting the overlapped edges of the sheet with an offsetting element projecting radially from a heat seal roller for sliding the overlapping edges of said sheet relative to each

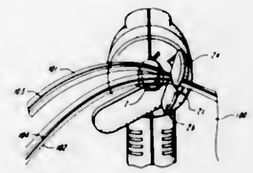


other to extend the length of the wrapping around the pack of rolls;
heat sealing the overlapping edges with a heat sealing sector of the heat seal roller located on the roller downstream of the offsetting element in the rotating direction of said roller, and then releasing the pack of rolls from between said vertical restraints.

5,287,680
VACUUM PACKING DEVICE

Yen Lau, Fo Tan, Hong Kong, assignor to Specialite Industries Ltd., Hong Kong

Filed Aug. 6, 1992, Ser. No. 926,233
Int. Cl.[5] B65B *31/06, 67/02, 61/18*
U.S. Cl. 53—512 **2 Claims**

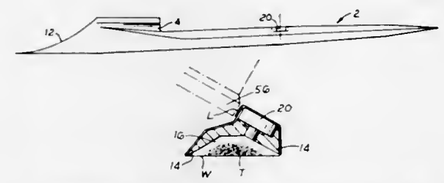


1. A vacuum packing device for use in evacuating and sealing a plastic bag having two free edges comprising:
a portable housing which serves as a handle by means of which the device may be held in one hand and moved along the two free edges;
a nozzle projecting from the housing for insertion between the two free edges of the plastic bag to be sealed;
a suction device located in the housing and associated with the nozzle for extracting air from the plastic bag; and
a jaw member projecting from the housing and provided with a slot for receiving the two free edges of the plastic bag, means for pivotably mounting said jaw member and slot on said housing whereby the jaw member with the slot and the nozzle are moveable relative to one another between an open position for initially receiving the two free edges of the bag and a closed operational position in which said jaw member and said nozzle are disposed immediately adjacent each other for sealing the bag as said jaw member and nozzle are moved along the two free edges.

5,287,681
TUBE-FORMING APPARATUS

Geoffrey W. Vernon, Kenilworth, and James Goodwin, Coventry, both of Great Britain, assignors to Thomas J. Lipton Co., Divison of Conopco, Inc., Englewood Cliffs, N.J.

Filed Jan. 19, 1993, Ser. No. 4,887
Claims priority, application United Kingdom, Jan. 20, 1992, 9201096
Int. Cl.[5] B65B *9/06;* **B31B** *1/40*
U.S. Cl. 53—550 **13 Claims**

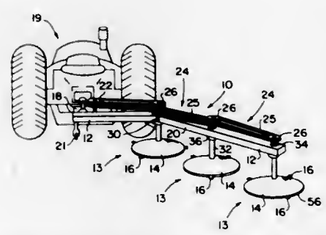


1. Apparatus for shaping a flexible heat-sealable web into a tubular cross-section shape, said apparatus comprising a former member for disposition within the width of the web, means for progressing the web along the former member, means for folding opposite side margins of the web over the former member and for placing edges of said side margins in overlapping relationship against the former member, a mobile element mounted on said former member providing a support surface for said overlapped side edges which is movable in step with the web, and means for heating and pressing said edges to lap weld said edges together as the web travels along the former member said former member having a transverse profile that is hollow from below to provide a space below the former member for the passage of material placed on the web in its central portion between said folded-over side margins.

5,287,682
MOWER

George F. Rautenbach, 257 Nelsonia, Vereeniging District, Transvaal, South Africa

Filed Sep. 11, 1992, Ser. No. 944,217
Claims priority, application South Africa, Sep. 13, 1991, 91/7316
Int. Cl.[5] A01D *55/00*
U.S. Cl. 56—6 **12 Claims**

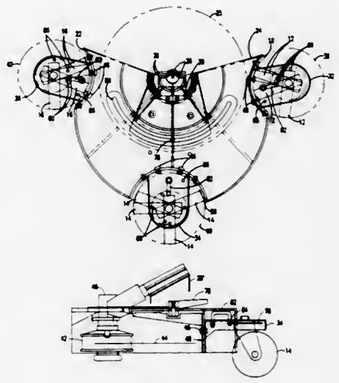


1. A tractor-drawn mower for use in harvesting a crop comprising a frame, at least two rotatable cutting elements for cutting the crop mounted rotatably on the fame, the cutting elements having non-overlapping loci of cutting movement and being arranged on the mower to cut in use overlapping swathes of crop material, and the mower further comprising at least two cutting discs mounted rotatably on the mower frame with the cutting elements pivotally mounted on the cutting discs at the periphery of the cutting discs so that relative pivotal movement can take place between the cutting elements and the cutting discs.

5,287,683
SWEEP CUT TRIMMER MOWER AND CONVERTING PLATFORM

Walker M. Smith, 2505 Gold Cup La., Reston, Va. 22091

Continuation-in-part of Ser. No. 931,823, Aug. 18, 1992, abandoned. This application Jan. 7, 1993, Ser. No. 1,341
Int. Cl.[5] A01D *67/00*
U.S. Cl. 56—12.7 **11 Claims**



1. A line trimmer/mower device, comprising:
a platform for housing a cutting head of a line trimmer, said platform having an opening which exposes a cutting line extending from said cutting head for a portion of its 360° rotation;
wheels connected to said platform at opposite sides of said opening, said wheels supporting said cutting head of said line trimmer above a ground surface and allowing said cutting head to move over said ground surface at a uniform height above said ground surface;
means for holding a shaft of said line trimmer projecting from said platform in a direction opposite said opening in said platform and on a line which divides said wheels connected to said platform at opposite sides of said opening; and
means for maintaining each of said wheels connected to said platform at opposite sides of said opening oriented to roll on a line offset from perpendicular to said shaft of said line trimmer wherein a first wheel is connected to said platform on a first side of said opening and is oriented to roll on a first line and a second wheel is connected to said platform on a second side of said opening and is oriented to roll on a second line with said first and second lines being offset from perpendicular to said shaft of said line trimmer by equal and opposite angular degrees,
said means for maintaining allowing said platform to move over said ground surface along an arcuate path in a sweeping motion as said wheels traverse said ground surface, and
said means for maintaining preventing said first and second wheels from rotating about an axis perpendicular to said first and second lines.

5,287,684
DEBRIS COLLECTION VEHICLE

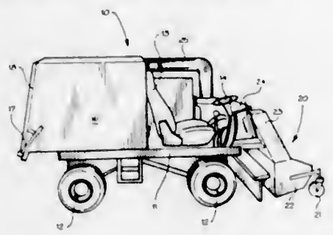
Charles J. Beroth, 2400 Vienna-Dozier Rd., Pfafftown, N.C. 27040

Filed Oct. 14, 1992, Ser. No. 960,691
Int. Cl.[5] A47L *5/22;* **B08B** *5/04*
U.S. Cl. 56—13.2 **17 Claims**

1. A debris collection vehicle, comprising:
(a) a vehicle chassis mounted on wheels;

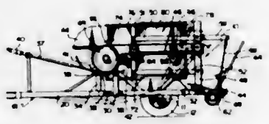
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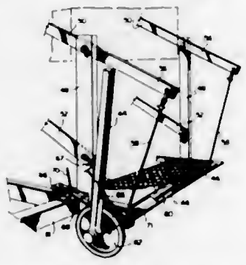
(b) a motor carried on said vehicle;
(c) a debris pick-up apparatus mounted on said vehicle and powered by said motor for collecting debris off of the ground, said debris pick-up apparatus comprising:
(1) an elongate sweeper driven by said motor for sweeping debris in the path of the vehicle;
(2) at least one pick-up fan powered by said motor and mounted downstream of the sweeper for receiving debris swept from the ground by the sweeper, said at least one pick-up fan comprising first and second pick-



up fans mounted adjacent opposite ends of said sweeper for directing debris swept by the sweeper to a central position between said first and second pick-up fans; and a third pick-up fan for receiving the debris from the first and second pick-up fans; and
(3) a grinder powered by said motor and mounted downstream from said at least one pick-up fan for receiving debris from said third pick-up fan picked up by the first and second pick-up fan and grinding the debris into smaller-sized debris.

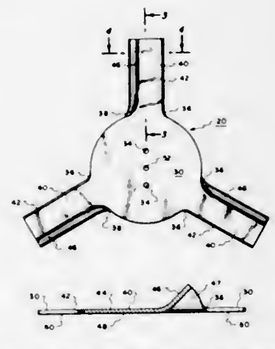
5,287,685
SEED HARVESTER
John P. Morgan, Argyle, Canada, assignor to Hoechst Canada Inc., Saskatchewan, Canada
Filed Jul. 2, 1992, Ser. No. 907,572
Int. Cl.[5] A01D *45/22, 46/20, 67/00*
U.S. Cl. 56—126 **19 Claims**





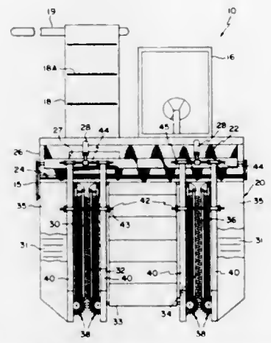
1. A seed harvester comprising:
(a) a frame supported on wheels rotatably attached thereto;
(b) a housing defining a rear seed box and a forward brush support portion;
(c) a rotary brush on the support portion;
(d) drive means for rotating the rotary brush;
(e) elevating means adapted to vary the height of the housing above the frame at a constant angle thereto;
(f) a draw bar pivotally connected to the frame;
(g) tilt angle adjustment means adapted to vary the angle between the frame and the draw bar;
(h) a cowling pivotally attached to said brush support portion and positioned to extend over the rotary brush; and
(i) cowl adjustment means adapted to vary the angle of the cowling relative to the brush support portion.

5,287,686
ANTI-SCALPING BLADE FOR ROTARY LAWN MOWER
David P. Lindsay, 1225 Mariposa Dr., Santa Paula, Calif. 93060
Filed Aug. 14, 1992, Ser. No. 929,403
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **8 Claims**



1. In a lawn mower of the type which includes a shroud supported on wheels for horizontally traversing the surface of a lawn, a rotatably driven shaft near the horizontal center of the shroud and extending downwardly for rotatably driving a blade attached thereto, and an opening in the upper portion of the shroud for the exit of cuttings from the lawn, an anti-scalping blade comprising: formed metallic member of generally
(a) an integrally flat configuration having a central section with a center balance point, said member being disposed horizontally within the shroud;
(b) means for securing the driving shaft to said member in concentric relation to said center balance point;
(c) said member also having three blade arms which are symmetrically circumferentially spaced about said central section and extend radially outwardly therefrom, each of said blade arms having a forward side sharpened to form a cutting edge and having a portion of its width adjacent its rearward side inclined upwardly to create an air lift for lifting cuttings toward the exit port; and
(d) said central section being of circular configuration concentric to said balance point, its diameter being at least one-third the diameter of the outer perimeter of said blade arms, both said air lifts and said cutting edges extending substantially the full length of the respective blade arms up to and adjacent said central section, and the under surface of said central section being relatively smooth, so that
(1) any tendency of said blade member to knock down grass without cutting it is minimized;
(2) the spaces between blade arms through which a vacuum force is created by the combined action of said air lifts have a combined cross-sectional area which is less than twice the cross-sectional area of said member; and
(3) the minimum speed of each blade arm cutting edge adjacent said central circular section is more than one-third its maximum speed at its outer end.

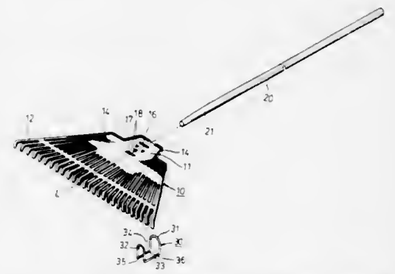
5,287,687
HARVESTING APPARATUS
Oren D. Urich, Windsor; Gary L. Urich, Loveland, and Randy L. Urich, Windsor, all of Colo., assignors to Colorado Harvester, Inc., Loveland, Colo.
Filed Sep. 2, 1992, Ser. No. 939,447
Int. Cl.[5] A01D *46/00*
U.S. Cl. 56—327.1 **19 Claims**



1. Apparatus for picking agricultural products from plants, said apparatus comprising:
(a) a wheeled frame;
(b) a power source carried on said frame;
(c) header means carried by said frame and powered by said power source; wherein said header means comprises:
(1) first and second spaced apart plucking means; wherein each said plucking means comprises first and second spaced-apart rotatable mounting means and a plurality of elongated bars attached between said mounting means, wherein a plurality of spaced-apart fingers are secured to said bars and project outwardly therefrom; and wherein said bars are inclined relative to a horizontal plane; wherein said first and second mounting means comprise first and second disk members which are parallel to each other and are inclined relative to a horizontal plane; wherein said fingers are adapted to move in a manner such that said fingers of said first and second plucking means move towards each other and simultaneously raise upwardly so as to engage said products and separate them from said plants; wherein the fingers mounted on at least one of said bars of said first plucking means interleave with the fingers mounted on at least one of said bars of said second plucking means when said disk members are rotated; and
(2) conveyor means for conveying said products away from said plucking means.

5,287,688
RAKE
Han-Chin Sun, No. 43, Ta-An Rd., San-An Li, Tien-Chung Chen, Changhua Hsien, Taiwan
Filed Feb. 26, 1993, Ser. No. 23,924
Int. Cl.[5] A01D *7/06*
U.S. Cl. 56—400.19 **4 Claims**

1. A rake including a flat rake body having a flared portion provided with a plurality of rake prongs and a head portion opposite to said flared portion, said rake further including an elongated wooden rod which has a tapered end connected to said head portion;
the improvements comprising: said flat rake body having an imaginary line which extends centrally from said head portion to said flared portion so as to divide said flat rake body into two symmetrical parts, said flat rake body further having an elongated first slot formed transverse to said imaginary line and adjacent to a free end of said head portion and an elongated second slot transverse to said imaginary line and spaced from and parallel to said first slot, said first slot having a first length, said second slot having a second length that is shorter than said first length, said second slot being disposed farther from said free end of said head portion than said first slot; and
a resilient fastening unit having a first inverted U-shaped member with two legs, a second inverted U-shaped member with two legs, said second inverted U-shaped member being smaller than said first inverted U-shaped member, and a connecting rod interconnecting one of said legs of said first inverted U-shaped member and one of said legs



of said second inverted U-shaped member, each of the other one of said legs of said first and second inverted U-shaped members having an extension which extends toward one anther and which defines cooperatively a clearance therebetween, said two legs of each of said first and second inverted U-shaped members being respectively spaced by first and second distances which are respectively equal to said first and said second lengths so that said first and second inverted U-shaped members can extend through said first and second slots beyond one face of said flat rake body, and said tapered end of said wooden rod can be inserted into said first and second inverted U-shaped members when said first and second inverted U-shaped members are mounted to said flat rake body.

5,287,689
SPINNING OR TWISTING SPINDLE ASSEMBLY FOR SECURING A SPINDLE TOP PART IN AN AXIAL DIRECTION
Gerd Stahlecker, Eislingen/Fils, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, Fed. Rep. of Germany
Filed Aug. 10, 1992, Ser. No. 926,639
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1991, 4126930
Int. Cl.[5] D01H *7/14*
U.S. Cl. 57—132 **15 Claims**

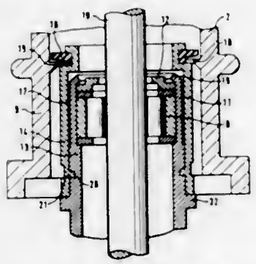
1. A spinning or twisting spindle assembly for securing a spindle top part in an axial direction against a lifting out from a spindle housing using a first retaining element arranged on an interior wall of a wharve bore and which forms a detachable closure with a second retaining element that is arranged on an upper front end of the spindle housing, the assembly comprising:
a spindle housing,
an upper spindle bearing for rotatably supporting a spindle shaft, said upper spindle bearing being supported inside said spindle housing adjacent an upper end of said spindle housing,
a spindle top part which includes a belt driving wharve which surrounds a wharve bore in the spindle top part, said spindle top part being disposed with its wharve bore

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surrounding the upper end of the spindle housing when in an operative position,

a retainer support sleeve fastened to an outer circumference of the spindle housing and projecting with an upper retainer support sleeve section above the spindle housing and concentrically surrounding the upper end of the spindle housing,

a first retaining element disposed in the wharve bore on the spindle top part,



and a second retaining element carried by the upper retainer support sleeve section, at least one of said first and second retaining elements being radially deflectable,

said first and second retaining elements being engageable with one another to preclude upward movement of the spindle top part during spinning or twisting operation while permitting an intentional lifting off of the spindle top part with radial deflection of at least one of the first and second retaining elements.

5,287,690

STAINLESS STEEL YARN

John J. Toon, South Daytona, Fla., assignor to Memtec America Corporation, Timonium, Md.

Division of Ser. No. 796,386, Nov. 22, 1991, Pat. No. 5,248,548. This application Jul. 13, 1993, Ser. No. 90,321

Int. Cl.[5] D02G 3/36

U.S. Cl. 57—210 20 Claims



1. A cut resistant, abrasion resistant, electrically conductive composite yarn for making protective garments comprising a core and a serving wrapped on said core, wherein said core is a substantially torque-free continuous filament metallic yarn of at least about 60 ends, each fiber in said metallic yarn has a diameter of not more than about 25 μm, and said serving comprises at least one non-metallic fiber.

5,287,691

METAL CORD AND COMPOSITE MATERIAL COMPRISING THE METAL CORD AND RUBBER

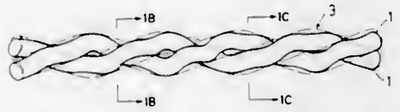
Kenichi Okamoto; Yoshifumi Nishimura, both of Itami, and Kazuhiko Kawamura, Akashi, all of Japan, assignors to Sumitomo Electric Industries, Ltd. and Sumitomo Rubber Industries, Ltd., Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 924,936

Claims priority, application Japan, Aug. 6, 1991, 3-196671; Jul. 15, 1992, 4-188180

Int. Cl.[5] D02G 3/48

U.S. Cl. 57—236 2 Claims



1. A metal cord consisting of two spirally shaped filaments twisted about one another in a direction of twist at a twisting pitch P, each of said filaments while extending in said direction of twist also retaining a spiral shape inscribing a respective inner circle projected along a respective path along which the filament is twisted about the other filament, said inner circle having a diameter d equal to the diameter of the filament plus 0.05–0.25 mm, the spiralling of each of said filaments within the inner projected circle of diameter d occurring in the same rotary direction as said direction of twist, and the pitch of said spiral shape being 0.20–0.50 times said twisting pitch P.

5,287,692

TRANSPORT MEDIUM FOR YARN OR THE LIKE

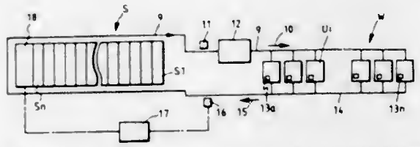
Junichi Matsubayashi, Toyonaka, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 20, 1990, Ser. No. 556,551

Claims priority, application Japan, Jul. 26, 1989, 1-194735

Int. Cl.[5] D01H 9/10, 9/00

U.S. Cl. 57—281 19 Claims



1. A spinning bobbin control apparatus for use with an automatic winder having a plurality of winding units, the spinning bobbin control apparatus comprising:

a tray for transporting a spinning bobbin,

storage means, attached to the tray, for storing yarn information data, the storage means being capable of having the data written therein and read therefrom, and

writing means, disposed on each of the plurality of winding units, for writing data into the storage means at each winding unit when winding for a bobbin is finished at each respective winding unit, the data including a representation of at least one of a number of yarn breakage due to slub, a number of yarn cuttings due to a defect of a length not less than a present length, evenness of yarn, and yarn strength.

5,287,693

SPINNING MACHINE HAVING SLIVERS EXPOSED ON A TRANSPORT BELT TO AIR-CONDITIONED AIR

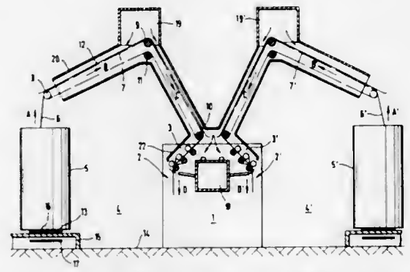
Gerd Stahlecker, Eislingen/Fils, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 870,958

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1991, 4123451

Int. Cl.[5] D01H 13/04

U.S. Cl. 57—308 20 Claims



1. A spinning machine comprising a plurality of spinning stations, each said spinning station having a drafting unit and supplied with silver from a silver-containing can, comprising:

transport devices that transport silvers from the silver-containing cans to the drafting units, the transport devices containing transport belts on which the slivers are transported, wherein the slivers are driven between the cans and the drafting unit at each point by a single transport belt without a facing movable belt;

at least one duct for supplying air-conditioned air, said duct extending in a longitudinal direction of the spinning machine and supplying the air-conditioned air to a plurality of spinning stations;

wherein the air-conditioned air is supplied to the slivers in an area between the sliver-containing cans and the drafting units, the slivers being at least partially exposed to the air-conditioned air when on the transport belts during the transport of the slivers to the spinning stations.

5,287,694

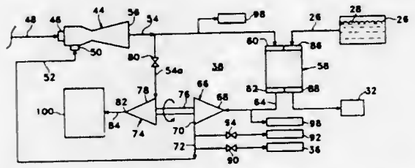
FLUID CHANNELING SYSTEM

Donald Y. Davis, Cincinnati, and Bradley D. Hitch, Pleasant Plain, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 5, 1992, Ser. No. 956,324

Int. Cl.[5] F02C 7/00; F04B 23/04

U.S. Cl. 60—39.07 9 Claims



1. A fluid channeling system comprising:

means or supplying a primary fluid at a primary temperature;

a fluid ejector having a primary, suction inlet for receiving said primary fluid, a secondary inlet for receiving a secondary fluid at a secondary temperature less than said primary temperature, and an outlet for discharging together said primary and secondary fluids as a mixed fluid ejector discharge at a temperature below said primary temperature;

a heat exchanger having a first inlet disposed in flow communication with said ejector outlet for receiving said ejector discharge therefrom, a first outlet for discharging said ejector discharge cooled in said heat exchanger as heat exchanger discharge at a temperature below said ejector discharge temperature, and means for cooling said ejector discharge channeled between said first inlet and said first outlet;

a fluid pump having an inlet disposed in flow communication with said heat exchanger first outlet for receiving said heat exchanger discharge, and an outlet disposed in flow communication with said ejector secondary inlet or channeling thereto said heat exchanger discharge compressed in said fluid pump as pump discharge or use in said ejector as said ejector secondary fluid; and

a fluid motor operatively joined to said fluid pump by a drive shaft, and including an inlet disposed in flow communication with said ejector outlet in parallel with said heat exchanger for receiving a portion of said ejector discharge for powering said fluid motor to drive said fluid pump, and an outlet for discharging said ejector discharge portion as motor discharge at a temperature less than said ejector discharge temperature.

5,287,695

POWER PLANT SYSTEM

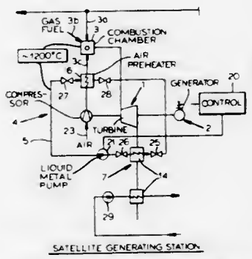
Karl-Uwe Schneider, Velbert, Fed. Rep. of Germany, assignor to RWE Energie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Nov. 23, 1992, Ser. No. 979,521

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138522

Int. Cl.[5] F02B 43/00

U.S. Cl. 60—39.12 7 Claims



1. A satellite power plane capable of independent power generation and adapted to be coupled to a planned future-erected major power plant integrating a coal-gasification unit, a gas-turbine main unit, a steam turbine main unit, and an electricity-generating main unit, said satellite power plant comprising:

a gas-turbine satellite unit;

an electric current generating satellite unit operatively connected to said gas-turbine satellite unit and driven thereby to output electrical energy;

a combustion chamber provided with means for burning a fuel gas to produce hot combustion gas, and operatively connected with said gas-turbine satellite unit for driving same with said hot combustion gas;

a heat-recovery unit capable of being switched on and off and having:

a liquid metal circulation for abstracting heat from depleted combustion gas from said gas-turbine satellite unit,

an air preheater heated in said liquid metal circulation for heating combustion air and operatively connected with

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said combustion chamber for supplying preheated combustion air thereto, and

means for delivering low-temperature heat for heating purposes, said gas-turbine satellite unit together with said heat-recovery unit being dimensioned to cover peak electric current demand when said heat-recovery unit is switched on, said means for delivering low-temperature heat being dimensioned to deliver optimal low-temperature heat when said heat-recovery unit is switched off; and

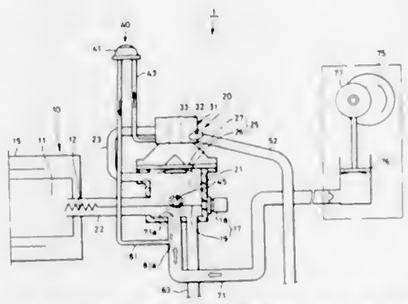
means for controlling said heat-recovery unit in response to electric current drawn from said electric current generating satellite unit.

5,287,696

PULSE-JET ATOMIZER MECHANISM FOR SPRINKLING CHEMICALS

Toyoki Shigemi, 921-27, Yamanokami, Tatomi-chou, Nakakoma-gun, Yamanashi-ken, Japan

Filed Feb. 3, 1993, Ser. No. 12,917
Claims priority, application Japan, Sep. 16, 1992, 4-246113
Int. Cl.[5] B05B *7/28*
U.S. Cl. 60—39.141 **9 Claims**



1. An atomizer mechanism for sprinkling chemicals, comprising a pulse jet engine, which atomizes chemicals supplied from a chemical supply unit using high speed exhaust gas generated through explosion, a combustible air-fuel mixture supply unit containing a precombustion chamber communicated with the combustion chamber of the pulse jet engine and a carburetor for supplying atomized fuel through a collecting valve into said precombustion chamber, and an engine starter having both a manual pump for pressurizing fuel and for supplying atomized fuel into the precombustion chamber by pump operation when the pulse jet engine is started, and first means for igniting said atomized fuel, characterized in that:

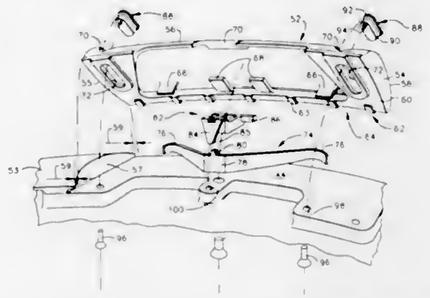
a compressed air inflow passage is connected between a compressed air source and said precombustion chamber, for injecting compressed air into the precombustion chamber, without the compressed air first passing through the collecting valve, such that the injection compressed air is projected toward the collecting valve from within the precombustion chamber, and a fuel supply passage for starting operation, which can supply the fuel pressurized by the manual pump, is connected to the middle of the compressed air inflow passage.

5,287,697

VARIABLE AREA BYPASS INJECTOR SEAL

Kenneth L. Johnson; Donald M. Corsmeier, both of Cincinnati; William L. Weaver, West Chester, and Eric H. Lewis, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 2, 1992, Ser. No. 816,694
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.3 **7 Claims**



1. A variable area bypass injector (VABI) seal segment for sealingly engaging a VABI valve in a gas turbine engine including an inner casing, said VABI seal segment comprising:

a seal body including an arcuate portion, a slanted sealing surface, and a bottom portion, said arcuate portion curving into said slanted sealing surface and said bottom portion for slidingly engaging the inner casing;

biasing means; and

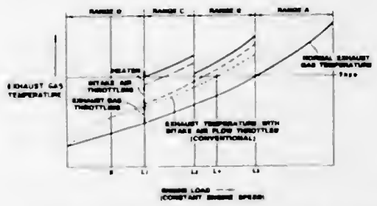
retention means coupling said biasing means to said seal body and coupling said seal body to the inner casing.

5,287,698

EXHAUST GAS PURIFYING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Motohiro Shinzawa; Shunichi Aoyama, both of Yokosuka; Yoshiki Sekiya, and Nobukazu Kanesaki, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Division of Ser. No. 629,700, Dec. 21, 1990, Pat. No. 5,195,316.
This application Jan. 19, 1993, Ser. No. 6,283
Claims priority, application Japan, Dec. 27, 1989, 1-339041; Dec. 27, 1989, 1-339042; Dec. 27, 1989, 1-339043; Dec. 27, 1989, 1-339044
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—286 **4 Claims**



1. An exhaust purifying system for an internal combustion engine, comprising:

a trap into which particulate matter in an exhaust gas from an internal combustion engine is separated and collected, the particulate matter being burnable upon heating;

means for raising a temperature in said trap to burn the particulate matter;

means for dividing engine operating conditions into a first zone in which the particulate matter is separated and collected in said trap and a second zone in which the particulate matter in said trap is burnt;

means for sensing an engine load and an engine speed of the engine to detect an engine operating condition;

means for determining whether the detected engine operating condition falls in either one of said first and second zones in accordance with engine load and engine speed;

means for calculating the amount of the particulate matter collected in said trap per unit time in said first zone, and the amount of the particulate matter burnt in said trap per unit time in said second zone, in accordance with the determination result of said determining means;

means for determining the amount of the particulate matter accumulated in said trap by adding respective amounts of the collected particulate matter for every unit time, and subtracting respective amount of the burnt particulate matter for every unit time;

means for determining that a time for requiring regeneration of said trap has been reached, in accordance with the amount of the accumulated particulate; and

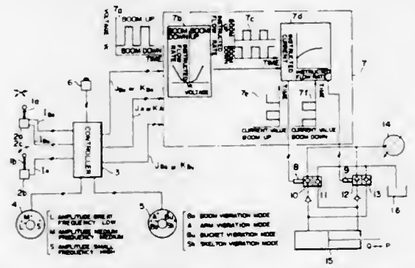
means for operating said temperature raising means in response to the determination of the generation requiring time having been reached.

5,287,699

AUTOMATIC VIBRATION METHOD AND DEVICE FOR HYDRAULIC DRILLING MACHINE

Fujitoshi Takamura, Hirakata, and Takumi Onoda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/00039, § 371 Date Jul. 10, 1992, § 102(e) Date Jul. 10, 1992, PCT Pub. No. WO91/10783, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 16, 1990, Ser. No. 910,084
Int. Cl.[5] F16D *31/00, 31/02*
U.S. Cl. 60—327 **20 Claims**



1. An automatic vibration method for operating a hydraulic drilling machine having working parts comprising a boom, an arm and a bucket, said method comprising:

the step of selecting, from a memory according to an operation form, a vibration signal for at least one of said working parts selected from the boom, the arm and the bucket;

the step of selecting, from the memory according to the operation form, an amplitude and a frequency of the selected vibration signal; and

the step of outputting, to an electronic hydraulic valve of an actuator of the working part, the vibration signal selected by said step of selecting a vibration signal and said step of selecting an amplitude and a frequency of the selected vibration signal.

3. An automatic vibration device for a hydraulic drilling machine with working parts comprising a boom, an arm and a bucket, said device comprising:

a working mode switch for selecting a vibration signal for the at least one working part selected from the boom, the arm and the bucket from a memory according to an operation form;

a vibration mode switch for selecting an amplitude and a frequency of the selected vibration signal from the memory according to the operation form; and

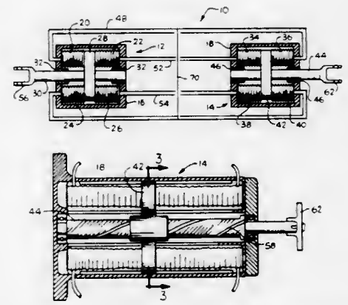
an automatic vibration mode switch for outputting the vibration signal, selected by the working mode switch and the vibration mode switch, to an electronic hydraulic valve of an actuator of the working part.

5,287,700

FLEXIBLE BELLOWS ACTUATION SYSTEM

Jeffrey M. Hein, Fountain Hills, and Richard Piechowicz, Scottsdale, both of Ariz., assignors to McDonnell Douglas Helicopter Company, Mesa, Ariz.

Filed Oct. 14, 1992, Ser. No. 960,856
Int. Cl.[5] F15B *7/00;* **F01B** *19/00*
U.S. Cl. 60—581 **11 Claims**



1. An actuation system for converting a mechanical input motion into a mechanical output motion wherein said mechanical output motion actuates a device, said actuation system comprising:

an input actuator including a first fluid pressurizing means, a housing, an input actuator shaft extending into said housing, and a first guided piston assembly connected to said input actuator shaft, said first fluid pressurizing means comprising a first bellows and a second bellows, each having fluid therein and being arranged generally end-to-end, said input actuator shaft being adapted to move in response to said mechanical input motion and said first guided piston assembly being adapted to travel linearly in response to motion of said shaft, a portion of said first guided piston assembly being positioned between said first and second bellows;

an output actuator including a second fluid pressurizing means; and

a flexible fluid line extending between said first and second fluid pressurizing means and providing fluid communication therebetween;

wherein the linear travel of said first guided piston assembly compresses one of said two bellows, thereby pressurizing the fluid therein and forcing it through said fluid line into said second fluid pressurizing means, said second fluid pressurizing means being responsive to said pressurized fluid and thereby initiating said mechanical output motion.

8. An actuation system for converting a linear mechanical input motion into a rotary mechanical output motion wherein said mechanical output motion actuates a device, said actuation system comprising:

an input actuator including a first fluid pressurizing means;

an output actuator including a second fluid pressurizing means, a housing, an output actuator shaft extending into said housing, and a guided piston assembly connected to said output actuator shaft;

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a flexible fluid line extending between said first and second fluid pressurizing means and providing fluid communication therebetween, said first fluid pressurizing means being responsive to said mechanical input motion to pressurize fluid therein and force said fluid into said fluid line;

said guided piston assembly being arranged to interact with said second fluid pressurizing means in such a manner as to travel linearly in response to the influx of said pressurized fluid into said second fluid pressurizing means from said fluid line;

said output actuator shaft having first and second opposed spiral grooves extending along its length, said guided piston assembly having a drive connection mechanism mounted thereon, said drive connection mechanism having a first portion thereof which fits into said first groove and a second portion thereof which fits into said second groove, such that when said guided piston assembly travels linearly in response to the influx of said pressurized fluid into said second fluid pressurizing means, said drive connection means first and second portions travel along said spiral grooves, thereby rotating said output actuator shaft and initiating a rotary mechanical output motion.

5,287,701

AUTOIGNITION TWO-STROKE INTERNAL COMBUSTION ENGINE

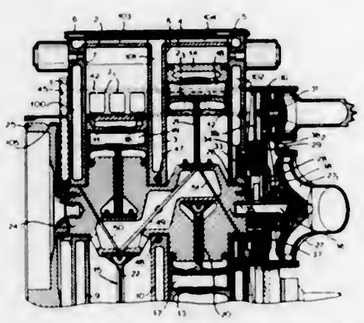
Hermann Klaue, Tour D'Ivoire, CH-1820 Montreux, Switzerland

Filed Dec. 2, 1992, Ser. No. 984,893

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1992, 4223393

Int. Cl.[5] **F02B** *33/44*

U.S. Cl. 60—607 **9 Claims**



1. An autoignition two-stroke internal combustion engine, comprising:

an engine block formed with a plurality of working chambers of generally rectangular cross section configured to operate in an autoignition two-stroke cycle;

respective pistons of generally rectangular cross section reciprocatable in said working chambers upon ignition of a fuel/air mixture in the respective chambers to drive said pistons and producing an exhaust gas in said chambers, said pistons being sealed with respect to said working chambers by planar rib seals;

a crankshaft rotatable in said engine block and coupled with said pistons so as to be rotated by said pistons upon said pistons being driven by said ignition of said fuel/air mixture;

respective rotary sleeve valves flanking each of working chambers, rotatable about axes parallel to an axis of said cranksbaft and provided for feeding fresh air to and discharging exhaust gas from each working chamber, each of said rotary slide valve having openings cooperating with slits formed in said engine block;

a turbocompressor on said engine block in fluid connection with the rotary sleeve valves feeding fresh air to said chambers for supercharging the engine;

at least one exhaust gas turbine on said engine block thermally separated from said turbocompressor and in fluid connection with at least one of the rotary slide valves discharging exhaust gas so as to be driven by exhaust gas therefrom;

gearing operatively coupling said exhaust gas turbine mechanically with said turbocompressor for driving said turbocompressor with said exhaust gas turbine;

planetary transmission provided between said turbocompressor and said crankshaft; and

a friction device for selectively activating and inactivating said planetary transmission.

5,287,702

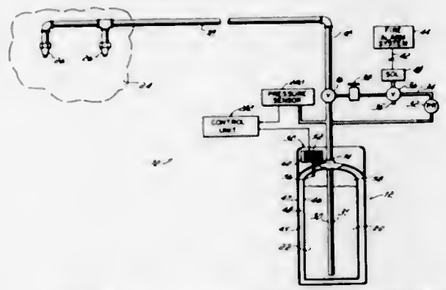
CARBON DIOXIDE STORAGE WITH THERMOELECTRIC COOLING FOR FIRE SUPPRESSION SYSTEMS

Andrew L. Blackshaw, Dunwoody, Ga., and Donald W. Hering, Cincinnati, Ohio, assignors to Preferred CO_2 Systems, Inc., Fairfield, Ohio

Continuation-in-part of Ser. No. 883,653, May 15, 1992, abandoned. This application Apr. 1, 1993, Ser. No. 42,091

Int. Cl.[5] **F65B** *21/02*

U.S. Cl. 62—3.2 **40 Claims**



1. A system for maintaining CO_2 under pressure comprising:

a pressure vessel having an interior for containing the CO_2 under pressure;

a chamber outside the pressure vessel; a tube interconnecting the chamber and the pressure vessel in fluid communication and terminating into the pressure vessel in an uppermost region of the pressure vessel interior; and

thermoelectronic refrigerator means communicating with the chamber for chilling the chamber whereby to chill CO_2 within the chamber and thereby reduce pressure within the pressure vessel.

5,287,703

PROCESS FOR THE RECOVERY OF C_2+ OR C_3+ HYDROCARBONS

Dennis P. Bernhard, Allentown, Pa.; Michael H. Evans, Shepperton; Richard P. Freeman, Purley, both of England, and Howard C. Rowles, Center Valley, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 16, 1991, Ser. No. 746,671

Int. Cl.[5] **F25J** *3/02*

U.S. Cl. 62—24 **6 Claims**

1. In a low temperature separation process for the recovery of a heavy hydrocarbon product from a hydrocarbon containing gas stream comprising:

(a) cooling the gas stream to effect the partial condensation thereof;

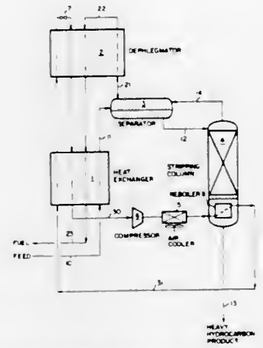
(b) phase separating the partially condensed gas stream into its vapor and liquid components in a phase separator;

(c) rectifying the vapor component from step (b) by low temperature dephlegmation to produce a light gas stream and a heavy liquid stream; and

(d) stripping the liquid component from step (b) and the heavy liquid stream from step (c) in a stripping column containing a reboiler wherein the bottoms stream from the stripping column is the heavy hydrocarbon product;

(e) providing the predominant amount of the refrigeration for the process from a single loop vapor recompression refrigerator employing a mixed refrigerant;

the improvement for increasing the efficiency of said separation process comprising:



(i) passing the liquid component from step (b) and the heavy liquid stream from step (c) directly to the stripping column of step (d);

(ii) operating the stripping column at below ambient temperature;

(iii) passing the overhead vapor from the stripping column directly to the phase separator of step (b) to be rectified with the vapor component from step (b); and

(iv) using the mixed refrigerant employed in step (e) as a heating medium for the reboiler of the stripping column in order to provide at least a portion of the heat duty for the reboiler.

5,287,704

AIR SEPARATION

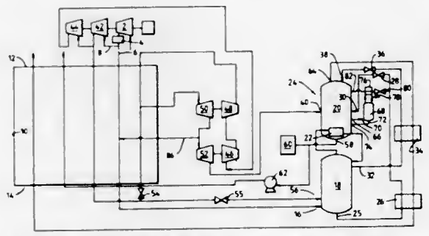
Thomas Rathbone, Surrey, England, assignor to The BOC Group, plc, Surrey, England

Filed Nov. 12, 1992, Ser. No. 976,249

Claims priority, application United Kingdom, Nov. 14, 1991, 9124242

Int. Cl.[5] **F25J** *3/02*

U.S. Cl. 62—25 **12 Claims**



1. A method of separating air, comprising: dividing a compressed air stream into first and second subsidiary streams; cooling the first subsidiary air stream by heat exchange to a temperature suitable for its separation by rectification; introducing the thus cooled air stream into the higher pressure stage of a double rectification column; further compressing the second subsidiary air stream; cooling at least part of it by heat exchange to a first intermediate temperature below ambient temperature but above those temperatures at which the double rectification column operates; expanding the thus cooled second subsidiary air stream in a first expansion turbine; withdrawing the thus expanded second subsidiary air stream from the first expansion turbine at a second intermediate temperature below the first intermediate temperature but above those temperatures at which the double rectification column operates and introducing it into a second expansion turbine; further expanding the second subsidiary air stream in the second expansion turbine and withdrawing the thus expanded second subsidiary air stream therefrom and introducing it into the lower pressure rectification stage of the double rectification column; separating the air in the double rectification column into oxygen and nitrogen, withdrawing oxygen and nitrogen streams from the said lower pressure stage, and producing a part of at least one of the oxygen and nitrogen as a liquid product.

5,287,705

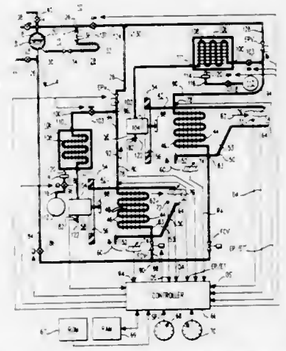
AIR CONDITIONING AND REFRIGERATION SYSTEMS UTILIZING A CRYOGEN

Roland L. Roehrich, Pittsburgh, Pa., and Herman H. Viegas, Bloomington, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 16, 1993, Ser. No. 17,905

Int. Cl.[5] **F17C** *9/04*

U.S. Cl. 62—50.3 **18 Claims**



1. A method of operating a refrigeration system having cryogenic cooling means in a liquid state and heat exchanger means, for controlling the temperature of a conditioned space to a predetermined temperature range adjacent to a selected set point temperature via at least a cooling cycle, with the cooling cycle comprising the steps of:

providing a desired evaporation vapor pressure value of the cryogen as a function of the selected set point temperature,

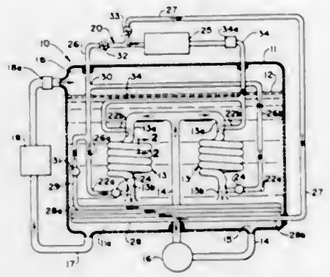
controlling the evaporation pressure in the heat exchanger means as a function of the desired evaporation vapor pressure value,

providing a desired superheat value of the cryogen exiting the heat exchanger means as a function of the selected set point temperature.

and controlling the mass flow a rate of liquid cryogen from the cryogenic cooling means to the heat exchanger means as a function of the desired superheat value.

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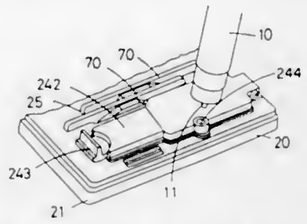
5,287,706
REFRIGERATION SYSTEM AND SUBCOOLING CONDENSER THEREFOR
Alea Williams, 2113 Emerson St., Evanston, Ill. 60201
Filed Dec. 16, 1992, Ser. No. 991,186
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—196.1 **11 Claims**



1. An improved thermal exchange assembly for industrial use comprising a water container; water cooling means including at least one water-conducting tube disposed in said container having water inlet means at one end thereof for receiving water from said container and having water outlet means at the opposite end thereof for discharging water into said container; water pumping means for circulating water through said water-conducting tube; refrigerant circulating means comprising at least one refrigerant-conducting tube disposed in said container in heat exchange relation with water in said water-conducting tube; said refrigerant-conducting tube having refrigerant inlet means adjacent said water outlet means and refrigerant outlet means adjacent said water inlet means; said refrigerant inlet means including a refrigerant expansion valve; said refrigerant circulating means including means for condensing and compressing refrigerant; said refrigerant circulating means also including a first refrigerant circuit having first outflow conduit means for conducting refrigerant from said condensing and compressing means directly to said refrigerant inlet means and return conduit means for conducting refrigerant from said refrigerant outlet means back to said condensing and compressing means, and a second refrigerant circuit including a subcooling condenser tube having an inlet and an outlet disposed in said container, second outflow conduit means for conducting refrigerant from said condensing and compressing means to said inlet of said subcooling condenser tube, and conduit means joining said outlet of said subcooling condenser tube to said refrigerant inlet means; and control valve means for selectively directing refrigerant through each of said first and second refrigerant circuits.

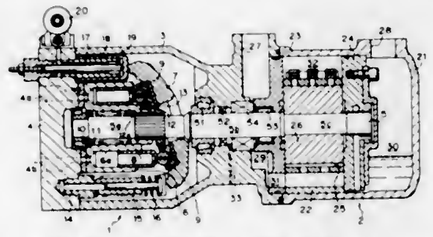
5,287,707
PORTABLE CHILLER
Daisuke Kitayama, Osaka, Japan, assignor to Senju Seiyaku Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 914,656, Jul. 17, 1992, Pat. No. 5,189,890, which is a continuation of Ser. No. 705,672, May 24, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,519
Claims priority, application Japan, Jun. 1, 1990, 2-145046; Jun. 14, 1990, 2-156714
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—293 **8 Claims**

1. A portable chiller comprising a cylinder having a cylinder body filled with a liquefied refrigerant gas and a cylinder nozzle adapted to eject said refrigerant from said cylinder body only when it is forced into the cylinder body and a chiller case, said chiller case comprising:
a cylinder compartment in which said cylinder is accommodated;
a cooling compartment having a cover means which includes a nozzle for accepting said cylinder nozzle and being adapted to accommodate an article to be chilled for chilling of the same; and
a refrigerant gasification control means for allowing the refrigerant ejected from the cylinder taken out from said



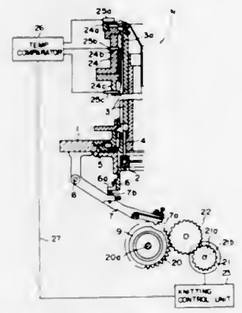
cylinder compartment into said cooling compartment through said nozzle to circulate in liquid form around the article in said cooling compartment and, then, be gasified in situ to chill said article, wherein said chiller case has a compartment for accommodating at least one spare article to be chilled.

5,287,708
CAR AIR CONDITIONER WITH A HYDRAULICALLY DRIVEN REFRIGERANT COMPRESSOR
Osamu Hiramatsu; Kunifumi Goto, and Tatsuyuki Hoshino, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Continuation of Ser. No. 765,567, Sep. 25, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 13,161
Claims priority, application Japan, Sep. 28, 1990, 2-102668[U]
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—323.1 **2 Claims**



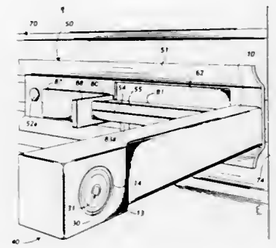
1. A refrigerant compressor, driven by an oil hydraulic motor for compressing a refrigerant gas circulated in an air-conditioning circuit of a car comprising:
a housing means provided with an inlet port for the refrigerant gas to be compressed and a delivery port for the refrigerant gas after compression;
a cylinder block element arranged in said housing means for defining therein at least one cylinder chamber;
a compressing means arranged in said cylinder chamber for compressing the refrigerant gas to be compressed, and discharging the compressed refrigerant gas;
a rotatably arranged shaft means including a portion thereof rotatably arranged in said housing means, said portion of said shaft means mounting thereon a means for causing operation of said compressing means in response to a rotation of said shaft means, said shaft means comprising a single common shaft extending through both said oil hydraulic motor and said refrigerant compressor, to thereby connect said refrigerant compressor in tandem to said oil hydraulic motor;
said oil hydraulic motor comprising an axial piston type variable capacity oil hydraulic motor operated by oil under pressure delivered from an oil hydraulic pump driven by the engine of said car, said axial piston type variable capacity oil hydraulic motor having a motor housing means for rotatably supporting a part of said single common shaft, said motor housing means being sealingly connected to said housing means of said refrigerant compressor;
said motor housing means having disposed therein first and second axially spaced shaft sealing means mounted on said single common shaft and defining therebetween an annular space for receiving said oil when leaking from said oil hydraulic motor through said first shaft sealing means; and
an oil drain passageway means formed in said motor housing means in fluid communication with said annular space between said sealing means.

5,287,709
STITCH DENSITY ADJUSTING DEVICE OF CIRCULAR KNITTING MACHINE
Masahiro Seino, Niigata; Kazuhiko Tamaki, Sanjo; Hidemasa Sakamoto, Niigata; Minoru Oboshi, Niigata, and Yutaka Kaneuchi, Niigata, all of Japan, assignors to Nagata Seiki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 20, 1992, Ser. No. 979,182
Claims priority, application Japan, Nov. 21, 1991, 3-103669; Feb. 4, 1992, 4-19079; May 8, 1992, 4-116104
Int. Cl.[5] D04B *9/00*
U.S. Cl. 66—55 **9 Claims**



1. A stitch density adjusting device of a circular knitting machine having a needle cylinder, and a knitting head provided outside the needle cylinder, comprising:
rotatable fashioning cam means;
a rising member acted upon by the fashioning cam means so as to pivot on a rising pin in a manner to move the needle cylinder up and down for stitch density adjustment;
sliding support means for supporting said rising pin in a vertically shiftable manner;
motor means;
means operated by said motor means to adjustingly shift said rising pin vertically thereby to finely adjust the rising member in vertical position for fine adjustment of the stitch density;
an adjusting lever pivotally mounted at an intermediate position thereof and having one end driven by said motor means and the other end associated with said rising pin; and
said sliding support means comprising a sliding support of U-shaped cross section having two opposite side walls and receiving said other end of the adjusting lever slidably therein, and a saddle slidably received in said sliding support and resting on said other end of the adjusting lever so as to be slidingly shifted vertically when the adjusting lever pivots, said rising pin being carried by the saddle.

5,287,710
HINGED LOCKING MECHANISM
Paul L. James, 3217 Buford Highway, Apt. C, Atlanta, Ga. 30324
Filed Aug. 10, 1992, Ser. No. 927,218
Int. Cl.[5] E05B *67/12*
U.S. Cl. 70—14 **1 Claim**



1. A locking apparatus for use on a hasp assembly having at least one hasp flange member defining a first shank aperture and a second shank aperture, said locking apparatus comprising:
a frame element including, at least,
a frame bar,
a first hinge pin extending in a first direction away from a first side of said frame bar,
a second hinge pin extending in a second direction away from a second side of said frame bar,
a first frame pin extending transversely away from said first side of said frame bar for insertion into the first shank aperture,
a second frame pin extending transversely away from said first side of said frame bar for insertion into the second shank aperture; and
a case element hinged to said frame element defining a frame cavity for receipt of said frame element and at least one hasp flange member and including, at least,
a first hinge pin base means for receiving said first hinge pin,
a second hinge pin base means for receiving said second hinge pin,
a locking means for securing said case element around said frame bar and the flange member, said locking means including, at least, a cylinder lock including, at least, a retractably locking bolt.

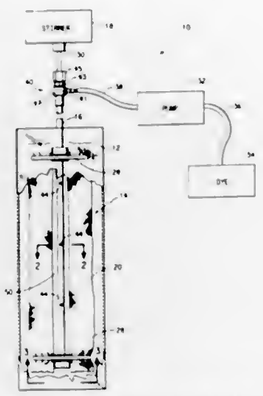
5,287,711
LABORATORY APPARATUS FOR DYEING TEXTILE FABRICS
Julie L. Chang, Newark, Del.; Darwin E. Ferster, Rising Sun, and Robert E. Shamrock, Elkton, both of Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 24, 1992, Ser. No. 905,353
Int. Cl.[5] D06B *5/22*
U.S. Cl. 68—148 **20 Claims**

12. An improved sample holder for use with laboratory apparatus for dyeing textiles of the type in which textile fabric samples are dyed in a generally cylindrical vessel containing a liquid dyeing bath while being moved in a cyclical fashion, said sample holder comprising a generally vertical rod for connection to an overhead stirrer, the improvement comprising:
two spaced-apart disks mounted on said rod in a generally parallel relationship, each of said disks having a disk edge

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contacting said fabric sample and holding said sample in a generally cylindrical configuration; and

an annular groove in each of said disk edges; and



a resilient ring dimensioned to fit snugly into each of said annular grooves.

5,287,712

LOCKING ARRANGEMENT CONSISTING OF KEY AND LOCK CYLINDER

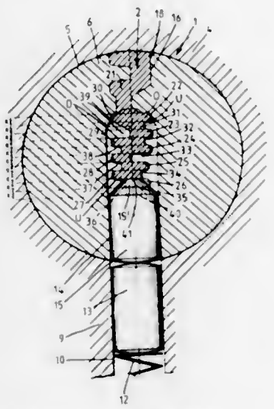
Giselher Sieg, Erftstadt, Fed. Rep. of Germany, assignor to Emhart, Inc., Newark, Del.

Filed Jul. 10, 1992, Ser. No. 911,572

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 4125017

Int. Cl.[5] E05B *19/02*

U.S. Cl. 70—406 4 Claims



1. A locking system, which comprises:

a key formed with a key shank having a broad face extending generally along a longitudinal central plane from the rear end thereof toward an opposite end thereof which is opposite the rear end;

a guide cross section formed on the rear end of the key shank;

a plurality of profiled longitudinal ribs formed on the broad face of the key shank extending at least partially between the rear and opposite ends;

a narrow edge formed on the key shank extending at least partially between the rear and opposite ends of the key shank;

a plurality of wards formed in the narrow edge of the key shank transversely to the profiled longitudinal ribs;

each of the plurality of ribs being formed with a lower rib flank and an upper rib flank;

each of the lower rib flanks being perpendicular to the longitudinal central plane;

the lower rib flank of each rib being spaced by a prescribed distance from the lower rib flank of any rib immediately adjacent thereto;

each rib formed with a convexly shaped curved end face which extends tangentially between the lower rib flank and the upper rib flank of the rib;

each of the plurality of wards extending transversely from the narrow edge to the lower rib flank of a respective one of the plurality of profiled longitudinal ribs;

a lock cylinder formed with a key channel having a plurality of grooves arranged to receive the profiled longitudinal ribs; and

a plurality of core pins located with the lock cylinder wherein each core pin is arranged to move into a respective one of the wards to the respective lower rib flank associated with the respective one of two wards.

5,287,713

METHOD AND APPARATUS FOR IRONING AND TRIMMING CYLINDRICAL PORTION OF WORKPIECE, USING STEPPED PUNCH AND DIE HAVING TAPERED DIE HOLE

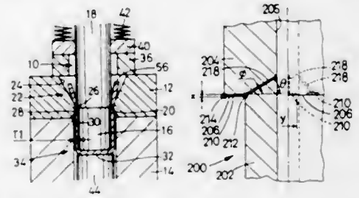
Kohichi Mine, Aichi, and Norio Itoh, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 4, 1992, Ser. No. 924,447

Claims priority, application Japan, Aug. 5, 1991, 3-221044

Int. Cl.[5] B21D *24/16*

U.S. Cl. 72—43 16 Claims



1. A method of ironing a cylindrical portion of a workpiece, and trimming one of opposite axial ends of said cylindrical portion, said workpiece having a radial bottom portion formed at the other of said opposite axial ends of said cylindrical portion, said method comprising the steps of:

preparing a stepped punch and a die, said punch having a small-diameter portion at one end thereof, a large-diameter portion adjacent to said small-diameter portion and a shoulder surface between said small-diameter and large-diameter portions, said shoulder surface cooperating with said large-diameter portion to define an outer circumferential edge, and cooperating with said small-diameter portion to define an inner circumferential corner, said die having a die hole with a surface including a tapered portion and a land portion adjacent to a small-diameter end of said tapered portion, said tapered portion and said land portion being formed in the order of description in a moving direction of said punch in which said punch is moved relative to said die, with said small-diameter portion leading said large-diameter portion;

positioning said punch relative to said workpiece such that a leading end of said small-diameter portion of the punch is in abutting contact with said bottom portion of the workpiece, with a lubricant applied between said stepped punch and an inner circumferential surface of said workpiece; and

moving said punch and said die relative to each other, to force said punch and said workpiece into said die hole of said die, for thereby (a) causing said small-diameter portion and said land portion to cooperate to effect an ironing operation on said cylindrical portion in an axial direction of the workpiece, for reducing a thickness of said cylindrical portion, while causing said inner circumferential corner of said punch to be filled with a portion of a material of said cylindrical portion which flows due to reduction of the thickness of said cylindrical portion, said portion of the material forcing said lubricant to flow from said inner circumferential corner of said stepped punch, through a channel formed through said stepped punch, to a space under atmospheric pressure or less, and (b) causing said outer circumferential edge and said die to cooperate to remove a waste of the material of the workpiece which exists between said large-diameter portion and said tapered portion, thereby to trim said cylindrical portion at said one of opposite axial ends thereof when said outer circumferential edge reaches said land portion in said moving direction via said tapered portion of said die hole.

5,287,714

ROLL STAND FOR A PLANETARY ROLLING MILL

Dieter Figge, and Peter Fink, both of Essen, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

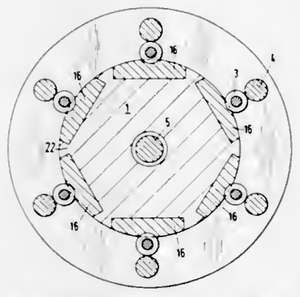
Filed Dec. 11, 1991, Ser. No. 805,109

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4041367

The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.

Int. Cl.[5] B21B *13/20*

U.S. Cl. 72—190 9 Claims



1. A roll stand for a planetary rolling mill comprising a housing, two stationary support members mounted in chocks with a plurality of rolling segments being distributed over a circumference of said support members and intermediate and working rolls mounted in rotationally driven cages and revolving around said support members, each of said support members being rotatably mounted in said chocks for bringing one of said rolling segments into a working position by rotation of said support member, and means for clamping said support members in said working position of one of said plurality of rolling segments after being rotated.

5,287,715

METHOD OF ROLLING STEEL SHAPES AND APPARATUS THEREFOR

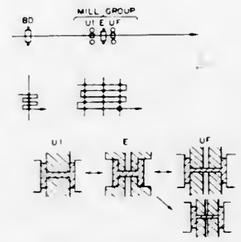
Yoshiaki Kusaba, Kobe, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jan. 31, 1991, Ser. No. 830,232

Claims priority, application Japan, Feb. 8, 1991, 3-018023

Int. Cl.[5] B21B *1/08*

U.S. Cl. 72—225 12 Claims



1. A method of rolling parallel-flange steel shapes comprising steps of:

forming a parallel-flange steel shape by reversing rolling steel under hot conditions in a universal mill group comprising a first universal mill, an edging mill, and a second universal mill wherein the steel is sequentially rolled by each of the first universal mill, the edging mill and the second universal mill during the reversing step and horizontal rolls of the second universal mill are of the variable-width type and taper of lateral faces of the horizontal rolls and edging rolls are from 0 to 2.0 degrees for each of the first universal mill, edging mill and second universal mill; and

finishing a web height of the steel shape to a final target size by a final pass in the second universal mill.

5,287,716

METHOD OF FORMING CABLE-GUIDING OPENING IN METAL WALL-STUDS AND HAND POWERED TOOL FOR IT

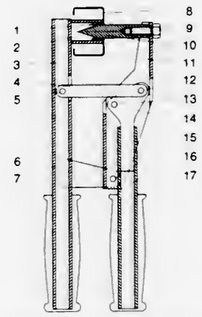
Andrzej J. Szulc, 1 Meadowglen Place, apt. 601, Scarborough, Ontario, Canada M1G 2V5

Filed Dec. 8, 1992, Ser. No. 987,214

Claims priority, application Canada, Dec. 23, 1991, 2058307

Int. Cl.[5] B21D *28/34*

U.S. Cl. 72—325 2 Claims



2. A tool for forming an opening in a metal wall-stud and forming tabs about the hole as guide for fished-in electrical cables, comprising:

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a handle with a hollow die affixed to one end and a handgrip on another end;

a jaw with a piercer affixed thereto having pyramidally shaped working end, the piercer cooperating with the hollow die so as to cut and deform tabs in the wall-stud;

a support affixed to the handle at a position intermediate the handgrip and the hollow die and having means for pivotal connection to said jaw with said support extending above said handle so that the pivotal connection is spaced away from the handle;

a lever, extending from a second handle and equipped with a handgrip, and

means for pivotally connecting said lever to said jaw;

a link having one end pivotally connected to the handle and another end pivotally connected to the lever,

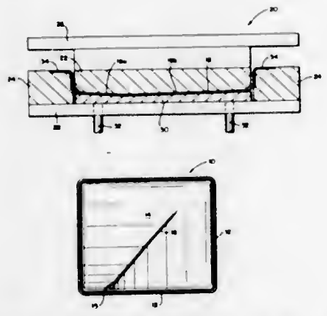
whereby, when the tool's hand grips are squeezed together, the lever forces the piercer into material supported by the hollow die metal wall-stud, thereby resulting in forming an opening.

5,287,717

METHOD FOR FORMING A TANK BOTTOM

Ronald G. Lancaster, Springfield, Mo., assignor to Custom Metalcraft, Inc., Springfield, Mo.

Filed Apr. 3, 1992, Ser. No. 863,721
Int. Cl.[5] B21D *51/16, 22/20*
U.S. Cl. 72—332 **7 Claims**



1. A method for forming the bottom of a tank for liquids, said tank having generally upwardly extending sides and a sloped bottom for complete drainage of liquid from the tank, said method comprising the steps of:

(a) providing a generally flat, rectangular shaped plate member having a plurality of corner portions, wherein at least one corner portion is trimmed along a line which is approximately equal to the diameter of a finished curved corner of the bottom;

(b) positioning said plate member in a head forming device having punch and die members, and

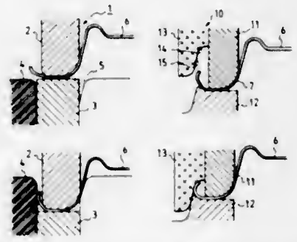
forming said plate member in said head forming device by deforming said flat plate member against said punch and die members to provide a bottom wall portion and upwardly extending side wall portions which extend continuously around the periphery of said bottom wall portion, and with an upward crease in the bottom wall portion of the plate member and a drain opening in said bottom wall portion, said bottom wall portion including a pair of downwardly sloping surfaces which slope downwardly from the side wall portions and which intersect in a region adjacent said drain opening to establish said crease so as to extend radially in a direction from said opening in an upward fashion towards said side wall portions, and with said bottom wall portion being generally contoured smoothly and continuously upwardly to the side wall portions from the entire circumference of the drain opening, thus providing a one-piece tan bottom which is formed without welding in the region adjacent said drain opening or in said corner portion.

5,287,718

CURL FORMING METHOD FOR A CAN END

Shigeaki Yamanashi, Yokohama, Japan, assignor to Toyo Saikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 817,555, Jan. 7, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,499
Claims priority, application Japan, Jan. 16, 1991, 3-14973
Int. Cl.[5] B21D *22/22*
U.S. Cl. 72—348 **1 Claim**



1. A curl forming method of a can end for forming a curl on a flange end of the can end for attaching the can end on a can body, said method comprising the steps of:

supplying a can end having a flange between a primary forming punch and a primary forming pad arranged opposite to said primary forming punch;

holding securely said flange of said can end by said primary forming punch and said primary forming pad such that an extreme end of said flange is protruded radially outwardly from an outer peripheral portion of said primary forming punch and said primary forming pad;

a primary forming step of forming a primary curl on the extreme end of said flange by forcing said flange into a die hole of a primary forming die from a side opposite to an open end of said flange, while holding said flange by said primary forming punch and said primary forming pad, said primary forming die being movably arranged relative to the outer peripheral portion of said primary forming pad, said die hole being larger by 0 to 2.0 mm than a diameter of a final curl of said extreme end of said flange, so that the extreme end is inwardly bent to form a primary curl on the flange during the relative movement between the primary forming die and the primary punch and pad assembly;

supplying the can end formed with the primary curl on said flange between a secondary forming pad and a secondary forming die arranged opposite to said secondary forming pad;

holding securely said flange of said can end by said secondary forming pad and said secondary forming die such that the extreme end of said flange is protruded radially outwardly from the outer peripheral portion of said secondary forming pad; and

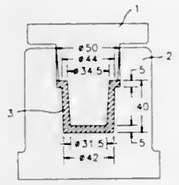
a secondary forming step of forming a final curl shape on the extreme end of curl on said flange by which a secondary forming punch movably arranged relative to the outer peripheral portion of said secondary forming pad, and having a forming surface matched to said final curl shape of the flange end, is relatively moved substantially orthogonally to the plane of the can end from the open side of the primary curl of said can end toward the flange end, whereby the extreme end of the flange end is pressed and bent by said secondary forming punch to form the extreme end of the flange end into the final curl shape.

5,287,719

METHOD OF FORMING SEMI-SOLIDIFIED METAL COMPOSITION

Mitsuru Moritaka; Sadahiko Shinya; Katsuhiro Takebayashi; Seiro Yahata, and Chisato Yoshida, all of Chiba, Japan, assignors to Rheo-Technology, Ltd., Japan

Filed Aug. 13, 1992, Ser. No. 929,782
Claims priority, application Japan, Aug. 22, 1991, 3-233821
Int. Cl.[5] B21J *5/02*
U.S. Cl. 72—364 **6 Claims**



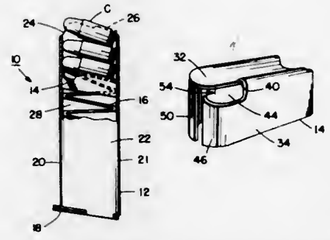
1. In a method of forming a semi-solidified metal composition by die forging a semi-solidified metal composition as a starting material at a solid-liquid coexistent state under conditions that said starting material is filled in a filling region of a die assembly at a mass fraction solid of 0.2–0.8 at a time of starting said die forging and then held under a pressure of not less than 6 kg/mm^2 until said starting material is completely solidified after the filling in said die assembly. an improvement wherein said starting material is flowed in said filling region at a flowing rate of not less than 3.5 m/sec during the filling.

5,287,720

METHOD OF MANUFACTURING A CARTRIDGE MAGAZINE FOLLOWER

Bryant L. Lishness, Bristol, Conn., assignor to Colt's Manufacturing Company, Inc., West Hartford, Conn.

Division of Ser. No. 782,429, Oct. 25, 1991, Pat. No. 5,263,273. This application May 19, 1993, Ser. No. 64,260
Int. Cl.[5] B21D *53/00*
U.S. Cl. 72—379.2 **5 Claims**



1. A method of manufacturing a follower for use in a firearm cartridge magazine the method comprising steps of:

cutting a blank from a flat sheet of metal; and

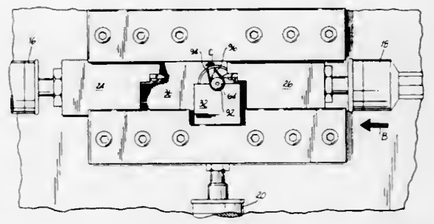
stamping the blank to form a top section and at least one side section extending down from the top section, the step of stamping the blank including forming a center cartridge trough along a to side of the top section and forming a peripheral spring trough along a bottom side of the top section wherein the step of stamping forms a portion of the center cartridge trough below the peripheral spring trough, the center cartridge trough and spring trough being suitably sized relative to each other such that a portion of a cartridge positioned into the center cartridge trough is located below a top of a spring positioned into the spring trough.

5,287,721

APPARATUS AND METHOD FOR FORMING CURVED NEEDLES

W. Scott Samsel, Bristol, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 12, 1992, Ser. No. 928,797
Int. Cl.[5] B21F *1/00, 45/00;* **B21G** *1/00*
U.S. Cl. 72—400 **48 Claims**



1. Apparatus for forming curved surgical needles from elongated workpieces of high tensile strength material, said elongated workpieces having a taper preformed at least at one of a first end and a second end thereof, comprising:

a frame including a forming surface demountably attached thereto;

means movably mounted on said frame for securely biasing said elongated workpieces against said forming surface in a fixed position; and

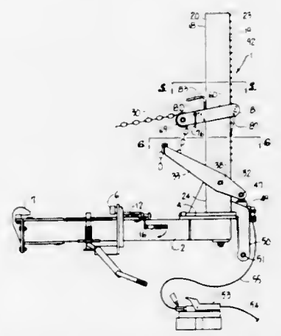
means movably mounted on said frame for bending said elongated workpieces about said forming surface, said bending means cooperating with said forming surface such that upon initial contact between said bending means and said first and second ends, said bending means does not contact the respective terminal section of said first and second ends whereby said pre-formed taper remains intact throughout the bending of said elongated workpiece.

5,287,722

PULL TOWER FOR CORRECTING VEHICLE DAMAGE

Leonard F. Eck, McPherson, Kans., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Nov. 27, 1991, Ser. No. 800,641
Int. Cl.[5] B21D *1/12*
U.S. Cl. 72—447 **7 Claims**



1. A pull tower for pulling upon a chain and correcting damaged portions of a vehicle, said pull tower comprising:

a) an upright tower of rectangular beam configuration having opposite side surfaces, a rear surface, and a front surface for facing a vehicle to be pulled upon;

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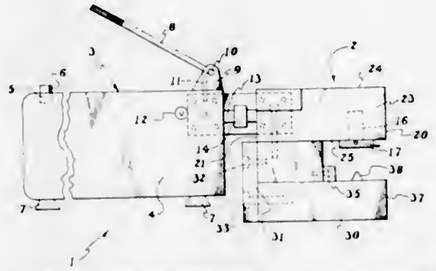
b) a base at a bottom end of said tower for mounting upon a support surface;
c) means for pulling upon a chain extended from said tower;
d) a chain height adjustment and pulley carrier mounted on said tower and including a collar fitted about said rectangular beam and having:
i) opposite side plates facing said tower side surface,
ii) front arm portions extending forwardly from said side plates and having a pulley therebetween over which said chain is trained,
iii) said arm portions and said pulley extending sufficiently forwardly to exert a downward rotational force on said carrier due to the weight thereof and which force increases as said chain is tensioned,
iv) front and rear crossbars extending between said side plates and having edges for biting contact with the front and rear surfaces of said tower beam,
v) said front and rear crossbars being spaced to loosely straddle said tower beam so that said carrier slides on said beam when held perpendicular thereto and rotates downwardly into wedging relationship when released to maintain said carrier at a selected height on said tower beam, and
vi) spring biasing means extending between said rear crossbar and said beam rear surface to urge said rear crossbar and said carrier away from said beam rear surface to induce said front arm portions to drop downward into said wedging relationship and maintain biting contact between said carrier and said tower beam.

5,287,723

DEVICE FOR DEFORMING A SMOOTH SURFACED PIPE

Daniel P. Corcoran, Grandville, Mich., assignor to Corcoran Industries, Grandville, Mich.

Filed May 11, 1992, Ser. No. 881,262
Int. Cl.[5] B21D *7/06*
U.S. Cl. 72—453.16 **1 Claim**



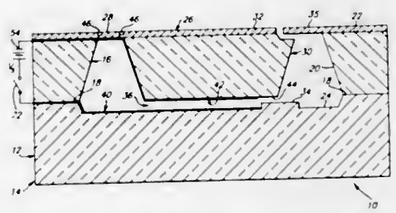
1. A device for deforming a smooth surfaced metal pipe, the device comprising in combination
a power source, and connected thereto, a deforming head, said deforming head comprising:
a hydraulic block containing a hydraulically operated piston; said hydraulic block having a front wall, a back wall, a top, and a bottom;
said hydraulic block having through it's back at least one entry port and connected to each said entry port, a hydraulic fluid line, the combination of each entry port and hydraulic line being for the transfer of hydraulic fluid into and out of the hydraulic block;
a connector block, said connector block having a top, a bottom, a back, and a front, said connector block being detachedly rigidly mounted with it's top to the bottom of the hydraulic block;
a platform block, said platform block having a top and a back, said platform block being detachedly rigidly mounted by it's top to the bottom of the connector block;
said platform block having rigidly mounted on it's top, a deforming pin;
a supporting plate, said supporting plate having a front, said supporting plate being detachedly rigidly mounted at its front to the back of the connector block and the back of the platform block;
said connector block having detachedly rigidly mounted on it's front, a pipe stop;
said hydraulic block having rigidly mounted on its bottom near the front wall, a die holder, said die holder being situated such that any die located therein will be in vertical alignment with said deforming pin;
the pipe stop, connector block, platform block, and supporting plate forming a subcombination which subcombination is adjustable in a vertical line, and removable from the hydraulic block, said subcombination being held by at least one adjustable threaded fastener which adjustable threaded fastener is insertably mounted through a vertical hole in the top of the hydraulic block which accomodates the adjustable threaded fastener;
said hydraulic block being rigidly attached to the power source by a mounting bracket.

5,287,724

METHOD FOR CALIBRATING AN ACCELEROMETER

Craig W. White, Grosse Pointe; Leonard W. Behr, Pontiac, and Kevin E. Musser, Farmington, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 776,071, Oct. 10, 1991, Pat. No. 5,163,325, Division of Ser. No. 413,318, Sep. 27, 1989, Pat. No. 5,060,504, which is a continuation-in-part of Ser. No. 248,362, Sep. 23, 1988, abandoned. This application Nov. 19, 1992, Ser. No. 977,539
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] G01P *21/00*
U.S. Cl. 73—1 D **9 Claims**



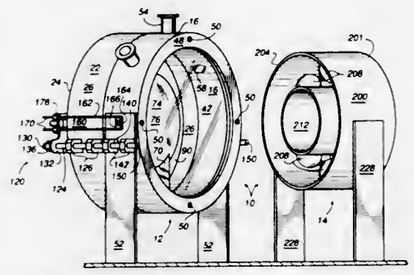
1. A method for establishing a value for the sensitivity of an acceleration sensor, said sensor having a rigid frame, an inertial sensing mass supported by said frame and displaceable relative to said frame in response to acceleration inputs applied to said frame along a sensing axis, and means responsive to sensing mass displacement for generating an output signal, said method comprising the steps of:
subjecting said sensing mass to an electrostatic field, said electrostatic field simulating application of an acceleration input of known magnitude to said frame along said sensing axis, said electrostatic field displacing said sensing mass from a first position relative to said frame to a second position relative to said frame;
receiving a first value for said output signal when subjecting said sensing mass to said electrostatic field;
receiving a second value for said output signal in the absence of said electrostatic field; and
determining said sensitivity value using said first and second values for said output signal and the magnitude of said simulated acceleration input.

5,287,725

SURFACE VOLATILE MATERIAL DETECTOR

Jun Zhao, Milpitas; Laszlo Szalai, Campbell; Boris Fishkin, and Terry Francis, both of San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 799,822, Nov. 26, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 82,142
Int. Cl.[5] G01N *1/22*
U.S. Cl. 73—23.2 **20 Claims**



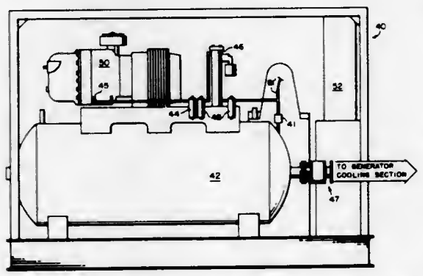
1. A surface volatile material detector, comprising:
a chamber, said chamber having walls enclosing and defining a space within said chamber;
a wafer holding means, said water holding means being disposed within said chamber and functioning to hold a wafer therewithin;
a wafer heating means, said wafer heating means functioning to provide heat energy to said wafer held within said wafer holding means, whereby a volatile contaminant that is disposed upon a surface of said wafer will be vaporized by exposure to said heat energy;
a wafer temperature sensing means, said wafer temperature sensing means being disposed within said chamber and functioning to detect the temperature of a wafer disposed therein;
a gas analyzer means, said gas analyzer means being engaged to said chamber and functioning to detect said vaporized volatile contaminants.

5,287,726

METHOD AND APPARATUS FOR LIQUID COOLED GENERATOR STATOR TEST AND PREPARATION THEREFOR

Hugh C. Burritt, Box 88; RR 110, No. Broadalbin, N.Y. 12025

Filed Aug. 14, 1991, Ser. No. 744,880
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—37 **9 Claims**



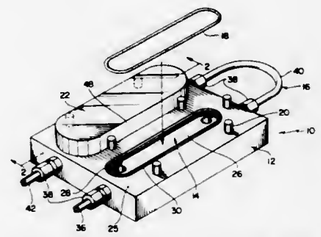
1. A portable, palletized system for purging coolant lines of transformers and/or dynomoelectric stators comprising:
(A) a pallet,
(B) pressurization and blowdown means for connection to coolant lines to be purged by systematic and automatic application of pressurization and blowdown operations,
(C) and control means including a plurality of transducers operatively associated with the pressurization and blowdown means to regulate cyclical operation of the pressurization and blowdown means.

5,287,727

FIXTURE FOR PRESSURE TESTING SIGHT GLASSES

Earl S. Nickerson, Jr., Little Compton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 19, 1992, Ser. No. 901,286
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—37 **9 Claims**



1. A test fixture for pressure testing a sight glass, said sight glass having opposite first and second faces and a perimeter surface extending between said first and second faces defining a perimeter of said sight glass, said first face being substantially flat, said test fixture comprising a base member having a receiving surface thereon and having a recessed pressure chamber therein opening outwardly through said receiving surface, said base member also having a supply passage therein which is connectable to a supply of pressurized fluid for supplying said fluid to said pressure chamber, said pressure chamber being defined by an inner pressure chamber surface and having a perimeter, the dimension of said pressure chamber as defined by the perimeter thereof being at least slightly smaller than the dimension of said sight glass as defined by the perimeter of said sight glass, and resiliently expandable seal ring means in said pressure chamber adjacent the perimeter thereof an extending slightly above the plane of said receiving surface, said test fixture being operable by securing said sight glass thereon over said pressure chamber so that the perimeter of said sight glass is spaced outwardly around the perimeter of said pressure chamber and supplying a pressurized fluid to said pressure chamber through said supply passage so that said seal ring means is urged into sealing engagement with both said sight glass and said pressure chamber surface in order to apply to said sight glass with said pressurized fluid.

5,287,728

POWER TRANSMISSION DEVICE FOR PRESS MACHINE

Akihiro Yoshida, Gifu, Japan, assignor to Kabushiki Kaisha Yamada Dobby, Risai, Japan

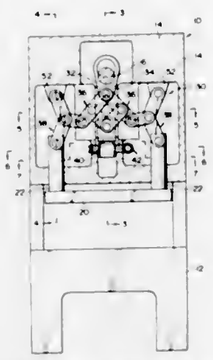
Filed Dec. 9, 1992, Ser. No. 988,325
Claims priority, application Japan, Oct. 5, 1992, 4-288208
Int. Cl.[5] F16H *21/16*
U.S. Cl. 74—40 **6 Claims**

1. A power transmission device for a press machine, said device transmitting a rotary motion of a crankshaft supported by a frame to a slide, further comprising:
a connection link connected to said crankshaft, and reciprocated in accordance with the rotation of said crankshaft;
a first slider provided in said frame so as to be reciprocated

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in a first direction, and pivotally connected to said connection link;

a first link mechanism provided with a pair of first links pivotally connected to each other, wherein one of said first links is pivotally connected to either said connection link or said first slider so as to be folded and extended



while following up the reciprocating movement of said first slider;

a second slider provided in said frame displaceably in said first direction, and pivotally connected to the other first link; and

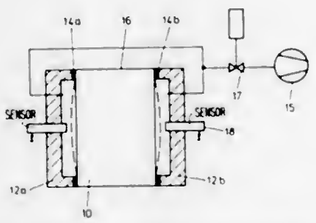
a mechanism for adjusting the position of said second slider in said first direction.

5,287,729

METHOD OF AND APPARATUS FOR A LEAKAGE TESTING

Martin Lehmann, Obere Farnbuhlstrasse 1, 5610 Wohlen, Switzerland

Filed May 31, 1991, Ser. No. 708,226
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017693
Int. Cl.[5] G01M 3/36
U.S. Cl. 73—49.3 22 Claims



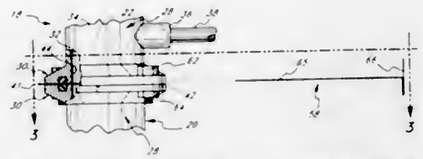
1. A method of leakage testing of closed containers having a flexible wall structure at least at certain areas thereof, the method comprising the steps of increasing an inner volume of the container, measuring a change of a variable caused by a leakage in the container, wherein the container is arranged such that at least one exterior wall area is subjected to an atmosphere of a medium having a pressure greater than an interior pressure of the leak proof container which results from the increase in volume thereof, and wherein said increase of the volume is produced by mounting a pulling member onto at least one flexible wall area and by generating a mechanical pull at said member.

5,287,730

PLUMBING LEAKAGE TEST APPARATUS AND METHOD OF USE

Duane R. Condon, Ramona, Calif., assignor to Securus, Inc., San Marcos, Calif.

Filed Jun. 18, 1992, Ser. No. 900,648
Int. Cl.[5] G01M 3/04
U.S. Cl. 73—49.8 31 Claims



1. An apparatus for permanent installation in a network of plumbing pipes to facilitate safe, simple and sanitary testing of said network for fluid leakage and to allow simple return of said network to normal operation after said testing, said apparatus comprising:

a first housing defining a generally circular through bore about a longitudinal axis, said first housing comprising:

a generally tubular portion, the interior of said tubular portion defining a portion of said bore and the exterior of said tubular portion being generally circular about said axis, a first end of said tubular portion being perpendicular to said axis and defining a distal end of said first housing, a second end of said tubular portion being disposed opposite said first end;

a flange having a first end adjacent said second end of said tubular portion and a second end defining a proximal end of said first housing, said second end of said flange defining a generally planar face perpendicular to said axis, said planar face having a first generally annular O-ring groove therein for receiving an O-ring; and

a port through said tubular portion for allowing introduction or removal of fluid through said port;

a second housing defining a generally circular through bore about a longitudinal axis, said second housing comprising:

a generally tubular portion, the interior of said tubular portion defining a portion of said bore and the exterior of said tubular portion being generally circular about said axis, a first end of said tubular portion being perpendicular to said axis and defining a distal end of said second housing, a second end of said tubular portion being positioned opposite said first end; and

a flange having a first end adjacent said second end of said tubular portion and a second end defining a proximal end of said second housing, said second end of said flange defining a generally planar face perpendicular to said axis, said planar face having a second generally annular O-ring groove therein for receiving an O-ring;

the axis of said second housing being generally collinear with the axis of said first housing, said proximal end of said second housing juxtaposing said proximal end of said first housing;

first and second resilient generally cylindrical sleeves having a through bore of a diameter generally equal to the outside diameter of said tubular portions for attaching said housings to pipes in said network;

securing means for securing said sleeves to said housing tubular portions and to the pipes and for preventing fluid leakage between said housing and the pipes;

a first O-ring received by said first O-ring groove, a portion of said first O-ring protruding from said first O-ring groove;

a second O-ring received by said second O-ring groove, a portion of said second O-ring protruding from said second O-ring groove;

a selectively removable, generally planar plate interposed between said first and second housings, said plate spanning the through bore of said first and second housings and contacting said first and second O-rings around their periphery, a portion of said plate extending outside said flanges and having a handle for facilitating grasping and manipulating of said plate; and

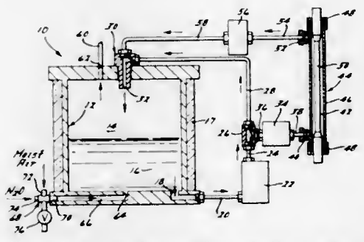
fastener means for urging said proximal ends of said first and second housings together and for urging said protruding portions of said first and second O-rings into contact with said plate, thereby forming generally fluid-tight seals with said plate to prevent fluid flow through said proximal ends of said first and second housings without allowing leakage through said seals, and allowing removal of said plate such that said O-rings contact each other about their respective protruding portions so as to form a sealed joint between said proximal ends of said first and second housings, thereby allowing fluid communication through said proximal ends of said first and second housings without allowing leakage from said bore through said joint, whereby insertion of said plate between said housings prevents fluid flow and allows pressure testing of said network and removal of said plate allows leakage-free fluid communication through said apparatus.

5,287,731

THERMO-OXIDATION ENGINE OIL SIMULATION TESTING

Dennis W. Florkowski, Southfield, and Theodore Selby, Midland, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 11, 1993, Ser. No. 74,529
Int. Cl.[5] G01N 11/00
U.S. Cl. 73—53.05 7 Claims



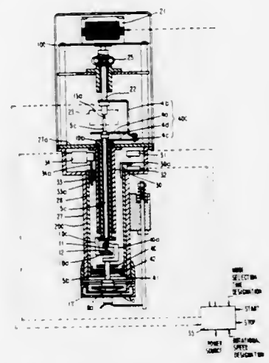
1. Apparatus for testing engine lubricating oil under simulated engine operating conditions, comprising: oil storage means defining an interior space for containing a quantity of engine lubricating oil; an elongated reactor enclosure with and inlet at one end and outlet at an opposite end for passage of said oil therethrough; means for pumping oil from the storage means to the reactor means and subsequently back to the storage means; a metal rod extending through the interior of the elongated reactor enclosure so that oil passes along its outer surface; means to introduce oxidizing agents to said oil; heating means for the metal rod whereby oil in the oil storage means is mixed with an oxidizing agent to develop partially oxidized products and is then passed into contact with the heated metal rod causing formation of oxidized products which are deposited on the surface of the metal rod for subsequent study.

5,287,732

ROTARY VISCOSIMETER

Koji Sekiguchi, Tokyo, Japan, assignor to Toki Sangyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01337, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO92/06365, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 859,466
Claims priority, application Japan, Oct. 3, 1990, 2-265715
Int. Cl.[5] G01N 11/14
U.S. Cl. 73—54.33 13 Claims



1. A rotary viscosimeter, comprising:

a rotor which is driven to rotate while contacting with a liquid of which a viscosity is to be measured;

a rotor shaft which supports the rotor and is a first drive shaft for transmitting a rotational drive force to the rotor;

rotating drive means having a drive power source for driving the rotor to rotate and an input shaft for outputting the drive power;

a second drive shaft for transmitting the drive power to the rotor shaft;

a first linking means for elastically linking said output shaft with the second drive shaft via a spring for transmitting the drive power therebetween;

support means having a pivot and a bearing for rotatably bearing and supporting the rotor shaft; and

a second linking means which bypasses said support means for linking the rotor shaft with the second drive shaft,

wherein said viscosimeter comprises rotational angular displacement detecting means for detecting a rotational angular displacement of said rotor shaft, viscosity calculating means for calculating said viscosity from the detected angular displacement, pivot protecting means having a locking mechanism for locking and unlocking the rotor shaft against and for rotating, respectively, a pivot separating mechanism for separating and contacting the pivot of said support means from and with the bearing, respectively, and

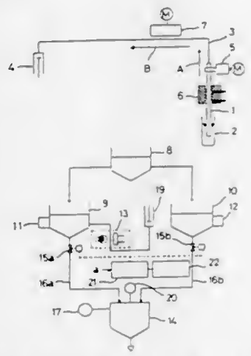
control means for controlling said rotating drive means and said pivot protecting means,

said pivot protecting means having a first state in which the rotor shaft is locked against rotating and the pivot of said support means is separated from the bearing and a second state in which the pivot of said support means is in contact with the bearing and locking of the rotor shaft is released; said control means having a control mode for measuring the viscosity by a spring relaxation method in which the control means controls the pivot protecting means so that the pivot protecting means is in the first and second state on starting and completion of measurement and in the second state during measurement and also controls said rotating drive means so that the torque on said spring of

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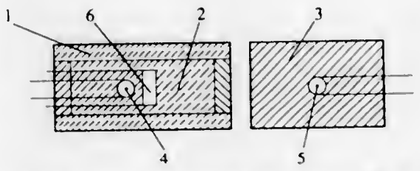
the first linking means reaches a preset desired value at the start of measurement.

5,287,733
APPARATUS FOR RECEIVING LIQUID TREATMENT SAMPLES FOR DISPOSAL
Narihiro Oku; Hitoshi Mitani, and Hiroaki Takahasi, all of Kyoto, Japan, assignors to Horiba Ltd., Kyoto, Japan and ABX S.A., Montpellier, France
Filed Sep. 23, 1991, Ser. No. 765,151
Claims priority, application Japan, Sep. 23, 1990, 2-253049
Int. Cl.[5] G01N *33/48, 35/00*
U.S. Cl. 73—64.56 **6 Claims**



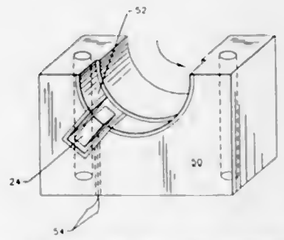
1. A system for removing blood samples from a measuring device comprising:
a cell for receiving a blood sample to enable measuring procedures on the blood sample;
a sealed waste receiving vessel connected to the cell;
means for reducing the pressure within the sealed waste receiving vessel;
means for measuring the pressure within the receiving vessel and providing a pressure signal; and
means for controlling the removal of the blood sample from the cells to the sealed waste receiving vessel in coordination with the pressure signal after the measuring procedures are completed.

5,287,734
THERMAL SENSOR
Kenneth J. Cuming, 68 Robinson Rd., Hawthorn, Victoria 3122, Australia
Filed Feb. 2, 1993, Ser. No. 13,814
Claims priority, application Australia, Feb. 13, 1992, PL0877
Int. Cl.[5] G01N *25/56*
U.S. Cl. 73—75 **18 Claims**



1. A soil moisture content sensing device intended in use to be embedded in a soil area to be sensed, said device comprising a porous media forming a first zone, a heated first temperature sensor arranged within said first zone, a second zone of a thermally conductive non-porous media, and a second reference temperature sensor located within said second zone, said sensors being connected to circuit means which includes means to provide power to heat said first temperature sensor, said circuit means including comparator means to compare outputs from said heated first temperature sensor and said second reference temperature sensor.

5,287,735
ENGINE MISFIRE OR ROUGHNESS DETECTION METHOD AND APPARATUS
Robert D. Klauber, and Erik B. Vigmostad, both of Fairfield, Iowa, assignors to Sensortech L.P., Fairfield, Iowa
Filed Dec. 10, 1990, Ser. No. 625,222
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **74 Claims**

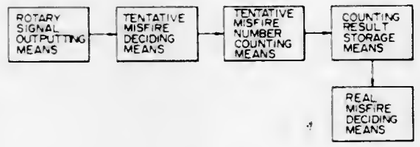


1. A method for detecting an abnormal combustion event in an internal combustion engine which produces a series of combustion events and which is coupled to a power transmitting member, said method comprising the steps of:
obtaining a first signal related to stress in the power transmitting member produced by a first at least one combustion event in the internal combustion engine;
obtaining a second signal related to stress in the power transmitting member produced by a second at least one combustion event in the internal combustion engine,
wherein the first and second signals are derived, at least in part, from magnetostrictive sensing means; and
comparing said first stress related signal to said second stress related signal to detect the abnormal combustion event in the operation of the engine.

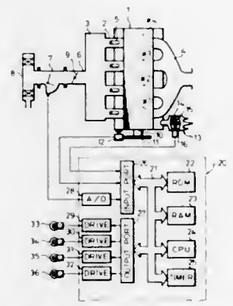
5,287,736
MISFIRE DETECTING APPARATUS FOR MULTICYLINDER INTERNAL COMBUSTION ENGINES
Masaaki Nakayama, Toyoake; Yasutoshi Baba, Obu; Hideki Morishima, Anjo; Isamu Nomura, Obu; Kouicbi Shimizu, Handa, and Yasuhito Takasu, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Sep. 28, 1992, Ser. No. 951,200
Claims priority, application Japan, Sep. 30, 1991, 3-251926; Nov. 26, 1991, 3-310982; Dec. 2, 1991, 3-317942; Aug. 7, 1992, 4-211471
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **13 Claims**

1. A misfire detecting apparatus for a multicylinder internal combustion engine comprising:
rotary signal outputting means for outputting a rotary signal at every predetermined rotary angle in accordance with the rotation of a multicylinder internal combustions engine;
tentative misfire deciding means for tentatively deciding, for each cylinder, whether or not misfire has occurred in said multicylinder internal combustion engine on the basis of the output signal from said rotary signal outputting means;
counting means for counting, for each cylinder, the number of tentative misfires decided by said tentative misfire deciding means;
counting result storage means for storing, for each cylinder, a counting result of said counting means; and
real misfire deciding means for deciding, after a given number of tentative misfire decisions, that misfire has actually occurred only if the counting result, for a part of the cylinders, among the counting results for respective cylinders stored in said counting result storage means is larger than a predetermined number.

12. A misfire detecting apparatus for an internal combustion engine comprising:
rotary signal outputting means for outputting a rotary signal at every predetermined rotary angle in accordance with the rotation of an internal combustion engine;
rotational speed change calculating means for detecting a rotational speed of said internal combustion engine on the basis of the rotary signal from said rotary signal outputting means and calculating changes of the rotational speed of said internal combustion engine; and
misfire detecting means for deciding that misfire has occurred in said internal combustion engine, if a shape of the distribution of a plurality of calculation results obtained by said rotational speed change calculating means when said internal combustion engine rotates by a predetermined number of times of rotation is not a normal distribution shape.

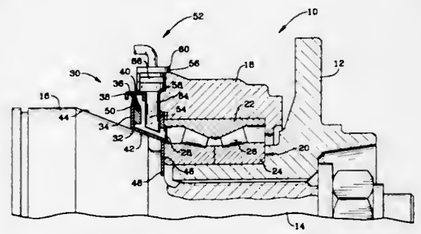


5,287,737
DEVICE FOR DETERMINING MISFIRING OF A CYLINDER OF A MULTICYLINDER ENGINE
Kouichi Osawa, Susono, and Hideki Morishima, Anjo, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of Japan
Filed Jul. 16, 1992, Ser. No. 914,833
Claims priority, application Japan, Jul. 19, 1991, 3-179603
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **3 Claims**



1. A device for determining a misfire of a cylinder of a multicylinder engine having a crankshaft rotatably supported by the engine body, said device comprising:
a velocity detecting means for detecting an angular velocity of the crankshaft rotation relative to the engine body in power stroke periods of respective cylinders;
a difference calculating means for calculating differences of said angular velocities in the power stroke periods of two respective cylinders;
a misfire determining means for determining that a misfire has occurred when said difference of the angular velocities becomes larger than a predetermined set value;
an operating condition detecting means for detecting operating conditions of the engine, wherein said operating condition detecting means detects a revolution speed of the engine and an operating load of the engine; and
a control means for controlling operation of said misfire detecting means when the engine operating conditions coincide with a predetermined condition in which the vibration of the engine is increased, wherein said predetermined condition in which the vibration of the engine is increased is defined as a function of the revolution speed and the operating load of the engine, and wherein said control means prohibits said misfire determining means from carrying out said determining operation of a misfire when the engine operating condition coincides with said predetermined condition.

5,287,738
SENSOR SYSTEM FOR ANTILOCK BRAKES
Mark A. Polinsky, Torrington; James A. Hilby, Litchfield, and Michael C. Brauer, Goshen, all of Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Oct. 30, 1992, Ser. No. 969,659
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **24 Claims**



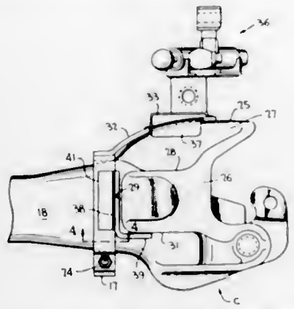
1. A sensor system for use with an antilock brake, constant velocity joint, spindle bearing inner race and steering knuckle, the sensor system comprising:
an encoded target;
target mounting means, adapted to be clamped between said constant velocity joint and said spindle bearing inner race, for mounting the encoded target for rotation with said wheel spindle over which the spindle bearing inner race is mounted; and
probe means, adapted to be mounted on said steering knuckle within which the constant velocity joint is mounted, for sensing the encoded target and for generating a signal indicative of rotation of the wheel spindle.

5,287,739
MOUNTING BRACKET FOR RAILWAY CAR COUPLER
Ronald L. Kingsbury, Roanoke, Va., assignor to Norfolk Southern Railway Co., Norfolk, Va.
Filed Sep. 1, 1992, Ser. No. 937,677
Int. Cl.[5] G01L *5/28*
U.S. Cl. 73—129 **8 Claims**

1. A bracket for mounting equipment to a coupler shaft of substantially rectangular cross-section of a railway car coupler comprising, split strap means adapted to embrace the coupler shaft, means for tightening said strap means in place about the shaft, said strap means having a first flange of arcuate shape

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adapted to engage a side surface of the car coupler of substantially complementary arcuate shape for stabilizing said strap



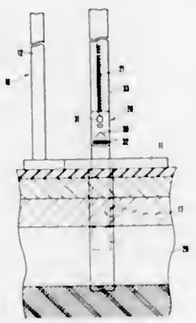
means when in place about the coupler shaft, said flange having a support surface on which the equipment can be affixed.

5,287,740

METHOD FOR LOCATING AND EXAMINING CAVITIES UNDER PAVED ROADS

Hiroshi Tomita, Tokyo, Japan, assignor to Geo Search Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 949,789
Claims priority, application Japan, Sep. 27, 1991, 3-249185
Int. Cl.[5] G01N *19/00*
U.S. Cl. 73—146 **10 Claims**



1. A method for examining a cavity present under a paved road, comprising the steps of:

detecting an abnormal portion under said paved road which may contain a cavity or a foreign substance through investigation of said paved road by a cavity examination vehicle mounted with underground radar means while traveling on said paved road as a primary investigation;

applying a network of investigation around the place considered to contain any abnormalities by using a pushcart type underground radar means as a secondary investigation;

boring an investigation hole with a small diameter at a place wherein said cavity as well as its planar extent are determined by said secondary investigation;

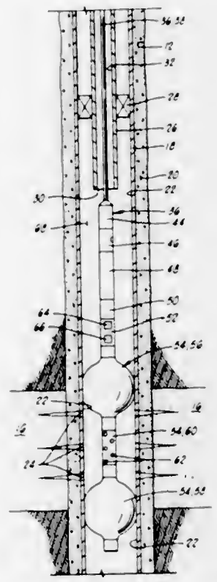
knowing conditions of said cavity and the ground under said paved road by photographing an inner circumferential wall of said bored investigation hole by photographing means.

5,287,741

METHODS OF PERFORATING AND TESTING WELLS USING COILED TUBING

Roger L. Schultz, Richardson, Tex., and Gary O. Harkins, AS Wassenaar, Netherlands, assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 31, 1992, Ser. No. 938,066
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 **20 Claims**



1. A method of testing a subsurface zone of a production well, said well having a casing set in a borehole intersecting said subsurface zone, said casing having a casing bore, said well further having a production tubing string received within said casing and having a production tubing bore, and a production facet sealing between said casing bore and said production tubing string above said subsurface zone, said well having previously been on production by flowing well fluid up through said production tubing bore, said method comprising:

(a) shutting down production of said well through said production tubing bore;

(b) leaving said production tubing string in place in said well and running a coiled tubing test string downward into said production tubing string, said coiled tubing test string including a coiled tubing string, a tester valve carried by said coiled tubing string for controlling flow of well fluid from said subsurface zone up through said production tubing bore, and a test packet carried by said coiled tubing string;

(c) setting said test packer within one of said casing bore and said production tubing bore above said subsurface zone;

(d) opening and closing said tester valve to perform drawdown and build-up tests on said subsurface zone by selectively flowing well fluids therefrom up through said coiled tubing string and then shutting in said coiled tubing string;

(e) after step (d), removing said coiled tubing test string from said production tubing string, and

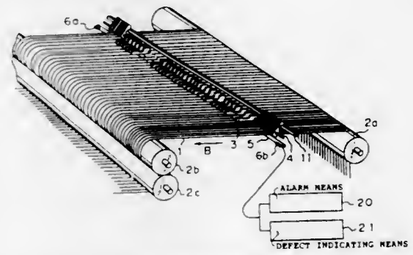
(f) resuming production of said well up through said production tubing bore.

5,287,742

DEVICE FOR DETECTING DEFECTS OF WEB

Kintaro Aihara, and Shinji Yamazaki, both of Chiba, Japan, assignors to Nippon Petrochemicals Company Ltd. and Polymer Processing Research Inst., Ltd., both of Tokyo, Japan

PCT No. PCT/JP92/00013, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO92/12410, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 10, 1992, Ser. No. 923,933
Claims priority, application Japan, Jan. 10, 1991, 3-12438
Int. Cl.[5] G01D *5/28*
U.S. Cl. 73—159 **15 Claims**



1. A device for detecting defects in a web comprising:

conveying means for conveying a web in a predetermined direction,

holding means arranged near said web,

at least one probe rotatably pivotally attached to said holding means for making contact with the web, and

detecting means generating an output signal in response to the rotational movement of said probe,

wherein said web comprises a laminated nonwoven fabric comprising a first web having a network structure comprising longitudinal ribbons generally extending parallel to the conveying direction and oblique ribbons extending obliquely and connected to the longitudinal ribbons, and a second web having a network structure comprising lateral ribbons generally extending perpendicular to the conveying direction; said probe comprising at least one first probe arranged so that it detects defects of the oblique ribbons between the adjacent longitudinal ribbons in a manufacturing process of said first web prior to the lamination, and at least one second probe arranged so that it detects defects of said laminated nonwoven fabric; said first probe being made of a material lighter than a material of said second probe.

5,287,743

MANUAL TRANSMISSION SHIFTER

Miles G. Doolittle, Royal Oak, Mich.; Anthony R. Gurney, Toledo, Ohio, and William J. LaRocca, Sterling Heights, Mich., assignors to Dura Mechanical Components, Inc., Troy, Mich.

Filed Sep. 24, 1992, Ser. No. 950,462
Int. Cl.[5] G05G *7/00*
U.S. Cl. 74—471 XY **17 Claims**

1. A shifter operatively connected to a pair of transmission control cables, comprising

a base,

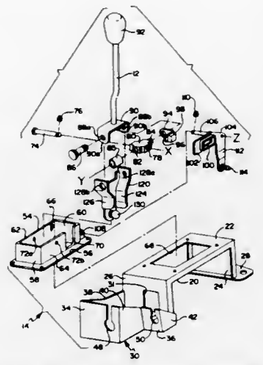
a shift lever,

a lever support mounted on the base and mounting said lever for movement about first and second orthogonal axes,

a cable control member attached at one end to one of the control cables and at its other end to said lever support for movement independent of pivotal movement of the shift lever about said second axis,

a bellcrank pivotally mounted on the base, and

a control arm pivotally connecting one leg of the bellcrank to the lever for movement of the bellcrank by movement of the shift lever about said second axis,



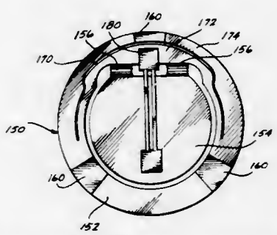
the other leg of the bellcrank being operatively connected to the other control cable, whereby movement of the shift lever about the first axis operates said one cable without moving said other cable.

5,287,744

ACCELEROMETER WITH FLEXURE ISOLATION

Brian L. Norling, Mill Creek; Mitchell J. Novack, Kirkland, and Peter H. LaFond, Redmond, all of Wash., assignors to Sundstrand Corporation, Rockford, Ill.

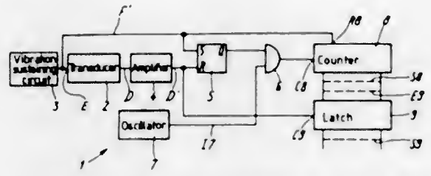
Continuation of Ser. No. 535,785, Jun. 11, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,816
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—497 **1 Claim**



1. In an accelerometer for measuring acceleration along a sensing axis, the accelerometer having a reed that includes a paddle, a support and means including a flexure for providing a flexural connection between the paddle and the support such that the flexure supports the paddle for movement with respect to said support in response to acceleration, the support including at least one mounting pad, the accelerometer further comprising mounting means for contacting the mounting pad to thereby mount the reed, the improvement wherein said support means includes means including an inner ring and an outer ring coupled to each other, said outer ring being coupled to said mounting pad and said inner ring being disposed between said outer ring and said flexure for supporting said flexure while isolating said flexure from stresses coupled into the reed through the mounting pad and wherein the accelerometer further comprises a force transducer connected between the inner ring and the paddle.

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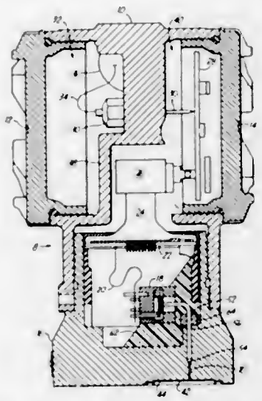
5,287,745
ANGULAR SPEED MEASURING DEVICE
Silvio Dalla-Piazza, St-Imier, Switzerland, assignor to Asulab S.A., Bienne, Switzerland
Filed May 29, 1992, Ser. No. 890,928
Claims priority, application France, May 31, 1991, 91 06708
Int. Cl.[5] G01P *15/00*
U.S. Cl. 73—505 **3 Claims**



1. Measurement device for measuring an angular speed, comprising:
a transducer intended to rotate at said angular speed;
means for producing an exciting signal having a first frequency;
means for exciting a first vibration of said transducer in response to said exciting signal;
means for producing a detection signal including at least one component having a amplitude representative of the amplitude of a second vibration of said transducer, said second vibration being coupled to said first vibration and having an amplitude representative of said angular speed; and
means for producing a measurement signal representative of said angular speed in response to said detection signal, including means for producing a signal representative of the phase shift between said exciting signal and said detection signal, said phase-shift being representative of said amplitude of said component of the detection signal, wherein said means for producing a signal representative of said phase-shift include:
means responsive to said exciting signal for producing a first logic signal having said first frequency and in phase with said exciting signal;
means responsive to said detection signal for producing a second logic signal in phase with said detection signal;
means for producing a signal comprising a plurality of periodic pulses having a second frequency grater than said first frequency; and
counting means including a counter and means responsive to one of said logic signals to start the counting of said pulses by said counter and to the other of said logic signals to stop said counting, the outputs of said counter presenting, immediately after said stop, a first number that is equal to the number of said pulses counted by said counter between said start and said stop, and the value of said first number being representative of said phase-shift.

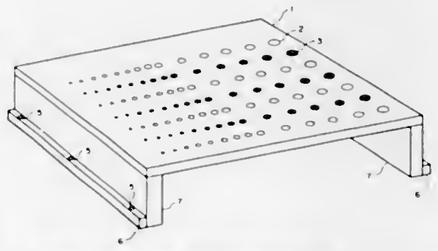
5,287,746
MODULAR TRANSMITTER WITH FLAME ARRESTING HEADER
David A. Broden, Chanhassen, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.
Filed Apr. 14, 1992, Ser. No. 868,451
Int. Cl.[5] G01L *7/08, 9/00*
U.S. Cl. 73—706 **12 Claims**

1. A transmitter for sensing a pressure of a process fluid comprising:
sensing means disposed within the transmitter for providing an output representative of pressure;
a header having a chamber on an outer face and a passageway extending from the chamber to a tapered opening inside the transmitter, the passageway having a first portion adjacent the tapered opening shaped to receive an inlet tube leading to the sensing means and having a second flame isolating portion open to the chamber;
a diaphragm transferring the pressure of the process fluid acting on an outer surface of the diaphragm to a substantially noncompressible fill fluid that isolates an inner surface of the diaphragm, the fill fluid filling the chamber, the passageway and the inlet tube, and the pressure of the fill



fluid being sensed by the sensing means, where an outer periphery of the diaphragm is sealingly attached to the outer face of the header; and
a seal in the tapered opening around the inlet tube for sealing in the fill fluid, the flame isolating second portion of the passageway being shaped to provide flame isolation for flame isolating the tapered seal around the inlet tube and an interior of the inlet tube from the process fluid.

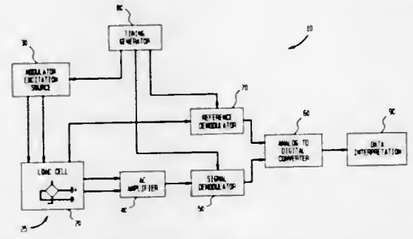
5,287,747
BOLT AND NUT EVALUATOR
James J. Kerley, Greenbelt; Raymond Burkhardt, Severn, and Steven White, Upper Marlboro, all of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed May 19, 1992, Ser. No. 885,697
Int. Cl.[5] G01D *7/02*
U.S. Cl. 73—761 **5 Claims**



1. A device for testing fasteners comprising:
a fixed base plate having a plurality of holes of varying size for receiving said fasteners to be tested;
torque marking paper affixed to said fixed base plate for receiving torque-angle indicia;

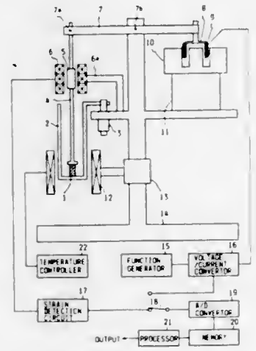
a torque applying means for applying torque to said fasteners being tested; and
means for indicating said applied torque.

5,287,748
METHOD AND APPARATUS FOR CHANGING THE SENSITIVITY OF A TRANSDUCER
Paul C. Talmadge, Ansonia, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed May 1, 1992, Ser. No. 876,994
Int. Cl.[5] G01L *1/26*
U.S. Cl. 73—769 **8 Claims**



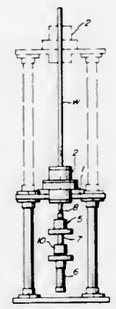
1. A method of changing the sensitivity of a transducer, comprising the steps of:
(a) applying a cyclic excitation signal to said transducer, said excitation signal having a plurality of recurring phases of different amplitudes;
(b) receiving an output signal from said transducer, said output signal having a like plurality of recurring phases corresponding to said phases of said excitation signal; and
(c) selecting for data acquisition one of said recurring phases of said output signal.

5,287,749
THERMOMECHANICAL ANALYZER
Nobutaka Nakamura, Tokyo, Japan, assignor to Seiko Instruments, Inc., Tokyo, Japan
Filed Oct. 11, 1991, Ser. No. 774,092
Claims priority, application Japan, Oct. 11, 1990, 2-272818
Int. Cl.[5] G01N *3/32*
U.S. Cl. 73—808 **2 Claims**



1. A thermomechanical analyzer comprising:
a function generator for generating an analog sine wave signal;
a stress applier connected to said functioning generator for applying a sine wave stress to a sample piece according to the sine wave signal;
strain detecting means operatively connected for detecting a strain induced in the sample piece by the stress applier and for producing an analog output signal representing the strain induced in this sample piece;
an analog-to-digital converter connected to said function generator and said strain detecting means for converting the analog sine wave signal and the analog output signal procured by said strain detecting means into corresponding digital values;
a memory connected to said converter for storing the digital values;
a processor connected to receive stored digital values from said memory for carrying out fourier transform of the stored digital values to produce a representation of the dynamic viscoelasticity of the sample piece;
and adjusting means for causing the digital values corresponding to the output signal produced by said strain detecting means to represent substantially only frequency components of the output signal produced by said strain detecting means at frequencies not less than the frequency of the analog sine wave signal.

5,287,750
APPARATUS FOR INSPECTING MECHANICAL STRENGTH OF BOTTOM PORTIONS OF BOTTOM-CLOSED HOLLOW PIPES
Satoru Yamada, and Koji Tanaka, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan
Continuation of Ser. No. 685,144, Apr. 15, 1991, Pat. No. 5,197,335. This application Oct. 5, 1992, Ser. No. 956,388
Claims priority, application Japan, Apr. 21, 1990, 2-105748
The portion of the term of this patent subsequent to Mar. 30, 2000, has been disclaimed.
Int. Cl.[5] G01N *3/10*
U.S. Cl. 73—825 **7 Claims**



1. A bottom strength-inspecting system for bottom-closed hollow pipes, said system comprising an air chuck for holding an outer peripheral surface of the bottom-closed hollow pipe, and a pressing means for contacting and pressing by given forces a bottom surface of the bottom-closed hollow pipe, said pressing means being longitudinally coaxially provided with the air chuck and being longitudinally axially movable with respect to the bottom-closed hollow pipe while said bottom-closed hollow pipe is held longitudinally axially stationary by the air chuck, said pressing means comprising an elastic pressing element.

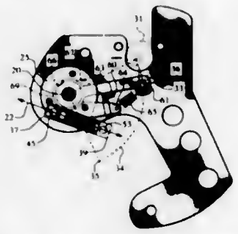
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5,287,751

DRIVE LINK FOR GAS METER COUNTER ASSEMBLY

John D. Morreale, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 30, 1992, Ser. No. 969,601
Int. Cl.[5] G01F *15/02*
U.S. Cl. 73—861.01 7 Claims



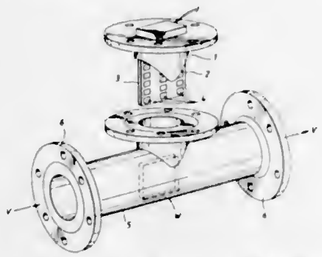
7. In a drive train of a computer mechanism of a counter assembly of a fluid meter wherein said train includes a crank connected to an input hub of a one-way clutch by a link reciprocable in opposite directions for oscillating the input hub in response to the flow of fluid through the meter the improvement comprising, said link having opposite ends with one of said ends being pivotally and eccentrically fixed to said input hub and the other of said ends being pivotally and eccentrically fixed to said crank, and a resiliently elongatable intermediate section urging said opposite ends toward each other.

5,287,752

MEASURMENT OF GAS AND LIQUID FLOWRATES AND WATERCUT OF MULTIPHASE MIXTURES OF OIL, WATER AND GAS

Johannis J. Den Boer, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 23, 1992, Ser. No. 872,377
Claims priority, application United Kingdom, Apr. 26, 1991, 9109074.6
Int. Cl.[5] G01F *1/74*
U.S. Cl. 73—861.04 7 Claims



1. A method for determining liquid and gas flowrates and/or watercut of multiphase mixtures of oil, water and gas flowing through a horizontal or inclined pipeline in an intermittent type of flow, comprising

a) locating a pair of stationary/parallel plates inside the horizontal pipe in line with the flow, said plates being positioned in the vertical plane and at least one of said plates comprising a plurality of segmented electrodes, the segments of an electrode being located one below another to form a nxm matrix of n columns and m rows of capacitor plates and the other plate of said pair comprising at least one continuous electrode, arranged in such a manner that a segmented electrode on the first plate and the electrode on the second plate form a capacitive sensor that gives a signal related to the mixture of oil, water and gas that happens to be between the electrodes;

b) measuring by impedance the level of the liquid to gas interface in the pipeline and the void fraction across the whole cross-section of the pipeline, the measuring being obtained from a single column of sensors;

c) continuously measuring the intermittent flow velocity by timing the passage of disturbances within the flow patterns between matrix segments located on a same row near the top of the pipeline;

d) continuously measuring liquid phase velocity between matrix segments located on the same level or row by cross-correlating the variations in impedance between them; and

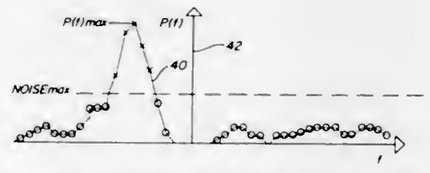
e) deriving from the above measuring quantities the flowrates for both the liquid and the gas.

5,287,753

CONTINUOUS DISPLAY OF PEAK AND MEAN BLOOD FLOW VELOCITIES

Helen F. Routh, Kirkland; Charles W. Powrie, Jr., Bellevue, and Roy B. Peterson, Redmond, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed May 2, 1992, Ser. No. 892,301
Int. Cl.[5] G01F *1/00*
U.S. Cl. 73—861.25 13 Claims



1. Ultrasonic diagnostic apparatus for providing Doppler information concerning flow velocities comprising:

means for acquiring Doppler signals from a region of a body;

means for processing said Doppler signals to produce spectral line data representing frequency or velocity for continuous display of a succession of spectral lines during the continuation of Doppler signal acquisition;

means for analyzing the data of a plurality of said spectral lines to determine a threshold level;

means for utilizing said threshold level and said spectral line data of a first successive spectral line to identify a peak velocity value in said first successive spectral line prior to the display of said first successive spectral line; and

means for displaying said first successive spectral line and its identified peak velocity value prior to the display of a second successive spectral line.

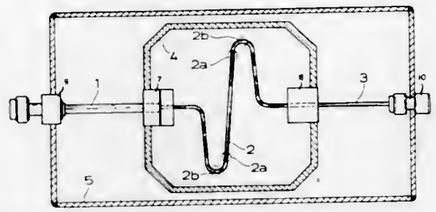
5,287,754

MASS FLOW METER

Ioannis Kazakis, Karlsruhe, Fed. Rep. of Germany, assignor to Krohne Messtechnik Massametron GmbH & Co., Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 893,388
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1991, 4118877; Sep. 3, 1991, 4129181
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 14 Claims

1. A mass flow meter for flowing media that works on the Coriolis Principle with a meter housing, a line inlet, at least one Coriolis line carrying a flowing medium, a line outlet at least one oscillator acting on the Coriolis line, at least one oscillation transducer detecting Coriolis forces and/or Coriolis oscillations based on Coriolis forces and a carrier system, wherein the line inlet, the Coriolis line and the line outlet are connected to the carrier system, the Coriolis line is supported by the carrier system and the carrier system is supported within the housing by the line inlet and the line outlet characterized by the fact that the carrier system's natural frequency is substantially



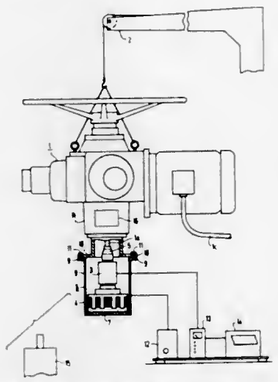
greater than the Coriolis line natural line frequency and the Coriolis natural frequency as well as the flow meter natural frequency, the flow meter natural frequency being equal to the natural frequency of the structural unit comprised of the line inlet, the carrier system and the line outlet.

5,287,755

PROCESS AND APPARATUS FOR VERIFYING THE CUT-OFF TORQUE OF AN ACTUATOR

Willi Stecher, Lauf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 898,487
Claims priority, application European Pat. Off., Dec. 14, 1989, 89123148.2
Int. Cl.[5] G01L *5/24*
U.S. Cl. 73—862.23 12 Claims



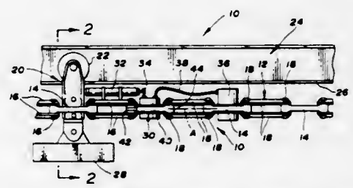
1. A process for verifying the cutoff torque of an actuator of an armature, the actuator having a driven shaft for the armature, a final torque switch and at least one electric lead, which comprises lifting the actuator away from the armature while keeping at least one electric lead connected to the actuator, connecting a torque measuring shaft and a brake connected to the torque measuring shaft to the driven shaft of the actuator, operating the actuator in the immediate vicinity of the armature and then braking the actuator until response of the final torque switch to ascertain a cutoff torque, and comparing the cutoff torque with a setpoint cutoff torque.

5,287,756

TRANSDUCER FOR SENSING TENSION LOADING OF A CONVEYOR CHAIN

William P. Tassic, 42036 Queen Anne Ct., Northville, Mich. 48167

Continuation of Ser. No. 711,931, Jun. 7, 1991, Pat. No. 5,207,108. This application Apr. 19, 1993, Ser. No. 49,170
The portion of the term of this patent subsequent to May 4, 2000, has been disclaimed.
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.391 13 Claims



1. A transducer for sensing tension loading of a conveyor chain of the type including single and dual links pivotally connected in an alternating relationship along an axis thereof, the transducer comprising: a transducer link having opposite ends for connection along the chain between links thereof such that the transducer link extends along the axis of the chain; one of the ends of the transducer link having a bifurcated shape including a pair of spaced legs with aligned connection pin openings that have elongated shapes along the axis of the chain; the other end of the transducer link including a connection pin opening; a transducer member located between the ends of the transducer link and including at least one strain gauge; and a clamp including: (a) a connector end located between the spaced legs of the one end of the transducer link and having a connection pin opening aligned with the elongated connection pin openings of the spaced legs such that the legs normally do not carry any tension loading of the chain but can carry the chain tension upon failure of the transducer member, (b) a shank that extends from the connector end toward the other end of the transducer link, and (c) a clamp that is connected to the shank to compress the transducer member as tension loading is applied between the opposite ends of the transducer link.

5,287,757

STRAIN-GAUGE TRANSDUCER

Rémy Polaert, Villecresnes; Jean-Pierre Hazan, Sucy en Brie, and Francois Maniguet, Marles en Brie, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1992, Ser. No. 846,371
Claims priority, application France, Mar. 8, 1991, 91 02814
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.627 13 Claims



1. A strain-gauge transducer comprising:

a strain gauge enclosed between pressure members, the strain gauge including a plate-shaped substrate provided with strain-detection elements,

at least one spring disposed between said substrate and one of the pressure members so as to be deformed in conjunction with said substrate by force exerted by the pressure members wherein said substrate exclusively contacts said

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spring in an arrangement such that the substrate is not connected to the spring, said spring having a flexibility larger than that of the substrate.

5,287,758

TEMPERATURE CONTROLLED PIPETTE TUBE

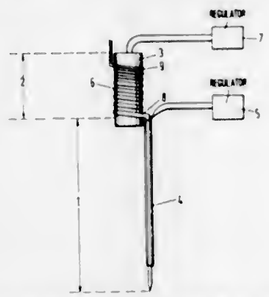
Manfred Geiss, Frankfurt am Main; Wolfgang Heide, Darmstadt; Jurgen Wittekind, Frankfurt am Main, and Michael Breetz, Steinberg, all of Fed. Rep. of Germany, assignors to Behringwerke AG, Marburg, Fed. Rep. of Germany

Continuation of Ser. No. 825,079, Jan. 24, 1992, abandoned. This application May 6, 1993, Ser. No. 57,517

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102336; European Pat. Off., Nov. 14, 1991, 91119406

Int. Cl.[5] B01L *03/02*; H05B *03/14, 01/02, 06/10*

U.S. Cl. 73—864.01 10 Claims



1. A heatable pipette apparatus for heating and maintaining a liquid conveyed in the pipette apparatus to a desired temperature, the pipette apparatus comprising:

a pipette tube having a first zone and a second zone, the first zone including a tip end;

first heating means for heating the first zone;

second heating means for heating the second zone;

first and second regulating means for separately regulating the temperature of the first heating means and the second heating means, respectively, the first regulating means rapidly adjusting the temperature of the liquid toward the desired temperature, and the second regulating means finely adjusting the temperature to achieve and maintain the desired temperature.

5,287,759

METHOD AND APPARATUS OF MEASURING STATE OF IC LEAD FRAME

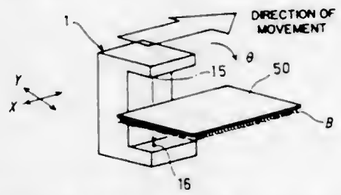
Noriaki Kaneda, Tokyo, Japan, assignor to Adtec Engineering Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,971

Claims priority, application Japan, Aug. 29, 1991, 3-244468

Int. Cl.[5] G01B *11/14*

U.S. Cl. 73—865.8 5 Claims



1. A method of measuring a state of an IC lead frame comprising the steps of:

projecting a first image of an upper edge of a lead terminal of the IC lead frame on a reference surface; projecting a second image of said upper edge on the reference surface, the second image of said upper edge being projected at an angle different from the angle at which said first image is projected;

projecting a first image of a lower edge of the lead terminal on the reference surface; projecting a second image of said lower edge on said reference surface, the second image of said lower edge being projected at an angle different from the angle at which said first image of said lower edge is projected;

detecting said images; and

computing the state of the lead terminal from the detection of said images.

5,287,760

POWER TRANSMISSION DEVICE FOR PRESS MACHINE

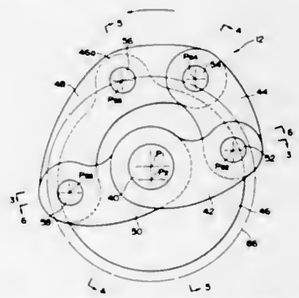
Akihiro Yoshida, Gifu, Japan, assignor to Kabushiki Kaisha Yamada Dobby, Bisai, Japan

Filed Nov. 5, 1992, Ser. No. 972,161

Claims priority, application Japan, Jul. 24, 1992, 4-217536

Int. Cl.[5] F16H *21/00, 21/18*

U.S. Cl. 74—68 9 Claims



1. A power transmission device for a press machine for transmitting rotation of a fly-wheel to a crankshaft, comprising:

first transmission means rotated around a first axis upon receipt of the rotation of said fly-wheel;

second transmission means connected to said first transmission means so as to be rotated around a second axis made eccentric from said first axis by the rotation of said first transmission means;

third transmission means pivotally connected to said second transmission means so as to be rotated around said first axis by the rotation of said second transmission means, and connected to said crankshaft so as to rotate said crankshaft; and

regulation means for regulating the rotary motion of said second transmission means relative to said second axis to a rotational movement along a hypothetical circle centered on said second axis;

wherein said second transmission means includes a first link pivotally connected to said first transmission means and a second link pivotally connected to said first link and said third transmission means at different portions, respectively; and

said second transmission means is engaged with said regulation means at an engagement portion moved along said hypothetical circle in accordance with the rotation of the second transmission means.

5,287,761

DEVICE AND METHOD FOR MICRO DISPLACEMENT

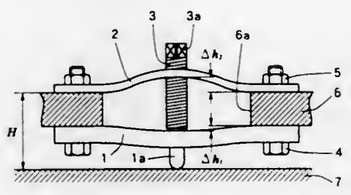
Hiroyuki Fujii, and Mamoru Abe, both of Saitama, Japan, assignors to Hitachi Metals Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,114

Claims priority, application Japan, Sep. 27, 1991, 3-248921

Int. Cl.[5] F16H *1/18*

U.S. Cl. 74—424.8 R 8 Claims



1. A fine displacement device for establishing a measured micro displacement comprising:

first and second plate members disposed in spaced relation to each other to define a gap therebetween and fixed directly or indirectly to each other at adjacent portions thereof; and

input means for changing said gap between said two plate members by deforming said plate members elastically in a direction perpendicular to said plate members,

wherein a distance between a plane of said first plate member and a deformed portion of said first plate member is used as a measure for establishing said micro displacement.

5,287,762

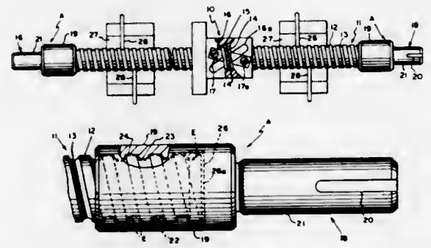
RECIRCULATING BALL NUT AND SHAFT ASSEMBLY

Michael J. Bonzak, Bay City, Mich., assignor to Thomson Saginaw Ball Screw Company, Inc., Saginaw, Mich.

Continuation-in-part of Ser. No. 812,747, Dec. 23, 1991, Pat. No. 5,199,169. This application Feb. 24, 1993, Ser. No. 22,717

Int. Cl.[5] F16H *25/22*

U.S. Cl. 74—424.8 R 8 Claims



1. A recirculating ball nut and ball shaft assembly comprising:

(a) a ball race device with internal land and ball receiving groove portions, and incorporating a recirculating ball circuit with balls;

(b) a ball shaft of a predetermined axial length, with complemental groove and land portions for cooperatively receiving the balls, on which said ball race device is mounted interjacent the ends of the shaft, said groove and land portions of said shaft extending to at least one terminal end portion of the shaft;

(c) a pre-machined end component of predetermined length having an outboard bearing surface, and a sleeve disposed axially over the at least one terminal end portion of the shaft and providing a clearance space between the sleeve and shaft;

(d) and a hardened adhesive key disposed between the sleeve and the at least one terminal end portion of the shaft to adhesively and mechanically unite them.

5,287,763

TILT TYPE STEERING SYSTEM

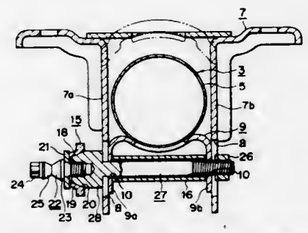
Toshiyuki Nagashima, Maebashi, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,321

Claims priority, application Japan, Sep. 6, 1991, 3-79790[U]

Int. Cl.[5] B62D *1/18*

U.S. Cl. 74—493 1 Claim



1. A tilt type steering system mounted to a car body, comprising:

a steering column having one end part into which a handle shaft fixed with a steering wheel is rotatably inserted;

supporting means supporting another end part of said steering column on a pivot axis such that said steering column is pivotally movable about said pivot axis relative to the car body;

adjusting means for adjustably locating and releasably fixing said steering column relative to the car body within a range of pivotal movement of said steering column, whereby a location of said steering wheel can be adjustably fixed relative to the car body; and

a tilt lever for controlling fixation and release of said steering column relative to the car body by said adjusting means;

wherein said adjusting means includes a lift bracket fixed to a mid-part of said steering column and having two side portions disposed to either side of an axis of said steering column, said side portions having respective notches formed therein; a fixed bracket fixed to the car body and having side portions which slidably engage said side portions of said lift bracket during pivotal movement of said steering column and which have slits that oppose said notches of said side portions of said lift bracket over said range of pivotal movement of said steering column; an adjust bolt penetrating said notches and said slits; an adjust nut screwed to said adjust bolt and cooperable with said adjust bolt to fasten said lift bracket to said fixed bracket; a rotation preventive mechanism for preventing rotation of said adjust nut; and a shearing bolt fixing said tilt lever to said adjust bolt, a head part of said shearing bolt having been shorn off by application of a predetermined torque in the fixing of said tilt lever to said adjust bolt.

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5,287,764

DEVICE FOR ACTUATING A HYDRAULIC POWER STEERING SYSTEM

Wilhelm Beer, Russelsheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

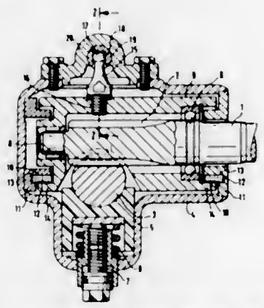
PCT No. PCT/EP91/01039, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO92/08637, PCT Pub. Date May 29, 1992

PCT Filed Jun. 6, 1991, Ser. No. 910,259

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1990, 4036743

Int. Cl.[5] B62D *5/06*

U.S. Cl. 74—498 24 Claims



1. A device for actuating a hydraulic power steering system for automotive vehicles inhering the following features:

a steering shaft non-rotatably coupled with a steering wheel is furnished with a pinion and is supported in a sleeve,

the pinion is engaged with a gear rack coupled to wheels to be steered,

the sleeve is supported in a steering gear housing so as to be pivotable about a parallel axis in relation to the steering shaft, and it comprises a recess to enable the pinion to engage into the gear rack, and on it a pin-shaped extension is secured vertically relative to the steering shaft, the extension actuating a valve slide of a steering valve designed as a linear slide valve,

a spring which presses the gear rack against the pinion simultaneously stabilizes the support of the sleeve in the steering gear housing, characterized by the following further features:

two needle bearings between the sleeve and the steering gear housing are formed by two needles,

the two needle bearings are designed on different sides of the gear rack,

the bearing axis interconnecting the two needle bearings is farther away from the steering shaft center line than the point of force transmission between the pinion and the gear rack, and it is placed on the same side of the steering shaft center line as the latter point (both axes and the point lie in one plane), and the valve slide is biassed by a captivated spring.

5,287,765

HAND ACTUATED CABLE DISPLACEMENT SYSTEM

Brian Scura, 13566 Yockey St., Garden Grove, Calif. 92644

Continuation of Ser. No. 461,027, Jan. 4, 1990, abandoned. This application Feb. 6, 1992, Ser. No. 832,677

Int. Cl.[5] F16C *1/10*; G05G *11/00*

U.S. Cl. 74—502.2 24 Claims

1. An improved hand-operated, four-bar linkage lever mechanism in combination with a cable;

said improved hand-operated, four-bar linkage lever mechanism comprising:

a bracket attachable to a handlebar structure for support,

a hand-actuable lever moving with respect to said bracket,

a first link having a first end and a second end, with said first end pivotally attached to said bracket at a first pivot axis and said second end pivotally attached to said hand-actuable lever at a second pivot axis;

a second link having a first end and a second end, with said



first end pivotally attached to said bracket at a third pivot axis and said second end pivotally attached to said hand-actuable lever at a fourth pivot axis, the improvement therein comprising:

means for directly attaching said cable to said first link at a position offset from said first pivot axis and said second pivot axis, whereby a force applied to said hand-actuable lever will be transferred to said cable.

5,287,766

SPEED CONTROL APPARATUS FOR A BICYCLE

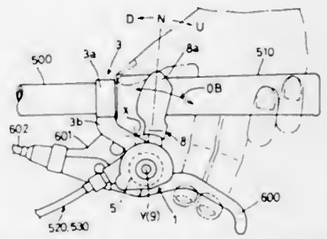
Masashi Nagano, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Apr. 16, 1992, Ser. No. 869,010

Claims priority, application Japan, Apr. 19, 1991, 3-087974

Int. Cl.[5] F16C *1/10*

U.S. Cl. 74—502.2 5 Claims



1. A bicycle control apparatus attached to a handlebar having a grip, comprising:

a support shaft disposed below said grip;

a shift lever pivotable about said support shaft, said shift lever having a control knob, said shift lever being pivotable between a downshift position, a neutral position, and an upshift position, said neutral position being located between said downshift position and said upshift position, and wherein the entire range of pivotal movement of said shift lever is between said downshift position and said upshift position;

urging means for urging said shift lever toward said neutral position;

control means for controlling a change speed wire based on a pivotal displacement of said shift lever, such that pivotal movement of said shift lever from said neutral position to said downshift position effects a downshift, and such that pivotal movement of said shift lever from said neutral position to said upshift position effects an upshift; and

a brake lever, said brake lever being pivotable about an axis of rotation; and

wherein a tangent to a substantial locus of movement of said control knob during pivotal movement of said shift lever from said neutral position to said downshift position approximates a direction in which said grip extends, and wherein a tangent to a substantial locus of movement of said control knob during pivotal movement of said shift lever from said neutral position to said upshift position approximates the direction in which said grip extends, and wherein said support shaft is substantially parallel to the axis of rotation of said brake lever.

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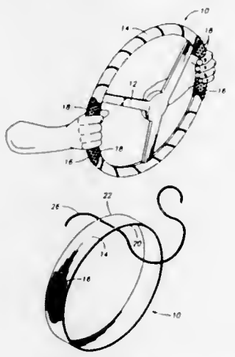
VEHICLE STEERING WHEEL COVER

Jacob Engelstein, Seattle, Wash., assignor to Classic Accessories, Inc., Seattle, Wash.

Filed Aug. 25, 1992, Ser. No. 936,043

Int. Cl.[5] B62D *1/06*

U.S. Cl. 74—558 2 Claims



1. A cover for a steering wheel of a vehicle, comprising:

a base panel having a width, the base panel being adapted to be placed over a steering wheel of a vehicle;

attachment means for securing the base panel to the steering wheel;

a first gripper panel having a surface area defined by a length and a width, the length substantially corresponding to a typical operator's hand and the width covering substantially the entire width of the base panel, the first gripper panel being secured to the base panel for providing a gripping location for an operator's hand to improve handling of the steering wheel, the first gripper panel being positioned on the base panel to correspond with a preferred location for the operator's hand;

grip enhancement means secured to the first gripper panel for improving the operator's grip of the steering wheel and reducing stress and fatigue of the operator's hand from prolonged vehicle operation; and

wherein the first gripper panel is heat welded to the base panel.

5,287,768

DRIVESHAFT

Peter Amborn, Neunkirchen, and Klaus Greulich, Hollig, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Mar. 27, 1991, Ser. No. 676,187

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1990, 4011082

Int. Cl.[5] F16C *3/00*

U.S. Cl. 74—607 17 Claims



1. A one piece driveshaft especially for use in the drive of a motor vehicle with input and output parts, said driveshaft comprising:

a tubular homogeneous shaft having a central tube region and end regions at both ends, said central tube region being a larger outer diameter than said end regions, toothed receiving regions formed on said end regions for connecting elements with said drive shaft for torque transmitting purposes, and the driveshaft being rotationally symmetrical about a longitudinal axis and asymmetrical with respect to a central plane transverse to the longitudinal axis.

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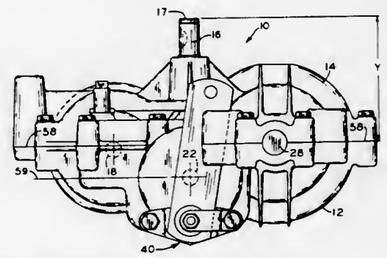
OFFSET SHAFT ARRANGEMENT FOR IN-LINE SHIFT TRANSAXLE HOUSING

Roland L. von Kaler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jul. 2, 1992, Ser. No. 907,602

Int. Cl.[5] F16H *37/08*

U.S. Cl. 74—606 R 20 Claims



12. A transaxle for a vehicle comprising:

a housing;

a vertical input shaft rotatably disposed in said housing and having a top end extending out of said housing;

an axle shaft rotatably disposed within said housing and having a central axis which is disposed generally coplanar with a first generally horizontal plane;

an input receiving shaft rotatably disposed within said housing and operably connected to said vertical input shaft, said input receiving shaft having a central axis; and

a plurality of gears on said input receiving shaft and said axle shaft interconnected to transmit rotational motion from said input receiving shaft to said axle shaft;

said input receiving shaft central axis disposed generally coplanar with a second generally horizontal plane below said first generally horizontal plane.

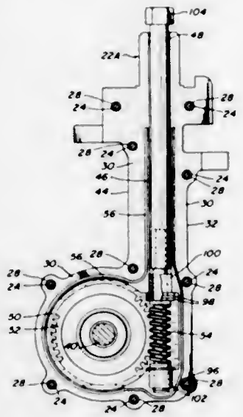
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,770

DIE CAST TRANSMISSION HOUSING FOR ROTOTILLER

George W. Mudd, Baltimore, Md., assignor to Schiller-Pfeiffer, Inc., Southampton, Pa.

Filed Nov. 25, 1992, Ser. No. 981,577
Int. Cl.[5] F16H 57/02, 1/16
U.S. Cl. 74—606 R 9 Claims



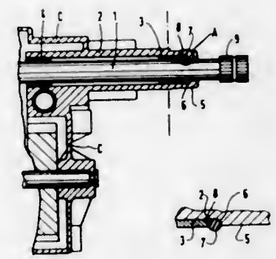
1. A rototiller for tilling soil comprising:
a plurality of tines;
transmission means connected to said tines; and
motor means mounted on said transmission means and operatively connected thereto for rotating said transmission means and said tines connected thereto;
said transmission means being comprised of:
a pair of die cast housing sections, each section having inner and outer surfaces and each of said sections having a plurality of strengthening and heat dissipating ribs projecting from said outer surface thereof and intersecting one another over a substantial portion of each housing section,
said inner surfaces of said housing sections each terminating in a peripheral engagement surface, said peripheral engagement surfaces confronting each other and one of said peripheral engagement surfaces having a groove extending the length thereof,
gasket means disposed within said groove and extending along the entire length of said peripheral engagement surface between said confronting engagement surfaces of said housing sections,
fastening means releasably securing said housing sections to each other, whereby fastening said housing members together seals said members along said peripheral engagement surfaces with said gasket means thereinbetween and creates an interior chamber between said housing members,
a rotatable drive shaft operatively connected to said motor and rotatable thereby, said drive shaft extending into said interior chamber between said housing sections,
a worm shaft connected to said drive shaft within said interior chamber, said worm shaft being rotatable by said drive shaft,
a worm gear within said interior chamber engageable with said worm shaft and rotatable in response to rotation of said worm shaft,
axle means connected to worm gear and rotatable therewith, said axle means extending through said housing sections and having said tines mounted thereon, and
lubrication material within said interior chamber.

5,287,771

MOUNTING FOR A DRIVE SHAFT, IN PARTICULAR FOR A WINDSHIELD WIPER DRIVE UNIT

Pierre Blanchet, Lencloitre, France, assignor to Valeo Systemes D'Essuyage, Montigny-Le-Bretonneux, France

Continuation of Ser. No. 729,417, Jul. 12, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 987,560
Claims priority, application France, Jul. 16, 1990, 90 09018
Int. Cl.[5] F16H 57/04
U.S. Cl. 74—606 R 19 Claims



1. A drive unit comprising:
a casing including a sleeve member having therethrough an axial bore;
a drive shaft extending through said bore;
a motor and speed reduction mechanism mounted in said casing and coupled to said drive shaft for imparting thereto rotary or oscillating motion;
at least one bearing mounted in said sleeve member for supporting said drive shaft and guiding said drive shaft during said motion thereof;
a seal mounted in said sleeve member and sealing against said drive shaft;
said sleeve member having a posterior part relatively closer to said casing and an anterior part relatively further from said casing, said bore through said sleeve member including a reduced diameter section at said anterior part, thereby defining a thickened portion of said sleeve member at said anterior part; and
said thickened portion of said sleeve member having a posterior portion having defined therein a seat within which seats said seal, with said seal being positioned axially between said bearing and said thickened portion, and with said bearing maintaining said seal seated on said sheet.

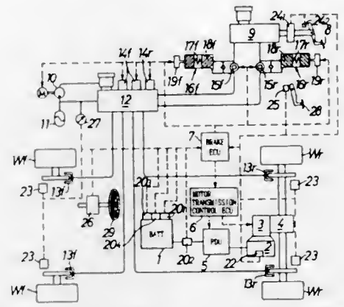
5,287,772

TRANSMISSION CONTROL SYSTEM IN ELECTRIC VEHICLE

Yasushi Anki; Nobuyoshi Asanuma; Atsuo Ohno, and Takeshi Ohba, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 987,041
Claims priority, application Japan, Dec. 5, 1991, 3-322084
Int. Cl.[5] F16H 59/14
U.S. Cl. 74—846 8 Claims

1. A transmission control system in an electric vehicle in which a battery is used as an energy source for a motor and is charged with an electric power generated by said motor through regenerative braking of a driving wheel which is connected to said motor through a transmission, said transmission control system comprising
transmission ratio determination means for calculating a regenerative energy capable of being generated at a current transmission ratio, a regenerative energy capable of being generated when said transmission ratio is increased, and a regenerative energy capable of being generated when said transmission ratio is decreased, and comparing results of these calculations to determine a transmission ratio at which a largest regenerative energy can be obtained, and
transmission control means for changing said transmission



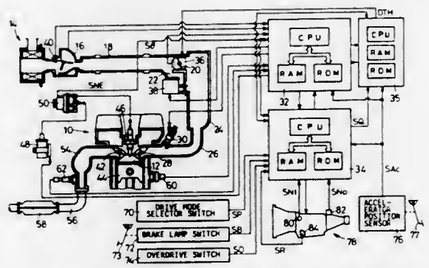
ratio of said transmission into a value permitting said largest regenerative energy to be provided, based on a transmission ratio command signal output from said transmission ratio determination means.

5,287,773

APPARATUS FOR CONTROLLING ENGINE BRAKE FORCE DURING VEHICLE RUNNING ON DOWNHILL WITH RELEASED ACCELERATOR

Yasunori Nakawaki, Susono; Yoshio Shindo, Numazu, and Yasuhiko Higashiyama, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 28, 1993, Ser. No. 11,467
Claims priority, application Japan, Jan. 31, 1992, 4-046111; Jan. 31, 1992, 4-046112; Jan. 31, 1992, 4-046113
Int. Cl.[5] F16H 61/02
U.S. Cl. 74—859 31 Claims



1. An apparatus for controlling an engine brake force of a motor vehicle having an engine, an accelerator pedal, and an automatic transmission which is shifted to change the speed ratio according predetermined shifting conditions, said engine brake force being produced by said engine when said accelerator pedal is in a released state, said apparatus comprising:
an accelerator position sensor for detecting an operating amount of said accelerator pedal;
a vehicle speed sensor for detecting an actual running speed of the vehicle;
desired-speed determining means for determining whether said operating amount of the accelerator pedal detected by said accelerator position sensor is reduced below a predetermined threshold which is close to zero, and determining a desired speed of the vehicle on the basis of said actual running speed detected by said vehicle speed sensor when said operating amount is reduced below said predetermined threshold;
intake air control means for controlling an intake air quantity of said engine such that said actual running speed approaches said desired speed; and
limiting means for limiting said intake air quantity controlled by said intake air control means, to a value not exceeding a reference value which is determined on the basis of said speed ratio of the automatic transmission and said actual running speed of the vehicle, so as to permit said actual running speed to be maintained at said desired speed when the vehicle runs on a level road surface.

5,287,774

METHOD AND DEVICE FOR PRODUCING SEAMLESS RIBBON AND WIRE LOOPS, AND THEIR USE AS CUTTINGS TOOLS IN RIBBON AND WIRE SAWS

Dieter Seifert, Neuotting, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Apr. 28, 1992, Ser. No. 875,073
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123095
Int. Cl.[5] B23D 65/00; B21B 5/00
U.S. Cl. 76—112 8 Claims



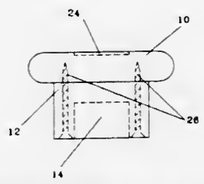
1. A method for producing seamless wire loops, which comprises the following measures:
a) preparing a seamless metal ring,
b) converting the metal ring into a rollable starting ring,
c) expanding the starting ring by cold rolling to form a thin ribbon loop,
d) drawing the ribbon loop onto a set of rolls provided with guide grooves,
e) dividing the ribbon loop into wire loops, said wire loops sliding into said guide grooves.

5,287,775

TORQUE LIMITING DRAWING HOLDER NUT WRENCH

Allen M. Moore, P.O. Box 148, Eagle Point, Oreg. 97524

Filed Sep. 18, 1992, Ser. No. 947,341
Int. Cl.[5] B25B 13/06
U.S. Cl. 81—121.1 2 Claims



1. A torque limiting drawing holder nut wrench comprising:
a. a disc shaped hand grip having any number of rounded cusps interposed with swales around the outer edge of said disc;
b. provision of a torque transfer limiting means; this supplied by the lack of any extended lever arm;
c. a socket body substantially joined to said hand grip and

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having a generally cylindrical shape and providing sufficient space within it to accommodate a wing nut socket and having a generally flat and parallel top and bottom;

d. A wing nut socket of a generally elongated hexagonal cross-section said socket being a straight sided hole cut perpendicularly up into said socket body; said socket's cross-sectional shape being more particularly defined as a six sided figure wherein four of the sides are of equal length and the other two are each of generally half the individual length of said four sides; these two short sides being placed opposite and parallel to each other and at 105 degree angles connected at each end to two of the four equal sides; the four equal sides being joined to each other by generally 150 degree angles where they join together; this figure then being a generally oval shape but having six straight sides and being approximately twice as long as it is wide;

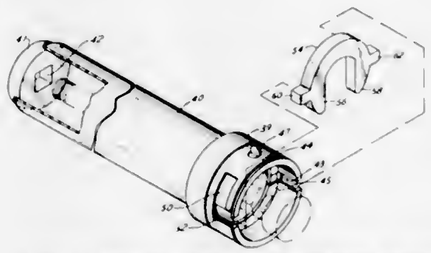
e. further comprising in the hand grip surface a shallow mortise aligned with and shaped to match the socket cross-section shape below it in the socket body to allow socket alignment over a wingnut without looking at the socket itself.

5,287,776

INNER TIE ROD TOOL

Danny L. Williams, Clarinda, Inwa, and Gerald A. McKim, LaFayette, Ind., assignors to Lisle Corporation, Clarinda, Inwa

Filed Jun. 26, 1992, Ser. No. 904,852
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—124.2 **6 Claims**



1. A tool for removal of inner tie rods comprising in combination:

(a) a nut engaging, C-shaped wrench disc having spaced arms for engaging a nut, and outwardly projecting tabs for cooperation with a retainer; and

(b) a hollow tube for placement over a tie rod, said tube having a retainer at one end and at least two slots for cooperatively engaging the tabs of the wrench disc and means for cooperation with tube rotation means at the opposite end, said retainer being detachably cooperative with the tabs to rotate the disc and a tie rod engaged therewith.

5,287,777

RATCHETING OPEN END WRENCH

Edward Kolodziej, 5445 S. Alameda, Corpus Christi, Tex. 78412

Filed Nov. 3, 1992, Ser. No. 970,560
Int. Cl.[5] B25B *13/12*
U.S. Cl. 81—179 **15 Claims**

1. A ratcheting open end wrench comprising:

a wrench body;

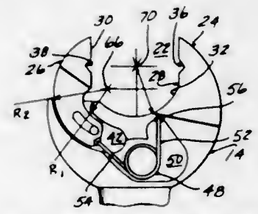
a fixed jaw projecting from said wrench body, said fixed jaw having a wrenching face;

a movable jaw extending from said wrench body, said movable jaw having a wrenching face disposed opposite said fixed jaw wrenching face with a wrenching space therebetween configured to receive an element having a contour to be wrenched and engage the contour thereof;

means mounting said movable jaw on said wrench body so as to be freely movable from an extended position to a retracted position upon rotation of said wrench body in a direction tending to push said element to be wrenched with said movable jaw, said retraction of said movable jaw causing an increase in the width of said wrenching space enabling said wrenching face of said movable jaw to move past and over said contour of said wrenched element; and,

spring means urging said movable jaw to said extended position, whereby a ratcheting action is provided with gripping by said jaw wrenching faces with rotation in one direction and free rotation in the other direction;

said means mounting said movable jaw to said wrench body including an arcuate jaw stem and an arcuate slot in said



wrench body receiving said arcuate jaw stem, said jaw stem and said arcuate slot acting to guide said movable jaw to rotate upon rotation of said wrench body in a direction away from said movable jaw, to cause pushing of said movable jaw by engagement with said contour of said element to be wrenched, said arcuate stem thereby retracted into said arcuate slot, said jaw stem and slot configured to cause wedging of said jaw stem in said slot upon rotation of said wrench body in a direction towards said movable jaw to prevent retraction thereof from said extended position;

said slot formed by concentric inner and outer walls comprising arc segments having a common center of radius of curvature thereof, said center of radius lying well within a quadrant of the wrenching space closest said wrenching body and said movable jaw.

5,287,778

UNIVERSAL SCREW DRIVER

Steven M. Cook, 3 Savannah Dr., Sylva, N.C. 28779

Filed Oct. 2, 1991, Ser. No. 769,717
Int. Cl.[5] B25B *23/10*
U.S. Cl. 81—442 **3 Claims**

1. A screw driver having a flexible working end, said screw driver comprising:

(a) a handle member, said handle member having an inner hollow handle chamber disposed inside said handle member;

(b) a shaft member with a first end and a second end, said shaft member being mounted to said handle member, such that said shaft member extends from said handle member, and wherein said shaft member has an internal shaft chamber, with a first end and a second end, extending completely through said shaft member, and wherein said internal shaft chember in said shaft member communicates with the internal handle chamber in said handle member;

(c) a plurality of flexible rod members, each of said rod members having a first end and a second end, said first end of each said rod member being integrally affixed within said internal handle chamber of said handle member with the remaining portion of each said rod member extending longitudinally through both the internal handle chamber and the internal shaft chamber with said second end of each said rod member extending out of the second end of said shaft chamber a limited distance, each said second end



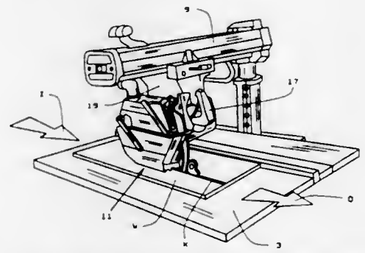
of each rod member functioning as the working end of such screw driver.

5,287,779

RADIAL SAW SAFETY GUARDS AND BARRIERS

James I. Metzger, Jr., Ballwin, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 15, 1993, Ser. No. 31,344
Int. Cl.[5] B27B *5/20*; B27G *19/02, 19/08*
U.S. Cl. 83—102.1 **25 Claims**



1. A radial saw for rip cutting and cross cutting workpieces comprising:

a motor driven saw blade mounted on a yoke depending from a supporting arm that overhangs a worktable, said motor driven saw blade being movable relative to a worktable mounted fence to enable said motor driven saw blade to be operated for rip cutting of workpieces longitudinally along the length of the fence and for cross cutting of workpieces transverse to the fence;

an upper blade guard mounted in fixed position relative to said yoke mounted motor driven saw blade for covering approximately an upper half of the motor driven saw blade;

a lower blade guard depending from the upper blade guard and substantially covering approximately the lower half of the motor driven saw blade when resting on the worktable, said lower blade guard being mounted to the upper blade guard for automatic upward and downward movement relative to the upper blade guard when resting upon workpieces of different thickness to protect a user against contact with the motor driven saw blade; and

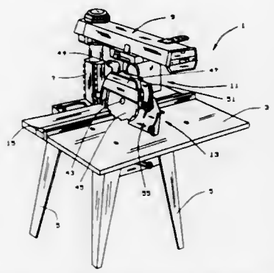
said lower blade guard including a wrong way feed barrier during rip cutting.

5,287,780

RADIAL ARM SAW GUARD WITH OPERATIONAL INTERLOCK

James I. Metzger, Jr., Ballwin; Jack E. Hyde, Jr., St. Peters, and Robert E. Steiner, Chesterfield, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 15, 1993, Ser. No. 31,345
Int. Cl.[5] B27B *5/20*; B27G *19/08*
U.S. Cl. 83—102.1 **15 Claims**



1. A radial saw for rip cutting and cross cutting workpieces comprising:

a motor driven saw blade mounted on a yoke depending from a supporting arm that overhangs a worktable, said motor driven saw blade being movable relative to a worktable mounted fence to enable said motor driven saw blade to be operated for rip cutting of workpieces longitudinally relative to the fence and for cross cutting transverse relative to the fence;

a blade guard mounted in fixed position relative to said yoke mounted motor driven saw blade for covering at least approximately an upper half of the motor driven saw blade;

adjustable outfeed user barrier means mounted to said upper blade guard for operation between an upper disengaged position exposing the motor driven saw blade and a lower engaged position covering an outfeed end of the motor driven saw blade to protect a user during rip cutting; and

interlock means for preventing rip cutting by the motor driven saw blade unless the adjustable outfeed user barrier means is in its lower engaged position.

5,287,781

DOUGH FEEDER/CUTTER

Amos Fehr, and Joseph Chong, both of 4572 Erie Avenue, Niagara Falls, Ontario, L2E 3N3, Canada

Continuation of Ser. No. 637,862, Jan. 8, 1991, abandoned. This application Jul. 8, 1991, Ser. No. 727,066
Claims priority, application Canada, Jan. 8, 1990, 2007327
Int. Cl.[5] A21C *11/10*
U.S. Cl. 83—155 **12 Claims**

1. Apparatus for feeding, cutting and depositing dough on a dough tray station, comprising:

a pivotally-mounted feed tray;

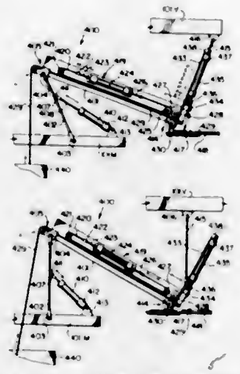
means on said feed tray for gripping a continuous dough sheet and for advancing it forwardly along said feed tray to a downstream end of said feed tray;

means for cutting a discrete sheet of dough from a portion of said continuous dough sheet overlapping said feed tray whereupon said gripping means deposits said discrete sheet of dough on said dough tray station;

means for moving an upstream end of said feed tray upwardly to a first position, maintaining said upstream end at said first position for a first predetermined period of time during which said continuous sheet of dough is being advanced forwardly along said tray, moving the upstream

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end of said feed tray downwardly to a second position, and maintaining said upstream end at said second position



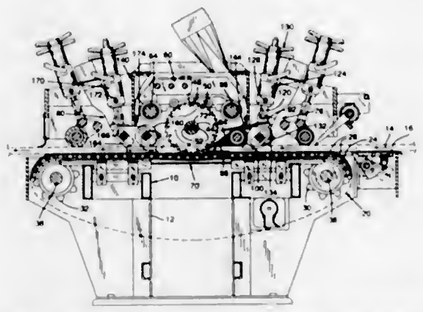
for a second predetermined period of time during which said discrete sheet of dough is being cut.

5,287,782

GANG SAW WITH HORIZONTALLY AND VERTICALLY MOVABLE HOLD-DOWNS

Mark A. Scott, Bend, Oreg., assignor to PIW Industries Inc., Portland, Oreg.

Filed Sep. 21, 1992, Ser. No. 947,390
Int. Cl.[5] B26D *7/01*
U.S. Cl. 83—447 **8 Claims**



5. In a rip saw which includes a frame, a power-driven saw arbor mounted on the frame, and plural saws mounted on the arbor, and keyed to the arbor for rotation with the arbor:

a support for work being cut by the rip saw, disposed on upstream and downstream sides of said arbor, for supporting one side of the work-piece being cut with the work-piece moveable in a direction extending from the upstream toward the downstream side of the arbor and along a travel path,

an upstream clamp structure and a downstream clamp structure, each for clamping against an opposite side of a work-piece being cut, in regions disposed upstream and downstream, respectively, of the saw arbor,

each clamp structure extending generally parallel to the axis of the arbor and across the peripheries of the saw, and

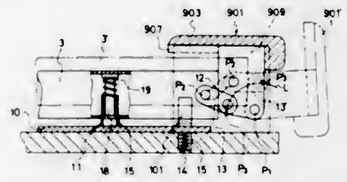
a mounting for each clamp structure whereby the structure is moveable along an inclined path, the mounting for the upstream clamp structure accommodating movement between an upper first position to a second position lower than and downstream from said first position, and the mounting for the downstream clamp structure accommodating movement from an upper first position to a second position lower than and upstream from said first position.

5,287,783

PAPER CUTTER

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,559
Claims priority, application Japan, Mar. 2, 1992, 4-080462
Int. Cl.[5] B26D *1/18, 7/02*
U.S. Cl. 83—455 **2 Claims**



1. A paper cutter for cutting a pile of paper on a bed using a cutting blade carried on a slider while the pile of paper is held by a paper holding plate and moving said slider along a rail supported such that said rail is always parallel to said bed, wherein said paper holding plate and said rail are assembled to move separately, movement of said rail being guided by two identically configured oblique guide slits with horizontal portions disposed at upper and lower ends of each guide slit respectively, said guide slits being provided in two stationary support members located at opposing ends of said bed, comprising.

a movable member pivoted on one of said stationary support members to move said rail back and forth in said guide slits between said upper and lower horizontal portions through a link, said link allowing said rail to move only obliquely up and down a predetermined distance, while ensuring said rail remains parallel to said bed;

a first spring means to push said paper holding plate against said rail; and

a second spring means provided on a bottom side of said rail to push against paper holding plate, such that a pushing force exerted by said second spring means is relatively stronger than a pushing force exerted by said first spring means.

5,287,784

BREAD SLICING AND STORAGE DEVICE FOR CYLINDRICAL SHAPED LOAVES

David W. Brockett, 1855 W. 10th, Eugene, Oreg. 97402

Filed Jun. 3, 1992, Ser. No. 893,054
Int. Cl.[5] B26D *1/54*
U.S. Cl. 83—762 **1 Claim**

1. A device for storing and slicing a cylindrically shaped bread loaf comprising:

a rigid holder including a base;

two opposing parallel guide side walls extending upwardly from said base, each having an upper and lower portion;

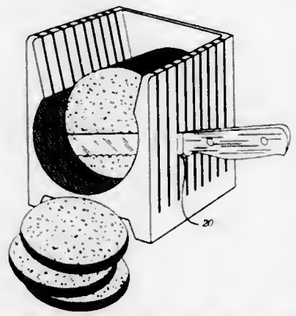
a flat end wall perpendicular to and joining said guide side walls and extending upwardly from said base;

said lower portion of said guide side walls and said flat end wall forming a cylindrical open-topped cavity opened at one end and closed at the other end by said flat end wall for receiving said loaf therein,

said upper portion of said guide side walls forming a lengthwise entry chute which defines said open-topped cavity, said entry chute being wedge shaped and including sides which taper and narrow downwardly and inwardly and merge with said cylindrical open-topped cavity permitting said loaf to momentarily compress as it is inserted through said chute and permitting said loaf to then expand within said cavity firmly securing said loaf therein;

said cylindrical cavity containing therein a sharply textured gripping surface for gripping and preventing any sliding or rotating movement of said loaf held therein;

said guide side walls and said cavity including a series of



evenly spaced, parallel vertical slots which extend from the top of said walls to a level slightly below the cylindrical cavity permitting a cutting knife to pass smoothly through a slot as it vertically slices said loaf;

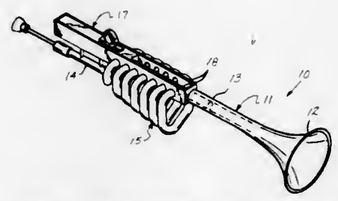
and a holder cover having an open bottom permitting it to fit closely over the top of and completely enclosing said holder, said holder cover having integrally attached thereto a sheath for encasing said cutting knife.

5,287,785

MUSICAL BRASS INSTRUMENT SLIDE APPARATUS

Robert P. Miller, 143 Buckingham Cir., Charlottesville, Va. 22903

Filed Feb. 3, 1993, Ser. No. 12,765
Int. Cl.[5] G10D *9/04*
U.S. Cl. 84—391 **4 Claims**



1. A musical brass instrument slide apparatus mounted within a brass instrument, having an instrument bell and a bell conduit, with the instrument further having a mouthpiece tube, and

valve means for effecting pneumatic and selective communication between the mouthpiece tube and the bell conduit, with the valve means having a slide housing, the slide housing arranged in fixed communication to the mouthpiece tube, and the slide housing including spaced parallel housing side walls and a housing first end wall spaced from a housing second end wall, and

a wind tube in pneumatic communication with the mouthpiece tube, and the wind tube having a plurality of individual tube coils, with the tube coils extending along the slide housing, with the slide housing having spaced pairs of coaxially aligned coil ports defining a predetermined number of pairs of coil ports, with the wind tube coils including an end coil in pneumatic communication with the individual wind tube coils through the valve means and with the end coil directed into one of said housing side walls terminating in an end coil port directed into the slide housing adjacent the housing second end wall, wherein the housing side walls include a first row of side wall ports directed into one of the housing side walls, and a second row of side wall ports directed into a further of said housing side walls, wherein the first row of side wall ports defining first ports and the second row of side wall ports defining second ports, wherein one of said first ports is aligned with one of said second ports to define a housing port pair, and

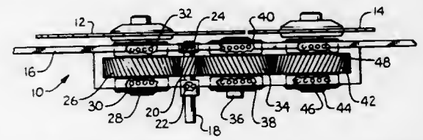
the housing port pairs equal said predetermined number.

5,287,786

PORTABLE ELECTRIC CUTTING AND SCORING SAW

Paul E. Fiala, 7205 Shadyoak Dr., Downey, Calif. 90240

Continuation-in-part of Ser. No. 745,412, Aug. 15, 1991, Pat. No. 5,159,870. This application Aug. 20, 1992, Ser. No. 932,600
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B27B *9/00*
U.S. Cl. 83—863 **24 Claims**



1. A method of cutting a workpiece having a laminate or veneer on the top side or on the top and bottom side with a portable electric cutting and scoring saw comprising:

providing a housing to contain a high speed electric motor, a set of gears, bearings, a cutting saw shaft, a scoring saw shaft, and an idle shaft, respectively, said blades lying in the same plane, said scoring saw blade is approximately 0.002 inches wider on each side of two planes formed by the cutting saw blade width;

turning said cutting saw and scoring shafts by said high speed electric motor;

gearing said electric motor to said cutting and scoring saw shafts;

using said set of gears to directly drive said cutting saw blade and said scoring saw blade such that the cutting saw blade and scoring saw blade turn in opposite directions at least 5,000 RPM;

providing an adjustment to control the depth of cut;

providing an adjustment to control the angle of cut;

providing a removable and replaceable motor in said housing;

providing a rechargeable battery power-pack to drive said high speed electric motor;

providing a rear handle having an on and off spring biased trigger switch to turn on and off said electric motor, said rear handle also used to push said portable electric cutting and scoring saw across said workpiece;

providing a front handle to guide the cutting and scoring saw;

aligning the cutting and scoring saw with the said workpiece to prepare for the cut;

activating the cutting and scoring saw electric motor by means of a trigger switch;

pushing on said rear handle and guiding said portable cutting and scoring saw by said front handle;

scoring the top surface of said workpiece ahead of said cutting blade allows a smooth cut to be made on said workpiece.

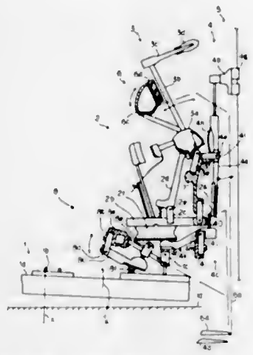
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,787

UPRIGHT PIANO FOR CONSTANT KEY-TOUCH REGARDLESS OF MANIPULATION OF SOFT PEDAL

Inoue Satosh, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 4, 1992, Ser. No. 925,793
Claims priority, application Japan, Aug. 6, 1991, 3-196884
Int. Cl.[5] G10C *3/18*
U.S. Cl. 84—240 **4 Claims**



1. An upright piano comprising:

a) a keyboard having at least one key rotatable with respect to a center axis, a first capstan button projecting from said at least one key;

b) at least one set of musical strings provided in association with said at least one key;

c) at least one hammer assembly having a butt, and rotatable from a home position toward said at least one set of musical strings for striking said at least one set of musical strings when said at least one key is depressed;

d) at least one key action mechanism having a rotatable whippen, a whippen heel attached to one surface of said whippen and a jack coupled with said whippen and held in contact with said butt, and operative to drive said at least one hammer assembly for rotation toward said at least one set of musical strings when said at least one key is depressed;

e) at least one damper mechanism having a rotatable damper lever held at a home position while said at least one key is released, and a first absorber supported by said rotatable damper lever and held in contact with said at least one set of musical strings while said rotatable damper lever is held at said home position, said damper lever allowing said first absorber to be spaced from said at least one set of musical strings when said at least one key is depressed;

f) a pedal mechanism linked with a soft pedal, and having a damper rail associated with a second absorber, said second absorber being spaced from said at least one hammer assembly while said soft pedal is released, said pedal mechanism causing said at least one hammer assembly to become closer to said at least one set of musical strings when said soft pedal is depressed;

g) an adjusting mechanism linked with said soft pedal, and having g-1) a second capstan button projecting from said at least one key and closer to said center axis of said at least one key than said first capstan button, g-2) a drive button spaced from said whippen heel when said soft pedal is released, and g-3) a transmission means slidable on said second capstan button and allowing said drive button to urge said whippen heel in a direction to increase distance between said first capstan button and said whippen heel when said soft pedal is depressed; and

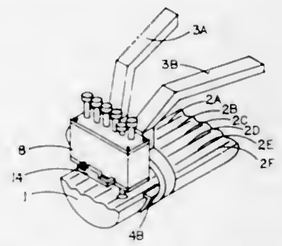
h) a driving link assembly driven for rotation independently from said whippen, and transmitting a key motion produced upon depressing said at least one key to said damper lever in a direction allowing said first absorber to be spaced from said at least one set of musical strings.

5,287,788

TONAL EXPONENT

Richard W. Hill, Jr., 239 Dillard Dr., Goose Creek, S.C. 29445

Filed Jan. 30, 1992, Ser. No. 828,036
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—315 **1 Claim**



1. A tonal clamp for a musical stringed instrument having a neck and a plurality of strings comprising:

a ballast housing, a plurality of string pegs, a retainer, and a release mechanism;

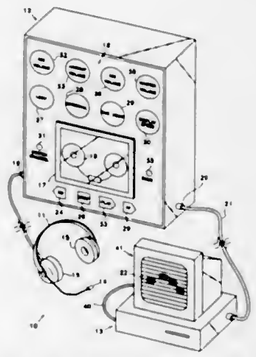
a clamp means for supporting and clamping said ballast to the neck; said clamp means including a pair of handles and a pair of arms; said arms having means for grasping the neck on opposite side surfaces and for supporting the ballast with the string pegs in alignment over the strings.

5,287,789

MUSIC TRAINING APPARATUS

Thomas G. Zimmerman, 218-15 Hartland Ave., Flushing, N.Y. 11364

Filed Dec. 6, 1991, Ser. No. 803,035
Int. Cl.[5] G09B *15/02*
U.S. Cl. 84—477 R **40 Claims**



1. A music training apparatus for teaching a student correct pitch and other musical skills by reference to a stored or pre-recorded musical sequence, comprising:

display means for presenting a live image visible to the student,

means for receiving a monophonic reference source and sending a variable signal in accordance therewith to the visual display means, so that the display means shows a sequence of pitch values, the monophonic reference source comprising desired pitches to be achieved by the student,

means for providing an audible tone reference to the student in unison with the monophonic reference source and sharing the same fundamental sequence of tones as the monophonic reference source,

pickup means for picking up intonations made by the student in attempting to follow the audible tone reference,

tunable filter means to attenuate harmonics of a signal from the pickup means,

filter control means, responsive to the droop of the output of the filter means, for setting the frequency of the filter means substantially near the frequency of the signal from the pickup means,

pitch tracker means receiving a signal from the tunable filter means, for analyzing and tracking the pitch of the student's intonations and for generating a pitch track signal, and

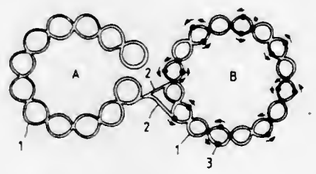
computer means for receiving pitch track signals from the pitch tracker means and for generating a signal to the display means, to display visually a temporal history of the series of intonations made by the student, superimposed with the desired sequence of pitch values as represented by the monophonic reference source and shown on the display.

5,287,790

METHOD AND APPARATUS FOR BRAIDING IN TWO BRAIDING REGIONS

Yasuo Akiyama, Kyoto; Zenichiro Maekawa, Amagasaki; Hiroyuki Hamada, and Atsushi Yokoyama, both of Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 694,385, May 1, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 10,448
Claims priority, application Japan, May 11, 1990, 2-49371[U]; Aug. 29, 1990, 2-227079
Int. Cl.[5] D04C *1/00*
U.S. Cl. 87—9 **8 Claims**



1. A fiber braiding device, comprising:

a first braiding region provided with first tracks arranged in an open circle to form a flat braid,

a second braiding region provided with second tracks arranged in a closed circle to form a tubular braid, the second braiding region in spaced relation to the first braiding region,

transfer tracks for connecting the first and second braiding regions,

a gathering guide defining a braiding point where cords or strands are collected and braided, the gathering guide shiftable between a position above the first braiding region and a position above the second braiding region, and

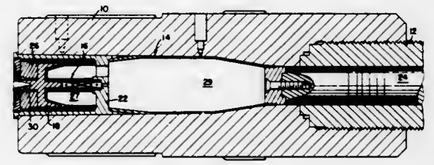
shifting means for shifting the gathering guide from the position above the first region to a position above the second region.

5,287,791

PRECISION GENERATOR AND DISTRIBUTOR DEVICE FOR PLASMA IN ELECTROTHERMAL-CHEMICAL GUN SYSTEMS

Amir Chaboki, Minneapolis, and James P. Warren, Coon Rapids, both of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed Jun. 22, 1992, Ser. No. 902,349
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 **18 Claims**



1. A precision plasma generator and distributor device coupled to a high voltage power supply for use in electrothermal-chemical gun systems comprising:

a capillary having first and second ends enclosing a volume defined by a wall;

said wall having perforations therein;

an elongated filament coaxially disposed in said capillary and further including conical sections forming an axially reduced taper along a longitudinal axis extending from said first end and said second end and forming said taper therebetween;

an anode terminal integrally attached to said first end;

a cathode terminal integrally attached to said second end;

a cartridge housing having connections to said anode and said cathode terminals; and

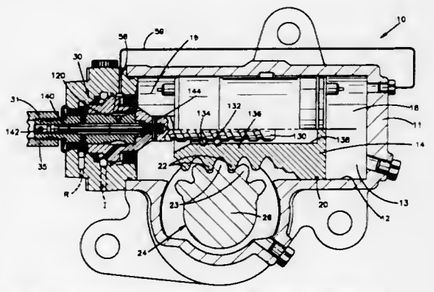
a combustible chemical mass disposed in said cartridge and surrounding said capillary.

5,287,792

HYDRAULIC POWER STEERING GEAR WITH NOISE ATTENUATION

Robert S. Betros, Hermosa Beach, and Jon W. Martin, Los Alamitos, both of Calif., assignors to TRW Inc., Lyndhurst, Ohio

Filed Oct. 27, 1992, Ser. No. 967,140
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—375 R **5 Claims**



1. In a hydraulic power steering apparatus having:

a rotatable input member;

a rotatable output member;

a housing supporting said input member and said output member for rotation about an axis relative to each other; and

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hydraulic valve means comprising a valve core and a valve sleeve;

said valve core having a cylindrical surface and being supported in said housing to rotate with said input member relative to said output member and said valve sleeve;

said valve sleeve being supported in said housing to rotate with said output member relative to said input member and said valve core, said valve sleeve having a cylindrical surface adjoining said cylindrical surface of said valve core;

the improvement comprising:

means for attenuating noise caused by vibrations of said valve core relative to said valve sleeve, said noise attenuating means comprising an elastomeric damping ring extending circumferentially between said adjoining cylindrical surfaces of said valve core and said valve sleeve, said damping ring being compressibly deformed by said valve core and said valve sleeve in an interference fit between said adjoining cylindrical surfaces, said interference fit continuously maintaining frictional contact of said damping ring with said adjoining cylindrical surfaces whenever said valve core and said valve sleeve rotate relative to each other;

said frictional contact providing static friction which is great enough to cause said damping ring to undergo cyclic deformation in shear between said adjoining cylindrical surfaces when said vibrations occur, said static friction thus being great enough to cause said damping ring to experience hysteretic energy loss which dissipates energy of said vibrations; and

said damping ring being formed of an elastomeric material having a loss tangent of at least 0.5 when subjected to vibrations at frequencies of approximately 100-300 Hertz, whereby said damping ring experiences said hysteretic energy loss in an amount which substantially eliminates noise caused by said vibrations at said frequencies.

5,287,793

POWER PISTON ASSEMBLY FOR BOOSTER WITH DIAPHRAGM RETAINER

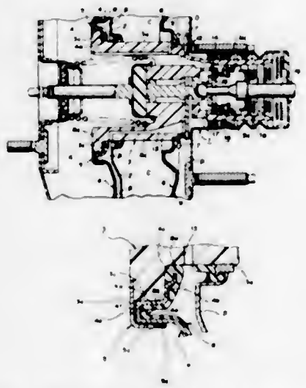
Tohru Satoh, and Atushi Satoh, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,743

Claims priority, application Japan, Apr. 9, 1992, 4-117002

Int. Cl.[5] F15B *9/10*; **F01B** *19/00*; **F16J** *3/00*

U.S. Cl. 91—376 R **6 Claims**



1. A power piston assembly for a brake booster including a valve body having a flange formed around the periphery at its front end and which bulges radially outward, a power piston including a tubular section formed in its axial portion which is fitted over the flange of the valve body from the rear side and also including a positioning section which is formed at the rear end of the tubular section and which is disposed in abutment against the rear end face of the flange, and an annular retainer for preventing the tubular section of the power piston from being disengaged from the flange; the power piston assembly being characterized in that the front end of the tubular section is folded upon itself to extend rearwardly to define a second tubular section at a location outward of the first mentioned tubular section, the retainer being disposed in abutment against the front end face of the valve body and including an outer peripheral edge which is extended rearwardly to define a peripheral tubular portion, which is fitted around the second tubular section of the power piston from the front side, the peripheral tubular portion being formed with a plurality of engaging pawls projecting inwardly therefrom and engaging the outer peripheral surface of the second tubular section.

5,287,794

HYDRAULIC MOTOR WITH INLET FLUID SUPPLEMENTED BY FLUID FROM CONTRACTING CHAMBER

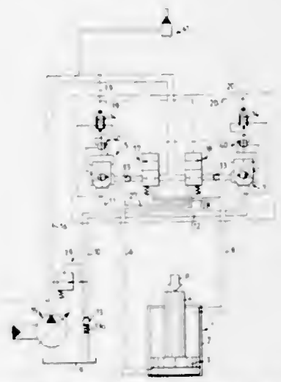
Bo Andersson, Junistigen 10, S-931 52 Skellefteå, Sweden

Filed Jul. 23, 1991, Ser. No. 734,644

Claims priority, application Sweden, Jul. 24, 1990, 9002494-4

Int. Cl.[5] F15B *11/08*

U.S. Cl. 91—436 **18 Claims**



1. An arrangement for controlling a hydraulic motor having two sides, comprising;

a plurality of spring-based pressure-controlled inlet element and a plurality of outlet elements arranged in a hydraulic circuit which connects the hydraulic motor with a tank and with a pump that functions as a power source for the hydraulic motor;

each of said inlet elements being connected in the hydraulic circuit between an outlet of the pump and the hydraulic motor;

each of said outlet elements being connected in the hydraulic circuit between the hydraulic motor an inlet of the tank;

each inlet element being biased on one end by a control pressure and biased on another end which is opposite said one end by a spring and a hydraulic pressure to control the inlet element, said hydraulic originating from the hydraulic circuit at a position on one side of the hydraulic motor, said one side being opposite to a side of the hydraulic motor where said inlet element is connected in said hydraulic circuit;

means for independently changing each of said inlet elements from an inactive state to an active state by separately applying said control pressure to said one end of said inlet element which is opposite said spring biased end;

means for directing flow to the hydraulic motor so as to maintain said hydraulic pressure when a force against said spring biased end of one of said inlet elements in lower than the force against said opposite end of said one inlet element from said control pressure;

means for closing said one inlet element and unloading the pump when said force from said hydraulic pressure and said spring against said spring biased end of said one inlet element is higher than the force against said opposite end of said one inlet element from said control pressure.

5,287,795

COFFEE MAKER

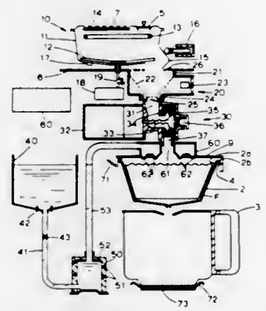
Kazuo Enomoto, 7-1-5 Sumiyoshi-miyacho, Higashinada, Kobe, Hyogo 658, Japan

Filed Dec. 7, 1992, Ser. No. 986,363

Claims priority, application Japan, Dec. 11, 1991, 3-351442

Int. Cl.[5] A47J *31/42*

U.S. Cl. 99—280 **5 Claims**



1. An automatic coffee maker comprising an outer case, a roaster mounted in said outer case for roasting raw coffee beans, a temporary holding and cooling means mounted in said outer case and located to receive coffee beans from said roaster for temporarily holding and fan cooling the coffee beans roasted by said roaster, grinding means mounted in said outer case and located to receive coffee beans from said holding and cooling means for grinding the beans removed from said holding and cooling means and supplying ground coffee, a water tank connected to said outer case, water heating and supply means mounted in said outer case and connected to receive water from said water tank for heating and supplying the water, brewing means mounted in said case and connected to receive the ground coffee beans ground by said grinding means and the hot water from said water heating and supply means for brewing the coffee, and a microcomputer equipped controller for controlling all of the steps from the roasting of the raw coffee beans to the brewing of the coffee completely automatically, said holding and cooling means further comprising sensor means for detecting coffee beans therein, said controller being connected to said sensor means, to said roaster, and to said grinding means and being operable to begin a first automatic subprocess operation starting from the roasting of the raw coffee beans by said roaster if said sensor means does not detect any coffee beans and to begin a second automatic subprocess operation starting from the grinding of the beans by said grinding means if coffee beans are detected by said sensor means.

5,287,796

CONTAINER FOR THE PREPARATION OF HOT DRINKS

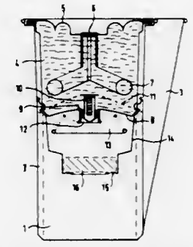
Eberhard Timm, Rahheideweg 15, D-2114 Appel, Fed. Rep. of Germany

Filed Sep. 24, 1991, Ser. No. 764,830

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1990, 9013838

Int. Cl.[5] A47J *31/10, 31/30*

U.S. Cl. 99—282 **21 Claims**



1. A container useful for preparing a hot drink, comprising:

an upper compartment for heating a liquid, the upper compartment having a side wall and an arched bottom wall having an aperture, the arched bottom wall being movable between a convex position and a concave position relative to the side wall,

a lower compartment for collecting the hot drink,

an adjustable closure adapted to separate the upper and lower compartments, the closure being formed by an annular projection surrounding the aperture and by a spike secured in a stationary position within the upper compartment, one of the annular projection and the spike having a seal which engages the other of the annular projection and the spike when the closure is in a closed position, the arched bottom wall being convex relative to the upper compartment side wall when the closure is in a closed position and concave relative to the upper compartment side wall when the closure is in an open position, the bottom wall being configured to be automatically movable from the convex position to the concave position when the liquid storage container reaches a predetermined pressure and being configured to be not automatically movable from the concave position to the convex position.

5,287,797

BREW BASKET

Shirdan J. Grykiewicz, Johnstown, Ohio; Douglas E. McKanna, Castro Valley, Calif., and Dean F. Rushmore, Marysville, Ohio, assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of Ser. No. 829,826, Feb. 3, 1992, abandoned. This application Feb. 3, 1993, Ser. No. 12,679

Int. Cl.[5] A47J *31/44*

U.S. Cl. 99—295 **7 Claims**

1. A brew basket for a compressed wafer of roast and ground coffee for use in a coffee making machine having a spray head from which hot extraction water is discharged into the brew basket, which comprises

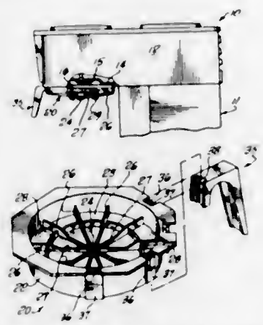
a circular upstanding sidewall which terminates at an upper circumferential edge, the sidewall having a rim extending outwardly around said upper circumferential edge for engagement with support means on said coffee making machine,

a bottom wall integral with said sidewall having an opening extending therethrough, with the bottom wall sloping downwardly from the sidewall toward the opening,

a plurality of radially extending upstanding ribs integral with the upper side of said bottom wall surrounding said open-

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ing, said ribs having a substantially horizontal inner end portion adjacent said opening adapted to support a compressed coffee wafer, with said ribs being dimensioned to position the upper surface of the compressed coffee wafer supported on the ribs in close proximity to the upper circumferential edge of the brew basket, and



a plurality of upstanding arcuate tabs on the upper side of said bottom wall between the normal to adjacent radial ribs, said tabs being positioned intermediate the opening and the circumferential sidewall and spaced equidistant from said opening.

5,287,798

HIGH-TEMPERATURE DRY STEAM COOKING UTENSIL

Teruhiko Takeda, Toyonaka, Japan, assignor to San Shokuzai Co., Ltd., Osaka, Japan

Filed Apr. 23, 1993, Ser. No. 52,643
Claims priority, application Japan, Mar. 5, 1993, 5-071171
Int. Cl.[5] A47J 27/00, 27/04, 37/00, 37/06
U.S. Cl. 99—413 7 Claims



1. A high-temperature dry steam cooking utensil comprising a cooking pan for containing water therein, a tray having, at its entire top circular edge, a flange projecting externally and inclined downward, for accommodating thereon a cooking material, a lid for covering the top of the cooking pan, and a steam baffle, wherein

at the top portion of the cooking pan there are formed, in the ascending order, a first stepped portion for receiving the rim of the flange of the tray, a second stepped portion for receiving the steam baffle, and a third stepped portion for receiving the lid; steam paths are formed at a plurality of locations around the peripheral of the tray by cutting partially the first stepped portion, between the peripheral of the tray and the inner wall of the cooking pan; and the steam baffle has guide segments for guiding steam passing out of the steam paths toward the cooking material accommodated in the tray

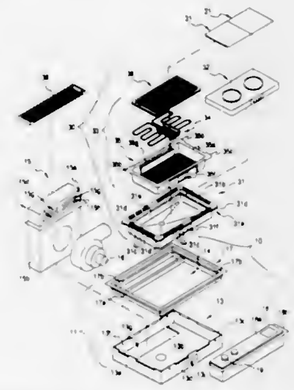
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5,287,799

RECESSED COOKTOP APPLIANCE SYSTEM

Mark A. Pickering, Lebanon, and Richard W. Brangan, Greenwood, both of Ind., assignors to Maytag Corporation, Newton, Iowa

Continuation-in-part of Ser. No. 704,644, May 23, 1991. This application Nov. 19, 1991, Ser. No. 794,482
Int. Cl.[5] A47J 27/12, 37/00; F24C 7/04, 7/06
U.S. Cl. 99—446 28 Claims



1. A countertop cooking unit, comprising:

a housing adapted to be supported by a countertop, including a burner box and having an open top level with the countertop, a bottom and peripheral walls;

at least one removable drip pan recessed below the open top of said housing within said burner box and removably carried by said housing at its peripheral edges;

a downdraft ventilation plenum recessed below the open top of said housing and carried, at least in part, by said burner box; and

at least one heating unit recessed and removably carried within said removable drip pan,

said countertop cooking unit being adapted thereby to provide an upper surface that is level with said countertop and removable interior parts

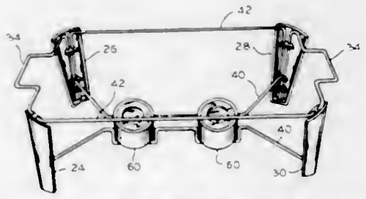
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5,287,800

CATERER FOOD DISPLAY SYSTEM

J. Paul Orednick, 19 W. 450 Deerpath La., Lemont, Ill. 60439

Filed Aug. 20, 1990, Ser. No. 569,937
Int. Cl.[5] A47J 27/00; A47F 5/01
U.S. Cl. 99—449 14 Claims



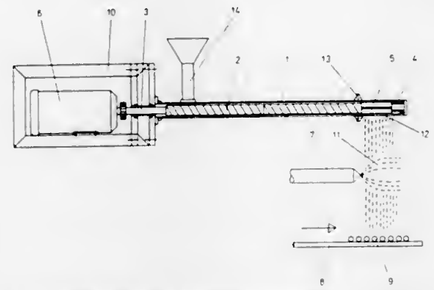
1. A known-down kit of separate and disposable parts which may be selected and assembled to form a variety of stands that supports any of a plurality of different utensils for a food display, said kit comprising a plurality of molded plastic legs, each of said legs having sockets integrally formed on one side thereof with a horizontal shelf support surface projecting on a bottom surface of said plastic leg beneath said sockets, a plurality of bent wires, of at least four of said bent wires forming four sides of an upper frame shaped perimeter of said stand and having vertical sections shaped and dimensioned to slide through said sockets and rest on said projecting support surface at the bottom of said plastic legs, whereby the load of a utensil resting on said frame is transferred at least in part through said vertical sections and bottom support surface to an under lying surface on which said stand is resting, said vertical sections thus providing mechanical supports for bearing the weight of a caterers utensil resting on said stand, at least two bent wires having downwardly projecting recess bends therein for providing a dependent means for receiving and supporting an independent cylindrical burner means, said recess bends extending down and under said burner, said at least two bent wires providing diagonal struts for extending across said perimeter and adding rigidity thereto, and each of said at least two bent wires have a vertical section on each end to slide through said sockets to a position encasing said shell, in order to fix the vertical the height of said burner.

5,287,801

FLAVORING FOOD PRODUCTS

Gordon A. Clark, Ivydene, Burnt Yates, Harrogate, North Yorkshire, England

Filed Jul. 31, 1992, Ser. No. 923,419
Claims priority, application United Kingdom, Jul. 31, 1991, 9116531; Oct. 22, 1991, 9122333; Apr. 2, 1992, 9207253
Int. Cl.[5] A47J 44/00; B05C 19/00; H05F 3/00
U.S. Cl. 99—451 12 Claims



1. Foodstuff flavoring apparatus comprising:

a vessel through which foodstuff can pass during manufacture;

an electrostatic charging head disposed in said vessel; and

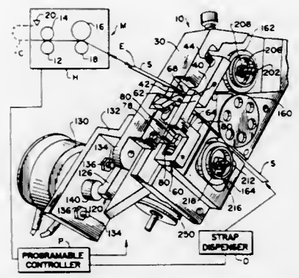
a flavoring dispenser arranged so that flavoring ejected from an outlet of said dispenser passes adjacent the electrostatic charging head to induce an electrostatic charge thereon, said flavoring dispenser including an inlet, a screw conveyor having an axis arranged to convey flavoring from the inlet to a rotor disposed in a cylindrical chamber parallel to the axis of the screw conveyor, the rotor including at least one blade extending towards the wall of the chamber, and the chamber including at least one aperture at said outlet through which powdered flavoring carried to the chamber from the inlet by rotation of the screw conveyor is ejected by rotation of the rotor in use of the dispenser.

5,287,802

STRAP SEVERING AND EJECTING MECHANISM FOR STRAPPING MACHINE

Timothy B. Pearson, Anitoch, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Dec. 14, 1992, Ser. No. 990,097
Int. Cl.[5] B65B 57/10, 13/06
U.S. Cl. 100—4 8 Claims



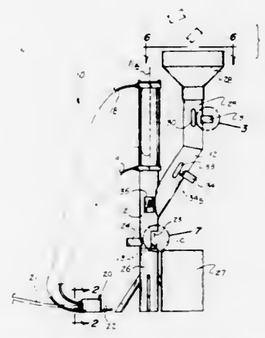
1. For use with a strapping machine of a type having a strapping head, which includes means for advancing a strap fed into the strapping head, means for sensing whether a leading end of the strap being advanced by the advancing means has reached a predetermined location within a predetermined time, and means for retracting the strap, a mechanism comprising means coacting with the sensing means for severing the strap being fed into the strapping head into a leading portion including the leading end and a trailing portion if the sensing means has not sensed that the leading end has reached the predetermined location within the predetermined time and means coacting with the retracting means for ejecting the leading portion after the strap has been severed.

5,287,803

CAN CRUSHING APPARATUS

Joseph L. Cole, P.O. Box 1494, Pittsburg, Calif. 94565

Filed Mar. 15, 1993, Ser. No. 31,705
Int. Cl.[5] B30B 15/30, 9/32
U.S. Cl. 100—45 5 Claims



1. A can crushing apparatus, comprising,

a cylinder housing and a guide tube housing arranged in end-to-end relationship relative to one another, with the cylinder housing in communication with the guide tube housing, and the cylinder housing and guide tube housing symmetrically oriented about a predetermined axis,

and

the guide tube housing including a guide tube floor orthogo-

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nally oriented relative to the predetermined axis and spaced from the cylinder housing,

and

a piston reciprocatably mounted within the cylinder housing, the piston including a piston rod directed through the cylinder housing and including a piston plate arranged parallel relative to the piston positioned within the guide tube housing arranged for reciprocation relative to the guide tube floor, and drive means arranged for reciprocation of the piston within the cylinder housing,

and

the guide tube housing including an outlet opening positioned in adjacency to the floor,

and

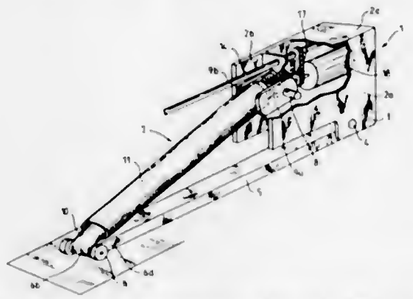
a first solenoid mounted through the guide tube housing spaced from the outlet opening, with the first solenoid including a ram plate orthogonally oriented relative to the guide tube floor arranged for projecting a workpiece from the guide tube floor through the outlet opening.

5,287,804

MECHANICAL SYSTEM FOR DISPLACING MODULAR PLATFORMS FOR FITTING OUT MULTI-PURPOSE HALLS

Rocco Compagnone, 4, rue Frederic Sauton, 75005, Paris, France

Filed Jun. 3, 1991, Ser. No. 709,326
Claims priority, application France, Jun. 6, 1990, 90 07015
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—144 **11 Claims**



1. A mobile platform adapted to be displaced, while remaining in a horizontal plane, between a lower retracted position and an elevated position at an adjustable height, said platform being constituted by one longitudinal beam, one longitudinal shaft running colinearly over the whole of the beam and at least two driving units, wherein each driving unit comprises:

(a) a frame formed by at least two lateral sides connected together and supporting the longitudinal beam;

(b) a principal upright articulated on the frame;

(c) rolling means provided on the free end of said principal upright and resting on a floor;

(d) a maneuvering jack constituted by:

(i) a telescopic sleeve articulated on said frame,

(ii) a movable piston contained inside said sleeve and articulated on the free end of said principal upright,

(iii) an endless screw, and

(iv) a captive nut fast with the piston;

(e) a secondary shaft parallel to the longitudinal shaft;

(f) transmission means for mechanical connection of the longitudinal shaft and the secondary shaft;

(g) a transverse shaft at right angles to the secondary shaft;

(h) a first bevel pinion mounted on said secondary shaft;

(i) a second bevel pinion mounted on the transverse shaft and gearing on said first bevel pinion;

(j) a third bevel pinion gearing on said second bevel pinion for maneuver of the jack and mounted on said endless screw;

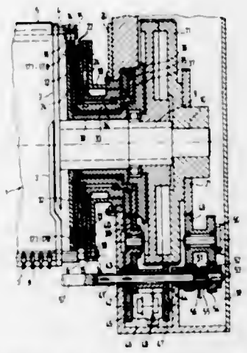
(k) connection means for kinetic connection of a shaft belonging to a mobile platform to a shaft belonging to an adjacent platform.

5,287,805

FOLDING APPARATUS

Emil Fischer, Ludwigshafen-Oggersheim, and Rudolf Staeb, Frankenthal, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

PCT No. PCT/DE91/00126, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/12195, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 19, 1991, Ser. Nn. 920,558
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1990, 4005195; Feb. 22, 1990, 4041613
Int. Cl.[5] B41F *5/04*
U.S. Cl. 101—219 **4 Claims**



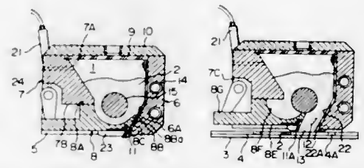
1. A folding apparatus, in particular a variable folding apparatus for a web-fed rotary gravure printing press, with a collect cylinder which can be switched from collect production to non-collect production and is provided with seven holding elements embodied as gripper rows, and seven folding blade rows, the holding elements of which are connected with actuating elements embodied as scanner rollers, which can be controlled by a respectively associated radial cam, the control area of which, embodied as a control recess, can be selectively uncovered or covered by means of a cover device provided with eight cover cams disposed on a drivable cam support which is coaxial with the radial cam, the cover cams of each cover device are received radially displaceable on the respectively associated cam support, the cover cams are adjustable by means of an adjusting disk, which is coaxial with the cam support, which can be driven together with the cam support and is adjustable in relation to the latter in the peripheral direction, characterized in that a 6U-printing cylinder with six copies around its periphery is provided, that the folding apparatus is switched into the production mode "partial collect", that the second and the sixth cover cam are extended, and the first, the third, the fourth, the fifth, the seventh and the eighth cover cams are retracted, that the cover cams are extended for rendering the gripper rows and folding blade rows passive, and are retracted for the activation position.

5,287,806

APPARATUS AND SYSTEM FOR SCREEN PRINTING OF SOLDER PASTE ONTO PRINTED CIRCUIT BOARDS

Takashi Nanzai, Miyoshi 3-10-3, Koto-ku, Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 902,963
Claims priority, application Japan, Jun. 24, 1991, 3-077831[U]; Dec. 6, 1991, 3-360409
Int. Cl.[5] B41L *13/18*
U.S. Cl. 101—123 **13 Claims**



1. A screen printing apparatus for printing onto a surface of a board through a medium of a screen, the apparatus comprising:

a dispenser including a pair of side walls substantially parallel to, and spaced from, each other in a direction of travel of said dispenser, said dispenser including a front wall fixedly secured to inner surfaces of forward portions of said side walls, said front wall having a lower portion with an inner surface rearwardly inclined and extending transversely to said direction of travel, said dispenser including a rear wall fixedly secured to rearward portions of said inner surfaces of said side walls, said dispenser also including a movable bottom wall, said movable bottom wall being movable toward and away from said front wall and having a front portion with an inner surface rearwardly inclined and substantially parallel to said inner surface of said front wall, said inner surfaces of said front and bottom walls defining a slit-like aperture which is closed and opened when said movable bottom wall is moved toward and away from said front wall, said front wall, said rear wall, said movable bottom wall and said side walls defining a chamber, said dispenser also including a removable lid covering said chamber and a pair of blades extending from said front wall and said movable bottom wall and along said slit-like aperture, said blades contacting an upper surface of the screen when said dispenser is moved in said direction of travel;

actuating means mounted on said dispenser and for closing said slit-like aperture when said dispenser is in a non-printing position and for opening said slit-like dispenser when said dispenser is performing a printing operation, whereby paste contained in said chamber is permitted to be dispensed onto the upper surface of the screen during each pass of said dispenser.

5,287,807

PERSONAL CHECK AMOUNT STAMPING DEVICE

James R. Johnston, #36-455 S. Buckmoore Ave., Lake Wales, Fla. 33833-2701

Filed Sep. 17, 1992, Ser. No. 946,085
Int. Cl.[5] B41K *1/42*
U.S. Cl. 101—333 **2 Claims**

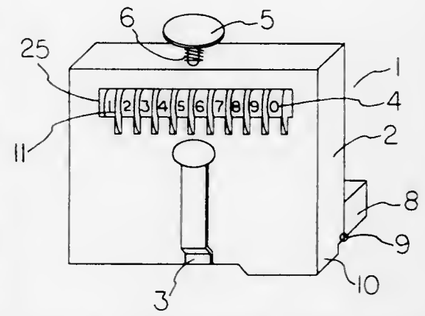
1. A personal check amount stamping device providing means for an individual to view, and at the same time, print the exact amount of a check being written on a check form, comprising:

a more or less rectangular enclosure having a top surface, a frontal surface, a rear surface, a left side surface, and a right side surface, and not having a bottom surface, and having entry to its inner area at its bottom, said top surface having an access hole located centrally,

an ink pad, said ink pad being filled with non-magnetic, computer readable ink, and hingedly affixed onto said rear portion of said enclosure at its lowermost edge, said hinge providing 180 degree rotatable retraction of said ink pad, a skirt protruding a distance downward from the lower right peripheral of said frontal portion, said skirt beginning at the right lower corner of said frontal portion of said enclosure, and continuing a distance to the left on said frontal portion, and said skirt also extending a distance along the lower peripheral of said right side portion of said enclosure, thereby providing locating means for said stamping device, onto said check form,

a more or less rectangular viewing opening in the front upper section of said frontal portion of said enclosure, said viewing opening having a plurality of equidistant located slots extending downwardly a distance below said viewing opening, and said slots being a part of said viewing opening at their upper peripheral, one said slot for each digit of a number to be printed onto said check form,

an inner printing cage assembly, said assembly being inserted into said enclosure through said bottom of said enclosure, and being held in place by a spring loaded actuator, said actuator being a removeable part of said cage assembly, said actuator extending upward through said hole in said top portion of said enclosure, and said actuator being held in its upper position by a spring, said spring being captured between the upper surface of said top portion of said enclosure, and the underside of the top of said actuator, and said inner cage assembly also comprising:



a framework, and said framework providing supporting means for two spaced axles, a top axle, and a bottom axle, each said axle providing turnable, supporting means for a plurality of wheels on said top axle mating with a plurality of wheels on said bottom axle, to form a plurality of sets one set for each digit to be printed, and said sets of wheels providing mounting means for a plurality of adjustable, endless, rubber number strips to be affixed around said set of wheels, one said number strip for each said set of wheels, and each said number strip having at least two sets of numbers affixed onto its outer surface in a manner, and location to provide viewing through said viewing opening, and printing a same digit on said check form in a simultaneous manner,

said numbers being individually settable by a set of thumb wheels, one said thumb wheel for each said number strip, and, said thumb wheels being supported on said top axle, and said thumb wheels protruding outward a distance through said slots in said frontal portion of said enclosure, and each said thumb wheel being attached onto the one side of each said wheel, thereby providing said setability of each said wheel, and therefore, each said number on each said number strip,

said frontal surface also having a clip affixed at its bottom center peripheral, said clip extending upward a distance to provide clipping means for said enclosure.

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5,287,808

METHOD AND SYSTEM FOR POSITIONING INK-METERING COMPONENTS RELATIVE TO A DUCT ROLLER OF A PRINTING MACHINE

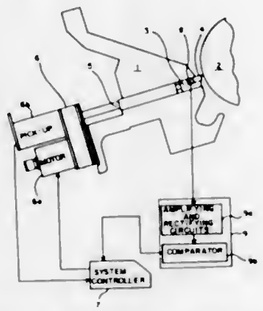
Andreas Lippold, Nidderau, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,783

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1991, 4131679

Int. Cl.[5] B41F *31/04, 33/00*

U.S. Cl. 101—365 **15 Claims**



1. A method for establishing a reference position for an ink-metering element relative to a duct roller of a printing machine, the method comprising the steps of:

creating a bore in the ink-metering element;

inserting an acoustic sensor into the bore for acoustically coupling the ink-metering element to the sensor;

rotating the duct roller;

moving the ink-metering element toward the rotating duct roller;

monitoring the physical position of the ink-metering element;

acoustically sensing a sound level at the acoustic sensor in the bore within the ink-metering element; and

upon sensing a predetermined change in the sound level which is indicative of the ink-metering element contacting the rotating duct roller, recording the physical position of the ink-metering element as the reference position.

5,287,809

METHOD AND DEVICE FOR FEEDING, ALIGNING AND HOLDING A SHEET ON A SHEET-PROCESSING MACHINE

Martin Greive, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

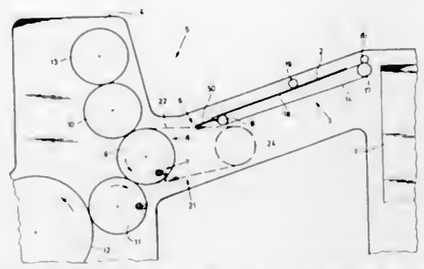
Filed May 4, 1992, Ser. No. 877,865

Claims priority, application Fed. Rep. of Germany, May 3, 1991, 4114479

Int. Cl.[5] B41F *9/00*; **B65H** *9/04*

U.S. Cl. 101—485 **17 Claims**

1. Method of feeding, aligning and holding a sheet on a cylinder of a sheet-processing machine, which comprises, prior to an occurrence of a gripping operation on a sheet at a cylinder of a sheet-processing machine, moving front lays from a location forward of the cylinder, as viewed in a sheet travel direction through the machine, and guiding the front lays around the cylinder to a location above the cylinder, forcing a leading edge of the sheet into a contact position wherein the leading edge of the sheet is pressed against the moving front lays, opening sheet grippers carried by the cylinder, inserting the leading edge of the sheet which is in the contact position into the sheet grippers, and maintaining the leading edge of the



sheet in the contact position with the front lays until just before closing the sheet grippers.

5,287,810

CARRIER SHELL EJECTING A PAYLOAD BY MEANS OF A PISTON

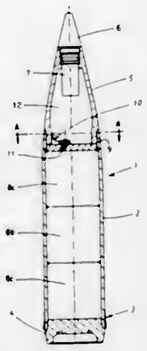
Régis Aumasson, and Dominique Dion, both of Bourges, France, assignors to Giat Industries, Versailles, France

Filed Nov. 6, 1992, Ser. No. 972,842

Claims prinrity, application France, Nov. 6, 1991, 91 13673

Int. Cl.[5] F42B *12/62*

U.S. Cl. 102—489 **10 Claims**



1. A carrier shell for transporting and ejecting a payload, comprising a body closed at one end by a base and at another end by a head; a piston; and a means for providing an attachment between the piston and the carrier shell after ejection of the payload, wherein said means for providing an attachment between the piston and the carrier shell after ejection of the payload comprises at least one cable, wherein one end of the at least one cable is coupled to the carrier shell at the head and another end is coupled to at least one spool fastened to the piston, the at least one cable being wound onto the spool.

5,287,811

FLEXIBLE BRANCHING APPARATUS IN SUPERCONDUCTING MAGNETICALLY LEVITATED RAILWAY HAVING VARIABLE CROSS-SECTION MAIN FLEXIBLE BEAM

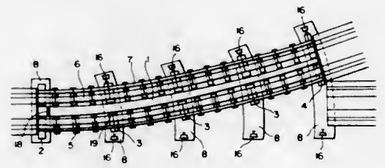
Akio Matsuura, Hachiouji; Atsushi Ichikawa; Genpachi Anami, both of Kokubunji, and Ichirou Sugimoto, Koganei, all of Japan, assignors to Railway Technical Research Institute, Japan

Filed Mar. 10, 1993, Ser. No. 29,161

Claims priority, application Japan, Apr. 2, 1992, 4-080133

Int. Cl.[5] E01B *26/00*

U.S. Cl. 104—130 **13 Claims**



1. A switching apparatus for switching between ranches in a U-shaped guideway for a superconducting magnetically levitated railway, comprising:

(a) a flexible main beam, which is integrally disposed along said guideway at the center thereof and has cross-sectional rigidity that gradually decreases from a fixed end to a distal end thereof, said main beam consisting of paramagnetic steel;

(b) cross beams integrated with said main beam and consisting of steel exhibiting a comparatively low magnetism;

(c) runway panels laid between said cross beams and supported so as not to possess transverse rigidity;

(d) short-span panels connected to vertical portions of said cross beams by hinge support means, said short-span panels having ground coils mounted thereon and forming side walls of said guideway for guidance;

(e) a driving device for moving the distal end of said main beam between at least two different positions providing two different routes in the guideway; and

(f) a stopping device for limiting movement of said distal end, thereby defining one of said positions and completion of movement of said distal end.

5,287,812

RAILROAD CAR POSITIONING APPARATUS

Ernest W., Lobb; Bruce A. Robbins, both of Aurora, and David L. Depew, Boling Brook, all of Ill., assignors to Svedala Industries, Inc., Waukesha, Wis.

Division of Ser. No. 565,644, Aug. 10, 1990, Pat. No. 5,150,656. This application Apr. 17, 1992, Ser. No. 871,267

Claims priority, application Canada, Sep. 28, 1989, 615556

Int. Cl.[5] B61B *13/00*

U.S. Cl. 104—162 **21 Claims**

11. Apparatus for automatically acquiring and positioning railroad cars in a train of cars along a railroad track; said apparatus comprising:

a guideway means situated between a pair of rails of the railroad track;

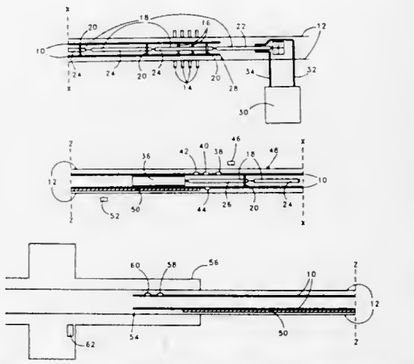
a carriage for travel along the guideway means;

dog means mounted on said carriage;

means for selectively moving the dog means between a lowered position beneath an axle height of the railroad cars and a raised position at the axle height for acquiring an axle of a railroad car;

a plurality of axially aligned, double acting hydraulic cylinders, each cylinder having an axially aligned piston rod therein for displacing the carriage in one of a forward or reverse direction along the guideway means as said piston rods are extended or retracted under hydraulic fluid pressure for exerting a force between the dog means and an acquired axle for thereby moving an acquired railroad car a selected distance and for thereafter indexing the carriage in an opposite direction for acquiring an axle of a next railroad car;

means for producing a signal when said carriage is indexed past an axle and for counting the number of axles passed;



means for cumulatively storing a counted number of axles; and

means for stopping said carriage when a predetermined number of axles has been counted.

5,287,813

COACH BODY CONSTRUCTION FOR RAIL VEHICLES HAVING EXTRUDED ALUMINUM PROFILES WITH UNDERCUT NUT-RECEIVING GROOVES FOR EASE OF ASSSEMBLY

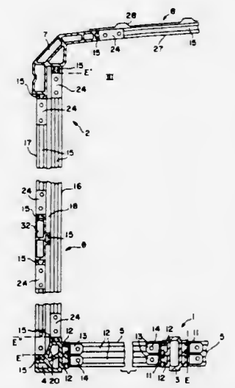
Roland Hänni, Zürich; Alex Stutz, Hirzel, and Giorgio Destefani, Zürich, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jun. 17, 1991, Ser. No. 716,631

Claims priority, application Switzerland, Jun. 7, 1990, 2256/90

Int. Cl.[5] B61D *17/04*

U.S. Cl. 105—396 **23 Claims**

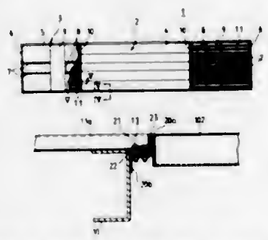


18. A coach body construction for rail vehicles which comprises:

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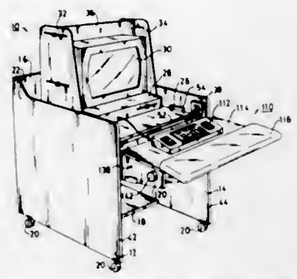
an upper structure of inherently sturdy construction including posts and upper flanges;
said posts and said upper flanges being formed by extruded aluminum alloy profiles;
said posts and said upper flanges each having two undercut longitudinally extending grooves for receiving nuts extending along at least one side;
a lower structure detachably connected to said upper structure;
said lower structure including longitudinal and transverse supports;
each of said longitudinal and transverse supports being formed by an extruded aluminum alloy profile; and
each of said longitudinal supports and at least some of said transverse supports having two undercut longitudinally extending grooves extending along at least one side for receiving nuts and to provide rigidity to the coach body construction.

5,287,814
CAR BODY OF RAILWAY ROLLING STOCK AND METHOD FOR FABRICATING CAR BODY
Kentaro Masai; Seiichi Okamoto; Sumio Okuno, and Keiji Ohmura, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 745,169, Aug. 15, 1991, abandoned, which is a continuation of Ser. No. 508,695, Apr. 13, 1990, abandoned. This applicatinn Jul. 30, 1992, Ser. No. 921,586
Claims priority, application Japan, Apr. 14, 1989, 1-92876
Int. Cl.[5] B61D *17/00*
U.S. Cl. 105—422 **5 Claims**



1. A car body of railway rolling stock comprising:
a roof framing including roof outer plate members of a ferrous material and roof frame members of a ferrous material;
two side framings including side outer plate members of a ferrous material and side frame members of a ferrous material;
two end framings including end outer plate members of a ferrous material and end frame members of a ferrous material; and
an underframe including an end underframe and a center underframe, said end underframe comprising two side sills, two cross beams connected between said two side sills, and said center underframe including extruded shaped light alloy members, light alloy joining members welded to the ends of said center underframe as viewed in a longitudinal direction of the car body, and coupling means for coupling said joining members to said cross beams of said end underframe, wherein said cross beams are disposed in respective positions close to the center underframe, and said cross beams having coupling flanges extending toward the center underframe, said coupling flanges being connected to respective ones of said joining members by said coupling means.

5,287,815
COMPUTER WORKSTATION
Milton Gross, 34 Elmore Rd., Rochester, N.Y. 14618
Filed May 7, 1992, Ser. No. 879,392
Int. Cl.[5] A47B *35/00*
U.S. Cl. 108—50 **23 Claims**

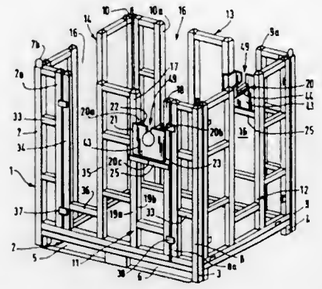


1. In a workstation having a table for supporting a computer display terminal with a screen facing a user, said table being mounted on vertically extending leg members, a shelf assembly on which a keyboard can be disposed in ergonomically optimal relationship with the user's arm, wrist and fingers, said assembly comprising a shelf, side members depending from said shelf, said side members having rear and forward ends respectively facing away from and towards said table, arm and foot members projecting forwardly, from each of said rear ends, said arm members being above said foot members, racks along said leg members, said racks having pluralities of vertically spaced slots in which said arms are selectively captured to locate said shelf at different elevations and to define pivots for said assembly, said racks having forwardly facing edges against which said foot members bear, said assembly being releaseably retained by said racks, and said arm and foot members defining mechanical couples enabling said assembly to rotate about said pivots under the force of gravity until stopped by said forwardly facing edges of said racks upon engagement thereof by said foot members, a bar providing a rest for the user's wrist or arm, said bar extending laterally along said shelf, laterally spaced brackets supporting said rest and projecting forwardly along said side members, and means for connecting said brackets to said side members and enabling movement of said rest forwardly and rearwardly in translation and rotationally in upward and downward directions to selected positions with respect to said shelf.

5,287,816
PALLET FOR TRANSPORTING CYLINDRICAL OBJECTS AND HOLDER FOR SUPPORTING THEIR CENTERAL TUBE
Raymond R. Jungpeter, Toernich, Belgium, and Lucien J. Bodson, Keispelt, Luxembourg, assignors to E. I. du Pont De Nemours & Company, Wilmington, Del.
Filed Dec. 11, 1991, Ser. No. 805,043
Claims priority, application France, Dec. 18, 1990, 90 15837
Int. Cl.[5] B65D *19/44*
U.S. Cl. 108—55.1 **31 Claims**

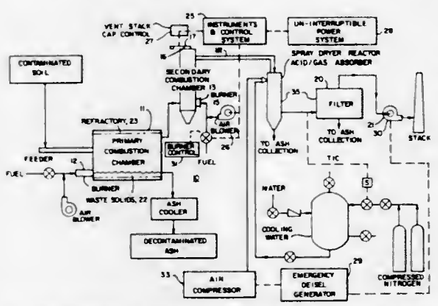
1. A pallet for carrying cylindrical objects of variable outside diameter supported by a central tube thereof, said pallet comprising a pallet base of generally rectangular shape carrying uprights secured at four corners thereof between which at least two detachable support means are fitted to said base on opposite sides thereof, each support means comprising a pair of vertical members, said support means being parallel to one another, said support means including means for mounting them on said pallet base and means for rendering them integral with the uprights, each of said vertical members including side walls said support means including, at least at an upper region, an an open area located between opposing side walls, said

opposing side walls provided with guiding means adapted to cooperate with matching guiding means of a holder member for an end of said central tube, said holder member resting on



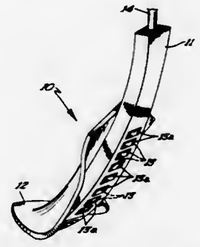
a detachable cross member extending between said opposing side walls and adapted to be fitted at differing levels within said open area.

5,287,817
EMERGENCY SHUTDOWN SYSTEM FOR A HAZARDOUS WASTE INCINERATOR
John N. Lees, Jr., Brookfield, Wis., and Allen B. Beaudin, Danville, Calif., assignors to Svedala Industries, Inc., Waukesha, Wis.
Filed Feb. 12, 1993, Ser. No. 17,010
Int. Cl.[5] F23N *5/24*
U.S. Cl. 110—193 **5 Claims**



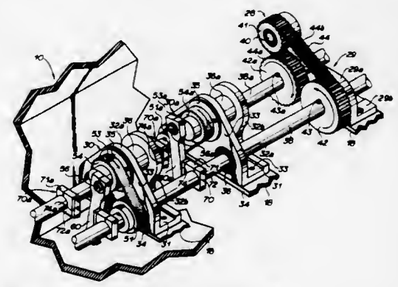
1. An emergency shutdown system for a hazardous waste incinerator having:
A. a primary combustion chamber,
B. means for feeding material containing hazardous waste to said primary chamber,
C. a heater for providing sufficient heat to said primary chamber to volatilize the hazardous waste material,
D. a secondary combustion chamber positioned to receive volatilized gas from said primary chamber,
E. means for providing heat and oxygen to said secondary combustion chamber to further treat the gas in a secondary combustion chamber,
F. a system induced draft fan for controlling the flow of gas through said combustion chambers,
G. a main power source for operating said feed means, said heater, said means for providing heat and oxygen to said secondary chamber and said fan,
H. an uninterrupted power source connected to said means for providing heat and oxygen to said secondary combustion chamber upon interruption of said main power source,
I. an auxiliary power source energizable upon an interruption of the main power source, and
J. control means for connecting said auxiliary power source to said fan to keep the system operating until all hazardous waste in the primary combusion chamber has been treated.

5,287,818
METHOD FOR KILLING SOIL PATHOGENS WITH MICRO-WAVE ENERGY
A. H. J. Rajamannan, Minneapolis, Minn., assignor to Aqua Heat Technology Inc., Fridley, Minn.
Filed May 11, 1993, Ser. No. 59,463
Int. Cl.[5] H01C *23/00*
U.S. Cl. 111—200 **6 Claims**



1. A method for killing soil pathogens in a field to improve agricultural production comprising moving a plurality of agricultural subsurface soil working tools through a field and during the movement of the tools simultaneously emitting microwave energy at a predetermined frequency range into the soil at levels located below the surface thereof from a plurality of microwave generators mounted on each tool to thereby instantaneously heat the soil organism to lethal levels sufficient to kill the soil organisms.

5,287,819
HIGH SPEED DYNAMICALLY BALANCED TUFTING MACHINE
Paul Beatty, Chattanooga, and Marshall A. Neely, Soddy-Daisy, both of Tenn., assignors to Card-Monroe Corp., Chattanooga, Tenn.
Filed Dec. 16, 1992, Ser. No. 991,103
Int. Cl.[5] D05B *15/04, 15/20, 69/02*
U.S. Cl. 112—80.01 **23 Claims**



1. A tufting machine of the type having:
(a) a frame having a head;
(b) a plurality of spaced parallel push rods carried by said head for simultaneous reciprocation along their respective axes;
(c) a needle bar carried by said push rods and adapted to

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hold a plurality of needles containing yarns for tufting action upon each reciprocation of said needle bar by said push rods;

(d) a drive shaft for imparting reciprocation to said push rods;

wherein the improvement comprises:

(e) first drive means connected between said drive shaft and a first group of said push rods and moveable in first prescribed paths for imparting reciprocation to said first group of push rods;

(f) second drive means connected between said drive shaft and a second group of said push rods and moveable in second prescribed paths for imparting reciprocal movement to said second group of push rods, the paths of movement of portions of said first drive means and the paths of movement of said second drive means providing counterbalancing effects with respect to each other; and

(g) synchronizing means for synchronizing the movement of said first drive means and said second drive means so as to produce said counterbalancing effects resulting from their separate paths of movement.

5,287,820

MOVABLE AND RELATIVELY POSITIONABLE SEWING UNITS FOR SEWING STATIONARY MATERIAL

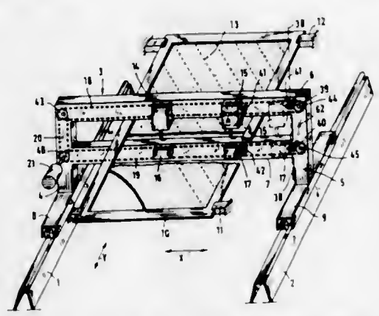
Klaus Stutznäcker, Frechen, Fed. Rep. of Germany, assignor to Nahmaschinenfabrik Emil Stutznacker GmbH & Co., KG, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 878,123

Claims priority, application Fed. Rep. of Germany, May 2, 1991, 4114148; Aug. 27, 1991, 4128336

Int. Cl.[5] D05B *11/00, 21/00*

U.S. Cl. 112—117 **41 Claims**



1. A sewing machine for sewing stationary large surface material (13) comprising at least two units (14, 16 and 15, 17), each of said units (14, 16 and 15, 17) including a sewing head (14, 15) and an associated shuttle box (16, 17), means (3) mounting said units for displaceable movement in a first direction (x), said mounting means (3) being displaceable in a second direction (y) substantially normal to said first direction (x), common drive means (18, 19, etc.) for displacing said units simultaneously in the first direction (x) while spaced a predetermined distance (D) from each other, means (35) for disengaging one of said units (14, 16 or 15, 17) from said common drive means (18, 19, etc.) and the other unit is displaced by said common drive means to thereby selectively change said predetermined distance (D), and said disengaging means (35) being further re-engageable relative to said common drive means (18, 19, etc.) to thereby re-engage and retain said one unit fixed relative to said other unit after said predetermined distance (D) has been changed.

5,287,821

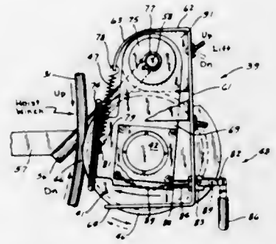
ELECTRIC DRIVE MECHANISM FOR BOAT HOIST WINCH

Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445

Filed Apr. 12, 1993, Ser. No. 44,802

Int. Cl.[5] B63C *15/00*

U.S. Cl. 114—44 **10 Claims**



1. In a boat hoist having a frame including at least a pair of spaced posts, a platform for supporting a boat movably mounted on the posts, a winch having a cable arrangement interconnected with the platform, a circular lift wheel for rotating the winch to move the platform in a vertical direction, and the boat provided with a DC source of power, an electrically powered mechanism for rotating the lift wheel comprising:

arm means secured to one of the posts adjacent the lift wheel;

carriage means mounted on said arm means;

plate means pivotally mounted on said arm means and including an electric motor having wiring detachably connectable to the boat source of power for energizing said electric motor, said electric motor having a drive shaft;

a circular drive wheel secured to said drive shaft for rotation therewith;

first means interconnected between said carriage means and said plate means for biasing said plate means from a first position wherein said drive wheel is spaced from the lift wheel to a second position wherein said drive wheel drivingly engages the lift wheel; and

second means interconnected between said carriage means and said plate means and operable in a first position to resist the bias of said first means whereby to retain said drive wheel spaced from the lift wheel, and operable in a second position to release said resistance whereby said drive wheel drivingly engages the lift wheel to impart drive thereto in response to energization of said electric motor.

5,287,822

PORTABLE WARNING MARKER

Roger K. Anderson, 415 Ridley St., Corydon, Ind. 47112

Filed Dec. 18, 1992, Ser. No. 992,552

Int. Cl.[5] E01F *9/00*

U.S. Cl. 116—63 P **20 Claims**

1. A foldable marker comprising

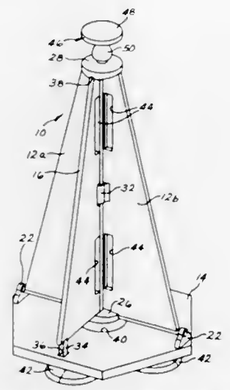
a base member having a relatively broad, flat upper surface,

a relatively flat plate member attached to said upper surface,

means for pivoting said plate member relative to said upper surface such that said plate member is tiltable between an operative upright position perpendicular to said upper surface and a downfolded storage position essentially parallel to said upper surface,

a pair of relatively flat wing members attached on opposite broad sides of said plate member,

means for pivoting each of said wing members relative to said plate member between an operative position perpendicular to said plate member and a folded storage position against a different one of said broad sides, said wing members being aligned with one another in essentially the same plane when both are in their operative positions, and



means for releasably securing said wing members to said base member when said wing and plate members are disposed in their operative positions to maintain said wing and plate members in said operative positions.

5,287,823

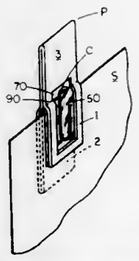
REMOVABLE PAGE MARKER

Curtis T. Jiang, San Francisco, Calif., assignor to QLH USA, Inc., San Francisco, Calif.

Filed Feb. 16, 1993, Ser. No. 17,748

Int. Cl.[5] B42D *9/00*

U.S. Cl. 116—237 **4 Claims**



1. A removable page marker comprising:

a front panel, a back panel and a lower panel wherein said front and back panels each have an elongated slot therethrough;

a top edge of said front and back panels being aligned;

a top end of each slot of said front and back panels being aligned;

said front and back panels being contiguous from said top edges to a diverging point below said top end of the elongated slot of said front and back panels;

said lower panel being contiguous with said front panel from a lower edge of said front panel to said diverging point and thereafter being contiguous with said back panel to a lower edge of said back panel;

said lower, front and back panels and respective slots below said diverging point forming means for retaining clipping members of a paper clip;

said top end of said slots forming aperture means for entrance of said paper clip whereby one clipping member of said clip is received in the retaining means associated with the front panel and a second slipping member of said clip is received in the retaining means associated with the back panel.

5,287,824

Patent Not Issued For This Number

5,287,825

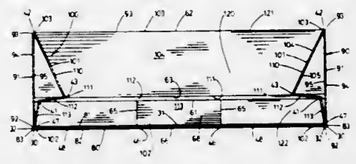
CONTAINER FOR HOUSING NEWBORN ANIMALS AND THE LIKE

Thomas R. Wheeler, and Vicki F. Wheeler, both of 47265 Ottawa Dr., Coarsegold, Calif. 93614

Filed Dec. 21, 1992, Ser. No. 993,703

Int. Cl.[5] A01K *1/02*

U.S. Cl. 119—20 **8 Claims**



1. A container for housing one or more infant and adult animals comprising a substantially flat bottom adapted to be rested on a surface of support; a wall mounted on said bottom in upstanding relation and, with said bottom, defining a confining area for said animals accessible through a mouth bounded by said wall; a panel borne in covering relation to said wall within said confining area and so configured as to form a projection upwardly spaced from th bottom and inwardly spaced from the wall to define a recess for receiving an infant animal to protect the infant animal from an adult animal which would otherwise lay thereon, and a confining member, extending upwardly and outwardly from said projection and to said mouth in a configuration resisting movement by the infant animals through the mouth and from the confining area; and wherein said bottom, wall and panel are formed from a single sheet of material adapted to be folded into an assembled attitude forming said container, said sheet having:

A. a substantially flat rectangular portion defined by first fold lines substantially right-angularly related to adjoining fold lines thereof and each of said first fold lines having an adjacent, substantially parallel slot;

B. a substantially flat lateral portion contiguous with each of said first fold lines and having opposite lateral edges, a distal edge substantially parallel to its respective first fold line, a second fold line interconnecting said lateral edges substantially parallel to its respective first fold line and a third fold line spaced from and substantially parallel to the second fold line; and

C. a substantially flat fastening portion contiguous with the distal edge of each lateral portion extending outwardly therefrom and having a fourth fold line substantially parallel to said third fold line and having a fastening tab extending outwardly therefrom whereby said sheet can be folded along the first fold lines to move said lateral portions between said respective first fold line and the second fold line to attitudes substantially right-angularly related to the rectangular portion so that the rectangular portion forms said bottom and the lateral portions between the first fold lines and said second fold line form said wall, said lateral portions between the second and third fold lines thereof inwardly between the adjacent lateral portions and toward the rectangular portion at an oblique angle to form said confining member, said lateral portions between the third fold line and said distal edge outwardly toward the adjacent wall to define a recess and the fastening portion downwardly through the adjacent slot and the fastening tab folded along the fourth fold line and beneath said bottom to retain said sheet in a configuration constituting said assembled attitude.

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5,287,826

METHOD FOR MODIFYING THE ESCRETORY BEHAVIOR OF AN ANIMAL SUCH AS A DOG

Mirza A. Mohamed, West Monroe, La., assignor to Board of Supervisors of Lousiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 862,791, Apr. 3, 1992, abandoned. This application May 19, 1993, Ser. No. 64,371

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—712 17 Claims

1. A method of modifying the excretory behavior of a dog, comprising the steps of:

(a) selecting a location at which the dog does not preferentially excrete, but at or near which location it is desired that the dog should preferentially excrete; and

(b) placing β-ionone at the selected location in an amount and for a time effective to cause the dog to excrete preferentially at or near that location;

whereby the dog's behavior is modified so that the dog preferentially excretes at or near the selected location.

5,287,827

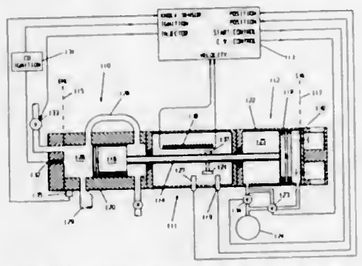
FREE PISTON ENGINE CONTROL SYSTEM

Allen D. Almendinger, Bloomington; Timothy S. Anderson, Deceased Late of St. Michael; By Tina P. Anderson, St. Michael, Administratrix; Anton Braun, Minneapolis, and William J. Zerull, Edina, all of Minn., assignors to Tectonics Companies, Inc., Minneapolis, Minn.

Filed Sep. 17, 1991, Ser. No. 761,252

Int. Cl.[5] F02B *71/00*

U.S. Cl. 123—46 R 10 Claims



1. A free piston control system, for use with a variable stroke free piston engine of the type having, an engine piston, an engine cyclinder, said engine piston and cylinder defining a combustion chamber, said control system comprising:

means for defining a first ignition event marker, based upon the velocity of said piston;

means for defining a second ignition event marker, based upon the position of said piston;

selection means for generating an ignition event in said combustion chamber upon the first to occur of said first ignition marker and said second ignition marker.

5,287,828

ENGINE INTAKE FLOW BOOSTER

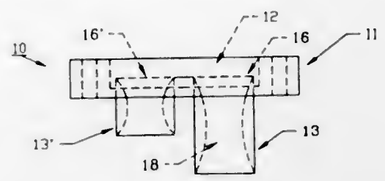
Michael D. Kennedy, 417 Walnut Grove Rd., Archdale, N.C. 27263

Filed Apr. 9, 1993, Ser. No. 44,454

Int. Cl.[5] F02M *29/00*

U.S. Cl. 123—52 M 12 Claims

1. An intake flow booster for an internal combustion engine for location between the carburetor and intake manifold, comprising a manifold plate, said plate defining a single well, a manifold tube wherein said well is wider foam said tube to be inserted into the intake manifold, said tube also being in fluid communication with and surrounded by said well, said tube having an internal nozzle configuration wherein an outlet end 56 said tube is whereby fluid passing through said carburetor will be smoothly directed through said well and said tubes for



delivery through said intake manifold for combustion purposes.

5,287,829

FLUID ACTUATORS

Nigel E. Rose, 5 Woodvale Drive, Mudgeeraba, Queensland 4213, Australia

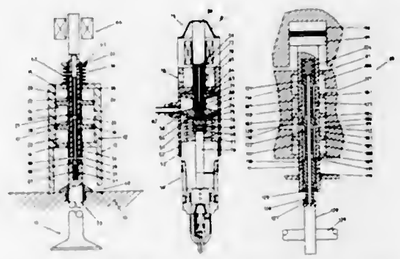
PCT No. PCT/AU90/00387, § 371 Date Feb. 26, 1992, § 102(e) Date Feb. 26, 1992, PCT Pub. No. WO91/03630, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 28, 1990, Ser. No. 835,911

Claims priority, application Australia, Aug. 28, 1989, PJ5992; Aug. 28, 1989, P. 5993; Sep. 11, 1989, PJ6283; Oct. 13, 1989, PJ6839; Nov. 22 1989, PJ7516; Dec. 28, 1989, PJ8028

Int. Cl.[5] F01L *9/02*; F02M *47/04*; F15B *9/08*, *15/20*

U.S. Cl. 123—90.12 24 Claims



1. A fluid actuator including a chamber, a piston assembly arranged for reciprocating movement within said chamber, said piston assembly including first and second spaced apart pistons dividing said chamber into a first chamber section between said first piston and said chamber, a second chamber section between said first and second pistons, and a third chamber section between said second piston and said chamber, passageway means in said piston assembly, fluid inlet means communicating with said second chamber section and valve means for controlling the flow of fluid through said passageway means, said valve means being operable to communicate fluid through said passageway means from said second to said first chamber sections so as to cause movement of said piston assembly in a first direction, and said valve means being further operable to communicate fluid through said passageway means from said second to said third chamber sections so as to cause said piston assembly to move in a direction opposite said first direction.

5,287,830

VALVE CONTROL MEANS

Clive Dopson, Norwich, and Jeffrey Allen, Attleborough, both of England, assignors to Group Lotus, United Kingdom

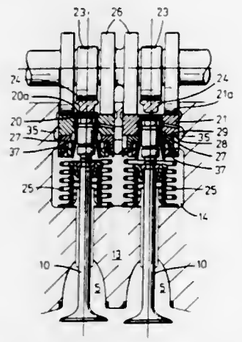
PCT No. PCT/GB91/00233, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO91/12413, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 15, 1991, Ser. No. 920,389

Claims priority, application United Kingdom, Feb. 16, 1990, 9003603; Mar. 29, 1990, 9007022

Int. Cl.[5] F01L *1/34*, *1/14*

U.S. Cl. 123—90.16 26 Claims



1. Valve control means for an internal combustion engine comprising valve means, cam means comprising a rotatable camshaft having a first cam member and a second cam member having a different profile from said first cam member, means for transmitting reciprocating movement to the valve means from said cam means, said transmitting means comprising a first cam follower member in engagement with said valve means and a second cam follower member movable relative to said first cam follower member, and locking means to enable said follower members to be linked so as to move together, wherein

when the follower members are not so linked the valve means is controlled by the first cam follower member in engagement with and following the profile of the first cam member and when the follower members are linked the valve means is controlled by the second cam follower member in engagement with the following the profile of the second cam member and wherein

the second cam follower member has a bore therethrough and the first cam follower member is in the form of an inner member located within the bore, said first cam second cam follower member when the cam follower members are not linked to move together.

5,287,831

VEHICLE STARTER AND ELECTRICAL SYSTEM PROTECTION

Christian J. Andersen, Cadillac; Duane W. Gebauer, and Ronald D. Ingraham, both of Reed City, all of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Aug. 15, 1991, Ser. No. 745,511

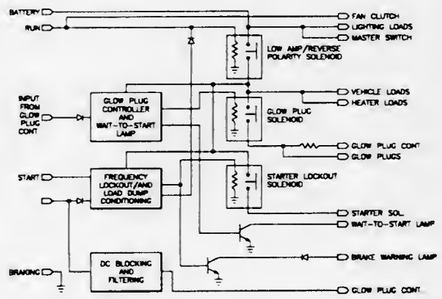
Int. Cl.[5] F02N *11/08*

U.S. Cl. 123—179.3 5 Claims

1. A starter protection system for a machine having an internal combustion engine, a starter motor for starting said internal combustion engine, and an alternator for producing alternating electric power in response to rotation of said internal combustion engine, at a frequency which is dependent on engine rotation speed, said starter protection device comprising:

a) starter control apparatus and circuitry for assuming a first state in which said starter motor is disabled, and a second state in which said starter motor is enabled, said starter control apparatus and circuitry comprising a solenoid for controlling application of electric power to said starter motor, a field effect transistor for controlling operation of said solenoid, and a second transistor coupled to the gate of said field effect transistor for actuating said field effect transistor;

b) circuitry including a frequency to voltage convertor for detecting and indicating the frequency of the alternating electric power produced by said alternator, said frequency to voltage converter being connected to receive as an input a signal from said alternator having a frequency corresponding to instantaneous alternator frequency, said frequency to voltage converter producing at a single output an analog voltage signal whose magnitude is a function of the received frequency signal, said frequency to voltage converter further including a separate input for receiving a reference voltage signal and an internal comparator for grounding said output analog signal in response to said analog signal having reached the value of said reference signal; and



c) voltage divider circuitry for establishing the value of said reference signal;

d) circuitry responsive to said dropping of said frequency to voltage converter output for re-establishing a second lower value of said reference signal by reconnecting circuit elements to form a second voltage divider configuration which differs from the configuration of said voltage divider circuitry utilized in establishing said first reference value, such that said output of said frequency to voltage converter remains in its low state until the frequency of the signal received by the frequency to voltage converter is reduced to a level significantly lower than the level which caused the initial dropping of said output of said frequency to voltage converter to its low state; and

e) circuitry for governing the state of said transistors of said starter control apparatus and circuitry in response to the dropping of said frequency to voltage converter output signal to its low level.

5,287,832

STARTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Klaus-Martin Uhl, Esslingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,435

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135405

Int. Cl.[5] F02N *3/02*

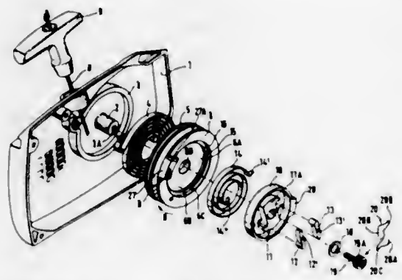
U.S. Cl. 123—185.3 36 Claims

1. A starting device for applying a starting torque to the shaft of an internal combustion engine with the engine developing a reaction torque during starting which causes said starting torque to fluctuate, the starting device comprising:

a housing;

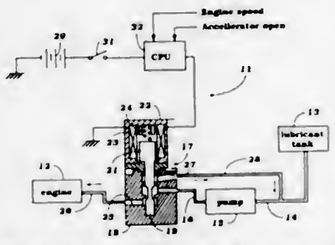
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a clutch arm rotatably journalled in said housing and defining an axis of rotation;
means for manually imparting a rotational movement to said clutch drum;
a clutch member fixedly mounted to the engine shaft for rotation therewith;
a carrier rotatably mounted in said housing so as to be rotatable about said axis;
entraining means for connecting said clutch drum to said carrier for transmitting the rotational movement of said clutch drum to said carrier;



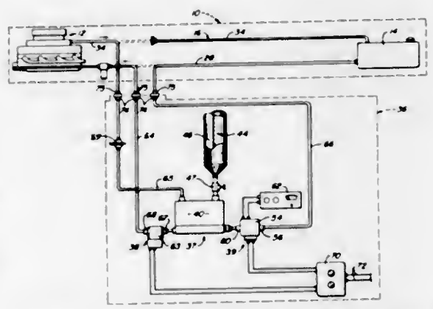
catch means mounted on said carrier and said catch means including a mount on said carrier and two pawls pivotally mounted on said mount so as to be displaceable in response to said rotational movement from a rest position into an engaging position wherein said two pawls engage and transmit said rotational movement to said clutch member; and,
said entraining means being elastically deformable to compensate for the fluctuations of said starting torque.

5,287,833
LUBRICATING OIL SUPPLYING SYSTEM FOR TWO CYCLE ENGINE
Yoshinobu Yashiro, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Apr. 7, 1992, Ser. No. 862,984
Claims priority, application Japan, Apr. 12, 1991, 3-108651
Int. Cl.[5] F01M *1/02*
U.S. Cl. 123—196 CP **23 Claims**



1. A lubricating system for an internal combustion engine comprising a reciprocating lubricant pump driven by said engine at a fixed speed ratio, said lubricant pump delivering a substantially fixed amount of lubricant during each cycle of its operation, conduit means extending from said lubricant pump to said engine for delivering lubricant thereto, valve means in said conduit means for selectively controlling the flow of lubricant to said engine, said valve means having a flow position in which lubricant flow to said engine is permitted and a non-flow position in which lubricant flow to said engine is precluded, successive flow and non-flow positions comprising a duty cycle "a" with the time of delivery of lubricant during a duty cycle being defined as a time period (a-b) where the time "b" is the time of non-delivery, and means for operating said valve means for varying the time period when said valve means is in its flow position (a-b) and in its non-flow position (b) and also the duty cycle for controlling the amount of lubricant delivered to said engine.

5,287,834
METHOD AND APPARATUS FOR CLEANING DEPOSITS AND RESIDUE FROM INTERNAL COMBUSTION ENGINES
Robert E. Flynn, 953 No. Greer Ave., Covina, Calif. 91724
Continuation of Ser. No. 666,390, Mar. 8, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,596
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 A **26 Claims**

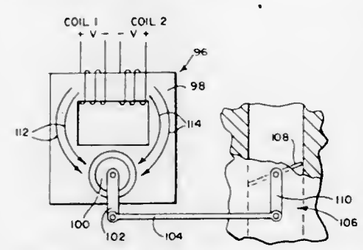


1. Engine conditioning apparatus for use with an internal combustion engine system including an internal combustion engine having combustion chamber means, a fuel tank for containing normal engine fuel, fuel input means for introducing fuel into said combustion chamber means, and an engine fuel pump driven by said engine having an inlet normally connected to said fuel tank and an outlet connected to said fuel input means for pumping fuel to said fuel input means, said conditioning apparatus comprising:
fuel handling means for containing an engine conditioning fuel formed by mixing normal engine fuel and a carbon removing agent, and wherein
said apparatus fuel handling means comprises a conditioning fuel tank, a priming pump having an inlet connected to said conditioning fuel tank and an outlet, fuel transfer means for conducting normal engine fuel to said conditioning fuel tank, and means for introducing said carbon removing agent into said conditioning fuel tank for mixing therein with normal engine fuel to form said conditioning fuel, and
said fuel handling means is operable to supply one of said fuels to the engine during cranking of said engine to start the engine and thereafter supply said conditioning fuel to said engine.

5,287,835
ELECTRONIC GOVERNOR WITH FAST RESPONSE TIME
John A. Fiorenza, II, Slinger, and John B. Gonnering, West Bend, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Jul. 10, 1992, Ser. No. 911,949
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—352 **8 Claims**

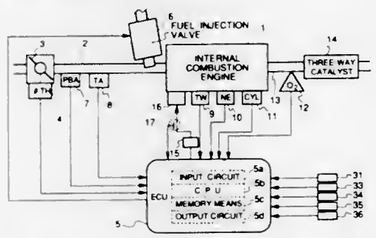
1. An electronic governor that controls the position of an engine throttle to set the engine speed near or at a set speed, comprising:

means for storing said set speed;
means for determining the engine speed;
means for generating a first control signal if said engine speed is not substantially equal to said set speed; and
an actuator interconnected with said engine throttle, including:
a stator having magnetic material;
a magnet means having a first magnet pole of a first polarity and having a second magnet pole of an opposite second polarity, said magnet means for magnetically interacting with said stator;



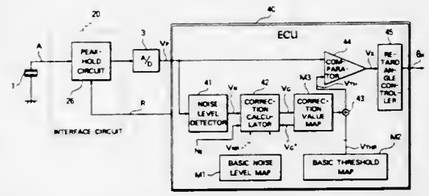
a rotatable rotor,
coil means, including a coil disposed on said rotor and being operated in response to said first control signal, for creating a first flux field in said stator, thereby changing the position of at least one of said magnet means and said coil in a first magnet direction to move said throttle in a first throttle direction; and
means, interconnected with said engine throttle, for creating a second flux field to thereby move said throttle in a second throttle direction opposite to said first throttle direction.

5,287,836
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Yuichi Shimasaki; Masaki Kanehiro; Takuji Ishioka; Shigeki Baba; Takashi Hisaki; Shigeru Maruyama; Masataka Chikamatsu; Shukoh Terata; Kenichi Maeda, and Kazuhito Kakimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,195
Claims priority, application Japan, Dec. 18, 1991, 3-353841; Dec. 25, 1991, 3-357067
Int. Cl.[5] F02P *5/00, 5/14*
U.S. Cl. 123—406 **6 Claims**



1. In a control system for an internal combustion engine having at least one cylinder, and a spark plug provided for each of said at least one cylinder, said control system including a control means for controlling operation of said engine according to combustion roughness, said control means including signal-generating means for determining ignition timing of said engine and for generating an ignition command signal indicative of the determined ignition timing, and igniting means responsive to said ignition command signal for generating high voltage for causing generation of sparking voltage across said at least one spark plug,
the improvement comprising:
voltage value-detecting means coupled to said igniting means for detecting said sparking voltage generated across said at least one spark plug when said high voltage is generated;
duration-measuring means coupled to said voltage value-detecting means for measuring a duration over which said sparking voltage across said spark plug exceeds a predetermined reference value, after generation of said ignition command signal; and
combustion roughness-detecting means coupled to said duration-measuring means and said control means for detecting said combustion roughness based on said duration measured.

5,287,837
KNOCK SUPPRESSING APPARATUS FOR INTERNAL COMBUSTION ENGINE
Atsuko Hashimoto, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1991, Ser. No. 748,725
Claims priority, application Japan, Aug. 24, 1990, 2-221151; Aug. 24, 1990, 2-221152
Int. Cl.[5] F02P *5/14*
U.S. Cl. 123—425 **3 Claims**



1. A knock suppressing apparatus for an internal combustion engine comprising:
a knock sensor for sensing the vibrations of an engine and generating a corresponding output signal;
an interface circuit for generating a vibration level based on the output signal of said knock sensor.
a noise level detector for generating a noise level based on the vibration level;
memory means for storing a basic noise level, a basic threshold level and a correction value in relation to the number of revolutions per minute of the engine;
calculating means for updating the correction value based on the noise level, the basic noise level and a current engine operating condition, and generating a corrected threshold for knock determination based on the basic threshold and the updated correction value;
a knock determiner for making a comparison between the vibration level and the corrected threshold and generating a knock determination signal if the vibration level exceeds the corrected threshold; and
a controller for controlling, based on the knock determination signal from said knock determiner, an engine control parameter in a direction to suppress knocking.

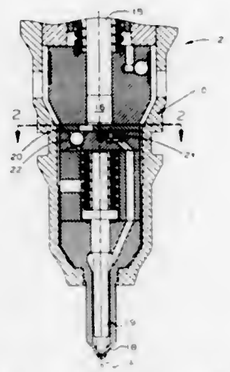
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,838

COMPACT REVERSE FLOW CHECK VALVE ASSEMBLY FOR A UNIT FLUID PUMP-INJECTOR

Glenn C. Wells, Minonk, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 26, 1993, Ser. No. 23,225
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—467 **7 Claims**



1. A reverse flow check valve assembly adapted for a unit fuel pump-injector having a pump chamber and an injection nozzle, said check valve assembly comprising:
a first stop having a first seat and at least one inlet passage adapted to be in fluid communication with the pump chamber;
a second stop having a second seat and at least one outlet passage adapted to be in fluid communication with the injection nozzle, one of the first and second stops defining a bore; and
a check positioned in the bore according to a selected annular clearance and movable between the first and second seats, said annular clearance defining a first flow path adapted to communicate fluid from the inlet passage to the outlet passage when the check is seated on the second seat, said check having internal passage means for communicating fluid in parallel with the first flow path from the inlet passage to the outlet passage when the check is seated on the second seat, said check arranged to block communication of fluid from the outlet passage to the inlet passage when the check is seated on the first seat.

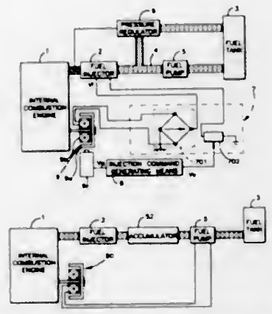
5,287,839

FUEL INJECTION EQUIPMENT FOR INTERNAL COMBUSTION ENGINE

Tetsuya Kondou, Shizuoka; Yutaka Inaba, Numazu; Narutoshi Aoki, Mishima; Yoshinobu Arakawa, Numazu; Ryuji Satsukawa, Shimizu, and Tsuneaki Endou, Numazu, all of Japan, assignors to Kokusan Denki Co., Ltd., Japan

Filed Dec. 30, 1991, Ser. No. 814,714
Int. Cl.[5] F02D *41/04, 41/26*; F02M *39/00*
U.S. Cl. 123—478 **2 Claims**

1. A fuel injection equipment in combination with an internal combustion engine which does not have a battery serving as a control power supply comprising:
a fuel injector including an exciting coil and injecting fuel into a fuel injected space of an internal combustion engine when said exciting coil is fed with an exciting current of a predetermined level or more;
a fuel pump for feeding fuel from a fuel tank to said fuel injector;
a fuel pump driving power supply for driving said fuel pump;
a driving power circuit including an injector driving power supply and generating a driving voltage applied to said exciting coil; and
an injector trigger circuit for permitting said exciting current to be fed from said driving power circuit to said exciting coil of said fuel injector when an injection command signal is fed thereto;
said fuel pump driving power supply and injector driving power supply comprising a magneto driven by said internal combustion engine and having characteristics of being increased in output voltage or output current with an increase in engine rotation speed;



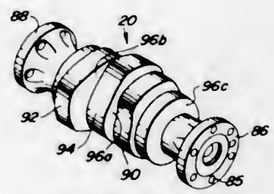
said magneto comprising an AC multipolar magneto including a generating coil for said fuel pump driving power supply and a generating coil for said injector driving power supply which are arranged separate from each other.

5,287,840

CAM SECTIONS FOR A "V"-TYPE DIESEL ENGINE

Catalina Z. B. Catanu, Montreal, and Yao S. Lu, Quebec, both of Canada, assignors to General Electric Canada Inc., Mississauga, Canada

Filed Jul. 30, 1992, Ser. No. 922,581
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—508 **11 Claims**



1. A unit cam section for use with a single cylinder and piston in a "V"-type fuel injected diesel engine wherein the unit cam section, having a longitudinal center axis, includes a plurality of cams for the single cylinder and piston wherein each of the cams has a base circle, the center of each base circle lying along the longitudinal center axis, and the plurality of cams include a fuel cam, interposed between an air cam and an exhaust cam, such that the fuel cam moves a fuel pump plunger mechanism for facilitating fuel flow to the cylinder, the air cam moves air valve means and the exhaust cam moves exhaust valve means, wherein each cam has an opening flank portion and a closing flank portion and a predetermined cam profile, the unit cam section being cooperative with an inverted fuel rocker mechanism and comprises:
a base circle diameter of at least 3.75 inches for each cam;
the fuel cam adapted to provide a fuel cam lift to fuel pump plunger lift ratio of at least 0.8:1.0; and

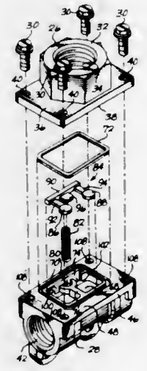
a predetermined cam orientation between the fuel cam and the air cam and the fuel cam and the exhaust cam such that:
a fuel cam to air cam angle is between 56° and 63° wherein the fuel cam to air cam angle is defined by an angle between a fuel cam reference line and an air cam line, the fuel cam reference line being defined by a first point, corresponding to a location of a center axis of a fuel cam roller which is at a position along the opening flank of the fuel cam where the fuel cam engages the inverted fuel rocker mechanism when the piston means is substantially at top dead center during a fuel injection portion of an engine cycle, and a second point corresponding to a center axis of the base circle of the fuel cam; the air cam line being defined by a first point corresponding to a location of a center axis of an air cam roller which is at a position along the opening flank of the air cam corresponding to a location on the opening flank of the air cam where the air cam causes the air valve means to start to open, and a second point corresponding to the center axis of the base circle of the air cam; and
a fuel cam to exhaust cam angle is between 143° and 153° wherein the fuel cam to exhaust cam angle is defined by an angle between the fuel cam reference line and an exhaust cam line defined by a first point corresponding to a location of a center axis of an exhaust cam roller which is at a position along the opening flank of the exhaust cam corresponding to a location on the opening flank of the exhaust cam where the exhaust cam causes the exhaust valve means to start to open, and a second point corresponding to the center axis of the base circle of the exhaust cam.

5,287,841

FLOW DIVIDER AND UTILIZATION SYSTEM

Alan K. Forsythe, Vashon, and John M. Morris, Auburn, both of Wash., assignors to GT Development Corporation, Tukwila, Wash.

Filed May 7, 1993, Ser. No. 59,119
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—510 **23 Claims**



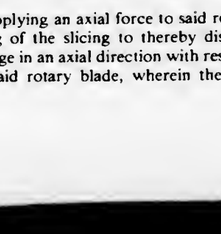
1. A flow divider, comprising:
a housing;
an inlet chamber in said housing;
an inlet into said inlet chamber;
spaced apart first and second orifices leading out from said inlet chamber;
a first outlet in communication with the first orifice;
a second outlet in communication with the second orifice;
a first closure member in the first outlet adjacent the first orifice and a second closure member in the second outlet adjacent the second orifice;
a rigid connection between both closure members; and
a spring operatively connected to the rigid connection, for rotating the rigid connection in a direction biasing the first closure member towards the first orifice and the second closure member towards the second orifice,
wherein liquid pressure within the inlet chamber acting on the closure members will swing the closure members in unison away from the orifices, against the spring, to provide equal flow restrictions to control liquid flow through the orifices from the inlet chamber to the first and second outlets.

5,287,842

3-PIECE CUSHION NOCKING POINT

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed Jan. 15, 1993, Ser. No. 5,152
Int. Cl.[5] F41B *5/14*
U.S. Cl. 124—91 **8 Claims**



8. In a multi-component nocking point assembly comprising a pair of elements including a pair of coaxial, intersleeved tubular sections including an inner section for intimately embracing a bowstring on which said assembly is mounted, and including an outer component for abuttingly engaging a bowstring-mounted arrow nock,
the improvement wherein said inner section comprises an elastomeric composition of lesser hardness and exhibiting compressibility and resilience for positively and protectively encasing and frictionally gripping a bowstring of an archery bow, and wherein said outer component constitutes a composition of greater hardness and of enhanced lubricity for abutting an arrow nock engaged on the bowstring thereby to reduce abrasive wear of said nocking point assembly against the arrow nock operationally seated on and drawn against the bowstring.

5,287,843

SLICING MACHINE EMPLOYING AN AXIAL FORCE TO PROVIDE RIGIDITY TO A ROTARY BLADE

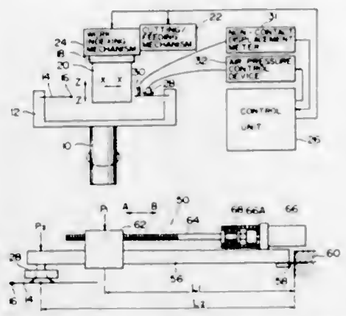
Ichiro Katayama, and Yosbio Kamoshita, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Division of Ser. No. 693,568, Apr. 30, 1991, Pat. No. 5,174,270.
This application Jul. 27, 1992, Ser. No. 918,760
Claims priority, application Japan, May 10, 1990, 2-120370; Mar. 25, 1991, 3-060329
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—13.02 **13 Claims**

1. A slicing machine for slicing a crystal ingot in thin pieces, the crystal ingot being supported for movement in a first direction, the slicing machine comprising:
a chuck body;
a doughnut-shaped rotary blade supported by said chuck body at an outer edge and having an inner cutting edge; and
means for applying an axial force to said rotary blade prior to starting of the slicing to thereby displace said inner cutting edge in an axial direction with respect to the outer edge of said rotary blade, wherein the crystal ingot is

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sliced while said inner cutting edge of said rotary blade is displaced and said means for applying an axial force controls the axial displacement of the inner cutting edge of said rotary blade by applying air pressure to the inner



cutting edge of said rotary blade, said axial displacement of the inner cutting edge of said rotary blade being achieved by varying a clearance between said means for applying an axial force and said inner cutting edge of said rotary blade.

5,287,844

VERSATILE CAMP GRILL

Ted L. Fieber, 875 Rd. 10, Powell, Wyo. 82435

Filed Feb. 16, 1993, Ser. No. 18,170
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—30 **20 Claims**



1. A campfire grill for cooking over an open fire, said grill being adaptable to be disassembled for ease in transporting and including adjustments for controlling temperature of a cooking implement relative to said open fire, comprising:

base support means including an upright member and a plurality of legs flared outwardly away from said upright member;

said plurality of legs having telescoping sections that can be disassembled from each other and from said upright member;

said upright member having a predetermined length and outer configuration, and terminating in an upper end and a lower end;

means permitting said upright member to turn readily relative to said plurality of legs;

cooking implement support means of a predetermined shape for movement along said upright member; and

said cooking implement support means including means for locking said cooking implement support means in a selected location on said upright member;

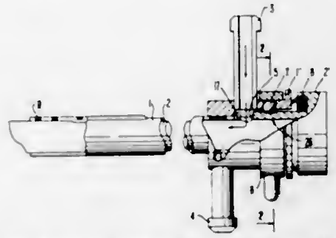
whereby a predetermined cooking implement is supported by said cooking implement support means in a selected position relative to a campfire.

5,287,845

ENDOSCOPE FOR TRANSURETHRAL SURGERY

Peter Faul, Memmingen; Heinz Hluchy, and Armin Schlüter, both of Hamburg, Fed. Rep. of Germany, assignors to Olympus Winter & Ibe Gmbh, Hamburg, Fed. Rep. of Germany

Filed Jan. 15, 1992, Ser. No. 820,926
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1991, 4101472
Int. Cl.[5] A61B *1/30*
U.S. Cl. 128—7 **5 Claims**



1. An endoscope for transurethral surgery comprising

a main body nonrotatably attached to and supporting an optical system and a surgical instrument;

an outer tube coupled to said main body and tubularly enclosing said optical system and said surgical instrument,

an inner tube inside of said outer tube and enclosing said optics and said surgical instrument, said inner tube being nonrotatably mounted relative to said main body, said optical system and said surgical instrument

said outer tube being rotatably mounted relative to said main body, said optical system and said surgical instrument,

said outer tube having an inside diameter sufficiently larger than the outside diameter of said inner tube to leave a fluid passage therebetween, and

proximal ends of said inner and outer tubes being mutually sealed;

a feed fitting connected to the proximal end of said inner tube to form a feed duct to the interior of said inner tube; and

a drain fitting connected to said fluid passage between said tubes forming a drain duct.

5,287,846

RESUSCITATION DEVICE

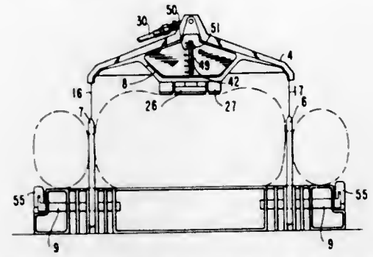
Jan Capjon, Fagerstrand, and Atle Nygaardsvik, Fjellstrand, both of Norway, assignors to Medreco A.S., Oslo, Norway

PCT No. PCT/NO91/00073, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO91/19473, PCT Pub. Date Dec. 26, 1991
PCT Filed May 22, 1991, Ser. No. 958,330
Claims priority, application Norway, Jun. 12, 1990, 902615
Int. Cl.[5] A61H *31/00*
U.S. Cl. 128—28 **23 Claims**

1. Resuscitation device, in particular for resuscitation of a patient with cardiac arrest, which device comprises a frame provided with at least one plunger which, when acted upon by a force generating means will move a plunger pad to and from the chest of a patient, an underlying back support means on which the patient may rest, as well as fastening means to attach the frame to the support means so that the patient is positioned between same,

characterized in that the fastening means comprises flexible but substantially non-stretchable straps (16,17) each coiled up on a spring biased rotatable reel (12,13) each of which may be locked in different angular positions, which straps (16,17) are ending in, or are connected to, respectively arranged armpit stays (6,7) each of which is provided with a protruding edge or has an adapted width relative to the

other dimensions of the resuscitation device to ensure that the plunger pad (28) will be pressed against the correct



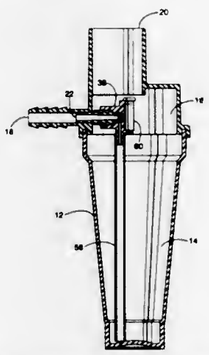
place on the sternum, independent of the size of the patient, when the resuscitation device is strapped around the patient with the armpit stays arranged in his armpits.

5,287,847

UNIVERSAL NEBULIZER

Samuel D. Piper, Sacramento; Otto G. Raabe, Davis; James I. C. Lee, and Gordon A. Wong, both of Sacramento, all of Calif., assignors to Vortran Medical Technology, Inc., Sacramento, Calif.

Filed Jul. 24, 1992, Ser. No. 919,810
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.21 **25 Claims**



1. A device for generating medicinal aerosols, comprising:

(a) flow generating means for generating a jet of gas, said flow generating means including a primary orifice;

(b) fluid reservoir means for holding fluid to be nebulized;

(c) a fluid injector, said fluid injector coupled to said fluid reservoir means, said fluid injector coupled to said flow generating means, said fluid injector including a secondary orifice having an inlet and an outlet, said inlet of said secondary orifice spaced apart from and aligned with said primary orifice; and

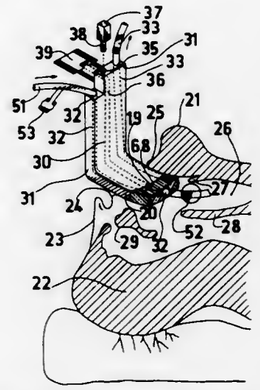
(d) stagnation baffle means for aerosolizing fluid droplets entrained in said gas upon striking said stagnation baffle means, said stagnation baffle means spaced proximally apart from said outlet of said secondary orifice by a gap ranging from approximately 0.23 millimeters to approximately 0.46 millimeters, said stagnation baffle means having a longitudinal axis aligned in a substantially perpendicular orientation in relation to a longitudinal axis extending through said secondary orifice.

5,287,848

EASY INTUBATOR

Anthony Cubb, 4301 Avila Ct., Arlington, Tex. 76003, and Natalie Landy, 801 15th St., S. 508, Arlington, Va. 22202

Continuation-in-part of Ser. No. 767,873, Sep. 30, 1991, abandoned. This application May 21, 1993, Ser. No. 64,677
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **14 Claims**



1. An intubation guide for the easy and accurate positioning of an endotrachael tube through the vocal cords of a patient being intubated, comprising:

an upper handle portion;

a lower blade portion joined to the upper handle portion for inserting into the patient's mouth;

a plurality of spaced conduits longitudinally extending from the upper portion into the lower portion of said guide;

one of the conduits being adapted to removeably receive the endotrachael tube therein, said conduit extending the entire length of said lower blade portion and penetrating a terminal edge of said lower blade portion;

a second conduit being adapted to be connected to a suction source, said second conduit penetrating a terminal edge of said lower blade portion to remove fluids from within the patient's mouth;

a third conduit being adapted to both receive a light source for illuminating the area into which the endotrachael tube is to be positioned and receive receiving images from the illuminated area, said third conduit terminating within said lower blade portion to prevent contact with the patient's bodily fluid; and

an eyepiece positioned in the upper handle portion cooperatively connected to said third conduit for viewing the patient's throat.

5,287,849

MEDICINAL AEROSOL DELIVERY SYSTEM AND METHOD OF USE

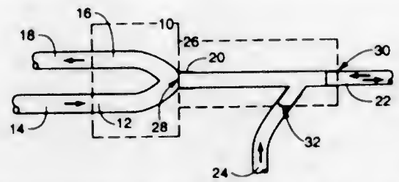
Samuel D. Piper, Sacramento; David A. Blackney, Orangevale; Lysa S. Kinoshita, Sacramento; Russell T. Reid, Garden Valley; Otto G. Raabe, Davis, and James I. C. Lee, Sacramento, all of Calif., assignors to Vortran Medical Technology, Inc., Sacremento, Calif.

Filed Jul. 24, 1992, Ser. No. 919,585
Int. Cl.[5] A62M *16/10*
U.S. Cl. 128—203.12 **14 Claims**

6. An apparatus for storing medicinal aerosol during the exhalation stage of a respiratory therapy cycle and delivering said medicinal aerosol to a patient during the inhalation stage of said respiratory therapy cycle, comprising: a generally tubular charging vessel means for receiving medicinal aerosol

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from an aerosol generating device during exhalation of said patient, for receiving exhalation gases from said patient, for using said received medicinal aerosol to flush said exhalation gasses from said charging vessel means, for strong said received medicinal aerosol, and for delivering said medicinal aerosol to said patient during inhalation, said charging vessel means including a first gas port, said first gas port including



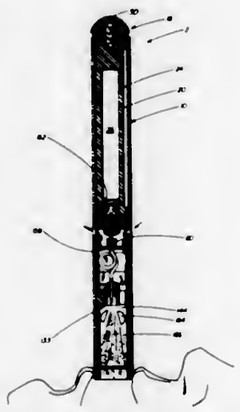
means for coupling to a respiratory device, said charging vessel means including a second gas port, said second gas port including means for coupling to an endotracheal tube, said charging vessel means including an aerosol intake port, said aerosol intake port including means for coupling to an aerosol generating device, said aerosol intake port disposed between said first gas port and said second gas port proximal to said second gas port.

5,287,850

TIMING AND VELOCITY CONTROLLED POWERED PHARMACEUTICAL INHALER

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Hubley Medical Technology Corporation, Laguna Hills, Calif.

Filed Aug. 20, 1991, Ser. No. 747,375
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.21 **16 Claims**



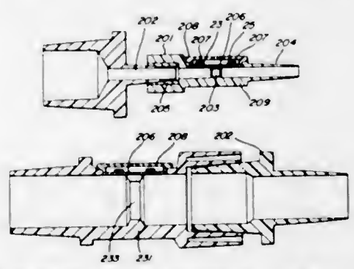
1. A pharmaceutical inhaler comprising:
an air pressurization chamber having an air vent fluidly coupling the air pressurization chamber to outside air for permitting a quantity of air into the air pressurization chamber;
means for pressurizing the quantity of air within the air pressurization chamber;
an inhalation chamber including a mouthpiece region and a pharmaceutical region containing the pharmaceutical;
an air flow path fluidly coupling the air pressurization chamber and the pharmaceutical region of the inhalation chamber; and
an activating mechanism having an open position and a closed position and being operably positioned along the air flow path, the activating mechanism fluidly isolating the pressurization and inhalation chambers along the air flow path when in the closed position and fluidly coupling the pressurization and inhalation chambers when in the open position.

5,287,851

ENDOTRACHEAL TUBE CONNECTOR WITH INTEGRAL PNEUMOTACH TRANSDUCER

Anthony V. Beran, 1472 La Loma Dr., Santa Ana, Calif. 92705, and Gordon Y. Shigezawa, 34 Cresthaven, Irvine, Calif. 92714

Filed Sep. 11, 1991, Ser. No. 757,731
Int. Cl.[5] A61M *16/00*; **A62B** *7/00*; **F16K** *31/02*; **A61B** *5/08*
U.S. Cl. 128—204.23 **16 Claims**



1. An apparatus for use in combination with an endotracheal tube for insertion into a patient and a ventilator device for providing a ventilatory gas flow to the patient, the apparatus located between the endotracheal tube and the ventilator device, the apparatus comprising:
a ventilator circuit element having a passageway for gas flow between the endotracheal tube and the ventilator tube;
flow restrictor means in said passageway for developing a differential pressure;
first and second openings in said element on either side of said flow restrictor means communicating with said passageway;
pressure transducer means integral to the circuit element and located opposite at least one of said first and second openings; and
means filling said openings for communicating said differential pressure to said pressure transducer means.

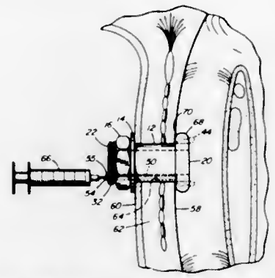
5,287,852

APPARATUS AND METHOD FOR MAINTAINING A TRACHEAL STOMA

William W. Arkinstall, Kelowna, Canada, assignor to Direct Trends International Ltd., Kelowna, Canada

Filed Jan. 13, 1993, Ser. No. 4,065
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **24 Claims**

1. An apparatus for maintaining a tracheal stoma in a patient, the stoma extending through a wall defined by the anterior tracheal wall and the patient's neck, the apparatus comprising:
a) a cannula having first and second opposite end portions with first and second coterminous openings therein, the cannula being insertable into the stoma such that the first end portion protrudes into the trachea and the second end portion protrudes from the neck;
b) retaining means for retaining the cannula in the stoma, the retaining means being external to the first and second coterminous openings to maintain the first and second coterminous openings unobstructed, the retaining means including an expandable and collapsible member secured the first end portion and capable of expandable to interfere with the anterior tracheal wall to prevent the first end portion from being withdrawn from the stoma while presenting a negligible effect to airflow in the trachea and collapsible to prevent interference of the member with the



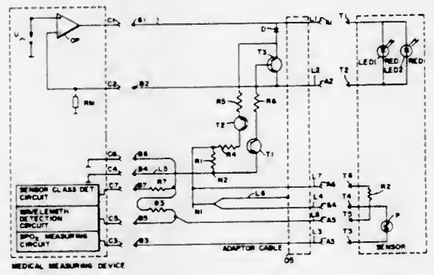
anterior tracheal wall to permit the first end portion to be withdrawn from the stoma; and
c) squeezing means on the cannula for squeezing the wall, defined by the anterior tracheal wall and the neck, between the expandable member and the second end portion to hold the cannula securely in the stoma.

5,287,853

ADAPTER CABLE FOR CONNECTING A PULSOXIMETRY SENSOR UNIT TO A MEDICAL MEASURING DEVICE

Joachim Vester, Aidlingen, and Heinz Sommer, Boeblingen, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 11, 1992, Ser. No. 989,115
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **9 Claims**



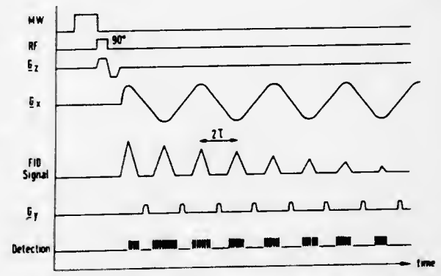
1. An adapter cable for connecting a pulsoximetry sensor unit to a medical measuring device,
said pulsoximetry sensor unit comprising two antiparallel-connected, light-emitting elements for emitting light of different wavelengths into a part of the body supplied with pulsating blood and a photosensitive element for receiving light which has been allowed to pass through said part of the body supplied with pulsating blood, and
said medical measuring device providing a pulsed supply signal, which supplies power to the light-emitting elements, and determining, on the basis of a signal produced by said photosensitive element, the oxygen saturation of the hemoglobin contained in the blood of the transilluminated part of the body,
wherein said adapter cable comprises the following features;
first and second lines for connecting the antiparallel-connected, light-emitting elements with supply terminals of the medical measuring device;
a third line for connecting one terminal of the photosensitive element to a measuring signal input of the medical measuring device;
a first grounding line for connecting another terminal of the photosensitive element to a reference potential terminal of the measuring device;
an electronic switch means, which is connected to said first and second lines and which, when activated, forms a shunt to at least one of the light-emitting elements, and
a fault current detection circuit, which detects current flowing through the first grounding line and for activating the electronic switch means, if the current flowing through said first grounding line exceeds a limit value.

5,287,854

ELECTRON SPIN RESONANCE ENHANCED MRI USING AN ECHO PLANAR IMAGING TECHNIQUE

Ib Leunbach, Dragör, Denmark, assignor to Nycomed Innovation AB, Malmo, Sweden

PCT No. PCT/EP90/00604, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/13047, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 12, 1990, Ser. No. 768,202
Claims priority, application United Kingdom, Apr. 24, 1989, 8909270.4
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **11 Claims**



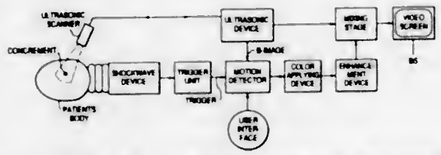
1. A method of electron spin resonance enhanced magnetic resonance imaging of a subject performed by an echo planar imaging technique, said method comprising the following steps:
(a) exposing said subject to a first radiation of a frequency selected to excite an electron spin resonance transition in a paramagnetic species in said subject,
(b) exposing said subject to at least one pulse of a second radiation of a frequency selected to excite nuclear spin transitions in selected nuclei in said subject,
(c) imposing on said subject at least one spatial information encoding magnetic field gradient,
(d) imposing on said subject a series of magnetic field read gradient pulses, said gradient pulses or sets of said gradient pulses within said series being of alternating polarities,
(e) during at least part of the time said read gradients are imposed, detecting the magnetic resonance signal from said selected nuclei, and
(f) generating from said detected signals an image of at least part of said subject.

5,287,855

Patent Not Issued For This Number

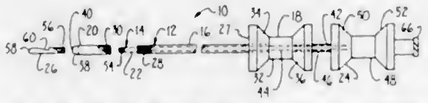
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,856
FOCAL RANGE LOCATING SYSTEM FOR LITHOTRITY
Jobst Treiber, Munich, Fed. Rep. of Germany, assignor to Dornier Medizintechnik GmbH, Munich, Fed. Rep. of Germany
Filed Apr. 27, 1992, Ser. No. 874,761
Claima priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113697
Int. Cl.[5] A61B *17/22*
U.S. Cl. 128—660.03 **4 Claims**



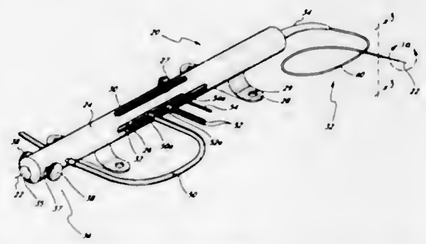
1. A system for locating the focal range of the shockwaves generated by a shockwave source relative to a concrement situated in the body of a living being, comprising.
an ultrasonic scanner;
an ultrasonic B-scan imaging device, coupled to the ultrasonic scanner for generating ultrasonic B-scan-images of an image area within the body,
image memory means for storing said ultrasonic B-scan-images in chronological sequence;
correlating means for dividing said B-scan-images into image segments, and for correlating image segments of a first B-scan-image with a corresponding image segment of at least one subsequent B-scan-image to detect motion induced in the body by said shockwaves;
trigger means providing a signal to said correlating means that limits the detection of motion to a predetermined time window after a triggering of shockwaves;
means for generating a color-coded speed pattern of the image area in response to motion detected by said correlating means; and
means for superimposing said color-coded speed pattern on the ultrasonic B-scan-images.

5,287,857
APPARATUS AND METHOD FOR OBTAINING AN ARTERIAL BIOPSY
David Mann, 4720 Everts St., San Diego, Calif. 92109
Filed Jun. 22, 1992, Ser. No. 901,830
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 **18 Claims**



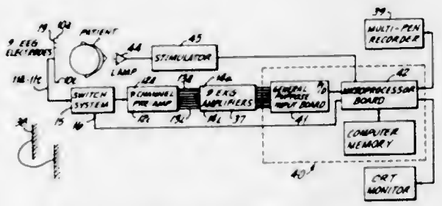
1. A catheter for insertion into an artery for obtaining a tissue sample from an arterial wall of a living being comprising:
a substantially flexible outer tube formed with an open distal end having a sharpened edge;
a substantially flexible inner tube slidably mounted within the outer tube and having a closed distal end and an opening formed to an inside diameter thereof;
means for applying a vacuum through the opening in the distal end of the inner tube for drawing tissue into contact with the opening; and
means for moving the sharpened edge of the outer tube over the opening in the inner tube to cut a tissue sample with the tissue sample retained within the opening and protected by the outer tube for withdrawing the tissue sample from the artery.

5,287,858
ROTATIONAL ATHERECTOMY GUIDEWIRE
Julius G. Hammerslag, San Juan Capistrano, and Vincent Divino, Mission Viejo, both of Calif., assignors to Pilot Cardiovascular Systems, Inc., San Clemente, Calif.
Filed Sep. 23, 1992, Ser. No. 949,908
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—772 **10 Claims**



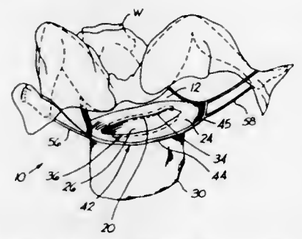
1. A flexible guidewire, comprising:
an elongate flexible core wire with a proximal segment having a first diameter and at least one distal segment having a second smaller diameter; and
a first coil disposed about the distal segment;
wherein the first coil is in contact with the core wire throughout the length of the coil.

5,287,859
ELECTROENCEPHALOGRAPH INSTRUMENT FOR MASS SCREENING
Erwin R. John, Mamaroneck, N.Y., assignor to New York University, New York, N.Y.
Filed Sep. 25, 1992, Ser. No. 951,656
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—731 **48 Claims**



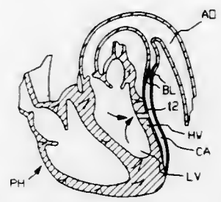
1. An electroencephalographic (EEG) system comprising:
(a) a plurality of EEG electrodes, including a fiducial electrode, adapted to be removably secured to the scalp of the patient, each EEG electrode being a portion of a brain wave signal channel;
(b) an amplifier means to amplify the analog microvolt level brain wave signals from the EEG electrodes in each brain wave channel, the amplifier means consisting of a plurality of fewer amplifiers than two-thirds the number of the EEG electrodes;
(c) electronic switching means to sample the larger number of electrodes by the smaller number of amplifiers;
(d) an analog/digital converter connected to the amplifiers to produce therefrom EEG data consisting of amplified and digitized brain wave signals;
(e) a micro-processor based computer system means connected to the analog/digital converter to analyze the EEG data;
(f) a patient stimulator means connected to and controlled by the computer system means to provide a selected pattern of stimulation to the patient to evoke the patient's brain wave responses in a set of evoked potential tests, each test being the brain wave evoked responses at a selected frequency range and at a selected electrode to a selected simulation;
g) a computer memory means connected to the computer system means to store the test scores of normal groups to a set of evoked potential tests corresponding to the evoked potential tests given to the patient;
(h) test score pair comparison means in the computer system means to form at least 24 pairs of test scores, each pair comprising two test scores from duplicated tests; to compare one test score of each pair with the other test score of the same pair, and to accept for further analysis only those pairs in which the two test scores of the pair are sufficiently alike within a predetermined definition;
(i) normal comparison means in the computer system to compare accepted pairs of test scores with the normal group test scores of (g) and to identify, as being abnormal, those accepted pairs of test sources which are significantly deviant from the normal group test scores of (g);
(j) signal means to signal the finding by (i) of abnormal test scores of the patient.

5,287,860
BIRTHING DRAPE
Rebecca L. Owens, 1260 No Pone Rd., NW., Georgetown, Tenn. 37336
Filed Oct. 2, 1992, Ser. No. 955,934
Int. Cl.[5] A61B *19/08*
U.S. Cl. 128—851 **16 Claims**



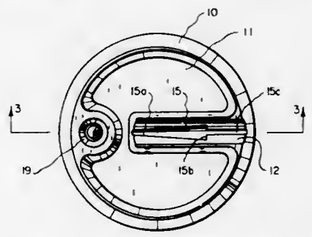
1. A birthing drape for catching and storing body fluids expelled during the birthing process comprising, a web of material having first and second ends and a pair of laterally spaced apart edges extending from said first end to said second end, a support portion at said first end upon which the buttocks of a birthing woman may rest, a catch portion extending from the support portion to said second end, a splash guard on the catch portion at said second end, an opening having a mouth formed in the catch portion intermediate said support portion and said splash guard, a pouch having an open entry end including a periphery fixed to and disposed about said mouth and a closed end for receiving and retaining said fluids, expandable resilient means at each lateral edge for pulling said edges adjacent said splash guard toward said support portion and for cratering said catch portion into a substantially basin shaped configuration, and band means secured to said catch portion adjacent said second end and each of said edges for encircling the lower limbs of said woman for drawing said resilient means from a contracted to an expanded condition to lift the lateral edges and said splash guard relative to the remainder of said catch portion, whereby expelled fluids are directed and funneled toward and into said pouch.

5,287,861
CORONARY ARTERY BY-PASS METHOD AND ASSOCIATED CATHETER
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Oct. 30, 1992, Ser. No. 969,747
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **17 Claims**



1. A surgical method comprising the steps of:
providing a collapsible stent made of a biocompatible material and having an inherent spring bias tending to form the stent into a substantially tubular opened configuration; and
disposing said stent in a wall of a patient's heart so that said stent extends between the left ventricle of the heart and a coronary artery, whereupon the stent opens and allows blood to flow from said left ventricle into the coronary artery during diastole and is closed by heart contraction during systole, said stent being essentially coextensive with said wall upon disposition of said stent in said wall, said stent adapted to extend only within said wall and not extend into the left ventricle or the coronary artery.

5,287,862
DEVICE FOR SLOWING THE BURNING OF A RESTING CIGARETTE
Jerry R. Pruyne, Salt Lake City, Utah, assignor to Innovative Industries, Inc., Salt Lake City, Utah
Filed Sep. 24, 1991, Ser. No. 764,315
Int. Cl.[5] A24F *13/22, 19/00*
U.S. Cl. 131—240.1 **16 Claims**



6. A device for slowing the burning and smoke output of a resting cigarette between drags thereon by a smoker, comprising a base; a plurality of open channels of varying length formed in the base, each channel having an open side and formed to receive at least a portion of a burning cigarette therein and to support the cigarette therein with one end of each channel adapted to receive the burning end portion of the cigarette, each channel being dimensioned to closely receive and cradle the portion of a standard size cigarette received therein and to extend circumferentially around at least about a half of the circumference of a standard size cigarette received therein, each said channel being formed in the base so that with the base resting on a flat surface, the channel will be inclined with the end thereof adapted to receive the burning end portion of the cigarette being downwardly means for providing air

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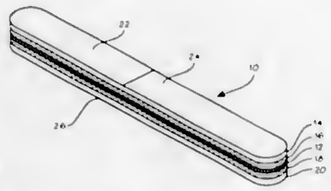
to the cigarette resting in the channel in addition to the air supplied by the open side of the channel.

5,287,863

FINGERNAIL AND TOENAIL FILE/BUFFER

Aldran H. La Joie, 22141 Stillwater, Mission Viejo, Calif. 92692, and Houshang Rastegar, 28630 Bamfield, Agoura, Calif. 91301

Filed Jun. 23, 1992, Ser. No. 902,617
Int. Cl.[5] A45D *29/18*
U.S. Cl. 132—76.4 19 Claims



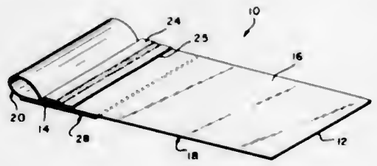
1. A nail tool comprising
at least one of a nail buffer or a nail file having
a core layer with at least one side,
at least two layers of resilient material wherein the material comprises at least one of foam and rubber on at least one side of said core layer and with at least one outside surface, and
an abrasive material on at least one outside surface of said resilient material.

5,287,864

FROSTING FOILS

Michael Gallo, 2744 B Morris Ave., Union, N.J. 07083

Filed Oct. 5, 1992, Ser. No. 956,119
Int. Cl.[5] A61K *7/13*
U.S. Cl. 132—208 12 Claims



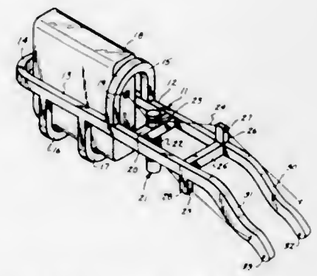
8. A method for color treating hair with a frosting foil, the frosting foil having a top end with a sleeve and an adhesive strip and a bottom end, the method comprising the steps of:
selecting a strand of hair to be treated;
selecting a frosting foil by placing a tail of a tail comb into the sleeve of the frosting foil;
positioning the frosting foil by manipulating the tail of the tail comb against the scalp along the strand of hair to be treated;
pressing the strand of hair onto the adhesive strip to hold the frosting foil in place;
folding the frosting foil about the strand of hair to be treated such that the bottom end of the frosting foil contacts the adhesive on the frosting foil and secures the frosting foil to the strand of hair to be treated;
selecting the next strand of hair and repeating the process of securing a frosting foil thereto with respect thereto until the desired amount of foils are positioned in the hair;
opening a foil and applying a coloring agent to the strand of hair in the foil to treat the hair;
reclosing the foil about the treated hair;
repeating the step of providing a coloring agent to the strand of hair in each foil;
allowing the coloring agent to be applied to the hair for a selected time period; and
removing the foil and hair coloring agent after the passage of the selected time period.

5,287,865

DENTAL FLOSSER APPARATUS

Jesse O. Fulton, 109 Springridge Dr., Vicksburg, Miss. 39180

Filed Apr. 12, 1993, Ser. No. 44,759
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 2 Claims



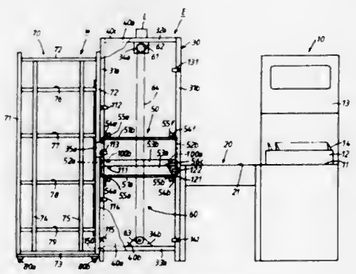
1. A dental flosser apparatus, comprising,
a U-shaped frame portion, having first and second legs arranged in a parallel coextensive relationship, with the U-shaped frame portion including a frame portion base at a U-shaped frame portion first end;
an arcuate abutment bar fixedly and orthogonally mounted to the first leg and the second leg extending above the U-shaped frame portion;
a first and second U-shaped cradle bar oriented between the arcuate abutment bar and the U-shaped frame portion, wherein the first and second U-shaped cradle bar is directed orthogonally and below the U-shaped frame portion;
a floss dispenser housing mounted between the first leg and the second leg and between the arcuate abutment bar and the frame portion base, with the floss dispenser housing received onto the first U-shaped cradle bar and the second U-shaped cradle bar;
the floss dispenser housing including an outlet opening to direct a dental floss filament therefrom through the arcuate abutment bar;
the first leg having a first extension leg extending from the first leg, and the second leg having a second extension leg extending from the second leg, with the first extension leg and the second extension leg arranged in a parallel relationship relative to one another, and the first extension leg including a first leg aperture, the second extension leg including a second leg aperture, wherein the dental floss filament is directed through the first aperture and the second aperture;
a first cross bar orthogonally directed between the first leg and the second leg, and a second cross bar arranged parallel to and spaced relative to the first cross bar orthogonally directed between the first leg and the second leg, wherein a first guide post is orthogonally mounted to the first leg at the second cross bar extending above the first leg, and a second guide post is fixedly and orthogonally mounted to the second leg extending below the second leg, wherein the first guide post includes a first bore receiving a filament therethrough, and the first bore is orthogonally oriented relative to the first aperture and the second aperture, and the second guide post having a second bore, with the second bore receiving the dental floss filament therethrough, and the second bore is oriented substantially parallel relative to the first bore;
the first cross bar includes a rotary guide post rotatably directed through the first cross bar in an orthogonal relationship, wherein the rotary guide post extends above the first cross bar, having an annular groove receiving the dental floss filament therealong for guidance, and wherein the rotary guide post extending below the first cross bar includes a knurled outer surface receiving a free distal end of the dental floss filament thereabout for winding the dental floss filament about the knurled cylindrical wall portion for winding the dental filament thereabout;
the first leg and the second leg are discontinuous between the first cross bar and the second cross bar, and a first annular disc mounted to the first leg and the second leg in a facing relationship relative to the first cross bar, and a second disc fixedly and orthogonally mounted to the first leg and the second leg in a facing relationship relative to the second cross bar, wherein a disc axle rotatably mounts the first disc to the second disc, and a disc friction ring interposed between the first disc and the second disc to maintain the first disc and the second disc in an angular predetermined orientation relative to one another.

5,287,866

DISHWASHING SYSTEM

Hiroshi Torimitsu; Chiyoshi Toya; Tomio Suyama; Sadayuki Hirate, and Tomoko Yamamura, all of Toyoake, Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/01444, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992
PCT Filed Oct. 22, 1991, Ser. No. 861,803
Claims priority, application Japan, Oct. 24, 1990, 2-286840; Oct. 24, 1990, 2-286841
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—44 1 Claim



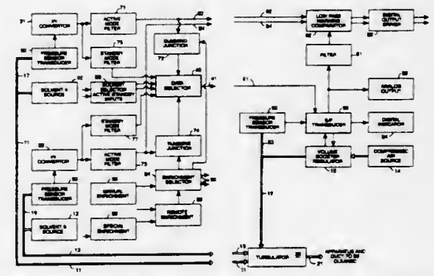
1. A dishwashing system comprising:
a dishwashing machine for washing tableware at every time when each rack holding thereon tableware is placed in a washing chamber;
a wagon provided therein with plural stages of horizontal storage shelves in an up-and-down direction;
an elevator disposed between said wagon and said dishwashing machine and provided therein with an elevatable base for placing thereon said each rack holding thereon tableware at every time when said each rack is removed from said washing chamber and with a conveying mechanism mounted on said base for horizontally conveying said each rack placed on said base to store said each rack onto each of said storage shelves;
reference position detecting means for detecting a reference position defined in said elevator when said base reaches said reference position;
placing detection means for detecting placing of said each rack on said base at every time when said each rack is placed on said base maintained at said reference position;
opposing position detecting means for detecting an opposing position of said base to one of said storage shelves when said base reaches said opposing position; and
drive control means for moving said base upward of downward in response to detection of said placing detection means, for releasing the upward or downward movement of said base in response to detection of said opposing position detecting means to effect horizontal conveyance of said conveying mechanism, for releasing the horizontal conveyance of said conveying mechanism when said placing detection means becomes a non-detection state upon each completion of storing said each rack onto each of said storage shelves to move said base downward or upward, and for releasing the downward or upward movement of said base in response to detection of said reference position detecting means.

5,287,867

APPARATUS AND METHOD FOR INSURING AND CONTROLLING TURBULENT FLOW FOR CLEANING DUCTS

Raymond G. Plummer; Raymond J. Foley, both of Toledo, Ohio, and J. Thomas Schaffer, Temperance, Mich., assignors to Plummer Design & Technologies, Inc., Toledo, Ohio

Filed Jun. 8, 1992, Ser. No. 894,959
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—56 R 35 Claims



35. A system for purging and cleaning a duct with a mixture of a turbulent gas and cleaning fluid, said system comprising a pressurized source of said cleaning fluid, a pressurized source of said gas, a turbulator, and control means for controlling the relative pressures between said gas and said cleaning fluid, the improvement comprising:
1) a feedback circuit for sensing the pressure of the gas to the turbulator to control said gas pressure in accordance with the pressure of said cleaning fluid to insure in said turbulator less than one pound per square inch difference in the predetermined pressure of said gas with respect to the pressure of said cleaning fluid,
2) a low pressure comparator for signalling a compressed pressure below a predetermined amount required for producing effective turbulence with said cleaning fluid in said turbulator,
3) a standby low pass filter means for averaging control signals from sensing said solvent pressure to reduce operation of said control valves when said system is in standby mode, and
4) separate means for varying the pressures of said gas with respect to the pressure of said cleaning liquid during their turbulence in cleaning a duct.

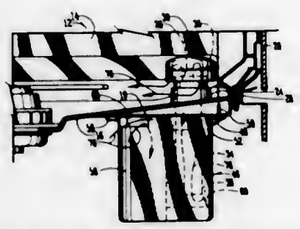
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,868

DISHWASHER CONVECTION AIR INLET AND SUDS CONTROL DEVICE

Barry E. Tuller, and Thomas M. Johnson, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Feb. 19, 1993, Ser. No. 19,763
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95.2 **13 Claims**



12. A suds suppressing air inlet for a dishwasher having a washing chamber with a bottom wall, the dishwasher washing chamber including a chimney with portions extending upwardly and downwardly through the bottom wall and terminating in open upper and lower ends respectively, and a chimney cover spaced in covering relation over the open upper end of the chimney, the air inlet comprising:

an outer cup surrounding the downwardly extending portion of the chimney and adjacent to said bottom wall, the outer cup including a side wall having an opening to atmosphere for permitting air to enter the chimney;

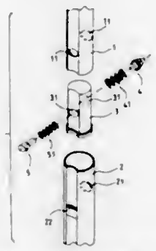
an inner cup surrounded by the outer cup and having an open top spaced below the washing chamber bottom wall, the inner cup enclosing the downwardly extending portion of the chimney and including a bottom wall spaced below the open lower end of the chimney, the air inlet defining a flow path for suds escaping from the washing chamber in an oversudsing condition, the inner cup providing surface contact area for condensing suds into liquid to bridge the space between the inner cup bottom wall and the open lower end of the chimney for stopping the flow of suds from the washing chamber.

5,287,869

CENTER POST OF A COLLAPSIBLE UMBRELLA

Jackson Wu, Taipe, Taiwan, assignor to Fu-Tien Liu, Taiwan

Continuation of Ser. No. 995,961, Dec. 23, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 103,545
Claims priority, application China, Feb. 7, 1992, 92 2 02290.9
Int. Cl.[5] A45B *19/00*
U.S. Cl. 135—25.1 **1 Claim**



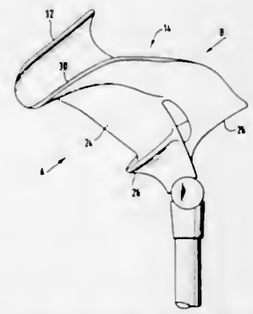
1. A center post of a collapsible umbrella comprising an outer tubular section and an inner tubular section telescopically received in said outer tubular section wherein the improvements comprises that: said inner tubular section comprises two through holes having central axes not collinear with each other, said inner tubular receiving therein a retainer body which has two guiding holes in such locations to be collinearly aligned with said through holes, said retainer body comprising a first retaining pin and a second retaining pin respectively slidably disposed within said guiding holes and respectively biased by a first spring means and a second spring means to partially project out of said through holes of the inner tubular section, said outer tubular section comprising an opening and a stop piece respectively corresponding to said retaining pins so that when said inner tubular section is fully extended out of said outer tubular section, said second retaining pin is engaged by said stop piece formed on said outer tubular section and said first retaining pin penetrates through said opening formed on said outer tubular section to retain the inner tubular section in the fully-extended position.

5,287,870

WALKING AID

H. A. G. Rhodes, Moor Crag 2, Ghyll Head Windermere LA23 3LW, United Kingdom

PCT No. PCT/GB90/00437, § 371 Date Nov. 20, 1991, § 102(e) Date Nov. 20, 1991, PCT Pub. No. WO90/11031, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 22, 1990, Ser. No. 773,958
Claims priority, application United Kingdom, Mar. 23, 1989, 8906865
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—72 **18 Claims**



1. A walking aid, comprising an elongate shaft having a handle connected to an upper portion of said shaft, wherein said handle has a front and comprises a central column having an axis inclined in the direction of the front at an angle relative to an axis of said shaft, a first platform extending outwardly from a lower portion of said column, and a second platform extending from an upper portion of said column, wherein said first platform extends spirally about said column and connects to said second platform.

5,287,871

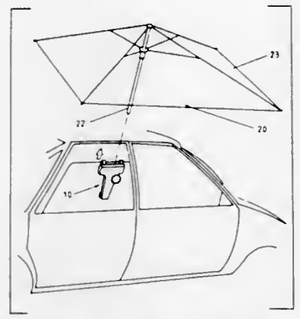
VEHICLE SUN SHADE

Denis V. P. Trice, 75 Portlock Road, Maidenhead, Berkshire SL6 6DX, United Kingdom

PCT No. PCT/GB90/01312, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO91/03384, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 23, 1990, Ser. No. 852,165
Claims priority, application United Kingdom, Sep. 1, 1989, 8919839
Int. Cl.[5] E04H *15/06*
U.S. Cl. 135—88 **2 Claims**

1. A vehicle sun shade, comprising:

a mounting bracket for fitting to a top edge of a window of a vehicle, said mounting bracket including a substantially T-shaped body member having a transverse top portion and a leg portion projecting downward from the transverse top portion, the transverse top portion having hooked clips for hooking over the top edge of the vehicle and said leg portion having a lower end for resting against an outer surface of the window;



a sun shade having a support stem and a canopy foldable downward against said support stem; and,

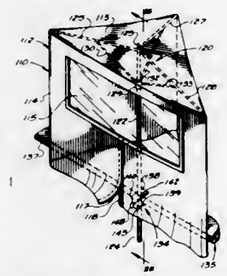
clamp means projecting from said substantially T-shaped body member of said mounting bracket and clamping said support stem in a substantially upright position.

5,287,872

PORTABLE UMBRELLA SHELTER

Dennis L. Anderson, 2544 N. 7th St., Phoenix, Ariz. 85006

Continuation-in-part of Ser. No. 678,662, Apr. 1, 1991, Pat. No. 5,135,018, which is a division of Ser. No. 405,200, Sep. 11, 1989, abandoned. This application Sep. 28, 1992, Ser. No. 922,820
Int. Cl.[5] E04H *15/28*
U.S. Cl. 135—98 **2 Claims**



1. A portable collapsible shelter, comprising:

a support pole having a first end and a second end;

a first, second, and third rib, each coupled to said support pole proximate said first end, and hinged for movement between a collapsed position alongside said support pole and an extended position substantially perpendicular to said support pole;

an enclosure having a triangular top portion with a first, second and third angle and edges extending therebetween, and a sidewall depending downwardly from said edges, encircling and covering a sheltered space;

said first, second, and third ribs intersect said first, second, and third angles respectively, supporting said enclosure;

said first, second, and third ribs being spaced apart from said edges of said triangular top portion with said support pole position generally centrally of said triangular top;

a view window formed in a front portion of said sidewall, said front portion extending between said second and third angles;

said sheltered space accessed by a slit extending through said front portion of said sidewall and sealed by a closing means; and

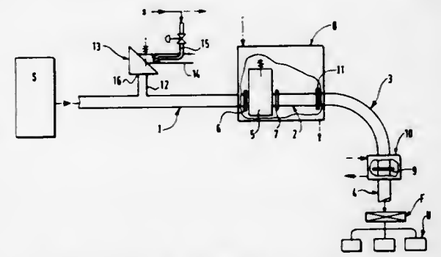
a clamping member slidably coupled to said support pole proximate said second end for coupling said shelter to a planar member.

5,287,873

INSTALLATION AND PROCESS FOR THE DISTRIBUTION OF VERY HIGH PURITY NITROGEN

Francois Venet, Walnut Creek, Calif., assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 13, 1992, Ser. No. 976,102
Claims priority, application France, Nov. 14, 1991, 91 14004
Int. Cl.[5] F17D *1/04*
U.S. Cl. 137—1 **14 Claims**



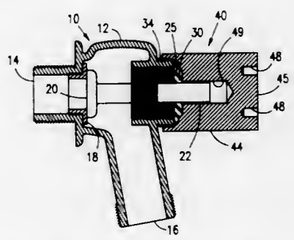
1. Installation for the distribution of a very high purity nitrogen, comprising at least one series of delivery conduits and active members, wherein the delivery conduits include conduit portions having a length L, a linear section S_1 and undergoing a volumetric flow Q of delivered nitrogen such as, in order to obtain a molar concentration of out-gassing impurities less than C_{max}, Q/S_1 is not less than 9.5×10^{-9} L/C_{max}, said conduit portions being made of stainless steel having a carbon content less than 0.05% and being free from electropolishing and internal chemical treatment.

5,287,874

ANTI-USE CAP FOR EXTERIOR WATER FAUCET AND METHOD OF USING

Theresa J. Dixon, 720 E. Oakton St., Arlington Hts., Ill. 60004, and Michael R. Falls, 1723 Victor Terr., Gurnee, Ill. 60031

Filed Mar. 25, 1993, Ser. No. 36,829
Int. Cl.[5] H16K *38/10*
U.S. Cl. 137—1 **8 Claims**



6. A method of precluding unauthorized use of an exterior water faucet having a rotatable stem for controlling water flow from an outlet spigot, packing precluding leakage between the

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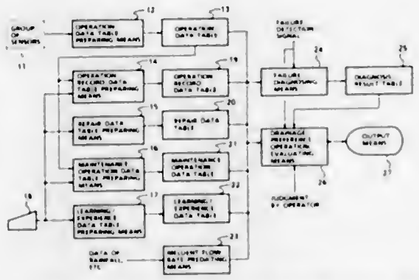
stem and faucet housing and a packing nut cooperating with faucet housing threads for holding the packing in place, and a handle keyed to the stem for allowing manual stem actuation, comprising the steps of turning the stem to the faucet closed position, removing the handle and packing nut from the faucet, and threading a cap to the housing packing nut threads, the cap having an axially elongated body that then overlies and covers the stem and precludes access thereto, operable to prevent opening or closing actuation of the faucet.

5,287,875

DRAINING PUMP SYSTEM AND DRAINAGE PREFERENCE OPERATING METHOD THEREFOR

Kenji Otani, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,682
Claims priority, application Japan, Nov. 27, 1990, 2-324354
Int. Cl.[5] F04D *15/00*
U.S. Cl. 137—15 **28 Claims**



1. In a draining pump system which includes a drain pump for discharging drained water, flowing into an influent tank, to a river or other watercourse,

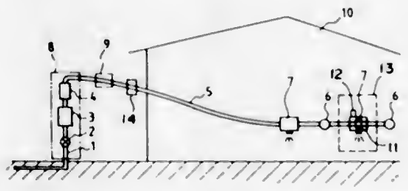
a drainage preference operating method for such a draining pump system comprises the steps of evaluating the necessity of drainage when a failure occurs in said draining pump system, and determining conditions of continuing or stopping operation of said drain pump on the basis of said evaluation.

5,287,876

WATER PIPING SYSTEM

Yoshishige Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Oze, Japan

Filed Dec. 23, 1991, Ser. No. 812,040
Claims priority, application Japan, Jul. 22, 1991, 3-271741; Aug. 29, 1991, 3-242346
Int. Cl.[5] E03B *7/12*; **F16L** *55/00*
U.S. Cl. 137—62 **2 Claims**



1. Apparatus for preventing stagnation in a fluid distribution system comprising:

fluid flow distribution means having a fluid inlet means and a fluid outlet means;

means for detecting fluid flow rate within the fluid distribution means;

timing means for measuring a predetermined period of time at which said means for detecting fluid flow senses zero flow rate in the distribution system;

means for detecting fluid temperature within the fluid distribution means, said detecting means generating a first signal when a predetermined fluid temperature is detected;

ambient temperature sensing means for generating a second signal when a predetermined ambient temperature is detected;

first valve means for controlling fluid flow at said inlet means, said first valve means being closed in response to said first signal;

second valve means for controlling discharge of said fluid from said fluid distribution means at a point intermediate said inlet means and said outlet means, said second valve means being opened in response to said first signal to discharge said fluid from said fluid distribution system;

heating means for heating said second valve means, said heating means actuated in response to said second signal to heat said second valve means; and

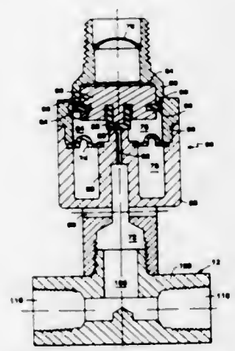
means for discharging the fluid from said distribution means in response to a signal from said means for detecting said period of zero fluid flow rate.

5,287,877

SEWER DRAIN TRAP PRIMER VALVE

Rand H. Ackroyd, Methuen, Mass., assignor to Watts Investment Company, Wilmington, Del.

Filed Dec. 8, 1992, Ser. No. 986,792
Int. Cl.[5] F16L *55/24*
U.S. Cl. 137—118 **5 Claims**



1. A sewer drain trap primer valve comprising

a case defining a volume, said case having an upper end and a lower end, said upper end defining an inlet orifice for communication of the volume with a source of domestic water, said lower end defining an outlet orifice for communication of the volume with a sewer drain trap,

a flexible diaphragm separating said volume into an upper, water chamber and a lower, sealed, air chamber,

a conduit member defining a conduit connecting said upper, water chamber with said outlet orifice, said conduit member defining a first valve seat,

a valve assembly comprising a float element, with a first valve element mounted thereupon, said float element having a continuous outermost surface of a constant diameter and being adapted for movement between a first

position and a second position in response to differential of pressure between said inlet and said water chamber,

in said first position, said first valve element being in engagement with said first valve seal for restricting flow of water from said water chamber into said conduit, and

in said second position, said first valve element being spaced from engagement with said first valve seat to permit flow of water from said water chamber into said conduit, and

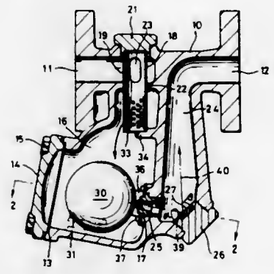
a check valve adapted to permit flow of water in a direction from said inlet toward said water chamber and to restrict flow of water in a direction from said water chamber toward said inlet, said check valve comprising a check valve element mounted upon said float element, said case including a radially inwardly extending check valve seat, and said check valve element defining a check surface disposed for sealing engagement with said radially inwardly extending check valve seat when said first valve element mounted upon said float element is in a second position, said check surface being spaced from engagement with said radially inwardly extending check valve seat when said first valve element mounted upon said float element is in a first position, said check valve element comprising a resilient member extending radially from said outermost continuous surface of said float element.

5,287,878

FREE FLOAT STEAM TRAP

Tadashi Oike, Kakogawa, Japan, assignor to TLV Co. Ltd., Japan

Division of Ser. No. 775,403, Oct. 15, 1991, Pat. No. 5,186,203.
This application Oct. 30, 1992, Ser. No. 968,875
Claims priority, application Japan, Oct. 15, 1990, 2-276705; Oct. 15, 1990, 2-276710
Int. Cl.[5] F16T *1/20*
U.S. Cl. 137—194 **8 Claims**



1. A free float steam trap comprising:

a trap casing having an inlet port, an outlet port and a valve chest formed therein;

a valve seat member attached to a lower portion of the valve chest and having a valve orifice opening through which the valve chest communicates with the outlet port;

a float valve arranged in a free state in the valve chest, rising and descending in accordance with the water level in the valve chest to directly open and close the valve orifice; and

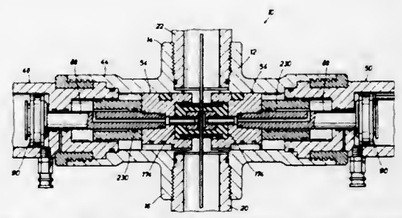
a vertical dispersing screen having an upper end, a middle section and a lower end, the middle section including an inlet opening and porous sidewalls located below the inlet opening and the lower end closed by an end member, condensate entering the inlet opening of the middle section of the vertical dispersing screen and exiting through the porous sidewalls, the end member forcing the condensate to flow through the porous sidewalls, the vertical dispersing screen being provided in a fluid inlet through which the inlet port communicates via the inlet opening and the porous sidewalls with the valve chest and located substantially above the valve orifice in order to thrust the float valve away from the valve orifice without pressing the float valve on the valve orifice using the falling condensate.

5,287,879

HYDRAULICALLY ENERGIZED WIRELINE BLOWOUT PREVENTER

Henry H. Leggett, Hallsville, Tex.; Lionel M. Gingras, Vancouver, Canada, and Russell C. Gilleylen, Longview, Tex., assignors to Eastern Oil Tools Pte Ltd., Singapore, Singapore

Filed Apr. 13, 1993, Ser. No. 46,980
Int. Cl.[5] E21B *33/06*
U.S. Cl. 137—246.22 **30 Claims**



18. A wireline BOP mechanism having sealing capability with a wireline and having injected grease pressure closing force enhancement for enhancing the sealing capability thereof, comprising:

(a) a BOP body having a vertical flow passage and forming a pair of tubular housings defining opposed horizontal ram passages;

(b) a pair of rams being movably disposed within said ram passages, each of said rams having a pair of vertically spaced elastomeric face sealing elements adapted for mechanical sealing engagement with a wireline, said rams being adapted to cooperatively define a grease chamber therebetween through which said wireline extends when said rams are closed, said rams being movable to an open position wherein said face sealing elements of said rams are positioned away from said wireline and a closed position where said face sealing elements of said rams establish sealing engagement with said wireline;

(c) primary operating means for imparting controlled movement of said rams to said open and closed positions;

(d) means for injecting grease into said grease chamber at sufficiently high pressure to establish sealing with said wireline in said grease chamber to prevent interstitial leakage of fluid pressure through said interstices of said wireline;

(e) secondary operating means for enhancing the closing force of said rams; and

(f) means causing pressure induced actuation of said secondary operating means for enhancing the closing force of said rams responsive to injected grease pressure.

5,287,880

THREE-WAY FIRE HYDRANT

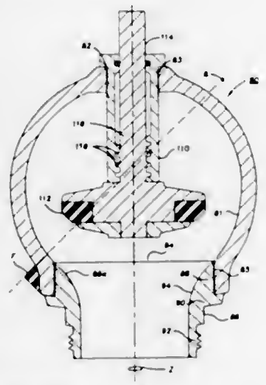
Gary Bouc, Decatur; Timothy Logman, Monticello; Carl E. Floren, Decatur, all of Ill., and Al Seitz, Arab, Ala., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 591,979, Oct. 2, 1990, Pat. No. 5,121,772.
This application Jan. 23, 1992, Ser. No. 824,506
Int. Cl.[5] E03B *9/02*
U.S. Cl. 137—272 **1 Claim**

1. A fire hydrant including a nozzle adapter for use with said fire hydrant having a body and an outlet opening and a valve member movable in said body between a retracted position and a forward position, said nozzle adapter comprising a substantially cylindrical body having a longitudinal axis and including a first end portion body having a longitudinal axis and includ-

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ing a first end portion having on the exterior thereof means operably engagable with said fire hydrant, a second end portion having on the exterior thereof means operably engagable with a hose, and an interior wall portion which smoothly curves from the interior of said first end portion to the interior of said second end portion such that (1) the radius from the longitudinal axis to the interior wall portion at said first end portion is larger that the radius from the longitudinal axis to the interior wall portion at said second end portion, and (2) the



radius from the longitudinal axis to the interior wall portion never increases when traversing along said longitudinal axis from said first end portion to said second end portion with the transition from the interior wall of said fire hydrant to said interior wall portion of said nozzle adapter being smooth and substantially continuous so that said valve member is movable farther into said interior wall portion of said nozzle adapter to engage said first end portion of said nozzle apparatus to close said opening.

5,287,881

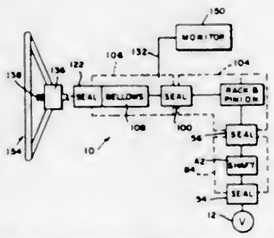
SEALED BONNET FOR ACTUATING A QUARTER TURN VALVE ASSEMBLY

Michael A. Szatmary, 8925 Admirals Pointe Dr., Indianapolis, Ind. 46236

Division of Ser. No. 718,343, Jun. 19, 1991, Pat. No. 5,246,029. This application Jun. 14, 1993, Ser. No. 77,124

Int. Cl.[5] **F16K** *41/04, 31/54, 51/00*

U.S. Cl. 137—312 **44 Claims**



1. A bonnet for operating a quarter turn valve assembly, which assembly includes a valve housing and quarter turn valve movable in a fluid-conducting passage provided in the valve housing to regulate flow of fluid through the passage, the bonnet comprising

means for moving the quarter turn valve in the passage between a passage-opening position and a passage-closing position,

a bonnet housing coupled to the quarter turn valve assembly and formed to include an interior region, the moving means extending through the bonnet housing into the valve housing to connect to the quarter turn valve,

first means for defining a first sealed containment area inside the interior region of the bonnet housing to retain and trap therein any fluid that leaks from the valve housing into the interior region of the bonnet housing, a first portion of the moving means extending through the first sealed containment area to the quarter turn valve,

second means for defining a second sealed containment area inside the interior region of the bonnet housing to retain and trap therein any fluid that leaks from the first sealed containment area into the bonnet housing, a second portion of the moving means extending through the second sealed containment area and into the first sealed containment area, and

third means for defining a third sealed containment area inside the interior region of the bonnet housing to retain and trap therein any fluid that leaks from the second sealed containment area into the interior region of the bonnet housing outside of the first sealed containment area, a third portion of the moving means extending through the third sealed containment area and into the second sealed containment area.

5,287,882

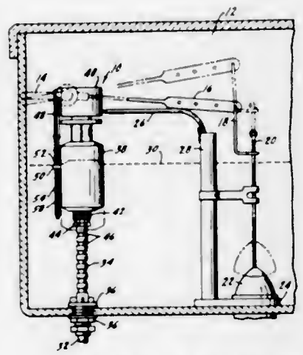
BALL COCK ASSEMBLY FLOAT WITH DRAIN OPENINGS

Erwin F. Mikol, Westlake, Ohio, assignor to Moen Incorporated, Elyria, Ohio

Filed May 11, 1993, Ser. No. 59,305

Int. Cl.[5] **F16K** *31/24, 33/00*

U.S. Cl. 137—410 **9 Claims**



1. A toilet tank ball cock for use in a toilet tank having an operating member, a flush valve controlled thereby, and a water supply, with the ball cock controlling the supply of water to the tank,

said ball cock including a vertical riser column communicating with the water supply, a water control valve regulating the flow of water from the water supply through the riser column to the toilet tank, a float movable on said riser column and coupled to said water control valve such that downward movement of the float to a selected level may open the water control valve to fill the toilet tank and upward movement of the float to a selected upper level closes the water control valve to stop filling the tank,

said float having opening means therein in fluid communication with the water within the tank interior, said opening means being located to provide for water flow from the float into the tank as the water level in the tank drops, said opening means being sized such that water will pass from the float to maintain a water level in the float consistent with the water level in the tank when the tank is slowly drained, as by leakage so that the combined weight of the float and the water therein will not cause the water supply valve to open when the tank is slowly drained, as by leakage, but the combined weight will cause the water valve to open when the tank is rapidly drained by opening the flush valve operator member.

5,287,883

VALVE, IN PARTICULAR FOR COMPRESSORS

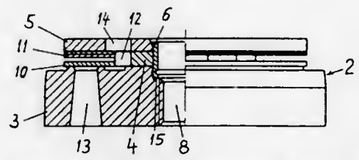
Günter Fink, and Walter Hammerschmidt, Kinsau, both of Fed. Rep. of Germany, assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Oct. 2, 1992, Ser. No. 955,458

Claims priority, application Austria, Oct. 2, 1991, 1976/91

Int. Cl.[5] **F16K** *15/08*

U.S. Cl. 137—454.4 **7 Claims**



1. A valve, in particular for compressors, adapted to be inserted into or attached to a housing and to be clamped by at least one tensioning bolt against the seating face of the housing, the valve being composed of a number of valve parts arranged one on top of the other and comprising:

a valve seating with through-ducts;

at least one closure member arranged movably above the valve seating;

a catching means for the closure member;

at least one spacer between the valve seating and the catching means; and

a most extremely arranged valve part, wherein the valve parts are held securely on the valve seating or the catching means by at least one clamping sleeve acting as a transportation safeguard and assembly aid in addition to the at least one tensioning bolt and before insertion or attachment of the valve into or to the housing, the sleeve comprising at least one groove which starts from an inner generated surface of the sleeve and which extends around the periphery of the sleeve, as a result of which the sleeve is deformable outwards in the region of said at least one groove by a force exerted upon it in an axial direction, and the clamping sleeve is connected by clamping to the most extremely arranged valve part, in particular to the valve seating and the catching means, and wherein the valve parts arranged between the extremely arranged valve part and the valve seating are fitted on the sleeve in the correct insertion position and the sleeve ends inside the outer face of the valve parts.

5,287,884

WATER FLOW MONITORING SYSTEM FOR DETERMINING THE PRESENCE OF LEAKS AND STOPPING FLOW IN PLUMBING PIPES

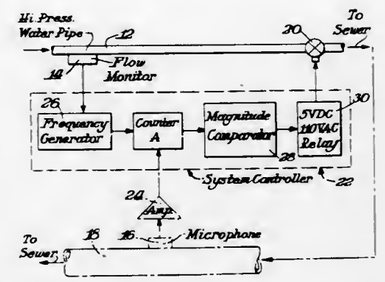
Jeffrey D. Cohen, 212 Marian Ct., Hockessin, Del. 19707

Continuation-in-part of Ser. No. 918,071, Jul. 24, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 38,165

Int. Cl.[5] **E03C** *1/00;* **F16K** *37/00*

U.S. Cl. 137—486 **25 Claims**

1. In a fluid flow monitoring system for determining the presence of leaks in plumbing pipes of a plumbing pipe system having fluid flowing therethrough under high pressure, the improvement being in a first flow monitor device mounted to a pipe of the plumbing pipe system for sensing the flow of fluid through the pipe, a second flow monitor device mounted to a pipe of the plumbing pipe system downstream from said first flow monitor device, control means for comparing the continuous flow sensed by said first flow monitor device with the



continuous flow sensed by said second flow monitor device, and action taking means actuated by said control means when the continuous flow sensed by said first flow monitor device exceeds the continuous flow sensed by said second flow monitor device.

5,287,885

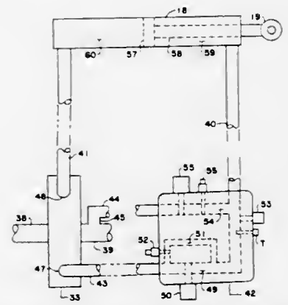
HYDRAULIC CONTROL SYSTEM FOR WEIGHING AND TWO-WAY VALVE THEREFOR

Ronald Smith, Narrabeen, Australia, assignor to Wray-Tech Instruments, Inc., Stratford, Conn.

Division of Ser. No. 868,305, Apr. 14, 1992, Pat. No. 5,195,418, which is a division of Ser. No. 683,078, Apr. 10, 1991, Pat. No. 5,139,101. This application Dec. 21, 1992, Ser. No. 994,347

Int. Cl.[5] **F15B** *13/04*

U.S. Cl. 137—596.17 **1 Claim**

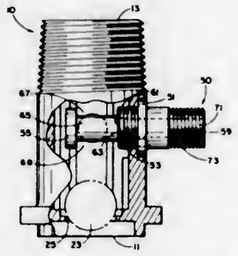


1. A two-way valve connected in a hydraulic lifting apparatus between a main operating valve for a hydraulic cylinder and the lift line to the hydraulic cylinder, said two-way valve being connected to a return line of the lift apparatus separate from said main operating valve, said two-way valve comprising a flow-through chamber with a normally open valve therein for permitting hydraulic fluid flow therethrough from said main operating valve; a bypass chamber means communicating with said flow through chamber to either side of said normally open valve wherein upon closing said normally open valve fluid flow is directed through said bypass chamber means, and said bypass chamber means having flow control means therein for reducing the flow of hydraulic fluid from said main operating valve; a second bypass chamber fluidly communicates with said flow through chamber between said normally open valve and the lift line, the second bypass chamber having therein a normally closed valve and flow control

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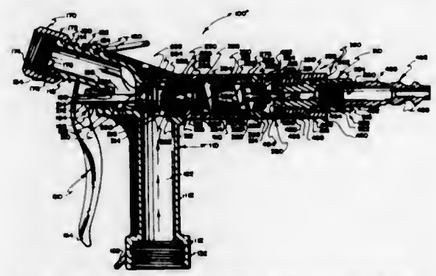
means for controlling flow therethrough when lowering the lifting apparatus, and the second bypass chamber capable of directing flow therethrough outwardly of the two-way valve to the return line to lower lifting apparatus independently of the main operating valve.

5,287,886
GAS LINE OVERRIDE VALVE
Jim L. Russell, 5018 S. Irvington Ave., Tulsa, Okla. 74135
Filed May 14, 1993, Ser. No. 62,111
Int. Cl.[5] F16K *17/12*
U.S. Cl. 137—606 **8 Claims**



1. A gas line override valve for connecting an external gas source to an operational gas line comprising:
a sleeve having an inlet end and an outlet end adapted for series connection of said sleeve in the operational gas line;
a hole through a wall of said sleeve;
a coupling secured in said hole having a passage in pneumatic communication between a first port in said coupling external of said sleeve and a second port in said coupling internal of said sleeve, said second port having an annular seat along a perimeter thereof; and
a cage extending from said second port into said sleeve and loosely containing a ball of diameter greater than said annular seat therein, said cage having openings therethrough for continuous pneumatic communication between said inlet and said outlet ends of said sleeve, said ball being free to move into and out of abutting interface with said seat to close said second port when pressure in said sleeve exceeds pressure in said coupling passage and to open said second port when pressure in said coupling passage exceeds pressure in said sleeve, respectively.

5,287,887
HANDLE OPERATED FLOW CONTROL VALVE
Robert W. Hengesbach, 7886 Munson Rd., Mentor, Ohio 44060
Filed May 14, 1993, Ser. No. 61,781
Int. Cl.[5] F16K *11/16*
U.S. Cl. 137—607 **10 Claims**

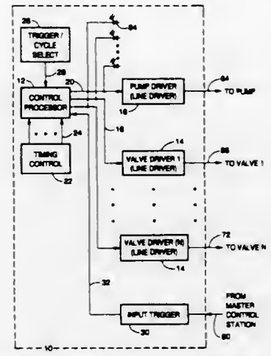


1. A handle operated flow control valve, comprising:
a) valve body means for defining:
i) a generally L-shaped valve body having an elongate inlet leg and an elongate outlet leg that each have proximal and distal end regions, that are joined near their proximal end regions, and that define an inlet opening near the distal end region of the inlet leg and an outlet opening near the distal end region of the outlet leg;
ii) primary inlet passage means for defining a primary inlet passage that extends through the inlet leg from the proximal end region to the distal end region of the inlet leg, and for communicating with the inlet opening at the distal end region of the inlet leg to receive a supply of a first pressurized fluid that is introduced into the valve body through the inlet opening;
iii) outlet passage outlet passage that extends through the outlet leg from the proximal end region to the distal end region of the outlet leg, and for communicating with the outlet opening at the distal end region of the outlet leg to discharge from the valve body such fluid as is introduced into the valve body;
iv) first valve opening means for defining a first valve opening for communicating the primary inlet passage with the outlet passage at a location near where the proximal end regions of the inlet leg and the outlet leg are joined;
v) first assembly opening means for defining a first assembly opening located near the proximal end region of the primary inlet leg for providing access through the primary inlet passage to the first valve opening for permitting portions of a first valve means to be installed within the valve body at a first location that extends between the first valve opening and the first assembly opening;
b) first valve means having at least portions thereof that are configured to permit their being installed in the valve body by being inserted through the first assembly opening for being positioned at said first location for being movable relative to the valve body between a closed position wherein the first valve means seals the first valve opening to prevent fluid flow from the primary inlet passage to the outlet passage, and open positions wherein the first valve means cooperates with the first valve opening to selectively control fluid flow through the first valve opening from the primary inlet passage to the outlet passage;
c) handle means including a handle that is connected to the valve body and to the first valve means for movement within a permitted range of movement relatively toward and away from the inlet leg of the valve body between a non-operated position wherein the handle means permits the first valve means to move to its closed position to seal the first valve opening to thereby prevent fluid flow therethrough, and operated positions wherein the handle means positions the first valve means in open positions to selectively control fluid flow through the first valve opening from the primary inlet passage to the outlet passage;
d) auxiliary input means connected to the valve body for admitting a controlled flow of a second pressurized fluid through the assembly opening into the primary inlet passage for combining with said first pressurized fluid for being ducted together with the first pressurized fluid through the first valve opening into the outlet passage for discharge through the outlet opening, including:
i) elongate sleeve means A) having first end region means configured to be rigidly connected to the body at the location of the assembly opening for defining a feed passage that communicates through the assembly opening with the primary inlet passage for ducting a flow of a second pressurized fluid into the primary inlet passage, B) having second end region means for defining a second assembly opening and a secondary inlet passage that communicates with the second assembly opening for receiving a supply of a second pressurized fluid, and C) defining a second valve opening for communicating the secondary inlet passage with the feed passage means, D) with the second assembly opening being

configured to provide access through the secondary inlet passage to the second valve opening for permitting portions of a second valve means to be installed within the sleeve means at a second location that extends between the second valve opening and the second assembly opening;
ii) second valve means having at least portions thereof that are configured to permit their being installed in the sleeve means by being inserted through the second assembly opening for being positioned at said second location for being movable relative to the sleeve means between a closed position wherein the second valve means seals the second valve opening to prevent fluid flow therethrough, and open positions wherein the second valve means cooperates with the second valve opening to selectively control fluid flow through the second valve opening from the secondary inlet passage to the feed passage;
e) first biasing means connected to the first valve means and to a selected one of the sleeve means and the valve body for biasing the first valve means away from its open positions toward its closed position;
f) second biasing means connected to the second valve means and to a selected one of the sleeve means and the valve body for biasing the second valve means away from its open positions toward its closed position; and,
g) lost motion connection means for selectively drivingly connecting the first valve means to the second valve means such that:
i) when the handle is moved away from its non-operated position within an initial part of its permitted range of movement, the first valve means will be caused to move away from its closed position in opposition to the biasing action of the first biasing means to open the first valve opening to permit a controlled flow of first fluid therethrough from the primary inlet passage to the outlet passage, with such movement of the first valve means not causing corresponding movement of the second valve means and not being opposed by the biasing action of the second biasing means; and,
ii) when the handle is moved away from its non-operated position beyond said initial part of its permitted range of movement to the remaining part of its permitted range of movement, both the first valve means and the second valve means will be caused to move, in unison, away from their respective closed positions, with such movement of the first valve means being opposed by the biasing action of the first biasing means, and with such movement of the second valve means being opposed by the biasing of the second biasing means.

5,287,888
IRRIGATION CONTROLLER
James E. Geiger, 1848 Germaine Dr., Yuba City, Calif. 95993
Filed Jan. 15, 1993, Ser. No. 4,949
Int. Cl.[5] G05B *11/01*
U.S. Cl. 137—624.2 **13 Claims**

1. An irrigation control apparatus, comprising:
(a) a plurality of valve driver means for generating valve control signals to activate irrigation valves;
(b) control processor means for sequentially activating each of said valve driver means for a predetermined period of time; and
(c) input trigger means for sensing an input control signal from a station control line of a master controller and initiating said sequential activation of said valve driver means by said control processor means upon sensing removal of said input control signal from said input trigger



means in a sequential application and removal of said input control signal.

5,287,889
LOW-NOISE ROTARY CONTROL VALVE
Christopher M. Leinen, 8420 Rayson, Houston, Tex. 77080
Filed Sep. 22, 1992, Ser. No. 949,459
Int. Cl.[5] F16K *5/10*
U.S. Cl. 137—625.3 **3 Claims**

1. A valve assembly including
a valve body (**10**) having entry and exit flow passage (**15**, **16**) formed therethrough, said entry and exit flow passages defining a longitudinal axis,
a valve member (**12**) having a passage (**14**) extending therethrough, said passage dividing said valve member into an upper portion (**50**) and a lower portion (**52**),
means for mounting said valve member in said valve body for rotation about a lateral axis with respect to said valve body between a completely open position and a completely closed position,
sealing means (**26**) provided in said valve body flow passage for operatively engaging said valve member for preventing fluid flow through said flow passage (**16**) past said valve member (**12**) once said valve member is in said closed position,
an improvement comprising,
an entry flow passage diverter (**28**) disposed in said entry flow passage (**15**) of said valve body (**10**) at a position adjacent said valve member,
an entry valve member diverter (**30**) disposed on a edge of said valve member (**12**), which faces said entry flow passage (**15**),
said flow passage diverter (**28**) and valve member diverter (**30**) cooperatively arranged and sized in relation to said valve member passage (**14**) through said valve member (**12**) to present limited impedance to fluid flow from said

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entry flow passage (15) of said valve body when said valve member is rotated to a completely open position with respect to said valve body, said flow passage diverter (28) and said valve member diverter (30) cooperating to increasingly restrict flow from said entry flow passage (15) to said valve member passage (14) as said valve member is increasingly rotated from said open position toward said closed position,

wherein said flow passage diverter (28) extends upwardly from said valve body into said entry flow passage, and

wherein said entry valve member diverter (30) extends downwardly from an upper portion (64) of said passage (14) through said valve member (12), and

wherein a plurality of transverse passages (40) are disposed through said lower portion (52) of said valve member (12), whereby a portion of fluid within said valve member passage (14) may be channelled through said lower portion (52) in alternative paths to said exit flow passage (16) from said valve member passage (14)

5,287,890

DIRECTIONAL GATE VALVE

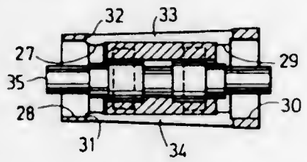
Josef A. Grotenhuis, Nijmegen, Netherlands, and Arnold P. Van Mullekom, Horsley Park, Australia, assignors to Maatschap J. A. Grotenhuis c.s., Nijmegen, Netherlands and De Van Mullekom Family Trust, Horsley Park, Australia

Filed Sep. 14, 1992, Ser. No. 944,590

Claims priority, application Switzerland, Sep. 18, 1991, 2756/91

Int. Cl.[5] **F15B** *13/04*

U.S. Cl. 137—625.69 **6 Claims**



1. A directional gate valve which can be used as a control element and consists of a housing and a control piston and in which the housing is formed from two parts, namely a block (10), provided with a through-hole having a circular cross-section and effective connections P, T, A and B transverse to said through-hole and entering the latter, and an integral one-piece sleeve (20) arranged in a conical through-hole (11), removable therefrom and provided with five windows coordinated with effective connections, the control piston (35) being mounted in an axially displaceable manner, wherein the sleeve (20) fits, with at least the essential part of its lateral surface, tightly and in a self-sealing manner in the through-hole (11) and has, in its lateral surface, at least one groove (33, 34) connecting to one another two windows furthest away from one another and the generating lines of the through-hole make an angle of 1° to 4° with the axis, the sleeve has two transverse holes ((31) and (32)) which are connected to a radial incision (26) via grooves ((33) or (34)), made in the conical lateral surface.

5,287,891

FLOW LIMITER

Philippe Bourlon, Aubervilliers, France, assignor to Bendix Europe Services Techniques, Drancy, France

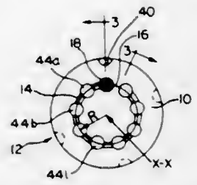
Filed Mar. 13, 1992, Ser. No. 850,723

Claims priority, application France, Mar. 29, 1991, 91 03856

Int. Cl.[5] **F15D** *1/14*

U.S. Cl. 138—43 **5 Claims**

1. A flow limiter for only hydraulic fluid, comprising at least one passage of reduced cross-section for the hydraulic fluid and formed only between two nonresilient contiguous pieces each having at least one planar face, one of the pieces comprising a recessed impression on the respective planar face, the passage of reduced cross-section defined between the recessed impression formed on the respective planar face and the planar face of the other piece, the length of the passage of reduced cross-section being adjusted by varying the relative positions of the two contiguous pieces, a hole located in one piece at one end of the passage of reduced cross-section and a hole located in the other piece at the other end of the passage of reduced



cross-section, and recesses located along the recessed impression formed on the respective planar face in order to obtain between two adjacent recesses a passage of reduced cross-section of a precisely determined length such that a slight variation in the relative positions of the two contiguous pieces has no effect on said precisely determined length, and varying the positions of the pieces relative to one another effecting serially an alignment of the hole located in the other piece with the recesses.

5,287,892

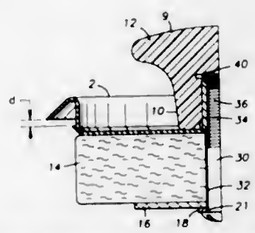
INSULATING PLUG

Laddy P. Sanderson, and Gordon B. Sanderson, both of 718 Cedar Bayou Rd., Baytown, Tex. 77520

Filed Mar. 19, 1993, Ser. No. 34,497

Int. Cl.[5] **F16L** *55/16*

U.S. Cl. 138—92 **15 Claims**



1. A removable insulation plug for plugging and replugging a hole formed in insulating material comprising:

substantially flat circular seal body with upper and lower sides;

handle means to allow hand grasping of said plug affixed to said upper side of said seal body;

insulation affixed to said lower side of said seal body;

vertical annular wall with inside and outside surfaces extending perpendicularly upward from and integrally attached to said body;

first annular lip at the uppermost point of said wall, said lip extending angularly downward and outward from and integrally attached to said wall; and

second annular lip disposed on said outside surface of said wall extending horizontally outward from and integrally attached thereto, said second lip being disposed below but sufficiently close to said first lip so as to allow a firm seal to be maintained when said plug is in place.

5,287,893

HEAD FOR REPLACING MAINS

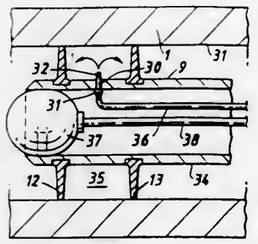
Anthony D. Elgar, Mitcham; Brian T. Sales, Dorking, and Adrian S. Parkes, Burgess Hill, all of United Kingdom, assignors to British Gas plc, London, England

Divisoin of Ser. No. 786,784, Nov. 1, 1991. This application Aug. 31, 1992, Ser. No. 937,407

Claims priority, application United Kingdom, Nov. 2, 1990, 9023857

Int. Cl.[5] **F16L** *55/18*

U.S. Cl. 138—98 **5 Claims**



1. A head for use in replacing an existing fluid carrying main with a replacement main having an outer wall of smaller diameter than the diameter of the inner wall of the existing main, so that the replacement main forms a clearance with the existing main when located therein, the head comprising a tubular body for location within the existing main and having a throughgoing bore extending to at least a rear end of the tubular body, the body being adapted for connection of the rear end to one end of the replacement main and a nozzle located in the body of the head and adapted to discharge a sealant supplied to the nozzle via the bore of the head into the clearance when the head is located within the existing main, wherein the body has at least two spaced annular vanes disposed around its outer wall, the nozzle being located between said vanes, the vanes providing a barrier to the flow of fluid along the clearance.

5,287,894

HEAT-SHRINKABLE FOAM TUBE AND METHOD OF MANUFACTURE

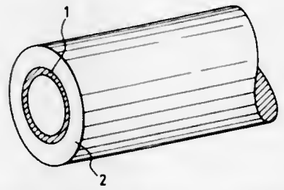
Satoshi Shukushima, and Tomoyoshi Kishimoto, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 4, 1992, Ser. No. 831,054

Claims priority, application Japan, May 6, 1991, 3-196215

Int. Cl.[5] **B29C** *67/22;* **C08J** *9/10*

U.S. Cl. 138—140 **3 Claims**



1. A method of manufacturing a heat-shrinkable foam tube including the steps of:

forming a tube having two-layers comprising a foam layer with foaming agent as an outer layer and a non-foam layer as an inner layer;

extruding the tube while simultaneously activating and expanding the foam agent outer layer; thereafter

cross-linking the foam tube;

enlarging the diameter of the tube; and

cooling and solidifying the tube.

5,287,895

EQUIPMENT FOR TRANSPORTING AND HANDLING WEFT-YARN STOCK BOBBINS

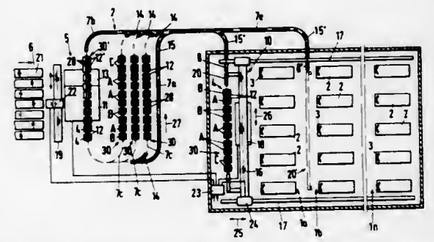
Tonny Raaijmakers, Winterthur, Switzerland; Gregor Gebald, Mönchengladbach, Fed. Rep. of Germany; Manfred Langen, Mönchengladbach, Fed. Rep. of Germany; Helmut Bungter, Viersen, Fed. Rep. of Germany, and Hans-Peter Schmitz, Mönchengladbach, Fed. Rep. of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 20, 1992, Ser. No. 871,522

Claims priority, application Switzerland, May 15, 1991, 01455/91

Int. Cl.[5] **D03D** *47/00*

U.S. Cl. 139—1 R **8 Claims**



1. An equipment for transporting, handling and feeding stock bobbins to a loom and for carrying away a spent stock bobbin from the loom, the equipment comprising:

a loading station having means for loading the stock bobbin on a bobbin holder;

a transport loop having means for carrying the bobbin holder between the loading station and a number of groups of looms, the transport loop having a portion adapted to deliver the bobbin holder to the number of groups of looms, the transport loop also having a storage section connected to the portion of the transport loop and constructed to receive a number of the bobbin holders; and

a secondary transport mechanism arranged to receive the bobbin holder from the transport loop, the secondary transport mechanism including a loading mechanism having means for positioning the loading mechanism at a loading position with respect to each loom in the number of groups of looms and means for replacing the spent bobbin with the stock bobbin when in the loading position.

5,287,896

METHOD AND APPARATUS FOR MEASURING OUT BY WEIGHT

André Graffin, La Tasse d'En Bas, 72405 La Chapelle Du Bois, France

Filed Jul. 8, 1992, Ser. No. 910,494

Claims priority, application France, Jul. 23, 1991, 91 09287

Int. Cl.[5] **B65B** *3/28*

U.S. Cl. 141—9 **12 Claims**

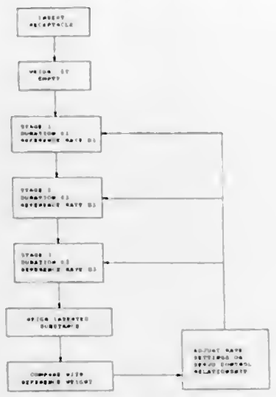
1. A method for filling a receptacle with a predetermined weight of a substance in at least one filling stage, comprising, for each of said at least one filling stage:

(1) inserting the substance into a receptacle for a fixed time period;

(2) measuring the flow rate of the substance into the receptacle at time intervals during said fixed time period;

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(3) determining the difference between the measured flow rate and a predetermined reference flow rate; and

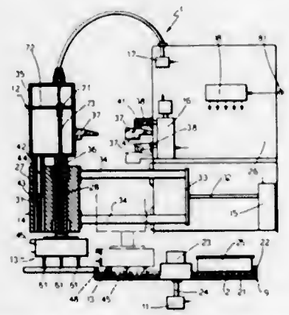


(4) adjusting the flow rate of the substance into the receptacle as a function of said difference.

5,287,897
MACHINE FOR DOSING POWDERED PHARMACEUTICALS

Ernesto Gamberini, Rostignano-Pianoro, Italy, assignor to MG2 S.p.A., Pianoro, Italy

Filed Jan. 10, 1992, Ser. No. 820,307
Claims priority, application Italy, Jan. 15, 1991, BO91A000006
Int. Cl.[5] B65B *43/42*; B67C *3/00*
U.S. Cl. 141—130 **20 Claims**

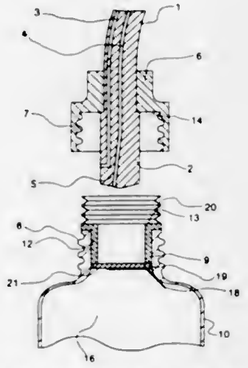


1. A machine for dosing powdered pharmaceuticals comprising:
- a container containing a horizontal layer of powdered pharmaceutical,
- a dosage unit,
- a device supporting said dosage unit,
- an element supporting said device and comprising a first body having a vertical axis,
- means for displacing said first body rectilinearly, in horizontal translation parallel to the layer of powdered pharmaceutical, between first and second horizontally displaced positions, said device and said element being translated with said first body between said first and second positions,
- said dosage unit in said first position of said first body being located to remove a measured amount of the powdered pharmaceutical from said layer thereof in said container,
- said dosage unit in said second position of said first body being located to dose the measured amount of pharmaceutical into a receiving seat therefor,
- said means for displacing said first body including a first drive means and a mechanical system connected to the first drive means for translating said first body solely horizontally between said first and second positions,
- a second drive means for translating said dosage unit along said vertical axis of said first body relative to said element when the first body is in said first position to cause said dosage unit to penetrate into said layer of powdered pharmaceutical and remove said measured amount thereof, and
- third drive means for releasing said measured amount of powdered pharmaceutical from said dosage unit into said receiving seat when said first body is in said second position,
- said first and second drive means being independently operable to displace the dosage unit independently and respectively in horizontal and vertical directions.

5,287,898
FILLING DEVICE FOR ANESTHETIC VAPORIZERS

Wolfgang Falb, Krummesse; Karl-Ludwig Gippert; Ulrich Heim, both of Lübeck; Uvo Hölscher, Stockelsdorf; Siegfried Kiske, Gross Grönau; Götz Kullik, Lübeck; Ralf-Ernst Löser, Kreuzkamp, and Christoph Maurer, Bad Schwartau, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Feb. 10, 1992, Ser. No. 833,327
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 4105147
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—329 **8 Claims**

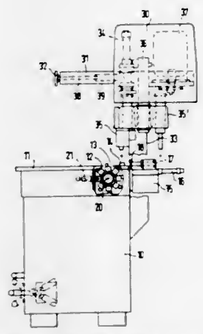


1. A filling device construction for filling and emptying an anesthetic vaporizer, comprising:
- a reservoir housing including a connection opening;
- a filling element including a filling canal for delivery of liquid anesthetic and a breather canal for compensating filling volume of the reservoir housing;
- a connection piece connected to the filling element and being applied to said connection opening of said reservoir in a gas-tight and liquid-tight manner, said connection piece further including a closure cap means;
- fastening means provided on said closure cap and on said reservoir housing adjacent said connection opening for guiding said closure cap into fastened connection with said reservoir housing;
- sealing means provided in said reservoir housing for sealing said connection opening at least in a liquid-tight manner providing a barrier between an exterior of said reservoir and an interior of said reservoir, said sealing means being openable via a projection depending from said connection piece and extending into an interior space of said connection opening for opening said sealing means upon said connection piece being applied to said connection opening in said gas-tight and liquid-tight manner;
- intermediate sealing means positioned adjacent said connection opening of said reservoir housing on said exterior side of said reservoir housing for providing a seal between said cap means and said reservoir housing prior to said sealing means being opened via said projection.

5,287,899
BORING MACHINE, PARTICULARLY FOR WOODWORKING

Siegfried Keusch, Plochingen, Fed. Rep. of Germany, assignor to Reich Spezialmaschinen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 939,991
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129745
Int. Cl.[5] B27C *3/00*
U.S. Cl. 144—92 **10 Claims**

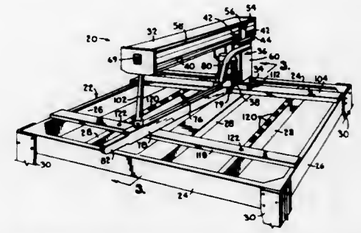


1. A woodworking boring machine for boring rows of holes and structural bores in flat workpieces such as cabinet sidewalls, cabinet doors and the like; comprising
- (a) a machine frame;
- (b) a workpiece holder and a boring assembly displaceable on a pair of horizontal guide rails carried by said machine frame;
- (c) a workpiece stop and a stop arrangement carried by said machine frame and having a plurality of position fingers adjustable and lockable in the direction of displacement of the boring assembly;
- (d) a supporting framework carried by said machine frame and adjustably supporting the boring assembly on the guide rails parallel to forward and rearward sides of said workpiece holder;
- (e) a first position roller mounted parallel to a longitudinal side of said workpiece holder and having a plurality of axially-extending rail guides therein in which are respectively positioned longitudinally-extending holding rails;
- (f) said position fingers being respectively positioned on respective ones of said holding rials around the circumference of said first position roller; and
- (g) a finger receiver displaceable on said supporting framework for cooperating with a selected one of said position fingers on said first position roller for locking the position finger in a working position with relation to the boring assembly to determine the boring position of the boring assembly along the displacement path of the boring assembly in relation to the position of the workpieces holder.

5,287,900
RADIAL ARM ROUTER TABLE

Manuel G. Falco, 1506 N. Towner St., Santa Ana, Calif. 92706

Filed Nov. 19, 1992, Ser. No. 978,824
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—134 A **23 Claims**

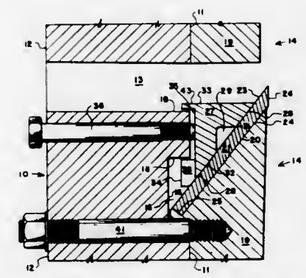


1. An apparatus for use in cutting a workpiece with a router, said apparatus comprising:
- a support surface for supporting said workpiece;
- an overhead arm supported over said support surface;
- a mount for said router, said mount being coupled with and moveable along said overhead arm; and
- a guide arm positioned above said support surface and moveable toward said support surface for clamping the workpiece between the guide arm and the support surface.

5,287,901
CHIPPER KNIFE CLAMP

Steven C. Matthews, 102 Teakwood Ct., Quinton, Va. 23141

Filed Feb. 12, 1993, Ser. No. 17,277
Int. Cl.[5] B02C *18/18*; B27C *7/06*
U.S. Cl. 144—176 **3 Claims**



1. An improvement in a knife clamp adapted for use in a log chipper of the Carthage-Norman design having a large vertically rotating disc having front and rear surfaces and a plurality of radially disposed cutting stations and associated elongated chip passages communicating between said front and rear surfaces, each cutting station comprised of:
- a) an elongated receiving groove recessed into the front surface of said disc,
- b) a knife holder removably secured to said front surface and having a sloping abutment surface,
- c) a knife blade having an upper surface and a lower surface which contacts said abutment surface, said knife having a sharpened front edge disposed forwardly of the front surface of said disc, and lateral extremities,
- d) an elongated knife clamp of an extruded form having a substantially right triangular cross section and comprising: 1) a hypotenuse holding surface configured to contact the upper surface of said knife blade, 2) a chipping surface disposed to communicate with an associated chip passage,

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and 3) a back face having an elongated depression and upper and lower projections, and

e) tensioning means adapted to force said knife clamp against said knife blade.

said improvement comprising a plurality of slots traversing said lower projection communicating between said elongated depression and said hypotenuse surface, the area of said slots comprising between 50% and 70% of said lower projection, two of said slots communicating with the lateral extremities of said knife blade, whereby sawdust is enabled to pass through said slots into said receiving groove.

5,287,902

METHOD TO SPLIT LOGS INTO QUARTERS AND MACHINE FOR ITS IMPLEMENTATION

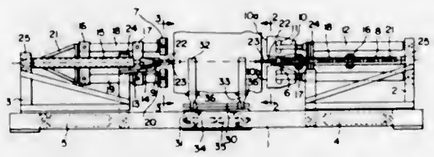
Maurice Jeantelot, 5, Grande Rue, F-10110 Landreville, France

Filed Nov. 17, 1992, Ser. No. 976,937

Claims priority, application France, Nov. 18, 1991, 9114165

Int. Cl.[5] B27L *7/00*

U.S. Cl. 144—366 **11 Claims**



1. A method of splitting a log with its medullar rays so as to produce quarters that can be subsequently converted into thin-cut sections comprising the steps of making a superficial hole in the core of the log at each of its ends so as to allow the partial introduction of pins (**23**) therein, lifting the log in such a manner that both pins will lie in a horizontal plane, resting the protruding part of each pin onto respective end supports, raising the log until it is supported by said pins, allowing the log to pivot on said pins so as to take a balanced position, clamping the log between two opposite jaws (**6,7**), one of said jaws (**7**) lying in a substantially horizontal plane when at rest, splitting the log at both ends respectively by means of a pair of tools (**10, 13**), one of said pair of tools disposed perpendicularly to said one jaw (**6,7**), one of said pairs of tools crossing the opposite pair in the median part of the log in the course of each splitting operation, each pair of tools comprising twin tools, each twin tool driven by a control cylinder and being adapted to rotate in the direction of the wood grain independently from the associated twin tool during the splitting operation, returning both of said pairs of tools to their initial rest position, and loosening said jaws in order to release the wood quarters.

5,287,903

CARRYING BAGS

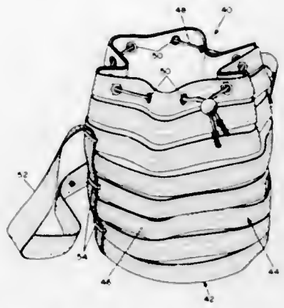
Emilio Ambasz, 295 Central Park West, New York, N.Y. 10024

Filed Jul. 1, 1992, Ser. No. 908,184

Int. Cl.[5] A45C *13/36*

U.S. Cl. 150—129 **17 Claims**

1. A carrying bag having external walls defining a receptacle for objects comprising at least one extensible panel forming at least a part of the external walls of the bag, the extensible panel being of a composite material composed of a sheet of a stretch-knit fabric and a multiplicity of elongated strips of a durable, substantially non-extensible material joined to the fabric sheet in closely spaced relation by stitching spaced apart from the



edges of the strips, thereby leaving portions of the fabric sheet underlying the major portions of the strips free to stretch.

5,287,904

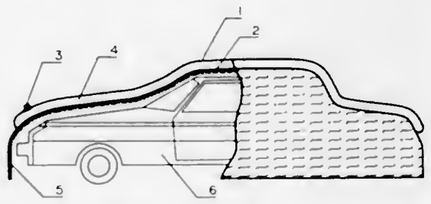
HAIL INHIBITING BLANKET

David W. Smith, NBU 4A #2 Unit 23, Kirtland, N. Mex. 87411, and Thomas C. Street, 3109 Northridge Dr., Farmington, N. Mex. 87401

Filed Jun. 18, 1993, Ser. No. 58,582

Int. Cl.[5] B65D *65/02*

U.S. Cl. 150—166 **2 Claims**



1. An automobile cover comprising;

a) a rubber sheet having a top side, a bottom side and side edges, said sheet sized to cover the top and sides of an automobile;

b) a cloth liner bonded to the bottom side of the rubber sheet and substantially corresponding in size to said sheet;

c) an inflatable chamber having side edges bonded to the top side of the rubber sheet, said chamber sized to cover the surfaces of an automobile facing generally upward.

5,287,905

TREAD FOR A MOTOR VEHICLE TIRE

Renato Caretta, Gallarate, and Gianfranco Colombo, Corcorezzo, both of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed May 14, 1991, Ser. No. 699,389

Claims priority, application Italy, May 14, 1990, 20284 A/90

Int. Cl.[5] B60C *11/11*

U.S. Cl. 152—209 R **16 Claims**

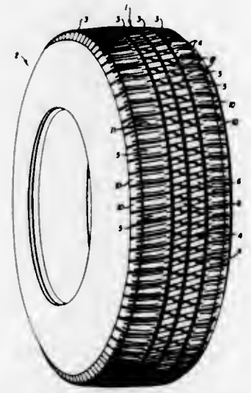
1. A tire for a motor vehicle wheel comprising a tread pattern having

a plurality of axially extending transverse grooves;

at least two circumferential straight grooves dividing the axial width of the tread into at least two circumferentially extending axially outer rows of circumferentially spaced apart substantially identically shaped shoulder blocks of substantially parallelepiped configuration and

at least one central row of blocks having a plurality of circumferentially spaced apart substantially identically shaped central blocks, all of the blocks of any row of said at least one central row being circumferentially aligned with each other between two of said at least two circumferential straight grooves and each of said rows being so aligned within that row,

each of said central blocks, along its circumferential length, having a pair of longitudinal sides, oriented substantially along the direction of rolling of the tire and a pair of transverse sides oriented transversely to the direction of rolling, each transverse side having two parallel lateral segments between which there extends an intermediate segment oriented to form an obtuse angle with the lateral



segments, said lateral segments having an inclination, with respect to the axis of rotation that is less than the inclination of the intermediate segment, each of the central blocks being traversed by at least one pair of parallel sipes, each of which extends in alignment with one of the lateral segments of one of the transverse sides,

each of said shoulder and central blocks having at least one generally axially extending sipe having a width not greater than one fifth of a width of said transverse grooves,

said sipes in the shoulder blocks being at a first angle to the rotational axis of the tire,

said sipes of the central blocks lying at a second angle of inclination with respect to the rotational axis of the tire that is greater than said first angle.

5,287,906

AIR CONTROL SYSTEM FOR PNEUMATIC TIRES ON A VEHICLE

Clyde G. Stech, Weimar, Tex., assignor to Equalaire Systems, Inc., Corpus Christi, Tex.

Continuation of Ser. No. 524,420, May 17, 1990, abandoned. This application Sep. 22, 1992, Ser. No. 951,297

Int. Cl.[5] B60C *23/00*

U.S. Cl. 152—417 **3 Claims**

1. An air control system for a truck vehicle having a plurality of axles with at least one wheel having a pneumatic tire at each end of the axles and said truck having an air supply wherein the air supply has a predetermined outlet pressure, the system comprising,

an air line connected to the air supply,

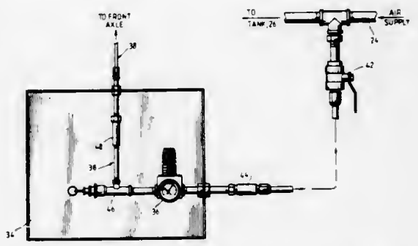
a pressure regulator connected to the air line for supplying substantially constant regulated air to the tires,

an air connection between the regulator and each tire for supplying regulated air to each tire,

said air connection extends through the axles and said air connection includes a rotatable pipe union having first and second parts sealably and rotatable relative to each other and positioned inside the axles for allowing rotation of the wheels while connected to the air control system,

at least one check valve in the air connection downstream of the regulator allowing downstream flow but preventing upstream flow from the tires, and

an unloader valve in the air connection downstream of the regulator and upstream of all of the tires, said unloader



valve being normally open for supplying air to all of the tires and having a predetermined setpoint pressure lower than the predetermined outlet pressure, said unloader valve closing on a drop in outlet pressure of the air supply below the predetermined setpoint thereby shutting off air to all of the tires for preventing further loss of air from the air supply and opening upon an increase in outlet pressure of the air supply above said predetermined setpoint.

5,287,907

METHOD AND APPARATUS FOR ASSEMBLING TIRE AND WHEEL AND FILLING INNER PRESSURE

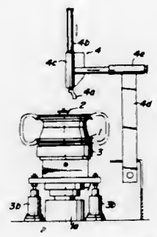
Hiroshi Kawabe; Toshiyuki Watanabe, and Naotaka Tomita, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,172

Claims priority, application Japan, Aug. 27, 1991, 3-238939

Int. Cl.[5] B60C *25/10*

U.S. Cl. 157—1 **4 Claims**



1. A method for assembling a tire having a pair of bead portions and a wheel and filling inner pressure in the tire, comprising steps of holding and fixing onto a wheel table the wheel whose one end surface is held in an airtight manner, arranging the tire on a free end of the wheel remote from the wheel table so that part of one bead portion of the tire is loosely dropped into a well of the wheel, arranging a pawl between the wheel and the one bead portion of the tire, establishing relative rotation between the pawl and the wheel to relatively move the pawl along the circumference of the wheel so that the bead portions of the tire are progressively radially outwardly expanded to arrange the bead portions around a rim of the wheel along all their circumferences, causing an annular outer cylinder member extendable and retractable toward and

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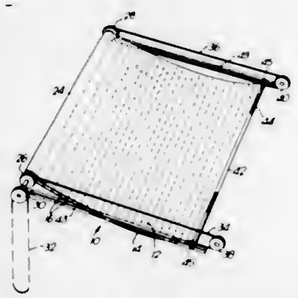
away from the tire and having at its forward end an inclined portion for filling inner pressure in the tire to abut against the one bead portion of the tire arranged around the rim of the wheel to form a clearance between the wheel and the one bead portion, supplying pressurized air into the interior of the tire through the clearance between the wheel and the one bead portion, progressively retracting the outer cylinder member from this state away from the tire to bring the bead portions into close contact with bead seats of the wheel, after that injecting pressurized air into the tire through the inflation valve of the wheel to raise the inner pressure of the tire higher than a normal pressure, and lowering the inner pressure of the tire to the normal pressure.

5,287,908

WINDOW COVERING ASSEMBLY

Brian M. Hoffmann, Westminster; Wendell B. Colson, Boulder, and Eric N. Williams, Louisville, all of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed Dec. 19, 1991, Ser. No. 810,331
Int. Cl.[5] E06B *9/08*
U.S. Cl. 160—121.1 **15 Claims**



1. A window covering assembly comprising in combination a window covering comprising first and second generally parallel spaced apart, longitudinally extending, sheer fabric sheets each defining parallel ends and parallel edges normal to said ends with juxtaposed ends of said sheets extending in spaced parallel relation, a plurality of longitudinally spaced, generally parallel, transversely extending vanes fixedly secured intermediate said first and second sheets and extending parallel to said sheet ends between the edges thereof, an end rail connected to one end of said second sheet and extending parallel to said vanes, a wind-u roll rotatable about its longitudinal axis and extending parallel to said end rail, means on said wind-up roll fixedly securing thereto juxtaposed ends of said sheets opposite said end rail in circumferentially spaced longitudinally extending relation thereon, said end rail being movable towards and away from said wind-up roll as said roll is rotated to wind or unwind said sheets, limited rotation of said wind-up roll when said sheets are fully extended causing said first and second sheets to move longitudinally relative to one another thereby to alter then angle of said vanes relative to said sheets.

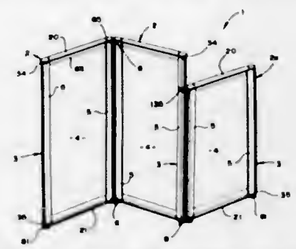
5,287,909

FREESTANDING PRIVACY SCREEN

Jonathan J. King, Grand Rapids; Marvin C. Knauf, Conklin; Bruce A. Preston, and John C. Fuhs, both of Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Dec. 9, 1992, Ser. No. 988,431
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—135 **33 Claims**

1. A freestanding privacy screen, comprising:
a plurality of panels configured to be positioned in a side-by-side relationship; each of said panels including:
a frame having hollow side members with opposite ends;
a pair of hinge rods positioned within the hollow side members of said frame for axial rotation therein, and extending continuously between the opposite ends of said side members; said hinge rods being rigid, and including first key members positioned adjacent opposite ends thereof;
a plurality of panel connectors interconnecting said panels and retaining the same in a mutually vertically aligned relationship; each of said panel connectors including:
a split body construction with mating body halves, each of which includes a pair of reception areas shaped to receive portions of adjacent hinge rods therein;



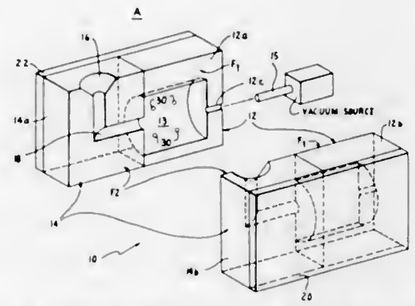
means for detachably interconnecting said mating body halves, whereby adjacent hinge rods are captured therebetween adjacent the opposite ends thereof to thereby securely yet releasably retain adjacent ones of said panels in said side-by-side relationship; and
second key members mating with said first key members on said adjacent hinge rods to rotationally interconnect said adjacent hinge rods, whereby upon relative pivoting of said adjacent panels to adjust said privacy screen, said adjacent hinge rods retain said adjacent panels in said mutually vertically aligned relationship.

5,287,910

PERMANENT MOLD CASTING OF REACTIVE MELT

Gregory N. Colvin, Muskegon; Leonard L. Ervin, Whitehall, and Robert F. Johnson, Spring Lake, all of Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Sep. 11, 1992, Ser. No. 943,704
Int. Cl.[5] B22D *18/04, 18/06, 21/00*
U.S. Cl. 164—63 **15 Claims**



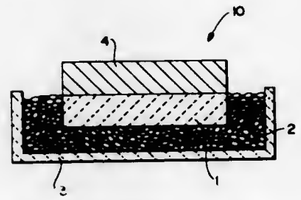
1. A method of casting a titanium based or nickel based material, comprising casting a melt or said material through a melt inlet defined by at least one titanium based melt inlet-forming member and communicating to a mold cavity defined by multi-part, reusable mold means comprising at least one of an iron based material and titanium based material such that the melt flows through the melt inlet into the mold cavity where the melt solidifies to form a casting.

5,287,911

METHOD FOR FORMING METAL MATRIX COMPOSITES HAVING VARIABLE FILLER LOADINGS AND PRODUCTS PRODUCED THEREBY

Michael K. Aghajanian, Bel Air, Md.; Alan S. Nagelberg, Wilmington, and Christopher R. Kennedy, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 521,203, May 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 269,312, Nov. 10, 1988, Pat. No. 5,020,584. This application May 14, 1992, Ser. No. 883,807
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—101 **15 Claims**



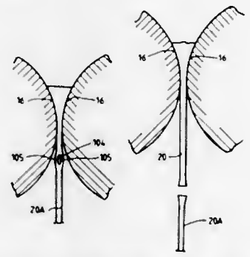
1. A method fo[r] aking a metal matrix composite, comprising:
mixing together at least two powdered matrix metals, one or more infiltration enhancer precursors and a substantially non-reactive filler to form a permeable mass; and
providing a source of molten matrix metal
spontaneously infiltrating at least a portion of the permeable mass with molten matrix metal having a different composition than at least one of said powdered matrix metals.

5,287,912

STRIP CASTING

William J. Folder, Kiama Downs; Lloyd W. Townsend, and Hisahiko Fukase, both of Wollongong, all of Australia, assignors to Ishikawajima-Harima Heavy Industries Company Limited, Tokyo, Japan and John Lysaght (Australia) Limited, New South Wales, Australia

Filed Nov. 2, 1992, Ser. No. 970,209
Claims priority, application Australia, Nov. 21, 1991, PK9598
Int. Cl.[5] B22D *11/06, 11/08*
U.S. Cl. 164—480 **10 Claims**



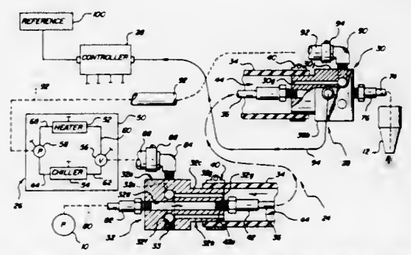
1. In a method of forming metal strip which comprises:
introducing molten metal into the nip of a contra-rotating pair of casting rollers which are contra rotating about axes;
cooling said rollers an amount sufficient to cause the portion of said molten metal in contact therewith to solidify into shells;
forming a strip, comprising said shells and molten metal therebetween, in the nip between said cooled rollers; and
moving said strip out of said nip as a substantially continuous strip to form a substantially solid metal strip;
the improvement which comprises:
after a portion of said strip has passed through said nip and has been formed into a strip of substantially solidified metal, moving at least one of said rollers radially away from the other of said rollers an amount sufficient to increase the thickness of said nip, and then moving said roller radially toward the other an amount sufficient to decrease the thickness of said nip, whereby forming a transversely thickened area in said formed sheet wherein the surface portions of said thickened area are substantially solid, and the interior portion of said thickened area is substantially molten whereby causing said transverse area to become reduced in tensile strength; and
causing said strip to separate along said area of reduced tensile strength thereby forming two portions of case strip of substantially solidified metal, at least one of which has a substantially clean end thereon.

5,287,913

HOSE ASSEMBLY AND TEMPERATURE CONTROL SYSTEM UTILIZING THE HOSE ASSEMBLY

Dave Dunning, 37894 Lakeville Dr., Mt. Clemens, Mich. 48045, and William Cline, 6417 Basswood, Troy, Mich. 48098

Filed May 29, 1992, Ser. No. 890,178
Int. Cl.[5] F25B *29/00*; F28F *27/00, 27/02*
U.S. Cl. 165—26 **4 Claims**



1. A temperature control system for delivering a viscous material from a pump to an application nozzle at a controlled temperature, said temperature control system comprising:
a hose assembly extending between the pump and the nozzle and including an inner flexible hose for carrying the viscous material and an outer flexible hose surrounding the inner hose and defining an annular space therebetween extending the length of the hose assembly;
means for passing a heat transfer fluid through the annular space; and
means for controlling the temperature of the heat transfer fluid and thereby the temperature of the viscous material being delivered through the inner hose to the nozzle;
said hose assembly including a pair of rigid end blocks each having an inboard end and an outboard end, each including a central through axial passage extending from the outboard end to the inboard end of the block, and each defining an annular hose mounting surface proximate the inboard end of the block in surrounding relation to the inboard end of the central passage;
the outer flexible hose being fitted at its opposite ends on the annular hose mounting surfaces of the respective block;
the opposite ends of the inner flexible hose respectively communicating with the inboard ends of the central passages of the respective block;

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each block further including further passage means communicating at one end thereof with the exterior of the block and communicating at the other end thereof with the annular space between the inner and outer hoses so as to facilitate the delivery of the heat transfer fluid to the annular space and removal of the heat transfer fluid from the annular space;

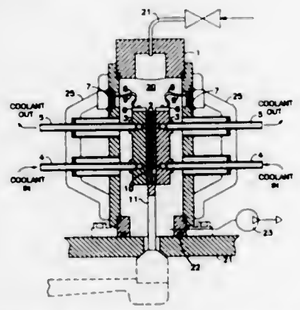
the temperature control system further including a temperature sensor mounted in one of said end blocks and including a probe extending into the central passage of said one block.

5,287,914

SYSTEM FOR SUBSTRATE COOLING IN AN EVACUATED ENVIRONMENT

John L. Hughes, Rodeo, Calif., assignor to Intevac, Inc., Santa Clara, Calif.

Continuation of Ser. No. 763,355, Sep. 20, 1991, Pat. No. 5,181,556. This application Nov. 24, 1992, Ser. No. 980,680
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] F28F *23/00*
U.S. Cl. 165—80.1 **8 Claims**



1. An apparatus for temperature control of an article having opposite substantially planar outer surfaces in an evacuated environment, comprising:

a heat exchanging structure, said structure having at least a stationary heat sink having a substantially planar surface disposed within a vacuum chamber;

transfer means for moving the article into and out of a position with an outer surface thereof adjacent to and substantially parallel with said planar surface of said heat sink;

said heat sink being spaced a predetermined distance apart from an article which distances sufficient to permit the positioning and removal of said article from a parallel relationship with the surface of the heat sink without contacting said heat sink;

said predetermined distance being further selected to permit a substantial convective/conductive heat transfer between said article and said heat sink; and

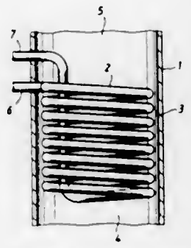
means for providing a high conductivity gas between said heat sink and said article at a pressure significantly above that of said vacuum chamber, yet substantially below that of the atmosphere.

5,287,915

HEAT EXCHANGER AND METHOD FOR REMOVING DEPOSITS FROM INNER SURFACES THEREOF

Chih-Hsiung F. Liu; Lloyd A. Clomburg, Jr., both of Houston; Otto E. Crenwelge, Jr., Katy; William G. Gottenberg, Houston, all of Tex., and Charles V. Sternling, North Kingstown, R.I., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 633,891, Dec. 26, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 901,043
Int. Cl.[5] F28G *7/00*
U.S. Cl. 165—84 **10 Claims**



7. A method for removing deposits from the inner wall of a housing and from movable heat exchange surfaces of a heat exchanger, comprising:

a) passing a hot fluid through the housing of the heat exchanger;

b) passing a coolant through a passage provided by movable heat exchange surfaces in the housing without bringing the coolant into direct contact with the hot fluid;

c) causing the movable heat exchange surfaces to vibrate by suddenly changing the flow rate of the coolant through the passage provided by the movable heat exchange surfaces; and

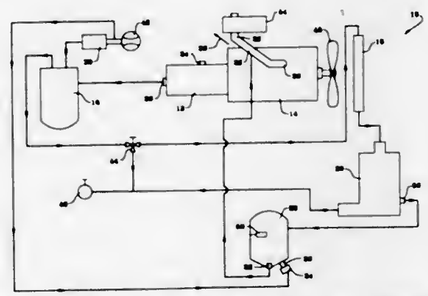
d) causing the heat exchange surfaces that are constructed as a heat exchange tube to be in the form of a loose coil, and at least some of the movable heat exchange surfaces are close to the inner wall of the housing.

5,287,916

APPARATUS AND METHOD FOR DISPOSING LIQUID EFFLUENT FROM A LIQUID SYSTEM

Glenn E. Miller, Mocksville, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 24, 1993, Ser. No. 21,817
Int. Cl.[5] F04B *39/06, 39/16*
U.S. Cl. 165—113 **18 Claims**



18. In a compressed system having a compressor which is driven by an engine, the engine having an exhaust system which vents an exhaust fluid in a predetermined flow direction

to an atmosphere, a method of disposing effluent condensate from the compressed air system, the method comprising:

compressing air within the system;

cooling the compressed air to a predetermined temperature to condense effluent from the compressed air;

separating the effluent condensate from the compressed air;

collecting the separated effluent condensate in a reservoir having a predetermined volume capacity;

injecting a predetermined volume of effluent condensate into the exhaust system in the flow direction of the exhaust fluid; and

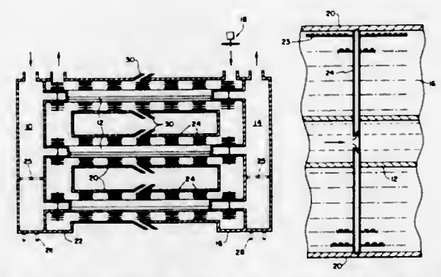
vaporizing the predetermined volume of effluent condensate in the exhaust fluid.

5,287,917

HEAT EXCHANGER

Antonio Cannata, 14 Patience Crescent, London, Ontario, Canada N6E 2K9

Filed Feb. 16, 1993, Ser. No. 17,791
Int. Cl.[5] F28D *7/10;* F28F *1/42*
U.S. Cl. 165—154 **10 Claims**



1. A heat exchanger having a core comprising a plurality of heat conducting elements extending transversely through a conduit and having portions projecting outwardly on each side of the conduit, a plurality of fins spaced along said portions, a housing enclosing said conduit and heat conducting elements, means for directing a flow of a medium to be heated or cooled through said conduit and means for inducing a flow of a heat exchanging medium through said housing and across said fins, said heat conducting elements being blindended tubes and said tubes having an opening within said conduit.

5,287,918

HEAT EXCHANGERS

Simon A. Banks, Derby; Alistair Calderwood, Nottingham; James E. Boardman, Lancashire; Colin I. Adderley, Derby, and John O. Fowler, Lancashire, all of England, assignors to Rolls-Royce plc, London, England

Continuation of Ser. No. 708,014, Jun. 3, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,880
Claims priority, application United Kingdom, Jun. 6, 1990, 9012618.6
Int. Cl.[5] F28F *3/14*
U.S. Cl. 165—166 **3 Claims**

1. A heat exchanger element comprising:

a core layer for flow of heat exchange fluid therethrough, and

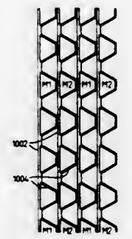
fluid inlet and outlet means communicating with the core layer;

the core layer including:

a main heat exchange region containing heat exchange surfaces, and;

a distributor region containing flow intercepting surfaces, the distributor region extending between the main heat exchange region and the inlet means so as to distribute the fluid flow across the extent of the core layer;

the heat exchange element comprising at least two unitary sheets of metal joined together by diffusion bonded joints in selected places, which joints are metallurgically the same as, and exhibit the same strength properties as, the unitary sheets, at least one of the unitary sheets exhibiting superplastic deformation in at least some of the places where it is not diffusion bonded to a neighboring layer, such that the at least one unitary sheet forms the core



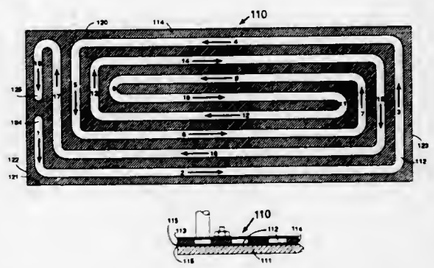
layer and defines therein the flow intercepting surfaces in the distributor region as well as the heat exchange surfaces in the main heat exchange region, said flow intercepting surfaces in the distributor region comprising corrugations in the at least one superplastically deformed sheet, the corrugations being arranged to convey the heat exchange fluid from the inlet means to the main heat exchange region.

5,287,919

HEAT EXCHANGER

Paul E. George, II, Dublin, Ohio, and John S. Barnhart, Champaign, Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Sep. 29, 1992, Ser. No. 953,557
Int. Cl.[5] F28F *3/12*
U.S. Cl. 165—170 **19 Claims**



14. Apparatus for exchanging heat between a heat conductive surface and an adjacent region or object, comprising

a first cover plate at least an order of magnitude longer and wider than its thickness;

a middle plate substantially similar to the first cover plate, contiguous with, and joined to, the first cover plate over their coextensive surfaces;

a second cover plate substantially similar to and positioned opposite to the first cover plate, contiguous with, and joined to, the middle plate over their approximately rectangular coextensive surfaces;

the second cover plate having high heat conductivity;

the middle plate having a confined path therein for fluid to flow into, through, and out of;

the path for fluid being bounded on a first pair of opposite sides by inner surface portions of the cover plates, and on

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a second pair of opposite sides substantially perpendicular to the first pair by material in the middle plate;

the path for fluid being substantially longer than the perimeter of the coextensive surfaces of the plates, and comprising predominantly a double spiral substantially symmetrical about the centerline between one pair of parallel opposite sides of the coextensive surfaces of the plates and substantially symmetrical about the centerline between the other pair of parallel opposite sides of the coextensive surfaces of the plates, the midpoint of the double spiral lying on one said centerline;

the separation distance between adjacent portions of the path for fluid being equal to about one-half to four-thirds of the width of the path; and the thickness of the second cover plate being about one-third to three-fourths of the separation distance between adjacent portions of the path for fluid; and

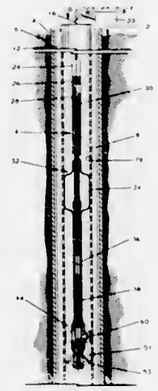
means for conveying fluid through the path at a predetermined velocity and a predetermined temperature, upon entering the path, that provide approximately a selected substantially uniform temperature over the outer surface of the second cover plate adjacent to the path.

5,287,920

LARGE HEAD DOWNHOLE CHEMICAL CUTTING TOOL

Donna K. Terrell, 1916 Christopher Dr., Ft. Worth, Tex. 76140

Filed Jun. 16, 1992, Ser. No. 899,429
Int. Cl.[5] E21B *29/02*
U.S. Cl. 166—55 **33 Claims**



1. In a downhole chemical cutting tool having an elongated tool body adapted to be inserted into a conduit and positioned at a downhole location thereof for effecting a cutting action in said conduit, the combination comprising:

a) a chemical section in said elongated tool body adapted to contain a chemical cutting agent;

b) a cutting section in said elongated tool body adapted to receive said chemical cutting agent from said chemical section and having an interior chamber for the distribution of said chemical cutting agent;

c) a plurality of externally upset cutting heads extending outwardly from said cutting section along circumferentially spaced transverse axes, each of said cutting heads having an outer cutting surface;

d) each of said cutting heads having a plurality of cutting ports extending radially inward from the outer cutting surface thereof and in fluid communication with said internal chamber within said cutting section; and

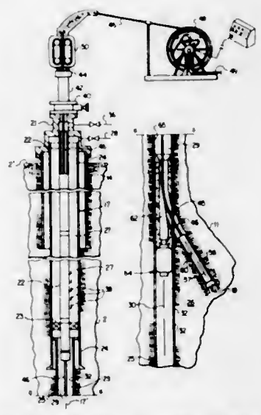
e) an expansible slip means in said elongated tool body for anchoring said tool body as said cutting agent is dispelled from said cutting ports.

5,287,921

METHOD AND APPARATUS FOR SETTING A WHIPSTOCK

Curtis G. Blount, 251 Gail Dr., Wasilla, Ak. 99654; Charles M. Hightower, 641 Post Oak Dr., Plano, Tex. 75025, and Charles D. Hailey, 1661 Exchange Ave., Oklahoma City, Okla. 73108

Filed Jan. 11, 1993, Ser. No. 2,555
Int. Cl.[5] E21B *19/00, 7/06, 23/03*
U.S. Cl. 166—117.6 **10 Claims**



1. In a method for setting a whipstock onto a packer in a wellbore, the improvement comprising providing a coiled tubing injection unit carrying coiled tubing for insertion into a well conduit in said wellbore, providing at one end of said coiled tubing a tool combination comprising an accelerator tool followed by a jar tool followed by a setting tool which setting tool carries said whipstock that is to be set onto said packer, said accelerator tool being connected to said coiled tubing and the remaining tools being carried below said accelerator in the order aforesaid, said whipstock being carried by said setting tool by a shear means, passing said tool combination into said wellbore by said coiled tubing until said whipstock is set on said packer, said jar tool being such that when actuated it delivers a sudden jarring impact to said setting tool, actuating said jar tool after said whipstock is set onto said packer to shear said shear means and physically separate said setting tool from said whipstock, and employing said accelerator tool to enhance said jarring impact on said setting tool and essentially insulate said coiled tubing from said jarring impact.

5,287,922

EMERGENCY METHOD FOR RUNNING SLIPS OVER CASING COLLARS

Charles D. Bridges, Cypress, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

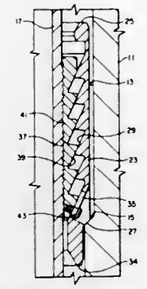
Division of Ser. No. 807,009, Dec. 13, 1991, Pat. No. 5,222,555. This application Mar. 30, 1993, Ser. No. 40,325
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—277 **15 Claims**

1. An emergency method of installing a string of casing in a wellhead housing in the event the string of casing becomes stuck, the string of casing having casing sections connected together by casing collars, resulting in a casing collar being located above the wellhead housing when the string of casing becomes stuck, the method comprising:

cementing the string of casing in the well;

providing a radially expansible slip bowl with a slips carried in the interior of the bowl;

expanding the slip bowl and lowering the slip bowl and slips



over the casing collar, then radially contracting the slip bowl; and

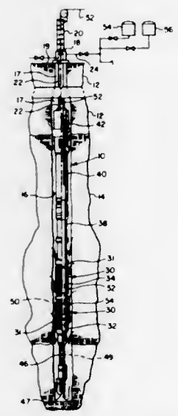
landing the slip bowl in the wellhead and moving the slips radially inward relative to the slip bowl to grip the casing.

5,287,923

SAND CONTROL INSTALLATION FOR DEEP OPEN HOLE WELLS

H. Mitchell Cornette, and Stephen E. Morrison, both of Houston, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 28, 1992, Ser. No. 921,185
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—278 **16 Claims**



7. A method of providing a sand control installation in a deep well comprising the steps of:

placing a sand control screen having solids filtering flow passages and a central interior flow passage therein in said well in the vicinity of a formation zone of interest to be produced of fluid, said sand control screen being connected at one end to a tubing string extending to the earth's surface and at an opposite end of said sand control screen to a tail section of said tubing string, said sand control screen being impregnated with a temporary plugging medium occupying said solids filtering flow passages to prevent the flow of solids-laden fluids through said solids filtering flow passages before placing said well in production;

causing said well to flow fluids from said formation zone of interest through said tail section and up through said interior flow passage of said sand control screen and said tubing string to remove said solids-laden fluids from said well adjacent said formation zone of interest;

closing said tail section to the flow of fluids from said formation zone of interest to said interior flow passage;

removing said temporary plugging medium from said solids filtering flow passages of said sand control screen; and

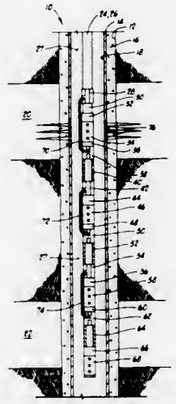
causing said well to flow fluids from said formation zone of interest through said solids filtering flow passages of said sand control screen to filter out solids produced from said formation with said fluids.

5,287,924

TUBING CONVEYED SELECTIVE FIRED PERFORATING SYSTEMS

John D. Burleson; Justin L. Mason, both of Denton, and Flint R. George, Flower Mound, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 28, 1992, Ser. No. 937,601
Int. Cl.[5] E21B *29/02*
U.S. Cl. 166—297 **27 Claims**



19. A method of perforating multiple zones in a well, comprising:

(a) running into said well a tubing conveyed multiple zone perforating string including:

a tubing string;

at least a first and a second perforating gun carried by said tubing string; and

at least a first and a second pressure actuated firing head associated with said first and second perforating guns, respectively;

(b) applying actuating fluid pressure from a source of actuating fluid pressure to said first firing head;

(c) isolating said second firing head from said source of said actuating fluid pressure during step (b);

(d) after step (b), firing said first perforating gun and;

(e) in response to firing said first perforating gun in step (d), communicating said second firing head with said source of said actuating fluid pressure.

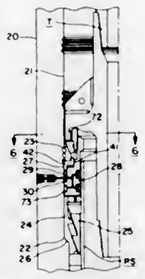
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5,287,925

WELLHEAD APPARATUS

Bruce J. Watkins, and Blake T. DeBerry, both of Houston, Tex., assignors to Dril-Quip, Inc., Houston, Tex.

Filed Mar. 4, 1993, Ser. No. 26,475
Int. Cl.[5] E21B 23/00
U.S. Cl. 166—208 11 Claims



1. Wellhead apparatus, which comprises

a housing having a bore therethrough and a port opening to the bore and valve means in the port permitting flow only toward the bore,

means for suspending a pipe string within the bore of the housing,

an assembly for closing an annular space between the bore and an outer wall of either the suspended pipe string or the means by which it is suspended, and

a tool for lowering the assembly into landed position,

said assembly including

an annular body having first and second seal rings carried about its outer side for sealing with the bore above and below the opening of the port thereto and a third seal ring carried on its inner side for sealing with the outer wall,

means responsive to actuation of the tool, following landing of the assembly, for energizing the first and second seal rings into sealing engagement with the bore, and

means including passageway means in the body connecting with its outer side between the first and second seal rings so that, when the first and second seal rings are energized, a medium may be supplied through the port and passageway means to the third seal ring for energizing it into sealing engagement with the outer wall.

5,287,926

METHOD AND SYSTEM FOR UNDERGROUND GASIFICATION OF COAL OR BROWNCOAL

Arnold W. J. Grupping, 3 Anjeliereniaan, 2111 BP Aerdenhout, Netherlands

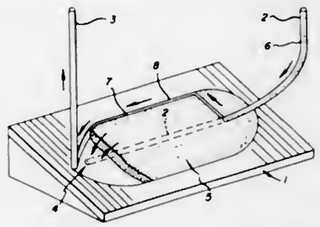
PCT No. PCT/NL91/00027, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/13236, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 18, 1991, Ser. No. 916,822
Claims priority, application Netherlands, Feb. 22, 1990, 9000426
Int. Cl.[5] E21B 43/243; E21F 15/08
U.S. Cl. 166—256 16 Claims

1. A method for the underground gasification of coal or browncoal in an inclined coal seam, comprising:

drilling a first borehole in a substantially vertical direction from the ground surface into said seam towards a lower level thereof from which the gasification is to be started upslope, said first borehole being deviated from the vertical direction into a direction substantially parallel to the strike of said seam and having an ending and being used for igniting the coal and initiating the gasification process,

supplying an oxygen containing gas through said first borehole and discharging the produced combustible gases through a second borehole ending in the vicinity of said first borehole, such that, a first chamber is formed in said seam by the combustion of coal,

filling said chamber, after bleeding off the gas pressure, with a filler suspended in a carrier liquid, which is supplied through one of said boreholes, said suspension having such a concentration and flow rate that the filler, because of the speed reduction when entering the chamber, will precipitate, leading through this suspension being continued until the chamber is completely filled with the filler with the exception of a channel, that connects both boreholes and runs along a high coal face,



removing the carrier liquid from the channel with a gas and restarting the gasification process to form a second chamber updip of the first chamber, and

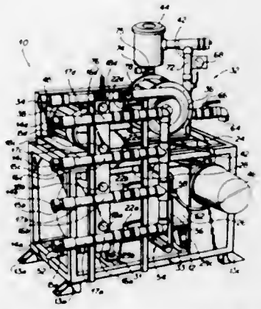
repeating the filling and gasification steps for driving the gasification front updip in the coal seam, such that the boreholes remain in communication with each other by the channel and the gasification chamber, wherein said first and second boreholes are the only two boreholes drilled, and the supply and discharge of gases and the supply of the filler suspension is performed through these two boreholes only.

5,287,927

VAPOR RECOVERY APPARATUS AND METHOD

David A. Pass, 2301 Bayswater Dr., Kennesaw, Ga. 30144, and Thomas A. Rice, Kennesaw, Ga., assignors to David A. Pass, Kennesaw, Ga.

Filed Nov. 10, 1992, Ser. No. 974,140
Int. Cl.[5] E21B 43/00
U.S. Cl. 166—267 29 Claims



1. A mobile vapor recovery apparatus for efficiently removing materials from soil, comprising:

an intake port means for releasably connecting to and receiving gas from a well pipe leading to a well in said soil, said gas having vaporized materials from said soil;

a fluid collection tank configured to receive said gas from said intake port means, said tank for collecting fluid entrained in said gas;

a blower means for drawing said gas into said intake port means by forcing said gas from said tank and out of an exhaust port; and

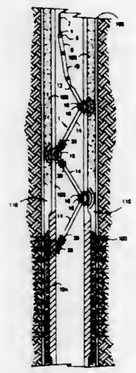
a transportable support frame securing said intake port means, said fluid collection tank, and said blower means in a self-contained unit.

5,287,928

APPARATUS AND METHOD FOR REPAIRING A GRAVEL-PACKED WELL COMPLETION

John C. Healy, Metairie, La., and Richard A. Sukup, Burleson, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 13, 1992, Ser. No. 976,023
Int. Cl.[5] E21B 43/00
U.S. Cl. 166—278 20 Claims



1. An apparatus for repairing a well completion having a gravel-packed annulus formed by a liner and a well casing, the annulus having at least one region within the gravel pack which is devoid of gravel, comprising:

(a) a tubular detonator sub pipe for placing an explosive device within, said sub pipe having a first end and a second end, said first end having means for connecting said sub pipe to a work string adapted to convey an electrical line;

(b) at least one elongated rigid member having a first end and a second end, said rigid member having a longitudinally disposed hole for placing an explosive primer cord therethrough, said rigid member having a plurality of vent orifices in fluid communication with said longitudinally disposed hole; and

(c) means for pivotally connecting said first end of said rigid member to said second end of said tubular detonator sub pipe;

whereby detonation of the explosive device detonates the primer cord effecting pivotal movement of said at least one elongated rigid member so as to cause the apparatus to impact the liner wall of the gravel-packed well completion.

5,287,929

METHOD OF USING DISPERSANT COMPOSITIONS FOR SUBTERRANEAN WELL DRILLING AND COMPLETION

James B. Bloys, and Richard F. Morgan, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 840,383, Feb. 24, 1992, Pat. No. 5,221,489, which is a continuation of Ser. No. 514,900, Apr. 26, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,997
Int. Cl.[5] F21B 33/14, 33/16
U.S. Cl. 166—291 8 Claims

5. A method of securing a casing within a borehole wherein said casing has an inner and outer wall, and wherein said borehole defines an annular space about said outer wall of said casing, said annular space being occupied by a drilling fluid, said method comprising:

displacing said drilling fluid with a composition, said composition comprising:

a settable cement slurry; and

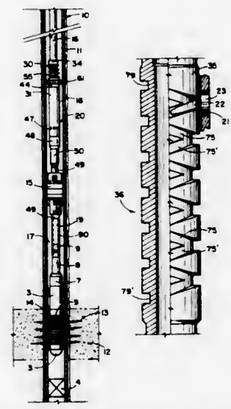
a dispersant copolymer comprising a first monomer selected from the group consisting of maleic anhydride, maleic acid and methacrylic acid; and, a second monomer selected from the group consisting of sulfonated ethene, sulfonated propene, sulfonated 1-butene, sulfonated 2-butene, sulfonated 1-pentene, sulfonated 2-pentene, sulfonated 2-methyl-1-butene, sulfonated 2-methyl-2-butene, sulfonated 3-methyl-1-butene, sulfonated cyclopentene, sulfonated cyclohexene, sulfonated 1-hexene, sulfonated 2-hexene, sulfonated 3-hexene, sulfonated 2-methyl-1-pentene, sulfonated 2-methyl-2-pentene, sulfonated 2-methyl-3-pentene, sulfonated 3-methyl-1-pentene, sulfonated 3-methyl-2-pentene, sulfonated 4-methyl-1-pentene, sulfonated 3,3-dimethyl-1-butene, sulfonated 2,3-dimethyl-1-butene, sulfonated 2,3-dimethyl-2-butene, sulfonated 2-ethyl-1-butene, sulfonated 1,3-butadiene, sulfonated 1,3-pentadiene, sulfonated 1,4-pentadiene, sulfonated 2-methyl-1,3-butadiene, sulfonated 2,3-dimethyl-1, 3-butadiene, sulfonated 2-ethyl-butadiene, sulfonated 2-methyl-1,3-pentadiene, sulfonated 3-methyl-1,3-pentadiene, sulfonated 4-methyl-1,3-pentadiene, sulfonated 2-methyl-1,4-pentadiene, sulfonated 3-methyl-1,4-pentadiene, sulfonated 4-methyl-1,4-pentadiene, sulfonated 1,3-hexadiene, sulfonated 1,4-hexadiene, sulfonated 1,5-hexadiene, sulfonated 2,4-hexadiene, and sulfonated 1,3,5-hexatriene.

5,287,930

VALVE APPARATUS FOR USE IN SAND CONTROL

Howard L. McGill, Lufkin, Tex., assignor to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed May 22, 1992, Ser. No. 887,066
Int. Cl.[5] E21B 34/12
U.S. Cl. 166—373 13 Claims



1. Valve apparatus for use in a well, comprising: a housing; a mandrel mounted for rotation in said housing and for limited telescopic movement, and mandrel being adapted to be connected to a running string of pipe which extends upward to the surface and said housing being adapted to be connected to a packer; clutch means on said mandrel and housing for preventing relative rotation until a selected amount of the weight of the running string is imposed on said mandrel to move it down-

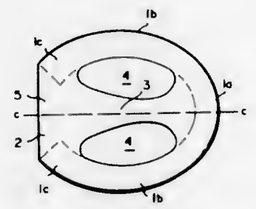
VOL 1159 ISS 4 FE 22 1994 UMI

ward a predetermined distance relative to said housing; port means in said housing; sleeve valve means for closing and opening said port means; and actuator means responsive to only right-hand rotation of said mandrel for shifting said sleeve valve means to effect closing and opening of said port means.

5,287,931
HORSESHOE

Bjorn H. Eriksson, Valla Himmeta, S-731 96 Koping, Sweden

PCT No. PCT/SE90/00795, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO91/07873, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 30, 1990, Ser. No. 910,285
Claims priority, application Sweden, Dec. 4, 1989, 8904088.5
Int. Cl.[5] A01L *1/02*
U.S. Cl. 168—24 **4 Claims**



1. A horseshoe for covering the entire rim of a horse's hoof comprising:

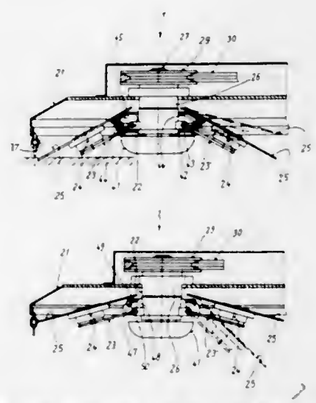
an integral unitary body having a longitudinally extending centerline and a continuous curved part sized to underlie the entire support rim of the hoof, said curved part being formed of a forward toe portion, two arcuate side portions spaced from one another and extending rearwardly from said toe portion on opposite sides of said centerline in the longitudinal direction of the shoe and a pair of tract portions located rearwardly of said side portions, respectively, and underlying corresponding tract portions of the hoof when the horseshoe is attached to the hoof;

said body including a transverse portion located between said tract portions of said body and extending substantially at right angles to the longitudinal centerline of said body, and a longitudinally extending portion between said toe portion and said transverse portion, said transverse portion and said longitudinally extending portion substantially straddling said centerline, said curved part, said transverse portion and said longitudinally extending portion being configured and dimensioned to define no more than two openings passing through the horseshoe body on opposite sides of said centerline, with one opening disposed on each side of said centerline, thereby affording access from a bottom of said horseshoe body through the shoe to an area between the shoe and the horn sole of the hoof when the horseshoe is attached to the hoof, the bottom surface of said longitudinally extending portion being substantially coplanar with the bottom surfaces of said curved part and said transverse portion and said longitudinally extending portion increasing in width from front to rear along its entire length.

5,287,932
SOIL TILLING DEVICE

Alfons Fleck, Bermatingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Bermatingen GmbH & Co., Bermatingen, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 800,407
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038008; Nov. 5, 1991, 4136328
Int. Cl.[5] A01B *35/16, 33/00*
U.S. Cl. 172—96 **12 Claims**



1. A soil tilling device that is pulled by a tractor vehicle, said soil tilling device comprising:

at least one tool holder that is supported at a supporting element and is rotatably drivable about a substantially vertical axis;

at least two circular disk-shaped soil tilling tools connected to a respective one of said tool holders and uniformly distributed over a circumference of said tool holder;

each one of said soil tilling tools having a shaft;

said tool holder comprising a support, said soil tilling tools rotatably connected by said shaft to said support, with an axis of rotation of said soil tilling tools corresponding to said shaft; and

said shaft being slanted relative to an axis of rotation of said tool holder such that said soil tilling tools have an angle of 20° to 40° to a surface of soil to be tilled, with circumferential sections of said soil tilling tools forming tilling surfaces, wherein said soil tilling tools are connected to a common one of said supports, and said support is in the shape of a truncated pyramid.

5,287,933
HOOD SUPPORT ASSEMBLY FOR AN EARTH WORKING MACHINE

Victor E. Lindblom, Brooklyn Center, Minn., assignor to Caterpillar Pavin, Products Inc., Minneapolis, Minn.

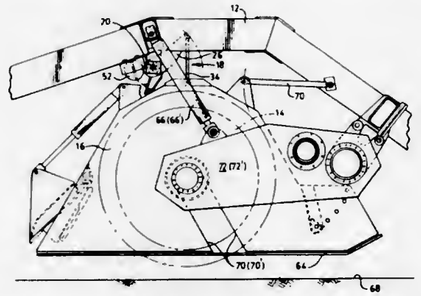
PCT No. PCT/US91/07757, § 371 Date Oct. 22, 1991, § 102(e) Date Oct. 22, 1991
PCT Filed Oct. 22, 1991, Ser. No. 829,013
Int. Cl.[5] A01B *17/00, 33/16*
U.S. Cl. 172—112 **3 Claims**

1. A hood support assembly (18) for an earth working machine (10) having a frame (12), a horizontally disposed rotor (14) having ground engaging tools mounted thereon, and a hood member (16) defining an open bottom mixing chamber about said rotor (14), said hood support assembly (18) comprising:

a support member (20) having first and second end portions (22,24) and being pivotally connected to said frame (12) at each of said end portions (22,24);

first and second arm members (26,28) each having first and second end portions (30,30',32,32'), the first end portion (30,30') of each arm member (26,28) being attached to a respective end portion (22,24) of the support member (20);

first and second adjustable link members (34,36) each having first and second end portions (38,38',40,40'), the first end portion (38,38') of each adjustable link member (34,36) being pivotally connected to the second end portion (32,32') of a respective one of said arm members (26,28) and the second end portion (40,40') of each adjustable link member (34,36) being pivotally connected to said hood member (16);



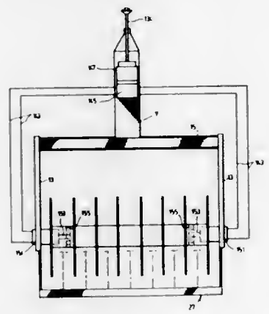
first and second stop members (42,44) each having an end portion (46,46') and a contact surface portion (48,48') spaced from said end portion (46,46'), said end portion (46,46') of each stop member (42,44) being attached to a respective end portion (22,24) of the support member (20); and,

first and second springs (52,54) each having first and second end portions (56,56',58,58'), the first end portion (56,56') of each spring (52,54) being attached to said frame (12) and the second end portion (58,58') of each spring (52,54) being abuttable with a respective contact surface portion (48,48').

5,287,934
SOIL WORKING IMPLEMENT

Brian Porter, 653 Fisher Street, Hemmingford, Quebec, Canada J0L 1H0

Filed Dec. 2, 1988, Ser. No. 278,749
Int. Cl.[5] A01B *33/02, 33/16*
U.S. Cl. 172—123 **18 Claims**



1. A plow constructed for movement in a predetermined direction, said plow comprising:

(a) a cultivator comprising:

a generally U-shaped frame having a pair of laterally spaced arms extending parallel to said predetermined direction, said arms being interconnected by a bight;

a draw centrally connected to said bight, said draw bar extending opposite said arms, and

a soil-chiselling assembly mounted on and transversely between said arms at the free ends thereof, said assembly including

a shaft provided with longitudinally spaced-apart sets of coplanar chisel-shaped blades extending flat in planes perpendicular to said shaft and each having a free end,

means for mounting the ends of said shaft on said arms for free rotation of said shaft about an axis transverse to said predetermined direction;

at least one low speed, high torque hydraulic motor mounted on one of said arms of said cultivator, said at least one motor having an output shaft coaxial with, and operatively connected to said shaft;

a hydraulic pump mounted on said frame and operatively connected to said at least one hydraulic motor in order to supply pressurized fluid thereto and thereby drive said at least one motor, and

means to operate said hydraulic pump,

(b) a pair of wheels and means mounting said wheels on said frame for movement and adjustment thereof between a first position wherein said wheels engage the soil for displacement of said cultivator with said soil chiselling assembly standing inoperative above the soil, and a second position wherein said wheels are retracted and stand above the soil and the chisel-shaped blades of said soil-chiselling assembly deeply engage the soil, and;

(c) a lump breaker mounted on the free ends of said arms of said cultivator, said breaker including lump-breaking elements disposed between said spaced sets of chisel-shaped blades.

5,287,935
GARDEN WEEDING AND LANDSCAPING TOOL

Michael P. Foeller, 2216 Oak Hill Dr., Deland, Fla. 32720

Filed Dec. 9, 1992, Ser. No. 987,789
Int. Cl.[5] A01B *1/06*
U.S. Cl. 172—136 **7 Claims**



1. A garden weeding and landscaping tool comprising:

two wheels attached to opposite ends of an axle;

a chassis mounted on said axle perpendicularly to said axle, said chassis having rear and front sides;

an elongated handle attached to the chassis extended angularly upward along a plane of the chassis toward the rear side of the chassis; and

a weed-cutting blade mounted horizontally to the rear side of the chassis having a cutting edge at the side of the blade facing the front side of the chassis.

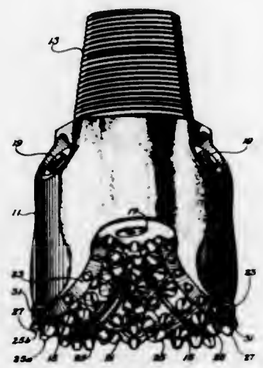
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,936

ROLLING CONE BIT WITH SHEAR CUTTING GAGE

Robert E. Grimes, Cypress, and Danny E. Scott, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 31, 1992, Ser. No. 830,130
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—331 16 Claims



1. In a rolling cutter of an earth-boring bit having a gage surface for contacting a sidewall of a borehole as the cutter rotates about its axis and rolls over the bottom of the borehole, the gage surface having a plurality of gage inserts secured by interference fit in sockets formed in the gage surface, an improved gage insert comprising:

at least one of the gage inserts having an elongated cylindrical body inserted in a selected socket in the gage surface, the body formed of a hard, fracture-tough material;

the gage insert having a cutting end adapted to extend, during drilling, a selected distance from the gage surface, the cutting end formed from a super-hard, abrasion-resistant material;

the cutting end of the gage insert having a substantially flat wear-resistant face substantially normal to a longitudinal axis of the body of the insert;

at least one cutting surface connecting the face and the body of the gage insert at a selected angle to define at least one cutting edge to shear the sidewall of the borehole; and

the selected angle of each cutting surface defining a negative rake angle with respect to a portion of the sidewall of the borehole being sheared.

5,287,937

DRILL BITS AND THE BLADES THEREFOR

Phillip A. Sollami, and Jimmie L. Sollami, both of Herrin, Ill., assignors to The Sollami Company, Herrin, Ill.

Filed Jun. 30, 1992, Ser. No. 905,890
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—427 11 Claims

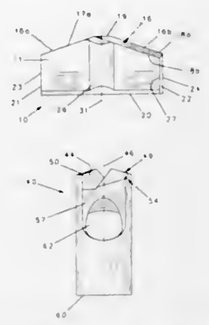
1. A drill bit comprising in combination

an elongate body member having a transverse slot at one end thereof,

a blade member having a body with cutting edges at one end thereof and a mounting portion at the opposite end thereof which is complementary in cross-section to said transverse slot,

said mounting portion being disposed in said transverse slot in said body member,

said blade member having a longitudinally extending protrusion disposed on one side of said blade member, said protrusion being received in a recess in one side of said slot, and



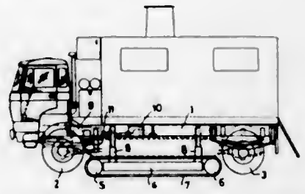
said protrusion extending to said cutting edge of said blade member.

5,287,938

VEHICLE SUITABLE FOR ON- AND OFF-ROAD USE

Engbert Welling, Oudehaske, Netherlands, assignor to Verenigde Bedrijven Van den Berg Heerenveen Holding B.V., Heerenveen, Netherlands

Continuation of Ser. No. 793,510, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 570,781, Aug. 22, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 3,950
Claims priority, application Netherlands, Aug. 25, 1989, 8902162
Int. Cl.[5] B62D *55/02*
U.S. Cl. 180—9.3 8 Claims



8. An auxiliary track-drive for a conventional wheeled motor vehicle having a vehicle frame with front and rear wheels driven by a vehicle engine, said track-drive comprising:

auxiliary frames each having continuous tracks on carrier wheels, a plurality of lifting cylinders spaced apart along each said auxiliary frame for attaching said auxiliary frames to said vehicle frame between said front and rear wheels, each of said lifting cylinders being individually actuable for vertically displacing said auxiliary frames relative to said vehicle frame between

a completely retracted position wherein said tracks are away from contact with a ground surface supporting said wheels;

an intermediate position wherein both said wheels and said tracks are in contact with an underlying ground surface and follow irregularities of the ground surface during travel thereon; and

a fully extended position wherein said tracks are driven over the ground surface and said wheels are raised away from contact with the ground surface such that said vehicle frame is supported by said tracks without assistance from said wheels;

further comprising control means for independently operating each of said lifting cylinders on each said auxiliary frame, said control means being adapted for placing said vehicle frame in a level horizontal position by relative adjustment of all said lifting cylinders while said vehicle is supported only by said tracks on a sloping ground surface; and

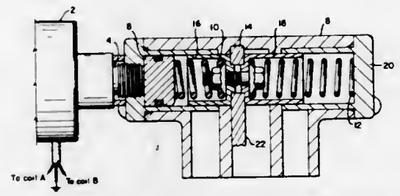
means for driving said carrier wheels.

5,287,939

ELECTRONIC SOLENOID SHIFTED POWER TAKEOFF DEVICE

Rickey J. Fernandez, Broken Arrow, Okla., assignor to Muncie Power Products, Inc., Muncie, Ind.

Continuation-in-part of Ser. No. 673,121, Mar. 20, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,382
Int. Cl.[5] B60K *17/28*; H01F *5/00*
U.S. Cl. 180—53.1 14 Claims



1. A mechanism for engaging a power takeoff having a drive gear and a driven gear and a yoke for moving a shift collar so that one of the gears engages with the other of the gears comprising

a solenoid having an armature and a low energy coil and a high energy coil,

an actuator having a piston, a slide, a heavy duty spring located between said piston and said slide and a lower duty spring located between said slide and an end wall of said actuator remote from said piston,

said armature upon energization of at least said high energy coil moving said piston toward said end wall,

a shifting yoke of said power takeoff secured to said slide for movement therewith,

a circuit for energizing said high energy coil for a specified length of time only, and

a circuit for energizing said low energy coil at least at all times after said specified length of time when said high energy coil is energized.

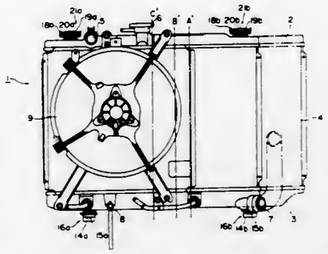
5,287,940

RADIATOR SUPPORT ARRANGEMENT AND APPARATUS FOR A VEHICLE

Soichiro Ogawa; Osamu Nozaki, and Hideaki Sakata, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 758,635, Sep. 12, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 83,386
Claims priority, application Japan, Sep. 14, 1990, 2-245280; Aug. 1, 1991, 3-192894
Int. Cl.[5] B60K *11/04*
U.S. Cl. 180—68.4 17 Claims

1. In a radiator support apparatus for a vehicle, for mounting and supporting a lower end of a radiator or a vehicle body via mount members formed of elastic members at two side positions of said lower end of said radiator in a widthwise direction of the vehicle body so as to cause a supported radiator to serve as a dynamic damper at a front end portion of the vehicle in a low-engine speed state, the improvement in which said mount members located on the two side positions have different spring constants so that the resonance frequencies of pitching and bouncing movements of said radiator support apparatus may substantially coincide with peak frequencies of torsional and flexural vibrations of the vehicle body, respectively, the mount member having the smaller spring constant being positioned nearer the center of gravity of said radiator than the other mount member.

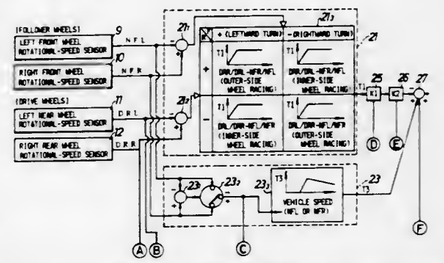


5,287,941

DRIVE WHEEL TORQUE CONTROLLING SYSTEM FOR VEHICLE

Katsuhiko Masuda; Jun Aoki, and Yasuji Shibahata, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 914,106
Claims priority, application Japan, Jul. 18, 1991, 3-178507
Int. Cl.[5] B60K *23/04*
U.S. Cl. 180—197 14 Claims



1. A drive wheel torque control system for a vehicle, comprising control means for controlling a variable differential motion limiting device provided between drive wheels to distribute a predetermined LSD torque from a racing drive wheel of the wheels to a non-racing drive wheel of the wheels, said control means comprising:

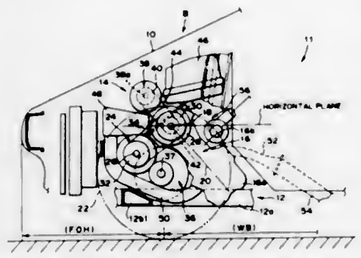
vehicle speed determining means for determining a vehicle speed from wheel speeds of follower wheels,

drive wheel speed determining means for selecting a smaller one of the wheel speeds of said drive wheels as a drive wheel speed, when an inner-side wheel is racing during a turn, and for selecting a larger one of the wheel speeds of the drive wheels, when an outer-side wheel is racing during a turn, and

torque determining means for determining said LSD torque from the vehicle speed and the drive wheel speed.

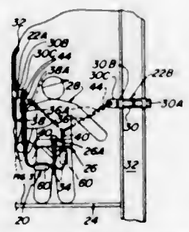
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,942
VEHICLE POWER TRAIN STRUCTURE
Jiro Maebayashi, and Isao Tohda, both of Yokohama, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 20, 1992, Ser. No. 979,311
Claims priority, application Japan, Nov. 20, 1991, 3-304373
Int. Cl.[5] B60K 5/04
U.S. Cl. 180—297 8 Claims



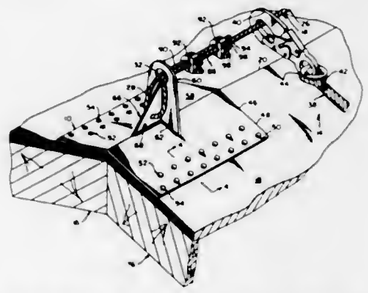
1. A vehicle power train structure comprising:
an engine which has a plurality of cylinders and is mounted in a vehicle body with a bore center axis of each of said cylinders inclining downwardly towards a corresponding cylinder head of each of said cylinder with respect to a horizontal plane of the vehicle;
a crankshaft which functions as an output shaft extending in a widthwise direction of said vehicle body, said cylinder head being located below a horizontal plane extending through said crankshaft;
a transmission having a shaft which is arranged at a position neighboring said engine to be substantially parallel to an extending direction of said crankshaft, for receiving a rotating force of said engine; and
a drive shaft arranged below said transmission, said drive shaft extending in a widthwise direction of said vehicle body, for receiving the rotating force of said engine from said transmission.

5,287,943
DUAL CONNECTION LANYARD FOR USE IN SAFETY SYSTEM
Michael Bell, 1705 Triumphe Way, Warrington, Pa. 19876
Filed Jan. 3, 1992, Ser. No. 816,990
Int. Cl.[5] A47L 3/00
U.S. Cl. 182—3 8 Claims



1. A lanyard for connection to a safety device worn by a worker and for connection to an anchor point to prevent the worker from falling more than a predetermined distance from said anchor point, said lanyard comprising a pair of flexible web members secured together by sewing at a single location to form a first, common elongate section and a second and third elongate section extending from said common section, said common section and one of said second and third sections being part of one of said flexible web members and the other of said second and third sections being provided by the other of said flexible web members being sewn to said one of said flexible web members at said single location intermediate opposed ends of said one of said flexible web members, each of said sections having a first end and a second end, said second ends of all of said sections being connected to one another by the sewing at the single location, each of said first ends including a respective connector member mounted thereon, said connector member of said first section being arranged to be releasably secured to said safety device, said connector members of said second and third sections being arranged to be releasably secured to said anchor point.

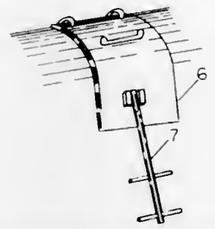
5,287,944
ROOF MOUNTED ANCHOR USED SINGLY OR WITH ANOTHER, AND WITH OTHER EQUIPMENT IN A FALL RESTRAINT AND/OR FALL ARREST SYSTEM
Clifford P. Woodyard, 24322 180th SE., Kent, Wash. 98042
Filed Feb. 3, 1993, Ser. No. 12,909
Int. Cl.[5] A62B 35/00
U.S. Cl. 182—3 24 Claims



1. A roof mounted anchor used by itself or used with other roof mounted anchors, and also used with other components of a workperson's fall restraint and/or fall arrest equipment, to protect a workperson from serious injury, if he or she were to fall while working on a roof, comprising:
a) a base member having spaced holes to receive fasteners which will be used to secure this roof mounted anchor to roof structures of a building;
b) an upright anchoring eyelet structure secured to the central portion of the base member having an eyelet to receive portions of a cable, or hook;
c) a gusset, serving as a reinforcement member and extending between the base member and the upright anchoring eyelet structure; and
d) a cable receiving hole structure integrally and centrally located in the gusset to receive and to anchor a portion of a cable.

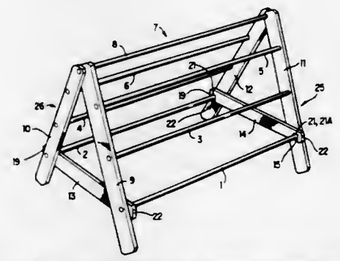
5,287,945
LADDER FOR BOARDING INFLATABLE BOATS
Mark Thurlow, 173 Copper Ave., Vista, Calif. 92083
Filed Dec. 7, 1992, Ser. No. 986,611
Int. Cl.[5] E06C 5/26
U.S. Cl. 182—97 1 Claim

1. A flexible saddle with an attached ladder for boarding inflatable boats wherein the improvements comprise:
(a), a saddle comprising a planer upper layer and a lower layer of HYPALON, or the like, encasing transverse platens of ABC, or the like, plastic;
(b), the transverse platens with a width of approximately three inches and a thickness of one quarter inch except for the platen which supports a centrally located hinged mounting block.
(c), the ladder consisting of an elongated tube of non-corrosive material with two spaced tubular rungs at the bottom portion;
(d), the ladder fastened to the hinged mounting block to be rotational in a longitudinal plane of the saddle;
(e), said mounting block centrally located and fastened to the platen;



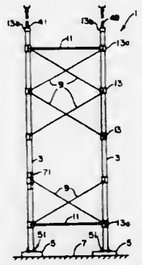
(f), the hinged mounting block incorporating a stop to maintain the ladder outwardly 20 degrees from vertical;
(g), a handle, comprising a loop of rope, or the like, fastened to the saddle above the hinged mount;
(h), two orifices centrally located along a top edge of the saddle for fasteneing the saddle to the boat by means of cords or belts.

5,287,946
CHILD'S PORTABLE CLIMBER
Henry C. Mayo, 2634 N. Richmond St., Arlington, Va. 22207
Filed Jun. 30, 1992, Ser. No. 906,484
Int. Cl.[5] E06C 1/00
U.S. Cl. 182—165 20 Claims



1. A child's portable climbing apparatus, comprising:
a first climbing member having spaced, opposing parallel support beams, each of which is identified as having inner and outer sides as well as upper and lower sides; with spaced parallel, horizontal climbing bars secured to the inner sides of the opposing support beams;
a second climbing member having spaced, opposing, parallel support beams each of which is identified as having inner and outer sides as well as upper and lower sides; with spaced parallel horizontal climbing bars secured to the inner sides of the opposing support beams; and the sides of the opposing support beams of the second climbing member spaced to be closely received within the opposing support beams of the first climbing member;
a top horizontal climbing bar secured between the opposing support beams of the first and second climbing members permitting relative pivotal movement of at least one of the first and second climbing members about the top horizontal climbing bar;
at least one safety bar is removably secured between a selected climbing bar on the first climbing member and a selected climbing bar on the second climbing member to adjustably position and releasably secure the climbing apparatus in a variety of heights and angular climbing positions, each safety bar having at least one safety catch comprising two opposing pawls which are pivotally secured adjacent to a slot in the safety bar, to releasably secure the selected climbing bar in the slot during use.

5,287,947
VERTICAL SUPPORT GRID SYSTEM
Gregory A. McSwain, 4448 Schmittwods Ct., St. Louis, Mo. 63123
Filed Jul. 24, 1992, Ser. No. 917,959
Int. Cl.[5] E04G 7/00
U.S. Cl. 182—179 8 Claims



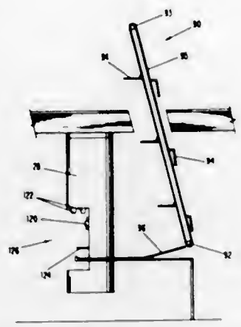
1. A vertical support grid system including vertically extending legs, cross-bracing diagonally spanning the distance between said legs, tie-bars horizontally spanning the distance between said legs, and bracketing means for securing said tie-bars and cross-bracing to said legs, said bracketing means comprising a bracket connector including first and second generally U-shaped mating halves, each of said half having a web and a pair of legs extending therefrom, each leg having aligned pin holes therethrough, said bracketing means being secured to said vertically extending legs at a defined location by locating said mating halves on opposite sides of the vertically extending legs and aligning the pin holes of the extending legs, at least one pin extending through the holes of the bracket connector legs and through said grid legs to affix the bracket connector to the vertically extending legs, and said bracket connector receiving one of said tie-bars and said cross-bracing to connect them to said grid system vertically extending legs.

5,287,948
FOOD DELIVERY APPARATUSES
Frank R. Casale; Nicola D. Casale, and Antonio A. Casale, all of Albuquerque, N. Mex., assignors to Nunzio's Pizza, Inc., Beverly Hills, Calif.
Continuation-in-part of Ser. No. 358,418, May 26, 1989, Pat. No. 5,109,956. This application Nov. 18, 1991, Ser. No. 793,845
Int. Cl.[5] B65G 17/12, 47/34; E04H 3/02
U.S. Cl. 186—41 8 Claims

1. A conveyor for conveying items from an upper level of a building to a lower level of said building, said conveyor comprising frame means for supporting conveyor belt means, said belt supporting a plurality of conveyor trays swingably affixed to said belt means, each of said conveyor trays being foldable downwardly when being conveyed upwardly on said belt means and being extendable outwardly substantially horizon-

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tally when being conveyed downwardly on said belt means, wherein said frame means and said belt means are positioned



from said upper level to said lower level at an angle of approximately twenty degrees from the vertical.

5,287,949

SHAFT LOCKING DEVICE

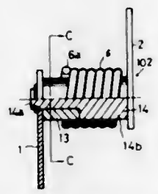
Yoshiharu Kitamura, Nagano, Japan, assignor to NHK Spring Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 635,659, Dec. 28, 1990, abandoned, which is a continuation of Ser. No. 544,817, Jun. 28, 1990, Pat. No. 5,010,983, which is a continuation of Ser. No. 318,081, Mar. 2, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 827,487

Claims priority, application Japan, Mar. 4, 1988, 63-28201; Mar. 4, 1988, 63-28202; Dec. 21, 1988, 63-165569

Int. Cl.[5] F16D *63/00*

U.S. Cl. 188—77 W **5 Claims**



1. A shaft-locking device for locking rotation at any arbitrary position of an article requiring control of an inclined angle, said device comprising:

a movable bracket secured to the article requiring control of an inclined angle,

a fixed bracket secured to a supporting member for supporting the article,

a fixed shaft integrally secured to said fixed bracket,

a movable shaft integrally secured to the movable bracket,

the fixed shaft being a stepped shaft with a small diameter portion, mounted within the movable shaft, and a large diameter portion, said movable shaft having at least one large diameter portion with a diameter which is the same as the large diameter portion of the fixed shaft and being assembled so as to have the at least one large diameter portion adjacent to said large diameter portion of said fixed shaft, and

a single continuous coil spring spiraling in a single direction surrounding the fixed shaft and the movable shaft in a closely contacted state and wound to be smaller in diameter than the large diameter portion of said fixed shaft and said movable shaft, said spring being located between said movable bracket and said fixed bracket,

the coil spring having two end loops at opposite ends thereof, said end loops being free from connection to said movable bracket and said fixed bracket, one end loop of the coil spring located closest to said fixed bracket being continuous with a spiral of a central portion of the coil spring, the other end loop of the coil spring located closest to said movable bracket including (a) and an end portion having a clearance from an outer circumference of the movable shaft and being free always when the movable shaft is locked or rotated and (b) a contact point at which it contacts the outer circumference of the movable shaft, said coil spring closely and uniformly contacting the outer circumference of the movable shaft at all portions of said coil spring other than said end portion.

5,287,950

FALL-ARREST APPARATUS WITH CONSTANT WINCH BRAKING

Leonard J. Feathers, Ty Croes; Gerald P. Murphy, Ceunant Llanrug, and Ian L. Hartley, Bangor, all of United Kingdom, assignors to Barrow Hepburn Sala Ltd., Portishead, United Kingdom

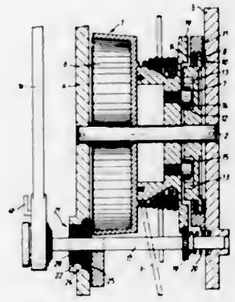
PCT No. PCT/GB91/01901, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO92/07626, PCT Pub. Date May 14, 1992

PCT Filed Oct. 30, 1991, Ser. No. 859,474

Claims priority, application United Kingdom, Oct. 31, 1990, 9023703

Int. Cl.[5] A62B *35/04*

U.S. Cl. 188—83 **14 Claims**



1. Fall-arrest apparatus for attachment to a fixed anchorage, which apparatus comprises a drum (**1**) for holding a cable or other extendable anchorage line (**3**), a drum brake (**7–11,13–15**) which functions automatically to brake the drum (**1**) if it exceeds a given unwinding speed, and a winch mechanism (**16–20**) incorporating a handle (**16**) which can be coupled to the drum to permit manual rotation of the drum in winding or unwinding mode for raising or lowering a load suspended from said anchorage line (**3**), said winch mechanism having associated braking means (**21**) for holding said load against descent under its own weight; characterised in that said winch braking means (**21**) comprises relatively rotatable brake elements (**22** or **48**,**24**,**25**), means (**26**) which permanently holds such elements in contact under pressure to maintain a predetermined frictional resistance to such relative rotation, and a one-way torque coupling (**22**,**28**, **31–33**; **44**,**46**,**48**) which whenever and for as long as the winch mechanism (**16–20**) is coupled to the drum (**1**), prevents unwinding motion of the drum otherwise than against the said resistance to relative rotation of said brake elements (**22** or **48**, **24**,**25**).

5,287,951

HYDRAULICALLY ACTUABLE RELEASER FOR A MOTOR VEHICLE FRICTION CLUTCH

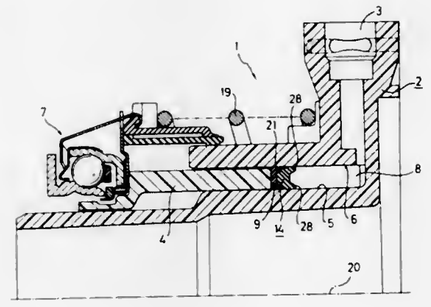
Herbert Voit, Schweinfurt; Karl Müller, Poppenhausen; Wolfgang Grosspietsch, Schweinfurt, and Gottfried Mader, Ebelsbach, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 938,373

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129370

Int. Cl.[5] F16D *25/08, 25/12;* **F16J** *15/32, 15/56*

U.S. Cl. 192—85 CA **6 Claims**



1. A hydraulically actuable releaser for a motor vehicle friction clutch, comprising:

an annular cylindrical slave cylinder (**1**) having a casing (**2**) which comprises a pressure chamber (**8**) limited radially inwardly by an internal wall (**5**) and radially outwardly by an external wall (**6**) extending at a radial distance form the internal wall (**5**), the casing (**2**) including the internal wall (**5**), and the external wall (**6**) being made form plastic material;

an axially movable annular piston (**4**) extending between the internal wall (**4**) and the external wall (**6**);

a groove sealing ring (**17**) at an end of the annular piston (**4**) facing the pressure chamber (**8**), the groove sealing ring (**17**) having, on its side axially remote from the annular piston (**4**) in the region of its internal periphery and its external periphery, sealing lips (**28**) which enclose an annular groove (**27**) between themselves and which, for sealing the pressure chamber (**8**), rest on the internal wall (**5**) and the external wall (**6**), and the groove sealing ring (**17**) having, on its internal periphery an its external periphery on the side of the sealing lip (**28**) located toward the annular piston (**4**) a respective sealing bead (**30**) which, in the mounted state of the groove sealing ring (**17**), limits a lubricant receiving groove (**36**) disposed axially between the sealing bead (**30**) and the sealing lip (**28**) and extending int the peripheral direction;

a supporting ring (**11**) disposed axially between the annular piston (**4**) and the groove sealing ring (**17**), the supporting ring (**11**) having, on the side facing the groove sealing ring (**17**) in the region of the external periphery, an annular supporting shoulder (**22**) which projects to the groove sealing ring (**17**) and engages in a corresponding annular recess (**25**) on the side of the groove sealing ring (**17**) adjacent to the annular piston (**4**); and

a release bearing (**7**) at an end of the annular piston (**4**) axially remote form the pressure chamber (**8**).

5,287,952

DEVICE FOR SELECTIVE TRANSFER OF ROWS OF PRODUCTS BETWEEN PAIRS OF CONVEYOR BELTS

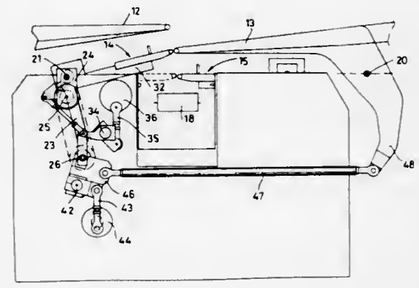
Marco Redaelli, Cassina de'Pecchi, Italy, assignor to Eurosicma S.r.l., Italy

Filed Feb. 9, 1993, Ser. No. 15,516

Claims priority, application Italy, Feb. 25, 1992, MI92A000406

Int. Cl.[5] B65G *47/46*

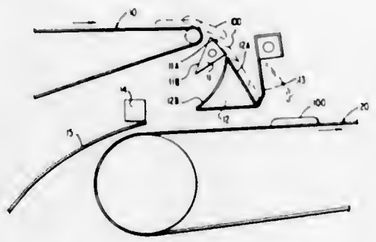
U.S. Cl. 198—369 **18 Claims**



1. A device for selective transfer of rows of products between a pair of conveyor belts arranged to travel at right angles to each other and comprising a first upper conveyor belt (**12**) for delivery of products (**11**), a second upper conveyor belt (**13**) normally aligned with said first upper belt and with the head end thereof facing upon the head end of said first upper belt to receive products (**11**) therefrom, and a third conveyor belt (**18**) positioned beneath said first (**12**) and second (**13**) belts and being perpendicular thereto, at least said head end of said first belt (**12**) being supported for inclination selectively downwardly toward said third belt (**18**) to effect transfer thereto of the products conveyed by said first belt, and characterised in that beneath the respective facing head ends of the upper belts (**12**, **13**) are positioned two horizontal intermediate shelves (**14**, **15**) each with means thereon for reception of an unloading therefrom of said products, one of said intermediate shelves (**15**) being positioned beneath said second upper belt (**13**) and being connected adjacent one end thereof for pivotal movement around a shaft (**22**) between a horizontal position and a position inclined upwardly to cause the opposite end thereof to be aligned with and confronting said head end of said first belt (**12**) when the latter has been inclined downward toward said third belt, the other of said shelves (**14**) being connected to means of translation to be movable thereby between a high position in which a head end thereof if aligned and juxtaposed to said head end of the first shelf (**15**) when the latter is in a horizontal position, and a low position in which said head end thereof is juxtaposed to one edge of the third belt (**18**), means for inclining the first belt (**12**) downwardly upon the arrival on the first belt (**12**) of products (**11**) to be transferred, and inclination means for inclining said one shelf (**15**) upwardly with its means of reception and unloading driven to receive the products from said first belt, said one shelf (**15**) upon rotating into its horizontal position having its reception and unloading means being driven simultaneously with the reception and unloading means of said other shelf (**14**) for passage of the products onto said other shelf (**14**), and means for moving said other shelf (**14**) into the low position thereof, and to operate its means of reception and discharge thereby to unload the products onto said third belt (**18**).

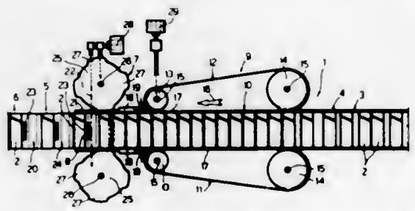
VOL 1159 ISS 4 FE 22 1994 UMI

5,287,953
FLIP-SLIDE APPARATUS
Herman D. Mims, Ellenboro, N.C., assignor to Machine Builders and Design Inc., Shelby, N.C.
Filed Feb. 20, 1992, Ser. No. 837,946
Int. Cl.[5] B65G 47/24
U.S. Cl. 198—374 7 Claims



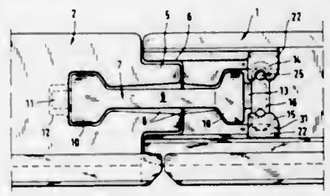
1. An article flipping apparatus comprising:
a primary slide member alternately moveable to slide or flip, respectively, an article transported by an infeed conveyor unit;
a reverse slide member for receiving a flipped article and guiding the article's movement as it slides down a surface thereof;
a flip stopping unit for stopping the flipped article's movement so that the article is registered in a given position for transport on an outfeed conveyor unit; and
a second slide member for receiving a slid article and guiding the article's movement as it slides down a surface thereof, wherein the respective movements of both said slid articles and said flipped articles are controlled so that said articles are deposited on said outfeed conveyor unit in a registered relationship.

5,287,954
DEVICE FOR EQUALLY-SPACED IN-LINE TRANSPORTATION OF RANDOMLY ARRANGED INCOMING PRODUCTS
Fiorenzo Draghetti, Medicina, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy
Filed Jun. 16, 1992, Ser. No. 899,297
Claims priority, application Italy, Jun. 21, 1991, BO91A 000221
Int. Cl.[5] B65G 47/26
U.S. Cl. 198—461 5 Claims



1. A device for equally-spaced in-line transportation of randomly arranged incoming products said device comprising a first conveyor for transporting said products successively and in a randomly arranged manner along a first path; a second conveyor for transporting said products continuously and in an equally-spaced manner along a second path; transfer means located at the output end of said first path for transferring said products, at a given rate, from said first conveyor to said second conveyor; first drive means for operating said second conveyor and said transfer means at constant speeds; braking means located along said first path; and second drive means for operating said brake means so as to form an orderly line of products for supply to said transfer means; said first path and said second path being substantially aligned; and said transfer means comprising two lobed wheels located on either side of said first path, and rotating continuously about respective axes in opposite directions at a constant speed and at the same speed with each other and in time with said second conveyor; said second drive means being provided with control means for controlling the speed of said braking means, wherein said braking means, said second conveyor, and said lobed wheels are driven in time with each other.

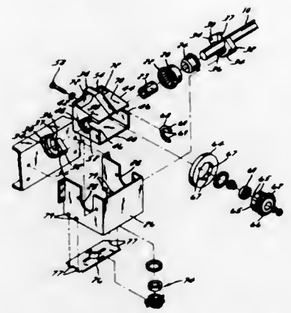
5,287,955
CONNECTIONS FOR INTER-CONNECTING THE PANS OF SCRAPER-CHAIN CONVEYORS
Bernd Steinkuhl, and Detlef Hahn, both of Lunen, Fed. Rep. of Germany, assignors to Westfalia Becorit Industrietechnik, GmbH, Fed. Rep. of Germany
Filed Aug. 13, 1992, Ser. No. 929,277
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128512
Int. Cl.[5] B65G 19/28
U.S. Cl. 198—735.6 17 Claims



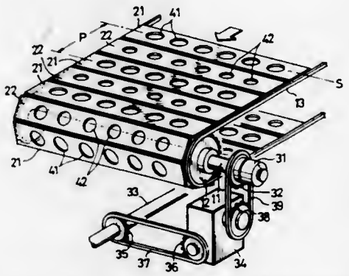
1. In connection means for connecting together two adjacent channel sections of a scraper-chain conveyor, the channel-sections each comprising a pair of side walls and a floor plate therebetween, the connection means comprising a connector with a central shank and enlarged heads at opposite ends of the shank, laterally-open pockets in end regions of the side walls of the adjacent channel sections shaped to receive the connector, a projection provided on at least one of the heads extending outwardly from said head relative to the shank and releasable locking means for engaging over the projection to secure the connector in position; wherein the locking means includes a separate releasable plate located to project over the projection and a resiliently deformable securing member carried by the plate and extending outwardly from at least one side of the plate, means defining a compartment in the side wall of one of the channel sections for receiving and end portion of the plate and means defining at least one recess for receiving the securing member.

5,287,956
HIGH SPEED CONVEYOR WITH MOVABLE DRIVE WHEEL
Ellsworth H. Collins, Mt. Washington; James F. Mattingly, and Willliam A. Fultz, both of Louisville, all of Ky., assignors to The Interlake Companies, Inc., Shepherdsville, Ky.
Filed Feb. 5, 1993, Ser. No. 14,378
Int. Cl.[5] B65G 13/06
U.S. Cl. 198—781 21 Claims

1. A conveyor, comprising:
a conveyor frame;
a plurality of conveyor rollers mounted on said conveyor frame;
a drive shaft extending along said conveyor frame;
at least one drive wheel rotatable about its axis, said drive wheel being driven from said drive shaft;
a drive wheel mounting frame on which is mounted said drive wheel, said drive wheel mounting frame being movable relative to said conveyor frame, such that, when said mounting frame is moved to a first position, said drive wheel is in driving contact with at least one of said conveyor rollers, and, when said mounting frame is moved to a second position, said drive wheel is out of driving contact with said at least one of said conveyor rollers.

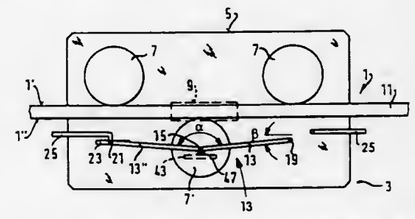


5,287,957
CONVEYOR FOR TRANSPORTING CONTAINERS
Tetsuya Iuchi; Takao Miki, and Hisanori Hamada, all of Tokushima, Japan, assignors to Sbikoku Kakoki Co, Ltd., Itano, Japan
Continuation of Ser. No. 875,942, Apr. 30, 1992, abandoned.
This application Apr. 26, 1993, Ser. No. 51,813
Claims priority, application Japan, May 8, 1991, 3-102811
Int. Cl.[5] B65G 17/12
U.S. Cl. 198—803.14 7 Claims



1. A conveyor for transporting different kinds of containers varying in size or the like, the conveyor comprising different kinds of container holders corresponding to the different kinds of containers, and means for moving the holders along a predetermined path intermittently by a specified pitch at a time, all the holders being divided into groups each comprising the combination of the different kinds of holders each one in number, the groups being arranged in succession along the path and being identical in the order of the kinds of holders in the group, the spacing between the holders of the same kind in the groups adjacent to each other being equal to the pitch the holders are moved at a time, wherein one of said groups of holders is selected by momentarily shifting the position of said holders by a fraction of the pitch.

5,287,958
DEVICE FOR STRETCHING AND FIXING SHEET
Manfred Steffl, Grassau, Fed. Rep. of Germany, assignor to Bruckner Maschinenbau Gernot Bruckner GmbH & Co. KG, Siegsdorf, Fed. Rep. of Germany
PCT No. PCT/EP91/00346, § 371 Date Oct. 30, 1991, § 102(e) Date Oct. 30, 1991, PCT Pub. No. WO91/12952, PCT Pub. Date Sep. 5, 1991
Continuation of Ser. No. 773,915, Oct. 30, 1991, abandoned.
This PCT application Feb. 25, 1991, Ser. No. 71,358
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006440
Int. Cl.[5] B65G 15/60
U.S. Cl. 198—838 24 Claims



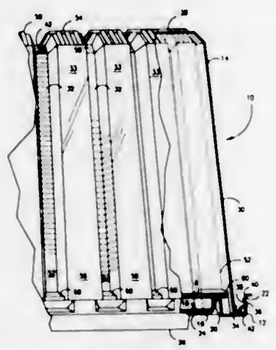
1. A device for crosswise stretching and fixing of plastic sheeting with a continuous conveyor chain as the device travels in a running direction, the device comprising:
at least one chain carriage;
a link for linking the chain carriage to at leaset one other chain carriage;
means for supporting the chain carriage with respect to a guide rail, the supporting means comprising:
at least one first roller adjustably mounted on the chain carriage whereby the position of the first roller is adjustable in a crosswise direction of the guide rail;
at least one second roller mounted on the chain carriage;
means for translating tension, resulting from tractive forces transmitted via the link when the chain carriage travels in the running direction, into a prestress force directed substantially in the crosswise direction of the guide rail, which prestress force holds the first roller in constant prestress contact with a first running surface of the guide rail and whereby the second roller is held in steady contact against the second running surface of the guide rail.

5,287,959
DOMED CONTAINER FOR BAKED GOODS OR THE LIKE
Darryl P. Hansen, Shortsville; Raj K. Mangla, Pittsford; Raul Matos, Rochester; Dennis Oberdorf, Canandaigua, and Chris Olenski, Walworth, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed May 3, 1993, Ser. No. 56,641
Int. Cl.[5] B65D 41/06
U.S. Cl. 206—45.32 20 Claims

1. A domed container comprising a receptacle and a dome cover therefore having locking means for releasably locking the cover to the receptacle, said receptacle comprising a bottom wall having a top surface delimited by an upstanding rib and terminating in an outwardly extending resilient rim wherein said rim is outwardly yieldable, said bottom wall having a bottom surface including depending rib structure extending below the bottom of said rim wherein said rim is downwardly yieldable, said rim encompassing in spaced relation said rib and being provided with an inwardly extending shoulder, and a first camming surface formed on said rim and extending outwardly and upwardly from said shoulder; and
said dome cover comprising a top wall having at least one wall depending therefrom, said depending wall having a

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plurality of vertical inwardly extending ribs spaced therealong, each of said vertical inwardly extending ribs having an upper end and a lower end, interspersed between said plurality of vertical inwardly extending ribs is a plurality of vertical outwardly extending ribs, each of said vertical outwardly extending ribs having an upper end and a lower end, each said upper end of said vertical outwardly extending ribs having a crush-resistant ribbed crown portion thereof, said depending wall having a lower end adapted to be received in the space formed between said upstanding rib and said rim of said receptacle, with said lower end of said inwardly extending vertical ribs of said dome relieved so as to avoid an abutting relation with said rib of said receptacle, said lower end of said depending wall



terminating in an outwardly extending resilient flange adapted to underlie said shoulder in abutting locking engagement therewith preventing movement of said dome cover relative to said receptacle, and a second camming surface formed on the exterior of said flange;

when said cover is moved towards said container to effect locking engagement therewith, said first and second camming surfaces initially co-acting with one another causing said rim to be deformed outwardly and downwardly and said flange to be deformed inwardly towards said lower end of said depending wall while the latter is substantially reinforced by a portion of said rib of said receptacle until said flange abuttingly engages the underside of said shoulder.

5,287,960

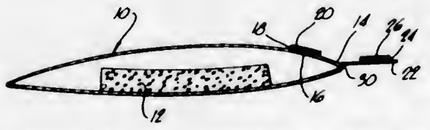
BLOOD PRODUCT DISPOSAL SYSTEM AND METHOD

Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90402; Robert H. Shaw, 243 Peck Dr., Beverly Hills, Calif. 90212, and Michael J. Ram, 1 Horseshoe Rd., Bell Canyon, Calif. 91307

Filed Oct. 20, 1992, Ser. No. 963,996

Int. Cl.[5] B65D *81/18*

U.S. Cl. 206—210 **8 Claims**



1. A method for the decontamination and disposal of a porous material containing body-fluids comprising:

a) supplying a bag having enclosed therein a disinfecting agent, the bag being sealed to prevent the activity of the disinfecting agent from being significantly diminished by evaporation or reaction with ambient air,

b) opening the bag at the time of use,

c) placing at least a portion of a porous material containing body-fluids in contact with the disinfecting agent to form a combination, the combination being positioned in the opened bag,

d) sealing the bag to prevent its contents from exiting the bag or ambient air from entering the bag,

e) causing the disinfecting agent to penetrate the porous material and contact the body-fluids, and

f) disposing of the sealed bag and its contents.

7. A system for receiving, decontaminating and disposing of a blood-containing menstrual pad comprising:

a non-porous bag containing structure for opening and resealing the bag a single time, and a disinfecting agent for microorganisms in blood contained in the bag,

the structure for opening and resealing the bag being an openable portion in a first wall thereof and means for sealing the openable portion after opening, the sealing thereof not being reversible without destroying the sealing means,

the bag being non-pervious to its contents prior to opening of the openable portion in the wall, the openings formed being suitable for placing a blood containing menstrual pad into contact with the disinfecting agent in the bag and being non-pervious to its contents after the opening in the wall is resealed,

wherein the disinfecting agent is chosen from the group consisting of chlorine-releasing materials, peroxide-releasing materials, iodine-releasing materials and a combination of two or more of the chlorine-peroxide-, and iodine-releasing materials, and

the disinfecting agent is made available in a form chosen from the group consisting of a liquid carried by a porous substrate, a dry form which can be activated by contacting the disinfecting agent with moist blood on the pad, and a dry or liquid disinfectant material enclosed in a frangible container.

5,287,961

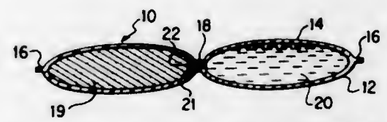
MULTI-COMPARTMENT PACKAGE HAVING IMPROVED PARTITION STRIP

Vincent W. Herran, Greenville, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S.C.

Filed Oct. 23, 1992, Ser. No. 965,834

Int. Cl.[5] B65D *81/32*

U.S. Cl. 206—219 **8 Claims**



1. A multi-compartment package formed of flexible thermoplastic material, suitable for filling with materials which are to be stored in isolation from each other, comprising:

a pouch formed of thermoplastic film material positioned in overlying relationship and permanently heat sealed on all but one edge thereof, at least one partition strip positioned between the sheets of thermoplastic film in such manner as to form at least two separate compartments, the open side being sealed after filling said compartments, whereby a rupturable seal between the resulting compartments is formed, said partition strip comprising at least one layer of heat sealable material being rupturable under nominal pressure allowing the products in each compartment to mix, said heat sealable layer of said partition strip comprising a blend of polypropylene, polybutylene and linear low density polyethylene.

5,287,962

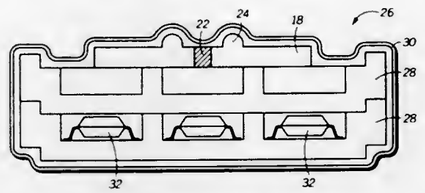
VACUUM SEAL INDICATOR FOR FLEXIBLE PACKAGING MATERIAL

Victor K. Nomi, Round Rock, and John R. Pastore, Leander, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 24, 1992, Ser. No. 933,541

Int. Cl.[5] B65D *73/02*

U.S. Cl. 206—328 **16 Claims**



1. A semiconductor device packaging medium comprising:

shipping means for carrying a semiconductor device;

a rigid vacuum seal indicator having a tangible pattern; and

a flexible dry-pack bag for containing the shipping means and the vacuum seal indicator, wherein the flexible dry-pack bag is vacuum sealed around the shipping means and the vacuum seal indicator and is in intimate contact with a surface of the vacuum seal indicator prior to shipping.

5,287,963

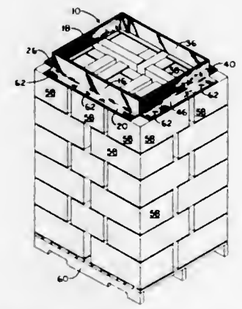
ICE ENCLOSURE

Tosh Umemoto, 5321 S. Campbell Rd., Wapato, Wash. 98951

Filed Aug. 20, 1991, Ser. No. 747,528

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—386 **7 Claims**



1. An ice enclosure for securement atop a stack or pallet load of packed cartons of produce comprising:

a plurality of vertically-oriented rectangular planar elements, each element having an upper edge and a lower edge, and the elements being joined successively at their vertical sides to form an enclosure; and

each element having a tab extending horizontally outward from its lower edge.

5,287,964

PACKING PROCESS, PACKING FOR PHOTOGRAPHIC WEB MATERIALS

Daniel R. Jacquand, and Robert G. Bonnamour, both of Chalon sur Saone, France, assignors to Eastman Kodak Company, Rochester, N.Y.

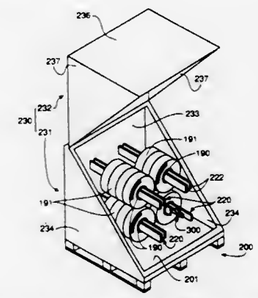
PCT No. PCT/FR91/00074, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO91/12561, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 4, 1991, Ser. No. 920,308

Claims priority, application France, Feb. 12, 1990, 90 01858

Int. Cl.[5] B65D *85/66*

U.S. Cl. 206—391 **14 Claims**



1. Reusable collective packing for photographic materials wound round tubes so as to form rolls having at least one hub member comprising:

a) a lightproof base adapted for handling by lift truck,

b) a rigid lightproof case which can be connected to the base through lightproof means; and

c) at least one spindle located within the room delimited by the lightproof base and the case incorporating a free end adapted so as to be able to receive said rolls, with the other end fixed to said base by means of a frame, said case being connected to said base in such a way so as to enable the free end of said spindle to be freed in order to permit the introduction of roll over said spindle and said spindle lying parallel with the base and including locking means to vary the diameter between a first dimension, where said winding tubes can slide onto this spindle, and a second dimension, greater than the first, where said winding tubes are immobilized.

5,287,965

LIGHT STORAGE DEVICE

John E. Miller, 911 E. 86th St., Ste. 201, Indianapolis, Ind. 46240

Filed Jun. 15, 1993, Ser. No. 77,421

Int. Cl.[5] B65H *75/14*

U.S. Cl. 206—396 **12 Claims**

1. A storage device, for use with articles wound for convenient storage such as Christmas lights, comprising:

a vertical core section having opposing ends, a plurality of sides defining a hollow center, and an ends connecting core length formed by the sides,

wherein at each opposing end at least one of the core section sides further comprises a flap, outwardly foldable along a fold line away from the core center, and a slot formed adjacent the fold line of the flap,

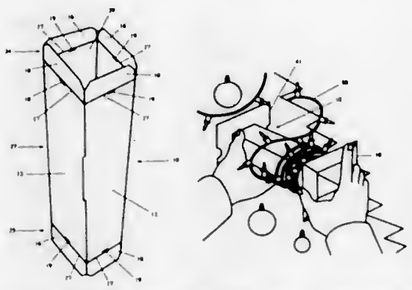
a pair of horizontal end sections, one located at either opposing end of the core section, each having a near surface and a far surface relative to the core section length,

each end section further comprising a centrally disposed opening defined by a plurality of inward sides, the inward sides being in a one to one correspondence with the core section sides,

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wherein each inward side corresponding to the core section side having the foldable flap further comprises an inwardly extending tab received by the slot of the corresponding core section side to secure the core section and end section.

each end section further comprising at least one outward locking region having a first folding element and a second folding element,



wherein the first folding element is folded toward the far surface of the end section such that it overlays the core section flap outwardly folded against the far surface of the end section, and the second folding element folds into the core section center, thereby further securing the core section and end section together.

5,287,966

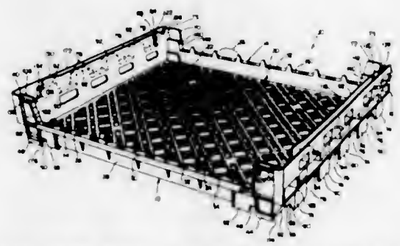
SLIDE ON MULTI-LEVEL BASKET

Edward L. Stahl, Orlando, Fla., assignor to Piper Industries of Texas, Inc., Garland, Tex.

Continuation-in-part of Ser. No. 815,866, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 525,859, May 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 402,684, Sep. 5, 1989, Pat. No. 5,035,326. This application Sep. 24, 1992, Ser. No. 950,005

Int. Cl.[5] **B65D** *21/04*

U.S. Cl. 206—509 **20 Claims**



1. A container adapted to have, in association with another identical container, a high stacking configuration, a low stacking configuration, and a nesting configuration, said container comprising:

a pair of opposed left and right side walls, a pair of opposed front and rear end walls, and a floor, and a plane of symmetry vertical to said floor and parallel to said left an right side walls, and equidistant from said left and right side walls;

said left and right side walls being mirror images of each other and each having:

a substantially vertical outer panel having parallel top and bottom edges, said bottom edge being offset from said floor;

a substantially vertical inner panel having parallel top and bottom edges, said bottom edge conjoining said floor;

a plurality of spaced-apart horizontal platforms formed between said inner and outer panels;

a horizontal ridge connecting said bottom edge of said outer panel with said inner panel, said ridge being formed between said platforms and defining a plurality of horizontal ledges alternating with said platforms, said platforms being narrower than said ledges, and therebeing a ledge formed immediately adjacent said front end wall and a platform formed immediately adjacent said rear end wall; and

a plurality of stacking posts extending downwardly from said ridge in vertical alignment with said plurality of platforms, said stacking posts being parallel to and offset form said inner panel, and said stacking posts and said platforms having substantially equal widths, whereby said stacking post of the upper container will fit over the outer surface of each said horizontal ledge of the lower container such that said stacking posts and said horizontal edges cooperate to limit any outward flexing of the end walls of the lower container;

said top edge of each said inner panel being positioned above said platforms;

said front and rear end walls having opposed lower walls portions having a height lower than said ledges, said front end wall having first upwardly-extending members at either end thereof and said rear end wall having second upwardly-extending members at either end thereof, said first upwardly-extending members, said second upwardly-extending members, and said lower wall portions being separated by equal distances; and

wherein each of said left and right side walls further has a rearward vertical web connecting one of said stacking posts to said inner panel and wherein said inner panel has a horizontally-extending notch formed therein extending downwardly from said top edge thereof in vertical alignment with said vertical web and of sufficient weight to receive said web, whereby in said high stacking configuration, said rearward vertical web interengages said horizontally-extending notch.

5,287,967

BAG CONTAINING THREE COMPONENT BIOCIDAL COMPOSITION

Bryan S. Backhouse, Leefdaal, Belgium, and William A. Fern, Bamford, England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 536,132, Jun. 11, 1990, Pat. No. 5,185,356. This application Nov. 2, 1992, Ser. No. 970,449

Claims priority, application United Kingdom, Jun. 13, 1989, 8913513

Int. Cl.[5] **B65D** *85/84*; **A61K** *31/425*

U.S. Cl. 206—524.7 **12 Claims**

1. A package comprising: a particular solid comprising (a) from 10 to 45 weight percent of an isothiazolinone or an isothiazolothione derivative, or a salt or complex thereof, (b) from 10 to 50 weight percent of a water-soluble inorganic salt which does not form a water insoluble salt or water insoluble complex with the said isothiazolinone or isothiazolothione or salt or complex thereof; and (c) from 10 to 45 percent of absorbed water, contained in a bag formed of a water-soluble material.

5,287,968

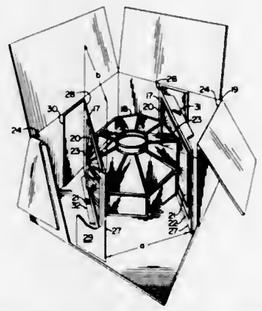
RETAINING AND SHOCK-ABSORBING PACKING INSERT

Louis H. Ridgeway, Big Pine Key, Fla., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Continuation of Ser. No. 579,044, Sep. 6, 1990, Pat. No. 5,071,009, which is a continuation-in-part of Ser. No. 500,384, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 293,059, Jan. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 285,449, Dec. 16, 1988, Pat. No. 4,923,065, which is a continuation-in-part of Ser. No. 162,215, Feb. 29, 1988, Pat. No. 4,852,743. This application Nov. 18, 1991, Ser. No. 793,603 The portion of the term of this patent subsequent to Feb. 8, 2007, has been disclaimed.

Int. Cl.[5] **B65D** *81/02*

U.S. Cl. 206—583 **10 Claims**



1. A cushioning packaging that is particularly useful for fragile objects comprising the combination of:

a polyhedral rigid shipping container formed of a plurality of walls that define the polyhedral shape of said container; and

at least two spacing elements positioned within said rigid container and against generally opposite inner surfaces of said rigid container and in noncontacting relationship to one another in which said spacing elements define a space therebetween within said shipping container into which an object to be packaged can be placed;

each of said spacing elements comprising:

a planar framing surface oriented obliquely to the walls of said shipping container against which said spacing element is positioned, said planar framing surface further surrounding and defining a void that is similarly obliquely oriented to the walls of said container; and

a film of pliable material of high tensile strength tightly spread over said void and peripherally secured to said framing surface for frictionally receiving an object to be packaged against each said respective film and for applying pressure to an object supported between said spacing elements to immobilize the object between said high tensile strength films and to frictionally limit any sliding movement of the object against said high tensile strength films when the object is subject to forces applied thereto.

5,287,969

ORIENTATION-INSENSITIVE SHIPPING CARTON

Roger F. Kehr, Huntington Valley, Pa., assignor to Any Side Up, Inc., Horsham, Pa.

Filed Oct. 30, 1992, Ser. No. 969,437

Int. Cl.[5] **B65D** *81/02*

U.S. Cl. 206—583 **8 Claims**

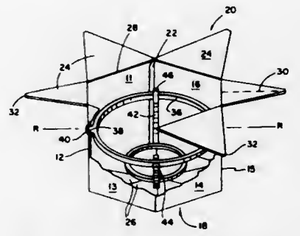
1. A shipping container comprising

a carton having a plurality of interconnected walls each parallel to common longitudinal axis so as to form a right polygonal prism having a top end and a bottom end,

means for closing said top end,

means for closing said bottom end,

a gimbal assembly contained within said carton and supported only by a first pair of pivot connections to an opposed pair of said walls, said gimbal assembly comprising a normally horizontal ring supported by said pivot connections, a normally vertical cradle pivotally connected at diametrically opposed points defining a horizontal axis to said ring by a second pair of pivot connections,



said cradle comprising a product platform below said horizontal axis, intermediate said opposed points, so that the cradle and product platform have a combined center of gravity below said horizontal axis, whereby the cradle tends to remain in a vertical plane regardless of orientation of the carton,

wherein each of said first pivot connections comprises a lug which extends outward from the ring through a respective hole in one of said walls, and has means for retaining said lug in said hole.

5,287,970

LOAD CARRIER OF PLASTIC AND TOOL FOR THE PRODUCTION OF SAME

Karl A. Weidt, Siegen, Fed. Rep. of Germany, assignor to Fritz Schäfer Gesellschaft mit beschränkter Haftung, Neunkirchen, Fed. Rep. of Germany

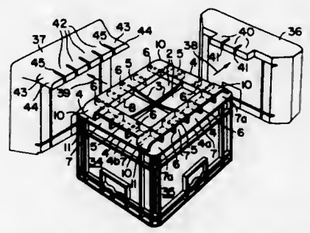
PCT No. PCT/EP91/02109, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/08650, PCT Pub. Date May 29, 1992

PCT Filed Nov. 8, 1991, Ser. No. 867,196

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1990, 4036178

Int. Cl.[5] **B65D** *9/34*

U.S. Cl. 206—599 **16 Claims**



1. Load carrier of plastic, in which a base having a planar upper surface is stabilized on the underside by stiffening ribs and in which flat foot strips lying in the direction of the base plane extend at least along two defining edges of the base running parallel to one another, are supported at a distance below the base plane by webs directed transversely relative to the respective defining edge, and form stand surfaces of the load carrier, wherein there are free spaces between the underside of the base, the upper side of the foot strips and the trans-

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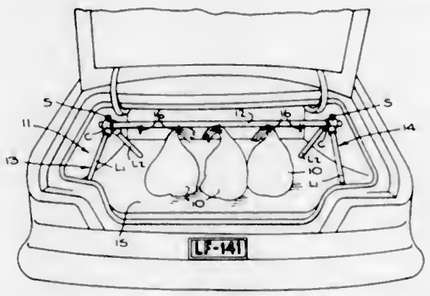
versely directed webs, which free spaces are enclosed to form pockets and are open at least toward the defining edge, characterized in that the end portions (9) of the flat foot strips (5) are formed by parts (10) which are curved upward transversely relative to their longitudinal direction in the shape of a ski until meeting the underside (2a) of the base and have a secure connection (11) at the base (2) and accordingly simultaneously form an end web serving to define a pocket-like free space (7a).

5,287,971

RACK FOR SUPPORTING LOADED PLASTIC GROCERY BAGS

Isidore Dorman, 147-71 6th Ave., Whitestone, N.Y. 11357

Filed Jun. 25, 1992, Ser. No. 904,014
Int. Cl.[5] B42F *17/00*
U.S. Cl. 211—12 **11 Claims**



1. A rack for suspending loaded plastic-film grocery bags so that they rest on the floor of a trunk or cargo compartment in a vehicle and are maintained in an upright position, each bag having an open mouth and a pair of handle loops extending upwardly from opposite sides of the bag, the loops when held together in a hand of a shopper then bunching together to form a tail closing the mouth, said rack comprising:

(a) at least one horizontal bar having a series of suspension hooks anchored thereon, each hook being formed by a resilient spring wire that is bent to define a dilatable clamp whose configuration is such that when the tail is pushed into the clamp, the clamp then dilates to clench the tail and the bag is suspended therefrom, said bar being a pipe having at each hook position bores to receive a crook extension of the hook clamp; and

(b) means to support the bar at an elevated position at which the bags rest on the floor and are maintained in an upright position.

5,287,972

GUN RACK

Ralph D. Saathoff, 2305 Trailridge Dr., Plano, Tex. 75074

Filed Jan. 6, 1992, Ser. No. 817,287
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—64 **13 Claims**

1. A gun rack, comprising, in combination:

a frame having gun barrel support means and gun trigger guard receiving means projecting from said frame for supporting a gun in a substantially horizontal position;

first mounting means for mounting said frame with a vertical mounting surface;

first securing means projecting from said frame;

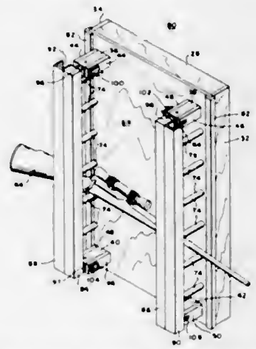
a panel member mountable with said frame to substantially cover said frame and inhibit access to said first mounting means, said panel member having respective openings to accommodate the passage of said gun barrel support means, said trigger guard receiving means and said first securing means through said panel member when said panel member is mounted with said frame;

second mounting means for mounting said panel member with said frame;

second securing means engageable in locking engagement with said first securing means, to retain a gun supported on said gun barrel support means and said trigger guard receiving means between said panel member and said second securing means and to retain said panel member mounted with said frame;

wherein said first securing means includes a hollow member having first and second holes on respective opposed sides of said hollow member and said second securing means includes an elongated bar having a lug projecting therefrom, said lug having third and fourth holes on respective opposed sides of said lug, said lug being telescopically receivable within said hollow member to align said first, second, third and fourth holes in transverse axial alignment for receiving a hasp of a locking device, to secure said lug in locking engagement with said hollow member; and

wherein said second means includes an elongated beam mounted against said bar, said beam having a channel positionable in facing relationship with said frame for receiving at least a portion of said trigger guard receiving means when said lug is telescopically received within said hollow member.

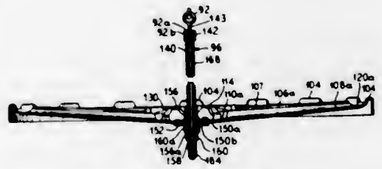


5,287,973

BANANA CARRIER

Jack D. Bankier, Northbrook, Ill., assignor to Bankier Companies, Inc., Glenview, Ill.

Division of Ser. No. 744,415, Aug. 13, 1991, Pat. No. 5,199,580.
This application Jan. 28, 1993, Ser. No. 10,185
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—113 **19 Claims**



1. A banana carrying tray comprising:

a surface for arranging bananas thereon;

a recessed central area, said surface sloped toward said central area;

a drainage hole arranged in said central area through said tray; and

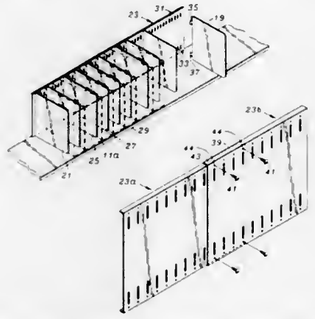
a trough formed into said surface and sloped toward said central area, said trough communicating for flow into said central area.

5,287,974

CATALOG HOLDER

Gene Buday, 23902 Taranto Bay, Laguna Niguel, Calif. 92677

Filed Sep. 15, 1992, Ser. No. 945,002
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—184 **4 Claims**



1. A removable, free-standing binder holding assembly for segregating binders within existing shelving, the assembly comprising:

a back panel having a plurality of spaced apertures along the length thereof;

a plurality of divider panels detachably engageable with said back panel at alternate locations along the length of said back panel, said divider panels extending orthogonal to the length of the back panel;

said back panel comprising first and second back panel portions, said back panel portions being slidably engageable to vary the length of said back panel; and

said first and second back panel portions each including a plurality of fastener receiving apertures to facilitate adjustment of the length of the back panel by a plurality of increments corresponding to the distance between adjacent fastener receiving apertures;

said assembly being self-supporting.

5,287,975

CONTINUOUS CYCLE APPARATUS FOR SEPARATING PRECIOUS METALS FROM CONCENTRATE

Daniel G. Chumley, Northglenn, and Michael C. Basford, Denver, both of Colo., assignors to Midan Incorporated, Henderson, Colo.

Filed Mar. 31, 1993, Ser. No. 41,007
Int. Cl.[5] B03B *1/00, 7/00*
U.S. Cl. 209—3 **17 Claims**

1. A continuous cycle apparatus for separating particles of precious metals from concentrate comprising:

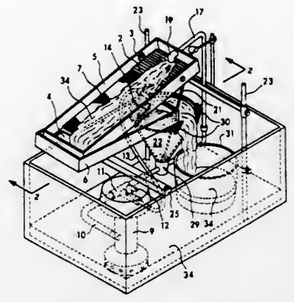
a funnel-shaped hopper having a smaller bottom opening and a larger upper opening for initially receiving a quantity of concentrate to be processed and for discharging any overflow from said hopper;

a tube having an opening sealed in fluid communication with said bottom opening of said hopper;

a sump for holding a quantity of water and for receiving said overflow from said hopper;

means for circulating a first flow of water from said sump into said hopper to create a vortex of said water and said concentrate in said hopper such that less dense material tends to overflow from said hopper into said sump;

means for circulating a second flow of water from said sump through said tube to transport a portion of said concentrate and water from said bottom opening of said hopper; and



a sluice box for collecting particles of precious metals from said flow delivered by said tube, said sluice box further having a discharge to circulate said flow back into said hopper.

5,287,976

SYSTEM AND METHOD FOR CO-MAILING A PLURALITY OF DIVERSE PUBLICATIONS

Theodore W. Mayer, Chicago; Nicholas A. Martellotto, Wheaton, and Glenn R. Scott, Glen Ellyn, all of Ill., assignors to R. R. Donnelley & Sons Company, Lisle, Ill.

Filed Oct. 31, 1990, Ser. No. 607,245
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—547 **137 Claims**

1. A method of co-mailing a plurality of diverse publications, comprising the steps of:

preparing and addressing copies of each of said diverse publications on a binding line;

recording mailing information for each of said diverse publications prepared and addressed on said binding line;

assembling each of said diverse publications in a predetermined order as said copies exit from said binding line;

placing each of said diverse publications in position for feeding each of said copies to a co-mailing line, said diverse publications each being placed for feeding each of said copies in a predetermined order relative to the order of exit from said binding line;

assembling said mailing information for all of said diverse publications to control or otherwise facilitate operation of said co-mailing line, said mailing information being assembled to permit said diverse publications to be accumulated for co-mailing purposes;

utilizing said assembled mailing information to feed copies of said diverse publications to said co-mailing line;

accumulating said copies of said diverse publications fed to said co-mailing line into co-mailing stacks, said co-mailing stacks being formed by copies of said diverse publications having a common indicia of said assembled mailing information; and

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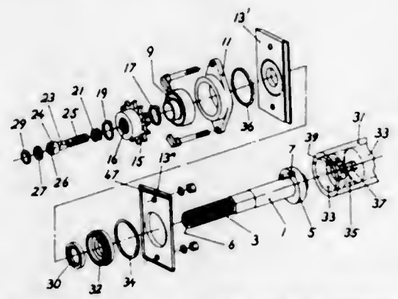
preparing said co-mailing stacks of accumulated copies of diverse publications for mailing.

5,287,977

ROLLER SYSTEM FOR USE IN A ROLLER SCREEN

Ehrenfried A. Tirschler, 10 Northridge, Ile Bizard, Quebec, Canada H9E 1A9

Filed Dec. 18, 1992, Ser. No. 993,302
Int. Cl.[5] B07B *13/05*
U.S. Cl. 209—673 **13 Claims**



5. A roller system for use in a roller screen arrangement, said arrangement including a plurality of said roller systems and a drive means, each said roller system comprising:
a drive shaft drivable by said drive means;
a roller associated with said drive shaft;
said drive shaft having a first end and a second end and a hollow core;
said roller having a driven end and an idle end and a hollow core;
the first end of said drive shaft being disposed adjacent the driven end of its associated roller;
first insert means inserted into the hollow core of said roller adjacent the driven end of said roller;
first connection receiving means on said first insert means;
first connection means being mounted in the hollow core of said drive shaft such that the first connection means extends outwardly of said drive shaft at said first end of said drive shaft, said first connection means being connectably received by said first connection receiving means, said connection means being rotatable relative to said drive shaft when mounted in said hollow core of said drive shaft;
wherein, to connect the driven end of said roller to its associated drive shaft for rotation therewith, said first connection means of said drive shaft is connectably received by the first connection receiving means of its associated roller.

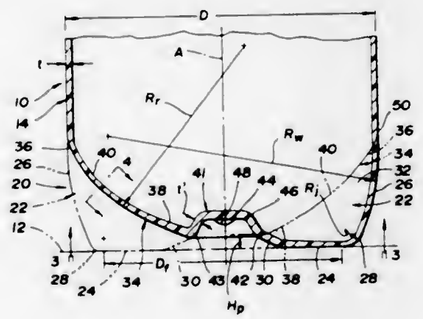
5,287,978

PLASTIC BLOW MOLDED FREESTANDING CONTAINER

William C. Young, Superior Township, Washtenaw County, Mich.; Richard C. Darr, Seville, Ohio, and Dale H. Behm, Palm Springs, Calif., assignors to Plastipak Packaging, Inc., Plymouth, Mich.

Continuation-in-part of Ser. No. 771,636, Oct. 4, 1991, Pat. No. 5,139,162, which is a continuation of Ser. No. 614,220, Nov. 15, 1990, Pat. No. 5,064,080. This application Jul. 16, 1992, Ser. No. 915,072
Int. Cl.[5] B65D *1/02, 1/42, 23/00*
U.S. Cl. 215—1 C **16 Claims**

1. In a plastic blow molded container having a central axis A and including a cylindrical body portion that extends vertically about the central axis A with a diameter D, an upper end closure unitary with the upper extremity of the cylindrical body portion and including a dispensing spout, and a freestanding base structure unitary with the cylindrical body portion to close the lower extremity thereof, said freestanding base structure comprising:
a plurality of downwardly projecting hollow legs spaced circumferentially from each other with respect to the body portion; each leg having a lower flat foot coplanar with the feet of the other legs to cooperate therewith in supporting the container in an upright position; the lower flat feet having an outer diameter D_f that is at least 0.75 of the diameter D of the cylindrical body portion to provide good stability against tipping; each leg also having an outer wall that extends from the outer extremity of the flat foot thereof to the cylindrical body portion; the flat foot and the outer wall of each leg having an abruptly curved junction with a radius of curvature R_j less than 0.05 of the diameter D of the cylindrical body portion; each leg also having a planar inner connecting portion that is inclined and extends upwardly and inwardly from the inner extremity of the flat foot thereof; and each leg also having a pair of side walls that cooperate with the flat foot, the outer wall and the inner planar connecting portion to close the leg;
a plurality of curved ribs spaced circumferentially from each other between the downwardly projecting legs and con-



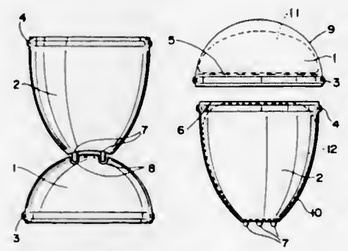
necting the adjacent side walls of the legs; each rib having an outer upper end that has a circumferential width W_u and extends upwardly for connection to the cylindrical body portion of the container; each rib also having an inner lower end located between the inner connecting portions of the legs on opposite sides thereof and extending downwardly and inwardly toward the central axis A of the container; the inner lower end of each rib having a circumferential width W_l that is larger than the circumferential width W_u of the outer upper end of the rib; and each rib also having a curved intermediate portion that extends between the outer upper and inner lower ends thereof with an outwardly convex shape; and the curved intermediate portion of each rib having a circumferential width that tapers from the inner lower end thereof to the outer upper end thereof with an included angle in the range of about 1° to 8°; and
a generally round hub that is located along the central axis A with the legs and curved ribs extending radially therefrom; said hub having a diameter D_h in the range of about 0.15 to 0.25 of the diameter D of the cylindrical body portion; and the hub having connections to the upwardly extending planar inner connecting portions of the legs and the hub also having connections to the downwardly extending inner lower ends of the curved ribs.

5,287,979

OVOID CONTAINER FOR CONDIMENTS

Alain Bourgeois, Batiment A Le Petit Bosquet, Marseille 13012, France

PCT No. PCT/FR90/00024, § 371 Date Jul. 9, 1991, § 102(e) Date Jul. 9, 1991, PCT Pub. No. WO90/07896, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 12, 1990, Ser. No. 720,515
Claims priority, application France, Jan. 13, 1989, 89 00512
Int. Cl.[5] B65D *6/00*
U.S. Cl. 220—4.21 **17 Claims**



1. An ovoid container comprising:
a first concave element, a second concave element, said first concave element having an open end and a closed end, said second concave element having an open end and a closed end, a first means for connecting the open end of said first concave element to the open end of said second concave element to form the ovoid container, a second means for connecting the closed end of said first concave element to the closed end of said second concave element to form an egg cup, said second means comprising means for enabling said ovoid container to be supported on said closed end of one of said first and second concave elements, and a means for sealing the first concave element to form a first compartment and a means for sealing the second concave element to form a second compartment.

5,287,980

TICKET DISPENSER ASSEMBLY INCLUDING INTERLOCKING DISPENSER UNITS

Edward B. Saltz, Brookfield, Wis., assignor to Eddy Associates, Inc., New Berlin, Wis.

Filed Jun. 17, 1992, Ser. No. 899,728
Int. Cl.[5] B65D *6/00*
U.S. Cl. 220—4.27 **14 Claims**



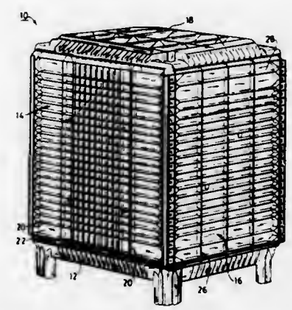
14. A ticket dispenser apparatus comprising:
a first dispenser unit including an upper rail, a lower rail, and a locking member
a second dispenser unit including a rail engageable with one of the upper and lower rails to interlock the first and second dispenser units for relative sliding movement therebetween, and
means for selectively restricting the sliding movement between the first and second dispenser units, when the first and second dispenser units are interlocked, to prevent the one of the upper and lower rails and the rail of the second dispenser unit from being disengaged, and
means for mounting the first dispenser unit on a support surface, the means for mounting including a base plate, the base plate including upper and lower rails, the upper rail on the base plate being engageable with the lower rail on the first dispenser unit and, alternatively, the lower rail on the base plate being engageable with the upper rail on the first dispenser unit, to interlock the first dispenser unit and the base plate for relative sliding movement therebetween, and a locking member, the locking member of one of the first dispenser unit and the base plate being engageable with the other of the first dispenser unit and the base plate when the lower rail of the first dispenser unit is engaged with the upper rail of the base plate to fix the first dispenser unit on the base plate, and the locking member of said other of the first dispenser unit and the base plate being engageable with said one of the first dispenser unit and the base plate when the upper rail of the first dispenser unit is engaged with the lower rail of the base plate to fix the first dispenser unit on the base plate.

5,287,981

COLLAPSIBLE CHEESE CONTAINER

William E. Wheeler, Sodus, N.Y., assignor to A. R. Arena Products, Inc., Rochester, N.Y.

Continuation of Ser. No. 723,434, Jun. 28, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 11,462
Int. Cl.[5] A23C *19/00*
U.S. Cl. 220—4.28 **12 Claims**



1. A collapsible container formed from a resin material for making and transporting cheese comprising:
a base;
four wall panels mounted on said base;
each of said wall panels having inner and outer faces and two end faces joining said inner and outer faces;
four columns of tenons projecting from said end faces of the panels;
four columns of mortises formed through said inner faces of the panels in ladder-like configurations of continuous inner and outer side ribs interconnected by spaced intermediate cross ribs;
said continuous outer side ribs forming four of said end faces of the wall panels; and
inner side lugs formed within said mortises adjacent to said continuous inner side ribs for mechanically engaging said tenons to prevent relative diverging movement between adjacent panels along a first of three orthogonal axes.

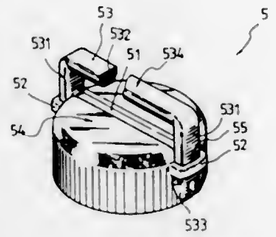
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5,287,982

STRUCTURE FOR THE EXTERNAL CAP OF A SPOUT

John Tsai, Taipei, Taiwan, assignor to Ho Lee Co., Ltd., Taipei, Taiwan

Filed May 20, 1993, Ser. No. 63,812
Int. Cl.[5] B65D *41/00*
U.S. Cl. 220—212.5 2 Claims



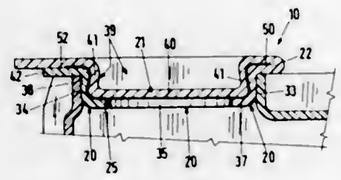
1. An improved structure for an external cap of a spout used in a waterbed comprising an external cap and a hand grip having a horizontal portion with opposing supporting legs, each of the supporting legs having a bottom end portion, the external cap having a slot at a top surface thereof, opposing flanges extending from a circumferential edge of the external cap, each of the flanges having a punched hole, said punched holes allowing the supporting legs of the hand grip to feed through the flanges to allow the supporting legs to move freely with respect to the punched holes, the bottom end portion of each of the supporting legs having an inverted hook to prevent the supporting legs from disengaging from the flanges, the horizontal portion of said hand grip having a T-shaped cross-sectional profile a portion of which can be fitted into the slot.

5,287,983

POURER DEVICE FOR A FLOWABLE MEDIA PACKAGE AND A METHOD OF PRODUCING SUCH A DEVICE

Wilhelm Reil, Bensheim; Gerd Knobloch, Griesheim, and Gottfried Pusch, Pfungstadt, all of Fed. Rep. of Germany, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Mar. 3, 1992, Ser. No. 845,024
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107607
Int. Cl.[5] B65D *51/22*
U.S. Cl. 220—258 16 Claims



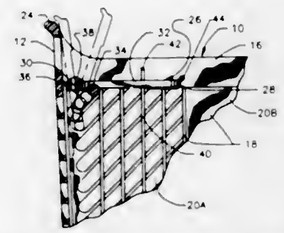
1. A pourer device for attachment to a hole in a package intended to contain flowable contents, comprising:
a bottom part including a pourer orifice formed therein;
a closure part;
a hinge connecting the bottom part and the closure part so that at least one of the bottom part and the closure part is movable between an open and a closed position; and
a non-porous film member partially sandwiched between portions of the bottom part and the closure part, the film member covering the pourer orifice.

5,287,984

SILVERWARE BASKET LID

Daryl A. Michael, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Continuation of Ser. No. 804,772, Dec. 9, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,085
Int. Cl.[5] B65D *43/16*
U.S. Cl. 220—331 22 Claims



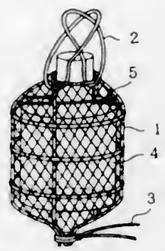
1. An improved silverware basket for a dishwasher, the basket having side and bottom walls defining a compartment with an upper perimeter edge, each side wall being substantially vertically oriented and having substantially horizontally disposed upper and lower edges and substantially vertically disposed ends, the improvement comprising:
slots in opposite side walls of the basket disposed at an acute angle with respect to the edges and ends of the side walls; and
a lid slidably and pivotally mounted in the slots between the opposite side walls and below the perimeter edge of the compartment for simultaneous sliding and pivotal movement between open and closed positions with respect to the compartment.

5,287,985

CONTAINER FOR DEWATERING OR PACKAGING AND TRANSPORTATION

Sakae Hatayama, Agatsuma, Japan, assignor to Morishita Chemical Industry Co., Ltd., Okayama, Japan

Filed Apr. 16, 1992, Ser. No. 870,516
Claims priority, applicatioo Japan, Apr. 17, 1991, 3-85230; Jul. 30, 1991, 3-59803; Jul. 30, 1991, 3-190088
Int. Cl.[5] B65D *90/04*; B01D *1/00, 46/02*; C02F *11/16*
U.S. Cl. 220—401 8 Claims



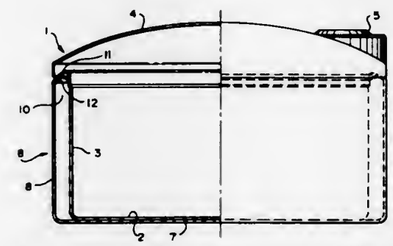
1 A container for dewatering a wet mixture and for transportation which comprises:
(1) an external container containing numerous openings therein provided with a hanging member at an upper portion of said external container wherein said hanging member is positioned through said openings so as to be able to pull the external container together at the upper portion to shut said portion of the external container and wherein said external container has an easy to open and shut closure at the bottom portion thereof; and
(2) an internal cloth container of sufficient dimensions to receive a wet mixture and having a bottom suited to the external container capable of removing liquid from said wet mixture, wherein said internal container has an open and shut closure at the upper portion thereof.

5,287,986

CONTAINMENT TANK ASSEMBLY

James O. Frost, Swartz, La., assignor to Abell Corporation, Monroe, La.

Filed Feb. 11, 1993, Ser. No. 16,299
Int. Cl.[5] B65D *88/76*
U.S. Cl. 220—565 7 Claims



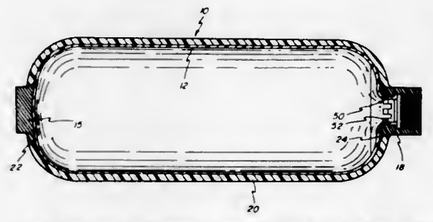
1. A containment tank assembly for storing fluid material comprising, a primary storage tank having a bottom wall, a side wall integral with the bottom wall and a closure integral with the top edge of the side wall, a secondary containment tank having a bottom wall and a side wall integral with the bottom wall, said secondary containment tank being open at the top, said primary storage tank being positioned within said secondary containment tank with the bottom wall of the primary storage tank being seated on the bottom wall of the secondary containment tank, the side wall width of said primary storage tank being less than the side wall width of said secondary containment tank to thereby provide a space between the adjacent side walls of the respective tanks, said space receiving any leakage of fluid from the primary storage tank, and a roof over said space to prevent any leakage therein from becoming contaminated by rain water, said roof comprising, a first lip integral with a perimeter of the closure in proximity to the top edge of the secondary containment tank, said first lip extending inwardly to the sidewall of said primary storage tank over said space, and a second lip integral with the top edge of the secondary containment tank, said second lip being positioned under said first lip and extending inwardly over said space.

5,287,987

FILAMENT WOUND PRESSURE VESSEL

William R. Gaiser, Spring Valley, Ohio, assignor to Comdyne I, Inc., Pa.

Filed Aug. 31, 1992, Ser. No. 937,554
Int. Cl.[5] B65D *8/08*
U.S. Cl. 220—589 5 Claims



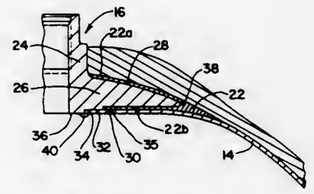
1. In a lightweight pressure vessel for retaining a gas under pressure, in which a liner forms a gas barrier for the vessel, and in which said vessel is strengthened by a wound filament as an over-wrap about said liner, the improvement comprising said liner being formed of a single layer of bi-axially oriented polyethylene terephthalate material.

5,287,988

METAL-LINED PRESSURE VESSEL

Cornelius F. Murray, Lincoln, Nebr., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Feb. 3, 1993, Ser. No. 12,932
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—589 15 Claims



1. A pressure vessel comprising:
a filament wound shell having an opening therein;
a metal liner substantially surrounded by the shell and having an opening having a perimeter aligned with the opening in the shell;
a boss having a tubular neck projecting outwardly through the opening in the shell and an annular flange extending radially from an end of the neck within the vessel;
interface means comprising a thin resilient shear accommodating layer forming a pliable connection between the boss and the metal liner for relieving stress induced when the vessel is pressurized;
said boss annular flange having a pair of axially offset grooves which define a first step for seating the perimeter of the liner opening and a second step for seating said shear accommodating layer; and
a sealing and attachment means continuously about the opening the metal liner and affixing the metal liner to the boss for isolating said interface means from fluid contained in the vessel.

5,287,989

MOLDED PLASTIC TUB

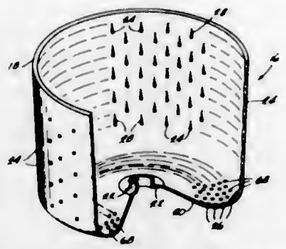
LeRoy D. Luther, Brookfield, Wis., assignor to Triangle Tool Corporation, Milwaukee, Wis.

Division of Ser. No. 847,664, Mar. 5, 1992, Pat. No. 5,167,898. This application Sep. 30, 1992, Ser. No. 954,551
Int. Cl.[5] D06F *23/04*
U.S. Cl. 220—676 13 Claims

1. A one-piece injection molded washing machine tub comprising:
a plastic bottom wall, and
a plastic cylindrical sidewall molded integrally with said bottom wall and extending in a transverse direction from said bottom wall, said cylindrical sidewall having therein a plurality of drain holes and including an interior surface,

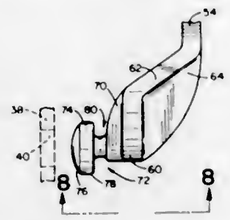
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said interior surface including a plurality of teardrop-shaped depressions, each of said drain holes extending



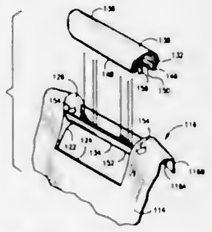
from one of said teardrop-shaped depressions so as to be recessed from said interior surface.

5,287,990
PLASTIC BAIL HANDLE
Jerry L. Knox, Garrettsville, Ohio, assignor to Cardinal Packaging, Inc., Streetsboro, Ohio
Filed Jul. 10, 1992, Ser. No. 911,517
Int. Cl.[5] B65D *25/28*
U.S. Cl. 220—760 **5 Claims**



1. A container comprising:
a pail having a circumferentially continuous sidewall, a bottom secured at one end of the sidewall to define a storage cavity, and first and second ears disposed on generally diametrically opposite regions of the sidewall, each ear including a mounting face spaced radially outward from the sidewall and having an aperture defined therethrough,
an elongated bail having a generally rectangular, uniform cross-section over its length defining inward and outward faces, first and second ends of the bail being offset inwardly from the remainder of the bail length for connection to mounting faces of respective ears and defining depressions on the outward faces of the bail ends;
a mounting member connected to and extending from each end of the bail, the mounting member including
(a) a shoulder connected to and projecting substantially perpendicularly inward from the inward face of the bail from the offset end, the shoulder having a reduced cross-section relative to the bail end,
(b) a projection having a cross-sectional dimension less than the aperture connected to and extending from the shoulder in an inward direction away from the bail, and
(c) a rounded cap connected to and extending from the projection in an inward direction away from the bail, the cap terminating at a location axially spaced from the shoulder to define a recess which receives the mounting face aperture of the ear; and, a reinforcing member extending outwardly from the outward face of the bail at each offset end and at least partially filling in said depression for strengthening each offset end of the bail, the bail having a reduced cross-section to assist a user in grasping each offset end of the bail for insertion into the mounting face aperture.

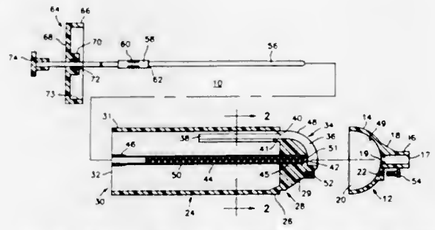
5,287,991
LAUNDRY BASKET AND HANDLE ASSEMBLY THEREFOR
Walter P. Koda, Brookfield, N.H.; Paul Santarsiero, Avon, Conn.; William Seabolt, Copley, and Walter H. Wilsford, Shreve, both of Ohio, assignors to Mobil Oil Corporation, Fairfax, Va.
Continuation-in-part of Ser. No. 920,945, Jul. 28, 1992, which is a continuation-in-part of Ser. No. 606,213, Oct. 31, 1990, Pat. No. 5,133,672. This application Aug. 14, 1992, Ser. No. 930,111
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—769 **13 Claims**



1. A laundry basket, comprising:
(a) a walled container having a peripheral rim about a substantial portion thereof;
(b) a pair of opposing hand openings adjacent said peripheral rim; and
(c) a pair of handle members extending, respectively, about said rim and through said hand each of said handle memsaid rim and through said hand openings, each of said handle members including a bottom portion positioned below said rim, said bottom portion having a first end and a second end, said bottom portion defining an upper boundary of one of said hand openings, said bottom portion further including a first rib at said first end and a second rib at said second end, said first said second ribs each having an orifice therethrough, and a top portion, said top portion of said handle members including a curved exterior surface and an interior surface, said top portion being generally semi-cylindrical having a longitudinal axis therethrough, said top portion having a first longitudinal end and a second longitudinal end, wherein each said top portion of said handle members further includes two opposing end walls extending generally perpendicularly from said interior surface of said top portion, each of said end walls terminating in a hook configured to cooperate with said orifice of said rib of said bottom portion to matingly engaging with said orifice when lockingly joining said top portion to said bottom portion;
wherein one of said top or bottom portions of each of said handle members is integrally formed to said peripheral rim.

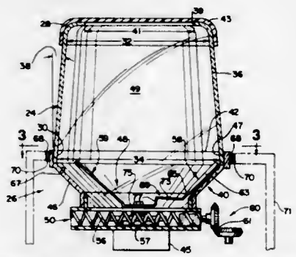
5,287,992
METHOD AND APPARATUS FOR APPLYING HERBICIDE AND THE LIKE TO TREES
Hans A. K. Merving, Torshalla, Sweden, assignor to Forestry Injection Co. FIC AB, Eskilstuna, Sweden
Division of Ser. No. 420,258, Oct. 12, 1989, Pat. No. 5,086,584. This application Nov. 6, 1991, Ser. No. 788,367
Int. Cl.[5] G07F *11/20*
U.S. Cl. 221—270 **10 Claims**

1. A dispenser for ejecting pellets comprising:
a body portion having first and second ends and a cylindrical outer wall, extending between the first and second ends, forming a boundary for a cavity provided in said body portion for storing a plurality of pellets to be ejected;
an elongated ejection rod for ejecting an individual pellet from the dispenser;
a dispensing spout mounted on the first end of said body portion;
an end wall at the first end of said body portion interposed between said dispensing spout and said body portion, said end wall including a first aperture allowing stored pellets to exit from said cavity, a second aperture allowing said elongated ejection rod to eject the individual pellet, and guide means for guiding pellets from said cavity to said first aperture and from said first aperture towards said



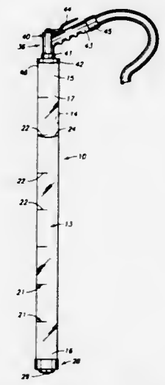
second aperture and into alignment with said second aperture;
a center tube aligned with said second aperture, said elongated ejection rod reciprocating within said center tube to protrude through said second aperture, move into contact with a pellet aligned with said second aperture, and force said pellet through said dispensing spout and out of said dispenser; and
biasing means, provided in said center tube, for providing a force which acts on said elongated ejection rod, said elongated ejection rod being moved against said force as the individual pellet is ejected through said dispensing spout.

5,287,993
HOPPER AGITATOR
David F. Ford, and Cindy J. S. Lord, both of Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Continuation-in-part of Ser. No. 851,512, Mar. 16, 1992. This application Sep. 9, 1992, Ser. No. 942,625
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—135 **4 Claims**



1. A rotatable multiaction material agitating device for use with a material delivery apparatus, said material delivery apparatus including at least one hopper assembly for storing and dispensing ground material and means for rotating said agitating device operatively associated with said hopper assembly, said hopper assembly including a storage hopper in which ground material is retained prior to dispensing, and an inverted frustoconical funnel portion, said agitating device being disposed in said storage hopper and rotated by said rotating means for moving ground material stored in said storage hopper to prevent clogging and bridging of the ground material, said multiaction agitating device comprising:
a base segment operatively attached to said rotating means for rotating said agitating device in said hopper assembly;
a blending blade extending from said base segment, said blending blade being spaced away from an inside surface of said funnel portion; and
a wiping blade extending from said base segment generally opposite said blending arm and being positioned in close proximity to said inside surface of said funnel portion opposite said blending arm for moving material retained in the storage hopper away from the inside surface of the storage hopper; said wiping blade being formed with a spiral twist, a leading edge of said wiping blade angled towards said inside surface of funnel portion, said spirally twisted wiping blade facilitating wiping action of said wiping blade against said inside surface of said funnel portion when ground material retained in said storage hopper presses said wiping blade against said inside surface of said funnel portion.

5,287,994
METERING LIQUID DISPENSER FOR PLANTS
James R. Dempsey, 2101 N. Steptoe K-4, Kennewick, Wash. 99336
Filed Feb. 13, 1992, Ser. No. 835,759
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—158 **13 Claims**



1. A liquid dispenser for plants, comprising:
an elongated reservoir tube member, including a top and a bottom end and an internal reservoir extending along the length thereof;
at least a portion of the elongated reservoir tube member being transparent to allow visual access into the internal reservoir along at least part of the length thereof;
volume indicia means on the elongated reservoir tube member associated with the transparent portion of the reservoir tube, including volume identification markings for indicating a liquid volume within the reservoir tube by visual alignment of the meniscus of a column of liquid in the reservoir tube with said identification markings;
dispenser valve means on the bottom end of the tube, normally closed to retain liquid within the reservoir tube member selectively opening responsive to axial force applied thereto in a direction toward the top end of the tube to permit dispensing of liquid from within the elongated reservoir tube member;

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filler means on the elongated reservoir tube member adapted for connection to a source of liquid for receiving and directing liquid into the internal reservoir and;

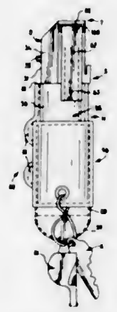
a vent adjacent the top end of the tube and opening the internal reservoir to the surrounding atmosphere to facilitate free drainage of liquid from the reservoir responsive to opening of the dispenser valve means.

5,287,995

TEAR GAS DEFENSE SYSTEM

Kenneth R. Redman, 918 Parkfield Ter., Ballwin, Mo. 63011, and Randall D. Lytle, 15953 Wetherburn, Chesterfield, Mo. 63017

Filed Apr. 9, 1992, Ser. No. 865,559
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—175 **38 Claims**



1. A personal defense system comprising:

a protective spray container with a spray actuator on its upper end, said spray actuator including dispensing valve and nozzle means, and actuator control means operatively associated with said valve means;

a dispensing cap constructed and arranged to engage the upper end of the container and house the spray actuator and actuator control means thereunder, said cap having a front wall with a discharge opening operatively associated with the nozzle means and said actuator control means being recessed within the cap and manually accessible from the rear side opposite to the front wall; and

a holster casing having a body portion with an open upper end for receiving the container with the dispensing cap projecting outwardly from the open upper end to thereby expose the front discharge opening of the dispensing cap and the actuator control means for the dispensing valve means, and locking means for orienting the dispensing cap in substantially fixed non-rotational relation within the casing.

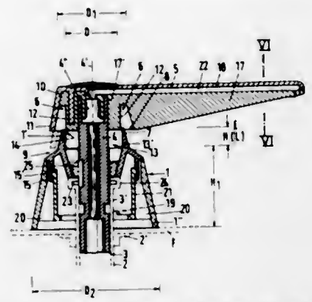
5,287,996

LIQUID SOAP DISPENSER WITH BUILT-IN PUMP

Bernd Uhlig, Frankfurt am Main, Fed. Rep. of Germany, assignor to CWF Chemie Frankfurt GmbH, Maintal, Fed. Rep. of Germany

Filed May 29, 1992, Ser. No. 891,657
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 9106675[U]
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—189 **7 Claims**

1. A liquid soap dispenser suitable for installation on a mounting surface, which comprises a socket including an upper part having an upper edge, a tubular piece, the socket and the tubular piece being mountable on the mounting surface, a tubular pump including an actuating rod housed in the tubular piece, the tubular pump and actuating rod defining a conduit for the liquid soap and being axially reciprocable through a pumping stroke between a highest and a lowest position, the actuating rod extending through an annular gap, a soap dispensing nozzle having a cap fitting over the upper socket part and having a lower edge facing the upper socket part, the nozzle cap and the upper socket part defining in all stroke positions an annular gap concentrically surrounding the annular gap through which the actuating rod extends, the



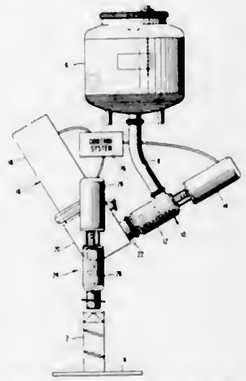
nozzle cap defining an annular recess facing the upper edge of the upper socket part, the upper edge and the lower edge extending substantially in the same plane when the actuating rod is in the highest position, and the external diameter of the upper socket part being slightly smaller than the diameter of annular recess at least along a length corresponding to the length of the stroke of the actuating rod whereby the upper socket part may be slid into the annular recess.

5,287,997

CARTON FILLING SYSTEM

John Rodrigue, St. Paul, and Susan G. Perreault, Hugo, both of Minn., assignors to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Filed Oct. 13, 1992, Ser. No. 959,802
Int. Cl.[5] G01F *11/08*
U.S. Cl. 222—380 **10 Claims**



1. Apparatus for dispensing liquid products comprising:

a source of liquid product;

dispensing valve means for selectively dispensing a quantity of liquid product;

liquid conduit means for conducting liquid product from said source to said dispensing valve means; said conduit means including metering chamber means for displacing a predetermined quantity of liquid product and including supply valve means for controlling flow of liquid product from said source into said metering chamber; said supply valve means including a valve element and a valve stem connected to said valve element for displacing said valve element relative to a valve seat;

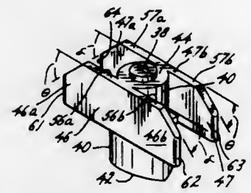
bearing means for said valve stem, said bearing means being positioned in said conduit means and including a plurality of balls engaging said valve stem.

5,287,998

ACTUATOR FOR AEROSOL CONTAINERS

Thomas J. Smrt, Marengo, Ill., assignor to Fox Valley Systems, Inc., Cary, Ill.

Continuation of Ser. No. 700,540, May 15, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 987,583
Int. Cl.[5] B65D *83/20*
U.S. Cl. 222—402.1 **21 Claims**



1. An actuator for use with an aerosol container, the actuator having a passage therethrough which terminates in an orifice, the passage being configured such that the contents of the aerosol container are communicated through the passage and discharged from the actuator at the orifice, comprising;

an actuator body, and;

at least one pair of wings, each wing having a bottom edge located proximate to the orifice and a peripheral edge which is adjacent to and intersects the bottom edge,

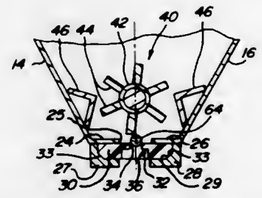
wherein at least a portion of one of the peripheral edges, from a point wherein said peripheral edge intersects the bottom edge of its respective wing, angles linearly away from the body, the angle formed by the linear angled portion of a peripheral edge with respect to the bottom edge of its respective wing being less than 90 degrees.

5,287,999

DROP SPREADER

Harvey P. Olsen, 409 E. Hudson, Royal Oak, Mich. 48067

Filed Jul. 10, 1992, Ser. No. 911,528
Int. Cl.[5] A01C *15/04*
U.S. Cl. 222—616 **12 Claims**



1. An apparatus for spreading granular material comprising:

a hopper within which the granular material is stored, said hopper having a elongated opening;

auger means supported for rotation within said hopper in close proximity to said elongated opening;

a gauge member removably supported adjacent said elongated opening of said hopper and having metering means for metering the quantity of the granular material to be discharged from said hopper;

drive means including a source of driving torque for causing rotation of said auger means, said drive means having a first operating mode for rotatably driving said auger means to forcibly urge the granular material through said metering means, and a second operating mode for inhibiting rotation of said auger means such that said metering means inhibits discharge of the granular material therethrough; and

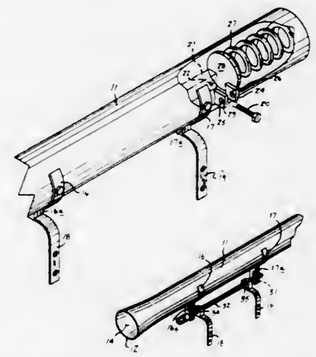
actuation means for selectively shifting said drive means between said first and second operating modes.

5,288,000

JACK CADDY APPARATUS

Steven J. Adamson, P.O. Box 1448, Crescent City, Calif. 95531

Filed Dec. 10, 1992, Ser. No. 988,852
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.03 A **4 Claims**



1. A jack caddy apparatus, comprising,

a coaxially aligned elongate tubular housing, having a first end spaced from a second end, and the first end having a first end entrance opening, and

a first semi-cylindrical cradle and a second semi-cylindrical cradle fixedly mounted to the tubular housing in a spaced parallel relationship, and

a first mounting strap and a second mounting strap for securement to a vehicular bumper, with the first mounting strap and the second mounting strap including mounting means for securement of the first mounting strap and the second mounting strap to the first cradle and the second cradle, and

the first end entrance opening is of a conical configuration permitting ease of access into the tubular housing, and a jack tool positioned within the tubular housing, and the jack tool having a jack tool bore, and a lock pin directed diametrically through the tubular housing into the tubular housing in adjacency to the second end, and the lock pin directed through the jack tool bore, and

the first cradle includes a first cradle mount fixedly secured to the first cradle, the second cradle having a second cradle mount secured to the second cradle, and the first mounting strap having a first mounting strap hub, the second mounting strap having a second mounting strap hub, wherein the first mounting strap hub and the second mounting strap hub are arranged in a spaced relationship relative to one another, the first mounting strap hub having a first parallelepiped bore, the second mounting strap hub having a second rectilinear bore, wherein the first rectilinear bore and the second rectilinear bore are coaxially aligned, and the mounting means includes a support rod directed through the first cradle mount and the second cradle mount and through the first mounting strap

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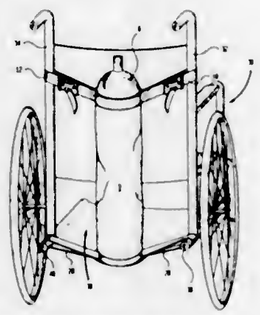
bore and the second mounting strap bore for securement and association of the first cradle mount and the second cradle mount to the first mounting strap hub and the second mounting strap hub.

5,288,001

OXYGEN TANK HOLDER FOR USE WITH WHEELCHAIRS

Michael M. Locarno, Boonton, N.J., assignor to Bel-Art Products, Inc., Pequannock, N.J.

Filed Jun. 7, 1993, Ser. No. 72,056
Int. Cl.[5] B60R *9/06*
U.S. Cl. 224—42.46 R **6 Claims**



1. An oxygen tank holder for use with wheelchairs, comprising:

a pouch having an open top and a closed bottom for holding an oxygen tank;

first strap means adapted to be disposed around a first wheelchair handle support secured to the pouch near the open top thereof and extending away therefrom in one direction;

second strap means adapted to be disposed around a second wheelchair handle support secured to the pouch near the open top thereof and extending away therefrom in a direction opposite the one direction;

first loop means adapted to be looped around a first bottom wheelchair frame member secured to the pouch near the closed bottom thereof and extending away therefrom generally in the direction of the first strap means;

second loop means adapted to be looped around a second bottom wheelchair frame member secured to the pouch near the closed bottom thereof and extending away therefrom generally in the direction of the second strap means;

the first strap means adapted to be disposed around the first wheelchair handle support near a top of said first support;

the second strap means adapted to be disposed around the second wheelchair handle support near a top of said second support;

said first and second wheelchair handle supports extending longitudinally along a back of the wheelchair in transversely spaced relation;

the first loop means adapted to be looped around the first bottom wheelchair frame member;

the second loop means adapted to be looped around the second bottom wheelchair frame member;

said first and second bottom wheelchair frame members extending rearwardly of the wheelchair in transversely spaced relation;

said first and second strap means and said first and second loop means cooperatively arranged on the respective first and second wheelchair handle support members and the respective first and second bottom wheelchair frame members for supporting the pouch on the back of the wheelchair so that the open top of the pouch is in alignment with the closed bottom thereof; and

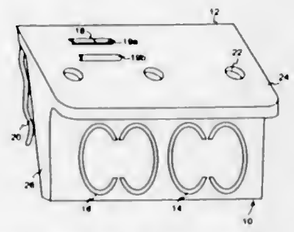
the first and second strap means having lengths which are adjustable and a length of one of the first and second loop means being longer than a length of the other of said first and second loop means, whereby said first and second strap means and said first and second loop means are cooperatively arranged on the respective wheelchair handle support members and the respective bottom wheelchair frame members to accommodate different transverse spacing between the handle support members and the bottom frame members, and so that the pouch can be displaced away from a center of the wheelchair back with the alignment of the open pouch top and the closed pouch bottom being maintained.

5,288,002

SPRING LOADED BALL HOLDER

Sangsoo Oh, 102 Arbor Dr., HoHoKus, N.J. 07423

Filed Mar. 4, 1991, Ser. No. 664,363
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—248 **13 Claims**



1. A holder for carrying golf balls comprising:

a frame member having a vertical back section and a horizontal top section; said vertical back section having a top, bottom, first side and second side;

a first pair of loop member and second pair of loop members, each of said pair of loop members having a diameter greater than half the diameter of the ball hut less than the diameter of said ball, retaining means for retaining said loop members on said first side of said frame member in a spaced relationship;

said horizontal top section being connected to the top of the vertical back section and extending over the first side of the vertical back section and

said first and second pair of loop members; said horizontal top section forming a substantially flat horizontal upper surface;

means formed in said substantially flat horizontal upper surface for retaining additional golf accessories; and a belt clip means, said belt clip means being fixed to said frame member on the second side of said vertical back section for allowing said frame member to be affixed to a users belt with the horizontal top section positioned above the loop members.

5,288,003

FLEXIBLE, CAR-TOP-TRANSPORTABLE CARRIER FOR AERODYNAMICALLY STREAMLINED CARS

Ron E. MacDonald, 823 E. Hayward Ave., Phoenix, Ariz. 85020

Filed Jul. 24, 1992, Ser. No. 920,138
Int. Cl.[5] B60R *9/055*
U.S. Cl. 224—328 **14 Claims**

1. A flexible, car-top-transportable baggage carrier, comprising in combination:

an aerodynamically streamlined car, free of rain gutter protuberances, having a roof, a door, and an interior head liner adjacent the top of said door;

a baggage enclosure made of flexible material

a strap coupled to said enclosure for coupling said enclosure to said roof of said aerodynamically streamlined car, said strap having a distal end;

means coupled to said distal end of said strap for coupling said strap to said interior head liner of said aerodynamically streamlined car adjacent said top of said door for maintaining said enclosure on said roof of said car;

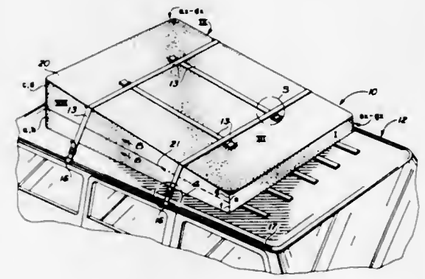
said baggage enclosure being made using a single length of material by the process comprising the steps of:

selecting a length of flexible material having a width W;

designating a first region, centered on said selected length of material, defining a front face of said enclosure, said front face being generally rectangular in shape, having two longer sides lying perpendicular to said selected length of material, and being shorter in length than the width W of said material;

designating a second region having a side as long as and adjacent to a first of said longer sides of said rectangular shaped front face and defining a bottom of said enclosure and being generally rectangular in shape;

designating a third region having a side as long as and adjacent to a second of said longer sides of said rectangular shaped front face and defining atop of said enclosure and being generally rectangular in shape;



designating a fourth generally rectangular shaped region having two longer sides parallel to said two longer sides of said face and extending from said bottom along said selected length of material and defining a lower parts of a rear face of said enclosure;

designating a fifth generally rectangular shaped region having two longer sides parallel to said two longer sides of said face and extending from said top along said selected length of material and defining an upper part of said rear face of said enclosure;

designating a sixth and a seventh region positioned one along each of the remaining opposed sides of said bottom and extending outward from said bottom along said width W of said selected length of material, said sixth region defining a lower right side of said enclosure and said seventh region defining a lower left side of said enclosure;

designating an eight and a ninth region positioned one along each of the remaining opposed sides of said top and extending outward from said top along said width W of said selected length of material, said eight region defining an upper right side of said enclosure and said ninth region defining an upper left side of said enclosure; and

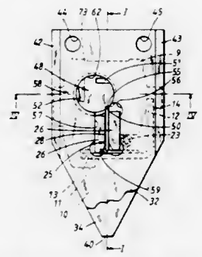
joining adjacent exterior edges of said regions to form said car-top-transportable baggage enclosure.

5,288,004

MAGAZINE FOR APPARATUS FOR EJECTING FASTENERS

Nils Johnsson, Axvall, and Börje Eriksson, Hjo, both of Sweden, assignors to Joset Kihlberg AB, Hjo, Sweden

PCT No. PCT/SE91/00279, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/16177, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 19, 1991, Ser. No. 937,892
Claims priority, application Sweden, Apr. 26, 1990, 9001499-4
Int. Cl.[5] B25C *5/16*
U.S. Cl. 227—109 **10 Claims**



1. Apparatus for ejecting elongated fasteners of predetermined length from a magazine, said apparatus comprising an impact member for striking an impact region on said fasteners, and said magazine comprising;

i) a longitudinally extending feed channel in which a row of said fasteners is arranged, and

ii) an adjustment device for selective adaptation of the magazine to rows of fasteners of a plurality of predetermined lengths;

said adjustment device comprising;

a cylindrical body having a longitudinal axis and having two or more longitudinally extending slots of differing depth, the depth of one sot accommodating a portion of the fasteners in said row of fasteners which are arranged in said feed channel, and said cylindrical body being rotatable between positions in which each of said slots are aligned with said row of fasteners in said feed channel;

said slots being arranged in said cylindrical body such that when each slot is aligned with sad row of fasteners, the longitudinal axis of the cylindrical body is offset from said row of fasteners in a manner such that the longitudinal axis of the cylindrical body does not lie directly above the row of fasteners.

5,288,005

AUTOMATIC INTERNAL PIPE LINE-UP CLAMP

Lane D. Beakley, 22702 Carter Moir, Katy, Tex. 77449, and Jerry P. Christopher, 14319 Stillmeadow, Houston, Tex. 77079

Filed Sep. 4, 1992, Ser. No. 941,205
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—49.3 **12 Claims**

1. Apparatus for end-to-end alignment of first and second sections of pipe for the welding together thereof, said apparatus comprising:

a frame assembly for supporting said apparatus within said pipe sections;

a clamp assembly carried by said frame assembly, and including first and second clamps, each of said clamps being independently expandable for clamping engagement with the interior walls of said pipe sections and independently retractable for disengagement with the interior walls of said pipe section;

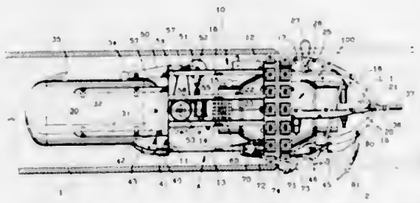
drive means carried by said frame assembly and engageable with the interior walls of said pipe sections for propelling

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said apparatus forwarding or rearwardly within said pipe section;

brake means carried by said frame assembly and activateable for frictional engagement with the interior walls of said pipe sections to slow or stop movement of said apparatus therein;

sensor means for automatically sensing the end of said first pipe section as said apparatus is propelled forwardly through said first pipe section by said drive means; and



control means connected to said first and second clamps, said drive means, said brake means and said sensor means and automatically responsive upon the sensing of the end of said first pipe section by said sensor means to deactivate said drive means and activate said brake means to arrest forward movement of said apparatus through said first pipe section.

5,288,006

METHOD OF BONDING TAB INNER LEAD AND BONDING TOOL

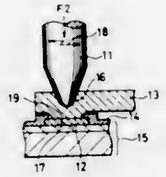
Yasuhiro Otsuka, and Hideki Kaneko, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 27, 1992, Ser. No. 859,155

Claims priority, application Japan, Mar. 27, 1991, 3-85895; Oct. 25, 1991, 3-279370

Int. Cl.[5] H01L *21/607*

U.S. Cl. 228—111 **5 Claims**



1. A method of bonding a TAB tape inner lead, wherein a bonding force is applied to said bonding tool when said ultrasonic vibration is applied, with said bonding force being less than another bonding force applied when pressing said bonding tool into said inner lead.

5,288,007

APPARATUS AND METHODS FOR MAKING SIMULTANEOUS ELECTRICAL CONNECTIONS

Mario J. Interrante, New Paltz; Michael Berger, Gardiner; Edward F. Handford, Wurtsboro, and Eugene Tas, Stanfordville, all of N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.

Continuation of Ser. No. 849,864, Mar. 12, 1992, abandoned, which is a division of Ser. No. 771,706, Oct. 19, 1991, Pat. No. 5,193,732. This application Dec. 23, 1992, Ser. No. 996,366

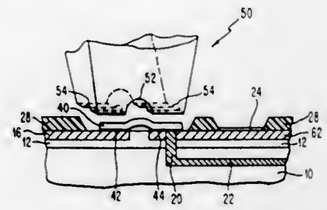
Int. Cl.[5] B23K *20/10*

U.S. Cl. 228—119 **19 Claims**

1. A method of simultaneously forming an electrically conductive path between at least two electrically conducting lines or pads comprising the steps of,

(a) site dressing at least a portion of at least two of said electrically conducting lines or pads,

(b) placing a segment of an electrically conductive material over at least a portion of each of said site dressed portions of said electrical lines or pads, and



(c) simultaneously securing said segment to said at least two electrical lines or pads using a tip having at least one work groove to accommodate at least a portion of said electrically conductive material during this securing process and thereby forming said electrically conductive path.

5,288,008

METHOD OF FORMING INNER LEAD BONDING ON A MICROCHIP

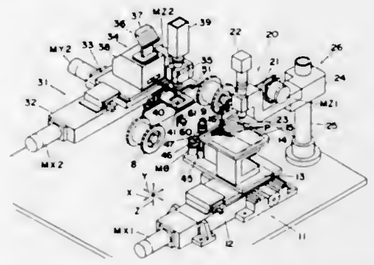
Hiroshi Haji, Kasuga, and Kiyoshi Arita, Fukuoka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 795,218, Nov. 20, 1991. This application Nov. 30, 1992, Ser. No. 983,026

Claims priority, application Japan, Nov. 29, 1990, 2-333918; Feb. 13, 1991, 3-19803

Int. Cl.[5] H01L *21/60*

U.S. Cl. 228—180.22 **5 Claims**



1. An inner lead bonding method, comprising the steps of:

picking up a chip provided in a chip feed section by a pickup nozzle, and placing it on a chip stage;

driving an X-Y table connected to the chip stage, and moving a chip on the chip stage to a place below a capillary tool held by a horn;

forming a hump on the chip while moving the capillary tool in an X-Y direction;

driving the X-Y table and thereby moving the chip stage to a side of the pickup nozzle, and picking up the chip on the chip stage by the pickup nozzle and returning it to the chip feed section;

holding a pressing tool by the horn in place of the capillary tool;

picking up the chip in the chip feed section by the pickup nozzle, and placing it on the chip stage;

driving the X-Y table, and thereby moving the chip stage to a place below a film carrier located below the pressing tool; and

moving the pressing tool in the X-Y direction, and pressing leads of the film carrier against the bump on an upper surface of the chip by the pressing tool and bonding the leads to the bump.

5,288,009

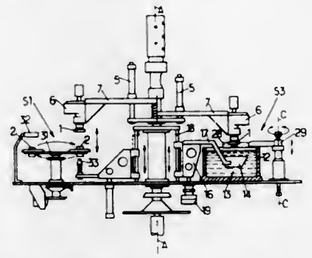
METHOD FOR DEGOLDING OR TINNING CONDUCTIVE PORTIONS OF A MICROELECTRONIC DEVICE

Christian Corlay, Saint-Germain-en Laye; Jean-Claude Germain, Gif-sur-Yvette, and Claude Chevalier, Saint-Germain-en Laye, all of France, assignors to Carrar, Saint-Germain-en-Laye, France

Filed Nov. 23, 1992, Ser. No. 980,160

Int. Cl.[5] B23K *1/08, 1/018*

U.S. Cl. 228—259 **8 Claims**



1. A method for processing a microelectronic device having a face with electrically conductive elements arranged thereon, comprising the steps of:

providing a vessel for containing a solder melt, and a bowl having an upper rim which extends in a horizontal plane, said upper rim being formed by an upwardly directed edge;

immersing the bowl in the solder melt contained in the vessel;

lifting the bowl to a position where at least said upper rim is located above the solder melt contained in the vessel, whereby molten solder is drawn by the bowl;

dipping said conductive elements of the device into the molten solder drawn by the bowl;

separating said conductive elements from the molten solder drawn by the bowl;

and, immediately after the separation, spinning the device about a substantially vertical axis,

wherein said spinning step comprises a first phase of submitting the device to a selected angular acceleration, a second phase, having a selected duration, of spinning the device at a selected maximum rotational velocity, and a third phase of submitting the device to a selected angular deceleration.

5,288,010

PACKAGE

Pertti Kleemola, and Ensio Mykkänen, both of Valkeakoski, Finland, assignors to Yhtyneet Paperitehtaat Oy, Valkeakoski, Finland

PCT No. PCT/FI90/00036, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO90/09322, PCT Pub. Date Aug. 23, 1990

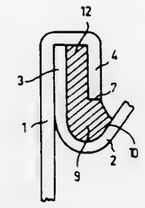
PCT Filed Feb. 5, 1990, Ser. No. 730,788

Claims priority, application Finland, Feb. 7, 1989, 890578

Int. Cl.[5] B65D *3/14*

U.S. Cl. 229—5.5 **5 Claims**

1. A package comprising a substantially cylindrical body part consisting essentially of cardboard and having reversely folded end portions at both ends of said body part; substantially round closing parts consisting mainly of cardboard at both ends of the body part, each of the closing parts having an edge portion turned in a direction away from a central portion of said package substantially perpendicular to the plane of the closing part and being attached to the respective end of the body part by passing it within the end of the body part, said edge portion of each closing part underlying a said reversely



folded end portion of said body part; and a closing ring comprising a bead inserted between each end portion of the body part and the adjacent closing part, the bead comprising a convexly rounded surface mating with a concavely curved surface of said adjacent closing part which is located at a junction between said edge portion and a central portion of said adjacent closing part.

5,288,011

PICTURE POST CARD

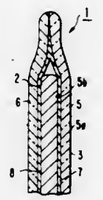
Sadako Yoshioka, Yokohama, Japan, assignor to Hamada Shashin Kogeisha, Yokohama, Japan

Continuation of Ser. No. 662,280, Feb. 28, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 13,157

Claims priority, application Japan, Mar. 2, 1990, 2-20481[U]

Int. Cl.[5] B42D *15/00*

U.S. Cl. 229—92.8 **12 Claims**



1. A picture post card having a surface for entry of an address and a message and an opposite surface provided with an image comprising:

a card body having a first surface and a second surface, said second surface being provided with an image;

a translucent hard synthetic resin film laminated on said first surface of said card body, said translucent resin film having a mat-processed external surface on which one can enter a message and an address using writing utensils, said external surface being the surface of said translucent resin film itself, and

a transparent hard synthetic resin film laminated on said second surface of said card body.

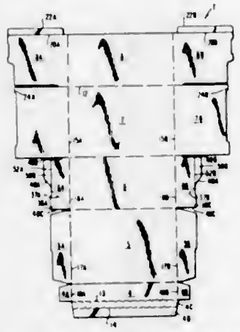
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5,288,012

FOLDING CARTON FOR CONTAINING A SEMI-SOLID PRODUCT AND BLANK FOR CONSTRUCTING SAME

Karl F. DeMay, Newark, N.Y., assignor to Fold-Pak Corporation, Newark, N.Y.

Continuation-in-part of Ser. No. 796,758, Nov. 25, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 974,975
Int. Cl.[5] B65D 5/28, 5/66
U.S. Cl. 229—132 1 Claim



1. A carton assembled from a foldable blank, said carton comprising:

(a) cover, top, rear, bottom and front panels hingedly connected in the order named, said cover, top, rear, bottom and front panels each having left and right ends and said front panel further having a first edge free of a first lip portion and said top panel being hingedly connected to said cover panel by way of a first fold line;

(b) left and right bottom panel end flaps hingedly connected to said left and right ends of said bottom panel, said left bottom panel end flap having a second edge free of a second lip portion and said right bottom panel end flap having a third edge free of a third lip portion;

(c) left and right front panel end flaps hingedly connected to said left and right ends of said front panel, said left front panel end flap having a fourth edge free of a fourth lip portion and said right front panel end flap having a fifth edge free of a fifth lip portion;

(d) left and right top panel end flaps hingedly connected to said left and right ends of said top panel by way of second and third fold lines, respectively;

(e) left and right rear panel end flaps hingedly connected to said left and right ends of said rear panel;

(f) left and right cover panel end flaps hingedly connected to said left and right ends of said cover panel;

(g) said cover panel is adhesively connected to said front panel;

(h) said left bottom panel end flap is folded first, said left front panel end flap is folded second to overlie a portion of said left bottom panel end flap, said left top panel end flap is folded third, said left rear panel end flap is folded fourth and said left bottom, front, top and rear panel end flaps are adhesively connected together;

(i) said right bottom panel end flap is folded first, said right front panel end flap is folded second to overlie a portion of said right bottom panel end flap, said right top panel end flap is folded third, said right rear panel end flap is folded fourth and said right bottom, front, top and rear panel end flaps are adhesively connected together; and

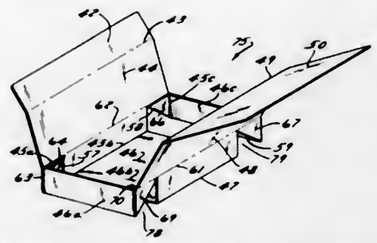
wherein said first free edge engages said first fold line, said second and fourth free edges engage said second fold line and said third and fifth free edges engage said third fold line.

5,288,013

CARTON WITH PARTIAL END PANELS

Thomas J. Sellors, Winthrop Harbor, Ill., assignor to Olympic Packaging, Inc., Mundelein, Ill.

Filed Jan. 5, 1993, Ser. No. 838
Int. Cl.[5] B65D 5/24
U.S. Cl. 229—161 7 Claims



1. A blank for forming a carton, said blank being rectangular and having end edges defining the length of the carton, side edges and comprising:

a first full-length top panel at one end edge of the blank;

a first full-length, full-height side panel joined to the first end panel by a first score line;

a full-length, full width bottom panel area comprising a pair of end panels and a bottom panel located therebetween, the bottom panel area being joined to the first full-length side panel by a second score line;

a second full-length, full-height side panel joined to the bottom panel area by a third score line;

a second full-length top panel at the other end edge of the blank joined to the second side panel by a fourth score line;

a pair of cut lines parallel to the side edges of the blank and extending from within the first side panel to within the second side panel;

tuck flap score lines extending from the ends of the cut lines to the intersection of the nearest one of the second or third score line and the nearest side edges forming four pairs of adjacent triangular tuck flaps; and

wherein fifth and sixth score lines are provided extending between the side edges of the blank and perpendicular thereto and located respectively in the first and second side panels at the ends of the cut lines.

5,288,014

TWO-WAY MAILER

Richard A. Meyers, and Nelson N. Lusiner, both of Troy, Mich., assignors to The Standard Register Company, Dayton, Ohio

Filed Mar. 5, 1992, Ser. No. 847,589
Int. Cl.[5] B65D 27/04, 27/06
U.S. Cl. 229—304 9 Claims

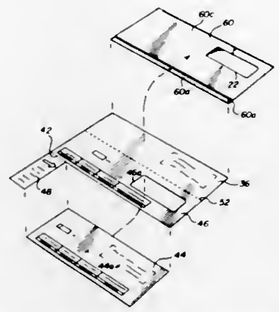
1. A one-piece mailer comprising:

a single sheet of paper having first, second and third sections, said first and second sections being separated by a first transverse line and said second and third sections being separated by a second transverse line, said sheet of paper being foldable along said first and second transverse lines so that said first section overlies said second section and said third section overlies said first and second sections;

first securing means on one of said first and said second sections for securing said first and said second sections to one another when said sheet is folded along said first transverse line to form a return envelope;

second securing means located on at least one of said first, second and third sections for securing said third section to at least one of said first and said second sections when said sheet is folded along said second transverse line to form a closed mailer; and

wherein said second section includes a first severance line extending across its width and spaced parallel to said first and second transverse lines for defining first and second portions of said second section, said first portion including a sealing panel and a first side of said return envelope and



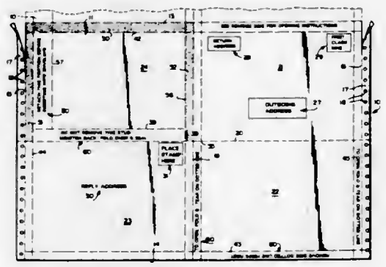
said second portion including an initial addressee portion having initial addressee information printed thereon, said return envelope being severable from said second portion of said second section along said first severance line.

5,288,015

SINGLE WEB BIFOLD WITH OUTGOING AND RETURN ENVELOPE

Dean N. Sauerwine, Zionsville, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 21, 1992, Ser. No. 947,478
Int. Cl.[5] B65D 27/06
U.S. Cl. 229—305 20 Claims



1. A mailer intermediate comprising:

a single ply having first and second faces;

first and second orthogonal fold lines separating said ply into first, second, third and fourth quadrants of substantially the same size, said first and third quadrants diagonally disposed with respect to each other, said first and second quadrants separated by said second fold line, and said first and fourth quadrants separated by said first fold line, each quadrant having first through fourth border lines;

said first face of sad first quadrant having outgoing address indicia thereon, and said first face of said third quadrant having reply address indicia thereon;

first adhesive adjacent the first through third border lines of the second face of at least one of said second, third and fourth quadrants, for forming a return envelope with said third quadrant and one of said second and fourth quadrants, no adhesive disposed along said fourth border line;

first perforation means defining a return envelope flap in one of said quadrants in or adjacent said fourth border line which has no adhesive;

information transmitting indicia printed on said second face of whichever of said second and fourth quadrants does not form said return envelope with said third quadrant;

second adhesive disposed on said second face of said return envelope flap;

third adhesive for holding said quadrants together, when folded about said first and second fold lines into a mailer, with said first face of said first quadrant and said first face of one of said second or fourth quadrants forming the exterior of the mailer, comprising permanent adhesive patterns disposed in said border lines on said second faces of at least two of said quadrants; and

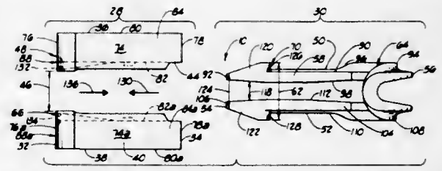
second, third, fourth, and fifth perforation means disposed adjacent said first through fourth border lines and defining exterior peripheral portions of two edges of each said quadrants.

5,288,016

RAIL-TIE FASTENING ASSEMBLY WITH ROCKING BEARING SEAT

S. Hudson Owen, Marshfield, Wis., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Dec. 28, 1992, Ser. No. 997,020
Int. Cl.[5] E01B 2/00
U.S. Cl. 238—355 9 Claims



1. A rail-tie fastening assembly for connecting a rail flange with an upper surface, a lower surface, a first side and a second side to a tie having an upper surface, comprising:

a rail seat assembly connectable to the upper surface of the tie having a seat hook assembly formed on a portion of the rail seat assembly and being adapted to extend a distance generally over a portion of the upper surface of the rail flange generally near the first side of the rail flange, a portion of the rail seat assembly being formed on a first radius to provide a rail seat curved bearing surface; and

a rail anchor, the rail anchor being operatively associated with the rail seat assembly, an anchor hook assembly being formed on a portion of the rail anchor with a portion of the rail anchor hook assembly being adapted to extend over a portion of the upper surface of the rail flange generally near the second side of the rail flange, a portion of the rail anchor being formed on a second radius to provide a rail anchor curved bearing surface, the rail anchor curved bearing surface being disposed adjacent the rail seat curved bearing surface in an assembled position of the rail anchor and the rail seat assembly, the first radius being larger than the second radius and the rail anchor curved bearing surface rocking or rolling on the rail seat curved bearing surface for reducing friction therebetween.

5,288,017

COLLAPSIBLE SPREADER

Paul M. Halovitz, Escondido, Calif., assignor to Republic Tool & Mfg. Corp., Carlsbad, Calif.

Filed Dec. 8, 1992, Ser. No. 985,582
Int. Cl.[5] A01C 17/00
U.S. Cl. 239—687 19 Claims

18. A spreader comprising,

a frame means having a wheel means,

a hopper means supported by said frame means,

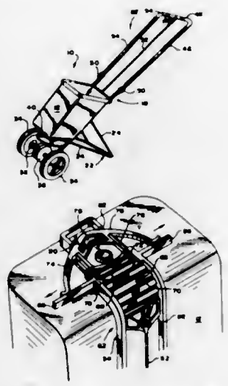
a dispensing means disposed on the bottom of said hopper

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means, said dispensing means including an opening in the bottom of said hopper means,

a guideway means bordering said opening and extending along the bottom of said hopper means,

a shut-off plate disposed in said guideway means for moving over said opening, and



said shut-off plate is connected to a bow-like spring member whose extremities are in sliding engagement with a stationary runner means on said bottom of said hopper means, whereby said shut-off plate can move against the bias of said bow-like spring member to positions ranging from completely covering said opening through partially covering said opening to completely exposing said opening.

5,288,018

WALL FOUNTAIN APPARATUS

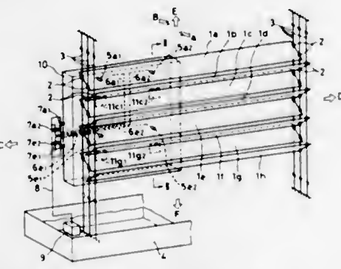
Shinichi Chikazumi, Tokyo, Japan, assignor to Shu-koh-sha Architectural & Urban Design Studio, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,102

Claims priority, application Japan, Oct. 16, 1991, 3-092153[U]

Int. Cl.[5] **B05B** *17/08*

U.S. Cl. 239—20 **14 Claims**



1. A wall fountain apparatus, comprising:

transparent sheets disposed in zigzags in a vertical direction to form zigzag paths for guiding water currents;

means for supporting the transparent sheets; and

a plurality of nozzles for supplying the transparent sheets with water, each nozzle being directed to an underside of a transparent sheet.

5,288,019

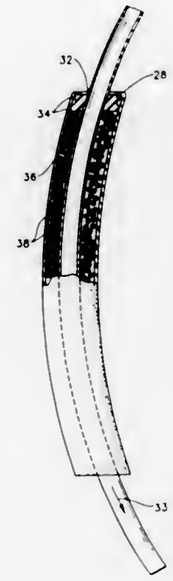
BEVERAGE COOLING SIPPER

Erica Gorochow, 13108 Brushwood Way, Potomac, Md. 20854

Filed Feb. 10, 1993, Ser. No. 16,007

Int. Cl.[5] **A47G** *21/18;* **A61J** *15/00*

U.S. Cl. 239—33 **18 Claims**



1. A drinking device for modulating the temperature of fluids drawn therethrough by a user's mouth, said device acting as a heat exchanger to draw heat from about liquid and thereby deliver cooled beverage to the user's mouth, said device comprising a flexible outer tube having a first cross-sectional area, said outer tube comprising a length of flexible tube and having a first inner diameter and a first outer diameter, said outer tube having placed concentrically therewithin an inner, cylindrical tube, said inner tube comprising a length of flexible, beverage grade tubing having a second inner diameter and a second outer diameter at least 1/16 of an inch less than the inner diameter of said outer tube, said inner tube further having a length at least thirty percent greater than that of said outer tube, said inner tube and said outer tube having a heat exchanger between their opposite surfaces, said heat exchanger comprising an air space filled with a thermally conductive, non-toxic solid, the upper end of said outer tube being attached proximate to the upper end of said inner tube in a first position such that a small section of inner tube comprising a mouthpiece is exposed above said first position, and the lower end of said outer tube being attached to said inner tube at a second position such that a section of at least 2 inches in length of said inner tube comprising an intake end is exposed below said second position, said thermally conductive, non-toxic solid being sealed between the opposite surfaces of said inner tube and said outer tube between said first position and said second position, whereby said heat exchanger portion of said device, after suitable refrigeration, remains essentially unsubmerged in said beverage thereby allowing the bulk of the beverage to retain its hot temperature while said heat exchanger portion cools only that liquid drawn therethrough by the user's mouth.

5,288,020

SEAL ARRANGEMENT FOR ADJOINING WALLS OF A PROPULSION NOZZLE OF AN ENGINE

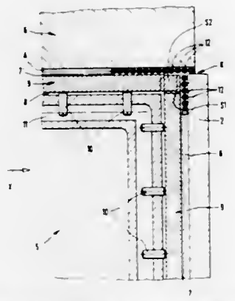
Klaus Pirker, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 38,504

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1992, 4210804

Int. Cl.[5] **F16J** *15/46;* **F16L** *27/00;* **B64C** *15/02;* **F02K** *1/12*

U.S. Cl. 239—127.3 **17 Claims**



1. Apparatus for sealing first and second wall elements, one of said wall elements having an end face facing a surface of the other of said wall elements with a clearance therebetween, said one wall element having a slot therein which opens at said end face into said clearance, a sealing element movably supported in said slot and projecting therefrom to contact the surface of said other wall element and form a primary seal therewith, said one wall element forming chambers on opposite sides thereof which are sealed from one another by said primary seal and which are subjected to differential pressures, actuating means for pressing said sealing element against the surface of said other wall element, said actuating means comprising a pressure chamber in said one wall element, a plunger movably carried in said one wall element, said plunger being subjected to pressure in said pressure chamber, causing said plunger to bear against said sealing element to urge the sealing element against the surface of said other wall element, said sealing element projecting from said slot into said clearance and being subjected on opposite sides thereof to the pressure differential in said chambers to cause said sealing element to be urged by said pressure differential against a side surface of the slot to form a secondary seal thereat.

5,288,021

INJECTION NOZZLE TIP COOLING

Virendra M. Sood, Encinitas, and Robie L. Faulkner, Santee, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Aug. 3, 1992, Ser. No. 923,403

Int. Cl.[5] **F02C** *7/22;* **B05B** *7/10*

U.S. Cl. 239—132.5 **6 Claims**

1. A fuel injection nozzle having a central axis, comprising:

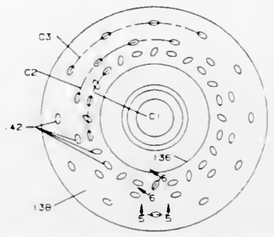
an outer casing coaxially positioned about the central axis;

a combustor end being attached to the outer casing and having a combustor face and a back face, said combustor face being generally perpendicular to said central axis;

a member being attached within the outer casing forming a chamber therebetween being in fluid communication with a source of fuel;

an air chamber being formed between said combustor end and said member and being in fluid communication with a source of compressed air; and,

a plurality of openings being formed in the combustor end between the combustor face and the back face and communicating with the compressed air in the air chamber, said plurality of openings being at an acute angle to the combustor face and being radially spaced about the central axis, such that a plurality of base circles are formed, in which a portion of said plurality of openings which are



disposed along said plurality of base circles are tangent to their respective base circle, such that compressed air discharged therefrom initially flows in a direction tangent to their respective base circle at said acute angle to the combustor face.

5,288,022

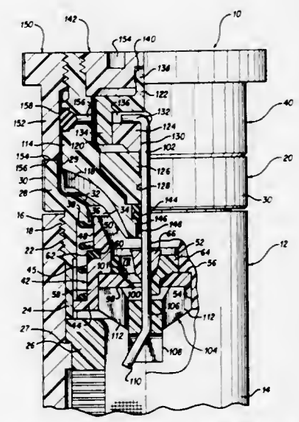
PART CIRCLE ROTATOR WITH IMPROVED NOZZLE ASSEMBLY

George L. Sesser, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Continuation of Ser. No. 789,690, Nov. 8, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,217

Int. Cl.[5] **B05B** *15/10*

U.S. Cl. 239—205 **29 Claims**



24. A rotary sprinkler including a sprinkler body having an outlet end, a discharge nozzle assembly located within said outlet end and including a discharge orifice; a rotatable distributor assembly supported above said discharge nozzle assembly, the distributor assembly including a viscous brake for inhibiting rotation of the distributor assembly caused by impingement of a stream issuing from the discharge orifice; a non-rotatable shaft extending between the discharge nozzle assembly and the distributor assembly, said shaft extending through said discharge orifice and into the distributor assembly; a seal interposed radially between the shaft and the distributor assembly; and means for deflecting the stream issuing from said discharge orifice away from said seal.

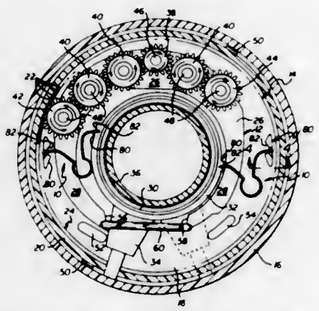
VOL 1159 ISS 4 FEB 22 1994 UMI

5,288,023

OVER-CENTER BIASING SPRING FOR PART CIRCLE GEAR DRIVEN ROTARY IRRIGATION SPRINKLERS

Joseph U. Han, Rancho Cucamonga, and Gerald E. Peterson, Riverside, both of Calif., assignors to Anthony Manufacturing Corp., Azusa, Calif.

Filed Oct. 21, 1991, Ser. No. 964,425
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 **10 Claims**



1. An improved part circle gear drive rotary sprinkler of the type including a drive gear train supported by a gear carrier movable between a first drive position and a second drive position for effecting rotation of the sprinkler in opposite rotary directions, and a lost motion trip mechanism for causing said gear carrier to be moved between said first and second positions, at least one over-center biasing means mounted to said sprinkler for biasing and maintaining said gear carrier in either of said first and second positions, wherein the improvement comprises:

said over-center biasing means comprising an elongated strip of spring material formed to have a bulbous-shaped arcuate head section interconnected through a narrowed neck section with downwardly and outwardly diverging leg sections, said narrowed neck section being formed to reverse curved arcuate wall sections to define a gap therebetween above said leg sections and below said head section, said leg sections terminating in outwardly flared foot sections adapted for mounting said biasing means to said sprinkler.

5,288,024

UNIVERSAL PNEUMATIC DEVICE FOR DOUGH-CASTING, POINTING AND FILLETING

Nicolas Vitale, 14 rue du 11 Novembre, 65600 Semeac, France

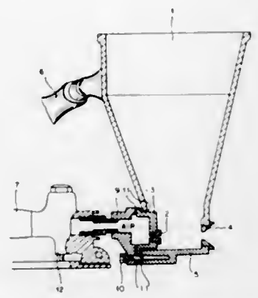
Filed Nov. 14, 1991, Ser. No. 791,859
Claims priority, application France, Jul. 26, 1991, 91 09921
Int. Cl.[5] B05B *7/30*
U.S. Cl. 239—346 **5 Claims**

1. Pneumatic device for rough-casting mortar in droplet from under pressure, comprising:

a receptacle having a bottom;

a tank attached to said receptacle bottom; said tank having at least one outlet orifice for said mortar;

a compression chamber accessible for maintenance comprising two hollow half-shells;



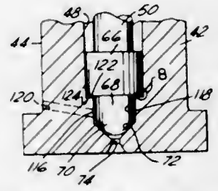
said tank and said two hollow half-shells connected together with impervious joining.

5,288,025

FUEL INJECTOR WITH A HYDRAULICALLY CUSHIONED VALVE

Mark S. Cerny, Sterling Hgts., Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1992, Ser. No. 993,251
Int. Cl.[5] F02M *51/06*
U.S. Cl. 239—533.8 **3 Claims**



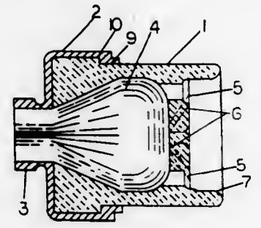
1. An improved fuel injector for an internal combustion engine, comprising: housing enclosure means defining an interior and including a valve guide portion with an aperture at one end for delivering fuel to the associated engine from the interior of said housing enclosure; a valve seating surface defined by the said guide portion adjacent said aperture; an elongated valve element with an end portion configured and normally engaging said seating surface when said valve element is in a closed operative position blocking fuel flow to said aperture; said valve guide portion supporting said valve element to permit opening movements of said valve element in the axial direction of said valve element which involves movement of said end portion away from said seating surface, thereby allowing a precise flow of fuel to said aperture; yieldable means exerting a closing force on said valve element so as to urge its end portion against said seating surface; valve actuating means which can be selectively energized to exert an opening force on said valve element in opposition to the force of said yieldable means thereby moving said end portion away from said seating surface and passing a precise quantity of fuel to said aperture, whereby said end portion quickly moves toward said seating surface in closing whenever said selectively energized actuating means is deenergized; means to dampen the closing action of said valve element with respect to said seating surface for inhibiting a tendency of said end portion to rebound away from said seating surface upon impact causing undesirable secondary openings of said valve element; said dampening means including a first surface formed by said valve guide portion upstream of said aperture and a corresponding second surface formed by said valve element upstream of said end portion, the opposite regions of each of said first and second surfaces being spaced uniformally from each other, whereby a film thickness of liquid fuel adheres to the first and the second surfaces with liquid fuel in the film thickness resisting any substantial migration away from and along said flat surface; said film thickness being sufficient so that when said first and second surfaces approach one another as said valve element moves to its closed operative position, their spacing eventually decreases to less than the combined film thicknesses whereby the relatively immobile liquid fuel is squeezed between said first and second surfaces to generate a hydraulic force opposing the closing force of said yieldable means for diminishing the impact effects of the contact of said end portion with said seating surface.

5,288,026

FLAME RETAINING CERAMIC BURNER NOZZLE

Paul V. Wilton, 2932 Via Loma Vista, Escondido, Calif. 92029

Filed Mar. 22, 1993, Ser. No. 35,402
Int. Cl.[5] B05B *1/14*
U.S. Cl. 239—558 **1 Claim**



1. A gas burner comprising:

a cup shaped gas burner nozzle made of tabular alumina having a cone shaped mixing chamber terminating at one end in an end wall portion;

said gas burner nozzle having a flame retarding circumferential ledge on said one end, extending outwardly from said end wall portion, the outer edge of said flame retarding ledge having a circular cross-section;

said end wall portion having a plurality of equally spaced axial outlet ports therethrough, said axial outlet ports being spaced in a circular pattern parallel to the axial centerline of the burner;

said end wall portion further having a plurality of angular outlet ports therethrough, said angular outlet ports being spaced in a circular pattern at an outward angle of approximately 60 degrees in a radial direction to the axial centerline of the burner, the centerline of each of the exits of said angular outlet ports being spaced radially outward from and circumferentially centered between the centerlines of the exits of adjacent axial outlet ports, each of said exits of said angular and axial outlet ports terminating an enlarged diameter concave-radiused edge; and,

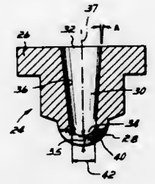
the other end of the burner nozzle being axially retained in a steel cup-shaped support member with an inlet aperture at the center thereof.

5,288,027

DISPENSING METHOD AND APPARATUS INCLUDING A RIBBON NOZZLE FOR COATING PRINTED CIRCUIT BOARDS

Glen Herstek, Lorain; William E. Donges, Wellington; James J. Turner, Amherst, all of Ohio, and Ronald Bernt, Duluth, Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Jul. 17, 1992, Ser. No. 915,113
Int. Cl.[5] B05B *1/04*
U.S. Cl. 239—594 **9 Claims**



1. A nozzle adapted for use with a coating dispenser for depositing a flat ribbon pattern of coating material onto a printed circuit board, comprising:

a nozzle tip formed with a nozzle bore having an inlet end, a discharge end and a longitudinal axis, said nozzle bore tapering inwardly relative to said longitudinal axis from said inlet end toward said discharge end, said discharge end forming a generally semispherical-shaped blind recess within said nozzle tip;

the nozzle tip further being formed with a substantially semispherical-shaped outer end, said semispherical-shaped blind recess of the discharge end of said nozzle bore being spaced from said semispherical-shaped outer end a distance in the range of approximately 0.004 to 0.024 inches and;

said nozzle tip being formed with a discharge slot which intersects said semispherical-shaped blind recess at the discharge end of said nozzle bore, said discharge slot being substantially rectangular in shape including a length dimension and a width dimension which is substantially constant along the entire length dimension of the slot, said length dimension being in the range of about 0.018 to 0.036 inches, and said width dimension being in the range of about 0.002 to 0.004 inches.

5,288,028

APPARATUS FOR ENHANCING THE FEEDING OF PARTICLES FROM A HOPPER

Philip Spirak, Toluca Lake; Alan E. Opel, Monrovia, both of Calif., assignor to Alpheus Cleaning Technologies Corp., Rancho Cucamonga, Calif.

Filed Sep. 10, 1992, Ser. No. 942,942
Int. Cl.[5] B65G *29/00*
U.S. Cl. 239—683 **26 Claims**

1. Apparatus for enhancing the feeding of particles, comprising:

(a) a hopper having a bottom hopper outlet and an inside surface extending from the bottom hopper outlet, the hopper having a lateral width;

(b) sensing means for sensing flow of particles from the hopper;

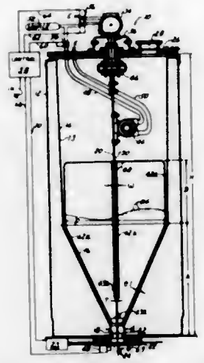
(c) a paddle member movably mounted in the hopper for moving approximately horizontally proximate the inside hopper surface without blocking the hopper outlet, an extremity portion of the paddle member moving in a plane approximately across the lateral width of the hopper in the plane;

(d) drive means for moving the paddle member in response to a drive signal;

(e) control means responsive to an external activate signal and to the sensing means for momentarily activating the drive signal during activation of the external signal upon

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occurrence of activation of the sensing means by absence of flow from the hopper outlet, the drive signal being



active for a period of time sufficient to cause the extremity portion of the paddle member to move a distance less than double the lateral width of the hopper in the plane.

5,288,029

APPARATUS FOR ELECTROSTATICALLY SPRAY-COATING WORKPIECE WITH PAINT

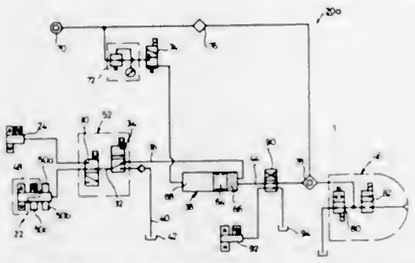
Ichirou Ishibashi; Toshio Kubota; Niichi Toyama; Shoko Sasaki; Yukihito Ono, and Akihiko Tada, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 785,262

Claims priority, application Japan, Nov. 8, 1990, 2-304465; Mar. 11, 1991, 3-013450[U]

Int. Cl.[5] B05B *5/02*

U.S. Cl. 239—691 **5 Claims**



1. An apparatus for electrostatically spray-coating a workpiece with conductive paint, said apparatus comprising:

a color changeover valve mechanism for selectively supplying cleaning liquid, air and the conductive paint through a supply line;

a first flush valve mechanism for selectively supplying the cleaning liquid and the air;

a first directional control valve having an outlet and inlets, said inlets being connected to said supply line and a feed line extending from said color changeover valve mechanism and said flush valve mechanism, respectively;

a block line made of an insulating material and having a first end connected to said outlet of said first directional control valve, said block line includes a second end in communication with said first end;

a second directional control valve having outlets and an inlet, said inlet being connected to the second end of said block line;

an intermediate reservoir connected via a second feed line to one of the outlets of said second directional control valve;

a waste-liquid tank connected via a first discharge line to a second one of the outlets of said second directional control valve;

a spray gun connected via a delivery line to said intermediate reservoir;

a second discharge line branched from said delivery line via a changeover valve;

a second flush valve mechanism selectively supplying at least cleaning liquid and air to said second discharge line, said second flush valve mechanism being provided separately from said color changeover valve mechanism for said supply line; and

means for applying a high voltage to the conductive paint between said second directional control valve and said spray gun.

5,288,030

AUTOMATIC POSITIONING DEVICE FOR A YARN END FINDER

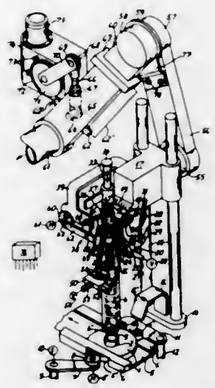
Ulrich Wirtz; Helmuth Hensen; Wolfgang Irmen, all of Moenchengladbach; Paul Surkamp, Kempen; Helmut Kohlen, Erkelenz; Dietmar Engelhardt, and Hans Grecksch, both of Moenchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Aug. 7, 1991, Ser. No. 741,673

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1990, 4025003

Int. Cl.[5] B65H *54/00, 69/04*

U.S. Cl. 242—18 R **26 Claims**



1. An apparatus for preparing an end of yarn of a textile yarn package, the yarn package having a body of yarn formed on a tube, the tube having one end and an opposed end and the body of yarn having at least one tapered portion tapering inwardly from an inclined transition location toward a respective end of the tube, the yarn end preparing apparatus comprising:

means for applying suction including a suction housing forming a suction slot through which suction is applied to a yarn package to effect drawing of a yarn end of the yarn package through the slot interiorly of the suction housing, the slot being of a narrow elongated configuration and having a lengthwise dimension at least approximately corresponding to the axial dimension of the tapered portion of the yarn package;

means for automatically positioning the suction slot at a predetermined spacing from the tapered portion of the body of yarn of the yarn package independent of the axial position of the inclined transition location at which the tapered portion of the body of yarn tapers inwardly, the automatically positioning means including means for moving the suction housing in a guided direction in which the suction slot is moved from a start position axially beyond the respective end of the tube toward the other end of the tube to thereby narrow the spacing between the suction slot and the tapered portion of the yarn package generally parallel to the axis of the yarn package, a light beam emitting component mounted to the suction housing at an orientation for emitting a light beam along a path into the spacing between the tapered portion of the yarn package and the suction slot, a light beam detecting component mounted to the suction housing and operable to generate a stop movement signal in response to an interruption of the light beam emitted by the light beam emitting component, and control means, operatively connected to the light beam detecting component, for controlling the means for moving the suction housing to stop the guided movement of the suction housing solely in response to the receipt of a stop movement signal from the light beam detecting component, whereby the means for moving the suction housing is operable to move the suction housing from the start position to narrow the spacing between the suction slot and the tapered portion of the yarn package and the light beam detecting component is operable to generate a stop movement signal upon narrowing of the spacing between the suction slot and the tapered portion of the yarn package to an extent at which the yarn package interrupts the light beam and the controlling means is operable to stop the suction housing with the suction slot positioned at the predetermined spacing from the tapered portion of the yarn package in response to receipt of the stop movement signal form the light beam detecting component; and

means for repositioning the suction slot portion after drawing in the yarn end into the suction applying means for depositing the drawn in yarn end at a predetermined location on the yarn package suitable for further processing of the yarn package at a subsequent processing station.

5,288,031

ARRANGEMENT IN AN AUTOMATIC CABLE WINDING MACHINE

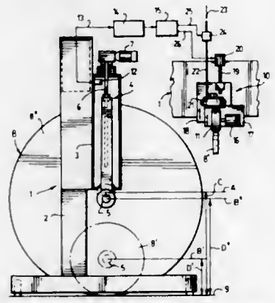
Gustaf Linderoth, Enkoping, Sweden, assignor to Nokia-Maillerfer Holding S.A., Ecublens, Switzerland

Continuation of Ser. No. 658,310, Feb. 20, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 26,179

Claims priority, application Sweden, Mar. 30, 1990, 9001179-2

Int. Cl.[5] B65H *75/00*

U.S. Cl. 242—54 R **7 Claims**



1. In a winding machine for winding and unwinding a cable on or from a flanged drum, said machine having a support frame, two gripping pins, each vertically displaceable in the support frame and arranged to co-axially grip one flange of the drum, power means for vertically displacing the gripping pins between a lower gripping position and a fixed upper winding position to lift the drum off of a floor plane, said lower position varying in accordance with the diameter of the flange of the drum, and rotating means supported by the support frame for rotating the drum, said rotating means comprising a rotatable and displaceable drive wheel, adjusting means for moving the drive wheel to an operating position against the flange of the drum and pressure means for pressing the drive wheel against the flange of the drum; the improvement comprising, a detecting device for determining the vertical distance of at least one of the gripping pins from the floor plane when it is in its lower gripping position for axially gripping the drum as an indication of the diameter of the flange of the drum and control means responsive to said distance determined by the detecting device for activating, based on the diameter of the drum's flange, both the adjusting means of the drive wheel to move the drive wheel to an appropriate operating position against the flange of the drum, and the pressure means to regulate the pressure of the drive wheel against the flange of the drum with a force related to the diameter of the drum's flange.

5,288,032

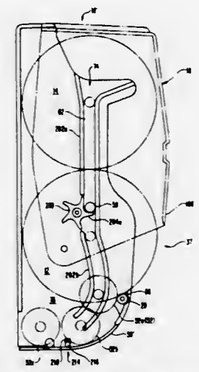
DISPENSER FOR FLEXIBLE SHEET MATERIAL

Bruce T. Boone, Acworth, and John S. Formon, Marietta, both of Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 751,064, Aug. 28, 1991. This application May 11, 1992, Ser. No. 881,132

Int. Cl.[5] B65H *16/06, 19/10*

U.S. Cl. 242—55.3 **27 Claims**



1. A dispenser for dispensing sheet material from a first roll and retaining therein at least one reserve roll from which sheet material may be dispensed when said first roll is depleted, comprising:

a chassis; and

dispensing roll transfer means attached to said chassis for transferring a roll to a dispensing position where dispensing from the roll will begin, said transfer means comprising:

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guiding means for guiding the roll along a pathway to said dispensing position as it falls under the force of gravity; and

fall retarding means positioned in said pathway above said dispensing position for retarding the fall of said roll into said dispensing position.

5,288,033

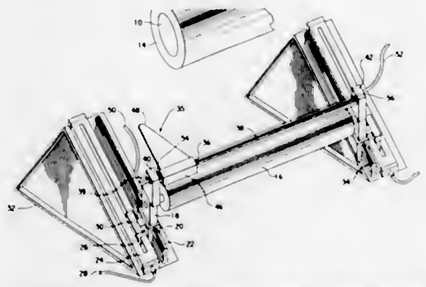
METHOD AND APPARATUS FOR CONTACT WINDING

W. Mark Kirkpatrick, Florence, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1992, Ser. No. 968,511

Int. Cl.[5] B65H *19/26, 18/16*

U.S. Cl. 242—56 R **8 Claims**



1. In an apparatus for contact winding including a lay-on roll adapted to exert a nip force against a roll of film winding on a core, said lay-on roll being rotatably supported by a carriage capable of moving away from the center of said core as the winding roll of film increases in diameter, the improvement comprising said carriage being connected to means for continuously moving said carriage along a straight path colinear with a line connecting the center of said lay-on roll and the center of said core while maintaining a substantially constant nip force, said moving means including a first linear bearing slideably supported on a first shaft oriented along the same direction as said linear path, said first linear bearing being attached to both said carriage and a first piston of a first cylinder aligned parallel to the first shaft.

5,288,034

SYSTEM FOR JOINING WEBS OF MATERIAL

Herbert Schönmeier, Düsseldorf; Peter Weiss, Neuss; Karl Thievessen, Grevenbroich; Ewald Welp, Erkrath; Runald Meyer, Willich; Manfred Weis, and Egbert Most, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

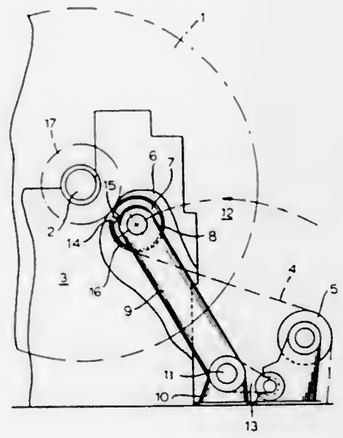
PCT No. PCT/EP90/00362, § 371 Date Aug. 27, 1991, § 102(e) Date Aug. 27, 1991, PCT Pub. No. WO90/10591, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 6, 1990, Ser. No. 752,632

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1989, 3907136

Int. Cl.[5] B65H *19/20*

U.S. Cl. 242—58.3 **13 Claims**



1. An automatic splicing device comprising:

a frame;

mounting means on the frame for sequentially receiving first and replacement rotatable unwinding rolls of a web of material to be spliced, the web of the replacement roll being formed with a leading end provided with adhesive thereon;

a guide roller mounted on the frame and spaced from the mounting means, the guide roller and a respective one of the unwinding rolls mounted on the mounting means defining a path of the web therebetween and being rotatable in one sense whereby a remainder of the roll and the guide roller lie at one side of the web;

a splice element mounted on the frame along the path between the guide roller and the respective one of the unwinding rolls and extending substantially across a working width of the web, the splice element comprising:

a tube having a longitudinal central axis engageable with a side of the web opposite to the one side and rotatable about said axis in a sense opposite to the one sense, said tube being provided with an axial groove;

cutting means mounted in said groove for cutting the web running off the first roll, thereby forming a trailing end of the web, and

holding means on the tube for holding the trailing end of the first roll upon cutting of the web, said holding means being located downstream of the cutting means; and

actuating means on the frame for displacing the splice element into a changing position toward a periphery of a replacement roll after mounting thereof on the mounting means, the holding means being urged against the periphery of the replacement roll in the changing position of the splice element thereby pressing the trailing end against the leading end, so that the ends are bonded together.

5,288,035

Patent Not Issued For This Number

5,288,036

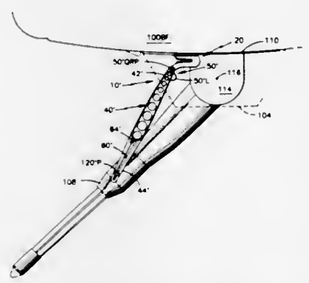
PIVOTING WIRE DEFLECTION AND SEVERING SYSTEM

Anton J. Kompare, Hamden, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1992, Ser. No. 968,568

Int. Cl.[5] B64C *27/00*

U.S. Cl. 244—17.11 **7 Claims**



1. In combination with an aircraft having an external, belly-mounted gun system that is pivotable in an elevational plane to any position from a stowed flight position to a fully depressed position, a critical strike zone with respect to cable strikes being defined between the stowed flight position and the fully depressed position of the gun system, a pivoting wire deflection and severance system, comprising:

wire cutter means disposed in combination with the gun system for severing incident cables to provide protection against cable strikes with the gun system in the stowed flight position; and

deflector member means for providing protection against cable strikes within the critical strike zone by deflecting incident cables within the critical strike zone into said wire cutter means, said deflector member means including

first means for affixing said deflector member means in pivotable combination with said wire cutter means, and

second means for affixing said deflector member means in translational and rotational combination with the gun system,

wherein said deflector member means is operative for synchronized movement with the pivotal elevational movement of the gun system to deflect incident cables within the critical strike zone into said wire cutter means for severance thereof.

5,288,037

CATCH DEVICE FOR LOCKING AIRCRAFT LANDING GEAR IN THE RAISED POSITION

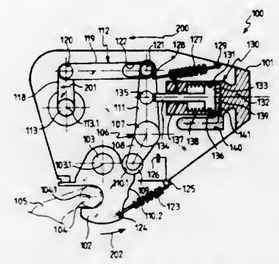
Michel Derrien, Versailles, France, assignor to Messier-Bugatti, Velizy Villacoublay, France

Filed Feb. 1, 1993, Ser. No. 11,856

Claims priority, application France, Feb. 3, 1992, 92 01160

Int. Cl.[5] B64C *25/26*

U.S. Cl. 244—102 SL **10 Claims**



1. A catch device for locking an aircraft landing gear in the high position, the device comprising a main casing receiving a hook hinged about a first axis and a locking lever hinged about a second axis parallel to said first axis, a first branch of the lever carrying a thrust wheel that co-operates with a camming surface of the hook, and a second branch of the lever being connected via a linkage to an outlet shaft of a driving motor and gear box assembly, wherein the linkage includes an oblong slot at one of its hinged axes in order to make it possible for the locking lever to pivot in the direction for unlocking the hinged hook in the event of the outlet shaft of the motor and gear box assembly jamming, and wherein said catch device further includes an independent trigger associated with the locking lever, suitable for being triggered in an emergency to pivot said locking lever sufficiently to release the thrust wheel from the associated camming surface and to unlock the hinged hook.

5,288,038

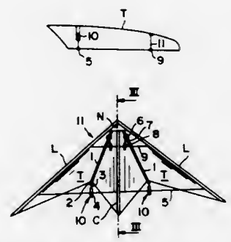
KITE

Long Duong, 21, Square General Paris De La Bollardiere, 35700 Rennes, France

Filed Sep. 30, 1992, Ser. No. 954,581

Int. Cl.[5] B64C *31/06*

U.S. Cl. 244—153 R **5 Claims**



1. A delta type kite that comprises a sail (T) mounted on a chord constituted by a central longitudinal rod (C), two lateral rods (L), two tension rods (1), each of said tension rods having an end coupled to a nose (N) of the kite and in contact with said sail (T), a rear transverse rod (5) and a front transverse rod (9) in a plane which is lower than a plane containing said sail (T), rear stiffeners connecting said tension rods (1) to said transverse rods (5, 9) said kite having two front stiffeners (11)

VOL 1159 ISS 4 FE 22 1994 UMI

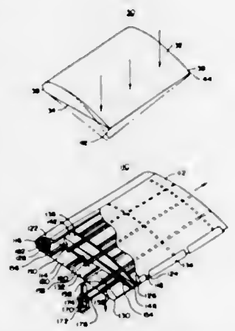
individually coupled to said two transverse rods to give said sail (T) an airplane wing shape (FIG. 4).

5,288,039

SPANWISE GRADED TWIST PANEL

James D. DeLaurier, 60 Cherry Hills Rd., Concord, Ontario, Canada L4K 1M4 , and Jeremy M. Harris, 476 Park Overlook, Worthington, Ohio 43085

Filed Jul. 29, 1992, Ser. No. 921,220
Int. Cl.[5] B64C *3/44*
U.S. Cl. 244—219 **24 Claims**



1. A shear flexible panel which comprises:
a longitudinally extending upper surface having a first longitudinal front end; a first longitudinal rear edge and a first inner face;
a longitudinally extending lower surface having a second longitudinal front end, a second longitudinal rear edge and a second inner face;
wherein said first and said second inner faces cooperate to define an interior cavity;
wherein said first and second front ends cooperate to form a leading edge and said first and second rear edges cooperate to form a trailing edge; and
wherein said first and said second rear edges are slidable longitudinally with respect to each other when one of a torsional force is applied to said panel or a linear force is applied to at least one of said first and second rear edges to thereby induce a spanwise gradient twist extending longitudinally in said panel.

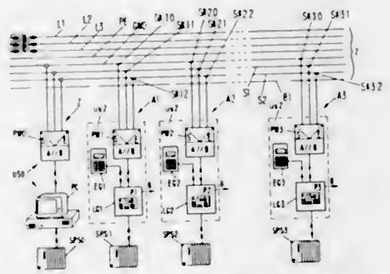
5,288,040

DEVICE FOR EXCHANGING DATA BETWEEN MOVABLE UNITS AND A CENTRAL UNIT

Siegfried Fox, Xanten, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,039
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131166
Int. Cl.[5] B60L *15/32*
U.S. Cl. 246—5 **15 Claims**

1. A device for exchanging data between a plurality of rail-supported movable automatic manipulating units for operating a plurality of textile machines with multiple work stations and a common central unit, said device comprising:
a rail system;
a lead system connected to said rail system, said lead system comprising at least two and at most three data-transmitting leads, that serve exclusively for data transmission and form a ring conduit via which a freely selected number of said plurality of movable automatic manipulating units may be connected to said common central unit, and further comprising supply leads for supplying electric current to said automatic manipulating units;
a central unit comprising a central sending and receiving device connected to said data-transmitting leads;
said plurality of automatic manipulating units movably connected to said rail system and each having first sliding contacts connected to said supply leads, each said automatic manipulating unit having a unit sending and receiving device and having second sliding contacts for connecting said unit sending and receiving device to said data transmitting leads; and



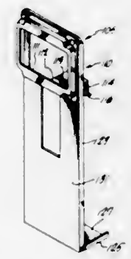
wherein data from said central and unit sending and receiving devices are sent in the from of primary pulses of predetermined duration and of predetermined intervals over a first of said data-transmitting leads, and along with each of said primary impulses is simultaneously sent opposite polarity impulses over a second one of said data-transmitting leads, and wherein said central and unit sending and receiving devices are embodied such that data are received only when the primary and opposite polarity impulses are received simultaneously via said first and second data-transmitting leads and each primary and opposite polarity impulse has a preset minimal impulse energy.

5,288,041

ELECTRICAL JUNCTION BOX MOUNTING BRACKET DEVICE AND METHOD

Ronald D. Webb, 4822 Franklin Ave., #3, Los Angeles, Calif. 90027

Continuation of Ser. No. 479,388, Feb. 12, 1990, Pat. No. 5,098,046, which is a continuation-in-part of Ser. No. 118,444, Nov. 9, 1987, abandoned. This application Mar. 20, 1992, Ser. No. 854,250
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] G12B *9/00*
U.S. Cl. 248—27.1 **18 Claims**



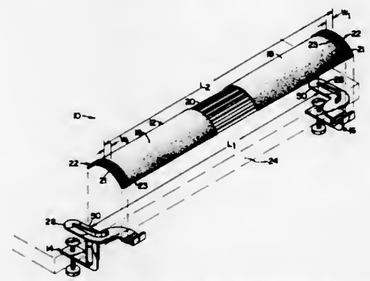
1. An installed bracket device for mounting a junction box in a structure including a floor, a floor track and a partition, the partition comprising a front wall and a rear wall with an interior space therebetween, the floor track being fixedly secured to the floor inside the interior space, the bracket device comprising:
a) a base fixedly attached to the floor track for fixedly securing the bracket device to the floor without mounting the device to any stud of the partition;
b) a riser extending upwardly from the base, the riser having an upper portion, a front face and a rear face; and
c) junction box attaching means attached to the upper portion of the riser for attaching the junction box to the bracket device, the junction box attaching means permitting access to the junction box when the junction box is attached so that the junction box can receive an electrical device from the exterior side of the front wall, the junction box attaching means being configured so that when attached the junction box extends rearwardly substantially from a plane defined by the rear face of the riser into the interior space.

5,288,042

WRIST REST SUPPORT SYSTEM

Thomas M. Grimm, Robbinsdale, Minn., assignor to Ergodyne Corporation, St. Paul, Minn.

Filed Aug. 12, 1992, Ser. No. 928,998
Int. Cl.[5] B43L *15/00*
U.S. Cl. 248—118 **5 Claims**



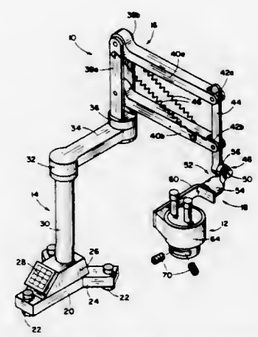
4. A wrist rest support system for attachment to a working surface, comprising:
a wrist rest having two oppositely disposed ends and a base member;
first and second extension clamps, each having a cantilever plate having a first end member proximate the working surface and a second end member having a distal end cantilevered away from the working surface and each end member has a separate approximately parallel longitudinal axis, the axis of the first end member being laterally spaced from the axis of the second end member, and the first end member having a first side and a second side oppositely disposed on either side of the longitudinal axis of the first end member; and
fastening means, operably connected to the first end member of the cantilever plate, for attaching the cantilever plate to the working surface, wherein the two extension clamps can be fastened to the working surface, spaced apart so that the wrist rest can be placed between the second side of the first end member of the first clamp and the second side of the first end member of the second clamp with a first end of the oppositely disposed ends of the wrist rest being adjacent the second side of the first end member of the first clamp and a second end of the oppositely disposed ends of the wrist rest being adjacent the second side of the first end member of the second clamp.

5,288,043

BALANCED SUSPENSION SYSTEM FOR SURGICAL MICROSCOPE

George S. Tigliev, House 55, Apt. 190, Code 191104, St. Petersburg, Prospect Blyukhera,

Filed Sep. 11, 1992, Ser. No. 944,092
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—123.1 **8 Claims**



1. A balanced suspension system for a surgical investigative instrument, comprising:
a generally vertical support structure,
a levered assembly extending out from one end of the support structure, and
a gimbal mount assembly connected adjacent one end of the levered assembly, the gimbal mount assembly comprising:
a bracket arm having a first joint member at one end threof and an instrument brakcet connected to a second end thereof by way of a second joint member, the instrument bracket including a third joint member; and
the first joint member provides motion about a horizontal roll plane, the second joint member provided motion about a horizontal pitch plane perpendicular to the first plane, and the third joint member provides motion about a vertical yaw plane;
whereby the center of mass of the surgical investigative instrument lies within the three planes of motion permitted by the first, second and third joint members.

5,288,044

CAMERA TRIPOD HEAD ASSEMBLY

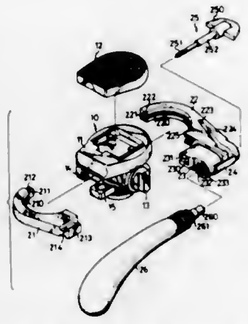
Chien-Shu Chen, 4th Fl., No. 2-3, Lane 313, Chang An St., Lu Chou Hsiang, Taipei Hsien, Taiwan

Filed Jul. 20, 1993, Ser. No. 93,870
Int. Cl.[5] F16M *11/12*
U.S. Cl. 248—183 **6 Claims**

1. A tripod head assembly comprising:
a tripod head comprising a neck;
a coupler comprising:
a first member comprising a first end, a second end and a cutout between the first and second ends;
a second member comprising a first end comprising a passage formed therein, a second end comprising a passage formed therein, and a cutout between the first and second ends thereof, a slit formed in the second end of the second member, thus forming a clamp; and
a block defining a passage wherein a number of teeth are formed, the block formed together with the second end of the second member;
the first end of the first member linked to the first end of the second member and the second end of the first member linked to the block so that the cutouts mate with each other for forming a hole for receiving the neck;

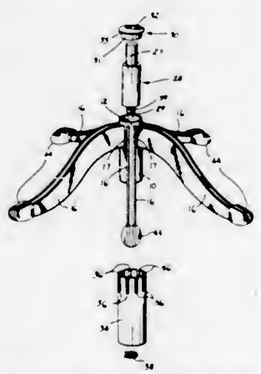
VOL 1159 ISS 4 FE 22 1994 UMI

a handle comprising a slender tip wherein a threading is formed and a number of teeth formed near the tip; and
a bolt comprising a shank and a slender tip on which a threading is formed;
the tip of the bolt inserted through the passage formed in the



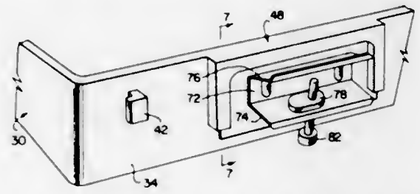
clamp and the tip of the handle inserted through the passage formed in the block, thus allowing the threadings to engage with each other, so that the shank pushes the clamp towards the first member for clamping the neck and that the teeth formed on the handle engage with the teeth formed on the block for retaining the handle in position.

5,288,045
CHAIR BASE
Thomas M. Edwards, Wyoming, and Robert A. Nagelkirk, Zeeland, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 392,721, Aug. 11, 1989, Pat. No. 5,249,768, which is a continuation-in-part of Ser. No. 205,308, Jun. 10, 1988, abandoned. This application Jul. 26, 1993, Ser. No. 97,158
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—188.7 **17 Claims**



1. A method of making a chair base having seat mounting means and multiple legs secured thereto, said method comprising the steps of:
forming a plurality of straps from low-carbon steel;
securing pairs of said straps to the seat mounting means in parallel relation to one another to form said legs;
heating said legs and said seat mounting means; and
coating at least a portion of said straps and said seat mounting means with a coating of sufficient thickness to conceal surface imperfections therein and to provide an aesthetic finish.

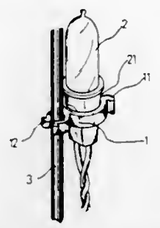
5,288,046
UNIVERSAL SHELF EXTENDER
Thomas E. Eklof; Walter M. Poterbin, and Roger L. Fernandez, all of Santa Cruz County, Calif., assignors to Santa Cruz Industries, Santa Cruz, Calif.
Filed Oct. 7, 1991, Ser. No. 774,042
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—220.2 **4 Claims**



1. A shelf extender for supporting and displaying articles, the shelf extender comprising the combination of a tray having a bottom wall and an upstanding back wall, first attachment means for selectively attaching the tray to a tag mold or other support structure, said first attachment means comprising a support pocket carried on the outer surface of the back wall and bracket means adapted for fitment in the support pocket for releasably mounting the tray on said tag mold or other support structure, said bracket means including a flat plate which releasably fits in said support pocket, said support pocket having spaced-apart side walls which form an internal cavity for fitment of said flat plate, flexible tab means carried by said plate for projecting outwardly into a friction fit with one of said cavity side walls for lockably retaining the plate within the cavity, and second attachment means for selectively and releasably attaching a tray to a foil tree or other display stand of the type having a plurality of laterally spaced-apart vertically extending support rods, said second attachment means including at least a pair of projections on said back wall of the tray, said projections extending rearwardly from the tray and being laterally spaced apart a predetermined distance which is commensurate with the lateral spacing between said support rods, said second attachment means being tilted between and engaged with the pair of support rods when the back wall of the tray is turned to a substantially horizontal position between the rods, said projections further being tilted away from and disengaged from the support rods when the back wall is turned away from said horizontal position.

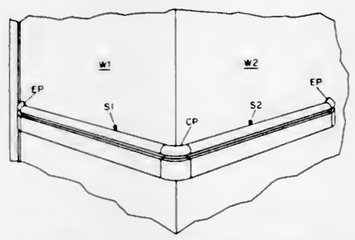
5,288,047
JOINER OF DECORATIVE LIGHT BULB
Wun-Fang Pan, No. 125, Lane 99, Tin Pu Road, Hsinchu, Taiwan
Filed Oct. 20, 1992, Ser. No. 963,546
Int. Cl.[5] E04B *7/18*
U.S. Cl. 248—229 **1 Claim**

1. A connector for a decorative light set comprising:
(a) a first clamping member having a substantially, semi-circular body defining a first opening adapted to releasably and grippingly receive a base of a light bulb;
(b) a second clamping member having a substantially semi-circular body defining a second opening adapted to releasably and grippingly receive a frame member, wherein said first and second clamping members are fixedly coupled each to the other forming an open numeral 8 contour having said first and second openings formed in linearly aligned relation within opposing ends of said contour, said first and second clamping members each having a flat upper surface and a flat lower surface, wherein said said



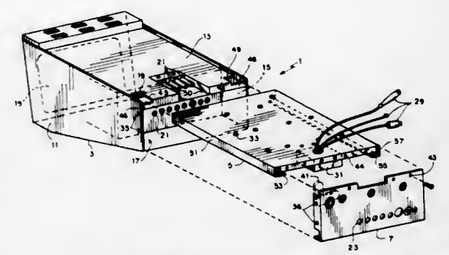
upper surfaces are coplanar and said lower surfaces are coplanar.

5,288,048
ERGONOMIC HANDRAIL
Thomas A. Shreiner, Muncy, Pa., assignor to Construction Specialties, Inc., Cranford, N.J.
Continuation-in-part of Ser. No. 679,802, Apr. 3, 1991, Pat. No. 5,165,643. This application Mar. 23, 1992, Ser. No. 855,905
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] E04H *17/14*
U.S. Cl. 248—251 **15 Claims**



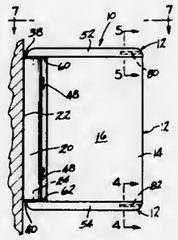
1. An ergonomic handrail adapted to be mounted on a wall in spaced-apart relation therefrom by means of mounting brackets and comprising an elongated metal retainer of substantially uniform cross-section along its length and having a body portion, upper and lower flange portions extending upwardly and downwardly, respectively, from the body portion, an upper web portion extending upwardly from the body portion from a juncture therewith rearwardly of the upper flange portion and defining with the upper flange portion a slot that opens generally upwardly, and upper front and rear arcuate arm portions extending upwardly from a common juncture with an upper edge of the web portion and defining the major portion of substantially circular cylindrical surface except for a space between upper edges thereof, an elongated bumper cover member of an impact resistant substantially rigid polymeric material and of substantially uniform cross-section along its length, having a front web portion, an upper flange portion of substantially L-shaped cross section received in captured engagement by the upper flange portion of the retainer with a return leg part thereof received in the slot, and a lower flange portion of substantially L-shaped cross section received in captured engagement by the lower flange portion of the retainer, and an elongated upper handgrip cover member of an impact-resistant substantially rigid polymeric material received over the upper arm portions of the retainer in substantially continuous contact therewith along mutually engageable internal surfaces of the handgrip cover member and external surfaces of the arm portions of the retainer.

5,288,049
SECURED MONITOR MOUNTING BRACKET
Robert E. Hays, 245 Trails End Rd., Elkhorn, Nebr. 68022
Filed Oct. 13, 1992, Ser. No. 959,642
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—298 **8 Claims**



1. A video monitor and bracket system for mounting said video monitor within a vehicle, comprising:
a video monitor having a top portion;
a bracket having guide rails; and
fastening means for attaching said bracket to an interior portion of a vehicle,
wherein said top portion includes means for receiving said guide rails of said bracket so as to attach said video monitor to said bracket and to the interior portion of said vehicle once said bracket is attached to said interior portion.

5,288,050
DISPLAY DEVICE
Richard L. Armstrong, 23 S. Turkey Hill Rd., Westport, Conn. 06880
Continuation of Ser. No. 500,692, Mar. 28, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 802,484
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—479 **21 Claims**



1. A display device comprising a display member including a rigid panel having first and second parallel faces facing in opposite directions away from each other and upper and lower parallel end surfaces spaced apart a fixed distance, said device also including means for mounting said display member including said panel for pivotal movement with respect to a vertical surface between a first extreme position in which said first face surface faces in a first direction and said second face surface faces in a second direction that is opposite said first direction and a second extreme position in which said first face surface faces in said second direction and said second face surface faces in said first direction, wherein said mounting means includes a mounting member having upper and lower configurations defining an axis and affixable to a vertical surface with said axis vertical, and said display member includes upper and lower support arms spaced a fixed distance apart and engaging said

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upper and lower end surfaces of said panel to hole said panel between said support arms, said arms having confronting ends extending beyond a side edge of said panel and having upper and lower aligned configurations in pivotal interengagement with said upper and lower configurations, respectively, of said mounting member, and wherein said lower support arm provides first and second trays on opposite sides of said first and second face surfaces.

5,288,051

LATCHING BOLT MECHANISM WITH LUBRICANT RESERVOIR FOR CONCRETE FORMING SYSTEM

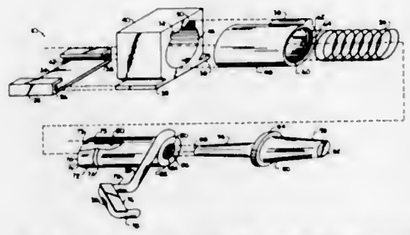
Philip T. Ward, Leawood, Kans., assignor to Western Forms, Inc., Kansas City, Mo.

Continuation of Ser. No. 603,399, Oct. 26, 1990, abandoned, which is a division of Ser. No. 466,967, Jan. 18, 1990, Pat. No. 5,058,855. This application May 5, 1992, Ser. No. 880,159

The portion of the term of this patent subsequent to Oct. 22, 2009, has been disclaimed.

Int. Cl.[5] E04G *17/04, 17/14*

U.S. Cl. 249—196 **4 Claims**



2. A latching bolt mechanism for selectively connecting adjoining concrete form panels along margins thereof and preventing parting movement thereof, said latching bolt mechanism comprising:

a) latching bolt means having a tapered tip for penetrating side rails of adjoining concrete form panels;

b) a tubular guide sleeve having a substantially closed end and a central bore reciprocally receiving said latching bolt means;

c) lubrication means in said guide sleeve and including a means defining a reservoir located therein adjacent said substantially closed end whereby said latching bolt means at least partially retracts into said guide sleeve and forces lubricant to said latching bolt means.

5,288,052

SELF-DRAINING SANITARY CONTROL VALVE

W. Keith Black; Jerold L. Hlad, both of Salina; Phillip G. Rogers, Lorraine; Wayne A. Rohr, Kanopolis; Daniel L. Sharp, and Bruce H. Shiffer, both of Ellsworth, all of Kans., assignors to Cashco, Inc., Ellsworth, Kans.

Filed Dec. 8, 1992, Ser. No. 988,303

Int. Cl.[5] F16K *31/28*

U.S. Cl. 251—30.01 **31 Claims**

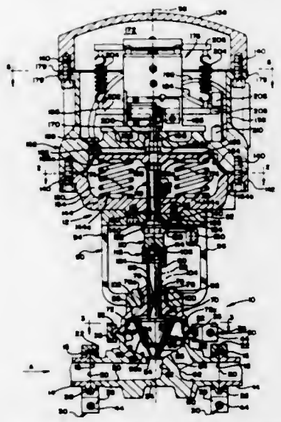
1. A self draining sanitary control valve, comprising:

a body having inlet means and outlet means with fluid control port means forming a valve seat therebetween;

a bonnet detachably securable to said body having a stem receiving bore aligned on a common central axis with said port means;

clamping ring means for securably clamping said body and said bonnet together when said ring means is engaged therewith in a locked position and movable to an unlocked position for permitting separation of said body and bonnet for cleaning; and

valve means including a valve stem slidably mounted in said bore having a valve plug at one end having a predetermined outer surface profile movable toward and away from said port means and flexible diaphragm means having a central portion adjacent to said plug for engaging said seat and an outer peripheral portion clamped between said body and said bonnet when said clamping ring means is locked, said central portion of said flexible diaphragm permanently and adhesively secured to said profiled outer



surface of said valve plug and having a substantially uniform thickness for providing a precisely matching profile substantially identical to the profile of said valve plug for cooperation with said valve seat resulting in a flow characteristic determined by said profile of said valve plug rather than said diaphragm alone.

5,288,053

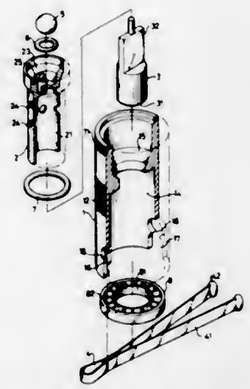
DISCHARGE CONTROLLING DEVICE FOR FAUCETS

Andy Y. Young, 1598 Loch Lomond La., San Jose, Calif. 95129-3737

Filed Jun. 1, 1993, Ser. No. 68,796

Int. Cl.[5] F16K *35/02*

U.S. Cl. 251—98 **4 Claims**



1. A discharge controlling device for a faucet comprising:

a housing in which the upper end thereof being threaded to form the threaded edge, the intermediate portion thereof being embossed to form the embossed portion, the internal portion thereof having a space open at one end in which the upper end thereof being defined by a partition having a central aperture a plurality of locking slots being provided at the lower edge of the housing, a securing slot being provided at the lower edge of the housing opposite the locking slots;

an inner sleeve having an internal space in the interior thereof, the upper portion of the space being defined by a partition having a central aperture, the periphery of the inner sleeve including two rows of water inlets;

a throttle pin having a spherical surface at the lower end thereof, and an rod tip located at the upper end;

a control lever shaped to be a forked double spring plate;

a steel ball;

an upper and lower seal rings, and

a diffusion ring having a central opening and a plurality of peripheral diffusion holes;

the upper seal ring being secured at the periphery of the aperture of the inner sleeve, the steel ball being positioned atop the aperture, the throttle pin being placed into the bottom of the inner sleeve and received within the internal space of the inner sleeve; the inner sleeve being placed in through the upper portion of the housing, penetrating through the central opening and being positioned on the slanting surface of the housing; the lower seal ring being placed between the bottom of the upper edge of the inner sleeve and the slanting surface of the housing; the diffusion ring being placed within the interior space of the housing such that the lower edge thereof is above the upper edges of the locking slots located at the lower edge of the housing; the inner sleeve having the throttle lever therein is penetrated through the central aperture of the housing and out through the central opening of the diffusion ring; the control lever spring plate being compressed at one end thereof so as to be released and moved to a selected locked position within one of the locking slots the securing slot so that the control lever will be fixed within the securing slot to permit the control lever spring plate to be moved to one of the selected locking slots.

5,288,054

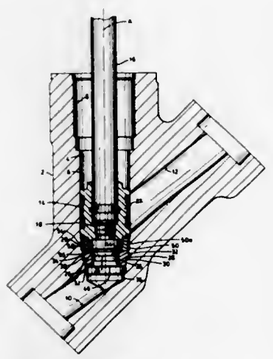
GLOBE VALVE AND METHOD FOR MAKING SAME

Earl A. Bake, Cary, and Leonard J. Stephens, Raleigh, both of N.C., assignors to M&FC Holding Company, Inc., Wilmington, Del.

Filed Jun. 28, 1993, Ser. No. 84,541

Int. Cl.[5] F16K *1/00*

U.S. Cl. 251—171 **24 Claims**



1. A globe valve comprising

a valve body defining a chamber,

a valve stem extending into said chamber,

a disk attached to said valve stem at an end of said valve stem in said chamber,

a discrete annular seat movably disposed in said chamber,

a compressed resilient ring disposed in said chamber adjacent said annular seat, and

a rigid metal retainer fixed in said chamber and extending inwardly from an internal wall of said chamber and on a side of said seat opposite from said resilient ring,

wherein said resilient ring, seeking return to its non-compressed state, exercises a bias on said seat in a direction toward said disk, urging said seat into engagement with said disk.

5,288,055

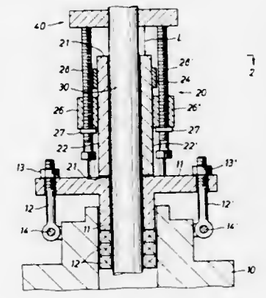
BRACE FOR A VALVE PACKING GLAND FLANGE

Jerry L. Fosnight, Fairfield; Thomas R. Bendixen, Antioch; Kenneth J. Daigle, Martinez, and Dennis E. Lines, Pittsburg, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 19, 1993, Ser. No. 34,927

Int. Cl.[5] F16K *41/04*; F16J *15/20*

U.S. Cl. 251—214 **5 Claims**



1. A brace for use in a valve having a valve body, a yoke, a valve stem and a stuffing box having packing disposed therein, said brace comprising:

a pipe section, said pipe section being cut into two longitudinal sections for placement around said valve stem and within said yoke and above said stuffing box, wherein an upper portion of said pipe section is adjustably spaced from a lower portion of said yoke and wherein a lower portion of said pipe section engages an upper portion of said stuffing box;

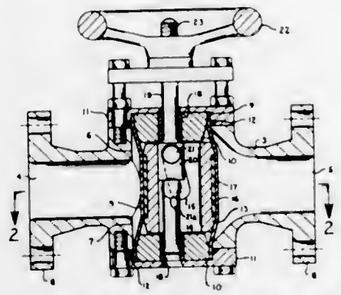
a clamp attached around said longitudinal pipe sections for holding said pipe sections in place around said valve stem;

a threaded nut fixedly attached to each of said pipe sections such that the axis of each nut and the axis of said pipe sections are parallel; and

a jacking screw in each of said threaded nuts, the head of said jacking screw being adapted to abut the underside of said yoke, wherein the tightening of said jacking screws within said threaded nuts increases the distance between said upper portion of said pipe section and said lower portion of said yoke and wherein said increase in distance lowers said lower portion of said pipe section and lowers said upper portion of said stuffing box which the lower portion of said pipe section engages, thereby compressing said packing disposed in said stuffing box, thereby increasing the leak-sealing between said valve body and said valve stem.

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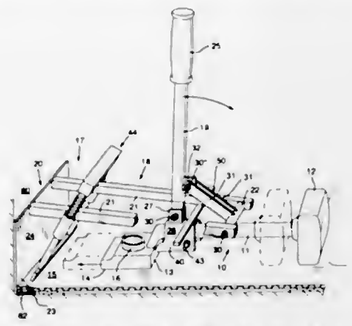
5,288,056
ECCENTRICALLY DISPLACEABLE SLEEVE TYPE SHUT-OFF VALVE
Hans D. Baumann, 32 Pine St., Rye, N.H. 03870
Filed Apr. 9, 1993, Ser. No. 45,651
Int. Cl.[5] F16K *31/528*
U.S. Cl. 251—251 **4 Claims**



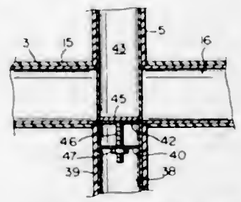
1. Eccentrically displaceable sleeve type shut-off valve, comprising a housing having at least one horizontal inlet port and outlet port and one central opening extending essentially perpendicular to said inlet port, the interface between said horizontal inlet port and the perpendicular central opening constituting a valve seat, a flexible sleeve inserted within and extending beyond the length of said central opening, a cylindrical core snugly fitting within said flexible sleeve and extending in width beyond the cross-sectional dimension of said inlet port, a shaft extending through the length of said central opening and having a camming element, said core having a bore cooperatively engaging with the shaft and having suitably configured portions to engage said camming element of the shaft and capable of causing the lateral displacement of said core toward said inlet port thereby forcing the central portion of said flexible sleeve to make a complimentary motion and thereby causing the sleeve to contact the valve seat to close off and prevent fluid from flowing from the inlet to the outlet port upon sufficient longitudinal displacement of said shaft, suitable closure means attached to either terminating end of said central opening to retain a portion of the flexible sleeve.

5,288,057
ADAPTER AND METHOD FOR POWER STRETCHING CARPETS
Ewald E. Listau, Randolph, Wis., assignor to Orcon Corporation, Union City, Calif.
Filed Apr. 8, 1991, Ser. No. 681,999
Int. Cl.[5] B65H *77/00*
U.S. Cl. 254—212 **13 Claims**

1. A carpet power stretcher for stretching carpet toward a wall, comprising:
a carpet kicker including an elongated rod having two ends, a knee pad attached to one end of said elongated rod, and a carpet engaging head at the other end of said elongated rod, said elongated rod having an offset bend adjacent to said head;
a power stretching adapter including
a frame having a front and a back,
an anchoring means attached to the front of the frame for anchoring the front of the frame between said wall and a tack strip,
an elongated handle including an upper portion terminating in a grip, a lower portion, and an end, said lower portion of said handle being pivotally attached to the back of said frame, and,
a clamping means for removably connecting pivotally the end of said elongated handle to the elongated rod of said carpet kicker;
said clamping means being removably attached to said elongated rod adjacent to said offset bend, such that said head is located between said clamping means and said anchoring means and said handle has a first position in which said handle is substantially perpendicular to said elongated rod, and a second position in which said handle is adjacent to said knee pad, such that when said handle is pivoted from said first position to said second position, said head is moved toward said anchoring means.

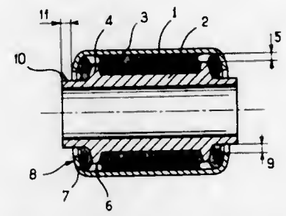


5,288,058
RAILING SYSTEM
William W. Russell, 1216 - 18 Street N.E., Calgary, Alberta, Canada T2E 4V9
Filed Dec. 21, 1992, Ser. No. 993,690
Int. Cl.[5] E04H *17/14*
U.S. Cl. 256—69 **3 Claims**



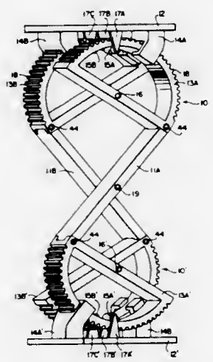
1. A railing system comprising post means including first plastic tube means for embedding in a concrete pad for supporting the system, first metal tube means in said first plastic tube means extending out of the bottom end thereof for anchoring the post means in a concrete footing;
third plastic tube means for mounting on rail means above and axially aligned with said first plastic tube means; second metal tube means in said third plastic tube means and second disc means closing the bottom end of said second metal tube means for abutting first disc means;
plug means proximate the top end of said post means; said plug means including first disc means proximate the top end of said first metal tube means for receiving bolt means; and
rail means for mounting on said post means for connecting the latter to another similar post means, said rail means including second, elongated plastic tube means and slot means in said second plastic tube means for receiving the top end of said first metal tube means and first, tubular metal coupler means in said plastic tube means; and bolt means carried by said second disc means in said first coupler means extending outwardly therefrom for insertion into said plug means for connecting said rail means to said post means;
said second disc means carrying said bolt means.

5,288,059
ELASTIC JOINT HAVING HIGH FILTERING CAPACITY AND AN AXIAL GAP CONTROLLED BY INCORPORATED STOPS, AND ITS APPLICATIONS
Michel Gautheron, Nevers, and Thierry Duchene, Verriere Le Buisson, both of France, assignors to Caoutchouc Manufacture et Plastiques, Versailles Cedex, France
Filed Jul. 20, 1992, Ser. No. 916,507
Claims priority, application France, Jul. 22, 1991, 91 09328
Int. Cl.[5] F16F *1/38*; B60G *7/02*
U.S. Cl. 267—292 **20 Claims**



1. An elastic coupling for joining together and filtering vibrations between a first component and a second component, said coupling comprising:
a substantially rigid inner member for being attached to one of said first and said second components, said inner member having a first end, a second end, a longitudinal axis extending from said first end to said second end, and an outer surface disposed about said inner member;
a substantially rigid outer member for being attached to the other of said first and second components, said outer member for being disposed about at least a portion of said inner member, said outer member having an inner surface for being disposed a distance from said outer surface of said inner member;
said inner member comprising a first projection and a second projection, said second projection being spaced apart from said first projection, and each of said first projection and said second projection extending radially outwardly from said inner member a portion of the distance between said inner member and said outer member;
elastomeric means for being disposed between said inner member and said outer member to filter vibrations, said elastomeric means having a first portion means and a second portion means;
said first portion means comprising a first elastomeric portion disposed on said inner member at least in an area between said first projection and said second projection, said first elastomeric portion being disposed between said inner and said outer member in contact with the outer surface of the inner member and the inner surface of the outer member;
each of said first projection and said second projection of said inner member having a first side disposed adjacent said first portion means and a second side disposed towards an end of said inner member;
said outer member has a first end and a second end, the second end being disposed opposite to the first end;
said first and second ends of said outer member extending radially inwardly towards said inner member a portion of the distance between said inner member and said outer member to form a first projection and a second projection of said outer member;
said first projection of said outer member being disposed substantially adjacent said second side of said first projection of said inner member, said second projection of said outer member being disposed substantially adjacent said second side of said second projection of said inner member; and
said second portion means comprising at least one second elastomeric portion disposed between each of:
said first projection of said inner member and said first projection of said outer member, and
said second projection of said inner member and said second projection of said outer member.

5,288,060
SHOCK ABSORBING SUSPENSION
Adolf Tyutinman, 2983 Cambridge Dr., San Jose, Calif. 95125
Filed Jan. 28, 1993, Ser. No. 11,299
Int. Cl.[5] F16F *1/14*
U.S. Cl. 267—154 **22 Claims**



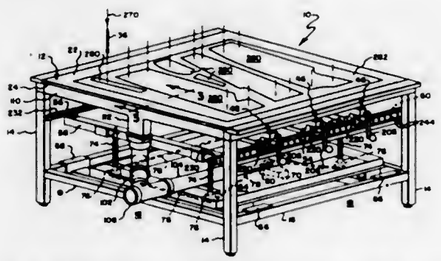
1. A suspension, comprising:
a pair of mounting means spaced apart by a variable distance, such that said pair of mounting means can be compacted together or extended apart,
a first pair of semi-circular frames positioned between said pair of mounting means, said first pair of semi-circular frames being concentrically and rotatably mounted about a first axis,
a second pair of semi-circular frames positioned between said pair of mounting means, said second pair of semi-circular frames being concentrically and rotatably mounted about a second axis,
gripping means attached to said pair of mounting means for slidably gripping said first and said second pairs of semi-circular frames, and
connecting means connecting said first and said second pairs of semi-circular frames, such that when said distance between said pair of mounting means is varied, said connecting means will cause said first pair of semi-circular frames to counterrotate about said first axis, and said second pair of semi-circular frames to counterrotate about said second axis.

5,288,061
PIN FOR USE IN FABRIC STACKING AND PINNING TABLE
Robert J. Pieroni, Youngstown, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.
Filed Feb. 28, 1992, Ser. No. 843,615
Int. Cl.[5] B23Q *1/00*
U.S. Cl. 269—4.5 **17 Claims**

1. A pin in combination with an apparatus for supporting sheet material such as cloth during operations such as cutting performed thereon comprising a supporting frame, means on said frame defining a planar supporting surface adapted to

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receive plies of sheet material placed thereon, said surface having at least one through aperture therein of substantially circular shape, said surface having an outer portion contacting said material and an oppositely disposed portion, pin holding and supporting means carried by said frame and facing said oppositely disposed portion of said supporting surface, said holding and supporting means adapted to receive a pin and maintain the disposition of the pin substantially perpendicular to the plane of said surface and the location of the pin in registry with said aperture, and means carried by said frame for moving said holding and supporting means to move the pin through said aperture so that sheet material can be anchored on the pin, said pin comprising:



a) an elongated body of substantially circular cross-section and having a substantially constant cross-sectional dimension along substantially the entire length of said body and terminating in a sharp, pointed head at one end of said body; and

b) an enlargement immediately at the opposite end of said body having a shape and cross-sectional size enabling said holding and supporting means to positively hold said pin and prevent unwanted withdrawl of said pin while at the same time allowing unimpeded movement of said pin and said enlargement through said aperture, said enlargement being of substantially circular cross-section having a diameter larger than the diameter of said body.

5,288,062

HIGH CAPACITY COMPILER WITH VERTICALLY ADJUSTABLE SHEET DISCHARGE AND ACQUIRE MEANS

Charles D. Rizzolo, Rochester; Barry P. Mandel, Penfield; Joseph J. Ferrara; Anthony T. DeSanctis, both of Webster, all of N.Y.; Peter A. Mayfield, Hemel Hempstead, England; Brian Whaites, Welwyn Garden City, England, and Jeffrey W. Ryan, Herts, England, assignors to Xerox Corporation, Stamford, Conn.

Filed May 26, 1992, Ser. No. 888,091

Int. Cl.[5] B42B *2/00*; **B65H** *31/26, 5/02*

U.S. Cl. 270—53 **18 Claims**

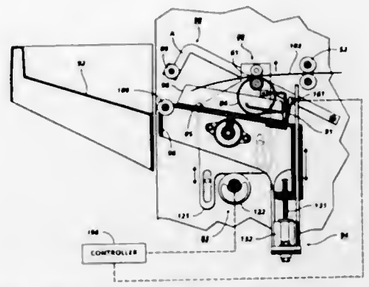
1. An apparatus for compiling a plurality of sheets received from a printing machine to form a stack thereof, comprising:

means for acquiring and discharging sheets;

sheet compiling means disposed adjacent to said acquiring and discharging means for receiving sheets from said acquiring and discharging means;

means for lateral registration of each of the received sheets in the stack in said compiling means;

means for determining the stack height in said sheet compiling means; and



means, responsive to said height determining means, for moving said acquiring and discharging means relative to said sheet compiling means.

5,288,063

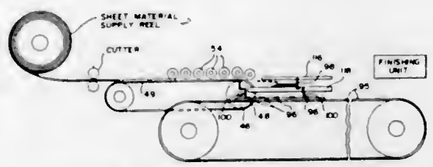
MULTI-LENGTH SHEET MATERIAL CONVEYOR AND COLLATOR

Reginald F. J. Lunt, Rutland, Vt., assignor to Metromail Corporation, Lincoln, Nebr.

Filed Nov. 29, 1991, Ser. No. 799,984

Int. Cl.[5] B65H *9/10, 39/10*

U.S. Cl. 270—58 **13 Claims**



1. A multi-length sheet material conveyor and collator including elongated, end aligned first and second conveyor means each including independently driveable conveyor belt means, the belt means of each conveyor means, at the adjacent ends of said conveyor means, being lengthwise lapped over the belt means of the other conveyor means in laterally spaced relation thereto, said first conveyor means including hold down means extending therealong for lightly holding down cut sheet material successively moving therealong, the belt means of said second conveyor means being intermittently actuatable and including cut sheet stop means against which successive cut sheets discharged for first conveyor means may abut for collation prior to intermittent actuation of said second conveyor means, said first conveyor means being operative to discharge successive different length sheets therefrom onto said second conveyor means, said second conveyor means including upper and lower pairs of laterally spaced apart top and bottom plates between which said cut sheets and the collated sheets of cut sheets are conveyed along said second conveyor means.

5,288,064

PAPER PRESSING MECHANISM FOR PAPER FEEDING DEVICE

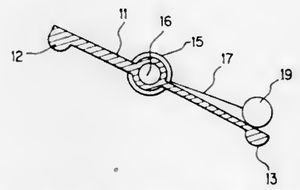
Nobuo Manabe; Motoaki Okitsu, both of Yamatokoriyama; Tosikazu Kitaura, Kashihara; Tomomi Tanaka, and Kan Mukai, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 19,209

Claims priority, application Japan, Feb. 20, 1992, 4-69379

Int. Cl.[5] B65H *5/22*

U.S. Cl. 271—3.1 **5 Claims**



1. A paper pressing mechanism for use in sheet feeding device, comprising:

a driving shaft;

a paper pressing roller;

a paper pressing arm provided at both ends thereof with paper pressing portions; and

a supporting arm, axially supported in a rotatable manner at its one end by said driving shaft, and holding at the other free end said paper pressing roller and said supporting arm in a rotatable manner;

being characterized in that said supporting arm is driven by said driving shaft between a retracted position in which the mechanism is kept away from sheets of paper on a sheet table and a pressing position in which the sheets are pressed by both said paper pressing roller and paper pressing portions at the ends of said paper pressing arm.

5,288,065

METHOD FOR SEPARATING SHEETS OF PAPER STACKED IN REAMS AND DEVICE FOR IMPLEMENTING THIS METHOD

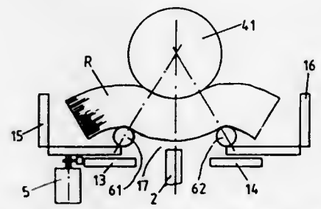
Philippe Wyssmuller, Cheseaux, Switzerland, assignor to De la Rue Giori S.A., Lausanne, Switzerland

Filed Feb. 17, 1993, Ser. No. 19,150

Claims priority, application Switzerland, Mar. 6, 1992, 725/92

Int. Cl.[5] B65H *3/46*

U.S. Cl. 271—105 **9 Claims**



1. A method for separating the sheets of paper stacked vertically in reams of sheets, by applying the ream against a curved surface in order to separate the sheets of this ream, in which method, while the ream is being applied against the said curved surface, pressure forces are exerted against the uppermost sheet of said ream along at least one line of application parallel to the generatrices of the curved surface, said line of application is moved perpendicularly to the generatrices of the curved surface over the entire length of the ream and then beyond each of the edges of the sheets, thereby releasing the sheets, the intensity of said pressure forces remaining sufficient, during sheet movement, to keep the sheets against the curved surface, the speed of said movement being adjusted so that the released sheets successively move away from the remaining curved sheets, thereby re-establishing a plane ream, and this formed ream is jogged.

5,288,066

APPARATUS AND METHOD FOR LOADING SHEETS INTO A RECEPTACLE

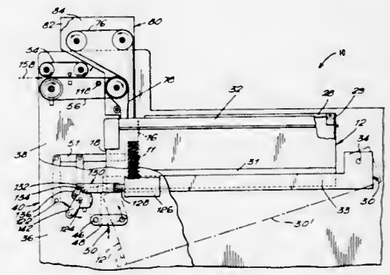
David A. Hain, Monifieth, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 13, 1992, Ser. No. 959,826

Claims priority, application United Kingdom, Apr. 10, 1992, 9207929

Int. Cl.[5] B65H *29/44*

U.S. Cl. 271—181 **17 Claims**



1. An apparatus comprising:

a receptacle for storing sheets;

moving means for moving said receptacle between loading and unloading positions in said apparatus;

said receptacle having a front end and a pusher plate means including a pusher plate for resiliently biasing sheets loaded into said receptacle towards said front end;

feeding means for feeding said sheets in overlapping relationship between said front end and said pusher plate when said receptacle is in said loading position; and

pusher arm means for pushing sheets fed between said front end and said pusher plate towards said pusher plate;

said pusher plate means including a one way clutch coupled to said pusher plate and said receptacle to enable said pusher plate to be moved only in a direction away from said front end by said pusher arm mans when said receptacle is in said loading position.

5,288,067

METHOD AND APPARATUS FOR CONVEYING AN IMBRICATED STREAM OF SHEETS TO A SHEET PROCESSING MACHINE

Ernst Stock, Offenbach am Main, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Feb. 8, 1993, Ser. No. 14,794

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203511

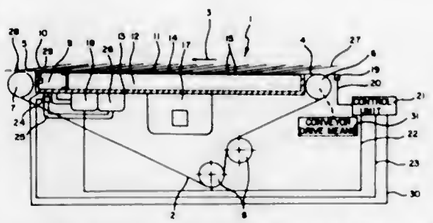
Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—276 **17 Claims**

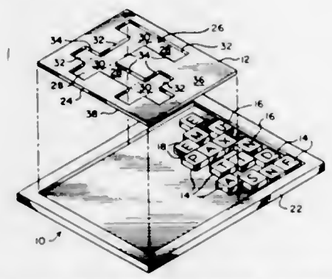
1. An apparatus for conveying an imbricated stream of sheets including a final sheet to an alignment station of a sheet process machine having front and side sheet alignment means comprising a conveyor table having a source end and an alignment end, a belt conveyor disposed for movement around said conveyor table, drive means for moving the belt conveyor and conveying said stream of sheets over the table from the source end to the alignment end, a suction box disposed below the conveyor table and communicating via suction openings in the

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table to the underside of the belt conveyor, the suction box including a first chamber located adjacent the source end and a second chamber disposed adjacent the alignment end, a first source of suction pressure coupled to the first chamber and communicating with the belt conveyor for retaining sheets on the belt conveyor at the source end, a second source of suction pressure coupled to the second chamber and communicating with the belt conveyor for retaining sheets on the belt conveyor at the alignment end, means for sensing the direction of the final sheet in the stream onto said conveyor table, and means responsive to said sensing means for interrupting communication of said second suction pressure source to said second, chamber and for communicating a high pressure source to said second chamber for rapidly reducing the amount of suction pressure on the final sheet when the final sheet is the only sheet remaining on the conveyor table.



5,288,068
WORD GAME SYSTEM
Jules N. Roth, Aurora, Colo., assignor to Way With Words, Inc., Englewood, Colo.
Filed Aug. 4, 1989, Ser. No. 390,401
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—272 **48 Claims**

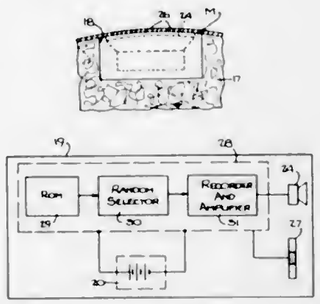


1. An apparatus for a puzzle game system for a player including a board which is used with relatively movable symbol bearing elements, and for which no predetermined solutions and no clues as to the solutions are required in order to play the game in two or more playing positions, wherein the apparatus comprises:

a board having a fixed three dimensional base frame body having a top side and a bottom side, and which is capable of being turned to place either said top side up or said bottom side up into a playing position orientation, which body defines and carries a fixed cut-out template which is comprised of two or more fixed cut-out word files which intersect with one another, with each said fixed word file being oriented at an angle to each other said fixed word file with which it intersects, each said fixed word file having a pair of opposed top and bottom longitudinal edges, each said fixed word file top longitudinal edge and bottom longitudinal edge also defining a different playing position orientation, whereby said fixed base frame is adapted to be moved to orient said fixed cut-out template to two or more playing position orientations; and

a plurality of symbol bearing movable elements which are sized and adapted for use within said fixed cut-out template of intersecting fixed word files; whereby, by selecting some of said symbol bearing movable elements and placing them in oriented positions in said word files for two or more playing position orientations a player can develop an oriented solution to said puzzle for each of two or more different playing position orientations of said fixed template carried by said fixed base frame, all without any required predetermined or defined words or clues as to the solutions.

5,288,069
TALKING FOOTBALL
Susan Matsumoto, 22 Lynn Ct., Hampton Bays, N.Y. 11946
Filed Nov. 20, 1992, Ser. No. 979,249
Int. Cl.[5] A63B *71/00*, *43/00*
U.S. Cl. 273—65 EF **15 Claims**



15. A talking, soft ball for children adapted for playing a game simulating the performance of a professional game, such as football or basketball, said ball comprising:

(a) a body of compressible material having a shape appropriate to the game to be played; and

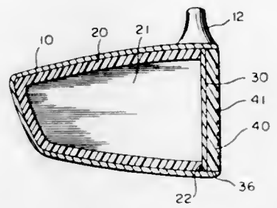
(b) an electronic, self-sufficient module nested within the body at a position adjacent its outer surface, said module having housed therein an impact sensor generating a command signal upon impact of the ball, a miniature loudspeaker at a position in the module adjacent said outer surface, so that the sounds produced thereby can be heard, a battery power supply, and an integrated circuit chip powered by said supply and activated by said command signal, said chip including a solid-state memory in which is digitally stored different messages appropriate to the game, and readout means coupled to the memory which act when the chip is activated to then select at random one of said digitally-stored messages and to decode and amplify the selected message to produce a corresponding audio signal which is applied to said loudspeaker and reproduced thereby.

5,288,070
GOLF CLUB HEAD OF COMPOSITE MATERIAL
Archer C. C. Chen, 35, Yichaong E. Road, Taipin, Taichung County, Taiwan
Filed Mar. 9, 1993, Ser. No. 28,262
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—78 **5 Claims**

1. A golf club head of composite material comprising:

an outer shell shaped to have an open end and made integrally of a metal by casting and provided with a receiving space having an inner wall within said outer shell and with a neck which extends upwardly and obliquely therefrom and having a shaft hole in communication with said receiving space;

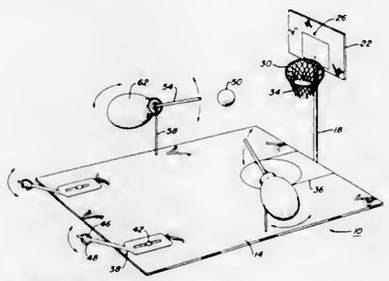
an inner shell of a fiber-reinforced resin material adhered to said inner wall of said receiving space of said outer shell and provided with a cell facing said open end of said outer shell and with an annular shoulder adjacent to said open end of said outer shell;



a base plate arranged on said shoulder so as to seal off said cell of said inner shell and to form a shaping slot located between said base plate and said open end of said outer shell; and

a front wall of a fiber-reinforced resin material embedded in said shaping slot to form a ball-striking face.

5,288,071
GAME APPARATUS
Allen C. Solomon, Rte. 1, Box 74c, Stephenville, Tex. 76401
Filed Dec. 4, 1992, Ser. No. 985,335
Int. Cl.[5] A63F *7/20*
U.S. Cl. 273—85 C **19 Claims**



14. A game apparatus comprising:

a base having a substantially flat surface, a forward end and a rearward end longitudinally spaced apart from each other and two side edges laterally spaced apart from each other;

a vertically oriented plate suspended over the rearward end of the base by a support, wherein a surface of the plate is facing the forward end of the base;

a horizontal hoop attached to the plate surface;

at least one catapult pivotally mounted to the forward end of the base opposite the hoop and having a receptacle for holding a ball in place for projecting the ball along a path towards the hoop;

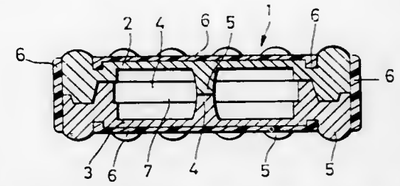
a stand mounted to the base at a stationary point adjacent one of the side edges;

at least one air nozzle pivotally mounted to the stand;

an electrically operated blower having duct means connected between the blower and the nozzle for delivering air to the nozzle from the blower for directing air laterally relative to the path of the ball to deflect the ball; and

a switch means for selectively energizing the blower.

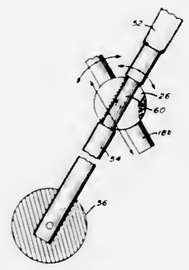
5,288,072
HOCKEY PUCK
Wen-Sen Hsieh, No. 8-50, Lane 41, Been Street, Yan-Pyng Li, Dong-Shyh Chen Tair-Chung Shien, Taiwan
Filed Feb. 24, 1993, Ser. No. 21,792
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—128 R **4 Claims**



1. A hockey puck having a disk like main body which comprises a peripheral side surface substantially being of a cylindrical shape and comprises a top surface and a bottom surface all being flat, a plurality of bosses being formed internally near said peripheral side surface and in an annular arrangement on each of said top and bottom surfaces, each of said bosses having a peak of small area, said puck is characterized in that:

said main body comprises two half main bodies made of a hard material coupled with each other, and comprises a soft enveloping layer covering over said surfaces thereof but revealing only said bosses.

5,288,073
GOLF SWING TRAINING DEVICE
Philippe Noël, 4530 Clark, Suite 103, Montréal, Québec, Canada
Filed Feb. 10, 1993, Ser. No. 16,020
Claims priority, application Canada, Jul. 23, 1992, 2074550
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **11 Claims**



1. A device to assist in the teaching of a golfer's swing comprising:

attachment means adapted to be mounted to a vertical surface;

an elongated rigid rod having one end mounted in a swivel manner to said attachment means and an opposite end;

a shaft of a golf club or simulated club mounted to said rod adjacent said connecting means mounting said shaft to said rod; said connecting means including:

first means receiving therein said rod in a sliding manner whereby said connecting means may be displaced longitudinally along said rod; and

second means receiving therein said shaft in a restrictive manner so that said connecting means is prevented from longitudinal movement along said shaft;

said first and second means being pivotally connected to one another so as to permit relative pivotal movement of said rod and said shaft to one another.

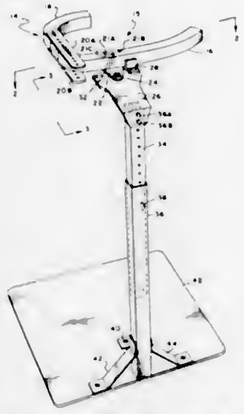
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5,288,074

GOLFER'S HIP TURN RESTRICTOR TRAINING AID

Robert S. Scheurer, P.O. Box 539, Wichita Falls, Tex. 76307

Filed Mar. 26, 1993, Ser. No. 38,142
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—188 R 34 Claims



1. A hip-turn restrictor for aiding a golfer in the development of a wide differential angle between the hip-turn and upper body turn comprising:

a support member adapted for upright service;

a generally concave member for receiving and engaging a golfer's hips coupled to the support member for rotation relative thereto about a pivot axis; and

stop means coupled to one of said support member and said generally concave member for limiting rotation of the generally concave member relative to the support member during the backswing portion of a golf swing and permits the execution of a full golf swing.

5,288,075

IMAGE RECOGNITION GAME APPARATUS

Glen M. Kelley, Gaithersburg, Md., assignor to The Face To Face Game Company, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 499,993, Mar. 27, 1990, abandoned, which is a continuation of Ser. No. 650,564, Feb. 4, 1991, abandoned. This application Jan. 21, 1992, Ser. No. 823,627
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—243 19 Claims

1. An image recognition game apparatus, comprising:

a gameboard having a plurality of areas defining at least one gamepath;

a first gamepiece for a first player and movable along said at least one gamepath;

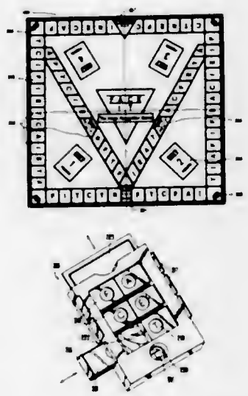
a second gamepiece for a second player and movable along said at least one gamepath;

a first card having a first image thereon;

a second card having thereon a second image, different from said from image;

a first revealing device including a first holder having a first viewing area, and a plurality of first shutters, said first viewing area being positioned such that with said first card in an insert position in said first holder said first image is at least substantially in said first viewing area, each said first shutter being movable between open and closed positions relative to said first viewing area such that when in the open position a corresponding portion of said first image of said first card in the insert position is visible through said first viewing area and when in the closed position the corresponding portion is blocked from viewing by the first and second players; and

a second revealing device including a second holder having a second viewing area and a plurality of second shutters, said second viewing area being positioned such that with said second card in an insert position in said second holder said second image is at least substantially in said second viewing area, each said second shutter being movable between open and closed positions relative to said second viewing area such that when in the open position a corresponding portion of said second image of said second card in the insert position is visible through said second viewing area and when in the closed position the corresponding portion is blocked from viewing by the first and second players;



wherein the movement of said first and second gamepieces along said at least one gamepath determines whether each of said first and second shutters is moved from their closed positions to their open positions to thereby expose to a greater extent at least one of said first and second images for attempted recognition by at least one of the players.

5,288,076

GAME OF PRESIDENTS AND THE ELECTORAL COLLEGE VOTING SYSTEM

Jerry F. Jackson, Murfreesboro, N.C.; Bert N. Adams, Madison, Wis., and Roald H. Sorensen, Raleigh, N.C., assignors to The Presidents Group, Murfreesboro, N.C.

Filed Apr. 28, 1993, Ser. No. 53,433
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—279 2 Claims

1. A method of playing an electoral college game comprising the steps of:

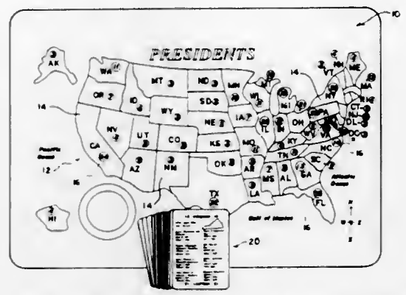
a) dealing the required selected number of state cards from the deck of cards to each individual player of the game with each card identifying a state and the number of electoral college votes of that state;

b) each player seeking to put together the necessary number of contiguous state cards by asking other players for the state needed or by drawing the state card from the deck;

c) accumulating the required number of state cards that represent contiguous states and laying down the group of contiguous state cards from the player's hand;

d) removing the corresponding contiguous states from a state puzzle board including a group of individual state puzzle pieces, and wherein the state puzzle board includes indicia thereon that indicates the number of electoral college votes of each state; and

e) continuing to draw state cards from other players and the deck and to accumulate contiguous state cards until a



player has accumulated the required number of electoral college votes and is declared the winner of the presidency.

5,288,077

METHOD OF PROGRESSIVE JACKPOT TWENTY-ONE

Daniel A. Jones, Las Vegas, Nev., assignor to D&D Gaming Patents, Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,863,553. This application Nov. 27, 1991, Ser. No. 800,631
The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.
Int. Cl.[5] A63F 1/00
U.S. Cl. 273—292 21 Claims

6. A method of including a jackpot component in a live casino table game comprising the steps of:

a) a player wagering at least one first gaming token to participate in the live casino table game;

b) a player wagering at least one second gaming token to participate in the jackpot component;

c) a dealer dealing a hand of playing cards to the player; and

d) if the player's hand comprises a predetermined arrangement of cards, the player wins a predetermined fixed amount.

5,288,078

CONTROL INTERFACE APPARATUS

David G. Capper, 49 Edwards Ave., Sausalito, Calif. 94965, and Stan Axelrod, Foret Knolls, Calif., assignors to David G. Capper, Sausalito, Calif., a part interest

Continuation of Ser. No. 258,157, Oct. 14, 1988, abandoned. This application Jul. 16, 1992, Ser. No. 914,640
Int. Cl.[5] A63F 9/22; G09G 5/00
U.S. Cl. 273—148 B 13 Claims

1. A method by which a person may play a video game, the method comprising:

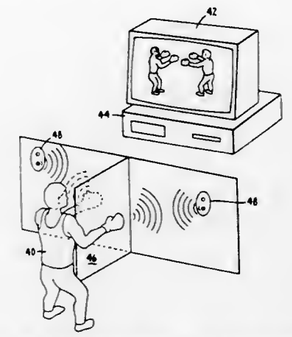
transmitting infrared radiation from a radiation transmitter to create a detection field;

providing a radiation receiver which has a fixed position relative to the radiation transmitter and this position being one where the receiver can detect reflections of the infrared radiation;

moving at least a part of the person to a position within the detection field thereby causing infrared radiation to reflect off of the part of the person within the detection field toward the receiver;

receiving radiation reflected from the part of the person within the detection field by the radiation receiver;

determining the strength of the radiation reflected from the part of the person within the detection field;



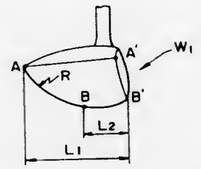
triggering an action in the game when the strength of the reflected radiation is above a predetermined threshold.

5,288,079

GOLF WOOD CLUBHEAD

Yotaka Katayama, Tokyo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan

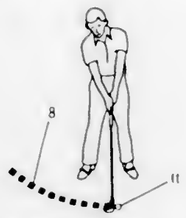
Filed Nov. 27, 1991, Ser. No. 797,824
Claims priority, application Japan, Nov. 29, 1990, 2-325551
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 A 3 Claims



1. A golf clubhead comprising a head body having a face portion which has lower and upper edges and is inclined to define a predetermined loft angle with respect to the ground, a rounded sole portion which has front and rear ends and is connected at the front end thereof to the lower edge of the face portion, thereby defining therebetween a leading edge of the head body, a generally flat top portion which has a front end and a rear end and is connected at the front end thereof to the upper edge of the face portion, the rear end of the top portion being opposed from the face portion and defining a rear end of the head body, and a rounded lower back portion which extends between the rear end of the sole portion and the rear end of the top portion, wherein the width from the leading edge of the head body to the rear end of the sole portion is nearly equal to or less than a half of the width from the leading edge of the head body to the rear end of the top portion, wherein the sole portion is downwardly convex between the front and rear ends thereof and is also of the same radius of curvature as that of the rounded lower back portion, and wherein the top portion is formed so as to extend substantially in parallel to the ground when the clubhead is brought into address on the ground.

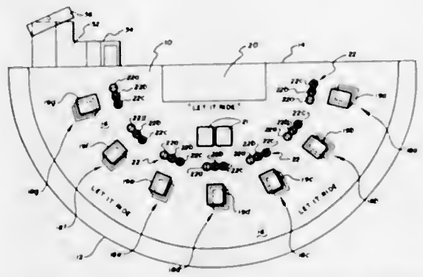
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,080
STROBOSCOPIC PRACTICE GOLF CLUB
David E. Tice, 16441 Lakeview Dr., Leavenworth, Wash. 98826
Filed Apr. 8, 1992, Ser. No. 866,997
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.3 **1 Claim**



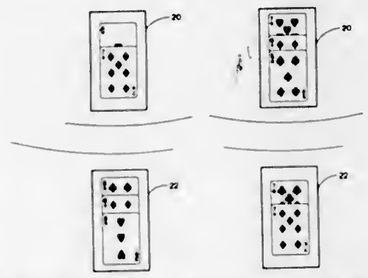
1. A practice golf club comprising
a. an elongated shaft,
b. a head mounted on one end of said shaft,
c. at least two light source(s) mounted in said head and visible by the user which
(1) highlight the face angle of said head, and which
(2) turn on and off rapidly and simultaneously, such that
(3) said light sources produce spaced, non-overlapping stroboscopic images when said club is swung at normal speed,
d. battery and electronic devices located inside said head which include means to
(1) provide current for simultaneous activation of said light sources, and which
(2) control timing of said current so that a stroboscopic effect is achieved with said light sources.

5,288,081
METHOD OF PLAYING A WAGERING GAME
John G. Breeding, St. Louis Park, Minn., assignor to Shuffle Master, Inc., Eden Prairie, Minn.
Filed Feb. 5, 1993, Ser. No. 23,196
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 **13 Claims**



1. A method of playing a wagering card game for a number of player using standard playing cards having a standard rand, said game involving standard poker hand rankings and comprising the steps of:
each player placing a wager to participate in the game;
dealing cards to each player and at least one common card, all of said cards being dealt face down;
giving each player the chance to examine the cards received by that player and to withdraw at least part of said wager based on the rank of said player's cards;
showing said at least one common card, thereby providing a hand for each player, each player's hand comprising said shown at least one common card and the cards each player was dealt; and
resolving each player's remaining wager, which was not withdrawn based on the rank of that player's hand.

5,288,082
METHOD OF PLAYING DOUBLE HAND MARQUEZ
Ruben L. Marquez, 5134 Pattijo Dr., Carmichael, Calif. 95608
Filed Apr. 7, 1993, Ser. No. 44,282
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 **20 Claims**

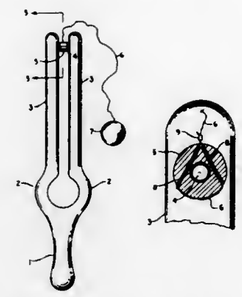


1. A method of playing a card game, comprising the steps of:
(a) providing at least one deck of playing cards;
(b) establishing numerical values for each card in said deck;
(c) dealing a plurality of cards to a player and a bank player, said player and said bank player being dealt the same number of cards;
(d) said player and said bank player each arranging its cards into a first hand and a second hand, said first hand containing one less card than said second hand, each said hand having a numerical sum;
(e) said cards in each said hand being arranged to produce a hand having a numerical sum that is closest to, without going over, twenty one;
(f) said cards in each said hand being further arranged such that said first hand comprises a hand having numerical value close to twenty-one without exceeding twenty one than said second hand;
(g) comparing the numerical sum of said player's first hand with the numerical sum of said bank player's first hand, with the highest numerical sum not exceeding twenty one winning said first hand; and
(h) comparing the numerical sum of said player's second hand with the numerical sum of said bank player's second hand, with the highest numerical sum not exceeding twenty one winning said second hand.

5,288,083
PADDLE SUSPENDED BALL
Herman D. Palmieri, 1532 Ebeh St., Pittsburgh, Pa. 15226
Continuation-in-part of Ser. No. 835,703, Feb. 12, 1992, abandoned. This application Sep. 30, 1992, Ser. No. 954,161
Int. Cl.[5] A63B *67/10*
U.S. Cl. 273—329 **7 Claims**

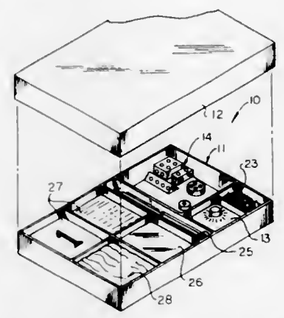
1. In a paddle having a handle at one end from which there diverges two semi-circular portions each forming an arm extension extending in a generally parallel relation with one another so that a ball can pass through the semi-circular portions while pivotally swung and held tautly by a length of string extending from the ball to pass between the parallel arrangement of arm extensions, the improvement comprising: a pair of axle portions each carried by one of said arm portions and projecting toward the other from said arm portions in a confronting relationship with one another; and a pivot supported by the axle portions for rotatory movement, said pivot including means for receiving the cord extending from said ball

to allow tying of the string to itself externally of the pivot, said means for receiving the cord includes a pair of angular extending grooves, one end of said cord being extended through one of said grooves, entrained about the outer portion of a cylindri-



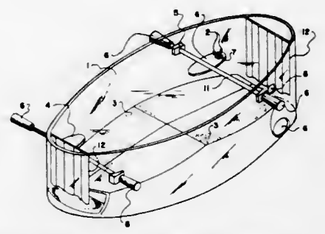
cal pivot and then extended through the other of said grooves to merge from the pivot and allow tying of the end of the cord to a part of the cord immediately adjacent the first entry site by the cord into said grooves.

5,288,084
OBJECT CONTACT INTERPRETATION GAME
Kenneth A. Miller, 102 Jacqueline Ct., Bonaire, Ga. 31005
Filed Nov. 30, 1992, Ser. No. 983,039
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—440 **4 Claims**



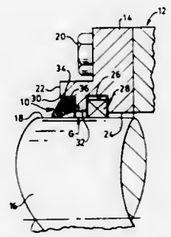
1. A method of playing an object contact interpretation game comprising the steps of,
A. Providing at least three players to include a tactile interpreter, a visual interpreter, and a judge, and
B. Including a plurality of geometric members, and
C. Providing a writing instrument, and a sketch web, and
D. Having the judge construct a geometric configuration from the geometric members, and
E. Providing a bag member, and
F. Having the judge position the geometric configuration within the bag member and directing the tactile interpreter to position both hands of the tactile interpreter within the bag member, and
G. Describing the thusly contacted geometric configuration, and
H. Directing the visual interpreter to employ the writing instrument and draw a sketch upon the sketch web from a description presented by the tactile interpreter of the geometric configuration.

5,288,085
TABLE RACKET BALL GAME DEVICE
Robert G. Young, 2301 30th St., Lubbock, Tex. 79411, assignor to Robert G. Young, Lubbock, Tex.
Filed Apr. 2, 1993, Ser. No. 41,862
Int. Cl.[5] A63F *7/06*
U.S. Cl. 273—85 D **3 Claims**



1. A table racket ball game device comprising;
a housing having top, bottom, end, and two side walls,
two goals within the housing, one near each end thereof, each to be defended by a player,
at least two paddle rods extending through said two side walls and slidable from side to side of said housing, and mounted for rotation on their axes,
each said rod being mounted in front of one of said goals and having a handle mounted exteriorly of said housing,
at least one paddle mounted, at its center, on each rod, each paddle having a serving hole near one end thereof,
a ball, larger than said serving hole, placeable over said hole and being capable of being served by rotating said rod, thereby causing said ball to leave the paddle and bounce off of the top, sides and bottom of said housing toward the goal on the far end of the housing,
said serving hole also being capable of catching and holding the ball before further serving,
whereby a first player attempts to propel the ball into an opponent's goal and the opposing player attempts to catch, hold and then serve the ball back towards the first player's goal.

5,288,086
COMPOSITE ROD WIPER
Mark J. Kiesel, Peoria Heights, Ill., assignor to Caterpillar, Inc., Peoria, Ill.
Filed Oct. 13, 1992, Ser. No. 960,332
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—152 **4 Claims**



1. A composite rod wiper for an end cap of a hydraulic cylinder for wiping the cylindrical exterior surface of an extensible and retractable rod extending through said end cap, comprising:
a wiper ring of a first, hard and wear resistant elastomeric material, said wiper ring being of a generally Vee shaped cross-sectional configuration having a radially inner acute

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wiper lip, an outer leg and an inner leg, each leg extending radially outwardly and axially inwardly in a diverging relation from each other from said wiper lip, and a cavity disposed intermediate said inner and outer legs;

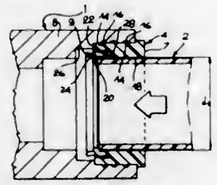
an energizer ring of a second, softer and more resilient elastomeric material, said energizer ring being disposed in said cavity of said wiper ring.

5,288,087

SEAL FOR A COUPLING FOR PROTECTIVE TUBING FOR ELECTRICAL CABLES AND A COUPLING INCLUDING SUCH A SEAL

Piero Bertoldo, Balangero, Italy, assignor to Bertoldo & C. S. r. l., Italy

Filed May 22, 1992, Ser. No. 888,542
Claims priority, application Italy, May 23, 1991, 91 A/000383
Int. Cl.[5] F16J *15/10*; F16L *21/03*
U.S. Cl. 277—207 A **13 Claims**



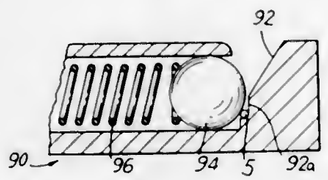
1. A seal for a coupling for protective tubing for electrical cables, intended to establish liquid-tight contact with protective tubing (2, 30) having a nominal diameter to be connected to the coupling (1), the coupling (1) including a seat (6) in a body element (8) of the coupling (1), the seal (4) comprising: an annular body (10) with a generating section which is substantially rectangular, an outer cylindrical surface (12) intended to establish sealing contact with a corresponding wall of the seat (6) in the body element (8) of the coupling (1), an inner cylindrical surface (18) of the seal (4) extending from an open end of the seal (4) and having a diameter (d1) substantially equal to the nominal diameter of the tubing (2, 30) to be connected to the coupling (1), a rib (20) projecting radially inwardly of the seal (4) whose inner diameter (d2) is less than the outer diameter of the tubing (2, 30), and an axially projecting annular lip (24) which has an inner surface with a diameter (d3) intermediate the inner diameter (d2) of the radial rib (20) and the diameter (d1) of the inner cylindrical surface (18) of the seal (4), wherein the diameter (d3) of the inner surface of the lip (24) defines the minimum inner diameter of the lip (24).

5,288,088

WIRE GRIPPER

Luciano Santandrea, and Massimo Lombardi, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Continuation of Ser. No. 592,667, Oct. 4, 1990, Pat. No. 5,137,221. This application Mar. 24, 1992, Ser. No. 856,564
Int. Cl.[5] B23B *31/107*
U.S. Cl. 279—24 **9 Claims**



1. Apparatus for releasably gripping a wire comprising:

first and second members having a point of tangency which forms an access passage when said first and second members are moved apart from one another;

a member for receiving a wire positioned past said access passage; and

means for resiliently urging said first and second members toward one another to close said access passage; wherein:

said wire is retained on said receiving member past said access passage;

said first and second members prevent said wire from leaving said receiving member and entering said access passage; and

said wire is inserted through said access passage to rest on said receiving member in a direction transverse to the longitudinal axis of said wire.

5,288,089

BRAKE MECHANISM FOR TELESCOPING SHOPPING CARTS

A. Dave Bowers, P.O. Box 2606, Sherman, Tex. 75091, and Johnny Roe, Rte. Box 236, Sherman, Tex. 75090

Filed Apr. 6, 1993, Ser. No. 43,347
Int. Cl.[5] B62B *5/04*
U.S. Cl. 280—33.994 **6 Claims**



1. An improved brake mechanism for shopping carts having a basket, a frame supporting the basket, front and rear caster wheels secured at the underside of said frame for conveying the cart about a displacement area and a cart handle secured at the rear of the basket enabling the cart to be conveyed manually, said brake mechanism comprising:

a cam rod supported at the rear of said basket;

a pair of displaceable brake rods each mounted to said frame vertically disposed above one of said rear wheels between a lower end and an upper end and including an upwardly inclined lateral offset at the upper end which at an intermediate location contiguously crosses said cam rod;

a brake pad connected to the lower end of each brake rod for displacement therewith between a first relation engaging a rear wheel to effect braking of the wheel and a second relation displaced from a rear wheel affording a brake release of the wheel; and

an actuator bar connected to the upper end of said brake rods generally parallel to said cart handle and supported for hand displacement toward said cart handle for said brake rods to be raised upwardly by said cam rod and displace said brake pads from said first relation to said second relation.

5,288,090

DOOR DOLLY APPARATUS

Martin D. Bross, P.O. Box 1536, 5510 Little John Way, Pollock Pines, Calif. 95726

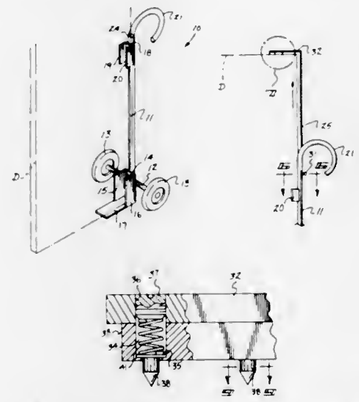
Filed Feb. 16, 1993, Ser. No. 18,150
Int. Cl.[5] B62B *1/06*, *1/26*
U.S. Cl. 280—79.7 **2 Claims**

1. A door dolly apparatus, comprising,

a support post, the support post having a support post first end and a support post second end, with the support post including an axle orthogonally and fixedly mounted to the support post adjacent the support post first end, with the axle rotatably mounting a plurality of wheel members on opposed sides of the support post, and the support post second end having a handle extending from the support post second end, and

a first container structure fixedly mounted to the support post adjacent the first end, and a second container structure mounted to the support post adjacent the second end, with the first container structure and the second container structure arranged to receive a door member therewithin, and

the first container structure includes a first wall fixedly mounted to the support post intermediate the axle, and orthogonally oriented relative to the axle, and a second wall and a third wall fixedly, orthogonally, and coextensively mounted to the first wall, wherein the second wall and the third wall are oriented on opposed sides of the support post in a parallel coextensive relationship relative to one another, and a floor plate fixedly and orthogonally mounted to the lowermost end of the first wall, second wall, and the third wall in an orthogonal relationship, with the floor plate extending beyond the second wall and the third wall to provide for underlying support to a door member, wherein the second container is of a U-shaped configuration having a fourth wall coplanar with the first wall, and a fifth wall coplanar to the second wall, and a



sixth wall coplanar with the third wall, wherein the fifth wall and the sixth wall are arranged in a parallel relationship relative to one another, and

a first cushion liner coextensively mounted to the first wall, the second wall, and the third wall, with a second cushion liner coextensively mounted to the fourth wall, fifth wall, and sixth wall, and

the support post includes a support post opening adjacent the support post second end, and a slide bar slidably and telescopingly received with the support post opening, with the slide bar having a slide bar first wall and a slide bar second wall, with the slide bar first wall and the slide bar second wall parallel relative to one another and oriented substantially parallel to the first wall and the fourth wall, with the slide bar having a slide bar groove coextensive with the first wall, and a lock rod threadedly directed through the support post orthogonally oriented relative to the first wall, wherein the lock rod includes a lock rod first end having a groove engaging head, with the groove engaging head positioned within the support post received within the groove, and the lock rod having a lock rod second end positioned exteriorly of the support post, with the lock rod second end having a handle member to ease manual rotation of the lock rod relative to the support post, and

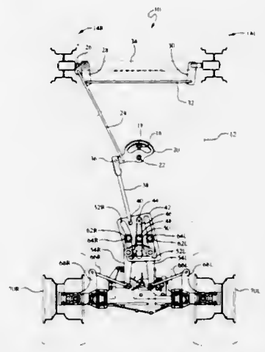
the slide bar includes a slide bar engaging plate orthogonally and fixedly mounted to the slide bar at an uppermost distal end of the slide bar, wherein the slide bar engaging plate is positioned over the floor plate in a parallel relationship, the slide bar including a mounting block fixedly mounted to a bottom surface of the engaging plate, wherein the mounting block is positioned intermediate the slide bar engaging plate and the floor plate, with the mounting block having a plurality of cavities, with each of the cavities including a cavity floor, and the slide bar engaging plate including a plurality of engaging plate bores, wherein each of the engaging plate bores is aligned and in communication with one of the mounting block cavities, and a threaded plug member threadedly received within each of the engaging plate bores, and a spike member, the spike member having a spike member abutment plate positioned upon the cavity floor, and a spring member captured between a respective one of said threaded plug members and a respective abutment plate.

5,288,091

FOUR WHEEL STEERING APPARATUS

Joe Deschamps, Jackson, Tenn., assignor to Noma Outdoor Products, Inc., Jackson, Tenn.

Filed Jan. 29, 1993, Ser. No. 11,302
Int. Cl.[5] B62D *7/15*
U.S. Cl. 280—91 **14 Claims**



1. Apparatus for controlling the steering of the front and rear wheels of a four-wheeled vehicle in response to movement of a steering input member, wherein laterally opposed wheels comprise inside and outside wheels during turning of said vehicle, said apparatus comprising:

interconnecting means, operatively connected to said steering input member and rotatable in response to movement thereof;

front wheel steering means having at least one front link assembly attached to said front wheels and said interconnecting means, said front link assembly being adapted to translate rotational movement of said interconnecting means into pivotal movement of said front wheels; and

rear wheel steering means comprising a pair of rear link assemblies independently connected to each of said rear wheels, each of said rear link assemblies having a steering arm with a first end operatively communicating with said interconnecting means and moveable in response to rotation thereof, and a second end connected to a tie rod assembly, said tie rod assembly being connected to one of said rear wheels wherein lateral movement of said tie rod assembly effects pivotal movement of said rear wheel; wherein

rotation of said interconnecting means is translated into angular movement of said rear wheels by said rear wheel

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steering means such that, during at least a portion of the total angular movement of said rear wheels, the angular movement of said inside wheel is not equivalent to the angular movement of said outside wheel, thereby reducing slippage of said rear wheels relative to the ground.

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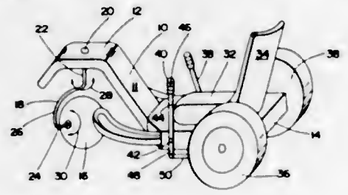
ARM POWERED TRICYCLE AND METHOD OF MOVEMENT

Amy L. Miller, 1115 Church Dr., Windber, Pa. 15963, and Rabon D. Johnson, 572 Jackson Rd., Ligonier, Pa. 15658

Filed Mar. 12, 1993, Ser. No. 30,728

Int. Cl.[5] B62M *1/02, 1/14*

U.S. Cl. 280—244 **8 Claims**



1. A tricycle which comprises:
a. a body frame having forward and rearward portions;
b. a universal wheel assembly depending downward from the forward portion of said frame to support said frame on the ground;
c. an adjustable seat on said rearward portion and foot rests extending forwardly on said frame from said adjustable seat;
d. rear wheels on each lateral side of said rear portion depending downwardly to support said frame off said ground;
e. each wheel having an independent axle rotatable on said frame and fixedly attached to the hubs of said wheels;
f. means for rotating each rear wheel and axle independently of the other and means for holding each axle non-rotatable independently of the other.

5,288,093

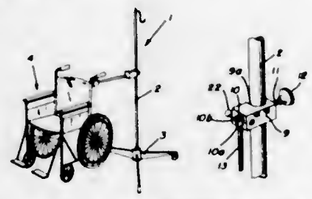
COUPLER FOR A MOBILE INTRAVENOUS SUPPORT STAND AND MOBILE PATIENT TRANSPORT MEANS

Gary D. Gross, 2790 Bentwood Dr., Marietta, Ga. 30062

Continuation-in-part of Ser. No. 788,243, Nov. 5, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,659

Int. Cl.[5] B60D *1/00*; **A47C** *7/62*

U.S. Cl. 280—292 **4 Claims**



1. A coupler for a mobile intravenous support stand and mobile transport means comprising:
a first coupling means disjointably mounted on said support stand,
a second coupling means disjointably mounted on said transport means,
an elongated connecting bar interconnectable with said first and second coupling means,
recessed cavities formed respectively in said first and second coupling means,
enlarged end portions formed on said connecting bar and being removably disposed respectively within said cavities,
one of said coupling means having locking means,
said locking means being elongated and having first and second oppositely disposed ends,
said recessed cavity of said one of said coupling means having an inner surface,
said locking means extending exteriorly of said one of said coupling means at said first end thereof and said second end thereof extending into said respective cavity immediately adjacent a portion of said inner surface,
said second end being selectively disposed in proximity to said enlarged end portion disposed in said respective cavity, and
the distance between said second end and said portion of said inner surface being greater than the distance between said enlarged end portion and said portion of said inner surface thereby preventing removal of said enlarged portion from said respective cavity.

5,288,094

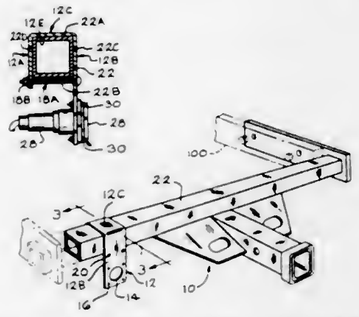
BRACKET FOR SUPPLYING AN ELECTRICAL CONNECTOR

Rex D. Putnam, 239 Sherman St., Bronson, Mich. 49028

Filed Oct. 23, 1992, Ser. No. 966,529

Int. Cl.[5] B60D *1/64*

U.S. Cl. 280—420 **12 Claims**



1. A bracket for mounting an electrical connector to a trailer hitch with a hitch bar with an essentially rectangular cross-section and which extends across the rear of a vehicle which comprises:
(a) a hook shaped plate having a U-shaped section conforming to the cross-section of the hitch bar and having a short extension which extends downward beyond the hitch bar and a long extension spaced from the short extension which extends downward beyond the hitch bar and the short extension; wherein the long extension is provided with an opening for mounting the electrical connector; and
(b) securing means extending between the short extension and the long extension beneath the hitch bar for holding the plate on the hitch bar.

5,288,095

TRAILER HITCH

Jackie J. Swindall, 9441 W. University, Odessa, Tex. 79764

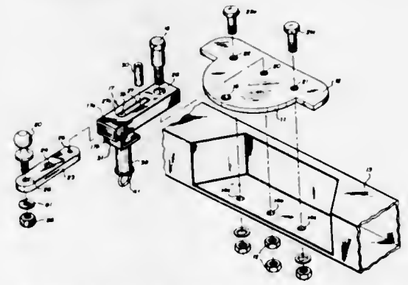
Filed Feb. 3, 1993, Ser. No. 13,081

Int. Cl.[5] B62D *53/00*

U.S. Cl. 280—479.2 **4 Claims**

3. A trailer hitch for attachment to a rear member of a pulling vehicle which swivels and extends and retracts for coupling with a trailer to be towed comprising:
a base plate having a semicircular section, a mounting hole in said base plate being the center of radius for the semicircular periphery of said semicircular section, and

having an aperture intermediate the mounting hole and the semicircular periphery on the radius bisecting said semicircular periphery,
a tubular housing having an upper wall and a lower wall, and having a mounting bore therethrough at one end, a guide slot in the upper wall thereof and an aperture in the lower wall thereof spaced from said mounting bore,
a trunnion extending through said mounting hole and said mounting bore and secured to the rear member of the pulling vehicle which facilitates arcuate movement of said tubular housing along the semicircular periphery,
a telescoping draw bar with a guide member retained within said tubular housing by the guide member extending into said guide slot, said draw bar having an aperture therein for alignment with said aperture in the lower wall of said tubular housing,



a releasable locking pin assembly for latching said tubular housing aligned and said draw bar retracted therein along the radius bisecting the semicircular periphery of said semicircular section.

5,288,096

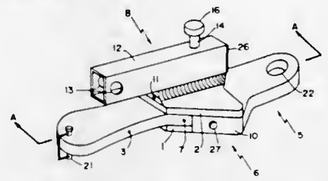
SELF ALIGNING HITCH

Paul W. Degelman, 272 Industrial Dr., Regina, Saskatchewan, Canada S4P 3B1

Filed May 10, 1993, Ser. No. 59,257

Int. Cl.[5] B60D *1/36*

U.S. Cl. 280—508 **14 Claims**



1. A self aligning coupling device for connecting a towed vehicle to a towing vehicle comprising in combination a tongue support means including an integrally joined and spaced upper member, lower member and two side members, and further including inner wedging surfaces on at least said two side members, said tongue support means having two open ends, a planar tongue means freely slidably supported between said integrally joined and spaced members and protruding out of and beyond both of said two ends simultaneously during all operational sliding movements, said planar tongue means including notched wedging surfaces for engaging said inner wedging surfaces, inwardly biased detent means carried by said two side members to engage said notched wedging surfaces for locking said tongue support means and said planar tongue means together when said notched wedging surfaces and said inner wedging surfaces are fully engaged and means for mounting and means for coupling said self aligning coupling to one of said towed or towing vehicles.

5,288,097

PROCESS FOR MANUFACTURING A SKI, AND A SKI MANUFACTURED BY THE PROCESS

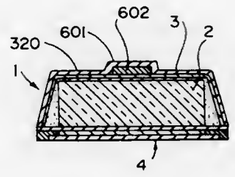
Roger Pascal, Annecy le Vieux, and Gilles Recher, Annecy, both of France, assignors to Salomon S.A., Chavanod, France

Division of Ser. No. 158,925, Feb. 22, 1988, Pat. No. 5,183,618. This application Apr. 30, 1992, Ser. No. 876,031

Claims priority, application France, Feb. 27, 1987, 87 03119; Sep. 23, 1987, 87 13398

Int. Cl.[5] A63C *5/04*

U.S. Cl. 280—610 **26 Claims**



1. A ski comprising:
(a) a core;
(b) a shell comprising at least two layers comprising:
(1) a first outer layer comprising an appearance layer, said first outer layer having a U-shaped configuration; and
(2) a second layer comprising a reinforcement layer, said second layer having a U-shaped configuration, said first outer layer entirely covering said second layer; and
(c) a lower element;
wherein said at least two layers further comprises a projection in at least one surface of said at least two layers to thereby form a visible projection on an outer ski surface, said projection comprising at least one additional element located between said first layer and said second layer, said at least one additional element comprising a reinforcement material;
wherein the appearance layer has a predetermined width and wherein the reinforcement element has a width substantially less than the width of the appearance layer.

5,288,098

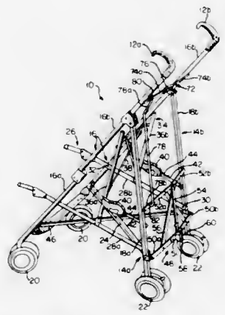
UMBRELLA STROLLER WITH UPPER SAFETY BAR RELEASE MECHANISM

Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238

Filed Dec. 21, 1992, Ser. No. 994,548

Int. Cl.[5] B62B *7/06*

U.S. Cl. 280—642 **3 Claims**



1. A stroller comprising:
a pair of side frames each side frame including a lower portion having a rear supporting leg and an upper portion by which the stroller can be pushed;

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bottom scissor frame means for foldably connecting said side frames together;

lower articulated safety spreader bar means for releasably locking said lower portion of said side frames in a spaced apart, open configuration, said lower articulated safety spreader bar means being connected to said lower portion of said side frames for pivotal movement in a first direction from a locked position to an unlocked position, and vice versa, said lower articulated safety spreader bar means including a pair of lower pivoting spreader bars, each pivotally connected at one end to a respective said side frame and to a central position at opposite ends thereof, and lower releasable locking means for releasably locking said pair of lower pivoting spreader bars in a locked position in which said lower portions of said side frames are maintained in said spaced apart, open configuration;

upper articulated safety spreader bar means for releasably locking said upper portion of said side frames in a spaced apart, open configuration, said upper articulated safety spreader bar means being connected to said upper portion of said side frames for pivotal movement in said first direction from a locked position to an unlocked position, and vice versa, said upper articulated safety spreader bar means including a pair of upper pivoting spreader bars, each pivotally connected at one end to a respective said side frame and to a central position at opposite ends thereof, and upper releasable locking means for releasably locking said pair of upper pivoting spreader bars in a locked position in which said upper portions of said side frames are maintained in said spaced apart, open configuration; and

release bar means connected between one of the upper and one of lower pivoting spreader bars of the upper and lower articulated safety spreader bar means adjacent at least one side frame for automatically moving said upper articulated safety spreader bar means from the locked position to the unlocked position thereof when said lower articulated safety spreader bar means is moved from the locked position to the unlocked position thereof.

5,288,099

TELESCOPIC AND FOLDING FRAME ASSEMBLY FOR A GOLF CART

Ching-Chang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 991,210, Dec. 15, 1992, Pat. No. 5,249,822. This application Feb. 5, 1993, Ser. No. 14,147

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] B62B *1/04*

U.S. Cl. 280—646 **1 Claim**

1. A telescopic and folding frame assembly for a golf cart comprising:

an elongated frame bar having a front end connected to a telescopic drag bar mounting structure and a rear end coupled with a connecting plate, said telescopic drag bar mounting structure comprising:

a drag bar having a handhold on a top end for holding by hand,

a mounting device for securing said drag bar to said elongated frame bar, including two opposite mounting shells connected together by means of a plurality of fastening elements, said two opposite mounting shells each having a unitary pin extending from an inner wall surface at a lower position thereof, a circular guide post extending inwardly from the inner wall surface at a middle position thereof, a notch on a topmost edge, a transversely curved and raised strip on the inner wall surface near the topmost edge, a rectangular hole transversely piercing the inner wall surface, a plurality of radial and convex strips on the inner wall surface, and a first bag cradle on an end of the mounting shells,

a swinging block made of resilient plastic material through a shape molding process and having a key hole extending vertically through the length, a plurality of concave strips radially arranged on a portion of opposing sides of said swinging block, a groove extending through said swinging block and intersecting said strips, a guide post hole horizontally passing through a lower position of said swinging block beneath said concave strips, and a pivot hole horizontally passing through said swinging block above said guide post hole and adjacent said strips,

a positioning member secured to a bottom end of said drag bar by means of a rivet joint and having a conical bottom end inserted in a top of said frame bar and a rectangular flange for preventing said drag bag from moving away from said mounting device, and

an adjusting device including a screw rod inserted through said rectangular hole of said two opposite mounting shells and said pivot hole of said swinging block, and connected with a swivel knob, said adjusting device permitting said mounting device to squeeze said swinging block for retaining said drag bar in position;

a frame member having a second bag cradle cooperating with said first bag cradle for carrying a golf bag with clubs, a bracket to hold two ground supporting wheels by two side beams, a hinge means spaced from a front connecting rod thereof pivotably connected to the connecting

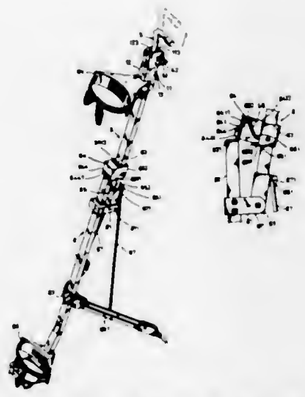


plate on said elongated frame bar, and a pair of links pivotably interconnecting the side beams at mid portions thereof and the connecting plate on said elongated frame bar; and wherein said connecting plate of said elongated frame bar is pivotably connected between two side walls on said hinge means, having two bottom projections pivotably connected to either link; said elongated frame bar has a stop plate connected thereto to stop a locking plate from pivoting forward for permitting said locking plate to be retained in a locking position; said locking plate is pivotably mounted on said elongated frame bar and retained by a spring means, having a back opening on a back wall thereof and a guide slope on a top wall thereof for guiding said front connecting rod of said frame member into or out of a lock hole defined inside said locking plate for permitting said front connecting rod of said frame member to be retained by said locking plate in said locking position or released from said locking plate, the back opening on said locking plate allowing said locking plate to be turned backwards from said locking position to an unlocking position for permitting said front connecting rod to said frame member to be inserted into said lock hole of said locking plate or released therefrom; the folding frame assembly is folded up into a collapsed, nonoperative condition by pivoting said locking plate backwards on said elongated frame bar from said front connecting rod of said frame member for permitting said front connecting rod of said frame member to be disconnected from said locking plate, and then pivoting said connecting plate of said elongated frame bar backwards on said hinge means through an 180° angle for permitting said links and said side beams and said elongated frame bar to be respectively collapsed and closely attached to the frame member; the folding frame assembly is extended out from the collapsed, non-operative condition into an operative condition and locked in place by pivoting said elongated frame bar on said hinge means in the reverse direction and permitting said front connecting rod of said frame member to be guided by said guide slope into said lock hole of said locking plate.

5,288,100

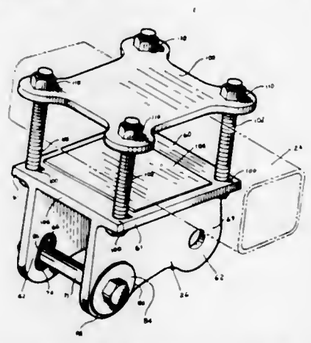
AXLE SUPPORT BRACKET FOR A DRIVE AXLE SUSPENSION

Herbert J. Cherry, Albion, Pa., and Stefan Siarkiewicz, Spring Lake, Mich., assignors to Nai Neway, Inc., Muskegon, Mich.

Continuation-in-part of Ser. No. 669,038, Mar. 14, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,437

Int. Cl.[5] B60G *9/04*

U.S. Cl. 280—688 **16 Claims**



1. A support bracket for mounting a drive axle to a trailing arm in a vehicle suspension, the support bracket comprising:

a pair of spaced arms connected by a web, said arms and an inner surface of the web thereby defining a first channel having a first longitudinal axis, said first channel being adapted to receive the trailing arm therein along the first longitudinal axis;

securing means on an outer surface of said web, said securing means defining a second channel having a second longitudinal axis transverse to the first longitudinal axis for securely receiving the drive axle in the second channel transversely of the first channel;

each of the arms having a first aperture and a second aperture formed therein, the first and second apertures of one of the arms being aligned, respectively, with the first and second apertures of the other of the arms;

each of said first apertures being elongated in an arc with a radius having its origin centered in the second aperture; and

each aperture being adapted to receive a pin for mounting the support bracket to the trailing arm, whereby when the support bracket is so mounted, it is pivotable relative to the trailing arm about a pivot axis extending between centers of the second apertures.

5,288,101

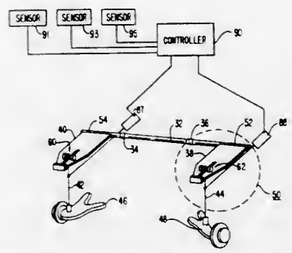
VARIABLE RATE TORSION CONTROL SYSTEM FOR VEHICLE SUSPENSION

Milford M. Minnett, 5 Hidden Valley Rd., Pomona, Calif. 91766

Filed May 28, 1992, Ser. No. 889,275

Int. Cl.[5] B60G *21/04*

U.S. Cl. 280—689 **30 Claims**



1. A stabilizing apparatus for a motor vehicle, comprising:

torsion conveying means for conveying torsional forces from one location on a motor vehicle to another location on a motor vehicle;

transfer means for conveying forces from a wheel suspension component to the torsion conveying means, the transfer means includes at least one elongated torsion arm having a central axis; and

varying means including an actuator, the varying means connecting the wheel suspension component to the transfer means at an engagement location that is selectively variable relative to the torsion conveying means to thereby permit selective regulation of leverage force from the suspension component to the torsion conveying means, the actuator being oriented so that a resulting force applied by the actuator at the engagement location is parallel to the central axis of the torsion arm.

5,288,102

VEHICLE HEIGHT CONTROL SYSTEM

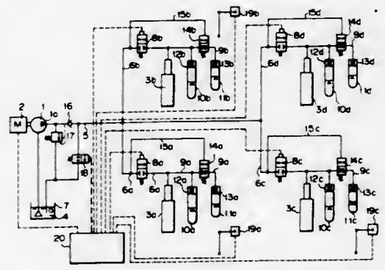
Hiromi Machida; Tetuo Kato, both of Kanagawa, and Jun Koike, Tokyo, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Aug. 28, 1992, Ser. No. 936,832

Claims priority, application Japan, Aug. 30, 1991, 3-245069; Jun. 26, 1992, 4-193451

Int. Cl.[5] B60G *17/04*

U.S. Cl. 280—708 **6 Claims**



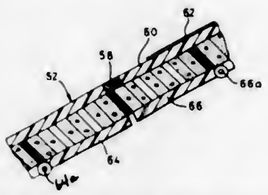
2. A height control system for a vehicle having a plurality of wheels, comprising:

an extendable and retractable hydraulic cylinder associated with each of said wheels for controlling the height of the vehicle by retraction of said cylinder;

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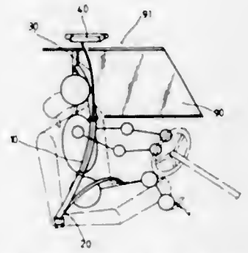
a source of pressurized oil, including a reservoir tank and a pump having an outlet port;
a main line connected to said outlet port of said pump;
each said hydraulic cylinder having a branch line extending therefrom and connected to said main line;
a solenoid-operated charge-discharge valve in each said branch line having a first position blocking said branch line and a second position permitting oil to flow through said branch line in opposite directions;
each said hydraulic cylinder having a plurality of gas springs connected in parallel therewith;
a solenoid-operated oil discharging valve connected between said main line and said reservoir tank and having a first position disconnecting said main line from said reservoir tank and a second position communicating said main line with said reservoir;
a pilot-controlled directional control valve for each said cylinder, having a pilot chamber, and arranged such that, when pressurized oil is charged in said pilot chamber, said control valve takes one of a first position in which said plurality of gas springs are communicated with said hydraulic cylinder and a second position in which at least one of said gas springs is at least substantially operably disconnected from said hydraulic cylinder, and when oil is discharged from said pilot chamber, said control valve takes the other of said first and second positions;
each said pilot chamber having a pilot line having one end connected thereto and another end connected to one of said main line and said branch line at a position between said pump and said charge-discharge valve; and
means for controlling said solenoid-operated valves so that oil is discharged from a said hydraulic cylinder by placing both of said solenoid-operated charge-discharge valve and said solenoid-operated oil discharging valve in said second positions, oil is supplied to a said hydraulic cylinder by placing said solenoid-operated oil discharging valve in said first position and placing said solenoid-operated charge-discharge valve in said second position while said pump is energized, oil is discharged from said pilot chamber by placing said solenoid-operated oil discharging valve in said second position, and pressurized oil is charged in said pilot chamber by placing said solenoid-operated oil discharging valve in said first position while said pump is energized.

5,288,103
AIRBAG COVER AND APPARATUS FOR PRODUCING AN INVISIBLE TEAR SEAM THEREIN
Thomas Parker, Strafford, and Peter Iannazzi, Hampton, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.
Filed Sep. 28, 1992, Ser. No. 951,874
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 R **5 Claims**



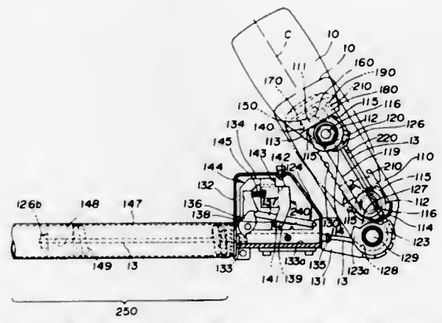
1. In a cover assembly for an air bag unit deployable into the passenger compartment of a motor vehicle through an opening in the cover assembly at a separable hidden tear seam in the cover assembly the improvement comprising:
an outer skin having a smooth outer surface;
means forming a preformed opening in said outer skin; said preformed opening having a thickness corresponding to the thickness of the remainder of the outer skin and having a shape conforming to the outlet from the air bag unit;
and a filler strip within said preformed opening integrally bonded to said outer skin and having an outer surface that joins to the outer surface of the outer skin to form a smooth uninterrupted outer surface extending across all of the outer skin whereby there is no readout of the presence of a air bag unit beneath the outer skin; said filler strip being weaker than the remainder of said outer skin whereby it will immediately separate to form an opening upon deployment of the air bag from the air bag unit.

5,288,104
BUFFERING SAFE DEVICE IN VEHICLES
Johnny Chen, 10F-1, No. 149, Keelung Road, Sec. 1, Taipei, Taiwan
Filed Nov. 9, 1992, Ser. No. 973,971
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **2 Claims**



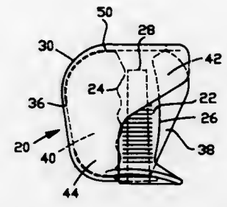
1. A buffering safety device of use in a vehicle, suitable for installing on a seat belt in a vehicle, comprising:
an elongate hollowed box having opposite ends, said box including an openable lid, a folded air bag being included in said box, on both ends of said box there being hook portions for positioning said box on said seat belt;
an inflator connecting pipe being provided at one of said hook portions at one of said ends of said box, one end of said connecting pipe extending into and connecting with said air bag in said box while the other end extends out of said box;
an inflating device being provided in said vehicle, the inflating device being connected to said inflator connecting pipe of said box through a flexible and elastic hose, said inflating device releasing a pre-stored gas when an impact occurs, said gas entering said air bag in said box along said flexible and elastic hose to expand said air bag to establish protection in front of a human body; and wherein
said inflating device is in the shape of a box, the interior thereof being divided into a left and a right space, a movable heavy block being provided in one of said spaces, there being provided in the other said space in sequence an eccentric block, a triggering device, and a gas barrel;
said heavy block being provided with a stop clip on one end thereof abutting against a notch provided on said eccentric block;
said eccentric block being located in position in a twisted state by a central axle and a twisting spring, said triggering device being located in an axial hole, a tip end being aligned with a top end of said barrel, an outlet being provided in said axial hole for connecting with one end of said flexible and elastic hose.

5,288,105
SAFETY BELT SYSTEM WITH EMERGENCY RETRACTION CAPABILITY
Isao Ikegaya, and Naotoshi Nishikawa, both of Shizuoka, Japan, assignors to Fuji Kiko Co., Ltd., Japan
Filed Feb. 19, 1992, Ser. No. 837,390
Claims priority, application Japan, Feb. 27, 1991, 3-009668[U]; Feb. 27, 1991, 3-009669[U]
Int. Cl.[5] B60R *22/46*
U.S. Cl. 280—806 **73 Claims**



1. A vehicle safety belt arrangement having emergency retraction capability, comprising:
slider means associated with a buckle of a safety belt, said slider means being movable in at least one direction for effecting retraction of said safety belt toward a hip point of a vehicle seat;
a guide plate having formed therein a groove for guiding said slider means in said one direction;
sensor means including a base portion and a sensor mass, said sensor mass comprising two pivotable arm portions connected to a weight portion, said sensor mass being pivotable relative to said base portion so as to be movable in at least one direction and responsive to motion of said vehicle;
a bracket connected to said sensor means and said guide plate for establishing a predetermined positional relationship between said sensor means and said guide plate, said bracket further being attachable to a vehicle seat assembly;
drive means including a piston, said drive means being connected to a side of said sensor means opposite said bracket and operable to move said piston in a direction away from said bracket;
a roller mounted on said bracket, said guide plate and said roller being mounted on different surfaces of said bracket respectively;
a cable connecting said piston of said drive means to said slider means via said sensor means, a portion of said cable length engaging said roller for establishing a cable path from said slider means to said sensor means and another portion of said cable length being releasably fixed in position within said sensor means, said cable extending between said two arm portions; and
trigger means associated with said sensor mass of said sensor means for activating said emergency retraction to a triggered position of said arrangement according to motion of said sensor mass indicative of an emergency condition, said trigger means releasing said portion of said cable length fixed within said sensor means to activate said drive means to move said piston away from said sensor means thus forcibly pulling said slider means in said one direction.

5,288,106
SAFETY SKI GRIP
Robert G. Dickie, 15 Valley Trail, Newmarket, Ontario, Canada L3Y 4V8 , and K. Ford Moore, 4 Houdini Way Box 19, R.R. 2, Aurora, Ontario, Canada L4G 3G8
Filed Oct. 23, 1991, Ser. No. 780,981
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—821 **3 Claims**



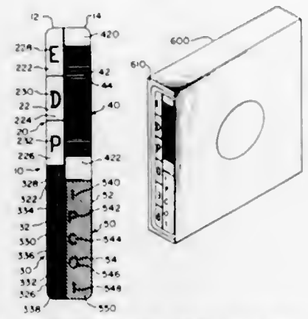
1. A protective device for protecting a user's hand when used in combination with a ski pole, comprising:
a grip suitable for being grasped by a person's hand, said grip having a slot therein located at the lower end thereof and having a recess therein for receiving a ski pole therein;
a protective shell having a first side shield portion, a second side shield portion, a front shield portion, a first attachment portion and a second attachment portion;
wherein said shell partially surrounds said grip with said first side shield portions being positioned over the thumb area of said grip, being the area of said grip where the thumb of the hand holding the grip will be found; with said second side shield portion positioned over the knuckle area of said grip, being the area of said grip where the first and second knuckles of the fingers of the hand holding the grip will be found; and with said front shield portion spanning between said first and second side shield portions;
said first side shield portion having a front portion that is disposed forwardly of said grip when said device is in place and said grip is in proper position in a person's hand, and further having a middle portion for precluding the thumb of the hand from extending substantially outwardly from said grip;
wherein said first and second attachment portions are for attaching said shell to said grip, and also for positioning said first side shield portion, said second side shield portion, and said front shield portion horizontally from said grip when in place, such that said thumb and fingers easily fit between said shell and said grip;
wherein said second attachment portion includes a tab adapted to fit into said slot and further having an opening therein adapted to receive a ski pole therethrough when said ski pole is in said recess;
wherein, when installed in an in-use position on said ski pole, said tab is located in said slot, said ski pole is in place in said grip and extends through said opening in said tab, whereby said tab is securely retained against movement in three dimensions within said slot.

5,288,107
MULTIPLE INFORMATION FIELD LABEL
Mack E. Johnson, Arvada; Daniel A. Benade, Lakewood, and Edward S. Folga, Sedalia, all of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Jan. 27, 1993, Ser. No. 10,220
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **20 Claims**

1. A label having multiple fields, said label comprising:
a base material;
a first vertical column including:
a first cell having at least one alphanumeric character for identifying a first information field;

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a second cell having at least one alphanumeric character for identifying a second information field; a second vertical column including:



a first cell having machine readable characters for identifying a third information field; and

a second cell having at least one alphanumeric character for identifying a fourth information field.

5,288,108

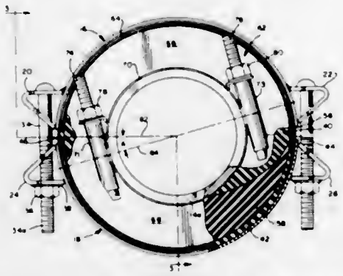
BELL JOINT REPAIR CLAMP

Sam Eskew, Atlanta, Ga., and William L. Kane, Aurora, Ill., assignors to Cascade Waterworks Manufacturing Co., Yorkville, Ill.

Filed Oct. 5, 1992, Ser. No. 956,378

Int. Cl.[5] F16L *55/18, 21/06*

U.S. Cl. 285—15 **15 Claims**



1. A repair clamp for sealing a leak in a bell joint formed of a spigot end of a first pipe and a bell end of a second pipe, said repair clamp comprising:

a cylindrical sleeve disposed about the bell joint;

deformable gasket means disposed intermediate and engaging an inner portion of said cylindrical sleeve and the bell joint; and

first and second sealing means respectively disposed about the first and second pipes and coupled to respective ends of said cylindrical sleeve for enclosing and confining said gasket means whereby said gasket means is maintained in intimate contact with the spigot end of the first pipe and the bell end of the second pipe for sealing a leak in the bell joint, wherein said deformable gasket means includes first and second gaskets extending between said first and second sealing means and disposed about the spigot end of the first pipe and the bell end of the second pipe, and wherein each of said first and second gaskets has a generally trapezoidal cross section and includes facing tapered side portions, and wherein the tapered side portions of said first gasket are positioned in contact with the tapered side portions of said second gasket.

5,288,109

METHOD FOR MECHANICAL JOINING A TUBE OF COMPOSITE MATERIAL AND A METALLIC FITTING AND STRUCTURE THUS OBTAINED

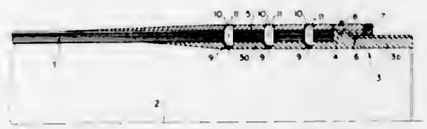
Marcel Auberon, le Haillan; Jean-Jacques Thouraud, Martignas; Charles Sparks, le Vesinet, and Pierre Odru, Fontenay Sous Bois, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris and Institue Francois du Petrole, Rueil-Malmaison, both of France

Filed Apr. 21, 1992, Ser. No. 871,327

Claims priority, application France, Apr. 22, 1991, 91 05340

Int. Cl.[5] F16L *39/00, 47/06;* **B23P** *11/00*

U.S. Cl. 285—149 **14 Claims**



1. A method of joining a tube of composite material and a tubular metal fitting, comprising the steps of:

winding filaments of pre-impregnated fibers to produce a tube of composite with a longitudinal axis, the fibers providing tensile strength for the tube being at a tensile fiber angle relative to the longitudinal axis;

introducing a tubular metal fitting at least partially into an end of a tube section of said composite material tube with inner and outer parts of the fitting being located inside and outside of the tube section, respectively; and

securing the inner and outer parts to the tube section by inserting penetrating elements extending radially through the tube section and the parts of the fitting, the penetrating elements being arranged in uniform circumferential alignments which are equally spaced from each other along the longitudinal axis, each of the circumferential alignments defining an alignment plane perpendicular to the longitudinal axis and conforming to

$$D = \frac{(n-1)i}{K\tan\alpha}$$

where

D=distance between two adjacent alignment planes of the circumferential alignments,

K=an integer equal to 1 or 2,

n=number of circumferential alignments of penetrating elements,

i=an interval between two consecutive penetrating elements in the same circumferential alignment, and

α=the tensile fiber angle.

12. A joined composite material tube and tubular metal fitting formed by the method of claim 1.

5,288,110

FLEXIBLE CONNECTOR ASSEMBLY

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed May 21, 1992, Ser. No. 886,624

Int. Cl.[5] F16L *27/04*

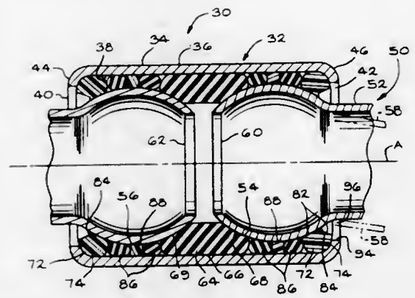
U.S. Cl. 285—166 **15 Claims**

1. A flexible connector comprising:

a collar, said collar comprising a collar wall having a cylindrical inner surface, said collar wall defining two opposed openings, said collar wall having two flanges extending radially inwardly covering a portion of each opposed opening;

a link, said link comprised of a link wall having at least one spherically-shaped outer surface, said link wall defining an open end, said link wall positioned within one of said opposed openings in spaced relationship to said cylindrical inner surface of said collar wall; and

bearing means and gasket means positioned in the space defined by said spaced relationship, said bearing means including at least one first bearing encircling and slideably engaged to said outer surface and in contact with said cylindrical inner surface adjacent one of said open ends defined by said link wall and at least one second bearing encircling and slideably engaged to said outer surface in contact with said cylindrical inner surface adjacent said opening defined by said collar walls; said gasket means including at least one annular gasket sealingly engaged to said cylindrical inner surface and said spherically-shaped outer surface and positioned between said first and second bearings.



5,288,111

90 DEGREE ELBOW FOR PNEUMATIC TRANSPORT PIPES

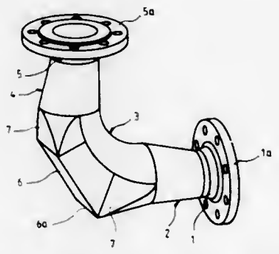
Robert Storf, Weingarten, and Klaus-Peter Lang, Aulendorf, both of Fed. Rep. of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 863,994

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1991, 4112423

Int. Cl.[5] F16L *43/00*

U.S. Cl. 285—179 **7 Claims**



1. A 90° elbow adapted for use in pneumatic transport pipes and defining an inner elbow side and an outer elbow side, comprising:

a first pipe socket for attachment of a pipe;

a first pipe section defining an axis and being connected to said pipe socket, said first pipe section including a flared pipe shell extending at the inner elbow side to provide said first pipe section with a cross-sectional expansion expanding in a direction away from said first pipe socket;

a pipe bend including a quadrantal pipe shell connected to said flared pipe shell at the inner elbow side;

a second pipe section including a cylindrical shell which is connected to said quadrantal pipe shell at said inner elbow side, and a tapered pipe shell connected to said cylindrical shell at the outer elbow side to provide said second pipe section with a cross-sectional contraction contracting in a direction away from said quadrantal pipe shell;

said pipe bend further including a baffle plate arranged between said first pipe section and said second pipe section and connected thereto at the outer elbow side and being oriented relative to said axis of said first pipe section at an angle between 55° and 65°; and

a second pipe socket connected to said second pipe section for attachment of another pipe.

5,288,112

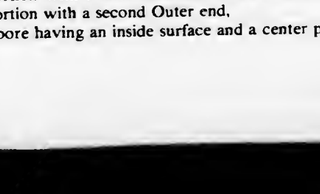
HOSE FITTING

Jeffrey C. Shiery, Swanton, Ohio, assignor to Aeroquip Corporation, Maumee, Ohio

Filed Dec. 17, 1992, Ser. No. 992,167

Int. Cl.[5] F16L *33/207*

U.S. Cl. 285—256 **5 Claims**



5. A hose fitting for use with a hose comprising, in combination, a longitudinally extending body member having a hose end and a coupling end, a coupling nut mounted adjacent said coupling end of said body member, said body member having an exterior surface and an interior opening, said exterior surface defining a gripping surface and a socket member surrounding said body member, said socket member defining an interior surface, said socket member interior surface and said exterior surface of said body member defining a generally cylindrical opening for receiving a hose, said interior surface of said socket member defining a serrated surface comprising a plurality of projections, each of said projections including an inner surface, an outer surface and a tip surface, each of said projections having a depth "x" perpendicularly measured from said interior surface of said socket member to said tip surface, said inner side defining a straight surface having an angle with respect to the vertical of from about 5° to about 15°, said outer surface of said projection and said interior surface of said socket member defining a circular surface having a radius of approximately x.

5,288,113

CONNECTOR FOR CAPILLARY TUBES HAVING A TAPERED INNER BORE

Paul H. Silvis, Boalsburg; Bradley R. Rightnour, Mingoville, and Richard A. Morehead, Pleasant Gap, all of Pa., assignors to Restek Corporation, Bellefonte, Pa.

Filed Dec. 24, 1992, Ser. No. 996,697

Int. Cl.[5] F16L *25/00, 35/00*

U.S. Cl. 285—342 **11 Claims**

1. An easily-assembled, heat-resistant connector for releasably joining end portions of two capillary tubes in end-to-end fashion for use in chromatography without interrupting fluid flow or interfering with chromatographic results, comprising

a cylindrical sleeve having an outside surface and an outside diameter,

a bore in the sleeve extending between a sleeve first end portion with a first outer end and a sleeve second end portion with a second Outer end,

the bore having an inside surface and a center point,

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the first end portion of the bore having a first tapered inside surface which tapers to a smaller diameter near the center point of the bore,

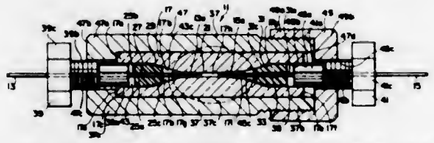
the first tapered inside surface being adapted for being contacted by a tip of an end portion of a first capillary tube to form a press-seal therewith,

the second end portion of the bore having a second tapered inside surface which tapers to a smaller diameter near the center point of the bore,

the second tapered inside surface of the sleeve being adapted for being contacted by a tip of an end portion of a second capillary tube to form a press-seal therewith,

a first ferrule adapted to be mounted on the end portion of the first capillary tube and having a ferrule bore with an inside surface for contacting the outside surface of the first capillary tube to form a seal therewith, and having an outside surface for contacting the inside surface of the sleeve bore to form a seal with the inside surface of the sleeve bore,

a second ferrule adapted to be mounted on the end portion of the second capillary tube and having a ferrule bore with an inside surface for contacting the outside surface of the second capillary tube to form a seal therewith, and having



an outside surface for contacting the inside surface of the sleeve bore to form a seal therewith,

a jacket surrounding and containing the sleeve and having a jacket first end and a jacket second end,

a first adjustment screw means mounted on the jacket first end for pushing against the first ferrule to deform the ferrule into sealing contact with the outside surface of the first capillary tube and with the inside surface of the sleeve bore,

a second adjustment screw means mounted on the jacket second end for pushing against the second ferrule to deform the ferrule into sealing contact with the outside surface of the second capillary tube and with the inside surface of the sleeve bore,

whereby the pressure on the first ferrule may be adjusted individually and independently of the pressure on the second ferrule by rotating the first adjustment screw to form seals between the first ferrule and the first tube and between the first ferrule and the sleeve, and the pressure on the second ferrule may be adjusted individually and independently of the pressure on the first ferrule by rotating the second adjustment screw to form seals between the second ferrule and the second tube and between the second ferrule and the sleeve.

5,288,114

ATTACHMENT METHODOLOGY FOR COMPOSITE CYLINDER ASSEMBLY

Roger M. Crane, Arnold, and Paul Coffin, Chesapeake Beach, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1992, Ser. No. 864,794

Int. Cl.[5] F16L *21/00, 23/00*

U.S. Cl. 285—370 **18 Claims**

1. A hollow cylinder assembly of two axially attached hollow cylinders, comprising:

a first cylinder having an axis and a first flanged axial end which is radially inwardly bent, normal to said axis of said first cylinder, said first flanged axial end having a perimeter and a plurality of first teeth, said first teeth being selectively distributed around said perimeter of said first flanged axial end;

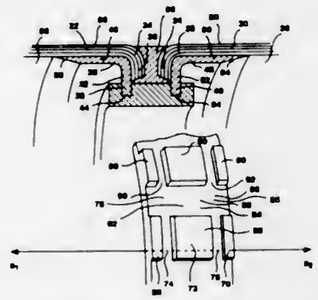
a second cylinder having an axis and a second flanged axial end which is radially inwardly bent, normal to said axis of said second cylinder, said second flanged axial end having a perimeter and a plurality of second teeth, said second teeth being selectively distributed, correspondingly with said first teeth, around said perimeter of said second flanged axial end; and

a fastening ring having an outer circumferential surface, said outer circumferential surface of said fastening ring having uniformly raised and recessed faces defining two parallel circumferential channels of said recessed faces, a plurality of parallel axial channels of said recessed faces, three parallel circumferential rows of said raised and recessed faces alternating, and a plurality of parallel axial rows of said raised and recessed faces alternating;

said circumferential channels being parallel to said circumferential rows, said axial channels being parallel to said axial rows, and said circumferential channels and said circumferential rows perpendicularly intersecting said axial channels and said axial rows;

said three circumferential rows being a first lateral circumferential row, a second lateral circumferential row and an intermediate circumferential row;

said two circumferential channels being a first circumferential channel and a second circumferential channel, said



first circumferential channel being interposed between said first lateral circumferential row and said intermediate row, said second circumferential channel being interposed between said second lateral circumferential row and said intermediate row;

said axial channels being selectively distributed correspondingly with said first teeth of said first flanged axial end and said second teeth of said second flanged axial end;

such that said fastening ring is rotatively aligned and engaged with said first flanged axial end and said second flanged axial end, wherein said first teeth initially mesh with said fastening ring at the locations of said intersection of said first circumferential channel with said axial rows, and upon rotation said first teeth become opposed said recessed faces of said axial rows and interposed between said raised faces of said first lateral circumferential row and said raised faces of said intermediate circumferential row, and upon rotation said first teeth become opposed said recessed faces of said axial rows and interposed between said raised faces of said first lateral circumferential row and said raised faces of said intermediate circumferential row, ad wherein said second teeth initially mesh with said fastening ring at the locations of said intersection of said second circumferential channel with said axial rows, and upon rotation said second teeth become opposed said recessed faces of said axial rows and interposed between said raised faces of said second lateral circumferential row and said raised faces of said intermediate circumferential row.

5,288,115

AUTO-CLOSING VEHICLE DOOR LOCK DEVICE

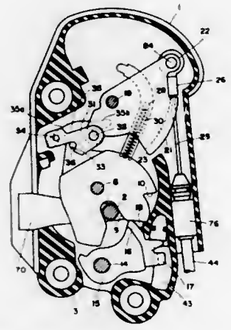
Jiro Inoue; Jiro Mitsui, and Patrik J. Dowling, all of Yamanashi, Japan, assignors to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,396

Claims priority, application Japan, Dec. 6, 1991, 3-348973; Dec. 11, 1991, 3-350925; Dec. 19, 1991, 3-354615; Dec. 26, 1991, 3-357653

Int. Cl.[5] E05C *3/26*

U.S. Cl. 292—201 **13 Claims**



1. A door lock comprising:

a housing having a front face provided with a dent extending along an up-and-down direction, said housing is adapted to be secured to a door,

a striker secured to a vehicle body, and a latch rotating from an open position to a full-lock position through a half-latched position,

a ratchet for preventing the latch from reversely rotating,

a motor being given electricity when said latch rotates to said half-latched position, and a lever rotating by force of the motor and engaging said latch positioned at said half-latched position in order to rotate said latch to said full-latched position,

wherein the lever, the latch and the ratchet are arranged in said dent along an up-and-down direction and respectively rotatably secured to the housing by parallel shafts, and the latch is positioned between said lever and said ratchet.

5,288,116

DOOR HANDLE ADAPTER AND METHOD

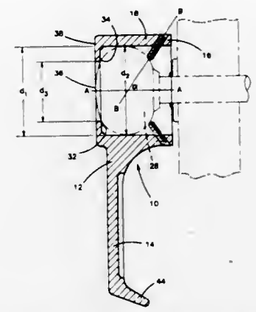
Philip J. Donofrio, Ansonia, Conn., assignor to Leeverall, Inc., Ansonia, Conn.

Filed Apr. 15, 1993, Ser. No. 47,866

Int. Cl.[5] E05B *3/00*

U.S. Cl. 292—336.3 **7 Claims**

1. A device for adapting a round door knob to a lever handle door knob comprising a one piece, metal lever attachment having a lever arm portion and a door knob receiving portion, said door knob receiving portion comprises a substantially cylindrical portion extending along an axis A, said cylindrical portion having a sidewall portion, a top wall portion and a bottom wall portion; a substantially circular recess having a diameter d_1 provided in said bottom wall portion and extending toward said top wall portion and defining therewith an abutment surface for receiving a door knob having a maximum outside diameter d_2 wherein d_2 and d_1 are substantially equal; a plurality of bore means provided in said sidewall and radially disposed about axis A, each of said bore means extending along an axis B which intersects a plane which extends parallel to and passes through axis A; and securing means movable with each



bore means along axis B for securing the door knob within said recess against said abutment surface.

5,288,117

MOTOR VEHICLE BUMPER

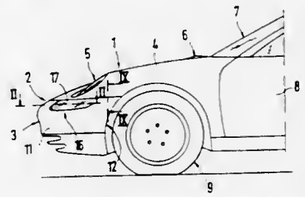
Harald-Werner Vogelgesang, Wurmberg, Fed. Rep. of Germany, assignor to Dr. Ing. H.C.F. Porsche AG, Weissach, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,343

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142582

Int. Cl.[5] B60R *19/08*

U.S. Cl. 293—117 **14 Claims**



1. A bumper for a motor vehicle, comprising a dimensionally stable supporting bracket and an elastic covering forming a front end area of a body of the motor vehicle and on which at least one lamp compartment, formed on an upper edge side of the covering, is constructed for receiving a lamp unit, wherein the at least one lamp compartment rests, at least in sections, on a supporting element having a sword-shaped configuration which in cooperation with the supporting bracket and the body of the motor vehicle, is operatively arranged to carry out relative movements.

5,288,118

BUILDING GUTTER CLEANING IMPLEMENT

William Hartselle, III, 15 Woodland Trail, Newnan, Ga. 30263

Filed Feb. 22, 1993, Ser. No. 20,708

Int. Cl.[5] A47L *25/00*

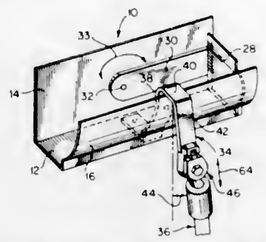
U.S. Cl. 294—19.1 **7 Claims**

1. An implement for cleaning the gutter of a building comprising:

(a) a main channel body positionable longitudinally in the gutter which channel body has integrally formed opposite facing sides, a bottom and open ends,

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(b) a bracket affixed to said channel body whose integral segments extend upward, outward and then downward,
(c) an elongated handle and



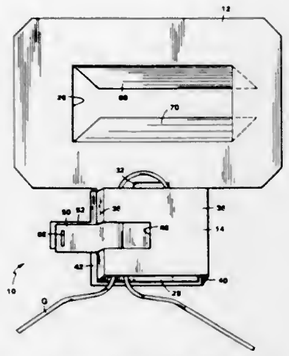
(d) a pivot means connecting said bracket to said elongated handle whereby said elongated handle is movable in a plane parallel to the longitudinal axis of said channel body.

5,288,119
BATTERY REPLACEMENT AND MAGNETIC PICKUP APPARATUS
Thomas C. Crawford, Jr., 1422 Denison Dr., Norman, Okla. 73069, and William T. Jones, Jr., 206 E. 15th, Irving, Tex. 75060
Continuation-in-part of Ser. No. 780,814, Oct. 22, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 964,670
Int. Cl.[5] B23P *19/00*; **H01F** *7/04*
U.S. Cl. 294—65.5 **17 Claims**



13. A hand held pickup apparatus comprising:
an elongated non-magnetic hollow barrel having a tip opening;
an elongated operating shaft adapted to move longitudinally within said barrel between an extended position and a retracted position in response to the action of an operating mechanism attached to the barrel and operable by the hand that holds the apparatus, the operating shaft having a hollow lower end portion;
a magnet disposed substantially entirely within the hollow lower end portion of the operating shaft for movement therewith between an extended position wherein a lower end of the magnet is generally flush with the tip opening of the barrel, and a retracted position wherein the lower end of the magnet is withdrawn into the barrel a magnetically significant distance from the tip opening.

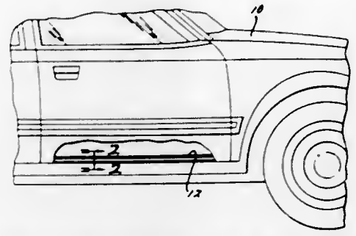
5,288,120
GARMENT CARRIER
E. Kevin Schopfer, 474 Glen Rd., Weston, Mass. 02193
Continuation-in-part of Ser. No. 878,630, May 5, 1992. This application Jul. 29, 1992, Ser. No. 922,030
Int. Cl.[5] A45F *5/10*
U.S. Cl. 294—137 **22 Claims**



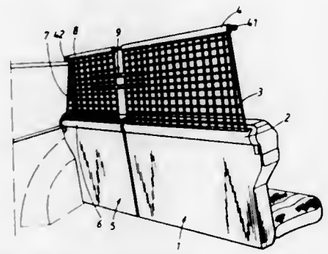
1. A garment carrier formed of a thin piece of material, comprising
a body having an upper portion defining a first orifice extending therethrough, said upper portion forming a handle, and a lower portion having a first vertical edge and defining a second orifice for receiving a free end of one or more garment hanger hooks therethrough,
a first flap having a first vertical edge and a second vertical edge generally parallel thereto, said lower portion and said first flap joined in a hinged connection along respective first vertical edges,
a second flap having a second vertical edge, said first flap and said second flap joined along respective second vertical edges,
said second flap adapted for movement from a first position with an inner face surface spaced from face surfaces of said lower portion and a second position with said inner face surface disposed in opposition to an inner face surface of said lower portion, and
means for securing said second flap in said second position for transport and storage of garments comprising a first securement tab extending from said body and a second securement tab having a surface disposed in opposition to a surface of said first securement tab when said second flap is in said second position, and means for joining said first securement tab and said second securement tab.

5,288,121
AUTOMOBILE TRIM STRIP AND CARPET RETAINING CLIP
Gregory A. Graves, Troy, Mich., assignor to Grant Industries, Inc., Fraser, Mich.
Filed Feb. 25, 1993, Ser. No. 23,065
Int. Cl.[5] B32B *3/02*; **B60N** *3/04*
U.S. Cl. 296—1.1 **17 Claims**

1. An automobile trim component for securing to an upstanding rocker panel weld flange extending longitudinally along the lower edge of a vehicle door opening wherein said weld flange is adapted to be covered by a weatherstrip member extending longitudinally over said weld flange, said weatherstrip member including a carrier having a longitudinally extending downwardly directed recess formed therein, said weld flange being disposed in said recess, said trim component comprising:
an elongated trim strip, said trim strip including a generally transversely extending substantially flat portion adapted to overlie an edge of vehicle floor covering; and
a transversely resilient clip member, said clip member engaging said weatherstrip carrier and said trim strip so as to securely retain said trim strip in a position overlying said weld flange, said weatherstrip carrier and said floor covering.



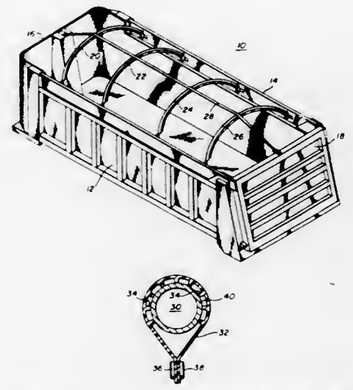
5,288,122
LOAD RESTRAINING DEVICE
Stig Pilhall, Trollhattan, Sweden, assignor to AB Volvo, Sweden
Filed Sep. 28, 1992, Ser. No. 920,361
Claims priority, application Sweden, Feb. 16, 1990, 9000549-7
Int. Cl.[5] B60R *5/04*
U.S. Cl. 296—24.1 **13 Claims**



8. A net assembly for partially screening off a front space from a rear space in a motor vehicle, said motor vehicle including a first backrest part and a second backrest part, said net assembly comprising
a first net having a backrest end connected to said first backrest part and having a withdrawable end remote to said backrest end,
a second net having a backrest end connected to said second backrest part and having a withdrawable end remote to said backrest end,
a telescopically extendable rod having two ends and provided at said withdrawable end of said first net,
fastening means for connecting said ends of said telescopically extendable rod to said vehicle, and
attachment means on said withdrawable end of said second net for connecting said second net to said telescopically extendable rod.

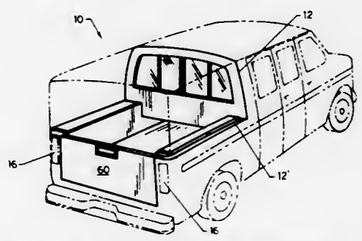
5,288,123
BOW COVER
Jerry Dimmer, Yankton, S. Dak., assignor to Wahpeton Canvas Co., South Dakota, Inc., Yankton, S. Dak.
Filed Jan. 22, 1993, Ser. No. 7,558
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—100 **32 Claims**

1. A protective cover for an elongated support member, to reduce wear of adjacent objects contacting the support member, the cover comprising:
a pliable member substantially equal in length to the elongated support member and having a width sufficient to substantially surround the elongated support member;
first fastening means on one side of the pliable member; and



second fastening means matable to said first fastening means on the other side of the pliable member such that the pliable member can be folded over the elongated support member and attached thereto with the first and second fastening means.

5,288,124
SPECIALTY-TRUCK CONVERSION VAN WITH A LINER INSERT
Jeffrey Ward, 3320 Wall Blvd. 11-102, Gretna, La. 20056
Filed Oct. 13, 1992, Ser. No. 959,787
Int. Cl.[5] B60P *9/00*; **B60R** *27/00*
U.S. Cl. 296—183 **7 Claims**



1. A specialty truck-conversion van comprising:
a main frame;
a front cab-section having at least one seat and a floor;
an upper, rear cut-out portion;
a well-portion below said rear cut-out portion defining an upper rim;
an existing van floor under said well-portion; and
a liner-insert positioned in said well-portion and being supported by said existing van floor said liner-insert having overhand-members overhanging respective, oppositely-disposed portions of said upper rim of said well-portion, whereby said liner-insert forms a bed of a pick-up truck.

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5,288,125
OPEN ROOF CONSTRUCTION FOR A VEHICLE
Johannes N. Huyer, Velserbroek, Netherlands, assignor to Vermeulen-Hallandia Octrooien II B.V., Haarlem, Netherlands
Filed Sep. 22, 1992, Ser. No. 948,665
Claims priority, application Netherlands, Oct. 14, 1991, 9101707
Int. Cl.[5] B60J 7/047
U.S. Cl. 296—216 11 Claims



1. An open roof construction for a vehicle having an opening (2) in the fixed roof (1), comprising an adjustable panel (3) closing the opening (2) in the fixed roof (1) in a closed position and being adapted to be moved first to a backwardly and upwardly inclined position and then backwardly to positions above the fixed roof (1) by means of an adjusting mechanism (4), the adjusting mechanism including a transverse pivot shaft (23) pivotally supporting the panel (3) at a front side, a set-out lever (10) spaced backwardly from the pivot shaft (23), the set-out lever (10) being pivotally connected to the panel (3) on an upper end and being pivotally in driven connection to a driving slide (8) on a lower end, the driving slide (8) being slidably guided within a stationary guide rail (5) extending in longitudinal direction of the vehicle and with which a driving means engages, a catching device (16, 21, 22) positioned backwardly of the set-out lever (10) between the panel (3) and the stationary guide rail (5) for pivoting the panel (3) from and to the closed position, wherein the set-out lever (10) includes forcing guide means (31, 32) for camming pivoting movements of the set-out lever (10) during at least a part of the pivoting movement of the panel (3) when the catching device (16, 21, 22) is not pivoting the panel (3).

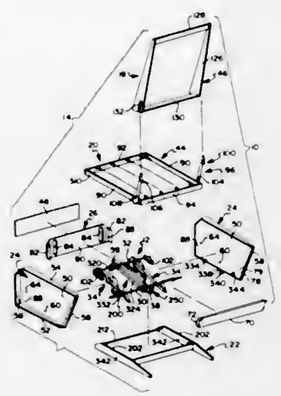
5,288,126
MODULAR RECLINING/TILT CHAIR AND METHOD
Jonathan R. Saul, LaSalle; Karl J. Komorowski, Petersburg, and Larry P. LaPointe, Temperance, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.
Division of Ser. No. 819,784, Jan. 13, 1992, Pat. No. 5,222,286, which is a continuation-in-part of Ser. No. 772,231, Oct. 11, 1991. This application Jul. 16, 1992, Ser. No. 913,826
Int. Cl.[5] A47C 1/02
U.S. Cl. 297—85 21 Claims

13. A frame for a tiltable seating unit having a pair of pantograph linkages supporting a leg rest member for movement between extended and retracted positions, and a tilt linkage mechanism to simultaneously tilt said frame about a stationary base upon which said frame is supported, comprising:

a pair of side frame members having forward and rearward end portions, said side frame members having a plurality of alignment bores formed therein for operably suspending a reclining/tilt actuation mechanism therebetween, said reclining/tilt actuation mechanism having a single reclining/tilt linkage assembly,

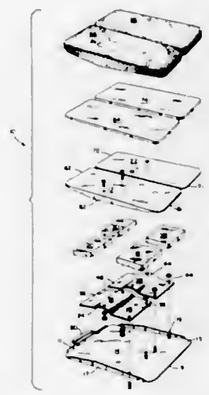
a rear cross-rail member interconnected between said rearward end portions of said side frame members,

a front cross-rail member interconnected between said forward end portions of said side frame members, said front cross-rail member having a pair of elongated apertures through which said pair of pantograph linkages protrude



to travel during movement of said leg rest member between said extended and retracted positions.

5,288,127
ROCKING SEAT
Joseph A. Berg, 5353 Topanga Canyon Blvd., No. 310, Woodland Hills, Calif. 91364, and Thomas E. Violand, Jr., 7660 Alabama Ave., Canoga Park, Calif. 91304
Filed Jan. 19, 1993, Ser. No. 5,351
Int. Cl.[5] A47C 1/02
U.S. Cl. 297—312 25 Claims



1. A seat comprising:

a. a body further comprising,

(i) a base having an upper surface, a lower surface, a front edge, a rear edge having an upward flange, and two side edges each having an upward flange,

(ii) a first arch shaped suspension and a second arch shaped suspension, each having an upper section, a first lower section and a second lower section,

(iii) means for attaching said first lower section of said first arch shaped suspension to said upper surface of said base at a first location adjacent to said front edge of said base, such that first arch shaped suspension is parallel and adjacent to said first side edge of said base,

(iv) means for attaching said first lower section of said second arch shaped suspension to said upper surface of said base at a second location adjacent to said front edge of said base, such that said second arch shaped suspension is parallel and adjacent to said second edge of said base,

(v) a handle member attached to said upward flange of said rear edge of said base for carrying said seat;

b. a first seat cushion assembly further comprising,

(i) a first cushion base having an upper surface, a lower surface and two downward side flanges,

(ii) a first cushioning material attached to said upper surface of said cushion base,

(iii) a first cover protecting said first cushioning material and said first cushion base,

(iv) a first pair of spaced apart resilient spacer members affixed to said lower surface of said first cushion base, including a front spacer member and a rear spacer member,

(v) means for attaching said upper section of said first arch shaped suspension to said lower surface of said first cushion base between said first pair of spacer members, said first arch shaped suspension being resilient, so that said first seat cushion assembly can be move downwardly as said second lower section of said first arch shaped suspension slides backwardly, when a force such as a weight of a person pushes downwardly on said first seat cushion assembly, said first arch shaped suspension further permitting said first seat cushion assembly to rock back and forth;

c. a second seat cushion assembly further comprising,

(i) a second base having an upper surface, a lower surface and two downward side flanges,

(ii) a second cushioning material attached to said upper surface of said second cushion base,

(iii) a second cover protecting said second cushioning material and said second cushion base,

(iv) a second pair of spaced apart resilient spacer members affixed to said lower surface of said second cushion base, including a front spacer member and a rear spacer member,

(v) means for attaching said upper section of said second arch shaped suspension to said lower surface of said second cushion base between said second pair of spacer members, said second shaped arch suspension being resilient, so that said second seat cushion assembly can move downwardly as said second lower section of said second arch shaped suspension slides backwardly, when a force such as a weight of a person pushes downwardly on said second seat cushion assembly, said second arch shaped suspension further permitting said second seat cushion assembly to rock back and forth; and

d. said first seat cushion assembly and said second seat cushion assembly positioned adjacent one another but spaced by a distance to permit each seat cushion assembly to rock back and forth independently of each other;

e. whereby said each seat cushion assembly can independently move downwardly and sliding backwardly and rock back and forth, and the rocking on said base is cushioned by said first and second pairs of spacer members.

5,288,128
RECLINING THEATER SEATING
Kenneth E. Smith, Saco, and David L. Sutter, Kennebunkport, both of Me., assignors to Hussey Seating Company, North Berwick, Me.
Filed Apr. 24, 1992, Ser. No. 873,474
Int. Cl.[5] A47C 1/121
U.S. Cl. 297—332 28 Claims

1. A reclining chair suitable for use in theaters and the like comprising:

a pair of spaced-apart stanchions;

a backrest;

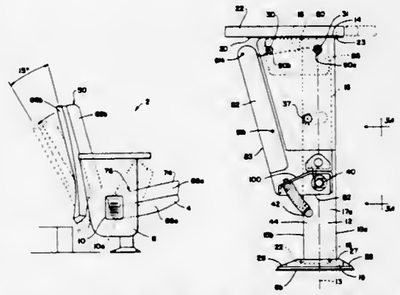
a seat; and,

a pair of spaced-apart mounting wings;

each of said stanchions comprising an inner side facing the other of said stanchions and stop means projecting inwardly from said inner side;

each of said mounting wings comprising a substantially flat element having a substantially inverted, truncated, right triangular shape including an upper edge, a lower edge, a first side edge extending substantially normally between said upper and lower edges, and a second side edge extending at an angle between said upper and lower edges, and first and second stop engagement means;

one of said mounting wings being pivotally attached in spring loaded relation to a corresponding location on said inner side of each of said stanchions, said pivotal attachments being made at corresponding first points on said wings located substantially adjacent the corner formed by



said lower edge and said first side edge and at a preselected distance normally from said first side edge such that each of said wings is correspondingly rotatable relative to its associated stanchion between (i) a first, normal position wherein said stop means engages said first stop engagement means and said first side edge is disposed substantially vertically, and (ii) a second, reclined position wherein said stop means engages said second stop engagement means and said first side edge is tilted at an angle to the vertical;

said backrest being supported between said second side edges of said wings; and,

said seat being supported on an axis extending between corresponding second points on said wings located substantially immediately above said first points and a normal distance from said first side edges substantially equal to said preselected distance.

5,288,129
STRUCTURE OF A VERTICALLY MOVABLE POWERED HEADREST
Akira Nemoto, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan
Filed Apr. 21, 1992, Ser. No. 871,397
Int. Cl.[5] A47C 7/38
U.S. Cl. 297—410 5 Claims

1. A structure of a vertically movable powered headrest in a seat, in which said headrest is movably supported via a pair of stays upon an upper edge of a seat back of said seat, said structure comprising:

a support means for rotatably supporting at least one of said pair of stays while preventing the same against movement in its axial direction, said support means being provided in said upper edge of said seat back;

a connecting means for operatively connecting a lower end portion of said at least one of said stays to a motor disposed within said seat back;

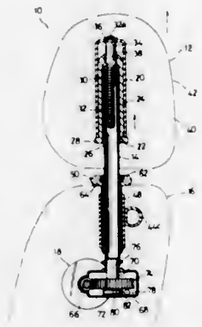
a stay guide means fixed in said headrest, said stay guide means being so arranged as to surround said stays, permit-

VOL 1159 ISS 4 FE 22 1994 UMI

ting rotation and axial movement of said stays therein and therealong;

an internally threaded means which is fixed integrally to one of said at least one of said stays and said stay guide means; and

a lead screw means which is fixed to another of said at least one of said stays and said stay guide means, said lead screw means being in a threaded engagement with said internally threaded means,



wherein operating said motor causes said at least one of said stays to rotate, which in turn causes one of said internally threaded means and lead screw means to rotate simultaneously, so that another of said internally threaded means and lead screw means, which is threadedly engaged with said one of them, is moved vertically relative to the latter, and thus said headrest is raised and lowered with respective to said seat back.

5,288,130

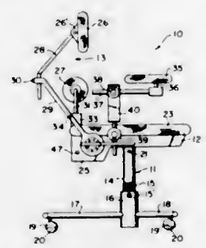
CHAIR FOR THE LOWER BACK

Daniel N. Foster, 3014 S.W. 41st La., Apt. #36D, Gainesville, Fla. 32608

Division of Ser. No. 589,420, Sep. 28, 1990, Pat. No. 5,110,121. This application May 4, 1992, Ser. No. 877,864

Int. Cl.[5] B60N *2/46*

U.S. Cl. 297—411.36 **20 Claims**



1. A chair for general use and adapted for movement of the lower back of a user comprising a base adapted to be disposed firmly on a floor and having a seat disposed spaced above a floor, selectively operable first adjustment means for mounting said seat to said base for positioning thereof, said seat being adjustable in height and rotatable through 360 degrees by selective operation of said first adjustment means, a pair of spaced apart arm rests, selectively operable second adjustment means for mounting each respective said arm rest to said base for adjustment of the height thereof in response to selective operation of said respective second adjustment means, selectively operable third adjustment means for mounting said respective arm rests for forward or rearward horizontal movement thereof in response to selective operation of said respective third adjustment means.

5,288,131

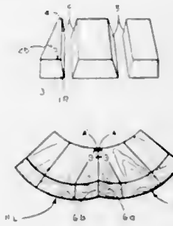
WOODEN CHAIR BOTTOM

Jeremy Singley, P.O. Box 236, East Middlebury, Vt. 05740

Filed Mar. 15, 1991, Ser. No. 670,023

Int. Cl.[5] A47C *7/16*

U.S. Cl. 297—452.24 **2 Claims**



1. A unitary wooden chair bottom comprised of at least one bevel-edged, longitudinally extending strip and at least one tapered longitudinally extending strip, each having top, bottom, front, rear and side edges and each said beveled-edged strip having at least one sloping longitudinal side edge forming an obtuse angle with the top surface of the beveled-edged strip and each said tapered strip being wider at its front edge than at its rear edge, said beveled strip and said tapered strip being glued together along their longitudinal side edges and disposed in symmetric alignment with the front-to-back centerline of the chair bottom and forming therein a divergent side-to-side trough shape.

5,288,132

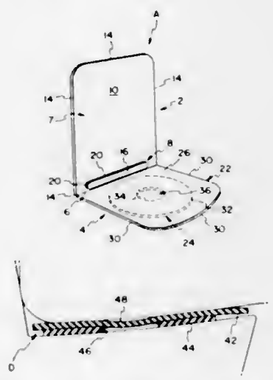
PORTABLE SEAT CUSHION

Jay E. Vaughn, 3004 Furman La., Alexandria, Va. 22306

Filed Jan. 28, 1993, Ser. No. 10,382

Int. Cl.[5] A47C *7/62, 27/15*

U.S. Cl. 297—452.22 **15 Claims**



1. An apparatus for cushioning seats, comprising:

a) a lower seat pad, said lower seat pad being formed from a flexible material such that said lower seat pad conforms generally to the contour of a seat;

b) said lower seat pad includes first and second cushion members, said first cushion member being positioned above said second cushion member;

c) said first cushion member having a top surface, a bottom surface and side surfaces, said top and bottom surfaces extending between said side surfaces;

d) said second cushion member being secured to said bottom surface of said first cushion member, said second cushion member having only a single cavity formed therein, said cavity being substantially circular in shape;

e) at least a portion of said bottom surface of said first cushion member being disposed directly above said cavity, said portion of said bottom surface being removed from said cavity when said lower seat pad is not in use and said portion of said bottom surface being free to recess in said cavity upon an individual sitting on said lower seat pad.

5,288,133

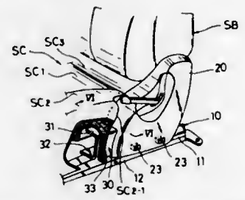
AUTOMOTIVE SEAT WITH SEAT CUSHION TILT DEVICE

Yoshihiro Mizushima, and Akira Aoki, both of Akishima, Japan, assignors to Tachi-S Co. Ltd., Akishima, Japan

Filed Sep. 29, 1992, Ser. No. 953,928

Int. Cl.[5] A47C *7/02*

U.S. Cl. 297—452.38 **8 Claims**



1. An automotive seat with a seat cushion tilt device, comprising:

a seat back;

a seat cushion having, defined at its backward section, a spacing through which a reclining device is mounted between said seat back and seat cushion in order to allow inclination of said seat back relative to said seat cushion by operation of said reclining device;

a slide rail which is connected with said seat cushion via said seat cushion tilt device, wherein a backward portion of said slide rail is situated at said spacing of said seat cushion, exposing partly therethrough together with a part of said seat cushion tilt device, and said seat cushion may be tilted forwardly or backwardly upon said slide rail by operation of said seat cushion tilt device;

a shield cover which is secured on said slide rail so as to cover said spacing; and

an auxiliary cover means provided at said shield cover, said auxiliary cover means serving to cover a clearance which is to be created between said shield cover and said spacing of said seat cushion when said seat cushion is tilted forwardly or backwardly by operation of said seat cushion tilt device, thereby preventing exposure of said part of said slide rail as well as said part of said seat cushion tilt device through said clearance.

5,288,134

SEAT ASSEMBLY WITH INTEGRATED SEAT CUSHION AND SEAT TRACK FRAME

Marc D. Hewko, Canton, and Duane E. Potes, Jr., Adrian, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Mar. 9, 1992, Ser. No. 848,131

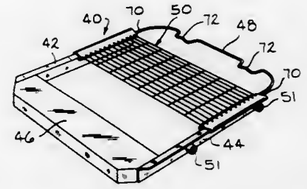
Int. Cl.[5] A47C *7/02*

U.S. Cl. 297—344.1 **11 Claims**

1. A seat assembly for a motor vehicle comprising:

a seat track frame for mounting said seat assembly to a motor vehicle, said seat track frame having laterally spaced fore and aft extending rails;

a generally planar and horizontal U-shaped seat cushion frame open at a rear end thereof formed by laterally spaced side portions extending rearwardly from a front portion, said side portions being laterally unreinforced at the rear end of said seat cushion frame, said seat cushion frame being mounted to said fore and aft extending rails of said seat track frame by connection to said side portions to said seat track frame whereby said side portions are laterally reinforced by said seat track frame at the rear end of said seat cushion frame; and



a flexible suspension extending laterally between said side portions rearwardly of said front portion, said flexible suspension supporting a vertical occupant load and transferring said occupant load to said side portions with both a vertical force component directed downwardly and lateral force components directed inwardly, a portion of the lateral force being transferred to said front portion as a compressive load in said front portion and the remainder of said lateral force being transferred from said side portions to said seat track frame.

5,288,135

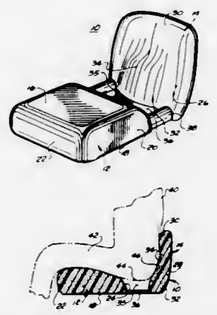
LUMBAR SUPPORTING SEAT CUSHION

Robert A. Forcier, and Marsha M. Forcier, both of 2448 N. Rose St., Mesa, Ariz. 85213

Filed May 18, 1992, Ser. No. 884,163

Int. Cl.[5] A47C *7/02, 27/08*; A47K *11/04*

U.S. Cl. 297—452.21 **8 Claims**



1. A supporting seat cushion, adapted to substantially reduce pressure on a user's buttocks region, comprising:

a generally horizontal thigh supporting cushion having a top surface and an opposing bottom surface;

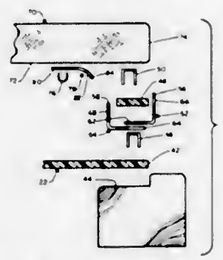
a back supporting cushion having a front surface and an opposing back surface, with said front surface comprising a compression portion extending outwardly therefrom;

coupling members extending between and coupling said thigh supporting cushion and said back supporting cushion; and a seat well defined between said thigh supporting cushion and said back supporting cushion, said seat cushion dimensioned such that a user's thighs are supported on the thigh supporting cushion, a user's lower back area presses against and compresses the compression portion of

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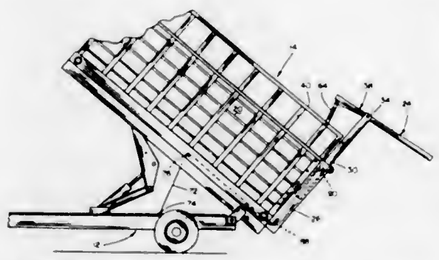
the back supporting cushion, and a user's buttocks region depends downwardly into the seat well.

5,288,136
CHAIR MEMBRANE FASTENER
David A. Webber, Zeeland; Steven F. Goodman, Wyoming, and Jeffrey S. Wing, Holland, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Feb. 14, 1992, Ser. No. 837,369
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440.11 **20 Claims**



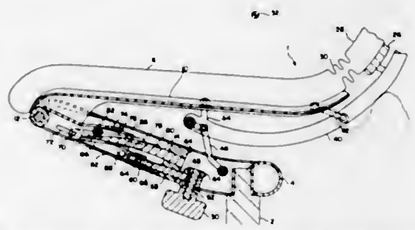
1. In an article of furniture comprising two support members parallel to and spaced from each other, a membrane having two opposed edges extending between and attached at the opposed edges to said support members to support an occupant, the improvement comprising;
each of said opposed edges is covered by an elongated web having one half of a slide fastener attached to one elongated edge of the web and another half of the slide fastener attached to another elongated edge of the web and parallel to said one half of said slide fastener; and
a plurality of first fasteners mounting the web and membrane to at least one of the support members;
the two halves of the slide fasteners are selectively interengagable to conceal the fasteners beneath the edges of the elongated web when the slide fasteners are zipped together.

5,288,137
END GATE
Charles R. Henry, R.R. 2, Solomon, Kans. 67480
Filed Apr. 23, 1992, Ser. No. 872,594
Int. Cl.[5] B60P *1/267*
U.S. Cl. 298—23 DF **3 Claims**



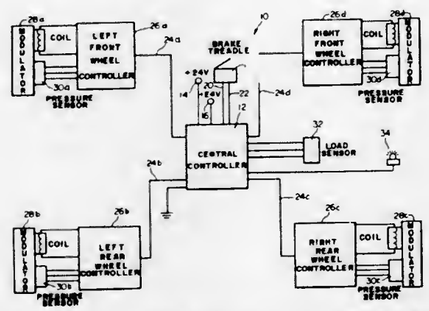
1. In combination,
a wheeled frame means having rearward and forward ends,
a dump body pivotally mounted on said wheeled frame means,
means for pivotally moving said dump body with respect to said wheeled frame means,
said dump body including a floor having rearward and forward ends, and opposite sides, an upstanding front wall, upstanding side wall, and an open rearward end,
an upstanding end gate means normally closing said open rearward end,
said end gate means being pivotally mounted on said dump body and being movable from a normally closed position to an open position whereby the contents of said dump body may pass through the open rearward end of said dump body,
and means for automatically pivotally moving said end gate means to its open position in response to movement of said dump body as the dump body is raised with respect to said wheeled frame means,
said end gate means being also vertically movable with respect to said dump body and wherein said means for automatically pivotally moving said end gate means also automatically vertically moves said end gate means with respect to said dump body when said dump body is raised with respect to said wheeled frame means.

5,288,138
RECLINING CHAIR
Edward L. Stulik, 7500 Hill Rd., Roseville, Calif. 95678, and Bruce Burness, 1260 Yocum St., Pasadena, Calif. 91103
Continuation of Ser. No. 565,791, Aug. 10, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,583
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—301 **4 Claims**



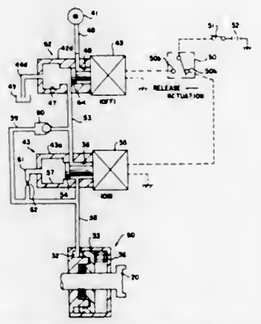
1. A reclining chair including a seat portion, a back portion and a base portion, said reclining chair comprising:
a first means for pivotally coupling a forward portion of said seat portion to said base portion such that said seat portion pivotally moves substantially about a first pivoting axis located adjacent said front portion;
a second means for coupling said seat and back portions together such that when said seat portion is pivoted about said first pivoting axis, said back portion simultaneously pivotally moves about a second pivoting axis located above said seat portion and adjacent said back portion, said second means comprising link means provided between said base and back portions; and
a single spring means coupled to said base and supporting said seat portion for applying spring force to said first means, said spring means comprising a leaf spring, a swing arm coupled to said seat portion and a roller means coupled to said base and provided between and engaging with both said swing arm and said leaf spring;
whereby a reclining chair which is comfortable for both lightweight and heavyweight people is provided.

5,288,139
ELECTROPNEUMATIC BRAKING SYSTEM
William A. Singleton, Grafton, and Robert D. Burns, North Royalton, both of Ohio, assignors to Allied-Signal Inc., Morristown, N.J.
Filed Jun. 5, 1992, Ser. No. 894,386
Int. Cl.[5] B60T *13/68*
U.S. Cl. 303—15 **15 Claims**



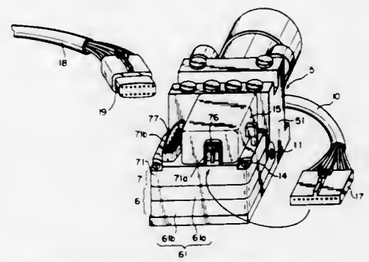
1. Method of controlling braking pressure in a fluid pressure braking system comprising the steps of generating a demanded braking pressure signal representing demanded braking pressure, measuring actual braking pressure and generating an actual braking pressure signal representing actual braking pressure, calculating a control signal for controlling an electrically actuated proportional brake pressure modulator for controlling braking pressure as a function of the magnitude of said control signal applied to the modulator, said control signal being calculated from the demanded braking pressure signal and the actual braking pressure signal, and modifying the magnitude of said control signal by a step increment when the pressure demand signal, the actual braking pressure signal, and the demanded braking pressure signal satisfy predetermined criteria.

5,288,140
PARKING BRAKE CONTROLLER WITH SLOWER ACTUATION IN THE EVENT OF A MALFUNCTION
Kiyoshi Shikata, Neyagawa, Japan, assignor to Daikin Clutch Corporation, Osaka, Japan
Filed Jan. 15, 1992, Ser. No. 820,785
Claims priority, application Japan, Jan. 16, 1991, 3-004734[U]
Int. Cl.[5] B60T *7/00*
U.S. Cl. 303—72 **9 Claims**



1. A hydraulic parking brake controller for controlling a parking brake on an output shaft of a motor vehicle in response to an operation unit, comprising;
a primary control means for actuating said parking brake when said operation unit is operated to be in an actuating position, and for releasing said parking brake when said operation unit is operated to be in a released position; said primary control means, when in said released position, effecting actuation of said parking brake upon malfunction of said operation unit; and
a secondary control means responsive to said primary control means, when said operating unit is in said actuating position, for actuating said parking brake at said first rate and for restricting the actuation of said parking brake upon malfunction of said operating unit to a second rate slower than said first rate.

5,288,141
ANTILOCK BRAKE SYSTEM WITH INTEGRAL HOUSINGS FOR A JUNCTION BLOCK AND ELECTRONIC CONTROL UNIT
Isao Isshiki; Toshihiro Toda; Hitoshi Hashiba, all of Osaka; Takao Nozaki, and Masahide Hio, both of Mie, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie and Sumitomo Electric Industries, Ltd., Osaka, both of Japan
Filed Jun. 18, 1992, Ser. No. 900,465
Claims priority, application Japan, Jun. 20, 1991, 3-177132
Int. Cl.[5] B60T *8/00*
U.S. Cl. 303—113.1 **5 Claims**



1. An antilock brake system comprising:
sensors (**1–4**) for detecting the rotating conditions of respective wheels of an automobile;
a hydraulic unit (**5**) for controlling brake fluid pressures applied to wheel cylinders of said respective wheels via electric control signals;
an electronic circuit unit (**6**) incorporating a circuit for forming said electric control signals for controlling said brake fluid pressures based on detected signals of said sensors so that said wheels are not locked;
and two relays (**8** and **9**), one electrically connected to solenoid valves of said hydraulic unit and said circuit of said electronic unit, another electrically connected to a motor of said hydraulic unit and said circuit of said electronic unit, said two relays disposed inside an engine compartment of the automobile;
said antilock brake system further comprising a junction block (**7**) having a housing (**71** and **72**) connected integrally to a housing (**61**) of said electronic unit, a group of terminals (**78** and **79**) provided in said housing of said junction block for electric connection with said relays, and an electric wiring section (**75**) incorporated in said housing of said junction block for effecting electric connection between said circuit of said electronic unit and said group of terminals.

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5,288,142
HYDRAULIC BRAKE SYSTEM INCLUDING SLIP CONTROL

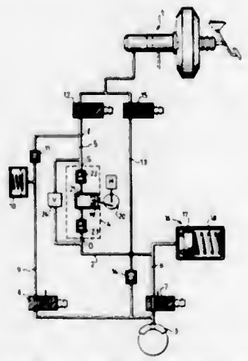
Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 638,927, Jan. 9, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 85,135

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1990, 4000837

Int. Cl.[5] B60T *13/16*

U.S. Cl. 303—113.2 **16 Claims**



1. A hydraulic slip controlling brake system for controlling slip of an automotive vehicle wheel, comprising: a brake pedal; a brake pedal-actuated master cylinder associated with said vehicle wheel; at least one wheel brake cylinder; fluid circuit means placing said wheel brake cylinder in fluid communication with said master cylinder including a brake conduit means and pressure fluid therein whereby upon actuation of said brake pedal, pressure fluid is displaced from said master cylinder, along said brake conduit, and into said wheel brake cylinder to pressurize said wheel brake cylinder; antislip control means activated upon detection of a wheel slip condition to control pressurization of said wheel brake cylinder to control slip of said vehicle wheel, said antislip control means including a hydraulic pump connected in series in said fluid circuit means with said brake conduit means, said pump having a pump chamber and including an intake side communicating said pump chamber with said master cylinder and a pressure side communicating said pump chamber with said wheel brake cylinder, a flow path from said master cylinder to said wheel brake cylinder passing through said pump chamber during normal pressurization of said wheel brake cylinder by said brake pedal actuation without activation of said antislip control means so that said fluid circuit means causes displacement of pressure fluid through said pump chamber during brake pedal actuation which pressure fluid displacement corresponds to substantially the entire fluid pressure displacement from said master cylinder caused by actuation of said brake pedal in pressurizing of said wheel brake cylinder during normal brake operation without activation of said antislip control means.

5,288,143
TRACK ROLLER ASSEMBLY HAVING A REPLACEABLE FLANGE

Delbert D. Dester, Washington, and Daniel L. Mikrut, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 14, 1993, Ser. No. 4,442

Int. Cl.[5] B62D *55/14*

U.S. Cl. 305—56 **15 Claims**

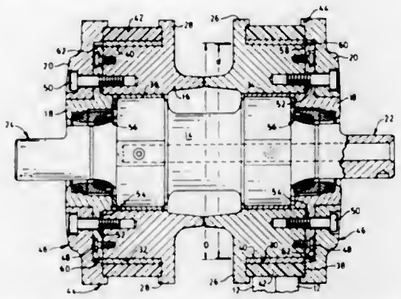
1. A track roller assembly for guiding and supporting an endless track of a self-laying track-type vehicle, comprising:

a shaft adapted to be secured to the vehicle;

a hub member having a flange portion and a support portion, said hub member being rotatably mounted on said shaft;

a seal plate;

a plurality of first fasteners adapted to releasably secure said seal plate to said hub member;



a replaceable tread ring mounted on said support portion of said hub member;

a replaceable flange plate adapted to engage said tread ring and to engage and encircle said seal plate; and

a plurality of second fasteners adapted to releasably secure said flange plate to said hub member.

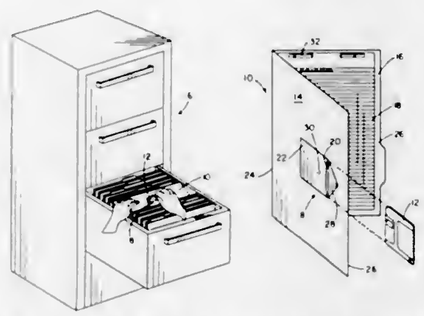
5,288,144
MULTI-MEDIA STORAGE AND PROTECTION SYSTEM

David A. Guderyon, 11479 Orange Grove Blvd., West Palm Beach, Fla. 33411

Filed Dec. 20, 1991, Ser. No. 811,072

Int. Cl.[5] A47B *63/00*

U.S. Cl. 312—183 **14 Claims**



1. A multi-media storage system for storing and protecting paper-based information in association with corresponding computer-based information, said system comprising:

a plurality of file folders, each having first and second panels pivotally joined at bottom edges and opening at opposing top edges;

a plurality of sheets of paper for recording paper-based information stored thereon between said first and second panels;

a computer disk for storing computer-based information corresponding to said paper-based information; and

a holder attached to said first panel of said each of said file folders for removably holding and protecting said disk, whereby a body of computer-based information and an associated body of paper-based information can be physically organized and coordinated together in one location.

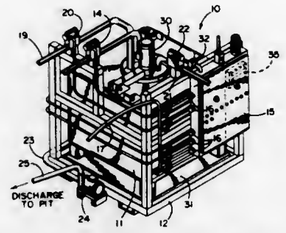
5,288,145
MIXING AND DILUTING APPARATUS

Glenn C. Mackey, Rockford, and William H. Lucas, Dakota, both of Ill., assignors to M.C. Chemical Co., Rockford, Ill.

Filed May 27, 1993, Ser. No. 68,414

Int. Cl.[5] B01F *15/04*

U.S. Cl. 366—152 **2 Claims**



1. Apparatus for mixing a first liquid material with a second at least partially liquid material, said apparatus comprising a mixing tank, first and second electrically controlled valves for regulating the flow of said first and second materials, respectively, to said tank, means for detecting the instantaneous weight of material in said tank and for producing an electrical signal representative of such weight, electrically controlled power operated means for mixing the first and second materials in said tank, controller means adapted to be programmed with the desired weight of each of said materials to be added to said tank, said controller means:

(A) causing one of said valves to open and admit one of said materials to said tank through said one valve;

(B) causing said power-operated means to start;

(C) responding to said signal and causing said one valve to close and causing the other valve to open when the weight of said one material in said tank reaches the desired weight whereby the other of said materials is then admitted into said tank through said other valve;

(D) responding to said signal and causing said other valve to close when the weight of the other material in said tank reaches the desired weight; and

(E) causing said power-operated means to stop a predetermined time after closure of said other valve.

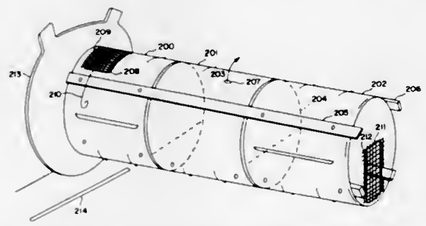
5,288,146
ROCKING, ROLLING COMPOSTERS

Stephen P. Baldwin, 943 Lowell Rd., Concord, Mass. 01742

Continuation-in-part of Ser. No. 498,002, Mar. 23, 1990. This application Sep. 30, 1991, Ser. No. 769,122

Int. Cl.[5] B01F *11/00, 9/02*

U.S. Cl. 366—219 **10 Claims**



1. A composter for composting compostable material comprising in combination a cylindrical tank having a first end and a second end and a cylindrical surface, said tank having an entrance aperture near its first end and an exit aperture near its second end, an external support which maintains said first end in a position which is not lower with respect to said second end, said support having a stationary surface with a curvature less than that of the cylindrical surface of said tank, at least some portion intermediate the ends thereof being horizontal, said cylindrical surface of said tank being in direct rolling contact with said surface of said support throughout rocking translational movement of said tank, and means to hinder axial movement of said tank, said tank being readily responsive to external initiation of rocking, translational movement of said tank with respect to ground on an interface which includes said surface, whereby said tank is caused to roll on said surface in rocking translational movement in response to external initiation, whereby said tank performs said rocking translational movement after said external initiation, causing the materials inside to be tumbled, mixed and aerated to promote composting, wherein said tank has adjustable curtain walls which hang down into the composting materials in such a way to provide an airtight chamber in the middle section along the length of said tank in which because of restricted supply of oxygen, the composting process includes at least one anaerobic interval process, thereby producing combustible gases, said airtight chamber having an aperture for the release of said combustible gases, said tank having an enclosure near the second end thereof, means for conveying said combustible gases from said aperture to said enclosure for the purpose of burning said combustible gases so as to heat the final product to destroy pathogens, and said chamber being isolated from the atmosphere can accept septage and other odiferous materials without exposing the noxious fumes.

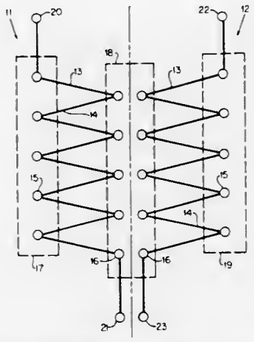
5,288,147
THERMOPILE DIFFERENTIAL THERMAL ANALYSIS SENSOR

John W. Schaefer, Wilmington, Del., and Robert L. Danley, Collingswood, N.J., assignors to TA Instruments, Inc., New Castle, Del.

Filed Nov. 9, 1992, Ser. No. 973,416

Int. Cl.[5] G01N *25/00*

U.S. Cl. 374—10 **43 Claims**



1. A differential thermal analysis sensor comprising:

(a) a substrate having a surface;

(b) a first thermopile attached to said surface of said substrate, said first thermopile having a first set of measuring junctions positioned around a first measuring zone, and a first set of thermoelectric reference junctions, wherein said first set of thermoelectric reference junctions are attached to the substrate, said first thermopile being characterized by a low electrical impedance;

(c) a second thermopile attached to said surface of said substrate, said second thermopile having a second set of measuring junctions positioned around a second measuring zone, and a second set of thermoelectric reference

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junctions, said second thermopile also being characterized by a low electrical impedance; and

(d) a first layer of insulating material electrically insulating said first thermopile from said second thermopile, wherein said second set of thermoelectric reference junctions are attached to said first layer of insulating material, and wherein

the thermoelectric reference junctions of said first thermopile and the thermoelectric reference junctions of said second thermopile are positioned in a common reference zone.

5,288,148

DETERMINING THE TEMPERATURE AT WHICH A SUBSTANCE CHANGES STATE

Bizhan Rahimzadeh, 101a Blackburn Street, Radcliffe, Manchester, M26 9WQ, England

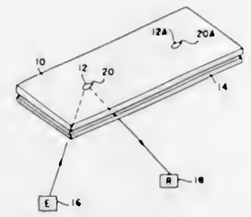
PCT No. PCT/GB90/00751, § 371 Date Nov. 15, 1991, § 102(e) Date Nov. 15, 1991, PCT Pub. No. WO90/14592, PCT Pub. Date Nov. 29, 1990

PCT Filed May 16, 1990, Ser. No. 773,619

Claims priority, application European Pat. Off., May 16, 1989, 89304936

Int. Cl.[5] G01N *25/04*

U.S. Cl. 374—19 **16 Claims**



1. A method of determining the temperature at which a substance changes state comprising impinging a light beam on a region of the back side surface of a substance, directly heating said back side of said substance to at least its melting point with means which does not interfere with said impinging light beam or a reflection thereof from said back side surface, monitoring a change in light reflected from the back side surface of the substance when the substance undergoes at least a partial change in state as a function of the temperature of said surface, and measuring the temperature at which the substance changes state, said change of state being indicated by said change in light reflectance.

12. Monitoring apparatus for determining the temperature at which the surface of a substance changes state comprising:

a substance, whose state is to be determined, disposed in a test region in a position such that a back side surface thereof is substantially downwardly directed;

means for emitting light spaced from said substance and located and positioned to impinge light emitted therefrom against said downwardly directed back side surface of said substance, said light being reflected therefrom;

means for directly heating at least a region of said downwardly directed back side surface of said substance to at least a temperature at which said region changes state, which heating means does not interfere with light emitted or reflected thereof;

means for measuring the temperature at which said back side surface of said substance changes state; and

means, disposed below said downwardly directed back side surface, for determining a change in said reflected light indicative of said change of state.

5,288,149

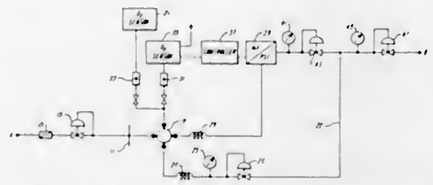
GAS CALORIMETER AND WOBBE INDEX METER

Emilio Meyer, Assago-Milano, Italy, assignor to Panametrics, Inc., Waltham, Mass.

Filed Mar. 12, 1992, Ser. No. 850,044

Int. Cl.[5] G01N *25/22*

U.S. Cl. 374—36 **11 Claims**



1. Apparatus for measuring the combustion characteristics, including the Wobbe Index, of a gaseous fuel comprising:

a pressurized source of said gaseous fuel;

an orifice connected to said pressurized source for passing said gaseous fuel;

a pressure regulator positioned between said source and said orifice to control the pressure of said gaseous fuel supplied to said orifice;

a mixer having first, second and third gas inputs and a gas output, said gaseous fuel from said orifice being supplied as a first input to said mixer;

a first source of air supplied as a second input to said mixer;

a second source of air supplied as a third input to said mixer at a predetermined, substantially constant pressure;

an oxygen sensor for burning the output gas from said mixer, measuring residual oxygen and providing an output signal proportional to said measured residual oxygen;

means for coupling said mixer output to said oxygen sensor;

a controller means responsive to the output signal from said oxygen sensor for controlling the pressure of said first source of air in response thereto to maintain a stoichiometrically balanced air/fuel mixture in said mixer;

the output signal from said oxygen sensor providing a measure of said Wobbe Index of said gaseous fuel.

5,288,150

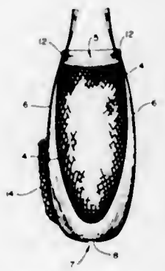
TOTE-BAG WITH SECONDARY ACCESS OPENING FOR REMOVING DEBRIS

Jodi Bearman, 10217 Hunt Club La., Palm Beach Gardens, Fla. 33418

Filed Jan. 11, 1993, Ser. No. 2,911

Int. Cl.[5] B65D *30/06, 30/22*

U.S. Cl. 383—38 **14 Claims**



1. A tote-bag comprising:

an outer lining formed from a flexible, water resistant material capable of containing particulate matter;

an inner lining having at least one compartment formed of mesh-like material completely disposed within and surrounded by said outer lining;

said outer lining having at least a first and second opening, said first opening providing access into said inner lining, said second opening traversing substantially a bottom portion of said outer lining to facilitate removal of particulate matter, said second opening accessing only into said outer lining; and

closure means for closing said second opening.

5,288,151

LINEAR MOTION GUIDE UNIT

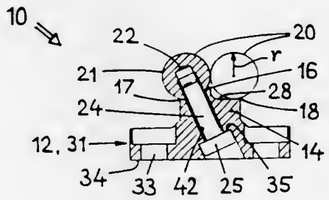
Hugo Isert, Im Leibolzgraben 16, W-6419 Eiterfeld, and Hubert Scheich, An der Drift, W-6419 Eiterfeld-Arzell, both of Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,856

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 9112285

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—49 **20 Claims**



1. Linear motion guide unit (**10**) having supports (**12**) for pairs of parallel clamped shafts (**20**) along which at least one member to be guided or a carriage (**49**) is supported thereon via linear ball bearings (**52**), rollers (**55**) which reach over the par of shafts (**20**) for moving engagement on their outer surfaces (**21**), respectively, wherein the shafts (**20**) are clamped together with positive line locking by bolting onto the support (**12**) and wherein bolts (**24**) extending through the support (**12**) are arranged at an angle relative to each other.

5,288,152

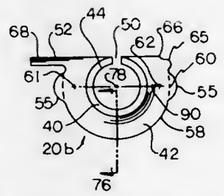
BEARING FOR AN ELECTROPHOTOGRAPHIC APPARATUS

Wilkins L. Davies, P.O. Box 4806, Clearwater, Fla. 34618

Filed Oct. 20, 1992, Ser. No. 980,511

Int. Cl.[5] F16C *17/02*

U.S. Cl. 384—220 **11 Claims**



1. A bearing for use in an electrostatic toner cartridge, said cartridge including a toner roller shaft having a first external radius and a bearing retainer having a second internal radius, said bearing comprising

an inner bearing surface comprising a section of a right circular cylinder drawn about a cylindrical axis and having a third radius slightly larger than said first radius whereby said bearing is adapted to be slid onto said shaft,

a composite outer surface comprising

a generally flat portion parallel to said cylindrical axis and displaced from said cylindrical axis by a first distance greater than said third radius,

a distorted, generally cylindrical portion located at a second distance from said cylindrical axis, said second distance varying between a minimum value slightly less than said second radius at a point distal from said flat portion and a maximum value slightly greater than said second radius at each of two diametrically opposed points lying on a fictitious line passing through said cylindrical axis parallel to said flat portion, and

an ear intermediate between a first end of said flat portion and said distorted cylindrical portion and extending parallel to said fictitious line segment, and

a slot perpendicular to said flat portion extending from said outer to said inner surface of said bearing, said slot having a predetermined width.

5,288,153

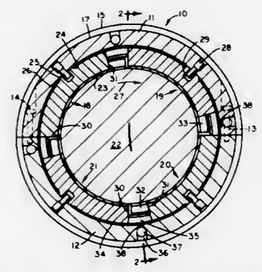
TILTING PAD JOURNAL BEARING USING DIRECTED LUBRICATION

Willis W. Gardner, Waukesha, Wis., assignor to Delaware Capital Formation, Inc., Waukesha, Wis.

Filed Jan. 4, 1993, Ser. No. 191

Int. Cl.[5] F16C *17/03*

U.S. Cl. 384—311 **6 Claims**



1. A tilting pad journal bearing for supporting a horizontally disposed rotatable shaft, comprising:

a supporting ring member for surrounding the shaft in radial spaced relationship,

a plurality of arcuate bearing pads arranged circumferentially spaced apart in the space between said ring member and the shaft, said pads having a curved radially inwardly presented bearing surface for interfacing with the shaft and having an opposite surface presented radially outwardly toward and substantially contiguous to said ring member,

said pads having leading and trailing ends spaced from each other in the direction of shaft rotation, and having opposite axially spaced apart sidewalls, said sidewalls having wall extensions extending along the periphery of the shaft for defining between them an oil receiving well,

said supporting ring member having an oil infeed passageway aligned with each well including a plurality of orifices through which oil is injected into the well directly toward the shaft.

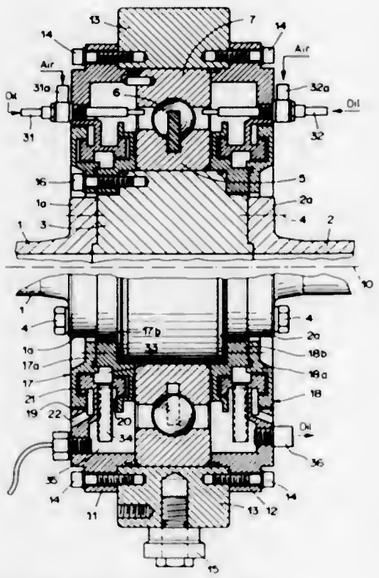
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,154

SPLASH-PROOF BEARING ARRANGEMENT HAVING A HORIZONTAL AXIS

Ralph Jost, Füllinsdorf, Switzerland, assignor to Hobas Engineering AG, Basel, Switzerland

Filed Oct. 20, 1992, Ser. No. 963,858
Claims priority, application Switzerland, Oct. 23, 1991, 3094
Int. Cl.[5] F16C *33/80, 33/66*
U.S. Cl. 384—480 11 Claims



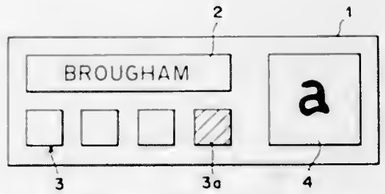
1. A bearing arrangement comprising:
an inner bearing ring;
an outer bearing ring positioned radially spaced from said inner bearing ring;
bearing means positioned between said inner bearing ring and said outer bearing ring and for rotatably connecting said inner and outer bearing rings;
inner first and second covering rings connected to substantially opposite axial sides of said inner bearing ring, both of said inner first and second bearing rings having an outer circumferential edge;
outer first and second covering rings connected to substantially opposite axial sides of said outer bearing ring, said outer first and second bearing ring having an inner circumferential edge, said inner circumferential edge of said outer first covering ring and said outer circumferential edge of said inner first covering ring interacting to from a labyrinth seal with an axial outward opening and an axially inward opening, said inner circumferential edge of said outer second covering ring and said outer circumferential edge of said inner second covering ring interacting to form a labyrinth seal with an axial outward opening and an axially inward opening;
injection nozzle means for injecting compressed gas and lubricant at said bearing means;
discharge means for removing the lubrication after the lubrication has lubricated said bearing means; said injection nozzle means and said discharge means are positioned in said outer first and second covering rings.

5,288,155

PRINTER CAPABLE OF DISPLAYING SELECTED FONT

Makoto Suzuki, Kani, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 524,011, May 16, 1990, abandoned.
This application Mar. 23, 1992, Ser. No. 855,488
Claims priority, application Japan, May 16, 1989, 1-55924[U]; May 16, 1989, 1-55925[U]
Int. Cl.[5] B41J *3/46*
U.S. Cl. 400—83 9 Claims



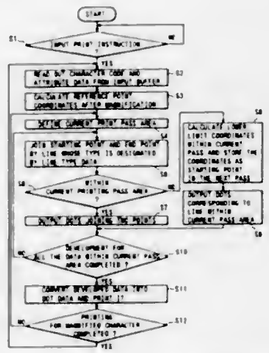
1. A printer physically separated from but electronically connected to an input device, comprising:
font selection means for selecting a desired font out of a plurality of fonts incorporated in the printer;
a first display, mounted on the printer, for displaying the configuration of the fonts selected by said selection means;
a second display, mounted on the printer, for displaying the name of the font selected by said font selection means;
font storage means storing font data regarding the plurality of fonts, each font having its own name and its own configuration of a group of dots representing each character and symbol of a print set, incorporating in the printer;
processing means for reading and processing font data regarding the font selected by said font selection means, wherein said processing means processes the font data to provide the name of the font and the configuration of the font; and
printer means for printing the print set in the desired font.

5,288,156

APPARATUS FOR GENERATING CHARACTER PATTERN FOR SERIAL PRINTER

Takashi Hori, and Nobuhisa Takabayashi, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,487
Claims priority, application Japan, Nov. 15, 1991, 3-327129
Int. Cl.[5] B41J *2/00*
U.S. Cl. 400—121 4 Claims



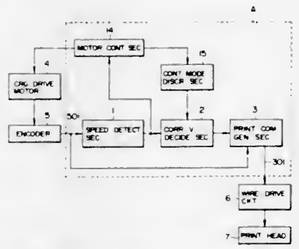
1. An apparatus for generating a character pattern for a serial printer with which a character pattern is printed in a plurality of printing passes, comprising:
input buffer for storing a character code and attribute data which designates a degree of magnification;
contour data storing means for storing contour data representing a contour of a complete character pattern that extends over a plurality of printing passes and corresponding to said character code, said contour data including starting point coordinate data, end point coordinate data, and line type data which designates a type of a line joining coordinates indicated by said starting and end coordinate data with each other;
means for reading said contour data from said contour data storing means according to said character code stored in said input buffer;
operation means for calculating, at the start of each one of said printing passes, starting point coordinate data and end point coordinate data for a portion of said character pattern to be printed in said one of said printing passes, according to said degree of magnification designated by said attribute data stored in said input buffer, said starting point coordinate data and said end point coordinate data, to output coordinates of a starting point and coordinates of an end point, said starting point and end point being in an area of said one of said printing passes;
contour reproducing means for joining said coordinates of the starting point with said coordinates of the end point output from said operation means by a line the type of which is designated by said line type data, to reproduce punctual coordinates of a contour; and
means for converting said punctual coordinates of the contour from said contour reproducing means into bit data to output said converted bit data.

5,288,157

PRINTING CONTROL SYSTEM HAVING MEANS TO CORRECT FLIGHT TIME

Hirotomo Tanaka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00642, § 371 Date Jan. 9, 1992, § 102(e) Date Jan. 9, 1992, PCT Pub. No. WO91/17892, PCT Pub. Date Nov. 28, 1991
PCT Filed May 15, 1991, Ser. No. 778,908
Claims priority, application Japan, May 15, 1990, 2-124774
Int. Cl.[5] B41J *2/30*
U.S. Cl. 400—279 2 Claims



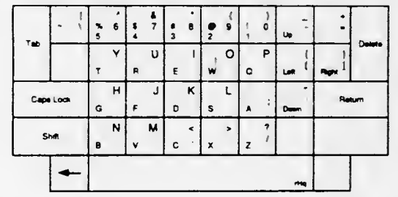
1. A printing control system in which a printing head is moved by a pulling member coupled to a power source, and a printing command signal generated in response to a signal synchronized with motion of the power source is applied to the printing head, which comprises:
means for detecting moving speed of the printing head; and
means for correcting timing at which the printing command signal is generated, in association with both expansion and contraction rate of the pulling member and flight time at the detected moving speed,
said timing correcting means further comprising:
a) means for generating a time correction value including an addition of a first correction time for correcting the generation timing of the printing command signal with respect to the expansion and contraction rate of the pulling member and a second correction time for correcting the generation timing of the printing command signal with respect to the flight time, both according to the detected moving speed, in accordance with a predetermined relationship between the first correction time and the moving speed of the printing head and another predetermined relationship between the second correction time and the moving speed of the printing head;
b) means for controlling time intervals from when the synchronizing signal is received to when the printing command signal is generated, on the basis of the generated time correction value, and
c) means for discriminating whether the printing head is being accelerated or decelerated; and wherein said correction value generating means generates different values as the correction value according to acceleration and deceleration discriminated by said discriminating means, even if the detected moving speed is the same.

5,288,158

ONE HANDED-KEYBOARD

Edgar Matias, 178 Thistledown Blvd., Rexdale, Ontario, Canada M9V 1K1

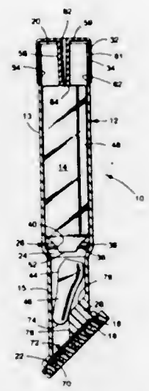
PCT No. PCT/CA90/00274, § 371 Date Feb. 25, 1992, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/03782, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 29, 1990, Ser. No. 836,289
Claims priority, application Canada, Aug. 29, 1989, 609678
Int. Cl.[5] B41J *5/08*
U.S. Cl. 400—472 9 Claims



1. A one-handed typing keyboard adapted to replace a standard two-handed typing keyboard having one half including keys with a predetermined sequence of characters thereon and normally operated by one hand and another half including keys with a predetermined sequence of different characters thereon and normally operated by the other hand of a typist, said one-handed typing keyboard comprising:
a) a plurality of keys representing one half the number of keys in the standard keyboard;
b) means for assigning a pair of different characters to each key of said plurality of keys, one of said characters being normally associated with the sequence of characters on the one half of the standard two-handed keyboard and the other of said characters being associated with the sequence of characters on the other half of the standard two-handed keyboard;
c) means for controlling said means for assigning a pair of characters to each key and for switching between the sequences of different characters on said one-handed keyboard thereby providing one-handed operation of said keyboard which can use touch-typing techniques normally used with the standard two-handed keyboard.

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5,288,159
LIQUID APPLICATOR WITH FRANGIBLE AMPOULE AND SUPPORT
David F. Wirt, Oak Grove Heights, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Dec. 4, 1992, Ser. No. 985,306
Int. Cl.[5] A61M *35/00;* **A45D** *34/03*
U.S. Cl. 401—133 **18 Claims**

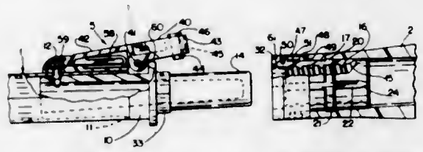


1. An article useful as a dispenser for the application of liquids contained within a rupturable reservoir container to a surface, comprising:
(a) a hollow elongate member dimensioned to contain the rupturable reservoir container and having a first major orifice at one end thereof;
(b) deformable means contained within said hollow elongate member adapted for supporting the reservoir container within the hollow elongate member until the liquid is to be dispensed, and having an aperture through which at least a portion of the reservoir container may be pushed;
(c) means for limiting the axial displacement of the deformable means while at least a portion of the container is pushed through the aperture in the deformable means; and
(d) means associated with said hollow elongate member for rupturing the reservoir container after at least a portion of the container is pushed through the aperture in the deformable means, wherein said means comprises a wedge projecting into the hollow elongate member and located between the deformable means and the first major orifice in the path of the reservoir container after at least a portion of it is pushed through the aperture in the deformable means.

5,288,160
AQUEOUS PERMANENT COLORING COMPOSITION
Jie Li, Bethlebem, and Christine R. Mott, Walnutport, both of Pa., assignors to Binney & Smith, Easton, Pa.
Continuation-in-part of Ser. No. 702,892, May 20, 1991, Pat. No. 5,131,776, which is a continuation-in-part of Ser. No. 553,156, Jul. 13, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 916,388
Int. Cl.[5] B43K *5/00;* **C03C** *17/00;* **C09D** *11/16*
U.S. Cl. 401—198 **36 Claims**

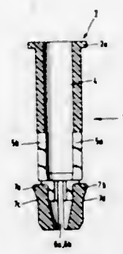
1. An aqueous permanent coloring composition comprising:
(a) from about 0.1% to about 30% by weight of a pigment;
(b) from about 0.1% to about 30% by weight of an alkali soluble acrylic resin;
(c) from about 0.05% to about 7% of a suspending agent, wherein said suspending agent is formed by a molecule having a first end and a second end and having an embedded hydrophilic segment and a hydrophobic segment attached at each of said first end and said second end; and
(d) a volatile pH regulant,
said composition having a pH from about 8 to about 10, and said composition having a viscosity of about six centipoise or less.

5,288,161
QUICK RELEASE LOCK MECHANISMS
Howard Graves, Berlin, and Richard L. Barker, Apple Creek, both of Ohio, assignors to The Wooster Brush Company, Wooster, Ohio
Filed Feb. 14, 1992, Ser. No. 835,319
Int. Cl.[5] B25G *3/18, 3/26, 3/28;* **F16B** *21/12*
U.S. Cl. 403—324 **43 Claims**



1. A lock mechanism for releasably connecting an extension pole to a tool handle comprising adaptor means attached to an end of said extension pole, said tool handle having an internally threaded bore, said adaptor means having a generally smooth cylindrical outer end portion axially slidable into and out of said internally threaded bore, means for providing bearing support for said cylindrical outer end portion when fully inserted into said bore, and latch means for releasably retaining said cylindrical outer end portion with said bore.

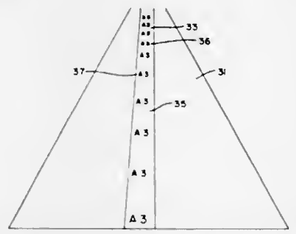
5,288,162
EXPANSION DOWEL
Heinz Bisping, Augsburg; Horst Goetzfried, Igling; Franz Popp, Buchloe; Wolfgang Hausner, Igling, and Helmut Mirsberger, Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein
Filed Jun. 24, 1992, Ser. No. 904,105
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120857
Int. Cl.[5] F16B *13/00*
U.S. Cl. 403—408.1 **4 Claims**



1. Expansion dowel comprising an axially elongated sleeve-like expansion member having an axially extending bore therethrough and an axially elongated expansion element insertable into said expansion member bore, said expansion member and expansion element each have a leading end and a trailing end spaced apart in the axial direction, said expansion member has a pair of axially extending first slots open at the leading end and extending toward the trailing end, and a pair of axially extending second slots closed at the opposite ends thereof spaced apart in the axial direction, said second slots are offset in the circumferential direction by 90° relative to the first slots,

wherein the improvement comprises that said second slots extend axially closer to the trailing end of said expansion member than said first slots, and said second slots partially overlap said first slots in the axial direction, radially displaceable projections are provided within the second slots and said projections extend radially outwardly from the outside surface of the expansion member before the expansion member is inserted into the bore hole, each said projection is pivotably displaceable above a pivot axis extending transversely of the axial direction of said expansion member, the pivot axes are arranged in the end region of the second slots closer to the leading end of the expansion member, and said second slots have a first width extending transversely of the axial direction closer to the trailing end of the expansion member and a second width greater than the first width located closer to the leading end of the expansion member and the second width sections contain said projections and said projections have a width transversely of the axial direction smaller than the width of the second section.

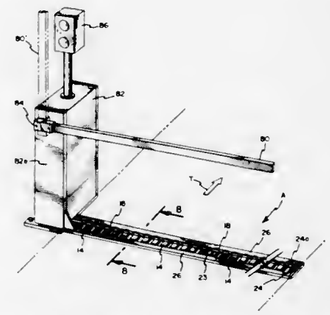
5,288,163
AIRPORT PAVEMENT MARKING SYSTEM FOR SURFACE MOVEMENT GUIDANCE
William D. Munson, 24480 Airport Rd., Philomath, Oreg. 97370
Filed Jun. 20, 1991, Ser. No. 717,911
Int. Cl.[5] E01F *9/00;* **G09F** *21/06*
U.S. Cl. 404—9 **14 Claims**



1. A method for identifying airport taxiways and taxiway intersections, which method comprises the steps of:
marking a first taxiway with a continuous elongated row of first indicia identifying said first taxiway;
marking said first taxiway with a continuous elongated row of second indicia identifying an intersection with a runway or second taxiway beginning at least 100 feet in advance of said intersection, wherein the spacing between said second indicia decreases with proximity to said intersection;
marking said intersection along the route to be traversed between said first taxiway and said runway of second taxiway with said row of second indicia; and
marking said runway or second taxiway with said row of second indicia after said intersection, wherein said spacing between said second indicia increases with proximity to said intersection and said row of second indicia extends substantially along the centerline of said runway or second taxiway.

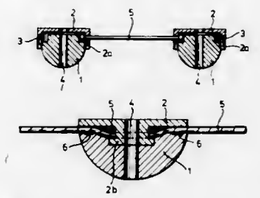
5,288,164
COMBINED VEHICLE BARRIER
Ralph G. Nasatka, 8405 Dangerfield Pl., Clinton, Md. 20735
Filed Jan. 7, 1992, Ser. No. 817,641
Int. Cl.[5] E01F *9/00, 13/00*
U.S. Cl. 404—10 **20 Claims**

1. A vehicle barrier for positioning on a roadway or the like comprising:
a) a support plane adapted for placement across a roadway;
b) a plurality of tread support means formed in series on said support plate with a space between adjacent tread support means;
c) a rod having a row of spikes attached thereto and being rotatably disposed across said support plate so that said spikes are movably received between respective spaced tread support means;
d) tensioning means, coupled to an end of said rod, for maintaining said row of spikes in a first position extending above said spaced tread support means and forming an acute angle with said support plate;
e) said tensioning means including:
i) a spring fixed at one end to an immovable member, the other end of which engages said adjustment means; and



ii) pump means adapted for connection to said end of said rod, for providing a force to assist in raising and lowering said spikes;
f) means for lowering said row of spikes into a second position between said spaced tread support means; and
g) whereby said row of spikes in said first position rotate downwardly into said second position when impacted by a vehicle approaching said barrier from one direction but are maintained in said first position by said tensioning means when impacted by a vehicle approaching from the other direction.

5,288,165
PROVISIONAL ROAD SURFACE
Dirk M. Douwes Dekker, Katwijk, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, Delft, Netherlands
Filed Feb. 12, 1992, Ser. No. 834,668
Claims priority, application Netherlands, Feb. 12, 1991, 9100244
Int. Cl.[5] E01C *5/16, 5/20, 5/22*
U.S. Cl. 404—35 **10 Claims**

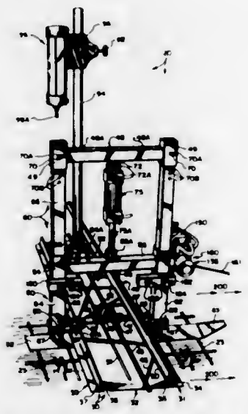


1. A re-usable road surface, comprising: soil-repression bodies to be placed on a provisional ground surface at a mutual distance therebetween; flexible, elongated rod or rope-shaped link elements between the bodies; wherein each body is formed as a plate-shaped part having therebelow a downwardly projecting rigid repression part for penetrating the ground surface; the plate-shaped part being provided with means for connect-

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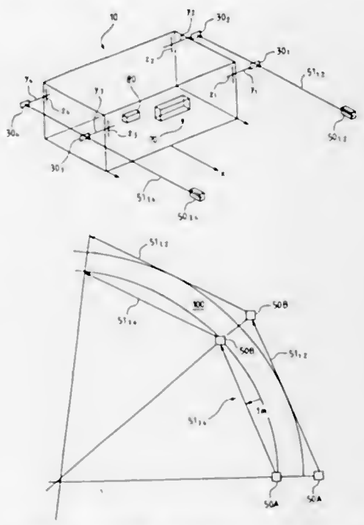
ing the plate-shaped part to the flexible link elements; whereby the bodies are arranged in substantially parallel, mutually staggered rows and each body is connected with adjacent bodies in other rows by said link elements.

5,288,166
LASER OPERATED AUTOMATIC GRADE CONTROL SYSTEM FOR CONCRETE FINISHING
J. Dewayne Allen, Paragould, Ark.; Ralph Luebke, Memphis, Tenn., and Thomas J. Leyes, Oakville, Canada, assignors to Allen Engineering Corporation, Paragould, Ark.
Filed Jun. 26, 1992, Ser. No. 903,936
Int. Cl.[5] E01C *19/00*
U.S. Cl. 404—84.1 **16 Claims**



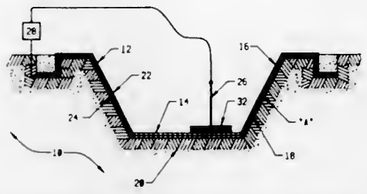
1. A laser operated automatic grade control device for finishing, surfacing or treating plastic concrete without forms, said device comprising:
an elongated concrete finishing mechanism adapted to be deployed in physical contact with said concrete for treating same, said finishing mechanism having a longitudinal axis;
at least two spaced apart, elongated skis oriented generally perpendicularly to said finishing mechanism for supporting the mechanism, said skis normally sliding below the surface of the concrete to be finished;
a pair of stanchions extending upwardly from each of said skis, one stanchion disposed adjacent each side of said finishing mechanism;
a slidable sleeve generally coaxially fitted about each of said stanchions;
means for coupling said sleeves to said finishing mechanism;
displacement means for raising and/or lowering said sleeves and thus said finishing mechanism;
laser means maintained at a fixed elevation for providing a reference level; and,
control means for controlling said displacement means responsive to said laser means, thereby leveling the finishing mechanism to provide a level concrete surface.

5,288,167
LASER BEAM GUIDANCE DEVICE FOR CIVIL ENGINEERING/EARTHMOVING PLANT
Jean-Paul Gaffard, Fontainebleau, and Geneviève Chabassier, Fresnes, both of France, assignors to Laserdot
Filed Oct. 29, 1992, Ser. No. 968,445
Claims priority, application France, Nov. 6, 1991, 91 13693
Int. Cl.[5] E01C *19/00*
U.S. Cl. 404—84.05 **8 Claims**



1. A device for guiding an earthmoving machine which is controlled with at least one actuation means such that said earthmoving machine moves along a predetermined path having a three dimensional surface, said device comprising:
at least one laser emitter for generating a beam, first and second laser receivers for receiving said beam, and displacement means having at least two degrees of freedom for mounting said first and second laser receivers to said earthmoving machine;
first means for sensing the position of said first and second laser receivers with respect to said at least two degrees of freedom, said first sensing means generating first and second output signals corresponding to the positions of said first and second laser receivers;
second means associated with said earthmoving machine for sensing the position of said earthmoving machine with respect to a fifth degree of freedom, said second sensing means generating a third output signal corresponding to the position of said earthmoving machine with respect to said fifth degree of freedom;
means in communication with said at least one actuation means and said first and second sensing means for storing data corresponding to said three dimensional surface of said predetermined path;
means in communication with said first sensing means for controlling said displacement means in said at least two degrees of freedom so as to position said first and second laser receivers to receive said beam generated by said at least one laser emitter; and
means in communication with said data storage means and said controlling means for actuating said at least one actuation means so as to substantially maintain said earthmoving machine on said predetermined path.

5,288,168
METHOD AND APPARATUS FOR LINING OUTDOOR FLUID CONTAINMENT AREAS TO FACILITATE ELECTRICAL LEAK DETECTION
John L. Spencer, Conroe, Tex., assignor to Gundle Lining Construction Corporation, Houston, Tex.
Filed Aug. 24, 1992, Ser. No. 934,868
Int. Cl.[5] B65G *5/00*
U.S. Cl. 405—54 **38 Claims**

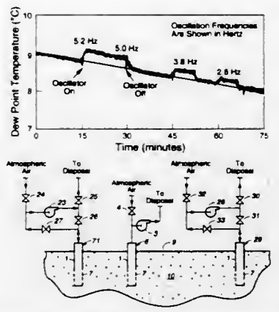


1. A flexible thermoplastic sheet for forming a liner for an outdoor earthen fluid containment area, said thermoplastic sheet having an upper flexible plastic layer and a lower flexible plastic layer adapted to be positioned over said containment area, said lower plastic layer being adapted to sufficiently conduct electricity to enable detection of pin hole leaks in the liner by establishing a potential difference between a probe within the containment area and said lower plastic layer, said sheet being adapted to be maintained for flexure in use over said containment area so as to at least approximately conform to the shape of the containment area.

19. A method for waterproofing an area of soil comprising the steps of:
(a) forming a flexible plastic sheet with a region capable of conducting sufficient electricity to enable pin hole leaks to be reliably located by establishing a potential difference between a probe within the containment area and said flexible plastic sheet;
(b) covering the soil to be waterproofed with a plurality of said flexible sheets;
(c) aligning said sheets in an abutting fashion to create a seam region between adjoining sheets; and
(d) permanently joining said abutting sheets to provide a continuous and uninterrupted barrier of plastic facing the area from which liquid is to be barred.

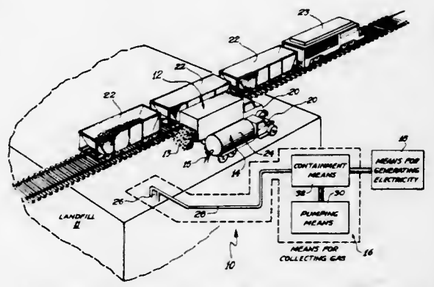
5,288,169
VENTILATION OF POROUS MEDIA
Donald A. Neeper, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 31, 1992, Ser. No. 829,346
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—128 **8 Claims**

1. A method of distributing gases throughout the interstices of porous materials consisting of flowing a gas through a porous mass of material and varying the gas flow rate in a series



of predetermined periodic cycles, where the frequency of said cycles is from about 0.001 to about 60 cycles per minute.

5,288,170
SLUDGE/WASTE LANDFILL METHOD AND SYSTEM
James B. Cummings, Pittsburgh, Pa., assignor to Chambers Development Co., Inc., Pittsburgh, Pa.
Filed Sep. 18, 1992, Ser. No. 947,046
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—129 **25 Claims**



1. A method of operating a landfill comprising the steps of:
disposing sludge with waste in the landfill during formation of the landfill to form a sludge/waste mixture such that gas production of the sludge/waste mixture during decomposition is greater than gas production that would have resulted during decomposition of the waste only;
collecting the gas produced by the sludge/waste mixture directly from the landfill;
channeling the collected gas from the landfill into a piping network connected to the landfill;
generating energy by burning the gas collected directly from the landfill and channeled through the piping network; and
converted the energy into work.

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5,288,171

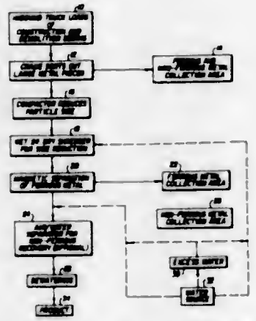
METHOD OF RECYCLING CONSTRUCTION AND DEMOLITION DEBRIS

R. Paul Smith, McLean, Va., and Michael I. Price, Upper Marlboro, Md., assignors to Recovermat Technologies, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 883,354, May 15, 1992, which is a continuation-in-part of Ser. No. 871,103, Apr. 20, 1992, Pat. No. 5,181,803. This application Jan. 22, 1993, Ser. No. 7,651

Int. Cl.[5] B09B *1/00*

U.S. Cl. 405—129 16 Claims



1. A method of disposing of municipal solid waste and construction and demolition debris in a landfill comprising the steps of:

dumping a first layer of shredded municipal solid waste on a landfill site; and

applying a second daily cover layer over said first layer, said second layer comprising construction and demolition debris to which water is added during processing of the debris through a shredder into a moist shredded product.

5,288,172

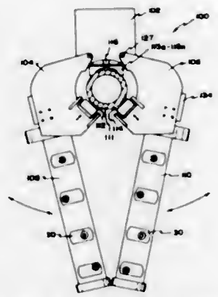
WATER JET SYSTEM FOR TRENCHING OF PIPELINES

Gerald G. Reuhl, Houston, Tex., assignor to Cal Dive International, Houston, Tex.

Continuation of Ser. No. 952,464, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 706,196, May 28, 1991, abandoned. This application May 5, 1993, Ser. No. 57,608

Int. Cl.[5] F16L *1/16*

U.S. Cl. 405—163 23 Claims



1. A water jet leg for trenching underwater comprising:

a. an enclosed housing having a surface surrounding a central axis of said housing and having at least one opening formed through said surface with said opening only partially surrounding said axis;

b. a hollow member disposed within said housing and mounted for rotation about said axis, said hollow member having a nozzle secured thereto for rotation therewith, said nozzle communicating with an interior of said hollow member, said nozzle disposed to be exposed through said opening during only a portion of angular displacement of said nozzle about said axis, said nozzle sealed from said opening during a remainder of said angular displacement;

c. means for rotating said member relative to said housing about said axis; and,

d. means for supplying liquid into said member under pressure for ejecting a stream through said nozzle when said nozzle is aligned with said opening.

5,288,173

METHOD FOR THE DIRECTIONAL CONTROL OF AN EARTH BORING DEVICE AS WELL AS APPARATUS FOR MAKING EARTH BORES

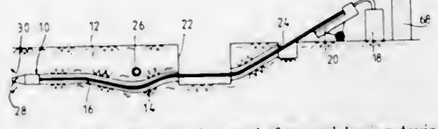
Gustav Jenne, Essen, Fed. Rep. of Germany, and Dietmar Jenne, Strengelbach, Switzerland, assignors to Terra AG fuer Tiefbautechnik, Strengelbach, Switzerland

Filed Jun. 30, 1992, Ser. No. 906,579

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1991, 4122350

Int. Cl.[5] E21B *7/08*

U.S. Cl. 405—184 6 Claims



1. A method for directional control of an earth boring device which includes a tubular shaped housing and a head arranged coaxially to the housing whereby for deflecting itself from its axial forward drive direction pressure fluid is conducted to jet nozzles formed in the head before or during the drive of the earth boring device, characterized in that the nozzle or nozzles whose jet directions at least nearly face the deflection direction are supplied with pressure fluid in a manner different from the way in which pressure fluid is supplied to the other nozzles, in that further jet nozzles are arranged in the tubular shaped housing which nozzles in the longitudinal direction of the earth boring device are each aligned with at least one of the jet nozzles of the head, and that each of said further nozzles is supplied with pressure fluid in the same way as is the jet nozzle of the head aligned with it.

5,288,174

JACKABLE OIL RIGS AND CORNER COLUMNS FOR PRODUCING LEGS IN AN OIL RIG

Geir L. Kjersem, Bones; Sture Rundhovde, Valestrandsfossen, both of Norway, and Gunnar Foss, The Hague, Netherlands, assignors to Offshore Innovation Limited A/S, Alesund, Norway

PCT No. PCT/NO90/00114, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/01411, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 11, 1990, Ser. No. 793,401

Claims priority, application Norway, Jul. 14, 1989, 892896

Int. Cl.[5] E02B *17/00*

U.S. Cl. 405—196 14 Claims

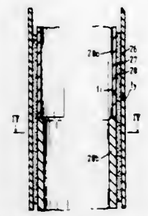
1. A jackable oil rig comprising

a deck;

a base foot;

at least one leg for supporting said deck on said base foot, said leg having a plurality of corner columns and a plurality of transverse stays interconnecting said columns, each said column having an outer pipe with a constant outer diameter along the length thereof, an inner pipe defining an annular space with said outer pipe and having a constant outer diameter along the length thereof and an increasing wall thickness from a top section thereof to a bottom section thereof, and a hardenable material in said space between said pipes to form a prefabricated stratified construction with said pipes; and

a jack system on said deck for moving said deck relative to said leg.



5,288,175

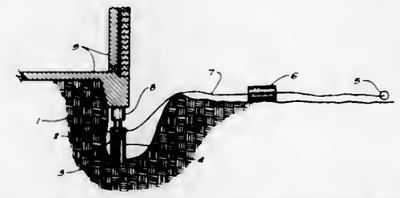
SEGMENTAL PRECAST CONCRETE UNDERPINNING PILE AND METHOD

David W. Knight, 1210 Hamblen Rd., Ste. 200, Kingwood, Tex. 77339

Filed Feb. 10, 1992, Ser. No. 832,840

Int. Cl.[5] E02D *5/30*

U.S. Cl. 405—230 13 Claims



1. A process of installing segmented underpinning piles for supporting a structure upon the earth comprising the steps of:

driving a first pile segment into unexcavated earth a desired distance from said structure, said first pile segment having an end of a strand fixedly received therein, said strand extending outwardly from an end of said first pile segment;

sliding a second pile segment on said strand until said second pile segment contacts said end of said first pile segment; and

driving said second pile segment another desired distance into the earth.

5,288,176

YIELDING GROUT COMPACTOR FOR MINE ROOF SUPPORT FIXTURE

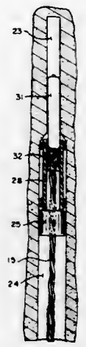
Brian K. Huff, Loveland, Colo.; Brian R. Castle, and James J. Scott, both of Rollo, Mo., assignors to Scott Investment Partners, Rolla, Mo.

Filed Mar. 1, 1993, Ser. No. 24,264

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—259.6 10 Claims

1. In a yieldable grout compactor for a cable support fixture to be positioned in a borehole in a geologic formation and secured by resinous grout contained in a cartridge positioned in such a borehole, the improvement comprising a tubular compactor means having an internal bore to receive initially at least the end portion of a cable in position to push a grout containing cartridge into a borehole, said tubular compactor means fitting the borehole and directing the cable into position to pierce said cartridge upon the cartridge bottoms in the borehole and effects release of the grout, and said tubular compactor means being adapted to yield to the pressure exerted by release of grout and slide on the cable as the cable advances toward the back of the borehole where it is to be secured by the setting of the grout.



5,288,177

METHODS OF TREATING LOCAL SOILS TO MAKE THEM OLEOPHILLIC AND OF USING THE SOILS TO MINIMIZE, CONSOLIDATE, AND CLEAN UP OILY SPILLS

Richard H. Montgomery, 2752 W. North Union Lot #72, Midland, Mich. 48642; Ramon E. Bisque, 9113 Fernway, Golden, Colo. 80403, and John W. Ryan, 514 Linwood Dr., Midland, Mich. 48640

Continuation of Ser. No. 700,769, May 15, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,561

Int. Cl.[5] E02B *15/04*

U.S. Cl. 405—264 18 Claims

1. An improved method of treating locally-available siliceous particles with silicon chemicals to render the particles permanently oleophillic wherein the improvement comprises the steps of:

a) choosing a particle taken from the group of particles consisting of sand, gravel, stone, limestone, diatomacious earth, and clay;

b) loading the particles to an agitating mixer taken from the group of mixers consisting of solid-solid, solid-liquid, solid-gas, and liquid-liquid mixers;

c) adding a silicon chemical taken from the group of organochlorosilanes, organoalkoxysilanes, organoacetoxysilanes, methylhydrogensiloxane polymers, and polydimethylsiloxane polymers;

d) mixing said particles and said silicon chemical together until said silicon chemical is covalently bonded to said particles;

whereby said particles are rendered permanently oleophillic.

5,288,178

PRELOAD HEADBOARD FOR AN ELONGATE PROP

Frans R. P. Pienaar, Krugersdorp, South Africa, assignor to HL&H Timber Products (PTY) Ltd., Johannesburg, South Africa

Filed Dec. 18, 1992, Ser. No. 995,646

Claims priority, application South Africa, Dec. 18, 1991, 91/9946

Int. Cl.[5] E21D *15/55*

U.S. Cl. 405—288 6 Claims

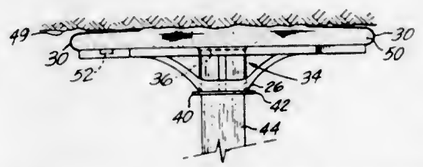
1. A headboard for an elongate prop, the headboard being

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dimensioned to support a preload bag inflatable with a settable grout, the headboard comprising:

a pressed steel sheet support member which has a substantially rectangular shape in plan view and which has relatively higher end regions lying in a common plane and a relatively lower central region which is formed with an opening therein and which is situated between the end regions,

bag retaining formations which are in the form of flexible steel flaps connected to opposite ends of the support member and extend inwardly over the end regions of the support member, the flaps being shaped to locate over opposite ends of a preload bag located in use upon the support member, and



an open-ended pot which is releasably engagable at an inverted orientation, in the opening in the central region, the pot being dimensioned to receive the upper end of an elongate prop and having a base against which the end of the prop bears when fully received by the pot, the base lying in substantially the same plane as the end regions of the support member, so that the support member is supported transversely on the end of the prop with the base of the pot and the end regions of the support member providing support for a preload bag placed on the support member with its ends located beneath the flaps.

5,288,179

HOB FOR GENERATING FACE GEARS

Martinus H. Cuypers, Eindhoven, Netherlands, and Jan M. Seroo, Bocholt, Belgium, assignors to Crown Gear B.V., Netherlands

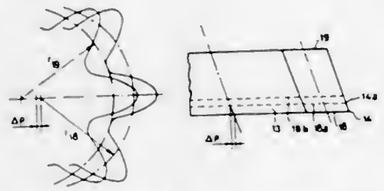
PCT No. PCT/NL90/00141, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO91/04819, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 28, 1990, Ser. No. 844,589

Claims priority, application Netherlands, Sep. 28, 1989, 8902417

Int. Cl.[5] B26D *1/14*

U.S. Cl. 407—23 **4 Claims**



2. Cutter for producing face gears, comprising:

a disc-shaped cutter body with a periphery, a central axis and cutting teeth fitted on the periphery, each cutting tooth having a front and rear side and a cutting edge which lies in a surface of revolution which is produced by turning an imaginary gear wheel of infinitely low thickness about the central axis of the cutter body and simultaneously about an axis of said imaginary gear wheel, during which the imaginary gear wheel on turning one revolution about the central axis of the cutter body turns about said axis of said imaginary gear wheel through an angle which is equal to a whole number of times the pitch angle of the imaginary gear wheel, and a plane defined by the imaginary gear wheel always extends in the radial direction of the cutter body and at a right angle to a path described by the teeth of the imaginary gear wheel, each cutting tooth of the cutter being formed by a separate cutting blade which is fixed on the periphery of the cutting body and each separate cutting blade having a shape defined by a plurality of profiles, each profile lying in a respective one of a plurality of successive parallel planes, each of the planes extending parallel to the central axis of the cutter body and running parallel to the front side of the cutting blade, each of the planes of the cutting blade always being of a same shape, while each profile of the cutting blade in successive parallel planes, as seen from the front side of the cutting blade to the rear side thereof, shifts towards the central axis of the cutter body.

5,288,180

CUTTING TOOL

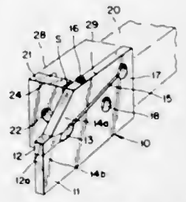
Thomas Hedlund, Gästrike-Hammarby, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jul. 30, 1992, Ser. No. 921,942

Claims priority, application Sweden, Jul. 31, 1991, 9102262-4

Int. Cl.[5] B23B *27/08, 27/04*

U.S. Cl. 407—101 **10 Claims**



1. A cutting tool for grooving and parting chip cutting operations on metal workpieces, comprising a holder shaft and a clamp body removably attached thereto, said clamp body including clamping jaws for retaining a cutting insert, said clamp body including integral first and second blade portions, said first blade portion being attached to one outer surface of said shaft by a first removable fastener, said second blade portion extending perpendicular to said first blade portion at a location spaced from opposite ends of said first blade portion, said second blade portion being attached to another outer surface of said shaft by a second removable fastener, said clamping jaws being formed in said first blade portion and defining a slot which is open at one end thereof, said other outer surface facing in the same direction as said open end of said slot.

5,288,181

RETHREADING TOOL

Donald L. Pinkston, 12295 Spruce La., Perry, Mich. 48872

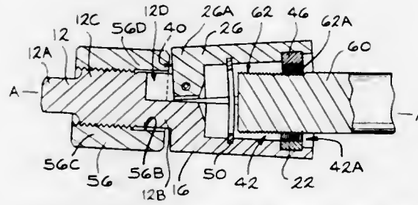
Filed Apr. 29, 1993, Ser. No. 52,520

Int. Cl.[5] B23G *5/00*

U.S. Cl. 408—1 R **32 Claims**

28. A method for reconditioning and rethreading the threads of a threaded member, which comprises:

(a) providing a rethreading tool including a shaft having a proximal end and a distal end spaced apart along a longitudinal axis of the shaft with threads along the shaft; a rotatable member with internal threads mounted on the threads of the shaft; a fixed jaw having a first portion and a second portion wherein the first portion is provided on the distal end of the shaft and the second portion extends outward from the first portion away from the distal end of the shaft, the fixed jaw having a part of an opening extending from the first portion and through the second portion so as to be along and around the longitudinal axis of the shaft; a moveable jaw pivotally mounted on the first portion of the fixed jaw having a part of an opening along and around the longitudinal axis of the shaft that mates together with the part of the opening of the second portion of the fixed jaw to provide a complete opening around the longitudinal axis when the fixed jaw and the moveable jaw are mated together, wherein the moveable jaw has a cam surface adjacent to where the moveable jaw is pivotally mounted to the fixed jaw which is oriented towards the proximal end of the shaft and away from the distal end of the shaft so that the cam surface is engageable by the



rotatable member to bring the moveable jaw together with the fixed jaw; and thread dies mounted in the part of the opening of the fixed jaw and the part of the opening of the moveable jaw around the longitudinal axis of the shaft so that the dies rethread the threaded member when the fixed jaw and the moveable jaw are mated together to form the complete opening;

(b) mounting the rethreading tool on the threaded member;

(c) rotating the rotatable member toward the cam surface of the moveable jaw to position the complete opening formed by the fixed jaw and the moveable jaw and the thread dies around the threaded member; and

(d) rotating the rethreading tool around the threaded member to rethread the threads of the threaded member.

5,288,182

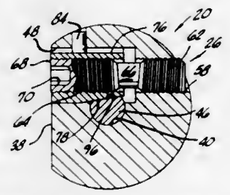
BORING BAR HOLDER AND INSERT WITH PRECISION PLACEMENT INSERT LOCATOR MEANS

Harvey L. Patterson, Arcadia; Efren D. Ofalla, El Monte, and John G. Harrel, Azusa, all of Calif., assignors to Circle Machine Company, Monrovia, Calif.

Filed Jan. 25, 1993, Ser. No. 8,633

Int. Cl.[5] B23B *31/10*

U.S. Cl. 408—146 **7 Claims**



1. Precision placement insert locator means for positioning a replaceable metal cutting insert member in a boring bar in the same location each time an insert is placed in said boring bar, said boring bar has an elongated shank to be mounted in a tool holder of a cutting machine, and said insert has a cutting head adapted to cut an opening in a work piece held in said cutting machine, said locator comprising:

said metal cutting insert having an elongated annular shank with a rear end and a front end, said front end having said cutting head, and a locking cut out including a flat wedge surface formed in said shank extending inwardly and downwardly from said rear end forming part of said locator means, and said annular shank is insertable in an insert bore; and

said boring bar has a forward section with a bore to receive said insert and an additional cooperating part of said locator means to receive said replaceable metal cutting insert member, said locator means including a set screw bore and threadable set screw means mounted in said forward section normal to said insert bore and in communication therewith, a wedge clamp collar having a flat surface mounted on said set screw means adapted to move into precise flat to flat wedging locking engagement with said flat wedge surface of said insert when said insert is mounted in said insert bore, yet slidably movable out of contact with said insert wherein said insert may be removed and replaced in the corresponding position as the insert removed.

5,288,183

SELF-CENTERING DRILL BIT WITH PILOT TIP

Peter C. Chaconas, Glyndon, and Paul A. Stone, Silver Run, both of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 598,516, Oct. 16, 1990, abandoned, which is a continuation of Ser. No. 897,716, Aug. 18, 1986, Pat. No. 4,968,193. This application Jul. 15, 1992, Ser. No. 921,441

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—211 **16 Claims**



1. A unitary self-centering drill bit, which comprises:

an elongated drill body having a shank end, an intermediate section and a working end all formed integrally in the drill body;

flutes formed in the drill body with each flute having a continuous uninterrupted surface extending from a juncture of the shank end and the intermediate section to a free end tip of the drill body at the working end and from side to side of each flute;

the working end of the drill body being formed with a first section of a prescribed major drill diameter and including major cutting lips arranged in an inversely angled configuration;

the working end of the drill body being formed with a second section which is formed integrally with and extends from the first section in a direction away from the shank end of the drill body;

the second section of the drill body formed with a minor drill diameter smaller than the prescribed major drill diameter;

the second section of the drill body being formed with minor cutting lips, and

at least the first section and the second section of the working end of the drill body being formed in a single piece of material and in a stepped-drill-bit configuration.

5,288,184

DEBURRING TOOL WITH ADDITIONAL CUTTING TOOL

Heinrich Heule, Kristallstrasse 6, Au, Switzerland

Filed Nov. 2, 1992, Ser. No. 970,154

Claims priority, application Fed. Rep. of Germany, May 23, 1992, 9207000[U]

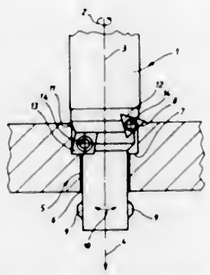
Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—224 **8 Claims**

1. Deburring tool for deburring the edges of bores, comprising:

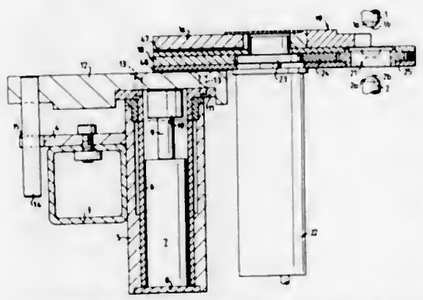
VOL 1159 ISS 4 FE 22 1994 UMI

a rotating tool holder having a longitudinal axis and a forward end facing in a first feed direction of the tool holder;
at least one radially moveable first cutting knife located at a first position on said rotating tool holder adjacent the forward end of the tool holder;
a first additional cutting tool axially spaced at a second axial distance from the first cutting knife between the first cutting knife and first additional cutting tool;



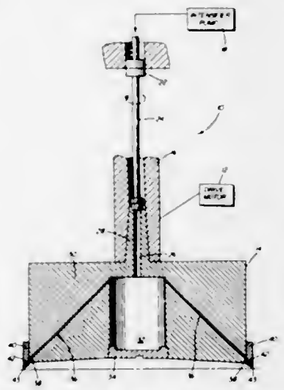
the first and second additional cutting tools comprising means for machining a first end of a bore to be deburred and a surface spaced from said first end, respectively, as the tool holder is moved in said first feed direction partially through said bore; and
said first cutting knife comprising means for machining an outer circumferential edge of a second, opposite end of the bore as the tool holder is moved back through the bore in a second direction opposite to said first direction.

5,288,185
PROCESS AND DEVICE FOR FORMING ELECTRODES IN A SPOT WELDING GUN OR THE LIKE
Karl-Erik Mattsson, Näsum, Sweden, assignor to AB Volvo, Goteborg, Sweden
PCT No. PCT/SE91/00016, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/10532, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 10, 1991, Ser. No. 890,584
Claims priority, application Sweden, Jan. 10, 1990, 9000076
Int. Cl.[5] B23C *1/20*; B23K *11/30*
U.S. Cl. 409—131 **13 Claims**



1. A process for dressing truncated conical tips of electrodes in a spot welding machine or the like, in which said process each electrode tip is dressed by insertion in a cavity in a tool for machining the tip, wherein each electrode tip is dressed both on its truncated conical lateral surface and on its end surface adjoining the minor diameter of the lateral surface, the electrode tip, in a first machining step, being inserted into a cavity in a first tool for machining the lateral surface or the end surface until the other of these two surfaces comes into contact with an abutment for determining a terminal position for machining, whereafter the electrode tip in a second machining step is inserted into a cavity in a second tool for machining the end surface or the lateral surface until the surface which has been machined in the first machining step comes into contact with an abutment for determining a terminal position for the machining.

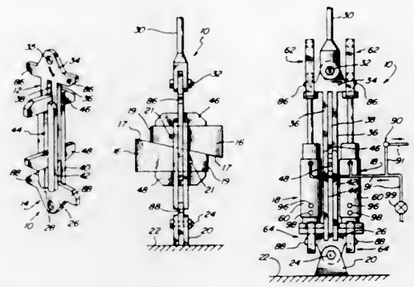
5,288,186
APPARATUS AND METHOD OF HIGH-PRESSURE WATERJET ASSISTED COOLING/LUBRICATION IN MACHINING
Radovan Kovacevic, Lexington, Ky., assignor to University of Kentucky Research Foundation, Lexington, Ky.
Filed Sep. 21, 1992, Ser. No. 948,403
Int. Cl.[5] B23C *5/28*
U.S. Cl. 409—131 **14 Claims**



13. A method of machining with a rotary cutting tool, comprising the steps of:
providing cutting fluid at a pressure greater than 30,000 psi; and
delivering said high-pressure cutting fluid through said rotary cutting tool directly into an interface defined by said rotary cutting tool and a chip being cut from said workpiece by directing said high-pressure cutting fluid through an aperture in said rotary cutting tool juxtaposed to said chip during the machining operation.

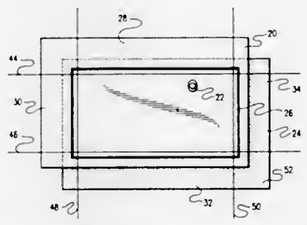
5,288,187
TIE DOWN ASSEMBLY FOR CONTAINER LOADS
Montague R. Ward, 5500 Oleta St., Long Beach, Calif. 90815
Filed Jun. 19, 1992, Ser. No. 901,268
Int. Cl.[5] B25B *28/00*
U.S. Cl. 410—100 **27 Claims**

1. A lashing assembly for tensioning a lashing, comprising:
tensioning means for providing selected tension to a lashing, the tension means being detachable from the lashing;
a coupling provided along said lashing, said coupling including first and second mutually-engaging linking members with interlocking elongated slots, the first linking member having a base mounted to the lashing and having a free end slidably engaged with the second linking member, the second linking member having a base mounted to the lashing and having a free end slidably engaged with the first linking member, and wherein the tensioning means engages said first and second linking members to provide the selected tension to the lashing; and



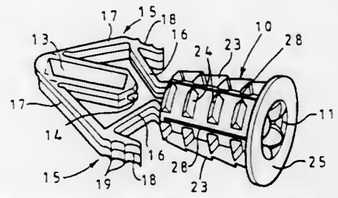
wedge means for removably mounting between the first and second linking members for maintaining the tension on the lashing after the tensioning means is detached.

5,288,188
DUNNAGE AIR BAG
Robert L. Vance, P.O. Box 656, Sheridan, Ark. 72150
Filed May 4, 1992, Ser. No. 877,713
Int. Cl.[5] B65G *1/14*
U.S. Cl. 410—119 **18 Claims**



1. A dunnage air bag, comprising:
first and second sheets each formed by a semi-rigid layer laminated to a substantially air impervious flexible film layer;
said first and second sheets at least partially disposed in offset overlying relation, with said film layers of said first and second sheets facing each other;
means securing portions of said film layers of said first and second sheets together within an overlying zone of said first and second sheets forming a sealed perimeter to define an enclosed air bladder;
valve means on one of said sheets connected to said bladder to allow selective inflation;
each of said sheets possessing peripheral flap portions;
said peripheral flap portions of each of said sheets folded over the other of said sheets along lines interior of said sealed perimeter; and
means securing said peripheral flap portions to the other of said two sheets.

5,288,189
FIXING DEVICE FOR A CAVITY WALL
Paul S. Hepworth, Guildford, England, assignor to Plas Plugs Limited, England
PCT No. PCT/GB90/01807, § 371 Date Jun. 23, 1992, § 102(e) Date Jun. 23, 1992, PCT Pub. No. WO91/08396, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 23, 1990, Ser. No. 859,366
Claims priority, application United Kingdom, Nov. 24, 1989, 8926587
Int. Cl.[5] F16B *13/04, 19/00*
U.S. Cl. 411—32 **13 Claims**



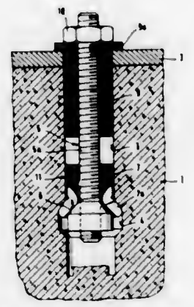
1. A fixing device for a cavity wall, comprising:
a sleeve portion adapted to receive a fixing element therethrough;
an engagement portion spaced from the sleeve portion and adapted to engage an end portion of the fixing element;
at least one flexible strut member connecting the engagement portion to the sleeve portion, the at least one flexible strut member comprising a relatively long arm connected to the engagement portion and a relatively short arm connected to the sleeve portion, the relatively long arm and the relatively shot arm being connected together at a point; and
a finger extending forwardly of the device substantially from the point where the relatively long and short arms are joined together;
the arrangement being such that engagement of the fixing element with the engagement portion holds the latter in a fixed position relative to the sleeve portion and thereby resists flexing movements of the at least one strut member, and tightening of the fixing element causes the engagement portion to move towards the sleeve portion and thereby causes the at least one strut member to flex outwardly of the device and the point at which the relative long arm and the relatively short arm are joined together to move forwardly as well as outwardly of the device, wherein the sleeve portion is radially expandable.

5,288,190
EXPANSION DOWEL ASSEMBLY
Antonius Winkeljann, Landsberg/Lech, and Franz-Paul Mayr, Hechenwang, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein
Filed Jul. 16, 1992, Ser. No. 914,984
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1991, 4123802
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—55 **5 Claims**

1. Expansion dowel assembly for use in undercut bores in a receiving material for securing a component to a surface of the receiving material, comprises an axially extending anchor bolt having a leading end to be inserted first into the undercut bore and a trailing end, said anchor bolt has an axially extending load engagement section extending from the trailing end toward the leading end thereof, an axially extending expansion sleeve having a leading end, a trailing end and an outside diameter, said expansion sleeve is slotted for at least a part of the axial length thereof from the leading end forming expansion sections between the slots, an axially extending guide sleeve having a leading end and a trailing end and an outside

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diameter, an expansion cone engageable on a leading end section of said anchor bolt and arranged to be pulled into the leading end of said expansion sleeve toward the trailing end thereof for radially expanding said expansion sections, wherein the improvement comprises that said guide sleeve has a flange-like shoulder formed on the trailing end thereof and projecting laterally outwardly from the outside diameter of said sleeve



arranged to bear against a surface of the component facing away from the receiving material, said leading end of said guide sleeve securing the component to the receiving material is axially spaced from the trailing end of said expansion sleeve providing an unobstructed space therebetween for relative axial positioning of the guide sleeve with respect to the expansion sleeve, and said guide sleeve has an axial length sufficient to extend through the component into the bore.

5,288,191

DEVICE FOR THE CLAMPING ATTACHMENT OF SPACED STRUCTURAL PARTS

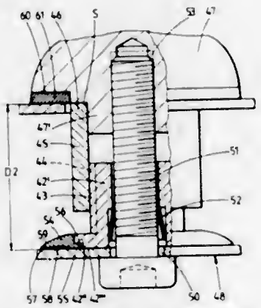
Edvard Rückert, Velbert, and Willi Piontek, Essen, both of Fed. Rep. of Germany, assignors to Ewald Witte GmbH & Co. KG, Velbert, Fed. Rep. of Germany

Filed Aug. 26, 1992, Ser. No. 936,108

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1991, 4128269; Jul. 24, 1992, 4224575

Int. Cl.[5] **F16B** *37/08, 39/284;* **F16G** *11/00;* **B25G** *3/00*

U.S. Cl. 411—432 **13 Claims**



1. A device for a clamping connection of first and second structural parts, the device comprising:

a fastening screw, and a spacer plate located in an intervening space between said first and said second structural parts, said spacer plate resting on an outer broad side thereof against said first structural part, said screw passing through said plate and making frictional contact therewith;

wherein said second structural part has a helical pitch support surface for mating with said screw;

said plate has a helical pitch support surface fitting said screw and being located opposite said helical pitch support surface of said second structural part;

said plate is advanced by frictional engagement with said screw upon rotation of said screw relative to said plate to bring said plate into a support position in which said plate lies against said first structural part to establish a first support distance from said first structural part to said second structural part;

said device includes restraining means providing a predetermined restraining force against rotation of said screw, and said first support distance can be reduced by a predetermined amount of clamping force of the screw; and

a reduction in the amount of said first support distance to a second support distance smaller than said first support distance is accomplished by displacement of said second structural part toward said first structural part by a predetermined amount of regions lying along said helical pitch support surfaces in opposition to said predetermined restraining force.

5,288,192

IMAGE-FORMING APPARATUS PROVIDED WITH BOOKBINDING DEVICE

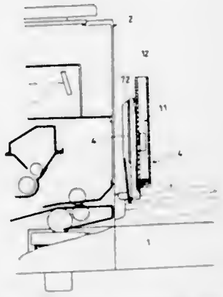
Yukihiro Ito, Osaka; Yutaka Shigemura, Takarazuka; Takashi Kondo, Sakai; Hideo Umezawa, Amagasaki; Mitsuharu Yoshimoto, Nara; Satoshi Yano, Takatsuki, and Junichi Oura, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 583,643, Sep. 17, 1990, Pat. No. 5,143,503. This application May 29, 1992, Ser. No. 890,701

Claims priority, application Japan, Sep. 28, 1989, 1-113844; Sep. 28, 1989, 1-113845; Sep. 28, 1989, 1-253652; Sep. 28, 1989, 1-253653; Sep. 28, 1989, 1-253654

Int. Cl.[5] **B42C** *13/00;* **G03G** *21/00*

U.S. Cl. 412—13 **4 Claims**



1. A device for use with an image-forming apparatus, comprising:

a binder receiving portion for receiving a binder having papers and an adhesive therein;

heating means for causing heating and melting of the adhesive in the binder when the binder is fully inserted in said binder receiving portion in order to adhere the papers in the binder, said heating means comprising a contact element mounted in a bottom portion of said binder receiving portion and adapted to be contacted against by a contact portion of the binder;

power supply means for providing power to operate said heating means;

a paper supply table mounted to said binder receiving portion for use in feeding paper into the image-forming apparatus, said paper supply table including paper regulating guides which are adjustable in their relative positions to guide different sized papers into the image-forming apparatus;

power adjustment means for adjusting a total amount of power to be provided to said heating means by said power supply means during a bookbinding operation in order to regulate a total calorific value of heat provided to melt the adhesive, in dependence on the relative positions of said paper regulating guides of said paper supply table.

5,288,193

QUARTER TURN BALE LIFT ARM FOR ROUND BALE MOVERS

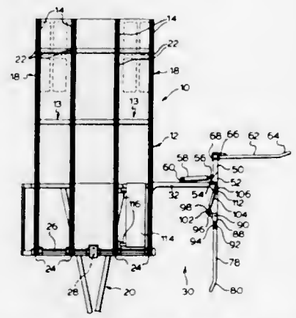
John R. Warburton, Box 39, Poplar Point, Manitoba, Canada R0H 0Z0 ; Russell E. Reyher, 2302 Burrows Avenue, Winnipeg, Manitoba, Canada R2R 1G7 , and Randy E. Reyher, 896 Isbister St., Winnipeg, Manitoba R2Y 1R7, Canada

Filed Jan. 23, 1992, Ser. No. 824,538

Claims priority, application Canada, Dec. 3, 1991, 2056897

Int. Cl.[5] **A01D** *87/12;* **B60P** *1/48*

U.S. Cl. 414—24.5 **7 Claims**



1. A round bale carrier which picks up round hay bales while moving in a direction perpendicular to a longitudinal end-to-end direction of a bale to be loaded onto said carrier, and a bale pick-up supported by said bale carrier, said bale pick-up comprising an open sided bale cradle including a cradle base located parallel along one side of said carrier when in a position to receive and pick up a hay bale and swingable in a horizontal plane through 90 degrees to a bale loading position relative to said carrier, first and second bale support arms secured to said cradle base, said first bale support arm extending out at generally right angles to said cradle base, said second bale support arm being moveable at said cradle base between a bale receiving position generally perpendicular to said first bale support arm and a bale pick-up position generally parallel to said first bale support arm, said bale cradle also being liftable form said bale loading position to a bale delivery position projecting upwardly form the one side of said carrier, and a control system for said bale pick-up, said control system including a first operating member which moves said second bale support arm, a second operating member which swings said cradle base and a third operating member which raises and lowers said cradle, said control system operating such that after said first operating member moves said second bale support arm to the bale pick-up position, said third operating member raises said cradle sufficiently to elevate the bale in the cradle away form ground level before said second operating member swings said cradle to the bale loading position, said third operating member then continuing to raise said cradle to the bale delivery position.

5,288,194

DEVICE FOR UNLOADING ARTICLE FROM CIRCULATIVE LOADING BASE

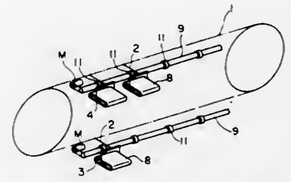
Satoshi Ueda, Itami, and Kiyoshi Fukuyama, Moriyama, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Sep. 11, 1992, Ser. No. 943,876

Claims priority, application Japan, Oct. 18, 1991, 3-092955

Int. Cl.[5] **B65G** *1/133*

U.S. Cl. 414—331 **1 Claim**



1. In a device for unloading an article from a circulative loading base, wherein a loading base frame is supported pivotally while being urged in a backwardly inclined state by each of a plurality of support frames mounted at suitable intervals to a circulative conveyor chain having drive means therefore, the improvement comprising:

an endless belt forming a loading surface being entrained about said loading base frame;

a rotatable drive shaft disposed side-by-side and in parallel with said conveyor chain;

means for rotating said drive shaft;

friction rollers fixed to a plurality of positions on said drive shaft corresponding to unloading positions; and

push-up means mounted beneath said friction rollers for upwardly pivoting a rear end portion of said loading base frame and urging said endless belt into contact with one of said friction rollers to thereby drive said endless belt for discharging an article contained thereon to one of said unloading positions.

5,288,195

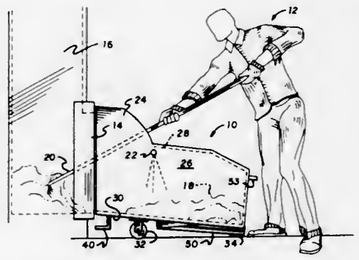
INCINERATOR ASH DUMPING CONTAINER

Roger L. McIntyre, 348 Kaufman, Dubuque, Iowa 52001

Filed Mar. 20, 1992, Ser. No. 854,682

Int. Cl.[5] **B65G** *67/02*

U.S. Cl. 414—400 **8 Claims**



1. A self-emptying dumping apparatus to effect removal, transport and dumping of loose, particulate material such as ashes located at a bottom of a conventional incinerator, said apparatus comprising:

a container of generally rectangular configuration including a generally flat bottom having a forward edge, a pair of vertical side walls having forward edges, a back wall, a partially open, top covering member, and an open, material receiving front end defined by said bottom and side wall forward edges, said open, top covering member

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enabling entry of an ash removing tool from above said container though a clean out opening whereby said particulate material may be removed through said clean out opening into said container by said ash removing tool;

means for supporting said container with said bottom being normally rearwardly sloped when said container is resting upon a horizontal surface, to retain said removed particulate material within said container by gravity; and

at least two pivoted frame members, extending fore and aft of said container bottom, being of hollow, boxlike construction, and dimensioned to receive tines of an otherwise conventional, manually operated cable hoist means, said manually operated cable hoist means being operable for lifting, transporting and emptying said container into an open receiving vessel, each said frame member being pivotally mounted on said container bottom, adjacent said bottom forward edge, to enable said container to be emptied into said open receiving vessel without disengaging said tines from said frame members.

5,288,196

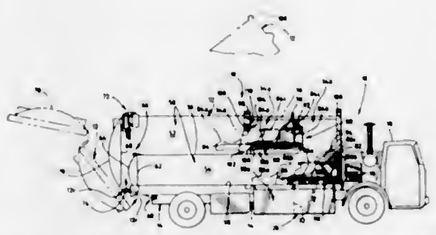
COLLECTING, HAULING AND DELIVERING APPARATUS AND METHOD

Larry D. Horning, Crestline; Eugene R. Grubaugh, Galion; Thomas E. Pfeifer, Galion, and Carroll R. Johnson, Galion, all of Ohio, assignors to Galion Holding Company, Galion, Ohio

Continuation-in-part of Ser. No. 565,172, Aug. 8, 1990, which is a continuation-in-part of Ser. No. 389,626, Aug. 4, 1989, abandoned. This application May 20, 1992, Ser. No. 886,439

Int. Cl.[5] B65F *3/04, 3/14*

U.S. Cl. 414—407 **23 Claims**



12. An apparatus for collecting and transporting recyclable waste material, comprising:

(a) a body mountable to a vehicle and extending longitudinally between a forward end and a rearward end, the body enclosing a material-receiving volume;

(b) a horizontal wall within the body forming separated upper and lower material-receiving compartments;

(c) first and second longitudinally-spaced loading openings at the top of the body, the first loading opening being in continuous communication with only the lower compartment, and the second loading opening being positioned rearward of said first loading opening and in continuous communication with only the upper compartment;

(d) a first door for closing the rear of the lower compartment;

(e) a second door for closing the rearward end of the body and the upper compartment, the second door when closed overlying and being spaced from the first door to define a vertical rearward continuation of the upper compartment;

(f) a bucket vertically movable along the exterior lateral side of the body between a lower loading position at the bottom of the body and an elevated discharge position at the top of the body, the bucket having separated bins for receiving material, each bin being aligned with one of the loading openings when the bucket is in the discharge position to dump material into one of the compartments;

(g) a first moveable compactor for compacting and moving only material received within said lower compartment via said first loading opening, said first compactor being positioned in non-interfering position with said second loading opening; and,

(h) a second moveable compactor for compacting and moving only material received within said upper compartment via said second loading opening, said second compactor being positioned rearward of and in non-interfacing position with said first loading opening.

5,288,197

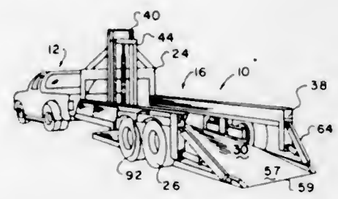
EQUIPMENT TRAILER

Wendell N. Harris, P.O. Box 462, Canyon, Tex. 79015

Filed Feb. 5, 1992, Ser. No. 831,560

Int. Cl.[5] B60P *1/34*

U.S. Cl. 414—495 **10 Claims**



1. A land vehicle having

a. a U-shaped frame with

i. two arms, each having a back end,

ii. a front end,

iii. a back end, and

iv. a bight connecting the two arms,

v. the bight of the U-frame at the front,

b. ground engaging wheels connected to the arms, having a ground contact area with the ground,

c. motive means connected to the vehicle at the front of the frame for moving the vehicle in a direction of travel,

d. a bed in the U-frame,

e. lifting means interconnecting the frame and bed for vertically moving the bed, and

f. locks interconnecting the back end of the frame and bed for attaching the bed to the grame in a travel position,

g. wherein the improvement comprises:

h. at least one of said locks engaging an arm of the frame at at least one engagement point which is located on the arm so that a vertical plane parallel to the direction of travel through said at least one engagement point passes through the ground contact area of at least one of the wheels.

5,288,198

CONTROL MECHANISM FOR AN OFF-HIGHWAY IMPLEMENT

Robert E. Mozingo, Burlington, Iowa, assignor to Case Corporation, Racine, Wis.

Filed Jul. 29, 1992, Ser. No. 921,527

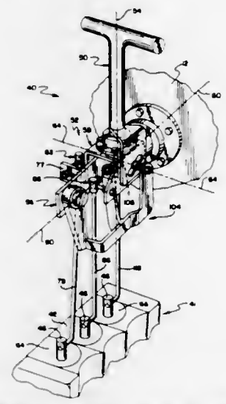
Int. Cl.[5] E02F *3/28*

U.S. Cl. 414—685 **8 Claims**

1. A control mechanism for independently or conjointly controlling three different functions of an off-highway implement, said control mechanism comprising:

a vertically elongated control lever; and

a mounting for permitting the control lever to be manipulated in first and second directions extending generally normal relative to each other and also for permitting the control lever to be manipulated through a twisting action about a generally vertical axis extending substantially perpendicular relative to the first and second directions, said mounting including a first bracket assembly mounted for movement about a first fixed pivot axis and including a first actuator arranged in offset relation from the first pivot axis of the first bracket assembly such that a first implement function is effected in response to movement of the control lever in the first direction, a second bracket assembly having a lower end of said control lever secured thereto for twisting movements in either rotational direction about said vertical axis, said second bracket assembly being pivotally connected to said first bracket assembly for movement about a second pivot axis extending transverse relative to and which intersects the first pivot axis, said second bracket assembly including a second actuator arranged in offset relation to the second pivot axis and in alignment with said first pivot axis such that a second implement function is effected in response to movement of the control lever in the second direction, and a third



bracket assembly pivotally carried by said first bracket assembly and including a third actuator which is normally located at the intersection of the first and second pivot axes of the first and second bracket assemblies, respectively, with said third actuator being movable in offset relation relative to the intersection of said first and second pivot axes to effect a third implement function in response to twisting manipulation of the control lever about said vertical axis, and whereby manipulation of the control lever in the first and second directions conjointly or independently controls the first and second implement functions while twisting manipulation of the control lever controls the third implement function either independently or conjointly with the other two implement functions.

5,288,199

TRANSPORTING DEVICE OF MAGNETICALLY FLOATING TYPE

Yoshihiro Enomoto, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Sep. 23, 1992, Ser. No. 950,437

Claims priority, application Japan, Oct. 3, 1991, 3-256819

Int. Cl.[5] B25J *13/00*

U.S. Cl. 414—749 **11 Claims**

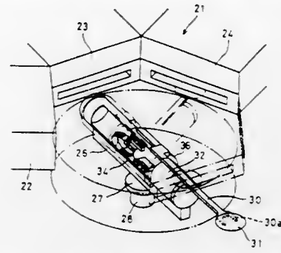
1. A transporting device of a magnetically floating type, comprising:

a slider member having a working arm disposed along an axial direction and a server disposed at an end portion of the working arm for carrying an article;

electromagnet means for magnetically floating the slider member to drive the same in the axial direction;

sensing means for sensing a width of a gap between the electromagnet means and the slider member;

control means for controlling an electric current flowing through the electromagnet means in accordance with the gap width determined by the sensing means; and



judging means operative to detect a variation in the electric current flowing through the electromagnet means for judging as to whether the article is present or absent on the server.

5,288,200

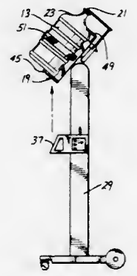
BOTTLED WATER INSTALLER

Willy Burgers, Laguna Niguel, and Rabih Nassif, Corona, both of Calif., assignors to Laguna Machine, Inc., Laguna Hills, Calif.

Filed Nov. 18, 1992, Ser. No. 977,916

Int. Cl.[5] B65G *65/23*

U.S. Cl. 414—758 **18 Claims**



11. An installer for installing a container of flowable material on a dispenser, said installer comprising:

a supporting structure;

a carriage adapted to carry the container, said carriage being mounted on the supporting structure for movement along a path between a loading position in which the carriage is adapted to receive the container and an unloading position in which the carriage is at a higher elevation than in the loading position and inverted with respect to the orientation of the carriage in the loading position;

motor means for moving the carriage from the loading position to the unloading position, said path having an inverting region intermediate said positions of the carriage in which the carriage inverts;

a first switch carried by one of the carriage and the supporting structure;

a first switch actuator carried by the other of the carriage and supporting structure and engageable with the switch near said inverting region and between the loading position and said inverting region to actuate the switch; and

and first means responsive to actuation of the switch to reduce the speed at which the motor means drives the carriage whereby the carriage is driven at a reduced speed through at least a major portion of the inverting region.

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5,288,201

VACUUM BEAM PRODUCT DISPENSER AND SINGULATOR AND METHOD FOR SINGULATING PRODUCTS

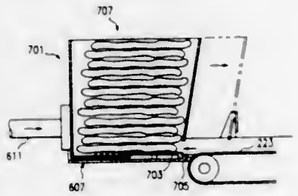
James M. Pippin, Keller, Tex., assignor to ElectroCom Automation L.P., Arlington, Tex.

Continuation of Ser. No. 755,174, Sep. 5, 1991, Pat. No. 5,161,937, which is a division of Ser. No. 481,340, Feb. 20, 1990, Pat. No. 5,064,341. This application Aug. 24, 1992, Ser. No. 933,661

The portion of the term of this patent subsequent to Jul. 14, 2008, has been disclaimed.

Int. Cl.[5] B65H *3/08*; B65G *69/00*

U.S. Cl. 414—795.8 **16 Claims**



1. A product singulator for use in an automatic order filing system for singulating individual products comprising:

a first conveyor belt for supplying a stream of products to be singulated;

a selectively controlled inclined conveyor belt, said inclined conveyor having an upstream input end and a downstream output end, said upstream input end positioned for receiving the stream of products to be singulated from the first conveyor belt;

a vacuum control element mounted at the surface of said inclined conveyor belt for picking a product from the first conveyor belt and holding the picked product under vacuum control to the surface of the inclined conveyor belt during movement toward the downstream output end, said vacuum control element comprising:

an exciter pad positioned on the conveyor belt surface having a higher coefficient of friction than the surface of the conveyor belt; and

an opening extending through the exciter pad and the conveyor belt;

means connected to said vacuum control element for generating a vacuum through the opening extending through the exciter pad to establish a vacuum force between the picked product and the inclined conveyor belt whereby products received by the inclined conveyor belt other than gripped products fall from the conveyor belt; and

control means responsive to a product input signal to generate control signals to selectively control the rate of movement of the inclined conveyor belt and cause product singulation.

5,288,202

CENTRIFUGAL REGULATOR DEVICE FOR OPENING AND CLOSING THE SHUTTER OF AN AXIAL ELECTRIC FAN UNIT AND AN ELECTRIC FAN UNIT UTILIZING THIS DEVICE

Vittorio Mancinelli, deceased, late of Imperia, Italy, by Rosella Mancinelli, and Emilio Mancinelli, heirs

Filed Mar. 31, 1993, Ser. No. 41,043

Claims priority, application Italy, Apr. 1, 1992, T092A000295

Int. Cl.[5] F04D *25/14*, *25/08*

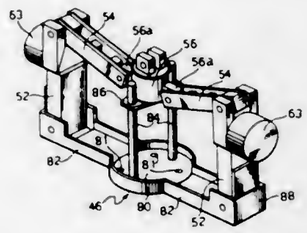
U.S. Cl. 415—25 **7 Claims**

1. A centrifugal regulator device for opening and closing a system of vanes of a shutter of an electric fan unit, comprising:

a base element adapted to be connected with a fan so as to rotate about an axis upon rotation of the fan,

an axially movable actuator member adapted to be operatively connected to the system of vanes,

at least two pivoted arms connecting said actuator member to said base element, said at least two pivoted arms each including a centrifugal mass and being displaceable, in use, by the centrifugal effect due to the rotation of the base element about said axis in such a way as to cause the axial advancement or retraction of the actuator member, and



guide means for guiding the axial movement of said actuator member,

wherein said guide means include at least one guide rod fixed to the base element and extending therefrom towards said actuator member, said guide rod being parallel to and spaced from said axis of rotation of said base element, and a corresponding at least one appendage fixed to said actuator member and defining a shaped aperture in which with said at least one guide rod, is slidably coupled.

5,288,203

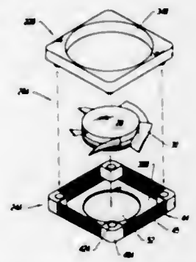
LOW PROFILE FAN BODY WITH HEAT TRANSFER CHARACTERISTICS

Daniel L. Thomas, 1299 San Tomas Aquino Rd., Ste. 212, San Jose, Calif. 95117

Filed Oct. 23, 1992, Ser. No. 965,654

Int. Cl.[5] F04D *29/58*

U.S. Cl. 415—178 **37 Claims**



15. A device for cooling an electronic component having an exposed surface, said device comprising:

a heat transfer body adapted to be engaged with said surface, said body having

an airflow passageway adapted to receive and discharge cooling air to cool said surface, and

heat transfer means positioned in said air flow passageway to enhance the heat transfer capacity of said heat transfer body; and

a means for moving air disposed in said passageway to create an air flow therethrough;

said heat transfer body and said air moving means having substantially equal dimensions in a direction normal to said surface.

5,288,204

GAS TURBINE ENGINE SUPPORT STRUCTURE

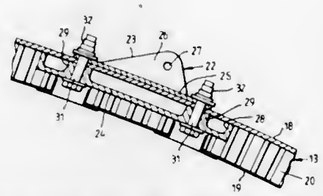
Anthony Adams, Nottingham, England, assignor to Rolls-Royce plc, London, United Kingdom

Filed Feb. 2, 1993, Ser. No. 12,434

Claims priority, application United Kingdom, Mar. 10, 1992, 9205177

Int. Cl.[5] F01D *25/28*

U.S. Cl. 415—182.1 **5 Claims**



1. A gas turbine engine casing comprising a wall member, a support structure for supporting a load from said wall member, said support structure comprising a first sub-structure positioned on one side of said wall member and a second sub-structure positioned on the opposite side of said wall member to said first sub-structure, said first and second sub-structures being aligned with each other at least one fastener maintaining said first and second sub-structures in engagement with said wall member, said at least one fastener interconnecting said first and second sub-structures through a corresponding at least one aperture in said wall member, the first of said sub-structures being provided with means for the attachment thereto of said load to be supported from said wall member, and cellular material attached to said wall member on the side thereof to which said second of said sub-structures is attached, a second wall member being attached to said cellular material so that said cellular material is interposed between and substantially enclosed by said wall members.

5,288,205

INDIA-STABILIZED ZIRCONIA COATING FOR COMPOSITES

Robert L. Jones, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1990, Ser. No. 589,230

Int. Cl.[5] F01D *11/08*

U.S. Cl. 415—200 **10 Claims**

1. A combustion engine having improved resistance to corrosion from sodium vanadates and sodium sulfates, said engine comprising metal surfaces and including a coating of tetragonal zirconia, stabilized with about 2.5 and 20.0 mole percent india, on said surfaces.

5,288,206

TURBO AERO ENGINE EQUIPPED WITH MEANS FACILITATING ADJUSTMENT OF PLAYS OF THE STATOR AND BETWEEN THE STATOR AND ROTOR

Alain M. L. Bromann, Savigny le Temple; Jean-Louis Charbonnel, le Mee sur Seine; Pierre Debeneix, St. Sauveur sur Ecole; Daniel J. Marey, Soisy Sur Seine; Jacky Naudet, Bondoufle; Thierry J. M. Niclot, Chilly Mazarin, and Yann J. M. Rigaud, Pomponne, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Nov. 12, 1992, Ser. No. 974,899

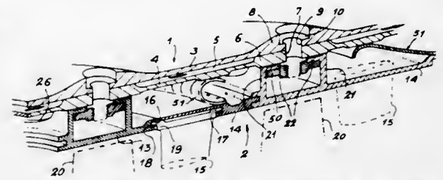
Claims priority, application France, Nov. 20, 1991, 91 14290

Int. Cl.[5] F04D *29/60*

U.S. Cl. 415—209.2 **11 Claims**

1. Turbojet engine which comprises:

a stator which includes one external circular housing and a ferrule bearing fixed vanes mounted on sectors of a circle-shaped elements covering one portion of the circumference of the stators, the ferrule having elements surrounded by the housing and rigidly fixed to the housing at a central location of the sectors and juxtaposed with a predetermined degree of play at circumferential extremities thereof so as to be divided into groups each extending



over substantially the full circumference of the stator, wherein guiding pieces of the extremities of the ferrule elements are fixed to the housing and include wings disposed in such a way as to keep the extremity portions of the ferrule elements against the housing in a radial direction, while enabling said elements to slide in a circumferential direction.

5,288,207

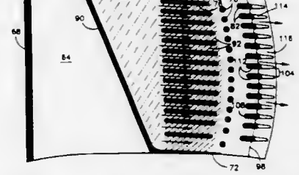
INTERNALLY COOLED TURBINE AIRFOIL

Indrik Linask, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1992, Ser. No. 980,849

Int. Cl.[5] F01D *5/18*

U.S. Cl. 416—97 R **12 Claims**



1. A turbine airfoil for a gas turbine engine having a longitudinal axis and a source of cooling fluid, the turbine airfoil having a pressure wall, a suction wall, a trailing edge and a cooling fluid flow passage, the cooling fluid flow passage in fluid communication with the source of cooling fluid and providing means for directing cooling fluid to the trailing edge, the flow passage including:

a plurality of axially extending walls, each of the walls extending laterally between the pressure wall and suction wall, the plurality of walls being radially spaced within the flow passage such that adjacent pairs of walls define a subchannel, wherein the plurality of walls turn the flow of fluid towards the trailing edge;

a plurality of axially extending dividers, each of the dividers extending laterally between the pressure wall and the suction wall, being axially spaced downstream of one of the walls, and extending over the trailing edge, the plurality of dividers being radially spaced within the flow passage such that a second plurality of subchannels is defined between adjacent dividers, wherein the walls and dividers define a plurality of axially extending flow channels,

a plenum upstream of the plurality walls, the plenum defined in part by the pressure wall, the suction wall, and a radially canted partition extending therebetween, wherein the plenum defines a converging passage in the direction of

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flow of the cooling fluid entering the flow passage, wherein the converging passage maintains a positive flow velocity through the plenum to evenly distribute cooling fluid to the flow channels; and

wherein the axial spacing between the walls and the dividers defines an interruption within the channels, the interruption permitting cross flow of the cooling fluid flowing through adjacent channels.

5,288,208

MARINE PROPELLER BLOCK APPARATUS

Richard L. Cummins, 435 Val La., Millville, N.J. 08332, and Fred W. Devaney, 1564 W. Riverside Dr., Atlantic City, N.J. 08401

Filed Jun. 1, 1993, Ser. No. 69,744
Int. Cl.[5] B63H *1/14*
U.S. Cl. 416—146 R **6 Claims**



1. A marine propeller block apparatus arranged for mounting to a cavitation plate of a marine engine lower unit, wherein the apparatus comprises,

a wedge member of rigid construction, having a top wall arranged to engage the cavitation plate, and a bottom wall, wherein the bottom wall is oriented at an oblique angulation relative to the top wall and coextensive with the top wall, with the wedge member including a first end wall spaced from a second end wall, and spaced side walls, wherein clamp means is mounted to the top wall in adjacency to the first end wall for securing the cavitation plate between the clamp means and the top wall.

5,288,209

AUTOMATIC ADAPTIVE SCULPTURED MACHINING

Roger J. Therrien, Georgetown, Mass., and Randall M. Ouellette, Proctor, Utah, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1991, Ser. No. 810,943
Int. Cl.[5] F01D *5/22*; G01B *5/20*
U.S. Cl. 416—193 R **14 Claims**

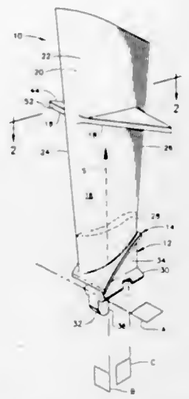
1. A method of adaptive machining, comprising the steps of:

a. measuring an actual surface of a workpiece at a plurality of locations relative to a reference nominal workpiece surface defined by a plurality of nominal NC tool paths stored in a NC machine tool controller, said nominal tool paths comprising a plurality of discrete nominal NC move commands;

b. calculating a spacial deviation between the actual workpiece surface and the nominal workpiece surface for each of said locations;

c. storing said deviations in said controller; and

d. concurrently generating modified tool paths in said controller and machining an area of said workpiece with a machining system under numerical control according to said modified tool paths, by sequentially generating and executing a succession of modified move commands for all of said plurality of nominal move commands, using an algorithm which is a function of each of said nominal move commands and at least two deviations, whereby a succeeding modified move command is generated prior to



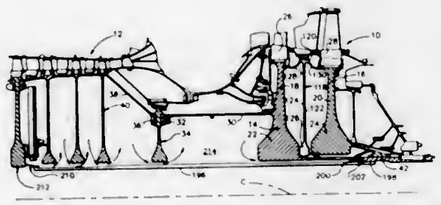
completion of execution of a preceding modified move command by said machining system.

5,288,210

TURBINE DISK ATTACHMENT SYSTEM

Richard W. Albrecht, Fairfield; John T. Kutney, Jr., Cincinnati, and Robert H. Weisgerber, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 785,389, Oct. 30, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 8,243
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—198 A **34 Claims**



1. In a gas turbine engine of a type having a high pressure turbine section including a first stage disk and a second stage disk, adjacent to said first stage disk, a disk attachment system comprising:

said first stage disk including a rearwardly-extending first aft shaft which supports said second stage disk; and

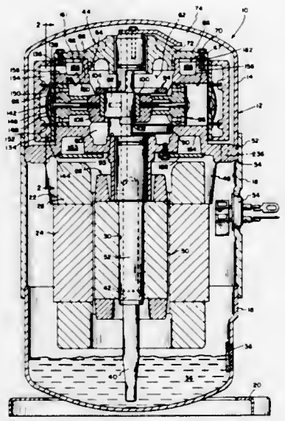
said second stage disk having means for mounting said second stage disk on said first aft shaft, whereby rotational energy from said second stage disk is transmitted through said first aft shaft to said first stage disk and said second stage disk is removable from said gas turbine engine independently of said first stage disk.

5,288,211

INTERNAL BAFFLE SYSTEM FOR A MULTI-CYLINDER COMPRESSOR

Emanuel D. Fry, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jul. 8, 1992, Ser. No. 910,785
Int. Cl.[5] F04B *39/12*
U.S. Cl. 417—312 **15 Claims**



1. A hermetic compressor comprising:

a hermetically sealed housing;

a motor-compressor unit disposed within said housing, said unit including a cylinder block defining a plurality of cylinder bores, said unit having a plurality of pistons reciprocatable within said cylinder bores, each bore including an associated discharge valve, said unit including a cylinder head attached over each bore;

a common muffler chamber within said housing in communication with said discharge valves, into which said discharge valves empty, said muffler chamber including an exit port; and

a baffle arrangement separating said common muffler chamber into a plurality of sub-chambers, each sub-chamber in communication through a cylinder head with a respective said discharge valve, each said discharge valve emptying directly into a separate sub-chamber, said baffle arrangement permitting fluid communication between said sub-chambers at other locations than at said exit port, said baffle arrangement preventing undeflected pressure pulses to travel from one discharge valve to any other discharge valve, whereby said baffle arrangement reduces the pressure pulses between said discharge valves and discharge valve performance is enhanced.

5,288,212

CYLINDER HEAD OF HERMETIC RECIPROCATING COMPRESSOR

In S. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

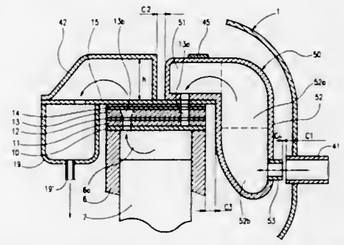
Continuation of Ser. No. 805,590, Dec. 11, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,821
Claims priority, application Rep. of Korea, Dec. 12, 1990, 20422/1990; Dec. 13, 1990, 20498/1990; Liberia, Apr. 6, 1991, 11462/1991
Int. Cl.[5] F04B *39/12*
U.S. Cl. 417—312 **3 Claims**

1. A cylinder head of a hermetic reciprocating compressor, comprising;

a main base mounted on a head plate of a cylinder of said compressor;

exhaust means for exhausting a compressed fluid which was compressed in said cylinder, said exhaust means being mounted on said main base;

suction means for sucking a fluid into the cylinder where the fluid is compressed, said suction means being mounted on the main base so as to be spaced apart from said exhaust means by a predetermined clearance, said suction means comprising a horizontal part communicating with an inner space of the cylinder by means of a suction hole, a vertical part comprising a resonance chamber for reducing noise generated during the suction of the fluid and a suction chamber provided at a lower inside portion of said vertical part of said suction means; and



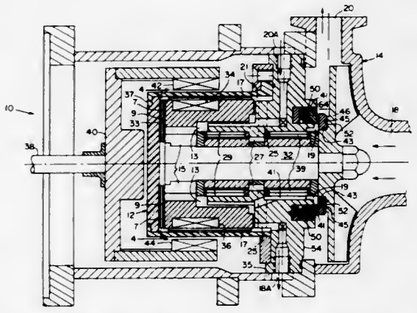
a suction pipe member for sucking said fluid, said suction member comprising a first pipe member mounted on a casing of the compressor for sucking the fluid into the inside of the casing of the compressor, and a second pipe member disposed inside the casing and mounted on said vertical part of said suction means for guiding a portion of the fluid into the suction chamber, said first pipe member having a diameter larger than a diameter of said second pipe member and being spaced apart from said second pipe member by a predetermined clearance so that the fluid not received by the suction chamber through said second pipe member is circulated in the casing.

5,288,213

PUMP HAVING AN INTERNAL PUMP

Ali M. Nasr, Summit, N.J., assignor to PMC Liquiflo Equipment Co., Inc., Warren, N.J.

Continuation-in-part of Ser. No. 892,752, Jun. 3, 1992, abandoned. This application Nov. 19, 1992, Ser. No. 978,628
Int. Cl.[5] F04D *13/14*
U.S. Cl. 417—368 **13 Claims**



1. A pump comprising a rotatable shaft mounted in a wear end of said pump, said wear end including, a rotor, means for effecting rotation of said rotor and said shaft and a housing seal between said means for effecting rotation and said rotor, a pump means mounted on said rotatable shaft in a pump end of

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said pump, means for introducing a first liquid into said pump end, means for removing said first liquid from said pump end, means for introducing a second liquid into said wear end, means for removing said second liquid from said wear end, an internal pump positioned between said pump end and said wear end on said rotatable shaft, said internal pump comprising a rotatable ring connected to said shaft and having a first face contacting a second face on a stationary ring, said first face and second face having a surface configuration which effects pumping of said second liquid in said wear end to said pump end while preventing said first liquid in said pump end from entering said wear end when said shaft is rotated, said internal pump sealing said pump end from said wear end when said shaft is not rotated and means for cooling said wear end

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5,288,214

MICROPUMP

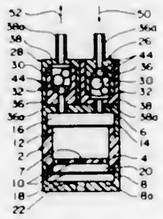
Toshio Fukuda, 66, Yada-cho 2-chome, Higashi-ku, Nagoya-shi, Aichi-ken, 461; Shinobu Hattori, and Shigenobu Nagamori, both of Kyoto, all of Japan, assignors to Toshin Fukuda, Nagoya and Nippon Densan Corporation, Kyoto, both of Japan

Filed Sep. 30, 1992, Ser. No. 954,310

Claims priority, application Japan, Sep. 30, 1991, 3-280849; Oct. 8, 1991, 3-290861

Int. Cl.[5] F04B *43/06*

U.S. Cl. 417—395 **7 Claims**



1. A micropump comprising a housing for defining a pump chamber, an inlet valve means disposed in an inlet flow passage connecting to said pump chamber, an outlet valve means disposed in an outlet flow passage connecting to said pump chamber, and an actuator for changing a volume of said pump chamber, said inlet valve means and said outlet valve means respectively comprising a valve body defining a valve chamber, a blocking means disposed in said valve chamber, and a deviating means for deviating resiliently said blocking valve means in a direction for closing a flow passage, wherein said actuator is made of a thermo-responsive polymer gel material, said actuator decreasing in volume when heated resulting in increasing the volume of and reducing the pressure within said pump chamber so as to draw said blocking means of said inlet valve means in a valve opening direction against an action of said deviating means of said inlet valve means to permit liquid to flow into said pump chamber through said inlet flow passage, said actuator increasing in volume when cooled resulting in decreasing the volume of and increasing the pressure within said pump chamber so as to move said blocking means of said outlet valve means toward an opening direction against an action of said deviating means of said outlet valve means to permit liquid to discharge from said pump chamber through said outlet flow passage.

5,288,215

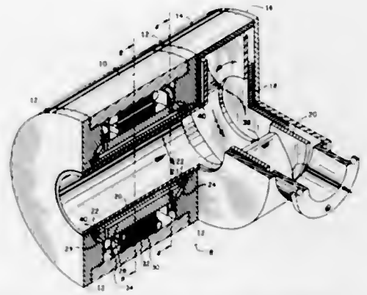
INTEGRAL MOTOR CENTRIFUGAL PUMP

Dennis H. Chancellor; Temple M. Chancellor, both of 13951 Chancellor Way, Poway, Calif. 92064, and Jacquetta Vogel, P.O. Box 1021, Poway, Calif. 92074-1021

Filed Nov. 19, 1992, Ser. No. 978,722

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—423.7 **2 Claims**



1. A motor driven centrifugal pump comprising:
(a) an oil cooled motor comprising a hollow motor shaft, a motor enclosure, a top motor end plate and a bottom motor end plate;
(b) a hollow impeller shaft concentric within and coupled to said hollow motor shaft;
(c) said hollow impeller shaft having a top end which extends beyond said motor enclosure, past said top motor end plate;
(d) top axial bearings located in said top motor end plate supporting said hollow motor shaft;
(e) bottom axial bearings located in said bottom motor end plate supporting said hollow motor shaft;
(f) a cylindrical volute casing enclosing the impeller said casing mounted on top of said motor end plate;
(g) a removable impeller inspection end plate attached to the top of said impeller;
(h) said axial bearings being oil lubricated;
(i) oil lubricated mechanical sealing means located on the interface of the hollow motor shaft and the motor end plates for sealing said motor;
(j) a removable volute inspection plate attached to the top of the volute casing.

5,288,216

FAN UNIT FOR GENERATING GAS STREAMS

Ekkehzrd Bolte, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

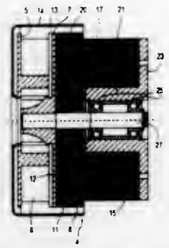
Continuation of Ser. No. 795,605, Nov. 21, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,376

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037229

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—423.7 **16 Claims**

1. A fan unit for generating gas streams, in particular for vacuum cleaners, which unit comprises a motor (4) having a motor axis and an impeller wheel (1) which is also electromagnetically active and in conjunction with electromagnetically active parts (19) of the motor stator (3) generates the torque of the impeller wheel via an air gap (11) extending perpendicular to the motor axis, and formed between surfaces of the impeller wheel (1) and the motor stator (3), wherein the electromagnetically active part of the impeller wheel (1) is a conductive disc (7) which is arranged in a plane extending perpendicular to the motor axis and which has one surface (8) extending perpendicular to the motor axis and bounding the air gap (11) at the rotor side, and at the stator side the air gap is bounded by planar stator poles (19) formed on a radial bounding surface (12) of an



iron cylinder (15), extending perpendicular to the motor axis, by the provision of radial slots (17) in which the coils (20) are arranged.

5,288,217

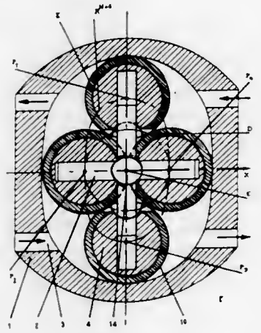
CYCLIC VOLUME MACHINE

Italo Contiero, via Lungargine 3, I-35010 Cadoneghe (PD), Italy

Continuation-in-part of Ser. No. 578,039, Sep. 4, 1990, abandoned, and a continuation-in-part of Ser. No. 16,381, Dec. 30, 1986, abandoned. This application Jan. 13, 1992, Ser. No. 820,193

Int. Cl.[5] F01C *1/22, 1/344, 21/08*

U.S. Cl. 418—150 **6 Claims**



1. A cyclic volume machine comprising:
one stator with one cylindrical cavity U; p1 one transmission shaft with axis of rotation Y_c;
one rotor with axis of rotation Y_o parallel to axis Y_c and with N_r sides which have N_e equal cylindrical surfaces E of radius r at their ends, said stator cavity U having a perimetral surface of contour M which is the external envelope of N_e cylindrical surfaces E of N_r rotor sides, said surfaces E of any rotor side having longitudinal axes Y_i, $i=1, 2, \ldots N_e$ parallel to axis Y_c and orthogonally intersecting a reference plane Γ in points $P_i P_{i+1}$ simultaneously guided by the stator cavity and placed at an equal distance $\overline{W}$ for any angular position of the rotor, wherein, referring to a polar system of coordinates with pole C and polar axis X on the plane Γ: each rotor side is a rotating and/or translating piston with points P_i and P_{i+1} running along a rotoid curve R^N which has the property of invariant length $\overline{W}P_iP_{i+1}$, this curve being obtained by transforming a given simple and closed curve L by means of the law $g_{(\partial)}=\overline{W}\cdot F_{(\alpha)}/W_{(\alpha)}$ (1) wherein:
$g_{(\partial)}$ is a non-constant function defining curve R^N in polar coordinates, $g_{(\partial)}=\overline{CP}_1$ being the radius of one rotor vertex O_1;
$\partial=P_1CX$ is the angular abscissa of a market point;
$f_{(\alpha)}$ is a given continuous positive function defining curve L, wherein $F_{(\alpha)}=\overline{CF}_1$, $\alpha=F_1CX$, $O\leqq\alpha\leqq 2\pi$;
$\overline{W}$ is the length of segment P_iP_{i+1} of each piston, $i=1$ to N;
N is an integer to which the modulus of rotoid curve R^N corresponds;
$W_{(\alpha)}$ is the length of the side of an equilateral N-polygon F_i with vertices $F_1F_2 \ldots F_N$ lying on curve L; and wherein:
the rotor is of hinged type;
assigned curve L has h symmetry axes;
$N=2h$;
angles $F_iCF_{i+1}=O_iCP_{i+1}=\lambda=\pi/2h$ are constant, C being the point in which axis Y_c intersects Γ; and the side length of N-polygon F_i in equation (1) is:

$$W_{(\alpha)}=\sqrt{CF_i^2+CF_{i+1}^2-2\cdot CF_i\cdot CF_{i+1}\cdot\cos\lambda}$$

rotor axis Y_o and axis Y_c of the transmission shaft coincide with the symmetry axis of stator cavity U;
the rotor is composed of N equal cylinders E, and cylinders E have circular bases of radius

$$r=P_iP_{i+1}/2=\overline{W}/2$$

5,288,218

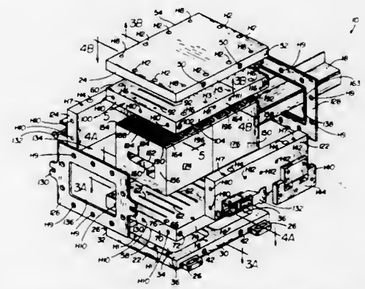
EXTRUSION CALIBRATOR

George Melkonian, Kent, Wash., assignor to Mikron Industries, Kent, Wash.

Filed Feb. 11, 1993, Ser. No. 16,730

Int. Cl.[5] B29C *47/90*

U.S. Cl. 425—71 **19 Claims**



18. An extrusion calibrating apparatus for use on a stationary support and connectable to an external source of cooling water and an external source of vacuum, the apparatus being usable to calibrate the exterior profile of a hollow extrusion upon its exit from an extruding die while the extrusion is still in a heated plastic state, comprising:
first and second assemblies, at least one of said first or second assemblies having a vacuum manifold, a vacuum channel providing communication between said vacuum manifold and the source of vacuum, and a plurality of vacuum apertures extending between said vacuum manifold and openings in a first side of said first or second assembly having said vacuum apertures, at least one of said first or second assemblies further having supply and return water channels providing communication between spaced-apart interior supply and return ports and the source of water, one of said first or second assemblies having attachment members fixedly attachable to the stationary support; and
a heat-conducting calibrating insert removably positioned

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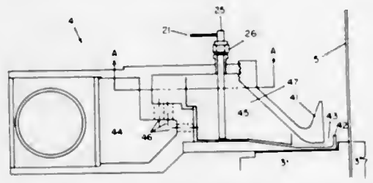
between said first and second assemblies with a first side in face-to-face juxtaposition with said assembly first side with said openings, said insert having a calibrating aperture corresponding to the exterior profile of the extrusion extending lengthwise therethrough, said calibrating aperture having an entry opening to permit the entry of the extrusion into said calibrating aperture and an exit opening to permit the exit of the extrusion out of said calibrating aperture, said insert having a plurality of vacuum apertures extending between said first side thereof and said calibrating aperture with said vacuum apertures having openings in said insert first side in communication with said openings in said assembly first side, said insert having a water channel formed therein and extending to communicate between said spaced-apart supply and return ports.

5,288,219

AIR RING FOR CONTROLLING BLOWN FILM THICKNESS

David J. Smith, Topsfield, Mass., assignor to Battenfeld Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Mar. 25, 1991, Ser. No. 674,589
Int. Cl.[5] B29C *47/88, 47/92*
U.S. Cl. 425—72.1 **12 Claims**



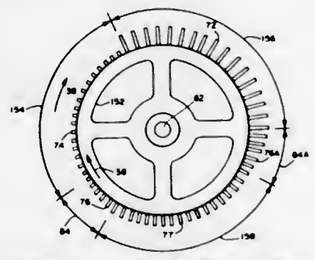
1. An air ring for controlling gauge of blown plastic film comprising:
a) a generally annular plenum;
b) an annular orifice for discharging cooling air against an extruded plastic tube passing through the air ring;
c) a flow path for cooling air between said plenum and said annular orifice;
d) an electrical cartridge heater inserted in said air flow path; whereby the temperature of cooling air discharge against said extruded plastic tube can be locally varied.

5,288,220

INTERMITTENT, MACHINE-DIRECTION FLUFF CONTOURING ROLL

Joseph M. Kugler; Peter J. Krautkramer; Lyle T. Lamers, and Douglas P. Rammer, all of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 2, 1992, Ser. No. 955,587
Int. Cl.[5] B29D *7/00;* **D04H** *1/70*
U.S. Cl. 425—83.1 **20 Claims**



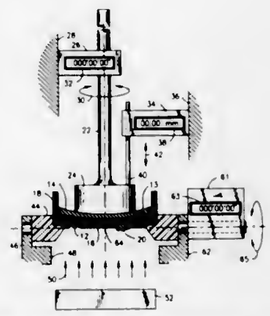
1. An apparatus for contouring a fibrous web, comprising:
supplying means for providing a fibrous web which defines an interconnected series of appointed article segments along a length dimension of said web;
conveying means for moving said web at a selected speed along an appointed machine direction;
scarfing means having a movement direction thereof and having an outer peripheral surface which is movable along said movement direction, said peripheral surface configured for removing and separating away predetermined quantities of fibers from selected regions of said fibrous web, said scarfing means constructed to provide each of said article segments with a selected contoured basis weight which varies at least along the length dimension of said web in a selected correspondence with a predetermined scarfing pattern, said scarfing pattern provided by said outer peripheral surface of said scarfing means, and said pattern configured to have a selected variation at least along said movement direction of said scarfing means; and
regulating means for controlling a relative movement between said conveying means and said scarfing means to provide said selected correspondence and to thereby from said selected contoured basis weight on substantially each of said article segments.

5,288,221

APPARATUS FOR MAKING OPHTHALMIC LENSES

Jacques Stoerr, Oldsmar; Sidney S. White, Jr., Seminole, and Horst H. Brytsche, Gulfport, all of Fla., assignors to Essilor of America, Inc., St. Petersburg, Fla.

Filed May 18, 1992, Ser. No. 885,108
Int. Cl.[5] B29C *45/80;* **B29D** *11/00*
U.S. Cl. 425—125 **10 Claims**



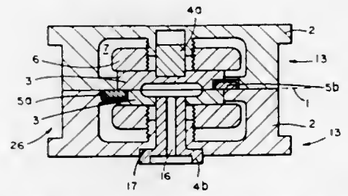
1. An apparatus for making an opthalmic lens, comprising:
a movably mounted first mold member;
means for rotating said first mold member;
a second mold member in the form of a lens wafer, said lens wafer disposed in spaced relation to said movably mounted first mold member;
a sealing ring disposed in circumscribing relation to said first mold member and said lens wafer;
first indexing means for selectively controlling a rotatably position of said first mold member with respect to said lens wafer;
means for injecting a preselected polymerizable material into a cavity defined by said first mold member, said lens wafer, and said sealing ring; and
radiation means for curing said polymerizable material;
whereby said lens wafer and said polymerizable material are fused to one another when the polymerizable material is cured by radiation; and
whereby said lens wafer is an integral part of the finished lens.

5,288,222

MOULD FOR INJECTION MOULDING MACHINES

Marianne Wieser, Hofweg 43, D-8780 Gemünden/Main, Fed. Rep. of Germany

PCT No. PCT/EP90/01745, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO91/05650, PCT Pub. Date May 2, 1991
PCT Filed Oct. 15, 1990, Ser. No. 849,002
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1989, 3934495
Int. Cl.[5] B29C *45/17*
U.S. Cl. 425—190 **18 Claims**



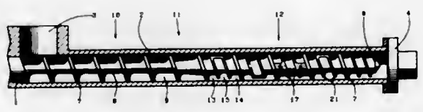
1. A mould (**26**) for use in a injection forming machine, said mould making a manufactured part by solidifying a liquid material,
comprising
at least two mould halves (**13**) which, when closed, are in intimate contact with each other in a defined position along at least one parting plane (**1**), and which, when opened, are movable relative to each other in order to remove the manufactured part, each half of the mould (**26**) comprising a retaining plate (**2**) and at least one mould insert (**3**) fitted therein and centered with respect to the retaining plate (**2**), each mould insert (**3**) having a front surface (**19**), which is in alignment with the parting plane (**1**), and a rear or back surface (**20**),
at least one stop (*5a*) urging each respective mould insert (**3**) away from said parting plane and toward its retaining plate (**2**);
at least one thrust block (**6**) urging each mould insert (**3**) toward said parting plane (**1**);
wherein each mould insert (**3**) is held firmly without play between said at least one thrust block (**6**) acting on the back surface (**20**) of the mould insert (**3**) and said at least one stop (*5a, 5b*) in the vicinity of the front surface (**19**) of the mould insert (**3**), and
further comprising means (**18**) allowing for adjustment of each thrust block (**6**) relative to the respective retaining plate (**2**) in an axial direction normal to said parting plane (**1**).

5,288,223

THREE STAGE INTERMIXING FEED SCREW FOR POLYMERS

Alfonso Toro, 60 Linus Allain Ave., Gardner, Mass. 01440

Continuation-in-part of Ser. No. 716,663, Jun. 14, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 80,798
Int. Cl.[5] B29B *7/42*
U.S. Cl. 425—208 **30 Claims**



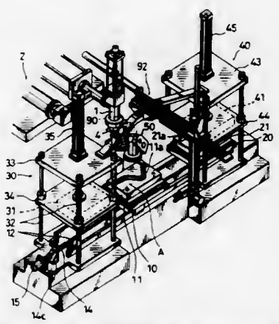
1. A polymer-extruder screw comprising:
a screw channel bounded by a screw core as a channel bottom and a main flight as channel walls forming screw flights extending radially outward from the screw core in helical progression intermediate a screw shank on a proximal end and a discharge tip on a distal end of an extruder screw;
a mixing section in which the screw channel has a designed mixing depth in a direction perpendicularly to the screw core and a designed mixing width between helical walls of the main flight for receiving and mixing a desired quantity of material between the screw shank and a transition section of the extruder screw,
a transition section having progressively shallower screw channels with the screw core having a progressively larger diameter extending helically from the mixing section of the extruder screw,
a metering section having a plurality of at least three pressure channels juxtaposed helically between helical rotations of the main flight and extending from the transition section to the discharge tip of the extruder screw,
channel interruptions of the pressure channels,
the channel interruptions being comprised of helical slopes extending inward radially on opposite helical sides of interruption tops,
the interruption tops having constancy of radii from an axis of the extruder screw,
pressure-channel bottoms that are offset helically from the interruption tops as designed for effective plastication of different polymers and other substances,
pressure-channel flights on edges of the pressure channels which are adjacent to other pressure channels between the screw flights, and
the pressure-channel flights taper away helically to radii equal to the radii of the interruption tops from positions where the interruption-channel bottoms of the pressure channels approach the interruption tops.

5,288,224

APPARATUS FOR MANUFACTURING A HOLLOW SYNTHETIC RESIN PRODUCT

Michio Yamamura, and Naoki Ohmori, both of Hyogo, Japan, assignors to Tigers Polymer Corporation, Osaka

Filed Dec. 6, 1990, Ser. No. 623,673
Claims priority, application Japan, Sep. 27, 1990, 2-259848
Int. Cl.[5] B29C *49/04*
U.S. Cl. 425—531 **5 Claims**



1. An apparatus for manufacturing a hollow synthetic resin product, the apparatus comprising:
at least a pair of upper and lower molding portions, said upper molding portion having a curved upper groove on a bottom surface thereof and said lower molding portion having a curved lower groove on a top surface thereof;
an extruding head for extruding a parison perpendicularly downward;
lower molding portion moving means for moving said lower molding portion straight in a direction crossing the direc-

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tion of extrusion of the parison in association with the extruding of the parison;

parison guiding means for guiding the parison in a direction crossing the moving direction of said lower molding portion in accordance with a shape of the lower groove to accommodate a first portion of the parison in the lower groove in association with the movement of said lower molding portion, wherein said parison guiding means comprises a robot having a mechanism which is movable to an arbitrary position and a guiding member attached to the mechanism, wherein the guiding member comprises four lengthy rollers arranged in parallel crosses, into whose hole the parison is to be inserted;

cutting means for cutting the parison into a predetermined length;

parison holding means for holding a portion of the parison to be cut with a parison pinch immediately before the parison is cut, for lowering an upper end of the above portion of the parison in progress with the accommodation of the parison, and then for releasing the upper end of the parison, wherein said parison holding means includes a mechanism for rotating the parison in a first direction in accordance with a curve of the lower groove when the parison is being accommodated in the curve and rotating the parison in a second direction opposite to the first direction after the parison passes the curve, and wherein the parison holding means comprises a robot having a mechanism which is movable three-dimensionally to an arbitrary position and a holding member for holding the parison, the holding member being attached to the mechanism; and

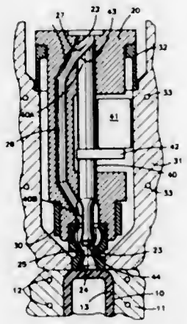
control means for executing overall control of said lower molding portion moving means, said parison guiding means and said parison holding means, wherein said control means controls said lower molding portion moving means, said parison guiding means and said parison holding means so that the parison is accommodated in the lower groove throughout a total length thereof at a substantially uniform speed.

5,288,225

PRESSURE BALANCED VALVE STEM

Harald Schmidt; Bruce Catoen, both of Georgetown, and Michael Dybka, Burlington, all of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Dec. 14, 1992, Ser. No. 991,433
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—564 **10 Claims**



1. Injection molding apparatus comprising:

a mold cavity;

a molten plastic inlet channel defining an outer end for communication with a source of molten plastic and an inner end for communication with said mold cavity for transporting molten plastic from the outer end to the mold cavity;

a valve gate between the mold cavity and inlet channel inner end and a reciprocable valve stem movable from a first position closing the valve gate to a second position opening the valve gate;

wherein said stem has an upstream end region adjacent the inlet channel outer end exposed to upstream pressure of said molten plastic and a downstream end region adjacent the inlet channel inner end exposed to downstream pressure of said molten plastic, wherein the upstream and downstream pressures are substantially equal and opposite due to said end regions being of substantially equal surface area; and

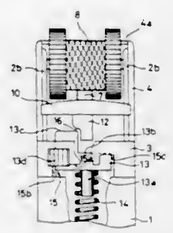
means for moving the valve stem from closed to open position and from open to closed position.

5,288,226

CIGARETTE LIGHTER

Decha Khemarangsan, Samutsakorn, Thailand, assignor to Thai Merry Co., Ltd., Samutsakorn, Thailand

Filed Jan. 26, 1993, Ser. No. 9,589
Claims priority, application Japan, Jan. 29, 1992, 4-2764[U]
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **5 Claims**



1. A cigarette lighter comprising:

an operating member movable to an actuating position to perform a lighting operation;

lock member means for permitting movement of said operating member means when said lock member means is in a first position and for preventing movement of said operating member means when said lock member means is in a second position;

first lock portion means for releasably locking said lock member means at said first position, wherein actuation of said operating member causes said lock member means to disengage from said first lock portion means;

second lock portion means for releasably locking said lock members at said second position in a non-rotatable manner;

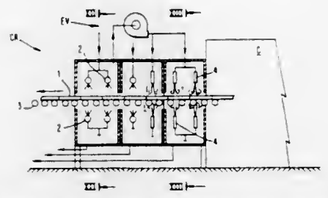
spring means for applying a rotary biasing force to move said lock member means in a rotary direction from said first position to said second position upon actuation of said operating member when said lock member means is caused to disengage from said first lock portion means, and for applying an axial biasing force to move said lock member means in an axial direction transverse to said rotary direction into locking relation with said first lock portion means when said lock member means is in alignment with said first lock portion means and into locking relation with said second lock portion means.

5,288,227

METHOD FOR COOLING CERAMICS, ESPECIALLY CERAMIC TILES PRODUCED IN ROLLER KILNS, AND THE RELATIVE PLANT

Renzo Righetti, Via Frescobaldi 17, 41049 Sassuolo, Italy

PCT No. PCT/IT89/00051, § 371 Date Jan. 17, 1991, § 102(e) Date Jan. 17, 1991, PCT Pub. No. WO90/01136, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 17, 1989, Ser. No. 613,673
Claims priority, application Italy, Jul. 19, 1988, 40118 A/88
Int. Cl.[5] F27D *15/02*; F25D *17/02*
U.S. Cl. 432—85 **3 Claims**



1. A method for cooling hot articles made of a ceramic material, as the hot articles are moved from a kiln while supported on a plurality of rollers, comprising the steps of:

applying jets of steam to the hot moving articles from above and below in an initial cooling stage;

applying jets of steam followed by jets of water, from above and below, to the initially-cooled moving articles in an intermediate cooling stage; and

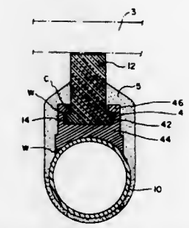
applying jets of water from above and below to the moving articles in a final cooling stage, to cool them to close to ambient temperature.

5,288,228

HEAT-RESISTANT MATERIALS

Hideo Fujita, Hirakata; Jun Funakosbi, Suita; Takabiro Kaba, Higashiosaka; Akira Shinosaki, and Hiroyuki Araragi, both of Hirakata, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Continuation of Ser. No. 767,753, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 589,559, Sep. 28, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,882
Claims priority, application Japan, Nov. 17, 1989, 1-300091
Int. Cl.[5] F27D *3/02*
U.S. Cl. 432—234 **7 Claims**



1. An assembly of a skid button and a support member therefor, said assembly being adapted for use in heating furnaces and comprising:

a skid button having a shank and a flange at its base portion;

a support member including a seat portion weldable to a skid pipe and formed with an annular cavity for the flange of the skid button to fit in loosely, and a ring member to be secured to the seat portion and having an inside diameter slightly larger than an outside diameter of the shank of the skid button, and

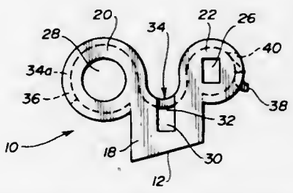
a refractory layer which covers at least the base and lower portion of the shank of said skid button.

5,288,229

CONVERTIBLE ORTHODONTIC BUCCAL TUBE

Stephen M. Huff; William J. Bauer, both of San Diego, and Diane K. Bolliger, Ramona, all of Calif., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Filed Jan. 6, 1993, Ser. No. 1,013
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—17 **5 Claims**



1. A buccal tube for mounting on a tooth comprising:

a base;

a body extending from the base and having spaced apart occlusal and gingival portions, one of said occlusal and gingival portions containing a slot therethrough, said slot capable of accepting a connection for a facebow therein, and the other of said occlusal and gingival portions containing a second archwire slot therethrough, said archwire slot capable of accepting an archwire therein, and said body including a first archwire slot located between the occlusal and gingival portions; and

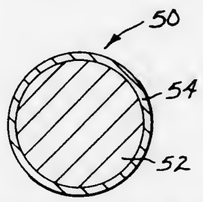
a cover integrally connected to said occlusal portion and a tab attachably connected to said cover, said cover rotatable about said occlusal portion.

5,288,230

COATED ORTHODONTIC ARCHWIRE

Enrique A. Nikutowski, Monrovia; Randall E. Adam, Temple City, both of Calif., and David G. O'Neill, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 732,117, Jul. 18, 1991, Pat. No. 5,203,804. This application Jan. 29, 1993, Ser. No. 11,373
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—20 **12 Claims**



1. A dental article having a hard carbon coating wherein said article comprises an orthodontic archwire.

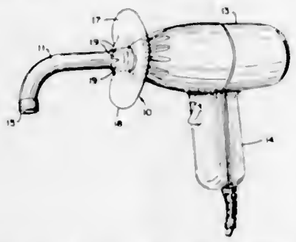
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,231

LIGHT SHIELD FOR DENTAL APPARATUS

Paul Kuehn, Eau Claire, Wis., and Thomas A. Lansing, Pine Springs, Minn., assignors to Pinnacle Products, Inc., St. Paul, Minn.

Filed Mar. 8, 1993, Ser. No. 27,785
Int. Cl.[5] A61C 1/00
U.S. Cl. 433—29 7 Claims



1. A light shield for mounting on the guidetube of a dental light gun which provides light for curing dental materials, comprising:

a body formed of a sheet of resilient plastic material, the body having an outer periphery, the body formed of a plastic material which substantially blocks light of wavelengths in the blue range and substantially passes longer wavelengths, and engagement members formed integrally with the body of the shield, the engagement members defined by slits in the body of the shield which converge toward an intersection to define the engagement members as flexible parts which may be deflected away from the central point as the tip of a guide tube of a light gun is pressed against the engagement members to mount the shield on the guide tube.

5,288,232

DENTAL PORCELAIN FOR TITANIUM AND TITANIUM ALLOYS

Carlino Panzera, Belle Mead, N.J., and Arun Prasad, Cheshire, Conn., assignors to American Thermocraft Corporation Subsidiary of Jeneric/Pentron Incorporated, Somerset, N.J.

Continuation of Ser. No. 629,617, Dec. 18, 1990, abandoned.
This application Sep. 23, 1992, Ser. No. 949,356
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] A61C 13/08
U.S. Cl. 433—206 16 Claims

1. A dental restoration comprising a titanium or titanium alloy coping coated with a biocompatible porcelain composition, said porcelain composition consisting essentially of:

Component (A) 50–70 percent by weight silicon dioxide,
Component (B) 7–33 percent by weight boron oxide,
Component (C) at least 8 percent by weight zinc oxide,
Component (D) up to 4 percent by weight aluminum oxide,
Component (E) up to 4 percent by weight titanium dioxide,
Component (F) up to 12 percent by weight sodium oxide,
Component (G) up to 8 percent by weight potassium oxide,
Component (H) up to 3 percent by weight cerium oxide,
Component (I) up to 1 percent by weight zirconium oxide, and
Component (J) up to 1 percent by weight of a complex of yttrium oxide and cerium oxide,

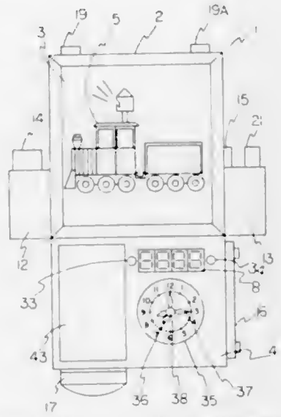
said composition having a thermal expansion coefficient close to that of said titanium or titanium alloy coping, having a fusion temperature of about 800° C. or lower, and capable of being shaped in the form of a finished crown or multiple unit bridge.

5,288,233

LEARNING DEVICE FOR ATTENTION DEFICIT CHILDREN

Janet E. Green, 504 Oakhurst St., Brandon, Fla. 33511

Filed Apr. 15, 1993, Ser. No. 46,132
Int. Cl.[5] G09B 19/00
U.S. Cl. 434—238 4 Claims



1. A learning device for attention deficit children, comprising a wall mounted, substantially rectangular enclosure,

said enclosure having at least two separate compartments consisting of an upper hinged section, and a lower closed section;

said enclosure also having attached side mounted storing means for a plurality of "on-track" cards each having a task to be completed by an attention deficit child, said storing means being an extension of one side of said enclosure,

said enclosure also having attached side mounted storing means for storing a plurality of "off-track" cards each having information which reinforces positive action from said attention deficit child,

said upper section of said enclosure having a mirrored frontal surface, and said mirrored frontal section supporting a model train,

said lower section of said enclosure having a timer apparatus, said timer apparatus being a starter clock, and said starter clock having two sets of hands, the one set of hands displaying the present time of day, and the other set of hands being settable, as desired,

said lower section of said enclosure also having a settable digital clock, and said settable digital clock having audible sounding means to alert said child when said digital clock has counted down to zero,

said lower section of said enclosure also having a plurality of chips being stored in a refillable stacking enclosure, said stacking enclosure being affixed inside said lower section of said enclosure, said enclosure further comprising a receiving slot located on one side of side of said enclosure, said receiving slot allowing insertion of an "on-track" card into said slot,

said lower section of said enclosure also having a dispensing means comprising an electrical switch, a solenoid and audio circuitry, said dispensing means allowing for solenoidal activation of a push mechanism such that when said "on-track" card is inserted edgewise into said receiving slot said "on-track" card activates said electrical switch which in turn activates said solenoid and said audio electrical circuitry,

said lower section of said enclosure also having a translucent viewing area in a frontal surface thereof, said translucent viewing area providing means for said child to view the operation of one of said plurality of chips being dispensed, and

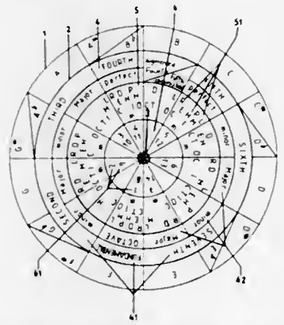
said lower section of said enclosure having storing means for a plurality of dispensed chips, said dispensed chips earned by said attention deficit child over a period of time.

5,288,234

DEVICE FOR COMPOSING AND DECOMPOSING CHORDS AND SCALES

Houari Hamzi, 2 Rue De La Concorde, 92600 Asniéres sur Seine, France

Continuation-in-part of Ser. No. 817,588, Jan. 7, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,304
Int. Cl.[5] G09B 25/00, 15/02
U.S. Cl. 434—404 7 Claims



1. Device for composing, decomposing, retransposing and retranscribing all chords and scales contained in music and comprising two superimposed disks of different diameters joined at their centre by a pin enabling the disks to rotate independently; the device is characterized by a lower disk with a larger diameter, on whose outer edge is marked the sequence of notes of the diatonic scale A; A#/Bb; B; C; C#/Db; D; D#/Eb; E; F; F#/Gb; G; G#/Ab; the device features an upper disk with a smaller diameter divided into three bands by two concentric circles, the outer band indicates sequentially the sequence of intervals with their qualifications below, viz. the FUNDAMENTAL/OCTAVE interval; the SECOND interval with the minor, Major qualifications below; the THIRD interval with the minor, Major qualifications below; the FOURTH interval with the perfect qualification below; the FOURTH qualification with the augmented qualification below and the FIFTH interval with the diminished qualification below; the FIFTH interval with the perfect qualification below; the SIXTH interval with the minor, Major qualifications below; the SEVENTH interval with the minor, Major qualifications below, the middle band indicates abbreviations related to the scales, the inner band indicates degrees in numerical sequence from 1 to 14, the whole device is arranged so that each note of the lower disk is matched by information marked in the three bands of the upper disk and pertaining to chords, scales and degrees.

5,288,235

ELECTRICAL INTERCONNECTS HAVING A SUPPORTED BULGE CONFIGURATION

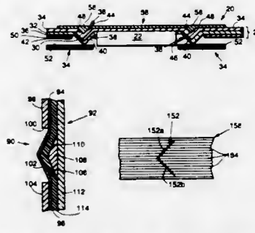
Mohi Sobhani, Encino, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 14, 1992, Ser. No. 989,612
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—67 19 Claims

1. An electrical connector, capable of establishing electrical contacts in flat circuits having line widths and spacing of less than 3 mil, comprising:

a flat circuit having a smooth surface and including electrical conductors whose line widths and spacings may be less than 3 mil and which are encapsulated in dielectric material;

said conductors having sites defining positions of electrical interconnects and being free from said dielectric material on at least that conductor surface portion which is closest to the smooth surface of said circuit; and



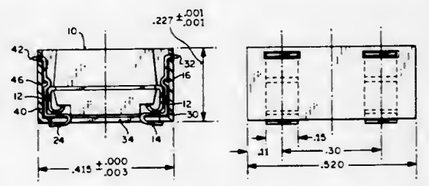
a configuration, positioned at the sites, defining at least one ridge-like deformation extending across said circuit and both said conductors and any dielectric material contiguous thereto to define at least one ridged bulge in and across said conductors, for elevating those portions of said conductors and said dielectric material contiguous therewith and adjacent thereto at the sites above the smooth surface, and a support supporting said bulge being electrically, physically and chemically compatible with its surrounding materials.

5,288,236

METHOD AND APPARATUS FOR REPLACING ELECTRONIC COMPONENTS ON A PRINTED CIRCUIT BOARD

James B. McIntyre, Cupertino, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 1, 1992, Ser. No. 861,663
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—70 9 Claims



1. An adaptor system for use in removably connecting a component to a printed circuit board, said component having electrical contact leads and a body portion, said adapter system comprising:

a) a first contact clip device comprising at least two contact clips, with each contact clip having a conductive portion which may be electrically connected to said printed circuit board at a first electrical contact point on said board and a second portion extending away from said board; and

b) a second contact clip device comprising at least two contact clips, with each contact clip having a conductive portion which may be electrically connected to said printed circuit board at a second electrical contact point on said board and a second portion extending away from said board; said second contact clip device being positionable generally opposite to said first contact clip device, and said component being insertable between said extend-

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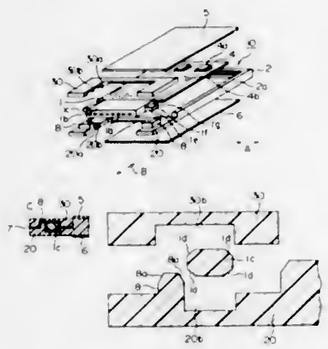
ing portions of said first and second contact clip devices, wherein each said contact clip comprises an L shaped member having a predetermined orientation in said adaptor system wherein a portion of the bottom conducting portion of the L is bent downward and folded back upon itself to form a clip-on foot of said contact clip, and wherein the top part of said extended portion is bent to a position perpendicular to said extended portion of said contact clip, and in a direction opposite to said bottom conducting portion of said clip, and wherein said upright portion of said contact clip is curved inwardly in the direction of said foot of said contact clip to form a bias holding area on said contact clip at approximately a distance above said foot of said contact clip to match the height of said electrical contact leads on said component, whereby said component body portion is held securely by said first and second extending portions to retain abutting electrical contact between both a top portion and a bottom portion of said component leads and said conducting portions of said first and second contact clip devices.

5,288,237

IC CARD CONNECTOR SUPPORTING/FIXING MECHANISM

Yoshitaka Mizutani, Sanda; Shigeo Onoda, and Hajime Maeda, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 979,005
Claims priority, application Japan, Jan. 8, 1992, 4-001417
Int. Cl.[5] H01R *4/58*
U.S. Cl. 439—76 **5 Claims**



1. An IC card connector supporting/holding mechanism for supporting and holding in an IC card a connector having a plurality of external connection terminals comprising:

a connector comprising a connector body having a terminal surface from which a plurality of external connection terminals electrically connected to electronic parts mounted on a circuit substrate of an IC card are accessible from outside the IC card, opposed side surfaces transverse to the terminal surface, holding parts extending from and transverse to the side surfaces of said connector body, each of said holding parts having a width transverse to the side surfaces and a thickness transverse to the width, the width and thickness both being smaller than a width and thickness of said connector body, and each of said holding parts having a front surface on the terminal surface side, a side surface parallel to the side surfaces of said connector body, and a rear surface opposed to the front surface;

a lower connector-supporting element having a shape complementary to a lower half of said connector body for receiving the lower half of said connector body and including two barriers, each barrier having a height of at least one-half the thickness of said holding parts for contacting the front surfaces of said holding parts and the side surfaces of the holding parts to support said connector without deviation parallel to a common axis of said holding parts, said barriers being unitary with a main frame of the IC card;

a sub-frame for fixing said connector in place by clamping said connector body between said lower connector-supporting element and said sub-frame without deviation parallel and transverse to the common axis and having a shape complementary to an upper half of said connector body and said barriers for receiving said upper half of said connector body and said barriers; and

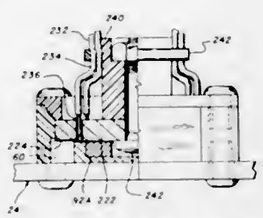
fixing means for fixing said sub-frame to said lower connector-supporting element.

5,288,238

IC CHIP TO PC BOARD CONNECTOR SYSTEM

Kazuo Ikenaka, Machida, and Deborah S. Schenberger, Sagamihara, both of Japan, assignors to ITT Industries, Inc., Secaucus, N.J.

Filed Apr. 9, 1992, Ser. No. 865,544
Claims priority, application Japan, Apr. 30, 1991, 3-98968
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—91 **9 Claims**



2. Apparatus for connecting an integrated circuit having a plurality of rows of contact pads thereon, to a circuit board having an upper surface with a plurality of rows of conductive traces thereon and a lower surface, which includes a socket which can mount to said circuit board and which has a cavity that can receive said integrated circuit and a plurality of horizontally elongated vertical through slots which lie under said rows of contact pads when said integrated circuit lies in said cavity, including an elongated compressible interface device in each of said slots and a holdown which can pres down an integrated circuit lying in said socket so the integrated circuit contact pads are connected to said board traces through said interface devices, comprising:

a probe for connection to said circuit board conductive traces, including a probe board which has upper and lower surfaces and a plurality of rows of conductive probe traces on said lower surface at locations corresponding to said contact pads of said integrated circuit, said probe also including a cable with a plurality of probe conductors each connected to one of said probe traces; said probe is constructed to fit into said socket cavity in place of said integrated circuit, with each of said rows of probe traces pressing down against one of said compressible interface devices.

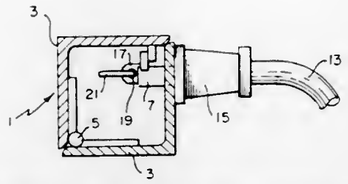
5,288,239

DEVICE FOR PREVENTING THE THEFT OF ELECTRICAL APPLIANCES

Jack L. Johnson, 608 Carr St., Pea Ridge, Ark. 72751

Filed Nov. 12, 1992, Ser. No. 975,532
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—134 **14 Claims**

1. A device for preventing the unauthorized removal of electrical appliances having a cord terminating in a plug with two prongs having aligned holes therethrough, comprising an enclosure comprising two portions hingedly interconnected and adapted to be opened and closed and having holes through a side wall thereof of a size to permit the insertion of said prongs through said holes but to prevent insertion of a said



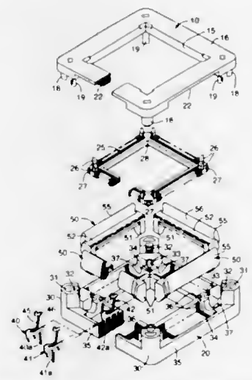
plug through said holes, a lock releasably retaining the enclosure closed against unauthorized opening, and means within the enclosure removably engageable with said holes through said prongs to releasably retain said prongs within said enclosure.

5,288,240

TOP-LOAD SOCKET FOR INTEGRATED CIRCUIT DEVICE

John A. Savant, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 16, 1992, Ser. No. 992,478
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 **5 Claims**



1. A socket assembly for use with an integrated circuit device having a plurality of leads arranged along at least one side of the device, said assembly comprising:

a socket body having a generally rectangular configuration and spaced parallel openings along at least one side,

a plurality of generally planar contact elements disposed in said openings in spaced parallel relationship along said at least one side of said socket body, each contact element comprising a connecting pin portion for making connection with an external electronic member, an anchor portion for anchoring each said contact element to said socket body, an arcuate resilient portion leading to a head, contacting means on said head for making resilient pressure contact with a said integrated circuit device and a lobe on said head extending in a direction away from said resilient portion, and

a top plate movable in relationship to said socket body for affording movement of said contacting means from a first normal portion to an open position for receiving a said integrated circuit device and to an operative position in pressure electrical contact with a said integrated circuit device, and

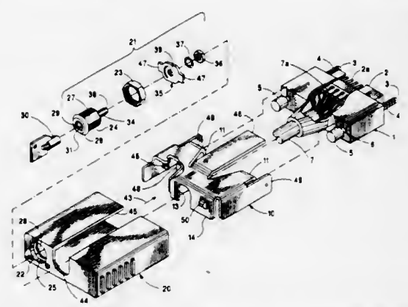
a cam member positioned over said lobes of said contact elements along said at least one side of said socket body, which cam member is supported by said socket body and said lobes of said contact elements, said cam member having rocker arms at each end thereof, seated in side walls which are located substantially at a bottom portion of said socket body, affording oscillatory movement of said cam member and surface means engaging each said lobe of the contact elements to urge said contacting means thereof from said normal position said open position, and said top plate has a cam surface extending along a side thereof for cooperatively engaging a cam follower extending the length of said cam member for moving said cam and contact elements to said open position upon movement of said top plate toward said socket body and to release said contact elements upon movement thereof in a direction away from said socket body.

5,288,241

CABLE LOCKING COVERS

Ronald V. Davidge, Coral Springs; John R. Dewitt, Boca Raton; Paul J. Galinis, Boynton Beach; Francis A. Kuchar, Jr., Delray Beach; Jay H. Neer, and Thomas H. Newson, both of Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 762,141, Sep. 19, 1991, Pat. No. 5,190,465.
This application Jun. 7, 1993, Ser. No. 990,205
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—304 **2 Claims**



1. Apparatus for locking a cable connector in engagement with an external port of a device, wherein said cable connector comprises a plurality of electrical contacts at a contact end configured for contact with port contacts within said external port and a plurality of insulated wires attached to various of said electrical contacts extending from said cable connector at an end opposite said contact end, wherein said cable connector and said port include first attachment means for holding said cable in engagement with said port, said first attachment means being operable to prevent said cable connector from being pulled away from said port and to release said cable connector for disengagement with said port, wherein said first attachment means comprises a screw rotatable in said cable connector and engageable within a threaded hole in a port, with a screw head attached thereto extending from an end of said cable connector opposite to said contact end, and wherein said apparatus comprises:

a bracket configured for engagement with said connector, including a bracket aperture through which said insulated wires extend when said bracket and said connector are so engaged;

second attachment means for holding said bracket and said connector in engagement, wherein said second attachment means comprises a tab, including a slot, extending

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from said bracket, configured so that, when said bracket is engaged with said cable connector, surfaces adjacent to said slot extend between said screw head and an adjacent back face opposite to a front face of said cable connector;

a cover configured for engagement with said bracket, including a cover aperture through which said insulated wires extend when said cover is engaged with said bracket and said bracket is engaged with said connector; and

lockable attachment means for holding said cover and said bracket in engagement;

wherein said cover, engaged with said bracket, surrounds said second attachment means when said bracket is engaged with said cable connector, to block access thereto;

wherein said cover and said bracket, when engaged with each other and with said connector, block operation of said first attachment means, thereby preventing release of said cable connector from said port; and

wherein said cover and said bracket together comprise means for surrounding said screw head to block access thereto when attached and engaged with said connector.

5,288,242

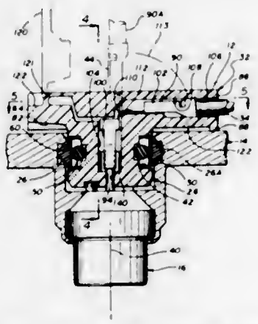
RING LOCK CONNECTOR

Steven Z. Muzslay, Huntington Beach, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Jul. 20, 1992, Ser. No. 914,727

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—349 **10 Claims**



1. An assembly of an electrical connector and base wherein said base has a hole with a top and with an annular groove below said top, and said connector has a frame with a mount portion that fits into said hole and has a snap ring lying about said mount portion for snapping into said groove when said mount portion is installed on said base, characterized by:

said snap ring is formed of resilient but nonelastomeric material and has a gap in it, and said frame mount portion has a recess that holds said snap ring while allowing said snap ring to contract and expand, said gap subtending a sufficient angle and said snap ring having sufficient resilience and a sufficiently large inside diameter when unrestrained, that said snap ring can readily fall off said frame mount during handling of said frame mount before it is mounted on said connector, if not retained on said frame,

said connector includes a spring ring that is much more easily compressed than said snap ring and that lies between said snap ring and said mount portion, to keep said snap ring centered in said recess and thereby help prevent said snap ring to contract in diameter during its movement down into said hole unit it snaps into said groove, said spring ring being of smaller average height than the maximum height of said snap ring and of smaller cross section than said annular groove, so that said spring ring can fit in said annular groove when said spring ring is compressed.

5,288,243

ELECTRICAL CONNECTOR

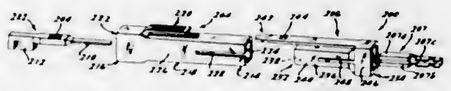
James E. Mergless, Utica, Mich., assignor to Omega Special Products, Inc., Mount Clemens, Mich.

Continuation-in-part of Ser. No. 658,260, Feb. 20, 1991, Pat. No. 5,120,234. This application Jan. 10, 1992, Ser. No. 818,869

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] H01R *13/627, 13/42, 13/64*

U.S. Cl. 439—357 **8 Claims**



1. An electrical connector assembly comprising:

a first tubular connector having an inner end portion and an enlarged, grippable outer end portion, an elongated tubular body portion having a generally square cross sectional shape, and interior and exterior surfaces, said exterior surface having a protruding locking tab catch portion and said interior surface having a protruding internal locking shoulder portion, said elongated tubular body portion being operable to receive therethrough an elongated electrical terminal pin having a slot, said slot being adapted to lockably engage said protruding internal locking shoulder portion to secure said electrical terminal pin therein;

a second tubular connector having an elongated tubular body portion having a generally square cross sectional shape and an elongated, tongue-like element, said elongated tongue-like element further having a tab element protruding therefrom, said elongated tubular body portion further having an inner end portion and an enlarged, grippable outer end portion, sand inner and outer surfaces, said inner surface of said elongated tubular body portion having an internal, locking shoulder portion operable to lockably, abuttingly engage a shoulder portion of a mating electrical terminal when said mating electrical terminal is inserted into said outer end portion of said elongated tubular body portion to thereby captively hold said mating electrical terminal securely within said elongated tubular body portion of said second tubular connector; and

whereby said elongated tubular body portion of said second tubular connector may be slidably inserted within said inner end portion of said elongated tubular body portion of said first tubular connector, thereby causing said elongated electrical terminal pin and said mating electrical terminal to matingly engage, and whereby said tab element of said elongated tongue-like element is operable to abuttingly engage with said locking tab catch portion to thereby releasably secure said first and second tubular connectors together in mating electrical and mechanical engagement;

wherein said body portion of said first tubular connector further comprises a slot disposed parallel to a longitudinal axis of said body portion and extending from said inner end portion of said body portion at least part way along said body portion; and

wherein said body portion of said second tubular connector further comprises an elongated, protruding rib portion disposed parallel to a longitudinal axis of said body portion of said second tubular connector and extending along at least a portion of the length of said body portion of said second tubular connector, said rib portion and said slot being operable to engage in a key-like fashion when said first and second tubular connectors are slidably coupled together to thereby help prevent axial rotation of said second tubular connector with respect to said first tubular connector.

5,288,244

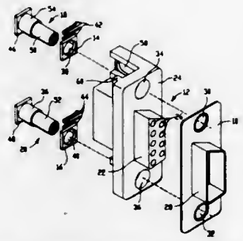
CONNECTOR ASSEMBLY HAVING FIXED UNITARY FASTENERS FOR MOUNTING TO A PANEL

Teh-Sou Lien, Taipei, Taiwan, assignor to Maxconn Incorporated, San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,141

Int. Cl.[5] H01R *4/18, 13/621*

U.S. Cl. 439—362 **18 Claims**



1. An electrical connector assembly comprising,

a connector body having a face surface and a rear surface and having an array of contact elements, said connector body having a mounting hole extending to said face surface, and

a unitary fastening member passing through said mounting hole, said unitary fastening member having an expanded portion at said rear surface of said connector body and having a deformed portion at said face surface, said unitary fastening member having an internally threaded section projecting outwardly beyond said deformed portion for coupling to an externally threaded fastener of a second connector, said expanded portion and said deformed portion each being larger than said mounting hole so that said unitary fastening member is fixed to said connector body.

5,288,245

ELECTRIC CABLE TERMINAL WITH BUILT-IN MARKING SUPPORT

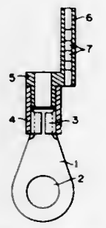
Ivana Piana, and Silvano Piana, Genoa, Italy, assignors to Grafoplast S.p.A., Italy

Filed Jul. 22, 1992, Ser. No. 916,729

Claims priority, application Italy, Feb. 28, 1992, GE92U000013

Int. Cl.[5] H01R *3/00*

U.S. Cl. 439—491 **15 Claims**



1. An electrical terminal for a cable to be marked, comprising:

an electrically conductive member extending along a longitudinal axis between one end for connection to an electrical device, and an opposite end for connection to an electrical cable to be marked;

an electrically insulating, tubular coating surrounding and fixedly mounted on said opposite end of the conductive member, and having a tubular end region extending along the longitudinal axis away from said opposite end of the conductive member; and

a marking sleeve having a tubular mounting portion fixedly and non-rotatably mounted within the tubular end region of the coating to constitute a non-detachable assembly, said marking sleeve being constituted of a molded synthetic plastic material and having an extension integrally molded with the sleeve, said extension extending along the longitudinal axis away from said opposite end of the conductive member.

5,288,246

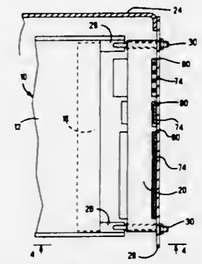
ELECTRICAL CONNECTOR FOR BACK PANEL MOUNTING

Robert N. Whiteman, Jr., Middletown, and Charles H. Weidler, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 6, 1993, Ser. No. 43,319

Int. Cl.[5] H01R *13/73*

U.S. Cl. 439—571 **9 Claims**



1. The combination of an electrical connector of the type including a housing having a mating face and a mating face, multiple cavities and multiple connectors in said cavities, walls of said cavities engaging the external profile of each of said multiple connectors to accurately position and hold them with respect to said housing,

a back panel in an electrical equipment rack having a mounting surface to which said mounting face of said electrical connector is secured,

flexible wires parallel to and on said mounting surface extending to said electrical connector and electrically connected thereto, and

a unit of equipment in said rack having a mating connector associated therewith for mating to said electrical connector, said unit arranged to slide toward said back panel so that said mating connector mates with said electrical connector when said unit is fully inserted in said rack.

5,288,247

GROUNDING SHROUD FOR AN ELECTRICAL CONNECTOR

John W. Kaufman, Hershey, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 926,628, Aug. 10, 1992, and a continuation-in-part of Ser. No. 986,660, Dec. 8, 1992. This application Feb. 1, 1993, Ser. No. 12,115

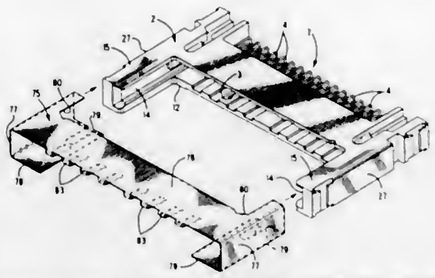
Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **11 Claims**

1. An electrical connector for a card reader, comprising: an insulative housing with conductive electrical contacts extending in a card receiving mouth in the housing, a conductive shroud encircling the housing, spring contact fingers extending from the shroud into the mouth, a ground reference plane extending along the shroud and along the spring contact fingers, a card receiving space in the mouth between the spring contact fingers and the contacts, the spring contact fingers

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being spaced apart from the contacts to engage frictionally against a surface on a card receiving by the card receiving space, and to connect electrically with the surface of the card



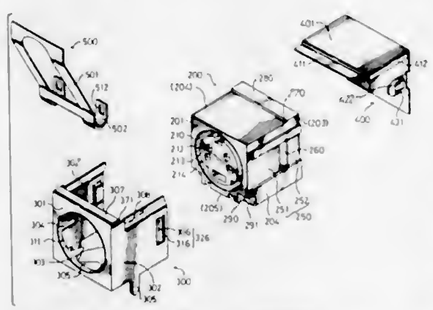
when the surface of the card is conductive electrically, and the spring contact fingers being constructed for deflection away from the contacts by a card received in the card receiving space, whereby the card receiving space is widened.

5,288,248

TOTALLY SHIELDED DIN CONNECTOR

Chin Y. Chen, Hsin-Chuang, Taiwan, assignor to Foxconn International, Sunnyvale, Calif.

Filed Oct. 28, 1991, Ser. No. 784,459
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—609 **12 Claims**



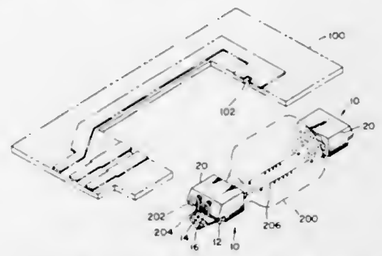
1. A totally shielded connector comprising:
a cuboid insulator having a front face, a top face, two side faces, a rear face, and a bottom face, said insulator defining an annular recess extending from the front face, and including a cylindrical portion, disposed within the annular recess, having a plurality of passageways extending therethrough for receiving a plurality of corresponding contracts;
a front shell, including a front wall and side walls, positioned on the insulator to cover the front face and the side faces of the insulator, the front wall having a circular opening defining an edge from which a plurality of tangs project into said annular recess;
a rear shell, including a top wall and a rear wall, positioned on the insulator to cover the top face and the rear face of the insulator such that the front shell cooperates with the rear shell to form a five sided shield for totally shielding the connector, the side walls of the front shell having a projection to cooperate with a corresponding groove and a step disposed on each side of the insulator for engagement therewith, the rear wall having an insertion ear to engage a slit formed between the projection and the side walls of the front shell for fastening, and the insertion ear further including a tab projecting outwardly for engaging an edge of the side wall when fastened.

5,288,249

BASE FOR CARTRIDGE LAMP

James J. Fitzgerald, Boonton, N.J., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 2, 1992, Ser. No. 946,052
Int. Cl.[5] H01R *17/00*
U.S. Cl. 439—612 **9 Claims**



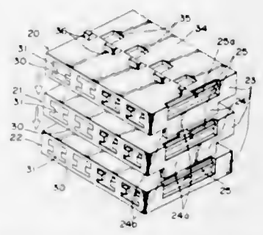
1. A device for mounting a cartridge lamp having one or more electrical leads, said mounting device comprising:
a substantially hollow lead housing having opposite ends with a first opening at one end for receiving a lead or leads from the cartridge lamp and a second opening at the other end;
said housing having a base member with a lower protrusion at the second opening of the lead housing for engaging a surface of a circuit board; and
said housing having an upper protrusion in opposing relation to said lower protrusion of said lead housing, whereby an electrical lead may be bent over said upper protrusion for securing the cartridge lamp to the mounting device.

5,288,250

CONNECTOR

Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Dec. 11, 1992, Ser. No. 989,633
Claims priority, application Japan, Dec. 25, 1991, 3-106922[U]
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—701 **5 Claims**



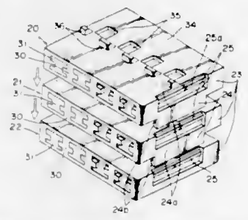
1. A connector comprising constituent connectors combined vertically with each other, each constituent connector including an upper wall, a lower wall, a pair of side walls having upper and lower ends, a front face, a rear face, and a plurality of terminal accommodating chambers extending between the front and rear faces and for accommodating terminals, comprising:
an arm-shaped rib projecting downwardly from the lower ends of both side walls of each constituent connector except a lowermost connector;
a claw projecting inwardly from a lower end of the rib; and
a locking portion, for locking the claw, formed on both side walls of each constituent connector, in which:
the claw of the rib of an upper connector is locked by the locking portion of a lower connector so as to fix the upper connector and the lower connector to each other, wherein when the upper and lower connectors are fixed together, an outer surface of the rib projecting downwardly from the respective sidewall of the upper connector is flush with the sidewall of the lower connector, such that the side wall of the fixed upper and lower connectors present a generally smooth surface.

5,288,251

CONNECTOR

Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 11, 1992, Ser. No. 989,644
Claims priority, application Japan, Dec. 25, 1991, 3-106923
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—701 **2 Claims**



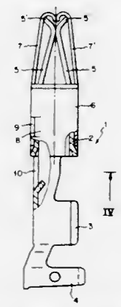
1. A connector comprising a plurality of constituent box-shaped connectors, having flat upper and lower walls and a plurality of terminal accommodating chambers for accommodating terminals, combined with each other by piling the connectors one on the other vertically, comprising:
a plurality of first openings formed on an upper wall of each connector at positions corresponding to an upper surface of each terminal-accommodating chamber arranged in parallel with each other in each connector;
a plurality of first projections formed on a lower wall of each connector, in which:
in combining the plurality of constituent connectors with each other vertically, each of the first projections formed on a lower wall of an upper connector is locked by each of the first openings formed on an upper wall of a lower connector and projects into each terminal-accommodating chamber of the lower connector, thus locking an end surface of a corresponding terminal, and further comprising:
a plurality of second projections formed on an upper wall of each connector at positions corresponding to a portion intermediate between adjacent terminal-accommodating chambers arranged in positions corresponding to an end of each terminal-accommodating chamber in a width direction thereof; and
a plurality of second openings, into which each of the second projections is inserted, formed on a lower wall of each connector, in which:
in combining the constituent connectors with each other vertically, each of the second projections formed on an upper wall of a lower connector is inserted into each of the second openings formed on a lower wall of an upper connector and projects into each terminal-accommodating chamber of the upper connector, thus locking a stabilizer of a corresponding terminal, thereby to double-lock each terminal.

5,288,252

FLAT-CONTACT PLUG SOCKET

Helmut Steinhardt, and Rudolf Nottrott, both of Nürnberg, Fed. Rep. of Germany, assignors to TRW Daut + Rietz GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

PCT No. PCT/EP91/02018, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/09120, PCT Pub. Date May 29, 1992
PCT Filed Oct. 24, 1991, Ser. No. 866,181
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1990, 4035613
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—839 **8 Claims**



1. Flat-contact plug socket comprising
a connecting area for an electrical conductor;
a socket body with at least two oppositely arranged contact arms on the socket body, said contact arms having free ends and being bent back at the free ends and elastically abutting each other over partial lengths in an interval of the free ends in the direction of the socket body;
an outer spring attached at its base on the socket body and provided with at least two outer spring arm parts on opposite wall segments, the outer spring arm parts abutting the contact arms;
the arm parts each having a free end and said free ends of the outer spring arm parts being bent back towards each other and in a plugging direction, said arm parts being partially bent back over the free ends of the contact arms, and said arm parts being pressed onto the free ends of the contact arms.

5,288,253

SINGLE POINT MOORING SYSTEM EMPLOYING A SUBMERGED BUOY AND A VESSEL MOUNTED FLUID SWIVEL

Karl A. B. Urdshals; Hans J. Hvide, and Alan G. Hooper, all of Singapore, Singapore, assignors to Nortrans Shipping and Trading Far East Pte Ltd., Singapore

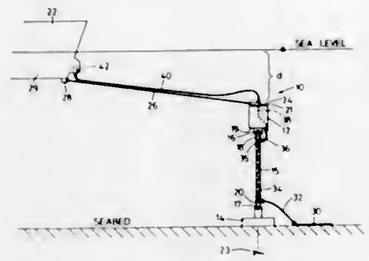
Filed Aug. 7, 1992, Ser. No. 925,916
Int. Cl.[5] B63B *21/52*
U.S. Cl. 441—5 **12 Claims**

1. A mooring system for mooring a floating vessel in a body of water comprising:
a) a buoy completely submerged in said body of water and having a top and a bottom; wherein said top of said buoy is submerged to a depth greater than a loaded draft depth of the vessel to be moored and wherein the vessel can drift directly over said buoy without colliding therewith;
b) an elongated member having a top and a bottom end;
c) a base secured to a bed of said body of water;
d) a first universal joint connecting said bottom of said buoy to said to end of said elongated member;
e) a second universal joint connecting said bottom end of said elongated member to said base;

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f) at least a first mooring line connected at one end to said buoy and connectable at a second end to a vessel to be moored;

g) first fluid handling means connected to said buoy;



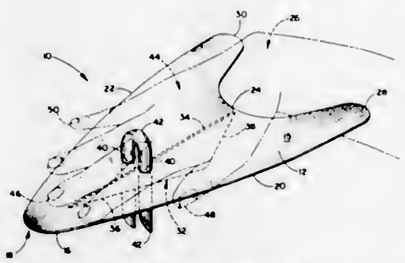
h) at least a first flexible hose connected at a first end to said fluid handling means and connected at a first end to a vessel to be moored.

5,288,254

SWIMMER'S HAND PADDLE

Timothy P. Elson, 1570 Charterwood Ct., Thousand Oaks, Calif. 91362

Filed Jul. 29, 1992, Ser. No. 922,553
Int. Cl.[5] A63B *31/00*
U.S. Cl. 441—56 **25 Claims**



1. A swimmer's hand paddle, comprising:

a. a planar member having an upper surface and a lower surface, a forward end and a rearward end, and opposing side edges;

b. a fin depending from said planar member's lower surface; and,

c. means for retaining said planar member's upper surface against the palm of a swimmer's hand.

5,288,255

METHOD OF MANUFACTURING A HIGH-PRESSURE DISCHARGE LAMP WITH END SEAL EVAPORATION BARRIER

Dale E. Brabham, Elmira, and Geert van Bockstal, Lakeville, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

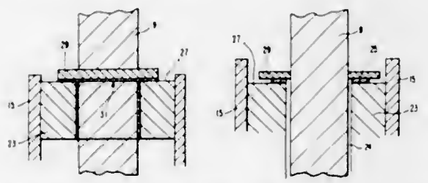
Division of Ser. No. 607,428, Oct. 31, 1990. This application Oct. 27, 1992, Ser. No. 966,779
Int. Cl.[5] H01J *9/32*
U.S. Cl. 445—26 **9 Claims**

1. A method of manufacturing a high-pressure discharge lamp comprising a tubular shaped envelope enclosing a discharge space and consisting of translucent densely sintered aluminum oxide, a ceramic end plug in a sunken position in regard to an end of said envelope and sintered to the inner surface of said envelope said end plug being provided with an aperture through which a tubular current lead-in member extends into said discharge space, said method comprising:

a) positioning a ceramic end plug provided with an aperture for said tubular current member in said end of said envelope, said aperture being dimensioned so as to provide only a capillary space between said current lead-in member and said plug,

b) sintering said end plug to said end of said envelope and positioning said current lead-in member so as to extend through said end-plug into said discharge space,

c) providing a thin disc-shaped sealing member formed of a magnesium oxide containing glass frit, and provided with an aperture for said current lead-in member on the outer surface of said end plug,



d) positioning a thin disc-shaped barrier member of a high temperature material, provided with an aperture for said current lead-in member, on the outer surface of said sealing member, said barrier member being dimensioned so as to extend over the outer surface of said sealing member and

e) heating the resultant assembly to a temperature sufficient to melt said sealing member and said barrier member to thereby cause said sealing member to melt and form a magnesium oxide containing glass seal between said current lead-in member and said plug and cause said barrier member to melt and bond to the outer surface of said glass seal.

5,288,256

THROWN WATER PROPELLING AND DISPENSING TOY

James S. W. Lee, Long Island, N.Y., and Chiu-Keung Kwan, Kowloon, Hong Kong, assignors to C.J. Associates, Ltd., Kowloon, Hong Kong

Filed Nov. 23, 1992, Ser. No. 980,566
Int. Cl.[5] A63H *27/00, 3/52;* **B05B** *1/00;* **A63B** *65/02*
U.S. Cl. 446—48 **13 Claims**



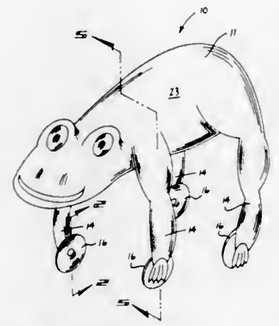
1. A thrown water toy comprising a water tank having at least one valve therein, the valve having spring means for normally urging said valve to a closed position, the valve having associated means responsive to centrifugal forces for acting against said spring means and opening said valve.

5,288,257

TOY FIGURE DOOR STOP HAVING DOOR ADHERING/SUCTION CUPS

Debra A. Zacherl, Rd. #2, Box 189A, Oil City, Pa. 16301

Filed Feb. 8, 1993, Ser. No. 14,742
Int. Cl.[5] A63H *3/00, 3/46*
U.S. Cl. 446—72 **3 Claims**



1. A toy door stop, comprising,

an animal simulation figure, having a figure body, the figure body including a first end spaced from a figure body second end, the figure body first end including a pair of forward appendages extending from a bottom surface of the figure body, with the forward appendages spaced from a pair of rear appendages extending from the figure body relative to the figure body bottom surface, and

each of the appendages includes an appendage distal end, and each appendage distal end includes fastening means for securing the figure body to a door, and

the fastening means includes a first pair of facing suction cup members mounted to the forward appendages, and a further pair of suction cup members mounted to the rear appendages on a facing relationship, and the figure body having a malleable body rod directed through the figure body, with the body rod including a plurality of appendage rods fixedly mounted to the body rod, with a single appendage rod of said appendage rods directed through each of the appendages, and each appendage rod includes an appendage rod free distal end, and each appendage rod free distal end includes a pivot shaft rotatably mounted to each appendage rod free distal end, and each pivot shaft is rotatably mounted within a polymeric bushing directed from the appendage rod to an exterior surface of the body.

5,288,258

WHEELED TOY

Owen R. Soso, 12407 Atlantic Ave., #16, Lynwood, Calif. 90262

Filed Mar. 23, 1992, Ser. No. 856,562
Int. Cl.[5] A63H *33/40, 33/02*
U.S. Cl. 446—218 **1 Claim**

1. A new and improved wheeled toy comprising:

wheel and axle means for moving said toy along a ground surface;

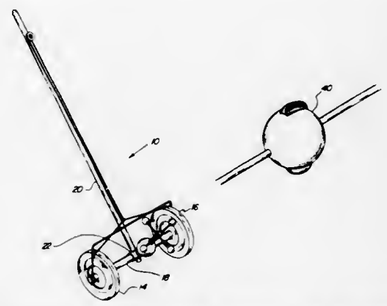
handle means rotatably attached to said wheel and axle means;

steering means for facilitating a change of direction between said wheel and axle means and said handle means;

and

fan assembly means rotatably attached to said wheel and axle means;

wherein said steering means includes a wire support structure attached to said wheel and axle means and further includes flexible cord means attached between said wire support structure and a top end of said handle means, said flexible cord means having opposite ends thereof being attached to opposed sides of said wire support structure and further having a central continuous portion thereof looped around a rotatable knob attached to said top portion of said handle means, whereby a rotation of said knob effects a rotatable movement of said wire support structure relative to said handle means, thereby to change a relative direction between said wheel and axle means and said handle means,



and further wherein said fan assembly means includes a rotatable ball mounted to a central portion of said wheel and axle means, said rotatable ball including an upstanding post to which a plurality of radially extending arms are fixedly secured, said radially extending arms having balls attached to end thereof, and

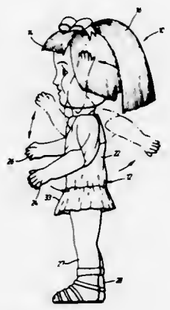
further including a fan blade structure attachable to said upstanding arm, and at least one removable air scoop attachable to at least one of said balls fixedly secured to ends of said radially extending arms.

5,288,259

DOLL WITH ILLUMINATED HAIR

Yukio Konta, Chiba; Sachiko Kitajima, Kanagawa, both of Japan, and Peter C. Lancaster, Buckinghamshire, United Kingdom, assignors to Sente Creations Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,394
Claims priority, application Japan, Sep. 20, 1991, 3-075904[U]; United Kingdom, Nov. 4, 1991, 9123306
Int. Cl.[5] A63H *33/22, 3/44, 33/26*
U.S. Cl. 446—219 **11 Claims**



1. A doll comprising:

a body portion including a moveable body portion;

a plurality of simulated hair fibers arranged on said body portion;

a plurality of optical fibers which are intermixed with said

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simulated hair fibers so as to be evenly distributed therethrough;

a light source positioned within said body portion, said optical fibers extending into said body portion so that a light receiving end of said optical fibers is positioned adjacent to said light source;

power means positioned in said body portion for supplying electrical energy to said light source; and

switch means coupled to said moveable body portion for selectively energizing and de-energizing said light source as said moveable body portion is displaced.

5,288,260

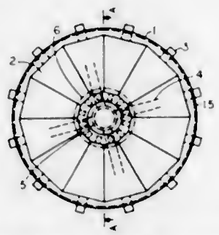
OPTICAL FUN DEVICE

Haw-Renn Chen, and Feichu H. Chen, both of 4057 Little Hollow Pl., Moorpark, Calif. 93021

Filed Sep. 17, 1992, Ser. No. 945,898

Int. Cl.[5] A63H *1/22*

U.S. Cl. 446—243 **10 Claims**



1. An optifun device comprising color mixing means being able to be set in motion at a predetermined way, motion manipulation means for manipulating the motion of said color mixing means, and more than one color variation means placed on said color mixing means in sequence along the direction of the motion of said color mixing means, each of said color variation means being a solid with colored surfaces placed on said color mixing means in a manner that only a portion of said colored surfaces, selected at any time, and the color thereon can be set to be visible on said color mixing means such that a specific color set composed of each individual selected surface portion and the color thereon of every of said color variation means set to be visible respectively on said color mixing means is visible therefore, by setting said color mixing means in motion, said color variation means move along sequencially in said direction of said motion of said color mixing means to have color pattern or coloring based on said specific color set visibly formed thereon.

5,288,261

FIGURATIVE TOY MISSILE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 840,022, Feb. 24, 1992, which is a continuation-in-part of Ser. No. 793,190, Nov. 13, 1991, Pat. No. 5,135,222, which is a continuation-in-part of Ser. No. 743,279, Aug. 9, 1991, Pat. No. 4,917,381, which is a continuation-in-part of Ser. No. 345,405, May 1, 1989, Pat. No. 5,138,721, which is a continuation-in-part of Ser. No. 205,477, Jun. 13, 1988, Pat. No. 4,834,382. This application May 7, 1992, Ser. No. 880,092

Int. Cl.[5] A63H *3/52*

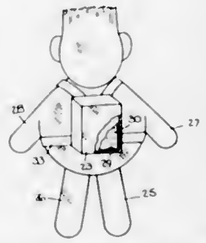
U.S. Cl. 446—267 **7 Claims**

1. A soft toy figure having a humanoid or animal-like form and capable of functioning as a play missile, said figure comprising:

(a) a weighted torso including a globular casing, whereby the torso, which is spherical, functions as a weighted ball having symmetrical flying characteristics; said torso being weighted by a rubber balloon disposed within the globular casing whose neck projects through a slit in the casing, the balloon being inflated by pressurized liquid fed into the balloon to cause it to engage and conform to the casing, the neck thereafter being tied to confine the liquid within the balloon;

(b) a head formed by a bag attached to the upper end of the torso casing and filled with soft stuffing material, said bag being shaped to define the head of a humanoid or animal-like figure;

(c) a pair of soft appendages attached to the lower end of the casing to define the legs and feet of a humanoid figure;



(d) a pair of soft appendages attached to opposite sides of the casing to define the arms and hands of a humanoid figure or the forelegs of an animal-like figure, said figure being capable of being thrown as a missile by a player who grasps at least one of the appendages as a handle to hurl the weighted ball, and

(e) a removable weighted accessory attachable to the figure to impart asymmetrical flying characteristics thereto, said accessory being a backpack having an inner pocket containing a balloon inflated with water to conform to said pocket and impart weight to the backpack.

5,288,262

CRAZY WHEELS TOY

E. Lakin Phillips, 2733 Centreville Rd., Herndon, Va. 22071

Filed Dec. 13, 1991, Ser. No. 806,372

Int. Cl.[5] A63H *33/02, 17/00, 5/00*

U.S. Cl. 446—451 **5 Claims**



1. A toy comprising a bent axle having a wheel attached to each end by a wheel connecting means, said axle being attached through a connecting means to a handle for applying propulsion and guidance, wherein said connecting means loosely engages said axle along the extent of said axle between the wheels or wheel connecting means so that a movement of said toy is responsive to any chosen position of said connecting means on said axle and direction of pressure on said handle.

5,288,263

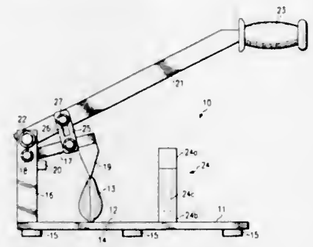
APPARATUS FOR OPENING SHELLFISH OR THE LIKE

Federico Ayala, 4571 Bonanza La., Dallas, Tex. 75211

Filed Apr. 9, 1993, Ser. No. 44,473

Int. Cl.[5] A22C *29/04*

U.S. Cl. 452—16 **20 Claims**



1. An apparatus for opening shellfish (e.g. oysters and/or clams) along the seam formed between the hinged portions of the shell of said shellfish, said apparatus comprising:

a base; a support mounted on said base

a knife pivotably mounted about a first axis on said support and movable between a first position where said knife rests on said seam of said shellfish when said shellfish is in an operable position on said base and a second position where said knife will penetrate said seam of said shellfish to thereby open said shellfish; and

hammer means pivotably mounted about a second axis on said support and movable between a first position where said hammer means lies above said knife and a second position where said hammer means will deliver an impact to said knife to thereby drive said knife to its second position.

5,288,264

APPARATUS FOR SKINNING FISH FILLETS

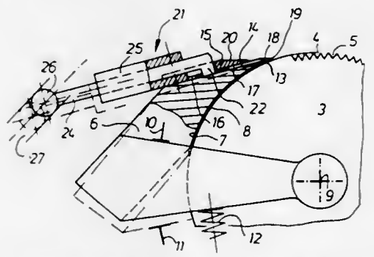
Horst H. Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud.Baader GmbH + Co KG, Lübeck, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,086

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136459

Int. Cl.[5] A22C *25/17;* **A22B** *5/16;* **B26D** *7/02*

U.S. Cl. 452—127 **9 Claims**



1. An apparatus for detaching skin from fish fillets, said apparatus comprising

a) an entraining roller for entraining said skin in an entraining direction, which skin entraining roller is driven to rotate and defines a circumferential surface as well as an axis of rotation;

b) a presser element defining presser face means which define an entrance end for said skin and opposing said circumferential surface of said skin entraining roller while leaving a gap with respect thereto; and

c) skinning knife means driven to oscillate and including a first cutting edge, which knife, with said first cutting edge opposes said circumferential surface of said skin entraining roller at a distance thereto, said entrance end of said presser face means is designed as a second cutting edge, this second cutting edge as well as said first cutting edge of said skinning knife being arranged to be displaced relative to each other such that in one end position of such relative displacement said first cutting edge is arranged upstream of said second cutting edge with respect to said entraining direction, and that in another end position of such relative displacement said second cutting edge is arranged upstream of said first cutting edge with respect to said entraining direction.

5,288,265

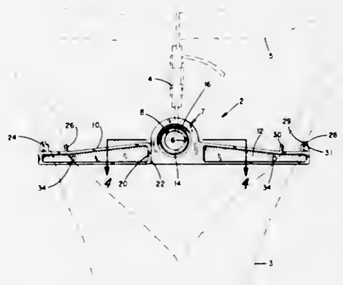
FOLDING GAMBREL SUPPORT

Lynn Beason, Box 481, Circle, Mont. 59215, and Donald O. Danell, 1488 Washington Ave., Havre, Mont. 59501

Filed Nov. 27, 1992, Ser. No. 982,560

Int. Cl.[5] A22C *25/18*

U.S. Cl. 452—192 **18 Claims**



1. A meat processing support comprising:

a) first and second arms, wherein each arm includes a first projection which projects from a peripheral edge, wherein one of said first and second arms includes a bored axle which projects from the one of said first and second arms, wherein the other of said first an second arms includes an aperture which concentrically mounts about said axle and further including;

b) means for restraining said first and second arms to one another; and

c) stop means for limiting the rotation of said first and second arms between a folded position and an open position, whereby a portion of the carcass of a supported animal is retained adjacent to the first projection of each of said first and second arms when folded to said open position.

5,288,266

STORAGE VESSEL

David Halley, Livingston, Scotland, assignor to W. L. Gore & Associates, (UK) Ltd., London, United Kingdom

Filed Jun. 17, 1992, Ser. No. 900,039

Claims priority, application United Kingdom, Jun. 18, 1991, 9113087; Aug. 23, 1991, 9118239; Mar. 18, 1992, 9205837

Int. Cl.[5] A01F *25/14, 25/22;* **F26B** *21/02*

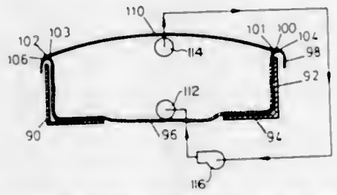
U.S. Cl. 454—182 **14 Claims**

1. A closed storage vessel for storing moisture-containing

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product in a controlled environment surrounded by an external atmosphere and for allowing said stored product to become dried by loss of moisture therefrom, which comprises:

a gas-impermeable enclosure for storing and drying the product, the enclosure comprising a membrane, said membrane being gas-impermeable such as to resist ingress of oxygen-containing gas from said surrounding external atmosphere, said membrane being water-vapour-permeable to enable passage of water-vapour from said product in the enclosure through said membrane such as to allow water-vapour to escape from the enclosure and to enable the product to be dried;



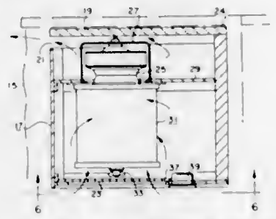
- means for recirculating gas within the enclosure for assisting drying of the product; and;
- the enclosure having means for providing an upstanding wall and a sealable inlet for introducing the product.

5,288,267

RETROFIT AIR CIRCULATION SYSTEM

George Mitchell, Rosemont, Pa., assignor to Centercore, Inc., Wayne, Pa.

Filed Feb. 10, 1993, Ser. No. 16,071
Int. Cl.[5] F24F 7/007
U.S. Cl. 454—230 10 Claims



1. In a work station array including at least one work space defined in part by at least two intersecting side walls, the apparatus comprising:

an air circulation unit mounted on at least on side wall at a location proximate its intersection with another side wall, said unit having a top and bottom end;

air inlet means on said unit for drawing ambient air into said unit solely from one end of said unit; and

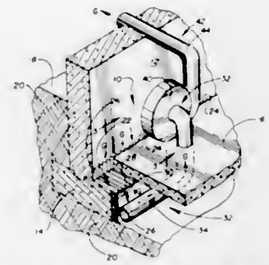
air discharge means on said unit for discharging air solely from the other end of said unit in a predetermined controlled horizontal direction to cooperatively form an envelope of air surrounding a space defined in part by said side walls and in part by air flow out of said discharge means and into said air inlet means to enclose an individual in said work station in air having superior quality to ambient air without directing air directly on said individual.

5,288,268

RADON GAS EVACUATION SYSTEM AND METHOD

Fred A. Kuypers, 6110 Jennifer, Tinley Park, Ill. 60477

Filed Feb. 13, 1992, Ser. No. 835,227
Int. Cl.[5] F24F 11/00
U.S. Cl. 454—341 14 Claims



1. An apparatus for removing gas from above a floor slab of an interior of a living space of a structure from a juncture of the floor slab and a foundation wall, in which a footing is disposed below the floor slab, comprising:

means disposed between at least a portion of a top of the footing and at least a portion of a bottom of the floor slab for providing an opening which communicates from a top of said floor slab at said juncture of said floor slab and foundation wall, down along the foundation wall to said footing and extending away from said foundation wall over said footing to at least the distance the footing extends from said foundation wall; and

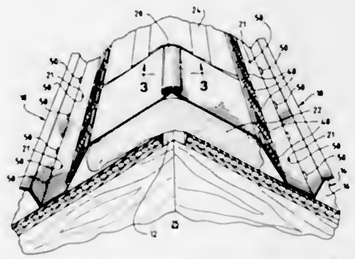
means for imparting a partial vacuum in said opening means to draw gas from above said floor slab to below the floor slab, in association with said opening means.

5,288,269

CONTINUOUS IN-LINE METHOD OF FABRICATING A VARIABLE PITCH ROOF RIDGE VENT ASSEMBLY AND THE ASSEMBLY THEREOF

Jeffery E. Hansen, Chillicothe, Ill., assignor to Air Vent, Inc., Peoria Heights, Ill.

Filed Jan. 28, 1993, Ser. No. 10,537
Int. Cl.[5] F24F 7/02
U.S. Cl. 454—365 10 Claims



1. A continuous in-line method of fabricating a variable pitch roof ridge ventilator assembly, comprising the steps of:

providing a plurality of elongate substantially rectangular panels, each panel having a predetermined length and width, top and bottom opposite planar surfaces, first and second opposite ends and first and second opposite elongate sides;

conveying said panels to punch press means;

punching a pluralty of louvers, weep holes and fastener apertures with said punch pres means at predetermined positions along the length of said panels;

conveying said panels to panel bending means;

bending an edge of said first elongate side of each panel toward said top surface thereof and substantially into a hook shape along the entire length of each panel;

bending an edge of said second elongate side of each panel toward said top surface thereof to maintain a predetermined angle with respect to said top surface;

arranging first and second panels of said plurality of panels parallel to each other with said first elongate side of each panel in face-to-face registry and positioned a predetermined distance apart;

conveying said arranged panels to roll forming means;

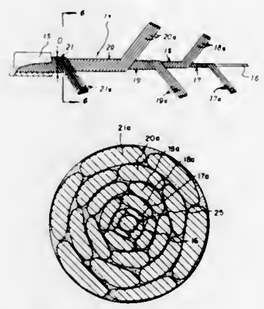
roll forming a flexible connecting cap member to each of said hook portions of said first and second panels by initially engaging respective portions of said connecting member to said hook portions and then deforming said hook portions to connect said connecting member thereto, said flexible connecting member enabling rotational movement between said first and second panels and providing a seal therebetween against infiltration of the elements and insects.

5,288,270

FLEXIBLE SHAFT HAVING ELEMENT WIRE GROUPS AND LUBRICANT THEREBETWEEN

Yoshiaki Ishikawa, Ashiya, Japan, assignor to Taisei Kohzai Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 563,149, Aug. 6, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,028
Claims priority, application Japan, Dec. 6, 1989, 1-317037
Int. Cl.[5] F16C 1/06
U.S. Cl. 464—7 3 Claims



1. A flexible shaft, comprising:

an inner shaft having a steel core wire and element wire groups which are formed by closely adhering a plurality of steel element wires into band shapes wound around the steel core wire by turns in reverse directions relative to each other and the plurality of element wire groups being formed in layers and in concentric sections; and

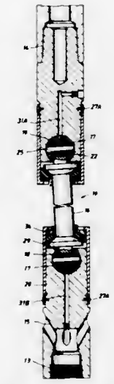
vacuum-impregnated lubricant impregnated within clearances between the plurality of steel element wires, wherein said vacuum-impregnated lubricant substantially surrounds the periphery of said steel core wire and each of inner ones of said plurality of steel element wires, and said vacuum-impregnated lubricant substantially fills up spaces between said steel element wires, wherein the lubricant is impregnated at a temperature higher than a normal temperature of the flexible shaft when in use.

5,288,271

CONSTANT VELOCITY UNIVERSAL JOINT ASSEMBLY FOR DOWNHOLE MOTOR

Sharon P. Nelson, Conroe, and Billy J. Roberts, Houston, both of Tex., assignors to Houston Engineers, Inc., Houston, Tex.

Filed Apr. 13, 1992, Ser. No. 867,366
Int. Cl.[5] F16D 3/16
U.S. Cl. 464—114 6 Claims



1. A constant velocity torque transmitting universal joint, comprising

a first member having an opening in one end and a cylindrically shaped recess extending transversely of the opening,

cylindrically shaped body means closely received in said recess for rotation about a first axis and having a slot in one side with parallel sides and holes on opposite sides of the slot,

a pin extending into the holes in the body means and across the slot along a second axis perpendicular to and intersecting the first axis, and

a second member having a tongue with flat sides closely fitting within the slot and a hole therethrough closely fitting about the pin for rotation about the second axis,

said second member also having an enlarged head with a spherical surface adjacent the tongue which is concentric to the intersection of said first and second axes, and

a flexible boot mounted on said second member and having a spherical surface which closely surrounds the spherical surface on the head to close a space between the members.

5,288,272

BEARING RETAINER FOR U-JOINT SHAFT END AND METHOD OF ASSEMBLING BEARING ASSEMBLY

Thomas J. Marriott, Temperance, Mich., and Martin J. Pearson, Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Apr. 10, 1991, Ser. No. 683,396
Int. Cl.[5] F16D 3/41
U.S. Cl. 464—128 15 Claims

1. A universal joint comprising:

a bearing assembly including a housing having first and second ends and an inner peripheral surface defining a housing bore of a first bore diameter;

at least one shaft having an outer diameter, said shaft rotatably received in said bearing assembly;

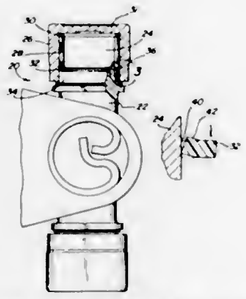
a plurality of bearing members received within said housing bore, and means at said first end of said housing to prevent movement of said bearing members beyond said first end of said housing;

said shaft having an end portion extending into said housing bore from said second end of said housing and not extend-

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ing beyond said first end of said housing, said bearing members contacting an outer peripheral surface of said shaft; and

a flexible, ring-shaped bearing retainer mounted adjacent said bearing members and entirely on a side of said bearing members spaced axially towards said second end of said housing to axially retain said bearing members within said housing bore and to maintain said housing on said shaft,



said bearing retainer having an inner peripheral surface defining a bearing retainer bore of a second bore diameter which is less than said shaft outer diameter, said shaft end portion having an interference fit with said bearing retainer bore, wherein said shaft end portion deflects the inner periphery of said bearing retainer toward said first end of said housing, said bearing retainer bore being axially displaced towards said first end of said housing, thereby locking said bearing retainer on said shaft.

5,288,273

CONSTANT VELOCITY UNIVERSAL JOINT WITH REDUCED CAGE SUPPORTING FACES

Werner Krude, Neunkirchen, Fed. Rep. of Germany, assignor to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

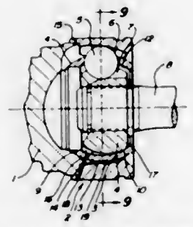
Filed Dec. 23, 1991, Ser. No. 812,422

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1990, 4042277

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] F16D *3/24*

U.S. Cl. 464—145 **15 Claims**



1. A constant velocity universal joint design as a fixed joint comprising:

an outer joint part having an open end and an inner face;

a plurality of first undercut-free meridional ball tracks disposed within said outer joint part;

a ball hub having an outer face;

a second plurality of undercut-free meridional ball tracks disposed within said ball hub;

a ball received in each of said first ball tracks and said second ball tracks for transmitting torque between said ball hub and said outer joint part, said first ball tracks and second ball tracks having corresponding open ends;

ball cage means for holding said balls in a common plane, said ball cage means having an inner and outer part-spherical face and defining a central through aperture in which the ball hub is received;

a joint base affixed to said outer joint part at the open end of said first tracks, said joint base having an internally positioned first undercut-free guiding face forming a contact region relative to a partial region of the outer part spherical face of the cage means;

a first free space recess defined by the inner face of the outer joint part and the outer face of said cage means, said first recess free space positioned adjacent to said contact region of said joint base and extending the length of said outer joint part;

and wherein the center lines of the ball second tracks are each undercut-free in the same axial direction axially towards the open end of said outer joint part and away from said joint base, and wherein said first undercut free guiding face is undercut-free in the opposite direction towards said joint base;

a second undercut-free guiding face externally positioned on said ball hub forming a contact region relative to a partial region of said inner part spherical face of said cage means; and

a second free space recess defined by the outer face of said ball hub and the inner part spherical face of said cage means, said second recess positioned adjacent the contact region, of said ball hub and reaching from the end face of the ball hub adjacent said joint base axially beyond the common plane of said balls.

5,288,274

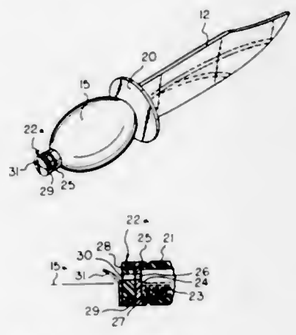
KNIFE

Harry H. Bell, Box 323, Delhi, Calif. 95315, and George R. Wegener, 306 Virginia Ave., Modesto, Calif. 95453

Filed Jul. 8, 1992, Ser. No. 910,724

Int. Cl.[5] A63J *23/00*

U.S. Cl. 472—52 **3 Claims**



1. A novelty knife, comprising,

a resilient blade, the resilient blade having a top edge and a lower edge spaced from the top edge, wherein the top edge and the lower edge merge into a forward tip, the blade including a blade hilt flange fixedly mounted orthogonally relative to the resilient blade spaced from the forward tip, and

a fluid reservoir bulb handle mounted to the blade hilt flange, with the bulb handle longitudinally aligned along a reservoir axis and the reservoir axis orthogonally oriented relative to the blade hilt flange, and

the resilient blade including a first conduit and second conduit directed through the resilient blade in fluid communication with the bulb handle, and the first conduit and second conduit projecting through the blade, with the first conduit terminating in a first conduit outlet and the second conduit terminating in a second conduit outlet, with the first conduit outlet and second conduit outlet directed through the blade lower edge, with the first conduit outlet spaced from the forward tip and the second conduit outlet spaced from the first conduit outlet, and

the bulb handle includes a reservoir fill conduit spaced from the hilt flange coaxially aligned along the axis, with the fill conduit including a fill conduit cap removably mounted relative to the fill conduit, and a fluid dye contained within the bulb handle, and

the fill conduit cap includes a first cap plate and the fill conduit is externally threaded, the first cap plate including an internally threaded skirt securable to the fill conduit, and the first cap plate including a first aperture directed through the first cap plate, the first aperture spaced relative to the axis a predetermined spacing, and the first cap plate including a first cap plate groove mounted to the first cap plate projecting above the first cap plate, and a second cap plate, the second cap plate including a second cap plate skirt, with the second cap plate skirt received within the first cap plate groove to rotatably mount the second cap plate relative to the first cap plate and the first cap plate in contiguous communication with the second cap plate, and the second cap plate including a second cap plate aperture directed through the second cap plate axially spaced relative to the axis the predetermined spacing to selectively align the first aperture relative to the second aperture.

5,288,275

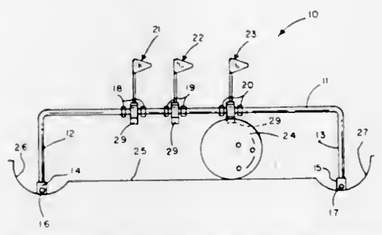
PIVOTING TARGET BOWLING TRAINING APPARATUS

Gail D. St. Peter, 701 Jefferson St., Scranton, Iowa 51462

Filed Feb. 16, 1993, Ser. No. 17,606

Int. Cl.[5] A63D *5/04*

U.S. Cl. 473—58 **1 Claim**



1. A bowling training apparatus arranged in combination with a bowling lane, wherein the bowling lane includes a lane top surface and a first gutter channel and a second gutter channel mounted in communication with a bowling lane on opposed sides of the bowling lane, and a support shaft, the support shaft arranged parallel to the bowling lane, and the support shaft having a first support leg for reception with the first gutter channel and a second support leg received within the second gutter channel, wherein the first support leg and the second support leg are arranged in a parallel relationship relative to one another and orthogonally mounted to the support shaft, and

a plurality of signal members, including a first signal member and a second signal member, wherein the first signal member is arranged for rotative mounting relative to the support shaft, and second signal member arranged for rotative mounting to the support shaft, and the first signal member includes a first resilient ring pair mounted on opposed sides of the signal member resiliently engaging the support shaft, and the second signal member including a second resilient ring pair, to include a second resilient ring mounted on opposed sides of the second signal member frictionally engaging the support shaft, and

the first signal member includes a first rotary hub and a first flange mounted to the rotary hub oriented between the rotary hub and the bowling lane, and a first shaft mounted to the rotary hub diametrically aligned with the first flange, and the first flange having a first indicator flag thereon, and the second signal member including a second rotary hub, wherein the second rotary hub includes a second flange and a second shaft, the second flange and the second shaft arranged in a diametrically aligned relationship relative to the second rotary hub on opposed sides of the second rotary hub, and the second shaft having a second flag member mounted to the second shaft, and

the first support leg and the second support leg each include an externally threaded end portion, and each externally threaded end portion includes an internally threaded locking collar, and each locking collar includes an annular flange, and each locking collar includes an extension shank coaxially aligned with the locking collar and the externally threaded end portion, and the extension shank including a shank annular groove to receive the annular flange, and each extension shank includes a head member, and each head member includes a support shaft directed through the head member orthogonally oriented relative to said extension shank, and

the first flange includes a first locking tube and a first locking rod pivotally mounted to the first flange, and the second flange includes a second locking tube and a second lock rod, wherein the first locking tube is arranged to receive the second locking rod therewithin to secure the first signal member to the second signal member.

5,288,276

TIGHTENING DEVICE FOR A DRIVE BELT

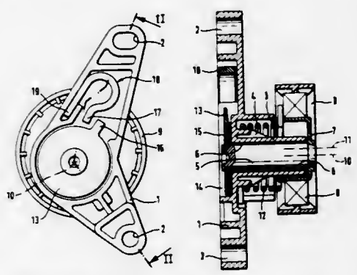
Eduard Golovatgai-Schmidt, Nuremburg, and Karl-Ludwig Grell, Aurachtal, both of Fed. Rep. of Germany, assignors to Ina Walzlager Schaeffler AG, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 29,012

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208840

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—133 **9 Claims**



1. A tightening device for a drive belt in an internal combustion engine, particularly for the toothed belt in the camshaft gear with a tension roller supported on a pivoting lever comprising a tension spring (**12**) acting upon the pivoting lever in the direction of tension, a blocking device opposing the motion of the pivoting lever whose blocking element changes its position as a function of the temperature, characterized in that the blocking element is formed as an end stop by a free end (**17**) of a preferably plate-shaped stop body (**18**) whose other end (**19**) is held in a fixed housing (**1**), and the end stop in the operating state of the internal combustion engine is disposed at a distance to the adjacent support face of the pivoting lever (**7**).

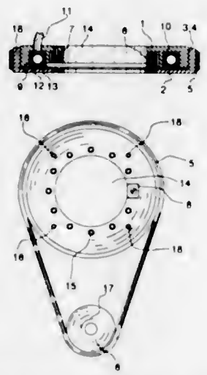
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,277

CEILING PIVOT ARM WITH A THREADED PIVOT BEARING

Ryszard Kummerfeld, Lübeck-Travemünde, Fed. Rep. of Germany, assignor to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,960
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1992, 4212996
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—198 **8 Claims**



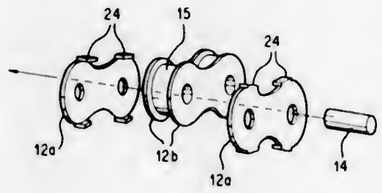
1. A pivot bearing mount for a ceiling pivot arm for holding equipment such as medical equipment that can be rotated in operating rooms, comprising:
- a ring with an external threaded surface, said ring forming a ceiling mount; and
- a threaded collar with an internally threaded surface, said collar being movable relative to said mount and said collar being connected to the pivot arm.

5,288,278

BICYCLE CHAIN

Masashi Nagano, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 30, 1991, Ser. No. 814,581
Claims priority, application Japan, Jan. 9, 1991, 3-200[U]
Int. Cl.[5] F16G *13/02*
U.S. Cl. 474—228 **11 Claims**



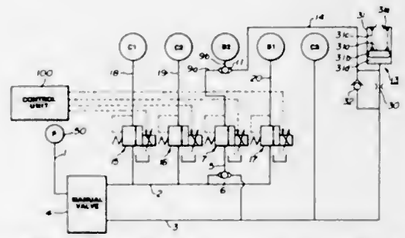
1. A bicycle chain, comprising:
- a plurality of outer link plates (**12***a*) and a plurality of inner link plates (**12***b*), said inner link plates being adjacent to said outer link plates;
- chain pins (**14**) for rotatably interconnecting pairs of said outer link plates to pairs of said inner link plates; and
- rollers (**15**) located on said chain pins, said rollers being rotatable with respect to said inner and outer link plates; and
- wherein each of said outer link plates include limiting means for limiting the flexibility of said chain to a predetermined range, and wherein said inner link plates include no means for limiting the flexibility of said chain.

5,288,279

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Hiromasa Sakai, and Toshikazu Oshidari, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 14, 1992, Ser. No. 943,189
Claims priority, application Japan, Sep. 18, 1991, 3-236700; Apr. 7, 1992, 4-085347
Int. Cl.[5] B60K *41/10*
U.S. Cl. 475—127 **18 Claims**



1. A fluid control system for an automatic transmission for a vehicle comprising:
- a frictional element operable to establish a reverse mode in the automatic transmission for allowing the vehicle to move backward;
- a pressure control valve operable to modify fluid pressure supplied from a pressure power source for providing a preselected pressure level required for actuating said frictional element;
- a manual valve, responsive to a shifting operation of a selector lever to a reverse position, for establishing fluid communication between the pressure power source and a reverse position pressure line which is connected to said frictional element and which by-passes said pressure control valve;
- a control unit responsive to the selector lever shifting operation to the reverse position to provide a control signal to said pressure control valve for providing the preselected pressure level to said frictional element within a given period of time following the selector lever shifting operation; and
- pressure delay means, disposed in the reverse position pressure line, for providing the preselected pressure level to said frictional element after said given period of time following the selector lever shifting operation to the reverse position.

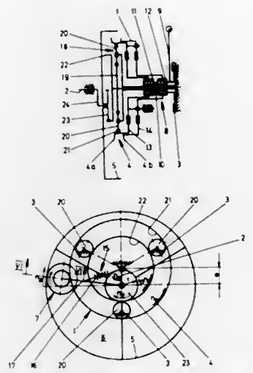
5,288,280

STEPLESSLY ADJUSTABLE ROTARY TRANSMISSION

Artur Polnik, Oberrahser Str. 133, W-4060 Viersen 1, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 934,778
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1991, 9110908[U]
Int. Cl.[5] F16H *15/54, 15/48;* **B62M** *11/14*
U.S. Cl. 475—185 **9 Claims**

1. A transmission comprising a housing, a rotary input member, a rotary output member, at least a first and a second at least substantially circular track means forming therebetween a gap which decreases in the peripheral direction, at least one rolling member arranged rollably between said track means and adapted to transmit rotary movement between the rotary input member and the rotary output member, a positive-action means adapted to hold the rolling member in contact at a drive rolling radius with one of said first and second track means and at a driven rolling radius with another of said first and second track means in said decreasing gap, steplessly adjustable adjusting means for adjusting the spacing between contact location of the rolling member with said one of said first and second track means and said other of said first and second track means, and auxiliary transmission means operatively associated with at least one of said first and second track means.

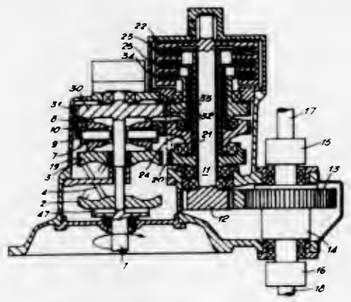


5,288,281

CONTIUOUSLY VARIABLE TRANSMISSIONS

Forbes G. Perry, Long Meadow, Church Street, Charlbury, Oxon OX7 3PP, England

PCT No. PCT/GB90/01336, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/05183, PCT Pub. Date Apr. 18, 1991
PCT Filed Aug. 29, 1990, Ser. No. 838,309
Claims priority, application United Kingdom, Sep. 26, 1989, 8921672
Int. Cl.[5] F16H *37/08, 15/38*
U.S. Cl. 475—191 **13 Claims**



1. A continuously variable transmission comprising
- a variable transmission unit having an input member (**2**) and an output member (**3**);
- means for providing a variable speed ratio between said input member and said output member;
- an output transmission member (**11**);
- a power recirculation system (**7–10**) coupled between said input member and said output member of said variable transmission unit;
- a first selectable operating regime with a drive path (**10, 24, 25**) from said power recirculation system to said output transmission member; and
- a selectable fixed-ratio drive path (**30–34**) from said input member of the variable transmission unit to said output transmission member.

5,288,282

Patent Not Issued For This Number

5,288,283

DOORWAY EXERCISER

Paul K. Meeker, Aurora, Ohio, assignor to Lisco, Inc., Tampa, Fla.

Filed Jan. 25, 1993, Ser. No. 8,024
Int. Cl.[5] A63B *22/00*
U.S. Cl. 482—69 **4 Claims**



1. A doorway exerciser comprising
- clamping means adapted to fit above a doorway framework;
- strap means secured to said clamping means at one end thereof;
- a substantially rigid tube having a reduced opening at one end thereof;
- a compression spring within said tube, said spring having an outer diameter greater than the diameter of said reduced opening at said one end of said tube;
- a slotted plate abutting the end of said spring opposite said reduced opening;
- the other end of said strap means passing into said reduced opening of said tubing, through said spring and said slots in said slotted plate and secured to itself;
- a seal;
- opposed ears integral with and extending outwardly from said tube;
- slotted orifices in each of said ears; and
- flexible straps secured to said seat and terminating at their distal ends in loops which are removably retained in said slotted orifices, whereby downward pressure on said seat causes compression of said spring and pressure on said clamping means.

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5,288,284

METHOD FOR MAKING BAGS AND AN APPARATUS FOR CARRYING OUT THIS METHOD

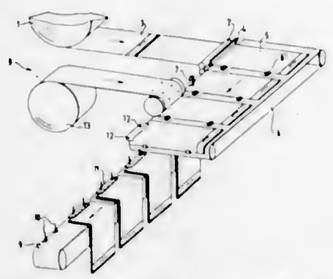
Fritz Achelpohl; Friedhelm Mundus, both of Lengerich, and Hans-Ludwig Voss, Tecklenburg, all of Fed. Rep. of Germany, assignors to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 989,866

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141466

Int. Cl.[5] B31B *1/84, 1/86*

U.S. Cl. 493—221 **8 Claims**



1. A method for making bags or other flat workpieces, which have a slip extending beyond their boundary, characterized by the following steps:

a) supplying partly prefabricated bags (5) laterally to a conveyor belt (6) driven in a timed manner,

b) gripping said bags with grippers (6') located on the conveyor belt,

c) applying a strip of glue via a glue applicator (7) to provide a glue surface on each bag (5) in a bottom region thereof, while the conveyor belt (6) is advanced in a timed manner,

d) in a slip application station (8), supplying a slip (18) laterally to each region on the conveyor belt (6) and placing said slip onto the glue surface thereof.

5,288,285

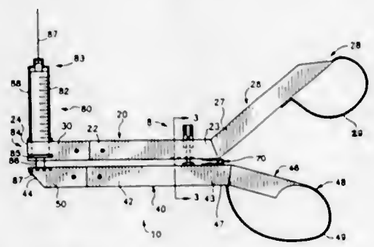
HOLDER FOR FILLING SYRINGE WITH RADIOACTIVE LIQUID

Wade P. Carter, 1710 Dayton Dr., Lemon Grove, Calif. 91945

Filed Feb. 16, 1993, Ser. No. 18,291

Int. Cl.[5] A61N *5/00*

U.S. Cl. 600—5 **19 Claims**



1. In combination:

a syringe including:

a barrel having a needle end and a back end; said barrel including:

a finger flange on said barrel back end; said finger flange having a front side; and a back side; and

a plunger having a front end slidingly engaged in said barrel and a back end; said plunger including:

a thumb flange on said plunger back end; said thumb flange having a front side and a back side; and

a holder for filling said syringe comprising:

a first rigid elongate member comprising:

a distal arm including:

a hinge end; and

a distal end terminating in finger flange bracket means for receiving and retaining said syringe finger flange, and

a proximal arm including:

a hinge end; and

a proximal end;

a second rigid elongate member having:

a distal arm including:

a hinge end; and

a distal end terminating in thumb flange bracket means for receiving and retaining said syringe thumb flange; and

a proximal arm including:

hinge end, and

a proximal end;

hinge means hingedly connecting said first member to said second member at said hinge ends such that said first and second members pivot about said hinge from a closed position, wherein said distal ends are in close proximity for receiving said finger flange and said thumb flange of said syringe when said plunger is fully inserted in said barrel and wherein said proximal ends are separated, to an open position, wherein said distal ends are separated, by moving said proximal ends closer together.

5,288,286

ADJUSTABLE PRESSURE CAST FOR ORTHOPEDIC INJURIES

Albert D. Davis, 23054 Vanowen St., West Hills, Calif. 91307

Filed Feb. 25, 1992, Ser. No. 841,314

Int. Cl.[5] A61F *3/00*

U.S. Cl. 602—6 **13 Claims**



1. A cast for immobilizing and stabilizing the lower leg, comprising:

an external sleeve member made of non-rigid elastomeric material for encasing a portion of the lower leg, said external sleeve member having a securable opening and means for releasably securing said securable opening, one end of said securable opening being located adjacent the proximal end of said external sleeve member, said securable opening being provided to facilitate installation of said cast onto the lower leg;

an inner lining located inside said external sleeve member and secured to said external sleeve member at common peripheries thereof;

inflatable first air chambers means located intermediate said external sleeve member and said inner liner for supporting a portion of the lower leg around the periphery thereof, said inflatable first air chambers means being oriented intermediate said external sleeve member and said inner liner in a manner whereby said inflatable first air chambers means extends longitudinally when said cast is installed onto the lower leg;

inflatable second air chambers means located intermediate said external sleeve member and said inner liner for applying pressure to support the ankle on both sides thereof;

wherein said inflatable first air chambers means comprise:

a) an anterior leg air chamber;

b) a lateral leg air chamber;

c) a posterior leg air chamber; and

d) a medial leg air chamber;

said cast including:

a) a first segment of tubing connecting a first side of said anterior leg air chamber to a first side of said lateral leg air chamber;

b) a second segment of tubing connecting a second side of said lateral leg air chamber opposite said first side of said lateral leg air chamber to a first side of said posterior leg air chamber;

c) a third segment of tubing connecting a second side of said posterior leg air chamber opposite said first side of said posterior leg air chamber to a first side of said medial leg air chamber; and

d) an air fill valve extending approximately two inches above the top edge of one of said anterior, lateral, posterior, and medial leg air chambers for use in filling said anterior, lateral, posterior, and medial leg air chambers.

5,288,287

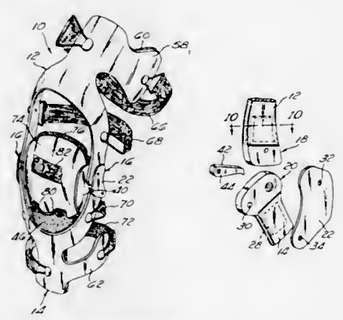
KNEE BRACE

James D. Castillo, Santa Maria, and Edward L. Castillo, Laguna Hills, both of Calif., assignors to Innovation Sports, Inc., Irvine, Calif.

Continuation of Ser. No. 694,681, May 2, 1991, Pat. No. 5,230,697. This application Sep. 24, 1992, Ser. No. 950,936

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—16 **7 Claims**



1. A knee brace comprising:

an upper frame member and a lower frame member formed from fiber-reinforced composite materials, each having a generally Y-shaped configuration, comprising a singular, central portion which bifurcates to a pair of extensions having end portions, said upper frame member being sized to be positionable above the knee joint of a user and said lower frame member being sized to be positionable below the knee joint of the user, such that the end portions of the extensions of each of said frame members are disposed laterally on opposite sides of the knee joint and the central portion of each of said frame members is disposed adjacent the front of the user's leg;

a pair of hinge members disposed laterally on opposite sides of the knee joint when the knee brace is attached to the user's leg and connected to the end portions of the extensions of each of said frame members such that said frame members may pivot about a primary pivot axis to allow bending of the knee joint, said hinge members including metal tabs formed thereon, the composite materials used to form the frame members being laminated about the metal tabs during the fabrication of the frame members, thus rigidly securing the hinge members to the end portions of the frame members and increasing the structural integrity of the knee brace;

a tibia pad removably attachable to an inner surface of said lower frame member to provide a firm interface between said lower frame member and the portion of the knee joint adjacent the crest of the tibia; and

means associated with said tibia pad for adjusting the position of the tibia pad relative the portion of the knee joint adjacent the crest of the tibia.

5,288,288

METHOD AND A DEVICE FOR COLD LASER MICROSURGERY WITH HIGHLY LOCALIZED TISSUE REMOVAL

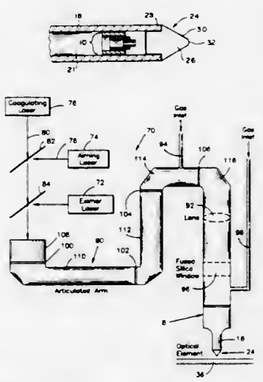
Aaron Lewis, and Daniel Palanker, both of Neve Shanan, 18/14 Jerusalem, Israel

Filed Oct. 22, 1991, Ser. No. 778,736

Claims priority, application Israel, Oct. 23, 1990, 096092

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—14 **21 Claims**



1. Apparatus for directing laser light to a material to be treated, comprising:

a micropipette having an axially extending interior opening terminating in a tip having an interior diameter of about 10 microns;

delivering means adjustably supporting said micropipette for motion with respect to the material being treated,

means supplying laser radiation to said micropipette for delivery through said tip to the material being treated, said laser radiation being delivered to said material with a resolution of less than about 10 microns; and

means preventing the entry of liquid into said micropipette tip from the region of the material being treated, whereby said laser light passes through said pipette without absorption by such liquid.

5,288,289

IONTOPHORETIC DELIVERY DEVICE AND METHOD OF HYDRATING SAME

Ronald P. Haak; J. Richard Gyory, both of San Jose, and Felix Theeuwes, Los Altos; Felix A. Landrau, San Jose; Nathan Roth, San Francisco; Robert M. Myers, Stanford, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 605,046, Oct. 29, 1990, Pat. No. 5,158,537. This application May 12, 1992, Ser. No. 881,909

Int. Cl.[5] A61N *1/30*

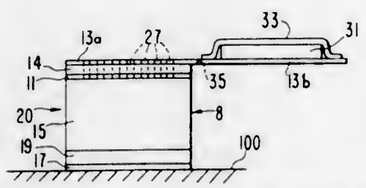
U.S. Cl. 604—20 **44 Claims**

1. A multilaminate dry state electrode assembly for an elec-

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trically powered iontophoretic agent delivery device, the electrode assembly having a reservoir layer including a substantially non-hydrated, hydratable matrix for containing an agent to be delivered, the reservoir layer being adapted to be placed in agent-transmitting relation with a body surface and an electrode layer in electrical contact with both the reservoir layer and a power source, the electrode assembly including:

means for hydrating the substantially non-hydrated matrix, said means including a self-supporting layer of a liquid-containing material, which layer of liquid-containing material (i) forms a portion of the electrode assembly, and (ii) is initially isolated from the reservoir layer, and



means for placing the layer of liquid-containing material in liquid transmitting relation with the reservoir layer;

whereby placing the layer of liquid-containing material in liquid transmitting relation with the reservoir layer causes the liquid in the layer of liquid-containing material to be transmitted from the layer of liquid-containing material into the hydratable matrix and hydrate the matrix and activate the electrode assembly.

5,288,290

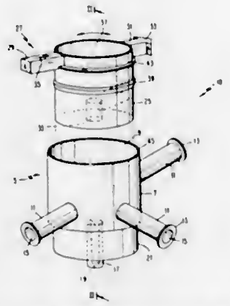
MULTI-PORTED VALVE ASSEMBLY

George Brody, San Clemente, Calif., assignor to Alcon Surgical, Inc., Fort Worth, Tex.

Continuation of Ser. No. 765,617, Sep. 25, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 23,165

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—32 **12 Claims**



1. A multi-ported valve assembly comprising:

a) a hollow cylindrical first valve body having a generally cylindrical chamber therein, said chamber forming a first opening in said valve body, said valve body further comprising:

i) a plurality of first ports extending outwardly from said valve body, and being disposed in a common plane; and

ii) a second port extending outwardly from said valve body, the axis of said second port being substantially perpendicular to said common plane;

b) a selector comprising a generally cylindrical body having an axis aligned with said second port axis, said generally cylindrical body having a first portion positioned in said generally cylindrical chamber and a second portion disposed outside of said cylindrical chamber, said second portion including a handle extending outwardly for rotating said cylindrical body, a passageway internal to said first portion for providing communication between said second port and one of said first ports or a shut-off position when said handle is rotated about said axis of said generally cylindrical body to a predetermined position, said generally cylindrical body including a second opening in said second portion and part of said first portion;

c) a recess on an inner wall of said chamber of said valve body and a protrusion on an outer wall of said first portion of said cylindrical body, said protrusion engaging said recess to prevent external leakage of fluid flowing through said valve and to maintain relative positions of said valve body and said selector, said recess positioned between said common plane and said first opening of said valve body; and

d) indicator means for indicating direction of a fluid flowing through said valve.

5,288,291

METHOD AND APPARATUS FOR SIMULTANEOUSLY INJECTING A LIQUID AND A TRANSPONDER INTO AN ANIMAL

Phillip Teoh, Daly City, Calif., assignor to Datapet, Inc., Danville, Calif.

Filed Aug. 12, 1992, Ser. No. 929,653

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—60 **21 Claims**



1. An ejector for use with and adapted to be attached to a discharge end of a syringe for injecting a liquid into living tissue and simultaneously placing an object into the tissue, the ejector comprising a tubular hub adapted to be attached to a liquid discharge end of the syringe having proximal and distal ends; an elongated, hollow needle secured to the hub, projecting from the distal end and having a sharp end adapted to make an incision in the tissue, the needle terminating short of the proximal end of the hub, the hub defining a chamber between the proximal end of the needle and the proximal end of the hub which has a larger cross-section than the needle; an elongated rod reciprocable disposed in the needle, having a diameter less than the inside diameter of the needle and a sufficient length so that it extends into the syringe when the hub is attached to the syringe; and retaining means disposed in the chamber and operably coupled with the rod for preventing the rod from axially moving under the influence of gravity out of either end of the needle, the retaining means comprising a sleeve frictionally engaging the rod and, upon the application of an axial force thereto, movable along the rod; whereby the object can be placed into the needle so that the object is forced by the rod through the incision into the tissue when a plunger of the syringe is moved towards the hub for injecting the liquid and thereby engages and moves the plunger relative to the needle towards the sharp end thereof.

5,288,292

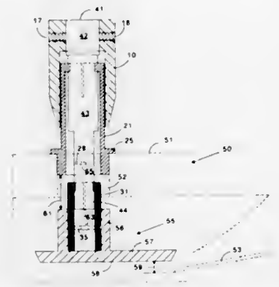
KERATOME WITH MINIATURE DIFFERENTIAL MICROMETER

Clarence E. Giraud, Mesa; Edward R. Perry, and Russell G. Koepnick, both of Phoenix, all of Ariz., assignors to Micro Precision Instrument Company, Phoenix, Ariz.

Filed Dec. 4, 1992, Ser. No. 985,338

Int. Cl.[5] A61B *17/32*; **G01B** *3/18*

U.S. Cl. 606—166 **20 Claims**



1. A keratome including a body containing a cutting blade, a plate having a major surface defining a reference plane, said blade positioned in said body adjacent one edge of said plate, and a differential micrometer attached to said body and to said plate for precisely moving said plate in a direction perpendicular to said plane, wherein said differential micrometer comprises:

a threaded shaft having a first portion without threads, a second portion having threads of a first pitch, and a third portion having threads of a second pitch;

a first sleeve having internal threads at one end and attached to said plate at another end;

a second sleeve having internal threads at a first end;

said second sleeve having a second end attached to said body and engaging the second portion of said threaded shaft with the internal threads on said first end; and

said first sleeve fitting within said second sleeve and engaging the third portion of said threaded shaft with the internal threads on the end of said first sleeve.

5,288,293

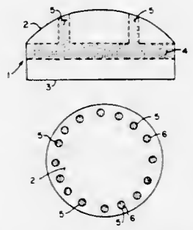
IN VIVO MODIFICATION OF REFRACTIVE POWER OF AN INTRAOCULAR LENS IMPLANT

Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017

Filed Sep. 24, 1992, Ser. No. 950,224

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **1 Claim**



1. An intraocular lens implant capable of having its refractive power changed, even after the lens has been formed, including said lens comprising three laminates, said laminates formed as a front, a back, and an intermediate laminate for the lens, at least one of the laminates having curvature for providing the refractive power for correcting viewing through the lens, and at least a second of said laminates formed to provide for a change in the refractive power of the lens by being hydrated and dehydrated when exposed to laser energy, the front and the back laminates formed of one of a silicone, collagen, polyacryalmide, and soft PMMA, with the intermediate laminate formed of one of a hydrogel and collagen, a series of columns extending through the front laminate, said columns being formed of the same material as the intermediate laminate and being formed so as to join with the intermediate laminate.

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5,288,294

PROCESS FOR DYEING PAPER WITH DISAZO DYES

Adolf Käser, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

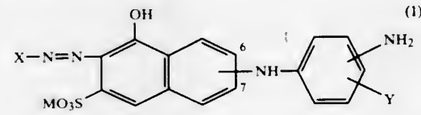
Filed Sep. 21, 1992, Ser. No. 949,179

Claims priority, application Switzerland, Sep. 26, 1991, 2852/91-9

Int. Cl.[5] **C09B** *31/00, 31/02;* **D21H** *21/28*

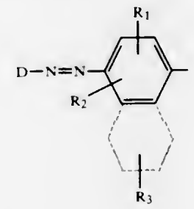
U.S. Cl. 8—687 **10 Claims**

1. A process for the dyeing of paper, which comprises dyeing the paper with a dye of formula



(1)

wherein
Y is sulfo or carboxy, and
X is a group of formula



(2)

or

(3)

wherein
D is the radical of an aromatic, carbocyclic or heterocyclic diazo component,
KK is a coupling component,
B is the radical of an aromatic diamine,
R_1 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy, —NH—CO—C_1-C_4alkyl or —NH—CO—NH_2,
R_2 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy, sulfo or carboxy,
R_3 is hydrogen, C_1-C_4alkyl, sulfo or carboxy, and
M is hydrogen or the equivalent of a colourless cation, and Y and the free amino group at the phenylamino radical in formula (1) are ortho-positioned to each other, and said phenylamino radical is in 6- or 7-position, and with the proviso that D is not the radical of 4-nitro-4′-aminostilbene-2,2′-disulfonic acid or 4,4′-diaminostilbene-2,2′-disulfonic acid.

5,288,295

CEMENT KILN FUELS CONTAINING SUSPENDED SOLIDS

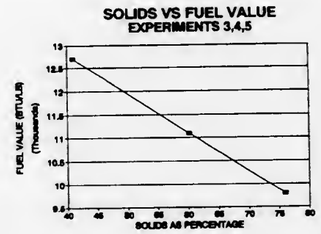
Ron Hypes, Foster City, and Peter Morton, East Palo Alto, both of Calif., assignors to Romic Chemical Corporation, East Palo Alto, Calif.

Continuation of Ser. No. 738,303, Jul. 31, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,261

Int. Cl.[5] **C10L** *1/32*

U.S. Cl. 44—301 **9 Claims**

1. A fuel for use in combustion in a cement kiln which comprises:
a) a heavy paraffinic oil having an average pour point of 80° F., an average density of 7.8 lbs./gallon, less than 0.1% Basic Sediment & Water, less than 10% asphaltene content and an API gravity in the range of 12° to 18° API; and,
b) an emulsified waste oil having a pour point less than 10° F., an average density of 6.8 lbs./gal., Basic Sediment & Water concentration in the range of 0.5 to 5.0%, and API Gravity in the range of 36° to 42° API:
c) solid particles constituting at least 36% of the weight of said fuel having particles sizes in the range of 10μ to 5000μ and oil impregnated on the surface of said particles



wherein said components are mixed together such that the suspended solids are stably suspended in the resulting fuel, the resulting fuel has a viscosity of 1000–4000 cps at 25° C; and the resulting fuel has a fuel value in excess of 8000 BUT/lb.

5,288,296

PRODUCTION OF MICROBIAL FIELD CROP INOCULANTS

Dennis E. McCabe, Middleton; Brian J. Martinell, Madison; Alan Paau, Middleton, and Lori L. Graham-Weiss, Madison, all of Wis., assignors to W. R. Grace & Co., Columbia, Md.

Continuation of Ser. No. 879,902, Jun. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 806,037, Dec. 6, 1985, abandoned. This application Dec. 27, 1989, Ser. No. 456,238

Int. Cl.[5] **A01N** *63/00*

U.S. Cl. 47—58 **14 Claims**

1. A method for producing microbial field crop inoculant in a culture container whereby the inoculants are fermented and stored until use in the same culture container, consisting essentially of the steps of:
introducing a culture medium, including finely ground vermiculite, a sufficient quantity of a nutrient appropriate for growth of the inoculant, and water in an amount as needed to moisten the vermiculite, into a culture container, the vermiculite in the container serving as an inoculant growth substrate and a particulate carrier;
inoculating the culture medium in the container with a starter culture of a microbial inoculant selected from the group consisting of bacterial and fungal inoculants;
closing the container;
storing the closed container at a temperature suitable for microbial growth, substantially free from agitation or aeration, so that the microbial culture first grows out and then matures on the medium in the container; and
delivering the inoculant for sue on the same carrier and in the same container in which it was grown.

5,288,297

ABRASIVE COMPACT OF CUBIC BORON NITRIDE AND METHOD OF MAKING SAME

Alfred E. Ringwood, Redhill, Australia, assignor to The Australian National University, Acton, Australia

Filed Nov. 18, 1992, Ser. No. 978,386

Claims priority, application Australia, May 25, 1990, PK 0297; PCT Int'l Appl., Apr. 17, 1991, PCT/AU91/00144

Int. Cl.[5] **B24D** *3/00*

U.S. Cl. 51—293 **22 Claims**

1. A method for producing a cubic boron nitride (CBN) compact which comprises the steps of:
(a) intimately mixing a mass of particulate CBN crystals with a bonding agent in the proportions 95 to 60 volume per-

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cent of CBN and 5 to 40 volume percent of bonding agent, said bonding agent containing silicon and metal atoms selected from the group consisting of titanium, zirconium and hafnium atoms in the atomic proportions $Si_{30}M_{70}$ to $Si_{85}M_{15}$, where M represents said metal atoms;

(b) subjecting the mixture of CBN crystals and bonding agent to temperatures in the range 900° to 1800° C. and pressures in the range 5 to 70 kilobars; and

(c) maintaining the temperature and pressure conditions on the mixture for a period of at least about 30 seconds, sufficient to cause most of the Si and M atoms of the bonding agent to react with the CBN crystals to form a bonding matrix in situ composed of an intimate mixture of two phases, one of which consists essentially of or consists of silicon nitride (Si_3N_4) and the other of which is a metallic diboride (MB_2) phase, each of said phases comprising at least 25 volume percent of the bonding matrix.

5,288,298

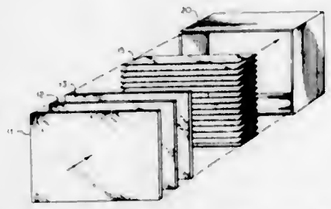
ANTIMICROBIAL AIR FILTER AND METHOD OF MAKING SAME

William T. Aston, 5003 Gardeola Cir., Marietta, Ga. 30068

Filed Jun. 22, 1992, Ser. No. 901,971

Int. Cl.[5] B01D *53/04, 29/56*

U.S. Cl. 55—279 **18 Claims**



1. An antimicrobial air filter comprising a layer of fabric bearing porous activated carbon particulate deodorizing agents and a layer of polymeric expanded foam filter media impregnated with a biostat type antimicrobial agent, said fabric layer being separated from said foam layer such that said antimicrobial agent is substantially prevented from contacting said porous activated carbon particulate deodorizing agents and clogging the carbon pores.

5,288,299

EXHAUST GAS TREATING APPARATUS

Hiroshi Yoshida, Kanagawa; Mitsuyoshi Kaneko, and Ryuichi Ishikawa, both of Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 833,786, Feb. 12, 1992, abandoned. This application Dec. 14, 1992, Ser. No. 993,806

Claims priority, application Japan, Feb. 22, 1991, 2-50534

Int. Cl.[5] B01D *53/02, 29/17*

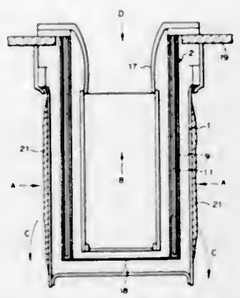
U.S. Cl. 55—302 **6 Claims**

1. An exhaust gas treating apparatus comprising:

a bag filter including a filter cloth for removing dust from exhaust gas which is passed through said filter cloth, said bag filter further including a retainer extending into a space defined by said bag filter for retaining a shape of said filter cloth; and

an activated carbon filter installed radially inward of and along said filter cloth at an exhaust gas outlet side of said bag filter for removing dioxin and NO_x from the exhaust gas in order to discharge purified exhaust gas;

wherein said activated carbon filter is spaced from said filter cloth and is of a thin size for providing a minimal pressure loss when a pulse jet for clearing the dust on the filter cloth is intermittently applied against said filter cloth, such that the carbon filter will not interfere with a deformation of the filter cloth caused by said pulse jet, and wherein



said activated carbon filter is detachably provided as an integral part of said retainer of said bag filter.

5,288,300

FILTER WITH A FILTER CASSETTE

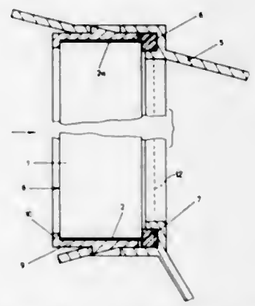
Theodor Müller, Eichenzell, and Peter Hartung, Eichenzell-Rothemann, both of Fed. Rep. of Germany, assignors to Thermoplast-Technik Gesellschaft fur Kunststoffverarbeitung m.b.H., Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 953,213

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133175

Int. Cl.[5] B01D *27/08*

U.S. Cl. 55—497 **1 Claim**



1. A filter with a filter cassette adapted to be disposed in a filter housing, comprising a fanfolded filter medium extending in one plane; side members formed by thin walled outer strips cemented against the two staggered faces of the fanfolded filter medium with the downstream side faces of the outer strips protruding slightly beyond the filter medium; and a clamping frame to hold the filter cassette in the filter housing; said clamping frame reaching over the edge of the filter cassette and forcing the protruding downstream side faces of the outer strips into a pair of seals disposed in said housing, and having a surface prong on two opposing sides that reaches into the outermost fanfold of the filter medium and pushes it into another seal disposed in the filter housing.

5,288,301

METHOD FOR FABRICATION OF FUSED FIBRE DEVICES

Christopher J. Rowe, Ipswich; David B. Mortimore, Trimley St. Mary; Iain J. Wilkinson, Felixstowe, and Nicholas E. Achurch, Woodbridge, all of England, assignors to BT&D Technologies Limited, Suffolk, Japan

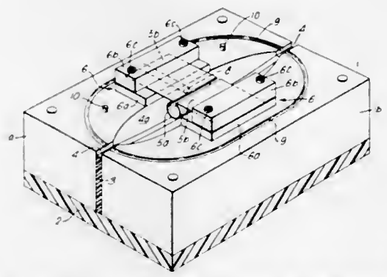
PCT No. PCT/GB90/01345, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/03436, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 31, 1990, Ser. No. 835,439

Claims priority, application United Kingdom, Sep. 1, 1989, 8919800

Int. Cl.[5] C03B *37/23*

U.S. Cl. 65—4.2 **5 Claims**



1. A method of fabricating fused optical fibre devices, the method comprising the steps of:

positioning an optical fibre arrangement within an elongate heating chamber, the heating chamber being defined within a heat-distributing material surrounded by an electric heating element and extending substantially the entire length of the heating chamber whereby the heating chamber attains a substantially uniform temperature,

raising the temperature of the optical fibre arrangement to the fusion temperatures of the fibres by passing an electric current through the heating element, and

stretching the optical fibre arrangement when the optical fibres are at their fusion temperatures,

wherein the heating chamber is provided with an inert atmosphere during the fusion process, and

wherein the combined thermal capacity of the heating element and the heat distributing material is such that the fusion temperature is reached within 1 to 30 seconds.

5,288,302

METHOD AND APPARATUS FOR EXTRACTION OF METAL VALUES FROM METAL BEARING ORES

Mark S. Hallinan, Westdene, South Africa, assignor to African Oxygen Limited, Selby, South Africa

Filed Jun. 8, 1992, Ser. No. 895,310

Claims priority, application South Africa, Jun. 6, 1991, 91/4337

Int. Cl.[5] C22B *3/02, 3/12*

U.S. Cl. 75—744 **14 Claims**

1. A process for extracting metal values from an ore bearing a desired metal, which comprises:

(a) milling a wetted ore containing the desired metal to produce an ore containing slurry;

(b) adding a lixiviant to the slurry;

(c) dissolving the desired metal from the slurry in the lixiviant to thereby leach the desired metal;

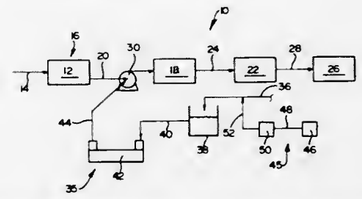
(d) absorbing the dissolved metal from the lixiviant with activated carbon particles in a carbon-in-pulp absorption section;

(e) separating the carbon particles from the slurry;

(f) recovering the desired metal from the carbon particles;

(g) conveying the slurry to and within each of steps (a) through (f) along pipelines, some of which pipelines are fitted with pumps, wherein some of the pumps are centrifugal pumps comprising a housing and a rotatable pump shaft, with glands or seals being provided around the shaft where it passes through the housing; and

(h) adding water to the glands via a gland service water arrangement, with conduits and tank,



wherein the improvement comprises introducing, prior to step (f), and after the formation of the ore-containing slurry in step (a), a gaseous or liquid agent, which agent is capable of promoting recovery of the metal values from the ore, into the gland service water arrangement of at least one of the pumps.

5,288,303

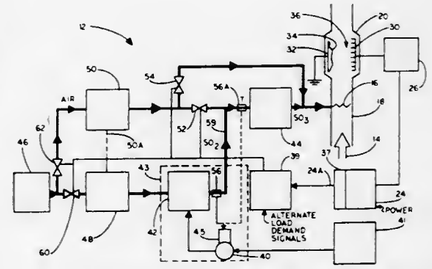
FLUE GAS CONDITIONING SYSTEM

David L. Woracek, Federal Way, Wash., and Robert A. Wright, Indianapolis, Ind., assignors to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Filed Apr. 7, 1992, Ser. No. 864,847

Int. Cl.[5] B03C *3/01, 3/68*

U.S. Cl. 95—2 **32 Claims**



1. An apparatus for conditioning flue gas with sulfur trioxide for removal of entrained particles with an electrostatic precipitator, comprising:

means for providing a flow of sulfur dioxide gas in air at a desired temperature, including a sulfur burner, means for providing said sulfur burner with a flow of air, and means for providing said sulfur burner with a flow of sulfur; temperature sensor means for said flow of sulfur dioxide in air, and a control for said means for providing said sulfur burner with a flow of sulfur responding to said temperature sensor means to provide said flow of sulfur dioxide in air at said desired temperature;

catalytic converter means for converting sulfur dioxide to sulfur trioxide;

sulfur trioxide input means for providing a signal corresponding to a demand for sulfur trioxide; and

a controller connected with said means for providing the sulfur burner with a flow of air and with said sulfur demand input means, said controller being programmed to operate said means for providing air flow to said sulfur burner to vary said air flow in response to said sulfur

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trioxide input signal and meet the demand for sulfur trioxide.

5,288,304

COMPOSITE CARBON FLUID SEPARATION MEMBRANES

William J. Koros, and Cheryl W. Jones, both of Austin, Tex., assignors to The University of Texas System, Austin, Tex.

Filed Mar. 30, 1993, Ser. No. 52,423
Int. Cl.[5] B01D 53/22
U.S. Cl. 95—45 21 Claims

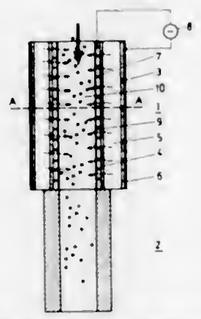
1. A membrane for the separation of fluids comprising a carbon membrane coated with a coating that reduces the partial pressure of water or other condensible agents or impurities relative to the other permeable components and having resistance to the permeation of water or other impurities without causing significant losses to the selectivity or productivity of the membrane.

5,288,305

METHOD FOR CHARGING PARTICLES

Bernd Gellert, Wettingen, and Andreas Kwetkus, Mellingen, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed May 18, 1992, Ser. No. 884,198
Int. Cl.[5] B03C 3/38
U.S. Cl. 95—57 4 Claims



1. A method for charging particles included in a gas comprising the steps of:

(a) precharging said particles using ultraviolet radiation which is irradiated at said gas containing said particles when said gas is caused to flow through a UV radiation device;

(b) performing additional charging of said particles included in said gas using a friction charging chamber, subsequent to said precharging of said particles using ultraviolet radiation; and

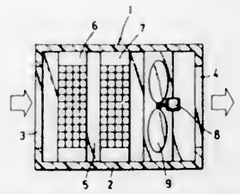
(c) separating said charged particles from uncharged particles within said gas and depositing said separated charged particles onto an electrode of opposite polarity from said charged particles subsequent to said additional charging of said particles in said friction charging chamber.

5,288,306

ACTIVATED CARBON HONEYCOMBS AND APPLICATIONS THEREOF

Toshio Aibe, Tsukuba, and Kazuo Shibata, Tohnosho, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 22, 1992, Ser. No. 917,197
Claims priority, application Japan, Jul. 22, 1991, 2-06282; Sep. 18, 1991, 2-68315; Feb. 28, 1992, 78910; Apr. 22, 1992, 1-29997
Int. Cl.[5] B01D 53/04
U.S. Cl. 95—141 32 Claims



1. A gas treating method which comprises treating a gas with a first activated carbon honeycomb matrix supporting alkali metal iodide.

5,288,307

METHOD TO REDUCE FUEL VAPOR EMISSIONS

H. Robert Goltz, and Tom N. Demopolis, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 28, 1992, Ser. No. 937,799
Int. Cl.[5] B01D 53/04
U.S. Cl. 95—143 30 Claims

1. A method for reducing hydrocarbon fuel vapor emissions from fuel reservoirs which comprises:

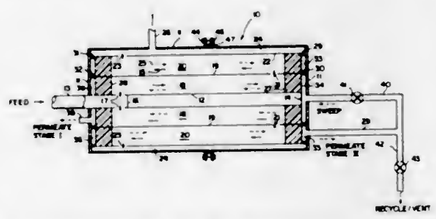
contacting a vented hydrocarbon fuel vapor stream from a fuel reservoir with a polymeric adsorbent to retain at least a portion of the hydrocarbon fuel vapors emitted from reservoir, the polymeric adsorbent comprising a macroporous or macroreticular copolymer of at least one monovinylidene aromatic monomer and a crosslinking monomer which has been post-crosslinked in a swollen state in the presence of a Friedel-Crafts catalyst.

5,288,308

MULTIPLE STAGE COUNTERCURRENT HOLLOW FIBER MEMBRANE MODULE

Pushpinder S. Puri, Macungie, and Dilip G. Kalthod, Fleetwood, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 736,197, Jul. 26, 1991, Pat. No. 5,176,725. This application Jun. 30, 1992, Ser. No. 906,731
Int. Cl.[5] B01D 53/22, 63/04
U.S. Cl. 96—8 12 Claims



1. A hollow fiber shell side feed separation module comprising:

(a) a pressurizable shell;

(b) an elongated bundled of hollow fibers within said shell, said fibers formed from semipermeable membrane material capable of separating components from a fluid feed mixture, said fibers aligned generally along paths running from one end of said bundle to the other end;

(c) first and second tubesheets embedding first and second ends, respectively, of said bundle and sealing the bores of said fibers from the fiber exteriors between said tubesheets;

(d) at least one impermeable wall member extending longitudinally through said bundle and partitioning said bundle between said tubesheets into at least first and second sections wherein said impermeable wall member contains a passageway in close proximity to the second tubesheet, each fiber between the tubesheets lying completely within one or the other of said sections;

(e) means for introducing a fluid feed mixture into said first section on the shell side of the fibers adjacent to said first tubesheet;

(f) means for passing said feed mixture along the exterior of the hollow fibers in said first section and then through said passageway and along the exterior of the hollow fibers in said second section, wherein permeate passes to the interior of said hollow fibers in said first section and said second section, such that said feed mixture is in countercurrent flow with permeate;

(g) means for removing retentate from said second section adjacent said first tubesheet;

(h) means for removing retentate from said shell;

(i) sealing means cooperating with said tubesheets for sealing the bores of the fibers of each section from the bores of the fibers in any other section and defining discrete collection zones for permeate from the bores of the fibers of each section;

(j) means for withdrawing a first permeate from the collection zone of said first section adjacent said first tubesheet; and

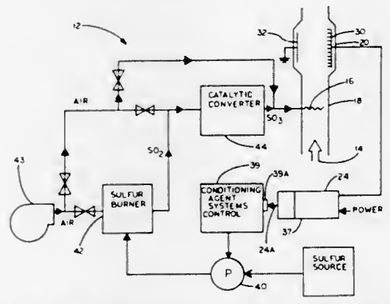
(k) means for withdrawing a second permeate from the collection zone of said second section adjacent said second tubesheet.

5,288,309

FLUE GAS CONDITIONING AGENT DEMAND CONTROL APPARATUS

Robert A. Wright, Indianapolis, Ind., assignor to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 864,847, Apr. 7, 1992. This application May 14, 1992, Ser. No. 882,835
Int. Cl.[5] B03C 3/01, 3/68
U.S. Cl. 96—22 26 Claims



1. A flue gas conditioning agent demand control apparatus for controlling flow of a conditioning agent for removal of entrained particles in a flue gas with an electrostatic precipitator having at least one charging electrode and at least one collection electrode, comprising:

first means for sensing a discharge rate of said charging electrode and for generating a conditioning agent demand signal related to said discharge rate of said charging electrode; and

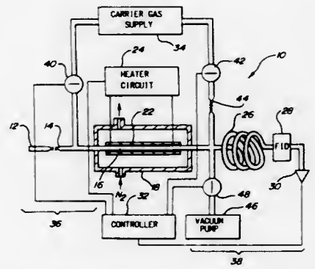
second means for producing a flow of conditioning agent connected with said conditioning agent demand signal, said second means providing a controlled flow of conditioning agent in relation to changes in said conditioning agent demand signal from said first means.

5,288,310

ADSORBENT TRAP FOR GAS CHROMATOGRAPHY

Anita J. Peters, Farmington Hills, and Richard D. Sacks, Ann Arbor, both of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 30, 1992, Ser. No. 953,893
Int. Cl.[5] B01D 15/08
U.S. Cl. 96—104 35 Claims



1. A gas chromatography system for the separation of components of a sample mixture, comprising:

a trap in the form of a porous layer open tubular column having an adsorbent coating on the inside surface of said tube,

temperature control means for causing said trap to be selectively held at a trapping temperature above the freezing point of a number of said components or a higher desorption temperature;

fluid circuit means for causing the sample mixture to be introduced into said trap while said trap is at said trapping temperature causing at least some of the components of the sample mixture to be adsorbed onto said adsorbent coating and for causing said adsorbed components to be desorbed from said trap when said trap is at said desorption temperature, said desorbed components of the sample mixture being at least partially eluted, and

a detector for receiving said desorbed component of the sample mixture and providing an output related to the concentrations of said desorbed components of the sample mixture.

5,288,311

DEVICE OF SUPPLYING A CONCENTRATED CO_2 GAS IN A CARBONATE SPRING BATH SYSTEM

Harumasa Furutani; Kazuyuki Kishishita, both of Hirakata, and Hideaki Fukui, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 24, 1992, Ser. No. 950,151
Claims priority, application Japan, Sep. 24, 1991, 3-243846; Sep. 25, 1991, 3-246303; Jan. 27, 1992, 4-012443
Int. Cl.[5] B01D 53/04
U.S. Cl. 96—110 22 Claims

1. A device of supplying a concentrated CO_2 gas in a carbonate spring bath system for creating a bath water dissolved with

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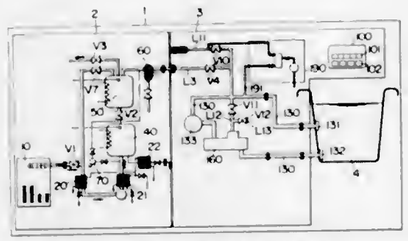
CO_2 gas and supplying the same to a bathtub, said device comprising:

a CO_2 gas source supplying a concentrated CO_2 gas to dissolving means which dissolves the CO_2 gas supplied from said CO_2 gas source under a pressurized condition into the bath water being fed to said bathtub;

said CO_2 gas source comprising:

combustion means for obtaining from a hydrocarbon fuel a combustion gas containing a CO_2 gas;

a CO_2 adsorption tower connected to said combustion means through a gas feed line to receive said combustion gas and connected to said dissolving means through a supply line, said CO_2 adsorption tower being filled with an adsorbent capable of adsorbing the CO_2 gas from said combustion gas at a relatively low adsorption temperature and of desorbing the CO_2 gas therefrom at a relatively high desorption temperature for feeding the CO_2 gas to said dissolving means through said supply line;



cooling means disposed in said gas feed line between said combustion means and said CO_2 adsorption tower to cool said combustion gas prior to being fed to said CO_2 adsorption tower;

heating means disposed within said CO_2 adsorption tower in order to heat said adsorbent for desorbing said CO_2 gas therefrom;

a gas discharge line extending from said CO_2 adsorption tower in communication with said gas feed line so as to discharge said combustion gas out of said CO_2 adsorption tower after adsorption of the CO_2 gas from said combustion gas to said adsorbent;

a cooling line extending from said CO_2 adsorption tower and terminating in said gas feed line upstream of said CO_2 adsorption tower so as to be cooperative with said gas feed line to form a closed loop for circulating a residual gas through said CO_2 adsorption tower in order to cool said adsorbent thereby.

5,288,312

FLUID SLUG FLOW MITIGATION AND GAS SEPARATION SYSTEM

Richard L. Payne, McKinney, and Miroslav M. Kolpak, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 26, 1993, Ser. No. 23,280

Int. Cl.[5] B01D *45/00*

U.S. Cl. 96—158 **5 Claims**

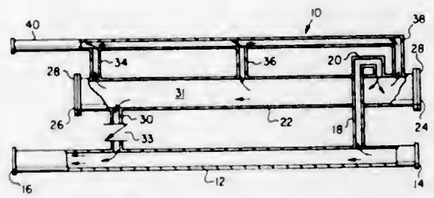
1. A slug flow mitigation device adapted to be interposed in a flow conduit for mixed phase, gas and liquid, fluid flow, said device comprising:

a primary fluid flow conduit for conducting slugs of liquid and gas, said primary fluid flow conduit extending in a generally horizontal direction;

a conduit section forming a slug flow mitigation and gas separation chamber disposed generally vertically spaced above said primary fluid flow conduit for receiving liquid slug flow and gas flow from said primary fluid flow conduit,

a branch conduit extending from said primary fluid flow conduit to and in communication with said chamber for discharging liquid and gas into said chamber;

a liquid return conduit extending between said conduit section and said primary fluid flow conduit and in communication with said chamber for returning liquid to said primary fluid flow conduit;



at least one gas vent conduit connected to said chamber for conducting gas away from said device; and

check valve means interposed in said liquid return conduit and operable to prevent fluid flow from said primary fluid flow conduit to said chamber through said liquid return conduit.

5,288,313

ELECTROLESS PLATING CATALYST

J. Claude Portner, Juvisy-sur-Orge, France, assignor to Shipley Company Inc., Marlborough, Mass.

Filed May 31, 1990, Ser. No. 531,156

Int. Cl.[5] B05D *3/00*

U.S. Cl. 106—1.11 **31 Claims**

1. An electroless plating catalyst solution comprising a polymer solution having a mixture of catalytic particles homogeneously dispersed therein, said mixture of catalytic particles comprising first catalytic particles of a reduced platinum family metal absorbed into an inert particulate carrier and second catalytic particles of reduced silver adsorbed onto an inert particulate carrier, said particles having a metals content whereby the weight ratio of silver to the platinum family metal varies between about 100:1 and 1:1.

5,288,314

POLISH

Scott Howard, Hartsdale, and Richard Frazer, Jr., Williamsville, both of N.Y., assignors to Crescent Manufacturing, Eden, N.Y.

Filed Aug. 4, 1992, Ser. No. 925,392

Int. Cl.[5] C09G *1/04*

U.S. Cl. 106—3 **16 Claims**

1. A polish comprising:

water in an amount between about 40.0 and about 75.0 percent;

a petroleum naphtha in an amount between about 12.0 and about 35.0 percent;

a rheological additive in an amount between about 0.30 and about 1.0 percent;

an ultraviolet absorber in an amount between about 0.05 and about 0.50 percent;

an oil soluble dye in an amount between about 0.0005 and about 3.0 percent;

a first silicate in an amount between about 5.0 and about 15.0 percent;

a fluid from a silicone siloxane fluid chemical family in an amount between about 0.50 and about 6.0 percent;

a methylsiloxane resin in solvent in an amount between about 0.10 and about 3.0 percent;

an oleic diethanol amide in an amount between about 0.50 and about 2.0 percent;

a second silicate in an amount between about 0.10 and about 3.0 percent;

a bactericide in an amount between about 0.05 and about 0.20 percent, by weight of the polish,

wherein the rheological additive is any rheological additive that provides the polish with elasticity, viscosity and plasticity needed for application to painted metallic and fiberglass surfaces.

5,288,315

SURFACE COATINGS

Adalbert Braig, Weil-Friedlingen, Fed. Rep. of Germany, and Emry Phillips, Wakefield, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 16, 1991, Ser. No. 808,388

Claims priority, application United Kingdom, Dec. 20, 1990, 9027724

Int. Cl.[5] C09D *5/08*

U.S. Cl. 106—14.15 **7 Claims**

1. An aqueous electrodepositable or alkaline paint composition comprising a) an aqueous film-forming binder; and b) as corrosion inhibitor, a corrosion inhibiting amount of a product produced by reacting i) a mono- or di-aldehyde having the formula I:

$$R—(CHO)_{1 \text{ or } 2} \qquad I$$

in which R is a C_1-C_{20}alkyl or alkylene group, optionally interrupted by one or more O- and/or N-atoms, or substituted by one or more hydroxy or cyano groups, or a C_6 or C_{10} aryl or arylene group optionally substituted by one or more C_1-C_1.0alkyl groups, C_1-C_{10}alkoxy groups, hydroxy or nitro groups, or halogen atoms, with ii) a mono- or di-amine having the formula II:

$$R_1—(NH_2)_{1 \text{ or } 2} \qquad II$$

in which R_1 is a C_1-C_{20}alkyl or alkylene group which is optionally interrupted by one or more O- and/or N-atoms, or substituted by one or more hydroxy or cyano groups, a C_5-C_7-cycloalkyl or cycloalkylene group, a C_6 or C_{10}aryl or arylene group or a C_7-C_{12}aralkyl or aralkylene group, each of which may be substituted in the cycloalkyl or aryl ring by one or more C_1-C_{10}alkyl groups, C_1-C_{10}alkoxy groups, hydroxy, nitro group, or C_7-C_{12}aralkyl optionally substituted by an amine group, or halogen atoms.

5,288,316

NON AQUEOUS DISPERSION INK WITH IMPROVED SHELF LIFE, TACK AND FLOW

Judith D. Auslander, Westport, Conn., and Norman C. Hochwalt, West Carrollton, Ohio, assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 5, 1992, Ser. No. 956,209

Int. Cl.[5] C09D *11/08*

U.S. Cl. 106—27 R **17 Claims**

1. A non aqueous dispersion ink composition, comprising:

a) 40 to 90% by weight of a non aqueous continuing phase, comprising: 70–90% by weight emollient, 0.2–1 organic titanate coupling agent, and 10 to 30% polypropylene glycol, and

b) 1–10% organic pigment having a particle size of 0.1 to 0.4 microns dispersed in rosin ester vehicle.

5,288,317

DISSOLVING METHOD

Kjell Johansson, Mölnlycke, and Kenneth Jacobsson, Surte, both of Sweden, assignors to Eka Nobel AB, Bobus, Sweden

Filed Dec. 9, 1991, Ser. No. 803,969

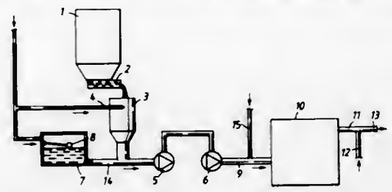
Int. Cl.[5] C08L *3/04*

U.S. Cl. 106—213 **5 Claims**

1. A method for preparing a starch solution comprising:

(a) mixing particles containing high-cationized starch having a degree of substitution of at least about 0.07 with cold water;

(b) subjecting the mixture to shear forces within about one minute after the starch particles have been contacted with the water, which force being suitable to break up agglomerates formed therein and wet the individual particles; and then



(c) heating the mixture to at least about 60° C. within about one minute and maintaining the mixture in this heated state until the viscosity maximum has passed.

5,288,318

CELLULOSE ACETATE AND STARCH BASED BIODEGRADABLE INJECTION MOLDED PLASTICS COMPOSITIONS AND METHODS OF MANUFACTURE

Jean M. Mayer, N. Smithfield, R.I., and Glenn R. Elion, Chatham, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 1, 1993, Ser. No. 88,961

Int. Cl.[5] C08L *3/00, 1/12*

U.S. Cl. 106—213 **19 Claims**

1. A biodegradable plastic comprising: between about 10% to 60% by weight starch which contains more than 3% intact starch granules; between 30% to 70% cellulose acetate which has a molecular weight ranging from 28,000 to 62,000 Daltons and a viscosity of 3 to 44 seconds; and between 5% and 35% of a plasticizer selected from the group consisting of triacetin, diacetin, monoacetin, ethylene glycol, propylene glycol and glycerol.

5,288,319

Patent Not Issued For This Number

5,288,320

OXIDES AND THE PRODUCTION THEREOF

Guy Decelles, Yarm, England, assignor to Tioxide Group Services Limited, London, United Kingdom

Filed Dec. 30, 1991, Ser. No. 814,439

Claims priority, application United Kingdom, Feb. 2, 1991, 9102315

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—445 **17 Claims**

1. An oxide comprising particulate titanium dioxide having on the particles thereof an ester or partial ester of pentaerythritol and an aliphatic, unsubstituted C_{10} to C_{22} monocarboxylic acid.

5,288,321

METHOD FOR ELIMINATING THE ALKALI-AGGREGATE REACTION IN CONCRETES AND CEMENT THEREBY OBTAINED

Joseph Davidovits, 16 rue Galilée, Saint Quentin, F-02100, France

PCT No. PCT/FR91/00007, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11405, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 8, 1991, Ser. No. 916,003

Claims priority, application France, Feb. 5, 1990, 90 01278

Int. Cl.[5] C04B *7/36*

U.S. Cl. 106—713 **6 Claims**

1. In a method of manufacturing a hydrated cement for use in an alkali activated concrete, the improvement comprising

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(1) providing a hydrated cement composition consisting essentially of:

(a) 100 parts by weight of a calcium alumino-silicate of the formula $x(CaO).y(Al_2O_3).(SiO_2)$, where "x" has a value between 2 and 3.5 and "y" has a value between 0 and 0.2;

(b) 10 to 30 parts by weight of a synthetic alumino-silicate belonging to the class of silicates whose mineralogical structure is lamellar and whose MAS-NMR for ^{27}Al has at least one main resonance at 20 ± 5 ppm and/or 50 ± 5 ppm in relation to $AlCl_3$;

(c) 0 to 10 parts by weight of a hydrated disilicate $Ca(H_3SiO_4)_2$ whose (SiO_4) tetrahedron polymerization degree is (Q1) as determined by the value of the MAS-NMR spectrum for ^{29}Si; and

(2) subjecting said composition to nuclear magnetic resonance spectroscopy to ensure that the hydrated alumino-silicate has a ^{27}Al MAS-NMR spectrum not showing a resonance at 66 ± 5 ppm corresponding to a (Q3) (3Si)-type (AlO_4) tetrahedron.

5,288,322

APPARATUS AND METHOD FOR COLORING TEXTILE ARTICLES WHILE EXPANDED AND PRESSED AGAINST A PATTERN

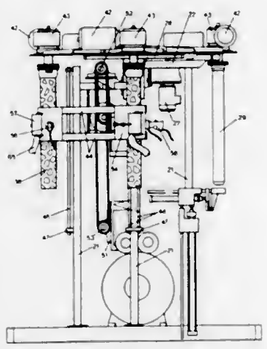
Ashley R. Hanna, Christchurch; Philip D. Buckman, and Graeme K. Crossman, both of Timaru, all of New Zealand, assignors to Annett & Darling Limited, Timaru, New Zealand

Filed Oct. 1, 1992, Ser. No. 953,670

Claims priority, application New Zealand, Oct. 2, 1991, 239625; Oct. 3, 1991, 240078; Nov. 27, 1991, 240770

Int. Cl.[5] B05C *5/00*; B05D *3/12*

U.S. Cl. 118—33 **15 Claims**



9. Apparatus for applying a pattern in contrasting color to textile articles, comprising:

conveyor means carrying a multiple number of generally cylindrical article supports of a shape complementary to the shape of the textile articles for each receiving a textile article over the article supports:

a plurality of printing stations, each comprising a generally cylindrical pattern and means for applying a coloring agent onto a textile article through the pattern, with the conveyor means arranged to move the article supports to and from the printing stations;

means for movably mounting one of the pattern and the article support for movement thereof relative to one another, to enter the article support and a textile article thereon into the pattern for printing and to remove the article support and textile article from the pattern after printing; and

means to cause each article support to expand when at one of said printing stations to press the article against the pattern sufficiently to hold the pattern over the textile article during printing.

5,288,323

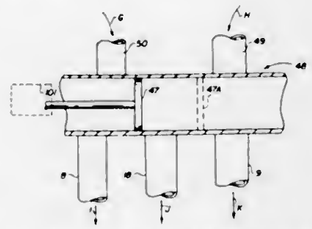
APPARATUS WITH A SHUNT SYSTEM FOR PROCESSING PRINTED CIRCUIT BOARD SUBSTRATES

Don S. Pender, 1121 E. Wesleyan Dr., Tempe, Ariz. 85282

Filed Feb. 19, 1993, Ser. No. 20,211

Int. Cl.[5] B05B *7/00*

U.S. Cl. 118—314 **1 Claim**



1. Apparatus for contacting with a fluid a substrate traveling through said apparatus, said apparatus including

(a) a conveyor table for transporting said substrate;

(b) means for contacting said substrate with a fluid including a shunt system comprising

(i) a primary fluid input conduit,

(ii) first and second spaced apart inlet ports formed in said primary conduit,

(iii) a pair of secondary conduits for inputting fluids into said primary conduit and each connected to a different one of said inlet ports,

(iv) piston means in said primary conduit to sealingly slidably engage said primary conduit and divide said primary conduit into a pair of discreet fluid chambers such that fluid in one of said discreet chambers is prevented from intermixing with fluid in the other of said discreet chambers

(v) at least one outlet port formed in said primary conduit generally intermediate said inlet ports,

(vi) a hollow conduit attached to said outlet port for dispensing fluid onto said substrate,

(vii) means for moving said piston means from a first operative position intermediate said outlet port and said first inlet port to a second operative position intermediate said outlet port and said second inlet port.

5,288,324

MULTI-COLOR POWDER COAT PAINT RECOVERY APPARATUS

Jack L. Shaneyfelt, R.R. 2, Box 2052, Country Club Rd., Baimbridge, Ga. 31717

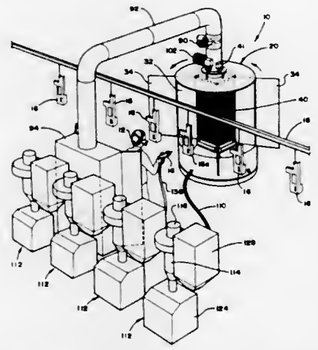
Filed Dec. 18, 1992, Ser. No. 992,563

Int. Cl.[5] B05B *15/04*

U.S. Cl. 118—326 **6 Claims**

1. Multi-color powder coat paint recovery apparatus for recovering excess powdered paint particles not deposited on an article being painted by a paint applicator at a painting station, comprising:

a paint recovery booth positionable adjacent the painting station on a side opposite the paint applicator, the paint recovery booth including a housing mounted for rotation about a vertical axis and having a plurality of individual paint color recovery chambers angularly spaced around the periphery of the housing, each chamber having an open outer side and filter means at an inner side, with the inner side being in communication with an air exhaust outlet from the interior of the housing, each chamber further having a paint hopper positioned below the filter means and extending outwardly toward the outer side of the chamber, air circulation means being connected to the air outlet for drawing air inwardly through the open outer side of the chamber, through the filter means, and then out of the housing through the air outlet, the housing being rotatable such that a color chamber corresponding to the paint color being applied can be rotated to a position opposite the painting station, the air circulation means



creating an air flow from the paint applicator over the part being painted and through the open outer side of the chamber, over the paint hopper, through the filter means and then out the outlet, excess paint particles entrained in the air falling toward the bin under the influence of gravity, with some particles falling into the hopper, the remaining particles being separated from the air by the filter means, with clean air being discharged from the outlet.

5,288,325

CHEMICAL VAPOR DEPOSITION APPARATUS

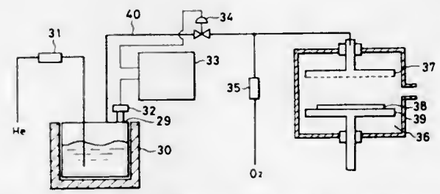
Hideki Gomi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,618

Claims priority, application Japan, Mar. 29, 1991, 3-66154

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—692 **6 Claims**



1. An atmospheric pressure chemical vapor deposition apparatus comprising a liquid raw material vaporizing unit for vaporizing a liquid raw material by bubbling said liquid raw material, and a reaction unit for depositing, at atmospheric pressure, a film made from said vaporized raw material on a substrate and a pipe having a branch for exhaustion of said vaporized raw material and connecting said liquid raw material vaporizing unit with said reaction unit, said pipe having an orifice between the branching portion of said pipe and the connecting portion of said pipe with said liquid raw material vaporizing unit so as to control the pressure in said liquid raw material vaporizing unit resulting in said pressure being higher than that in said reaction unit.

5,288,326

APPARATUS FOR CONTINUOUS GROWTH OF SIC SINGLE CRYSTAL FROM SIC SYNTHESIZED IN A VAPOR PHASE WITHOUT USING GRAPHITE CRUCIBLE

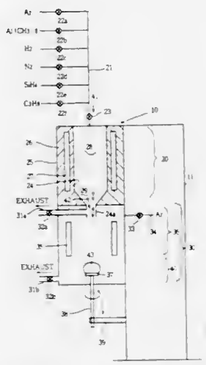
Yasuhiro Maeda; Seiichi Taniguchi, and Momoya Fukuda, all of Tokyo, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,312

Claims priority, application Japan, Jan. 28, 1992, 4-037208

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—719 **3 Claims**



1. An apparatus for producing a SiC single crystal comprising:

a chamber divided into a reaction zone and a sublimation-crystal growth zone,

conduit means for supplying gaseous reactants into said reaction zone, whereby providing a gaseous mixture in said reaction zone in which solid-phase SiC is synthesized from the gaseous mixture,

means for delivering solid SiC from said reaction zone into a sublimation portion of said sublimation -crystal growth zone,

means for subliming said solid SiC in said sublimization portion, a

mount base means for mounting a seed crystal thereon disposed below said sublimation portion, in a crystal growth portion of said sublimation-crystal growth,

a rotatable shaft in supporting relation to said mount base, and

heater means for maintaining the interior of said sublimation-crystal growth zone with a predetermined gradient of temperature which decreases from said sublimation portion toward said seed crystal;

wherein said solid-phase SiC is synthesized from said gaseous reactants, is transferred into the sublimation portion and evaporated therein, and is condensed as a single crystal on the seed crystal in said crystal growth portion.

5,288,327

DEFLECTED FLOW IN CHEMICAL VAPOR DEPOSITION CELL

Rajaram Bhat, Red Bank, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 849,973, Mar. 12, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,779

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—719 **4 Claims**

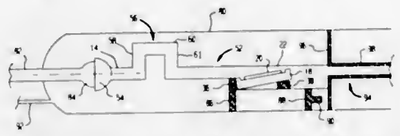
1. In a reactor cell for use in a chemical vapor deposition system and having

a deposition chamber for holding a substrate for chemical

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vapor deposition thereupon from a gas flowing through said chamber substantially along a gas flow axis extending along a median of said deposition chamber while said substrate is held within said chamber with a normal of its principal face being inclined to said axis at a substantially non-zero angle and

an input port for supplying said gas, the improvement comprising



means interposed between said input port and said deposition chamber for uniformly mixing the gas composition whereby the gas flows through the deposition chamber uniformly across its cross section, said means comprising a deflection section having a plurality of right angle corners through which said gas flows between said input port and said deposition chamber so that the gas is injected into the deposition chamber perpendicular to and onto said gas flow axis.

5,288,328

APPARATUS FOR CONTROLLING A MATERIAL FLOW EMITTED BY A HEATED EVAPORATION SOURCE AND APPLICATION TO A VACUUM EVAPORATION COATING MACHINE

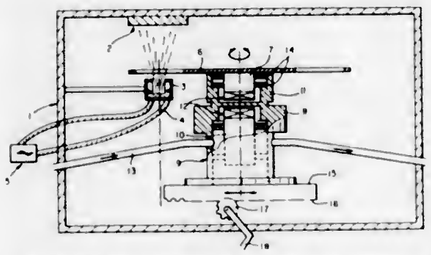
Luc Nouvelot, St. Martin d'Heres, and Aimé Perrin, St. Ismier, both of France, assignors to Commissariat A L'Energie Atomique, Paris and Etat Francais Represente Par Le Delegue General Pour L'Armenent, Armees, both of France

Filed Feb. 2, 1993, Ser. No. 12,465

Claims priority, application France, Feb. 12, 1992, 92 01563

Int. Cl.[5] C23C *14/24*

U.S. Cl. 118—722 **12 Claims**



1. Apparatus for controlling a material flow emitted by a source (3) mounted on a support and characterized by a cover constituted by solid portions (23,24) and openings (21,25), a motor (9) making the cover (6) move in front of the source (3) and by another support (1,15) on which are fitted the cover and the motor, one of the supports being mobile with respect to the other, so that it is possible to vary the degree of hiding of the source, defined as the proportion, with respect to the total passage time, of the time during which the solid portions of the cover extend in front of the source.

5,288,329

CHEMICAL VAPOR DEPOSITION APPARATUS OF IN-LINE TYPE

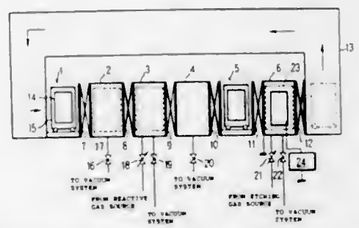
Kyuzo Nakamura; Michio Ishikawa; Kazuyuki Ito; Noriaki Tani; Masanori Hashimoto, and Yoshifumi Ota, all of Chiba, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Japan

Filed Nov. 20, 1990, Ser. No. 616,106

Claims priority, application Japan, Nov. 24, 1989, 303063

Int. Cl.[5] H01L *21/00*

U.S. Cl. 118—729 **8 Claims**



1. An in-line type CVD apparatus comprising a substrate loading chamber in which a substrate to be treated is mounted on a substrate holder under an atmosphere pressure, a preparatory chamber being evacuated in which the substrate is pretreated, a processing chamber in which a desired film is formed on the substrate, a substrate withdrawing chamber, a substrate unloading chamber in which the processed substrate is dismounted from the substrate holder, an etching chamber provided subsequent to the substrate unloading chamber for etching at least the substrate holder without the processed substrate in a vacuum condition, said etching chamber being provided with an RF cathode member which is movable together with said substrate holder, the substrate unloading chamber being connected to the substrate loading chamber via the etching chamber, a plurality of gate valves each of which is provided between the adjacent chamber, and means for transporting at least the substrate holder sequentially through the respective chambers.

5,288,330

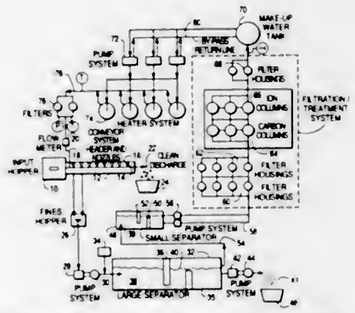
METHOD AND APPARATUS FOR REMOVING CONTAMINANTS FROM PARTICULATE MATERIAL

Robert B. Ballard, and Noel A. Shenoi, both of Houston, Tex., assignors to Tuboscope Vetco International, Inc., Houston, Tex.

Filed Jun. 4, 1992, Ser. No. 893,845

Int. Cl.[5] B08B *3/04;* **B01J** *39/00, 39/16*

U.S. Cl. 134—25.1 **16 Claims**



1. A method for removing contaminants, including hydrocarbons and metal, from contaminated particulate material, comprising contacting the contaminated particulate material with water at a temperature higher than a melting temperature of at least some of said contaminants to produce melting and removal of said contaminants to produce particulate material from which said contaminants have been removed, collecting the particulate material from which the contaminants have been removed, subjecting at least a portion of the removed contaminants, including contaminants in particle form, with the water to effect specific gravity separation, wherein a first portion of said contaminants in particle form having a specific gravity greater than water are removed and collected and wherein a second portion of said contaminants in particle form having a specific gravity less than water are separately removed and collected to leave a third portion of said contaminants, filtering said third portion to leave a fourth portion in the water containing hydrocarbon and metal contaminants, introducing to said fourth portion before or after said filtering a water-soluble compound to react with said metal contaminants to form a metal-containing compound capable of removal from the water by ion exchange filtration, removing said hydrocarbon contaminants by activated carbon filtration, removing any unreacted water-soluble compound from the water by contact with an ion exchange resin or activated carbon, and filtering to remove the ion exchange resin and activated carbon particles resulting from the filtration of the water.

5,288,331

METHOD FOR OPERATING A DISHWASHING MACHINE AND MAINTAINING THE ACTIVE OXYGEN CONTENT IN THE WASH TANK

Friedel Rings, Monheim; Karl-Heinz Odendahl, Grevenbroich, and Horst Pruehs, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

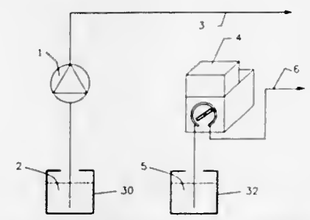
PCT No. PCT/EP90/00944, § 371 Date Feb. 18, 1992, § 102(e) Date Feb. 18, 1992, PCT Pub. No. WO91/00044, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 15, 1990, Ser. No. 781,270

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920728

Int. Cl.[5] B08B *3/04, 3/08*

U.S. Cl. 134—25.2 **21 Claims**



1. A method for operating a dishwashing machine comprising a wash tank in which a detergent assisted or complemented in its effect by a bleach is introduced into the wash tank, wherein said method comprises the steps of:

including an active oxygen carrier in said bleach;

introducing a plurality of individual doses of detergent at different times into said wash tank, during predetermined phases of operation to maintain a desired level of detergent in said wash tank; and

introducing doses of said bleach containing an active oxygen carrier into said wash tank at times that detergent is not being added to said wash tank, for maintaining the active oxygen content in said wash tank above a predetermined minimum level over rinse and stoppage phases of operation of said dishwashing machine.

5,288,332

A PROCESS FOR REMOVING CORROSIVE BY-PRODUCTS FROM A CIRCUIT ASSEMBLY

Cecil S. Pustilnik, and George E. Shannon, both of Albuquerque, N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 5, 1993, Ser. No. 13,876

Int. Cl.[5] B08B *3/08;* **C23G** *1/02*

U.S. Cl. 134—27 **18 Claims**

1. A process for removing corrosive by-products from a circuit assembly, said process comprising the steps of:

(a) applying an aqueous flush to the assembly, said aqueous flush comprising an effective saponifying amount of an alkaline agent;

(b) applying an acidic aqueous wash to the assembly; and

(c) treating the acid aqueous wash with an effective amount of a chelating agent.

5,288,333

WAFER CLEANING METHOD AND APPARATUS THEREFORE

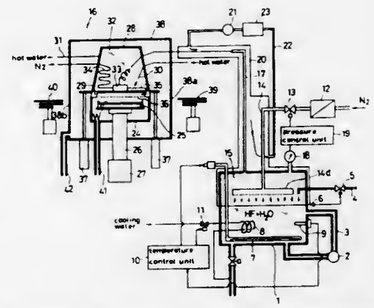
Masato Tanaka; Hisao Nishizawa; Nobuyuki Hirai; Kaoru Shinbara, and Hitoshi Yosbioka, all of Hikone, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Division of Ser. No. 518,971, May 4, 1990, Pat. No. 5,158,100. This application Jul. 29, 1992, Ser. No. 921,565

Claims priority, application Japan, May 6, 1989, 1-113922(P); Mar. 30, 1990, 2-87068(P); Apr. 7, 1990, 2-92472(P)

Int. Cl.[5] B08B *5/00*

U.S. Cl. 134—31 **12 Claims**



1. A method of cleaning a wafer by supplying cleaning vapor to the wafer, comprising the steps of:

causing a cleaning solution to evaporate at a temperature below its boiling point to produce said cleaning vapor; and

supplying said cleaning vapor to said wafer to clean said wafer at a temperature above a dew point thereof so as to reduce formation of an aerosol as a result of condensation of said cleaning vapor.

5,288,334

SYSTEM AND METHOD FOR ARRESTING DETERIORATION OF CONCRETE VEHICLE PARKING STRUCTURES

Arthur C. Avril, Cincinnati, Ohio, assignor to A and T Development Corporation, Cincinnati, Ohio

Filed Oct. 13, 1992, Ser. No. 960,587

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—34 **15 Claims**

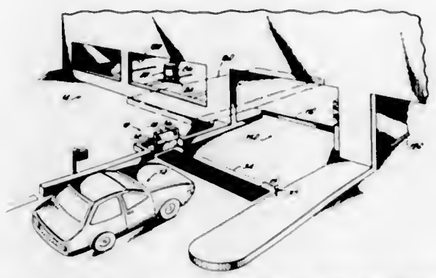
1. A system for arresting deterioration of concrete floors and reinforcing steel in a concrete vehicle parking structure, comprising:

means for spray washing vehicle underbodies as vehicles enter said parking structure to remove road salt carried on said vehicle underbodies, thereby preventing deterioration of said concrete floors and reinforcing steel which

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would otherwise be caused by said road salt being carried into said parking structure, and

means for periodically applying an effective amount of a detergent formulation to said concrete floors so as to



penetrate the concrete, thereby at least partially neutralizing road salt which previously has penetrated the concrete floors in order to arrest structural deterioration of said concrete floors and reinforcing steel caused by road salt previously carried into said parking structure.

5,288,335

PAINT STRIPPER AND VARNISH REMOVER COMPOSITIONS, METHODS FOR MAKING THESE COMPOSITIONS AND METHODS FOR REMOVING PAINT AND OTHER POLYMERIC COATINGS FROM FLEXIBLE AND INFLEXIBLE SURFACES

Edwin Stevens, West Orange, N.J., assignor to Stevens Sciences Corp., West Orange, N.J.

Division of Ser. No. 689,126, Apr. 22, 1991, Pat. No. 5,124,062, which is a continuation of Ser. No. 375,137, Jun. 30, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 901,915

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—38 **19 Claims**

1. A method of making a paint stripper composition containing a microgel comprising:

1. mixing a thixotropic agent in the presence of water and a solvent extender or bulking agent to procedure a microgel-containing suspension; and

2. adding said suspension to a mixture comprising

a. about 10% to about 60% by weight of a terpene compound;

b. about 10% to about 50% by weight of a compound selected from the group consisting of pyrrolidones and pyurrolidines; and

c. about 2% to about 20% by weight of a terpene emulsifying surfactant.

5,288,336

THERMOELECTRIC ENERGY CONVERSION

Jnhn S. Strachan, Edinburgh, Scotland, and Harold Aspden, Southamptnn, England, assignors tn Dr. Harold Aspden, Chilworth

Filed Nov. 20, 1989, Ser. No. 439,829

Claims priority, application United Kingdom, Nov. 18, 1988, 8826952; Dec. 5, 1988, 8828307; Sep. 12, 1989, 8920580

Int. Cl.[5] H01L *35/04*

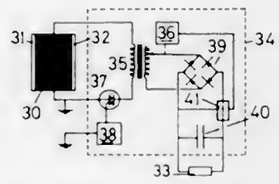
U.S. Cl. 136—200 **12 Claims**

1. A thermoelectric energy conversion apparatus comprising a thermopile formed by a laminar assembly of two conductor substances A and B located between external thermal surfaces across which heat is transferred when the surfaces have different temperatures, there being thermocouple junctions formed between the substances A and B, providing, from A to B an A-B junction interface and from B to A a B-A junction interface, and a current flow path connected to electrical circuit means including an electrical control unit linked to an external power system, characterized in that said electrical control unit comprises:

(a) means for admitting a regulated current to flow through said junctions which is predominantly unidirectional at each junction,

(b) means for interrupting the current flow cyclically at a steady frequency,

(c) means for measuring the electrical power throughput, and



(d) current regulating means for adjusting the peak strength of current flowing between the external power system and the laminar assembly forming the thermocouple junctions, the current regulating means operating to adjust progressively the peak current strength to search for and sustain flow at a threshold peak current level at which the maximum electrical power throughput occurs when the apparatus operates in Seebeck mode.

5,288,337

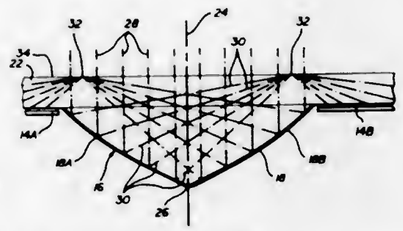
PHOTOVOLTAIC MODULE WITH SPECULAR REFLECTOR

Kim W. Mitchell, Granada Hills, Calif., assignor to Siemens Solar Industries, L.P., Camrillo, Calif.

Filed Jun. 25, 1992, Ser. No. 903,897

Int. Cl.[5] H01L *31/052*

U.S. Cl. 136—246 **17 Claims**



1. A photovoltaic module comprising:

a light-receiving structure having a substantially transparent front cover portion;

a plurality of photovoltaic cells disposed along a preselected plane behind and substantially parallel to the front cover portion to receive radiation transmitted thereby;

a plurality of specular reflectors oblique to said preselected plane and disposed alongside the photovoltaic cells to direct radiation incident thereon back into the front cover portion and onto the photovoltaic cells for conversion to electrical energy;

said specular reflectors extending behind said preselected plane.

5,288,338

SOLAR CELL AND METHOD OF PRODUCING THE SOLAR CELL

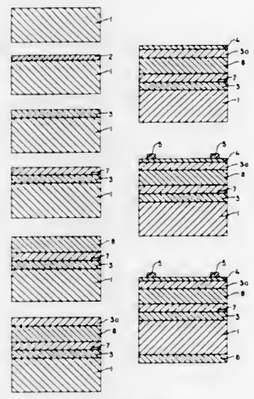
Hiroaki Morikawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 704,209, May 22, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 928,747

Claims priority, application Japan, May 23, 1990, 2-134843

Int. Cl.[5] H01L *31/06, 31/075, 31/18*

U.S. Cl. 136—249 **6 Claims**



4. A tandem solar cell comprising:

a first conductivity type crystalline silicon substrate having opposed first and second surfaces;

a second conductivity type layer of microcrystalline or amorphous silicon deposited on the first surface of the substrate in a plasma process and consuming an oxide film no more than 2 nanometers thick formed on the first surface of the substrate before depositing the second conductivity type layer;

a first conductivity type microcrystalline silicon layer disposed on the second conductivity type layer;

an intrinsic amorphous silicon layer disposed on the first conductivity type microcrystalline silicon layer;

a second second conductivity type microcrystalline silicon layer disposed on the intrinsic amorphous silicon layer;

a transparent electrode disposed on the second microcrystalline silicon layer;

a grid electrode disposed on the transparent electrode; and

a rear surface electrode disposed on the second surface of the substrate.

5,288,339

PROCESS FOR THE PRODUCTION OF MAGNETIC MATERIAL BASED ON THE SM-FE-N SYSTEM OF ELEMENTS

Kurt Schnitzke, Neunkirchen am Brand; Ludwig Schultz, Bubenreuth; Matthias Katter, Dechsendorf, and Joachim Wecker, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

Continuation of Ser. No. 736,048, Jul. 25, 1991, abandoned. This application Sep. 2, 1992, Ser. No. 939,541

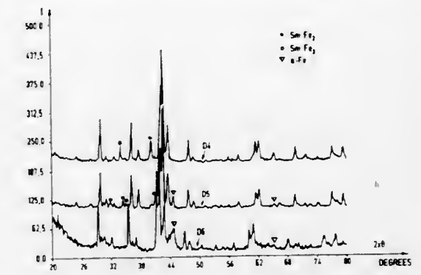
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1990, 4023575

Int. Cl.[5] H01F *1/02*

U.S. Cl. 148—101 **22 Claims**

1. In a process for the production of a magnetic material based on a composition consisting essentially of Sm-Fe-N and having a crystalline, hard magnetic phase with a Th_2Zn_{17} crystalline structure, wherein nitrogen atoms are incorporated in the crystalline lattices, said process including the steps of providing a preliminary product having a binary Sm_2Fe_{17} phase and of subsequently heating the preliminary product in a nitrogen atmosphere, the improvement comprising:

providing said preliminary product having said binary Sm_2Fe_{17} phase by mechanical alloying of powders containing ; Sm and Fe and by thermal treatment, whereby a



very fine crystalline structure is obtained in the preliminary product, and

transforming said preliminary product into said Sm-Fe-N composition with said hard magnetic phase by said heating of said preliminary product in said nitrogen atmosphere, without altering said very fine microstructure.

5,288,340

METHOD OF IMPROVING THE CORROSION RESISTANCE OF CARBONITRIDED COMPONENTS MADE OF FERROUS MATERIALS

Ulrich Christ, Karlstein; Helmut Kunst, and Georg Wahl, both of Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 16, 1991, Ser. No. 746,427

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1990, 4027011

Int. Cl.[5] C23C *8/32*

U.S. Cl. 148—217 **8 Claims**

6. A method for improving the corrosion resistance of a carbonitrided component formed of ferrous material, comprising:

subjecting said ferrous material to carbonitriding to form a carbonitrided component, coating said component with a thin layer of a heat hardenable organic synthetic resin and then subjecting said coated component to a temperature of 80° to 200° C. for a period of 2 to 30 minutes, to form a thin layer of an organic synthetic resin material on the surface of said ferrous component to thereby improve the corrosion resistance thereof as compared to a component which had not been subjected to the carbonitriding.

5,288,341

AGENT AND METHOD FOR TREATING THE SURFACES OF METALS

Katsunori Kojima, Tokyo; Yohji Imai, Chiba, and Tetsuro Sakuma, Tokorozawa, all of Japan, assignors to GC Corporation, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,676

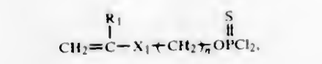
Claims priority, application Japan, Oct. 30, 1991, 3-10122

Int. Cl.[5] A61K *6/00*

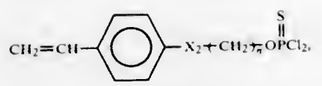
U.S. Cl. 148—248 **4 Claims**

1. A method for treating the surface of a metal, comprising applying on the surface of a metal an agent comprising a polymerizable monomer comprising 0.001 to 10% by weight of a thiophosphoric acid dichloride group of the formula (I) or (II):

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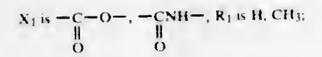


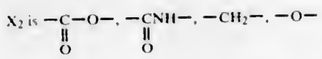
(I)



(II)

wherein





n is an integer of from 1–16, wherein said agent is dissolved in an organic solvent.

5,288,342

SOLID METAL-CARBON MATRIX OF METALLOFULLERITES AND METHOD OF FORMING SAME

Robert C. Job, 4215 Kuykendall Rd., Charlotte, N.C. 28270

Filed Dec. 31, 1991, Ser. No. 816,636
Int. Cl.[5] C21D *6/00*; C22C *38/00*
U.S. Cl. 148—320 **20 Claims**



1. A metallic solid comprising a ferro-carbon matrix of iron and iron fullerites.

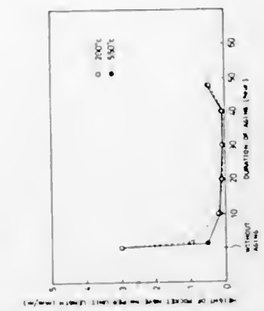
5,288,343

STAINLESS STEEL SHEET FOR EXTERIOR BUILDING CONSTITUENT

Yoshihiro Yazawa; Yuji Sone; Keiichi Yoshioka, all of Chiba; Noboru Kinoshita, Tokyo, and Masayuki Hino, Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 670,708, Mar. 18, 1991, abandoned, which is a division of Ser. No. 495,345, Mar. 19, 1990, Pat. No. 5,019,181. This application Nov. 24, 1992, Ser. No. 982,021
Claims priority, application Japan, Mar. 17, 1989, 1-63891
Int. Cl.[5] C22C *38/18*
U.S. Cl. 148—325 **6 Claims**

1. An aged ferritic stainless steel alloy of Cr in an amount of 10–32 wt %, C and N in a total combined amount of 0.005–0.01 wt % and a balance of Fe and unavoidable impurities, the aged



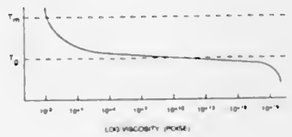
ferritic stainless steel alloy having a strain ratio of not less than 2.5.

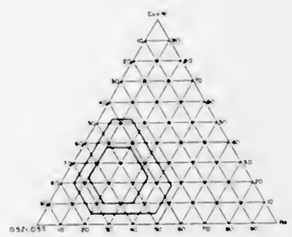
5,288,344

BERYLLIUM BEARING AMORPHOUS METALLIC ALLOYS FORMED BY LOW COOLING RATES

Atakan Peker, and William L. Johnson, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 7, 1993, Ser. No. 44,814
Int. Cl.[5] C22C *9/00, 14/00*
U.S. Cl. 148—403 **57 Claims**





1. A metallic glass formed of an alloy having the formula

$$(Zr_{1-x}Ti_x)_{a1}ETM_{a2}(Cu_{1-y}Ni_y)_{b1}LTM_{b2}Be_c$$

where x and y are atomic fractions, and a1, a2, b1, b2, and c are atomic percentages, wherein:

ETM is at least one early transition metal selected from the group consisting of V, Nb, Hf, and Cr, wherein the atomic percentage of Cr is no more than 0.2a1;

LTM is a late transition metal selected from the group consisting of Fe, Co, Mn, Ru, Ag and Pd;

a2 is in the range of from 0 to 0.4a1;

x is in the range of from 0 to 0.4; and

y is in the range of from 0 to 1; and

(A) when x is in the range of from 0 to 0.15:

(a1 + a2) is in the range of from 30 to 75%,

(b1 + b2) is in the range of from 5 to 52%,

b2 is in the range of from 0 to 25%, and

c is in the range of from 6 to 47%;

(B) when x is in the range of from 0.15 to 0.4:

(a1 + a2) is in the range of from 30 to 75%,

(b1 + b2) is in the range of from 5 to 52%,

b2 is in the range of from 0 to 25%, and

c is in the range of from 5 to 47%.

5,288,345

METHOD FOR TREATING SINTERED ALLOY

Tsuneaki Ohhashi, Ohgaki; Nobuo Tsuno, Kasugai, and Takashi Harada, Nagoya, all of Japan, assignors to NGK Insulators, Inc., Japan

Filed Mar. 30, 1992, Ser. No. 859,859
Claims priority, application Japan, Apr. 26, 1991, 3-125516
Int. Cl.[5] C23C *8/16*
U.S. Cl. 148—514 **5 Claims**

1. A method for treating sintered alloy, comprising:

exposing at least a portion of a sintered alloy containing aluminum to a temperature within a range from about 800° C. to about 1,300° C. under an atmosphere which contains an amount of water vapor corresponding to a dew point within the range of about 30° C. to about 60° C.

5,288,346

PROCESS FOR PRODUCING DEFORMABLE WHITE CAST IRON

Polina F. Nizhnikovskaja; Leonid Snagovski; Yuri Taran; Tatyana Mironova, all of Dnepropetrovsk; Michael Loiferman, Ezhevsk; Kasimir Zhdanovich, Ezhevsk, and Galina Demchenko, Ezhevsk, all of U.S.S.R., assignors to DMK TEK, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 692,560, Apr. 29, 1991, abandoned.
This application Dec. 17, 1992, Ser. No. 993,959
Int. Cl.[5] C21D *5/04, 8/00*
U.S. Cl. 148—540 **8 Claims**



5. A process for plastically deforming a white cast-iron, said process comprising the steps of:

(a) preparing a melt consisting essentially of:

(i) about 2.0 to about 3.7% by weight of carbon;

(ii) at least one carbide-forming element selected from the group consisting of manganese, chromium, molybdenum, tungsten, vanadium, titanium, niobium, tantalum, zirconium, hafnium, uranium and mixtures thereof, wherein the amount of said carbide-forming element is selected in accordance with the formula:

$$E_1 + 1.49\ E_2 + 3.03\ E_3 + 5.88\ E_4 + 76.9\ E_5 = (\text{about } 1.51 \text{ to about } 3.27)\ E_6;$$

wherein:

E_1 is the concentration of elements selected from the group consisting of manganese, chromium and mixtures thereof;

E_2 is the concentration of elements selected from the group consisting of tungsten, molybdenum, and mixtures thereof;

E_3 is the concentration of elements selected from the group consisting of vanadium, titanium and mixtures thereof;

E_4 is the concentration of elements selected from the group consisting of niobium, tantalum, and mixtures thereof;

E_5 is the concentration of elements selected from the group consisting of hafnium, uranium, and mixtures thereof; and

E_6 is the concentration of carbon; and

(iii) the balance iron;

(b) cooling said melt at a rate of at least about 2° C. per minute for forming a white cast-iron material having a structure with a metastable cementite (M_3C) phase;

(c) annealing said white cast-iron material at a temperature of about 100° C. to about 400° C. below the solidus temperature of said white cast-iron material for transforming said metastable cementite phase and forming a structure containing Fe_3C, and a carbide denoted as M'C where M' is at least one of said carbide-forming elements, wherein said M'C is a more stable carbide than said M_3C, wherein the presence of said M'C facilitates plastic deformation of said white cast iron; and further wherein the amount of said metastable cementite phase that is transformed is sufficient to permit plastic deformation of said white cast iron at a temperature as low as about 850° C., and at a deformation rate ranging from about 1/sec to about 10/sec; and

(d) then plastically deforming said white cast iron material having said M'C at a temperature as low as about 850° C., and at a deformation rate ranging from about 1/sec to about 10/sec.

5,288,347

METHOD OF MANUFACTURING HIGH STRENGTH AND HIGH TOUGHNESS STAINLESS STEEL

Toshihiro Uehara, Yasugi; Rikizo Watanabe, Mooka, and Nobuhito Nakama, Kawanishi, all of Japan, assignors to Hitachi Metals, Ltd.; Society of Japanese Aerospace Companies, Inc. and Sumitomo Precision Products Co., Ltd., all of Japan

Continuation of Ser. No. 704,927, May 23, 1991, abandoned.
This application Jun. 4, 1992, Ser. No. 893,888
Claims priority, application Japan, May 28, 1990, 2-137560; Feb. 8, 1991, 3-039147
Int. Cl.[5] C22C *38/52, 38/30*
U.S. Cl. 148—577 **4 Claims**

3. A method of producing a high strength, high toughness martensitic stainless steel comprising the steps of: preparing a stainless steel having a composition consisting of, by weight,

C more than 0.16% but less than 0.25%, Si not more than 2.0%, Mn nor more than 1.0%, Ni not more than 2.0%, Cr from 11 to 15%, Mo not less than 0.5% but less than 3.0%, Co from 12 to 21%, V from 0.1 to 0.5%, and the balance Fe and incidental impurities;

subjecting the stainless steel to a solution heat treatment at a temperature of 950° to 1150° C.; quenching the steel; subjecting the steel to a sub zero treatment at a temperature of −50° to −100° C.; and subjecting the steel to a tempering at a temperature of 120° to 450° C.

5,288,348

METHOD OF MAKING HIGH LOFT AND HIGH STRENGTH NONWOVEN FABRIC

James P. Modrak, Conyers, Ga., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 628,061, Dec. 14, 1990, abandoned.
This application Aug. 31, 1992, Ser. No. 938,574
Int. Cl.[5] B32B *31/22*
U.S. Cl. 156—62.2 **24 Claims**

1. A method for obtaining a durable high loft nonwoven material comprising:

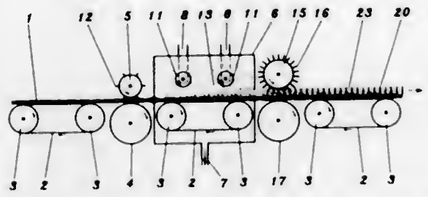
(a) forming and compiling at least one nonwoven web of staple fibers or filaments of thermoplastic material on a supporting surface movably biased in machine direction;

(b) lightly bonding said at least one formed and compiled

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web to obtain a facing component with a low area density bonding pattern on a face thereof;

(c) forming at least one nonwoven web comprising staple fibers or filaments on the face of said facing component to form a base component having said fibers or filaments oriented in a general cross direction relative to the machine direction of said facing component; and



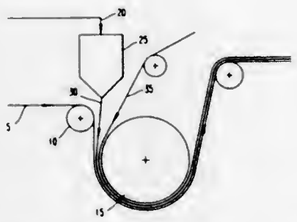
(d) bonding through said base component with bonds that penetrate through the base component to at least the face of the facing component, said bonds forming a substantially greater area density bonding pattern than the low area density bonding pattern on the face of said facing component, to obtain the high loft nonwoven material.

5,288,349

CARPET AND TECHNIQUES FOR MAKING AND RECYCLING SAME

Wilbert E. Fink, Villanova, Pa., assignor to Tennessee Valley Performance Products, Inc., Dayton, Tenn.

Division of Ser. No. 833,093, Feb. 10, 1992, Pat. No. 5,240,530.
This application May 21, 1993, Ser. No. 64,380
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—72 **21 Claims**



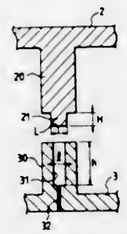
1. A method for manufacturing a carpet comprising (a) fixing tufts of carpet fibers to a primary backing so that the tufts protrude from the top surface of the primary backing to form a tufted base (b) extruding a heated sheet of thermoplastic isotactic polymer, (c) continuously contacting a lower surface of said tufted base with said heated sheet, and (d) integrally fusing at least one of the primary backing or tufts to said heated sheet of thermoplastic isotactic polymer.

5,288,350

PLASTIC CASE HAVING IMPROVED ULTRASONIC WELDS BETWEEN HALVES THEREOF AND METHOD FOR PRODUCING SAME

Akihisa Kita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 743,617, Aug. 12, 1991, Pat. No. 5,199,593.
This application Jan. 25, 1993, Ser. No. 8,180
Claims priority, application Japan, Aug. 14, 1990, 2-85442[U]; Sep. 11, 1990, 2-94736[U]; Oct. 8, 1990, 2-105196[U]
Int. Cl.[5] B32B *31/16*
U.S. Cl. 156—73.1 **9 Claims**



1. A method for producing a plastic case comprising the steps of:

providing two case halves, one of said case halves having a projection formed thereon, and the other of said case halves having a recess formed for receiving a distal face of said projection, said projection having a diameter slightly greater than the diameter of said recess, a gap being formed between the bottom of said recess and an end face of said distal face of said projection when said projection is inserted into said recess defining an internal space, and at least one air hole is provided in at least one of said projection and recess communicating with said internal space;

assembling said two case halves with said distal face of said projection received in and abutting said recess;

applying ultrasonic vibration energy to abutting portions of said projection and recess to weld said projection to said recess; and

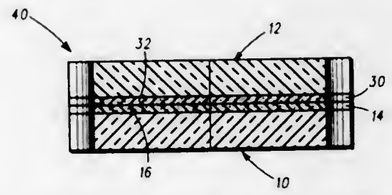
simultaneously with said step of applying ultrasonic vibration energy, applying suction to said air hole to apply suction to said internal space to thereby draw out through said air hole particulate material formed during welding of said projection and recess.

5,288,351

SILVER PASTE SINTERING METHOD FOR BONDING CERAMIC SURFACES

Truc G. N. Hoang, San Diego, Calif.; Douglas Morris, and Daniel H. Balinski, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1991, Ser. No. 801,212
Int. Cl.[5] C04B *37/00*; B32B *18/00*
U.S. Cl. 156—89 **16 Claims**



1. A solid state silver sintering method for bonding a first preformed ceramic element having a first faying surface to a second preformed ceramic element having a second faying surface, said method using a silver powder paste composed of silver particles dispersed in a volatile solvent vehicle, said method comprising

applying and drying a first film of said paste onto said first faying surface,

applying and drying a second film of said paste onto said second faying surface,

assembling said first element and said second element with said first film in contact with said second film, and

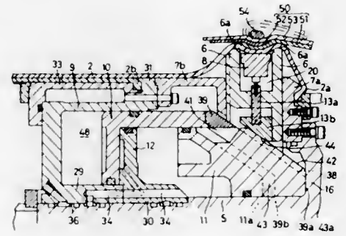
heating the assembly to a temperature and for a time sufficient to sinter said particles to form an integral silver layer and to bond said silver layer to each faying surface to thereby form a product assembly comprising said ceramic elements bonded by said silver layer, wherein said temperature is less than the melting point of silver.

5,288,352

BEAD LOCKING APPARATUS FOR GREEN TIRE BUILDING MACHINE AND BEAD LOCKING METHOD FOR USE THEREWITH

Yoshinobu Miyanaga, Akashi; Masao Takami, Kobe; Hisashi Imai, Nishishirakawa, and Koji Soeda, Kobe, all of Japan, assignors to Sumitomo Rubber Industries Limited, Hyogo, Japan

Division of Ser. No. 733,133, Jul. 19, 1991, Pat. No. 5,223,074.
This application Nov. 30, 1992, Ser. No. 983,047
Claims priority, application Japan, Jul. 24, 1990, 2-195286
Int. Cl.[5] B29D *30/32*
U.S. Cl. 156—135 **2 Claims**



1. A method for locking a bead in a process of manufacturing a green tire with use of a green tire building machine having a building drum, and bead support segments arranged circumferentially of the building drum to be radially expandable, each bead support segment being shaped to have a recess formed with two opposite walls whose outer ends form outer ends of the bead support segments, and recesses being lined up in circumferential series to form an annular passage, and a radially expandable elastic ring being received in the recess, said method comprising the steps of:

(a) winding a tire material over the surface of the tire building drum such that both the outer ends of the bead support segments and the elastic rings are covered;

(b) placing the bead around the tire material at a position in superjacent alignment to the circularly arranged elastic ring, wherein the outer ends of the bead support segments are positioned to approach two opposing sides of the bead;

(c) radially expanding the elastic ring to a position above and between the outer ends of the respective bead support segments and pressing the inner face of the tire material by the outer surface of the elastic ring to abut against an inner portion of the bead;

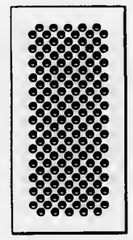
(d) radially extending the bead support segments past the expanded position taken by the outer surface of the elastic ring such that the outer ends of the bead support segments are positioned above and on opposing sides of the outer surface of the elastic ring and the tire material lying below the bead is pushed up by the bead support segments for gripping up the bead with the tire material.

5,288,353

METHOD FOR FORMING A POLYMERIC PLASTIC PRODUCT HAVING A HARD WEAR-RESISTANT SURFACE

Gopal S. Revankar, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jan. 21, 1992, Ser. No. 822,905
Int. Cl.[5] B32B *19/02*
U.S. Cl. 156—153 **19 Claims**



1. A method for impregnating a plastic product with a hard wear-resistant material surface layer comprising:

(a) providing a support sheet having a desired shape and further having an adhesive layer on at least a portion thereof;

(b) introducing a plurality of particles comprising a hard wear-resistant material onto the adhesive layer;

(c) curing the adhesive so as to anchor the particles onto the support plate;

(d) placing the support sheet into a mold cavity;

(e) introducing a polymer material into the cavity;

(f) exposing the sheet and polymer material to conditions effective to provide a polymer product having a hard wear-resistant material surface layer therein;

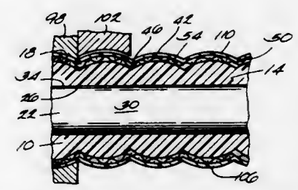
(g) cooling the mold and removing the support sheet therefrom.

5,288,354

METHOD OF BONDING SELF-LUBRICATING FIBERS TO AN EXTERNAL SURFACE OF A SUBSTRATUM

Bernard Harris, Northbrook, and Dennis E. Bozych, Downers Grove, both of Ill., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Aug. 26, 1992, Ser. No. 935,820
Int. Cl.[5] F16C *33/20, 33/02*; B65H *81/00*
U.S. Cl. 156—154 **19 Claims**



1. A method of integrally bonding self-lubricating material to a configured external surface of a bearing substratum to form a self-lubricating surface thereon comprising the steps of:

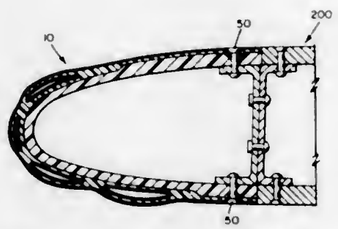
A. forming said substratum to provide an external surface thereon of desired configuration;

B. applying a layer of self-lubricating material onto said configured external surface;

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C. applying a plurality of filaments on said layer of self-lubricating material to form an overlayment thereon to exert a bonding pressure sufficient to cause said layer of self-lubricating material to conform and bond to said configured external surface;
D. applying a hardenable liquid resin prior to, simultaneously with, or subsequent to the application of said self-lubricating material and overlayment of filaments to coat said material and overlayment of filaments and fill any interstices that exists;
E. hardening said resin; and
F. removing all or part of said overlayment after said resin has hardened to expose said layer of self-lubricating material or portions thereof on said configured external surface.

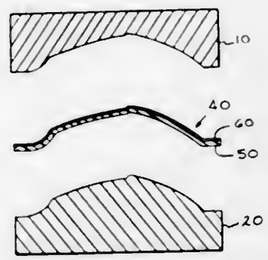
5,288,355
STRUCTURAL AIRFOIL HAVING INTEGRAL EXPULSIVE SYSTEM
Kevin L. Leffel, Akron; James C. Putt, Doylestown, and Richard L. Rauckhorst, North Canton, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio
Division of Ser. No. 432,715, Nov. 6, 1989, Pat. No. 5,098,037. This application Nov. 18, 1991, Ser. No. 793,906
Int. Cl.[5] B64D *15/00;* **B29C** *41/02*
U.S. Cl. 156—156 **15 Claims**



1. A method of making a unitary structural member having integral surface de-icing capability, the method comprising the steps of:
(a) providing a female mold,
(b) inserting an outer thin high tensile modulus skin having an inner side and an obverse outer side and an outer bonding layer into the mold with the outer side of the skin nearest the mold,
(c) forming thin force and displacement generation means having an inner side and an obverse outer side and applying the outer side of the thin force and displacement generation means to the outer bonding layer,
(d) forming a composite substructure of a plurality of layers of reinforcing filaments in a polymeric matrix and applying said substructure to the inner side of the force and displacement generation means, and
(e) bonding the combined outer skin, force and displacement generation means, and substructure together to provide said unitary structural member.

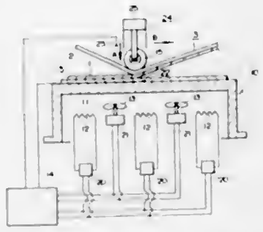
5,288,356
METHOD OF MAKING A COATED ARTICLE
James W. Benefiel, Northville, Mich., assignor to BASF Corporation, Southfield, Mich.
Division of Ser. No. 288,325, Dec. 22, 1988, Pat. No. 5,100,732. This application Aug. 7, 1991, Ser. No. 741,842
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—196 **12 Claims**

1. A method of manufacturing a coated article comprising the steps of
a) coating at least the outer surface of metal stock having an outer surface and an inner surface, with at least one coating selected from the group consisting of
primer coatings;
pigmented topcoat coatings;
inner pigmented basecoat coatings, and outer clear top coat coatings;
b) cutting the metal from step a) into pieces in a cutting means;



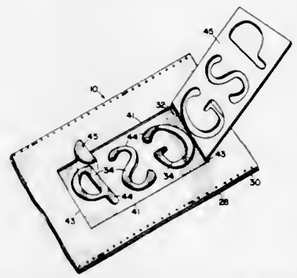
c) forming the metal pieces from step b) into veneers in a die forming means, the veneers having a coated outer surface and an inner surface; and
d) affixing the inner surface of the veneer to the outer surface of a substrate, the substrate having substantially the same shape as the veneer; thereby forming the coated article.

5,288,357
METHOD FOR MANUFACTURING PREPREG LAMINATIONS
Hideyuki Yamada, Shida; Masafumi Tsunada; Yasuhiko Nagakura, both of Numazu, and Soichi Shin, Tagata, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 7, 1992, Ser. No. 865,025
Claims priority, application Japan, Apr. 8, 1991, 3-075196
Int. Cl.[5] B32B *31/20, 31/10*
U.S. Cl. 156—249 **4 Claims**



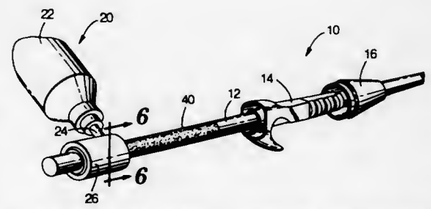
1. A method for laminating plural layers of a prepreg sheet on a face sheet mounted on an operating table comprising the steps of:
mounting said face sheet on a first surface of said operating table having said first surface and a second surface opposite said first surface;
uniformly heating said second surface of said operating table to a desired temperature above room temperature of a room in which operating table is disposed to allow heat to be conducted through said operating table from said second surface to said first surface to enable said first surface of said operating table to heat uniformly to a temperature said face sheet contacting said first surface;
placing a prepreg tape, comprising a carrier sheet and said prepreg sheet, on said face sheet already uniformly heated during the heating step to allow said face sheet to heat said prepreg sheet, said prepreg sheet being placed adjacent to said face sheet;
controlling said temperature to which said second surface of said operating table is heated to maintain said temperature of said face sheet higher than a temperature of said prepreg sheet and said carrier sheet; and
laminating said prepreg sheet onto said face sheet by urging said prepreg sheet against said face sheet while peeling said carrier sheet off of said prepreg sheet, said laminating step occurring while said second surface of said operating table is at said desired temperature and said controlling step is causing said temperature of said face sheet to be higher than said temperature of said prepreg sheet and said carrier sheet.

5,288,358
SIGN MAKING WEB WITH DRY ADHESIVE LAYER AND METHOD OF USING THE SAME
David J. Logan, Glastonbury, Conn., assignor to Gerber Scientific Products, Inc., Manchester, Conn.
Continuation of Ser. No. 674,075, Mar. 21, 1991, abandoned, which is a division of Ser. No. 56,458, May 29, 1987, Pat. No. 5,026,584. This application Jun. 12, 1992, Ser. No. 897,387
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—268 **3 Claims**



1. A method for use in making a sign, said method comprising:
providing a laminated web comprised of a base layer of sheet material having first and second faces, a layer of plastic sign material in sheet form superimposed on said base layer and having a first face facing said base layer and a second face facing away from said base layer, a layer of permanently tacky adhesive between said base layer and said layer of plastic sign material, and a layer of activatable adhesive bonded to said second face of said layer of sign material and activatable into a tacky condition from an otherwise dry condition, said adhesive of said layer of permanently tacky adhesive and the materials constituting said base layer and said layer of plastic sign material being such that said adhesive of said layer of permanently tacky adhesive adheres more strongly to said second face of said base layer than to said first face of said layer of plastic sign material allowing said layer of plastic sign material to be peeled from said layer of permanently tacky adhesive with said permanently tacky adhesive in the course of such peeling remaining on said base layer and coming completely free of said layer of plastic sign material, said activatable adhesive in its tacky condition having a greater adhesion strength than said permanently tacky adhesive,
maintaining said activatable adhesive in a dry condition,
cutting a closed shape in said web by first cutting completely through said activatable adhesive while in a dry condition and then into said layer of sign material and finally no more than partially into said base layer to separate a shape portion of the layer of plastic sign material defining said closed shape from a waste portion of said layer of plastic sign material and to separate the portion of said layer of activatable adhesive associated with said shape portion of said layer of plastic sign material from that portion of said layer of activatable adhesive associated with said waste portion of said layer of plastic sign material,
removing from said web said waste portion of said layer of plastic sign material and the portion of said layer of activatable adhesive associated with said waste portion to leave said shape portion of the layer of plastic sign material and the portion of said layer of activatable adhesive associated therewith on said base layer in free standing form,
attaching said shape portion of said layer of plastic sign material to a supporting surface by activating the activatable adhesive associated therewith from a dry to a tacky condition and then placing said web against a supporting surface with the activated adhesive facing said supporting surface, said sub-steps of activating said activatable adhesive and of placing said web against a supporting surface being carried out in any sequence,
pressing said shape portion of said layer of sign material toward said supporting surface by a force applied to said first face of said base layer in the area overlapping said shape portion of said layer of sign material such that the activated activatable adhesive causes said shape portion of said layer of sign material to adhere to said supporting surface, and
then peeling said web from said supporting surface to remove said shape portion of said layer of sign material from the remainder of said web through the intermediary of the selected relative adhesion strengths between the layer of permanently tacky adhesive and the tackified activatable adhesive and to leave it attached to said supporting surface due to the adhesive effect of that portion of said layer of activatable adhesive associated with said shape portion of said layer of plastic sign material.

5,288,359
METHOD FOR ADHESIVELY BONDING CLOSE FITTING COMPONENTS
Charles W. Stobbie, IV, Maplewood; Walter C. Pearson, and Gerald W. Quinn, both of St. Paul, all of Minn., assignors to Minnestoa Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 7, 1992, Ser. No. 927,125
Int. Cl.[5] A63B *53/14;* **B29C** *63/22, 65/40*
U.S. Cl. 156—294 **9 Claims**



1. A method for adhesively bonding an at least partially hollow first member to a second member received interiorly of the first member, the method of comprising the steps of:
(a) applying a moisture curable hot melt adhesive to the second member;
(b) allowing the adhesive to attain a substantially nonflowable condition;
(c) positioning the first member and the second member such that at least a portion of the second member is received interiorly of the first member whereby at least a portion of the first member at least partially overlies the substantially nonflowable adhesive;
(d) reactivating the substantially nonflowable adhesive; and

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(e) cooling the reactivated adhesive to adhesively bond the first and second members together.

5,288,360

ADHESIVE RESIN COMPOSITION

Kazuhide Hayama; Kazuyuki Hata; Keizo Abe, and Takahiro Ozu, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 888,621, May 27, 1992, abandoned. This application Oct. 9, 1992, Ser. No. 959,466

Claims priority, application Japan, May 27, 1991, 3-121370

Int. Cl.[5] C09J *4/00*; **C08F** *283/00*

U.S. Cl. 156—330 **13 Claims**

1. A method of adhering a fluorine-containing resin to a metal substrate comprising:

applying between a fluorine-containing resin and a metal substrate, an adhering effective amount of an adhesive composition consisting essentially of a polymer of a radically polymerizable epoxy resin (I) and a monomer (c),

said radically polymerizable epoxy resin (I) being a reaction product between an epoxy resin (a) and a radically polymerizable monomer (b) having a functional group reactive to an epoxy group or a hydroxyl group in said epoxy resin (a) selected from the group consisting of carboxyl groups, hydroxyl groups and a mixture thereof,

having an equivalent ratio $(b')/(a')=0.01-0.9$, wherein (b') represents an equivalent of said functional group of said radially polymerizable monomer (b) which reacted with said epoxy resin (a) and (a') represents an equivalent of said epoxy group or hydroxyl group in said epoxy resin (a), and

said monomer (c) being copolymerizable with said radically polymerizable epoxy resin (I) and containing alkyl(meth-)acrylate, fluorine-containing unsaturated monomer, or mixture thereof, serving as an indispensable component.

5,288,361

APPARATUS FOR SPLICING OF A CONTINUOUS PACKAGING WEB

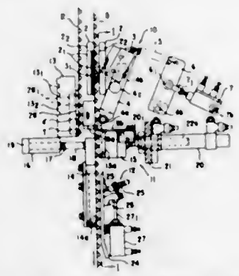
Hidetoshi Konno, Yokohama, Japan, assignor to Tetra Pak Holdings SA, Pully, Switzerland

Filed Nov. 25, 1991, Ser. No. 796,978

Claims priority, application Japan, Nov. 27, 1990, 2-327861

Int. Cl.[5] B65H *21/00*

U.S. Cl. 156—353 **13 Claims**



1. An apparatus for adhesively splicing a terminal end portion of a first web section to a starting end portion of a second web section to form a continuous packaging web having regularly spaced packaging bulges on one surface, comprising:

braking means for braking the terminal end portion of said first web section at a braking position located on a conveying pathway of the web, said braking means including a braking and positioning roller disposed to contact the belt-shaped product between the bulged sections at regular pitch intervals; and driving means activated in response to signals from said detection means for driving said braking means, wherein said braking and positioning roller freely advances and recedes at the conveying pathway via spring means;

detection means coupled to said braking means for detecting the terminal end portion of the first web section;

positioning means including interacting means for interacting with and moving the bulged sections in the conveying direction, said interacting means being driven diagonally relative to the conveying direction of the belt-shaped product, wherein said positioning means positions the terminal end portion at a prescribed position downstream from the braking position on the web pathway by tensioning and positioning the terminal end portion with interactive movement between the bulged sections and said interacting means;

cutting means for cutting and separating the terminal end portion of said first web section and, forming a new terminal end portion, said cutting means cutting and separating the terminal end of the first web section by movement of a mobile cutting piece,

starting-end positioning means for positioning the adhesively-covered starting end portion of the second web section, said starting end positioning means being located adjacent to said braking means, and including a cutting section to cut the starting end of the second web section between adjacent packaging bulges, and including a suction means for positioning the adhesively-covered starting end portion by suction against a retaining surface,

retaining means for retaining the position of the new terminal end portion and for orthogonally displacing it in a conveying direction and pressing and connecting said new terminal end portion onto said starting end portion of said second web section;

a mobile cutting piece which reciprocates orthogonally relative to the conveying direction, said mobile cutting piece having multiple slots of a prescribed pitch disposed to accommodate the bulged sections, and

a pressing means for moving said new terminal end portion into adhesive connection with said starting end portion.

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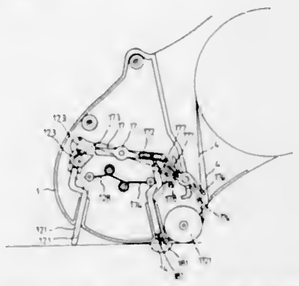
TAPE DISPENSER OF PACKAGING

Lin Shuh-Chin, No. 36, Lane 13, Ji-Syang St., Hsinten City, Taipei, Taiwan

Filed Jan. 15, 1993, Ser. No. 5,045

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—523 **1 Claim**



1. A packaging tape dispenser system for delivering and cutting tape comprising:

(a) a housing forming a tape enclosure;

(b) a swing base member rotatably mounted to said housing for insert and removal of said tape from said enclosure;

(c) a pressure plate member slideably mounted to said housing and linearly displaceable responsive to impingement with said tape, said pressure plate member extending through a pressure plate opening formed through a wall of said housing;

(d) a cutter blade holder mounted to said housing member and displaceable responsive to a displacement of said pressure plate member, said cutter blade holder having a cutter blade formed thereon for displacement external said housing member through a blade outlet opening formed through said wall of said housing for cutting said tape responsive to said displacement of said pressure plate member;

(e) a swing block member rotatably coupled to said housing member between said pressure plate member and said cutter blade holder, said swing block member having opposing first and second end sections rotatable about a central pivot, said first and second end sections being rotatably displaceable responsive to contact with said pressure plate member, said second end section having a slot formed therethrough for insert of a side post member coupled to said cutter blade holder for reversible linear displacement of said cutter blade responsive to rotative displacement of said swing block member; and,

(f) a stop member rotatably coupled to said housing, said stop member having first, second and third wing extension lugs, said first wing extension lug being rotatably actuated by interface with said tape, said second wing extension lug being displaced from contact with said second end section of said swing block member responsive to said rotation of said first wing extension lug providing rotation of said swing block member until contacted by said third wing extension lug thereby terminating displacement of said cutter blade holder.

5,288,363

AUTOMATIC CONTROL METHOD FOR GROWING SINGLE-CRYSTAL NECK PORTIONS

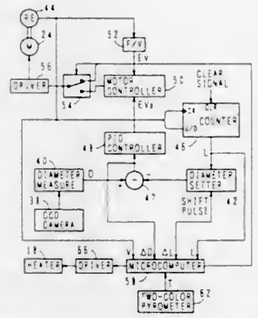
Kenji Araki, Annaka, Japan, assignor to Shin-Etsu Handotai Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,077

Claims priority, application Japan, Feb. 14, 1991, 3-42640

Int. Cl.[5] C30B *15/22*

U.S. Cl. 156—601 **6 Claims**



1. An automatic control method for growing a single-crystal neck portion between an initial point and a cone portion by employing the CZ method in order to remove dislocation, said automatic control method comprising the steps of:

adjusting the pulling-up speed of the seed crystal so that a control deviation of the crystal diameter becomes closer to zero;

calculating a correction value for the amount of power supplied to a melt heater, based on fuzzy inference, according to fuzzy inference conditions which are combinations of the crystal diameter control deviation (ΔD) being large or small and the pulling-up speed (V) being high or low; and

correcting the power supplied to the heater, by using the correction value.

5,288,364

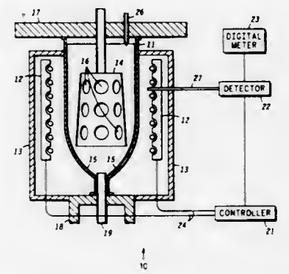
SILICON EPITAXIAL REACTOR AND CONTROL METHOD

Curtis L. Burt, Glendale, and John W. Steele, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 20, 1992, Ser. No. 932,820

Int. Cl.[5] C30B *25/16*

U.S. Cl. 156—601 **14 Claims**



1. A method of controlling a silicon epitaxial reactor comprising:

providing a silicon epitaxial reactor having a quartz bell jar;

positioning an infrared sensor near an external surface of the quartz bell jar;

coupling an output of the infrared sensor to a controller that controls initiating an epitaxial deposition cycle within the silicon epitaxial reactor;

monitoring a temperature of the quartz bell jar by using the infrared sensor for monitoring infrared radiation emitted from the quartz bell jar and from a silicon haze on an inside surface of the bell jar during an epitaxial deposition cycle; and

inhibiting initiation of an epitaxial deposition cycle a first number of epitaxial deposition cycles after the temperature reaches a first value wherein the inhibiting is performed by the controller.

5,288,365

METHOD FOR GROWING A SILICON CARBIDE SINGLE CRYSTAL

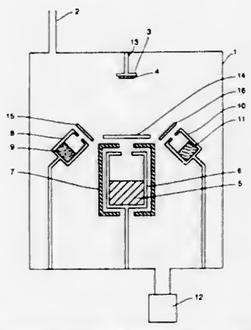
Katsuki Furukawa, Sakai; Yoshimitsu Tajima, and Akira Suzuki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 855,376

Claims priority, application Japan, Mar. 22, 1991, 3-057487

Int. Cl.[5] C30B *25/00*

U.S. Cl. 156—614 **8 Claims**



1. A method for growing a silicon carbide single crystal on

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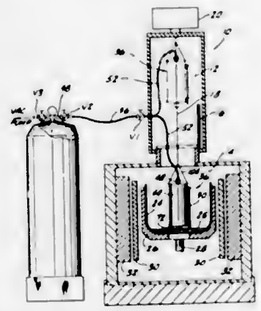
a seed crystal using a plurality of molecular beam sources in vacuo by means of a molecular beam epitaxy, wherein a first material in the molecular beam sources is silicon carbide and wherein a second material in the molecular beam sources is silicon.

5,288,366

METHOD FOR GROWING MULTIPLE SINGLE CRYSTALS AND APPARATUS FOR USE THEREIN

John D. Holder, Lake St. Louis, Mo., assignor to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Apr. 24, 1992, Ser. No. 873,375
Int. Cl.[5] C30B *15/12*
U.S. Cl. 156—617.1 **8 Claims**



1. A method for growing multiple high-purity single crystals from a replenished melt by maintaining the purity of molten source material in the melt held in a crucible in a furnace of the type used for growing high-purity single crystals, the method comprising the steps of:

growing at least one crystal from the source material in the crucible;

extracting a substantial liquid portion of the volume of the melt remaining in the crucible independently of growing another crystal from the melt whereby impurities in the melt tending to remain in liquid during said step of growing at least one crystal are removed with the extracted liquid portion;

replenishing the melt with high-purity source material; and

growing at least one more single crystal.

5,288,367

END-POINT DETECTION

David Angell, and Carl J. Radens, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

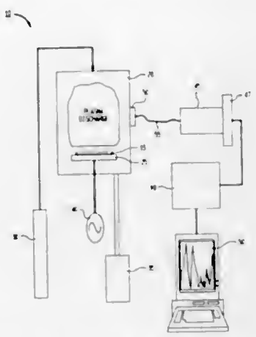
Filed Feb. 1, 1993, Ser. No. 11,630
Int. Cl.[5] G01N *21/00*
U.S. Cl. 156—626 **33 Claims**

1. A method of selecting a wavelength of light to monitor for end-point detection during etching, wherein the etching produces discharge which emits light, said method comprising the steps of:

collecting data during etching, said data characterizing variation of light emitted by discharge produced during the etching;

calculating a principal component of the data, said principal component having variables, each variable having a weight, and each variable corresponding to a wavelength of the light emitted by the discharge; and

determining which variable of the principal component varies during the etching such that end-point of the etch



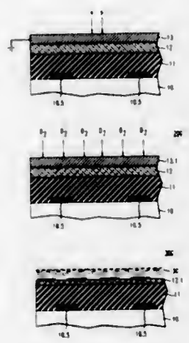
can be detected by monitoring the wavelength corresponding to the variable.

5,288,368

ELECTRON BEAM LITHOGRAPHY WITH REDUCED CHARGING EFFECTS

John J. DeMarco, East Brunswick, and Christophe Pierrat, Basking Ridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 993,866, Dec. 23, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,714
Int. Cl.[5] B44C *1/22*; C03C *15/00*; C23F *1/00*
U.S. Cl. 156—643 **12 Claims**



1. In a method of patterning a workpiece in accordance with the lateral pattern of a spatially selective, electrically charged, scanning beam of actinic radiation, the steps of

(a) directing the beam at a major surface of a conductive layer that is located overlying a resist layer that is sensitive to the beam, the conductive layer being transparent to the beam, the resist layer being located overlying the workpiece;

(b) removing the entire thickness of the conductive layer by means of dry etching; and

(c) developing the resist layer, whereby the resist layer becomes a patterned resist layer in accordance with the pattern of the beam.

5,288,369

DEINKING METHOD AND DEINKING COMPOSITION

Yoichi Ishibashi; Yoshitaka Miyauchi; Koji Hamaguchi; Hideaki Urushibata; Hiromichi Takahashi, and Takanobu Shiroishi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 730,042, Jul. 15, 1991, abandoned. This application Nov. 22, 1991, Ser. No. 796,608
Claims priority, application Japan, Dec. 28, 1990, 2-409283; Mar. 7, 1991, 3-41883; Mar. 7, 1991, 3-41884; Mar. 7, 1991, 3-41885; Mar. 7, 1991, 3-41886; Mar. 29, 1991, 3-66498
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—5 **6 Claims**

1. A deinking composition for use in the reclamation of waste paper consisting essentially of a mixture of higher fatty acids having 8 to 24 carbon atoms, or salts thereof, wherein the average carbon atom number of said fatty acids in said mixture ranges from 12.7 to 21.5, and wherein the content of higher fatty acids having 20 to 24 carbon atoms or salts thereof, ranges from 9.6 to 70.6% by weight, said mixture having an iodine value (IV) of not greater than 45.

2. A deinking composition for use in the reclamation of waste paper consisting essentially of:

(a) a mixture of higher fatty acids having 8 to 24 carbon atoms, or salts thereof, wherein the average carbon atom number of said fatty acids in said mixture ranges from 12.7 to 21.5, and wherein the content of higher fatty acids having 20 to 24 carbon atoms or salts thereof ranges from 9.6 to 70.6% by weight, said mixture having an iodine value (IV) of not more than 45; and

(b) at least one surfactant selected from the group consisting of compounds represented by the following general formulae (a-1), (a-2), (a-3) and (a-4) which follows:

$$R_1—O—(—AO—)_p—H \qquad (a\text{-}1)$$

wherein R_1 represents an alkyl or alkenyl group having 8 to 24 carbon atoms or an alkylphenyl group wherein said alkyl group has 6 to 14 carbon atoms,

AO represents an alkylene oxide having 2 to 4 carbon atoms which may be either a block polymer chain or a random polymer chain wherein two or more kinds of the alkylene oxide are present; and p is 1 or above so as to result in a total molecular weight of from 800 to 10,000;

$$R_2—COO—(—AO—)_m—H \qquad (a\text{-}2)$$

wherein R_2 represents an alkyl or alkenyl group having 7 to 23 carbon atoms,

AO represents an alkylene oxide having 2 to 4 carbon atoms which may be either a block polymer chain or a random polymer chain wherein two or more types of the alkylene oxide are present; and m is 1 or above so as to result in a total molecular weight of from 800 to 10,000;

$$R_3—O—(—AO—)_n—SO_3M \qquad (a\text{-}3)$$

wherein R_3 represents an alkyl, alkenyl or cycloalkyl group having 8 to 24 carbon atoms or an alkylphenyl group wherein said alkyl has from 8 to 12 carbon atoms,

AO represents an alkylene oxide having 2 to 4 carbon atoms which may be either a block polymer chain or a random polymer chain wherein two or more types of the alkylene oxide are present;

n is from 1 to 5; and

(a-4) a reaction product of an alkylene oxide with a mixture of a natural fat and polyhydric alcohol; and

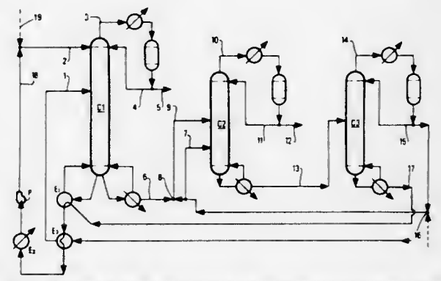
M represents an alkali metal or ammonium ion.

5,288,370

PROCESS FOR THE SEPARATION OF BUTENES AND BUTANES BY EXTRACTIVE DISTILLATION

Lionel Asselineau, Paris, and Alexandre Rojey, Rueil Malmaison, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Mar. 20, 1992, Ser. No. 855,755
Claims priority, application France, Mar. 20, 1991, 91/03 477
Int. Cl.[5] B01D *3/40*
U.S. Cl. 203—51 **22 Claims**



1. A process for the separation of butanes and butenes from a charge containing the same, comprising:

introducing said charge into an extractive distillation column under pressure;

contacting said charge in said extractive distillation column with a first polar solvent **S1**, in which the butanes have a higher volatility than the butenes;

withdrawing an overhead from the top of said extractive distillation column, said overhead consisting essentially of butanes;

withdrawing residue from the bottom of said extractive distillation column, said residue comprised mainly of solvent **S1** and butenes;

providing a second solvent **S2** having a volatility between that of the first solvent **S1** and that of the butenes, which does not form an azeotrope with the butenes and which is miscible with said first solvent **S1**;

passing said residue and said second solvent **S2** into a desorption column under pressure;

withdrawing from said desorption column an overhead consisting essentially of butenes;

withdrawing a residue from said desorption column, said residue consisting essentially of a mixture of solvents **S1** and **S2**;

feeding said mixture into a purification column;

withdrawing from said purification column an overhead consisting essentially of said solvent **S2**;

condensing the latter overhead to form a distillate consisting essentially of said solvent **S2**;

recycling the resultant distillate to the desorption column;

withdrawing from the bottom of the purification column a bottom residue consisting essentially of purified solvent **S1**; and

recycling said purified solvent to the extractive distillation column.

5,288,371

OXIDATION OF ORGANIC MATERIALS BY ELECTRIFIED MICROHETEROGENEOUS CATALYSIS

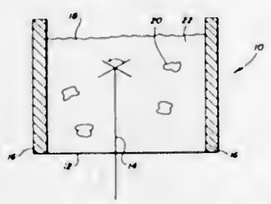
Debra R. Rolison, Arlington, Va., and Joseph Z. Stemple, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1992, Ser. No. 822,782
Int. Cl.[5] C25B *3/02*
U.S. Cl. 204—78 **26 Claims**

14. A method for oxidizing at least one organic reactant comprising the steps of:

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(a) dispersing at least one reaction enhancer in a fluidic medium to form a preactivation mixture, said dispersal occurring in the absence of the at least one organic reactant, said reaction enhancer being a stable, non-soluble, porous, electronically non-conductive, inorganic solid;
(b) subjecting said preactivation mixture to a first electrifying force in the absence of the at least one organic reactant until said preactivation mixture reaches ionic equilibrium, thereby forming an activated mixture of low ionic strength;



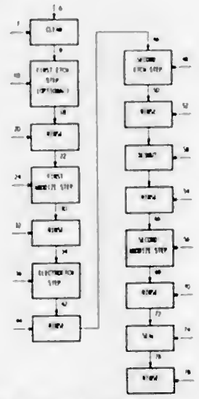
(c) dispersing the at least one organic reactant in said activated mixture to form a reaction mixture of low ionic strength;
(d) subjecting said reaction mixture to a second electrifying force thereby forming an oxidation product by oxidation of the at least one organic reactant, said subjection being carried out in such a manner that said at least one reaction enhancer enhances the oxidation of the at least one organic reactant to form the oxidation product; and
(e) collecting the oxidation product.

5,288,372

ALTERING A METAL BODY SURFACE

Bernard R. Baker, Golden, and Eugene A. Beck, Broomfield, both of Colo., assignors to Alumax Inc., Norcross, Ga.

Filed Jul. 7, 1992, Ser. No. 909,637
Int. Cl.[5] C25D *11/02*
U.S. Cl. 204—129.1 **35 Claims**



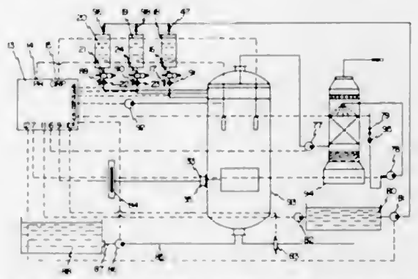
1. A method for altering a metal body, comprising:
(a) preparing a metal body in a first solution by producing electrochemically a first coating on at least a desired portion thereof, wherein said first coating has a large number of substantially uniformly distributed pores and provides a substantially continuous outer surface on said metal body; and
(b) treating said metal body to achieve substantially throughout said desired portion of said metal body a substantially uniform distribution of pits and a substantially matte finish, said treating step including removing substantially all of said first coating from said metal body in a second solution, wherein a substantial number of said pits have a depth of no more than about 3 microns.

5,288,373

PROCESS OF REMOVING CYANIDE FROM WASTE WATER

Xinyu Yang, 23 Laoyang Zhuang, Chengbei, Zaoqiang County, Hebei 053100, China

Continuation of Ser. No. 650,075, Feb. 4, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,864
Claims priority, application China, Mar. 15, 1990, 90202759; Jun. 14, 1990, 90104317
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—131 **8 Claims**



1. A process for removing cyanide from liquid waste by electrolysis comprising the steps of:
adding liquid waste containing cyanide to an electrolyser cell;
maintaining a pH of said liquid waste at about 10.5;
adding NaCl into said electrolyser cell in a manner that a NaCl/liquid waste radio is controlled to about 0.5–3 g/l;
agitating the liquid in said electrolyser cell;
applying a high density current to a set of positive and negative electrode plates defining an anode and a cathode respectively in said electrolyser cell;
monitoring an equivalent potential of chlorine and cyanogen of the liquid in the electrolyser cell;
discharging treated liquid from the electrolyser cell when a potential of the liquid approaches a selected value; and
conveying waste gases consisting essentially of HCN and CNCl produced in the electrolysis to a purifying tower and purifying said gases therein.

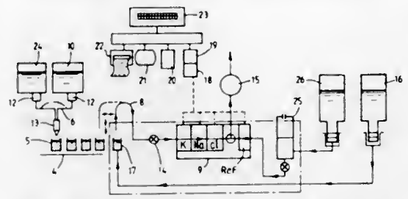
5,288,374

METHOD AND APPARATUS FOR ELECTROCHEMICAL ANALYSIS AND AN AQUEOUS SOLUTION FOR USE THEREIN

Miyoko Watanabe, and Hiroshi Mitsumaki, both of Mito, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1990, Ser. No. 580,121
Claims priority, application Japan, Sep. 13, 1989, 1-238242
Int. Cl.[5] G01N *27/30*
U.S. Cl. 204—153.1 **15 Claims**

1. A method of electrochemical analysis, comprising the steps of:
(i) contacting a first fluid having a fixed value of an analytical item with an electrochemical sensor at least once to obtain at least one output signal from the electrochemical sensor;
(ii) contacting first and second pluralities of fluid samples with said electrochemical sensor in a mixed sequence to obtain respective output signals corresponding to the values of said analytical item in said samples, said first and second pluralities having different respective analytical characteristics;
(iii) at each change in said sequence from a sample of said first plurality to a sample of said second plurality, contacting a second fluid having a value of said analytical item different from that of the first fluid with said electrochemical sensor; and
(iv) comparing said output signals of said samples with said at least one output signal for said first fluid.

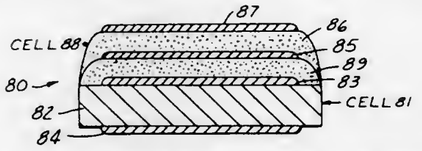


5,288,375

METHOD FOR DETERMINING RELATIVE AMOUNT OF OXYGEN CONTAINING GAS IN A GAS MIXTURE

Eleftherios M. Logothetis, Birmingham, and Richard E. Soltis, Redford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 465,592, Jan. 18, 1990, Pat. No. 5,145,566, which is a continuation of Ser. No. 251,622, Sep. 30, 1988, abandoned. This application Jun. 19, 1992, Ser. No. 901,315
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] G01N *27/419*
U.S. Cl. 204—153.18 **4 Claims**



1. A method employing an electrochemical oxygen pumping device for measuring the relative amount of a measurement gas consisting essentially of at least one oxygen containing gas in a gas mixture comprising in addition at least a second oxygen containing gas which is capable of being pumped out of said device or disassociated at a voltage less than that which is capable of disassociating said measurement gas, said method comprising the steps of:
providing communication between said gas mixture and a first porous layer of an electrochemical device, which device comprises;
a generally planar first electrochemical oxygen pump cell including a relatively dense platelet with one of a pair of porous electrodes on each of two spaced sides of said platelet, one of said porous electrodes being exposed;
the first porous layer deposited on one of the electrodes of said first pump cell;
a generally planar second electrochemical oxygen pump cell including a first porous electrode, a second porous layer and a second porous electrode deposited successively on said first porous layer;
applying and maintaining a first voltage across said second pump cell to positively bias said second electrode (i) sufficiently to cause substantially all said second oxygen containing gas molecules inside said first porous layer to be pumped out or disassociated by a current flowing through said second pump cell and (ii) insufficiently to disassociate said measurement gas;
applying and maintaining simultaneously with the maintaining of said first voltage, a second voltage across said first pump cell to positively bias the exposed electrode of said first pump cell sufficiently to disassociate only substantially all of said measurement gas molecules inside said first porous layer; and
measuring said current flowing through said first pump cell, said current being proportional to the relative amount of said measurement gas in said gas mixture.

5,288,376

PREPARATION OF PERFLUOROOLIGOETHER IODIDES

Masayuki Oyama; Noriyuki Koike, both of Gunma, and Toshio Takago, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 748,615, Aug. 22, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,952
Claims priority, application Japan, Aug. 23, 1990, 2-222090
Int. Cl.[5] G07B *39/00*
U.S. Cl. 204—157.63 **9 Claims**

1. A method for preparing a perfluoropolyether iodide of the formula

$$CF_3CF_2CF_2O\underset{\displaystyle CF_3}{CF}CF_2O\underset{\displaystyle CF_3}{CF}I$$

by reacting a perfluoropolyether carboxylic fluoride of the formula

$$CF_3CF_2CF_2O\underset{\displaystyle CF_3}{CF}CF_2O\underset{\displaystyle CF_3}{CF}\overset{\displaystyle O}{\overset{\|}{C}}-F$$

with a metal iodide of the formula MIa, wherein M is a metal atom and a is the valence of the metal, to form a perfluoropolyether carboxylic iodide of the formula (I)

$$CF_3CF_2CF_2O\underset{\displaystyle CF_3}{CF}CF_2O\underset{\displaystyle CF_3}{CF}\overset{\displaystyle O}{\overset{\|}{C}}-I \qquad (I)$$

and exposing the perfluoropolyether carboxylic iodide of formula (I) to ultraviolet light at a wavelength of 220–280 nm at a temperature of 0°–60° C. for about 2 to about 30 hours.

5,288,377

PROCESS FOR THE MANUFACTURE OF PRINTED CIRCUITS USING ELECTROPHORETICALLY DEPOSITED ORGANIC RESISTS

James A. Johnson, Litchfield; Brian Jobson, Wolcott, and Gary B. Larson, Cheshire, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation of Ser. No. 908,944, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 710,665, Jun. 5, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,142
Int. Cl.[5] C25D *13/20*
U.S. Cl. 204—181.3 **11 Claims**

10. In a process for manufacturing a printed circuit wherein a copper-clad insulating substrate has through-holes drilled therein; followed by metallization of said through-holes, and coating said copper cladding with electroless copper; followed by application to the electrolessly copper coated copper cladding of a layer of photoresist which is imaged and developed to form a plating resist over selected areas of said electrolessly copper coated copper cladding corresponding to a negative of a pattern of eventually desired circuitry; followed by provision of additional copper over the electrolessly copper coated copper cladding not covered by said plating resist and over the electrolessly copper coated throughholes; followed by electro-

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phoretic deposition of an organic etch resist over said additional copper, which is over said electrolessly copper-coated copper cladding; followed by removal of said plating resist and etching away the copper thereunder; and followed by removal of said organic etch resist; the improvement comprising providing said additional copper, which is over said electrolessly copper-coated copper cladding, with a layer of phosphate conversion coating before the electrophoretic deposition of said organic etch resist thereover, and thereafter electrophoretically depositing said organic etch resist over said layer of phosphate conversion coating.

5,288,378

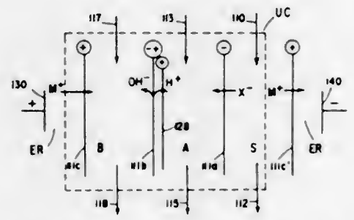
GUARD MEMBRANES FOR USE IN ELECTRODIALYSIS CELLS

Frederick P. Chlanda, Rockaway, N.J., assignor to AlliedSignal Inc., Morristownship, Morris County, N.J.

Continuation-in-part of Ser. No. 590,116, Sep. 28, 1990, Pat. No. 5,126,026. This application Sep. 18, 1991, Ser. No. 759,811

Int. Cl.[5] B01D *61/44*; C02F *1/469*

U.S. Cl. 204—182.4 **23 Claims**



1. An electrodialysis apparatus comprising at least one unit cell comprising:

at least one first membrane having at least one ion selective layer selected from the group consisting of anion selective layers and cation selective layers, and

at least one separate guard membrane adjacent to said at least one first membrane wherein the improvement comprises an ionically conductive layer disposed between said at least one first membrane and said guard membrane such that said guard membrane adheres to said first membrane.

5,288,379

MULTI-CHAMBER INTEGRATED PROCESS SYSTEM

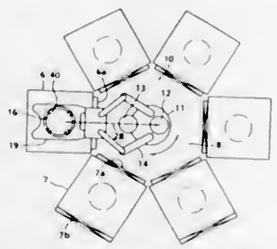
Minoru Namiki, and Nobuyuki Takahashi, both of Fuchu, Japan, assignors to Anelva Corporation, Fuchu, Japan

Filed Nov. 20, 1992, Ser. No. 979,255

Claims priority, application Japan, Dec. 4, 1991, 3-347738

Int. Cl.[5] C23C *14/34*; B65G *49/05*

U.S. Cl. 204—192.12 **16 Claims**



1. An integrated module multi-chamber vacuum processing system comprising:

a plurality of processing chambers capable of being vacuum evacuated;

a substrate transferring chamber capable of being vacuum evacuated;

at least one load-lock chamber capable of being vacuum evacuated;

a substrate transferring robot assembly for transferring a substrate between the at least one load-lock chamber and the processing chamber disposed within the substrate transferring chamber;

the substrate transferring robot assembly comprising:

a baseplate rotatable with respect to the substrate transferring chamber;

two waiting stages integrated on the baseplate to store the substrate temporarily; and

a substrate transferring robot mounted on the baseplate for transferring the substrate.

5,288,380

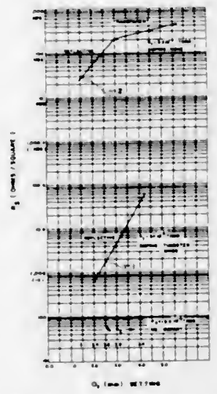
METHOD FOR FABRICATION OF THIN-FILM BOLOMETRIC MATERIAL

David A. Jackson, Jr., Springfield, and Samuel M. Tomarchio, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 23, 1992, Ser. No. 917,257

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.21 **3 Claims**



1. A technique for fabrication of thin-film bolometric materials for use in low-ohm multi-detector devices, comprising:

reactive co-sputtering a group V-B periodic table element or compound in an oxygen containing atmosphere with small amounts of a dopant, where the dopant has an oxide that is highly temperature dependent with an electrical resistance that varies in accordance with the oxide content of the dopant, whereby a change in electrical resistance of the resultant doped material may be achieved by adjusting the oxygen content of the atmosphere during the doping process, wherein the dopant is selected from the group consisting of nickel, iron, cobalt, chromium, tin, and manganese.

5,288,381

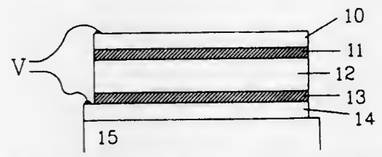
METHOD FOR PRODUCING ELECTROCHROMIC MATERIAL AND ELECTRO-OPTICAL DEVICE USING SAME

Stuart F. Cogan, Sudbury, and R. David Rauh, Newton, both of Mass., assignors to E.I.C. Laboratories, Norwood, Mass.

Division of Ser. No. 506,340, Apr. 6, 1990, Pat. No. 5,080,471. This application Oct. 25, 1991, Ser. No. 783,061

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.26 **14 Claims**



1. The method of forming an oxidatively coloring electrochromic film comprising the steps of:

depositing CrO_{3-k}, where $k<1.5$;

depositing an alkali metal M onto said CrO_{3-k};

heating to a temperature of 196 C. or higher said CrO_{3-k} and said alkali metal M to form $(zM)M_yCrO_{2+x}(0.33<y<2.0, x<2)$ by reaction with M;

whereby said metal M reacts to form a compound or compound mixture comprising separate phases of stoichiometric M—Cr—O compounds, in which M cannot be extracted electrochemically, and

whereby the excess zM is able to be extracted and re-inserted into M_yCrO_{2+x} electrochemically.

5,288,382

OPTICAL FINE PROCESSING APPARATUS

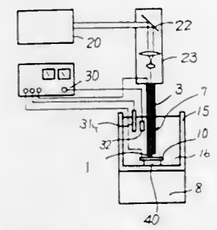
Masataka Shinogi; Toshihiko Sakuhara; Masayuki Suda; Fumiharu Iwasaki, and Akito Ando, all of Tokyo, Japan, assignors to Seiko Instruments, Inc., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,510

Claims priority, application Japan, Mar. 30, 1992, 4-74732

Int. Cl.[5] C25D *17/00*; C25F *7/00*

U.S. Cl. 204—217 **5 Claims**



1. An optical fine processing apparatus for forming a structure constituted by a deposited substance on a workpiece, comprising: a container adapted to be filled with an electrolytic solution in which the workpiece is to be immersed; a light guide having a light output end adapted for immersion in the electrolytic solution and adapted for irradiation of the workpiece with light in order to effect deposition of a substance from the electrolytic solution onto the workpiece by optical energy; at least one removal electrode disposed adjacent to said light guide and connected to receive an electric potential selected for scraping a part of the deposited substance from the workpiece by electrochemical reaction; light generating means for supplying light to said light guide through an optical system; and potential supplying means for supplying the electric potential to said removal electrode.

3. An optical fine processing apparatus according to claim 1, further comprising a rotation ring surrounding said light guide and wherein there is a plurality of removal electrodes carried by said rotation ring, said rotation ring being rotatable about the optical axis of the light guide so as to adjust the width of the structure formed after scraping of deposited substance by action of said removal electrodes.

5,288,383

METHOD AND APPARATUS FOR ADJUSTING THE DISTANCE BETWEEN THE POLES OF ELECTROLYSIS CELLS

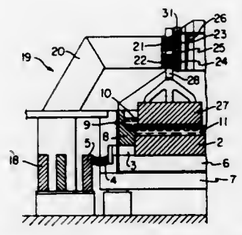
Volker Sparwald, Grevenbroich, and Gerald Peychal-Heiling, St. Augustin, both of Fed. Rep. of Germany, assignors to VAW Aluminum Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Filed Mar. 8, 1990, Ser. No. 491,475

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3908087

Int. Cl.[5] C25C *3/10, 3/12*; C25B *9/00*

U.S. Cl. 204—225 **13 Claims**



1. An apparatus for adjusting the distance between the anodes and cathodes of an electrolysis cell, comprising:

a first movable anode beam, to which individual anodes are attachable,

a second movable anode beam, disposed beneath the first anode beam, to which individual anodes are attachable,

means for selectively attaching the individual anodes to either one of the first or the second anode beams, dependent on the direction in which the individual anode is to be moved, and

means for moving the anode beams relative to each other, the beams being synchronously movable in a first direction towards each other and in a second direction away from each other, such that the selectively attached anodes are raised or lowered as desired.

5,288,384

WETTING OF DIAPHRAGMS

Shoibal Banerjee, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 789,687, Nov. 8, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 46,911

Int. Cl.[5] C25B *13/00*

U.S. Cl. 204—252 **23 Claims**

23. An electrolytic cell comprising anode and cathode compartments, separated by a diaphragm, in which at least a portion of its exterior surfaces and a portion of its interior pores of said diaphragm have been coated with a perfluoro ion exchange polymer or a solution comprising said perfluoro ion exchange polymer and a solvent or dispersant for said polymer and the diaphragm is coated with a wetting agent which has a surface tension of about 22 to 45 dynes/cm, wherein said wetting agent is different than said solvent or dispersant, if any.

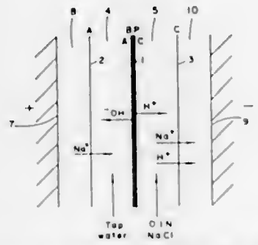
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5,288,385

SUPPORTED, MECHANICALLY STABLE BIPOLAR MEMBRANE FOR ELECTRODIALYSIS

Ora Kedem, and Abraham Warshawsky, both of Rehovot, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Mar. 17, 1992, Ser. No. 852,817
Claims priority, application Israel, Mar. 20, 1991, 97605
Int. Cl.[5] B01D *61/42*
U.S. Cl. 204—263 **5 Claims**



1. A supported, mechanically stable bipolar membrane for electrodialysis having two sides and having a cation-exchange layer on one side of said membrane and an anion-exchange layer on the other side of said membrane, wherein:
i) the cation-exchange and anion-exchange layers are supported by a single sheet of woven fabric;
ii) the cation-exchange layer is heterogeneous;
iii) the anion-exchange layer is homogeneous; and
iv) the anion-exchange layer is anchored in the cation-exchange layer whereby the anion- and cation-exchange layers are interlocked.

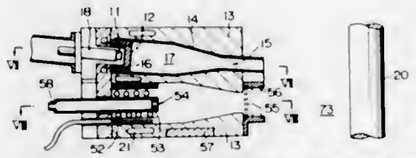
4. An electrodialysis cell according to claim 1 having means for ingress and egress of liquid comprising two bipolar membranes joined along their edges.

5,288,386

SPUTTERING APPARATUS AND AN ION SOURCE

Kenichi Yanagi; Mitsuo Kato; Kazuya Tsurusaki; Toshio Taguchi; Kenji Atarashiya; Tadashi Rokkaku, and Ichiro Yamashita, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 913,927
Claims priority, application Japan, Jul. 18, 1991, 3-178114; Jul. 18, 1991, 3-178115; Jul. 18, 1991, 3-178116; Aug. 16, 1991, 3-205906; Aug. 16, 1991, 3-205907
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—298.16 **2 Claims**



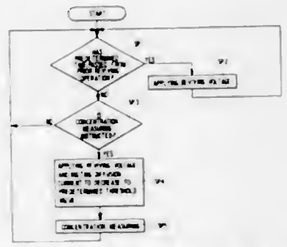
1. A sputtering apparatus including two electrodes, a sputtering target disposed on one of the electrodes, means for supplying a discharge gas in a vacuum to produce an electric discharge between the two electrodes and whereby particles sputtered from the target due to impact thereon of ions produced by the discharge are deposited on a substrate, wherein the target disposed on one electrode is formed into an elongated band and the other electrode is disposed so as to enclose the target, said other electrode being provided with a magnet for producing a magnetic field thereon, said other electrode further having a narrow elongated slot which defines a narrow sputter particle outlet, wherein said narrow sputter particle outlet permits a pressure to exist near said discharge which is higher than the pressure near the substrate.

5,288,387

APPARATUS FOR MAINTAINING THE ACTIVITY OF AN ENZYME ELECTRODE

Takayuki Ito, and Hideo Katayama, both of Tsukuba, Japan, assignors to Daikin Industries, Ltd., Japan

Filed Jun. 10, 1991, Ser. No. 712,669
Claims priority, application Japan, Jun. 12, 1990, 2-154527
Int. Cl.[5] G01N *27/327, 27/38*
U.S. Cl. 204—402 **3 Claims**



1. An apparatus for maintaining activity of an enzyme electrode of a concentration measuring apparatus which measures a concentration of a test substance in a liquid based upon an electrical signal output from said enzyme electrode when an oxidation reaction or a reduction reaction of said test substance is performed on said enzyme electrode, said apparatus comprising:
a reviving power source means for applying a reviving voltage to said enzyme electrode for activating said enzyme electrode, said reviving voltage having a polarity which is reverse with respect to a test voltage which is applied to said enzyme electrode for performing concentration measurement;
connection means for interconnecting said revising power source means and said enzyme electrode;
interconnection instruction means for providing an interconnection signal for causing interconnection of said reviving power source means and said enzyme electrode in response to either a timing signal indicative of expiration of a predetermined time interval or a signal indicative of an instruction to perform a concentration measurement; and
connection controlling means for controlling said connection means to interconnect said reviving power source means and said enzyme electrode in response to an interconnection signal from said interconnection instruction means.

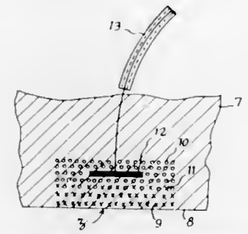
5,288,388

HOMOGENEOUS POTENTIOMETER SENSOR

Jean-Jacques Fombon, Meyzieu, France, assignor to Societe Anonyme: Societe Lyonnaise d'Electronique Appliquee, France

Filed Dec. 6, 1988, Ser. No. 280,494
Claims priority, application France, Dec. 9, 1987, 87 17437
Int. Cl.[5] G01N *27/414*
U.S. Cl. 204—416 **18 Claims**

1. A homogeneous potentiometer sensor for sensing the presence of ions in a measurement solution, the sensor comprising a body having at least one active surface portion or face delimiting at least one zone which is sensitive to an ionic species, the sensor being provided with a conductor of an electrically conductive material disposed in relationship to the body and connected to an electrical connection cable, wherein:
the body is a matrix body made of a single material which does not conduct electricity, which is chemically inert, and which has the ability to be filled with various different materials in the dispersed, dissolved, or grafted state;
the sensitive zone of the matrix body comprises:
a layer or thickness of ion sensitive material dispersed, dissolved, or grafted into the matrix body for being put into contact with the measurement solution;



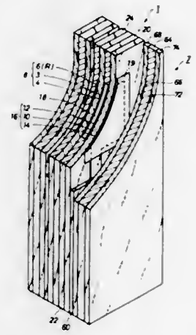
an underlayer or underthickenss of an electronically conductive material dispersed, dissolved, or grafted into the matrix body; and an intermediate layer or thickness in intimate connection with the layer and with the underlayer and which is dispersed, dissolved, or grafted into the matrix body; and
the conductor passes through a portion of the matrix body in sealed manner and is inserted into the underlayer.

5,288,389

OXYGEN SENSOR WITH HIGHER RESISTANCE TO REPEATED THERMAL-SHOCKS AND SHORTER WARM-UP TIME

Tessho Yamada; Akio Mizutani, both of Nagoya, and Nobubiro Hayakawa, Chita, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 746,010, Aug. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 330,524, Mar. 10, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 32,187
Claims priority, application Japan, Apr. 1, 1988, 63-81785; Mar. 22, 1989, 1-69832
Int. Cl.[5] G01N *27/419*
U.S. Cl. 204—425 **1 Claim**



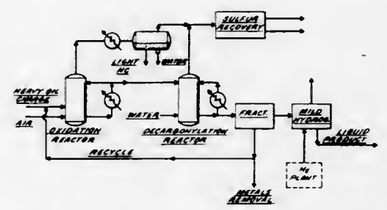
1. An oxygen sensor comprising:
an oxygen pump element having a first solid electrolyte plate and two porous electrodes, one on each surface of the first solid electrolyte plate,
an oxygen concentration cell element having a second solid electrolyte plate and two porous electrodes, one on each surface of the second electrolyte plate, and
a heater adjacent to at least one of the oxygen pump element and the oxygen concentration cell element,
wherein:
a spacer is formed between the oxygen pump element and the oxygen concentration cell element,
a gas diffusion chamber is surrounded by the two porous electrodes facing the gas diffusion chamber and the spacer,
a gas diffusion path is formed at the spacer and connects the gas diffusion chamber and the ambience of the oxygen sensor,
a porous member is disposed along said path to regulate diffusion therealong,
a shield layer is attached to the oxygen concentration cell element for shielding a one of the two porous electrodes of the oxygen concentration cell element external to the gas diffusion chamber from contact with ambient object gas,
the thickness of the oxygen sensor is between 0.7 and 1.25 mm, and the width of the oxygen sensor is between 2.8 and 4.0 mm,
the gas diffusion path has a resistance against gas flow,
the volume of the gas diffusion chamber is between 0.05 and 1.0 mm^3,
the thickness of the gas diffusion chamber is between 20 and 100 microns,
the area of the electrode of the oxygen pump element facing the gas diffusion chamber is greater than 3.0 mm^2,
there is provided a peripheral margin between a periphery of the shield layer and a periphery of said porous electrode of the oxygen concentration cell element external to the gas diffusion chamber, a width of the peripheral margin being greater than 0.7 mm, and
oxygen gas in the gas diffusion chamber is transported to said one of the two porous electrodes of the oxygen concentration cell element external to the gas diffusion chamber through the electrolyte plate and the other electrode of the oxygen concentration cell element, and an internal reference source is created in one of the two porous electrodes external to the gas diffusion chamber by maintaining a voltage between the two porous electrodes of the oxygen concentration cell element at a predetermined value or maintaining a current flow through the oxygen pump element at a predetermined value.

5,288,390

POLYCYCLIC AROMATIC RING CLEAVAGE (PARC) PROCESS

Vincent A. Durante, West Chester, Pa., assignor to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Mar. 30, 1992, Ser. No. 860,384
Int. Cl.[5] C10G *27/10*
U.S. Cl. 208—3 **27 Claims**



1. A low severity process for upgrading hydrocarbonaceous feedstock containing polynuclear aromatic compounds, comprising the steps of:
a. selectively oxidizing said feedstock under mild oxidation conditions in a multi-phase system, including at least one aqueous phase, using a water-soluble oxidation catalyst, said catalyst chosen to catalyze the selective oxygenation

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of non-terminal aromatic rings of polynuclear aromatic compounds in said feedstock;

b. deoxygenating the product of said oxidation; and

c. hydroprocessing the product of said deoxygenation to yield substantially mononuclear aromatic products.

5,288,391

RENDERING OILY WASTES LANDTREATABLE OR USABLE

Omer Bicerоglu, Clearwater, Canada, assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 454,665, Dec. 21, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 787,162

Int. Cl.[5] C10G *21/12, 21/14*

U.S. Cl. 208—13 **7 Claims**

1. A process for deoiling an oily sludge produced in a refinery, consisting essentially of the following steps:

(a) in an extraction zone, mixing the sludge with a solvent comprising a distillate stream from a refinery unit, which solvent comprises 40 to 75 percent by weight aromatics and has a boiling point of 100° to 600° C., wherein the sludge to solvent ratio in the extraction zone is about 2:1 to 1:5, whereby oil components of the sludge are extracted into the solvent;

(b) in a separation zone, separating the mixture formed in the extraction zone into at least two streams: a first stream comprising solvent and extract, and a second stream comprising substantially all of the solid material in said sludge;

(c) repeating steps (a) and (b) if further reduction in the oil content of the sludge is desired;

(d) in a combustion zone, employing the solid material produced in step (b) as a source of fuel; and

(e) blending the first stream from step (b) with crude oil for reprocessing in the refinery.

5,288,392

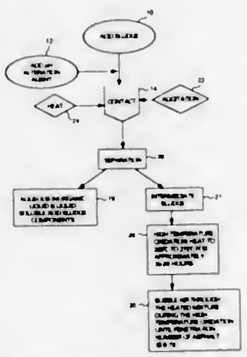
PROCESS FOR CONVERTING ACID SLUDGE TO INTERMEDIATE SLUDGE

Benjamin S. Santos, 38735 Hungington Cir., Fremont, Calif. 94536

Filed May 7, 1992, Ser. No. 879,642

Int. Cl.[5] C10G *17/02, 19/02, 19/073*

U.S. Cl. 208—13 **13 Claims**



1. A process for converting acid sludge to intermediate sludge and for forming blown asphalt from said intermediate sludge, comprising:

altering the pH of the acid sludge by adding a sufficient volume of liquid pH elevating agent relative to a volume of said acid sludge being treated, said pH elevating agent having a pH ranging form 3 up to 14, said volume and pH of said pH elevating agent being sufficient as to raise the pH of said acid sludge to from approximately 3 to approximately 7 such that said acid sludge does not become sandy and unmeltable at temperatures from room temperature up to approximately 275 degrees centigrade, thereby creating an intermediate mixture comprising a liquid layer and a layer of intermediate sludge having a pH in the range from approximately 3 to approximately 7, and;

separating said liquid layer from said layer of intermediate sludge, and further heating and oxidizing said intermediate sludge to form blown asphalt.

5,288,393

GASOLINE FUEL

Peter J. Jessup, and Michael C. Croudace, both of Santa Ana, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 13, 1990, Ser. No. 628,488

Int. Cl.[5] C10L *1/04*

U.S. Cl. 208—16 **155 Claims**

1. An unleaded gasoline fuel, suitable for combustion in an automotive engine having the following properties:

(1) a 50% D-86 distillation point no greater than 205° F.; and

(2) a Reid Vapor Pressure less than 7.5 psi.

5,288,394

PROCESS FOR THE PREVENTION OF POLYMER FORMATION IN COMPRESSOR SYSTEMS

Vincent E. Lewis, and Carl T. Rowe, both of Missouri City, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

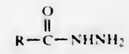
Continuation-in-part of Ser. No. 718,623, Jun. 21, 1991, Pat. No. 5,160,425. This application Jul. 1, 1992, Ser. No. 907,320

The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.

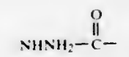
Int. Cl.[5] C10G *9/16*

U.S. Cl. 208—48 AA **19 Claims**

1. A method of inhibiting formation of polymeric fouling deposits after the caustic scrubbing of a hydrocarbon stream contaminated with oxygenated compounds with a basic washing solution having a pH > 7 comprising adding to said hydrocarbon stream a sufficient amount for inhibiting formation and deposition of fouling materials of a composition comprising at least one hydrazide compound characterized by the formula



where R is selected from the group consisting of H, $NHNH_2$, and



5,288,395

PRODUCTION OF HIGH VISCOSITY INDEX LUBRICANTS

David O. Marler, Deptford, and Dominick N. Mazzone, Wenonah, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 24, 1991, Ser. No. 734,826

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] C10G *67/02, 69/02*

U.S. Cl. 208—58 **40 Claims**

1. A process for producing a high viscosity index lubricant having a viscosity index of at least 110 from a hydrocarbon feed of mineral oil origin having a wax content of at least 20 weight percent, which comprises:

(i) hydrocracking the feed over a bifunctional lube hydrocracking catalyst to hydrocrack aromatic components present in the feed at a severity which results in a conversion of not more than 50 weight percent of the feed to products boiling outside the lube boiling range;

(ii) isomerizing waxy paraffins present in the effluent from the hydrocracking step in the presence of an isomerization catalyst comprising a hydrogenation component on a porous support material comprising an inorganic, non-layered, porous, crystalline phase material which has an arrangement of uniformly-sized pores with diameters of at least about 12 Å, and, after calcination, exhibits a benzene adsorption capacity of greater than about 15 grams benzene per 100 grams at 50 torr and 25° C. and an X-ray diffraction pattern with at least one peak having a relative intensity of 100 at a d-spacing greater than about 18 Å, to isomerize waxy paraffins to less waxy isoparaffins.

5,288,396

HYDROCRACKING PROCESS USING A CATALYST SELECTIVE FOR MAKING MIDDLE DISTILLATES

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 573,735, Aug. 28, 1990, Pat. No. 5,116,792, which is a continuation of Ser. No. 332,517, Mar. 31, 1989, Pat. No. 4,990,476, which is a continuation-in-part of Ser. No. 196,942, Apr. 4, 1988, Pat. No. 4,879,019, which is a division of Ser. No. 28,654, Mar. 20, 1987, Pat. No. 4,762,813, which is a continuation of Ser. No. 793,567, Oct. 31, 1985, abandoned, which is a continuation-in-part of Ser. No. 699,919, Feb. 8, 1985, Pat. No. 4,610,973, which is a continuation of Ser. No. 531,924, Sep. 13, 1983, Pat. No. 4,517,074, which is a division of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Jan. 31, 1992, Ser. No. 830,139

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] C10G *47/20*

U.S. Cl. 208—111 **20 Claims**

1. A hydrocracking process which comprises contacting a hydrocarbon feedstock with a hydrocracking catalyst under hydrocracking conditions in the presence of added hydrogen, wherein said catalyst contains a zeolite having a unit cell size between 24.20 and 24.40 angstroms and is prepared by the process comprising:

(a) extruding a mixture of at least one inorganic refractory oxide component and a crystalline aluminosilicate zeolite having cracking activity to form extrudates, wherein said crystalline aluminosilicate zeolite has a unit cell size between 24.40 and 24.95 angstroms and is selected from the group consisting of Y zeolites, modified Y zeolites, X zeolites and modified X zeolites; and

(b) calcining said extrudates in the presence of steam at a water vapor partial pressure greater than about 5.0 psia under conditions such that the unit cell size of said crystalline aluminosilicate zeolite is reduced to a value between about 24.20 and 24.40 angstroms.

5,288,397

BAFFLED FCC REGENERATION PROCESS AND APPARATUS

Catherine L. Markham, and Gregory P. Muldowney, both of Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 18, 1992, Ser. No. 946,707

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—113 **18 Claims**

1. A process for the catalytic cracking of a hydrocarbon feed to lighter products comprising:

a. cracking said feed by contacting said feed with a supply of hot, regenerated cracking catalyst in a fluidized catalytic cracking (FCC) reactor means operating at catalytic cracking conditions to produce a mixture of cracked products and spent cracking catalyst containing coke and charging said mixture to a separation means;

b. separating said mixture of cracked products and spent cracking catalyst containing coke in said separation means to produce a cracked product vapor phase which is charged to a fractionation means and a spent catalyst phase which is charged to a catalyst stripping means;

c. stripping said spent catalyst in said stripping means to produce a stripped catalyst phase containing coke and charging said stripped catalyst to a regeneration means having a spent catalyst inlet and a regenerated catalyst outlet;

d. charging to said inlet of said dense phase fluidized bed within said regeneration means said stripped catalyst and regenerating said spent catalyst by contact with oxygen or an oxygen-containing gas at dense phase fluidized bed catalyst regeneration conditions, and wherein there is:

horizontal flow of catalyst from said spent catalyst inlet to a regenerated catalyst outlet, and

vertical flow of regeneration gas from a lower portion of said bed to a dilute phase region above said dense phase bed,

to produce at least partially regenerated catalyst in said dense phase fluidized bed which is withdrawn from said dense phase fluidized bed via said catalyst outlet and flue gas with entrained catalyst which is discharged up from said dense phase fluidized bed into a dilute phase region above said dense phase fluidized bed;

e. horizontally transporting, beneath a horizontal baffle means, at least a majority of said dilute phase, comprising flue gas and entrained catalyst, from said bubbling dense phase bed spent catalyst inlet toward said regenerated catalyst outlet.

5,288,398

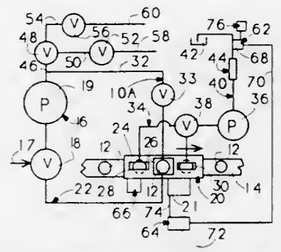
FILTER BED BACKWASHING DEVICES AND METHODS

Stephen P. Angelino, Midlothian, Va., assignor to Infilco Degremont Inc., Richmond, Va.

Filed Mar. 2, 1993, Ser. No. 25,130

Int. Cl.[5] B01D *24/46*

U.S. Cl. 210—89 **10 Claims**



1. In a method of cleansing a plurality of seriate filter cells in an automatic backwash filter system that backwashes the cells one at a time by (a) pumping backwash liquid seriatim through separate effluent ports of individual filter cells, (b) simultaneous with the backwashing of a new cell in the plurality of filter cells, pumping waste liquid from an immediately previous backwashed cell through its effluent port, (c) monitoring such waste liquid for contaminant content, (d) continuing said waste liquid pumping from said immediately previous backwashed cell until the contaminant content thereof reaches a predetermined low level, (e) preventing the backwashing operation on said new cell from moving to a further cell until the contaminant content of the waste liquid from said immediately previous backwashed cell reaches a predetermined low level, and (f) reapplying such combination of steps in repeating such backwashing operation through all the filter cells in said automatic backwash filter system until all the filter cells in the system have been backwashed,

the improvement which comprises in combination the steps of:

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determining the quantity of waste liquid pumped from said immediately previous backwashed cell waiting for the contaminant content of said waste liquid therefrom to reach said predetermined low level,

overriding the prevention of said backwashing operation on said new cell from moving to said further cell after said quantity of waste liquid reaches a predetermined value thereby allowing said backwashing operation to pass to said further cell, and

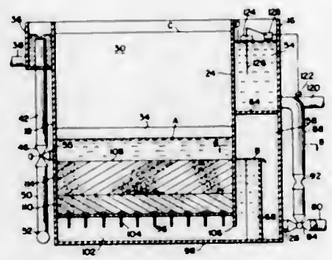
recording the identity of said previous backwashed cell.

5,288,399

GRAVITY FLOW FILTER WITH BACKWASH CONTROL CHAMBER

Christopher R. Schulz, 4909 Magdalene Ct., Annandale, Va. 22003

Filed Aug. 28, 1992, Ser. No. 936,835
Int. Cl.[5] B01D *24/14, 24/46*
U.S. Cl. 210—108 **12 Claims**



1. A gravity flow, liquid filter comprising:

a) a vessel including a liquid inlet conduit for conducting unfiltered liquid from a source of unfiltered liquid to the vessel, and a liquid outlet conduit for conducting filtered liquid from the vessel to a downstream clearwell;

b) a filter cell positioned within the vessel for receiving liquid to be filtered that enters the vessel through the liquid inlet, the filter cell including a filter bed and having a liquid outlet communicating with the vessel outlet;

c) a backwash chamber in communication with a source of filtered backwash liquid and with the filter cell, the backwash chamber positioned to provide a backwash liquid level at a higher elevation than liquid within the filter cell to permit gravity flow of the backwash liquid from the backwash chamber to the liquid outlet of the filter cell to flow through the filter cell in a reverse direction relative to flow of unfiltered liquid through the filter cell to clean the filter cell of accumulated filtrate material during a filter cell backwash operation;

d) a first backwash liquid flow control valve communicating with the backwash chamber for providing backwash liquid from a pressurized backwash liquid source to the backwash chamber, the backwash flow control valve operatively connected with a liquid level sensor responsive to a backwash liquid level within the backwash chamber for maintaining a desired level of backwash liquid within the backwash chamber;

e) a second backwash flow conduit extending between the backwash chamber and the liquid outlet of the filter cell, the backwash flow conduit including a backwash flow control valve for selectively controlling the rate of flow of backwash liquid from the backwash chamber to the filter cell for permitting backwash liquid to flow through the filter cell during a backwash operation in a reverse direction relative to flow through the filter bed of liquid to be filtered during a filtering operation; and

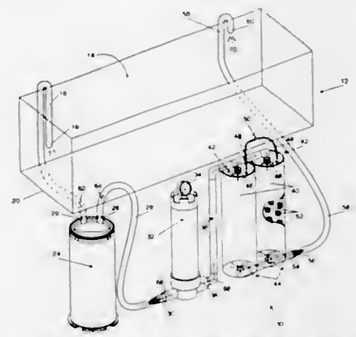
f) a drain conduit extending from the vessel for receiving backwash liquid after the backwash liquid has passed through the filter bed and for conveying the backwash flow to a drain line.

5,288,400

BIOLOGICAL FILTRATION SYSTEM

Rodney A. Phillips, Indianapolis, Ind., assignor to Theodore J. Wichman, Indianapolis, Ind., a part interest

Filed Dec. 4, 1992, Ser. No. 986,627
Int. Cl.[5] C02F *3/02*
U.S. Cl. 210—151 **11 Claims**



7. A biological filtration system for filtering a water supply, the biological filtration system reducing the quantity of ammonia and nitrite in the water supply, the filtration system comprising:

means for separating heterotrophic bacteria colonies, from nitrifying bacteria colonies, said separating means including a micron filter having an input and an output, said micron filter having a pore size range of from submicron to about 5 microns;

means for supplying water from the water supply to the separating means;

a canister filled with a biomedia material, said biomedia material defining a means for promoting growth of nitrifying bacteria in the canister, the canister having an inlet end coupled to the outlet of the separating means so that water from the separating means flows through the canister and an outlet end;

means for injecting air into the inlet end of the canister to provide oxygen for promoting oxidation of ammonia and nitrite by the nitrifying bacteria growing on the biomedia in the canister; and

means for returning water from the outlet end of the canister to the water supply.

5,288,401

MAGNETIC INDUCTOR TO REVITALIZE WATER

Andres C. Rodriguez, Parque Residencial Ntra. Sra. de la Merced, Bloque 5-3°-C, Cadiz, Spain

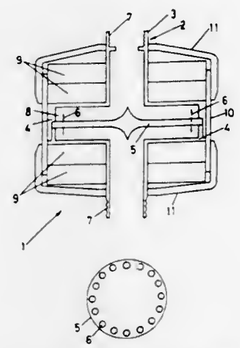
Filed May 15, 1992, Ser. No. 883,641
Claims priority, application Spain, May 17, 1991, 9101527[U]; May 17, 1991, 9101528[U]
Int. Cl.[5] C02F *1/48*
U.S. Cl. 210—222 **9 Claims**

1. A magnetic inductor for water comprising:

first and second conduit means for forming first and second conduits, respectively, which communicate with each other, the first conduit means having a first tubular portion extending toward the second conduit means and the second conduit means having a tubular portion extending toward the first conduit means, and the first and second tubular portions having respective end portions which face one another, said end portions being wider than the tubular portions coupling means for coupling said end portions together to define a sealed space therebetween, said sealed space communicating with an interior of said first and second tubular portions;

first and second sets of magnets, each magnet having an aperture extending therethrough, said magnets being located externally of said sealed space, the apertures of said first set of magnets surrounding an outer surface of said first tubular portion and the apertures of the second set of magnets surrounding an outer surface of said second tubular portion;

a central internal disc positioned in said sealed space between said first and second sets of magnets and across the



water flow passing from the first tubular portion to the second tubular, the disc having holes therethrough and the holes being located radially outward from a center of said disc so that the water in the space between the first and second tubular portions decreases speed to spend a relatively longer time in the magnetic field;

means for sealing a periphery of said disc to said coupling means;

wherein the first tubular portion is connected with a water inlet and the second tubular portion is connected with a water outlet, and the first tubular portion and the second tubular portion direct the water through the apertures of all the magnets of the inductor.

5,288,402

LIQUID FILTER MEDIUM INCLUDING A FIBRILLATED FILTERING LAYER AND AN ORGANIC FIBER SUPPORT

Mitsuo Yoshida, Tokyo, Japan, assignor to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,537
Int. Cl.[5] B01D *39/16*
U.S. Cl. 210—488 **4 Claims**

1. A filter medium for liquid filtration which comprises: a filtering layer comprising 5-40% by weight of fibrillated organic fibers having a fiber diameter of 1 μm or less, 5-70% by weight of ultra-fine organic fibers having a fiber diameter of 1-5 μm, and 20-70% by weight of organic fibers having a fiber diameter of more than 5 μm, a part or all of the organic fibers having a fiber diameter of more than 5 μm being a fibrous organic binder, and having an average pore size of 1-10 μm and a basis weight of 5-50 g/m^2, and a support comprising organic fibers having a fiber diameter of 7 μm or more and a basis weight of 30-150 g/m^2, and the filtering layer and the support being integrated into a piece.

5,288,403

FILTER FOR REMOVING LEUCOCYTES

Shinji Ohno, Ohtsu, Japan, assignor to Nissoh Corporation, Osaka, Japan

Filed Feb. 24, 1993, Ser. No. 21,574
Claims priority, application Japan, Feb. 28, 1992, 4-079379
Int. Cl.[5] B01D *39/08, 39/16*
U.S. Cl. 210—508 **3 Claims**

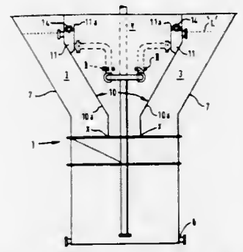
1. A filter for removing leucocytes comprising a filter medium, said filter medium being a fibrous material made of a polyester fiber which is treated on its surface with a copolymer containing 40 to 80% by weight of units derived from glucosyloxyethyl methacrylate.

5,288,404

SEDIMENTATION

Philip Marsh, Hitchin, Great Britain, assignor to Thames Water Utilities Limited, Reading, United Kingdom

PCT No. PCT/GB91/01013, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/00131, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 24, 1991, Ser. No. 966,021
Claims priority, application United Kingdom, Jun. 22, 1990, 90140146
Int. Cl.[5] B01D *21/02, 21/24*
U.S. Cl. 210—519 **18 Claims**



1. Apparatus for separating constituents of a liquid containing solids, comprising a central stilling chamber having an upflow inlet for the liquid in the upper portion and an outlet for heavier constituents proximate the bottom; a pair of separator means, each having a plurality of baffle plates in a housing through which the liquid is arranged to flow in upwardly inclined paths extending in opposite directions from said stilling chamber to upper areas separated from said stilling chamber by walls, to separate heavier constituents from lighter constituents of the mixture, and means in the upper area above each separator housing for receiving lighter constituents.

5,288,405

WASTEWATER TREATMENT WITH ENHANCED BIOLOGICAL PHOSPHORUS REMOVAL AND RELATED PURIFICATION PROCESSES

James C. Lamb, III, Charlottesville, Va., assignor to Piedmont Olsen Hensley, Inc., Greenville, S.C.

Filed Jan. 27, 1993, Ser. No. 9,858
Int. Cl.[5] C02F *3/30*
U.S. Cl. 210—605 **20 Claims**

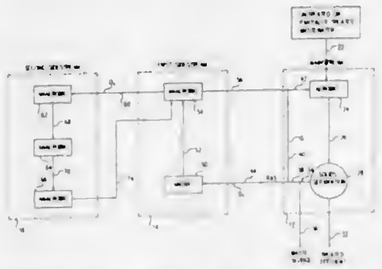
10. A biological wastewater treatment system having three interconnected, but separately controlled, systems permitting selection of desired organisms under optimal conditions and efficient utilization of the organisms to effect removal of wastewater constituents from an influent wastewater stream, said system comprising:

a mainstream biological treatment system including a biological treatment zone for receiving an influent stream of untreated or partially treated wastewater, a downstream solids separation zone for separating effluent from sludge,

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and means for returning sludge from the solids separation zone to the biological treatment zone as return sludge;

a first sidestream system in which organisms desired for removal of said constituents are selected under optimal conditions, said first sidestream system being connected to said mainstream sludge returning means to establish an inflow comprising a variably controlled potion of the return sludge, said first sidestream including at least one biological treatment zone receiving the inflow and operable at selected flow rates and retention times to provide means to optimize selection of desired organisms through assimilation of appropriate food materials, and means for



returning desired organisms so selected in the first sidestream to the mainstream biological treatment zone; and

a second sidestream system in which food needed for production of the desired organisms is produced, said second sidestream system comprising at least one biological treatment zone connected to establish a variably controlled inflow of liquor from the first sidestream system for flow through the cell under a selected flow rate and retention time conditions to provide means to encourage optimized biological production of organics that satisfy the metabolic needs of the desirable organisms, and means for conveying the organics so produced in the second sidestream to the first sidestream system.

5,288,406

PROCESS FOR BIOLOGICALLY PURIFYING WASTE WATERS

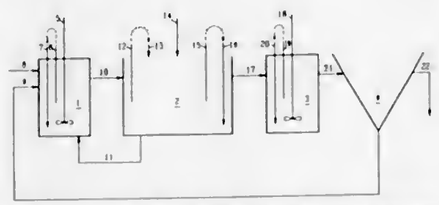
Theodor Stein, Kamen, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 650,045, Feb. 4, 1991, abandoned. This application Apr. 1, 1992, Ser. No. 865,830

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1990, 4004476

Int. Cl.[5] C02F *3/12*

U.S. Cl. 210—614 **6 Claims**



1. In a process for biologically purifying waste waters containing low to high concentrations of organic constituents and total nitrogen in which said waste water to be purified is aerated or exposed to oxygen in two stages, a portion of the waste water/activated sludge mixture draining from the second stage is recycled to the first stage, and the remainder of the waste water/activated sludge mixture draining from the second stage is separated in a settling tank, and the settled activated sludge is recycled to the first stage and the purified waste water is removed, the improvement which comprises mixing the components of the first stage and maintaining a redox potential E_H (pH 7) of below + 100 mV in the first stage while the components thereof are aerated or exposed to oxygen.

5,288,407

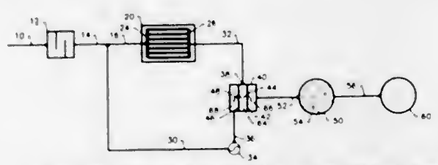
DENITRIFICATION SYSTEM

Russell S. Bodwell, Glen Head, and William S. Houck, Dix Hills, both of N.Y., assignors to Henderson and Bodwell, Plainview, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,813

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—617 **10 Claims**



1. A process for the microbiological nitrification and the microbiological denitrification of wastewater consisting of the steps of:

(a) removing settleable solids form the waste-water in a settling tank zone, producing a wastewater output and transporting this output to a fixed-bed nitrification field zone;

(b) nitrifying the wastewater output form the settling tank zone in the fixed-bed nitrification field zone by conversion of nitrogen, first to nitrite and then nitrate, by aerobic microbiological activity, producing a wastewater flow; and transporting the wastewater flow to a separation zone;

(c) splitting the wastewater flow from the nitrification field zone into a first stream and a second stream in said separation zone;

(d) recycling back the first stream to the nitrification field zone, such that a sufficient amount of the wastewater is recycled back into the nitrification filed zone so that there will be sufficient wetting of all the nitrification field zone in order to assure a continuous microbiological activity to act upon the nitrogen in the wastewater; and transporting the second stream for denitrification to a denitrification chamber zone;

(e) denitrifying the wastewater in the second stream in a fixed-bed denitrificaiton chamber zone with a microbiological denitrification media; and

(f) disposing of wastewater form the denitrification chamber zone through a discharge system.

5,288,408

METHOD OF GELATIN RECOVERY AND PURIFICATION FROM ENCAPSULATION PROCESSES

William J. Schmidt, Dresher; Michael F. Smith, Springfield, and James W. Neal III, King of Prussia, all of Pa., assignors to Chemical Industry Consultants, Inc., Springfield, Pa.

Filed Oct. 26, 1992, Ser. No. 965,965

Int. Cl.[5] B01D *11/00, 35/18*

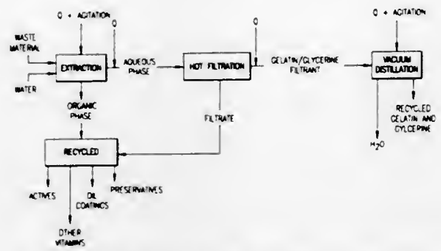
U.S. Cl. 210—634 **22 Claims**

1. A process for the recovery and purification of waste gelatin and glycerine resulting from the manufacture of soft gelatin capsules, which comprises the steps of:

(a) effecting dissolution of the gelatin and glycerine components of the waste in water such that an aqueous gelatin/-glycerine solution dispersed within the remaining components of said waste is formed;

(b) permitting said dispersion to settle into an upper oil phase and a lower aqueous gelatin/glycerine solution phase;

(c) separating said lower phase from said upper phase.



(d) hot filtering said lower phase to remove traces of said remaining components of said upper phase; and

(e) distilling at reduced pressure said lower phase until the desired concentration of gelatin and glycerine is achieved.

5,288,409

INHIBITING THE GROWTH OF ZEBRA MUSSELS

Richard P. Herrle, Greentree Boro, and Virginia Piermattie, Pittsburgh, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1993, Ser. No. 42,501

Int. Cl.[5] C02F *1/50*; A01N *25/00, 25/10*

U.S. Cl. 210—698 **2 Claims**

1. A method of inhibiting the settling of zebra mussels on a surface in an aqueous environment comprising contacting said aqueous environment with said surface which comprises a cured, copolymerized, resin composition comprising about 5–89% unsaturated polyester, about 1–40% N-phenyl maleimide, up to about 20% methacrylic acid or a lower alkyl ester thereof, and about 10–40% of a polymerizable monomer.

5,288,410

SCALE CONTROL IN AQUEOUS SYSTEMS

Dionisio Cuisia, Buffalo Grove, Ill., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 986,302, Dec. 7, 1992, abandoned, which is a division of Ser. No. 790,105, Nov. 7, 1991, Pat. No. 5,200,105. This application Mar. 30, 1993, Ser. No. 39,714

Int. Cl.[5] C02F *5/14*

U.S. Cl. 210—699 **8 Claims**

1. A method for inhibiting the deposition of scale and sludge in aqueous systems comprising adding to the aqueous system a composition containing at least three additives selected from the group consisting of;

(a) polyacrylic acid (PAA) having a molecular weight from 1,000 to 90,000, copolymer of allyl sulfonate and maleic anhydride (ASMA) having a molecular weight of from 1,000 to 10,000 and a monomer weight ratio of 1:10 to 10:1 and mixtures thereof,

(b) hydroxyethylidene diphosphonic acid (HEDPA), amine(trimethylene phosphonic acid) (AMP), diethylenetriamine pentaacetic acid (DTPA), and

(c) copolymer of acrylic acid and acrylamide (AAA) having a molecular weight of from 2,000 to 5,000 and a monomer weight ratio of 1:10 to 10:1, and wherein the composition contains at least one additive selected from each of (a), (b) and (c) supra in ration of a:b:c in the range (6–2):(6–2):(3-1) respectively on a weight basis, and in an amount effective to inhibit the deposition of scale.

5,288,411

CONTROL OF SCALE DEPOSITION IN GEOTHERMAL OPERATIONS

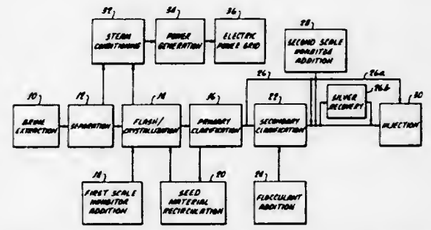
Darrell L. Gallup, Chino, and John L. Featherstone, El Centro, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 717,527, Jun. 19, 1991. This application Mar. 31, 1992, Ser. No. 861,323

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] C02F *5/14*

U.S. Cl. 210—700 **49 Claims**



1. A method for treating a feed geothermal brine containing silicon-containing components and naturally occurring radioactive materials comprising:

introducing said brine into a clarification zone in which silicon-containing components are induced to deposit by addition of a flocculating agent;

inhibiting the deposition of naturally occurring radioactive materials in said clarification zone by introducing into said clarification zone a crystal structure modifier; and

recovering from said clarification zone a product geothermal brine of substantially reduced content of silicon-containing components but containing a substantial proportion of the naturally occurring radioactive materials originally contained in said feed geothermal brine.

5,288,412

GRAY WATER PROCESSING SYSTEM

Michael T. Voorhees, 3131 Bell Dr., Boulder, Colo. 80301-2280; Linda M. Brown, and Richard F. Schaeff, both c/o Pecos River Learning Center, 1800 Old Pecos Trail, Santa Fe, N. Mex. 87501

Filed Jan. 9, 1992, Ser. No. 818,678

Int. Cl.[5] C02F *1/32*

U.S. Cl. 210—739 **12 Claims**

1. A method for processing gray water, comprising the combination of steps of:

collecting gray water;

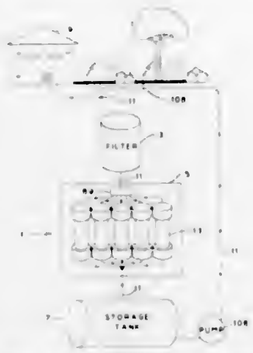
passing the collected gray water through a filter, the filtered gray water having a total volume;

dividing the filtered gray water into discrete flows of predetermined rates;

passing each of the discrete flows of filtered gray water respectively through a plurality of modules, each of said modules having a capacity corresponding to the volume of one of the discrete flows, wherein said discrete flows are passed to a first module until said first module receives one of said discrete flows of said filtered gray water equal to said capacity before the next sequential module receives one of said discrete flows, and wherein said discrete flows

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are passed only through a number of said modules whose aggregate capacity substantially equals said total volume;



irradiating each of said discrete flows of filtered gray water with ultraviolet radiation respectively in each of the modules to obtain filtered and irradiated gray water.

5,288,413

TREATMENT OF A WASTE SLUDGE TO PRODUCE A NON-STICKING FUEL

Humbert H. Chu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 782,185, Oct. 24, 1991, abandoned. This application May 22, 1992, Ser. No. 887,720

Int. Cl.[5] C02F *1/02*

U.S. Cl. 210—770 **11 Claims**

1. A process for the preparation of a solid fuel from a waste sludge containing solids, oil and from about 2% wt water to about 90% wt water which process comprises:

a) filtering the sludge under vacuum or under applied pressure or inert gas up to about 50 psia while utilizing a filter aid to maximally retain of oil in the filter cake, and

b) selectively removing moisture from the filter cake by drying at a temperature from about 100° C. to about 110° C. and at the pressure applied to the filter cake, thereby producing a high heating value, non-sticking solid fuel.

5,288,414

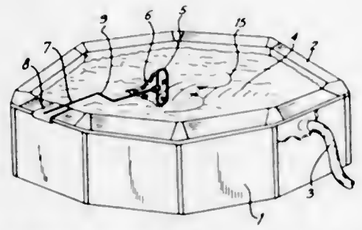
POOL SKIMMING DEVICE

Louis Mongiello, 4 Haskel La., Smithtown, N.Y. 11787

Filed Jun. 23, 1992, Ser. No. 902,671

Int. Cl.[5] B01D *35/027*; E04H *4/00*

U.S. Cl. 210—776 **8 Claims**



1. A method of automatically skimming debris off the surface of a pool having a center and an input surface current, said method comprising:

directing said input surface current along a path substantially toward said pool center, a distance inwardly of the side of the pool to create a current pattern that draws floating debris from water surface regions outside and on either side of the input current into the input current;

stably mounting a collection net directly in the path of the input surface current substantially inwardly of the sides of the pool and in said current pattern, wherein floating debris carried by the current is swept into said net.

5,288,415

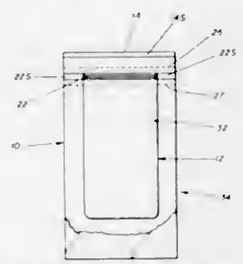
APPARATUS AND METHOD FOR SEPARATION OF BIOLOGICAL AGENTS

Joan L.-P. Chen-Wu, and Jing-Jung Chen, both of 464 Commonwealth Ave., Boston, Mass. 02215

Filed Jan. 28, 1992, Ser. No. 826,775

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—781 **8 Claims**



4. A process for separating and collecting biological agents from a suspension, which process comprises the steps of:

introducing said suspension into a first chamber having pores capable of allowing passage of said biological agents therethrough;

separating said biological agents from other particulate materials in said suspension by forcing them to pass through said pores; and

collecting said separated biological agents as a pellet at the bottom of a second chamber; wherein said separating step and said collecting step are performed simultaneously by filtration with the aid of centrifugal force.

5,288,416

FINISH FOR TEXTILE FIBERS CONTAINING SILAHYDROCARBON LUBRICANTS AND NONIONIC EMULSIFIERS HAVING A PLURALITY OF HYDROCARBON CHAINS

Randy D. Petrea, and Robert L. Schuette, both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 27, 1992, Ser. No. 825,969

Int. Cl.[5] D06M *13/00*

U.S. Cl. 252—8.6 **20 Claims**

1. A fiber finish composition comprising on a neat basis:

(a) from 10 to 95 parts by weight of a silahydrocarbon selected from compounds having the formula:

$$Si\,R_1\,R_2\,R_3\,R_4$$

and $R_1\,R_2\,R_3\,Si—(CH_2)_n—Si—R_1\,R_2\,R_3$ wherein R_1, R_2, R_3 and R_4 are independently selected from alkyl, aryl, or aralky, alkaryl and cycloalkyl; and n is an integer from 2 to 8, provided that said silahydrocarbon has at least 24 carbon atoms and is liquid at ambient temperature;

(b) from 5 to 90 parts by weight of an emulsifier selected from:

(i) branched alcohols having at least two aliphatic chains of C_4-C_{32} and from 12 to 36 total carbon atoms, which have been alkoxylated with from 3 to 30 moles of alkylene oxides selected from ethylene oxide, propylene oxide and glycidol; and

(ii) C_3-C_{90} polyhydric alcohols having at least three hydroxyl sites, which have been alkoxylated with from 5 to 200 moles of alkylene oxides selected from ethylene oxide, propylene oxide, butylene oxide and glycidol, provided that if any of said hydroxyl sites are primary alcohols, then said primary alcohols are reacted with a secondary hydroxyl forming alkylene oxide prior to alkoxylation, followed by esterification in an acidic medium with 1 to 6 moles of a C_{12}-C_{36} fatty acid.

5,288,417

FABRIC CONDITIONING COMPOSITIONS AND PROCESS FOR MAKING THEM

Herbert E. Bauer, Saddle Brook; Michael G. Clarke, Basking Ridge; John E. Lovas, Kearny; William R. Narath, Parsippany, and Andrew N. Williams, Franklin Lakes, all of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

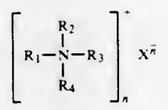
Filed Jul. 6, 1992, Ser. No. 909,359

Int. Cl.[5] D06M *13/325, 13/46*

U.S. Cl. 252—8.8 **3 Claims**

1. A continuous process for making an aqueous fabric conditioning composition comprising from 8% to 80% by weight of a cationic fabric conditioning agent and from 0.01% to 0.5% of an ionizable salt said process comprising the steps of:

(i) selecting a cationic fabric conditioning active of formula 1



wherein R_1 and R_2 are each hydrocarbyl groups containing from about 1 to about 25 carbon atoms, R_3 and R_4 are each hydrocarbyl groups containing from 1 to about 6 carbon atoms, X is an anion and n is an integer from 1 to about 3

(ii) adding the active to a continuous mixer,

(iii) dispersing the active in water under controlled shear in the continuous mixer to form a homogeneous dispersion of the active,

(iv) mixing the dispersion with 3 or more discrete portions of the ionizable salt added sequentially with about 4 or more seconds between the addition of each discrete portion under controlled shear to maintain the homogenous dispersion.

5,288,418

AMINE-COUPLED HINDERED PHENOLS AND PHOSPHITES AS MULTIFUNCTIONAL ANTIOXIDANT/ANTIWEAR ADDITIVES

Liehpao O. Farng, Lawrenceville; Andrew G. Horodysky, and William F. Olszewski, both of Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 3, 1992, Ser. No. 985,043

Int. Cl.[5] C10M *133/00, 137/12*

U.S. Cl. 252—49.9 **12 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor amount of a multifunctional antiwear/antioxidant additive product of reaction prepared by (a) reacting a hindered or semi-hindered alkylated phenol with an aldehyde or ketone and an aliphatic primary or secondary amines or diamine to form condensation products and (b) subsequently reacting said condensation products with an aldehyde or ketone and a hydrocarbyl phosphite to form amine coupled phenol-phosphite adducts and wherein the reaction is carried out at temperatures varying from ambient to about 250° C. under ambient up to 1000 psi or autogenous pressures for a time sufficient to obtain the desired amine coupled phenol-phosphite additive product of reaction and wherein the reaction is carried out in molar ratios of reactants varying from equimolar to more than molar to less than molar.

9. A multifunctional antiwear/antioxidant lubricant additive product of reaction prepared by (a) reacting a hindered or semi-hindered alkylated phenol with an aldehyde or ketone and aliphatic primary or secondary amines or diamines to form condensation products and (b) subsequently reacting said condensation products with an aldehyde or ketone and a hydrocarbyl phosphite to form amine coupled phenol-phosphite adducts wherein the reaction is carried out at temperatures varying from ambient to about 250° C. under ambient to about 1000 psi or autogenous pressures for a time sufficient to obtain the desired additive product of reaction and wherein the reaction is carried out in molar ratios of reactants varying from equimolar to more than molar to less than molar.

12. A method of preparing an improved lubricant composition comprising adding to said lubricant a minor multifunctional antiwear/antioxidant amount of from about 0.001 to about 10 wt% based on the total weight of the composition of an additive product of reaction as described in claim 9.

5,288,419

GLYCOL-BASED POLYCARBOXYLATE-CONTAINING ANTIFREEZE/COOLANT FORMULATIONS FOR RESISTING CAVITATION EROSION-CORROSION ON ALUMINUM

David E. Turcotte, Woodhaven; James T. Lyon, Novi; John J. Conville, Canton; Shrikant V. DeSai, Grosse Ile, and Stanley T. Hirozawa, Birmingham, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 23, 1991, Ser. No. 734,717

Int. Cl.[5] C09K *5/00*

U.S. Cl. 252—76 **8 Claims**

1. A silicate and phosphate salt-containing glycol-based automotive antifreeze/coolant solution which resists cavitation errosion-corrosion on aluminum or aluminum alloys including a cavitation errosion-corrosion rate reducing effective amount of a polycarboxylate additive which is at least one of (i) a sodium salt of a copolymer of acrylic acid and maleic acid, and (ii) a secondary alcohol modified polyacrylic acid.

5,288,420

SOLID LAUNDRY PRE-SPOTTER COMPOSITION AND METHOD OF USE

John C. Mandy, Woodbridge, N.J., assignor to Fluid Packaging Company, Inc., Lakewood, N.J.

Filed Jun. 22, 1992, Ser. No. 901,785

Int. Cl.[5] C11D *9/60, 17/00*; D06L *1/08, 1/16*

U.S. Cl. 252—121 **71 Claims**

1. A soil and stain remover composition in applicator stick form for application to fabric as an aid in cleaning, said composition comprising:

a. from about 11 to about 15% by weight of sodium stearate;

b. from about 8 to about 11% by weight of propylene glycol;

c. from about 4 to about 7% by weight of a polyethylene glycol;

d. from about 12 to about 20% by weight of an alkyl aromatic sulfonic acid surfactant, an alkyl aromatic sulfonate surfactant that has been formed in situ by the reaction of said alkyl aromatic sulfonic with a strong base, or a mixture thereof;

e. from about 2 to about 6% by weight of a strong base capable of reacting in situ with said alkyl aromatic sulfonic acid surfactant to form a semi-solid sulfonate product;

f. from about 20 to about 35% by weight of at least one nonionic surfactant, wherein said nonionic surfactant is different from said alkyl aromatic sulfonic acid surfactant or said alkyl aromatic sulfonate surfactant above;

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g. from about 2 to about 10% by weight of an enzyme; and
h. from about 24 to about 30% by weight water;
wherein said composition has a pH of between about 9.0 and about 9.6, a drop point of greater than about 115° F., and a penetrometer reading of at least about 55 units (5.5 mm).

5,288,421

SOLID LAUNDRY PRE-SPOTTER COMPOSITION CONTAINING SODIUM BICARBONATE AND METHOD OF USE

John C. Mandy, Woodbridge, N.J., assignor to Fluid Packaging Company, Inc., Lakewood, N.J.

Filed Jul. 13, 1992, Ser. No. 912,191
Int. Cl.[5] C11D *9/60, 17/00;* **D06L** *1/08, 1/16*
U.S. Cl. 252—121 **59 Claims**

1. A soil and stain remover composition in applicator stick form for application to fabric as an aid in cleaning, said composition comprising:
a. from about 10 to about 15% by weight of sodium stearate;
b. from about 8 to about 11% by weight of propylene glycol;
c. from about 3 to about 6% by weight of a polyethylene glycol;
d. from about 10 to about 20% by weight of an alkyl aromatic sulfonic acid surfactant, an alkyl aromatic sulfonate surfactant that has been formed in situ by the reaction of said alkyl aromatic sulfonic with a strong base, or a mixture thereof;
e. from about 2 to about 6% by weight of a strong base capable of reacting in situ with said alkyl aromatic sulfonic acid surfactant to form a semi-solid sulfonate product;
f. from about 20 to about 35% by weight of at least one nonionic surfactant, wherein said nonionic surfactant is different from said alkyl aromatic sulfonic acid surfactant or said alkyl aromatic sulfonate surfactant above;
g. from about 2 to about 10% by weight of an enzyme;
h. from about 20 to about 30% by weight water; and
i. an amount of sodium bicarbonate sufficient to reduce the pH of said composition to a range of about 8.2 to about 9.0;
wherein the composition exhibits a drop point greater than about 115° F. and a penetrometer reading of at least about 55 units (5.5 mm).

5,288,422

AZEOTROPE-LIKE COMPOSITIONS OF 1,1,1,3,3,5,5,5-OCTAFLUOROPENTANE, CHLORINATED ETHYLENES, AND OPTIONALLY NITROMETHANE

Rajat S. Basu, Williamsville; Ellen L. Swan, Ransomville, and David P. Wilson, East Amherst, all of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 15, 1993, Ser. No. 31,740
Int. Cl.[5] C11D *7/30, 7/50;* **C23G** *5/028*
U.S. Cl. 252—172 **10 Claims**

1. Azeotrope-like compositions consisting essentially of from about 90 to about 48 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 10 to about 50 weight percent trichloroethylene and from about 0 to about 2 weight percent nitromethane which boil at about 66.4° C. at 760 mm Hg; or from about 99.5 to about 83.8 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 0.5 to about 15.2 weight percent perchloroethylene and from about 0 to about 2 weight percent nitromethane which boil at about 71.1° C. at 760 mm Hg.

5,288,423

PROCESS FOR PREPARING PERFUMED DETERGENT PRODUCTS

John M. Behan, Ashford; Jeremy N. Ness, Chartham; Keith D. Perring, Ashford, and William M. Smith, Folkstone, all of Great Britain, assignors to Unilever Patent Holdings, B.V., Rotterdam, Netherlands

Filed Jul. 10, 1991, Ser. No. 727,635
Claims priority, application European Pat. Off., Jul. 11, 1990, 90307587.7
Int. Cl.[5] C11D *1/72, 1/74*
U.S. Cl. 252—174.11 **16 Claims**

1. A process for incorporating a perfume into a detergent product comprising the steps of:
combining a dispersed perfume with one or more non-ionic emulsifiers at a temperature sufficient to form a homogeneous non-aqueous liquid phase;
heating an aqueous phase, consisting essentially of water, to a temperature substantially the same as the non-aqueous liquid phase;
mixing the aqueous phase and non-aqueous phase under shear conditions such that an emulsion containing liquid crystal structures, which surround the dispersed perfume is formed;
dispersing the structured emulsion into a detergent composition.

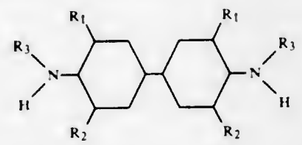
5,288,424

THERMODYNAMIC MIXTURE OF ALKYL SUBSTITUTED BI(CYCLOHEXYLAMINE) ISOMERS

Peter A. Lucas, Allentown; Gamini A. Vedage, Bethlehem, and Jeremiah P. Casey, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 743,463, Aug. 9, 1991. This application Jul. 15, 1993, Ser. No. 92,042
Int. Cl.[5] C08G *59/50*
U.S. Cl. 252—182.13 **8 Claims**

1. A mixture of bridged bi(cyclohexylamine) isomer derivatives represented by the formula:



wherein;
R^1 is hydrogen or C_{1-4} alkyl;
R^2 is C_{1-4} alkyl; and
R^3 is hydrogen or C_{1-4} alkyl
and characterized in that at least 50% of the isomers in the mixture are in the trans, trans-isomer configuration.

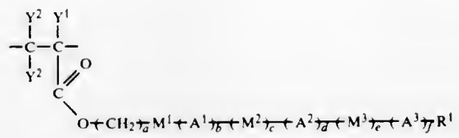
5,288,425

FERROELECTRIC, LIQUID-CRYSTALLINE POLYMERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN ELECTROOPTICAL COMPONENTS

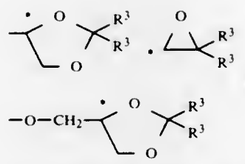
Günter Scherowsky; Andreas Schliwa, and Wolfgang Trapp, all of Berlin, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP89/00745, § 371 Date Jan. 3, 1991, § 102(e) Date Jan. 3, 1991, PCT Pub. No. WO90/00584, PCT Pub. Date Jan. 25, 1990
PCT Filed Jun. 29, 1989, Ser. No. 635,180
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823154
Int. Cl.[5] C09K *19/52, 19/34, 19/12;* **C08G** *63/00*
U.S. Cl. 252—299.01 **4 Claims**

1. A ferroelectric, liquid-crystalline polymer comprising repeating units of the formula (I)



in which
Y^1=H or CH_3
Y^2=H
R^1=



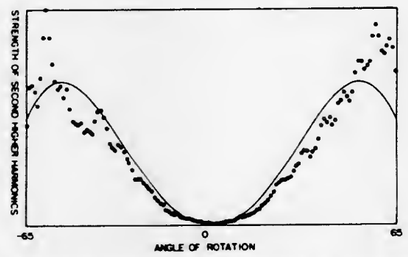
or an achiral alkyl having 2 to 16 carbon atoms, and
R^3=H or CH_3
a=2 to 20
b, c, d, e and f=0 or 1, where d+e+f=2 or 3
A^1, A^2 and A^3=identical or different 1,4-phenylene or 3,6-pyrimidinediyl, with the proviso that at least one of the radicals A^1, A^2 or A^3 is not 1,4-phenylene
M^2 and M^3=identical or different CO—O or O—CO
M^1= O.

5,288,426

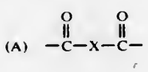
NONLINEAR OPTICAL MATERIALS

Hiroyuki Itoh; Takafumi Ishii; Takehiro Toyooka, all of Kanagawa, and Tetsuo Satoh, Tokyo, all of Japan, assignors to Nippon Oil Company. Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 340,907, Apr. 20, 1989, abandoned. This application Oct. 23, 1990, Ser. No. 601,026
Claims priority, application Japan, Apr. 21, 1988, 63-96766
Int. Cl.[5] C09K *19/54, 19/52;* **F21V** *9/00;* **G02F** *1/13*
U.S. Cl. 252—299.5 **16 Claims**

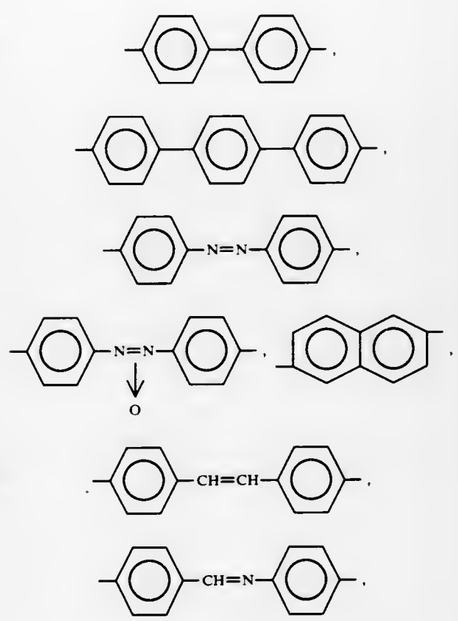


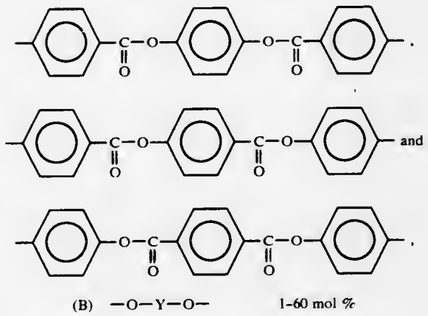
1. A nonlinear optical material comprising (a) a compound exhibiting a nonlinear optical response and having a secondary molecular susceptibility larger than 1×10^{-30} esu and (b) a chiral smectic C liquid crystalline polyester consisting essentially of the structural units having the general formulae (A), (B) and (C):



(A) 40-60 mol %

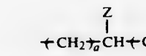
wherein X is a structural unit selected from the group consisting of



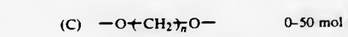


(B) —O—Y—O— 1-60 mol %

wherein Y is a structural unit having the general formula



wherein a and b are each an integer of 0-10, the sum of a and b is in the range of 2-11, a is not equal to b, and Z is C_{1-3} alkyl, F, Cl or Br and



(C) 0-50 mol %

wherein n is an integer of 2-10.

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5,288,427

ELECTROOPTICAL DISPLAY ELEMENT

Georg Weber, Erzhausen, Fed. Rep. of Germany; Bernhard Scheuble, Kanagawa, Japan; Rudolf Eidenschink, Bodenheim, and Andreas Wächtler, Griesheim, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP88/00090, § 371 Date Oct. 17, 1988, § 102(e) Date Oct. 17, 1988, PCT Pub. No. WO88/06178, PCT Pub. Date Aug. 25, 1988

Continuation of Ser. No. 272,831, Oct. 17, 1988, abandoned. This PCT application Feb. 8, 1988, Ser. No. 815,832

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1987, 3705071

Int. Cl.[5] C09K *19/34, 19/30, 19/52*

U.S. Cl. 252—299.61 **13 Claims**

1. A TFT-addressed electrooptical LC display element containing a dielectric with a positive dielectric anisotropy and being based on a TN cell having a short switch-on time T_{on} when the voltage is switched from a first voltage below or approximately at the threshold voltage to a second voltage on the increase of the electrooptical characteristic line, said dielectric consisting essentially of at least one component of formula I

$$R^1-A^1-Z^1-A-O-R^2$$

wherein

R^1 and R^2, independently of one another, are each alkyl having 1 to 9 C atoms, in which, in addition, one or two CH_2 groups may be replaced by —CH=CH—, or one of the two groups R^1 and R^2 is H, and R may be C_{1-5}-straight chain alkanoyl,

Z^1 is $—CH_2—O—$, $—OCH_2$, $—CH_2CH_2—$ or a single bond,

A^1 is trans-1,4-cyclohexylene in which, in addition, one or two nonadjacent CH_2 groups may be replaced by O and/or S, or 1,4-cyclohexenylene, and

A is unsubstituted or fluorine-substituted 1,4-phenylene,

at least one component of formula II

$$R^3-A^2-Z^2-A^3-Z^3-A'-R^4 \qquad II$$

wherein

R^3 is H or alkyl having 1 to 9 C atoms, in which, in addition, one or two nonadjacent CH_2 groups may be replaced by —O—, —CO—, —O—CO—, —CO—O— and/or —CH=CH—,

R^4 is H, alkyl having 1 to 9 C atoms in which, in addition, one or two nonadjacent CH_2 groups may be replaced by —O—, —CO—, —O—CO—, —CO—O— and/or —CH=CH—, halogen, NCS or N_3,

Z^2 and Z^3 are each $—CH_2CH_2—$, $—OCH_2—$, $—CH_2O—$, —O—CO—, —CO—O—, or a single bond,

A^2 and A^3 are each trans-1,4-cyclohexylene in which, in addition, one or two nonadjacent CH_2 groups may be replaced by O and/or S,

optionally a component of formula IV

$$R^3-A^2-Z^2-A^3-(Z^4-A^4)_m-Z^3-A'-(Z^5-A^5)_n-R^4 \qquad IV$$

wherein

Z^4 and Z^5 are each $—CH_2CH_2—$, $—OCH_2—$, $—CH_2O—$, —O—CO—, —CO—O— or a single bond,

A^4 and A^5 are each trans-1,4-cyclohexylene or unsubstituted or fluorine-substituted 1,4-phenylene in which, in addition, one or two CH groups may be replaced by N,

m and n are each 0 or 1 and (m+n) is 1,

A' is unsubstituted or fluorine-substituted 1,4-phenylene in which, in addition, one or two CH groups may be replaced by N,

and R^3, R^4, A^2, A^3, Z^2 and Z^3 have the meaning given above.

5,288,428

LIQUID CRYSTAL COMPOUNDS HAVING A TERMINAL ALKOXY PROPENYL GROUP

Stephen Kelly, Möblin, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

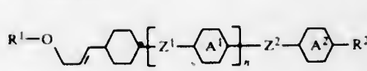
Filed Aug. 6, 1991, Ser. No. 741,029

Claims priority, application Switzerland, Aug. 15, 1990, 2651/90

Int. Cl.[5] C09K *19/30, 19/34, 19/12;* **C07C** *41/00*

U.S. Cl. 252—299.63 **21 Claims**

1. A compound of the formula



I

wherein rings A^1 and A^2 each independently are unsubstituted or halogen-substituted 1,4-phenylene, pyridin-2,5-diyl, pyrimidin-2,5-diyl, pyrazin-2,5-diyl or trans-1,4-cyclohexylene or trans-1,3-dioxane-2,5-diyl; n is 0 or 1; Z^1 and Z^2 each independently are a single covalent bond or $—CH_2CH_2—$, —COO—, —OOC—, $—OCH_2—$, $—CH_2O—$, $—(CH_2)_4—$, $—O(CH_2)_3—$, $—(CH_2)_3O—$, the trans form of $—O—CH_2—CH=CH—$, $—CH=CH—CH_2—O—$, $—(CH_2)_2CH=CH—$ or $—CH=CH—(CH_2)_2—$; R^1 is alkyl of 1 to 12 carbon atoms; R^2 is halogen, cyano, or trifluoroacetyl, or R^2 is alkyl, alkoxy, alkenyl, alkenyloxy, alkoxyalkyl, alkoxyalkoxy, alkenyloxyalkyl, alkenyloxyalkoxy, alkyloxyalkenyl or alkyloxyalkenyloxy, each of such R^2 moieties being unsubstituted or fluorine substituted.

5,288,429

PROCESS FOR THE PRODUCTION OF MOULDINGS

Wulf von Bonin, Odenthal-Hahnenberg, and Ulrich von Gizycki, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 18, 1992, Ser. No. 885,090

Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117077

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] C04B *14/00*

U.S. Cl. 252—378 R **10 Claims**

1. A process for the production of mouldings from expandable graphite, in which water or a water-containing liquid is added to expandable graphite to form a moist preparation containing not less than 2% wt. water and the resulting moist preparation form of the expandable graphite is heated in moulds to temperatures above 180° C. to expand it within the mould.

5,288,430

CONDUCTIVE PASTES

Chika Amemiya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,491

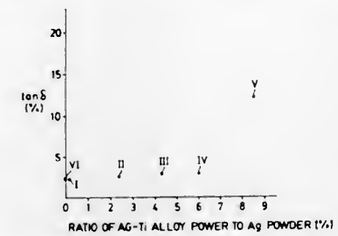
Claims priority, application Japan, Apr. 12, 1991, 3-079420; Apr. 30, 1991, 3-126879

Int. Cl.[5] H01B *1/00, 1/02*

U.S. Cl. 252—512 **12 Claims**

1. A conductive paste prepared by kneading a composition

comprising silver metal powder, an organic vehicle, and a silver-titanium alloy powder contained in an amount of 0.1 to



6.0% by weight based on the amount of the silver metal powder.

5,288,431

LIQUID LAUNDRY DETERGENT COMPOSITIONS WITH SILICONE ANTIFOAM AGENT

Alan C. Huber, Hamilton, and Rajan K. Panandiker, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

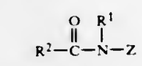
Continuation-in-part of Ser. No. 898,851, Jun. 15, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,061

Int. Cl.[5] C11D *1/82, 1/66, 3/32, 3/37*

U.S. Cl. 252—548 **12 Claims**

1. A homogenous liquid laundry detergent composition, comprising:

a. from about 1 to about 30 weight % of polyhydroxy fatty acid amide having the formula



wherein R^1 is H, C_1 to C_4 hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl, or a mixture thereof, R^2 is a C_5 to C_{31} hydrocarbyl, and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected thereto, or an alkoxylated derivative thereof;

b. from about 0.001 to about 1 weight % of silicone antifoam composition comprising by weight % of said antifoam composition: (1) from about 5% to about 50% of a polyorganosiloxane and a resinous siloxane or a silicone resin-producing silicone compound; (2) from about 0.1% to about 15% of a finely divided filler material, (3) from about 0.01% to about 5% of a catalyst to promote formation of silanolates; (4) from about 1% to about 40% of at least one nonionic silicone surfactant; and (5) from about 10% to about 80% of a copolymer of polyethylenepolypropylene glycol having a solubility in water at room temperature of more than about 2 weight %; and without polypropylene glycol; and

c. from about 1 to about 50 weight % of anionic or amphoteric or additional nonionic surfactant.

5,288,432

HIGH TEMPERATURE SYNTHETIC LUBRICANTS AND RELATED ENGINE LUBRICATING SYSTEMS

Alfred K. Jung, Millwood, N.Y., assignor to Akzo America Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 909,432, Sep. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,217, Dec. 20, 1985, abandoned. This application Feb. 12, 1987, Ser. No. 26,227

Int. Cl.[5] C10M *169/04, 105/36*

U.S. Cl. 252—565 **4 Claims**

1. A method of lubricating an internal combustion engine operating at a ring reversal temperature of at least 343° C. which comprises contacting the moving parts of the engine with a lubricant composition comprising a predominant amount of a non-neo-carbon polycarboxylic ester ingredient capable of escaping with the exhaust gases of the engine when operated at such a temperature and a lesser amount of an organophosphorus compound, wherein said polycarboxylic ester ingredient comprises a blend of a predominant amount of a benzene tricarboxylic ester with a lesser amount of a benzene dicarboxylic acid ester.

5,288,433

ELECTROCHROMIC DEVICE AND A METHOD TO MANUFACTURE THE SAME

Jim Stevens, Chalmers c/o Tekniska Högskola, Göteborg, Sweden S-412 96

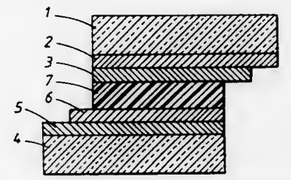
PCT No. PCT/SE89/00226, § 371 Date Dec. 3, 1990, § 102(e) Date Dec. 3, 1990, PCT Pub. No. WO89/10578, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 24, 1989, Ser. No. 603,674

Claims priority, application Sweden, Apr. 29, 1988, 8801637-3

Int. Cl.[5] G02F *1/00, 1/01*

U.S. Cl. 252—583 **4 Claims**



1. An electrochromic optical device comprising a first substrate, a first transparent conductor on one side of said first substrate, a first electrochromic layer on the side of said first transparent conductor opposite said first substrate, a second substrate, a second transparent conductor on one side of said second substrate, a second electrochromic layer on the side of said second transparent conductor opposite said second substrate, the two substrates with their respective sides carrying the respective transparent conductors and electrochromic layers facing each other and being laminated to each other by means of a solid state polymeric material doped with a metal salt said metal salt being selected from the group consisting of $LiClO_4$, $NaCF_3SO_3$, $LiCF_3SO_3$, LiSCN and NaSCN, said metal salt being capable of working as an ion conductor, wherein the ion conductor comprises a poly(methylmethacrylate) and a polyether.

5,288,434

HEPA FILTER DISSOLUTION PROCESS

Ken N. Brewer, Arco, and James A. Murphy, Idaho Falls, both of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 933,144

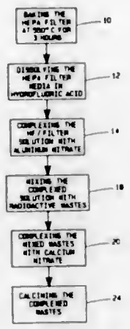
Int. Cl.[5] G21F *9/00*

U.S. Cl. 252—626 **26 Claims**

1. A process for reducing the volume of a contaminated HEPA filter comprising dissolving the HEPA filter media in hydrofluoric acid solution of a strength required to have a

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minimal amount of free hydrofluoric acid at the end of the dissolution to provide that filter dissolution is complete, silica



gel (SiO_2) is minimized, and silicon fluoride (SiF_4) is maximized.

5,288,435

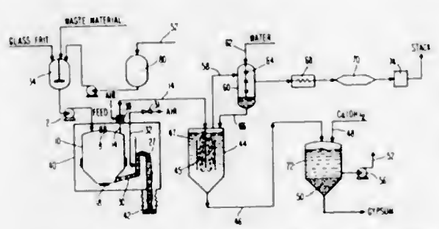
TREATMENT OF RADIOACTIVE WASTES

John D. Sachse, Pittsburgh; Larry R. Eisenstatt; Walter P. Drosjack, both of Penn Township, Westmoreland County; David H. Weigle, Normalville, and C. Patrick Keegan, South Huntingdon Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1992, Ser. No. 877,299

Int. Cl.[5] G21C *21/00*

U.S. Cl. 264—0.5 **9 Claims**



1. A method of treating radioactive waste material comprising sulfur compounds, comprising:

(a) feeding an aqueous feed slurry comprising radioactive waste material comprising sulfur compounds and glass forming material into a melter, said melter comprising a molten glass pool and a plenum area above the glass pool, whereby said waste material forms solid ash and waste gas, a portion of the solid ash being incorporated into the glass pool;

(b) combusting said waste gas in the plenum area for an average residence time of at least about 3 seconds, to form an off-gas comprising sulfur compounds by contacting said waste gas with oxygen;

(c) solidifying a portion of the sulfur compounds contained within said off-gas by contacting said off-gas with an aqueous solution in a scrubber to produce sulfuric acid and scrubber off-gas and where the sulfuric acid is contacted with calcium hydroxide to form gypsum and gypsum-water; and

(d) recycling a portion of the gypsum-water into the aqueous feed slurry.

5,288,436

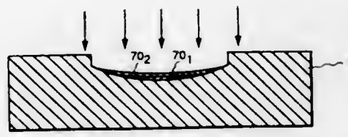
METHODS OF FABRICATING A COLLAGEN LENTICULE PRECURSOR FOR MODIFYING THE CORNEA

Yung S. Liu, Niskayuna, N.Y.; Keith P. Thompson, Atlanta; Raymond P. Gailitis, Decatur, both of Ga.; Seth R. Banks, Milwaukee, Wis., and Gary C. Taylor, Fair Oaks, Calif., assignors to Colloptics, Inc., Palo Alto, Calif.

Division of Ser. No. 609,976, Nov. 6, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 855,367

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.4 **9 Claims**



1. A method of fabricating a partially cured non-water soluble collagen lenticule precursor in layers comprising the steps of:

(a) providing an anterior surface mold;

(b) depositing a quantity of curable viscous collagen in said anterior mold to form a layer;

(c) partially curing said viscous collagen layer;

(d) repeating steps (b) and (c) until a preform having a desired thickness has been formed;

(e) removing said preform from said anterior mold.

5,288,437

PROCESS TO PRODUCE THIN FILM

Guenther Crass, Taunusstein; Siegfried Janocha, Wiesbaden, and Gisbert Bammert, Eltville-Rauenthal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 878,258

Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114670

Int. Cl.[5] B29C *55/12*

U.S. Cl. 264—25 **10 Claims**

1. A process for producing biaxially oriented thermoplastic films comprising;

A) superimposing together unoriented thermoplastic films;

B) heat treating the superimposed films at a temperature in the range of from about 50° C. to 90° C. to improve the stretchability of the films;

C) heating the heat treated superimposed films immediately following said heat treating step B) and in the absence of intermediate steps to a temperature sufficient for stretching, and

D) biaxially stretching the superimposed films to a thickness of about 2 μm or less wherein the films are biaxially oriented.

5,288,438

CARBORANE CATALYZED GRAPHITIZATION OF POLYARYLACETYLENE (PAA)

Rafael J. Zaldivar, Tarzana; Ross W. Kobayashi, Long Beach, both of Calif.

Filed Nov. 22, 1991, Ser. No. 796,504

Int. Cl.[5] C01B *31/00*

U.S. Cl. 264—29.6 **1 Claim**

1. A process for producing a carbon-carbon composite comprising a carbon matrix reinforced by carbon fibers, the method comprises the steps of:

a. preparing the matrix from a blend of polyarylacetylene (PAA) and carborane ($C_2B_{10}H_{12}$) in a concentration of 1 to 5 boron weight percent solution in a solvent;

b. orienting the carbon fibers within the blend to provide a precursor for the carbon-carbon composite; and

c. curing and heat treating the precursor in a non-reactive atmosphere up to 2500 degrees Centigrade to produce the carbon-carbon composite.

5,288,439

METHOD OF INSTALLING A POST

H. Nash Babcock, Old Greenwich, and Edward P. Holub, Trumbull, both of Conn., assignors to Nomix Corporation, Fairfield, Conn.

Continuation-in-part of Ser. No. 199,556, May 27, 1988, Pat. No. 5,108,790, which is a continuation-in-part of Ser. No. 101,908, Sep. 28, 1987, Pat. No. 4,839,115, which is a division of Ser. No. 53,561, May 21, 1987, Pat. No. 4,732,782, which is a continuation-in-part of Ser. No. 843,316, Mar. 24, 1986, abandoned, and a continuation-in-part of Ser. No. 168,715, Mar. 16, 1988, Pat. No. 5,219,222, and a continuation-in-part of Ser. No. 49,906, May 15, 1987, Pat. No. 4,747,878. This application May 2, 1990, Ser. No. 518,040

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] E04B *1/16*

U.S. Cl. 264—32 **16 Claims**

1. A method of installing a post in a post hole comprising:

a) providing a dry fast setting cementitious composition having a set time, the cementitious composition being in the form of finely divided particles, the cementitious composition comprising at least one cement binder;

b) providing a post hole;

c) locating a post in the post hole;

d) providing a volume of water in the post hole;

e) pouring an amount of dry cementitious composition into the volume of water, the volume of water being greater than the amount necessary for hydration of the poured amount of cementitious composition,

the water contacts the particles of the cementitious composition and hydrates the particles, and

the major portion of the particles of the cementitious composition have approximately the same drop rate through the volume of water;

f) allowing the cementitious composition to drop through the water, displacing the excess water as a result of the dropping of the cementitious composition; and

g) allowing the hydrated cementitious composition to form into a cured substantially non-segregated mass.

5,288,440

METHOD AND APPARATUS FOR CONTROLLING POWDER MOLDING PRESS

Takeshi Katagiri, Machida; Masao Yamamoto; Tukasa Tajima, both of Kawasaki, and Siro Sirasaki, Yokohama, all of Japan, assignors to Yoshizuka Seiki Co., Ltd., Kawasaki, Japan

Filed Feb. 4, 1992, Ser. No. 830,661

Claims priority, application Japan, May 2, 1991, 3-130657

Int. Cl.[5] B29C *43/02*

U.S. Cl. 264—40.5 **10 Claims**

1. A method of controlling a powder molding press in which a stepped mold product having a plurality of stepped portions is molded by compressing powder within a mold by relatively moving an upper punch assembly, a lower punch assembly and the mold, the method comprising the steps of:

detecting a speed ratio of moving speeds of the upper and lower punch assemblies at a time of compressing the respective stepped portions of the mold product during a compressing time from a pressing start time to a pressing completion time;

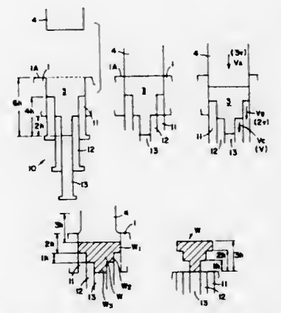
detecting a compression ratio of compressed dimensions of the stepped portions of the mold product; and

controlling relative moving speeds of the upper punch assembly, the lower punch assembly and the mold so that the speed ratios substantially accord with the compression ratios of the respective stepped portions of the mold product.

6. An apparatus for controlling a powder molding press in which a stepped mold product having a plurality of stepped portions is molded by compressing powder within a mold by relatively moving an upper punch assembly, a lower punch assembly and the mold, the apparatus comprising:

means for respectively driving and relatively moving the upper punch assembly, the lower punch assembly and the mold;

means for detecting positions of the upper punch assembly, the lower punch assembly and the mold, respectively;



means for detecting moving speeds of the upper punch assembly, the lower punch assembly and the mold at a time of compressing the respective stepped portions of the mold product during a compressing time from a pressing start time to a pressing completion time;

means for detecting a compressing pressure with respect to the stepped portions of the mold product; and

means for controlling the driving means to control the relative moving speeds of the upper punch assembly, the lower punch assembly and the mold so that speed ratios of the upper and lower punch assemblies substantially accord with compression ratios of compression dimensions of the respective stepped portions of the mold product.

5,288,441

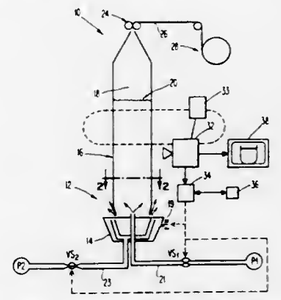
SYSTEM AND METHOD FOR EXTRUDER FROST LINE DETECTION

Steven L. Collins, 282 Emerald Dr., Yardley, Pa. 19067

Filed Dec. 24, 1992, Ser. No. 996,450

Int. Cl.[5] B29C *47/92*

U.S. Cl. 264—40.2 **30 Claims**



1. An improved synthetic resin film blowing system of the kind having (a) a die head for ejecting a continuous tube of said

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film, said die head having a die gap for adjusting the thickness of said film as said film leaves said die head, an extruder screw for adjusting the speed of ejection of said tube from said die head, blowing means for inflating said tube to form a bubble of said film, and cooling means for blowing external cooling air around said bubble; (b) measuring means downstream of said die head for measuring the temperature of said bubble; (c) flattening means spaced downstream of said measuring means for flattening said bubble to form a flattened web thereof; and (d) coil means for coiling said flattened web into a roll downstream of said flattening means; the improvement wherein said measuring means comprises an infrared camera for measuring and for providing a multi-dimensional profile of infrared radiation levels emitted by said bubble, said camera measuring said radiation levels simultaneously at more than one point on said bubble, said camera located proximate said bubble to multi-dimensionally measure the temperature at points on said bubble between said die head and proximate to and downstream of the frost line of said bubble.

2. A method for controlling a synthetic resin film blowing system of the kind having (a) a die head for ejecting a continuous tube of said film, said die head having a die gap for adjusting the thickess of said film as said film leaves said die head, an extruder screw for adjusting the speed of ejection of said tube from said die head, blowing means for inflating said tube to form a bubble of said film, and cooling means for blowing external cooling air around said bubble; (b) measuring means downstream of said die head for measuring the temperature of said bubble; (c) flattening means spaced downstream of said measuring means for flattening said bubble to form a flattened web thereof; and (d) coil means for coiling said flattened web into a roll downstream of said flattening means;

wherein the method comprises the steps of:

measuring the temperature of said bubble simultaneously at at least two points on said bubble to provide a multi-dimensional profile of the temperature of said bubble in the region between said die head and proximate to and downstream of the frost line of said bubble;

comparing the temperature at each measured point with a preselected value for the temperature at each measured point; and

controlling the output of said film blowing system to maintain the temperature at each measured point on said bubble substantially at said preselected value.

5,288,442

PROCESS FOR THE MANUFACTURE OF A COMPLEX MOULDED STRUCTURE, AND ESPECIALLY OF A SKI

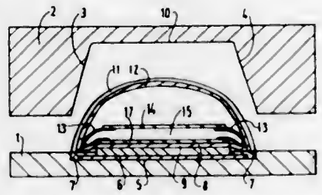
Jean Bauvois, Villard De Lans, France, assignor to Skis Rossignol S.A., France

Filed Jun. 18, 1992, Ser. No. 900,435

Claims priority, application France, Jul. 31, 1991, 91 09970

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—45.2 **13 Claims**



1. A process for manufacturing a complex molded structure having a plastic foam core surrounded by an upper half-shell and a lower half-shell, said process comprising:

depositing in a mold a first element which forms the lower half-shell;

depositing on the first element a tubular element having at least a rigid, non-stretchable upper portion and deformable side portions;

depositing on the tubular element a second element which forms the upper half-shell;

closing the mold;

injecting into the tubular element reactants which react to form a foam which expands in situ to press the second element against walls of the mold;

cooling the contents of the mold; and

opening the mold to remove the complex molded structure.

5,288,443

MOLD RELEASE AGENT FOR CERAMIC MOLDS USED IN CERAMIC SLIP CASTING PROCESSES

Howard H.-D. Lee, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1992, Ser. No. 996,532

Int. Cl.[5] C04B *33/28*

U.S. Cl. 264—56 **7 Claims**

1. A method for slip casting ceramic articles from submicron ceramic powders, the method comprising the steps of:

providing an absorbent alumina mold having a cavity, the absorbent alumina mold having submicron pores formed therein so as to significantly reduce the tendency for a slip cast ceramic article to adhere to the cavity;

applying a mold release agent to a surface of the cavity, the mold release agent comprising a suspension of organic solids; and

pouring into the cavity a quantity of powdered ceramic materials dispersed in a liquid so as to form the slip cast ceramic article therefrom, the powdered ceramic materials comprising submicron ceramic particles;

whereby the mold release agent substantially forms a permeable barrier layer between the absorbent alumina mold and the quantity of powdered ceramic materials, the permeable barrier layer being substantially nonreactive with the absorbent alumina mold and the quantity of powdered ceramic materials dispersed in the liquid, while also permitting passage of the liquid through to the absorbent alumina mold.

5,288,444

CONTROLLED RESISTIVITY CERAMIC FIBERS AND PROCESS FOR MAKING THEM

Harris A. Goldberg, Colonia; Ilmar L. Kalnin, West Millington, and Clyde C. Williams, Roselle, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Apr. 17, 1987, Ser. No. 39,256

Int. Cl.[5] F27B *9/04*

U.S. Cl. 264—65 **14 Claims**

1. A process for increasing the resistivity of ceramic fibers which have been formed by pyrolyzing a fiber spun from an organosilicon preceramic polymer devoid of pendant or backbone oxygen comprising: contacting said ceramic fiber with an oxidizing agent at temperatures of about 400°–750° C. for a period of time sufficient to reduce the free carbon content of said fibers and provide a silicon carbide fiber of increased electric resistivity.

5,288,445

RAPID HEAT-TREATMENT METHOD FOR POLYBENZAOLE FIBER

Katsuya Tani, Shiga, Japan; Steven Rosenberg, Midland, Mich.; Willard E. Alexander, Midland, Mich., and Chieh-Chun Chau, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,068

Int. Cl.[5] D01D *10/02;* **D01F** *6/26*

U.S. Cl. 264—85 **10 Claims**

1. A method to heat treat a polybenzoxazole or polybenzothiazole fiber comprising contacting the polybenzoxazole or polybenzothiazole fiber under tension in a heat treating zone

with a heating medium heating gas, with the heating medium heating gas moveing through the heat treating zone in a cocurrent or countercurrent fashion relative to the fiber.

5,288,446

PRODUCTION OF RUBBER ARTICLE

Tomoko Noyama, Takarazuka, and Akihiro Nakahara, Ibaragi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Continuation of Ser. No. 689,506, Apr. 23, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 943,546

Claims priority, application Japan, Apr. 23, 1990, 2-043226[U]; Apr. 23, 1990, 2-106713; Apr. 23, 1990, 2-106715

Int. Cl.[5] B29C *35/02*

U.S. Cl. 264—108 **11 Claims**

1. A process for preparing a rubber composition having anisotropy strength, comprising mixing said rubber composition under shearing force in a rubber orientation direction and vulcanizing said composition while in a mold, said rubber composition comprising a base rubber, 3 to 100 parts by weight of a metal salt of an alpha, beta-unsaturated fatty acid, and 0.5 to 5.0 parts by weight of an organic peroxide; said parts by weight being based on 100 parts by weight of said base rubber wherein crystals of said metal salt are oriented with a direction of rubber molecules in said rubber composition when mechanically mixed.

5,288,447

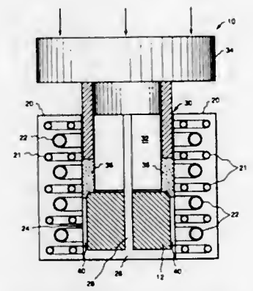
METHOD OF MAKING PERMANENT MAGNET ROTORS

James Day, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,968

Int. Cl.[5] B29C *43/18*

U.S. Cl. 264—112 **14 Claims**



1. A method for making a permanent magnet rotor, comprising the steps of:

preparing a rotor core of solid or laminated soft magnetic material;

milling a binder material to a powder of particles of predetermined size;

dry mixing the powder with magnetic particles;

placing the rotor core in a lower chamber of a molding fixture, said molding fixture having an upper chamber for receiving the mixture of said powder and magnetic particles;

putting the mixture into said supper chamber;

heating the molding fixture and rotor core to a temperature above that of the melting point of the binder material;

melting the binder material and compressing the mixture;

transferring the mixture of the lower chamber and compressing the mixture in the lower chamber about the rotor core; and

cooling the mixture to form a permanent magnet of predetermined thickness about the rotor core.

5,288,448

METHOD FOR PRODUCING A PACKAGE FOR FLOWABLE SUBSTANCES

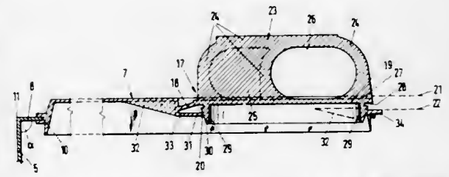
Par M. Andersson, Lutry, Switzerland, assignor to Tetra pak Holdings & Finance S.A., Pully, Switzerland

Division of Ser. No. 533,925, Jun. 6, 1990, Pat. No. 5,154,342. This application Jul. 14, 1992, Ser. No. 913,438

Claims priority, application Switzerland, Jun. 7, 1989, 02134/89

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—153 **9 Claims**



1. A method for the production of a package for the containment of flowable substances comprised of four flat side walls, a bottom and a top with a pouring means comprising:

a) forming a continuous web of synthetic plastic coated material that is performed with equally spaced folding seams that are transverse to the length of the web;

b) longitudinally cutting said web substantially in the center to form two identical webs with a top and a bottom;

c) cutting each web transversely along every predetermined fourth folding seam to produce a container blank;

d) folding each blank at each one of the four folding seams to form an open-ended, four-sided tetragonal tube which is joined at both ends by a longitudinal sealing seam;

e) folding at least two of the top portions of oppositely disposed side walls to produce at least two oppositely disposed side wall panels;

f) folding over the bottom portions of said side walls to form a bottom, and;

g) integrally molding a plastic top and pouring means onto the free edges of the oppositely disposed side wall panels.

5,288,449

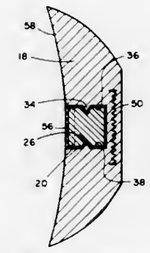
DEVICE AND METHOD FOR PERSONALIZING TIRES

Charles R. Mauro, 3605 Union Ct., Wheatridge, Colo. 80033

Filed Jun. 24, 1992, Ser. No. 904,189

Int. Cl.[5] B29C *45/16;* **B29D** *30/72*

U.S. Cl. 264—219 **14 Claims**



1. A device for producing raised lettering on elastomeric tires comprising:

a mold member sized and shaped to receive at least a portion of the sidewall of an elastomeric tire;

a channel disposed along the interior surface of said mold member;

a plurality of insert members for positioning in said channel,

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each said insert member having a face engraved with the mirror image of a preselected alphanumeric symbol to form a female alphanumeric mold therein;

a pair of tracking members positioned along the interior opposite sides of said channel for engagement with said insert members to align and positionally maintain said insert members therein to form a series of symbols into a preselected legend;

means for injecting heated vulcanizing rubber into said symbol molds as the sidewall of said elastomeric tire is in contact with the faces of said insert members; and

an electrical heating element imbedded in and disposed along the length of said mold member proximate said channel to heat said insert members to fuse said injected rubber directly to said tire sidewall to produce raised alphanumeric lettering of a preselected pattern on the sidewall of said tire.

14. A method for producing raised alphanumeric lettering on existing elastomeric tire sidewalls comprising the steps of:

engraving mirror-image alphanumeric symbols in the face surface of a plurality of insert members, each said member having a single symbol;

sliding a plurality of said removable insert members along a slot disposed in a mold adapted to receive a portion of said tire sidewall, said insert members representing a preselected pattern of symbols with said mold including an electrical heating element imbedded therein;

injecting vulcanizing rubber into said engraved symbols;

placing said tire sidewall in said mold against said insert members;

heating said insert members with said electrical heating element to fuse said injected rubber directly against said original tire sidewall; and

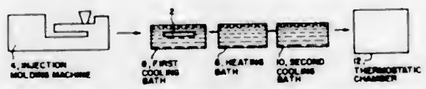
removing said tire from said mold thereby generating raised alphanumeric lettering in accordance with said pattern.

5,288,450

PROCESS FOR PRODUCING MOLDED ARTICLE OF CONTINUOUS LENGTH

Junji Koizumi; Haruyasu Mizutani; Koichi Ogiso, and Atsushi Goto, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Inazawa, Japan

Filed Feb. 26, 1992, Ser. No. 840,895
Claims priority, application Japan, Feb. 27, 1991, 3-55900
Int. Cl.[5] B29C *71/02, 45/72*
U.S. Cl. 264—235 **12 Claims**



1. A process for producing dimensionally stable injection molded articles from synthetic resins, comprising the steps of:

injection molding an article of a synthetic resin material having a glass transition temperature Tg;

removing the article from a mold while maintaining the temperature of the article above Tg;

subjecting the molded article, immediately after molding, to a first cooling treatment prior to the article reaching Tg and cooling the article to a temperature lower than Tg;

subjecting the cooled article to a heating treatment and heating the article to a temperature higher than Tg; and

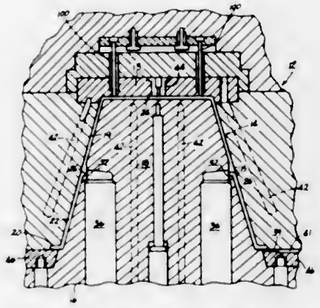
subsequently subjecting the article to a second cooling treatment and cooling the article to a temperature lower than Tg so that the injection molded articles possess less dimensional and shrinkage variation in use after molding.

5,288,451

PROCESS AND APPARATUS FOR DIRECT GATING INJECTION MOLDING

Robert D. Schad, Ontario, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 221,026, Jul. 18, 1988, abandoned. This application Oct. 12, 1989, Ser. No. 420,308
Int. Cl.[5] B29C *45/27*
U.S. Cl. 264—328.8 **22 Claims**



1. A process for injection molding a hollow article which comprises the steps of:

providing an injection molding machine having a first mold portion defining a female cavity portion and a second mold portion defining a male core portion which is shiftable relative to said cavity portion when said mold portions are in a mold closed position, said male core portion being substantially centered within said female cavity portion when said mold portions are in said mold closed position and defining a space in the shape of said article with said female cavity portion, said space having a sidewall defining portion, an upper end, a bottom end and a circumferentially extending region of greater thickness positioned at an approximate center point of said sidewall defining portion; and

introducing molten plastic material into said space in the vicinity of said circumferentially extending region without creating any significant side loads which would cause said male core portion to shift relative to said female cavity portion,

whereby said mold core portion remains substantially centered within said mold cavity portion.

5,288,452

STEAM HEAT-TREATMENT METHOD FOR POLYBENZAZOLE FIBER

Kazuyuki Yabuki, Ohtsu, Japan, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,067
Int. Cl.[5] D01F *6/26;* **D01D** *10/02*
U.S. Cl. 264—345 **9 Claims**

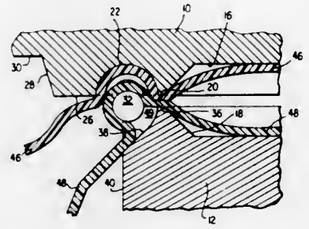
1. A method to heat treat a polybenzoxazole or polybenzothiazole fiber comprising contacting the polybenzoxazole or polybenzothiazole fiber under tension in a heat treating zone with a heating medium heating gas, with the heating medium heating gas being steam which moves through the heat treating zone in a cocurrent or countercurrent fashion relative to the fiber.

5,288,453

METHOD FOR FORMING DOUBLE WALLED INTEGRAL HINGE MEMBERS IN BLOWMOLDED PLASTIC ARTICLES

Mark M. Rutenbeck, and Steven W. Neff, both of Clinton, Iowa, assignors to Custom Pak, Incorporated, Clinton, Iowa

Filed Nov. 12, 1992, Ser. No. 974,495
Int. Cl.[5] B29C *49/04*
U.S. Cl. 264—531 **6 Claims**



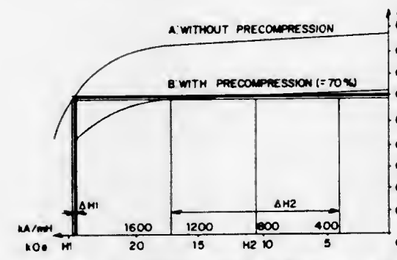
1. A method of blow molding a hinge boss having a bore therethrough, the hinge boss being integral with a blow molded article formed from a parison, including the steps of, inserting a parison having upper and lower sheets between first and second blow molding dies so a portion of the sheets are between a recess in the first blow molding die and a core pin adjacent to the second blow molding die, closing said dies, introducing pressurized air into the parison, causing a portion of the upper parison sheet to deform into the recess in the first blow molding die, causing a portion of the lower parison sheet to deform around and be in contact with the core pin and into a channel in the second blow molding die, the recess and the channel being aligned, the channel being spanned by the core pin, causing the portion of the lower parison sheet to fuse together with itself in the channel and around the core pin, withdrawing the core pin, to thereby form a hinge boss having a bore therein.

5,288,454

METHOD OF CONTROLLING THE REMANENT INDUCTION OF A SINTERED MAGNET, AND THE PRODUCT THUS OBTAINED

Jean-Marc Lang, Meylan, and Robert Tissot, Allevard, both of France, assignors to Aimants Ugimag S.A., Pierre D'Allevard, France

Filed Jan. 6, 1993, Ser. No. 1,249
Claims priority, application France, Jan. 23, 1992, 92 00910
Int. Cl.[5] B22H *3/16;* **H01F** *1/08*
U.S. Cl. 419—38 **11 Claims**



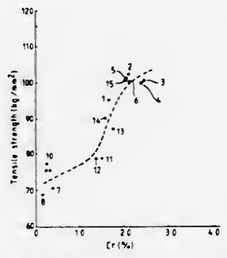
1. A method of obtaining sintered magnets with accurate induction characteristics, comprising obtaining powders of appropriate particle size, at least one cold compressing of the powders in an orienting field, sintering, heat treating, machining and a final magnetizing to technical saturation, wherein the cold compressing in an orienting field takes place at a precompression rate (TP) of over 15% before the orienting field is applied.

5,288,455

STEEL FOR ROTOR SHAFTS OF ELECTRIC MACHINES AND METHOD AND PRODUCT THEREOF

Masao Siga, Hitachi; Mitso Kuriyama, Ibaraki; Takanobu Mori, Hitachi; Yutaka Fukui, Hitachi, and Tatsuro Ishizuka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,567
Claims priority, application Japan, Mar. 20, 1991, 3-057087
Int. Cl.[5] C22C *38/46, 38/44*
U.S. Cl. 420—83 **21 Claims**



6. A steel for use in an electric machine rotor shaft, having the following composition by weight:

C 0.15 to 0.3%,

Si less than 0.3%,

Mn less than 1%,

Ni 3 to 5%,

Cr from more than 2 to 3.5%,

Mo 0.1 to 0.6%,

V 0.03 to 0.35%,

Al less than 0.006%,

P+S+Sn+Sb+As total in an amount less than 0.03%

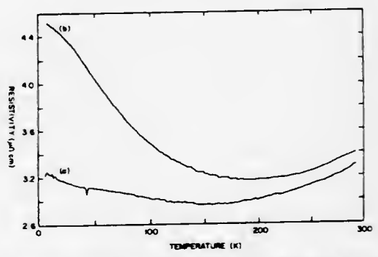
and the remainder substantially Fe, a ratio of Ni:Cr being less than 2.1.

5,288,456

COMPOUND WITH ROOM TEMPERATURE ELECTRICAL RESISTIVITY COMPARABLE TO THAT OF ELEMENTAL COPPER

Mohamed O. Aboelfotoh, Poughkeepsie; Michael J. Brady, Manor, Brewster, and Lia Krusin-Elbaum, Dobbs Ferry, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,146
Int. Cl.[5] C22C *9/00*
U.S. Cl. 420—469 **6 Claims**



1. A highly oxidation resistant compound having low resistivity at room temperature comprising a body of stoichiomet-

VOL 1159 ISS 4 FE 22 1994 UMI

ric Cu_3Ge containing about 1 to about 15 atomic % Ga and/or Au.

5,288,457

COPPER-NICKEL-TIN ALLOY FOR SLIDE BEARINGS

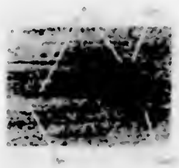
Andreas Boegel, Senden, Fed. Rep. of Germany, assignor to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 907,825

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 4121994

Int. Cl.[5] **C22C** *9/00*

U.S. Cl. 420—470 **12 Claims**



1. A slide bearing comprising a copper-nickel-tin alloy consisting essentially of

4–8% by wt nickel,
4–8% by wt tin,
0.005–1.0 by wt zinc,
0.005–0.5 by wt iron,
0.005–1.0 by wt lead,

the remainder being copper and common impurities, said alloy having a multi-phase granular state with a preferred linear orientation and including:

at least one of discontinuous gamma phase precipitations and continuous gamma phase precipitations, said precipitations being formed followed cold forming of said alloy by heat treatment at a temperature of 300° to 450° C. for 10 minutes to 50 hours so as to provide about 0.1 to about 30 volume % of said gamma phase in said alloy,

up to 15 volume % of highly concentrated tin and nickel grain areas (GSnNi) characterized by the atomic formula $Cu_{43}Ni_{17}Sn_{40}$,

up to 15 volume % of highly concentrated tin and nickel grain areas (GSn) characterized by the atomic formula $Cu_{80}Ni_6Sn_{14}$,

a highly concentrated lead-containing phase, and

the remainder a mixed copper crystal.

5,288,458

MACHINABLE COPPER ALLOYS HAVING REDUCED LEAD CONTENT

David D. McDevitt, Greenwood, Ind.; Jacob Crane, Woodbridge, Conn.; John F. Breedis, Trumbull, Conn.; Ronald N. Caron, Branford, Conn.; Frank N. Mandigo, North Branford, Conn., and Joseph Saleh, Branford, Conn., assignors to Olin Corporation, New Haven, Conn.

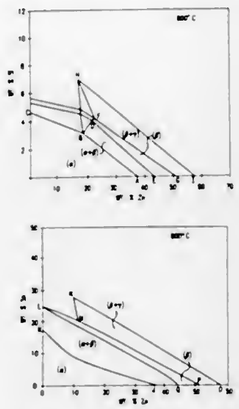
Continuation-in-part of Ser. No. 662,876, Mar. 1, 1991, Pat. No. 5,137,685. This application Jul. 1, 1992, Ser. No. 907,473

Int. Cl.[5] **C22C** *9/00*

U.S. Cl. 420—477 **18 Claims**

1. An alpha/beta brass comprising:

copper, zinc, a partial zinc substitute and from about 1.8% to about 5.0% by weight bismuth, said zinc and zinc substitute present in an amount sufficient to form an amount of beta phase effective to minimize hot shorting said alpha/beta brass having been hot worked at temperatures above



about 600° C. and an amount of alpha phase present at room temperature effective to provide cold workability.

5,288,459

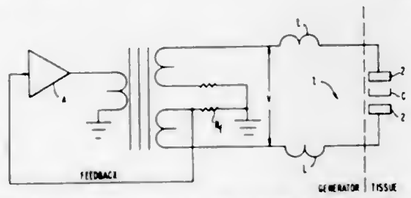
PROCESS FOR IMPROVING THE SHELF LIFE OF WHOLE BLOOD

Joseph L. Lawrence, New York, N.Y., assignor to Biolectron, Inc., Hackensack, N.J.

Continuation of Ser. No. 221,291, Jul. 19, 1988, abandoned. This application Jun. 8, 1993, Ser. No. 74,003

Int. Cl.[5] **A61L** *2/02*

U.S. Cl. 422—22 **6 Claims**



1. A process for extending the shelf life and quality of whole blood and of blood fractions, which comprises storing a blood or blood fraction within a modulated, alternating current capacitive electrical field.

5,288,460

PLASMA CYCLING STERILIZING PROCESS

Ross A. Caputo, Long Grove; Jeffrey Jones, Antioch, both of Ill.; Kern A. Moulton, Livermore, Calif., and Bryant A. Campbell, deceased, late of Los Gatos, Calif. Louise A. Campbell, legal representative , assignors to Abtox, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 576,294, Aug. 31, 1990, Pat. No. 5,186,893, which is a continuation-in-part of Ser. No. 475,602, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 321,483, Mar. 8, 1989, abandoned. This application Oct. 19, 1992, Ser. No. 962,895

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] **A61L** *2/00*

U.S. Cl. 422—23 **24 Claims**

1. A method for plasma sterilization of an interior of a chamber and any articles therein within a controlled temperature range comprising:

a) exposing the interior of said chamber and any articles therein to a gas plasma flowing from a plasma generating chamber until the temperature in said chamber rises to a preselected maximum temperature;

b) terminating flow of the gas plasma to said chamber until the temperature in said chamber falls to a preselected temperature below the preselected maximum temperature; and

c) repeating steps (a) and (b) until sterilization of the interior of said chamber and any articles therein as defined by a preselected probability of survivors is effected; and

wherein said any articles in said chamber are enclosed in porous packaging.

5,288,461

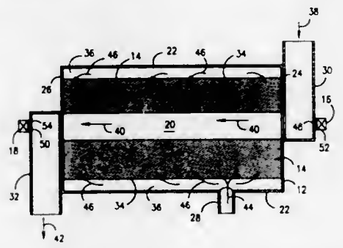
FLUID TREATMENT SYSTEM

Buddy D. Gray, Dellrose, Tenn., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Aug. 31, 1992, Ser. No. 937,556

Int. Cl.[5] **B01J** *19/08*

U.S. Cl. 422—24 **12 Claims**



1. A system for decontaminating an aqueous fluid at ambient temperature, said system comprising:

a housing;

a rigid porous element fixedly contained within said housing, said porous element having an elongated interior channel;

a first inlet for introducing an oxidant into said housing such that the oxidant diffuses into said porous element, and a second inlet for introducing an aqueous fluid into said elongated interior channel such that the oxidant is introduced into the aqueous fluid within said elongated interior channel;

exposure means cyclically exposing the aqueous fluid within said elongated channel to ultraviolet light having at least two different wavelengths; and

an outlet for withdrawing the aqueous fluid from said housing, said outlet being in fluid communication with said elongated interior channel of said rigid porous element.

5,288,462

STERILIZATION APPARATUS AND METHOD

Stephen D. Carter, Stone Mountain, and James W. Brazell, Atlanta, both of Ga., assignors to Stephen D. Carter, Stone Mountain, Ga.

Filed May 18, 1992, Ser. No. 885,661

Int. Cl.[5] **H61L** *2/00*

U.S. Cl. 422—39 **35 Claims**

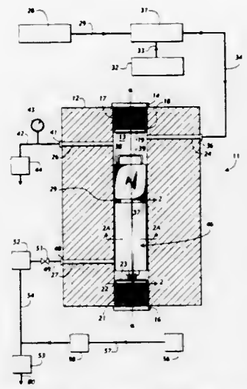
8. A sterilization apparatus comprising:

a housing member having a chamber therein for containing material or objects to be sterilized;

first means in communication with said chamber for introducing a fluid under pressure into said chamber to pressurize said chamber to at least one thousand PSI;

second means in communication with said chamber having an opening therein for exhausting pressurized fluid from said chamber, said second means including pressure sensitive means for sealing said opening; and

means for producing an explosive decompression of said chamber by unsealing said opening;



whereby fluid under pressure in said chamber exits said chamber through said opening.

5,288,463

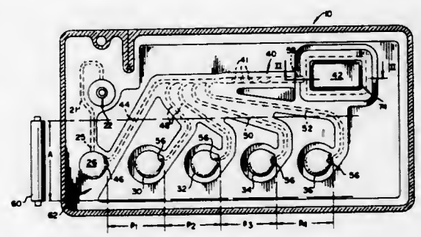
POSITIVE FLOW CONTROL IN AN UNVENTED CONTAINER

John B. Chemelli, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 965,683, Oct. 23, 1992, abandoned. This application Apr. 2, 1993, Ser. No. 42,361

Int. Cl.[5] **G01N** *21/05, 21/03*

U.S. Cl. 422—58 **7 Claims**



1. A containment device for use in amplifying and detecting nucleic acid material comprising a pair of sheet materials secured together in such a manner so as to provide a cuvette including

a reaction compartment with reagents for amplifying nucleic acid material,

a detection site,

flow means allowing fluid flow from said compartment to said site,

reagents allowing detection at said site of amplified nucleic acid material, and

a waste compartment downstream of said detection site and fluidly connected thereto to receive reagents and nucleic acid material after passage over said site, all of said compartment, detection site, and reagents being confined within said pair of sheet materials, said sheet materials being sealable after sample insertion to prevent leakage of nucleic acid material,

said waste compartment comprising a pair of opposing walls

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that provide the major interior surface area of the compartment, each of said sheet materials defining one of said opposing walls, at least one of said opposing walls being provided with fold lines along a crease so as to have a bi-stable configuration, one of said configurations being that in which said at least one opposing wall is collapsed proximal to another of said defining opposing walls, and the other of said configurations being that in which said at least one opposing wall is expanded more distally away from said another opposing wall,

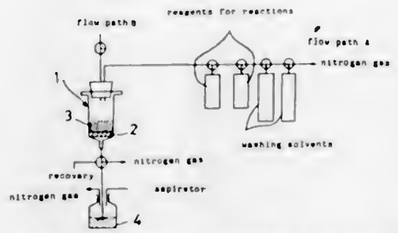
so that the build-up of pressure in said waste compartment is relieved by the movement of said at least one wall from said one configuration to said other configuration.

5,288,464

SOLID-PHASE SYNTHESIZER

Kiyoshi Nokihara, Uji, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Aug. 24, 1992, Ser. No. 933,675
Claims priority, application Japan, Aug. 24, 1991, 3-237153
Int. Cl.[5] B01L *3/00, 11/00*
U.S. Cl. 422—101 **4 Claims**



1. A solid-phase synthesizer comprising a reaction vessel packed with a polyalkylene filter in the bottom portion thereof; said reaction vessel having two inlets and one outlet, and said reaction vessel being connected to three different flow paths wherein;

the first flow path being connected to one of said two inlets of said reaction vessel and being connected to a container containing a reaction reagent, and being connected to a container containing a buffer, so that the reaction reagent and buffer can be injected into said reaction vessel through said first flow path so as to synthesize a peptide in said reaction vessel;

the second flow path being separate from said first flow path and being connected to the other of said two inlets of said reaction vessel, and being connected to means for exhaust gas discharge, and to a container containing a cleavage cocktail reagent that cleaves the peptide so that a gas and the cleavage cocktail reagent can be injected into said reaction vessel through said second flow path; and

the third flow path being separate from said first and second flow paths, and being connected to said outlet of said reaction vessel and being connected to a container for recovery of waste liquids and to a container for the recovery of the desired product.

5,288,465

CASSETES FOR ELECTROPHORETIC GELS

Joel Margolis, Greenwich, Australia, assignor to Gradipore Limited, Pyrmont, Australia

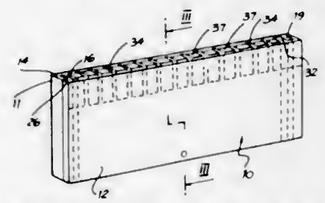
Filed Sep. 22, 1992, Ser. No. 949,293
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **7 Claims**

1. A cassette for holding an electrophoretic gel, comprising:

first and second substantially planar wall members each having two sides and first and second ends,

connecting means formed integrally with and along the sides of each of the wall members, the connecting means being adapted to hold the first and second wall members in substantially parallel planes spaced apart sufficiently to define between them an electrophoretic gel receiving space that has an opening between the first ends of the first and second wall members and an opening between the second ends of the first and second wall members, and

a plurality of dividing ribs on one or each of the wall members extending from the first end of the member or members substantially parallel to at least one of the sides thereof and adapted to extend into the space so as to



subdivide at least one end of the space into a plurality of substantially parallel wells,

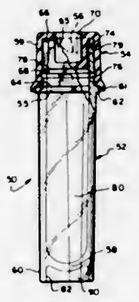
wherein the connecting means serve to releasably hold the wall members together and wherein the connecting means comprise sealing means for forming a substantially fluid tight seal between the sides of the wall members, the sealing means consisting essentially of a sealing rib and sealing groove along each side of each of the wall members, the respective sealing ribs and sealing grooves of the wall members being adapted to frictionally interdigitate.

5,288,466

BLOOD MICROCOLLECTION TUBE ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 716,225, Jun. 6, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,771
Int. Cl.[5] A61B *5/14;* **B01L** *3/14;* **B65D** *41/18;* **C12M** *1/24*
U.S. Cl. 422—102 **10 Claims**



5. A capillary blood specimen collection assembly for collecting blood comprising:

an elongated blood collection container including a blood collection chamber having an annular open end, an integral lip coaxially extending from said open end and an annular integral cap seating flange extending outwardly from said container and spaced from said open end; and

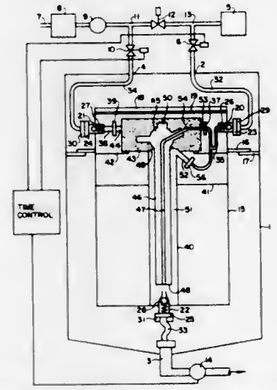
a sealing cap having a top and a bottom for sealing engagement with said open end of said container, said cap having an annular outer skirt extending from the top to the bottom of said cap and a cup-shaped inner portion surrounded by said annular outer skirt and extending from the top toward the bottom of said cap, said cup-shaped inner portion having an annular bottom surface, and said annular outer skirt extending beyond said annular bottom surface of said cup-shaped inner portion and having an angled integral extension extending from its bottom for receiving therein a top surface and a portion of an annular outer edge of said annular integral cap seating flange to provide a larger sealing surface engagement when said cap is placed over said open end, wherein said extension does not extend beyond said annular cap seating flange so that force is only applied to the bottom of said annular cap seating flange and no loosening force is applied to said extension, when the capped assembly is centrifuged.

5,288,467

CLEANING AND DISINFECTING MACHINE FOR MEDICAL EQUIPMENT AND INSTRUMENTS, ANESTHETIC TUBES, CATHETERS, AND ENDOSCOPES

Hans Biermaier, Winterbruckenweg 30, 8904 Friedberg/Derching, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 646,526, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 362,149, Jun. 6, 1989, abandoned. This application Jun. 15, 1992, Ser. No. 898,849
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1988, 3819257
Int. Cl.[5] A61L *2/24, 2/18*
U.S. Cl. 422—116 **7 Claims**



1. A cleaning and sterilizing apparatus for medical equipment and instruments, including anesthetic tubes, catheters, and endoscopes, comprising:

a transporting, storing, and cleaning vessel which receives articles to be cleaned and sterilized; a feed line for supplying cleansing liquid to said vessel; a compressed air supply line; a cleansing liquid supply line for cleansing liquid under pressure; and

an output line for discharging spent cleansing liquid from said vessel, wherein:

(a) said vessel is constructed so as to be placed in and removed from remaining components of the apparatus;

(b) said vessel consists of a pressure chamber and a tubular element which is in fluid communication with said pressure chamber;

(c) said pressure chamber has an opening for loading and unloading articles to be cleaned and means tightly closing said opening;

(d) said pressure chamber has an inlet having means for coupling to said feed line;

(e) said feed line has means for connecting to at least one of said compressed air supply line and said cleansing liquid supply line;

(f) said tubular element has an outlet having means for coupling to said outlet line for discharging spent cleansing liquid;

(g) said tubular element is constructed so as to define a vacuum system with respect to an inner passage of an article to be cleaned when liquid flows along a gap between an outside surface of the article and an inner wall of said tubular element;

(h) a time controlled magnetic valve is provided in each of the compressed air supply line and the cleansing liquid supply line, said magnetic valves being constructed so as to open and close a fluid path from a supply for pressurized cleansing liquid and a supply for pressurized air to said feed line, and

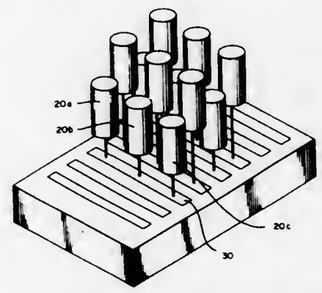
(i) means for controlling said time controlled magnetic valves is provided to selectively meter at least one of liquid cleansing agents, and pressurized air into the vessel.

5,288,468

PARALLEL SEQUENTIAL REACTOR

George M. Church, Brookline, and Stephen G. Kieffer-Higgins, Dorchester, both of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 705,308, May 24, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 970,650
Int. Cl.[5] C12M *1/00;* **G05B** *13/00*
U.S. Cl. 422—116 **21 Claims**



1. A reactor for sequentially modifying a molecule attached to a solid phase support, comprising

a plurality of substrate carriers, each substrate carrier capable of carrying a solid phase support to which a molecule to be modified can be attached,

a plurality of reagent chambers, each capable of comprising a reagent for effecting a modification of said molecule, and

means for individually bringing each of a plurality of chosen substrate carriers into a reagent-contact mode and a reagent-non-contact mode with each of a plurality of reagent chambers comprising means for individually positioning each of a plurality of chosen substrate carriers in a reagent-contact mode and in a reagent-non-contact mode, and means for positioning each of a plurality of chosen reagent chambers relative to a chosen substrate carrier such that when said chosen substrate carrier is in said reagent-contact mode said chosen substrate carrier is in contact with the contents of a chosen reagent chamber and when said chosen substrate carrier is in said reagent-non-contact mode said chosen substrate carrier is not in contact with said contents of said chosen reagent chamber and wherein said individual positioning means is positioned such that a first substrate carrier and a second substrate carrier can be simultaneously placed in the reagent-contact mode with respect to a first chosen reagent chamber,

each of a plurality of said substrate carriers being capable of sequential contact with the contents of a plurality of said reagent chambers said sequential contact being capable of

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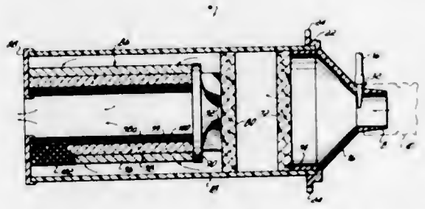
resulting in the sequential modification of molecules attached to said solid phase supports on said plurality of substrate carriers.

5,288,469

SURGERY PLUME FILTER DEVICE

Randy M. Skalla, Leesburg, Ga., assignor to EnviroSurgical, Inc., Cincinnati, Ohio

Filed Mar. 16, 1992, Ser. No. 851,862
Int. Cl.[5] A61L *9/00*; B01D *47/00, 50/00, 53/00*
U.S. Cl. 422—171 **18 Claims**



1. A filter assembly for receiving and treating an airstream containing a gaseous and particulate materials from a surgery plume, comprising:

a canister having an inlet and an outlet, said inlet adapted to receive an airstream containing gaseous and particulate materials from a surgery plume;

introducing means for introducing an aqueous solution comprises of oxidizing and surface active components downstream of said canister inlet;

a first porous member means in said canister for receiving said aqueous solution and said gaseous and particulate materials and for generating a foam by interaction of said aqueous solution and said airstream through said porous member, the first porous member means being located downstream of said introducing means; and

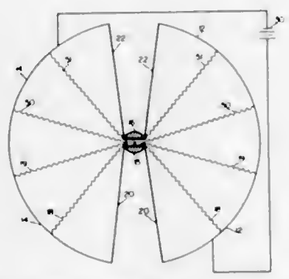
activated carbon in said canister downstream of said inlet through which said airstream flows.

5,288,470

METAL SUBSTRATE HAVING AN INSULATING BARRIER

Richard C. Cornelison, Hiram, Ohio; William B. Retallick, West Chester, and Raymond J. Gorte, Philadelphia, both of Pa., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Oct. 2, 1992, Ser. No. 955,460
Int. Cl.[5] B01D *53/34*; B01J *23/40, 23/56*; F01N *3/10*
U.S. Cl. 422—177 **42 Claims**



22. An electrically-heated catalytic converter comprising a plurality of metal strips disposed within a housing, the strips being spaced so as to allow gas to flow through at least one channel defined by the strips, and means for directing electric current through the strips, wherein the strips are made by the method comprising the steps of:

a) coating the surface of a metal substrate with a first layer of an alumina washcoat,

b) heating the substrate to a temperature of about 800° to 1000° C., the heating being performed for a time of about one minute, and

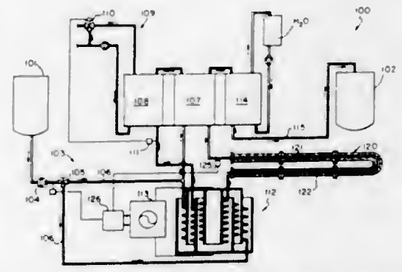
c) applying a catalyst to the substrate.

5,288,471

APPARATUS FOR PRESERVING BIOLOGICAL PRODUCTS

Antonio Corner, Thiene, Italy, assignor to Officine de Cartigliano S.p.A., Thiene, Italy

Filed Jul. 13, 1992, Ser. No. 912,837
Int. Cl.[5] A23C *3/07*; A23L *3/005*; B01J *19/12*; H05B *6/00*
U.S. Cl. 422—307 **8 Claims**



1. Apparatus for continuous sterilization and/or pasteurization of a biological and alimentary product containing bacterial and sporal loads, particularly in the liquid or viscous state, comprising:

a tank for holding product to be treated;

a container for collecting treated product;

a conduit, connecting said tank and said container so that product may flow from said tank to said container;

irradiation means, including at least one pair of facing emitting surfaces, for irradiating product confined within an irradiation region of the conduit with a high-frequency oscillating electromagnetic field;

means for adjusting the energy and frequency of the electromagnetic field and the irradiation time according to the composition and concentration of the bacterial loads; and

an oscillator, having an output connected to said at least one pair of facing emitting surfaces, operating in a range of radio frequencies below 1 GHz;

wherein said irradiation means is set so as to heat the product to a maximum temperature of approximately 50° C.;

wherein said conduit in said irradiation region includes a dielectric-wall conduit having a wall made of a dielectric material whose resistivity is lower than that of the active principles which are responsible for the organic and organoleptic properties of the product to be treated; and

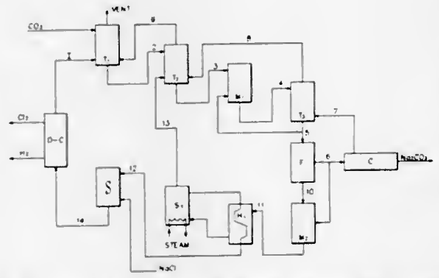
wherein said conduit has a thermally insulated region, downstream of said irradiation region, whereby the product may be maintained at the maximum temperature of the treatment for a predetermined time sufficient to ensure the complete destruction of the bacterial and sporal loads contains in the product.

5,288,472

PROCESS FOR THE RECOVERY OF THE SODIUM HYDROXIDE AND SODIUM CHLORIDE FROM THE EFFLUENT OF A DIAPHRAGM CELL AS SOLID SODIUM BICARBONATE

Raymundo L. Ruiz, Sierra Vista-Residencia 350, Colonia Linda Vista, Mexico 14, D.F., Mexico

Filed Feb. 8, 1993, Ser. No. 14,621
Int. Cl.[5] C01D *1/30*
U.S. Cl. 423—187 **21 Claims**



1. A method for converting sodium chloride and sodium hydroxide in an effluent stream from a chlor-alkali diaphragm cell, said chlor-alkali diaphragm cell having an anode compartment and a cathode compartment, to sodium bicarbonate, comprising the steps of:

(a) treating the effluent of the diaphragm cell which contains unreacted sodium chloride with carbon dioxide to form a solution containing equivalent amounts of bicarbonate and hydroxide ions;

(b) treating the solution from step (a) with ammonia and carbon dioxide to form a solution containing more equivalents of bicarbonate ions than of hydroxide ions;

(c) mixing the solution of step (b) with solid sodium bicarbonate causing a substantial portion of the sodium bicarbonate produced in step (h) to crystallize from solution to form a first suspension;

(d) treating the first suspension of step (c) with carbon dioxide to produce a second suspension containing the crystallized sodium bicarbonate of step (c) and additional crystallized sodium bicarbonate;

(e) reacting the sodium chloride from the diaphragm cell effluent that is contained in the second suspension of step (d) in a double decomposition reaction with ammonium bicarbonate formed in steps (b) and (d) to give ammonium chloride and additional sodium bicarbonate that crystallizes;

(f) separating the solid sodium bicarbonate from the suspension of step (e) to produce a mother liquor comprising saturated sodium bicarbonate with ammonium chloride in solution;

(g) adding sodium bicarbonate to the mother liquor of step (f) to form a suspension;

(h) heating the suspension of step (g) to evolve ammonia gas and carbon dioxide gas, and removing the ammonia and carbon dioxide gases, thereby producing an aqueous solution; and

(i) cooling the aqueous solution of step (h), resaturating the aqueous solution with sodium chloride and recycling the aqueous solution as a sodium chloride solution to the anode compartment of the diaphragm cell.

5,288,473

PROCESS FOR ELIMINATION OF WASTE MATERIAL DURING MANUFACTURE OF ACRYLONITRILE

Wilfrid G. Shaw, Lyndhurst; Kenneth L. Bigler, Aurora; Louis R. Trott, Solon; Steve J. Miko, Hudson; Vincent G. Reiling, Shaker Heights; Michael J. Seely, Twinsburg; Dev D. Suresh, Hudson; Maria S. Friedrich, Lyndhurst, all of Ohio; Paul E. Bott, Victoria; Edward J. Sockell, Port Lavaca, both of Tex.; Albert R. Shuki, Jr., Sagamore Hills, Ohio; Kenneth P. Keckler, Lima, Ohio, and Frank J. Kojancic, Independence, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 9, 1992, Ser. No. 959,237
Int. Cl.[5] C01C *3/00*
U.S. Cl. 423—237 **21 Claims**

1. A process for the elimination of ammonia breakthrough and ammonium sulfate production during the manufacture of acrylonitrile comprising introducing into the lower portion of a fluid bed reactor a hydrocarbon selected from the group consisting of propylene and propane, ammonia and oxygen containing gas to react in the presence of a fluid bed catalyst to produce acrylonitrile, introducing an oxygenate comprising methanol at a temperature below its coking temperature into the upper portion of the fluid bed reactor at a point where the methanol does not substantially affect the reaction of the hydrocarbon, ammonia and oxygen containing gas to produce acrylonitrile and reacts with substantially all the unreacted ammonia present in the reactor to substantially eliminate the presence of any free ammonia in the reactor effluent exiting said reactor, passing the reactor effluent containing acrylonitrile and substantially free of any unreacted ammonia into a quench column to cool the reactor effluent with water in the absence of sulfuric acid to remove unwanted impurities and recovering the acrylonitrile from the quench column.

5,288,474

PROCESS FOR THE PRODUCTION OF LEAD METAL NIOBATES

Karlheinz Reichert, Hornburg, and Harald Kröger, Goslar, both of Fed. Rep. of Germany, assignors to H. C. Starck GmbH & Co. KG, Goslar, Fed. Rep. of Germany

Filed May 28, 1993, Ser. No. 69,157
Claims priority, application Fed. Rep. of Germany, May 29, 1992, 4217818
Int. Cl.[5] C01G *33/00*
U.S. Cl. 423—593 **8 Claims**

1. A process for the production of phase-pure highly reactive lead metal niobates of perovskite structure corresponding to the general formula $Pb_3Me(II)Nb_2O_9$ or $Pb_2Me(III)NbO_6$, where Me=Mg, Fe, Co, Ni, Cr, Mn, Cd, Cu and/or Zn, in which a perovskite intermediate is obtained from a corresponding salt solution of Pb, Nb, and Me separated off, dried and calcined at temperatures of 500° to 1000° C., characterized in that said salt solution is in the form of citrates and is reacted with ammonia to effect formation of the perovskite intermediate, the phase-pure highly reactive lead metal niobates so produced having less than 5% pyrochlore content.

5,288,475

SYNTHESIS OF ZSM-35

Clarence D. Chang, Princeton, N.J., and Stuart D. Hellring, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Oct. 21, 1992, Ser. No. 963,979
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—706 **9 Claims**

1. A method for using dimethylpiperazine to synthesize ZSM-35, said method comprising (i) preparing a mixture capable of forming said ZSM-35, said mixture comprising sources of alkali or alkaline earth metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), water and directing agent (R) of 1,4-dimethylpiperazine, and having a composition, in terms of mole ratios, within the following ranges.

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YO_2/X_2O_3	1 to 100
H_2O/YO_2	10 to 100
OH^-/YO_2	0 to 0.25
M/YO_2	0 to 2.0
R/YO_2	0.18 to 2.0

(ii) maintaining said mixture under sufficient conditions until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii).

5,288,476

RADIOPHARMACEUTICAL PRODUCT MORE PARTICULARLY HAVING A CARDIAC TROPISM INCORPORATING A NITRIDE COMPLEX OF A TRANSITION METAL AND ITS PREPARATION PROCESS

Roberto Pasqualini, Clanart, France; Luciano Magon, Padova, Italy; André Bardy, Morangis, France; Adriano Duatti, Chiesuol Fosso, France, and Andrea Marchi, Ferrara, Italy, assignors to CIS Bio International, Saclay, France

PCT No. PCT/FR89/00608, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO90/06137, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 24, 1989, Ser. No. 675,938

Claims priority, application France, Jun. 12, 1989, 89 07731; Nov. 25, 1989, 88 15415

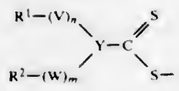
Int. Cl.[5] A61K *49/02, 43/00*

U.S. Cl. 424—1.65 **23 Claims**

1. A radiopharmaceutical product, comprising a complex of a transition metal having the formula:

$$(M{=}N)\ L^1L^2$$

in which M is a transition metal and L^1 and L^2, which can be the same or different, have the formula:



(II)

in which V and W, which can be the same or different, represent O, S or Se, n and m, which can be the same or different, are equal to 0 or to 1, Y represents N, P or As, and R^1 and R^2, which can be the same or different, represent a straight or branched alkyl radial with 1 to 10 carbon atoms, which is either not substituted or substituted by $-O-R^3$, $OOC-R^3$, $OCNR^4R^5$ or $-NR^4R^5$ groups, in which R^3 is a straight or branched alkyl radical with 1 to 5 carbon atoms and R^4 and R^5, which can be the same or different, are hydrogen atoms or straight or branched alkyl radicals with 1 to 5 carbon atoms, or in which R^1 and R^2 together form a hydrocarbon ring optionally containing one or more heteroatoms, wherein R^1 and R^2 are not both unsubstituted alkyl radicals when n and m are equal to 0.

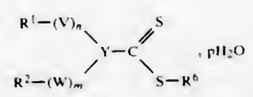
13. A process for the preparation of a radiopharmaceutical product according to Claim 1, said process comprising the following successive steps:

reacting an oxygenated compound of a titanium metal M with:

a) a first ligand selected from the group consisting of substituted or unsubstituted, aromatic and aliphatic phosphines and polyphosphines and

b) a second reagent selected from the group consisting of ammonium and alkali metal nitrides and the nitrogenous ligands having a $>N-N<$ in which the N are connected to hydrogen atoms and/or to monovalent organic groups via a carbon atom, or in which one of the N is connected to the carbon atom of a divalent organic group via a double bond and the other N is connected to hydrogen atoms and/or monovalent organic groups via a carbon atom and

reacting the intermediate obtained in the first step with a compound having the formula:



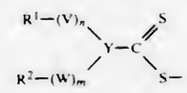
(X)

in which V and W, which can be same or different, represent O, S or Se, n and m, which can be the same or different, are equal to 0 or to 1, Y represents N, P or As, and R^1 and R^2, which can be the same or different, represent a straight or branched alkyl radical with 1 to 10 carbon atoms, which is either not substituted or substituted by $-O-R^3$, $OOC-R^3$, $OCNR^4R^5$ or $-NR^4R^5$ groups, in which R^3 is a straight or branched alkyl radical with 1 to 5 carbon atoms and R^4 and R^5, which can be the same or different, are hydrogen atoms or straight or branched alkyl radicals with 1 to 5 carbon atoms, or in which R^1 and R^2 together form a hydrocarbon ring optionally containing 1 or more heteroatoms, R^6 is an alkali metal ion, H^+ or NH_4^+ and p is equal to 0 or an integer between 1 and 5.

20. A method of diagnosis or therapy for heart conditions, comprising administering to a patient in need thereof an effective amount of a radiopharmaceutical product comprising a complex of a transition metal having the formula:

$$(M{=}N)\ L^1L^2$$

in which M is a transition metal and L^1 and L^2, which can be the same or different, have the formula:



(II)

in which V and W, which can be the same or different, represent O, S or Se, n and m, which can be the same or different, are equal to 0 or to 1, Y represents N, P or As, and R^1 and R^2, which can be the same or different, represent a straight or branched alkyl radial with 1 to 10 carbon atoms, which is either not substituted or substituted by $-O-R^3$, $OOC-R^3$, $OCNR^4R^5$ or $-NR^4R^5$ groups, in which R^3 is a straight or branched alkyl radical with 1 to 5 carbon atoms and R^4 and R^5, which can be the same or different, are hydrogen atoms or straight or branched alkyl radicals with 1 to 5 carbon atoms, or in which R^1 and R^2 together form a hydrocarbon ring optionally containing one or more heteroatoms.

5,288,477

METHOD FOR PROGNOSTICATING RESPONSE TO CANCER THERAPY

Sarah S. Bacus, Hinsdale, Ill., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 767,041, Sep. 27, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,529

Int. Cl.[5] G01N *1/00, 33/48, 33/566;* **C12Q** *1/68*

U.S. Cl. 424—2 **17 Claims**

1. A method for determining/prognosticating the effectiveness of a therapeutic agent in the treatment of a cancer by measuring the ability of the therapeutic agent to induce terminal cell differentiation wherein malignant cells of the cancer overexpress an oncogene product, the method comprises the steps of:

(a) obtaining from a human having such a cancer a biopsy comprising viable malignant cells which overexpress at least one oncogene product and dividing the same into first and second portions;

(b) treating the first portion comprising viable cells with a sufficient quantity of a composition comprising at least one compound having specific binding affinity for the oncogene product and contacting the second portion with a composition which is devoid of the at least one compound having specific binding affinity for the oncogene product;

(c) maintaining the first and second portions in a physiologically acceptable medium for an amount of time sufficient to induce maturation in the viable malignant cells of said first portion: and

(d) comparing the percentage of cells in the first portion which exhibit markers of terminal cell differentiation to the percentage of cells in the second portion which exhibit markers of terminal cell differentiation wherein effectiveness of treatment correlates with the degree of terminal cell differentiation.

5,288,478

Patent Not Issued For This Number

5,288,479

EXTRUDABLE ELASTIC ORAL PHARMACEUTICAL GEL COMPOSITIONS AND METERED DOSE DISPENSERS CONTAINING THEM AND METHOD OF MAKING AND METHOD OF USE THEREOF

William G. Gorman, East Greenbush, and Elio P. Mariani, Colonie, both of N.Y., assignors to Sterling Drug, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 297,720, Jan. 17, 1989, abandoned. This application Nov. 27, 1989, Ser. No. 441,849

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 **4 Claims**

1. An extrudable elastic oral pharmaceutical gel composition being a solution and consisting essentially of by weight-/volume from about 0.1% to about 50% of acetaminophen, from about 5% to about 40% of a mixture of propylene glycol, glycerin and polyethylene glycol having the structural formula $H-(OCH_2CH_2)_n-OH$ wherein the polyethylene glycol is a mixture of the polyethylene glycol wherein n is 6 and the polyethylene glycol wherein n is 32, from about 5% to about 40% of a hexitol selected from the group consisting of sorbitol, mannitol and hydrogenated maltose syrup or a mixture thereof, from about 25% to about 85% of water, and from about 0.2% to about 5% of a seaweed polysaccharide selected from the group consisting of agar, algin, carrageenan and furcelleran or a mixture thereof.

5,288,480

ANTIPLAQUE ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, Brunswick; John Afflitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Co., New York, N.Y.

Division of Ser. No. 655,571, Feb. 19, 1991, Pat. No. 5,178,851, which is a continuation of Ser. No. 398,566, Aug. 25, 1989, Pat. No. 5,032,386, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and a continuation-in-part of Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Oct. 21, 1992, Ser. No. 964,247

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 **15 Claims**

1. An oral composition for attaching, adhering or bonding a plaque-inhibiting agent to oral tooth and gum surface comprising in an orally acceptable aqueous humectant vehicle, about 5–30% by weight of a siliceous polishing agent, about 0.25%–0.35% by weight of a substantially water insoluble noncationic antibacterial agent, said oral composition comprising at least one of a surface active agent and a flavoring oil and about 0.05–4% by weight of an antibacterial-enhancing agent which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing group, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent on oral tooth and gum surfaces, wherein said oral composition is free of polyphosphate anticalculus agent in an effective anticalculus amount and said vehicle is other than polyethylene glycol which reduces the antibacterial activity of said antibacterial agent.

5,288,481

INVISIBLE FOUNDATION COMPOSITION

Hovic O. Ounanian, Princeton Junction, N.J.; Natividad R. Jose, Jamaica, N.Y.; Joseph DiSomma, Ramsey, and Harvey Gedeon, Allendale, both of N.J., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 603,489, Oct. 26, 1990, abandoned, which is a division of Ser. No. 441,305, Nov. 27, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 928,146

Int. Cl.[5] A61K *7/021*

U.S. Cl. 424—63 **5 Claims**

1. A foundation composition comprising from about 1.5% to about 30% of a spherical inorganic material having a diameter of up to about 30 microns; from about 5% to about 35% of a matte finishing agent, from about 5% to about 35% of a moisturizing agent; and up to about 68% water, all said percentages being by weight based on the total weight of the compositions.

5,288,482

SILICONE CONTAINING LIP CARE COSMETIC COMPOSITION

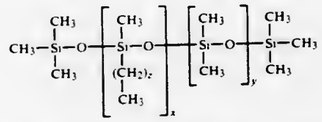
Duane G. Krzysik, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 11, 1993, Ser. No. 29,503

Int. Cl.[5] A61K *7/027*

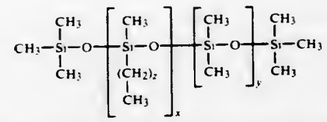
U.S. Cl. 424—64 **16 Claims**

1. In a lipcare cosmetic composition containing as ingredients thereof an emollient, a wax, a suspending agent, a coloring agent, and further including as an additional ingredient an organosilicon compound, the improvement comprising the organosilicon compound being an alkylmethylpolysiloxane having the formula



in which x has a value of 1–50; y has a value of 1–300; and z has a value of 5–50.

9. A method of enhancing the durability on lips of a lipcare cosmetic composition containing an emollient, a wax, a suspending agent, and a coloring agent, comprising applying to the lips a lipcare cosmetic composition which includes as an ingredient thereof an alkylmethylpolysiloxane having the formula



in which x has a value of 1–50; y has a value of 1–300; and z has a value of 5–50.

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5,288,483

ANTI-LICE TREATMENT COMPOSITIONS

Caroline W. Cardin; David W. Peter, both of Cincinnati, Ohio, and Clint A. Markham, Cedarburg, Wis., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 844,899, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 510,658, Apr. 18, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 20,003

Int. Cl.[5] **A61K** *7/06;* **A01N** *25/02*

U.S. Cl. 424—70 **12 Claims**

1. A stable ovicidal/pediculicidal active hair conditioning composition comprising:

(a) from about 0.1% to about 5.0% of a cationic surfactant selected from the group of fatty amines consisting of primary, secondary and tertiary fatty amines having at least one alkyl group with from about 12 to about 22 carbon atoms;

(b) from about 0.25% to about 5% of an alkanol synergizer selected from the group consisting of phenyl ethanol, phenyl propanol, phenyl ethanediol, and mixtures thereof;

(c) from about 0.5% to about 5% of naturally and synthetically derived fatty materials selected from the group consisting of acids, alcohols, esters, ethers, ketones, amides, and mixtures thereof having carbon chain lengths of from about 12 to about 22;

(d) from about 85% to about 95% water.

5,288,484

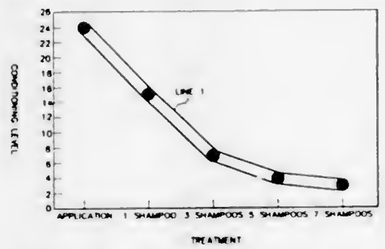
CATIONIC CELLULOSE DERIVATIVE CONTAINING FATTY QUATERNUM GROUPS IN A PRE-SHAMPOO CONDITIONING COMPOSITION

Anne Tashjian, c/o Eastman Kodak Company, Rochester, N.Y. 14650-2201

Filed May 15, 1992, Ser. No. 884,964

Int. Cl.[5] **A61K** *7/075, 7/08*

U.S. Cl. 424—71 **8 Claims**

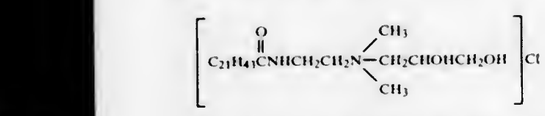


1. A pre-shampoo conditioning composition comprising an aqueous system of:

(a) from about 0.1 to about 20 weight percent of a steardimonium hydroxypropyl oxythyl cellulose having a molecular weight of from about 75,000 to about 125,000 daltons;

(b) from about 0.05 to about 20 weight percent of a quaternary polymer selected from the group consisting of polydiallyldimethylammonium chloride and polydiallyldimethylammonium bromide; and

(c) from about 0.2 to about 10 weight percent of a dehenamidopropyl dihydroxypropyl dimonium chloride as represented by the formula:



wherein said weight percentages are the active weight percentage of each ingredient, based on total weight of the composition

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5,288,485

VASODILATING AGENT

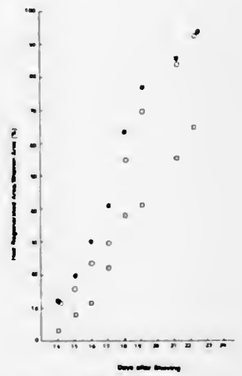
Seiji Kikuta, Tanashi; Katsunori Aizawa, Okazaki; Seiji Kosemura; Tetsuro Kamiya, both of Utsunomiya, and Mitsuyuki Hotta, Kaminokawa, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 571,877, Aug. 24, 1990, abandoned. This application May 24, 1991, Ser. No. 707,224

Claims priority, application Japan, Aug. 31, 1989, 1-226212

Int. Cl.[5] **A61K** *7/06*

U.S. Cl. 424—74 **3 Claims**



1. A method of promoting hair growth in an individual in need of same, comprising administering to said individual a hair growth promoting composition comprising an amount of an active agent effective to promote hair growth in said individual, said active agent comprising an extract of *hypericum erectum thunb* in a pharmaceutically acceptable carrier.

5,288,486

ALCOHOL-BASED ANTIMICROBIAL COMPOSITIONS

John H. White, St. Louis, Mo., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 7,159, Jan. 26, 1987, abandoned, which is a continuation of Ser. No. 791,668, Oct. 28, 1985, abandoned. This application Mar. 29, 1991, Ser. No. 676,412

Int. Cl.[5] **A61K** *31/74*

U.S. Cl. 424—78.08 **2 Claims**

1. A method for enhancing the efficacy of an alcohol-based skin disinfectant containing about 30 to 90 percent, based on total composition weight, of at least one alcohol selected from the group consisting of n-propyl alcohol, isopropyl alcohol and ethyl alcohol comprising adding about 0.25 to about 5 percent, based on total composition weight, of at least one alcohol-soluble hydroxypropyl cellulose polymer viscosifying agent to said alcohol-based skin disinfectant, thereby increasing its antimicrobial effectiveness *against Serratia marcescens, Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa or Candida albicans.*

5,288,487

HUMAN MONOCYTE-MACROPHAGE-CSF PREPARATIONS

Takuji Kawashima, Kawasaki; Nobuya Yanai, Tokyo; Muneo Yamada, Zama; Hajime Yokota; Kunio Ujiie, both of Tokyo; Katsuo Yoshida, Higashiyamato; Shinya Suzu, Shimotsuga; Fumimaro Takaku, Tokyo; Kazuo Motoyoshi, Ohmiya, and Nobuhiro Yamada, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 485,483, Feb. 27, 1990, abandoned. This application Nov. 6, 1991, Ser. No. 789,431

Claims priority, application Japan, Feb. 28, 1989, 1-47594; Mar. 30, 1989, 1-79100; Apr. 4, 1989, 1-85612; May 12, 1989, 1-117372; Jun. 12, 1989, 1-150087

Int. Cl.[5] **C07K** *15/00;* **A61K** *45/05*

U.S. Cl. 424—85.1 **8 Claims**

4. A method of decreasing myeloblast count in peripheral blood and for decreasing the proportion of myeloblasts to total bone marrow cells while increasing erythrocyte, leukocyte and neutrophil leukocyte counts in peripheral blood, comprising administering to a patient having myelodysplastic syndrome an effective amount of naturally-occurring human monocyte-macrophage colony stimulating factor.

5,288,488

METHOD OF CONTROLLING FOLIAR MICROORGANISM POPULATIONS

Paul A. Backman; Rodrigo Rodriguez-Kabana, and Nancy M. Kokalis, all of Auburn, Ala., assignors to Auburn University, Auburn University, Ala.

Continuation of Ser. No. 483,505, Feb. 23, 1990, abandoned. This application Jul. 8, 1991, Ser. No. 728,316

Int. Cl.[5] **A01N** *63/00;* **A61K** *37/00;* **C12N** *1/00*

U.S. Cl. 424—93 D **20 Claims**

1. A method of controlling the population of a first microorganism at a foliar locus by preferentially enhancing the population of a second microorganism at said locus, comprising applying to the locus an amount of a durable, substantially water-insoluble polymeric substrate having a solubility in water (20° C. of at most 1% which has been selected for being preferentially biodegraded by said second microorganism, whereby growth of said second microorganism is substantially preferential to that of said first microorganism, and wherein said polymeric substrate is applied in admixture with a binder which increases its durability.

5,288,489

FIBRINOLYSIS AND FIBRINOGENOLYSIS TREATMENT

Edward Reich, Setauket, and Thomas G. Easton, Coram, both of N.Y., assignors to Orion Therapeutic Systems, Inc., New York, N.Y.

Filed Aug. 28, 1991, Ser. No. 755,501

Int. Cl.[5] **A61K** *37/547, 37/553*

U.S. Cl. 424—94.64 **18 Claims**

1. A fibrinolysis and fibrinogenolysis treatment comprising the step of:

parenterally introducing into the body of a human patient in need thereof a therapeutically effective amount of human plasmin or mammalian mini- or micro-plasmin in fibrinolytically/fibrinogenolytically active form in an amount and for a time sufficient to permit said active plasmin to reach a concentration in the bloodstream of said patient sufficient to reduce the level of circulating fibrinogen, wherein, substantially coincident with parenteral introduction of said active plasmin into said patient, fibrinolytically/fibrinogenolytically plasminogen, or an analog thereof, or stabilized inhibited plasmin, is converted to said fibrinolytically/fibrinogenolytically active plasmin ex vivo.

5,288,490

THROMBUS-TARGETED COMPLEXES OF PLASMINOGEN ACTIVATOR AND FIBRIN FRAGMENTS

Andrei Z. Budzynski, Glenside, Pa.; Linda C. Knight, East Windsor, N.J., and Ahmed A. Hasan, Glenside, Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 356,978, May 24, 1989, abandoned. This application Nov. 25, 1991, Ser. No. 799,699

Int. Cl.[5] **A61K** *37/547, 37/18*

U.S. Cl. 424—94.64 **15 Claims**

1. A thrombolytic agent comprising a non-covalent complex formed from contacting tPA with a 100–500 molar excess of either fibrin fragment DD or fibrin fragment DD(E).

5,288,491

NONI (*MORINDA CITRIFOLIA*) AS A PHARMACEUTICAL PRODUCT

Herbert Moniz, R.R. 2 Box 223, Kula, Maui, Hi. 96790

Filed Sep. 24, 1992, Ser. No. 949,994

Int. Cl.[5] **A61K** *35/78*

U.S. Cl. 424—195.1 **1 Claim**

1. A process for processing the noni plant into powder, that takes away the foul smell and taste and makes the fruit more palatable for human consumption; comprising the steps of:

a) picking the noni fruit from the tree when the fruit is half ripened, placing half ripened picked noni fruit in a closed dark room until the half ripened picked fruit is fully ripened;

b) washing and cleaning the noni plant;

c) mashing the noni fruit;

d) placing the pulp onto liner;

e) rotating trays for five hours @ 155 degrees, rotating trays for another five hours @ 145 degrees, rotating trays for another 14 hours @ 135 degrees, so that these temperatures and changes in timing are very important for even drying and is also unique in holding in and preserving its natural values; and

f) crushing and grinding dried wafers.

5,288,492

DECONGESTANT COMPOSITION CONTAINING ALOE VERA

Michael A. Morris, Rte. 1 Box 89A, Church Hill, Md. 21623

Filed Nov. 13, 1992, Ser. No. 975,716

Int. Cl.[5] **A61K** *35/78, 31/20*

U.S. Cl. 424—195.1 **8 Claims**

1. A decongestant composition for treatment of symptoms associated with respiratory diseases consisting essentially of 20 to 35% by weight of aloe vera, 5–15% castor oil, 5–10% sodium metasilicate, 5–10% and calcium chloride as the active ingredients, and 30 to 65% by weight of purified water to form an aqueous solution.

5,288,493

SKIN CARE COMPOSITIONS WITH IMPROVED RUB-OFF RESISTANCE

Gary T. Martino, Plainsboro; Dinesh C. Patel, Holmdel, both of N.J., and Jacob J. Guth, Upper Black Eddy, Pa., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 703,431, May 17, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,094

Int. Cl.[5] **A61K** *9/107, 9/12*

U.S. Cl. 424—401 **22 Claims**

1. In a skin care composition having a vehicle comprising:

i) an emulsion,

ii) an oil base,

iii) an aqueous system,

iv) a solvent system, or

v) a mixture of aqueous and solvent systems,

wherein the aqueous system comprises from about 25 to 99.8% by weight water, from about 0.1 to 25% by weight of additives

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and ingredients, and from about 0 to 50% by weight of a propellant, and wherein the solvent system comprises from about 25 to 99.8% of organic solvent selected from the group consisting of aliphatic alcohols, esters, ethers, ketones, amines and hydrocarbons, from about 0.1 to 25% by weight of additives and ingredients, and from about 0 to 75% by weight of a propellant, the improvement comprising providing improved rub-off resistance by adding from about 0.1 to 10% by weight of a copolymer consisting essentially of:

a) about 10 to 75% by weight of C_1 to C_{18} alkyl acrylate or methacrylate,

b) about 10 to 70% by weight of C_1 to C_{18} N-substituted alkyl acrylamide, and

c) about 5 to 40% by weigh of unsaturated carboxylic acid having 3 to 5 carbon atoms.

5,288,494

COSMETIC COMPOSITION

Toru Yoshihara, and Jiro Kawase, both of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 694,999, May 2, 1991, Pat. No. 5,242,689. This application Jun. 8, 1993, Ser. No. 72,945

Claims priority, application Japan, Jun. 5, 1990, 2-146598

Int. Cl.[5] A61K *7/021, 7/13*

U.S. Cl. 424—401 **3 Claims**

1. A cosmetic composition comprising inorganic particles selected from the group consisting of Kaolin, titanium oxide, and silica, said inorganic particles having a diameter of between 0.01 to 200 μm coated with polypyrrole; and a cosmetically acceptable oil or wax.

5,288,495

METHOD FOR CONTROLLING PESTS USING STABILIZED THIOCARBONATE SOLUTIONS

James A. Green, II, Maipu, Chile, and Donald C. Young, Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 744,279, Aug. 8, 1991, Pat. No. 5,167,966, which is a continuation of Ser. No. 262,961, Oct. 28, 1988, Pat. No. 5,041,240, which is a continuation-in-part of Ser. No. 128,146, Dec. 3, 1987, Pat. No. 5,022,912, Ser. No. 931,517, Nov. 17, 1986, abandoned, Ser. No. 55,923, May 29, 1987, Pat. No. 5,013,350, Ser. No. 55,719, May 29, 1987, abandoned, and Ser. No. 56,143, May 29, 1987, abandoned, Ser. No. 128,146, May 29, 1987, which is a continuation-in-part of Ser. No. 685,454, Apr. 30, 1984, Pat. No. 4,726,144, which is a continuation-in-part of Ser. No. 315,492, Oct. 27, 1981, Pat. No. 4,476,113, and a continuation-in-part of Ser. No. 490,461, May 2, 1983, abandoned, said Ser. No. 55,923, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 55,719, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 56,143, is a continuation-in-part of Ser. No. 490,461, May 2, 1983. This application Sep. 8, 1992, Ser. No. 941,978

Int. Cl.[5] A01N *25/00, 39/02*

U.S. Cl. 424—405 **25 Claims**

1. A method for controlling pests in soil, the method comprising the step of applying to the soil a fumigation effective amount of a composition which comprises an aqueous solution of a thiocarbonate selected from the group consisting of alkali and alkaline earth metal tetrathiocarbonates, and combinations thereof, and a sulfide selected from the group consisting of alkali and alkaline earth metal sulfides and alkali and alkaline earth metal polysulfides of the formula M_nS_x, wherein M is selected from alkali and alkaline earth metals and combinations thereof, x is 1 to about 5, n is 2 when M is alkali metal, and n is 1 when M is an alkaline earth metal, and combinations thereof, the concentration of the sulfide in the solution corresponding to at least about 0.02 equivalent of the sulfide per equivalent of carbon disulfide in the thiocarbonate (based on the decomposition of the thiocarbonate resulting in the formation of carbon disulfide), wherein the pests are selected from the group consisting of nematodes, insects, fungi, bacteria, and combinations thereof.

5,288,496

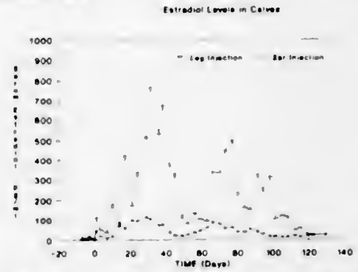
GROWTH PROMOTERS FOR ANIMALS

Danny H. Lewis, Hartselle, Ala., assignor to Stolle Research & Development Corporation, Decatur, Ala.

Filed May 15, 1990, Ser. No. 523,249

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—426 **37 Claims**



1. A method of promoting growth in animals wherein said method comprises administration, in amounts sufficient to promote growth in said animals, of an injectable, biodegradable, composition comprising microparticles, wherein said microparticles comprise a steroid growth promoter within a polymeric matrix, and wherein the polymeric matrix of said microparticle composition is selected from the group consisting of poly-d,l-lactic acid, poly-L-lactic acid, polyglycolic acid, copolymers of mixed d,l-lactic acid and glycolic acid, copolymers of L-lactic acid and glycolic acid, copolyoxalates, polycaprolactone, poly(lactic acid-caprolactone), poly(glycolic acid-caprolactone), casein, albumin, and waxes.

5,288,497

COMPOSITIONS OF ORAL DISSOLVABLE MEDICAMENTS

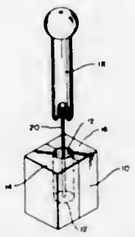
Theodore H. Stanley, Salt Lake City, and Brian Hague, West Valley City, both of Utah, assignors to The University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 60,045, Jun. 8, 1987, Pat. No. 4,863,737, which is a continuation-in-part of Ser. No. 729,301, May 1, 1985, Pat. No. 4,671,953. This application Sep. 5, 1989, Ser. No. 403,751

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] A61K *9/68*

U.S. Cl. 424—440 **219 Claims**



1. A drug-containing dosage-form for use in transmucosal delivery of the drug to a patient, said dosage form comprising;

a bindng agent which is dissolvable in the mouth of the patient;

a pharmacologically effective dose of a drug being capable of absorption through mucosal tissues of the month, pharynx, and esophagus, the drug being dispersed throughout the binding agent to form a mixture that is fashioned into a solid matrix which is dissolvable in the mouth of the patient such that when the solid matrix dissolves in the mouth of the patient, the pharmacologically effective dose of the drug is released for absorption through mucosal tissues of the mouth, pharynx, and esophagus of the patient;

a permeation enhancer which is also dispersed throughout the solid matrix, the permeation enhancer being capable of modifying the permeability of the mucosal tissues of the mouth, pharynx, and esophagus towards the drug in order to facilitate transmucosal aborption of the drug; and

holder means secured to the solid matrix so as to form a drug-containing dosage-form, the holder means being configured so as to permit convenient insertion and removal of the drug-containing dosage form into and out of the mouth of the patient.

5,288,498

COMPOSITIONS OF ORAL NONDISSOLVABLE MATRIXES FOR TRANSMUCOSAL ADMINISTRATION OF MEDICAMENTS

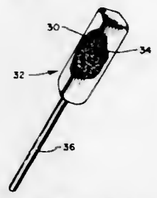
Theodore H. Stanley, Salt Lake City, and Brian Hague, West Valley City, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 60,045, Jun. 8, 1987, Pat. No. 4,863,737, which is a continuation-in-part of Ser. No. 729,301, May 1, 1985, Pat. No. 4,671,953. This application Sep. 5, 1989, Ser. No. 403,752

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] A61K *9/68*

U.S. Cl. 424—440 **205 Claims**



1. A drug-containing dosage-form for use in transmucosal delivery of the drug to a patient, said dosage-form comprising:

a drug containment matrix which is nondissolvable by the saliva in the mouth of the patient;

a pharmacologically effective dose of a drug being capable of absorption through mucosal tissues of the mouth, pharynx, and esophagus, the pharmacologically effective dose of the drug being contained by the nondissolvable drug containment matrix which is configured to release the drug within the mouth of the patient for absorption through mucosal tissues of the mouth, pharynx, and esophagus; and

holder means secured to the drug nondissolvable containment matrix so as to form a drug-containing dosage-form, the holder means being configured to permit convenient insertion and removal of the drug-containment matrix into and out of the mouth of the patient.

5,288,499

STERODIAL LIPOSOMES

Andrew S. Janoff, Yardley, Pa.; Mircea C. Popescu, Plainsboro; Alan L. Weiner; Lois E. Bolcsak, both of Lawrenceville; Paul A. Tremblay, Hamilton, and Christine E. Swenson, Princeton Junction, all of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Division of Ser. No. 425,727, Oct. 23, 1989, which is a continuation of Ser. No. 773,429, Sep. 10, 1985, Pat. No. 4,891,208, which is a continuation-in-part of Ser. No. 721,630, Apr. 10, 1985, Pat. No. 4,721,612, which is a continuation-in-part of Ser. No. 599,691, Apr. 12, 1984, abandoned. This application Sep. 12, 1991, Ser. No. 758,587

The portion of the term of this patent subsequent to Jan. 26, 2005, has been disclaimed.

Int. Cl.[5] A61K *9/127, 9/133, 37/22*

U.S. Cl. 424—450 **9 Claims**

1. Steroidal liposomes having bilayers consisting essentially of a salt form of cholesteryl hemisuccinate.

2. The composition of claim 1 further comprising an antifungal compound.

5,288,500

ORAL COMPOSITION CONTAINING PARTICLES COMPRISING AN ACTIVE SUBSTANCE

Lars S. Ibsen, Frederiksberg, Denmark, assignor to Benzon Pharma A/S, Hvidovre, Denmark

Division of Ser. No. 526,671, May 21, 1990, Pat. No. 5,147,655, which is a continuation of Ser. No. 166,638, Mar. 11, 1988, abandoned. This application Mar. 25, 1992, Ser. No. 857,515

Claims priority, application Denmark, Mar. 13, 1987, 1302/87

Int. Cl.[5] H61K *9/16*

U.S. Cl. 424—489 **16 Claims**

1. An oral composition comprising a dispersion in an aqueous carrier of a multiplicity of solid particles having particle sizes of about 0.05–7 mm and shapes such that they normally feel gritty, the particles:

(a) containing at least one active substance selected from the group consisting of drugs, vitamins, nutrients, and combinations thereof; and

(b) being provided with an aqueous masking surface layer having a higher viscosity than the viscosity of the surrounding aqueous carrier, the masking surface layer being provided by a first viscosity-increasing agent comprising a gelling or swelling agent, being in intimate contact with the surfaces of the solid particles and thereby reducing the grittiness of said particles, contributing to masking any unpleasant taste of the active substance, and/or reducing the tendency of the particles to settle, to adhere to a container from which the composition is administered, or to adhere to the oral mucosa;

the dispersion containing about 0.05–20 weight percent of the gelling or swelling agent; and

the dispersion additionally containing a second viscosity-increasing agent which is distinct from the gelling or swelling agent and is selected from the group consisting of:

(i) a substance having a redox potential such that, in the aqueous medium it is oxidized or reduced;

(ii) a substance which forms a salt or chelate with the gelling or swelling agent dispersed in said aqueous medium;

(iii) a surfactant which reduces the surface tension of the water in said aqueous medium; and

(iv) combinations thereof.

5,288,501

MECHANICALLY-STABLE, READILY-DISINTEGRATABLE TABLETS MADE OF SMALL PREFORMED PARTICLES CONTAINING ACTIVE INGREDIENTS

Eberhard Nürnberg, Uttenreuth/Weiher; Erhard Seiller, Niderau, and Bernd Kühn, Frankfurt, all of Fed. Rep. of Germany, assignors to Merz + Co. GmbH & Co., Frankfurt, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 905,036

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122217

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—465 **23 Claims**

1. Process for the manufacture of mechanically-stable, readily-disintegratable tablets which are disintegratable in water within a period of 5 of 300 seconds comprising small preformed individual pellets or particles containing active ingredient wherein

A. an aqueous or aqueous-organic suspension which consists essentially of:

a) water-soluble polyvinyl alcohol having an ester content up to about 20%,

b) pharmaceutically-acceptable disintegrant,

c) finely-divided cellulose, and

d) pharmaceutically-acceptable excipients,

the percentage by weight of said suspension of a) being 1–20, the percentage by weight of said suspension of b) being 1–20, the percentage by weight of said suspension of c) being 1–20, and the percentage by weight of said suspen-

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sion of d) being 0 to 37%, the percentage by weight of a), b), c), and d) to total weight of the suspension being 3 to 40 percent, the remainder being the suspending liquid,

is applied to the particles or pellets, whereafter

B. the coated particles or pellets are dried, and

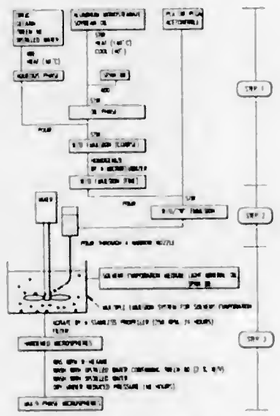
C the dried coated particles or pellets are compressed under pressure of at least 2 kN into tablets of about 25–125 N hardness wherein the weight of the coating is at least 3% of the weight of the coated particles or pellets.

5,288,502

PREPARATION AND USES OF MULTI-PHASE MICROSPHERES

James W. McGinity, Austin, Tex., and Motokazu Iwata, Osaka, Japan, assignors to The University of Texas System, Austin, Tex.

Filed Oct. 16, 1991, Ser. No. 779,173
Int. Cl.[5] A61K *9/14*; B32B *5/16*
U.S. Cl. 424—484 **62 Claims**



1. A delivery system for a protein, peptide, or drug with biodegradable multi-phase microspheres, said microspheres comprising a protein, peptide, or drug contained within a fixed oil and an essentially water insoluble, biodegradable polymeric matrix comprised of polylactic acid or polylactic glycolic acid wherein the polymeric matrix surrounds the fixed oil of the microsphere and wherein the fixed oil contains the protein, peptide, or drug.

54. A multi-phase microsphere for the delivery of a peptide, protein, or drug comprising a biodegradable essentially water insoluble polymeric matrix of polylactic acid or polylactic glycolic acid surrounding a protein, peptide, or drug contained within a fixed oil, said microsphere prepared by a process of:

preparing a first mixture of a water-soluble protein, peptide, or dug in water, gelatin and Tween 80 to form an aqueous base;

preparing a second mixture of an amount of aluminum stearate and a volume of a fixed oil to produce a 2% w/w aluminum stearate and about 5% w/w span 80 oil phase;

combining the first mixture with the second mixture to form a coarse W/O emulsion;

processing the coarse W/O emulsion into a fine W/O micro emulsion;

preparing a third mixture of a biodegradable essentially water-insoluble polymer polylactic acid of polylactic glycolic acid and a solvent;

combining a quantity of the fine W/O micro emulsion with the third mixture to form a W/O/"O" emulsion;

preparing a fourth mixture of an amount of span 80 and an oil incompatible with the polymer solvent;

pouring the W/O/"O" emulsion into the fourth mixture to form a multiple emulsion;

evaporating the solvent from the multiple emulsion to form hardened microspheres;

separating the hardened microspheres from the mixture; and

washing and drying the hardened microspheres to form multi-phase microspheres containing a water-soluble protein, peptide, or drug.

5,288,503

CRYOGEL ORAL PHARMACEUTICAL COMPOSITION CONTAINING THERAPEUTIC AGENT

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to SRCHEM Incorporated, Elkridge, Md.

Division of Ser. No. 821,627, Jan. 16, 1992, Pat. No. 5,260,066. This application Jun. 16, 1992, Ser. No. 899,369
Int. Cl.[5] A61K *9/16, 9/50*
U.S. Cl. 424—497 **5 Claims**

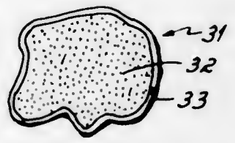
1. An oral pharmaceutical composition in unit dosage form comprising a hydrophobic resin or an ion-exchange resin wherein the form of the resin is selected from a group of forms consisting of regularly shaped particles and irregularly shaped particles, said resin having a pharmacologically active therapeutic agent bound thereto forming an agent-resin complex wherein said agent comprises less than about 29% by weight of the agent-resin complex, the ratio of pharmacologically active therapeutic agent to resin ranging from about 0.01 to 0.39:1 and wherein said agent-resin complex forms have an outer coating consisting of a water-permeable diffusion barrier of poly(vinyl alcohol) polymer cryogel, 90–100% hydrolysis, of molecular weight 50,000–250,000 daltons, said cryogel comprising over 80% water, from about 0.1% to about 25% by weight of the agent-resin complex and wherein said composition provides controlled release of said active agent.

5,288,504

PHARMACEUTICALS MICROENCAPSULATED BY VAPOR DEPOSITED POLYMERS AND METHOD

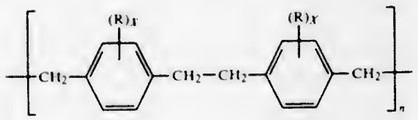
Ronald J. Versic, Dayton, Ohio, assignor to The Ronald T. Dodge Company, Dayton, Ohio

Continuation of Ser. No. 243,064, Sep. 9, 1988, abandoned. This application Aug. 23, 1991, Ser. No. 753,002
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—497 **3 Claims**



1. A pharmaceutical comprising:

an active pharmaceutical agent coated with a vapor deposited inert polymeric film produced by chemical vapor deposition, said inert polymeric film comprising the solid polymerization product of pyrolyzed vapors of di-p-xylylene, said product having the general repeating units



wherein R is an aromatic nuclear substituent, X is a number from 0 to 3 and n is a number from 10–10,000,

said inert polymeric film having a thickness of from about 0.1 to about 10 microns, and

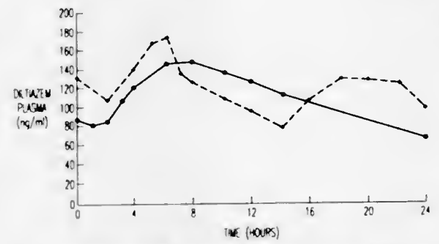
said active pharmaceutical agent being selected from a group consisting of ammonium bisphosphate, ammonium chloride, theophylline, erythromycin, aspirin, colchicine, diethylstilbestrol, digestive enzymes, ferrogylcine sulphate, methenaminemaleate, oxbile extract, paraminosalicyclic acid, phenazopyridiene, proteolitic enzymes, potassium chloride, potassium iodide, potassium salicylate, sodium acid pyrophosphate, sodium amino benzoate, sodium biphosphate, sodium chloride, sodium salicylate, sulfacsalazine, sulfoxone sodium, thyroid, and ascorbic acid.

5,288,505

EXTENDED RELEASE FORM OF DILTIAZEM

Arthur M. Deboeck, Gurabo, P.R., and Philippe R. Baudier, Waterloo, Belgium, assignors to Galephar P.R., Inc., Ltd., Carolina, P.R.

Filed Jun. 26, 1991, Ser. No. 721,396
Int. Cl.[5] A61K *9/16, 9/58*
U.S. Cl. 424—497 **15 Claims**



1. An extended-release galenical composition of Diltiazem or one or more pharmaceutically-acceptable salts thereof, which comprises beads, said beads consisting essentially of in admixture together:

a) an effective amount of Diltiazem or said one or more salts thereof as an active ingredient, and

b) an effective amount of a wetting agent, wherein said wetting agent is selected from the group consisting of a sugar, a C_{12}–C_{20} fatty acid ester of sucrose or xylose, a glyceride of sucrose, a fatty acid ester of polyoxyethylene, an ether of fatty alcohols and polyoxyethylene, an ester of sorbitan, an ester of polyoxyethylene sorbitan, a glyceride-polyglycide, an alcohol-polyglycide ester, lecithins and a combination thereof,

wherein said beads are coated with a microporous membrane constituted by an aqueous dispersion of a neutral copolymer of ethyl acrylate and methyl acrylate, and a pharmaceutically-acceptable adjuvant.

5,288,506

ANTACID COMPOSITIONS WITH PROLONGED GASTRIC RESIDENCE TIME

Robert G. W. Spickett; Jose L. F. Vidal, and Juan C. Escoi, all of Barcelona, Spain, assignors to Walton S.A., Madrid, Spain

Filed Apr. 20, 1989, Ser. No. 340,780
Claims priority, application United Kingdom, Apr. 21, 1988, 8809421
Int. Cl.[5] A61K *9/16, 9/20, 9/54*
U.S. Cl. 424—498 **10 Claims**

1. A solid pharmaceutical preparation comprising an internal phase and a solid external phase,

a) the internal phase being a powder mixture comprising discrete solid granules of an antacid means for neutralizing acid and a pharmaceutically acceptable excipient,

b) the internal phase being surrounded by a solid external phase comprising a hydrophobic organic means for floating selected from the group consisting of hydrogenated mono-, di- and tri-glycerides, wherein about 70% to 90% by weight of ester is a 12-hydroxysteric ester and about 10 to 20% by weight of ester is a stearic acid ester, a hydroxylated polyalkene having a molecular weight between about 950 and about 10,000, and a non-ionic emulsifier comprising a polyoxyethylene-sorbitan mono-ester of an oleic, lauric, stearic or palmitic acid.

5,288,507

IBUPROFEN ANTACID COMBINATIONS

Robert T. Sims, Holicong; Thomas N. Gates, Doylestown, and William Slivka, Philadelphia, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J. and McNeill-PPC, Inc., Fort Washington, Pa.

Filed Jul. 29, 1992, Ser. No. 921,879
Int. Cl.[5] A61K *33/06, 33/08, 33/10*
U.S. Cl. 424—682 **4 Claims**

1. A method of treating of pain and inflammation and the treatment of acid indigestion, heartburn, sour stomach, and symptoms of upset stomach associated with these conditions in a mammalian organism in need of such treatment, comprising administering to such organism:

(i) an analgesically and anti-inflammatory effective amount of a salt of (S)-ibuprofen, substantially free of (R)-ibuprofen wherein the salt is selected from (S)-ibuprofen-(S)-lysine and (S)-ibuprofen-(R)-lysine; and

(ii) an amount effective in the treatment of acid indigestion, heartburn, sour stomach, and symptoms of upset stomach associated with these conditions of aluminum hydroxide with magnesium hydroxide.

5,288,508

DELIVERY SYSTEMS CONTAINING ELASTOMER SOLVENTS SUBJECTED TO FLASH FLOW

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies, Ltd., Chatilly, Va.

Filed Mar. 20, 1992, Ser. No. 855,599
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—5 **35 Claims**

1. A chewing gum base, comprising:

a) an elastomer component; and

b) a matrix prepared by subjecting a feedstock comprising an elastomer solvent and a flavorant to conditions which create flash flow, said elastomer solvent present in said feedstock in an amount sufficient to provide a throughput, whereby the structure of the elastomer solvent is altered and said matrix is formed which is a generally non-descript aggregate.

5,288,509

METHOD FOR THE PREPARATION OF A YEAST EXTRACT, SAID YEAST EXTRACT, ITS USE AS A FOOD FLAVOUR, AND A FOOD COMPOSIITON COMPRISING THE YEAST EXTRACT

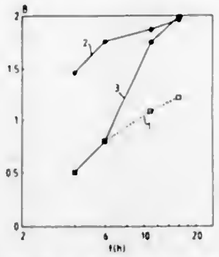
Ronald P. Potman, Schiedam, and Johannes Wesdorp, Roosendaal, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 24, 1989, Ser. No. 383,337
Claims priority, application European Pat. Off., Jul. 22, 1988, 88201596.9; Apr. 13, 1989, 89200922.6
Int. Cl.[5] A23L *1/28*
U.S. Cl. 426—60 **13 Claims**

1. A method for the preparation of a yeast extract by degrading yeast with enzymes having RNA degrading activity yield-

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ing to 5'-ribonucleotides, wherein oxidizing conditions are maintained during the enzymatic degradation and the oxidizing conditions comprise an oxygen concentration of about 0.1 to 30 mg/l of aqueous yeast-containing medium.



5,288,510

PALATABLE LOW SALT SUBSTITUTES

George Gregory, 5401 Ostrom Ave., Encino, Calif. 91316, and Hakam Singh, Bradbury, Calif. 91010

Filed May 18, 1992, Ser. No. 885,328

Int. Cl.[5] A23L *1/237, 1/302*

U.S. Cl. 426—72 **17 Claims**

1. A palatable composition suitable as a salt substitute comprising a mixture of about forty to about sixty percent by weight of said mixture (wt %) of the calcium salt of ascorbic acid, about five to about twenty-five wt % of the sodium salt of ascorbic acid, about fifteen to about twenty wt % of sodium chloride and about one to about two wt % of potassium chloride.

5,288,511

SUPERCRITICAL CARBON DIOXIDE DECAFFEINATION OF ACIDIFIED COFFEE

Peter T. Kazlas, Allentown; Richard D. Novak, Lansdale, and Raymond J. Robey, Macungie, all of Pa., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 799,904, Nov. 26, 1992, abandoned, which is a continuation of Ser. No. 571,749, Aug. 23, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,536

Int. Cl.[5] A23F *5/20*

U.S. Cl. 426—427 **21 Claims**

1. A method of treating green coffee beans comprising contacting green coffee beans with an aqueous solution of an organic acid which is insoluble in supercritical carbon dioxide, said organic acid being selected from the group consisting of tartaric acid, citric acid, malic acid, succinic acid, ascorbic acid, phenylacetic acid and oxalic acid, maintaining said green coffee beans in contact with said aqueous solution until a predetermined degree of acidification of said green coffee beans has occurred by absorption of said aqueous solution by said green coffee beans, said predetermined degree of acidification being that obtained which is equivalent to the use of a citric acid solution which has a citric acid concentration of between about 0.25% and about 3.0% by weight and the weight ratio of citric acid solution to green coffee beans is from about 1:3 to about 1:1 and decaffeinating said acidified green coffee beans by extraction with supercritical carbon dioxide.

5,288,512

REDUCED CALORIE FATS MADE FROM TRIGLYCERIDES CONTAINING MEDIUM AND LONG CHAIN FATTY ACIDS

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 329,620, Mar. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 132,400, Dec. 15, 1987, abandoned. This application Dec. 4, 1992, Ser. No. 989,484

Int. Cl.[5] A23D *5/00*

U.S. Cl. 426—607 **21 Claims**

1. A reduced calorie fat having an at least about 10% reduction in calories relative to corn oil and comprising at least about 50% by weight reduced calorie triglycerides selected from the group consisting of MML, MLM, LLM, and LML triglycerides, and mixtures thereof and at least about 10% by weight of a mixture of MML and MLM triglycerides; wherein M = fatty acids selected from the group consisting of C_6 to C_{10} saturated fatty acids, and mixtures thereof, and L = fatty acids selected from the group consisting of C_{17} to C_{26} saturated fatty acids, and mixtures thereof; and wherein the fat has the following fatty acid composition by weight percent:

(a) from about 15 to about 70% C_6 to C_{10} saturated fatty acids;

(b) from about 10 to about 70% C_{17} to C_{26} saturated fatty acids;

(c) not more than about 10% fatty acids selected from the group consisting of $C_{12:0}$ and $C_{14:0}$, and mixtures thereof;

(d) not more than about 20% fatty acids selected from the group consisting of $C_{18:1}$, $C_{18:2}$, $C_{18:3}$, and mixtures thereof; and

(e) not more than 4% $C_{18:2}$ fatty acids.

5,288,513

NON-TEMPER FILLING FATS

Frederick W. Cain, Voorburg; Franciscus Duurland, Loenen a/d Vecht; Bettina Schmidl, Alkmaar, and Joke Ten Wolde-Hakvoort, Zaandam, all of Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Feb. 11, 1993, Ser. No. 16,361

Claims priority, application European Pat. Off., Feb. 12, 1992, 92200387.6

Int. Cl.[5] C07C *53/00*

U.S. Cl. 426—660 **7 Claims**

1. Cool-melting, non-temper, non-trans filling fat comprising a fat blend having the composition :

% SUS = 35–80 wt. %, preferably 51–80 wt. %;

% S_3' = less than 5 wt. %, preferably less than 3 wt. %;

% $(U_2S + U_3)$ = 7–60 wt. %, preferably 10–50 wt. %;

% SSU = less than 40 wt. %.

weight ratio

$$\frac{SUS}{SSU} < 6$$

wherein

S = saturated fatty acid having 16–18 C atoms;

S' = saturated fatty acid having 10–24 C atoms;

U = unsaturated fatty acid having 16–22 C atoms, in particular $C_{18:1}$.

5,288,514

SOLID PHASE AND COMBINATORIAL SYNTHESIS OF BENZODIAZEPINE COMPOUNDS ON A SOLID SUPPORT

Jonathan A. Ellman, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Sep. 14, 1992, Ser. No. 944,469

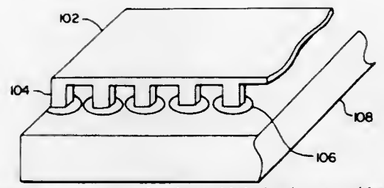
Int. Cl.[5] A01N *1/02*

U.S. Cl. 427—2 **18 Claims**

1. A method of making a plurality of benzodiazepines on a substrate comprising the steps of:

coupling substituted amino benzophenones to a substrate, said substituted amino benzophenones comprising protecting groups;

removing said protecting groups from said amino benzophenones to form amino benzophenones having amino active sites;



coupling a plurality of amino acid derivatives to said amino active sites; and

cyclizing molecules resulting from the step of coupling said plurality of amino acid derivatives, whereby a plurality of benzodiazepines are formed on said substrate.

5,288,515

VAPOR DEPOSITION METHOD AND APPARATUS FOR PRODUCING AN EL THIN FILM OF UNIFORM THICKNESS

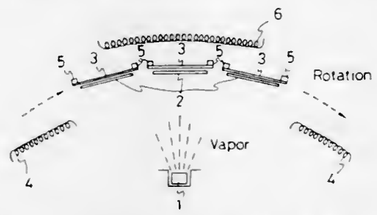
Noriaki Nakamura; Hiroyuki Shimoyama, both of Nara; Kinichi Isaka, Yamatokoriyama; Akio Inohara, Osaka, and Hiroshi Kishishita, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 748,005, Aug. 21, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,289

Claims priority, application Japan, Aug. 24, 1990, 2-224016; Nov. 26, 1990, 2-324615

Int. Cl.[5] B05D *5/12;* **C23C** *16/00*

U.S. Cl. 427—58 **6 Claims**



1. A vapor deposition method comprising the steps of:

(a) depositing a deposition material of an evaporation source on a substrate, in a vacuum chamber;

(b) heating the substrate; and

(c) adjusting the heat transmitted to the substrate to provide uniform heating over an entire area of the substrate in order to produce an electroluminescent film with an overall thickness variation of less than 1%, suitable for use in a multi-gradation display, using an equalizing plate larger in area than the substrate, with a thermal conductivity of at least 200 $W \cdot m^{-1} \cdot K^{-1}$ and an infrared energy emissivity of at least 0.2.

5,288,516

PROCESS OF PRODUCING BIOABSORBABLE FILAMENTS

Mary B. Anderson, Milford, Ohio, and Paul D. Seemuth, Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1993, Ser. No. 16,423

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—171 **19 Claims**

1. In the process of preparing a stretch-oriented, bioabsorbable poly(hydroxycarboxylic acid) filament, the process comprising the steps of:

spinning a bioabsorbable poly(hydroxycarboxylic acid) into a filament to produce an as-spun filament, and

drawing the as-spun filament to produce the stretch-oriented filament;

the improvement wherein:

the step of applying to the as-spun filament, prior to the drawing step, a lubricant that is biocompatible with mammals, has sufficient lubricity to minimize filament-to-filament friction and filament breakage, is liquid at the temperature of application, is hydrophobic, and has a viscosity at the temperature of application of about 1 to about 100 cp.

5,288,517

METHOD OF FORMING PLANAR MEMBRANE

Tsunehiro Kanno, Isehara; Kinya Kato, Yokohama; Harumi Iwashita, Atsugi; Junji Ohyama, Yamato; Nobuko Yamamoto, Isehara, and Masanori Sakuranaga, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 402,080, Aug. 21, 1989, abandoned. This application Feb. 18, 1992, Ser. No. 835,025

Claims priority, application Japan, Aug. 26, 1988, 63-211911

Int. Cl.[5] G01N *33/545;* **C07K** *17/08;* **B05D** *5/00*

U.S. Cl. 427—244 **6 Claims**

1. A method of forming a lipid planar bilayer membrane, comprising the steps of selecting a liquid phase comprising a suspension of liposome; and

immersing a substrate having on the surface of at least one side thereof a molecular layer of long-chain hydrocarbon groups in said liquid phase, whereby said liposome is cleaved, on the surface of said molecular layer in said liquid phase and is disposed as a monolayer on said molecular layer.

5,288,518

CHEMICAL VAPOR DEPOSITION METHOD FOR FORMING FLUORINE CONTAINING SILICON OXIDE FILM

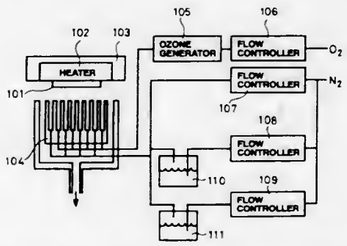
Tetsuya Homma, Tokyo, Japan, assignor to NEC Corproation, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,584

Claims priority, application Japan, Jun. 7, 1991, 3-136426

Int. Cl.[5] C23C *16/40, 16/50*

U.S. Cl. 427—255.1 **8 Claims**



1. A chemical vapor deposition method for forming a fluo-

VOL 1159 ISS 4 FE 22 1994 UMI

rine-containing silicon oxide film comprising introducing a gaseous mixture of alkoxysilane as a source gas with fluoroalkoxysilane added thereto into a reaction chamber and performing decomposition of the gaseous mixture to deposit the fluorine-containing silicon oxide film onto a substrate.

5,288,519

METHOD OF PRODUCING MODIFIED POLYIMIDE LAYER HAVING IMPROVED ADHESION TO METAL LAYER THEREON

Charles E. Baumgartner, Schenectady, N.Y., and Lisa R. Scott, Chicago, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,458

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—304 **22 Claims**

1. A method of improving adhesion of a metal layer on a halogenated polyimide surface comprising:

reacting a halogenated polyamic acid with about 0.1 to about 14.0% by weight of added water to form a reaction product;

applying a coating of said reaction product over the surface of a substrate about 5 minutes to about 8 hours after adding said water;

curing said reaction product coating into a layer of said halogenated polyimide;

treating said surface of said polyimide layer with a degreasing agent; and

treating said degreased surface with an oxidizing agent.

14. A method of metallizing a halogenated polyimide surface comprising:

reacting a halogenated polyamic acid with about 0.1 to about 14.0% by weight of added water to form a reaction product;

applying a coating of said reaction product over the surface of a substrate about 5 minutes to about 8 hours after adding said water;

curing said reaction product coating into a cured layer;

post-curing said cured layer into a layer of said halogenated polyimide;

treating said surface of said modified polyimide layer with a degreasing agent;

treating said degreased surface with an oxidizing agent;

contacting said oxidized surface with a mild reducing agent for a time sufficient to remove most of the oxidized residue produced during said oxidation of said surface; and

applying a metal layer on said cleaned surface.

20. A method of improving adhesion of a metal layer on a fluorinated polyimide surface comprising:

reacting a fluorinated polyamic acid with about 0.1 to about 14.0% by weight of added water to form a reaction product;

applying a coating of said reaction product over the surface of a substrate about 5 minutes to about 8 hours after adding said water;

curing said reaction product coating at about 205° C. to about 250° C. for about 2 to 8 hours to form a cured layer;

post-curing at about 260° C. to about 357° C. for about 1 hour to about 48 hours said cured layer into a layer of aid fluorinated polyimide;

treating said surface of said fluorinated polyimide layer with a degreasing agent;

oxidizing said degreased surface with an aqueous solution containing potassium permanganate and sodium hydroxide for about 2.5 minutes; and

contacting said oxidized surface with an aqueous solution of a reducing agent for a time sufficient to remove most of the oxidized residue produced during said oxidation of said surface.

5,288,520

PROCESS FOR PAINTING A POLYOLEFINIC RESIN COMPONENT

Kazuaki Toyoshima; Takumi Kunikiyo; Mitsutoshi Shimizu, all of Hamamatsu; Shousaku Yamamoto, Yokohama; Yoshifumi Ohama, and Yasuyuki Takeuchi, both of Nishinomiya, all of Japan, assignors to Suzuki Motor Corporation, Shizuoka, Japan

Filed Sep. 25, 1991, Ser. No. 765,187

Claims priority, application Japan, Sep. 25, 1990, 2-251852

Int. Cl.[5] B05D *7/02*

U.S. Cl. 427—322 **1 Claim**

1. A process for painting a polyolefinic resin component comprising washing a surface of the polyolefinic resin component and directly without using a primer, coating at least one time the surface with a paint composition; the paint composition being obtained by mixing a component containing a polymer resin having a hydroxyl number of 20–150 with a curing agent selected from the group consisting of polyfunctional isocyanate compounds (D) at an equivalent ratio of NCO groups of the curing agent per hydroxyl groups of the polymer resin of NCO/OH=0.4–2.0, and the polymer resin being obtained by polymerizing the following ingredients (A), (B) and (C):

(A) chlorinated polyolefin, 5–50% by weight,

(II) acrylic monomer having hydroxyl groups or a mixture of the acrylic monomer and an ethylene monomer which is able to copolymerize with the acrylic monomer, 5–80% by weight; and

(C) polyester prepolymer having ethylene terminal double bonds and a number-average molecular weight of 500–3,000, 1–50% by weight.

5,288,521

PROCESS AND APPARATUS FOR THE IMPREGNATION OF WORKPIECES OF POROUS MATERIAL

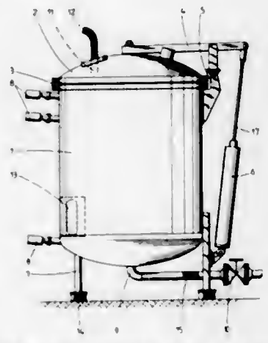
Hubert Maldaner, Max-Planck-Ring 3, D-4018 Langenfeld/Rhld., Fed. Rep. of Germany

Continuation of Ser. No. 597,083, Oct. 15, 1990, abandoned. This application Feb. 20, 1992, Ser. No. 840,663

Claims priority, application European Pat. Off., Oct. 25, 1989, 89119784.0

Int. Cl.[5] B05D *3/12, 3/04*

U.S. Cl. 427—346 **8 Claims**



1. A process for impregnating a solid workpiece of porous metal with a liquid impregnating agent, comprising the steps of.

(a) placing the workpiece in an autoclave;

(b) sealing the autoclave;

(c) evacuating the sealed autoclave;

(d) introducing sufficient impregnating agent into the sealed and evacuated autoclave to immerse the workpiece in the impregnating agent;

(e) vibrating the sealed and evacuated autoclave until the process of impregnating the workpiece is complete; and

(g) impacting the immersed workpiece with insert gas after the vibrating step.

5,288,522

Patent Not Issued For This Number

5,288,523

CROSSLINKABLE RESIN COMPOSITION COMPRISING A THERMOPLASTIC RESIN

Adolf A. Klaiber, Neuss, Fed. Rep. of Germany; Johannes F. H. Courtier, Hoogstraten, and Daniel Gaeckle, Waterloo, both of Belgium, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 899,567, Jun. 16, 1992. This application Jun. 11, 1993, Ser. No. 74,622

Claims priority, application European Pat. Off., Jun. 20, 1991, 91870099.8

Int. Cl.[5] B05D *3/02, 3/06*

U.S. Cl. 427—385.5 **11 Claims**

1. A process for making a cured resin coating on a substrate which comprises applying on a substrate a film of a curable composition comprising:

(A) 10% to 90% by weight of a thermoplastic resin component,

(B) 90% to 10% by weight of a curable resin component, comprising, expressed by reference to the curable resin component (100%),

(i) 50% to 95% of a (meth)acryloyl derivative, and
(ii) 50% to 5% of a (meth)allyloxy derivative, and

(C) 0% to 30% by weight of a plasticiser for the thermoplastic resin component, and subsequently curing the composition.

5,288,524

PROCESS FOR COATING HOLLOW BODIES

Evert Kramer, Wuppertal, and Hans-Jürgen Schlinsog, Wülfrath, both of Fed. Rep. of Germany, assignors to Herberts G.m.b.H., Wuppertal, Fed. Rep. of Germany

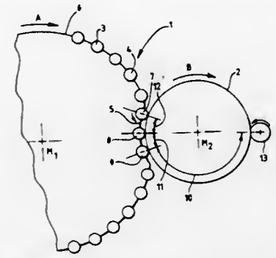
Filed Mar. 6, 1992, Ser. No. 847,462

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203643

Int. Cl.[5] B05D *1/28*

U.S. Cl. 427—428 **7 Claims**

1. A process for the application of several layers of lacquer onto cylindrical hollow bodies by rotating the hollow bodies about axes of rotation and in contact with a lacquer film moved in a first direction on an application device, characterized in that the axes of rotation of the hollow bodies are moved in a second direction opposite the first direction of movement of the lacquer film, one after the other, wherein, for the application of at least a first layer of lacquer onto a hollow body, such hollow body is rolled in a position on the applicator device where an amount of lacquer on the applicator device at that



position has been reduced by the application of lacquer from that position onto one or more preceding hollow body or bodies.

5,288,525

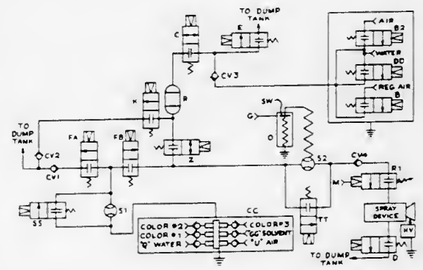
METHOD OF AND SYSTEM FOR DELIVERING CONDUCTIVE COATING MATERIAL TO ELECTROSTATIC SPRAYING APPARATUS

Michael J. Diana, West Dundee, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Mar. 24, 1992, Ser. No. 856,658

Int. Cl.[5] B05D *1/04, 1/06;* **B05B** *7/16*

U.S. Cl. 427—475 **26 Claims**



1. A system for delivering electrically conductive coating material from a coating material supply to high voltage electrostatic coating apparatus, said system comprising a fluid path for coupling the coating material supply to the coating apparatus; a reservoir coupled to said fluid path at a connection point intermediate the coating material supply and the coating apparatus; means for flowing coating material from the coating material supply first into and through said fluid path past said connection point to the coating apparatus to fill said fluid path with coating material and then from said connection point into said reservoir; means, operative after operation of said flowing means, for cleaning coating material from at least a portion of said fluid path between the coating material supply and said connection point to electrically isolate the coating material supply from the coating apparatus and from said reservoir; and means, operative after said cleaning means cleans at least said portion of said fluid path, for delivering coating material in said reservoir through said fluid path from said connection point to the coating apparatus for being electrostatically charged and emitted by the coating apparatus.

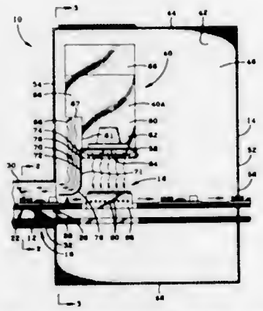
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,526

VENTILATED CURING OVEN AND PREHEAT FLASH ZONE SYSTEM FOR CURING COATINGS ON CIRCUIT BOARDS

Patrick T. Hogan, Lorain, and Richard G. Christyson, Lakewood, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Feb. 11, 1993, Ser. No. 16,230
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—492 **21 Claims**



17. A process of curing conformal coatings on circuit boards being conveyed through a UV oven, comprising the steps of:

conveying said circuit boards through a curing chamber within said UV oven;

directing UV light from a lamp housing containing UV lamps onto said coatings of said circuit boards for curing said coatings;

blowing air into said lamp housing; and

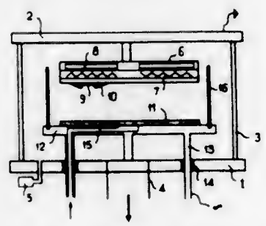
directing exhausted from said lamp housing into a flash zone chamber through which said coated circuit boards are conveyed prior to entering said UV oven for flashing volatile constituents from said coatings and raising the temperature of said circuit boards.

5,288,527

SILICON NITRIDE THIN FILMS WITH IMPROVED PROPERTIES

Didier Jousse, St Leu; Pablo Vilato, Paris; Jean-Claude Bruyere, Venon, and Brigette Reynes, Fontaine, all of France, assignors to Saint Gobain Vitrage International c/o Saint Gobain Recherche, Aubervilliers Cedex, France

Filed Nov. 21, 1991, Ser. No. 795,383
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 427—579 **8 Claims**



1. A process for the production of a silicon nitride film by a chemical vapor deposition, comprising the steps of:

generating a plasma from a gas mixture of SiH_4 and N_2 in helium in the presence of an alternating field having a frequency less than 1 MHz; and

introducing NH_3 into the plasma, so that a ratio R is greater than 0.95 and less than 1.00, where R is defined as,

$$R = \frac{\text{flow of } N_2}{\text{flow of } N_2 + \text{flow of } NH_3}$$

wherein the plasma yields on a substrate the silicon nitride film.

8. The process according to claim 1, further comprising:

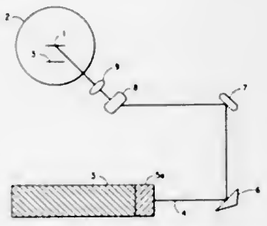
fabricating a flat screen incorporating the silicon nitride film, including engraving transistors on the flat screen, wherein glass in the flat screen is protected from attack by the silicon nitride film during the engraving of said transistors.

5,288,528

PROCESS FOR PRODUCING THIN POLYMER FILM BY PULSED LASER EVAPORATION

Graciela B. Blanchet-Fincher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1993, Ser. No. 12,223
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—596 **12 Claims**



1. In a process for producing a thin film of an addition polymer on a substrate by bombarding a target polymer with radiation from a pulsed laser in a vacuum or gas atmosphere to form a plume of the components of the target polymer which undergo a repolymerization reaction and are deposited on the substrate as a film, wherein the improvement comprises modifying the molecular weight of the addition polymer of the deposited film by conducting the deposition in the presence of at least one additive comprising a chain transfer agent or polymer initiator.

5,288,529

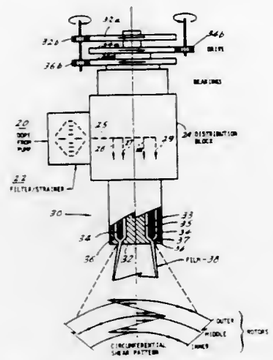
LIQUID CRYSTAL POLYMER FILM

Andrew C. Harvey, Waltham; Richard W. Lusignea, Brighton, and Leslie S. Rubin, Newton, all of Mass., assignors to Foster-Miller Inc., Waltham, Mass.

PCT No. PCT/US90/03394, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/15706, PCT Pub. Date Dec. 27, 1990
Continuation-in-part of Ser. No. 367,433, Jun. 16, 1989, abandoned. This PCT application Jun. 18, 1990, Ser. No. 778,812
Int. Cl.[5] C09K *19/00*
U.S. Cl. 428—1 **51 Claims**

1. A multiaxially oriented film prepared from high molecular weight liquid crystalline lyotropic or thermotropic polymer, having two substantially parallel and flat main surfaces and having a controlled molecular orientation in substantially any plane of said film, which orientation in each plane is defined by a selected positive or negative angle with respect to a longitudinal axis of said film, said film having planar surfaces regions wherein said angles defined by said molecular orientation generally have values defined as positive, and said film having

an inner region with respect to said surface regions wherein said angles generally have negative values, said film having a



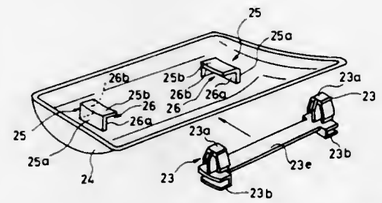
nearly uniform coefficient of thermal expansion in all planar directions.

5,288,530

TRIM FOR INSTALLATION TO AUTOMOBILES

Renji Maki, Kariya, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed May 15, 1992, Ser. No. 883,678
Claims priority, application Japan, May 15, 1991, 3-043711[U]
Int. Cl.[5] B60R *13/04*
U.S. Cl. 428—31 **6 Claims**



1. A trim for installation to the panels of automobiles wherein the trim itself is fixed to the automobile body panel by the insertion of clips into mounting holes provided in the automobile body panel comprising:

a trim member including a pair of holders spaced with respect to one another along a longitudinal direction of said trim, said holders located on a back surface of the trim member, said holders each including an opening, and wherein the openings of said holders face one another;

a pair of clips, each including a contact section which engages a contact section of a respective one of said holders; and

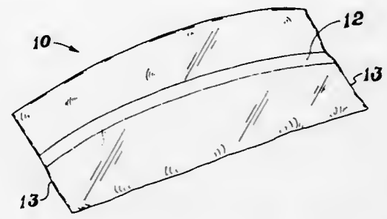
wherein said contact sections of said holder and clip are arranged for engagement to slide in a direction at an angle to a widthwise direction, said widthwise direction extending perpendicular to the longitudinal direction of the trim.

5,288,531

POUCH FOR PACKAGING FLOWABLE MATERIALS

Daniel J. Falla; Allen W. Ross, and Robert S. Elliott, all of Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1991, Ser. No. 742,800
Int. Cl.[5] B32B *27/32;* **B65D** *30/00, 85/80*
U.S. Cl. 428—35.2 **18 Claims**



1. A pouch containing a flowable material, said pouch being made from a film in tubular form and having transversely heat sealed ends, said film being made from a material comprising a film structure comprising (a) from 10 to 100 percent by weight of at least one polymeric seal layer of an ultra low density linear ethylene copolymer interpolymerized from ethylene and at least one alpha-olefin in the range of C_3–C_{10} and having (1) a density of from about 0.89 g/cm^3 to less than 0.915 g/cm^3, (2) a melt index of less than 10.0 g/10 minutes and (3) (i) a hot tack or heat seal initiation temperature of less than 100° C. at a force of at least 1 N/inch (39.4 N/m) or (ii) a hot tack strength of at least 1 N/inch (39.4 N/m) at a seal bar temperature of about 110° C. and at a time of less than 0.2 seconds using the DTC Hot Tack Strength Method or a heat seal strength of at least 1 lb/inch (175 N/m) at a seal bar temperature of about 110° C. and at a time of less than 0.25 seconds using the DTC Heat Seal Strength Method; and (b) from 0 to 90 percent by weight of at least one polymer selected from the group consisting of a linear copolymer of ethylene and a C_3–C_{18}-alpha-olefin having a density of greater than 0.916 g/cm^3 and a melt index of from 0.1 to 10 g/10 minutes, a high-pressure low density polyethylene having a density of from 0.916 to 0.930 g/cm^3 and a melt index of from 0.1 to 10 g/10 minutes and ethylene-vinyl acetate copolymer having a weight ratio of ethylene to vinyl acetate from 2.2:1 to 24:1 and a melt index of from 0.2 to 10 g/10 minutes.

5,288,532

TRANSFERABLE MODIFIER-CONTAINING FILM

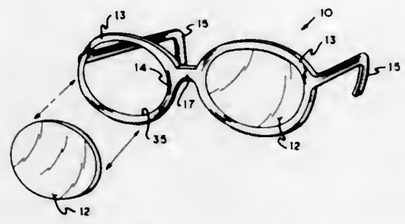
Roger L. Juhl, Asheville, N.C.; Stanley Lustig, Park Forest, and Donatas Tijunelis, Buffalo Grove, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Continuation of Ser. No. 573,770, Aug. 28, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 966,915
Int. Cl.[5] B32B *27/08;* **C08L** *23/08, 71/02*
U.S. Cl. 428—35.2 **38 Claims**

1. An extruded film article consisting essentially of a blend of an ethylene copolymer and poly (ethylene oxide) having a weight-average molecular weight of at least about 70,000 and less than 300,000 with said poly (ethylene oxide) comprising between about 15 and about 40 wt. % said blend, and a modifier absorbed in said blend inside the film, said modifier being desorbable from said blend, movable to the film surface and transferable from said film to a receiving surface in fluid transfer relationship with said film.

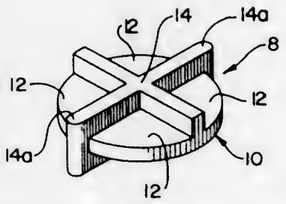
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,533
ADHESIVE LENS HOLDER
Marlin W. Remick, II, 815 Rutledge Rd., Chesapeake, Va. 23320
Filed Dec. 23, 1991, Ser. No. 812,098
Int. Cl.[5] G02B 7/02
U.S. Cl. 428—45 4 Claims



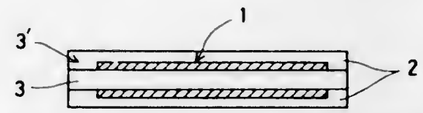
1. A temporary lens securing device for use in an eyeglasses frame assembly, the assembly including an eyeglasses frame and at least one lens, said temporary lens securing device comprising:
a strip member;
said strip member being made of a transparent plastic material;
means defining a strip member upper side and a strip member lower side;
a low-tack adhesive coating on said upper side;
a low-tack adhesive coating on said lower side;
said low-tack adhesive coating being made of a transparent material;
whereby in use, said strip member upper side is affixed to the eyeglasses frame at a predetermined location and said lens is placed in said frame and engaged by said strip member lower side, said strip member thus being affixed intermediate the lens and the frame, thereby enabling the lens to be secured to the frame by said lens securing device.

5,288,534
HANDY, MULTI-PUPOSE TILE INSTALLATION SPACERS
B. Armen Tavshanjian, 10 Amanda Dr., Manchester, Conn. 06040
Filed Dec. 28, 1992, Ser. No. 997,056
Int. Cl.[5] G01B 3/00; B32B 3/02
U.S. Cl. 428—64 10 Claims



1. A tile spacer formed of a single piece of semi-rigid material comprising:
a platform portion having coplanar, flat surfaces disposed on opposite faces thereof;
a straight spacer element comprising a raised rigid extending outwardly from and substantially across one of said surfaces; and
a corner spacer element comprising a pair of raised transverse ridges extending outwardly from and substantially across the other of said surfaces;
said spacer elements having a depth extending outwardly of said surfaces which is a significant fraction of the depth of the tile to be spaced thereby and a width equal to the width of intertile grout line which is intended to separate the tiles to be spaced thereby.

5,288,535
ELECTRODE FOR ELECTROVISCOUS FLUID
Makoto Kanbara; Masahiko Hayafune; Hirotaka Tomizawa, and Katsuya Arai, all of Ooi, Japan, assignors to Tonen Corporation, Tokyo, Japan
Continuation of Ser. No. 515,969, Apr. 27, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,113
Claims priority, application Japan, Apr. 28, 1989, 1-110497
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—68 10 Claims



1. An electrode for electroviscous fluid for applying voltage on electroviscous fluid, wherein an insulating layer is laminated on the entire electrode surface, which is in contact with the electroviscous fluid.

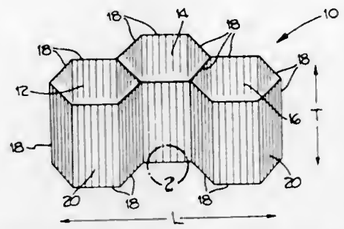
5,288,536
HYDRAULIC-JET-TREATED STITCHBONDED FABRIC
Dimitri P. Zafiroglu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 28, 1993, Ser. No. 68,821
Int. Cl.[5] B32B 3/06
U.S. Cl. 428—102 7 Claims

1. A process wherein a stitchbonded fabric comprising a multi-needle stitched fibrous layer of substantially nonbonded fibers is subjected to a treatment wherein the stitchbonded fabric, while supported on a screen, is impacted by columnar jets of water, the stitchbonded fabric having initial compressed thickness in the range of 0.15 to 0.85 mm and a unit weight in the range of 50 to 350 g/m^2, the jets imparting to the stitchbonded fabric a total impact-energy of at least 0.03 MJN/Kg, at least 0.02 MJN/Kg of the total impact-energy being imparted in a final part of the treatment with the stitchbonded fabric supported on a screen of no coarser than 40 mesh, and with the jets in the final part of the treatment being supplied through orifices of no greater than 0.15-mm diameter and being spaced with a frequency of at least 10/cm across the fabric, and the screen in the first part of the treatment having a thickness at least equal to the initial compressed thickness of the stitchbonded fabric.

5,288,537
HIGH THERMAL CONDUCTIVITY NON-METALLIC HONEYCOMB
John L. Corden, Dublin, Calif., assignor to Hexcel Corporation, Pleasanton, Calif.
Filed Mar. 19, 1992, Ser. No. 853,957
Int. Cl.[5] B32B 3/12
U.S. Cl. 428—116 16 Claims

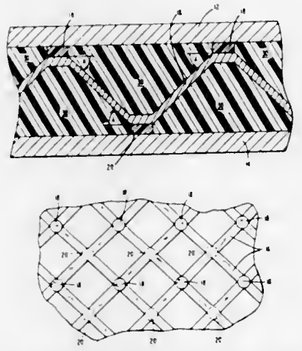
1. A high thermal conductivity non-metallic honeycomb structure comprising:
a plurality of interconnected walls which define a plurality of interconnected honeycomb cells having a lengthwise direction which extends transversely relative to said walls and a thickness direction which extends parallel relative to said walls, said cell walls comprising;
a plurality of non-metallic fibers having low thermal conductivity;
a plurality of non-metallic fibers having high thermal conductivity; and

a resin matrix in which said low and high thermally conductive fibers are impregnated to thereby provide a honeycomb structure, said high thermally conductive fibers



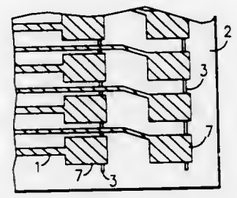
within said resin matrix being oriented to provide directionally controlled heat conductance through said honeycomb structure.

5,288,538
EXPANDABLE HONEYCOMB CORE STRUCTURAL MEMBER
Robert P. Spears, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Dec. 16, 1992, Ser. No. 992,271
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—116 37 Claims



1. An expandable structural member, comprising (a) two outer skin members, (b) a plastically deformable reinforcing layer arranged between the two outer skin members, each adjacent surface of the reinforcing layer and the respective outer skin member contacting one another and being intermittently bonded to one another, the intermittent bonds on one surface of the reinforcing layer being nonaligned with the intermittent bonds on the other surface of the reinforcing layer, and (c) a foamable polymer composition coated on at least one of each adjacent surface of the reinforcing layer and the respective outer skin member, the foamable polymer composition being foamable by application of heat to the structural member, and the foamed polymer resulting from application of heat to the structural member expanding the outer skin members from contact with the reinforcing layer at nonbonded areas and plastically deforming the reinforcing layer into a three dimensional reinforcing configuration.

5,288,539
TAB TAPE WITH A PEELING-PREVENTION STRUCTURE FOR THE CONDUCTIVE LAYER
Kaoru Araki, Sbiga, Japan, assignor to International Business Machines, Corp., Armonk, N.Y.
Filed Dec. 4, 1991, Ser. No. 802,178
Claims priority, application Japan, Dec. 27, 1990, 2-415178
Int. Cl.[5] H01L 21/60; B32B 3/24
U.S. Cl. 428—136 4 Claims



1. A TAB tape, having a peeling - prevention structure, comprising:
a patterned, electrically conductive layer including at least one test pad and at least one circuit line, said at least one circuit line being connected to said at least one test pad; and
an electrically insulating, supporting layer which supports said patterned, electrically conductive layer, said supporting layer including a slit which is positioned, at least in part, directly beneath said test pad, wherein aid electrically conductive layer and said supporting layer have different thermal expansion coefficients, and wherein said slit is capable of preventing peeling of said electrically conductive layer from said supporting layer during thermal expansion of said TAB tape.

5,288,540
DAMAGE RESISTANT DECORATIVE LAMINATE HAVING EXCELLENT APPEARANCE AND CLEANABILITY AND METHODS OF PRODUCING SAME
Donald J. Albrinck, and Ronald J. Keeling, both of Cincinnati, Ohio, assignors to Formica Technology Delaware, Wilmington, Del.
Filed Jun. 21, 1991, Ser. No. 719,158
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—208 8 Claims

1. A binderless damage resistant decorative laminate having improved scratch, mar, scrape and abrasion resistance comprising at least one backing layer sheet and a thermoset resin impregnated paper sheet laminated thereto, said decorative paper sheet having thereon an abrasion resistant coating composed of a mixture consisting essentially of:
(a) abrasion resistant mineral particles having a particle size of from about 15 microns to about 45 microns in a concentration of from about 8 to about 12 grams per square meter of surface area;
(b) a silane coupling agent in an amount dependant upon the concentration of the abrasion resistant mineral particles;
(c) a thickening agent in an amount sufficient to suspend said abrasion resistant particles; and
(d) a small but effective amount of polyethylene glycol stearate to enhance surface slip and improve scrape resistance of the laminate.

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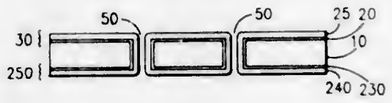
METHOD FOR METALLIZING THROUGH HOLES IN THIN FILM SUBSTRATES, AND RESULTING DEVICES

Kim J. Blackwell, Owego; Pei C. Chen, Endicott; Stephen E. Dellman, Endicott; Allan R. Knoll, Endicott, all of N.Y.; George J. Matarese, Bradenton, Fla., and Richard D. Weale, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 17, 1991, Ser. No. 779,411

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **34 Claims**



1. A device, comprising:

a device which includes first and second surfaces and at least one through hole extending through the thickness of said substrate from said first surface to said second surface, said at least one through hole containing metallic material, a top of said through hole at said first surface circumscribing a first area, A_1;

at least one metallic land on said first surface which is adjacent to said at least one through hole, an outer periphery of said metallic land circumscribing a second area, A_2, Characterized In That

said metallic material contained in said at least one through hole is essentially free of a layer of an essentially pure, palladium-tin colloid and includes a metallic, vapor phase deposited seed layer and an overlying, metallic, non-vapor phase deposited layer, said seed layer including a first, relatively thin layer and a second, relatively thick layer, said first layer serving as an adhesion layer for said second layer,

said substrate includes material having a thermal conductivity, in a direction transverse to the thickness direction of said substrate, at 25° C., equal to or less than 2.0 watts/meter °K., and a coefficient of thermal expansion, in a direction transverse to the thickness direction of said substrate, at 25° C., equal to or greater than 5×10^{-6} cm/cm °C., and

A_1 overlaps A_2, the amount of said overlap being equal to or greater than 50% of A_1.

5,288,542

COMPOSITE FOR PROVIDING A RIGID-FLEXIBLE CIRCUIT BOARD CONSTRUCTION AND METHOD FOR FABRICATION THEREOF

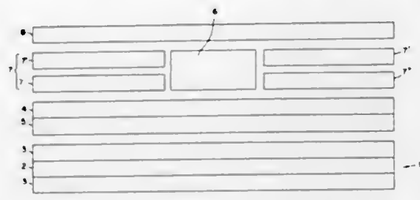
Michael J. Cibulsky, Binghamton; Konstantinos I. Papathomas, Endicott; William J. Summa, Endwell; David W. Wang, Vestal, and Patrick R. Zippetelli, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1992, Ser. No. 913,101

Int. Cl.[5] B32B *03/00*

U.S. Cl. 428—209 **25 Claims**

1. A composite for providing a rigid-flexible circuit board construction comprising at least one core wherein said at least one core comprises both a dielectric substrate and at least one conductive layer located on said dielectric substrate; at least one sub-composite located on top of said at least one conductive layer and which comprises a polyimide layer and a rigid dielectric substrate, and wherein said rigid dielectric substrate contacts said at least one conductive layer; a release layer located on top of said at least one sub-composite in a predetermined location to correspond to the desired flexible segment of said circuit board; at least one rigid bonding layer located next to each of the two sides of said release layer to correspond to the desired rigid portion of said circuit board; and at least one



second conductive layer located on top of said at least one bonding layer and said at least one release layer.

5,288,543

PROTECTIVE FILM ON SLIDING MEMBERS AND METHOD OF FORMING SAME

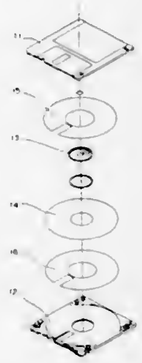
Kunihiro Ueda; Masaru Ikebe, and Morimasa Sasaki, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 723,047

Claims priority, application Japan, Sep. 17, 1990, 2-243759

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—216 **1 Claim**



1. A sliding member provided with a protective film which comprises:

a sliding member body made of a stainless steel;

an anchor layer formed on the surface of the body, said anchor layer consisting of a film selected form the group of

(a) a hydrocarbon plasma polymer film consisting of carbon and hydrogen and having an H/C value of about 1.5 to about 2.0 and

(b) a diamond film formed by ionization evaporation and having a vickers hardness of about 2,500 kg/mm^2; and

a protective coating formed on the anchor layer, said protective coating consisting of a film selected from the group of

(a') hydrocarbon plasma polymer film consisting of carbon and hydrogen and having an H/C value of about 1.5, the H/C value of the plasma polymer film of the protective coating being less than that of the anchor layer when the anchor layer consists of (a), said hydrocarbon plasma polymer film having a thickness in the range of about 100 Å to about 5000 Å, and

(b') a diamond film formed by ionization evaporization having a Vickers hardness of at least about 5,000 kg/mm^2 when the anchor layer consists of (b), said diamond film having a thickness in the range of about 100 Å to about 1000 Å.

5,288,544

NON-LINTING, ANTI-STATIC SURGICAL FABRIC

Ted A. Mallen, Chattanooga, and Doyle B. Word, Cleveland, both of Tenn., assignors to Intera Company, Ltd., Cleveland, Tenn.

Continuation of Ser. No. 427,375, Oct. 27, 1989, abandoned, which is a continuation of Ser. No. 278,468, Dec. 1, 1988, abandoned, which is a continuation of Ser. No. 924,866, Oct. 30, 1986, abandoned. This application Feb. 28, 1991, Ser. No. 662,515

Int. Cl.[5] D03D *3/00*

U.S. Cl. 428—224 **13 Claims**

1. A non-linting, anti-static, aqueous media absorbent operating room fabric article, comprising:

a synthetic fabric fiber substrate, wherein said synthetic fabric fiber substrate is chemically treated to render it absorbent to aqueous media; and

an anti-statically effective amount of a conductive fiber consisting essentially of a fiber selected from the group consisting of stainless steel, copper, platinum, gold, silver and carbon fibers, in combination with said substrate fiber.

5,288,545

TINTING AND INSULATING SCREEN LINED WITH HYDROPHILIC TEXTILE THREADS

Oscar De Decker, Gent, Belgium, assignor to Bonar Phormium N.V., Zele, Belgium

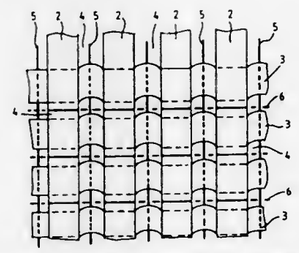
PCT No. PCT/BE90/00004, § 371 Date Jul. 30, 1991, § 102(e) Date Jul. 30, 1991, PCT Pub. No. WO90/08459, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 26, 1990, Ser. No. 730,892

Claims priority, application Belgium, Jan. 31, 1989, 8900096

Int. Cl.[5] D03D *3/00*

U.S. Cl. 428—226 **5 Claims**



1. Shading and insulating screen (1) consisting of several flexible parallel flat warp strips (2), extending lengthways without overlapping one another, and of both transversal and longitudinal water absorbing weft fabric fibres (6), interconnecting the warp strips (2) and showing some free interspaces (4) between the edges of two adjacent strips, resulting in a permeability which is evenly distributed over the whole screen (1), characterized in that the longitudinal (6) and transversal (5) fabric fibres are water absorbing textile threads which are individually and separately interwoven at the upper side and the underside of the fibres and the strips (2,3) according a structure and are serving as holding material for the canevas so that they hold the above strips tightly together in a stable pattern or supporting weave.

5,288,546

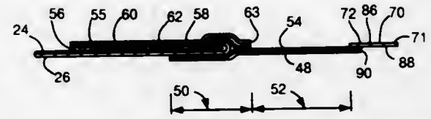
ATTACHMENT TAPE FINGER TAB

Thomas H. Roessler, Menasha; Mary P. Jordan, and Carmen C. Donovan, both of Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 31, 1992, Ser. No. 923,066

Int. Cl.[5] A41B *13/02;* **A61F** *13/16*

U.S. Cl. 428—284 **18 Claims**



1. An article having first and second waistband sections and an intermediate section which interconnects said waistband sections, said article comprising:

a backsheet layer;

a liquid permeable topsheet layer superposed in facing relation with said backsheet layer;

an absorbent body interposed between said backsheet and topsheet layers; and

at least one adhesive tape member comprising a polymer film material and connected to said first waistband section, said tape member having a factory-bond section for connecting said tape member to said first waistband section and a user-bond section having a primary adhesive located on said substrate for securing said article on a wearer, said user-bond section connected to a finger tab which includes a non-securing grasping section thereof, said grasping section comprising a layer of absorbent material having an absorbent capacity value of at least about 8 wt %.

5,288,547

TOUGHENED RESINS AND COMPOSITES

David A. Elmes, Gates Mills, Ohio, and Marie A. Mullier, Bracknell, England, assignors to The British Petroleum Company p.l.c., London, United Kingdom

Filed Jan. 23, 1992, Ser. No. 824,642

Claims priority, application United Kingdom, Jan. 25, 1991, 9101691

Int. Cl.[5] B32B *5/14*

U.S. Cl. 428—308.4 **6 Claims**

1. A process for the preparation of a composite comprising reinforcing fibres embedded in a thermosetting resin matrix, said process comprising taking said fibres impregnated with said resin and curing said resin; characterized in that a porous membrane film of thermoplastic material selected from polyesters, polyamides, polyaramids, polyarylates, polycarbonates, poly(ester-carbonates), polybenzimidazoles, polyimides, polyetherimides, polyetherketones, polyarylene ethers, polysulphones and polyamideimides is placed between at least two layers of fibres prior to curing.

5,288,548

LABEL FACE STOCK

Ralph J. Weber, Fairport, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 31, 1992, Ser. No. 922,418

Int. Cl.[5] B32B *27/00, 7/12;* **C08F** *20/10*

U.S. Cl. 428—315.9 **9 Claims**

1. A multilayer label film comprising a base structure comprising an oriented polypropylene film having on one side thereof a blend of (A) one or more alkylene acrylate copolymer of a C_{2-6} monoolefin and a C_{1-8} alkyl (meth) acrylate, and (B) and interpolymer of (a) from 2.5 to about 6 parts by weight of an alpha-beta monoethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof and (b) from about 97.5 to about 94 parts by weight of neutral monomer ester, said neutral

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monomer esters comprising (1) methyl acrylate or ethyl acrylate and (2) methyl methacrylate, said interpolymer comprising from about 30% to about 55% by weight of methyl methacrylate when the acrylate is methyl acrylate, and from about 52.5% to 69% by weight of methyl methacrylate when the acrylate is ethyl acrylate; said mixture containing inert inorganic fillers; and on the other side thereof an adhesive layer.

5,288,549

COMPOSITE ELEMENT COMPRISING A TOP LAYER AND A BASE LAYER OF THERMOPLASTIC POLYURETHANES, ITS PREPARATION, AND ITS USE

Gerhard Zeitler, Hessheim, and Thomas Friedl, Diepholz, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1992, Ser. No. 848,616

Int. Cl.[5] B32B *3/26, 27/00;* **B29C** *67/00, 65/00*

U.S. Cl. 428—318.6 **7 Claims**

1. A composite element built up from

A) an elastic, cellular polyurethane sheet-like structure comprising a thermoplastic polyurethane as the top layer, having an essentially pore-free surface, said top layer having been prepared by sintering a thermoplastic polyurethane in the presence of a solid blowing agent which is solid at 23° C., and

B) a thermoplastic polyurethane elastomer (B) as the base layer, which is itself prepared by reacting

(Ba) 1 mol of at least one essentially linear polyesterol or polyetherol having a molecular weight of from 600 to 3000,

Bb) from 6 to 15 mol of an organic diisocyanate, and

Bc) from 5 to 14 mol of at least one alkanediol or dialkylene glycol,

in the presence of

Bd) from 0.05 to 0.3% by weight, based on the total weight of (Ba) to (Bc), of water.

5,288,550

PRODUCTION METHOD OF NON-FITTING TYPE CAPSULE AND NON-FITTING TYPE CAPSULE PRODUCED THEREBY

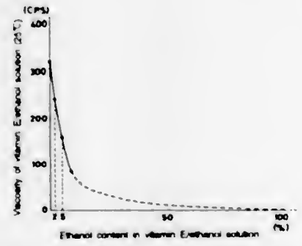
Naoyuki Sakato, Tokyo, Japan, assignor to Freund Industrial Co., Ltd., Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,322

Claims priority, application Japan, May 8, 1991, 3-102824

Int. Cl.[5] B01J *13/02*

U.S. Cl. 428—321.5 **5 Claims**



1. A non-fitting type capsule, comprising an oily substance and a hydrophilic solvent which dissolves in the oily substance, as contents of the capsule.

5,288,551

FLEXIBLE PIEZOELECTRIC DEVICE

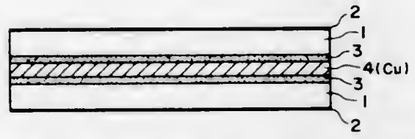
Takashi Sato; Kazuyuki Suzuki, and Kenichi Nakamura, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,279

Claims priority, application Japan, Aug. 9, 1991, 3-070619[U]; Dec. 26, 1991, 3-356667; Dec. 26, 1991, 3-356668

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—334 **12 Claims**



1. A flexible laminated piezoelectric device, comprising: a relatively rigid central electrode layer, a pair of piezoelectric polymer films or sheets sandwiching the central electrode layer, and a pair of outer electrode layers sandwiching the piezoelectric polymer films or sheets; the outer electrode layers comprising at least one of a vapor-deposited coating electrode and a thermally sprayed coating electrode and being less rigid than the central electrode layer and providing a symmetrical flexural deformation characteristic to the laminated piezoelectric device.

3. A device according to claim 1, wherein the outer electrode layers comprise a vapor-deposited coating electrode having a thickness of 10 to 100 μm.

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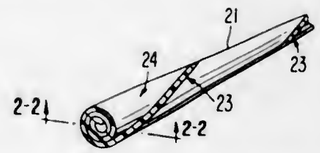
CONTINUOUS POLYTETRAFLUOROETHYLENE FIBERS

Donald L. Hollenbaugh, Jr., North East, Md.; Gordon L. McGregor, Nottingham, Pa., and Raymond B. Minor, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 778,294, Oct. 17, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 1,869

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—357 **7 Claims**



1. A continuous fiber comprising a helically rolled self-adhered continuous sheet of expanded porous polytetrafluoroethylene, said fiber having an outside surface with a substantially round profile and a single spiralling seam, and said continuous sheet having a coating of a polymeric material thereon.

5,288,553

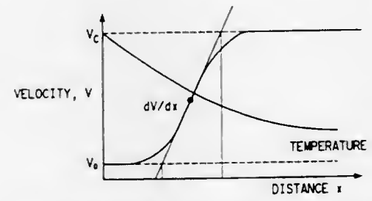
POLYESTER FINE FILAMENTS

Robert J. Collins, Wilmington; Hans R. E. Frankfort, Kinston; Stephen B. Johnson, Wilmington, all of N.C.; Benjamin H. Knox, Wilmington, Del., and Elmer E. Most, Jr., Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 647,381, Jan. 29, 1991, abandoned, and Ser. No. 860,776, Mar. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,672

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—364 **12 Claims**



1. Yarns comprising fine polyester filaments of denier per filament (dpf) in the range 0.2 to 0.8, said polyester having a relative viscosity (LRV) in the range 13 to 23, a zero-shear polymer melting point ($T_M°$) in the range 240° C. to 265° C., and a glass transition temperature (T_g) in the range 40° C. to 80° C.; and said yarns having the following characteristics:

(a) tenacity-at-7%-elongation (T_7) in the range 0.5 to 1.75 gpd, such that the $[(T_B)_n/(T_7)]$-ratio is at least $[5/(T_7)]$, wherein $(T_B)_n$ is normalized tenacity-at-break;

(b) elongation-at-break (E_B) in the range 40% to 160%;

(c) boil-off shrinkage (S) less than the maximum shrinkage potential (S_m), wherein $Sm=[(550-E_B)/6.5]\%$;

(d) maximum shrinkage tension (ST_{max}) in the range 0.05 to 0.2 gpd, with a peak temperature $T(ST_{max})$ in the range 5° C. to 30° C. above the glass-transition temperature (T_g)

(e) an average along-end filament denier spread (DS) of no more than 4%.

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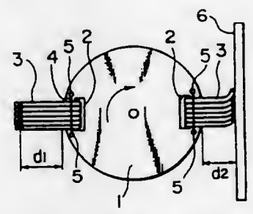
ABRASIVE FILAMENTS AND PRODUCTION PROCESS THEREOF

Tomoo Susa, Iwaki; Seiichi Ohira, Kitaibaraki, and Hiroyuki Endo, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Japan

Division of Ser. No. 722,390, Jun. 26, 1991, Pat. No. 5,238,739. This application Mar. 9, 1993, Ser. No. 28,489

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—364 **5 Claims**



1. Abrasive filaments made of a composition which comprises 95–70 vol.% of a polyvinylidene fluoride resin, whose inherent viscosity (η_{inh}) ranged from 0.9 to 1.4, and 5–30 vol.% of abrasive grains, wherein the polyvinylidene fluoride resin is a polymer blend composed of a high melting-point polyvinylidene fluoride resin whose melting point (T_{m1}) ranges from 165° C. to 185° C. and a low melting-point polyvinylidene fluoride resin whose melting point (T_{m2}) ranges from m125° C. to 170° C., and the melting points (T_{mt}), (T_{m2}) satisfy the following equation:

$$50° C. \geqq (T_{m1} - T_{m2}) \geqq 5° C.$$

5,288,555

COMPOSITES WITH INTERPHASES AND METHODS OF MAKING THE SAME

Liza M. Monette, Flemington; Arnold Lustiger, Edison; Michael P. Anderson, Gillette; John P. Dismukes, Annandale, all of N.J.; H. Daniel Wagner, Rehovot, Israel; Cary N. Marzinsky, Stockton, and Russell R. Mueller, Washington, both of N.J., assignors to Exxon Research Engineering Company, Florham Park, N.J.

Filed Mar. 5, 1992, Ser. No. 846,642

Int. Cl.[5] D02G *3/06*

U.S. Cl. 428—375 **20 Claims**

1. A discontinuous-fiber composite comprising fibers formed from a fiber material having apparent elastic modulus $E_{f,app}$ and apparent cohesive energy $U_{f,app}$ embedded in a matrix material having apparent elastic modulus $E_{m,app}$ and apparent cohesive energy $U_{m,app}$, there being an interphase surrounding said fibers and interposed between said fibers and said matrix, said interphase being formed from an interphase material having apparent elastic modulus $E_{i,app}$ and apparent cohesive energy $U_{i,app}$, wherein:

$E_{i,app} < E_{m,app}$; and

$U_{i,app} > U_{m,app}$.

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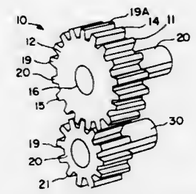
GEARS AND GEAR ASSEMBLIES

Jerome H. Lemelson, 930 Tahoe Blvd., Unit 802, Incline Village, Nev. 89451-9436

Continuation-in-part of Ser. No. 488,116, Mar. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 32,352, Mar. 31, 1987, Pat. No. 4,960,643, and a continuation-in-part of Ser. No. 32,307, Mar. 31, 1987, Pat. No. 4,859,493. This application Sep. 25, 1991, Ser. No. 765,447

Int. Cl.[5] F16H *55/17*

U.S. Cl. 428—408 **27 Claims**



1. A gear assembly comprising in combination:

(a) at least two gears, each of which is formed of a substrate having a base and a surface defining a plurality of teeth,

(b) means for supporting said gears in positions so as to mesh with each other and so that driving one of said gears will drive at least one other of said gears by engaging at least a select surface portion of the teeth of each of the gears, and

(c) a non-abrasive coating deposited on at least said select surface portions of said teeth of said gears comprising a hard synthetic diamond material.

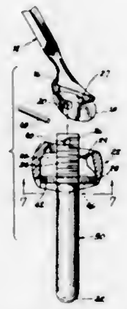
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,557

PORTABLE HOOD ORNAMENT STRUCTURE

Richard I. Perlman, and Marvin K. Perlman, both of 2311 Morena Blvd., San Diego, Calif. 92110

Filed Jan. 21, 1993, Ser. No. 6,780
Int. Cl.[5] B60R *13/04*
U.S. Cl. 428—31 **7 Claims**



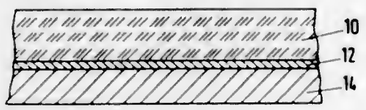
1. A removable hood ornament structure for insertion into a retainer socket mounted to the under side of a hood, said structure comprising:
(a) an ornament element having a seating foot with a tongue depending therefrom with a mounting hole passing therethrough;
(b) a seating element having a central cavity open through the top and bottom of said seating element and defining a seat for said foot at the top of said cavity and receiving said tongue in said cavity;
(c) a mounting shaft having a lower end insertable into said socket and a threaded bifurcated upper end with a transverse bore through the bifurcations of said upper end, and a retaining pin passing through said bore and mounting hole;
(d) said seating element defining a downwardly-directed shoulder around said cavity; and,
(e) a threaded washer engaged on a threaded upper end of said shaft and seated against said shoulder and being rotated onto said shaft to bear against said shoulder, pulling said bifurcated end, retainer pin and tongue downward into said seating element in tight expansive frictional engagement.

5,288,558

ATTACHMENT FOR VIDEO SCREENS HAVING DUAL OPTICAL ACTIVE DEREFLECTION LAYERS

Axel Nöthe, Castrop-Rauxel, Fed. Rep. of Germany, assignor to Flachglas Aktiengesellschaft, Bayern

Filed Sep. 11, 1992, Ser. No. 944,109
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130930
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—426 **9 Claims**



1. Video screen attachment for attachment to a cathode ray tube of a monitor or TV receiver comprising:
a glass pane having a first side facing away from a video screen ad an opposite rear side,
a multilayer anti-reflective coating of no more than two active dereflective layers on said first side of said glass pane comprising:
(1) a metal layer (**12**) of gold or a metal alloy of gold content in excess of 50% of a thickness of 4 to 10 nm, and
(2) an interference layer (**14**) of a dielectric material with a refractive power of $n<1.8$ on said metal layer on the side facing away from said glass pane (**10**), which is essentially absorption-free and forming an anti-reflective layer for the visible region of the spectrum.

5,288,559

COATING COMPOSITION FOR METAL SHEET FOR TWO-PIECE CAN AND METAL SHEET COATED WITH THE COMPOSITION

Masami Oka; Takao Aoki; Hiroshi Fujimoto, and Hiroshi Tachika, all of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Oct. 15, 1992, Ser. No. 961,871
Claims priority, application Japan, Oct. 22, 1991, 3-304265
Int. Cl.[5] B32B *27/06*
U.S. Cl. 428—482 **5 Claims**

1. A coating composition to be coated on a metal sheet for forming a two-piece can; the composition being a solution consisting essentially of:
(A) from 70 to 99 parts of a polyester resin (A), which is composed of:
(1) an acid component comprising from 60 to 100 mol % of terephthalic acid and from 0 to 40 mol % of other dicarboxylic acid(s) than terephthalic acid,
(2) a glycol component comprising from 40 to 100 mol% of propylene glycol and from 0 to 60 mol % of other aliphatic or alicyclic glycol(s) than propylene glycol, and
(3) from 0.1 to 3 mol%, to the total acid component or total glycol component, or tri- or more functional polycarboxylic acid(s) or polyol(s) and which has a reduced viscosity of 0.3 or more, said polyester resin (A) having:
(1) a glass transition temperature of 40° C. or higher,
(2) a specific gravity of 1.25 or more, and
(3) a dissolution parameter of 10.5 or more; and
(B) from 1 to 30 parts of an alkyl-etherified aminoformaldehyde resin (B);
dissolved in an organic solvent;
(C) the organic coating film (C) to be obtained by reacting the polyester resin (A) and alkyl-etherified aminoformaldehyde resin (B) in the composition having the following characteristics:
(1) the tensile strength at break (kg/mm^2) and the tensile elongation at break (%) of the organic coating film (C) are larger than those of a film made of only (A), and
(2) the organic strength at break of coating film (C) has a tensile strength at break of 5 kg/mm^2 or more and a tensile elongation at break of 5% or more.

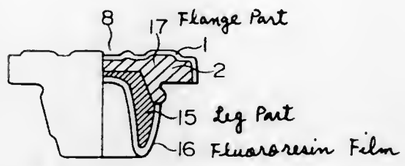
5,288,560

LAMINATED SANITARY RUBBER ARTICLE

Morihiro Sudo, Sumida; Tomoyasu Muraki, Abiko; Eiji Kawachi, Kiryu, and Yasushi Kawachi, Ashikaga, all of Japan, assignors to Daikyo Gomu Seiko, Ltd., Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 827,116
Claims priority, application Japan, Jan. 30, 1991, 2-027657; Dec. 19, 1991, 2-336690
Int. Cl.[5] B32B *25/08;* **B65D** *39/00;* **C08L** *23/22*
U.S. Cl. 428—494 **7 Claims**

1. A sanitary rubber article having a resin film laminated on the surface of a base resin, said film made from a resin previously produced by polymerizing an aliphatic cyclic olefinic compound or bridged polycyclic hydrocarbon compound, prior to being laminated on the rubber article.



5,288,561

HIGH TEMPERATURE HEAT-TREATING JIG

Masanori Kibata; Noboru Kitamori; Shigeki Kajima; Kazunori Yokosu; Mituo Kawai; Hideo Ishihara, and Noriaki Yagi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 784,179
Claims priority, application Japan, Oct. 30, 1990, 2-292419
Int. Cl.[5] F27D *5/00*
U.S. Cl. 428—664 **10 Claims**

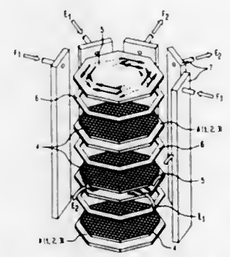
1. A high temperature heat-treating jig for sintering ceramic materials, comprising:
a molybdenum plate or molybdenum alloy plate heat-resistant base; and
a tungsten layer or tungsten alloy layer formed on one surface of said heat-resistant base.

5,288,562

SOLID ELECTROLYTE FUEL CELL

Noboru Taniguchi; Junji Niikura; Kazuhito Hatoh, and Takaharu Gamo, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 14, 1992, Ser. No. 820,509
Claims priority, application Japan, Jan. 18, 1991, 3-004273
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—32 **7 Claims**



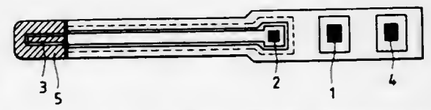
1. A solid electrolyte fuel cell comprising:
a plurality of flat unit cells stacked with metal bipolar plates as gas barriers interposed between the adjacent unit cells;
a pair of inlets for introducing an oxidizing gas, the inlets being disposed in a direction opposite to each other;
another pair of inlets for introducing a fuel gas, the inlets being disposed in a direction opposite to each other;
a pair of outlets for discharging the fuel gas, the outlets being disposed in a direction opposite to each other; and
another pair of outlets for discharging the oxidizing gas, the outlets being disposed in a direction opposite to each other;
wherein each unit cell includes a first electrode, a second electrode, and a solid electrolyte disposed between the first electrode and the second electrode, the first electrode being supplied with a fuel gas and the second electrode being supplied with an oxidizing gas so as to generate electricity;
wherein the fuel gas and the oxidizing gas flow with the solid electrolyte interposing therebetween;
wherein the metal bipolar plate is a polygon having $4(n+1)$ sides, wherein n denotes a natural number starting from 1;
wherein the fuel gas is introduced through the pair of inlets for introducing the fuel gas and discharged through the pair of outlets for discharging the fuel gas, and the directions in which the fuel gas is introduced are perpendicular to the directions in which the fuel gas is discharged;
wherein the oxidizing gas is introduced through the pair of inlets for introducing the oxidizing gas and discharged through the pair of outlets for discharging the oxidizing gas, and the directions in which the oxidizing gas is introduced are perpendicular to the directions in which the oxidizing gas is discharged; and
wherein the directions in which the oxidizing gas is introduced and discharged are different from the directions in which the fuel gas is introduced and discharged.

5,288,563

HYDROGEN ION CONCENTRATION SENSOR AND LEAD-ACID BATTERY HAVING THE SENSOR

Satoshi Saito, and Yuko Fujita, both of Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Feb. 14, 1992, Ser. No. 835,391
Claims priority, application Japan, Feb. 18, 1991, 3-046057; Jul. 19, 1991, 3-204707; Jul. 19, 1991, 3-204708
Int. Cl.[5] H01M *2/00*
U.S. Cl. 429—91 **20 Claims**



9. A device for measuring hydrogen ion concentration in an aqueous solution, comprising:
means for sensing hydrogen ion concentration, said sensing means having an ion-sensitive layer coming in contact with said aqueous solution; and
a reference electrode opposed to said sensing means, said ion-sensitive layer consisting of tantalum nitride;
said device being integrally built into and adapted for use with a lead-acid battery including a housing, a positive plate contained in said housing, a negative plate opposite said positive plate, a separator interposed between said positive plate and said negative plate, an insulator membrane for preventing contact between said sensing means having said ion-sensitive layer thereon and said positive plate, and said aqueous solution, said aqueous solution comprising an electrolyte, and wherein aid positive plate, said negative plate and said sensing means are at least partially immersed in said electrolyte.

5,288,564

COMPACT, CYLINDRICAL, MULTI-CELL SEAWATER BATTERY

Lloyd E. Klein, and Donald V. Conte, both of Fort Wayne, Ind., assignors to Magnavox Electronic Systems Company, Fort Wayne, Ind.

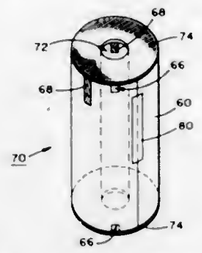
Filed Sep. 30, 1992, Ser. No. 953,360
Int. Cl.[5] H01M *6/10, 6/34*
U.S. Cl. 429—94 **17 Claims**

1. A seawater battery comprising a plurality of series connected battery cells rolled into a cylindrical form, said cells having a top, bottom and side edges, each of said battery cell

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comprises a thin flexible anode closely spaced apart from a thin flexible cathode; said seawater battery further comprising:

(a) said anode has attached thereto a conductive foil strip;



(b) said cathode has a conductive film extending outwardly form one edge thereof; and

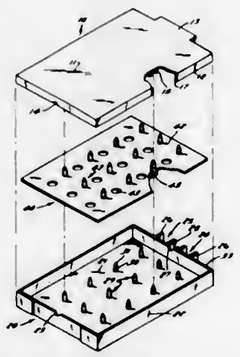
(c) said cells are joined by connecting said conductive film of one cell to said conductive foil strip of an adjacent cell.

5,288,565

SUPPORT EXTENSION FOR FLAT PACK RECHARGEABLE BATTERIES

Robert G. Gruenstern, Muskego, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 8, 1993, Ser. No. 14,784
Int. Cl.[5] H01M *2/02*
U.S. Cl. 429—153 **14 Claims**



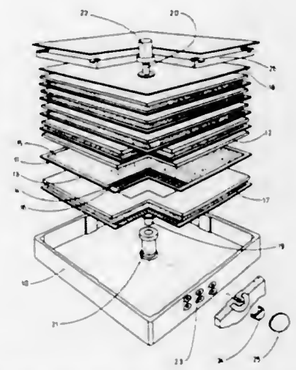
1. A rechargeable lead-acid battery comprising upper and lower casings, a plurality of support members attached to one of the casings and extending toward the other casing, the support members including an upper end, a non-conductive plate located between the casings, openings being provided in the plate and support members attached to the intermediate plate and extending perpendicularly therefrom and having upper ends, the casing support members bridging the casing member and the plate and being attached to the plate, and the support members extending from the plate bridging the plate and the other casing and being attached thereto, the battery further including electrode elements disposed on either side of the plate.

5,288,566

SEALED LEAD ACID BIPOLAR BATTERY

Marco V. Ginatta, and Furio Rossetti, both of Turin, Italy, assignors to Edison Termoelettricc S.p.A., Milan, Italy

Filed Nov. 20, 1991, Ser. No. 796,077
Claims priority, application Italy, Nov. 21, 1990, 67909 A/90
Int. Cl.[5] H01M *4/70*
U.S. Cl. 429—210 **8 Claims**



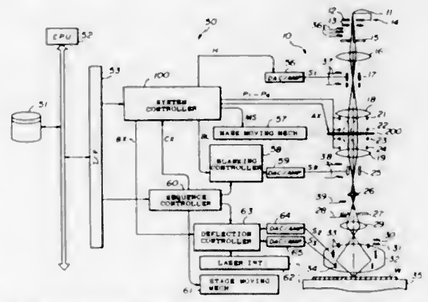
1. A seal lead acid bipolar storage battery, characterized in that one or more bipolar electrodes consist of foils of electroconductive material, said foils being provided with a reticular print having a grid-like pattern for keeping a layer of positive active compound on one side of the foil and a layer of negative active compound on the other side; said electrodes being stacked one on top of the other so as to alternate the different polarities; a series of separators in microfiber glass with a high porosity being interposed between the electrodes in series.

5,288,567

STENCIL MASK AND CHARGED PARTICLE BEAM EXPOSURE METHOD AND APPARATUS USING THE STENCIL MASK

Kiichi Sakamoto, Tokyo; Yasushi Takahashi; Yoshihisa Oae, both of Kawasaki, and Hiroshi Yasuda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 20, 1991, Ser. No. 718,433
Claims priority, application Japan, Jun. 27, 1990, 2-171001
Int. Cl.[5] G03F *9/00*; H01J *37/04*
U.S. Cl. 430—5 **22 Claims**



1. A stencil mask for use in exposing a pattern on a wafer using a charged particle beam which is transmitted through the stencil mask, said stencil mask comprising:

a plate;

at least a first block pattern region formed on said plate, said first block pattern region including apertures of arbitrary shapes for transmitting therethrough the charged particle beam which irradiates the apertures in one shot of the charged particle beam said first block pattern region forming a block mask; and

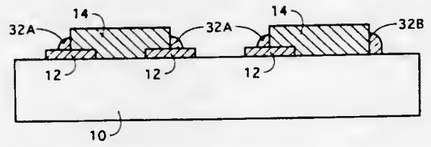
a corresponding pair of confronting blanking electrodes disposed in each of selected ones of the apertures.

5,288,568

OPTICAL SPACER METHOD FOR PREVENTING NULL FORMATION IN PHASE SHIFTED PHOTOMASKS

David A. Cathey, Jr., Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 754,893, Sep. 4, 1991. This application Jan. 30, 1992, Ser. No. 831,359
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **10 Claims**



1. A method of preventing null formation in a photoresist layer on an integrated circuit substrate caused by optically clear edges in a phase shifted photomask, the method comprising the steps of:

providing a photomask having a clear substrate and a plurality of dark features;

providing a plurality of clear phase shifting features raised from a surface of the substrate;

terminating an end of at least one of the phase shifting features in an optically clear edge;

covering the entire surface of the photomask with an optical spacer layer;

etching the optical spacer layer sufficiently until the surface of the clear substrate and a surface of the optically clear phase shifting feature are exposed and an optical spacer remains adjacent the optically clear edge of the phase shifting feature; and

exposing the photoresist layer through phase shifted photomask;

the optical spacer having a smoothly curved convex profile such that a null formed by the optically clear edge is spread out and is therefore not printed into the photoresist layer.

5,288,569

FEATURE BIASSING AND ABSORPTIVE PHASE-SHIFTING TECHNIQUES TO IMPROVE OPTICAL PROJECTION IMAGING

Burn J. Lin, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,784
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **22 Claims**

1. A phase-shifting mask consisting of a composite pattern material disposed on a substantially transparent substrate and comprising a first sublayer of an absorptive non-opaque phase-shifting material having a predetermined absorption for incident radiation and a second sublayer of a substantially transmissive phase-shifting material, with openings in said composite pattern material permitting passage of radiation through said substrate, said absorptive and transmissive phase-shifting materials having predetermined thicknesses such that there is a relative phase shift of π radians between radiation passing through said composite material, whereby radiation passing through said composite layer has a predetermined attenuation and a π phase shift with respect to radiation passing through said opening

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5,288,570

COMPOSITE BLACK AND WHITE SUBSTRATE FOR COLOR PROOFING FILMS

Robert J. von Trebra, Wheeling, Ill., and Dennis J. Bellville, Yorba Linda, Calif., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 577,949, Sep. 5, 1990, abandoned. This application Aug. 12, 1992, Ser. No. 929,089
Int. Cl.[5] G03C *1/90, 1/84, 11/12*; G03F *9/00*
U.S. Cl. 430—14 **14 Claims**

1. A composite film article comprising a flexible, heat resistant, polymeric film material having two sides, a first non-opaque, translucent white side, having a visible light opacity of from about 0.90 to about 0.99; and a second non-opaque, black side having a visible light opacity of less than 1.0, a transmission density of less than about 2.0 and a thickness of less than about 5 0 microns.

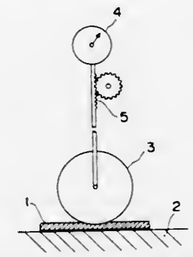
14. An element which comprises the article of claim 1 and an image disposed on the white side of said article.

5,288,571

PHOTORESIN PRINTING PLATE FOR USE IN PRINTING A CORRUGATED BOARD

Shohei Nakamura, Fuji, and Kuniaki Minonishi, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 464,604, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 100,181, Sep. 23, 1987, abandoned. This application Feb. 27, 1992, Ser. No. 841,212
Claims priority, application Japan, Oct. 2, 1986, 61-233264
Int. Cl.[5] G03C *3/00*
U.S. Cl. 430—18 **21 Claims**



1. A photoresin printing plate for use in printing a corrugated board, having a Shore A hardness at 20° C. of 25 to 60, an impact resilience at 20° C. of 35% or more as measured by a falling ball method and a surface tack at 20° C. of 40 g/cm or less, said printing plate being prepared by providing a photosensitive resin layer of a liquid photosensitive resin composition on a substrate and subjecting the layer to image-wise exposure to actinic radiation, followed by the development thereof, wherein said liquid photosensitive resin composition comprises (A) an unsaturated polyurethane prepolymer, (B) an ethylenically unsaturated compound and (C) a photopolymerization initiator,

said unsaturated polyurethane prepolymer being obtained by the reaction of a diol having a number average molecular weight of 700 to 5,000 with a compound having at least two isocyanate groups and a compound containing in the molecule thereof at least one functional group having an active hydrogen atom and at least one ethylenically unsaturated double bond,

said diol consisting of a polyether diol comprising at least 20% by weight, based on the total weight of the polyether diol, of polytetramethylene glycol.

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5,288,572

METHOD FOR MONITORING PHOTORESIST LATENT IMAGES

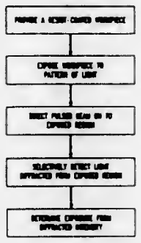
Konstantinos P. Giapis, Athens, Greece; Richard A. Gottscho, Maplewood, and Christian A. Green, Long Valley, both of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 560,712, Jul. 31, 1990, Pat. No. 5,124,216. This application Mar. 26, 1992, Ser. No. 858,263

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] G03F *7/20*

U.S. Cl. 430—30 **7 Claims**



1. A method for monitoring during exposure the formation of a latent image in a layer of resist comprising the steps of:

providing a workpiece having a surface coated with resist;

exposing a region of said resist to form a latent image in said region;

during exposure directing a pulsed beam of monochromatic light onto said region of said resist when said latent image is being formed said pulsed beam having an exposure which does not produce a developable image; and

detecting light from said pulsed beam defracted by said latent image.

5,288,573

PHOTOCONDUCTIVE ELEMENTS WHICH ARE SENSITIVE TO NEAR-INFRARED RADIATION

Yann Hung; William Mey, and Ralph H. Young, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1991, Ser. No. 683,386

Int. Cl.[5] G03G *5/047, 5/09*

U.S. Cl. 430—58 **26 Claims**

1. An electrophotographic element which comprises:

(a) an electrically conductive support,

(b) a charge generation material comprising a near-infrared-sensitive organic pigment,

(c) an aggregate photoconductive material comprising a continuous, electrically insulating polymer phase and heterogeneously dispersed therein a co-crystalline complex of (i) at least one polymer having an alkylidene diarylene group in a recurring unit and (ii) at least one pyrylium dye salt, said organic pigment being admixed in a layer with said aggregate photoconductive material or being present in a separate layer in contact with a layer containing said aggregate photoconductive material, said separate layer having a thickness in the range from about 0.05 μm to 6.0 μm.

5,288,574

PHTHALOCYANINE IMAGING MEMBERS AND PROCESSES

Denis Desilets, Mississauga; Trevor I. Martin, Burlington; Cheng-Kuo Hsiao, Mississauga, all of Canada, and Terry L. Bluhm, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 14, 1992, Ser. No. 944,632

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] G03G *15/02, 15/06, 5/00;* C09B *67/04*

U.S. Cl. 430—58 **18 Claims**

3. A process for the preparation of Type IV oxytitanium phthalocyanine consisting essentially of the formation of a slurry comprised of dihalotitanium phthalocyanine in a mixture comprised of a trihaloacetic acid and an alkylene chloride; adding the resultant slurry to a mixture comprised of an aliphatic alcohol and water enabling hydrolysis to obtain Type X oxytitanium phthalocyanine; separating the Type X oxytitanium phthalocyanine from the slurry; and thereafter subjecting the Type X oxytitanium phthalocyanine obtained to treatment with a halobenzene, followed by the separtion of Type IV oxytitanium phthalocyanine.

5,288,575

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT AND FACSIMILE MACHINE EMPLOYING THE PHOTOSENSITIVE MEMBER

Yoshio Kashizaki; Koichi Suzuki; Shintetsu Go, and Satomi Sugiyama, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

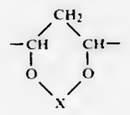
Filed Nov. 13, 1992, Ser. No. 976,500

Claims priority, application Japan, Nov. 14, 1991, 3-325113

Int. Cl.[5] G03G *5/04*

U.S. Cl. 430—58 **13 Claims**

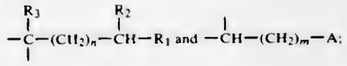
1. An electrophotographic photosensitive member comprising an electroconductive substrate and a photosensitive layer formed thereon, said photosensitive layer containing an acetal resin having a component unit represented by the following formula (1):



(1)

wherein

X is



R_1 is a substituted or unsubstituted aryl group and a substituted or unsubstituted heterocyclic group;

R_2 is a hydrogen atom and a substituted or unsubstituted alkyl group;

R_3 is a substituted or unsubstituted alkyl group;

A is a substituted or unsubstituted heterocyclic group and



R_4 is a substituted or unsubstituted heterocyclic group;

R_5 is a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group and a substituted or unsubstituted heterocyclic group; and

n and m are each 0, 1, 2 and 3.

5,288,576

ELECTROPHOTOGRAPHIC MEMBER HAVING AN AZO COMPOUND WITH DIPHENOQUINONE

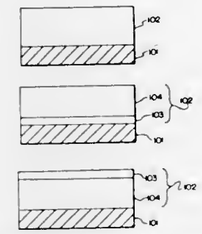
Eiichi Miyamoto, Osaka; Yasuyuki Hanatani, Sakai; Hiroaki Iwasaki, Hirakata; Yasufumi Mizuta, Kishiwada, and Akihiko Kawahara, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1992, Ser. No. 980,641

Claims priority, application Japan, Nov. 27, 1991, 3-311143; Nov. 28, 1991, 3-312895

Int. Cl.[5] G03G *5/06, 5/047*

U.S. Cl. 430—58 **21 Claims**

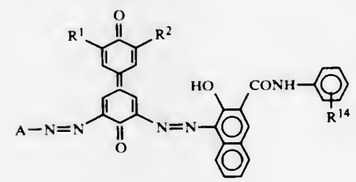


1. An electrophotographic photosensitive member comprising a conductive substrate and a photosensitive layer deposited on the conductive substrate,

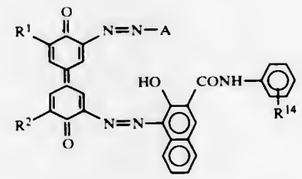
wherein the photosensitive layer comprises a charge generating material and a charge transporting material;

the charge generating material comprising an azo compound having a diphenoquinone structure selected from the group consisting of structures represented by the following general formulas IA, IB, IC, IIA, IIB and IIC:

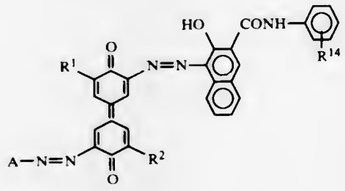
(IA)



(IB)

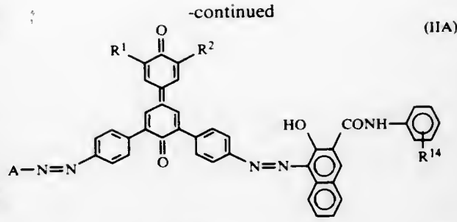


(IC)

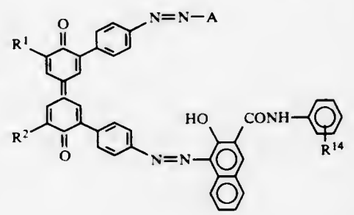


-continued

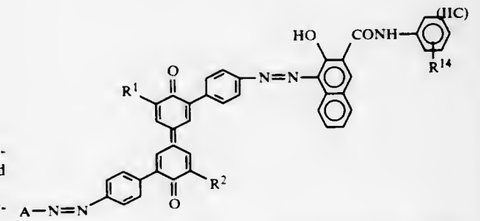
(IIA)



(IIB)



(IIC)



wherein R^1 and R^2 are the same or different from each other and are a hydrogen atom, an alkyl group, an alkenyl group, a hydroxyl group, an alkoxy group, a carboxy group, an alkoxy carbonyl group, an acyl group, an aryl group, a halogen group or a cyano group, respectively; R^{14} is a hydrogen atom, a halogen group, an alkyl group, an alkoxy group, an aryl group, an amino group, a cyano group, a nitro group or a sulfoxide group; and A is a coupler residue having an acceptor property.

3. An electrophotographic photosensitive member according to claim 1, wherein the photosensitive layer is of a multilayered structure comprising a charge generating layer including the charge generating material and a binder resin, and a charge transporting layer including the charge transporting material and a binder resin.

5,288,577

DRY-TYPE DEVELOPER

Kimitoshi Yamaguchi, Numazu, and Yoichiro Watanabe, Fuji, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,830

Claims priority, application Japan, Feb. 27, 1991, 3-53625

Int. Cl.[5] G03G *9/09, 9/107, 9/113*

U.S. Cl. 430—106.6 **15 Claims**

1. A dry type developer comprising:

(a) substantially spherical, electrically insulating toner particles which are dyed polymer particles, free from electroconductive particles, prepared by dyeing polymer particles with a dye by dispersing said polymer particles in an organic solvent in which said polymer particles are insoluble; and

(b) carrier particles, each carrier particle comprising a core particle and a resin layer comprising an electroconductive material coated on the surface of said core particle, with a resistivity in the range of 10^8 to 10^{14} Ωcm under the application of a DC voltage of 1000 volts.

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3. The dry type developer as claimed in claim 1, wherein said core particles comprise a magnetic material selected from the group consisting of Fe_2O_3, γ-Fe_2O_3, Fe_3O_4, MnZn ferrite, NiZn ferrite, Ba ferrite, Fe, Ni, Co and alloys thereof.

5,288,578

POSITIVELY CHARGEABLE CARRIER

Yutaka Sugizaki; Susumu Saito; Hirotaka Matsuoka; Masanori Ichimura; Masaru Miura, and Takashi Imai, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,023
Claims priority, application Japan, May 14, 1991, 3-137044
Int. Cl.[5] G03G *9/10*
U.S. Cl. 430—108 **17 Claims**

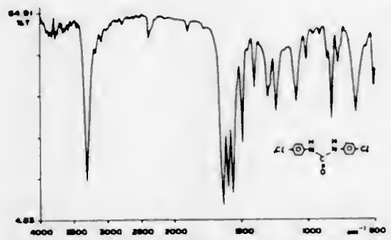
1. A positively chargeable carrier for developing electrostatic images, comprising a core material having formed thereon an interlayer having a triboelectrification controlling function and having a nitrogen atom content of from 5 ppm to 75 ppm based on the weight of the core material, and a releasable coated layer formed on the interlayer, wherein the releasable coated layer is present on the interlayer in a coating amount sufficient to cause the carrier to impart a sufficient negative charge to toners.

5,288,579

DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGE, IMAGE FORMING APPARATUS, APPARATUS UNIT AND FACSIMILE APPARATUS

Katsuhiko Tanaka; Kazuyoshi Hagiwara; Tsuyoshi Takiguchi, all of Yokohama, and Rika Doi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,486
Claims priority, application Japan, Nov. 30, 1990, 2-33095; May 20, 1991, 3-142763
Int. Cl.[5] G03G *9/00, 9/083, 9/107*
U.S. Cl. 430—110 **77 Claims**



1. A developer for developing electrostatic images, comprising: a toner containing a binder resin and a charge controller, said charge controller comprising an arylurea compound which comprises an arylurea having at least one electron-attracting group or electron-donating group, or a polyarylurea including such an arylurea as a recurring unit.

5,288,580

TONER AND PROCESSES THEREOF

Paul C. Julien, Webster; Robert J. Gruber; John L. Haack, both of Pittsford, and Bing R. Hsieh, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,090
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—110 **9 Claims**

1. An imaging process consisting essentially of (1) charging an imaging member in an imaging apparatus; (2) creating on the member a latent image comprising areas of high, intermediate, and low potential; (3) developing the low areas of potential with a first developer comprising carrier and a substantially humidity insensitive toner comprised of resin particles and pigment particles having added thereto metal oxide particles surface treated with a metal salt complex charge enhancing additive selected from the group consisting of bis{4-[(3',5'-dinitro-2'-hydroxybenzene)azo]-3-hydroxy-2-naphthanilide} chromate (−1) hydrogen, bis{4-[(3',5'-dinitro-2'-hydroxybenzene)azo]-3-hydroxy-2-naphthanilide} cobaltate (−1) hydrogen, and bis{4-[(3',5'-dinitro-2'-hydroxybenzene)azo]-3-hydroxy-2-naphthanilide} ferrate (−1) hydrogen; (4) developing the high areas of potential with a second developer comprising carrier and a second toner comprised of resin, pigment, and a charge enhancing additive; (5) transferring the resulting developed image to a substrate; and (6) fixing the image thereto.

5,288,581

TONER COMPOSITIONS WITH ANIONIC CLAY OR CLAY-LIKE CHARGE ENHANCING ADDITIVES

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1992, Ser. No. 885,589
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **21 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, and a hydrotalcite charge enhancing additive comprised of metal oxides of the formula $Mg_6Al_2(OH)_{16}CO_3{\cdot}4H_2O$, $Mg_{4.5}Al_2(OH)_{13}(CO_3)$, $Mg_{4.5}Al_2{\cdot}(OH)_{11}(CO_3)_{0.8}O_{0.2}$, or mixtures thereof.

5,288,582

PHOTOELECTROGRAPHIC METHOD FOR PRINTING

Lawrence E. Contois, Conesus, and William Mey, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1991, Ser. No. 741,295
Int. Cl.[5] G03G *13/22*
U.S. Cl. 430—126 **9 Claims**

1. A photoelectrographic method for printing using a photoelectrographic element comprising:

a conductive layer and

a photosensitive layer, which is free of photopolymerizable materials and is in electrical contact with said conductive layer, comprising:

an organic photoconductor and

an ultraviolet radiation sensitizer, wherein said method comprises:

exposing said element to ultraviolet radiation without prior charging to create a barrier to charge injection in exposed portions of said photosensitive layer but not in unexposed portions thereof, and

printing an image from said exposed element, said printing comprising:

charging said element, whereby exposed portions of said element are charged, while unexposed portions are not charged to form an electrostatic latent image on said element;

developing the electrostatic latent image by applying charged toner particles to said element to produce a toned image; and

transferring the toned image to a suitable receiver, wherein said printing is carried out one time for each print made.

5,288,583

DEVELOPING METHOD USING SINGLE-COMPONENT NONMAGNETIC TONERS

Kunihisa Osumi; Toshiyuki Shirai, and Shunji Konda, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 825,573
Claims priority, application Japan, Jan. 31, 1991, 3-029126
Int. Cl.[5] G03G *13/08, 13/16*
U.S. Cl. 430—126 **5 Claims**

1. A contact-type developing method for developing a static latent image using a single-component non-magnetic toner, comprising the steps of:

a) preparing (1) a developing device having at least a developing roll for carrying a toner and a control member for controlling the thickness of a toner layer provided near the developing roll and, (2) a single-component non-magnetic toner consisting essentially of a coloring agent and a binder resin of a styrene copolymer having a number average molecular weight of 8,000 to 30,000 and a weight average molecular weight of 100,000 to 300,000, and having a single peak molecular-weight distribution in a gel partition chromatograph, wherein the styrene copolymer is obtained by a polymerization reaction between (i) a styrene monomer selected from the group consisting of styrene, α-methyl-styrene, p-chlorostyrene, and their derivatives and (ii) a compounds selected from the group consisting of an acrylic alkyl ester wherein the alkyl group has 1 to 15 carbon atoms, a methacrylic alkyl ester wherein the alkyl group has 2 to 15 carbon atoms, and a vinyl monomer;

b) feeding the single-component non-magnetic toner into the developing roll;

c) forming a thin layer of toner by virtue of the control member for controlling the thickness of the toner layer to charge the toner;

d) causing the charged toner to contact with a carrier for holding a static latent image to develop the static latent image; and

e) transferring the latent image to paper.

5,288,584

PROCESS FOR FABRICATING A FLEXIBLE ELECTROPHOTOGRAPHIC IMAGING MEMBER

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, N.Y.

Continuation of Ser. No. 812,392, Dec. 23, 1991, abandoned.
This application Jun. 18, 1993, Ser. No. 82,010
Int. Cl.[5] G03G *5/10, 5/082*
U.S. Cl. 430—128 **14 Claims**

1. A process for fabricating a flexible electrophotographic imaging member comprising providing a flexible substrate comprising a biaxially oriented thermoplastic polymer supporting web coated with at least one adhesive layer comprising a thermoplastic adhesive, vapor depositing on said adhesive layer a thin charge generating layer, cooling said charge generating layer to induce strain between said charge generating layer and said substrate, heating said flexible substrate to shrink said biaxially oriented thermoplastic polymer web and substantially remove said strain between said charge generating layer and said substrate, forming a layer of a charge transport coating solution on said charge generating layer, said charge transport coating solution comprising a charge transporting film forming polymer matrix and solvent for said film forming polymer matrix, said solvent also being a solvent for said thermoplastic adhesive, and drying said charge transport coating solution.

5,288,585

PROCESSES FOR THE PREPARATION OF POLYMERS

Hadi K. Mahabadi, Toronto; Michael Cunningham, Georgetown, and Denise Y. Wright, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1992, Ser. No. 872,197
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—137 **23 Claims**

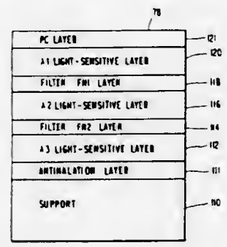
1. A process for the preparation of a toner composition consisting essentially of (1) mixing a water soluble monomer or monomers, and an oil soluble monomer or monomers with optional polymerization initiators, an optional crosslinking component and an optional chain transfer component; (2) effecting bulk polymerization until from about 10 to about 40 weight percent of the water soluble and oil soluble monomer or monomers have been polymerized; (3) cooling the product obtained; (4) mixing with the aforesaid partially polymerized product components comprised of charge control agents, pigments, or dyes to formulate a uniform organic phase; (5) dispersing the organic phase into from between about 2 to about 5 times its volume of water containing from between about 1 to about 5 weight percent of a stabilizing component to form a suspension with an average particle size of from between about 5 to about 25 microns and a particle size distribution of from about 1.1 to about; (6) suspension polymerizing to complete the conversion of said monomer, or said monomers to polymer; (7) washing the toner product containing said polymer with water and/or an alcohol; (8) isolating the toner composition; and (9) drying; and wherein said monomer or monomers are styrene, monocarboxylic acids and the derivatives thereof; dicarboxylic acids with a double bond; vinyl esters; vinyl ketones; vinyl naphthalene; unsaturated mono-olefins; vinylidene halides; sulfonic acids or sulfonates; and mixtures thereof.

5,288,586

IMAGE-FORING PROCESS USING MICROCAPSULES

Jun Yamaguchi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 19, 1991, Ser. No. 717,578
Claims priority, application Japan, Jun. 20, 1990, 2-161922; Jul. 4, 1990, 2-176826; Jul. 4, 1990, 2-176828
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] G03C *1/73, 7/00*
U.S. Cl. 430—138 **7 Claims**



1. A process of forming an image in a heat-developable light-sensitive recording medium,

said heat-developable light-sensitive recording medium comprising at least one layer containing a light-sensitive composition capable of imagewise curing upon imagewise exposure to actinic radiation to form a latent image and thereafter capable of forming a color image in respective correspondence or counter-correspondence to said latent image in the light-sensitive material by heating to cause movement of components relating to coloring or decoloring,

said process comprising the steps of:

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superposing an image original against said heat-developable light-sensitive recording medium;
placing the superposed image original and heat-developable light-sensitive recording medium in an exposure apparatus comprising:
at least one light source;
an element transmissive to actinic radiation emitted from said light source positioned between said light source and said image original, said element holding said image original against said heat-developable light-sensitive recording medium; and
at least one interference filter disposed between said light source and said image original during exposure;
exposing said heat-developable light-sensitive recording medium to actinic radiation emitted from said light source and passing through said interference filter, said transmissive element and said original to form a latent image in said heat-developable light-sensitive recording medium; and
heating said exposed heat-developable light-sensitive recording medium;
wherein the heat-developable light-sensitive recording medium comprises microcapsules which include an electron donative colorless dye, and a light-curable composition outside said microcapsules which includes an electron acceptive compound and which forms latent images by imagewise exposure, said heat-developable light-sensitive recording medium forming color images in counter-correspondence to said latent images by heating to move said electron acceptive compound.

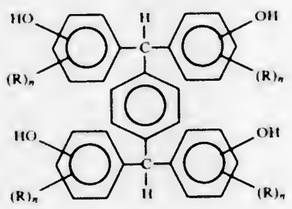
5,288,587

RADIATION-SENSITIVE POSITIVE RESIST COMPOSITION COMPRISING AN O-QUINONE DIAZIDE, AN ALKALI-SOLUBLE RESIN AND A POLYPHENOL COMPOUND

Haruyoshi Osaki, and Yasunori Uetani, both of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 574,112, Aug. 29, 1990, abandoned. This application Mar. 31, 1993, Ser. No. 43,151
Claims priority, application Japan, Sep. 5, 1989, 1-231165
Int. Cl.[5] G03F *7/023, 7/32*
U.S. Cl. 430—191 **5 Claims**

1. A positive resist composition comprising, in admixture, a 1,2-quinone-diazide compound, a novolak resin prepared by an addition condensation reaction of a phenol compound with formaldehyde, and a polyphenol compound (I) of the formula:



(I)

wherein R is a C_1-C_5 alkyl group or a C_1-C_5 alkoxy group, and n is a number of 0 to 3, wherein said 1,2-quinone diazide compound is prepared by a condensation reaction of 1,2-naphthoquinone diazide sulfonyl chloride or benzoquinone diazide sulfonyl chloride with at least one compound having a hydroxyl group selected from the group consisting of hydroquinone, resorcinol, phloroglucin, 2,4-dihydroxybenzophenone, 2,3,4-trihydroxybenzophenone, 2,3,4,4'-tetrahydroxybenzophenone, 2,2', 4,4'-tetrahydroxy-benzophenone, bis(p-hydroxyphenyl)methane, bis(2,4-dihydroxyphenyl)methane, bis(2,3,4-trihydroxyphenyl)methane, 2,2-bis(2,4-dihydroxyphenyl)propane, 2,2-bis(2,3,4-trihydroxyphenyl)propane and hydroxyflavan compounds.

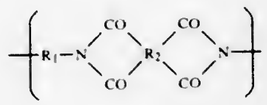
5,288,588

POSITIVE PHOTOSENSITIVE POLYIMIDE RESIN COMPOSITION COMPRISING AN O-QUINONE DIAZIDE AS A PHOTOSENSITIVE COMPOUND

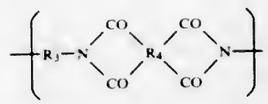
Masahiko Yukawa; Toyohiko Abe, and Noriaki Kohtoh, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 602,814, Oct. 24, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,605
Claims priority, application Japan, Oct. 27, 1989, 1-281337
Int. Cl.[5] G03F *7/023, 7/32*
U.S. Cl. 430—192 **15 Claims**

1. A positive photosensitive polyimide resin composition which comprises 100 parts by weight of an organic solvent-soluble polyimide resin in admixture with 1–100 parts by weight of an o-quinonediazide compound, said polyimide resin being composed of the repeating units represented by formulas [I] and [II] below



(I)



(II)

where R_1 is a divalent organic group to constitute a diamine which has one or more groups of at least one kind selected from the group consisting of phenolic hydroxyl group, carboxyl group, thiophenol group, and sulfonic group; R_3 is a divalent organic group having no phenolic hydroxyl group, carboxyl group, thiophenol group, or sulfonic group; and R_2 and R_4 each are a tetravalent organic group constituting a tetracarboxylic acid or a derivative thereof when R_1 has one or more groups of at least one kind selected from the group consisting of carboxyl group and sulfonic group and has no phenolic hydroxyl group or thiophenol group, or R_2 and R_4 each are a tetravalent organic group constituting an alicyclic or aliphatic tetracarboxylic acid or a derivative thereof when R_1 has one or more of a phenolic hydroxyl group or thiophenol group, with the molar percentage (a) of the repeating units represented by formula [I] being in the range of 1 mol $\% \leqq a \leqq 90$ mol % and the molar percentage (b) of the repeating units represented by formula [II] being in the range of 10 mol $\% \leqq b \leqq 99$ mol %, and having a reduced viscosity of 0.05–3.0 dl/g measured at a concentration of 0.5 g/dl in N-methylpyrrolidone at 30° C.

5,288,589

AQUEOUS PROCESSABLE, MULTILAYER, PHOTOIMAGEABLE PERMANENT COATINGS FOR PRINTED CIRCUITS

Mark R. McKeever, 135 Center St., and Karuppiah Chandrasekaran, 206 Sharon Ave., both of Sayre, Pa. 18840

Filed Dec. 3, 1992, Ser. No. 984,795
Int. Cl.[5] G03C *1/805*
U.S. Cl. 430—262 **16 Claims**

1. An aqueous processble, storage stable, photoimageable permanent coating element capable of adhering to a circuit board and withstanding molten solder after cure, which comprises:
(a) a temporary support film;

(b) a first layer of a photoimagable permanent coating composition comprising:
(I) an amphoteric binder;
(II) a carboxyl containing copolymeric binder;
(III) a monomeric component containing at least two ethylenically unsaturated groups; and
(IV) a photoinitiator or photoinitiator system;
(c) a second layer of a photoimagable permanent coating composition comprising;
(I) a carboxyl containing copolymeric binder;
(II) a monomeric component containing at least two ethylenically unsaturated groups;
(III) a photoinitiator or photoinitiator system; and
(IV) a thermal crosslinking agent,
wherein the first layer is interposed between the support and the second layer.

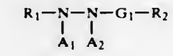
5,288,590

HIGH-CONTRAST SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMING AN IMAGE WITH THE SAME

Ken-ichi Kuwabara, and Takashi Hoshimiya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 25, 1992, Ser. No. 934,232
Claims priority, application Japan, Sep. 2, 1991, 3-246496
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 **6 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein a silver halide emulsion in the emulsion layer contains at least one of an iridium salt and a rhodium salt and comprises a gold-sensitized and sulfur-sensitized silver chlorobromide emulsion or silver chloroiodobromide emulsion, having a silver chloride content of 50 mol% or more and a silver iodide content of 5 mol% or less, and the emulsion layer contains a hydrazine compound represented by formula (I):



(I)

wherein R_1 represents an aliphatic group or an aromatic group, which contains a partial structure, $-O+CH_2CH_2O)_n-$, $-O+CH_2CH(CH_3)O)_n-$ or $-O+CH_2CH(OH)CH_2O)_n-$, wherein n is an integer of 3 or more, as a part of the R_1 substituent, or contains a quaternary ammonium cation as a part of the R_1 substituent; G_1 represents —CO—, —COCO—, —CS—, $-C(=NG_2R_2)-$, —SO—, $-SO_2-$ or $-P(O)(G_2R_2)-$, wherein G_2 represents at least one chemical bond selected from the group consisting of —O—, —S— or $-N(R_2)-$, and R_2 represents an aliphatic group, an aromatic group or a hydrogen atom, and when the molecule has a plurality of R_2 groups, they may be same as or different from each other; and one of A_1 and A_2 is a hydrogen atom, and the other is a hydrogen atom, an acyl group, an alkylsulfonyl group or an arylsulfonyl group.

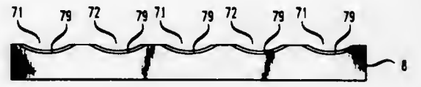
5,288,591

LCD DISPLAY WITH MICROTEXTURED BACK REFLECTOR AND METHOD FOR MAKING SAME

Greg E. Blonder, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 816,405, Dec. 31, 1991, Pat. No. 5,245,454. This application Mar. 29, 1993, Ser. No. 37,857
Int. Cl.[5] G03C *5/00;* **G02F** *1/13*
U.S. Cl. 430—321 **2 Claims**

1. A method for making a microtextured reflecting surface comprising the steps of:
providing a substrate;
photolithographically forming on said substrate a pattern of photoresist areas corresponding to the bases of segments to be formed on said reflecting surface;
heating said photoresist areas to provide smooth, continuous surfaces within said bases;



forming a master having a surface texture corresponding to the surface of the resist-covered surface after heating; and
forming a reflecting surface having the surface texture of said master.

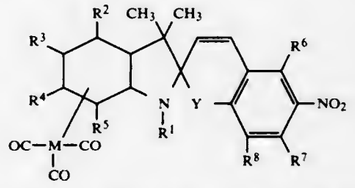
5,288,592

TRANSITION METAL-SPIROBENZOPYRAN COMPLEX, A PRODUCTION PROCESS THEREFOR AND A PHOTOCHROMIC MATERIAL COMPRISING THE COMPLEX

Akira Miyashita, Ageo, Japan, assignor to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00295, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO92/16538, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 12, 1992, Ser. No. 938,044
Claims priority, application Japan, Mar. 13, 1991, 3-047202
Int. Cl.[5] G03C *1/735;* **C07D** *209/96*
U.S. Cl. 430—345 **3 Claims**

1. A transition metal-spirobenzopyran complex of the general formula



wherein R^1 means an alkyl group of 1 to 20 carbon atoms or an aralkyl group. R^2, R^3, R^4, and R^5 may be the same or different and each means a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, an aryl group, an aralkyl group, an alkoxy group of 1 to 5 carbon atoms, a halogen atom, a cyano group or a nitro group. R^6 and R^7 may be the same or different and each means a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, an aryl group, an aralkyl group, a halogen atom, a cyano group or a nitro group. R^8 means a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, an alkoxy group or 1 to 5 carbon atoms, a chloromethyl group, a methacryloxymethyl group or a vinyl group. Y means a oxygen atom or a sulfur atom. M means a chromium atom, a molybdenum atom or a tungsten atom.

5,288,593

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A COUPLER CAPABLE OF FORMING A WASH-OUT DYE (Q/Q)

William J. Begley; Drake M. Miebno, both of Webster; Hans G. Ling, Rochester, and Teh H. Chen, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,784
Int. Cl.[5] G03C *7/32, 7/34*
U.S. Cl. 430—382 **9 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and at least

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one coupler (A) having a water solubilizing group wherein coupler (A) forms a compound that is washed out of the photographic element during photographic processing and forms a coupling-off group represented by the formula:

$$-X-Rel^2-T^2-INH$$

wherein:

X is selected from oxygen, nitrogen or sulfur;

X—Rel^2 contains a photographic ballast and is a releasing group for releasing T^2—INH from X—Rel^2 by elimination electron transfer reaction during photographic processing, wherein the half-life for release of T^2—INH from X—Rel^2 is not greater than five seconds;

T^2 is a timing group that releases INH by elimination electron transfer reaction during photographic processing, wherein the half-life for release of INH from T^2 is at least five seconds; and

INH is a development inhibitor group.

8. A process of forming a photographic image which comprises developing an exposed photographic silver halide emulsion layer with a color developing agent in the presence of coupler (A) as defined in claim 1.

5,288,594

PHOTOGRAPHIC ELEMENT AND PROCESS COMPRISING A DEVELOPMENT INHIBITOR RELEASING COUPLER AND A YELLOW DYE-FORMING COUPLER

Joseph W. Manthey; David M. Niklewicz, and Richard P. Szajewski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 708,546, May 31, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,951

Int. Cl.^{5} C03C *7/30, 7/34, 7/36, 7/32*

U.S. Cl. 430—382 **10 Claims**

1. A color photographic element comprising a support bearing at least one yellow image dye-forming photographic silver halide emulsion layer (A); at least one layer (B) adjacent to the layer (A); at least one yellow image dye-forming coupler; at least one photographic development inhibitor releasing coupler; and,

in at least one of layer (A) and layer (B), a concentration, within the range of 2.5 to 25 mg/m^2, that does not accelerate bleaching of the element upon exposure and processing, of

a dye-forming naphtholic or acetanilide coupler comprising a coupling-off group represented by the formula

$$+TIME\frac{}{}_n S-R^1-SOL$$

wherein TIME represents a timing group; n is 0 or 1; R^1 is a divalent aliphatic group comprising 1 to 8 carbon atoms; and SOL represents a water solubilizing group.

5,288,595

METHOD FOR PROCESSING SILVER HALIDE PHOTOSENSITIVE MATERIAL

Haruml Watanabe; Tetsuro Kojima, and Nobuo Watanabe, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed May 10, 1993, Ser. No. 58,258

Claims priority, application Japan, May 11, 1992, 4-143699

Int. Cl.^{5} G03C *5/38, 7/42*

U.S. Cl. 430—393 **15 Claims**

1. A method for processing a silver halide photosensitive material which comprises the steps of developing an exposed silver halide photosensitive material and treating it with a bath having a fixing function containing an N-oxide compound having a mercapto group in the molecule.

5,288,596

BLACK AND WHITE DIRECT POSITIVE IMAGE FORMING PROCESS

Katsumi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1992, Ser. No. 913,628

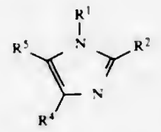
Claims priority, application Japan, Jul. 17, 1991, 3-201158

Int. Cl.^{5} G03C *5/305*

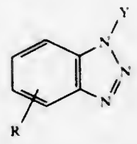
U.S. Cl. 430—410 **14 Claims**

1. A black and white direct positive image forming process which comprises imagewise exposing to light a silver halide light-sensitive material and developing the material with a black and white developing solution, said light-sensitive material comprising a non-pre-fogged internal latent image type silver halide emulsion layer provided on a support, and said material further containing a quaternary salt nucleating agent and a nucleating accelerator, wherein the black and white developing solution contains an imidazole compound represented by the formula [A] and a benzotriazole compound represented by the formula [B]:

[A]



[B]



wherein each of R^1, R^2, R^4 and R^5 independently is hydrogen, an alkyl group, a hydroxyalkyl group or an alkenyl group; Y is hydrogen or mercapto; R is hydrogen, a halogen atom, nitro, amino cyano, hydroxyl, mercapto, sulfo, carboxyl, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, an alkoxy group, an acyl group or an alkoxycarbonyl group, and wherein the amount of the benzotriazole compound is in the range of 0.1 to 10 wt.% of the amount of the imidazole compound, and the amount of the benzotriazole compound is also in the range of 0.02 to 0.1 g based on 1 liter of the developing solution.

5,288,597

METHOD FOR FORMING A COLOR IMAGE

Yasuhiro Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 650,491, Feb. 5, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,024

Claims priority, application Japan, Feb. 5, 1990, 2-25510

Int. Cl.^{5} G03C *7/407*

U.S. Cl. 430—448 **9 Claims**

1. A method of forming a color image which comprises providing a silver halide color photographic material including a transparent support having thereon at least one photosensitive layer containing at least one coupler which forms a dye upon a coupling reaction with an oxidized product of an aromatic primary amine color developing agent and a substantially silver iodide-free silver halide emulsion containing at least 90 mol. % of silver chloride, which silver halide color photographic material further contains at least one compound of the following formula (I) or (II), and subjecting said silver halide color photographic material to imagewise exposure and then to development with a substantially benzyl alcohol-free developer for not less than 90 seconds;

$$R_{21}(A)_nX \quad (I)$$

$$R_{22}-\underset{\underset{B}{|}}{C}=Y_1 \quad (II)$$

wherein R_{21} and R_{22} each represents an aliphatic group, an aromatic group or a heterocyclic group; X represents a group which leaves on reaction with an aromatic amine developing agent; A represents a group which reacts with said aromatic amine developing agent to form a chemical bond; n is equal to 0 or 1; B represents hydrogen, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group or a sulfonyl group; Y_1 represents a group which promotes addition of an aromatic amine developing agent to the compound of formula (II); and R_{21} and X, and Y_1 and either r_{22} or B may each combine to form a ring structure, wherein the silver halide color photographic material has a total silver coverage of not less than 1.2 g/m^2, and the compound of formulas (I) and (II) each is present in an amount of from 1×10^{-2} to 10 moles per mol of magenta coupler.

5,288,598

PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS

Melvin D. Sterman, Pittsford; Alfred B. Fant, Rochester; Melvin M. Kestner, Hilton; Dennis E. Smith, and Gary W. Visconte, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,720

Int. Cl.^{5} G03C *1/815*

U.S. Cl. 430—496 **12 Claims**

1. A photographic element comprising at least one light-sensitive layer on a support said element containing in at least one layer, a first particulate material and a second particulate material, said first particulate material being polymeric particles having a core surrounded by a shell of colloidal inorganic particles and said second particulate material being colloidal silica.

5,288,599

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND COLOR PHOTOGRAPHIC IMAGE-FORMING PROCESS

Osamu Takahashi; Kazunori Hasebe, and Kentaro Osazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1992, Ser. No. 965,029

Claims priority, application Japan, Oct. 23, 1991, 3-302666; Nov. 22, 1991, 3-332888

Int. Cl.^{5} G03C *1/46*

U.S. Cl. 430—507 **7 Claims**

1. A silver halide color photographic material comprising a reflecting support and provided thereon three light-sensitive silver halide emulsion layers each having a light sensitivity to a different wavelength region, including a light sensitive silver halide emulsion layer containing a yellow dye-forming coupler, a light sensitive silver halide emulsion layer containing a magenta dye-forming coupler, and a light sensitive silver halide emulsion layer containing a cyan dye-forming coupler, wherein

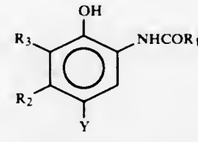
(1) said cyan coupler is a compound represented by the following formula (C), and of the three silver halide emulsion layers, the silver halide emulsion layer containing the cyan coupler is disposed at the farthest position from the support,

(2) a hydrophilic light-insensitive layer which contains compound represented by the following formula (I) and which does not contain an ultraviolet absorber or does contain an ultraviolet absorber in an amount of less than 100 mg/m^2 of light sensitive material, is adjacent to said cyan coupler-containing silver halide emulsion layer and closer to the support than the cyan coupler-containing layer,

(3) a hydrophilic light-insensitive layer which contains an ultraviolet absorbent and which does not contain or does contain, in an amount of less than 10 mg/m^2, a compound represented by the following formula (I), is further away from the support than said cyan coupler-containing silver halide emulsion layer, and

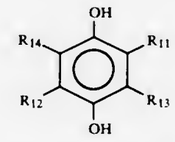
(4) the average silver chloride content of the silver halide contained in each silver halide emulsion layer is at least 90 mol%;

(C)



wherein R_1 represents a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group, or a substituted or unsubstituted heterocyclic group; R_2 represents a substituted or unsubstituted aliphatic group having at least 2 carbon atoms; R_3 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group, or an acylamino group; and Y represents a hydrogen atom or a group capable of splitting off upon a coupling reaction with an oxidation product of a developing agent;

(I)



wherein R^{11} represents a hydrogen atom or a substituent; R_{12}, which may be same as or different from R_{11}, represents a hydrogen atom or a substituent; and R_{13} and R_{14}, which may be the same or different, each represents a hydrogen atom or a substituent, and at least one of said R_{11} to R_{14} must be a substituent.

5,288,600

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING AN OIL-SOLUBLE DYE DISPERSION

Junichi Yamanouchi; Yoshihiro Jimbo; Toshiyuki Watanabe; Koji Tamoto; Yukio Karino, and Kei Sakanoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 20, 1992, Ser. No. 932,986

Claims priority, application Japan, Aug. 21, 1991, 3-232436; Dec. 3, 1991, 3-344129

Int. Cl.^{5} G03C *1/06*

U.S. Cl. 430—522 **11 Claims**

1. A silver halide photographic material comprising a support having thereon one or more hydrophilic colloid layers, at least one layer of which is a light-sensitive silver halide emulsion layer, at least one hydrophilic colloid layer containing a dispersion obtained by emulsifying and dispersing a solution containing at least one oil-soluble dye which is decolorized or eluted from the photographic material upon photographic processing and at least one water-insoluble, organic solvent-soluble polymer having a repeating unit derived from a monomer having an anionic functional group.

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5,288,601
LIGHT SENSITIVE SILVER HALIDE ELEMENT HAVING PHOTOGRAPHIC FILM BASE WITH IMPROVED CURL STABILITY

Jehuda Greener, and James M. Pearson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 21, 1993, Ser. No. 95,137
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—533 **9 Claims**

1. A light-sensitive silver halide photographic element having at least one silver halide containing emulsion layer on a film base, the film base being a coextruded laminate having a first layer and a second layer, the first layer being a polyester of an aromatic dicarboxylic acid or a dialkyl ester thereof and an alkylene glycol adjacent to the emulsion layer, the second layer being a polyester having a humidity expansion coefficient greater than 5×10^{-5}

$$\frac{1}{\%\ RH}\ ,$$

(RH is relative humidity) and a Young's modulus at 50% relative humidity greater than 300 kPSI, the thickness of the second layer is defined by the formula;

$$0.3h_2^0<h_2<1.2h_2^0 \qquad \text{I}$$

where h_2^0 is the thickness of the second layer to obtain zero curl and is determined by formula

$$h_2^0 = 0.5\left(-\frac{b}{a}+\sqrt{\left(\frac{b}{a}\right)^2-4\frac{c}{a}}\right) \qquad \text{II}$$

where the values a, b and c are obtained by the following formulas III, IV and V respectively;

$$a=\phi E'_2-E'_eh_e-E'_1h_1 \qquad \text{III}$$

$$b=\phi(h_e+h_1)E'_2+\phi h_1E'_2-(h_e+h_1)h_eE'_e-h_1(E'_eh_e+E'_1h_1) \qquad \text{IV}$$

$$c=\phi(h_e+h_1)h_1E'_1 \qquad \text{V}$$

ϕ in the above formulas is determined by the following formula VI

$$\phi=\frac{E'_eh_e(\alpha_e-\alpha_1)}{E'_2(\alpha_e-\alpha_2)} \qquad \text{VI}$$

where E'_e, E'_1 and E'_2 are determined by the formula

$$E'_i=\frac{E_i}{1-\nu_i^2} \qquad \text{VII}$$

where i is layer 1, 2 or e respectively and ν_i is the Poisson's ratio of layer i (layer 1, 2 or e respectively) and where h_e, E_e and α_e are the thickness, Young's modulus and HEC respectively of the emulsion layer;

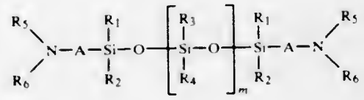
h_1 E_1 and α_1 are the thickness, Young's modulus and HEC respectively of the first layer of the film base; and h_2, E_2 and α_2 are the thickness, Young's modulus and HEC respectively of the second layer of the film base.

5,288,602
PHOTOGRAPHIC SILVER HALIDE ELEMENT CONTAINING SILICONE OIL

Markus Geiger, Langenfeld, and Hans-Horst Steinbach, Lindlar, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 10, 1993, Ser. No. 104,992
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1992, 4228003
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—539 **7 Claims**

1. A photographic recording material which contains a support and thereupon at least one light-sensitive silver halide emulsion layer together with a protective layer over the light-sensitive layer and optionally a layer on the reverse side, wherein the protective layer and/or reverse side layer contains gelatine, characterised in that the protective layer containing gelatine and/or the reverse side layer containing gelatine contains a silicone oil of the formula I

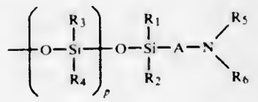


(I)

in which

R_1 means hydroxy, alkoxy, cycloalkoxy, aryloxy,

R_2 means a residue of the formula



or R_1

R_3, R_4 means alkyl, aryl, cycloalkyl,

R_5, R_6 means H, alkyl, aminoalkyl, polyaminoalkyl,

A means a straight-chain or branched alkene residue with 3 to 20 C atoms, wherein there is between the Si atom and the N atom a carbon chain of at least 3 C atoms,

m means 10 to 1000 and

p means 1 to 350,

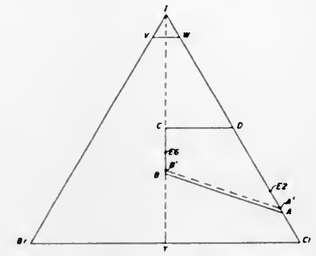
and is hardened.

5,288,603
HIGH CHLORIDE SILVER IODOHALIDE EMULSIONS CONTAINING AN INCREASED PROPORTION OF IODIDE

Joe E. Maskasky; Carlos A. Reyes, and Martin McMillan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1991, Ser. No. 649,511
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—567 **9 Claims**

1. A photographic silver halide emulsion comprised of a high chloride silver iodohalide grain structure having a face centered cubic rock salt type structure in which the proportions of chloride, bromide and iodide ions are chosen to lie within the boundary defined by A, B, C, and D in FIG. 1.

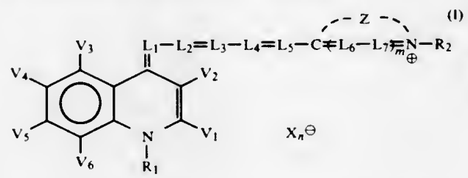


5,288,604
SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR DEVELOPING THE SAME

Yuji Mihara; Takashi Kato, and Takanori Hioki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 30, 1992, Ser. No. 876,380
Claims priority, application Japan, May 10, 1991, 3-133221
Int. Cl.[5] G03C *1/02*
U.S. Cl. 430—584 **13 Claims**

1. A silver halide photographic material comprising at least one sensitizing dye represented by formula (I):



(I)

wherein V_1, V_2, V_3, V_4, V_5 and V_6 each represent a substituent satisfying the condition of:

$Y=\sigma p1+\sigma p2+\sigma p3+\sigma p4+\sigma p5+\sigma p6<-0.27$, and Hammett's σp value of each being σpi with i being from 1 to 6;

R_1 and R_2may be the same or different and each represents an alkyl group;

L_1, L_2, L_3, L_4, L_5, L_6 and L_7 each represents a methine group; and m represents 0 or 1;

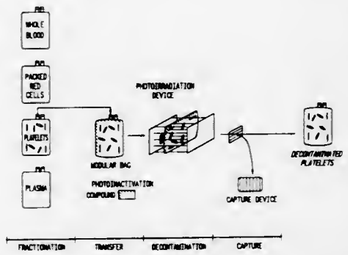
Z represents an atomic group necessary for forming a 5-membered or 6-membered nitrogen-containing hetero ring; and

X represents a charge balancing counter ion, and n has a value of at least 0 which is necessary for neutralizing the charge of the compound.

5,288,605
METHODS FOR INACTIVATING BACTERIA IN BLOOD PREPARATIONS WITH 8-METHOXYPSORALEN

Lily Lin; Lawrence Corash, both of Berkeley; Stephen T. Isaacs, Orinda; Carl V. Hanson, Berkeley, and George D. Cimino, Richmond, all of Calif., assignors to Steritech, Inc., Concord, Calif.

Filed Mar. 2, 1992, Ser. No. 844,790
Int. Cl.[5] A01N *1/02*; A61K *41/00*; A61M *37/00*; A61N *1/30*
U.S. Cl. 435—902 **19 Claims**



1. A method of inactivating bacteria in platelet preparations prior to long term storage and administration, comprising:

a) providing, in any order, i) 8-methoxypsoralen; ii) means for activating said 8-methoxypsoralen; iii) a platelet preparation intended for in vivo use suspected of being contaminated with bacteria;

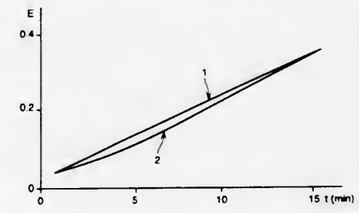
b) adding said 8-methoxypsoralen to said platelet preparation at a final concentration of between approximately 3 and 30 ug/ml; and

c) activating said 8-methoxypsoralen, so that said nucleic acid binding compounds bind covalently to the nucleic acid of a portion of said bacteria, without causing significant damage to said platelet preparation.

5,288,606
REAGENT FOR SPECIFIC DETERMINATION OF FRUCTOSAMINE

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Division of Ser. No. 64,336, Jun. 19, 1987, Pat. No. 5,156,947.
This application Jul. 9, 1992, Ser. No. 911,282
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1986, 3620817
Int. Cl.[5] C12Q *1/00*; C12P *19/38*; A61K *37/02, 35/78*
U.S. Cl. 435—4 **20 Claims**



1. Reagent useful in determining serum fructosamine in a sample of blood or a sample derived from blood with avoidance of the protein matrix effect comprising:

(a) a first agent comprising an enzymatic oxidizing agent and a detergent selected from the group consisting of anionic, non-ionic, and cationic detergents;

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(b) a second agent comprising a tetrazolium salt which reacts with fructosamine to form a color; and
(c) a third agent which is a buffer at a pH of from about 10.5 to about 12.5.

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POLYPEPTIDES HAVING A β-ADRENERGIC RECEPTOR ACTIVITY IN MAN, IMPLICATED IN THE LIPOLYTIC RESPONSE, NUCLEIC ACIDS CODING FOR THESE POLYPEPTIDES AND THE USE OF THESE POLYPEPTIDES FOR THE SCREENING OF A SUBSTANCE ACTIVE ON THESE POLYPEPTIDES

Laurent Emorine; Stefano Marullo, and Donny Strosberg, All of Paris, France, assignors to Centre National De La Recherche Scientifique, Paris, France

PCT No. PCT/FR90/00054, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO90/08775, PCT Pub. Date Aug. 9, 1990

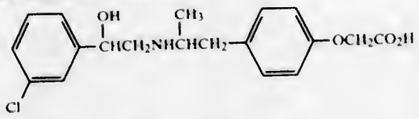
PCT Filed Jan. 25, 1990, Ser. No. 721,571

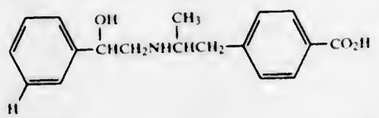
Claims priority, application France, Jan. 25, 1989, 8900918

Int. Cl.[5] **C12Q** *1/68;* **C12P** *21/06;* **C07K** *3/00;* **C07H** *15/12*

U.S. Cl. 435—6 **16 Claims**

1. A substantially pure polypeptide having a β-adrenergic receptor activity comprising: the sequence of 402 amino acids of FIG. 12, or a fragment of said sequence, wherein said fragment contains sites in this sequence such that when this fragment is exposed at the surface of a cell, it is capable of participating in the activation of adenylate cyclase in the presence of an agonist, this activation increasing in the order of the agonists as follows: salbutamol,





(1)-isoproterenol

or said fragment is capable of being recognized by antibodies which also recognize the above-mentioned sequence of 402 amino acids, but which do not recognize the β1-adrenergic receptor or the β2-adrenergic receptor,

or said fragment is capable of generating antibodies which recognize the above-mentioned sequence of 402 amino acids but do not recognize either the β1-adrenergic receptor or the β2-adrenergic receptor.

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Patent Not Issued For This Number

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CAPTURE SANDWICH HYBRIDIZATION METHOD AND COMPOSITION

Dean L. Engelhardt, and Elazar Rabbani, both of New York, N.Y., assignors to Enzo Diagnostics, Inc., Farmingdale, N.Y.

Continuation of Ser. No. 428,087, Oct. 27, 1989, abandoned, which is a division of Ser. No. 5,327, Jan. 15, 1987, Pat. No. 4,894,325, said Ser. No. 5,327, is a continuation of Ser. No. 653,816, Sep. 24, 1984, abandoned, which is a continuation of Ser. No. 605,022, Apr. 27, 1984, abandoned. This application Oct. 30, 1992, Ser. No. 968,706

Int. Cl.[5] **C12Q** *1/68;* **G01N** *33/555, 33/552, 33/546*

U.S. Cl. 435—6 **41 Claims**

1. A method for the detection of a single-stranded genetic material in a sample, which method comprises the steps of:
(a) providing:
(i) a first polynucleotide probe comprising a label and a first single-stranded polynucleotide segment, the first single-stranded polynucleotide segment being hybridizable with a first portion of the genetic material;
(ii) a second polynucleotide probe comprising a second single-stranded polynucleotide segment hybridizable with a second portion of said genetic material and a first entity; and
(iii) a matrix having a second entity which is specifically bindable with the first entity;
(b) forming a complex comprising said first and second single-stranded polynucleotide segments hybridized to the genetic material and said first entity bound to the second entity; and
(c) detecting the presence of the genetic material by means of the label associated with the complex.

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DETECTING REAGENT FOR ANTIPLATELET ANTIBODY

Yoichi Shibata, Tokyo, and Naohiro Ozawa, Ynno, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 508,922

Claims priority, application Japan, May 16, 1989, 1-122392

Int. Cl.[5] **G01N** *33/543, 33/544, 33/546, 33/555*

U.S. Cl. 435—7.21 **9 Claims**

1. A detecting reagent for an antiplatelet antibody, said detecting reagent comprising a carrier particle coupled to a solubilized lysate of a platelet from a human, said solubilized lysate being obtained by treating said platelet by sonication so as to extract alloantigens from among platelet antigens, said alloantigens being immobilized on the carrier particle by passive adsorption onto the carrier particle, said carrier particle agglutinates with anti-$P1^{A1}$, anti-Yuk^b and anti-Nak^a antibody, but does not agglutinate with anti-Bak^a, anti-Sib^a and anti-Ko^a antibodies.

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METHOD FOR DETECTING, IDENTIFYING, AND QUANTITATING ORGANISMS AND VIRUSES

David E. Kohne, La Jolla, Calif., assignor to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 584,432, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 464,717, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 353,208, May 17, 1989, abandoned, which is a continuation of Ser. No. 655,365, Sep. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 456,729, Jan. 10, 1983, abandoned. This application Mar. 19, 1992, Ser. No. 857,081

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] **C12Q** *1/68, 1/06, 1/18, 1/22*

U.S. Cl. 435—6 **1 Claim**

1. A method for detecting the presence of a species of organism comprising a ribosomal nucleic acid sequence, in a test sample, comprising the steps of:
contacting ribosomal nucleic acid from said test sample with a nucleic acid probe able to hybridize to only a portion of said ribosomal nucleic acid sequence of said organism,
incubating said probe and said ribosomal nucleic acid obtained from said test sample under specified hybridization conditions such that said probe hybridizes to the ribosomal nucleic acid of said organism and does not detectably hybridize to ribosomal nucleic acid from other species and
detecting any hybridization of said probe with said ribosomal nucleic acid in said test sample as an indication of the presence of said organism comprising said ribosomal nucleic acid sequence in said sample.

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ASSAY METHODS FOR DETECTING SERUM PROTEASES, PARTICULARLY ACTIVATED PROTEIN C

John H. Griffin, Del Mar, and Andras Gruber, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Jul. 3, 1991, Ser. No. 725,359

Int. Cl.[5] **C12Q** *1/37*

U.S. Cl. 435—23 **9 Claims**

1. A method for determining the amount of a protease in a body fluid sample comprising the steps of:
a) contacting an immobilized antibody molecule composition, comprising antibody molecules affixed to a solid support, with an irreversible protease inhibitor in an amount of inhibitor sufficient to inhibit any protease associated with the composition to form a first admixture, said antibody molecules immunoreactive with said protease to form an immunoreaction complex having protease activity and the ability to bind a reversible protease inhibitor;
b) maintaining the first admixture for a time period sufficient for said irreversible protease inhibitor to inhibit said protease and form a protease activity-free immobilized antibody composition;
c) removing excess irreversible protease inhibitor from said protease activity-free immobilized antibody composition formed in step (b);
d) admixing a body fluid sample with a coagulation inhibiting buffer containing a protease inhibiting amount of said reversible protease inhibitor, to form a second admixture;
e) admixing said second admixture with the protease activity-free antibody composition formed in step (c) to form an immunoreaction admixture having a liquid phase and a solid phase;
f) maintaining said immunoreaction admixture under immunoreaction conditions for a time period sufficient for said protease present in said body sample to immunoreact with the antibody molecules present on the solid support and form a first solid-phase immunoreaction product;
g) removing the reversible protease inhibitor from said first solid phase immunoreaction product to form an inhibitor-free solid-phase immunoreaction product; and
h) determining the amount of said protease present in the inhibitor-free solid-phase immunoreaction product formed in step (g) and thereby the amount of protease in the body sample.

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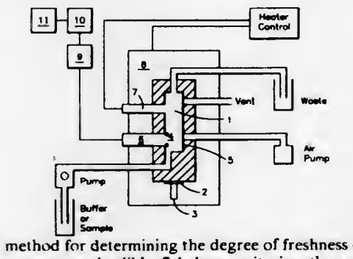
ENZYME-BASED BIOSENSOR SYSTEM FOR MONITORING THE FRESHNESS OF FISH

John H. T. Luong, Mont-Royal; Keith B. Male, Verdun, and An L. Nguyen, Dollard des Oremeaux, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the National Research Council of Canada, Ottawa, Canada

Continuation of Ser. No. 563,116, Aug. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 157,390, Feb. 17, 1988, abandoned. This application Dec. 5, 1991, Ser. No. 802,698

Int. Cl.[5] **C12Q** *1/26, 1/64;* **C12M** *1/40;* **G01N** *27/26*

U.S. Cl. 435—25 **14 Claims**



1. A method for determining the degree of freshness of raw, frozen or processed edible fish by monitoring the autolytic degradation of adenosine triphosphate in fish muscles to inosine monophosphate, inosine and hypoxanthine, said method comprising:
(a) providing a homogenous fish muscle extract wherein the cell membrane of the fish muscle has been broken;
(b) contacting a first portion of said extract with the enzymes xanthine oxidase and nucleoside phosphorylase and electrochemically measuring through an amperometric probe, comprising an anode and a cathode, a value $d_1=[HxR]+[Hx]$ from the simultaneous determination of the amount of hydrogen peroxide and uric acid resulting from the degradation of hypoxanthine and inosine in said first extract portion by said enzymes, wherein [HxR] is the concentration of inosine and [Hx] is the concentration of hypoxanthine;
(c) contacting a second portion of said extract with the enzymes nucleotidase, nucleoside phosphorylase and xanthine oxidase, and electrochemically measuring through an amperometric probe, comprising an anode and a cathode, a value $d_2=[IMP]+[HxR]+[Hx]$ from the simultaneous determination of the amount of hydrogen peroxide and uric acid resulting from the degradation of inosine monophosphate, inosine and hypoxanthine in said second extract portion by said enzymes, wherein [IMP] is the concentration of inosine monophosphate, [HxR] is the concentration of inosine, and [Hx] is the concentration of hypoxanthine; and
(d) determining the index of freshness from the formula $K=d_1/d_2$, wherein K represents the index of freshness.

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METHOD FOR THE DETECTION OF MALIGNANT DISEASES

Heinz Bodenmüller, and Andreas Dessauer, both of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

PCT No. PCT/SE90/02314, § 371 Date Jul. 23, 1991, § 102(e) Date Jul. 23, 1991, PCT Pub. No. WO91/10139, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 27, 1990, Ser. No. 730,953

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 3942999

Int. Cl.[5] **G01N** *33/574;* **C12N** *15/06;* **C07K** *15/28*

U.S. Cl. 435—7.23 **15 Claims**

9. Method for screening for malignant diseases, comprising the steps of:
incubating a sample of a body fluid with at least two receptors R1 and R2 in a liquid phase, wherein one of the two receptors contains a monoclonal antibody which specifically binds to the amino acid sequence 311 to 335 of cytokeratin 19 and the other receptor contains a monoclonal antibody which specifically binds to the amino acid sequence 346 to 359 of cytokeratin 19, to produce a signal change by binding of the receptors R1 and R2 to the substance to be detected in the sample solution, and
detecting the signal change in the sample caused by the binding as an indication of the presence of a malignant disease.

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METHODS FOR PREPARING PROTEINS OF ALTERED STRUCTURE

Annette T. Lee, New York, and Anthony Cerami, Shelter Island, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 499,885, Mar. 27, 1990, abandoned, which is a continuation of Ser. No. 144,404, Jan. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 885,967, Jul. 15, 1986, Pat. No. 4,761,368, which is a division of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192, and a continuation-in-part of Ser. No. 97,856, Sep. 17, 1987, abandoned. This application Apr. 7, 1992, Ser. No. 864,523

Int. Cl.[5] **C12N** *15/00, 15/09;* **C12P** *21/00*

U.S. Cl. 435—69.1 **19 Claims**

1. A method for preparing a protein of altered structure from target genetic material comprising:

a. incubating a protein structure modifying agent comprising the reaction product of glucose-6-phosphate and an amino acid selected from the group consisting of lysine and putrescine with said target genetic material under conditions conducive for causing the reaction thereof;

b. recovering any reacted genetic material from Step a. and introducing said reacted generic material into a bacterial cellular strain;

c. incubating the cellular strain of Step b. under conditions conductive to promoting mutation; and

d. screening for and recovering genetic clones of the cellular strain of Step c. that provide a gene or protein material having an altered structure with the desired properties.

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PROCESS FOR PRODUCING PROTEINS USING SILKWORMS INFECTED WITH RECOMBINANT VIRUS

Hironobu Okazaki; Toshimichi Kanaya, and Sayuri Nishimura, all of Matsumoto, Japan, assignors to Katakura Industries Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,542

Claims priority, application Japan, Feb. 17, 1992, 4-061521

Int. Cl.[5] **C12N** *15/00*

U.S. Cl. 435—69.1 **3 Claims**

1. A process for producing a protein using silkworms, which comprises:

chilling the silkworms to a temperature of from 0 to 10° C.;

allowing the chilled silkworms to warm to about 25° C. to awaken the silkworms from a temporary diapause caused by said chilling step;

orally administering to said silkworms a feed containing a recombinant Bm nuclear polyhedrosis virus in an amount effective to infect the silkworms into which has been inserted a gene encoding said protein;

raising said silkworms;

and isolating said protein from said silkworms.

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METHOD OF PRODUCING AN ANTIGENIC PREPARATION

John S. Mattick; Belinda J. Anderson, both of Sydney, and Thomas C. Elleman, Melbourne, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell and University of Sydney, Sydney, both of Australia

Continuation of Ser. No. 498,497, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 887,088, Jun. 19, 1986, abandoned. This application Sep. 30, 1991, Ser. No. 767,369

Claims priority, application Australia, Oct. 31, 1984, PG7930

Int. Cl.[5] **C12P** *21/00;* **C12N** *15/00, 1/21*

U.S. Cl. 435—69.3 **26 Claims**

1. A method for the production of an antigenic preparation for use in raising antibodies active against a species of bacteria naturally producing Type 4 fimbriae, said method comprising the steps of:

culturing genetically engineered *Pseudomonas aeruginosa* host cells, containing the genes encoding the fimbrial structural subunit antigens of at least one strain of the said species of bacteria, and an endogenous compatible system for the morphogenetic assembly of Type 4 fimbriae, said host cells being such that mature fimbriae are produced as extracellular structures; and

harvesting the whole or a part of the fimbriae substantially free of the host cells.

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POLYSACCHARIDE COMPOSITION AND PROCESS FOR PREPARING SAME

Robert S. Hardin, San Diego, Calif.; James H. Flatt, and Douglas C. Cameron, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 526,473, May 21, 1990, Pat. No. 5,130,249. This application Apr. 29, 1992, Ser. No. 876,008

Int. Cl.[5] **C12P** *19/04*

U.S. Cl. 435—101 **16 Claims**

1. A process for the production of an anionic galactomannan polysaccharide in recoverable quantity comprising growing the microorganism Erwinia sp. ATCC No. 55046 in an aqueous nutrient medium by aerobic fermentation of a defined carbohydrate and nitrogen source and recovering the galactomannan polysaccharide.

5,288,619

ENZYMATIC METHOD FOR PREPARING TRANSESTERIFIED OILS

Peter H. Brown, Morton Grove; Federico D. Carvallo, Wheeling; Robert C. Dinwoodie; Michael T. Dueber, both of Glenview; David K. Hayashi, Chicago; R. G. Krishnamurthy, Glenview; Zohar M. Merchant, Wilmette; James J. Myrick, Glencoe; Richard S. Silver, Wilmette, and Chrisanthus Thomas, Arlington, Heights, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 714,432, Jun. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 455,551, Dec. 18, 1989, abandoned, and Ser. No. 700,115, May 9, 1991, abandoned, which is a continuation of Ser. No. 455,555, Dec. 18, 1989, abandoned. This application Jun. 11, 1992, Ser. No. 897,255

Int. Cl.[5] **C12P** *7/64, 7/58;* **A23D** *7/00, 9/00*

U.S. Cl. 435—134 **5 Claims**

1. An enzymatic transesterification method for preparing a margarine oil having both low trans- acid and low intermediate chain fatty acid content, together with a broad margarine solids fat index melting profile and a smooth organoleptic consistency, said margarine oil comprising a blend of from about 84 to about 95 weight percent fatty acid triglycerides, from about 5 to about 15 weight percent fatty acid diglycerides and less than about one weight percent of fatty acid monoglycerides, based on the total weight of said blend, less than 3 weight percent of esterified trans- unsaturated fatty acid and less than 6 weight percent of intermediate chain saturated fatty acids, from about 25 to about 45 weight percent of esterified linoleic acid, from about 0 to about 11 weight percent of esterified linolenic acid, from about 5 to about 25 weight percent of esterified oleic acid based on the total weight of esterified fatty acids, said margarine oil also having a non-random fatty acid distribution in which esterified stearic acid is predominantly distributed in the 1-, 3- positions, while esterified unsaturated fatty acid moieties are in higher concentration at the 2- position of said glycerides within the following ranges:

	1-,3- Glyceride positions weight percent	2- Glyceride position weight percent
Palmitic acid	5–10	0–2.0
Stearic acid	50–70	0–5.0
Oleic acid	5–15	20–30
Linoleic acid	10–30	60–80

-continued

	1-,3- Glyceride positions weight percent	2- Glyceride position weight percent
Linolenic acid	0–10	3–12

and said margarine oil having a solid fat content profile within the following ranges:

Temperature	Dilatometric Solid Fat Index, Percent
10° C.	7–31
21.1° C.	3–25
26.7° C.	0.75–10
33.3° C.	0.5–4
38.7° C.	less than 3,

said method comprising the steps of providing a transesterification reaction mixture containing a stearic acid source material selected from the group consisting of stearic acid, stearic acid monoesters of low molecular weight monohydric alcohols, and mixtures thereof, said stearic acid source material comprising at least about 84 weight percent of stearic acid, based on the total weight of fatty acids in said stearic acid source material, and

an edible liquid vegetable oil comprising at least about 80 weight percent of esterified eighteen carbon fatty acid moieties based on the total weight of the edible liquid vegetable oil triglyceride, said vegetable oil further comprising less than 7 weight percent of esterified palmitic acid in 2- glyceride position, and less than 4 weight percent of esterified stearic acid in the 2- glyceride position, at least about 20 weight percent of esterified oleic acid in each of the 1, 2 and 3 glyceride positions, at least about 20 weight percent of esterified linoleic acid, at least about 5 weight percent of esterified linolenic acid, and less than 2 weight percent of esterified stearic acid in the 2- position,

transesterifying said stearic acid source material and said vegetable oil triglyceride using a 1-, 3- positionally specific lipase, at a weight ratio of stearic acid source material to the vegetable oil triglyceride in the range of from about 0.5:1 to about 2:1 to substantially equilibrate the ester groups in the 1-, 3- positions of the glyceride component with non-glyceride fatty acid components of the reaction mixture, separating transesterified free fatty acid components from glyceride components of the transesterification mixture to provide a transesterified margarine oil product and a fatty acid mixture comprising fatty acids, fatty acid monoesters or mixtures thereof released from said vegetable oil, and

hydrogenating the fatty acid mixture to provide a recycle stearic acid source material for recyclic reaction with said vegetable oil triglyceride.

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PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE 2-HYDROXY-4-PHENYL-3-BUTENOIC ACID

Akinobu Matsuyama, Niigata; Ichiro Takase; Yoichiro Ueda, both of Hyogo, and Yoshinori Kobayashi, Niigata, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 459,787, Mar. 1, 1990, Pat. No. 5,194,380. This application May 20, 1992, Ser. No. 885,974

Claims priority, application Japan, Jul. 12, 1988, 63-173464; Jul. 12, 1988, 63-173470; Oct. 7, 1988, 63-253020

Int. Cl.[5] **C12P** *7/42;* **C12R** *1/22, 1/01, 1/645*

U.S. Cl. 435—146 **2 Claims**

1. A process for the production of optically active 2-hydroxy-4-phenyl-3-butenoic acid, which comprises:

treating a microorganism selected from the group of genera consisting of Lactobacillus, Leuconostoc, Streptococcus, Sporolactobacillus, Pediococcus, Arthrobacter, Agrobacterium, Ambrosiozyma, Achromobacter, Aureobacterium, Bacillus, Botryoascus, Brevibacterium, Candida, Clavispora, Corynebacterium, Flavobacterium, Geotrichum, Hansenula, Kluyveromyces, Lipomyces, Lodderomyces, Proteus, Pseudomonas, Saccharomycopsis, Schizosaccharomyces, Stephanoascus, Torulaspora, Trigonopsis, Wickerhamiella, Enterobacter, Klebsiella and Xanthomonas by a treatment selected from the group consisting of grinding, treating with acetone and lyophilizing, to obtain an enzyme preparation having the biochemical activity of reducing 2-oxo-4-phenyl-3-butenoic acid to form (S)-2-hydroxy-4-phenyl-3-butenoic acid or (R)-2-hydroxy-4-phenyl-3 butenoic acid; and

treating 2-oxo-4-phenyl-3-butenoic acid with said enzyme preparation.

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PITUITARY TRH RECEPTOR

Marvin C. Gershengorn, and Richard E. Straub, both of New York, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 14, 1990, Ser. No. 629,104

Int. Cl.[5] **C07K** *13/00*

U.S. Cl. 435—69.4 **3 Claims**

1. A cDNA molecule encoding a thyrotropin-releasing hormone receptor wherein the cDNA molecule essentially contains the following sequence:

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1 GAATTCCGGA GGGTTTAGAG GAACTGCCGC

                    TCTGAAGACT GAGCCTCTGC

51 TAAGTGATCT TCCTGCCAGA CAGACTGGAC

                    AAGATTTCTT CTGCAGGATT

101 GGAAACTTGG ACCTATTAGC ACTTCATCTA

                    CCAGAGAAAC AGGCAGCGTG

151 ACAGAGTGAA GAGGGGAAAG AACTACTGCA

                    AAAACAAACA GACAGAAAGG

201 TGAAGGCTGG AAAGATGTTT TAGAGTCCCC

                    GTGTCAGAGA AGCTTCAAGC

251 CACTGAAG ATG GAG AAT GAT ACT

                    GTC AGT GAA ATG AAC CAA

291 ACC GAG CTC CAG CCA CAA GCA GCT

                    GTG GCC CTC GAG TAC CAG

333 GTG GTT ACC ATC TTA CTT GTG GTC

                    ATT ATT TGT GGA CTG GGC

375 ATT GTG GGC AAC ATC ATG GTA GTC

                    CTG GTG GTC ATG AGA ACA

417 AAG CAC ATG AGA ACC CCT ACA AAC

                    TGT TAC CTG GTA AGT CTG

459 GCT GTG GCA GAT CTC ATG GTT CTG

                    GTG GCT GCA GGA CTC CCC

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GCC ATC AAC CCA GTG ATT
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CGT GCA GCC TTC AGG AAC
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ACA GAA AAA GCT GCT AAC
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GTC ATC AAG GAG TCA GAC
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1620 GAACTTAATT CAAAACTCAA ATAATCTTCT
TTGACAAGAG TGATCATGGA
1670 TAAAAATGGA CTCAGTTCTT GTGCATATAG
CTTTTCTTTG ACTGCCAAAC
1720 AAGAGCGAAT ATGAACTTCC ATCTTGAACT
GG --- 3'

5,288,622

HUMAN NERVE GROWTH FACTOR BY RECOMBINANT TECHNOLOGY

Alane M. Gray, and Axel Ullrich, both of San Francisco, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 242,093, Sep. 8, 1988, Pat. No. 5,169,762, which is a division of Ser. No. 471,962, Mar. 3, 1983, abandoned. This application Jun. 11, 1992, Ser. No. 897,221

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] **C12P** *21/06, 21/02;* **A61K** *37/36;* **C07K** *13/00*

U.S. Cl. 435—69.4 **9 Claims**

1. A process which comprises transforming a host cell with a replicable expression vector capable, in the host cell transformed with the vector, of expressing an isolated first DNA sequence which encodes a polypeptide comprising the human mature βNGF amino acid sequence

ser ser ser his pro ile phe his arg gly glu phe ser val cys
asp ser val ser val trp val gly asp lys thr thr ala thr asp
ile lys gly lys glu val met val leu gly glu val asn ile asn
asn ser val phe lys gln tyr phe phe glu thr lys cys arg asp
pro asn pro val asp ser gly cys arg gly ile asp ser lys his
trp asn ser tyr cys thr thr thr his thr phe val lys ala leu
thr met asp gly lys gln ala ala trp arg phe ile arg ile asp
thr ala cys val cys val leu ser arg lys ala val arg

operably linked with a second DNA sequence capable of effecting expression of the first DNA sequence in the host cell transformed with the operably linked DNA sequences.

5,288,623

PROCESS FOR SECRETORY PRODUCTION OF A CALCIUM-BINDING PROTEIN

Shuhei Zenno, Yokohama, Japan, and Satoshi Inouye, San Diego, Calif., assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 587,843, Sep. 25, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,582

Claims priority, application Japan, Oct. 26, 1989, 1-279528

Int. Cl.[5] **C12N** *15/62, 15/70*

U.S. Cl. 435—69.7 **2 Claims**

1. A process for producing a fusion protein comprising a calcium-binding protein and biogenic substance of *E. coli* which facilitates the extracellular secretory production of the fusion protein, which process comprises:

preparing a recombinant plasmid as a cloning vehicle for expression of the fusion protein in *E. coli*, said plasmid comprising a first DNA sequence consisting of a lipoprotein promoter region being linked in reading phase with a second DNA sequence located downstream of said first DNA sequence, said second DNA sequence coding for a signal peptide of outer membrane protein A and being linked in reading phase with a third DNA sequence located downstream of said second DNA sequence, said third DNA sequence coding for the fusion protein,

inserting said plasmid into *E. coli* to obtain a transformed *E. coli*, and

cultivating the transformed *E. coli* in a suitable medium to produce said fusion protein,

wherein said calcium-binding protein is selected from the group consisting of calmodulin, troponin c, myosin light chain, parvalubumin, vitamin D-dependent calcium-binding proteins, S-100, S-100β, calpactin, carpaine/CANP, and oncomodulin.

5,288,624

CERCOSPORAL FUNGICIDE COMPOSITIONS AND METHODS OF USE

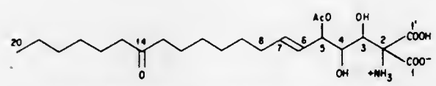
Ruby I. Nielsen, Farum, Denmark, assignor to Novo Nordisk A/S, Denmark

Continuation-in-part of Ser. No. 564,691, Aug. 8, 1990, abandoned, which is a continuation of Ser. No. 271,712, Nov. 16, 1988, abandoned. This application Jun. 13, 1991, Ser. No. 713,463

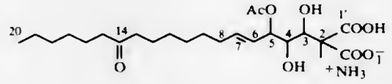
Claims priority, application Denmark, Nov. 17, 1987, 6046/87

Int. Cl.[5] **C12P** *1/02;* **A01N** *37/06;* **A61K** *31/22*

U.S. Cl. 435—128 **11 Claims**



1. A substantially pure fungicidal agent comprising the structure:



5,288,625

MAMMALIAN ARTIFICIAL CHROMOSOMES

Gyula Hadlaczky, Szamos, Hungary, assignor to Biologic Research Center of the Hungarian Academy of Sciences, Hungary

Filed Sep. 13, 1991, Ser. No. 759,558

Int. Cl.[5] **C12N** *15/06, 15/12, 5/16, 5/28*

U.S. Cl. 435—172.2 **12 Claims**

1. A method of producing a cell line which comprises a functioning centromere comprising human DNA sequences, wherein the centromere is present on a chromosome, wherein all of the centromeres of said chromosome comprise human sequences, comprising:

fusing cells of a cell line deposited at the European Collection of Animal Cell Culture (ECACC) under accession no. 90051001 with CHO K-20 cells to form fused cell hybrids;

screening said fused cell hybrids or progeny for cells which are devoid of a dicentric chromosome but which contain a centromere which comprises human DNA.

5,288,626

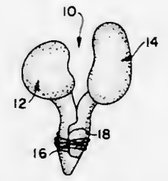
METHOD FOR PRODUCING NEW VARIETIES OF PLANTS

William C. Levengood, 4853 Wolf Lake Rd., Grass Lake, Mich. 49240

Continuation of Ser. No. 363,451, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 907,858, Sep. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 545,656, Oct. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 309,607, Oct. 8, 1981, abandoned. This application Jun. 15, 1990, Ser. No. 539,302

Int. Cl.[5] **C12N** *15/00;* **A01H** *1/00*

U.S. Cl. 435—172.3 **25 Claims**



1. A method for increasing the proportion of altered phenotypes in generations subsequent to at least one progenitor member of a first species of plant, said first species having at least one established phenotype, and said method comprising:

placing said at least one member of said first species in contact with whole cells and associated materials of a second species of plant while simultaneously applying an electrophoretic current across said at least one member of said first species and said whole cells and associated materials of said second species, during a time said at least one member is in a germinal stage; and

allowing said member of said first species to develop from said germinal stage.

5,288,627

ENDOPROTEASE FROM *FUSARIUM OXYSPORUM*DSM 2672 FOR USE IN DETERGENTS

Ruby I. Nielsen, Farum; Dorrit A. Aaslyng, Roskilde; Georg W. Jensen, Bagsvaerd, and Palle Schneider, Ballerup, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 536,592, Jul. 3, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 977,355

Claims priority, application Denmark, Jan. 7, 1988, 0062/88; Jan. 7, 1988, 0063/88

Int. Cl.[5] **C12N** *9/58, 1/14, 1/00;* **C11D** *3/386*

U.S. Cl. 435—223 **2 Claims**

1. An endoprotease preparation, comprising an isolated endoprotease having the following characteristics:

a) is a serine protease,

b) shows immunochemical identity to a trypsin-like protease derived from *Fusarium oxysporum* DSM 2672 which hydrolyzes the oxidized beta-chain of bovine insulin at the peptide bonds Arg (22)-Gly (23) and Lys (29)-Ala(30),

c) hydrolyzes the oxidized beta-chain of bovine insulin at the peptide bonds Arg (22)-Gly (23) and Lys (29)-Ala(30),

d) has optimum activity towards casein in the pH range of 8.5–11 with nearly constant activity in said pH range,

e) has optimum activity at a temperature of about 45° C., and

f) has an isolelectric point of about 9–10, wherein the preparation is devoid of other proteases.

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5,288,628

RAT OSTEOSARCOMA CELL LINE OSR4TR1

Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 24, 1992, Ser. No. 903,436
Int. Cl.[5] C12N 5/06; C12P 21/02
U.S. Cl. 435—240.2 1 Claim

1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11067.

5,288,629

DNA SEQUENCE ENCODING FACTOR VII WITH AN AMINO ACID SUBSTITUTION AT AVG-152

Kathleen L. Berkner, Seattle, Wash., assignor to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 471,313, Jan. 29, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 951,295
Int. Cl.[5] C12N 5/00, 15/00; C07H 15/12, 17/00
U.S. Cl. 435—240.2 8 Claims

1. A polynucleotide molecule comprising two operatively linked sequence coding regions encoding, respectively, a pre-pro peptide and a gla domain of a vitamin K-dependent plasma protein, and a gla domain-less Factor VII having an amino acid substitution in the activation region, wherein said polynucleotide encodes a modified Factor VII molecule that is resistant to activation by plasma Factor Xa, as compared to wild-type Factor VIIa, and is capable of inhibiting the clotting activity of wild-type Factor VIIa.

5,288,630

EXPRESSION SYSTEM FOR RSV GLYCOPROTEIN F AND G

Michael W. Wathen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 543,780, Jun. 20, 1990, Pat. No. 5,194,595, which is a continuation of Ser. No. 137,387, Dec. 23, 1987, abandoned. This application Nov. 20, 1992, Ser. No. 979,505
Int. Cl.[5] C12N 5/10, 1/21, 1/19
U.S. Cl. 435—240.2 9 Claims

1. An expression system comprising a host selected from the group consisting of hacteria cells, yeast cells, mammalian cells and insect cells containing a gene for expressing a polypeptide having an immunogenic fragment from both human respiratory syncytial virus glycoprotein F and human respiratory syncytial virus glycoprotein G.

5,288,631

MASS TRANSFER MEMBRANE FOR OXYGENATION OF ANIMAL CELL REACTORS

Mark F. Baumgartner, St. Charles; William R. Tolbert, Manchester, and John Shanahan, Florissant, all of Mo., assignors to Centocor Incorporated, Malvern, Pa.

Continuation of Ser. No. 534,125, Jun. 5, 1990, Pat. No. 5,112,760. This application Jan. 17, 1992, Ser. No. 822,353
Int. Cl.[5] C12N 5/00; C10J 1/08; B01D 33/70
U.S. Cl. 435—240.242 4 Claims



1. An apparatus for conducting a biological or chemical reaction in liquid medium which comprises a vessel holding said medium, having disposed in said medium an integral tubular permeable membrane encompassing a lumen, the membrane having an interior surface and an exterior surface, the membrane suitable for the conduction of a gaseous fluid through the lumen, wherein said tubular membrane is characterized by an exterior surface having a routine pattern of irregularities in said surface.

5,288,632

ENCAPSULATION OF MATERIAL IN MICROBIAL CELLS

Nahida A. Pannell, Hagley, England, assignor to AD2 Limited, Birmingham, England

Continuation-in-part of Ser. No. 37,182, Apr. 10, 1987, abandoned. This application Sep. 5, 1989, Ser. No. 402,347
Claims priority, application United Kingdom, Apr. 12, 1986, 8608964
Int. Cl.[5] C12N 1/00, 1/12, 1/14, 1/06
U.S. Cl. 435—243 16 Claims

1. Method for the production of a microbially encapsulated material, comprising:

treating a grown intact microbe having a microbial lipid content of significantly less than 40% by weight, with an encapsulatable material in liquid form which is capable of diffusing into the microbial cell without causing total lysation thereof,

said treatment comprising mixing the microbe with the encapsulatable material in the presence of an aqueous medium, but in the absence of added surfactant, to produce an aqueous emulsion of the encapsulatable material and to maintain the aqueous emulsion during the mixing,

whereby the encapsulatable material is absorbed by the microbe by diffusion across the microbial cell wall and the encapsulatable material is retained passively within the microbe,

wherein the encapsulatable material is not in aqueous emulsion form prior to said mixing of the microbe therewith, and

the method being performed in the absence of treatment of the microbe with a lipid-extending substance or a plasmolyser.

5,288,633

PSEUDOMONAS CEPACIA STRAIN 5.5B AND METHOD OF CONTROLLING *RHIZOCTONIA SOLANI* THEREWITH

D. Kelly Cartwright, and D. Michael Benson, both of Cary, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Jul. 31, 1992, Ser. No. 923,857
Int. Cl.[5] C12N 1/20, 1/00
U.S. Cl. 435—253.3 1 Claim

1. A biologically pure culture of *Pseudomonas cepacia* strain having all of the identifying characteristics of *Pseudomonas cepacia* NCSU strain 5.5B (ATCC 55344).

5,288,634

METHOD OF INCREASING THE PERCENTAGE OF VIABLE DRIED SPORES OF A FUNGUS

Gary E. Harman; Xixuan Jin; Thomas E. Stasz, all of Geneva; George P. Peruzzotti, Webster; A. Carl Leopold, Ithaca, and Alan G. Taylor, Geneva, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 841,270, Feb. 26, 1992, abandoned, which is a continuation of Ser. No. 562,285, Aug. 3, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,998
Int. Cl.[5] C12N 1/14, 1/04, 1/38
U.S. Cl. 435—254.1 10 Claims

1. A method of increasing the percentage of viable dried spores of a fungus of a genus selected from the group consisting of Trichoderma, Gliocladium, Collectotrichum, and Fusarium, which comprises the steps of:

(a) inoculating an aqueous growth medium with a suspension of spores of said fungus to provide an inoculated aqueous growth medium,

(b) culturing said inoculated aqueous growth medium to increase the density of the spores,

(c) adding a non-toxic osmoticant to said aqueous growth medium before said inoculation or after said inoculation, wherein the osmoticant added to the aqueous growth medium after said inoculation is added before or while the density of the spores is increasing; said osmoticant being added in an amount to provide an osmotic potential to said aqueous medium between about −1.5 and −2.1 mPa,

(d) harvesting the spores,

(e) drying the harvested spores.

5,288,635

MICROBES AND THEIR USE TO DEGRADE N-PHOSPHONOMETHYLGLYCINE IN WASTE STREAMS

William J. Adams, St. Charles; Laurence E. Hallas, St. Louis, and Michael A. Heitkamp, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 27, 1990, Ser. No. 544,436
Int. Cl.[5] C02F 3/00; C12N 1/20
U.S. Cl. 435—262.5 9 Claims

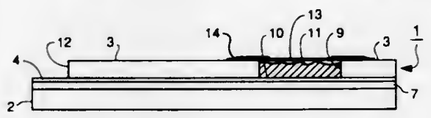
3. A process for the degradation of N-phosphonomethylglycine which comprises attaching a mixed culture of microorganisms ATCC 55050 to an inert, immobile support, and contacting an aqueous stream containing the N-phosphonomethylglycine with the microorganisms on the immobile support for a sufficient time to degrade the N-phosphonomethylglycine.

5,288,636

ENZYME ELECTRODE SYSTEM

Klaus H. Pollmann, Neulussheim, Fed. Rep. of Germany; Martin T. Gerber, Carmel; Kent M. Kost, Fishers; M. Luann Ochs, Fishers; P. Douglas Walling, Indianapolis; Joseph E. Bateson, Fishers; Lance S. Kuhn, Indianapolis; Chi-Neng A. Ha, Indianapolis, all of Ind.

Continuation-in-part of Ser. No. 451,671, Dec. 15, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 627,667
Int. Cl.[5] C12M 1/40, 1/34
U.S. Cl. 435—288 38 Claims



1. A device for analyzing an analyte, comprising:

a. a first electrical insulator;

b. a pair of electrodes consisting of working and counter electrodes of substantially the same size, the electrodes being made of the same electrically conducting materials and being supported on the first electrical insulator;

c. a second electrical insulator, overlaying the first electrical insulator and the electrodes and including a cutout portion that exposes substantially equal surface areas of the working and counter electrodes; and

d. a reagent, substantially covering the exposed electrode surfaces in the cutout portion and comprising the oxidized form of a redox mediator, an enzyme, and a buffer,

the oxidized form of the redox mediator being of sufficient type to receive at least one electron from a reaction involving enzyme, analyte, and oxidized form of the redox mediator and being in sufficient amount to insure that current produced by diffusion limited electrooxidation is limited by the oxidation of the reduced form of the redox mediator at the working electrode surface,

the enzyme being of sufficient type and in sufficient amount to catalyze the reaction involving enzyme, analyte, and oxidized form of the redox mediator, and

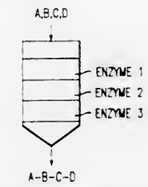
the buffer having a higher oxidation potential than the reduced form of the redox mediator and being of sufficient type and in sufficient amount to provide and maintain a pH at which the enzyme catalyzes the reaction involving enzyme, analyte, and oxidized form of the redox mediator.

5,288,637

APPARATUS FOR THE SYNTHESIS OF SACCHARIDE COMPOSITIONS

Stephen Roth, Gladwyne, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 683,810, Apr. 11, 1991, Pat. No. 5,180,674, which is a continuation-in-part of Ser. No. 509,560, Apr. 16, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 955,687
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] C12M 1/40
U.S. Cl. 435—288 73 Claims



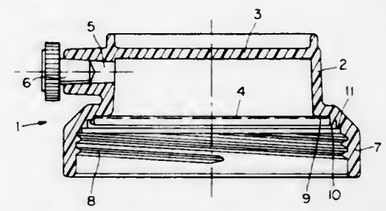
1. An apparatus for a glycosyltransferase-catalyzed synthesis of a tetrasaccharide composition of the formula gal-glcNAc-gal-β-1,4-glc from saccharide units and an acceptor moiety, said apparatus comprising reactor means having inlet means and outlet means, and containing two glycosyltransferases, an N-acetyl glucosaminyltransferase and a galactosyltransferase.

5,288,638

APPARATUS AND METHOD FOR THE MICROBIOLOGICAL TESTING OF PRESSURIZED LIQUIDS

Jean Lemonnier, le Vesinet, France, assignor to Millipore Corporation, Bedford, Mass.

Filed Jun. 8, 1992, Ser. No. 895,291
Claims priority, application France, Jun. 13, 1991, 9107232
Int. Cl.[5] B01D 29/00; C12M 1/12
U.S. Cl. 435—299 12 Claims



1. A device for the microbiological testing of a pressurized liquid sample comprising a completely closed container formed of a transparent plastic, a membrane filter, having an upstream surface and downstream surface pre-sterilized and for single use only, being sealed at the base of said completely closed container, said completely closed container having a liquid inlet adjacent the upstream surface of the membrane filter in the form of an orifice with an axis parallel to the plane of the membrane filter and which can be closed by a removable

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plug, said completely closed container being fitted, adjacent said upstream surface of the membrane filter with a built-in reading window and; adjacent said downstream surface of the membrane filter with a flange comprising a lip seal and a female threaded part.

5,288,639

FUNGAL STRESS PROTEINS

James P. Burnie, and Ruth C. Matthews, both of Wilmslow, United Kingdom, assignors to The Victoria University of Manchester, Manchester, England

PCT No. PCT/GB90/01021, § 371 Date Mar. 14, 1991, § 102(e) Date Mar. 14, 1991, PCT Pub. No. WO91/00351, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 2, 1990, Ser. No. 663,897

Claims priority, application United Kingdom, Jun. 30, 1989, 8915019.7

Int. Cl.[5] **C12N** *15/31, 15/63;* **C07K** *5/00, 7/00, 13/00*

U.S. Cl. 435—320.1 **11 Claims**

1. A purified candidal stress protein having an amino acid sequence which includes at least the sequence of FIG. 3:

```
                10                  20                  30
EFRAILFVPKRAPFDAFESKKKKNNIKLYV

                                    40                  50                  60
                RRVFITDDAEELIPEWLSFIKGVVDSEDLP

                70                  80                  90
LNLSREMLQQNKILKVIRKNIVKKMIEIFN

                                   100                 110                 120
                EISEDQEQFNQFYTAFSKNIKLGIHEDAQN

                130                 140                 150
RQSLAKLLRFYSTKSSEEMTSLSDYVTRMP

                                   160                 170                 180
                EHQKNIYYITGESIKAVEKSPFLDALKAKN

                190                 200                 210
FEVLFMVDPIDEYAMTQLKEFEDKKLVDIT

                                    220                 230                 240
                KDFELEESDEEKAAREKEIKEYEPLTKALK

                250                 260                 270
DILGDQVEKVVVSYKLVDAPAAIRTGQFGW

                                    280                 290                 300
                SANMERIMKAQALRDTTMSSYMSSKKTFEI

                310                 320                 330
SPSSPIIKELKKKVETDGAEDKTVKDLTTL

                                    340                 350                 360
                LFDTALLTSGFTLDEPSNFAHRINRLIALG

                370                 380                 390
LNIDDDSEETAVEPEATTTASTDEPAGESAMEEVD*
```

or immunogenic epitope thereof or a candidal homolog thereof, wherein antibodies that detect said protein, epitope or homolog cross react with the *Candida albicans* 47 kilodalton antigen or its 92 kilodalton precursor which comprises the sequence of FIG. 3.

5,288,640

SEQUENCES CONTAINING THE VPU GENE AND VECTORS THEREFORE METHODS OF PREPARATION AND USE

William A. Haseltine, Cambridge; Ernest Terwilliger, Boston, and Eric Cohen, Brighton, all of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Division of Ser. No. 193,321, May 12, 1988, Pat. No. 5,043,262. This application Jun. 17, 1991, Ser. No. 716,131

Int. Cl.[5] **C07H** *17/00*

U.S. Cl. 435—320.1 **5 Claims**

1. A DNA segment encoding an HIV-1 vpu gene product, wherein the DNA segment does not encode an entire HIV env gene product.

5,288,641

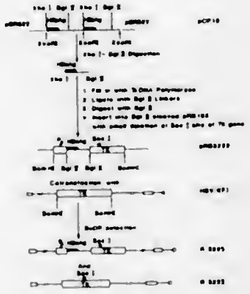
HERPES SIMPLEX VIRUS AS A VECTOR

Bernard Roizman, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 455,771, Dec. 28, 1989, abandoned, which is a continuation of Ser. No. 616,930, Jun. 4, 1984, abandoned. This application Jul. 30, 1992, Ser. No. 923,015

Int. Cl.[5] **C12N** *15/86, 15/09;* **C12P** *21/00*

U.S. Cl. 435—320.1 **62 Claims**



1. A recombinant viral genome of a *Herpes simplex* virus (HSV) containing an expressable non-HSV nucleotide sequence encoding a desired protein permanently integrated at a non-lethal site of said genome.

5,288,642

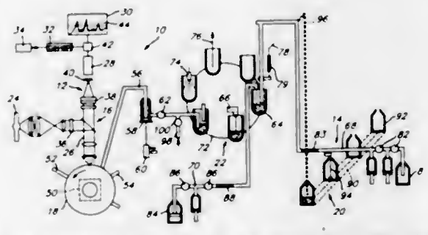
SHELF-STABLE MILK CALIBRATION STANDARDS

Jeffrey D. Turner, Hudson, Canada, assignor to Flockton Analytical Management Inc., Cornwall, Canada

Filed Dec. 9, 1992, Ser. No. 987,825

Int. Cl.[5] **G01N** *31/00, 31/22, 33/04*

U.S. Cl. 436—8 **8 Claims**



1. A shelf-stable milk calibration standard of non-milk origin comprising an aqueous dispersion of microbeads bearing a fluorescent dye, a suspending agent effective to maintain said microbeads in a dispersed state in said dispersion and an electrolyte in an amount to provide the dispersion with an electrical conductivity which is substantially at least that of milk said dye having an excitation wavelength below 580 nm and having a fluorescence emission wavelength in the range of 550 to 660 nm, with said excitation wavelength being at least 10 nm below said emission wavelength, and said microbeads being present in a predetermined number per unit volume of the dispersion.

5,288,643

QUICK METHOD TO DISTINGUISH ALKYLBENZENE AND NAPHTHENIC LUBRICANTS IN COMPRESSORS

Rajender K. Sadhir, Plum Boro, Pa., and Sung L. Kwon, Burnsville, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jun. 29, 1993, Ser. No. 85,063

Int. Cl.[5] **G01N** *31/00, 33/03*

U.S. Cl. 436—60 **4 Claims**

1. A method of distinguishing between an alkyl benzene and a naphthenic lubricant in a sample which comprises:

a. adding a sufficient amount of 3,3-bis (p-hydroxyphenyl) phthalide to said sample and;

b. observing the resulting turbidity against a blank, wherein said resulting turbidity indicates said lubricant is naphthenic whereas no turbidity indicates alkyl benzene lubricant.

5,288,644

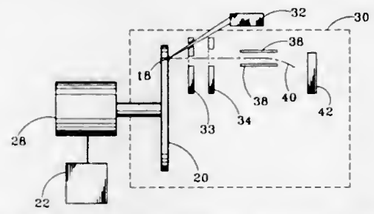
INSTRUMENT AND METHOD FOR THE SEQUENCING OF GENOME

Ronald C. Beavis, and Brian T. Chait, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 504,643, Apr. 4, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 957,688

Int. Cl.[5] **G01N** *33/48, 33/56*

U.S. Cl. 436—94 **8 Claims**



1. A method of DNA sequencing of the genome by detecting the mass weights of DNA fragments comprising the steps of:

(a) producing a piece of DNA of unknown sequence;

(b) performing four different base-specific reactions on the piece of DNA to produce four different DNA sets containing DNA fragments each DNA set having a common origin and terminating at a particular base along the unknown sequence;

(c) selecting a solid matrix having a strong absorption band at the wavelength of light produced by a laser and placing one of the DNA sets on the matrix, the strong absorption band of the matrix having a longer wavelength than the absorption bands for the DNA set;

(d) without separation of the DNA fragments by electrophoresis or other separation methods and without labeling the DNA fragments with radioactive, fluorescent or other labeling means, striking the DNA fragments on the solid matrix within one of the DNA sets with a series of laser pulses from the laser to desorb ions of the DNA fragments and produce ionized DNA fragments;

(e) detecting the mass weights of the ionized DNA fragments by a time of flight mass spectrometer; and

(f) repeating steps (d) and (e) for the other DNA sets to determine the sequence of bases in the DNA.

5,288,645

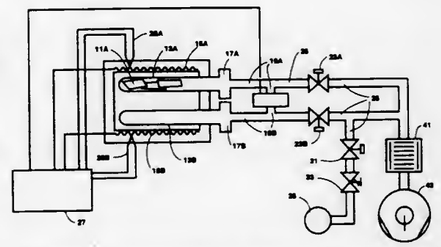
HYDROGEN EVOLUTION ANALYZER

Masato Toshima, Sunnyvale, and Jerry Wong, Fremont, both of Calif., assignors to MTM Engineering, Inc., Santa Clara, Calif.

Filed Sep. 4, 1992, Ser. No. 940,687

Int. Cl.[5] **G01N** *33/00*

U.S. Cl. 436—144 **15 Claims**



1. A method for determining the amount of a selected gas that evolves from a specimen of a selected material, the probable source of that gas and the concentration of a selected element in the evolved gas, the method comprising the steps of:

inserting a specimen into the interior of an evacuable chamber and evacuating the chamber to a selected evacuation pressure;

increasing the specimen temperature T to at least one selected temperature and monitoring the pressure of any gas that appears in the chamber interior at the selected temperature; and

determining the amount of a gas evolved in the chamber at temperatures near the selected specimen temperature by analyzing changes in the monitored pressure as the chamber temperature is increased.

5,288,646

METHOD OF PHOTOMETRIC IN VITRO DETERMINATION OF THE CONTENT OF AN ANALYTE IN A SAMPLE OF WHOLE BLOOD

Finn C. Lundsgaard, Tastrup; Niels-Henrik Jensen, Farum, and Willy Andersen, Espergaerde, all of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

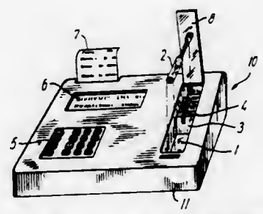
PCT No. PCT/DK89/00301, § 371 Date Jun. 21, 1991, § 102(e) Date Jun. 21, 1991, PCT Pub. No. WO90/07109, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 21, 1989, Ser. No. 720,531

Claims priority, application Denmark, Dec. 22, 1988, 7162/88

Int. Cl.[5] **G01N** *21/03*

U.S. Cl. 436—165 **48 Claims**



15. A method of photometric in vitro determination of the content of an analyte in a sample of whole blood, comprising the steps of:

a) transferring a sample of whole blood directly from an in vivo locality to a sampling device, wherein the sampling device comprises:

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at least one measuring chamber which has two locally transparent wall parts located opposite one another, at least one of the locally transparent wall parts being sufficiently deformable to facilitate displacement of the whole blood sample from the at least one measuring chamber for photometric analysis,

said at least one measuring chamber further including a transparent body disposed between the locally transparent wall parts, the transparent body being capable of selectively absorbing said analyte or reacting with said analyte such that upon contact of said analyte with said transparent body a detectable change in a radiation transmission characteristic of said transparent body occurs which is dependent upon the concentration of said analyte in the whole blood sample, wherein the transparent body maintains said radiation transmission characteristic after displacement of the whole blood sample from said at least one measuring chamber so that photometric analysis of said analyte in the absence of said whole blood sample can be performed;

b) placing the sampling device in a sampling device station wherein the sampling device station is arranged relative to an optical system comprised of a radiation source and a means for detecting radiation such that the sampling device is located between the radiation source and the radiation detection means;

c) deforming the at least one measuring chamber of the sampling device in a controlled manner to reduce the volume of the at least one measuring chamber thereby substantially draining the sample of whole blood from the measuring chamber;

d) transmitting radiation from the radiation source through the deformed, substantially drained at least one measuring chamber to the radiation detector;

e) detecting the radiation transmitted in step d); and

f) determining the analyte content of the sample of whole blood from the radiation detected in step e).

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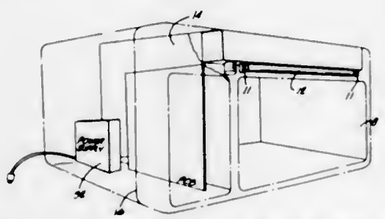
METHOD OF IRRADIATING BIOLOGICAL SPECIMENS

William C. Zimlich, Jr., and Joseph A. Sorge, both of San Diego, Calif., assignors to Stratagene, La Jolla, Calif.

Division of Ser. No. 189,285, May 2, 1988, abandoned. This application Apr. 17, 1991, Ser. No. 686,491

Int. Cl.[5] G01J *1/04*

U.S. Cl. 436—174 **6 Claims**



1. A method of irradiating a polynucleotide specimen on a substrate, the method comprising:

providing an apparatus having:

(a) a chamber having a repository for the substrate;

(b) an ultraviolet lamp fixture disposed within the chamber, which fixture carries an ultraviolet lamp to illuminate the repository;

(c) an energy detector which can provide an indication of the total ultraviolet dose received on the repository, the energy detector having:

(i) a sensor disposed in a fixed location in the chamber, which provides a signal corresponding to the ultraviolet flux on the repository;

(ii) a detector circuit connected to the sensor, so as to provide an indication of the total ultraviolet dose received on the repository based on the signal received from the sensor over time;

(d) a control circuit connected to the detector circuit and the lamp fixture, which control circuit can de-energize the lamp fixture upon detection of a selected or predetermined total ultraviolet dose by the energy detector;

the method further comprising placing the substrate carrying the polynucleotide into the chamber, then energizing the lamp fixture so that the polynucleotide specimen will be irradiated with ultraviolet radiation from the lamp until the control circuit de-energizes the lamp upon detection of the selected or predetermined total ultraviolet dose.

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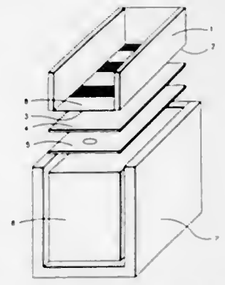
MULTIWELL STAT TEST

Philippe Pouletty, Redwood City; Beth Atwood, San Bruno, and David Rammler, Woodside, all of Calif., assignors to SangStat Medical Corporation, Menlo Park, Calif.

Division of Ser. No. 644,941, Jan. 23, 1991, Pat. No. 5,147,780, which is a division of Ser. No. 444,814, Dec. 1, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 919,295

Int. Cl.[5] G01N *33/543*

U.S. Cl. 436—514 **10 Claims**



7. A diagnostic device for measuring an analyte comprising a porous reactive filter comprising at least one region and in at least one of said regions, a measurement circle of a member of a specific binding pair immobilized to said filter and defining a concentration gradient comprising an inner circle at an elevated concentration and an outer contiguous circle at a substantially lower concentration.

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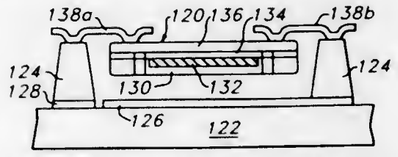
METHOD FOR FORMING UNCOOLED INFRARED DETECTOR

William F. Keenan, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 768,801, Sep. 30, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,928

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **21 Claims**



1. A method of forming a bolometer cell on a semiconductor substrate comprising the steps of:

forming a temporary layer on said substrate;

forming a layer of absorber material on said temporary layer;

patterning and etching said layer of absorber material;

forming an insulating layer over said layer of absorber material;

patterning and etching said insulating layer;

forming a layer of variable resistor material over said insulating layer;

patterning and etching at least one pillar hole in said layer of variable resistor material and the underlying portion of said temporary layer;

patterning and etching said variable resistor material to form a temperature variable resistor;

forming a pillar in each of said at least one pillar holes;

forming at least two contacts from said at least two pillars to said temperature variable resistor; and

removing said temporary layer.

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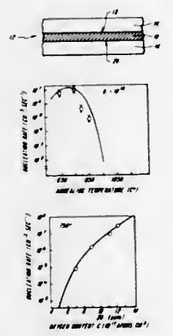
PRENUCLEATION PROCESS FOR SIMOX DEVICE FABRICATION

Peter M. Sandow, New Market, N.H., assignor to Ibis Technology Corporation, Danvers, Mass.

Continuation of Ser. No. 646,143, Jan. 25, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 960,193

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—24 **14 Claims**



1. A method of producing a buried insulating layer in a silicon substrate comprising the steps of

A. implanting a subcritical dose of at least one first ion species into said substrate to induce a controlled amount of damage to regions of the silicon lattice within a subsurface layer;

B. creating nucleation sites in the damaged silicon lattice within said subsurface layer by heating the substrate following ion implantation to enlarge the damaged regions;

C. implanting oxygen ions into said subsurface layer following the creation of the nucleation sites to deliver a total oxygen dose to the substrate less than 1.5×10^{18} ions/cm^2; and

D. annealing said substrate to form a buried layer of silicon dioxide in said silicon substrate.

5,288,651

METHOD OF MAKING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING BIPOLAR TRANSISTORS, MOS FETS AND CCD

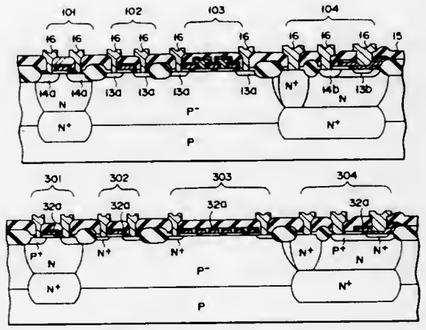
Hiroyuki Nakazawa, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 609,623, Nov. 6, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 914,587

Claims priority, application Japan, Nov. 9, 1989, 1-291714

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **3 Claims**



1. A method of making a semiconductor integrated circuit device comprising the steps of:

(a) preparing a semiconductor substrate of a first conductivity type having a well region of a second conductivity type for providing a bipolar transistor;

(b) forming a field oxide film in said semiconductor substrate to define first and second regions for providing a charge coupled device (CCD) and a MOS FET, respectively;

(c) removing an unwanted portion of the field oxide film from said well region and said first and second regions;

(d) forming an oxide film over said well region and said first and second regions to provide a gate oxide film on said first and second regions and said well region;

(e) selectively introducing a first dopant impurity of said first conductivity type into said well region to provide a base region;

(f) selectively removing said gate oxide film from said base region to define an emitter portion;

(g) successively depositing a first conductive layer of doped polysilicon and a second conductive layer of high melting material over said well region and said first and second regions to provide a composite conductive layer thereon;

(h) patterning said composite conductive layer to simultaneously provide an emitter electrode for said bipolar transistor, transfer gate electrodes for said CCD, and a gate electrode for said MOS FET;

(i) selectively removing said gate oxide film from said base region to define a base contact portion;

(j) selectively introducing said first dopant impurity into said base contact portion using said field oxide film and said emitter electrode as a mask to provide a base contact therein;

(k) selectively introducing a second dopant impurity of said second conductivity type into said first and second regions; and

(l) subjecting said semiconductor substrate to a heat treatment to diffuse said first dopant impurity contained in said first conductive layer into said base region to provide an emitter region thereon.

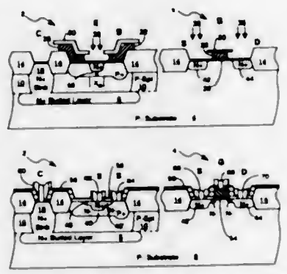
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5,288,652

BICMOS-COMPATIBLE METHOD FOR CREATING A BIPOLAR TRANSISTOR WITH LATERALLY GRADED EMITTER STRUCTURE

Chung S. Wang, Fremont; Ying-Tsong Loh, Saratoga, and Edward D. Nowak, Pleasanton, all of Calif., assignors to VLSI Techaology, Inc., San Jose, Calif.

Filed Dec. 18, 1992, Ser. No. 993,229
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 **45 Claims**



1. A method of fabricating, on a substrate that includes a collector region and a base region, a bipolar transistor with improved hot carrier characteristics, the method comprising the following steps:

(a) forming above the base region a blocking layer and a cap layer overlying said blocking layer;

(b) forming in said blocking and cap layers a central emitter window overlying a desired central emitter region, said window including a portion of said cap layer extending a desired lateral distance over said window;

(c) implanting a first dopant through said central emitter window into said desired central emitter region at a first dosage level;

(d) removing said cap layer;

(e) implanting a dopant of like polarity to said first dopant through said central emitter window at a second dosage level significantly lower than said first dosage level; and

(f) after at least one of said steps (c) and (e), driving-in said previously implanted dopant to form an emitter region with a depth determined by said driving-in step;

wherein said central emitter window determines said central emitter region's lateral extent, and

wherein said extending cap layer portion determines a lateral extent of a graded emitter region bounding said central emitter region, said graded emitter region being lightly doped relative to said central emitter region.

5,288,653

PROCESS OF FABRICATING AN INSULATED-GATE FIELD EFFECT TRANSISTOR

Hiroyasu Enjoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 841,070
Claims priority, application Japan, Feb. 27, 1991, 3-053602
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—41 **16 Claims**

1. A process of fabricating an insulated-gate field effect transistor comprising the steps of:

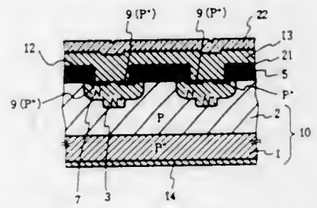
forming a polycrystalline silicon layer on a gate insulating film covering one main surface of a semiconductor substrate of a first conductivity;

selectively removing said polycrystalline silicon layer to form a silicon gate electrode having a plurality of holes and a plurality of silicon islands each located in an associated one of said holes;

selectively introducing an impurity of a second conductivity type opposite to said first conductivity type into said semiconductor substrate by using said silicon gate electrode and said silicon islands as a mask to thereby form a plurality of base regions of said second conductivity type in said semiconductor substrate;

forming a mask layer on said silicon gate electrode;

selectively introducing an impurity of said first conductivity type into each of said base regions, using said silicon gate electrode an said silicon islands as a mask, and preventing said second impurity from being introduced into said



silicon gate electrode via said mask layer to thereby form a plurality of source regions of said first conductivity type in said base regions, respectively, each of said source regions having a ring shape;

removing each of said silicon islands and said mask layer;

forming a source electrode in contact with respective parts of said base regions and said source regions; and

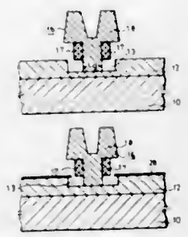
forming a drain electrode on an opposite main surface of said semiconductor substrate.

5,288,654

METHOD OF MAKING A MUSHROOM-SHAPED GATE ELECTRODE OF SEMICONDUCTOR DEVICE

Nobuyuki Kasai; Shinichi Sakamoto; Takuji Sonoda, and Tetsuya Yagi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 802,560, Dec. 5, 1991, Pat. No. 5,220,186. This application Feb. 8, 1993, Ser. No. 14,857
Claims priority, application Japan, Dec. 26, 1990, 2-406358
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **2 Claims**



1. A method of making a mushroom-shaped gate electrode for a semiconductor device, said gate electrode having a lower end contacting a semiconductor active layer disposed on a semiconductor substrate in a recess in the active layer and having a metallic side wall disposed on a relatively thin portion of said gate electrode adjacent an enlarged head section comprising:

depositing a first photoresist layer on a semiconductor active layer disposed on a semiconductor substrate and, thereafter, patterning said first photoresist layer to form an opening therein having predetermined dimensions;

depositing a layer of metal on said first photoresist layer and on said active layer in said opening;

anisotropically etching said metal, leaving metal on the first photoresist layer at the side of said opening;

depositing on said first photoresist layer a second photoresist layer and forming an opening in said second photoresist layer exposing said metal and said active layer, said second photoresist layer having a sensitivity different from that of said first photoresist layer;

etching and thereby removing a portion of said semiconductor active layer using said metal as a mask to form a recess in said active layer;

depositing a gate electrode metal to a desired thickness on said second photoresist layer, said metal, and the portion of said recess which is coextensive with said opening defined by said metal; and

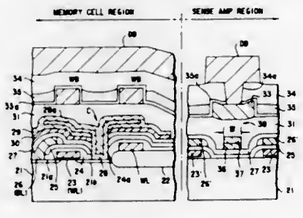
lifting off said first photoresist layer, said second photoresist layer, and the gate electrode metal disposed on said second photoresist layer.

5,288,655

METHOD OF MAKING DYNAMIC RANDOM ACCESS MEMORY HAVING A RELIABLE CONTACT

Masaaki Higasitani; Daitei Shin, and Toshio Nomura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 762,117, Sep. 19, 1991. This application Apr. 21, 1993, Ser. No. 49,326
Claims priority, application Japan, Sep. 20, 1990, 2-252497
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **3 Claims**



1. A method for producing a dynamic random access memory on a substrate, said substrate being defined with a memory cell region formed with memory cell transistors and a sense amplifier region formed with sense amplifiers, said method comprising the steps of:

providing a first insulation layer on said substrate including the memory cell region and the sense amplifier region to bury the memory cell transistors and the sense amplifiers underneath;

providing a spacer layer having a composition different from the first insulation layer on said first insulation layer;

exposing a drain region of the memory cell transistor by providing a contact hole through the spacer layer and through the first insulation layer;

depositing a first conductor layer on said spacer layer such that said first conductor layer covers the exposed drain region of the memory cell transistor and a side wall of the contact hole;

patterning the first conductor layer to form a first electrode of a memory cell capacitor;

removing the spacer layer selectively against the underlying first insulation layer by etching to form a space under the first electrode;

depositing a dielectric film on an exposed surface of the first electrode;

depositing a second conductor layer on said first insulation layer including the first electrode that is covered by the dielectric film, said second conductor layer being deposited also on the first insulation layer covering the sense amplifier region;

patterning the second conductor layer to form a second electrode that opposes the first electrode of the memory cell capacitor with the dielectric film intervening therebetween;

said step of patterning including a step of patterning the second conductor layer to leave a conductor pattern on the first insulation layer covering the sense amplifier region in correspondence to a part having a depressed upper major surface;

depositing a second insulation layer on said first insulation layer covering the memory cell region and the sense amplifier region to bury the memory cell capacitors on the memory cell region and the conductor pattern on the sense amplifier region underneath an upper major surface of the second insulation layer;

providing an interconnection pattern on the upper major surface of the second insulation layer in correspondence to a part of the sense amplifier region where the conductor pattern is formed;

providing a spin-on-glass layer on the upper major surface of the second insulation layer to fill a depression formed on the upper major surface of the second insulation layer by the interconnection pattern, said spin-on-glass layer having an upper major surface and being provided to expose an upper major surface of the interconnection pattern above the upper major surface of the spin-on-glass layer;

providing a third insulation layer on the upper major surface of the spin-on-glass layer to cover both the memory cell region and the sense amplifier region, said third insulation layer being provided to bury the interconnection pattern underneath;

providing a contact hole through the third insulation layer in correspondence to the conductor pattern to expose an upper major surface of the conductor pattern; and

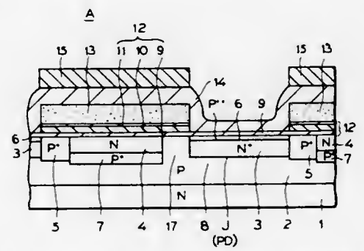
providing an interconnection pattern on the upper major surface of the third insulation layer in contact with the conductor pattern via the contact hole.

5,288,656

METHOD OF MANUFACTURING A CCD SOLID STATE IMAGE SENSING DEVICE

Takahisa Kusaka, Tokyo; Hideo Kanbe, Kanagawa; Akio Izumi, Kanagawa; Hideshi Abe, Kanagawa; Masanori Ohashi, Kanagawa, and Atsushi Asai, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 851,336, Mar. 16, 1992, abandoned. This application Sep. 23, 1992, Ser. No. 949,130
Claims priority, application Japan, Mar. 15, 1991, 3-051464
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—53 **2 Claims**



1. A method of manufacturing a CCD solid state image sensing device comprising the steps of:

(a) forming a first insulating layer made of SiO_2 on a P-type layer;

(b) forming a second insulating layer made of Si_3N_4 on said first insulating layer;

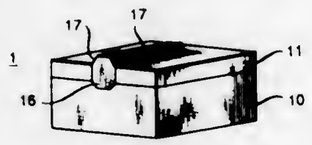
(c) forming a third insulating layer made of SiO_2 on said second insulating layer;

(d) removing said second and third insulating layers formed on a photo-sensitive section;

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(e) forming a transfer electrode on said third insulating layer;
(f) implanting arsenic into said P-type layer to form a photosensitive region using said transfer electrode as a mask; and
(g) carrying out a heat treatment in a nitrogen atmosphere to form said N-type impurity diffusion region.

5,288,657
DEVICE FABRICATION
Anatoly Feygenson, Hillsboro; Henryk Temkin, Berkeley Heights, and Yuh-Lin Wang, North Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 1, 1990, Ser. No. 608,093
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—90 **21 Claims**

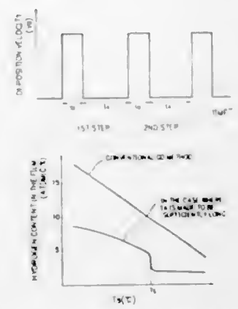


1. Process for fabrication of integrated circuit, designed in accordance with design rule of 1 μm or smaller, such process at least including a sequence of process steps performed on a body comprising a substrate of device-functional material supporting a first layer, such process entailing aperture pattern delineation of the first layer to expose patterned material underlying such layer, followed by epitaxial growth within a controlled atmosphere of a second layer substantially of the pattern as so delineated, said second layer including device-functional material,

CHARACTERIZED in that pattern delineation comprises a first process step carried out outside of such controlled atmosphere during which delineation reveals an initial patterned surface, and in that the body in fabrication is next introduced into such controlled atmosphere in which an additional process step is carried out wherein surface material including material revealed by initial patterning is removed to a depth necessary and for the sole purpose of revealing a final growth surface, such revealed surface now evidencing a degree of crystallographic damage, and/or contamination less than that resulting from initial delineation and wherein depth of material removed in the additional process step is sufficiently small as to have minimal device operation consequence.

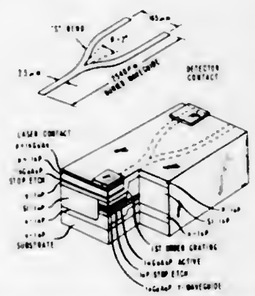
5,288,658
PROCESS FOR THE FORMATION OF AN AMORPHOUS SILICON DEPOSITED FILM WITH INTERMITTENT IRRADIATION OF INERT GAS PLASMA
Shunichi Ishihara, Ebina, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1992, Ser. No. 888,159
Claims priority, application Japan, May 24, 1991, 3-148130
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—101 **12 Claims**

1. A process for forming a silicon-containing amorphous film on a substrate which comprises (a) a step of depositing a silicon-containing amorphous film on said substrate and (b) a step of irradiating a plasma of inert gas to said silicon-containing amorphous film deposited on the substrate in said step (a), wherein said step (a) and said step (b) are alternately repeated while (i) controlling the thickness of said silicon-containing amorphous film deposited on each repetition of said step (a) to a thickness of at least 10 Å and (ii) maintaining the temperature of the substrate when irradiating a plasma of inert gas in step (b) to at least a transition temperature at which a marked reduction is caused in the content of hydrogen atoms contained



in the silicon-containing amorphous film formed on the substrate.

5,288,659
PHOTONIC-INTEGRATED-CIRCUIT FABRICATION PROCESS
Thomas L. Koch, Holmdel, and Uziel Koren, Fair Haven, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 237,251, Aug. 18, 1988, Pat. No. 5,147,825. This application Sep. 14, 1992, Ser. No. 944,628
Int. Cl.[5] H01L *21/308*; H01S *3/18*
U.S. Cl. 437—129 **5 Claims**



1. A method of fabricating at least one photonic integrated circuit comprising

epitaxially growing a stack of numerous layers of semiconductor materials, at least two of which differ in either material composition or doping level or doping type, at least a portion of each of the material layers serving a function in at least one of the devices which will comprise the photonic integrated circuit or in at least one of the photonic integrated circuit fabrication steps,

THE INVENTION CHARACTERIZED IN THAT

(1) the stack is selectively etched to define areas of specific layer combinations, at least a portion of some of such areas ultimately forming devices which will comprise the photonic integrated circuit, the specific layer combination of each such areas being appropriate for each of such devices,

(2) a first, stripe geometry, mask is subsequently deposited to protect the region of the remaining stack underlying the mask from subsequent etching,

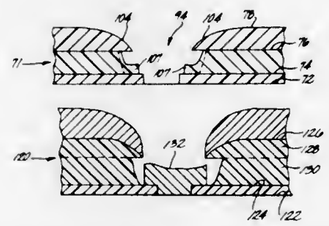
(3) unmasked portions of the stack are subsequently etched,

(4) a second mask, at least a portion of which overlies the first mask, and at least a portion of the overlying region of said overlying mask having a width larger than that of the first, stripe geometry, mask, is subsequently deposited to protect the region of the remaining stack underlying either the first or second mask from subsequent etching,

(5) unmasked portions of the stack are subsequently etched, whereby portions of the stack which underlie only the second mask are less deeply etched than portions of the stack which do not underlie either of the masks, and a stripe geometry mesa is thereby formed with regions of deep and shallow sidewalls,

(6) growing additional epitaxial materials which serve as current blocking layers in regions adjacent to those regions which ultimately form devices to which electric fields are applied, and said same additional epitaxial materials serve as cladding layers in regions which ultimately form optical waveguides.

5,288,660
METHOD FOR FORMING SELF-ALIGNED T-SHAPED TRANSISTOR ELECTRODE
Chang-Hwang Hua, Palo Alto; Simon S. Chan, Saratoga, and Ding-Yuan Day, Sunnyvale, all of Calif., assignors to Avantek, Inc., Santa Clara, Calif.
Filed Feb. 1, 1993, Ser. No. 11,998
Int. Cl.[5] H01L *21/283, 21/312*
U.S. Cl. 437—187 **17 Claims**



1. A method for forming a T-shaped transistor electrode comprising the steps of:

forming a dielectric film on a semiconductor substrate;

placing a photoresist layer over the dielectric film;

removing a relatively narrower portion of the photoresist layer for forming a narrower opening at a location where an electrode is desired;

etching an opening through the dielectric film corresponding to the narrower opening through the photoresist layer;

removing a portion of the photoresist layer adjacent to each edge of the narrower opening for forming a wider opening through the photoresist layer;

depositing metal through the opening in the dielectric film and through the wider opening in the photoresist layer for forming a T-shaped metal deposit; and

removing the photoresist layer.

10. A method of forming a T-shaped electrode on a semiconductor substrate, comprising the steps of:

forming a dielectric film on the substrate, the dielectric film having an upper surface;

applying a first layer of photoresist on the upper surface of the dielectric film;

applying a second layer of photoresist over the first layer of photoresist, the second layer of photoresist having a different optical property from the first layer of photoresist;

selectively removing portions of the first and second photoresist layers and the dielectric film to form an opening to the substrate;

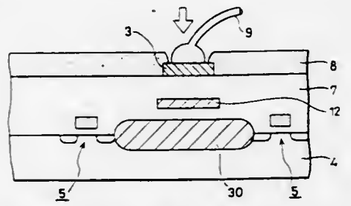
removing additional portions of the first and second photoresist layers adjacent to the opening for exposing the upper surface of the dielectric film adjacent to the opening;

removing a portion of the first adjacent to the opening to undercut the second photoresist layer;

depositing metal in the opening and on the exposed upper surface of the dielectric film; and

removing the first and second photoresist layers.

5,288,661
SEMICONDUCTOR DEVICE HAVING BONDING PAD COMPRISING BUFFER LAYER
Shinichi Satoh; Hiroji Ozaki; Hiroshi Kimura; Wataru Wakamiya, and Yoshinori Tanaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 538,817, Jun. 15, 1990, Pat. No. 5,084,752. This application Nov. 25, 1991, Ser. No. 796,976
Claims priority, application Japan, Oct. 17, 1989, 1-270972
Int. Cl.[5] H01L *21/28*
U.S. Cl. 437—195 **4 Claims**



1. A method of manufacturing a semiconductor device having an electrode layer for insulation and isolation formed in a major surface of a semiconductor substrate through an insulation film, a buffer layer with a periphery surrounded by the electrode layer and being maintained in an electrically floating state, and a bonding pad formed above the buffer layer with an interlayer insulation layer provided therebetween, comprising the steps of:

sequentially forming a first insulation layer and a conductive layer covering said first insulation layer on the major surface of the semiconductor substrate,

patterning said conductive layer and said first insulation layer by making a groove in said conductive layer and said first insulation layer bounding a first portion of said conductive layer to simultaneously form said buffer layer in said first portion and said electrode layer in a second portion of said conductive layer outside said first portion,

covering with a second insulation layer a side surface and an upper surface of said electrode layer and said buffer layer,

forming an interlayer insulation layer on surfaces of said electrode layer and said buffer layer which are covered with the second insulation layer,

forming a bonding pad on a surface of said interlayer insulation layer located above said buffer layer.

5,288,662
LOW OZONE DEPLETING ORGANIC CHLORIDES FOR USE DURING SILICON OXIDATION AND FURNACE TUBE CLEANING
André Lagendijk, Oceanside; Arthur K. Hochberg, Selana Beach, and David A. Roberts, Carlsbad, all of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jun. 15, 1992, Ser. No. 898,857
Int. Cl.[5] H01L *21/31*
U.S. Cl. 437—239 **5 Claims**

1. A process for thermal oxidation of a silicon article comprising the steps of:

heating the silicon article to a temperature in excess of 700° C. in a reactor;

flowing a gaseous mixture of oxygen and a chlorohydrocarbon having the general formula $C_xH_xCl_x$ where x is 2, 3 or 4 into said reactor, said chlorohydrocarbon being selected based upon its being readily and completely oxidized under the stated conditions and;

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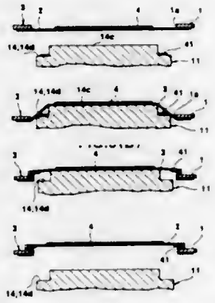
maintaining exposure of said silicon article to said gaseous mixture until said oxidation is completed.

5,288,663

METHOD FOR EXTENDING WAFER-SUPPORTING SHEET

Tetsuro Ueki, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,878
Claims priority, application Japan, Apr. 28, 1992, 4-134331
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—250 **19 Claims**



1. A method of extending a wafer-supporting sheet comprising:

a step of preparing a wafer-supporting table which is constructed by attaching a circular wafer-supporting sheet to a lower surface of a ring-shaped frame, a wafer placed on an upper surface of the wafer-supporting sheet and divided into chips, and a C-shaped extension spring having an outer diameter larger than an inner diameter of the ring-shaped frame when the spring is unloaded;

a step of contracting the extension spring by applying an external force so that the outer diameter of the spring becomes smaller than the inner diameter of the ring-shaped frame;

a step of extending the wafer-supporting sheet by positioning a portion of the sheet, which is located inside of an inner periphery of the frame, above the frame with an external force applying to the portion of the sheet;

a step of positioning the extension spring above the frame by inserting the extension spring from under the wafer-supporting table into an inner space surrounded by the inner periphery of the frame;

a step of releasing the external force applied to the extension spring; and

a step of releasing the external force applied to the portion of the sheet which is located inside of the inner periphery of the frame.

5,288,664

METHOD OF FORMING WIRING OF SEMICONDUCTOR DEVICE

Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

Filed Jul. 10, 1991, Ser. No. 727,681
Claims priority, application Japan, Jul. 11, 1990, 2-182969; Sep. 19, 1990, 2-247458
Int. Cl.[5] H01L *21/268*
U.S. Cl. 437—173 **23 Claims**

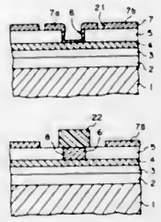
1. A method of forming a wiring of a semiconductor device comprising the steps of:

forming a first conductor film on a first insulating film formed on a semiconductor substrate;

forming a second insulating film having a via-hole on said first conductor film and first insulating film;

depositing a second conductor film over said second insulating film and said via-hole;

selectively etching said second conductor film to form a groove which surrounds said via-hole at a predetermined distance from the via-hole and to leave the remaining portion thereof on said second insulating film;



irradiating the whole surface with a laser beam to make the portion of said second conductor film from the edge of said via-hole to said groove flow into said via-hole, so that a conductor plug is formed within said via-hole and

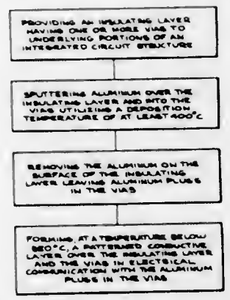
forming a third conductor film in contact with said conductor plug.

5,288,665

PROCESS FOR FORMING LOW RESISTANCE ALUMINUM PLUG IN VIA ELECTRICALLY CONNECTED TO OVERLYING PATTERNED METAL LAYER FOR INTEGRATED CIRCUIT STRUCTURES

Jaim Nulman, Palo Alto, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 12, 1992, Ser. No. 928,813
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—194 **17 Claims**



1. A process for forming a low resistive aluminum plug in a via in an insulating layer of an integrated circuit structure and a patterned conductive layer over said insulating layer and electrically connected to said aluminum plug which comprises:

a) providing an insulating layer having one or more vias therein to underlying portions of said integrated circuit structure;

b) depositing sufficient aluminum over said structure to fill said one or more vias with aluminum plugs and to form an aluminum layer over said insulating layer, utilizing a deposition temperature of at least 400° C. or higher for at least a portion of the aluminum deposition;

c) removing said aluminum layer from said surface of said insulating layer, while leaving said aluminum plugs in said one or more vias; and

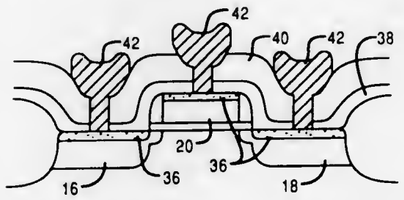
d) forming one or more patternable conductive layers over said insulating layer and said one or more vias, and electrically connected to said aluminum plugs, including depositing a layer of aluminum at a temperature of less than 350° C.

5,288,666

PROCESS FOR FORMING SELF-ALIGNED TITANIUM SILICIDE BY HEATING IN AN OXYGEN RICH ENVIRONMENT

Steven S. Lee, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 21, 1990, Ser. No. 496,720
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—200 **17 Claims**



1. A process for producing a semiconductor device comprising:

providing a silicon substrate;

forming silicon electrode and oxide insulator regions on said substrate;

forming a metal layer overlying said electrode and insulator regions;

heating said device in an oxygen rich environment to form metal silicide overlying said electrode regions and to form metal oxide overlying said insulator regions ad metal silicide; and

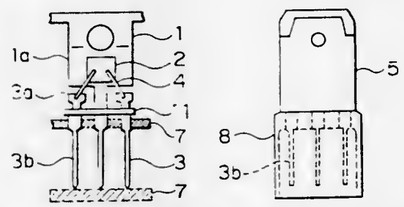
forming an electrically insulating layer over said metal oxide.

5,288,667

METHOD OF MANUFACTURING A MOLDED SEMICONDUCTOR PACKAGE HAVING A LEAD FRAME AND AN CONNECTING COUPLER

Masaaki Taruya, and Mitsuru Koiwa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1991, Ser. No. 747,587
Claims prinrity, application Japan, Aug. 23, 1990, 2-220037; Aug. 23, 1990, 2-220038
Int. Cl.[5] H01L *21/56, 21/58, 21/60*
U.S. Cl. 437—207 **6 Claims**



1. A method of manufacturing a semiconductor package with an externally connecting coupler, said semiconductor package being a mold packaged leadframe having a die pad portion on which at least one semiconductor device forming an internal circuit is mounted and a plurality of leads including at least one lead extending from said die pad portion, said plurality of leads being coupled to each other by a tie bar, said method comprising the steps:

die mounting said semiconductor device on said die pad portion of said leadframe;

conducting wire bonding between said semiconductor device and inner leads of said leads;

forming the externally connecting coupler which provides mechanical connection to an external device, said coupler having a plurality of terminals, each terminal having an inner end to be connected to said lead and an outer end which is connectable to the external device;

electrically connecting the inner end of each of said terminals of said coupler to the corresponding lead in the plurality of leads of said leadframe to couple said coupler to said leadframe;

cutting off unnecessary portions of said leadframe and portions of said leadframe located between said leads so as to electrically separate said leads; and

forming a mold package for packaging said die pad portion of said leadframe on which said semiconductor device is mounted, said plurality of leads of said leadframe and at least part of said coupler containing said plurality of terminals.

5,288,668

GLASSES MADE OF PINK BOROSILICATES, THEIR MANUFACTURE, AND ARTICLES MADE OF SUCH GLASSES

Paul L. Netter, Paris, France, assignor to Corning Incorporated, Corning, N.Y.

Filed Aug. 9, 1993, Ser. No. 103,214 ,
Claims priority, application France, Sep. 14, 1992, 92 10906
Int. Cl.[5] C03C *3/091*
U.S. Cl. 501—66 **4 Claims**

1. A borosilicate glass of a pink color consisting essentially, in weight percent based on the oxides, of 65–85% SiO_2, more than 10% but less than 20% B_2O_3, 0–8% Na_2O.0–8% K_2O, a total proportion of Na_2O and K_2O of 2–8%, 1–6% Al_2O_3, and 0.05–1.00% manganese calculated as MnO_2, said glass having a linear coefficient of thermal expansion between 20° and 300° C. of between 30 and 55 X 10^{-7}/C, and wherein said glass has a degree of oxidation such that it exhibits a chromaticity, at a thickness of 4 mm and for the Illuminant C, within the following ranges:

x=0.3115 to 0.4200
y=0.3170 to 0.3600
z=15 to 92%.

5,288,669

GLASSES WITH VERY HIGH INDEX OF REFRACTION AND LOW DENSITY

Luc Grateau, Paris; Pascale Laborde, Champagne Sur Seine, and Michel Prassas, Vulaines Sur Seine, all of France, assignors to Corning France S.A., Avon Cedex, France

Filed Feb. 12, 1993, Ser. No. 17,183
Claims priority, application France, Apr. 22, 1992, 92 04918
Int. Cl.[5] C03C *3/068, 3/066*
U.S. Cl. 501—78 **4 Claims**

1. Glasses characterized by the fact that they exhibit an index of refraction higher than 1.880, an Abbe number of at least 29, a density lower than 4.1 g/cm^3, a good chemical durability and a lower tendency towards crystallization, and an integrated transmission from 380–800 nm—at a thickness of 10 mm—higher than 79%, these glasses consisting essentially, expressed in weight percent on the oxide basis, of

SiO_2	5–8
B_2O_3	15–21
ZrO_2	3–10
TiO_2	7–17
Nb_2O_5	20.5–26

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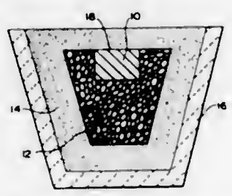
$ZrO_2 + TiO_2 + Nb_2O_5$	29–45
La_2O_3	19–32
Y_2O_3	0–9
CaO	8–16
SrO	0–5
BaO	0–5
MgO	0–5
CaO + SrO + BaO + MgO	8–16
ZnO	0–5
Li_2O	0–2
Na_2O	0–2
K_2O	0–2
$Li_2O + Na_2O + K_2O$	0–2.

5,288,670

PROCESS FOR PREPARING SELF-SUPPORTING CERAMIC COMPOSITE BODIES AND BODIES PRODUCED THEREBY

Paul V. Kelsey, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 624,836, Dec. 10, 1990, Pat. No. 5,166,105. This application Nov. 23, 1992, Ser. No. 979,986
Int. Cl.[5] B22F 3/26
U.S. Cl. 501—96 22 Claims



1. A method for producing a self-supporting body, comprising:

selecting a parent metal comprising at least one metal selected from the group consisting of the actinide series of metals;

heating said parent metal in a substantially inert atmosphere to a temperature above its melting point to form a body of molten parent metal;

contacting said body of molten parent metal with a permeable mass comprising at least one material selected from the group consisting of (1) boron carbide, (2) a mixture of a boron donor material , (4) a mixture of boron carbide and a carbon donor material, and (5) a mixture of boron carbide and a boron donor material and a carbon donor material;

maintaining said temperature for a time sufficient to permit infiltration of molten parent metal into said permeable mass and to permit reaction of said molten parent metal with at least a portion of said at least one material to form at least one compound selected from the group consisting of a parent metal boride, a parent metal boro compound and a parent metal carbide;

controlling at least one condition of said infiltration and said reaction, said controlling comprising at least one step selected from the group of steps consisting of controlling said temperature, controlling said time and controlling a particle size of said at least one material, whereby said controlling, upon conclusion of said infiltration and reaction, results in at least a portion of said at least one material remaining unreacted with said parent metal;

continuing said infiltration and reaction for a time sufficient to produce said self-supporting body comprising residual parent metal and said at least one material embedded by a matrix comprising said at least one compound; and

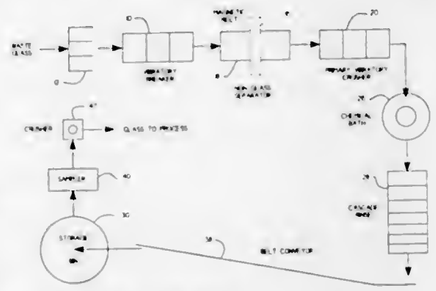
cooling said formed self-supporting body.

5,288,671

MAGNETITE WATER SLURRY COMPOSITION

Edward A. Vitunac, Pittsburgh, and Edward A. Zawadzki, Wexford, both of Pa., assignors to Falcon United Ltd., Wexford, Pa.

Division of Ser. No. 805,260, Dec. 9, 1991. This application Dec. 8, 1992, Ser. No. 986,781
Int. Cl.[5] C04B 9/04
U.S. Cl. 501—110 3 Claims



1. A composition comprising:

a magnetite water slurry having a solids content of about 80%; and

an anionic dispersant present in an amount of about 5% by weight of said solids content.

5,288,672

CERAMICS BASED ON ALUMINUM TITANATE, PROCESS FOR THEIR PRODUCTION AND THEIR USE

Ernst Gugel, Roedental; Bernhard Freudenberg, Coburg, and Johannes Seyer, Roedental-Mittelberg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 336,826, Apr. 12, 1989, abandoned. This application Jun. 15, 1992, Ser. No. 899,008
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3814079
Int. Cl.[5] C04B 35/46
U.S. Cl. 501—134 16 Claims

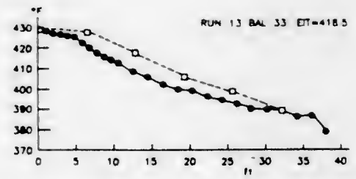
16. The sintered ceramics as claimed in claim 1, wherein said ceramics have a strength level of greater than or equal to 40 MPa.

5,288,673

TEMPERATURE CONTROL IN DRAFT TUBES FOR CATALYST REJUVENATION

William C. Behrmann, and Stephen C. Leviness, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 18, 1992, Ser. No. 994,219
Int. Cl.[5] B01J 23/94, 21/20, 38/10; C07C 1/04
U.S. Cl. 502—30 4 Claims



1. A method for controlling the of rejuvenation of reversibly

deactivated particulate hydrocarbon synthesis catalyst in a slurry phase reactor, said method comprising the use of substantially vertical draft tube means, open at both ends, fully immersed in the slurry containing the catalyst and injecting a hydrogen containing gas at or substantially near the bottom of said draft tube means thereby lifting catalyst in slurry from the bottom of the slurry phase reactor into and through the open bottom end of the draft tube means, rejuvenating said catalyst in the presence of said hydrogen in the vertical draft tube means at a temperature within said draft tube means which is different than the temperature of the surrounding slurry in the reactor, said different temperature within the draft tube means being controlled by temperature control means selected from the group consisting of insulating means around the draft tube means, heating or cooling means fitted within said draft tube means and a combination thereof, and ejecting the rejuvenated catalyst into the top of the slurry phase in the slurry phase reactor through the open top of the draft tube means.

5,288,674

CATALYTIC DEVICE FOR TREATMENT OF COMBUSTION GASES AND ITS METHOD OF USE, AND THE CATALYTIC MATERIAL USED IN THE CATALYTIC DEVICE

Jack H. Taylor, Jr., 6250 Valley Wood Dr., Reno, Nev. 89523

Filed Oct. 29, 1991, Ser. No. 783,877
Int. Cl.[5] B01J 21/14, 29/06
U.S. Cl. 502—63 8 Claims

1. An emission control device comprising a substrate supporting a, catalytic material comprising plagioclase feldspar in an amount greater than 50 wt%, said feldspar mainly comprising albite and anorthite minerals, and said material containing magnetite.

3. The emission control device as claimed in claim 1, wherein said substrate carries the catalytic material in the form of a cured ceramic adhesive having the material uniformly dispersed therein, said adhesive capable of withstanding temperatures of 850° F. or higher.

5,288,675

SOX CONTROL COMPOSITIONS

Gwan Kim, Olney, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Feb. 5, 1992, Ser. No. 831,610
Int. Cl.[5] B01J 23/10, 29/06
U.S. Cl. 502—65 20 Claims

1. A coprecipitated ternary oxide composition having the formula:

30 to 50 MgO/5 to 30 La_2O_3/30 to 50 Al_2O_3 wherein the amounts of MgO, La_2O_3 and Al_2O_3 are expressed as weight percent, and the MgO is present as a microcrystalline component.

5. The composition of claim 1 combined with a catalytically active amount of promoters for SO_2 oxidation and/or H_2S release selected from the oxides of Ce, Pr, Ti, Nd and V.

6. The composition of claim 5, combined with an FCC catalyst.

5,288,676

CEMENTED CARBIDE

Fumio Shimada, Ibaraki, Japan, and Tadashi Kainuma, Garden Grove, Calif., assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 749,730, Aug. 26, 1991, abandoned, which is a division of Ser. No. 249,909, Sep. 27, 1988, Pat. No. 5,068,149, which is a continuation-in-part of Ser. No. 30,173, Mar. 25, 1987, abandoned. This application Dec. 24, 1992, Ser. No. 996,790
Claims priority, application Japan, Mar. 28, 1986, 61-68432; Mar. 28, 1986, 61-68433
Int. Cl.[5] C04B 35/56
U.S. Cl. 501—93 2 Claims

1. A cemented carbide consisting essentially of:

at least one binder metal selected from the group consisting of cobalt and nickel in an amount from 4 to 35% by weight;

balance tungsten carbide having an average crystal grain size of 0.2 to 1.5 micrometers; and

unavoidable impurities consisting essentially of calcium, sulfur, aluminum, silicon and phosphorus,

wherein said calcium sulfur, aluminum and silicon are each present in a finite amount of no greater than 50 ppm by weight, and said phosphorus is present in a finite amount of no greater than 20 ppm by weight.

5,288,677

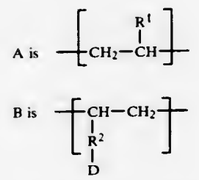
IMMOBILIZED LEWIS ACID CATALYSTS

Tze-Chiang Chung, State College, Pa.; Frank J. Chen, Edison; Jon E. Stanat, Westfield, both of N.J., and Alok Kumar, State College, Pa., assignors to Exxon Chemical Patents Inc., Linden, N.J.

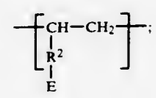
Filed Jun. 28, 1991, Ser. No. 723,130
Int. Cl.[5] B01J 31/00
U.S. Cl. 502—152 23 Claims

1. Immobilized Lewis Acid catalyst comprising polymer having at least one Lewis Acid immobilized within the structure therein, said polymer having monomer units represented by the structural formula:

wherein a represents about 1 to about 99 mole %
b represents about 0 to about 50 mole %
c represents about 1 to about 99 mole %
a+b+c=100%;



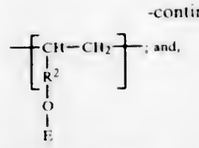
C is selected from the group consisting of:



(I)

VOL 1159 ISS 4 FE 22 1994 UMI

-continued



(II)

; and,

combinations thereof. (III)

D is OH, halide, OR^4, NH_2, NHR^3, OM', or OM'';
E is at least one Lewis Acid;
R^1 represents H, C_1-C_{24} alkyl group, or C_3-C_{24} cycloalkyl;
R^2 represents C_1-C_{24} alkyl group, C_3-C_{24} cycloalkyl, C_6-C_{18} aryl, or C_7-C_{30} alkylaryl; R^3 represents C_1-C_{24} alkyl, C_3-C_{24} cycloalkyl, C_6-C_{18} aryl, or C_7-C_{30} alkylaryl;
R^4 represents C_1-C_{24} alkyl, C_3-C_{24} cycloalkyl, C_6-C_{18} aryl, or C_7-C_{30} alkylaryl;
M' represents alkali metal; and
M'' represents alkaline-earth metal.

5,288,678

INDIRECT POTENTIOMETRIC METHOD AND DILUENT FOR ANALYSIS OF LITHIUM

Frank R. Shu, La Habra Heights, Calif.; Chen-Yie Chien, Ashland, Mass., and Julie S. Kim, Placentia, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 600,453, Oct. 19, 1990, Pat. No. 5,110,742. This application Aug. 23, 1991, Ser. No. 749,074
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] G01N *27/327*
U.S. Cl. 436—18 **20 Claims**

1. A diluent useful for the indirect potentiometric determination of lithium in a clinical sample comprising, in effective amounts:
(i) a pH buffer selected from a group of buffers substantially free of sodium consisting of acetic acid, 2-(N-morpholino)ethanesulfonic acid, 3-(N-morpholino)propanesulfonic acid, N-2-hydroxyethyl piperazene-N'-2-ethanesulfonic acid, phosphoric acid, N-[tris-(hydroxymethyl)-methyl]glycine, tris-(hydroxymethyl)aminomethane, triethyl amine, diethyl amine, dimethyl amine, alkyl amines having up to twelve carbon atoms, and tris-(hydroxymethyl) aminomethane-phosphate or combinations thereof and
(ii) a non-cationic surfactant, said surfactant comprising at least one hydrophobic group and at least one hydrophilic group and being substantially free of polyoxyethylene groups.

5,288,679

PROCESS FOR PRODUCING SUPERCONDUCTING WIRES

Sophia R. Su, Weston, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 745,819, Aug. 16, 1991. This application Nov. 26, 1991, Ser. No. 797,874
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—1 **9 Claims**

1. A method for producing a superconducting copper oxide based wire exhibiting improved critical current density comprising the steps of:
mixing a copper oxide based superconductor as a powder and a binder as a melt at a solids loading of at least about 90% by weight to form a homogeneous extrudable powder/binder mixture, wherein said binder consists essentially of an ester wax with no more than about 0.25 weight percent extrusion-aiding additives, and said ester wax has the general formula RCOOR' with said R and said R' each being independently selected from the group consisting of long chain hydrocarbon groups of at least 6 carbons, and said ester wax has a melting point of about 40°-100° C. and a viscosity of about 94-2000 centipoise at its melting point;
shaping said binder/powder mixture to form a shaped wire;
heating said shaped wire in an oxidizing atmosphere at a heating rate of up to about 120° C./hr to a binder removal temperature of about 500°-600° C., and holding said wire in said oxidizing atmosphere at said binder removal temperature for a time sufficient to remove said binder from said wire and to form a green wire having a density of at least 50% of theoretical density;
heating said green wire in said oxidizing atmosphere at a heating rate of about 50°-130° C./hr to about the incongruent melting temperature of said superconductor, and holding said green wire in said oxidizing atmosphere at said incongruent melting temperature for a time just sufficient to begin partial melting of at least one component in said superconductor; and



cooling said partially melted wire in said oxidizing atmosphere at a rate below about 130° C./hr to a consolidation temperature of about 940°-969° C., and holding said wire in said oxidizing atmosphere at said consolidation temperature for a time sufficient to consolidate said wire to a density of at least 90% of theoretical density and sufficient to achieve an average grain length of at least about 0.3 mm and grain alignment along the length of said wire;
cooling said consolidated wire in said oxidizing atmosphere at a rate below about 130° C./hr to a cooled temperature at or below about 550° C.; and
holding said cooled wire at an annealing temperature of about 450°-550° C. in an atmosphere of flowing oxygen for a time sufficient to convert the crystal structure of said wire to at least 50 v/o superconducting perovskite crystal.

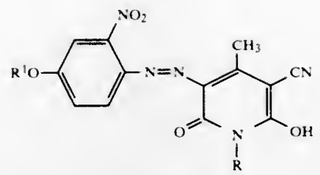
5,288,680

PROCESS FOR THE PREPARATION OF FINISHED DYEINGS WHICH ARE FAST TO THERMOMIGRATION: ORANGE-DYED POLYESTER FABRICS

Rudolf Binder, Maintal; Ulrich Bühler, Alzenau; Friedrich Schophoff, Frankfurt/M.; Margareta Boos, Hattersheim, and Reinhard Kühn, Frankfurt, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 649,702, Jan. 28, 1991, abandoned. This application May 22, 1992, Ser. No. 888,248
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1990, 4003887
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] C09B *29/42, 67/22;* **D06P** *3/85, 5/08*
U.S. Cl. 8—639 **20 Claims**

1. A dyeing and finishing process resulting in dyeings which are highly fast to thermomigration on fibre materials containing polyester, characterized in that the material is dyed with one or more dyestuffs of the general formula



(I)

wherein
R denotes linear (C_1-C_3)-alkyl or (C_3-C_6)-alkyl which is interrupted by an oxygen atom and
R^1 denotes (C_1-C_4)-alkyl,
and the dyeing thus obtained is then finished.

5,288,681

CATALYST FOR THE HYDROCONVERSION OF ASPHALTENE-CONTAINING HYDROCARBONACEOUS CHARGE STOCKS

John G. Gatsis, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 749,810, Aug. 26, 1991, Pat. No. 5,171,727. This application Oct. 16, 1992, Ser. No. 961,968
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] B01J *37/18, 31/12, 31/34, 31/36*
U.S. Cl. 502—152 **15 Claims**

1. A catalyst prepared by the steps which comprise:
(a) adding to an asphaltene-containing hydrocarbonaceous oil charge stock a heteropoly acid and an oxide of a metal selected from Group IV through Group VIII and mixtures thereof and water;
(b) converting said heteropoly acid and metal within said charge stock by heating said oil to a temperature from about 120° F. (43° C.) to about 500° F. (260° C.) to produce at least one organometallic compound within said charge stock; and
(c) converting said organometallic compound within said charge stock under hydroconversion conditions including a temperature from about 650° F. (343° C.) to about 1000° F. (538° C.), a hydrogen partial pressure from about 500 psig (3448 kPa gauge) to about 5000 psig (34475 kPa gauge), and a space velocity from about 0.1 to about 10 volumes of oil feed per hour per volume of reactor to produce said catalyst.

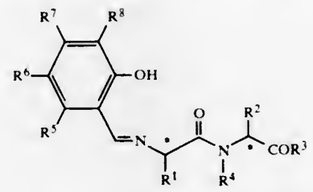
5,288,682

CATALYST FOR ASYMMETRIC INDUCTION

Atsunori Mori, and Shohei Inoue, both of Tokyo, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Mar. 12, 1992, Ser. No. 851,285
Claims priority, application Japan, Mar. 12, 1991, 3-046482
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—167 **12 Claims**

1. A catalyst for asymmetric induction comprising the dipeptide derivative represented by the formula



[I]

wherein R^1 represents an isopropyl group, an isobutyl group, a sec-butyl group, a tert-butyl group, a methyl group, a benzyl group or a phenyl group, R^2 represents a benzyl group, an indol-3-ylmethyl group, an isopropyl group, an isobutyl group or a phenyl group, R^3 represents a lower alkoxy group, a hydroxyl group or a mono- or di-lower alkylamino group, R^4 represents a hydrogen atom, or R^2 and R^4 are bonded together at their terminals to form a $CH_2CH_2CH_2$ group, R^5,R^6,R^7 and R^8 are the same or different, and each represents a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group, or R^5 and R^6,R^6 and R^7, or R^7 and R^8 are bonded together at their terminals to form CH=CH—CH=CH or OCH_2O, and * denotes an absolute configuration of S or R, and a titanium (IV) alkoxide.

5,288,683

WEAR-RESISTANT COPPER ALLOYS AND SYNCHRONIZER RINGS FOR AUTOMOBILES COMPRISING THE SAME

Kunio Nakashima; Masao Hosoda, and Kazuyuki Inagaki, all of Toyama, Japan, assignors to Chuetsu Metal Works Co., Ltd., Toyama, Japan

Continuation-in-part of Ser. No. 605,957, Oct. 30, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,709
Int. Cl.[5] C22C *9/04*
U.S. Cl. 148—413 **8 Claims**



1. A wear-resistant copper alloy consisting essentially of 56 to 65 wt. % of Cu, 28 to 32 wt. % of Zn, 3.5 to 5.5 wt. % of Al, 0.5 to 2.0 wt. % of Fe, 1.0 to 3.0 wt.% of Ni, 0.1 to 1.0 wt. % of Nb, and 0.4 to 1.5 wt. % of Ti wherein Ti+Nb is equal to or greater than 0.7 wt. %, and wherein said alloy includes two discrete intermetallic compounds dispersed as precipitates in the microstructure, a first of said compounds comprising Ti-Ni-Fe-Al and a second of said compounds comprising Nb-Fe-Al.

5,288,684

PHOTOCHEMICAL VAPOR PHASE REACTION APPARATUS AND METHOD OF CAUSING A PHOTOCHEMICAL VAPOR PHASE REACTION

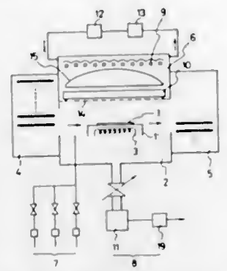
Shunpei Yamazaki, Tokyo; Shinji Imatoh, and Shigenori Hayashi, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 22, 1991, Ser. No. 673,812
Claims priority, application Japan, Mar. 27, 1990, 2-77781
Int. Cl.[5] H01L *21/00*
U.S. Cl. 118—722 **20 Claims**

1. A photochemical vapor phase reaction apparatus comprising:
a reaction space;
a gas feeding system for supplying a reactive gas to said reaction space;
a light source for emitting light rays, said light source being provided in a light source room separated from said reaction space by a light window in an air-tight manner;
a substrate holder for holding a substrate in said reaction space;
means for condensing and projecting the light rays emitted from said light source onto said substrate on said holder in order to cause a photochemical vapor phase reaction to said reactive gas in said reaction space, and
a mechanism for adjusting the distance between said light ray condensing means and said substrate by changing the

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location of said light ray condensing means to vary its distance from the substrate holder and thereby changing



the extent to which the light rays are condensed as they travel from the light ray condensing means, through the light window, onto said substrate.

5,288,685

ALKYLATION PROCESS AND CATALYST THEREFOR

Lyle R. Kallenbach; Roy F. Wright, and David C. Miller, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 973,493, Nov. 9, 1992, Pat. No. 5,233,199. This application Mar. 19, 1993, Ser. No. 35,334
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—168 **20 Claims**

1. A composition of matter comprising trifluoromethanesulfonic acid and a solid material comprising boron phosphate, wherein the weight ratio of trifluoromethanesulfonic acid to said solid material is in the range of about 0.02:1 to about 0.4:1.

5,288,686

HEAT SENSITIVE COLOR DEVELOPING MATERIAL

Hisaki Tanabe, Yawata; Yasuhiko Nakae, Sakai; Shingi Nakano, Takatsuki, and Yoshio Eguchi, Ikeda, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

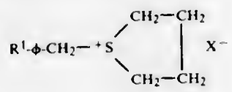
Division of Ser. No. 726,835, Jul. 8, 1991. This application Feb. 12, 1993, Ser. No. 17,481
Int. Cl.[5] B41M *5/20;* **C09D** *11/02*
U.S. Cl. 503—209 **16 Claims**

1. A heat sensitive recording paper coated with a heat sensitive material comprising:

(A) an electron donating color forming organic compound;

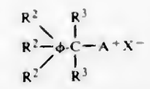
(B) a heat activating compound selected from the group consisting of compounds I, II, and III:

I

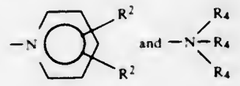


R^1 is selected from the group consisting of H, —R, —OR, a halogen atom, and a nitro group, X is selected from the group consisting of AsF_6, SbF_6, BF_4, BF_6, PF_6, ClO_4, $FeCl_4$, CF_3SO_3, RSO_3, and RCOO—, R is selected from the group consisting of alkyl of 1 to 12 carbon atoms substituted by —OH and cycloalkyl of 1 to 12 carbon atoms substituted by —OH, and cycloalkyl of 1 to 12 carbon atoms substituted by —OH,

II

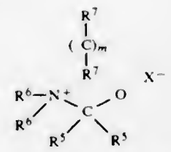


R^2 is independently selected from the group consisting of —COR, —R^1, —OH, a cyano radical, and an amino radical, R^3 is selected from the group consisting of H, —R and a halogen atom, A is selected from the group consisting of:



R^4 is selected from the group consisting of an alkyl of 1 to 12 carbon atoms substituted by hydroxy, carboxy, nitro, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, an alkenyl of 1 to 12 carbon atoms substituted by hydroxy, carboxy, nitro, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, a phenyl group substituted by one or more of a halogen atom, nitro, cyano, amino, —R, and —OR, R, R^1, and X are as defined above;

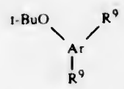
III



R^5 is selected from the group consisting of H, —R, alkenyl of 2 to 3 carbon atoms and R^8, R^6 is selected from the group consisting of —R, alkenyl of 2 to 3 carbon atoms and R^8, R^7 is selected from the group consisting of H, hydroxy, —R, —OR, and —R^8, —R^8 is selected from the group consisting of phenyl, and phenyl substituted by a group selected from the group consisting of a halogen atom, hydroxy, nitro, cyano, —NHR, —R, and —OR, m is an integer of 1 to 4, R and X are as defined above, and

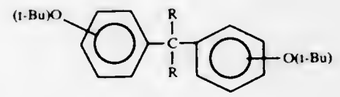
(C) a color developer selected from the group consisting of compounds IV, V, and a resin compound containing a chain of a t-butoxyphenyl group:

IV



Ar is selected from the group consisting of benzene, naphthalene, naphthalene substituted by a group selected from the group consisting of t-butyl oxide and R^9, R^9 is selected from the group consisting of H, —R, —OR, —OCOR, a halogen atom and a nitro group, R is as defined above;

V



R is as defined above.

5,288,687

CARBONLESS COPYING PAPER

Yoshihide Murakami; Shingo Tachizawa, and Takeo Sugiyama, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Jul. 18, 1991, Ser. No. 732,239
Claims priority, application Japan, Jul. 20, 1990, 2-192437; Jul. 27, 1990, 2-200844; Oct. 1, 1990, 2-263386
Int. Cl.[5] B41M *5/165*
U.S. Cl. 503—214 **3 Claims**

1. A carbonless copying paper which comprises a support and a coated layer thereon formed by coating a coating composition comprising a stilt agent, a binder and anionic microcapsules containing a color former therein and drying the composition, wherein the binder comprises anamphoteric latex.

5,288,688

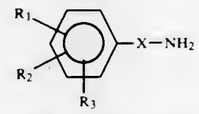
THERMAL RECORDING MATERIAL

Hiroshi Kawakami; Chiyoshi Nozaki, and Ken Iwakura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1993, Ser. No. 36,390
Claims priority, application Japan, Mar. 24, 1992, 4-66212
Int. Cl.[5] B41M *5/30*
U.S. Cl. 503—217 **4 Claims**

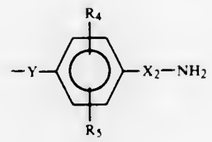
1. A thermal recording material comprising, on a support, a heat-sensitive coloring layer containing an electron-donating colorless dye, an isocyanate compound and an amino compound, wherein the amino compound is one represented by formula (I):

(I)



wherein X represents a direct bond, —CO—, —SO_2—, —CONH— or —SO_2NH—; R_1, R_2, and R_3 each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a sulfonyloxy group, an oxycarbonyl group, a carbamoyl group, a sulfamoyl group, an oxysulfonyl group, an acyl group, a sulfonyl group, a halogen atom, a nitro group, a cyano group, a hydroxyl group, —$CONH_2$, —SO_2NH_2, —$CONHNH_2$, —SO_2NHNH_2 or a group represented by formula (II):

(II)



wherein

y represents a divalent group;

R_4 and R_5 each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an acyl group, a sulfonyl group, a halogen atom, a nitro group or a cyano group;

X_2 represents a direct bond, —CO—, —SO_2—, —CONH— or —SO_2NH—; and the R_1, R_2, R_3, R_4 and R_5 substituents may optionally be substituted, and R_1 and R_2, and R_4 and R_5 each may be bonded to each other to form a ring;

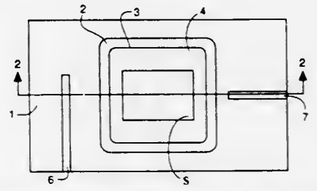
wherein the electron-donating colorless dye is a black-coloring fluoran compound substituted by an arylamino group at the 2-position, a hydrogen atom, a halogen atom or an alkyl group at the 3-position and an amino group at the 6-position, said amino group being further substituted by an alkyl group, a cycloalkyl group, an alkoxyalkyl group or a tetrahydrofurfuryl group.

5,288,689

METHOD FOR FUSING THERMAL DYE TRANSFER IMAGES

William H. Simpson, Pittsford, and Jacob J. Hastreiter, Jr., Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1993, Ser. No. 34,034
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **20 Claims**



1. A process of fusing a dye-receiving element for thermal dye transfer -suitable for forming a slide for projection viewing, said dye-receiving element comprising a polymeric central dye image-receiving section and a polymeric frame section extending around the periphery of said central section, said dye image-receiving section containing a thermally-transferred dye image, said process comprising simultaneously subjecting said element to both conductive and convective heating.

5,288,690

RECEIVING ELEMENT WITH CELLULOSE PAPER SUPPORT FOR USE IN THERMAL DYE TRANSFER

Cheryl L. Warner, Brockport, and Douglas G. Wimer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 822,522, Jan. 17, 1992, Pat. No. 5,250,496. This application May 28, 1993, Ser. No. 69,307
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **5 Claims**

1. In a dye-receiving element for thermal dye transfer comprising a cellulose fiber paper support having thereon a dye image-receiving layer, the improvement wherein the cellulose fibers of the paper support comprise at least 50% hardwood fibers having a length weighted average fiber length equal to or less than about 0.5 mm as measured after pulping and bleaching.

5,288,691

STABILIZERS FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Noel R. Vanier, Fort Collins, Colo.; Michel F. Molaire, Rochester, N.Y.; Csaba A. Kovacs, Rochester, N.Y., and Paul D. Yacobucci, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 21,381, Feb. 23, 1993. This application Jun. 28, 1993, Ser. No. 83,836
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **20 Claims**

8. In a process of forming a thermal dye transfer image comprising:

I) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye in a polymeric binder, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

II) imagewise-heating said dye-donor element; and

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III) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

the improvement wherein said dye layer also contains a stabilizer comprising a monomeric or oligomeric organic material having a glass transition temperature of greater than about 60° C., said stabilizer:

a) being derived from a mixture of at least two different compounds, each having at least two linking components joining one multivalent organic nucleus with at least two organic nuclei, wherein at least one of the multivalent organic nucleus and the organic nuclei is a multicyclic aromatic nucleus; or

b) having a phenylindane moiety.

5,288,692

SYSTEMIC HERBICIDES AND METHODS OF USE

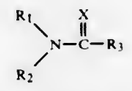
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 116,472, Nov. 3, 1987, Pat. No. 4,994,101, which is a continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, abandoned, and a continuation-in-part of Ser. No. 453,496, Dec. 27, 1982, Pat. No. 4,910,179. This application Dec. 27, 1990, Ser. No. 707,322

Int. Cl.[5] A01N *57/12*

U.S. Cl. 504—127 **29 Claims**

1. A herbicidal composition comprising a herbicidally effective amount of a combination of a systemic herbicide stable in said composition and a monoadduct of sulfuric acid with a compound, other than urea, having the formula:



wherein X is selected from the group consisting of oxygen and sulfur; R_1 is hydrogen; and each of R_2 and R_3 is independently selected from the group consisting of hydrogen, C_3 to C_{10} substituted or unsubstituted cyclic radicals, C_1 to C_{10} substituted or unsubstituted acyclic radicals, C_3 to C_{10} substituted or unsubstituted cyclic radicals containing one or more heteroatoms, and C_1 to C_{10} substituted or unsubstituted acyclic radicals containing one or more heteroatoms wherein (a) said substituents are selected from the group consisting of thiol, hydroxy, nitro, amino, nitrile, amide, ester, and halogen groups, and (b) said heteroatoms are selected from the group consisting of sulfur, nitrogen, oxygen, and phosphorus atoms.

5,288,693

2-(3-OXOALK(EN)YL)-3-ISOTHIAZOLONES AND DERIVATIVES AS ANTIMICROBIAL AGENTS

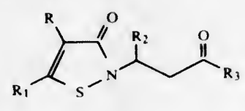
Peter Osei-Gyimah, Horsham, and Barry C. Lange, Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 25, 1993, Ser. No. 83,958

Int. Cl.[5] A01N *43/80;* **C07D** *275/03, 275/04*

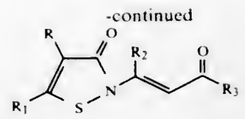
U.S. Cl. 504—156 **7 Claims**

1. Antimicrobial compounds of the formula



or

-continued



wherein

R is hydrogen, halogen, or $(C_1$–$C_4)$alkyl group;

R_1 is hydrogen or halogen; alternatively, R and R1 may be taken together with the carbons to which they are attached to form a 5- to 7-membered carbocyclic ring, said ring optionally being aromatic; and

R_2 is hydrogen or $(C_1$–$C_3)$alkyl group;

R3 is hydrogen, substituted or unsubstituted $(C_2$–$C_{18})$alkyl, substituted or unsubstituted $(C_2$–$C_{18})$alkenyl, substituted or unsubstituted $(C_2$–$C_{18})$alkynyl, substituted or unsubstituted $(C_4$–$C_8)$cycloalkyl or cycloalkenyl, of a substituted or unsubstituted arylalkyl group.

5,288,694

N-ARYL-NITROGEN HETEROCYCLES

Otto Schallner, Monheim; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Renate Vosswinkel, Kürten-Bechen, all of Fed. Rep. of Germany, assignors to Bayer Atkiengesellschaft, Leverkusen, Fed. Rep. of Germany

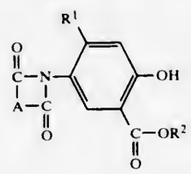
Filed Nov. 23, 1992, Ser. No. 979,758

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1991, 4139636

Int. Cl.[5] A01N *43/36, 43/38;* **C07D** *207/448*

U.S. Cl. 504—166 **12 Claims**

1. An N-aryl-nitrogen heterocycle of the formula



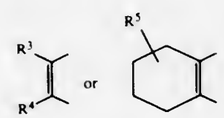
(I)

wherein

R^1 represents hydrogen, fluorine, chlorine, bromine or iodine,

R^2 represents hydrogen or a straight-chain or branched radical selected from the group consisting of alkyl, halogenoalkyl having identical or different halogen atoms, alkoxyalkyl, alkoxyalkoxyalkyl, alkoxycarbonylalkyl, alkenyl, or cycloalkyl which is optionally monosubstituted or polysubstituted by identical or different straight-chain or branched alkyl substituents and

A represents one of the radicals



where

R^3 represents straight-chain or branched alkyl,

R^4 represents straight-chain or branched alkyl,

R^5 represents hydrogen or straight-chain or branched alkyl.

5,288,695

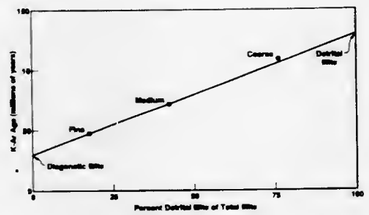
POTASSIUM-ARGON DATING OF ILLITE COMPONENTS IN AN EARTH SAMPLE

David R. Pevear, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 937,918, Aug. 28, 1992, abandoned. This application Oct. 2, 1992, Ser. No. 955,951

Int. Cl.[5] G01N *33/24, 23/00*

U.S. Cl. 436—27 **8 Claims**



1. A process for determining an end member age of an illite component in an earth sample which contains a diagenetic illite component and a detrital illite component, comprising the steps of:

(a) separating the earth sample into a plurality of fractions by a separation means which separates the earth sample into discrete fractions having different sized particles;

(b) determining for each fraction the relative percentage of one of the illite components;

(c) determining through potassium-argon age analysis the mean age of total illite in each fraction;

(d) correlating the relative percentages determined in step (b) with the mean ages determined in step (c) to generate a linear relationship; and

(e) determining an end member age for said one of the illite components using said linear relationship, whereby zero percent of said one of the illite components corresponds to the end member age of the other illite component.

5,288,696

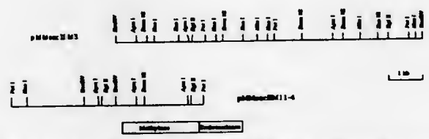
METHOD FOR PRODUCING AND CLONING SACII RESTRICTION ENDONUCLEASE AND METHYLASE

Elleo P. Guthrie, Swampscott, and Marta M. Meda, Beverly, both of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed Sep. 7, 1990, Ser. No. 578,822

Int. Cl.[5] C12N *9/10, 15/54, 15/70, 15/76*

U.S. Cl. 435—199 **12 Claims**



1. A method for cloning DNA for a SacII restriction endonuclease comprising;

a) purifying DNA from *Streptamyces achromogenes* ATCC No. 12767;

b) digesting the purified DNA with EcoRV to form DNA fragments;

c) ligating the DNA fragments into the cloning vector pJRD184;

d) transforming a host cell with the cloning vector of step c) to form a cell library;

e) purifying recombinant vectors from the cell library to form a plasmid library;

f) contacting the plasmid library of step e) with SacII to form a digestion pool, transforming the digestion pool into a host cell, and screening for the presence of one or more cloning vectors containing DNA coding for a SacII methylase;

g) subcloning the DNA obtained in step f) which contains DNA coding for SacII methylase into a Streptomyces compatible cloning vector;

h) transforming *Streptomyces lividans* host cell with the cloning vector of step g); and

i) screening the transformants of step h) for the presence of DNA coding for a SacII restriction endonuclease by identifying transformants which produce the SacII restriction endonuclease.

5,288,697

PRODUCTION OF THIN PROTECTIVE POLYIMIDE LAYERS ON HIGH TEMPERATURE SUPERCONDUCTORS

Wolfgang Schrepp, Heidelberg; Hans-Joachim Haehnle, Ludwigshafen, and Michael Grunze, Neckargemoend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 879,012

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115872

Int. Cl.[5] B05D *1/36, 7/00*

U.S. Cl. 505—1 **5 Claims**

1. A process for producing a protective layer of a polyimide on a substrate of a high temperature superconductor material which comprises: (1) applying a layer of a) a polyamic acid which serves as a precursor to polyimide or b) a precursor of the polyamic acid to the substrate and (2) imidating the applied layer in an atmosphere consisting essentially of oxygen.

5,288,698

METHOD OF POSITIONING LEAD FRAME ON MOLDING DIE TO SEAL SEMICONDUCTOR ELEMENT WITH RESIN

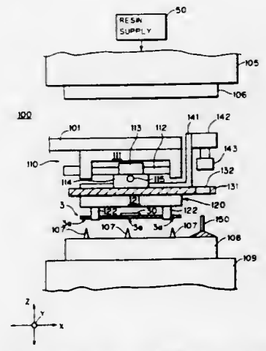
Toshinobu Banjo; Kouji Shika, and Minoru Tanaka, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 641,397, Jan. 15, 1991, Pat. No. 5,123,823. This application Mar. 27, 1992, Ser. No. 858,785

Claims priority, application Japan, Feb. 1, 1990, 2-23901

Int. Cl.[5] B29C *33/12, 33/30*

U.S. Cl. 264—40.1 **9 Claims**



1. A method of positioning a lead frame on a molding die to seal said lead frame with resin, wherein a semiconductor element is bonded on said lead frame, said method comprising the steps of:

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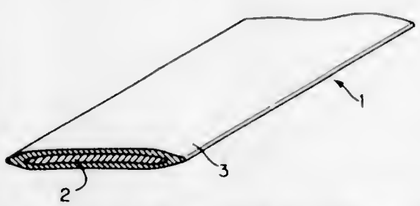
(a) preparing a die having a top surface at an end position of which a pin is planted;
(b) preparing X-Y driver means provided with a horizontal plate member under which holding means for holding said lead frame is attached, wherein said X-Y driver means is operable to two-dimensionally drive and move said plate member in horizontal X-Y directions and said plate member has a vertical through hole at an end region of said plate member;
(c) holding said lead frame by said holding means;
(d) carrying said X-Y driver means to a space on said die together with said plate member and said holding means holding said lead frame;
(e) detecting respective two-dimensional images of said hole and said pin by a two-dimensional-image detector coupled to said plate member to generate an image signal representative of said respective two-dimensional images;
(f) detecting two-dimensional positional deviation between said respective images by comparing image portions based on said image signal with each other;
(g) enabling said X-Y driver means in accordance with said deviation to two-dimensionally align respective positions of said hole and said pin in said horizontal directions; and
(h) releasing said lead frame from said holding means to place said lead frame on said die.

5,288,699

METHOD OF MANUFACTURING OXIDE SUPERCONDUCTING WIRE

Kenichi Sato, and Takeshi Hikata, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Continuation of Ser. No. 622,914, Dec. 6, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,307
Claims priority, application Japan, Dec. 7, 1989, 1-318251; Jan. 31, 1990, 2-22855
Int. Cl.[5] H01L *39/24*
U.S. Cl. 505—1 **20 Claims**



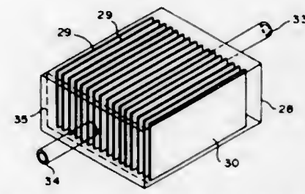
1. A method of manufacturing a high T_c copper oxide superconducting wire, comprising:
a step of preparing powder by repeating heat treatment and pulverization of a high T copper oxide superconductor a plurality of times;
a step of covering said powder with a sheath of a metal or a metal ally being unreactive with respect to said powder at a temperature of not more than 950° C.;
a step of deforming said sheath;
a step of heat treating a wire obtained by said step of deforming said sheath, and
said method further including a step of desorbing gas from said powder between said step of preparing powder and said step of covering said powder with a sheath so that no inflation of said wire is caused by gas in said step of heat treating said wire.

5,288,700

ORGANOMETALLIC SOLAR VOLTAIC STORAGE CELL

Mathew E. McDowell, 20 E. Hyde Park, St. Joseph, Mo. 64504

Filed Jul. 9, 1992, Ser. No. 911,678
Int. Cl.[5] H01M *6/30*
U.S. Cl. 429—111 **2 Claims**



1. A device for converting light into electrical energy which comprises a container having a photoactive liquid therein; at least one pair of electrodes including a cathode and an anode immersed in the liquid; said container having a portion through which visible light may pass to irradiate said photoactive liquid; said photoactive liquid containing water and an organometallic compound; said compound comprising a metal ion capable of existing in two valent states and having bonding sites wherein the metal is bonded to a ligand at each bonding site; said ligands being selected from the group consisting of chlorine, ammonia, and a carboxylic acid derivative from which at least one carboxyl group has been removed during the formation of the complex to produce a ligand having at least one carbon atom covalently bonded to the metal; and said compound contains at least one chlorine ligand, at least one ammonia ligand, and at least one of said carboxylic acid derivative ligands.

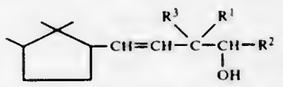
5,288,701

DERIVATIVES OF DIHYDROCAMPHOLENIC ALDEHYDE

Josianne Baudin, Annemasse, France, assignor to Givaudan-Roure Corporation, Clifton, N.J.

Filed Jul. 1, 1991, Ser. No. 723,996
Claims priority, application European Pat. Off., Jul. 12, 1990, 90113324.9
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—8 **6 Claims**

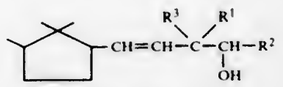
1. A compound of the formula:



Id

wherein each of R^1, R^2 and R^3 is alkyl of one to four carbon atoms.

3. An odorant composition having a compound the formula:



Id

wherein each of R^1, R^2 and R^3 is alkyl of one to four carbon atoms, and a carrier material.

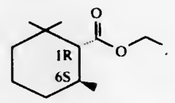
5,288,702

ETHYL (1R,6S)-2,2,6-TRIMETHYLCYCLOHEXANECARBOXYLATE, AROMA CHEMICAL COMPOSITION CONTAINING THE SAME AND PROCESS OF PRODUCING THE SAME

Miharu Ogura; Hiroyuki Matsuda; Takeshi Yamamoto, and Akemi Shimada, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

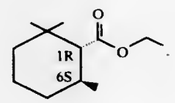
Filed Mar. 26, 1992, Ser. No. 858,187
Claims priority, application Japan, Mar. 26, 1991, 3-166543; Mar. 9, 1992, 4-99009
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—24 **2 Claims**

1. Ethyl (1R,6S)-2,2,6-trimethylcyclohexanecarboxylate represented by formula (1):



(1)

2. An aroma chemical composition containing ethyl (1R,6S)-2,2,6-trimethylcyclohexanecarboxylate represented by formula (1):



(1)

5,288,703

METHOD FOR ENHANCING GUT ABSORPTION

Douglas Wilmore, Brookline, Mass., assignor to Brigham and Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 771,415, Oct. 7, 1991, abandoned. This application Oct. 7, 1992, Ser. No. 957,174
Int. Cl.[5] A61K *37/00, 31/195*
U.S. Cl. 514—2 **13 Claims**

1. A method of increasing gut absorption of nutrients in a mammal, comprising co-administering to said mammal a therapeutically effective amount of glutamine and a therapeutically effective amount of growth hormone.

5,288,704

SYNERGISTIC COMPOSITION COMPRISING A FIBROBLAST GROWTH FACTOR AND A SULFATED POLYSACCHARIDE, FOR USE AS ANTIVIRAL AGENT

Domenico Ungheri, Parabiago; Luisa Garofano, Monza; Carlo Battistini, Novate Milanese; Paolo Carminati, and Guy Mazué, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

Filed Jan. 31, 1992, Ser. No. 830,330
Claims priority, application United Kingdom, Jan. 31, 1991, 9102145.1; Jan. 9, 1992, 9200410.1
Int. Cl.[5] A61K *37/00*
U.S. Cl. 514—12 **14 Claims**

1. A pharmaceutical composition, comprising an amount of:
(i) a fibroblast growth factor selected from the group consisting of an amidated human or bovine fibroblast growth factor, a human or bovine fibroblast growth factor having an N-terminal extension selected from the group consisting of SEQ ID NOS:2, 3, 4 and 5, an amidated human or bovine fibroblast growth factor having an N-terminal extension selected from the group consisting of SEQ ID NOS:2, 3, 4 and 5, the peptides of SEQ ID NOS:8, 9, 10, 11, 12, 13, 14 and 15, amidated peptides of SEQ ID NOS:8, 9, 10, 11, 12, 13, 14 and 15, and mixtures thereof;
(ii) a sulfated polysaccharide having antiviral activity; and
(iii) a pharmaceutically acceptable excipient, effective for the treatment or prevention of infections caused by enveloped viruses.

5,288,705

MANIPULATION OF OVULATION AND SPAWNING IN FISH

Jonathan Zohar, Eilat, Israel, assignor to Israel Oceanographic & Limnological Research Ltd., Haifa, Israel

Filed Oct. 6, 1989, Ser. No. 417,772
Claims priority, application Israel, Oct. 10, 1988, 87982
Int. Cl.[5] A61K *37/02; C07K 7/06*
U.S. Cl. 514—15 **9 Claims**

1. A method for the induction and synchronization of ovulation, spawning, sperm production and spermiation in fish, which comprises administering to the fish an effective amount of an active compound selected from the group consisting of GnRH, LHRH, GnRH analogs, LHRH analogs and non-toxic salts of any of those compound, wherein said active compound is embedded in a biodegradable polymer based carrier matrix, and wherein said carrier matrix is (i) biocompatible with said fish and said active compound and (ii) confers sustained release properties on said active compound when said composition is administered to said fish.

5,288,706

MEDICAMENT FOR PREVENTION AND REMEDY OF DISEASES OF THE PANCREAS AND OTHERS

Toshikazu Yamanouchi, Tokyo; Akira Awaya, Yokohama; Hisashi Kobayashi, Mobara; Yusaku Ishizuka, Yokohama, and Hayao Abe, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP88/01317, § 371 Date Aug. 18, 1989, § 102(e) Date Aug. 18, 1989, PCT Pub. No. WO89/06136, PCT Pub. Date Jul. 13, 1989
Continuation of Ser. No. 702,117, May 16, 1991, abandoned, which is a continuation of Ser. No. 397,498, Aug. 18, 1989, abandoned. This PCT application Dec. 23, 1988, Ser. No. 19,347
Claims priority, application Japan, Dec. 25, 1987, 62-327180
Int. Cl.[5] A61K *37/02; C07K 7/06*
U.S. Cl. 514—15 **6 Claims**

1. A method of treating diabetes consisting essentially of administering to a patient having same an effective amount of a nonapeptide consisting essentially of amino acids in the L form and having the following configuration:

pGlu-Ala-Lys-Ser-Gln-Gly-Gly-Ser-Asn

or an ester and amide at the carboxyl group of the C-terminal of the asparagine, or a pharmacologically acceptable ammonium salt thereof or a salt with an organic base.

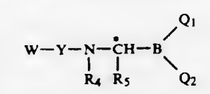
5,288,707

BOROLYSINE PEPTIDOMIMETICS

Rainer Metternich, Inzlingen, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 743,847, Aug. 12, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,443
Claims priority, application United Kingdom, Aug. 13, 1990, 9017694
Int. Cl.[5] A61K *37/02; C07K 5/10*
U.S. Cl. 514—19 **13 Claims**

1. A compound of formula I



(I)

wherein:

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W is hydrogen or an N-protecting group

Y is a sequence of n amino acids such that the n+1 amino acid peptide Y-Lys or Y-Arg has an affinity for the active site of a trypsin-like protease; where n is an integer of from 1 to 10 and in which at least one amino acid is an unnatural amino acid having a hydrophobic side chain;

Q_1 and Q_2 are the same or different and are selected from —OH, —COR_1, —$CONR_1R_2$, —NR_1R_2 or —OR_3or —OR_3 or Q_1 and Q_2 taken together form a diol residue;

R_1, R_2 and R_3 which may be the same or different, are C_{1-10}alkyl, C_{6-10}aryl, C_{6-10} aralkyl or phenyl substituted by up to three groups selected from C_{1-4}alkyl, halogen and C_{1-4}alkoxy;

R_4 is hydrogen or C_{1-10}alkyl

R_5 is a group —A—X; wherein

A is —$(CH_2)_z$— in which z is 2,3,4 or 5; —$CH(CH_3)$—$(CH_2)_2$—; —CH_2—$CH(CH_3)$—CH_2; —$(CH_2)_2$—$CH(CH_3)$—; —$(CH_2)_2$—$C(CH_3)_2$—; —$CH(CH_3)$—$(CH_2)_3$—; —CH_2—$CH(CH_3)$—$(CH_2)_2$—; —CH_2—CH_2—$CH(CH_3)$—CH_2—; $(CH_2)_3$—;$CH(CH_3)$—; —$(CH_2)_3$—$C(CH_3)_2$; C_{6-10}aryl C_{6-10}aralkyl and

X is —NH_2, —NH—C(NH)—NH_2, —S—C(NH)—NH_2—, —N_3, C_{1-4}alkoxy, C_{1-4}alkylthio or —$Si(CH_3)_3$ or

R_4 and R_5 together form a trimethylene group and the asymmetric carbon atom marked * may have the D- or L-configuration or represent any mixture of these.

5,288,708

PHARMACOLOGICALLY ACTIVE SUBSTANCE BPC, THE PROCESS FOR ITS PREPARATION AND ITS USE IN THE THERAPY

Predrag Sikiric, Jurisiceva 5; Marijan Petek, Visnjica 29; Ivo Rotkvic, Cvjetno naselje 1/21, all of 41 000 Zagreb; Stjepan Mise, Ruzveltova 37, 58 000 Split; Simun Krizanac, Platana 8, 41 000 Zagreb, all of Yugoslavia; Ivan Udovicic, Ennetmooserstraase 16, 6370 Stans, Switzerland; Ernest Suchanek, Aleja V. Popovica 125, 41 000 Zagreb, Yugoslavia; Marko Duvnjak, R. Luxenburg 4, 41 000 Zagreb, Yugoslavia, and Jerka Jukic, Palih Omladinaca 33, 41 000 Zagreb, Yugoslavian

PCT No. PCT/EP90/01533, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991

PCT Filed Sep. 11, 1990, Ser. No. 690,954

Claims priority, application Yugoslavia, Sep. 12, 1989, 1760/89

Int. Cl.[5] C07K *3/28, 15/06;* A61K *37/02*

U.S. Cl. 514—21 4 Claims

1. A process for preparation of the substance BPC having a molecular weight 40000±5000 Dal and partial N-terminal amino acid sequence: H_2N-Gly-Glu-Pro-Pro-Pro-Gly-Lys-Pro-Ala-Asp-Asp-Ala-Gly-Leu-Val—. . . —COOH from human or animal gastric juice characterized with following production steps in which:

(a) the collected and homogenized animal or human gastric juice is separated in crude parts and supernatant liquid by centrifugalization;

(b) the supernatant liquid is dialysed and lyophilized to obtain a first dry residue;

(c) the first dry residue is purified on a chromatographic column filled with weakly basic modified ion-exchange gel or resin to obtain a first concentrate;

(d) the first concentrate is again dialysed and lyophilized to obtain a second dry residue;

(e) the second dry residue is purified with gel chromatography to obtain a second concentrate and

(f) the substance BPC is finally obtained from the second concentrate using dialysis and lyophilisation.

5,288,709

ERYTHROMYCIN DERIVATIVES

Leslie A. Freiberg, Waukegan; Larry L. Klein, Lake Forest; Clinton M. Yeung, Skokie; Carla M. Edwards, Evanston, and David J. Bacino, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

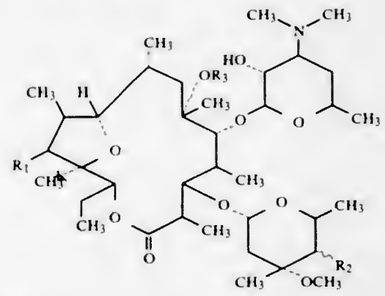
PCT No. PCT/US90/01658, § 371 Date Aug. 21, 1991, § 102(e) Date Aug. 21, 1991

Continuation-in-part of Ser. No. 329,473, Mar. 28, 1989, abandoned. This PCT application Mar. 28, 1990, Ser. No. 743,424

Int. Cl.[5] A61K *31/70;* C07H *17/08*

U.S. Cl. 514—29 5 Claims

1. A compound having the structure:



wherein

R_1 is an oxo, oxime, hydroxy or amino group at the 11 position;

R_2 is hydrogen, an oxygen-containing group selected from the group consisting of hydroxy, oxime, C_1—to —C_8 alkanoyloxy, C_1—to —C_8 aminoalkoxy, aminocarbonyloxy and carbonate, or a nitrogen-containing group selected from the group consisting of amino, oxime, imine and carbamyl at the 4" position; and

R_3 is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof.

5,288,710

STABLE SALTS OF 4"-DEOXY-4"-EPI-METHYLAMINO AVERMECTIN BLA/BLB

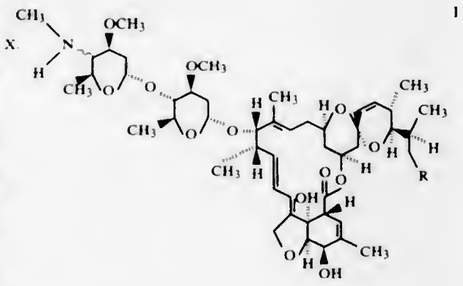
Raymond Cvetovich, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 545,229, Jun. 28, 1990, abandoned. This application Apr. 2, 1992, Ser. No. 862,035

Int. Cl.[5] A61K *31/70;* C07H *17/04*

U.S. Cl. 514—30 4 Claims

1. A stable salt of Formula I:



I

wherein:

R is hydrogen or methyl; and

X is: benzoic acid.

4. A method of treatment for parasitic infections in warm blooded animals, which comprises the administration of an effective amount of a stable salt of claim 1 to an animal in need of such treatment.

5,288,711

METHOD OF TREATING HYPERPROLIFERATIVE VASCULAR DISEASE

Robert D. Mitchell, Doylestown, Pa., and Stephen Skwish, Mercer, N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Apr. 28, 1992, Ser. No. 874,895

Int. Cl.[5] A61K *31/71, 31/725*

U.S. Cl. 514—56 13 Claims

1. A method of treating vascular disease resulting from smooth muscle cell proliferation in a mammal in need thereof which comprises, administering an antiproliferative effective amount of the combination of rapamycin in a concentration of at least 1 nM and heparin in a concentration of at least 1 μg/ml to said mammal orally, parenterally, intravascularly, intranasally, intrabronchially, transdermally, rectally, or via an impregnated vascular stent.

5,288,712

PERVAPORATION PROCESS EMPLOYING PERMEATE RECYCLE

Tan J. Chen, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 7, 1992, Ser. No. 957,116

Int. Cl.[5] B01D *61/36*

U.S. Cl. 210—640 5 Claims

1. A method for increasing the selectivity of a membrane pervaporation aromatics/nonaromatics separation process comprising contacting a feed stream comprising aromatics and non-aromatics with an aromatics selective membrane in a pervaporation zone, recovering an aromatics rich permeate and an aromatics lean retentate from said pervaporation zone, and recycling part of the aromatics rich permeate directly to the inlet of said pervaporation zone wherein said recycled permeate and fresh feed are combined, and coprocessing said mixture of fresh feed and recycled permeate through said pervaporation zone.

5,288,713

METHOD FOR INJECTING TREATMENT CHEMICALS

D. Dwaine Reese, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 16, 1989, Ser. No. 394,604

Int. Cl.[5] C02F *5/08*

U.S. Cl. 210—696 5 Claims

1. A method for treating a flowing stream with a desired treatment chemical, the method comprising:

injecting an amount of the desired treatment chemical in a continuous and constant manner into the flowing stream to achieve a constant axial concentration of the treatment chemical in the flowing stream wherein the treatment chemical is injected into the flowing stream by pumping a continuous and constant flow of the desired treatment chemical into a pipe containing the flowing stream and wherein the flowing stream exhibits a turbulent flow regime.

5,288,714

APPARATUS FOR LAYING UP ADHESIVE BACKED SHEETS

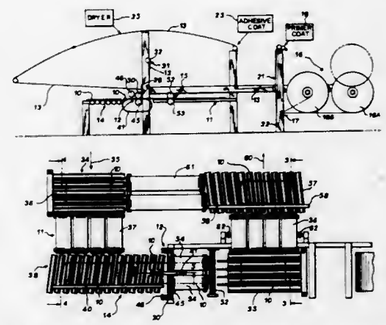
Carl R. Marschke, Phillips, Wis., assignor to Converex, Inc., Madison, Wis.

Continuation of Ser. No. 747,788, Aug. 19, 1991, Pat. No. 5,209,810. This application Sep. 30, 1992, Ser. No. 954,287

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—522 5 Claims



1. A system for laying up multi-layer stacks of sheets, each sheet having an adhesive coating on one side to cause each succeeding sheet in a stack to adhere to the sheet preceding it, said system comprising:

means for circulating in series sheet receiving backing members in multiple lay-up cycles through a sheet lay-up station to serially receive on each member an initial layer and successive layers of sheets forming a stack;

means for feeding a continuous web from which said sheets are formed into said lay-up station;

web accumulating means for initially receiving said web from said lay-up station;

application means in said lay-up station movable from an accumulating position to an application position for applying said initial layer and said successive layers from said web to said backing members and the immediately preceding one of each of said successive layers in each stack;

means for simultaneously moving said application means to the application position and severing the web from said accumulating means; and

means for receiving each backing member from said lay-up station and for separating each applied layer from said continuous web.

5,288,715

LIGHT SENSITIVE SILVER HALIDE ELEMENT WITH CELLULOSE ESTER FILM BASE

Julie S. Machell, Webster, N.Y., and I. Daniel Sand, Jonesborough, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 588,650, Sep. 26, 1990, Pat. No. 5,219,510. This application Feb. 16, 1993, Ser. No. 18,052

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—531 3 Claims

1. A photographic element comprising at least one aqueous-processable, light sensitive layer coated on a film support which is a biaxially oriented, melt-cast cellulose ester film comprising a cellulose acetate or a cellulose acetate propionate having degrees of substitution in the ranges DS_{ac}=1.90 to 2.60, DS_{pr}=0 to 0.9 and DS_{OH}=0 to 0.55, melt compounded with a non-volatile phosphoric acid ester, said film being biaxially oriented to a stretch ratio from 1.25X to 2.5X in both directions

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of orientation, and said oriented film having a yellowness index less than 4, a percent haze less than 2, an elastic modulus greater than 3.1 GPa and post-processing curl less than 2 mm^{-1}.

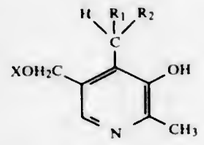
5,288,716

USE OF PYRIDOXINE DERIVATIVES IN THE PREVENTION AND TREATMENT OF HYPERLIPIDAEMIA AND ATHEROSCLEROSIS

Ulrich Speck, Benediktinerstrasse 50, D-1000 Berlin 28, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 156,990, Feb. 18, 1988, abandoned. This application Jun. 15, 1989, Ser. No. 365,935
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1987, 3705549
Int. Cl.[5] A61K *31/675, 31/44;* **C07F** *9/06;* **C07D** *211/84*
U.S. Cl. 514—89 **20 Claims**

1. A compound according to formula I



(I)

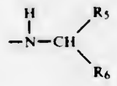
wherein

a) R_1 is hydrogen and R_2 is



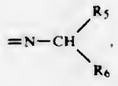
wherein R_3 and R_4 are independently hydrogen, C_{1-6}-alkyl, C_{2-6}-alkenyl, (hydroxy or C_{1-4}-alkoxy)-C_{1-6}-alkyl or C_{6-14}-aryl or substituted aryl, or

b) R_1 is hydrogen and R_2 is

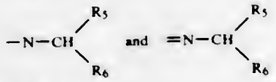


or

R_1 and R_2 together are



both radicals



being derived from a

natural amino acid, a natural amine, or a respective amide, R_5 and R_6 being the appropriate groups to form said radicals derived from natural amino acids, amines or respective amides,

and X is hydrogen,



or $-PO_4H_2$, R_3

being independently a group defined for R_3 above;

or a pharmacologically acceptable salt of said compound;

with the provisos that:

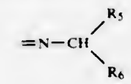
R_3 and R_4 are not both H when X is H or PO_4H_2,

when R_1 and R_2 are $=N-CHR_5R_6$, then $=N-CHR_5R_6$ is not derived from glutamic acid, aspartic acid, or an S-containing amino acid when X is PO_4H_2;

when one of R_3 and R_4 is H and the other is alkyl, then X is not PO_4H_2;

when one of R_3 and R_4 is H and X is H, then the other of R_3 and R_4 is not butyl;

when X is H or PO_4H_2 and R_1 and R_2 together are

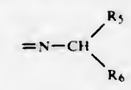


then R_5 and R_6 are not (H, phenethyl) or (H, benzyl);

when one of R_3 and R_4 is H and X is PO_4H_2, then the other of R_3 and R_4 is not tryptamine;

when R_1 and R_2 are $-NCHR_5R_6$, then $-NHCHR_5R_6$ is not derived from aspartic acid when X is H; and

when X is H, R_1 and R_2 are not together



5,288,717

ALKALI METAL 8,9-DEHYDROESTRONE SULFATE ESTERS

Panolil C. Raveendranath, Plattsburgh, N.Y., and John A. Wichtowski, St. Albans, Vt., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 841,694, Feb. 26, 1992, Pat. No. 5,210,081.
This application Dec. 3, 1992, Ser. No. 984,741
Int. Cl.[5] A61K *31/56;* **C07J** *53/00, 31/00*
U.S. Cl. 514—179 **6 Claims**

1. An alkali metal salt of 8,9-dehydroestrone.

5,288,718

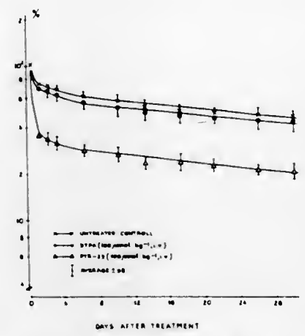
METHOD FOR DECORPORATING RADIOACTIVE ISOTOPE FROM LIVING ORGANISM

László Varga, Budapest; Mihály Töröcsik, Tószeg; László B. Sztanyik, Budapest; Erno Brücher, Debrecen; József Emri, Debrecen, and Béla Györi, Debrecen, all of Hungary, assignors to Országos "Frederic Joliot-Curie" Sugárbiológiai és Sugáregészségügyi Kutató Intézet, Budapest; Agromen Agrármenedzseri Kft, Szolnok and Magyar Külkereskedelmi Bank Rt., Budapest, all of Hungary

Contiouation of Ser. No. 646,762, Jan. 17, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 80,985
Claims priority, application Hungary, May 24, 1989, 2614/89
Int. Cl.[5] A61K *31/33, 49/02*
U.S. Cl. 514—183 **6 Claims**

1. A method for decorporating radioactive isotopes of alkaline earth, and rare earth metal compounds from a living or-

ganism, which comprises administering to said organism a composition of 1, 4, 10, 13-tetraoxa-7, 16-diazacyclooctadec-



ane-N,N[1]-dimalonic acid tetrasodium salt, and a pharmaceutically acceptable carrier.

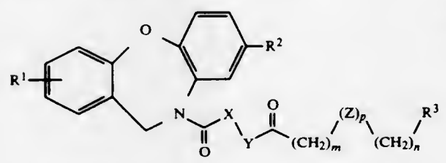
5,288,719

2-,3-,8-AND/OR 10-SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS FOR TREATING OSTEOPOROSIS

Robert K. Huss, Vernon Hills; Timothy J. Hagen, Glenview, and E. A. Hallinan, Evanston, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 786,161, Oct. 31, 1991, Pat. No. 5,212,169.
This application Jan. 21, 1993, Ser. No. 6,858
Int. Cl.[5] A61K *31/55*
U.S. Cl. 514—211 **2 Claims**

1. A method for treating osteoporosis in a mammal comprising administering to said mammal a therapeutically-effective amount of a compound having a structure of the formula:



or a pharmaceutically-acceptable salt thereof, wherein:

X is —NH— or $-CH_2-$;

Y is

(1) $-CH_2-$ when X is —NH—, and

(2) —NH— when X is $-CH_2-$;

R^1 is hydrogen, halogen or $-OR^4$;

R^4 is hydrogen, alkyl or



Z is oxygen, sulfur, —SO—, $-SO_2$ or $-NR^5-$;

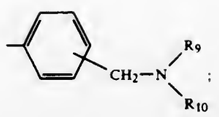
R^5 is hydrogen or t-butyloxycarbonyl;

R^2 is hydrogen, halogen or trifluoromethyl;

R^3 is hydrogen, halogen, aryl, heteroaryl in which the heteroatoms are selected from oxygen, nitrogen and/or sulfur, or $-NR^6R^7$;

R^6 and R^7 are independently hydrogen or alkyl;

R^8 is alkyl, aryl or



R^9 and R^{10} are each independently hydrogen or alkyl, or when taken together form N-morpholino or 4-methyl-N-piperazinyl;

m and n are each independently integers of from 0 to 3; and P is 0 or 1, provided that p i not 1 when m is 0.

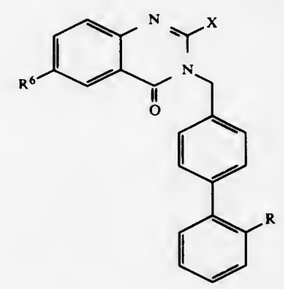
5,288,720

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

Jay D. Albright, Nanuet, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

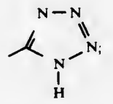
Filed Apr. 23, 1993, Ser. No. 52,940
Int. Cl.[5] C07D *239/91, 403/10;* **A61K** *31/505;* **A01N** *43/54*
U.S. Cl. 514—259 **38 Claims**

1. A quinazolinone compound having the formula:



wherein:

R is



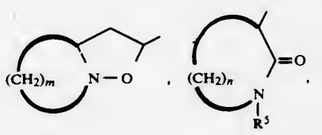
X is straight or branched alkyl of 3 to 5 carbon atoms;

R^6 is



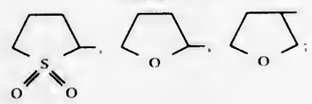
R^2 is H, or straight chain lower alkyl of 1 to 4 carbon atoms;

R^3 is



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-continued



n is 2,S or 4;
m is 3 or 4;
R^4 is H, or straight chain lower alkyl of 1 to 4 carbon atoms;
R^5 is straight chain lower alkyl of 1 to 4 carbon atoms; and the pharmaceutically acceptable salts thereof.

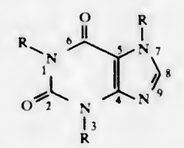
5,288,721

SUBSTITUTED EPOXYALKYL XANTHINES

J. Peter Klein, Vashon; David Porubek, Edmonds; Glenn C. Rice, Seattle, and Paul Woodson, Bothell, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

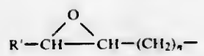
Filed Sep. 22, 1992, Ser. No. 949,330
Int. Cl.[5] A61K *31/52;* **C07D** *473/04*
U.S. Cl. 514—263 **12 Claims**

1. A compound of the formula



(1)

including the resolved enantiomers and/or diastereomers and mixtures thereof wherein each of one or two R is



(2)

wherein n is 4-16 and R' is H or alkyl(1-4C); and wherein each remaining R is independently H, alkyl(1-6C), alkenyl(1-6C) or benzyl; and wherein said alkyl or alkenyl may be substituted by a hydroxyl, halo, or dimethylamino group, and/or interrupted by an oxygen atom.

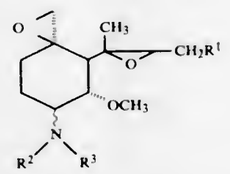
5,288,722

6-AMINO-6-DESOXYFUMAGILLOLS, PRODUCTION AND USE THEREOF

Shoji Kishimoto, Takarazuka; Shogo Marui, Suita, and Takeshi Fujita, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 489,370, Mar. 6, 1990, abandoned. This application Sep. 19, 1991, Ser. No. 762,658
Claims priority, application Japan, Mar. 6, 1989, 1-53535
Int. Cl.[5] A61K *31/40, 31/445, 31/335;* **C07D** *303/02*
U.S. Cl. 514—278 **8 Claims**

1. A compound of the formula:



wherein
R^1 is 2-methyl-1-propenyl group or isobutyl group;
R^2 is
(1) hydrogen atom,
(2) a C_{1-20} alkyl group which may be substituted with (i) amino, (ii) C_{1-6} alkylamino, (iii) di-C_{1-6} alkylamino, (iv) nitro, (v) halogen, (vi) hydroxyl, (vii) C_{1-6} alkylthio, (viii) C_{1-6} alkoxycarbonyl, (xiii) carboxy-C_{1-6} carbamoyl, (ix) carboxyl, (xii) C_{1-6} alkoxycarbonyl, (xiii) carboxy-C_{1-6} alkoxy, (xiv) phenyl which may be substituted by (a) C_{1-6} alkyl, (b) C_{1-6} alkoxy, (c) halogen, (d) halogenated alkyl or (e) nitro, or
(3) a C_{6-12} aryl group which may be substituted with (i) C_{2-6} alkyl, (ii) amino, (iii) halogen, (iv) hydroxyl, (v) C_{1-6} alkoxy, (vi) cyano, (vii) carbamoyl or (viii) carboxyl;
R^3 is
(1) hydrogen atom,
(2) a C_{1-20} alkyl group which may be substituted with (i) amino, (ii) C_{1-6} alkylamino, (iii) di-C_{1-6} alkylamino, (iv) nitro, (v) halogen, (vi) hydroxyl, (vii) C_{1-6} alkylthio, (viii) C_{1-6} alkoxy, (ix) cyano, (x) carbamoyl, (xi) carboxyl, (xii) C_{1-6} alkoxycarbonyl, (xiii) carboxy-C_{1-6} alkoxy, (xiv) phenyl which may be substituted by (a) C_{1-6} alkyl, (b) C_{1-6} alkoxy, (c) halogen, (d) halogenated alkyl or (e) nitro, or (xv) a 5- to 6-membered aromatic heterocyclic group containing 1 to 4 hetero atoms selected from nitrogen, oxygen and sulfur, and the said alkyl group may be epoxidated at an optional position,
(3) a C_{2-20} alkanoyl group which may be substituted with (i) amino, (ii) C_{1-6} alkylamino, (iii) di-C_{1-6} alkylamino, (iv) nitro, (v) halogen, (vi) hydroxyl, (vii) C_{1-6} alkylthio, (viii) C_{1-6} alkoxy, (ix) cyano, (x) carbamoyl, (xi) carboxyl, (xii) C_{1-6} alkoxycarbonyl, (xiii) carboxy-C_{1-6} alkoxy, (xiv) phenyl which may be substituted by (a) C_{1-6} alkyl, (b) C_{1-6} alkoxy, (c) halogen, (d) halogenated alkyl or (e) nitro, or (xv) a 5- to 6-membered aromatic heterocyclic group containing 1 to 4 hetero atoms selected from nitrogen, oxygen and sulfur,
(4) a C_{6-10} aroyl group which may be substituted with (i) C_{2-6} alkyl, (ii) amino, (iii) halogen, (iv) hydroxyl, (v) C_{1-6} alkoxy, (vi) cyano, (vii) carbamoyl or (viii) carboxyl,
(5) carbamoyl group which may be substituted with Ii) C_{1-6} alkyl, (ii) C_{1-6} alkanoyl, (iii) halogeno-C_{1-6} alkanoyl, (iv) C_{1-6} alkoxycarbonylmethyl, (v) carboxymethyl, (vi) phenyl which may be substituted by (a) C_{1-6} alkyl, (b) C_{1-6} alkoxy, (c) halogen, (d) halogenated alkyl or (e) nitro, (vii) naphthyl, (viii) benzoyl, (ix) naphthoyl or (x) substituents forming cyclic amino group, taken together with the nitrogen atom of the carbamoyl group,
(6) benzenesulfonyl group which may be substituted with (i) C_{1-6} alkyl or (ii) halogen,
(7) a C_{1-6} alkylsulfonyl group which may be substituted with the same substituents(s) as those of substituted C_{2-20} alkanoyl group mentioned in above (3),
(8) thiocarbamoyl group which may be substituted with the same substituents(s) as those of a substituted carbamoyl group mentioned in above (5),
(9) a C_{1-6} alkoxycarbonyl group which may be substituted with the same substituent(s) as those of a substituted C_{2-20} alkanoyl group mentioned in above (3),
(10) phenoxycarbonyl group which may be substituted with the same substituent(s) as those of a substituted benzenesulfonyl group mentioned in above (6), or
(11) a 5- or 6-membered aromatic heterocyclic carbonyl group containing 1 to 4 hetero atoms selected from nitrogen, oxygen and sulfur which may be substituted with the same substituent(s) as those of a substituted C_{6-10} aroyl group mentioned in above (4), wherein said aromatic heterocyclic carbonyl group is selected from the group consisting of 2-furoyl, 2-thenoyl, nicotinoyl and isonicotinoyl;
R^2 and R^3 may form pyrolidine, piperidine or isoindoline ring which may be substituted with C_{1-3} alkyl or oxo; and

the bonding mark ~ represents an α-linkage or β-linkage, or a salt thereof.

5,288,723

A COMPOSITION AND A METHOD OF USING VERATRIDINE AND EPINEPHRINE AS A LOCAL ANESTHETIC

Gary R. Strichartz, Boston; Sanjay Datta, Newton Centre, both of Mass., and Markus Schneider, Basel, Switzerland, assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 754,915, Sep. 6, 1991, abandoned. This application Oct. 22, 1991, Ser. No. 779,197
Int. Cl.[5] A61K *31/44, 31/135, 49/00*
U.S. Cl. 514—279 **6 Claims**

1. A method for inhibiting nerve impulses in an animal or human in need thereof comprising administering a therapeutically effective amount of veratridine or a pharmaceutically acceptable salt thereof, proximal to at least one C-fiber containing nerve.

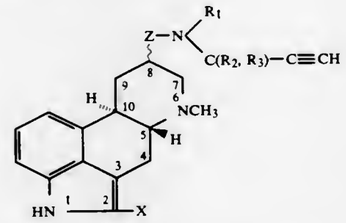
5,288,724

ERGOLINE DERIVATIVES OF 2-PROPINYLAMINE, A PROCESS FOR THE MANUFACTURE THEREOF AND THE USE THEREOF FOR MEDICAMENTS

Rudolf Rucman; Breda Bole-Vunduk; Magdalena Ocvirk; Bogomila Lavric, and Igor Krisch, all of Ljubljana, Slovenia, assignors to LEK, tovarna farmacevtskih, Slovenia

Filed Jun. 22, 1992, Ser. No. 901,983
Claims priority, application Yugoslavia, Jul. 1, 1991, 1154/91
Int. Cl.[5] A61K *31/44;* **C07D** *457/00*
U.S. Cl. 514—288 **16 Claims**

1. Ergoline derivatives of 2-propinylamine of the general formula I



I

wherein
R_1, R_2 and R_3 independently represent a hydrogen atom or a straight-chain or branched-chain C_1–C_6 alkyl group,
X represents a hydrogen or a halogen atom,
Z represents a carbonyl or methylene group and
C_9···C_{10} represents a single or a double bond, diastereomeric forms, racemates and acid addition salts thereof.

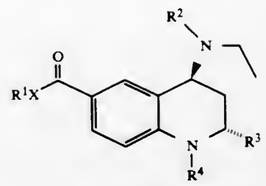
5,288,725

PYRROLOQUINOLINE BRADYKININ ANTAGONIST

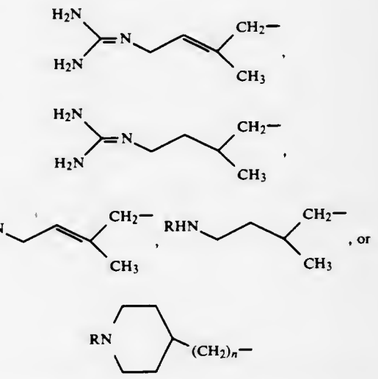
Keith M. Witherup, Lansdale; Richard W. Ransom, New Britain; Sandor L. Varga, Harleysville; Steven M. Pitzenberger, Lansdale; Victor J. Lotti, Harleysville, and William J. Lumma, Pennsburg, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 15, 1992, Ser. No. 961,589
Int. Cl.[5] C07D *471/04;* **A61K** *31/44*
U.S. Cl. 514—292 **17 Claims**

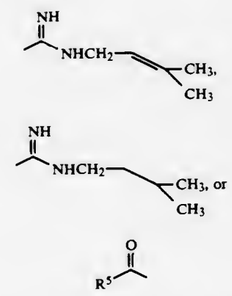
1. A compound of the formula:



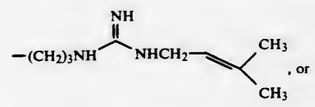
and the pharmaceutically acceptable salts thereof, wherein:
R^1 is
H,
C_{1-6} alkyl,



wherein R is H, C_{1-10} alkyl, or C_{1-6}alkyloxycarbonyl;
R^2 is:
H,
C_{1-6}alkyl,

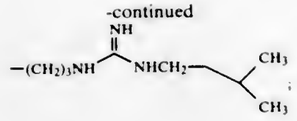


wherein R^5 is C_{1-10} alkyl, aryl, or aryl C_{1-10} alkyl wherein aryl is phenyl or methoxy phenyl;
R^3 is: $-(CH_2)_nNHR$ wherein R is H, C_{1-6} alkyl, or C_{1-6} alkyloxycarbonyl and $-(CH_2)_n$ is straight chain alkyl;



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-continued



R^4 is:

H,

C_{1-6} alkyl,

C_{1-6} alkyloxycarbonyl,

RCH_2—, wherein R is H, C_{1-6} alkyl or aryl wherein aryl is phenyl, or methoxy phenyl; or



X is:

O, or NR^6 wherein R^6 is equal to H or C_{1-6} alkyl and n is an integer from 1-3.

5,288,726

TETRAHYDROTHIENOPYRIDINE DERIVATIVES, FURO AND PYRROLO ANALOGS THEREOF AND THEIR PREPARATION AND USES FOR INHIBITING BLOOD PLATELET AGGREGATION

Hiroyuki Koike; Fumitoshi Asai; Atsuhiro Sugidachi, all of Tokyo; Tomio Kimura, Ube; Teruhiko Inoue, Ube; Shigeyoshi Nishino, Ube, and Yasunori Tauzaki, Ube, all of Japan, assignors to Ube Industries Limited, Ube and Sankyo Company, Limited, Tokyo, both of Japan

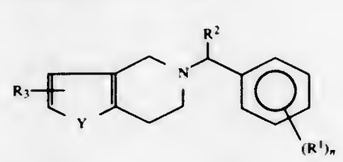
Filed Sep. 8, 1992, Ser. No. 941,676

Claims priority, application Japan, Sep. 9, 1991, 3-227875; May 29, 1992, 4-138529

Int. Cl.[5] **A01K** *3/14;* **C07D** *513/04*

U.S. Cl. 514—301 **56 Claims**

1. A compound of formula (I):



(I)

wherein

R^1 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a halogen atom, a haloalkyl group having from 1 to 4 carbon atoms and at least one halogen atom, a hydroxy group, an alkoxy group having from 1 to 4 carbon atoms, a haloalkoxy group having from 1 to 4 carbon atoms and at least one halogen atom, an alkylthio group having from 1 to 4 carbon atoms, a haloalkylthio group having from 1 to 4 carbon atoms and at least one halogen atom, an amino group, an alkanoyl group having from 1 to 5 carbon atoms, a haloalkanoyl group having from 2 to 5 carbon atoms and at least one halogen atom, a carboxy group, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a carbamoyl group, a cyano group, a nitro group, an alkanesulfonyl group having from 1 to 4 carbon atoms, a haloalkanesulfonyl group having from 1 to 4 carbon atoms and at least one halogen atom, or a sulfamoyl group;

R^2 represents an alkanoyl group having from 1 to 10 carbon atoms; a substituted alkanoyl group which has from 2 to 10 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents A, defined below; an alkenoyl group having from 3 to 6 carbon atoms; a substituted alkenoyl group which has from 3 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents A, defined below; a cycloalkylcarbonyl group having from 4 to 8 carbon atoms; a substituted cycloalkylcarbonyl group which has from 4 to 8 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents A, defined below; or a substituted benzoyl group having at least one substituent selected from the group consisting of substituents B, defined below;

R^3 represents a hydrogen atom; a hydroxy group; an alkoxy group having from 1 to 4 carbon atoms; a substituted alkoxy group which has from 1 to 4 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents C, defined below; an aralkyloxy group in which the aralkyl part is as defined below; an alkanoyloxy group having from 1 to 18 carbon atoms; an alkenoyloxy group having from 3 to 6 carbon atoms; a cycloalkylcarbonyloxy group having from 4 to 8 carbon atoms; an arylcarbonyloxy group in which the aryl part is as defined below; an alkoxycarbonyloxy group having from 2 to 5 carbon atoms; an aralkyloxycarbonyloxy group in which the aralkyl part is as defined below; a phthalidyloxy group; a (5-methyl-2-oxo-1,3-dioxolen-4-yl)methoxy group; a (5-phenyl-2-oxo-1,3-dioxolen-4-yl)methoxy group; a group of formula $—NR^aR^b$: wherein R^a and R^b are independently selected from the group consisting of hydrogen atoms, alkyl groups having from 1 to 4 carbon atoms and substituted alkyl groups which have from 1 to 4 carbon atoms and which are substituted by at least one substituent selected from the group consisting of substituents C, defined below; an aralkylamino group in which the aralkyl part is as defined below; an alkanoylamino group having from 1 to 18 carbon atoms; an alkenoylamino group having from 3 to 6 carbon atoms; a cycloalkylcarbonylamino group having from 4 to 8 carbon atoms: an arylcarbonylamino group in which the aryl part is as defined below; an alkoxycarbonylamino group having from 2 to 5 carbon atoms; an aralkyloxycarbonylamino group in which the aralkyl part is as defined below; a phthalidylamino group; a (5-methyl-2-oxo-1,3-dioxolen-4-yl)methylamino group; a (5-phenyl-2-oxo-1,3-dioxolen-4-yl)methylamino group, or a nitro group;

Y is a sulfur atom; and

n is an integer from 1 to 5, and, when n is an integer from 2 to 5, the groups represented by R^1 may be the same as or different from each other;

said substituents A are selected from the group consisting of halogen atoms, hydroxy groups, alkoxy groups having from 1 to 4 carbon atoms and cyano groups;

said substituents B are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, halogen atoms and alkoxy groups having from 1 to 4 carbon atoms;

said substituents C are selected from the group consisting of alkoxy groups having from 1 to 4 carbon atoms, alkanoyloxy groups having from 1 to 6 carbon atoms and arylcarbonyloxy groups in which the aryl part is as defined below;

said aralkyl parts of said aralkyloxy, aralkyloxycarbonyloxy, aralkylamino and aralkyloxycarbonylamino groups are alkyl groups which have from 1 to 4 carbon atoms and which are substituted by at least one aryl groups as defined below;

said aryl groups and said aryl parts of said arylcarbonyloxy groups and of said arylcarbonylamino groups having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents D, defined below; and

said substituents D are selected from the group consisting of the groups and atoms defined above in relation to R^1, other than said hydrogen atom;

or a tautomer thereof, or a pharmaceutically acceptable salt of said compound of formula (I) and of said tautomer.

5,288,727

HYDRAZONE COMPOUNDS, PROCESSES FOR THEIR PRODUCTION, INTERMEDIATES USEFUL FOR THEIR PRODUCTION AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Tadaaki Toki; Toru Koyanagi; Kiyomitsu Yoshida; Hiroshi Sasaki; Masayuki Morita, and Tetsuo Yoneda, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

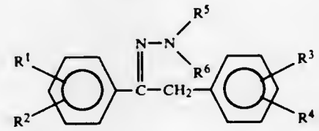
Filed Feb. 13, 1992, Ser. No. 834,835

Claims priority, application Japan, Feb. 22, 1991, 3-114191

Int. Cl.[5] **C07C** *251/80, 251/88;* **A01N** *47/40*

U.S. Cl. 514—632 **4 Claims**

1. A hydrazone compound of the formula (I) or its salt



(I)

wherein each of R^1, R^2 and R^4, which are independent of one another, is a hydrogen atom, a halogen atom, an alkyl group which may be substituted by a halogen atom, or an alkoxy group which may be substituted by a halogen atom, R^3 is a halogen atom, an alkyl group which may be substituted by a halogen atom, or an alkoxy group which may be substituted by a halogen atom, R^5 is a hydrogen atom, or an alkyl group, R^6 is X^7CO— (wherein X^7 is a hydrogen atom, or an alkyl group), or X^8OCO— (wherein X^8 is an alkyl group), or R^5 and R^6 together form $=CR^7R^8$ (wherein R^7 is a hydrogen atom, or an alkyl group, and R^8 is an amino group which may be substituted by an alkyl group, or an alkoxy group),

provided that the following cases (1) to (3) are excluded:

(1) a case where R^2, R^4 and R^5 are hydrogen atoms, R^6 is an ethoxycarbonyl group, and at least one of R^1 and R^3 is p-methoxy group,

(2) a case where R^1, R^2, R^4 and R^5 are hydrogen atoms, R^3 is a p-tert-butyl group, and R^6 is an ethoxycarbonyl group,

(3) a case where R^1, R^2 and R^4 are hydrogen atoms, R^3 is a p-fluorine atom, R^5 is an isopropyl group, and R^6 is an acetyl group.

5,288,728

PROCESS FOR RECOVERING SILVER FROM PHOTOGRAPHIC SOLUTIONS

Nathan O. Spears; Ernest R. Anderson, both of Rochester, and Elizabeth A. Murphy, Somers, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

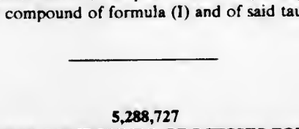
Filed Sep. 17, 1992, Ser. No. 946,503

Int. Cl.[5] **C02F** *1/62*

U.S. Cl. 210—729 **6 Claims**

1. A process of removing silver ion from a mixture of seasoned photoprocessing solutions containing stabilizer, bleach, fixer and bleach-fix solutions, in order to lower dissolved silver concentration in the mixture to less than 3 parts per million,

comprising contacting the mixture of seasoned photoprocessing solutions with a mercapto-s-triazine or water-soluble salt thereof, the mercapto-s-triazine having the formula:



(I)

wherein:

R is hydrogen, $—NH_4$, —OH, alkyl having 1 to 8 carbon atoms, alkoxy having 1 to 8 carbon atoms, phenyl, cyclohexyl, oxazinyl, phenoxy, $—NR'_2$ or SR"; wherein R' is hydrogen, alkyl having 1 to 8 carbon atoms, phenyl, cyclohexyl, naphthyl or benzyl;

and wherein

R" is alkyl having 1 to 8 carbon atoms, phenyl, cyclohexyl, naphthyl or benzyl;

m is an integer from 1 to 3; and

n is 0 or an integer from 1 to 2.

5,288,729

EXPOSING METHOD AND APPARATUS

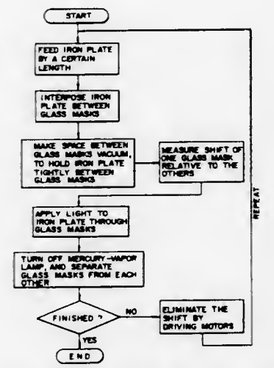
Yukitaka Miyata, Yokohama; Tatsuhiko Asaka, Tokyo; Hisashi Iijima, Oomiya, and Shigeru Suwa, Kanuma, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 593,895, Oct. 5, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 813,060

Claims priority, application Japan, Oct. 7, 1989, 1-262800; May 9, 1990, 2-119334

Int. Cl.[5] **G03F** *9/00*

U.S. Cl. 430—22 **4 Claims**



1. A method of exposing a long iron plate from both sides thereof, wherein said iron plate has a photosensitive material coated on both sides thereof, is held between a first mask plate provided with a first masking pattern on the inner side thereof and a second mask plate provided with a second masking pattern on the inner side thereof, comprising the steps of:

simultaneously image-sensing first and second alignment patterns formed at those areas on the inner sides of the first and second mask plates, respectively where the iron plate is not held by the first and second mask plates so as to obtain an image signal said first and second alignment patterns being in a predetermined positional relation when the first and second mask plates are correctly aligned with each other, said first alignment pattern comprising a pair of circular marks arranged in a direction parallel to the long axis of the iron plate and said second alignment pattern comprising a pair of circular marks arranged in the

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the a direction perpendicular to the long axis of the iron plate;

processing the image signal to determine the positionally mis-registered amount of the first and second alignment patterns from the predetermined positional relation;

exposing both sides of the iron plate to photoradiation through the first and second mask plates;

moving one of the first and second mask plates in a direction along the iron plate to correct the positionally mis-registered amount of the alignment pattern determined by the processing of the image signal;

moving the iron plate by a certain length; and

repeating the previous steps.

5,288,730

AZABICYCLIC COMPOUNDS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE IN THERAPY

Raymond Baker, Much Hadham; Christopher J. Swain, Duxford; Martin R. Teall, Standon, and Brian J. Williams, Great Dunmow, all of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

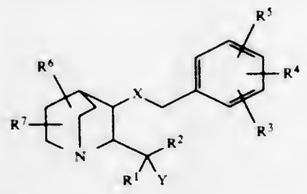
Filed Jun. 16, 1992, Ser. No. 899,205

Claims priority, application United Kingdom, Jun. 24, 1991, 9113567

Int. Cl.[5] A61K *31/435;* **C07D** *453/00*

U.S. Cl. 514—305 **11 Claims**

1. A compound of formula (IC), or a salt or prodrug thereof:



(IC)

wherein

X is selected from oxa and thia;

Y is selected from H and hydroxy;

R^1 is selected from phenyl, thienyl or C_{5-7} cycloalkyl; wherein either phenyl or thienyl can be unsubstituted or substituted by a substituent selected from halo, trifluoromethyl or C_{1-3} alkoxy;

R^2 is selected from benzyl or C_{5-7} cycloalkyl, wherein benzyl can be substituted on the benzyl ring by a substituent selected from halo, trifluoromethyl or C_{1-3} alkoxy; and

R^3, R^4 and R^5 are independently selected from H, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, $—OR^a$, SCH_3, $SOCH_3$, SO_2CH_3, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—CO_2R^a$ and $—CONR^aR^b$; where R^a and R^b are independently selected from H, C_{1-6} alkyl, phenyl and trifluoromethyl; and

R^6 and R^7 independently represent H, C_{1-4} alkyl, C_{2-4} alkynyl, halo, hydroxy, C_{1-4} alkoxy, carboxy or (C_{1-4} alkoxy) carbonyl; or R_6 and R_7 together represent carbonyl.

5,288,731

2,6-METHANO-2H-1-BENZOXOCINCARBOXYLIC ACIDS, ESTERS AND AMIDES

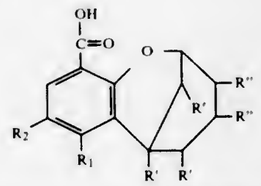
John E. Airey, King of Prussia; Mattbew R. Powers, Barto; Walter Rodriguez, Douglasville, all of Pa., and Raymond D. Youssefyeh, Princeton Junction,, N.J., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 620,241, Nov. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 582,890, Oct. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 186,824, Apr. 27, 1988, Pat. No. 4,863,921. This application Aug. 5, 1992, Ser. No. 925,044

Int. Cl.[5] A61K *31/55;* **C07D** *453/02*

U.S. Cl. 514—305 **16 Claims**

1. A product prepared by the treatment of a compound of the formula



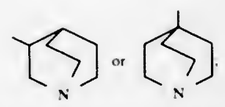
and its steroisomers, enantiomers, diasteroisomers and racemic mixtures with an amine of the formula H_2N-Z; where:

R_1 is hydrogen, an amino or alkylamino optionally substituted with a protecting group halo or haloalkyl;

R_2 is hydrogen, halo, sulfamyl, mono- and di-alkylsulfamyl or haloalkyl;

R' and R'' are hydrogen or alkyl; and

Z is:



and its racemic mixtures and stereospecific isomers.

5,288,732

2-CYANO-2-ALKOXIMINO-ACETAMIDES

Herbert Gayer, Monheim; Klaus Jelich; Winfried Lunkenheimer, both of Wuppertal; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

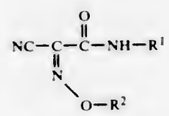
Division of Ser. No. 363,228, Jun. 8, 1989, Pat. No. 5,231,109, which is a division of Ser. No. 88,922, Aug. 24, 1987, Pat. No. 4,886,833. This application Mar. 31, 1993, Ser. No. 40,827

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1986, 3630732

Int. Cl.[5] C07D *261/14, 263/48;* **A01N** *43/76, 43/80*

U.S. Cl. 514—365 **5 Claims**

1. A 2-cyano-2-alkoximino-acetamide of the formula



in which

R^1 represents oxazolyl, isoxazolyl, or oxazolylalkyl or isoxazolylalkyl having 1 to 6 carbon atoms in the alkyl part,

each of the foregoing of which is optionally monosubstituted or polysubstituted and/or benzene-fused, the substituents being identical or different and substituents of the oxazolyl or isoxazolyl parts and/or of the benzene-fused rings in each case being hydroxyl, halogen, cyano, in each case straight-chain or branched alkyl, alkenyl, alkoxy or alkylthio in each case having up to 4 carbon atoms, aralkyl having 6 to 10 carbon atoms in the aryl part and 1 to 3 carbon atoms in the straight-chain or branched alkyl part, aryl having 6 to 10 carbon atoms, and also alkylcarbonyl, alkoxycarbonyl, alkylaminocarbonyl and dialkylaminocarbonyl in each case having 1 to 4 carbon atoms in the individual straight-chain or branched alkyl parts, and

R^2 represents straight-chain or branched alkyl, having 1 to 18 carbon atoms, which is optionally monosubstituted or polysubstituted, the substituents being identical or different and being cyano, in each case straight-chain or branched alkanoyl, alkoxycarbonyl or alkylcarbonyloxy in each case having 1 to 6 carbon atoms in the individual alkyl parts, and phenyl or heteroaryl which is in each case optionally monosubstituted or polysubstituted by lower alkyl and/or halogen; and in addition represents in each case straight-chain or branched alkenyl or halogenoalkyl in each case having 3 to 8 carbon atoms and, in the case of halogenoalkenyl, having 1 to 5 halogen atoms, or straight-chain or branched alkinyl having 3 to 8 carbon atoms, the heteroaryl when present being pyridyl, pyrimidyl, triazinyl, quinolyl, isoquinolyl, oxazolyl, isoxazolyl, oxadiazolyl, benzoxazolyl, thiazolyl, isothiazolyl, thiadiazolyl, benzthiazolyl, imidazolyl, benzimidazolyl, pyrrolyl, furanyl, thienyl, pyrazolyl or triazolyl.

5,288,733

QUINOLYLMETHOXYPHENYLACETIC ACID ACYLAMIDES AND UREAS

Siegfried Raddatz, Cologne; Klaus-Helmut Mohrs; Michael Matzke, both of Wuppertal; Romanis Fruchtmann, Cologne; Armin Hatzelmann, Konstanz, and Reiner Muller-Peddinghaus, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

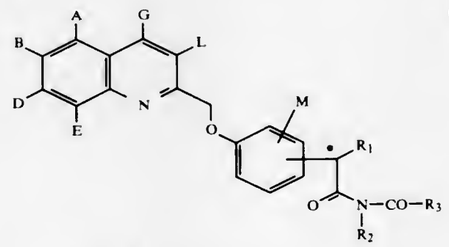
Filed Nov. 23, 1992, Ser. No. 979,756

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139750

Int. Cl.[5] C07D *215/14;* **A61K** *31/47*

U.S. Cl. 514—311 **8 Claims**

1. Aquinolylmethoxyphenyl acetic acid acylamide or urea of the formula



(I)

in which

A, B, D, E, G, L and M independently of one another represent hydrogen, hydroxyl, halogen, cyano, carboxyl, nitro, trifluoromethyl or trifluoromethoxy, or represent straight-chain or branched alkyl or alkoxy having in each case up to 8 carbon atoms, or represent aryl having 6 to 10 carbon atoms, which is optionally substituted by halogen, hydroxyl, nitro or cyano,

R^1 represents cycloalkyl having 3 to 12 carbon atoms, which is optionally substituted by straight-chain or branched alkyl having up to 8 carbon atoms,

R^2 represents hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or benzyl and

R^3 represents straight-chain or branched alkyl having up to 8 carbon atoms, benzyl, cycloalkyl having 3 to 12 carbon atoms or phenyl, which is optionally substituted by halogen, nitro, cyano or hydroxyl, or represents a group of the formula $—NR^4R^5$, wherein

R^4 and R^5 are identical or different and denote hydrogen, straight- chain or branched alkyl having up to 6 carbon atoms, benzyl or phenyl,

or a physiologically acceptable salt thereof.

5,288,734

STABLE PARENTERAL SOLUTION OF 2-PHENYL-1.2-BENZISOSELENAZOL-3(2H)-ONE AND PROCESS FOR PRODUCING THE SAME

Joerg Hager; Andrea M. Huether, and Joachim Roeding, all of Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & CIE GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 428,870, Oct. 30, 1989, abandoned. This application Jul. 31, 1991, Ser. No. 740,861

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1988, 3836892

Int. Cl.[5] A61K *31/41*

U.S. Cl. 514—359 **4 Claims**

1. Stable injectable solution of 2-phenyl-1.2-benzisoselenazol-3(2H)-one, characterized in that they contain a water-soluble combination of 2-phenyl-1.2-benzisoselenazol-3(2H)-one with one or several phospholipids, the weight proportion of 2-phenyl-1.2-benzisoselenazol-3(2H)-one and the phospholipid or phospholipids in the solution being between 1:2500 to 1:15.

5,288,735

TREATMENT OF GLAUCOMA

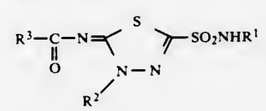
Seymour F. Trager, 14 Sherwood Dr., Plainview, N.Y. 11803, and G. Michael Blackburn, 23 Crimicar La., Sheffield, S10 4FA, United Kingdom

Continuation of Ser. No. 666,489, Mar. 6, 1991, abandoned, which is a continuation of Ser. No. 432,994, Nov. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 346,493, May 2, 1989, Pat. No. 4,975,446. This application Jun. 15, 1992, Ser. No. 899,176

Int. Cl.[5] C07D *285/135;* **A61K** *31/41*

U.S. Cl. 514—363 **33 Claims**

1. A compound of the formula:

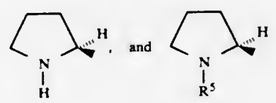


or a pharmaceutically acceptable salt thereof, wherein

R^1 is selected from the group consisting of H, —OH, —CN and $—OCH_3$;

R^2 is a methyl or a lower alkyl having from two to five carbon atoms;

R^3 is selected from the group consisting of $HNHCHR^4—$, $R^5NHCHR^4—$, $R^5NHCH_2CHR^4—$,



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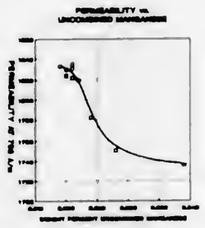
R^4 is a lower alkyl having two or five carbon atoms, or a naturally occurring amino acid side chain;
R^5 is selected from the group consisting of CH_3—, HCO—, CH_3CO—, and X—CH_2CO— wherein X is a halogen atom; and
stereoisomers thereof.

5,288,736

METHOD FOR PRODUCING REGULAR GRAIN ORIENTED ELECTRICAL STEEL USING A SINGLE STAGE COLD REDUCTION

Jerry W. Schoen, Middletown, Ohio, and Francesco Gaudino, Butler, Pa., assignors to Armco Inc., Middletown, Ohio

Filed Nov. 12, 1992, Ser. No. 974,772
Int. Cl.[5] H01F 1/04
U.S. Cl. 148—113 **13 Claims**



13. A method for producing regular grain oriented electrical steel having a permeability measured at 796 A/m of at least 1780 comprising the steps of:
a) providing a band having a thickness of from 1.0–2.1 mm, said band consisting essentially of, in weight percent, 2.5–4.5% Si, 0.01–0.08% C, 0.009% or less Al, 0.006 to 0.06% S, 0.006–0.14% Se, 0.01–0.10% Mn with a maximum of 0.024% in excess of that needed to combine with S and/or Se, and balance being essentially iron and normally occurring residual elements,
b0 annealing said band at a temperature of from 900°–1125° C. (1650°–2050° F.) for a time up to 10 minutes, said annealed band having $\gamma_{1150°\,C}$ of at least 7%;
c) cold rolling said annealed band in a single stage by a reduction of greater than 75 to 90% to final gauge strip;
d) decarburizing said strip to a level sufficient to prevent magnetic aging;
e) providing a S-bearing addition onto one or more surfaces of said strip such that the total S provided to said strip is at least 15 mg per square meter;
f) providing said strip with an annealing separator coating; and
g) final annealing said coated strip for a time and temperature sufficient to develop secondary recrystallization and provide a permeability at 10 oersteds of at least 1780.

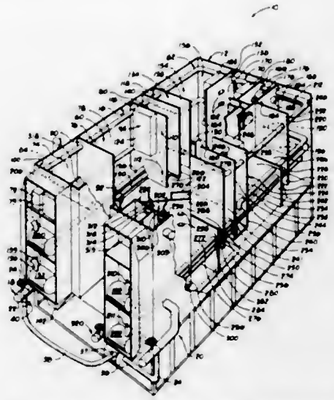
5,288,737

WASTEWATER TREATMENT APPARATUS

Joseph P. Krieger, Edmond, Okla., assignor to Hydro Modular Systems, Inc., Okla.

Continuation of Ser. No. 616,583, Nov. 21, 1990, Pat. No. 5,173,184. This application Oct. 30, 1992, Ser. No. 969,615
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] C02F 1/24
U.S. Cl. 210—195.1 **25 Claims**

1. A wastewater treatment apparatus comprising:
a housing having a bottom and defining an internal chamber, with a mixing zone comprising a portion of the internal chamber;
means for introducing wastewater into the mixing zone, means for introducing air into the wastewater prior to the wastewater being introduced into the mixing zone in an amount sufficient so that large air bubbles are formed in the mixing zones; and



spray means for spraying water into the wastewater in the mixing zone so that the sprayed water contacts the large air bubbles in the mixing zone and substantially reduces the size of the large air bubbles in the mixing zone.

5,288,738

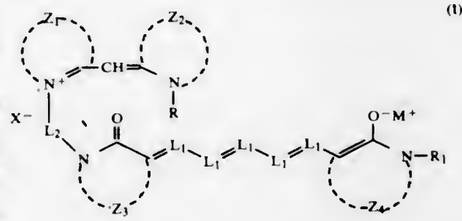
DYE COMPOUND AND PHOTOGRAPHIC ELEMENT CONTAINING SAME

Lal C. Vishwakarma, Rochester, and Thomas R. Dobles, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 8, 1992, Ser. No. 865,382
Int. Cl.[5] G03C 1/005, 1/494
U.S. Cl. 430—579 **7 Claims**

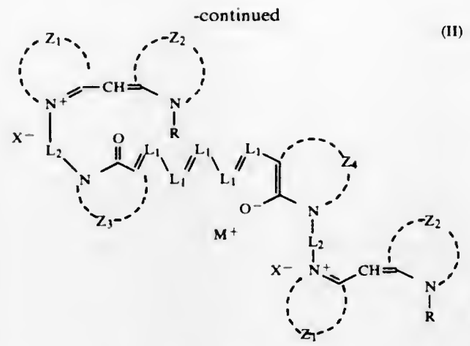
1. A photographic element comprising a support having thereon a silver halide emulsion layer comprising cubic silver halide crystals and a dye of the general formula (I) or (II)

(I)



-continued

(II)



wherein Z_1, Z_2 Z_3 and Z_4 each independently represent the non-metallic atoms necessary to complete a substituted or unsubstituted heterocyclic ring system containing at least one 5- or 6- membered heterocyclic nucleus; R and R_1 each represent a substituted or unsubstituted alkyl group of 1 to 10 carbon atoms, or a substituted or unsubstituted aryl, aralkyl, or cycloalkyl group of 5 to 12 carbon atoms; L_1 independently represents an unsubstituted or alkylsubstituted methine group; L_2 represents a linking group of 4 to 20 atoms containing at least two alkylene groups and at least one ester group, amide group, or carbamate group; M^+ represents a cation; and X^- represents an anion or an anionic group bonded to the compound.

5,288,739

PRODUCTION OF ATTRITION-RESISTANT CATALYST BINDERS THROUGH USE OF DELAMINATED CLAY

Edward J. Demmel, 1931 Port Claridge, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 893,921, Jun. 4, 1992, Pat. No. 5,190,902. This application Mar. 1, 1993, Ser. No. 24,688
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] B01J 20/12, 21/16, 29/06
U.S. Cl. 502—63 **108 Claims**

108. Attrition-resistant clay/phosphate/auxiliary binder material/catalyst particles, made by a process comprising:
(1) preparing a clay slurry having from about 20 to about 50 weight percent delaminated and calcined clay;
(2) bringing the clay slurry to a pH of from about 10.0 to about 14.0;
(3) mixing a phosphate-containing compound and an auxiliary binder material (which will collectively constitute an auxiliary binder component of the attrition-resistant clay/-phosphate/auxiliary binder material/catalyst matrix particles) into the clay slurry in an amount which is such that the clay/phosphate/auxiliary binder material/catalyst particles produced from said slurry will be comprised of from about 5.0 to about 40 weight percent of the auxiliary binder component and wherein said auxiliary binder component contains an amount of phosphate which is sufficient to provide the attrition-resistant clay/phosphate/auxiliary binder material/catalyst particles with at least about 0.25 weight percent phosphate;
(4) mixing a sufficient amount of catalyst particles into the clay/phosphate-containing/auxiliary binder material slurry to form a clay/phosphate-containing compound-/auxiliary binder material/catalyst particle slurry which has a quantity of catalyst particles which is such that the attrition-resistant clay/phosphate/auxiliary binder material/catalyst matrix particles ultimately made from this process will comprise from about 3 to about 60 weight percent of said catalyst particles;
(5) drying said clay/phosphate compound/catalyst particle slurry to produce solid particles;
(6) calcining the solid particles to produce attrition-resistant clay/phosphate/auxiliary binder material/catalyst particles which comprise between about 3 and about 60 percent by weight of the catalyst particles, between about 20 and about 91.75 weight percent clay and between about 5.25 and about 40 percent auxiliary binder component and wherein said auxiliary binder component contains sufficient phosphate-containing compound to make the attrition-resistant clay/phosphate/auxiliary binder material/-catalyst particles comprise at least about 0.25 weight percent phosphate.

5,288,740

PROCESS FOR MAKING ALKENYL AROMATIC FOAM PACKING BODIES WITH CARBON DIOXIDE AND/OR ETHANE BLOWING AGENT SYSTEMS

Chung P. Park, Pickerington, and Kyung W. Suh, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 965,917, Oct. 23, 1992, abandoned. This application May 11, 1993, Ser. No. 59,718
Int. Cl.[5] C08J 9/08, 9/14
U.S. Cl. 521—58 **29 Claims**

1. A process for making discrete, closed-cell, alkenyl aromatic polymer foam packing bodies, comprising:
a) heating an alkenyl aromatic polymer material comprising greater than 50 percent by weight alkenyl aromatic monomeric units to form a melt polymer material;
b) forming a foamable gel by incorporating into the melt polymer material at an elevated pressure a blowing agent having about 20 weight percent or more based upon the total weight of the blowing agent of a first blowing agent selected from the group consisting of carbon dioxide, ethane, and a mixture of the foregoing;
c) extruding the formable gel through a die to a region of reduced pressure to form an alkenyl aromatic polymer foam strand;
d) pelletizing the foam strand to form a plurality of the discrete foam bodies; and
e) further expanding the foam bodies by exposing them one or more times to heated air or steam.

5,288,741

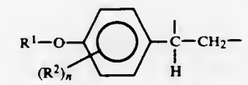
USE OF POLYMERS WHICH CONTAIN UNITS DERIVED FROM 4-HYDROXYSTYRENE OR 4-ACETOXYSTYRENE AS REINFORCING RESINS AND ADHESION PROMOTERS IN RUBBER MIXTURES

Albert Bender, Mainz; Erhard Leicht, Hofheim am Taunus, and Richard Sattelmeyer, Wiesbaden, all of Fed. Rep. of Germany, assignors to Roussel-Uclaf, France

Continuation of Ser. No. 516,097, Apr. 27, 1990, abandoned. This application Jul. 28, 1992, Ser. No. 922,022
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914338
Int. Cl.[5] C08L 29/10
U.S. Cl. 525—159 **8 Claims**

1. A rubber composition containing an effective amount of polymers prepared from ethylenically unsaturated monomers by radically initiated polymerization or copolymerization in an organic solvent in the absence of emulsifiers and/or surfactants and obtained in an emulsifier-free, surfactant-free and solvent-free dry state, which polymers contains units of the formula

I



as reinforces resins and adhesion promoters wherein R^1 is

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CH_3CO— which may be partially saponified, R^2 is hydrogen or an alkyl or alkoxy of 1 to 4 carbon atoms or halogen or —CN and n is an integer from 1 to 4, with the proviso that if n is ≧1, the R^2 can be identical or different, and that at least in some of the units of Formula I, there is a hydrogen atom in at least one of the position vicinal to R^1—O— and an effective amount of a methylene donor cross-linking agent for the polymers containing units of Formula I in the rubber vulcanization process.

5,288,742

α,α DIALKYLBENZYL DERIVATIVES

Philip N. Edwards, Bramhall, and David Waterson, MacClesfield, both of England, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

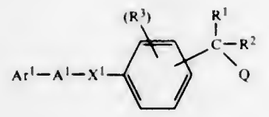
Filed Mar. 18, 1992, Ser. No. 853,277

Claims priority, application European Pat. Off., Mar. 21, 1991, 91400772.9

Int. Cl.[5] C07C *41/00*; C07D *277/04*; A01N *43/78*

U.S. Cl. 514—365 **7 Claims**

1. An α,α-dialkylbenzyl derivative of the formula I



I

wherein

Ar^1 is phenyl or naphthyl, and Ar^1 may optionally bear up to four substituents selected from halogeno, hydroxy, cyano, (1-4C)alkyl, (1-4C)alkoxy, fluoro-(1-4C)alkyl, phenyl, benzoyl, phenyl-(1-4C)alkyl, α,α-difluorobenzyl, α-hydroxybenzyl and α-[(1-4C)alkoxy]benzyl and wherein said phenyl substituent or any of said substituents which contain a phenyl group may optionally bear a substituent selected from halogeno, (1-4C)alkyl and (1-4C)alkoxy;

A^1 is a direct link to X^1 or is (1-3C)alkylene;

X^1 is oxy, thio, sulphinyl or sulphonyl;

the phenylene group [which carries the groups X^1, (R^3) and $C(R^1)(R^2)(Q)$] may optionally bear one or two substituents R^3 selected from halogeno, hydroxy, amino, nitro, cyano, carbamoyl, ureido, (1-4C)alkyl, (1-4C)alkoxy and fluoro-(1-4C)alkyl;

each of R^1 and R^2, which may be the same or different, is (1-4C)alkyl, (2-4C)alkenyl, (2-4C)alkynyl, fluoro-(1-4C)alkyl, phenyl or phenyl-(1-4C)alkyl and wherein said phenyl or phenyl-(1-4C)alkyl group may optionally bear one or two substituents selected from halogeno, trifluoromethyl, (1-4C)alkyl and (1-4C)alkoxy, provided that both of R^1 and R^2 are not methyl or fluoromethyl; and

Q is cyano, amino, nitro, formyl, (1-4C)alkoxy, thiazolyl or (2-4C)alkanoyl,

or a pharmaceutically-acceptable salt thereof.

5,288,743

INDOLE CARBOXYLATE DERIVATIVES WHICH INHIBIT LEUKOTRIENE BIOSYNTHESIS

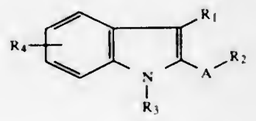
Dee W. Brooks, Libertyville; Keith W. Woods, Lake Forest, both of Ill., and Karen E. Rodriques, Stowe, Mass., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 20, 1992, Ser. No. 979,138

Int. Cl.[5] A61K *31/405*; C07D *277/04*

U.S. Cl. 514—365 **7 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

A is selected from the group consisting of straight or branched divalent alkylene of from one to twelve carbon atoms and divalent cycloalkylene of from three to eight carbon atoms;

R_1 is selected from the group consisting of

hydrogen,

alkylthio of from one to six carbon atoms,

phenylthio, optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen,

phenylalkylthio in which the alkyl portion contains from one to six carbon atoms, and the phenyl group is optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen,

R_2 is selected from the group consisting of

—COOB wherein B is selected from hydrogen, a pharmaceutically acceptable cation, or a metabolically cleavable group,

—COOalkyl where the alkyl portion contains from one to six carbon atoms,

—COOalkylcarbocyclicaryl where the alkyl portion contains from one to six carbon atoms and the aryl portion is optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen,

—$CONR_5R_6$ wherein

R_5 is selected from the group consisting of hydrogen, hydroxyl, alkyl of from one to six carbon atoms, and alkoxy of from one to six carbon atoms, and

R_6 is selected from the group consisting of hydrogen and alkyl of from one to six carbon atoms,

—COR_6, and

—OH;

R_3 is selected from the group consisting of

phenylalkyl in which the alkyl portion contains from one to six carbon atoms, and the phenyl group is optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen,

R_4 is selected from the group consisting of

thiazolylalkyloxy in which the alkyl portion contains from one to six carbon atoms, and the heteroaryl portion is optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen, and

thiazolyloxy optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen.

5,288,744

AROMATIC HETEROCYCLIC DERIVATIVES AND THEIR THERAPEUTIC AND COSMETIC USE

Braham Shroot, Antibes; Jacques Eustache, Grasse, and Jean-Michel Bernardon, Le Rouret, all of France, assignors to Centre International De Recherches Dermatologiques (C.I.R.D.), Valbonne, France

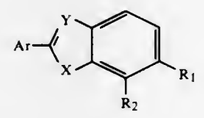
Division of Ser. No. 696,708, May 7, 1991, Pat. No. 5,260,295, which is a division of Ser. No. 430,286, Nov. 2, 1989, Pat. No. 5,059,621, which is a division of Ser. No. 172,494, Mar. 24, 1988, Pat. No. 4,920,140, which is a division of Ser. No. 836,269, Mar. 13, 1986, Pat. No. 4,740,519, which is a continuation-in-part of Ser. No. 777,728, Sep. 19, 1985, abandoned. This application Jun. 18, 1992, Ser. No. 900,479

Claims priority, application Luxembourg, Sep. 19, 1984, 85 544

Int. Cl.[5] C07D *417/01*, *277/66*; A61K *31/425*

U.S. Cl. 514—367 **13 Claims**

13. An aromatic heterocyclic compound having the formula



(I)

wherein:

R_1 represents



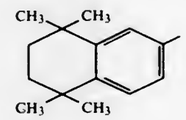
R_3 represents hydrogen, —OR_4 wherein R_4 represents hydrogen, alkyl having 1-20 carbon atoms, mono or polyhydroxyalkyl, or R_3 represents



wherein r' and r'' represent hydrogen, or lower alkyl, or r' and r'' together with the nitrogen atom to which they are attached form a heterocycle, selected from the group consisting of piperidino, piperazino, morpholino, pyrrolidino,

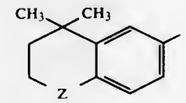
R^2 represents hydrogen or —CH_3,

Ar represents an aromatic radical having a formula selected from the group consisting of:



(A)

and



(B)

wherein:

Z is O or S,

Y represents a nitrogen atom, and

X represents sulfur.

5,288,745

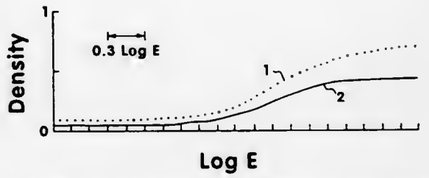
IMAGE SEPARATION SYSTEM FOR LARGE VOLUME DEVELOPMENT

John Texter, Rochester; Wayne A. Bowman, Walworth; Glenn T. Pearce, Fairport, and David S. Bailey, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,443

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—237 **70 Claims**



1. A diffusion transfer process for forming a color photographic image comprising the steps of:

(a) using an integral element comprising one and only one dimensionally stable layer comprising a coating support, and coated thereon in reactive association a mordant layer comprising a material which binds a diffusible dye, an imaging layer comprising radiation sensitive silver halide, a diffusible dye forming layer comprising a diffusible dye forming compound, a barrier layer overlaying said diffusible dye forming layer, and a stripping layer coated intermediate said mordant layer and a diffusible dye forming layer, wherein said support is selected from the group consisting of reflection base and transparent materials, wherein said diffusible dye forming layer is the same or different than said imaging layer, wherein said barrier layer comprises a polymer that allows the passage of solutions for processing said element when said element is contacted with an external processing bath, and wherein said barrier layer impedes the diffusion out of said element of the diffusible dye formed from said diffusible dye forming compound;

(b) exposing said element to actinic radiation

(c) processing said element by contacting said element to an external bath containing compounds selected from the group consisting of color developer compounds of the primary an-fine type, compounds which activate the release of incorporated color developers, and compounds which activate development by incorporated dye developers;

(d) washing said element to remove compounds imbibed in step (c).

5,288,746

LIQUID LAUNDRY DETERGENTS CONTAINING STABILIZED GLUCOSE/GLUCOSE OXIDASE AS H_2O_2 GENERATION SYSTEM

Kakumanu Pramod, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 21, 1992, Ser. No. 992,326

Int. Cl.[5] C11D *3/395*, *3/386*, *3/26*

U.S. Cl. 252—95 **10 Claims**

1. A concentrated liquid detergent composition useful for inhibiting dye transfer among fabrics laundered in a diluted solution thereof, said composition comprising:

a) from about 1% to about 60% of an organic surfactant;

b) from about 1% to about 40% detergent builder;

c) from about 0.1% to about 20% glucose;

d) from about 5 U to about 5000 U glucose oxidase per gram of composition;

e) a water soluble source of a metal ion selected from the group consisting of Cu^{2+}, Ag^+ and mixtures of said sources, in sufficient amount to provide in the composition

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from about 0:1 to about 100 ppm of said metal ion when the ion is Ag^+ and from about 20 to about 200 ppm when the ion is Cu^{2+};

f) an effective amount of a bleaching catalyst capable of catalyzing the bleaching effect of hydrogen peroxide; and

g) at least about 5% water.

5,288,747

METHOD OF CONTROLLING OR PREVENTING PHYTOPATHOGENIC MICROORGANISM INFESTATION OF PLANTS USING PROPICONAZOLE AS A SEED DRESSING

Rudolf Aebi, Basel; Adolf Hubele, Magden, and Jürg Speich, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 742,173, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 514,894, May 29, 1990, abandoned, which is a division of Ser. No. 218,189, Jul. 13, 1988, Pat. No. 4,940,799. This application Aug. 18, 1992, Ser. No. 931,756

Claims priority, application Switzerland, Jul. 20, 1987, 2746/87-6

Int. Cl.[5] **A01N** *43/64*

U.S. Cl. 514—383 **6 Claims**

1. A method of controlling or preventing infestation of cultivated plants by phytopathogenic fung, which comprises dressing the seeds from which said plants are grown with an effective amount of propiconazole having reduced toxicity to the plants relative to racemic propiconazole, said propiconazole consisting of

a) 90 to 100 percent of the 2RS,4RS diastereomeric mixture of propiconazole, and

b) 0 to 10 percent by weight of the 4R pr4opiconazole isomers.

5,288,748

CENTRALLY ACTING 6,7,8,9-TETRAHYDRO-3H-BENZ(E)INDOLE HETEROCYCLICS

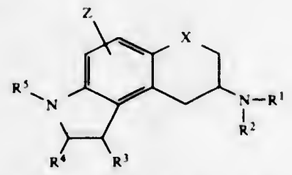
Hakan V. Wikstrom, Groningen, Netherlands; Per A. E. Carlsson, Gothenburg, Sweden; Bengt R. Andersson, Gothenburg, Sweden; Kjell A. I. Svensson, Gothenburg, Sweden; Stig T. Elebring, Molndal, Sweden; Nils P. Stjernlof, Vastra Frolunda, Sweden; Arthur G. Romero, Kalamazoo, Mich.; Susanne R. Haadsma-Svensson, Gothenburg, Sweden; Chiu-Hong Lin, and Michael D. Ennis, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 464,126, Jan. 11, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 907,932

Int. Cl.[5] **C07D** *209/60*

U.S. Cl. 514—411 **16 Claims**

1. A compound of Formula I:



or pharmaceutically acceptable salts thereof wherein

R^1 is H, C_1–C_3 alkyl, $-(CH_2)_nCONH_2$ wherein n is 2 to 6, $(CH_2)_n$-1-(4,4-dimethylpiperidine-2,6-dione-yl), or cyclopropylmethyl;

R^2 is hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, C_2–C_8 akynyl, $(CH_2)_n$—R''—Ar (where R'' is O, S, or NH, and Ar is phenyl, pyridyl, naphthyl, or indolyl (all of which may be optionally substituted with one or more of OR^1, F, Cl, Br, I, CN, CHO, $(CH_2)_m$Phenyl, NO_2, SR^1, or NHR^1), 3,3,3-trifluoropropyl, $-(CH_2)_m-R^9$ (where m is 2 or 3 and R^9 is phenyl, 2-thienyl or 3-thienyl) or R^1 and R^2 are taken together to form a hetero- C_3–C_8 cycloalkyl with said nitrogen atom;

R^3 is hydrogen, C_1–C_3 alkyl, 2,2,2-trifluoroethyl, 3,3,3-trifluoropropyl, formyl, CN, halogen, CH_2OR^2, $C(O)C(O)OR^1$, $C(O)CONR^1R^2$, $-(CH_2)_q-NR^1R^2$ where q is 0 to 5, $-CH{=}NOR^2$, 2(4,5-dihydro)oxazolyl, or COR^{10} where R^{10} is H, R^1, NR^1R^2 or CF_3;

R^4 is hydrogen, C_1–C_3 alkyl, cyclopropylmethyl, CF_3, 2,2,2-trifluoroethyl, Cl, $CONR^1R^2$, =O, 2(4,5-dihydro)imidazolyl, 2(4,5-dihydro)oxazolyl, 2-oxazolyl, 3-oxadiazolyl, or 3,3,3-trifluoropropyl;

R^5 is R^1, OCH_3, $C(O)CH_3$ or $C(O)OR^1$;

X is oxygen or sulfur; and

Z is a hydrogen or halogen.

5,288,749

TERTIARY AND SECONDARY AMINES AS ALPHA-2 ANTAGONISTS AND SEROTONIN UPTAKE INHIBITORS

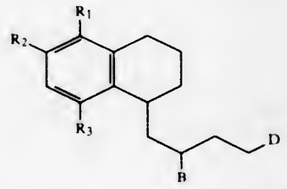
Michael D. Meyer; John F. DeBernardis, both of Lindenhurst; Rajanandan Prasad, Vernon Hills; Kevin B. Sippy, Lindenhurst, and Karin R. Tietje, Mundelein, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 20, 1991, Ser. No. 811,091

Int. Cl.[5] **A61K** *31/40;* **C07D** *209/34, 209/38, 209/44*

U.S. Cl. 514—414 **13 Claims**

1. A compound or pharmaceutically acceptable salt thereof having the structure



wherein

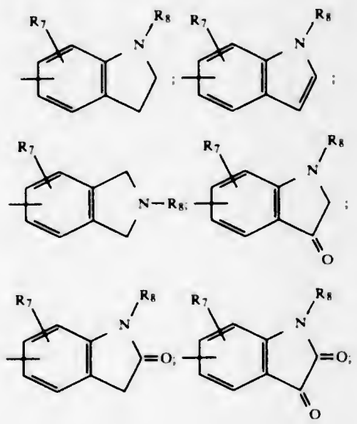
B is hydrogen or alkyl of from one to three carbon atoms;

R_1 is alkoxy of from one to four carbon atoms;

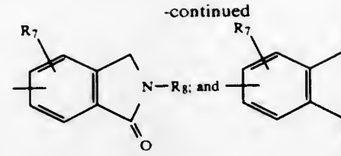
R_2 is hydrogen or, taken together with R_1 is methylenedioxy or ethylenedioxy;

R_3 is hydrogen, fluorine, or chlorine, and

D is selected from the group consisting of



-continued



wherein

R_7 is one, two or three substituents independently selected from the group consisting of hydrogen, alkyl of from one to four carbon atoms, halogen, hydroxy, alkoxy of from one to four carbon atoms, amino, and thioalkoxy of from one to four carbon atoms; and

R_8 is selected from hydrogen, lower alkyl and alkylsulfonyl.

5,288,750

SUBSTITUTED β-DIKETONES

Pentti Pohto; Päivi A. Aho; Reijo J. Bäckström, all of Helsinki; Erkki J. Honkanen, Vantaa; Inge-Britt Y. Linden, Helsinki, and Erkki A. O. Nissinen, Espoo, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI89/00165, § 371 Date Jan. 31, 1991, § 102(e) Date Jan. 31, 1991, PCT Pub. No. WO90/02724, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 1, 1989, Ser. No. 646,714

Claims priority, application United Kingdom, Sep. 1, 1988, 8820729

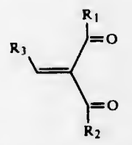
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] **A61K** *31/38, 3/12;* **C07C** *49/794;* **C07D** *333/22*

U.S. Cl. 514—438 **10 Claims**

1. A compound of the formula Ib:

Ib



wherein R_1 and R_2 are independently C_{1-6} alkyl which is unsubstituted or substituted by hydroxy, C_{1-6} alkoxy, halogen, nitro or amine, C_{1-6} alkoxy, phenyl or naphthyl which are unsubstituted or substituted by C_{1-6} alkyl, hydroxy, C_{1-6} alkoxy, halogen, nitro amine or carboxy or one of the following heteroaryl groups: pyridyl, quinolyl, thienyl or furyl which are unsubstituted or substituted by C_{1-6} alkyl, hydroxy, C_{1-6} alkoxy, halogen, nitro or amine; R_3 is C_{1-6} alkyl which is substituted by hydroxy, C_{1-6} alkoxy, halogen, nitro or amine, phenyl or naphthyl which are substituted by trifluoromethyl, cyano, or one of the following heteroaryl groups: quinolyl, thienyl or furyl which are substituted by hydroxy, C_{1-6} alkoxy, halogen, nitro or amine or a salt thereof, provided that when R_3 is substituted furyl it is not substituted by halogen or nitro and if R_3 is a phenyl which is substituted by cyano then the cyano is not in the para position.

5,288,751

[(SUBSTITUTED) PHENYLALKYL]FURYLALKYNYL-AND [SUBSTITUTED) PHENYLALKYL] THIENYLALKYNYL-N-HYDROXYUREA INHIBITORS OR LEUKOTRIENE BIOSYNTHESIS

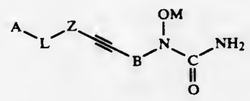
Dee W. Brooks, Libertyville; Andrew O. Stewart, Wildwood; Anwer Basha, Lake Forest; Pramila Bhatia, Mundelein, and James D. Ratajczyk, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 6, 1992, Ser. No. 973,100

Int. Cl.[5] **C07D** *307/36, 333/22;* **A61K** *31/34, 31/38*

U.S. Cl. 514—438 **10 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof wherein

M is selected from the group consisting of hydrogen, and a pharmaceutically acceptable cation;

B is a straight or branched divalent alkylene group of from one to twelve carbon atoms;

Z is selected from the group consisting of:

(a) furyl, optionally substituted with alkyl of from one to six carbon atoms, or haloalkyl of from one to six carbon atoms, and

(b) thienyl, optionally substituted with alkyl of from one to six carbon atoms, or haloalkyl of from one to six carbon atoms; and

L is alkylene of from 1–6 carbon atoms;

A is phenyl optionally substituted with

alkyl of from one to six carbon atoms,

haloalkyl of from one to six carbon atoms,

hydroxyalkyl of from one to six carbon atoms,

alkoxy of from one to twelve carbon atoms,

alkoxyalkoxyl in which the two alkoxy portions may each independently contain from one to six carbon atoms,

alkylthio of from one to six carbon atoms,

hydroxy,

halogen,

cyano,

amino,

alkylamino of from one to six carbon atoms,

dialkylamino in which the two alkyl groups may independently contain from one to six carbon atoms,

alkanoylamino of from two to eight carbon atoms,

N-alkanoyl-N-alkylamino in which the alkanoyl is of from two to eight carbon atoms and the alkyl group is of from one to six carbon atoms,

alkylaminocarbonyl of from two to eight carbon atoms,

dialkylaminocarbonyl in which the two alkyl groups are independently of from one to six carbon atoms,

carboxyl,

alkoxycarbonyl of from two to eight carbon atoms,

phenyl, optionally substituted with alkyl of from one to six carbon atoms, haloalkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, hydroxy or halogen,

phenoxy, optionally substituted with alkyl of from one to six carbon atoms, haloalkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, hydroxy or halogen, or

phenylthio, optionally substituted with alkyl of from one to six carbon atoms, haloalkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, hydroxy or halogen.

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5,288,752

COMPOUND EFFECTIVE AS CEREBRAL INSUFFICIENCY IMPROVER

Toshio Tatsuoka, Nishinomiya; Kenji Suzuki, Osaka; Fumio Satoh, Nagaokakyo; Seiji Miyano, Fukuoka, and Kunihiro Sumoto, Oonojo, all of Japan, assignors to Suntory Limited, Osaka, Japan

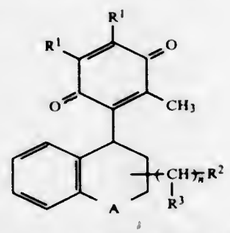
Division of Ser. No. 737,717, Jul. 30, 1991, Pat. No. 5,179,092, which is a division of Ser. No. 286,857, Dec. 20, 1988, Pat. No. 5,057,514. This application Nov. 23, 1992, Ser. No. 980,238

Claims priority, application Japan, Dec. 22, 1987, 62-322951; Feb. 3, 1988, 63-21863; Sep. 5, 1988, 63-220497

Int. Cl.[5] A61K *31/21*

U.S. Cl. 514—510 **10 Claims**

1. A compound having the formula (I):



wherein A is —CH_2—; R^1 is CH_3 or OCH_3; R^2 is a hydroxy, carboxy, carboxylic acid or carboxylic acid ester group; R^3 is H or a lower alkyl; and n is 0 or an integer of 1 to 6 and a salt thereof.

5,288,753

METHOD OF CONTROLLING ANIMAL AND FUNGAL PESTS WITH OLIGOMERIC THIOCARBONATES

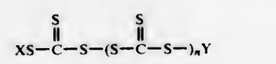
James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 28, 1989, Ser. No. 458,283

Int. Cl.[5] A01N *31/02, 37/02, 37/36;* **C07C** *329/02, 329/12*

U.S. Cl. 514—512 **34 Claims**

1. A method for controlling animal and fungal pests which comprises applying to an area in which said pests are to be controlled less than a herbicidal amount of an oligomeric thiocarbonate represented by the formula



wherein n is at least 1 and X and Y independently are inorganic cations selected from the group consisting of alkali metal cations, alkaline earth metal cations, and transition metal cations or organic cations consisting of



wherein each of R_5, R_6, R_7, and R_8 is independently an organic radical selected from the group consisting of alkyl radicals, aralkyl radicals, and aryl radicals, said alkyl radicals, aralkyl radicals, and aryl radicals having from 1 to about 10 carbon atoms, for a total of between 5 and 20 carbon atoms.

5,288,754

POLAR C-1 ESTERS OF PROSTAGLANDINS

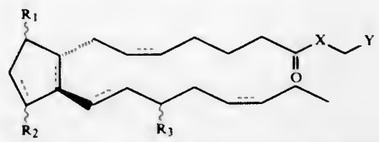
David F. Woodward, El Toro, and Ming F. Chan, San Diego, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Feb. 4, 1992, Ser. No. 831,023

Int. Cl.[5] A61K *31/557*

U.S. Cl. 514—530 **16 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula (I)



(I)

wherein the wavy line attachments indicate either alpha (α) or beta (β) configuration; hatched lines indicate α configuration, solid triangles are used to indicate β configuration; the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration; X is selected from the group consisting of O, NH, S, and NR, where R is an aliphatic hydrocarbon group of 1 to about 6 carbon atoms; Y is a polar functional group selected from the group consisting of 1 to about 6 carbon hydroxy- or amino-substituted alkyl, a carboxyl moiety, an aminocarbonyl moiety, a sulfonic acid and a phosphonic acid, the alkyl groups of said Y groups may optionally be substituted with hydroxyl, nitro, chlorine or fluorine; one of R_1 and R_2 is =O, —OH or a —$O(CO)R_4$ group, the other one is —OH or a —$O(CO)R_4$ group or R_1 is =O and R_2 is H; R_3 is —OH or —$O(CO)R_4$ wherein R_4 is a saturated or unsaturated, branched or straight-chained acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or —$(CH_2)_nR_5$ wherein n is 0–10, and R_5 is a saturated or unsaturated aliphatic ring from 3 to about 7 carbon atoms, or a phenyl or monoheteroaromatic ring consisting of 5 or 6 atoms one of which is O, N, or S; or a pharmaceutically acceptable salt thereof.

5,288,755

PHYSIOLOGICALLY ACTIVE AND NUTRITIONAL COMPOSITION

Shlomo Yehuda, Tel Aviv, Israel, assignor to Bar Ilan University, Ramat Gan, Israel

Division of Ser. No. 376,289, Jul. 6, 1989, Pat. No. 5,120,763, which is a continuation-in-part of Ser. No. 120,830, Nov. 16, 1987, Pat. No. 4,851,431, and a continuation-in-part of Ser. No. 263,548, Oct. 27, 1988, abandoned, and a continuation-in-part of Ser. No. 359,562, Jun. 1, 1989, abandoned. This application Jan. 14, 1992, Ser. No. 820,562

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/22, 31/20*

U.S. Cl. 514—549 **9 Claims**

1. A method for treating a mammal for the purpose of inducing therein at least one physiological effect selected from memory enhancement and analgesia, which comprises administering to the mammal, in absence of an oily carrier or diluent which comprises at least one member of the group consisting of $C_{8\text{-}18}$ saturated fatty acids, oleic acid and derivatives of these acids, a composition of matter which consists of (a) from about 16.7 to about 22.2% by weight of at least one compound selected from the group consisting of linolenic acid and salts, esters, and amides thereof, calculated as the free acid, said salts, esters, and amides of linolenic acid being both physiologically hydrolyzable and pharmacologically acceptable, and (b) about 83.3 to about 77.8% by weight of at least one compound selected from the group consisting of linoleic acid and salts, esters, and amides thereof, calculated as the free acid, said salts, esters, and amides of linoleic acid being both physiologically hydrolyzable and pharmacologically acceptable, said composition of matter being administered in an amount effective to induce said at least one physiological effect, provided that when said salts of linolenic and linoleic acids are metal salts of these acids, then the metal is selected from the group consisting of sodium, potassium, calcium and magnesium.

5,288,756

BENZOYLPHENYLUREAS

Jozef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 754,790, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 626,321, Dec. 13, 1990, abandoned, which is a continuation of Ser. No. 91,337, Aug. 31, 1987, abandoned, which is a continuation of Ser. No. 915,447, Oct. 6, 1986, abandoned. This application Aug. 5, 1992, Ser. No. 926,083

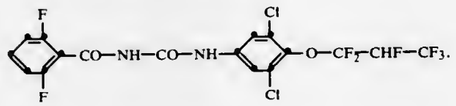
Claims priority, application Switzerland, Oct. 14, 1985, 4420/85

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] A01N *47/34*

U.S. Cl. 514—594 **5 Claims**

1. The compound of the formula



5,288,757

AMINOSULFONYL UREA ACAT INHIBITORS AND A METHOD OF LOWERING BLOOD CHOLESTEROL LEVELS THEREWITH

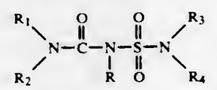
Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 747,040, Aug. 19, 1991, Pat. No. 5,234,909, which is a continuation-in-part of Ser. No. 610,287, Nov. 7, 1990. This application Feb. 19, 1993, Ser. No. 19,519

Int. Cl.[5] A61K *31/175*

U.S. Cl. 514—593 **4 Claims**

1. A pharmaceutical composition comprising an effective amount of compound of the following formula together with a pharmaceutically acceptable carrier:



Formula I

wherein R is hydrogen, straight or branched alkyl having from 1 to 8 carbon atoms, or benzyl;

wherein R_1 is hydrogen;

wherein R_2 is 2,6-bis(1-methylethyl)phenyl;

wherein each of R_3 and R_4 is a straight or branched hydrocarbon chain having from 10 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds, or cycloalkyl having from 3 to 7 carbon atoms; or a pharmaceutically acceptable salt thereof.

5,288,758

UREA DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION IN THERAPY

Jean-Louis Vidaluc, and Dennis Bigg, both of Castres, France, assignors to Pierre Fabre Medicament, Boulogne, France

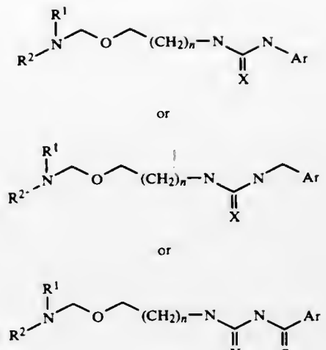
Filed Jul. 22, 1992, Ser. No. 918,424

Claims priority, application France, Jul. 25, 1991, 91 09446

Int. Cl.[5] A01N *47/30;* **C07C** *275/04*

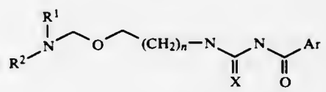
U.S. Cl. 514—597 **7 Claims**

1. A urea derivative corresponding to the general formula

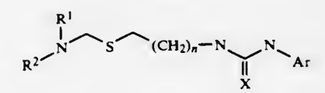


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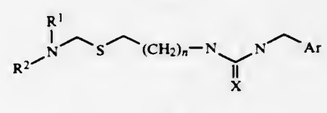
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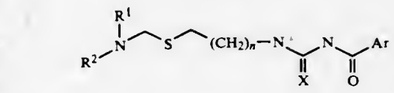
or



or



or



in which:

R^1 represents a C_1–C_4 alkyl group;

R^2 represents:

a C_5–C_7 cycloalkyl group

a cycloalkylmethyl group in which the cycloalkyl radical contains from 5 to 7 carbon atoms

a benzyl group

a benzyl group in which the aromatic ring bears a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a halogen atom or a nitro group;

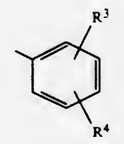
n represents 1 or 2;

X represents an oxygen or sulfur atom;

Ar represents:

a pyridyl group

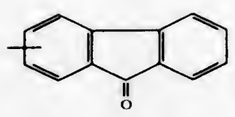
a phenyl group of formula:



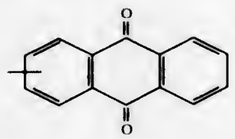
where R_3 and R_4, independently of one another, represent a hydrogen atom, a halogen atom, a nitro goup, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a phenyl group or a trifluoromethoxy group;

an oxofluorenyl group of formula:

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a dioxoanthracenyl group of formula:



a naphthyl group, as well as the therapeutically acceptable organic or inorganic salts of this molecule.

5,288,759

USE OF CERTAIN SULFAMOYL-SUBSTITUTED PHENETHYLAMINE DERIVATIVES TO REVERSE DRUG-INDUCED MYDRIASIS

Louis DeSantis, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Aug. 27, 1992, Ser. No. 936,436
Int. Cl.[5] A61K *31/18*
U.S. Cl. 514—603 **4 Claims**

1. A method for reversing or inhibiting drug-induced mydriasis by the topical application to an affected eye a composition comprising an ophthalmically acceptable carrier and a mydriasis-inhibiting amount of a compound selected from the racemic and enantiomeric forms and acid addition salts of 5-[2-[2-(2-ethoxyphenoxy)-ethylamino]-2-methylethyl]-2-methoxybenzenesulfonamide.

5,288,760

SEPARATION AND SALVAGE OF COMPONENTS OF PARTS

Jack W. Morgan, Brighton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1992, Ser. No. 937,270
Int. Cl.[5] C08J *11/06*
U.S. Cl. 521—40 **15 Claims**



1. An improved method of separating into individual components scrap lamination from a reaction injection molding process, said method comprising the steps of:

obtaining scrap lamination comprising an inner foam layer having a skin on one side thereof and a thermoplastic resin substrate on the other side;

cooling said scrap laminate to a temperature sufficient to materially avoid plasticization of said scrap laminate during grinding;

grinding the scrap lamination while in said non-plasticization, cooled state to form an aggregate formed of interspersed foam, skin and thermoplastic resin particles and collecting the resulting ground aggregate;

passing the aggregate to a density-based separator, and collecting the first dense fraction therefrom comprising an enriched concentration of thermoplastic resin particles; and

serially passing the first dense fraction to a density-based separator to provide a second dense fraction which is further enriched in concentration of the thermoplastic resin.

5,288,761

OPEN CHAIN ENEDIYNE DIHYDROPEROXIDES HAVING DNA CLEAVING PROPERTIES

Kyriacos C. Nicolaou; Erik Sorensen, both of La Jolla; Chan-Kou Hwang, San Diego, all of Calif.; Robert Discordia, Liverpool, N.Y.; Robert G. Bergman, Kensington, and Robert E. Minto, Albany, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 788,161, Nov. 5, 1991, Pat. No. 5,183,942. This application Jan. 28, 1993, Ser. No. 10,639
Int. Cl.[5] A61K *31/33, 31/045, 31/335;* C07C *409/04;* C07D *207/00, 209/00, 309/00, 213/00*
U.S. Cl. 514—714 **7 Claims**

1. A compound of the formula

wherein R^5 and R^6 are each hydrogen or R^5 and R^6 together with the carbon atoms of the depicted vinylene group forms a group W that is an aromatic monocyclic ring or bicyclic fused ring system that includes five or six atoms in the ring containing the depicted vinylene group; and

R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen, C_1–C_6 alkyl, phenyl or benzyl, with the provisos that only one of R^1 and R^2 and one of R^3 and R^4 is hydrogen.

5,288,762

CROSS-LINKED ETHYLENIC POLYMER FOAM STRUCTURES AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio; Pak-Wing S. Chum, and George W. Knight, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1993, Ser. No. 54,329
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—79 **21 Claims**

1. A process for making a cross-linked ethylenic polymer foam structure, comprising:

a) forming a foamable melt polymer material by blending and heating a decomposable chemical blowing agent and an ethylenic polymer material comprising a substantially linear ethylenic polymer having:

i) a melt flow ratio, I_{10}/I_2, $\geqq 5.63$;

ii) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \leqq (I_{10}/I_2) - 4.63$; and

iii) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear ethylenic polymer having about the same I_2 and M_w/M_n;

b) inducing cross-linking in the foamable melt polymer material; and

c) expanding the foamable melt polymer material by exposing it to an elevated temperature to form the foam structure.

5,288,763

POROUS, POLYMER BEADS AND PROCESS OF THEIR PREPARATION

Nai-Hong Li, Edmonton, Canada, and Kam W. Leong, Ellicott City, Md., assignors to The Johns Hopkins University School of Medicine, Baltimore, Md.

Filed Dec. 23, 1992, Ser. No. 995,793
Int. Cl.[5] C08J *9/26*
U.S. Cl. 521—61 **18 Claims**

1. A method of preparing porous, functionalized polymer particles which comprises a cross-linked copolymer having microporous regions and macroporous regions in the polymer matrix thereof, wherein the functional groups are essentially present only within the macroporous regions, comprising the steps of:

(a) providing a polymerizable mixture containing a functional monomer, a cross-linker and a template polymer in an aqueous medium to form a suspension, the template polymer being capable of forming an ionic or covalent bond with the functional monomer;

(b) copolymerizing the monomer and the cross-linker with or without a polymerization catalyst in the suspension to form a cross-linked copolymer;

(c) removing the aqueous medium and the template polymer from the copolymer to recover porous, functionalized polymer particles, the particles having microporous regions and macroporous regions in the polymer matrix thereof, wherein the functional groups are essentially present only within the macroporous regions.

5,288,764

INCREASED THROUGHPUT IN FOAMING AND OTHER MELT FABRICATION OF POLYESTER

George E. Rotter, Clarendon Hills; John L. Melquist; Weilong Chiang, both of Naperville; Boh C. Tsai, Inverness, and John J. Kelly, Warrenville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 29, 1993, Ser. No. 10,767
Int. Cl.[5] C08J *9/08*
U.S. Cl. 521—81 **11 Claims**

1. A process for obtaining foamed polyester resin which comprises: (1) forming a molten mixture comprising (i) a major amount of a first resin composition comprising polyester and from 0 up to about 1 wt. % of a compound capable of branching the polyester, and (ii) a minor amount of a second polyester resin composition comprising at least about 50 wt. % polyester resin and greater than about 2 wt. % of a compound capable of branching the polyester, wherein the relative amounts of (i) and (ii) are such that said molten mixture comprises from about 0.1 wt. % to about 1 wt. % of said branching compound; (2) adding a blowing agent to the molten mixture; and (3) extruding the resultant mixture to obtain a foam.

5,288,765

EXPANDED ARTICLES OF BIODEGRADABLE PLASTICS MATERIALS AND A METHOD FOR THEIR PRODUCTION

Catia Bastioli, Novara; Vittorio Bellotti, Fontaneto D'Agogna; Luciano Del Giudice, Milan; Roberto Lombi, and Angelos Rallis, both of Novara, all of Italy, assignors to Spherilene S.r.l., Milan, Italy

Continuation of Ser. No. 663,823, Mar. 27, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 972,875
Claims priority, application Italy, Aug. 3, 1989, 67667 A/89
Int. Cl.[5] C08J *9/18;* C08L *3/06*
U.S. Cl. 521—84.1 **17 Claims**

1. Expanded articles of biodegradable plastics material comprising a material including starch and a synthetic polymer selected from the group consisting of ethylene-vinyl alcohol, ethylene-acrylic acid, and mixtures thereof, said articles having a closed pore structure and a density of from 0.1 to 0.3 g/cm^3.

5,288,766

POYUREA BASED DISPERSIONS, FOAMS PREPARED THEREFROM, AND A PROCESS FOR THE PREPARATION THEREIN

Thirumurti Narayan, Grosse Ile, Mich., and Michael G. Kinnaird, Durham, N.C., assignors to BASF Corporation, Parsippany, N.J.

Filed Feb. 28, 1992, Ser. No. 843,697
Int. Cl.[5] C08G *18/32*
U.S. Cl. 521—128 **17 Claims**

1. A stable urea group dispersion comprised of a disperse phase and a continuous phase, the disperse phase being solids comprised of urea group-containing reaction products of carbon dioxide and an amine which is free of hydroxyl groups, and the continuous phase comprised of a carrier compound having at least two isocyanate reactive hydrogens.

5,288,767

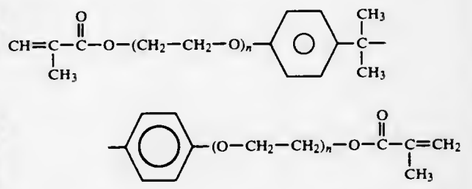
TWO-COMPONENT ADHESIVE COMPOSITION FOR THE CHEMICAL FIXING TECHNIQUE

Edwin Cramer, Ludwigshafen, and Dankmar Scholz, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 947,572
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131458
Int. Cl.[5] C08F *4/34;* B32B *5/20*
U.S. Cl. 521—147 **8 Claims**

1. A capsule or cartridge containing a two-component adhesive composition substantially styrene-free, comprising:

I. a curable resin of the formula



wherein the average degree of condensation n is from 1.05 to 1.5 and having a viscosity of from 100 to 10,000 mPa.s at 23° C., and

II. a curing agent for the curable resin I,

wherein the curable resin I and curing resin II are present in said capsule or cartridge separated from each other.

5,288,768

UREA-MODIFIED ISOCYANURATES

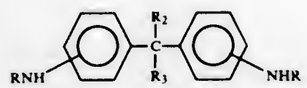
Mark J. Gattuso, Palatine; David W. House, Arlington Heights, and Ray V. Scott, Jr., Schaumburg, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 813,559, Dec. 26, 1991, Pat. No. 5,223,551. This application Dec. 21, 1992, Ser. No. 994,016
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] C08G *18/32*
U.S. Cl. 521—163 **10 Claims**

1. A dimensionally stable, rigid urea-modified polyisocyanurate having substantially no urethane linkages and a density of between 0.5 and 20 pounds per cubic foot resulting from the reaction of a polyisocyanate selected from the group consisting of toluene diisocyanate, methylenediphenyl diisocyanate, polymeric (methylenediphenyl diisocyanate), and modified me-

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thylenediphenyl diisocyanate, and an aromatic di-secondary diamine of formula



where R is selected from the group consisting of monovalent alkyl or alkenyl moieties having from 3 up to about 20 carbon atoms, and R_2, R_3 are independently selected from the group consisting of hydrogen or monovalent alkyl moieties with 1 to 3 carbon atoms, where the amount of aromatic disecondary diamine is such that the ratio of isocyanate moieties, NCO, of the polyisocyanate to secondary amino moieties, NH, of the aromatic disecondary diamine is from 1 up to about 9, said reaction performed in the presence of a catalyst inducing trimerization of said isocyanate to an isocyanurate.

5,288,769

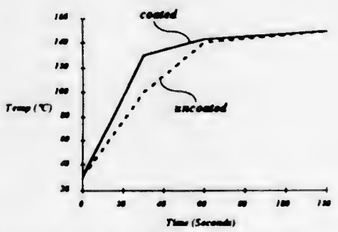
THERMALLY CONDUCTING ADHESIVE CONTAINING ALUMINUM NITRIDE

Marc V. Papageorge; Robert W. Pennisi, both of Boca Raton, and James L. Davis, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 676,022, Mar. 27, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 935,360

Int. Cl.[5] B32B *5/16, 15/02*

U.S. Cl. 523—200 **4 Claims**



1. A thermally conducting adhesive, comprising:

an adhesive material having aluminum nitride particles dispersed within the adhesive material, the aluminum nitride particles having a copper coating, whereby the coated aluminum nitride particles impart higher thermal conductivity to the adhesive material than uncoated aluminum nitride particles.

2. A thermally conducting adhesive, comprising a mixture of:

an adhesive material selected from the group consisting of epoxy, acrylic, phenolic and silicone adhesives; and

copper coated aluminum nitride particles dispersed throughout the adhesive material, such that the thermally conducting adhesive conducts heat more rapidly than a mixture having uncoated aluminum nitride particles dispersed throughout the adhesive.

5,288,770

RESIN COMPOSITION FOR CATIONICALLY ELECTRODEPOSITABLE PAINT COMPRISING ALICYCLIC EPOXY RESINS AND EMULSION POLYMERIZED, FINELY DIVIDED GELLED POLYMERS

Teiji Katayama; Eisaku Nakatani; Haruo Nagaoka; Kenji Yamamoto, all of Hiratsuka, and Reiziro Nishida, Chigasaki, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Jan. 22, 1991, Ser. No. 643,931

Claims priority, application Japan, Jan. 20, 1990, 2-9493

Int. Cl.[5] C09D *163/00, 151/00, 5/44;* **C08F** *291/00*

U.S. Cl. 523—201 **21 Claims**

1. A resin composition for a cationically electrodepositable paint comprising

(A) a resin having hydroxyl groups and cationic groups and being obtained by reacting a polyepoxide compound obtained from a polyphenol compound and epichlorohydrin with a cationizing agent,

(B) an epoxy resin having at least 2 epoxy functional groups each of which comprises an epoxy group directly bound to an alicyclic ring and/or bridged alicyclic ring on average per molecule, and

(C) a finely divided gelled polymer as principal components, wherein said finely divided gelled polymer is one obtained by emulsion polymerizing

(C-1) a polymerizable monomer containing at least two radically polymerizable unsaturated groups, and

(C-2) a radically polymerizable unsaturated monomer other than the one mentioned in (C-1) above

in the presence of a reactive emulsifier containing one allyl group.

5,288,771

WATER-DISPERSIBLE CORE-SHELL RESIN WHICH EXHIBITS EXCELLENT SAGGING RESISTANCE IN COATINGS

Yasuo Takaya, Kanagawa; Masaru Mitsuji, Zama, and Mitsugu Endo, Kanagawa, all of Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Continuation of Ser. No. 365,862, Jun. 14, 1989, abandoned. This application Jan. 17, 1991, Ser. No. 641,632

Claims priority, application Japan, Jun. 15, 1988, 63-147304; Sep. 30, 1988, 63-248474

Int. Cl.[5] C08L *51/06, 43/04;* **C08F** *289/00*

U.S. Cl. 523—201 **5 Claims**

1. A water-dispersible resin composition prepared by a process comprising:

(I) reacting a silane monomer (A) which is at least one monomer selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, acryloxyethyltrimethoxysilane, methacryloxyethyltrimethoxysilane, acryloxypropyltrimethoxysilane, methacryloxypropyltrimethoxysilane, acryloxypropyltriethoxysilane, methacryloxypropyltriethoxysilane and vinyltris (β-methoxyethoxy) silane with a vinyl monomer (B) in an aqueous medium to obtain a three-dimensionally crosslinked particular polymer, (II) reacting the obtained particular polymer with the silane monomer (A) or a mixture of the silane monomer (A) and an allyl acrylate or allyl methacrylate (C), and (III) copolymerizing the resulting reaction product with a vinyl monomer component comprising a carboxyl-containing vinyl monomer (D), followed by neutralizing the carboxyl group whereby a particular polymer having a core/shell structure is obtained, wherein the monomers are used in steps (I) and (III) in the following proportions, based on the combined weight of all the monomers used in steps (I) and (III); about 60 to about 90% by weight in step (I); and about 40 to about 10% by weight in step (III).

5,288,772

PRE-TREATED CELLULOSIC MATERIALS FOR PRODUCING MOLDED COMPOSITE ARTICLES THEREFROM AND PROCESS

David N.-S. Hon, Clemson, S.C., assignor to Clemson University, Clemson, S.C.

Filed Jun. 23, 1992, Ser. No. 903,026

Int. Cl.[5] C08L *1/00;* **C08K** *5/13*

U.S. Cl. 524—35 **32 Claims**

1. A composition for production of composite materials comprising a thermoplastic resin, cellulosic materials that have been pre-treated with water such that said cellulosic materials have an initial moisture content of at least about 30 percent by weight, and lignin, said lignin being present in an amount sufficient to cause said thermoplastic resin and said cellulosic materials to form a coherent structural composite.

5,288,773

SULFONATED UNHYDROGENATED COPOLYMERS OF STYRENE AND BUTADIENE

Martin L. Gorbaty, Westfield, and Dennis G. Peiffer, Annandale, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 846,365, Mar. 5, 1992, abandoned, and a continuation-in-part of Ser. No. 846,366, Mar. 5, 1992, abandoned. This application Sep. 3, 1992, Ser. No. 940,403

Int. Cl.[5] C08L *25/10, 95/00*

U.S. Cl. 524—68 **12 Claims**

1. A sulfonated polymer composition comprising a sulfonated block copolymer of (poly)styrene and a conjugated diene having a sulfonation level below which the copolymer is water swellable, the (poly)conjugated diene having less than about 25% of the olefinic unsaturation in the starting block copolymer saturated, and base neutralized forms of the sulfonated block copolymer, and wherein the starting block copolymer is selected from the group consisting of linear diblock, linear triblock, and radial triblock, and wherein the (poly)conjugated diene is selected from the group consisting of (poly)isoprene and (poly)butadiene, the sulfonated block copolymer having less than 0.8% weight of bound sulfur.

5,288,774

NOVEL LOW-EMISSION, COLD-CURING BINDING AGENTS

Arno Gardziella, Witten-Rüdinghasuen; Achim Hansen, and Alois Kwasniok, both of Iserlohn-Letmathe, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Oct. 28, 1992, Ser. No. 967,814

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136594

Int. Cl.[5] B22C *1/22;* **C08K** *5/00*

U.S. Cl. 524—74 **18 Claims**

1. A binding agent for molding compositions for refractory material comprising 95 to 50% by weight of a furan resin, 5 to 50% by weight of low molecular weight, sulfur-free lignin from the Organozolv process with a mean molecular weight of 800 to 4000 and organic and/or inorganic acid curing agents.

5,288,775

MOLDABLE BUILDING MATERIAL COMPOSITES

Robert K. Bischoff, Quincy, and Eugene A. Witzleben, Tallahassee, both of Fla., assignors to Fiberstone Quarries, Inc., Quincy, Fla.

Filed Apr. 13, 1992, Ser. No. 867,567

Int. Cl.[5] C08K *3/00, 3/30;* **C08L** *1/02*

U.S. Cl. 524—2 **20 Claims**

1. Moldable structural building material composite comprising:

an acrylic polymer emulsion including 30–70% polymer solids in solution, said polymer emulsion being present in the composite in an amount between approximately 19 to 35%, by weight;

an alpha-gypsum present in the composite in an amount between approximately 35 to 71%, by weight;

natural cellulose fibers present in the composite in an amount of between approximately 3 to 15%, by dry weight of the fiber; and

water in an amount of between approximately 200–400%, by weight of the fibers.

5,288,776

SUBSTITUTED PYRROLES AS STABILISERS FOR CHLORINATED POLYMERS

Rolf Drewes, Lindenfels, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 3, 1991, Ser. No. 709,690

Claims priority, application Switzerland, Jun. 7, 1990, 1907/90-7

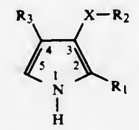
Int. Cl.[5] C08K *5/3415;* **C07D** *207/00, 295/00*

U.S. Cl. 524—94 **13 Claims**

1. A composition comprising

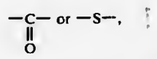
a) a chlorinated polymer, and

b) a compound of formula I



(I)

wherein X is a group



R_1 and R_2 are each independently of the other C_1–C_{20}alkyl, hydroxy- and/or halogen-substituted C_1–C_{10}alkyl, C_3–C_{20}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_8cycloalkyl, phenyl or phenyl which is substituted by 1 to 3 radicals A_1, which radicals A_1 are each independently of one another selected from the group consisting of C_1–C_{10}alkyl, halogen, hydroxy, methoxy and ethoxy,

R_1 and R_2 are further C_7–C_{10}phenylalkyl or C_7–C_{10}phenylalkyl which is substituted in the phenyl moiety by 1 to 3 radicals A_2, which radicals A_2 are each independently of one another selected from the group consisting of C_1–C_{20}alkyl, halogen, hydroxy, methoxy and ethoxy, and

R_3 is phenyl or phenyl which is substituted by 1 to 3 radicals A_3, which radicals A_3 are each independently of one another selected from the group consisting of C_1–C_{10}alkyl, halogen, hydroxy, methoxy, ethoxy and (C_1–C_8alkyl-)oxycarbonyl,

with the proviso that at least one of the radicals R_1 and R_2 is phenyl or substituted phenyl as defined above and R_1 is different from methyl if R_2 is phenyl.

VOL 1159 ISS 4 FE 22 1994 UMI

5,288,777

PROCESS FOR THE PREPARATION OF STABILIZED STYRENE COPOLYMERS CONTAINING ELASTOMER PARTICLES

Bernard Gilg, St. Louis-La-Chaussée, France; Gerhard Rytz, Schwarzenburg; Werner Stauffer, Fribourg, both of Switzerland, and Margot Claass, Riedisheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 769,916, Sep. 30, 1991, Pat. No. 5,194,465. This application Nov. 9, 1992, Ser. No. 973,478

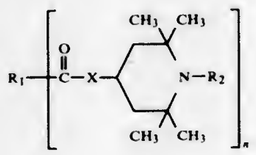
Claims priority, application Switzerland, Oct. 4, 1990, 3200/90

Int. Cl.[5] **C08K** *5/3432, 5/3415;* **C08G** *63/91;* **C08L** *39/04*

U.S. Cl. 524—99 **3 Claims**

1. A process for the preparation of a stabilised copolymer of styrene or α-methylstyrene and at least one ethylenically unsaturated comonomer, which copolymer contains crosslinked elastomer particles which are modified by copolymerization with an unsaturated derivative of a sterically hindered amine of formula I or formula II

I



wherein

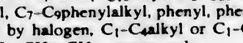
n is 1 or 2 and X is —O— or —N(R_3)—,

R_1, when n=1, is C_1-C_{18}alkyl, C_2-C_{20}alkenyl, C_5-C_8cycloalkyl, C_7-C_9phenylalkyl, phenyl, phenyl which is substituted by halogen, C_1-C_4alkyl or C_1-C_4alkoxy, or is a R_4OOC—CH=CH— group and,

R_1, when n=2, is C_2-C_{10}alkylene, vinylene, C_6-C_{12}arylene or cyclohexylene,

R_2, is hydrogen, O., C_1-C_{12}alkyl, C_3-C_5alkenyl, C_7-C_9phenylalkyl, C_1-C_{18}alkoxy, C_5-C_8cycloalkoxy, C_7-C_9phenylalkoxy, C_2-C_{10}alkanoyl, C_3-C_6alkenoyl or a group of formula Ia

Ia



R_3 is hydrogen, C_1-C_{12}alkyl or C_5-C_8cycloalkyl,

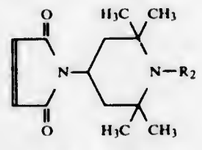
R_4 is hydrogen or C_1-C_{12}alkyl,

R_5 is hydrogen, CH_3 or CN, and

R_6 is hydrogen, C_1-C_{12}alkyl or phenyl,

with the proviso that at least one of the substituents R_1 and R_2 contains an ethylenic double bond; or

II



wherein R_2 is hydrogen, C_1-C_{12}alkyl, C_3-C_5alkenyl, C_7-C_9phenylalkyl, C_1-C_{18}alkoxy, C_5-C_8cycloalkoxy, C_7-C_9phenylalkoxy or C_2-C_{10}alkanoyl;

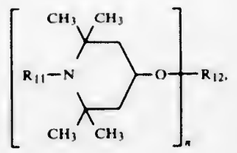
which process comprises

first grafting an unsaturated sterically hindered amine of formula I or formula II onto the elastomer particles,

then grafting a mixture of styrene or α-methylstyrene and at least one ethylenically unsaturated comonomer onto the so modified elastomer particles, and

finally, adding to the resultant copolymer a sterically hindered amine which is not unsaturated and which is a derivative of 2,2,6,6-tetramethylpiperidine, having formula IV

(IV)



wherein

n is an integer from 1 to 4,

R_{11} is H, C_1-C_4alkyl, benzyl, acetyl, C_1-C_{12}alkoxy, C_7-C_9phenylalkoxy or cyclohexyloxy, and

R_{12}, when n is 1, is the radical of a saturated aliphatic carboxylic acid of 2 to 18 carbon atoms, of a saturated cycloaliphatic carboxylic acid of 7 to 15 carbon atoms, or of an aromatic carboxylic acid of 7 to 15 carbon atoms,

R_{12}, when n is 2, is the divalent radical of a saturated aliphatic dicarboxylic acid of 2 to 12 carbon atoms, of a saturated cycloaliphatic or aromatic dicarboxylic acid of 8 to 14 carbon atoms, or of a saturated aliphatic, cycloaliphatic or aromatic dicarbamic acid of 8 to 14 carbon atoms,

R_{12}, when n is 3, is the trivalent radical of a saturated aliphatic tricarboxylic acid of 6 to 12 carbon atoms or of an aromatic tricarboxylic acid of 9 to 15 carbon atoms, and,

R_{12}, when n is 4, is the tetravalent radical of a saturated aliphatic tetracarboxylic acid of 8 to 12 carbon atoms or of an aromatic tetracarboxylic acid of 10 to 16 carbon atoms.

5,288,778

STABILIZED POLYMERS HAVING HETERO ATOMS IN THE MAIN CHAIN

André Schmitter, Hegenheim, France; Kurt Burdeska, Basel, Switzerland; Mario Slongo, Tafers, Switzerland, and Jean-Luc Birbaum, Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 13, 1992, Ser. No. 835,660

Claims priority, application Switzerland, Feb. 21, 1991, 528/91

Int. Cl.[5] **C08K** *5/3492*

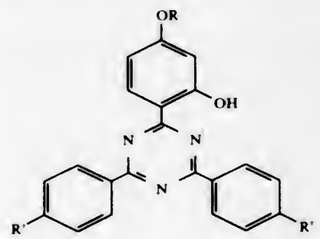
U.S. Cl. 524—100 **11 Claims**

1. A polymer composition stabilised against damage by light, oxygen and heat, comprising

a) a thermoplastic polymer that comprises hetero atoms in the main chain, and

b) an effective stabilising amount of a hydroxyphenyltriazine compound of formula I

I



wherein R is C_1-C_{18}alkyl, C_2-C_6alkyl substituted by halogen or by C_1-C_{12}alkoxy, or is benzyl and R′ is hydrogen or methyl.

5,288,779

POLYURETHANEUREA SOLUTIONS AND SPANDEX THEREFROM

Charles W. Goodrich, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

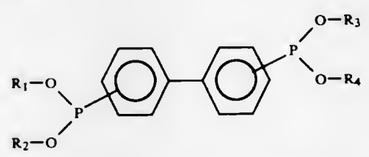
Filed Oct. 31, 1991, Ser. No. 785,657

Int. Cl.[5] **C08J** *3/20;* **C08K** *5/49;* **C08L** *75/02;* **C08G** *18/08*

U.S. Cl. 524—121 **6 Claims**

1. An improved solution of polyurethaneurea polymer in an inert organic solvent, the improvement comprising, for protection against viscosity changes during storage and processing, a 4,4′-biphenylenediphosphonite additive incorporated in the solution, the additive amounting to 0.05 to 1.5 percent of the weight of the polymer and having the following structural formula

(I)



wherein

the biphenylene unit is unsubstituted or substituted,

R_1, R_2, R_3 and R_4, each independently is a mono-substituted, di-substituted or tri-substituted phenyl group or an alkyl group of 3 to 8 carbon atoms, and

the substituents on the biphenylene or phenyl groups are lower alkyl of 1 to 4 carbon atoms.

5,288,780

WATER BASED ADHESION PROMOTING COMPOSITIONS

Richard E. Jarzombek, Munster, Ind.; William J. Yapp, Park Forest, Ill., and David W. Helms, Munster, Ind., assignors to Tioga International, Inc., Calumet City, Ill.

Continuation-in-part of Ser. No. 668,872, Mar. 13, 1991, abandoned. This application May 29, 1992, Ser. No. 889,816

Int. Cl.[5] **C08K** *5/52*

U.S. Cl. 524—127 **9 Claims**

1. An adhesion-promoting composition for use on polyolefin substrates comprising an aqueous emulsion of:

(a) from 25 percent by weight to 75 percent by weight of a chlorinated polyolefin; olefin;

(b) at least 20 percent by weight of a plasticizer for the chlorinated polyolefin, said plasticizer being sufficiently non-volatile so as not to increase the VOC content of the composition; and

said composition containing water sufficient to emulsify the composition, said composition having a VOC value of 0.

5,288,781

POLYESTER FILM

Kwang-Jin Song; Byeong-Ho Cho, and Yong-Won Kim, all of Suwon, Rep. of Korea, assignors to SKC Limited, Rep. of Korea

Filed Oct. 19, 1992, Ser. No. 962,937

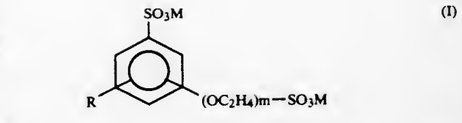
Claims priority, application Rep. of Korea, Dec. 27, 1991, 91-24673

Int. Cl.[5] **C08K** *5/41*

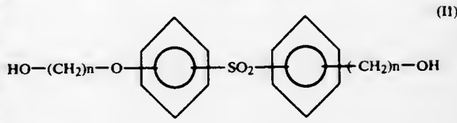
U.S. Cl. 524—167 **9 Claims**

1. A biaxially oriented polyester film having 70% or more by weight of polyethylene terephthalate, which further comprises 0.05 to 10% by weight of a metallic alkylbenzene sulfonate derivative of formula(I); 0.1 to 10% by weight of polyethylene glycol having a molecular weight ranging from 500 to 100,000; and 0.1 to 10% by weight of bis(4-β-hydroxyalkoxyphenyl) sulfone of formula(II) on the basis of the total dry weight of film:

(I)



(II)



wherein:

R represents an optionally substituted C_{8-25} alkyl group;

M represents an alkali or alkaline earth metal;

m is an integer of 100 or fewer; and

n is an integer from 1 to 10.

5,288,782

ROSIN EMULSION SIZING AGENTS FOR PAPERMAKING

Masato Nakajima; Itsuro Sakai, and Nobuyuki Tani, all of Osaka, Japan, assignors to Arakawa Chemical Industries Ltd., Osaka, Japan

PCT No. PCT/JP92/01107, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/05231, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 28, 1992, Ser. No. 39,241

Claims priority, application Japan, Sep. 10, 1991, 258424

Int. Cl.[5] **C08L** *93/24, 31/02, 39/02, 31/00*

U.S. Cl. 524—272 **8 Claims**

1. A rosin emulsion sizing agent for papermaking, comprising a rosin substance, a dispersant and water, the sizing agent being characterized in that the dispersant is a copolymer comprising (A) 20 to 90% by weight of a vinyl carboxylate, (B) 1 to 60% by weight of an anionic unsaturated monomer and (C) 1 to 60% by weight of a cationic unsaturated monomer.

5,288,783

PREPARATION OF SALT OF POLYASPARTIC ACID BY HIGH TEMPERATURE REACTION

Louis L. Wood, Rockville, Md., assignor to Srchem Incorporated, Elkridge, Md.

Continuation-in-part of Ser. No. 882,919, May 14, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 7,376

Int. Cl.[5] **C08G** *69/00*

U.S. Cl. 525—418 **9 Claims**

1. A process for the preparation of a salt of polyaspartic acid comprising reacting maleic acid and ammonia in a molar ratio of 1:1-2.1 at 190°-350° C., for a time of four hours or less and converting the resultant polymer into a salt by adding an alkaline-earth or alkali metal hydroxide or ammonium hydroxide.

5,288,784

POLYESTER COMPOSITION CONTAINING VATERITE-TYPE CALCIUM CARBONATE

Shiro Minayoshi, Akashi, Japan, assignor to Maruo Calcium Company Limited, Akashi, Japan

Filed May 24, 1991, Ser. No. 705,423

Claims priority, application Japan, May 28, 1990, 2-137486

Int. Cl.[5] **C08J** *3/20;* **C09C** *1/02*

U.S. Cl. 524—425 **2 Claims**

1. A polyester composition comprising a saturated polyester and 0.005–10 weight %, based on the polyester, of a particulate vaterite-type calcium carbonate having the following particle size and particle size distribution:

0.1 μm≦DS≦2.0 μm

DP3/DS≦1.25

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$1.0 \leqq DP2/DP4 \leqq 2.5$
$1.0 \leqq DP1/DP5 \leqq 4.0$
$(DP2-DP4)/DP3 \leqq 1.0$

wherein
DS is the mean particle size in μm,
DP1 is the particle size in μm for 10% by weight,
DP2 is the particle size in μm for 25% by weight,
DP3 is the particle size in μm for 50% by weight,
DP4 is the particle size in μm for 75% by weight of the particles, and
DP5 is the particle size in μm for 90% by weight of the particles, said particulate vaterite-type calcium carbonate having been prepared by the carbonation of a calcium compound in a mixed alcohol and water medium.

5,288,785

LOW VOLTAGE POWER CABLES

Jinder Jow, Branchburg; Sundaresan Ramachandran, Flemington, and Michael J. Keogh, Bridgewater, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 14, 1993, Ser. No. 76,457
Int. Cl.[5] C08K 9/04
U.S. Cl. 524—436 **8 Claims**

1. A flame retardant composition comprising:
(i) a linear polyethylene having a density equal to or less than 0.915 gram per cubic centimeter;
(ii) a linear polyethylene having a density in the range of 0.916 to 0.925 gram per cubic centimeter, grafted with an unsaturated aliphatic diacid anhydride, said polyethylene being present in an amount of about 40 to about 400 parts by weight based on 100 parts by weight of component (i); and
(iii) magnesium hydroxide, surface treated with an organic phosphate ester or a salt thereof in an amount of about 0.1 to about 4 parts by weight of ester per 100 parts by weight of magnesium hydroxide, said magnesium hydroxide being present in an amount of about 90 to about 400 parts by weight based on 100 parts by weight of component (i).

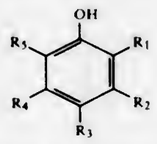
5,288,786

THERMOPLASTIC RESIN COMPOSITION

Taichi Nishio; Takashi Sanada; Satoru Hosoda, all of Chiba; Kenji Nagaoka, Osaka, and Takayuki Okada, Chiba, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 380,083, Jul. 14, 1989, Pat. No. 5,162,433, which is a continuation of Ser. No. 102,528, Sep. 29, 1987, abandoned. This application Aug. 12, 1992, Ser. No. 928,341
Claims priority, application Japan, Sep. 30, 1986, 61-233721
Int. Cl.[5] C08L 71/04, 77/06
U.S. Cl. 524—451 **4 Claims**

1. A thermoplastic resin composition comprising:
(A) a dispersing phase of 1–65 percent by weight of polyphenylene ether having a reduced viscosity of 0.4–0.60 measured in chloroform solution at 25° C. obtained by oxidation polymerization of at least one phenyl compound represented by the formula:



wherein R_1, R_2, R_3, R_4, and R_5, each represent a hydrogen atom, a halogen atom or a substituted or unsubstituted hydrocarbon residue wherein at least one of R_1, R_2, R_3, R_4, and R_5, is a hydrogen atom,
(B) a matrix phase of 35–98.9% by weight of polyamide resin,
(C) 0.1–50% by weight of a mutual compatibilizer compatible with at least one of (A) or (B), and, 1–50 parts by weight of
(D) a fibrous reinforcing material having an aspect ratio of at least 10 or more in the resin composition or (E) an inorganic filler having an average particle diameter of 10μ or less, based on 100 parts of (A)+(B)+(C),
wherein the average particle size diameter in said dispersing phase (A) is 0.1–1.8 microns, and said mutual compatibilizer (C) is (1) at least one member selected from the group consisting of compounds containing, in the molecule, at least one carboxyl group, acid anhydride group, acid amide group, imide group, carboxylate group, epoxy group, amino group, isocyanate group, oxazoline ring-containing group, and hydroxyl group or (2) a rubber modified with at least one of (C) (1), and
wherein the thermoplastic composition is obtained by kneading firstly said dispersing phase (A) with said mutual compatibilizer (C) and then thereafter said matrix phase (B) therewith.

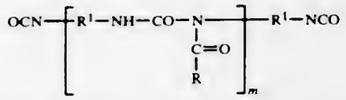
5,288,787

EMULSION POLYMERS

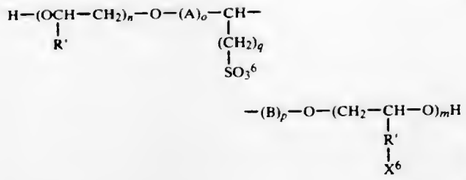
Günter Sackmann, Leverkusen; Wolfgang Henning, Kuerten; Joachim Probst, Leverkusen; Joachim König, Odenthal, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 373,765, Jun. 29, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 714,317
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824484
Int. Cl.[5] C08K 3/20
U.S. Cl. 524—457 **14 Claims**

1. Emulsion polymers obtained by emulsifying a mixture consisting of
A) 5 to 95% by weight of at least one monomer from the group consisting of acrylonitrile, methacrylonitrile and vinylcarboxylate, and
B) 5 to 95% by weight of acrylic esters, methacrylic esters, or mixtures thereof,
the sum of components A)+B) being 100% by weight, in the presence of an aqueous solution or dispersion of an anionically modified polyurethane based on
a) diisocyanates of the formula



wherein
R denotes a saturated or unsaturated aliphatic hydrocarbon radical having 1 to 35 C atoms, an aryl radical having 6 to 10 C atoms, or an araliphatic radical having 7 to 10 C atoms, in which different radicals R can be present if several radicals R are present in the same molecule side by side,
R^1 represents a divalent hydrocarbon radical, optionally containing urethane, ester and/or ether groups, in which different radicals R^1 can be present at the same time if several radicals R^1 are present in the same molecule, and
m represents a whole or (on average) fractional numbers from 1 to 10,
b) sulphonate dioles of the general formula



in which
A and B represent identical or different divalent aliphatic hydrocarbon radicals having 1 to 6 carbon atoms,
R' represents hydrogen, an aliphatic hydrocarbon radical having 1 to 4 carbon atoms or a phenyl radical,
$X^{\ominus}$ represents an alkali metal cation or a substituted or unsubstituted ammonium group,
n and m represent identical or different numbers from 0 to 30,
o and p each represents 0 or 1, and
q represents an integer from 0 to 2, and
c) appropriate auxiliaries and additives which polyurethane at least partially contains incorporated acylurea groups of the formula



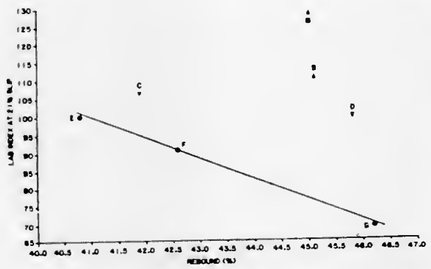
in which R denotes an organic radical, preferably a saturated or unsaturated aliphatic hydrocarbon radical having 1–35 C atoms, an aryl radical having 6–10 C atoms or an araliphatic radical having 7–10 C atoms, in which different radicals R can be present, if several radicals R are present side by side in the same molecule, and subjecting the resulting emulsion to a polymerization initiated by free radicals.

5,288,788

CARBON BLACKS IMPARTING SUPERIOR TREADWEAR/HYSTERESIS PERFORMANCE AND PROCESS FOR PRODUCING CARBON BLACKS

Chiun Huei Shieh, Lexington, Mass.; John M. Branan, Jr., Amarillo, Tex.; Ted W. Bush, Carlisle, Mass.; William L. Sifleet, Acton, Mass., and Miles Mace, Dover, Mass., assignors to Cabot Corporation, Boston, Mass.

PCT No. PCT/US91/00065, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992
Continuation-in-part of Ser. No. 462,163, Jan. 8, 1990, abandoned. This PCT application Jan. 8, 1991, Ser. No. 861,978
Int. Cl.[5] C09C 1/50
U.S. Cl. 524—495 **10 Claims**



1. Carbon blacks characterized by having a $CTAB \geqq (I_2\ No. + 5\ m^2/g)$ wherein $105\ m^2/g \geqq CTAB \geqq 80\ m^2/g$; a $CDBP \geqq 104$ cc/100 g; a Tint of $(0.5(CTAB)+70\ m^2/g > Tint > 0.5(CTAB)+60\ m^2/g)$ and an ASTM aggregate volume $\geqq 480{,}000\ (nm)^3$.

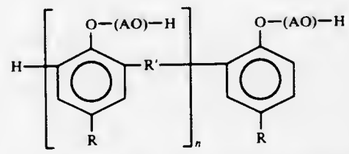
5,288,789

FOAM CONTROL IN FERMENTATION BROTHS WITH A CONDENSATE OF ALKYLPHENOL AND ALDEHYDE THAT HAS BEEN POLYOXYALKYLATED

Kevin J. McCarthy, University City, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 26, 1992, Ser. No. 858,202
Int. Cl.[5] C12N 1/00, 1/34; C08F 283/06; C08G 65/02
U.S. Cl. 435—243 **19 Claims**

1. A method for controlling foam in a fermentation broth comprising adding to the fermentation broth an effective amount of a composition comprising a compound corresponding to the formula:



wherein AO is an oxyalkylene copolymer moiety of oxypropylene and oxyethylene units, each oxyalkylene copolymer moiety having a molecular weight of about 300 or more and an oxypropylene to oxyethylene molar ratio of from about 2:1 to about 10:1, n is an integer from about 1 to about 20, R is an alkyl group of from about three to about twelve carbon atoms, and R' is selected from the group consisting of methylene and substituted methylene.

5,288,790

METHOD FOR PRODUCING SPHERICAL FINE PARTICLES OF COLORED RESIN

Saburo Nakahara; Yasuhiro Yamamoto; Yohji Akazawa; Masao Baba, all of Hyogo, and Yoshikuni Mori, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 758,145, Sep. 12, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,525
Claims priority, application Japan, Feb. 25, 1991, 3-030207
Int. Cl.[5] C08J 5/10; C08K 3/04; C08L 61/26
U.S. Cl. 524—495 **4 Claims**

1. A process for producing spherical fine particles of a colored resin, the process comprising (a) blending an amino resin and an inorganic pigment, (b) suspending the resulting blend in an aqueous solution of a suspending agent, and (c) polycondensation curing the amino resin contained in the suspended blend to form spherical fine particles, the inorganic pigment comprising from about 1 to about 30 weight percent of the colored fine particles, the amino resin comprising the initial reaction product of formaldehyde and an amino reactant comprising from about 40 to about 100 weight percent of at least one guanamine selected from the group consisting of benzoguanamine, cyclohexanecarboguanamine and cyclohexenecarboguanamine, the inorganic pigment comprising carbon black, and said spherical fine particles having an average particle diameter in a range of from about 0.1 to 50 μm.

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5,288,791

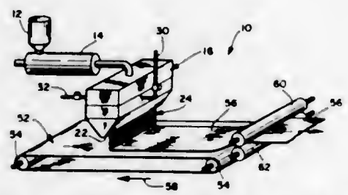
LOW STRESS RELAXATION ELASTOMERIC FIBERS

L. Warren Collier, IV, Alpharetta, and Steven R. Stopper, Doraville, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 463,079, Jan. 10, 1990, Pat. No. 5,260,126. This application Apr. 7, 1993, Ser. No. 43,887

Int. Cl.[5] C08L *53/00*

U.S. Cl. 524—505 **17 Claims**



1. Elastic fibers formed from an extrudable blend, the blend including:

(A) an elastomeric polymer selected from the group consisting of styrene-poly(ethylene-propylene)-styrene elastomeric block copolymer and a mixture of styrene-poly(ethylene-polypropylene)-styrene and styrene-poly(ethylene-butylene)-styrene elastomeric block copolymers; and

(B) a tackifying resin,

wherein the fibers are adapted to form a nonwoven elastic web having a stress relaxation of less than about 30 percent.

5,288,792

ADDITIVE FOR FRICTION LINING MIXTURES

Lothar Buxbaum, Landskron, Austria, assignor to Chemson Polymer-Additive Gesellschaft, Arnoldstein, Austria

Filed Jan. 21, 1992, Ser. No. 823,222

Claims priority, application Austria, Jan. 28, 1990, 178/91

Int. Cl.[5] C10M *125/00*

U.S. Cl. 252—25 **26 Claims**

1. A resin bound friction lining mixture which comprises a phenolic and/or cresolic resin and a solid lubricant additive comprising MnS.

5,288,793

FILLED MOLDING COMPOSITION COMPRISING POLYAMIDE HAVING TEREPHTHALAMIDE AND NAPHTHALAMIDE UNITS

Yu-Tsai Chen, Glen Ellyn, Ill., assignor to Amoco Corporation, Chicago, Ill.

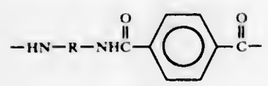
Continuation of Ser. No. 585,875, Sep. 20, 1990, abandoned. This application Jan. 2, 1992, Ser. No. 816,766

Int. Cl.[5] C08L *77/06*

U.S. Cl. 524—606 **12 Claims**

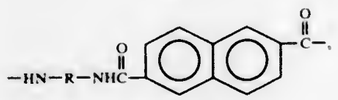
1. An injection moldable composition comprising (1) a crystallizable polyamide component comprising recurring units

A



and

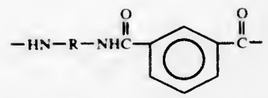
C



with or without

-continued

B



wherein R comprises a divalent aliphatic radical and the mole ratios of the dicarboxylic acid moieties of the A, C and B units are 45–65:25–55:0–20, respectively, and (2) a fibrous or particulate filler material.

5,288,794

CYANOACRYLATE ADHESIVES WITH IMPROVED CURED THERMAL PROPERTIES UTILIZING SUBSTITUTED AROMATIC ADDITIVE

Shabbir Attarwala, West Hartford, Conn., assignor to Loctite Corporation, Hartford, Conn.

Filed Oct. 23, 1992, Ser. No. 966,133

Int. Cl.[5] C09J *11/06, 133/14*

U.S. Cl. 524—714 **9 Claims**

1. In a cyanoacrylate monomer adhesive formulation the improvement wherein the formulation includes an effective amount, for enhancing the thermal resistance of the polymerized adhesive, of a mono, poly or hetero aromatic compound characterized by at least three substitutions on an aromatic ring thereof, two or more of said substitutions being electron withdrawing groups selected from the group consisting of NO_2, CN, CF_3, $NR^1_3{}^+$, $SR^1_2{}^+$, $C(=O)R^1$, $C(=O)OR^1$, NO, CCl_3, SO_2, $S(=O)$, SO_3, SO_2R^1, SO_2OR^1 and F, one or more of said substitutions being leaving groups selected from the group consisting of F, Br, Cl, I, NO_2, CN, SOR^1, SO_2R^1 and SO_2OR^1, and R^1 is an optionally substituted hydrocarbon group.

5,288,795

MOLD-RELEASABLE CURABLE ORGANOPOLYSILOXANE COMPOSITION

Hironao Fujiki; Morio Ochasi, and Mitsuaki Igarashi, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1991, Ser. No. 807,490

Claims priority, application Japan, Dec. 17, 1990, 2-411537

Int. Cl.[5] C08K *3/36, 3/22*

U.S. Cl. 524—731 **17 Claims**

1. A mold-releasable curable organopolysiloxane composition which comprises, as a blend:

(a) 100 parts by weight of a diorganopolysiloxane represented by the average unit formula

$$R_aSiO_{(4-a)/2},$$

in which R is an unsubstituted or substituted monovalent hydrocarbon group and the subscript a is a positive number 1.9 to 2.4, and mainly consisting of difunctional siloxane units of the formula R_2SiO, at least two of the groups denoted by R per molecule being alkenyl groups;

(b) an organohydrogenpolysiloxane having, in a molecule, at least three hydrogen atoms directly bonded to the silicon atoms, in an amount sufficient to provide from 0.4 to 4.0 moles of the silicon-bonded hydrogen atoms per mole of the alkenyl groups in the component (a);

(c) an alkali metal compound selected from the group consisting of alkali metal hydroxides, alkali metal oxides, alkali metal carboxylates, alkali metal alcoholates and alkali metal siliconates, in an amount of 5 to 5000 ppm by weight as alkali metal based on the amount of the component (a);

(d) 5 to 50 parts by weight of a finely divided silica filler having a specific surface area of at least 50 m^2/g; and

(e) a catalytic amount of a platinum compound.

5,288,796

FRIABLE SEALING COMPOUND FOR SEALING JOINT BOXES

Rainer Hoefer, Dusseldorf; Gerhard Stoll, Korschenbroich; Peter Daute, Essen, and Roland Gruetzmacher, Wuelfrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00940, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/19298, PCT Pub. Date Dec. 12, 1991

PCT Filed May 21, 1991, Ser. No. 949,508

Claims priority, application Fed. Rep. of Germany, May 30, 1990, 4017444

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—789 **20 Claims**

1. A friable sealing compound system which comprises: a polyol component (A) and an diisocyanate component (B), wherein the polyol component (A) comprises a mixture of ricinene oil (I) and a ring opening reaction product (IIb) of an epoxidized vegetable oil with unsaturated or saturated short-chain linear or branched fatty acids.

5,288,797

MOISTURE CURABLE POLYURETHANE COMPOSITION

Hamdy Khalil, Willowdale; Witek Majewski, Breslau; George Nickel; George Wypych, both of Toronto, and Jeffrey D. van Heumen, Guelph, all of Canada, assignors to Tremco Ltd., Toronto, Canada

Continuation of Ser. No. 870,523, Apr. 17, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 34,454

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—872 **30 Claims**

1. A polyurethane adhesive composition, comprising: a blend of at least polyurethane Prepolymers A, B, and C, an effective amount of carbon black to improve mechanical properties and sag resistance, and an effective amount of a resin having a polyamide backbone to improve sag resistance, said adhesive composition being a one-part moisture curable system; each said prepolymer being a reaction product of a polyol and an isocyanate, wherein the polyol used in the formation of at least one of said prepolymers is generally incompatible with the polyols used in the formaiton of said other prepolymers, wherein said polyol of each of said prepolymers is a linear or branched polyol having a backbone of polyacrylate, polybutadiene, polycarbonate, polycaprolactone, polyether, polyester, polythioether, or polyurethane, said polyols each having at least two terminal primary and/or secondary hydroxyl groups; wherein said isocyanate of said polyurethane Prepolymer A is an aromatic (poly)isocyanate, wherein said isocyanate of said polyurethane Prepolymer C is an aliphatic or cycloaliphatic (poly)isocyanate and wherein said isocyanate of said polyurethane Prepolymer B is an aromatic (poly)isocyanate or an aliphatic or a cycloaliphatic (poly)isocyanate.

5,288,798

POLYARYLENE SULFIDE RESIN COMPOSITIONS

Atsunori Koshirai; Akira Nakata, and Naoki Yamamoto, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 741,662, Aug. 7, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,181

Claims priority, application Japan, Aug. 22, 1990, 2-220349

Int. Cl.[5] C08L *51/08*

U.S. Cl. 525—63 **8 Claims**

1. A polyarylene sulfide resin composition obtained by melt-mixing a mixture comprising

(A) a polyarylene sulfide resin and

(B) a polyorganosiloxane graft copolymer obtained by graft-polymerizing one or more kinds of vinyl monomer containing at least an epoxy group-containing vinyl monomer onto a compound rubber in which a polyorganosiloxane rubber and a polyalkyl (meth) acrylate rubber have been inseparably united with each other, wherein the proportion of said polyorganosiloxane graft copolymer derived from said one or more kinds of vinyl monomer is 5–50 wt. % based on a total weight of said polyorgano-siloxane graft copolymer.

5,288,799

THERMOPLASTIC MOLDING COMPOSITIONS WHICH ARE MIXTURES OF AMORPHOUS AND SEMI-CRYSTALLINE POLYAMIDES, A METHOD OF PREPARATION THEREOF AND PRODUCTS MADE THEREFROM

Eduard Schmid, and Helmuth Thullen, both of Bonaduz, Switzerland, assignors to EMS-Inventa AG, Switzerland

Filed Jul. 2, 1992, Ser. No. 908,322

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122211

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—6 **29 Claims**

1. A thermoplastic molding composition comprising

a) 25–75 parts of a semicrystalline polyamide;

b) 75–25 parts of an amorphous copolyamide of

(i) 25–45 molar parts of at least one aromatic dicarboxylic acid,

(ii) 25-5 molar parts of at least one dimerized fatty acid,

(iii) 50 molar parts of at least one cycloaliphatic diamine, the sum of the acid groups of acids (i) and (ii) substantially equaling the sum of the amine groups of amine (iii);

c) 0–30 parts of a compatibility agent,

a), b) and c) totaling 100 parts.

5,288,800

POLYMER BLENDS

John D. Wilkey, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 28, 1992, Ser. No. 996,945

Int. Cl.[5] C08L *69/00, 53/02, 51/04;* **C08F** *287/00*

U.S. Cl. 525—67 **9 Claims**

1. A blend comprising at least one aromatic polycarbonate and a hydrogenated block copolymer modified with a hydroxyethyl acrylate terminated caprolactone oligomer to form a modified block copolymer.

5,288,801

POLYCARBONATE RESIN COMPOSITION

Kazuhiko Ishii, and Makoto Mizutani, both of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,843

Claims priority, application Japan, Oct. 23, 1991, 3-304102

Int. Cl.[5] C08L *53/00;* **C08F** *8/16*

U.S. Cl. 525—92 **10 Claims**

1. A polycarbonate resin composition comprising (a) an aromatic polycarbonate resin, (b) a rubber-polyester block copolymer comprising an aliphatic diene-based rubber having, at one or both ends thereof, a polyester structural unit formed by ring-opening polymerization of an aliphatic lactone with the aliphatic diene-based rubber, and (c) an inorganic filler.

5,288,802

AUTOMOTIVE REFINISH PRIMER SURFACER CONTAINING ACETOACETATE FUNCTIONAL POLYESTERPOLYOL, A POLYACRYLATE, AND AN AMINE FUNCTIONAL EPOXY RESIN

David N. Walters, Slippery Rock; Cathy A. Kreutzer, Glenshaw, and Padmanabhan Sundararaman, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 25, 1993, Ser. No. 8,435

Int. Cl.[5] C08L *33/14;* **C08G** *12/00, 59/44*

U.S. Cl. 525—110 **22 Claims**

1. A curable coating composition comprising:

(a) A polyepoxide resin which is essentially free of oxirane

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functionality and having an average of at least two amine groups per molecule and having a weight average molecular weight of from about 1000 to about 50,000;

(b) an acetoacetate group functional polyester, which is the transesterification reaction product of a polyester polyol and an acetoacetate, the polyester polyol prepared by esterification of an organic polycarboxylic acid or anhydride thereof with organic polyol and/or epoxide, and having a weight average molecular weight of from about 1000 to about 50,000;

(c) a polyacrylate having at least two acrylate groups per molecule and having a weight average molecular weight from about one hundred to about 50,000.

5,288,803

SELF-CROSSLINKING RESIN

Yoshiyuki Yukawa, Hiratsuka; Motoshi Yabuta, Hadano, and Yasushi Nakao, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Jan. 9, 1992, Ser. No. 895,683
Claims priority, application Japan, Jun. 18, 1991, 3-145892
Int. Cl.[5] C08F *8/30*; C08L *75/04*
U.S. Cl. 525—124 **8 Claims**

1. A self-crosslinking resin comprising a graft polymer which comprises: (1) vinyl polymer units containing blocked isocyanate groups, and (2) vinyl polymer units containing hydroxyl groups, and carboxyl groups or carboxylic anhydride groups, wherein said vinyl polymer units (2) are attached to said vinyl polymer units (1) by a urethane bond.

5,288,804

ACETOACETATE AROMATIC ALDIMINE RESIN COMPOSITION

Kyu-Jun Kim, Tonawanda, and Roy C. Williams, Orchard Park, both of N.Y., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Jan. 3, 1992, Ser. No. 817,473
Int. Cl.[5] C08L *61/00*
U.S. Cl. 525—154 **35 Claims**

1. A curable composition comprising a first component including a compound comprising at least two acetoacetate groups, and a second component including a compound comprising at least two groups which will react with an acetoacetate group, at least one of which is an aromatic aldimine group having a relatively low reactivity with water when compared with its reactivity with an acetoacetate group.

5,288,805

LINSEED OIL BASED POLYMERIC VEHICLE

Dharma R. Kodali, Minnetonka, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Filed Aug. 14, 1992, Ser. No. 929,815
Int. Cl.[5] C08F *36/00*, *8/30*
U.S. Cl. 525—190 **24 Claims**

1. A composition which is the copolymerization reaction product of a reaction mixture comprising linseed oil having an iodine value in the range of from about 170 to about 195 and dicyclopentadiene, the linseed oil comprising from about 70 to about 90 weight percent of the reaction mixture and the dicyclopentadiene comprising from about 10 to about 30 weight percent of the reaction mixture, the composition having a viscosity in the range of from about 500 to about 10,000 cps at 25° C. and wherein the reaction mixture is provided by addition of the dicyclopentadiene to the linseed oil at a rate of from about 0.4 to about 0.9 volume percent per minute of the total dicyclopentadiene added to the linseed oil, the reaction mixture being heated at a temperature of not more than 300° C. in a closed container.

5,288,806

THERMOPLASTIC OLEFINS WITH LOW VISCOSITY

Andrew J. Peacock, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Sep. 22, 1992, Ser. No. 949,302
Int. Cl.[5] C08L *23/06*, *23/16*
U.S. Cl. 525—240 **20 Claims**

1. A composition of matter consisting essentially of:

a) about 20 to about 60 wt % random propylene copolymer (RCP) having about 1.5 to about 6 mole percent α-olefin comonomer;

b) about 10 to about 30 wt % ethylene/α-olefin rubber having a viscosity higher than a) or c) (ER); and

c) about 20 to about 50 wt % polyethylene (HDPE) with a density of 0.94 g/cm^3 or above,

said wt % being based upon the total weight of a, b and c, said composition of a), b) and c) and the mixture of a) and c) having a melt flow ratio of 2 g/ 10 min. or more at 230° C.

5,288,807

VINYL MONOMER COMPOSITIONS WITH ACCELERATED SURFACE CURE

Frederick P. Hinz, Jeffersonville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 2, 1991, Ser. No. 724,691
Int. Cl.[5] C08F *279/02*; C04B *7/02*; C08L *51/04*
U.S. Cl. 525—279 **23 Claims**

1. A vinyl monomer composition exhibiting improved cure in an oxygen-containing environment comprising (1) a deinhibiting amount of from about 5% to about 15% weight percent of diolefin rubber dispersed in monomer comprising isobornyl methacrylate having a partial pressure less than about 1 millimeter of mercury at 50° C., (2) a multifunctional monomer selected from the group consisting of diacrylates, triacrylates, dimethacrylates, and (3) a catalyst consisting of at least one polyvalent cobalt salt, wherein (a) said diolefin rubber is polymerized in at least two stages including an initial stage and a subsequent stage, said initial stage comprising polymerizing a diolefin monomer selected from the group consisting of 1,3-butadiene, 2-chloro-1,3-butadiene, 2,3-dichloro-1,3-butadiene, 2-cyano-1,3-butadiene, 1,2,3,4-tetrachlorobutadiene, isoprene, 1,4-hexadiene and dicyclopentadiene, and said subsequent stage comprising polymerizing a monomer selected from the group consisting of styrene, methyl methacrylate and (C_2–C_8) alkyl acrylate, and (b) said diolefin rubber is insoluble in said vinyl monomer composition.

21. A sealer composition for concrete comprising the vinyl monomer composition of claim 1.

22. A healer composition for concrete comprising the vinyl monomer composition of claim 1.

23. A concrete binder composition for polymer concrete comprising the vinyl monomer composition of claim 1.

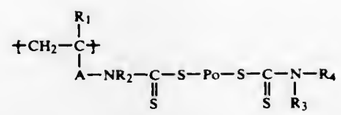
5,288,808

GRAFT COPOLYMERS HAVING PENDANT THIURAM DISULFIDE FUNCTIONS

Gilbert Clouet, La Wantzenau, France, assignor to ATOCHEM, Peteaux, France

Division of Ser. No. 687,793, Apr. 19, 1991, Pat. No. 5,189,112, which is a continuation-in-part of Ser. No. 599,805, Oct. 19, 1990, abandoned. This applicatioo Nov. 20, 1992, Ser. No. 979,345
Claims priority, application France, Oct. 19, 1989, 89 13706
Int. Cl.[5] C08F *265/04*, *271/02*
U.S. Cl. 525—303 **29 Claims**

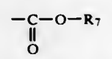
1. A graft copolymer having grafts containing vinyl or diene sequences, said copolymer comprising a chain linkage comprising repeating units of:



(VI)

wherein:

R_1 represents a hydrogen atom or a monovalent organic radical which is an alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals; a

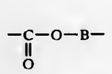


radical,

where R_7 represents hydrogen, an alkyl, cycloalkyl, or aryl radical or a combination of at least two of the aforesaid radicals;

or a radical substituted by at least one halogen atom, said radical being an alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals;

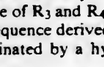
A represents a single bond; an alkylene, cycloalkylene or arylene radical or a combination of at least two of the aforesaid radicals; or a



radical, where B represents an alkylene, cycloalkylene or arylene radical or a combination of at least two of the aforesaid radicals;

R_2, R_3 and R_4 each represent independently an unsubstituted alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals or at least one of R_3 and R_4 is substituted by at least one hydroxyl or carboxylic acid group, or at least one of R_3 and R_4 represents a polyoxyethylene or polyester sequence derived from a polyoxyethylene or a polyester terminated by a hydroxyl function, respectively;

all of said alkyl, cycloalkyl, aryl radicals and their combinations, alkylene, cycloalkylene, arylene radicals and their combinations optionally containing at least one heteroatom, and/or at least one



radical, where R represents alkyl, cycloalkyl or aryl radicals or a combination of at least two of said radicals; and

where Po represents a vinyl or diene polymer sequence, said chain linkage optionally containing a random distribution of units derived from at least one vinylic monomer.

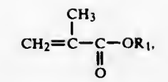
5,288,809

POLYMER PRODUCT FOR TREATING LEATHER

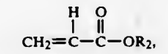
Juergen Christner, Seeheim-Jugenheim; Harald Bauer, Weiterstadt; Maria L. Weber, Roedermark, and Victor N'Gueyilbé, Karlsdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 41,000
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211060
Int. Cl.[5] C08F *265/06*
U.S. Cl. 525—309 **5 Claims**

1. A graft copolymer, adaptable to the treatment of leather, comprising the product obtained by grafting monomers comprising at least one methacrylate ester graft monomer of the formula



wherein R_1 stands for a hydrocarbon group having 2–24 carbon atoms, onto a compatible non-crosslinked acrylate ester base polymer comprising 55–100 percent by weight of at least one monomer of the formula



wherein R_2 stands for a hydrocarbon group having 2 to 24 carbon atoms, and less than 0.01 percent by weight of polyfunctional esters, with the proviso that the groups R_1 and R_2 have van der Waals volumes which differ from one another by less than 30 percent of the value of the larger volume, whereby compatibility of the graft monomers and base polymer is assured.

5,288,810

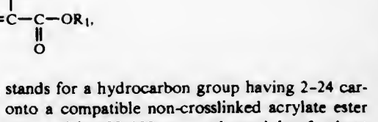
VULCANIZED RUBBER COMPOSITION AND RUBBER VIBRATION INSULATOR

Keisaku Yamamoto; Yoshio Tanimoto; Kiyosi Ikeda, and Eiichi Usuda, all of Chiba, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 822,877, Jan. 21, 1992, abandoned. This application Dec. 31, 1992, Ser. No. 999,617
Claims priority, application Japan, Feb. 4, 1991, 3-13324
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—327.6 **11 Claims**

1. A vulcanized rubber composition obtained by vulcanizing a modified ethylene-α-olefin-nonconjugated diene copolymer rubber composition defined below with sulfur or organic peroxides, said modified copolymer rubber composition comprising an ethylene-α-olefin-nonconjugated diene copolymer rubber modified with 0.01–0.15% by weight of an unsaturated carboxylic acid or a derivative thereof based on the modified ethylene-α-olefin-nonconjugated diene copolymer rubber and at least one dinitroamine represented by the following formula (A):

(A)



wherein X represents a divalent chain aliphatic, cyclic aliphatic or aromatic group which may contain a halogen or oxygen, R^1 represents a hydrogen atom, a chain aliphatic group, a cyclic aliphatic group or an aromatic group with a proviso that when both X and R^1 represent a chain aliphatic group, nitrogen atoms may further link to each other through R^1, and R^2 and R^3 each represents a hydrogen atom or an alkyl group of 1–12 carbon atoms and R^2 and R^3 may link to each other to form a ring.

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5,288,811

CYCLIC CARBONYL CONTAINING COMPOUNDS VIA RADICAL GRAFTING

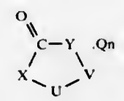
Stanley J. Brois, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 5, 1992, Ser. No. 972,270

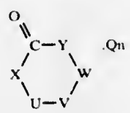
Int. Cl.[5] C08F *8/12, 8/30, 34/02;* **C07D** *251/00, 309/30;* **C07C** *49/105*

U.S. Cl. 525—383 **11 Claims**

1. A carbonyl containing composition formed by contacting, in the presence of a free radical initiator, a compound selected from the group consisting of saturated hydrocarbons, substituted saturated hydrocarbons, polymers and mixtures thereof with a carbonyl containing compound or mixtures thereof having the structures:



and



wherein Q=HOH, MeOH, EtOH, or n-BuOH, n=0,1,>1; and X and Y are independently selected from the group consisting of CH_2, C=O; W is independently selected from the group consisting of CH_2, C=O, O, NH, CMe_2, C=N-alkyl and N-alkyl, wherein alkyl is 1 to 18 carbons; U and V are independently selected from the same groups as W and dependently selected so that U and V taken together are one of 1,2-phenylene, 1,8-napthalene-diyl, and 1,2-napthalene-diyl, provided that at least one of X, Y, U, V and W is C=O.

5,288,812

POLYMER MIXTURE COMPRISING A POLYPHENYLENE ETHER AND OPTIONALLY A POLYSTYRENE AND/OR A RUBBER-MODIFIED POLYSTYRENE, AND ARTICLES FORMED THEREFROM

Jan Bussink, and Roelof van der Meer, both of Bergen op Zoom, Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 165,586, Mar. 8, 1988, abandoned, which is a continuation of Ser. No. 594,494, May 29, 1984, Pat. No. 4,771,096. This application Oct. 31, 1990, Ser. No. 606,477

Claims priority, application Netherlands, Apr. 12, 1983, 8301284

Int. Cl.[5] C08L *71/12*

U.S. Cl. 525—397 **4 Claims**

1. A polyphenylene ether polymer composition which is the product obtained from melt-mixing a mixture consisting essentially of polyphenylene ether polymer and from 0.1-5% by weight of a precursor of a diene.

5,288,813

VISCOELASTIC RESIN COMPOSITION OR VIBRATION DAMPING MATERIAL

Hiroshi Hirakouchi; Masanori Nakamura; Takeshi Yatsuka, all of Otsu; Nobuo Kadowaki, Futtsu; Hiroshi Endoh, Futtsu, and Yoshimasa Zama, Futtsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka and Nippon Steel Corporation, Tokyo, both of Japan

Filed Aug. 22, 1991, Ser. No. 748,550

Claims priority, application Japan, Aug. 22, 1990, 2-221470

Int. Cl.[5] C08F *20/00*

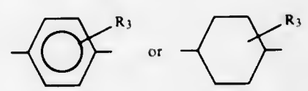
U.S. Cl. 525—438 **10 Claims**

1. A viscoelastic resin composition useful for vibration damping material which comprises:

(a) a polyester resin having a molecular weight of 5,000 to 50,000, an acid value of 50 to 500 equivalents/10^6 g, a polycarboxylic acid component, at least 80 mol % of which is an aromatic dicarboxylic acid, and a polyol component, at least 30 mol % of which is a compound of the formula (I):

$$H-(OR_2)_n-O-A-R_1-A-O-(R_2O)_n-H \quad (I)$$

wherein R_1 is oxygen or a straight or branched chain C_{1-6} alkylene group; R_2 is a straight or branched chain C_{1-6} alkylene group; A is a group of the formula:



wherein R_3 is hydrogen or a C_{1-6} alkyl group; and n is an integer of 1 to 6, and at most 70 mol % of the polyol component of which is at least one polyol selected from the group consisting of ethylene glycol, neopentyl glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, diethylene glycol, reductant of dimer acid, eicosanediol, 8,13-methyleicosanediol, 3-methylpentanediol, trimethylpentanediol and cycloaliphatic polyols,

(b) an acid anhydride compound having at least two acid anhydride groups in a molecule,

(c) an epoxy compound having at least two epoxy groups in a molecule, and

(d) a ring-opening catalyst of the epoxy group,

said composition having a gel fraction of at least 50% by weight when in the form of a coating having a thickness of not more than 100 μm after drying at 180° C. for 3 minutes.

5,288,814

EASY TO DISPERSE POLYCARBOXYLIC ACID THICKENERS

Carl J. Long, II, Elyria; Zahid Amjad, Brecksville; William F. Masler, III, Hinckley, and William H. Wingo, North Royalton, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 26, 1992, Ser. No. 935,616

Int. Cl.[5] C08F *2/26, 2/08*

U.S. Cl. 525—450 **22 Claims**

1. An interpolymer of

(1) at least one olefinically unsaturated carboxylic acid or anhydride containing at least one activated carbon-to-carbon olefinic double bond and at least one carboxyl group, in an amount of more than 15% by weight based upon the weight of the interpolymer, and

(2) at least one steric stabilizer having at least one hydrophilic moiety and at least one hydrophobic moiety, selected from the group consisting of linear block copolymeric steric stabilizers, having a hydrophobic moiety having a length of more than 50 Angstroms, random copolymeric comb steric stabilizers, and mixtures thereof.

5,288,815

POLY(ARYLENE THIOETHER-KETONE) COPOLYMER AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake; Yoshiyuki Inaguma, and Yasuhiro Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 686,978

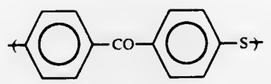
Claims priority, application Japan, Apr. 25, 1990, 2-109481; Mar. 8, 1991, 3-067554

The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.

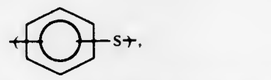
Int. Cl.[5] C08F *283/00;* **C08G** *14/00*

U.S. Cl. 525—471 **5 Claims**

1. A poly(arylene thioether-ketone) copolymer comprising (A) at least one poly(arylene thioether-ketone) segment having at lest 50 wt. % recurring units of the formula



herein the —CO— and —S— are in the para position to each other and (B) at least one poly(arylene thioether) segment having at least 50 wt. % recurring units of the formula



and having the following properties (a)-(c):

(a) the ratio of the total amount of the poly(arylene thioether) segment (B) to the total amount of the poly(arylene thioether-ketone) segment (A) ranging from 0.05 to 5 by weight,

(b) the number-average polymerization degree of the poly(arylene thioether) segment (B) being higher than 1 but lower than 10, and

(c) said copolymer having a melt viscosity of 2-100,000 poises as measured at 350° C. and a shear rate of 1,200/sec.

5,288,816

NONLINEAR OPTICAL AMINOARYL HYDRAZONES AND NONLINEAR OPTICAL POLYMERS THEREOF

Muthiah N. Inbasekaran; Mark D. Newsham, and Michael N. Mang, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1992, Ser. No. 927,692

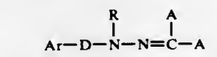
Int. Cl.[5] C08G *59/00, 65/08, 65/14*

U.S. Cl. 525—502 **36 Claims**

1. A nonlinear optical polymeric composition comprising the reaction product of:

(A) at least one compound containing an average of more than one epoxy group per molecule; and

(B) at least a first reactant, the first reactant being an aminoaryl hydrazone, represented by the formula:



wherein Ar is an aromatic carbocyclic or heterocyclic radical containing up to 30 non-hydrogen atoms, optionally substituted with a functionality capable of reacting with an epoxy group; A is independently at each occurrence either R or an aromatic group, optionally substituted with a functionality capable of reacting with an epoxy group; D is nil, carbonyl or sulfonyl; and R is hydrogen or a C_1 to C_{20} hydrocarbyl radical; provided there is at least one aromatically substituted electron withdrawing group, and at least two active aromatic amino hydrogens capable of reacting with an epoxy group, in the aminoaryl hydrazone.

5,288,817

POLYARYLENE SULFIDE RESIN COMPOSITIONS

Naoki Yamamoto; Akira Nakata, and Atsunori Koshirai, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 774,777, Oct. 10, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 2,409

Claims priority, application Japan, Oct. 11, 1990, 2-272613

Int. Cl.[5] C08L *51/06*

U.S. Cl. 524—504 **8 Claims**

1. A polyarylene sulfide resin composition obtained by melt-mixing a composition consisting essentially of

60 to 99 parts by weight of a polyarylene sulfide resin (component A),

1 to 40 parts by weight of a polyorganosiloxane graft copolymer (component B) obtained by graft-polymerizing one or more kinds of vinyl monomer onto a compound rubber of 0.08 to 0.6 μm in average particle size consisting of a polyorganosiloxane rubber component and a polyalkyl (meth)acrylate rubber component and having such a structure that 1 to 99 wt. % of the polyorganosiloxane rubber component and 1 to 99 wt. % of the polyalkyl (meth)acrylate rubber component have been inseparably united with each other, the total amount of the components A and B being 100 parts by weight, and

an organic silane compound having an epoxy group (component C) of 0.01 to 10 parts by weight based on 100 parts by weight of the total amount of the components A and B.

5,288,818

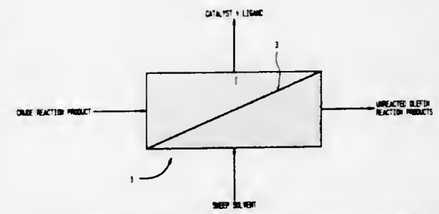
METHOD FOR SEPARATING A WATER SOLUBLE NOBLE METAL CATALYST FROM A NOBLE METAL CATALYZED HYDROFORMYLATION REACTION

Joel R. Livingston, Jr., Basking Ridge; Edmund J. Mozeleski, Califon, and Guido Sartori, Annandale, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 747,597, Aug. 20, 1991, Pat. No. 5,215,667. This application Mar. 16, 1993, Ser. No. 32,349

Int. Cl.[5] B01D *61/14*

U.S. Cl. 210—640 **20 Claims**



1. A method for separating a water soluble noble metal catalyst from a crude reaction product of a noble metal-catalyzed hydroformylation reaction run in aqueous solution, in an aqueous emulsion or as an aqueous suspension, said crude reaction product including an aqueous phase containing a water soluble Group VIII noble metal-ligand complex catalyst, and an organic phase containing unreacted olefin feed and an organic hydroformylation reaction product, which comprises: (a) contacting said crude reaction product with a hydrophobic membrane capable of allowing a substantial portion of said unreacted olefin feed and organic hydroformylation reaction product to pass therethrough while retaining a substantial portion of said water soluble Group VIII noble metal-ligand complex catalyst, said hydrophobic membrane is selected from

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the group consisting of crosslinked bromobutyl rubber membranes and crosslinked copolymers of isobutylene and p-bromomethyl styrene membranes; (b) removing unreacted olefin feed and said organic hydroformylation reaction product which passes through said hydrophobic membrane as permeate; and (c) retaining said water soluble Group VIII noble metal-ligand complex catalyst as retentate, wherein said hydrophobic membrane retains at least about 99% of said water soluble group VIII noble metal-ligand complex catalyst.

5,288,819

AZEOTROPE-LIKE COMPOSITIONS OF DICHLOROPENTAFLUOROPROPANE AND 1,2-DICHLOROETHYLENE

Hillel Magid, Buffalo; Richard E. Eibeck, Orchard Park; Michael Van Der Puy, Cheektowaga; Richard M. Hollister, Buffalo; Dennis M. Lavery, Springville, and David P. Wilson, East Amherst, all of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 549,781, Jul. 9, 1990, Pat. No. 5,116,526, which is a continuation-in-part of Ser. No. 418,317, Oct. 6, 1989, abandoned, and a continuation-in-part of Ser. No. 417,952, Oct. 6, 1989, abandoned. This application Feb. 24, 1992, Ser. No. 842,849

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] **C11D** *7/30, 7/50;* **C23G** *5/028*

U.S. Cl. 252—172 **42 Claims**

1. Azeotrope-like compositions consisting essentially of from about 77 to about 93 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from about 7 to about 23 weight percent cis-1,2-dichloroethylene which boil at about 50.0° C. at 753 mm Hg; or from about 77 to about 93 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from about 7 to about 23 weight percent of a mixture consisting of cis-1,2-dichloroethylene and trans-1,2-dichloroethylene wherein said trans-1,2-dichloroethylene is present in an amount of from about 0.1 to about 25 weight percent of said mixture which boil at about 50.0° C. at 753 mm Hg; or from about 62 to about 82 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from about 18 to about 38 weight percent cis-1,2-dichloroethylene which boil at about 53.5° C. at 751 mm Hg; or from about 62 to about 82 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from about 18 to about 38 weight percent of a mixture consisting of cis-1,2-dichloroethylene and trans-1,2-dichloroethylene wherein said trans-1,2-dichloroethylene is present in an amount of from about 0.1 to about 25 weight percent of said mixture which boil at about 53.5° C. at 751 mm Hg; or from about 35 to about 60 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from about 40 to about 65 weight percent trans-1,2-dichloroethylene which boil at about 44.2° C. at 745 mm Hg; or from about 35 to about 60 weight percent 1,1-dichloro-2,2,3,3,3-pentafluoropropane and from about 40 to about 65 weight percent of a mixture consisting of cis-1,2-dichloroethylene and trans-1,2-dichloroethylene wherein said cis-1,2-dichloroethylene is present in an amount of from about 0.1 to about 25 weight percent of said mixture which boil at about 44.2° C. at 745 mm Hg; or from about 23 to about 49 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from about 51 to about 77 weight percent trans-1,2-dichloroethylene which boil at about 45.5° C. at 743 mm Hg; or from about 23 to about 49 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from about 51 to about 77 weight percent of a mixture consisting of trans-1,2-dichloroethylene and cis-1,2-dichloroethylene wherein said cis-1,2-dichloroethylene is present in an amount of from about 0.1 to about 25 weight percent of said mixture which boil at about 45.5° C. at 743 mm Hg; wherein the components of each azeotrope-like composition consist of 1,1-dichloro-2,2,3,3,3-pentafluoropropane or 1,3-dichloro-1,1,2,2,3-pentafluoropropane and cis-1,2-dichloroethylene, trans-1,2-dichloroethylene or a mixture of cis-1,2-dichloroethylene and trans-1,2-dichloroethylene.

5,288,820

THERMOSETTING COATING COMPOSITIONS

Franklin D. Rector, Jr., Osaka, Japan, and J. Stewart Witzeman, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,044

Int. Cl.[5] **C08F** *283/00*

U.S. Cl. 525—510 **5 Claims**

1. A thermosetting coating composition comprising an inert solvent having dissolved therein:

(1) about 50 to 80 weight percent of a film forming polymeric material selected from polyesters and acrylic polymers bearing acetoacetate residues, said percent being based on the weight of film-forming polymeric material and the solvent;

(2) about 49 to 5 weight percent, based on the weight of polymeric material (1), of an amino resin cross-linking agent;

(3) about 0.05 to 2 weight percent, based on the combined weight of polymeric material (1) and cross-linking agent (2), of an organic sulfonic acid cross-linking or curing catalyst; and

(4) an epoxide compound selected from limonene monoepoxide, limonene diepoxide and mixtures thereof wherein the mole ratio of epoxide compound (4) to organic sulfonic acid (3) is about 0.8:1 to 1.5:1.

5,288,821

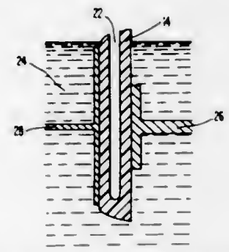
POLYMERIC ELECTRICAL INSULATION MATERIALS

James D. B. Smith, Monroeville; Allan I. Bennett, Export, both of Pa., and Emil M. Fort, Maitland, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1992, Ser. No. 907,085

Int. Cl.[5] **C08F** *283/00*

U.S. Cl. 525—529 **16 Claims**



1. An electrical insulation material comprising:

(1) electrically insulating polymer comprising epoxy, polybutadiene, urethane, acrylic, or polyethylene resin or a combination thereof; and

(2) an amount of a synergistic mixture of:

a metal acetylacetonate and a dicyclopentadienyl metal compound; or

a chromium salt other than chromium acetylacetonate and a dicyclopentadienyl metal compound;

said amount being soluble in said polymer and effective to improve the corona resistance of said polymer.

5,288,822

LIQUID CRYSTALLINE EPOXY RESIN AS ADDITIVE FOR POLYKETONE POLYMERS

Jagadish C. Goswami, New City, and Ki-Soo Kim, Katonah, both of N.Y., assignors to Akzo nv, Arnhem, Netherlands

Filed Jan. 14, 1992, Ser. No. 820,186

Int. Cl.[5] **C08G** *6/02;* **C08F** *283/00*

U.S. Cl. 525—539 **3 Claims**

1. A polyketone polymer composition which comprises a predominant amount of a polyketone polymer and a liquid crystalline diglycidyl compound wherein the compound is the diglycidyl ether of a 1,4-bis(p-hyroxybenzoyloxy) cyclohydrocarbon to stabilized and/or enhance the processability of the polymer.

5,288,823

CHROMIUM COMPOUNDS AND USES THEREOF

William K. Reagan, Stillwater, Minn., and Brian K. Conroy, Batavia, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 698,515, May 10, 1991, Pat. No. 5,198,563, which is a division of Ser. No. 454,554, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,688, Aug. 10, 1989, abandoned. This application Nov. 19, 1992, Ser. No. 978,852

Int. Cl.[5] **C08F** *4/08*

U.S. Cl. 526—124 **27 Claims**

1. A polymerization process comprising contacting at least one mono-1-olefin with an alkyl aluminum activating compound and a catalyst prepared by a process comprising forming a mixture of and refluxing:

(a) a chromium salt;

(b) a metal amide, which is a pyrrolide; and

(c) an electron pair donor solvent which can affect a reaction between the chromium salt and metal amide.

5,288,824

PREPARATION OF HOMO- AND COPOLYMERS OF PROPENE BY MEANS OF A ZIEGLER-NATTA CATALYST SYSTEM

Juergen Kerth, Carlsberg; Rainer Hemmerich, Gruenstadt; Peter Koelle, Ludwigshafen, and Patrik Mueller, Kaiserslautern, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 25, 1992, Ser. No. 934,848

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128829

Int. Cl.[5] **C08F** *4/64*

U.S. Cl. 526—128 **1 Claim**

1. A process for the preparation of a homopolymer of propene or a copolymer of propene with minor amounts of other C_2–C_{12}-α-monoolefins by polymerization of the monomer or monomers at from 20° to 160° C. and from 1 to 100 bar by means of a Ziegler-Natta catalyst system consisting essentially of

(1) a titanium component which is based on a finely divided, shape-imparting silica gel and contains titanium, magnesium, chlorine and a benzenecarboxylic acid derivative,

(2) an aluminum component of the formula

$$AlR_3$$

where R is alkyl of not more than 8 carbon atoms, and

(3) a silane component of the formula

$$R_n^1Si(OR^2)_{4-n}$$

where R^1 is, methylphenyl or ethylphenyl, R^2 is methyl or ethyl and n is 1 or 2.

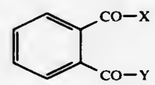
with the provisos that the atomic ratio of titanium from the titanium component (1) to aluminum from the aluminum component (2) is from 1:10 to 1:800 and a molar ratio of the aluminum component (2) to the silane component (3) is from 1:0.01 to 1:0.8, wherein the titanium component (1) used is one which is obtained by a method in which first

(1.1) in a first state, (I), a carrier is prepared from (Ia) a finely divided silica gel which has a particle diameter of from 1 to 1,000 μm, a pore volume of from 0.3 to 5 cm^3/g and a surface area of from 100 to 1,000 m^2/g, is of the formula $SiO_2.aAl_2O_3$, where a is from 0 to 2 and possesses a moisture content such that it loses from 1 to 20% by weight, based on the initial total weight of the silica gel, of water at 1000° C. in the course of 0.5 hour, (Ib) an organomagnesium compound of the formula MgR^3R^4, where R^3 and R^4 are each C_2–C_{10}-alkyl and (Ic) a gaseous chlorinating agent of the formula ClZ, where Z is Cl or H, in a manner such that first

(1.1.1) in a first substage, the finely divided silica gel (Ia) and the organomagnesium compound (Ib) are combined in a liquid inert hydrocarbon with constant thorough mixing at from 10° to 120° C., from 1 to 10 molar parts of the organomagnesium compound (Ib) being used by 10 molar parts of silicon of the silica gel (Ia), and the combined substances are then kept at from 20° to 140° C. for from 0.5 to 5 hours, then

(1.1.2) in a second substage, the gaseous chlorinating agent (Ic) is passed into the mixture obtained from the first substage with constant thorough mixing, from 2 to 40 molar parts of the chlorinating agent (Ic) being used per molar part of the organomagnesium compound (Ib), thereafter

(1.2) in a second stage, a solid-phase intermediate is prepared from (I), the carrier obtained in the first stage (II), a C_2–C_8-alkanol, (III) titanium tetrachloride and (IV) a phthalic acid derivative of the formula



where X and Y together are oxygen or X and Y are each chlorine or C_1–C_{10}-alkoxy, in a manner such that first

(1.2.1) in a first substage, the carrier (I) and the alkanol (II) are combined in a liquid inert hydrocarbon with constant thorough mixing, from 1 to 5 molar parts of the alkanol (II) being used per molar part of magnesium of the carrier (I), and the combined substances are kept at from 20° to 140° C. for from 0.5 to 5 hours, then

(1.2.2) in a second substage, the titanium tetrachloride (III) is introduced into the reaction mixture resulting from the first substage with constant thorough mixing, from 2 to 20 molar parts of the titanium tetrachloride (III) being used per molar part of magnesium of the carrier (I), with the proviso that the phthalic acid derivative (IV) is introduced at least in the course of one of the substages (1.2.1) or (1.2.2), from 0.01 to 1 molar part of the phthalic acid derivative (IV) being used per molar part of magnesium of the carrier (I), then

(1.3) in a third stage, the solid-phase intermediate obtained from the second stage is subjected, at from 100° to 150° C. for a period of from 0.2 to 5 hours, to a one-stage or multistage or continuous extraction of titanium tetrachloride or with a mixture of titanium tetrachloride and an alkylbenzene of up to 12 carbon atoms, whose content of titanium tetrachloride is at least 5% by weight, a total of from 10 to 1,000 parts by weight of the extraction agent being used per 10 parts by weight of the solid-phase intermediate obtained from the second stage, and finally

(1.4) in a fourth stage, the solid-phase produce formed in the third stage is washed with a liquid inert hydrocarbon until the hydrocarbon contains less than 2% by weight of titanium tetrachloride, and the titanium component (I) is thus obtained.

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5,288,825
FLUOROACRYLIC POLYMER HAVING LUBRICATING EFFECT AND THERMOPLASTIC RESIN COMPOSITION COMPRISING SAME

Yutaka Toyooka; Kohji Matsumoto; Hideki Koizumi; Masahiro Kaneda, all of Otake, and Kenji Okano, Kawasaki, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 674,951, Mar. 26, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,475
Claims priority, application Japan, Mar. 29, 1990, 2-78687
Int. Cl.[5] C08F *18/20*
U.S. Cl. 526—245 **9 Claims**

1. A fluoroacrylic polymer having a lubricating effect, which comprises at least one member selected from the group consisting of units derived from a fluoroalkyl acrylate and units derived from a fluoroalkyl methacrylate as a part of all of structural units and a reducing viscosity $\eta Sp/C$ not higher than 2 as measured at 25° C. with respect to a solution of 0.1 g of the polymer in 100 ml of chloroform, wherein when the fluoroacrylic polymer is a random copolymer, the random copolymer has a T_g of no higher than 70° C., wherein when the fluoroacrylic polymer is prepared by a two-stage polymerization process, the resulting polymer has a T_g of no higher than 70° C. after a first stage of the polymerization or after a second stage of the polymerization, and wherein when the fluoroacrylic polymer is prepared by a three-stage polymerization process, a polymer obtained by the second stage of the polymerization has a T_g of no higher than 70° C.

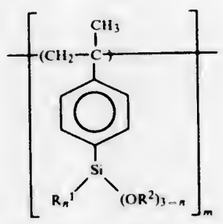
5,288,826
POLYMER, SURFACE MODIFIER FOR INORGANIC MATERIALS AND MODIFIED PRODUCTS THEREOF

Masaharu Yamamoto, Suita, and Masatoshi Ohata, Sakai, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 11, 1992, Ser. No. 944,176
Claims priority, application Japan, Sep. 13, 1991, 3-234463
Int. Cl.[5] C08F *30/08*
U.S. Cl. 526—279 **9 Claims**

1. A polymer prepared from an α,β-ethylenic unsaturated compound having the chemical formula: $CH_2=CXR$ wherein X stands for an unsubstituted or substituted phenyl group or —COO—Q in which Q is an alkyl group having 1 to 7 carbon atoms and R stands for a hydrogen atom or a methyl group, said polymer comprising a structure having the following general formula (1):

(1)



where, R^1 and R^2, which are the same or different, a C1-C4 alkyl group, m is an integer of 1-10 and N is 0, 1 or 2 in the molecule.

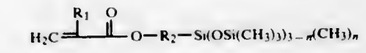
5,288,827
COPOLYMER OF (METH)ACRYLOXY-ALKYL-SILOXYSILANE AND ALKYL(METH)ACRYLATES AND THE USE THEREOF AS PRESSURE SENSITIVE ADHESIVES

Xiaoling Li, Dobbs Ferry, and Bret Berner, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,667
Int. Cl.[5] C08F *230/08*
U.S. Cl. 526—279 **9 Claims**

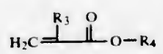
1. A polymer having a polymerization feed mixture of
(a) an effective amount of a polymerization initiator,
(b) 0 to 5 mole %, based on the total of all monomers present, of a vinylic copolymerizable crosslinker; and
(c) one of the following groups (i), or (iii);
where (i) is
(I) 42 mole % to 58 mole % of a siloxy silane of formula I,
(II) 42 mole % to 58 mole % of an unsubstituted alkyl (meth-)acrylate of formula II,
(III) 0 to 5 mole % of a Group A monomer, and
(IV) 0 to 16 mole % of an additional vinylic copolymerizable monomer of Group B; or
where (iii) is
(I) 16 mole % up to less than 42 mole % of a siloxy silane of formula I,
(II) 42 mole % to 58 mole % of an unsubstituted alkyl (meth-)acrylate of formula II,
(III) 0 to 5 mole % of a Group A monomer, and
(IV) 0 to 36 mole % of an additional vinylic copolymerizable monomer of Group B; in which formula I is

(I)



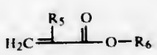
in which R_1 is hydrogen or methyl;
R_2 is alkylene of 1-6 carbon atoms; and
n is an integer of from 0 to 2;
and where formula II is

(II)



in which R_3 is hydrogen or methyl; and
R_4 is methyl or a linear or branched chain C_{2-10}alkyl which is unsubstituted;
and where Group A monomer is a monomer selected from (meth)acrylic acid, maleic acid, fomaric acid, itaconic acid, cinnamic acid, crotonic acid, 2-(methy)acroyloxyethyl sulfonic acid, 2-(meth)acrylamido-2-methylpropane sulfonic acid, vinyl sulfonic acid, p-styrene sulfonic acid, allyl sulfonic acid and monomers of formula III

(III)



in which R_5 is hydrogen or methyl; and R_6 is a substituted linear or branched alkyl group of up to 10 carbon atoms, said substituent being selected from the group consisting of hydroxy, C_{1-4}alkoxy, Cl, Br, F, carboxy, C_{1-4}alkoxycarbonyl, C_{1-4}alkylcarbonyloxy, and amino;
and said additional vinylic copolymerizable monomer of Group B is neither a polymerization initiator, a crosslinker, nor a member of the group of compounds of formulae I, or II, nor a member of Group A monomers as defined above, but is a mono-unsaturated monomer which is copolymerizable with compounds of formulae I, II, and Group A monomers.

5,288,828
DISPERSANT POLYMERS

Rodney M. Harris, Chicago; Maqsood S. Ahmed, Homewood, and Thomas A. Renner, Lansing, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Mar. 8, 1993, Ser. No. 28,039
Int. Cl.[5] C08F *20/26*
U.S. Cl. 526—320 **3 Claims**

1. A hydroxy functional polymeric dispersant which is substantially free of acid groups, amine groups, and ethylenic unsaturation, the dispersant being especially adapted for dispersing pigments therein and being compatible with a variety of film-forming polymers, said dispersant being the free radical addition polymerization reaction product of a mixture of monomers consisting essentially of:
(a) 15-30% by weight styrene; and
(b) 15-30% by weight of at least one alkyl methacrylate monomer having 1 to 16 carbon atoms in the alkyl group; and
(c) 20-60% by weight of at least one alkyl acrylate monomer having 1 to 16 carbon atoms in the alkyl group; and
(d) 7-25% by weight of at least one hydroxy-functional ethylenically unsaturated monomer copolymerizable with, monomers (a) (b) and (c);
wherein said polymeric dispersant has a weight average molecular weight of 18,000 to 24,000, a number average molecular weight of 4,500 to 7,400, and a polydispersity of 2.9 to 4.2.

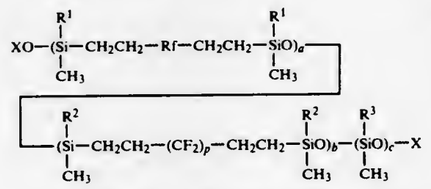
5,288,829
CURABLE SILICONE COMPOSITION

Toshio Takago; Horishi Inomata; Shinichi Sato, all of Annaka; Noriyuki Koike, Yoshii; Takashi Matsuda, and Hirofumi Kishita, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

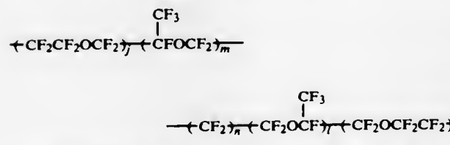
Filed Jul. 23, 1992, Ser. No. 917,291
Claims priority, application Japan, Jul. 23, 1991, 3-206590; Sep. 10, 1991, 3-258601; Sep. 10, 1991, 3-258602
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—15 **6 Claims**

1. A curable silicone composition, comprising
(A) a fluorocarbonsiloxane represented by the following general formula (1):

(1)



wherein R^1 and R^2 each represent an unsubstituted or substituted monovalent hydrocarbon group, R^3 represents a monovalent hydrocarbon group having 1 to 8 carbon atoms, Rf represents a bivalent group represented by the following general formula:



wherein n is an integer of 0 to 8, m and l are each an integer of 0 to 5, and j and k are each an integer of 0 or 1, provided that l+m+n+j+k is an integer bringing the number of carbon atoms to 11 to 30, a is an integer of 2 to 300, b is an integer of 0 to 300, c is an integer of 0 to 5,000, p is an integer of 2 to 8, and X is a triorganosilyl group represented by the following formula:



wherein R^4 is an unsubstituted or substituted monovalent hydrocarbon group having an aliphatic unsaturated bond, and
R^5 and R^6 each represent a monovalent hydrocarbon group having 1 to 8 carbon atoms,
(B) an organohydrogensiloxane containing two or more Si—H groups in the molecule, and
(C) a platinum family metal catalyst, the amount of the component (B) being such that the amount of the Si—H groups is 0.5 to 5.0 mol per mol of the aliphatic unsaturated group in the composition.

5,288,830
CURABLE ORGANOPOLYSILOXANE COMPOSITION

Hideyuki Itou, and Takamasa Toyoda, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,400
Claims priority, application Japan, Jan. 14, 1992, 4-024809
Int. Cl.[5] C08G *77/12*
U.S. Cl. 528—15 **9 Claims**

1. A curable organopolysiloxane composition which comprises:
(A) 100 parts by weight of an organopolysiloxane having at least two vinyl groups each joined to silicon atoms in one molecule and having a viscosity not lower than 50 centipoises at 25° C.;
(B) from 0.5 to 20 parts by weight of an organohydrogenpolysiloxane of the following general formula

$$(R^1_2R^2SiO_{\frac{1}{2}})_l(R^1HSiO_{2/2})_m(R^1_2SiO_{2/2})_n(R^1SiO_{3/2})_k$$

wherein R^1's may be the same or different and represent an unsubstituted or substituted monovalent hydrocarbon group other than aliphatic unsaturated hydrocarbon groups, R^2 represents a hydrogen atom or a monovalent hydrocarbon group represented by R^1, and l, m, n and k are such that l+m+n+k is a value which permits the organopolysiloxane to have a viscosity at 25° C. of from 5 to 1,000 centipoises and that $m \geqq 2$, $k \geqq 1$, $0.5 \leqq l/k \leqq 3$ and $0 \leqq n/m \leqq 1$; and
(C) a catalytic amount of a platinum group catalyst.

5,288,831
ODOR-FREE PURIFIED POLYETHER SILICONES AND METHOD FOR THEIR PRODUCTION

Shoji Ichinohe, and Hideyuki Kawamoto, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 524,309, May 17, 1990, Pat. No. 5,118,767. This application Jan. 31, 1992, Ser. No. 828,824
Claims priority, application Japan, May 17, 1989, 1-123053
Int. Cl.[5] C08G *77/14*
U.S. Cl. 528—25 **20 Claims**

1. A purified polyether silicone addition product of a hydrogen siloxane and a polyoxyalkylene containing a terminal double bond which, in unpurified form, contains unreacted polyoxyalkylene, internal rearrangement side reaction products thereof, or both, which generate unpleasant odors in the reaction product upon storage and upon contact with water, wherein said purified polyether silicone addition product contains a total quantity of no greater than 100 ppm calculated on said polyether silicone of said unreacted polyoxyalkylene and rearrangement products thereof.

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5,288,832

POLY(SILETHYNYLENEDISILOXANE) AND METHOD FOR THE MANUFACTURE THEREOF

Toshio Suzuki, Kanagawa, Japan, assignor to Dow Corning Japan, Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 9,488
Claims priority, application Japan, Jan. 31, 1992, 4-016656
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—34 **7 Claims**

1. Poly(silethynylenedisiloxane) with a degree of polymerization of 3 to 10,000 and with repeating units represented by the formula:

$$-R^1R^2SiC{\equiv}CSiR^3R^4OSiR^5R^6O-$$ where R^1-R^6

independently represent hydrogen atoms, alkyl groups, aryl groups, or alkenyl groups.

5,288,833

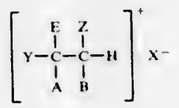
LIQUID CATALYSTS FOR RAPID POLYMERIZATION OF LIQUID COMPOSITIONS BASES ON POLYISOCYANATES AND EPOXIDES

Fabrizio Parodi, Genova; Carlo Belgiovine, Quiliano, and Carla Zannoni, Milan, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed May 20, 1992, Ser. No. 886,599
Claims priority, application Italy, May 22, 1991, MI 91 A/001412
Int. Cl.[5] C08G *18/18*
U.S. Cl. 528—49 **11 Claims**

1. Liquid reactive compositions, rapidly polymerizing starting from temperatures lower than 60° C., comprising:
(A) at least one organic polyisocyanate;
(B) a monoepoxide or polyepoxide, or a mixture of different mono-and/or polyepoxides;
(C) at least one catalyst which is liquid at temperatures lower than 60° C., selected from among quaternary β-hydroxyalkylammonium halides or quaternary β-hydroxycycloalkylammonium halides of formula (I)

(I)



wherein:
A and B, different from each other, are —OH or an

$$-N^+R_1R_2R_3$$

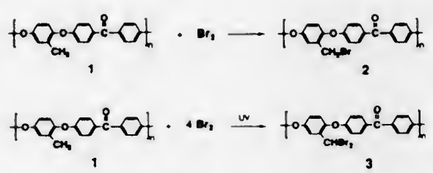
moiety, wherein R_1, R_2 and R_3, which may be the same or different from one another, are C_1-C_{24} alkyl radicals, C_3-C_{14} cycloalkyl radicals, C_6-C_{14} aromatic radicals, or C_4-C_{24} radicals of mixed alkyl, cycloalkyl and/or aromatic character, optionally containing one or more functional groups selected from among ether group, olefinic double bond or acetylenic triple bond, and R_2 and R_3, taken jointly, can also constitute, together with the quaternary nitrogen atom, a heterocyclic structure;
E and Z, which may be the same or different from one another, are H or a C_1-C_{24} alkyl radical, a C_3-C_{12} cycloalkyl radical, a C_6-C_{14} aromatic radical, or a C_4-C_{24} radical of mixed alkyl, cycloalkyl and/or aromatic character, optionally containing one or more functional groups selected from among ether group, olefinic double bond or acetylenic triple bond, wherein Z can also be replaced by a simple covalent bond with the Y moiety;
Y is a C_1-C_{50} alkyl radical, a C_3-C_{36} cycloalkyl radical, a C_6-C_{14} aromatic radical, a C_2-C_{14} heterocyclic radical with heteroatoms being selected from among O, N, S or P, or a C_4-C_{50} radical of mixed alkyl, aromatic and/or cycloalkyl character, optionally containing one or more functional groups selected from among ether, thioether, ester, carbonate, amido groups, olefinic double bond or acetylenic triple bond, and
X is a halide ion, selected from Cl^-, Br^- and I^-.

5,288,834

FUNCTIONALIZED POLYARYLETHERKETONES

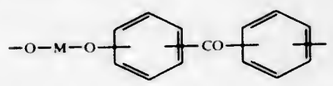
Jacques Roovers, Gloucester; Fei Wang, and Michael Guiver, both of Ottawa, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Mar. 25, 1993, Ser. No. 36,868
Int. Cl.[5] C08G *8/02, 14/00, 65/48*
U.S. Cl. 528—125 **15 Claims**



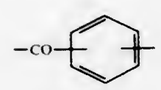
1. A process for preparing derivatives of a polyaryletherketone containing repeating units

(I)



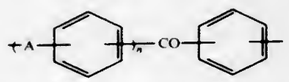
alone or in conjunction with other repeating units selected from the group consisting of subunit

II



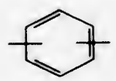
and

III

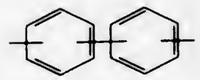


where M is selected from the group consisting of

IV

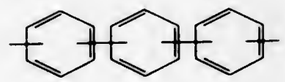


V



and

VI



A is —O— or —CO— and n is 1 or 2,
the process comprising

a) providing a methyl derivative of said polyaryletherketone with methyl groups being substituted predominantly on the phenylene rings of the subunits M, and
b) brominating said methyl derivative in conditions effective to obtain a bromomethyl derivative of said polyaryletherketone.

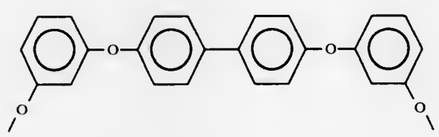
5,288,835

MELT PROCESSABLE POLYESTERS AND POLY(IMIDE-ESTERS)

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1993, Ser. No. 65,300
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—185 **17 Claims**

1. An isotropic polyester comprising the repeat unit



5,288,836

PROCESS FOR PRODUCING POLYCARBONATES FROM NITROGEN DIOL AND AROMATIC DIOL HALOFORMATE.

Walter Mychajlowskij, Georgetown; George Liebermann, and Dasarao K. Murti, both of Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1992, Ser. No. 907,341
Int. Cl.[5] C08G *64/12*
U.S. Cl. 528—198 **23 Claims**

1. A process for producing a polycarbonate, comprising polymerizing a diol selected from the group consisting of N,N'-diphenyl-N,N'-bis(3-hydroxyphenyl)-[1,1'-biphenyl]-4,4'-diamine, 3,5-dihydroxyphenyl-9-dicyanomethylene-4-carboxylate,N,N-bis(4-biphenyl)-3,5-dihydoxyaniline, and bis(m-hydroxyphenyl)-4-bisphenylamine with an aromatic diol haloformate.

5,288,837

PREPARATION OF POLYCARBONATE WITH SUBSEQUENT ADDITION OF CHAIN TERMINATOR AND BASE

Sarat Munjal; Thomas M. Wardlow, and Andrew F. Hall, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 724,642, Jul. 2, 1991, Pat. No. 5,200,496. This application Apr. 5, 1993, Ser. No. 43,103
Int. Cl.[5] C08G *64/20*
U.S. Cl. 528—198 **6 Claims**

1. A process for preparing polycarbonate comprising
(a) forming a carbonate oligomer by contacting a carbonate precursor with a solution containing a dihydroxy compound, water, a solvent capable of dissolving a carbonate precursor, and a base,
(b) admixing a chain terminator with said solution after said carbonate precursor has been substantially completely reacted with said solution,
(c) forming a polycarbonate by admixing with said solution, after said chain terminator has been substantially completely reacted therewith, sufficient base to impart to said solution a negative chloroformate test,
(d) recovering a polycarbonate product from said solution.

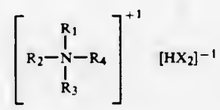
5,288,838

PREPARATION OF POLYCARBONATES WITH BIOXYANION CATALYST

Swaminathan Sivaram; Jagdish C. Sehra; Venkat S. Iyer, all of Maharashtra; Ishwar S. Bhardwaj, and Sheo Satish, both of Gujarat, all of India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Apr. 9, 1992, Ser. No. 865,951
Int. Cl.[5] C08G *64/30*
U.S. Cl. 528—199 **11 Claims**

1. An improved process for the preparation of aryl polycarbonates which comprises reacting an arylcarbonate and a dihydric phenol in the melt phase with a catalyst belonging to the class of quaternary ammonium bioxyanions having the general formula:



wherein X represents a carboxylate and R represents alkyl or aryl.

5,288,839

DIOL-TERMINATED POLYCARBONATES

Alberto Greco, Dresano, Italy, assignor to Enichem Synthesis S.p.A., Palermo, Italy

Filed Sep. 15, 1992, Ser. No. 944,908
Claims priority, application Italy, Sep. 17, 1991, MI91 A 002457
Int. Cl.[5] C08G *64/00*
U.S. Cl. 528—204 **11 Claims**

1. A diol-terminated polycarbonate having the formula (I):

$$HO-(R_1-O-CO-O)_x-(R_2-O-CO-O)_y-R-_3OH$$

wherein the succession of radicals

$$-R_1-O-CO-O- \text{ and } -R_2-O-CO-O-$$

inside the copolymer is purely random; R_1 is a polymethylene radical containing from 9 to 12 carbon atoms, or combinations thereof; R_2 is a bivalent radical derived by the loss of the two hydroxyl groups from a diol selected from the group consisting of 1,4-butandiol, 2,2-dimethyl-1,3-propandiol, 1,5-pentandiol, 1,6-hexandiol, 1,4bishydroxymethylcyclohexane, triethyleneglycol and the diol derived by the condensation of caprolactone with 1,6l **-hexandiol;** R_3 is a bivalent radical which is R_1 or R_2, and x and y have such values that:
(a) the fraction of the structural units corresponding to: $-(R_1-OCO-O)_x-$ is from 50 to 95% by weight of the entire copolymer; and
(b) the number molecular weight (MW) of the polycarbonate diol having formula (I) ranges from 1500 to 15,000.

5,288,840

POLYOXYMETHYLENE COPOLYMER AND PROCESS FOR PRODUCING THE COPOLYMER

Hirohisa Morishita, and Kazuhiko Matsuzaki, both of Kurashiki, Japan, assignors to Asahi Kasei Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/00039, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992
PCT Filed Jan. 17, 1991, Ser. No. 859,440
Claims priority, application Japan, Oct. 5, 1990, 2-266414
Int. Cl.[5] C08G *14/02*
U.S. Cl. 528—238 **10 Claims**

1. A polyoxymethylene copolymer having a molecular

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weight of 10,000–200,000 comprising oxymethylene units (—CH_2O)— and oxyalkylene units



wherein R and R_0 may be the same or different and are each selected from hydrogen, an alkyl group or an aryl group, n is 1 to 5, and m is 2 to 6, and wherein

(a) the proportion of oxyalkylene units to oxymethylene units is 0.07–0.5% by mole, and

(b) the ratio of the absorbance of terminal formate groups to methylene groups in the infrared spectrophotometry of the polymer is not more than 0.025.

5,288,841

FLUIDIZED BED RING-OPENING POLYMERIZATION PROCESS

Howard E. Bellis, Wilmington, Del., and Donald C. Paul, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 580,525, Sep. 11, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 984,005

Int. Cl.[5] C08G *69/16, 63/08, 61/12*

U.S. Cl. 528—275 **10 Claims**

1. In the process for the ring-opening polymerization of a ring-opening polymerizable cyclic compound which comprises contacting the cyclic compound under polymerizing conditions in a reaction zone with a metal or metal compound polymerization initiator effective to initiate the polymerization of the cyclic compound to a solid polymer, the improvement which comprises contacting a vaporizable, cyclic ring-opening polymerizable compound having 6 to 8 atoms in the ring in the vapor state with a particulate solid initiator maintained in the reaction zone as a fluidized bed by a fluidizing flow of a gas stream whereby the cyclic compound is converted to a particulate solid polymeric reaction product.

5,288,842

MORPHOLOGICAL COMPOSITE MATERIALS FORMED FROM DIFFERENT PRECURSORS

Claudius Feger, Hopewell Junction; Rodney T. Hodgson, Ossining; David A. Lewis, Carmel, and Ravi Saraf, Croton-on-Hudson, all of, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1991, Ser. No. 647,957

Int. Cl.[5] C08G *69/26;* **B32B** *27/00*

U.S. Cl. 528—335 **33 Claims**

1. A method of preparing a polymer composite comprising an integral structure having a continuous phase and at least one discontinuous phase, said discontinuous phase being constituted by a multiplicity of separated domains, said continuous phase and said discontinuous phase each consisting essentially of polymeric material of the same chemical constitution, said continuous and discontinuous phases exhibiting a different morphological characteristic, said method comprising:

(a) forming a mixture of reactant precursors to said polymeric material, at least one of said precursors having a reaction rate higher than the other precursor or precursors in said mixture;

(b) reacting said precursor having the highest reaction rate under conditions effective to obtain a composite comprising a continuous-polymer phase and a discontinuous phase of unreacted precursors;

(c) simultaneously or sequentially applying compressive or tensile stress to said composite effective to improve the ultimate tensile strength of said composite; and

(d) simultaneously or subsequently to application of said stress to said composite, reacting said unreacted precursors in said discontinuous phase under conditions effective to convert said precursors to polymeric material.

5,288,843

POLYIMIDES, PROCESS FOR THE PREPARATION THEREOF AND POLYIMIDE RESIN COMPOSITIONS

Shoji Tamai; Masahiro Ohta, both of Yokohama; Saburo Kawashima, Yokosuka; Katsuaki Iiyama, Odawara; Hideaki Oikawa, Yokohama; Akihiro Yamaguchi, Kamakura; Kouji Ohkoshi, Zushi, and Masao Yoshikawa, Kuwana, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

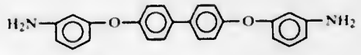
Continuation-in-part of Ser. No. 196,492, May 20, 1988, abandoned, and a continuation-in-part of Ser. No. 199,918, May 27, 1988, abandoned, and a continuation-in-part of Ser. No. 202,031, Jun. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 551,314, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 426,715, Oct. 26, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 608,727

Claims priority, application Japan, May 20, 1987, 62-126320; Jun. 1, 1987, 62-134830; Jun. 1, 1987, 62-134831; Jun. 3, 1987, 62-138203; Jun. 3, 1987, 62-138204; Jun. 5, 1987, 62-140041; Dec. 16, 1987, 62-316101; Dec. 25, 1987, 62-327206; Oct. 28, 1988, 63-270778; Apr. 12, 1989, 1-090674

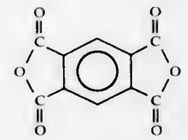
Int. Cl.[5] C08G *69/26, 73/10, 8/02*

U.S. Cl. 528—353 **42 Claims**

1. A process for preparing a polyimide having a melt viscosity of not more than 40,000 poise at 380° C. comprising carrying out condensation of 4,4'-bis(3-aminophenoxy)biphenyl of the formula:



with pyromellitic dianhydride of the formula:



in the presence of at least one diamine compound in an amount of from about 1 to 100% by mole of said 4,4'-bis(3-aminophenoxy)biphenyl, said at least one diamine compound being selected from:

(a) aminobenzylamine, phenylenediamine, diaminocyclohexane and ethylene diamine;

(b) 4,4'-diaminobiphenyl, 3,4'-diaminobiphenyl, 3,3'-diaminobiphenyl, 4,4'-diaminobenzophenone, 3,3'-diaminobenzophenone, 3,4'-diaminobenzophenone, bis(3-aminophenyl)ether, (3-aminophenyl)(4-aminophenyl)ether, bis(3-aminophenyl)sulfide, (3-aminophenyl)(4-aminophenyl)sulfide, bis(4-aminophenyl)sulfide, bis(3-aminophenyl)sulfoxide, (3-aminophenyl)(4-aminophenyl)-sulfoxide, bis(4-aminophenyl)sulfoxide, bis(3-aminophenyl)sulfone, (3-aminophenyl)(4-aminophenyl)sulfone, bis(4-aminophenyl)sulfone, 3,3'-diaminodiphenylmethane, 3,4'-diaminodiphenylmethane, 4,4'-diaminodiphenylmethane and diaminonaphthalene;

(c) 1,3-bis(3-aminophenoxy)benzene, 1,3-bis(4-aminophenoxy)benzene, 1,4-bis(3-aminophenoxy)benzene, and 1,3-bis(4-aminophenoxy)benzene;

(d) bis-[4-(4-aminophenoxy)phenyl]methane, 1,1-bis[4-(4-aminophenoxy)phenyl]ethane, 1,2-bis[4-(4-aminophenoxy)phenyl]ethane, 2,2-bis[4-(4-aminophenoxy)phenyl]propane, 2,2-bis[4-(4-aminophenoxy)phenyl]butane, 2,2-bis[4-(4-aminophenoxy)phenyl]-1,1,1,3,3,3-hexafluoropropane, bis[4-(4-aminophenoxy)phenyl]ketone, bis[4-(4-aminophenoxy)phenyl]sulfide, bis[4-(4-aminophenoxy)phenyl]-sulfoxide, bis[4-(4-aminophenoxy)phenyl]sulfone and bis[4-(4-aminophenoxy)phenyl ether;

(e) 1,4-bis[4-(3-aminophenoxy)benzoyl]benzene, 1,3-bis[4-(3-aminophenoxy)benzoyl]benzene, 4,4'-bis[3-(4-aminophenoxy)benzoyl]diphenyl ether, 4,4'bis[3-(3-aminophenoxy)benzoyl]diphenyl ether, 4,4'-bis[4-(4-amino-α,α-dimethylbenzyl)phenoxy]benzophenone, 4,4'-bis[4-(4-amino-α,α-dimethylbenzyl)phenoxy]diphenyl sulfone and bis[4-{4-(4-aminophenoxy)phenoxy}phenyl]sulfone.

5,288,844

HIGH-REFRACTIVE INDEX PLASTIC OPTICAL MATERIAL

Teruo Sakagami, 3-2-7, Nakamukae, Nisbiki-machi, Iwaki-shi, Fukushima, Japan

Filed Jul. 2, 1992, Ser. No. 907,628

Claims priority, application Japan, Aug. 1, 1991, 3-214186

Int. Cl.[5] C08G *75/04*

U.S. Cl. 528—376 **3 Claims**

1. A high-refractive index plastic optical material comprising a copolymer obtained by subjecting a mixture composed of a component A consisting of a dithiol compound represented by the following formula I:



wherein n stands for an integer of 2 or 3, and a component B consisting of divinylbenzene, said mixture containing both components in such a manner that the proportion of the component A to the component B is 0.25–3.5 in terms of weight ratio, to addition polymerization and having a refractive index of at least 1.63 and an Abbe's number of at least 27.

5,288,845

EIMERIA NECATRIX 16S RDNA PROBES

Prasanta R. Chakraborty, Scotch Plains; Michael Dashkevicz, Jamesburg; Alex Elbrecht, Watchung; Scott D. Feighner, Scotch Plains; Paul A. Liberator, Jackson, all of N.J., and Helen Profous-Juchelka, Staten Island, N.Y., assignors to Merck and Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 707,351, May 29, 1991, abandoned. This application May 12, 1992, Ser. No. 879,470

Int. Cl.[5] C07H *21/04*

U.S. Cl. 536—24.32 **2 Claims**

1. A DNA probe, the DNA probe selected from the group consisting of 5' AAGTGATACAGTAATCGTGAAGTT 3' (SEQ ID NO: 17) and 5' CAAAACCAACCCACTTAACG 3' (SEQ ID NO: 38).

5,288,846

CELL SPECIFIC GENE REGULATORS

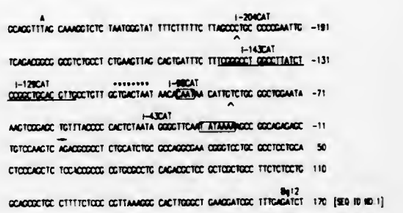
Thomas Quertermous, Cambridge, and Mu-En Lee, Boston, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 598,890, Oct. 19, 1990, abandoned. This application Aug. 3, 1992, Ser. No. 924,396

Int. Cl.[5] C12N *15/85, 15/67, 5/16;* **C07H** *21/04*

U.S. Cl. 435—172.3 **15 Claims**

1. An isolated DNA molecule comprising an element of the endothelin-1 (ET-1) promoter (SEQ ID No:1) capable of directing high-level cell-specific expression of a heterologous



gene in endothelial cells operably linked to a heterologous gene.

5,288,847

FABRIC CONDITIONING COMPOSITION CONTAINING ALKANOL AMINE ESTER AND ACID

Subhash Harmalker, Somerset, N.J.; Jean-Paul Grandmaire, Andrimont, Belgium; Viviane Tack, Soumagne, Belgium, and Alain Jacques, Blegny, Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

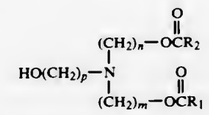
Filed Aug. 21, 1992, Ser. No. 934,097

Int. Cl.[5] D06M *13/325*

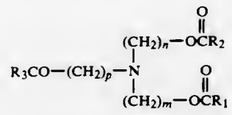
U.S. Cl. 252—8.8 **10 Claims**

1. An environmentally compatible and biodegradable fabric conditioning composition capable of providing improved softening with significant reduction and solubilization of unwanted mineral encrustations on fabrics to be softened, such encrustations having generally deposited on the fabrics during the course of laundering in water having a high mineral content, which comprises a fabric conditioning mixture of:

(a) from about 1 to 20% by weight of (i) an alkanolamine diester having the general formula:



and (ii) an alkanolamine triester having the general formula:



wherein R_1, R_2, R_3 are each independently hydrogenated tallow or soft tallow; and n, m, and p are integers from 1 to 4; and

(b) from about 5 to 25% by weight an acid selected from the group consisting of citric acid, formic acid, maleic acid, malonic acid, tartaric acid and succinic acid.

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5,288,848

PROCESS FOR PREPARATION OF HIGH MOLECULAR WEIGHT, OPTIONALLY BRANCHED POLYARYLENE SULPHIDES

Karsten Idel; Wolfgang Ebert; Ludwig Bottenbruch; Dieter Freitag, and Rolf-Volker Meyer, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 494,782, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 256,250, Oct. 11, 1988, abandoned, which is a continuation of Ser. No. 893,615, Aug. 6, 1986, abandoned. This application Nov. 17, 1992, Ser. No. 978,174

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529498

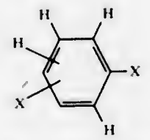
The portion of the term of this patent subsequent to Jul. 26, 2005, has been disclaimed.

Int. Cl.[5] C08G *75/14*

U.S. Cl. 528—388 **1 Claim**

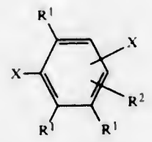
1. In the process for the preparation of branched or unbranched polyarylene sulphides which comprises reacting:

a) 50–100 mol % of dihalogenoaromatics of the formula



(I)

and 0–50 mol % of dihalogenoaromatics of the formula



(II)

in which

X represents halogen in the meta- or para-position relative to one another, and

R^1 and R^2 is identical or different and is hydrogen, C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{10}-alkylaryl or C_7–C_{14}-aralkyl, or two radicals R^1 in the ortho-position relative to one another linked to form an aromatic ring or a heterocyclic ring containing up to three hetero atoms, and wherein one radical R^1 is always other than hydrogen,

b) 0–5 mol %, based on the sum of the dihalogenoaromatics of the formula I and II, of a tri- or tetrahalogenoaromatic of the formula

$$ArX_n \quad \text{(III)}$$

wherein

Ar is an aromatic C_6–C_{14} radical or a heterocyclic radical with 5 to 14 ring atoms with up to 3 ring carbon atoms replaced by hetero atoms, X represents halogen, and

n represents the number 3 or 4, and

c) 50 to 100 mol % of an alkali metal sulphide or alkali metal sulphide with or without alkali metal hydroxide, and 0 to 50 mol % of an alkali metal bisulphide with the molar ratio of (a+b):c in the range from 0.75:1 to 1.25:1,

wherein the improvement comprises adding to the reaction 0.1 to 5 mol % of monochlorodiphenyl sulfone.

5,288,849

ALUMINA-BASED ADSORBENTS FOR THE PURIFICATION OF POLYOLEFINS

Eric Garcin, Montrouge; Claude-Bernard Cartier, Villeneuve-Saint-Georges, and Eric Quemere, Cormeilles-En-Parisis, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 466,917, Jan. 18, 1990, abandoned. This application Dec. 21, 1990, Ser. No. 631,476

Claims priority, application France, Jan. 18, 1989, 89 00530

Int. Cl.[5] C08F *6/08*

U.S. Cl. 528—482 **9 Claims**

1. In a process for the adsorptive purification of a polyolefin prepared by the polymerization of an olefin in the presence of a metallic coordination catalyst, to remove contaminating catalyst metal values therefrom, which comprises utilizing as the adsorbent therefore, an alumina substrate having incorporated therein at least one compound of an alkali or alkaline earth metal, said alkali or alkaline earth metal values being present therein in an amount ranging from 15 mmole to 100 mmole per 100 g of alumina substrate.

5,288,850

PROCESS FOR REMOVING METALS FROM VINYLPHENOL POLYMERS

Tadashi Matsumoto, Omiya, and Mitsuru Akaho, Kimitsu, both of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,310

Claims priority, application Japan, Nov. 28, 1991, 3-339727

Int. Cl.[5] C08F *6/08*

U.S. Cl. 528—482 **14 Claims**

1. A process for removing alkali metals, alkaline earth metals, and transition metals from a vinylphenol polymer characterized by dissolving said vinylphenol polymer into a solvent to make a solution and contacting said solution with a strongly acidic cation exchange resin.

5,288,851

RENIN INHIBITORS, PROCESSES FOR PREPARING THEM, METHODS FOR USING THEM, AND COMPOSITIONS CONTAINING THEM

Annette M. Doherty, Ann Arbor; Harriet W. Hamilton, Chelsea; John C. Hodges, Ann Arbor; Joseph T. Repine, Ann Arbor, and Ila Sircar, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 676,047, Mar. 27, 1991, Pat. No. 5,162,527, which is a division of Ser. No. 384,236, Jul. 24, 1989, Pat. No. 5,063,207, which is a continuation-in-part of Ser. No. 206,023, Jun. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 113,772, Oct. 26, 1987, abandoned. This application Aug. 4, 1992, Ser. No. 925,702

Int. Cl.[5] A61K *37/02*; C07K *5/00*

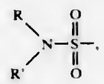
U.S. Cl. 530—338 **2 Claims**

1. A process for the preparation of a peptide of the formula

A—X—Y—W—U (I)

or a pharmaceutically acceptable acid addition salt thereof wherein

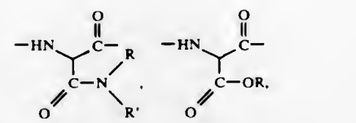
A is

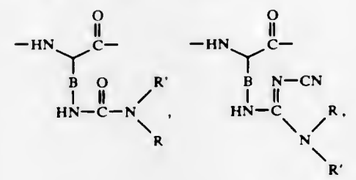


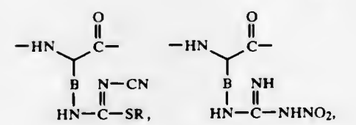
wherein R and R' are each independently hydrogen, benzyl or lower alkyl;

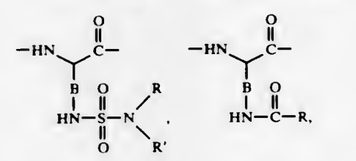
X is PHE, HOMOPHE, TYR, TYR(OMe), CYCLOHEXYLALA, LEU, NAPHTHYLALA, TRP, HIS, or (NMe)PHE;

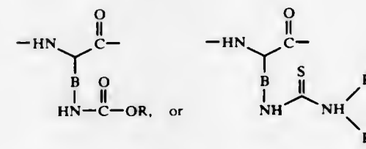
Y is GLN, HIS, LEU, PGY, MET, MET(O), MET(O_2), TZA, ALG, PPG, CPM, EMG, BYG, NIA, PHA,









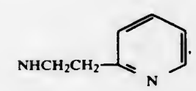


wherein B is a carbon chain of from 3 to 6 carbon atoms which is saturated, unsaturated, or acetylenic;

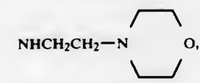
R and R' are each independently hydrogen, benzyl, or lower alkyl;

W is STA, CYSTA, PHSTA, CHSTA, ASTA, ACYS, DFSTA, DFKSTA, DFCYS, DFKCYS, DFCHS, DFKCHS; and

U is



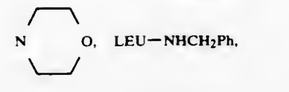
$NHCH_2CH_2N(CH_2CH_2OH)_2$,

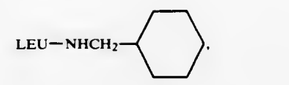


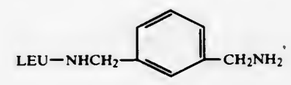
$NHCH_2CH(CH_3)CH_2CH_3$,

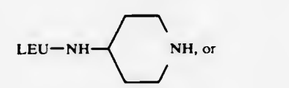
$NHCH(CH_2OH)CH(CH_3)CH_2CH_3$,

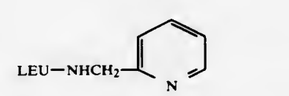
-continued











which comprises reacting at least two equivalents of a sulfamyl chloride with at least one equivalent of amino acid as in X, an inorganic aqueous base and a water-miscible organic solvent to give a sulfamyl-amino acid, followed by coupling of the latter to the -Y-W-U fragment and if desired, converting to a pharmaceutically acceptable acid addition salt thereof.

5,288,852

HUMAN TUMOR NECROSIS FACTOR POLYPEPTIDES

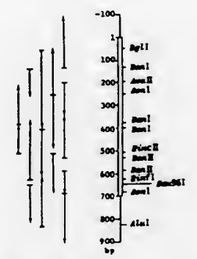
Masaaki Yamada, Kyoto; Yasuji Furutani, Toyonaka; Mitsue Notake, Suita, and Juniti Yamagishi, Toyonaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 89,134, Aug. 25, 1987, abandoned, which is a division of Ser. No. 708,846, Mar. 5, 1985, abandoned. This application Jul. 1, 1993, Ser. No. 84,445

Claims priority, application Japan, Mar. 6, 1984, 59-43617; Apr. 23, 1984, 59-82653; Aug. 17, 1984, 59-172307

Int. Cl.[5] C07K *13/00*; A61K *37/02*

U.S. Cl. 530—351 **4 Claims**



1. A polypeptide having human tumor necrosis factor activity and being selected from the group consisting of

(a) the polypeptide having the amino acid sequence of the following formula, and

(b) a polypeptide having an amino acid sequence resulting from the addition of one or two amino acid residues from the precursor portion of said polypeptide (a) to the N-terminus of the following formula:

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					Ser	Ser	Ser	Arg
Thr	Pro	Ser	Asp	Lys	Pro	Val	Ala	His	Val
Val	Ala	Asn	Pro	Gln	Ala	Glu	Gly	Gln	Leu
Gln	Trp	Leu	Asn	Arg	Arg	Ala	Asn	Ala	Leu
Leu	Ala	Asn	Gly	Val	Glu	Leu	Arg	Asp	Asn
Gln	Leu	Val	Val	Pro	Ser	Glu	Gly	Leu	Tyr
Leu	Ile	Tyr	Ser	Gln	Val	Leu	Phe	Lys	Gly
Gln	Gly	Cys	Pro	Ser	Thr	His	Val	Leu	Leu
Thr	His	Thr	Ile	Ser	Arg	Ile	Ala	Val	Ser
Tyr	Gln	Thr	Lys	Val	Asn	Leu	Leu	Ser	Ala
Ile	Lys	Ser	Pro	Cys	Gln	Arg	Glu	Thr	Pro
Glu	Gly	Ala	Glu	Ala	Lys	Pro	Trp	Tyr	Glu
Pro	Ile	Tyr	Leu	Gly	Gly	Val	Phe	Gln	Leu
Glu	Lys	Gly	Asp	Arg	Leu	Ser	Ala	Glu	Ile
Asn	Arg	Pro	Asp	Tyr	Leu	Asp	Phe	Ala	Glu
Ser	Gly	Gln	Val	Tyr	Phe	Gly	Ile	Ile	Ala
Leu.									

5,288,853

FACTOR VIII PURIFICATION PROCESS

Prabir Bhattacharya, Walnut, and Toshiharu Motokubota, Arcadia, both of Calif., assignors to Alpha Therapeutic Corporation, Los Angeles, Calif.

Filed Apr. 30, 1992, Ser. No. 876,410
Int. Cl.[5] A61K *35/14;* **C07K** *13/00*
U.S. Cl. 530—383 **21 Claims**

1. A process for separating Factor VIII complex from an impure protein fraction containing Factor VIII complex, the process comprising the steps of:

providing an aqueous solution of an impure protein fraction comprising Factor VIII complex;

applying the impure protein fraction solution to a heparin-coupled chromatographic medium to thereby bind Factor VIII complex to the heparin;

eluting the Factor VIII complex from the chromatographic medium using an aqueous solution comprising $CaCl_2$;

adding a sufficient amount of glycine and sodium chloride to the eluate to thereby precipitate Factor VIII complex;

washing the Factor VIII complex precipitate with a wash solution; and

recovering the washed Factor VIII complex.

5,288,854

FUNCTIONAL DERIVATIVES OF ICAM-1 WHICH ARE SUBSTANTIALLY CAPABLE OF BINDING TO LFA-1 BUT ARE SUBSTANTIALLY INCAPABLE OF BINDING TO MAC-1

Michael S. Diamond, Cambridge; Donald E. Staunton, Chestnut Hill, and Timothy A. Springer, Newton, all of Mass., assignors to Center For Blood Research, Inc., Boston, Mass.

Filed Nov. 28, 1990, Ser. No. 618,286
Int. Cl.[5] C07K *9/00;* **A61K** *37/02*
U.S. Cl. 530—395 **5 Claims**

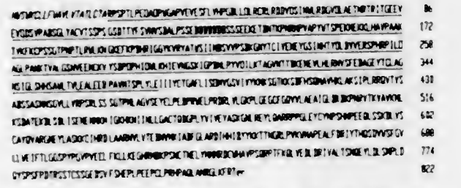
1. An ICAM-1 functional derivative which is substantially incapable of binding to MAC-1 but is substantially capable of binding to LFA-1, wherein said functional derivative comprises domains 1-3 of ICAM-1 and said functional derivative further contains a substitution or deletion of one or more of the amino acid residues from about residues 229 to 231 and from about 254 to 256 within domain 3 of ICAM-1 or an insertion of one or more amino acid residues within the region from about residues 229 to 231 and from about 254 to 256 within domain 3 of ICAM-1.

5,288,855

EXTRACELLULAR FORM OF THE HUMAN FIBROBLAST GROWTH FACTOR RECEPTOR

Laura Bergonzoni; Guy Mazue; Antonella Isacchi; Romeo Ronciucci, and Paolo Sarmientos, all of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

Continuatioo of Ser. No. 642,755, Jan. 18, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,133
Claims priority, application United Kingdom, Jan. 23, 1989, 9001466
Int. Cl.[5] C12P *21/06;* **C07K** *3/00;* **A61K** *37/24;* **A01N** *37/18*
U.S. Cl. 530—399 **2 Claims**



1. A polypeptide which is capable of binding specifically human basic fibroblast growth factor and human acidic fibroblast growth factor and which consists of the sequence underlined in FIG. 3.

5,288,856

METHOD OF ISOLATING ACID-STABLE, BIOLOGICALLY ACTIVE PROTEINS

Pierre Amiguet, Ruelle de Cojonnex 8, CH-1807 Blonay, Switzerland

Continuation of Ser. No. 436,253, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 122,012, Nov. 18, 1987, abandoned. This application Mar. 19, 1992, Ser. No. 854,336
Claims priority, application France, Nov. 20, 1986, 86 16166
Int. Cl.[5] C07K *3/24*
U.S. Cl. 530—419 **8 Claims**

1. A method of isolating biologically active, acid-stable proteins from biological extracts, said acid-stable proteins having a molecular weight not exceeding 15,000 daltons and having a half-cystin content of not less than 5%, consisting of:

co-precipitating from said extracts said acid-stable proteins to be isolated with acid-sensitive proteins having a molecular weight greater than 15,000 daltons, said co-precipitation being obtained by acidification of said extracts with a strong, protein denaturing acid such that said acid-stable proteins remain undenatured and said acid-sensitive proteins are denatured;

isolating said undenatured acid-stable proteins from the co-precipitate thus formed by resuspending said co-precipitate in an aqueous solution, separating all insoluble material and recovering said undenatured acid-stable proteins from the aqueous phase, the residual contaminants thereof consist of nonproteinic material only in an amount of less than 10% by weight.

5,288,857

LIGNIN PREPARATION AND METHOD FOR ITS MANUFACTURE

Wilhelm Aarsrud; Hans Bergström, both of Vänersborg, Sweden, and Ingemar Falkehag, Charleston, S.C., assignors to Ligno Tech Sweden AB, Vargon, Sweden

Continuation of Ser. No. 689,251, Jul. 23, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 22,415
Claims priority, application Sweden, Dec. 12, 1988, 8804477
Int. Cl.[5] C07G *1/00;* **C08L** *97/00*
U.S. Cl. 530—500 **17 Claims**

1. A lignin fuel preparation which upon combustion will form an ash having an elevated melting point, said preparation containing predominantly lignin obtained by precipitation from black liquor derived directly from an alkali delignification process selected from the group consisting of the sulphate process, the soda process and the polysulphide process, and wherein the original sodium content of the lignin has been reduced by treating the lignin precipitate so as to be less than 2% by weight calculated on the dry weight of the lignin, and that sodium removed from the lignin has been replaced by calcium such that the calcium content of the lignin exceeds 2% by weight calculated on the dry weight of the lignin, said preparation further including an acid component selected from the group consisting of kaolin, silicon dioxide, aluminum oxide and slag, ash of an acid nature, and mixtures thereof.

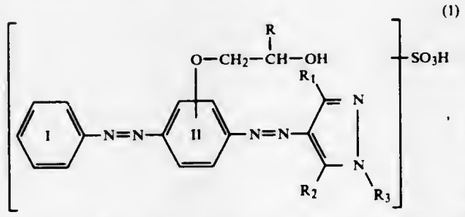
5,288,858

DIAZO DYES CONTAINING A HYDROXY ALKOXYBENZENE MIDDLE COMPONENT AND A PYRAZOLE COUPLING COMPONENT

Jürgen Schaetzer, Rheinfelden, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 14, 1992, Ser. No. 914,176
Claims priority, application Switzerland, Jul. 19, 1991, 2161/91
Int. Cl.[5] C09B *31/147;* **D06P** *3/24*
U.S. Cl. 534—756 **15 Claims**

1. An azo dye of the formula



(1)

in which R, R_1 and R_2, independently of one another, are hydrogen, substituted or unsubstituted C_1–C_8alkyl or phenyl, R_3 is hydrogen or substituted or unsubstituted C_1–C_8alkyl, C_5–C_7cycloalkyl or phenyl and the benzene rings I and II may be further substituted.

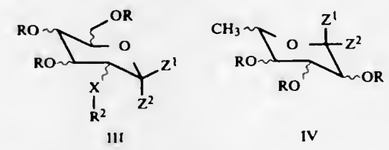
5,288,859

PROCESS FOR THE PREPARATION OF GLYCOSYL AZIDES

Subramaniam Sabesan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 22, 1991, Ser. No. 644,390
Int. Cl.[5] C07H *5/04, 11/04, 13/02*
U.S. Cl. 536—124 **10 Claims**

1. A process for the stereospecific preparation of a glycosyl azide of Formula III or IV



III IV

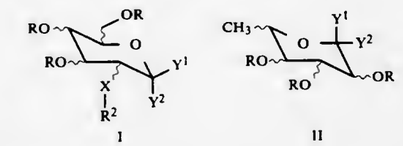
wherein:

R is alkyl, aryl, aralkyl, acyl or aroyl;

X is oxygen or NH; when X is oxygen, R^2 is alkyl, aryl, aralkyl, acyl or aroyl; when X is NH, R^2 is acyl, aroyl, or alkylcarbamyl; and

one of Z^1 or Z^2 is N_3, and the other is H;

comprising reacting a metal azide with a glycosyl phosphate triester having the phosphate group cis to the adjacent C-2 substituent at a temperature of from about 40 degrees Centigrade to about 80 degrees Centigrade wherein the glycosyl phosphate triester is a compound of Formula I or II



I II

wherein:

R is alkyl, aryl, aralkyl, acyl or aroyl;

X is oxygen or NH; when X is oxygen R^2 is alkyl, aryl, aralkyl, acyl or aroyl, when X is NH, R^2 is acyl, aroyl, or alkylcarbamyl;

one of Y^1 or Y^2 is $O—P\uparrow O(OR^4)_2$

and the other is H; and

R^4 is aryl

and wherein the reaction is carried out in the presence of a polar, aprotic solvent.

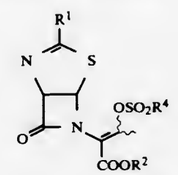
5,288,860

PROCESS FOR PREPARING THIAZOLINO AZETIDINONE AND 2-EXO-METHYLENEPENAM DERIVATIVE

Sigeru Torii, Okayama; Hideo Tanaka, Oakayama; Masatoshi Taniguchi, Tokushima; Michio Sasaoka, Tokushima; Takashi Shirol, Tokushima, and Yutaka Kameyama, Tokushima, all of Japan, assignors to Otsuka Kagaku Kasbushiki Kaisha, Osaka, Japan

Division of Ser. No. 665,863, Mar. 7, 1991, Pat. No. 5,206,361. This application Jan. 11, 1993, Ser. No. 3,024
Claims priority, application Japan, Mar. 8, 1990, 2-56956; Mar. 8, 1990, 2-56957
Int. Cl.[5] C07D *499/04, 513/04*
U.S. Cl. 540—310 **2 Claims**

1. A process for preparing a thiazolinoazetidinone derivative characterized by reacting a base with a thiazolinoazetidinone derivative represented by the formula



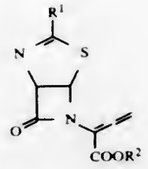
(2)

wherein R^1 is phenyl, substituted phenyl, methyl, substituted methyl, or



group, R^3 being phenyl or substituted phenyl, and R^2 is a hydrogen atom or carboxylic acid protective group, and R^4 is a lower alkyl, substituted lower alkyl, phenyl or substituted phenyl, to obtain a thiazolinoazetidinone derivative represented by the formula

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(I)

wherein R^1 and R^2 are as defined above, and

substituents of the substituted phenyl are selected from the group consisting of halogen atoms, straight-chain or branched-chain C_{1-4} lower alkyl groups, straight-chain or branched-chain C_{1-4} lower alkoxy groups, straight-chain or branched-chain C_{1-4} alkylthio groups, amino group, amino groups having one to two straight-chain or branched-chain C_{1-4} lower alkyl groups as substituent(s), hydroxy group, protected hydroxy group, nitro group, cyano group, phenyl group,

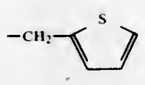


group (wherein R^5 is a straight-chain or branched-chain C_{1-4} lower alkyl group), and



group (wherein R^5 is as defined above); and

said substituted methyl is selected from the group consisting of $-CH_2Cl$, $-CHCl_2$, $-CCl_3$, $-CH_2Br$, $-CHBr_2$, $-CBr_3$, $-CH_2F$, $-CHF_2$, $-CF_3$, $-CHXR^3$ group (wherein X is a hydrogen atom, a halogen atom, hydroxyl group, protected hydroxyl group, acetoxy group, amino group or protected amino group, and R^3 is as defined above),



group, $-CY_2R^3$ group (wherein Y is a halogen atom and R^3 is as defined above), and $-CH_2OR^3$ group (wherein R^3 is as defined above).

5,288,861

POTASSIUM CLAVULANATE IN ROSETTE FORM

Dennis E. Clark; Shaukat H. Malik; Paul G. Butterly, all of Piscataway, N.J.; Clive E. Badman, and Jeffrey D. Haseler, both of Worthing, England, assignors to Beecham Group plc, England

Continuation of Ser. No. 867,275, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 668,795, Mar. 6, 1991, abandoned, which is a continuation of Ser. No. 440,909, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 148,576, Jan. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 74,944, Jul. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,781, Jan. 29, 1987, abandoned.

This application Nov. 18, 1992, Ser. No. 978,196

Int. Cl.[5] C07D *498/047*

U.S. Cl. 540—347 **11 Claims**

1. Potassium clavulanate in a crystalline form, of which 50% by weight or more of the potassium clavulanate is in the form of crystalline rosettes, each rosette comprising a plurality of needle crystals radiating out from a common nucleation point and characterized by their microscopic appearance under 100-fold magnification as having a clearly discernible rosette-form.

9. A process for the preparation of potassium clavulanate in the form of crystalline rosettes which comprises dissolving potassium clavulanate in aqueous methanol, ethanol or isopropanol and admixing the resulting solution with a mixture of isopropanol and acetone so as to cause precipitation of the potassium clavulanate in the form of crystalline rosettes.

5,288,862

SUBSTITUTED ACETOXYAZETIDINONE DERIVATIVES AND PROCESS FOR PREPARING 4-ACYLOXYAZETIDINONE DERIVATIVES

Takao Saito; Hidenori Kumobayashi, both of Tokyo, and Shunichi Murahashi, Osaka, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

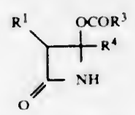
Filed Apr. 16, 1992, Ser. No. 869,171

Claims priority, application Japan, Apr. 18, 1991, 3-086588

Int. Cl.[5] C07D *205/08*; C07B *41/12*

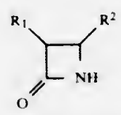
U.S. Cl. 540—357 **5 Claims**

1. A process for preparing a 4-acyloxyazetidinone or a derivative thereof represented by formula (IV):



(IV)

wherein R^1 represents a hydrogen atom, a lower alkyl group, a hydroxyethyl group, or a protected hydroxyethyl group; R^3 represents an alkyl group having from 1 to 10 carbon atoms which may be substituted with a halogen atom, a cyano group, a lower alkoxy group or a phenyl group, or a substituted or unsubstituted phenyl group, wherein said substituted phenyl group is substituted with a halogen atom, a lower alkoxy group or a nitro group, provided that the α-positioned carbon atom of said alkyl group should not have more than two halogen atoms; and R^4 represents a hydrogen atom, a lower alkyl group, or a lower alkoxycarbonyl group, which comprises reacting azetidinone or a derivative thereof represented by formula (II):



(II)

wherein R^1 is as defined above, and R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxycarbonyl group, or a carboxyl group,

with a carboxylic acid represented by formula (III)

$$R^3COOH \quad \text{(III)}$$

wherein R^3 is as defined above, in the presence of (1) a ruthenium compound represented by formula (V):

$$RuA_3 \quad \text{(V)}$$

wherein A represents a halogen atom, a lower alkanoyloxy group or acetylacetonato, (2) an aldehyde having 2 or more carbon atoms, provided that the carbon atom at the α-position thereof should not have two or more halogen atoms, and (3) oxygen.

5,288,863

PROCESS FOR THE PREPARATION OF HIGH-PURITY 1-(3-CHLORO-PHENYL)-4-METHYL-7,8-DIMETHOXY-5H-2,3-BENZODIAZEPINE

György Somogyi; Péter Botka; Gyula Horváth; Antal Simay; Roózsa Gyenge; Imre Moravcsik; Ernó Orbán; Tamás Hámori; Jeno Korösi; Csilla Kiss; Tibor Balogh; Mária Bidló née Iglói, and née Dievald Uskert, all of Budapest, Hungary, assignors to Egis Gyogyszergyar Rt., Budapest, Hungary

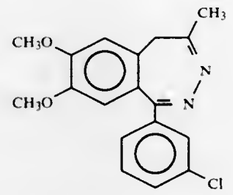
Filed May 4, 1992, Ser. No. 878,379

Claims priority, application Hungary, May 3, 1991, 1482/91

Int. Cl.[5] C07D *243/02*

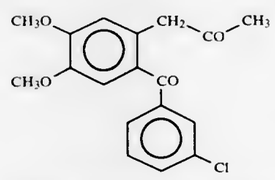
U.S. Cl. 540—567 **4 Claims**

1. A process for the preparation of 1-(3-chlorophenyl)-4-methyl-7, 8-dimethoxy-5H-2,3-benzodiazepine of formula (I)



(I)

in high purity and in a quality suitable for pharmaceutical purposes, said process comprising reacting 1 mole of 2-acetonyl-3'-chloro-4, 5-dimethoxybenzophenone of formula (II)



(II)

with 3 to 7 moles of hydrazine hydrate in an organic solvent or in a mixture of organic solvents, at a temperature between 15° C. and 85° C. in the absence of oxygen and optionally in the presence of water, and subsequently recrystallizing the crude product from an aliphatic alcohol containing 1 to 5 carbon atom(s), wherein the total contamination content in said 1-(3-chloro-phenyl)-4-methyl-7, 8-dimethoxy-5H-2,3-benzodiazepine does not exceed 0.3% by mass.

5,288,864

QUATERNARY AMMONIUM CARBOXYLATE INNER SALT COMPOSITIONS AS CONTROLLED ACTIVITY CATALYSTS FOR MAKING POLYURETHANE FOAM

James D. Nichols, Fogelsville; Ann C. L. Savoca, Bernville, and Mark L. Listemann, Whitehall, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 1,977, Jan. 8, 1993, Pat. No. 5,240,970. This application Jul. 28, 1993, Ser. No. 98,557

Int. Cl.[5] C07D *251/32*

U.S. Cl. 544—193 **11 Claims**

1. In a method for catalyzing the trimerization of an isocyanate and/or the reaction between an isocyanate and a compound containing a reactive hydrogen, the improvement which comprises employing as a catalyst composition a quaternary ammonium carboxylate inner salt.

5,288,865

PROCESS FOR PREPARING AMIDE DERIVATIVES FROM HALOAMINOTRIAZINES AND ACID HALIDES

Ram B. Gupta, Bronx, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

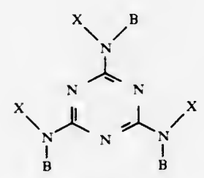
Continuation-in-part of Ser. No. 793,077, Nov. 15, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 968,871

Int. Cl.[5] C07D *251/54, 413/04*

U.S. Cl. 544—200 **13 Claims**

1. A process for preparing an acid amide from a haloaminotriazine and an acid halide comprising: contacting said haloaminotriazine with said acid halide at a temperature and for a length of time sufficient to produce said acid amide, wherein the haloaminotriazine is selected from the group consisting of:

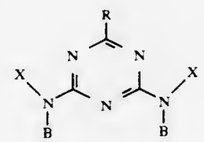
(i) a halogenated melamine represented by the formula (I):



(I)

wherein each X group is the same or different and is selected from the group consisting of hydrogen, chloro, bromo, iodo and fluoro groups, provided that at least one X group is a halogen; and wherein each B group is the same or different and is selected from the group consisting of hydrogen, chloro, bromo, iodo, fluoro, alkyl, alkylenealkoxy, triazino, pyrimidino, pyridino, imidazolo, tetrazolo, silyl, cyano, perfluoroalkyl, perfluoroaryl, and perfluoroaralkyl groups;

(ii) a halogenated guanamine represented by the formula (II):



(II)

wherein X and B are the same as described above; and wherein R is selected from the group consisting of linear alkyl of 1 to 20 carbon atoms, cyclic or branched alkyl of 3 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms, aryl of 6 to 20 carbon atoms, aralkyl of 7 to 20 carbon atoms, alkoxy of 1 to 20 carbon atoms, aryloxy of 6 to 20 carbon atoms, alkylthio of 1 to 20 carbon atoms, arylthio of 6 to 20 carbon atoms, alkylamino of 1 to 20 carbon atoms, dialkylamino of 2 to 40 carbon atoms, morpholino, piperidino, pyrrolidino, aminotriazino, alkylaminotriazino, aminoalkylaminotriazino, hydrogen, chloro, bromo, iodo, fluoro, perfluoroalkyl, perfluoroaryl, and perfluoroaralkyl groups; and

(iii) a mixture of any of (i) and (ii).

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5,288,866

5,6-DISUBSTITUTED-3-PYRIDYLMETHYL AMMONIUM HALIDE COMPOUNDS USEFUL FOR THE PREPARATION OF 5- (SUBSTITUTED METHYL)-2,3-PYRIDINEDICARBOXYLIC ACIDS

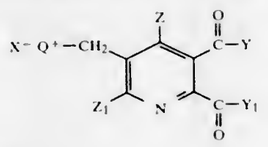
Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 812,520, Dec. 20, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 960,749

Int. Cl.[5] C07D *251/00, 213/04, 401/00*

U.S. Cl. 544—215 **6 Claims**

1. A 5,6-disubstituted-3-pyridylmethyl ammonium halide compound having the structural formula



(I)

wherein

Z is hydrogen or halogen;

Z_1 is hydrogen, halogen, cyano or nitro;

X is Cl, Br, I or R_3SO_3;

R_3 is C_1–C_4 alkyl or

phenyl optionally substituted with one to three C_1–C_4 alkoxy groups, C_1–C_4 alkyl groups, nitro groups, cyano groups or halogen atoms;

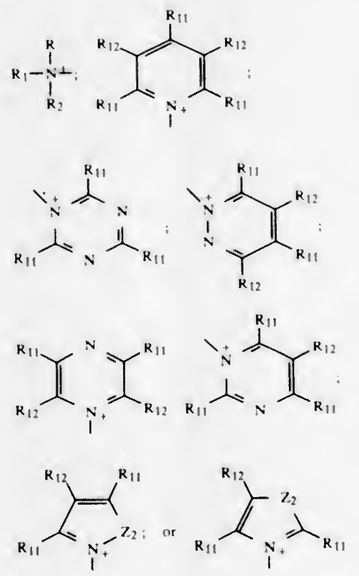
Y and Y_1 are each independently OR_4, NR_4R_5;

R_4 and R_5 are each independently hydrogen,

C_1–C_4 alkyl optionally substituted with C_1–C_4 alkoxy or phenyl optionally substituted with one to three C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or halogen atoms, or phenyl optionally substituted with one to three C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or halogen atoms;

R_6 is hydrogen or C_1–C_4 alkyl;

Q is



R, R_1 and R_2 are each independently C_1–C_4 alkyl, and when taken together, R and R_1 may form a 5- or 6-membered ring in which RR_1 is represented by the structure: $-(CH_2)_n-$, optionally interrupted by O, S or NR_{10}, where n is an integer of 3,4 or 5, provided R_2 is C_1–C_4 alkyl;

Z_2 is O, S or NR_{10};

R_{10} is C_1–C_4 alkyl; and

R_{11} and R_{12} are each independently hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy, and when taken together, R_{11} and R_{12} may form a 5- or 6-membered saturated or unsaturated ring optionally interrupted by O, S, or NR_{10} and optionally substituted with one to three halogen atoms, C_1–C_4 alkyl groups or C_1–C_4 alkoxy groups.

5,288,867

PROCESS FOR THE PREPARATION OF 2-HYDROXY-4,6-DIARYL-1,3,5-TRIAZINES

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Jean-Pierre Bacher, Buschwiller, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

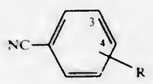
Filed Feb. 1, 1993, Ser. No. 11,931

Claims priority, application Switzerland, Feb. 4, 1992, 323//92

Int. Cl.[5] C07D *251/52*

U.S. Cl. 544—219 **6 Claims**

1. A process for the preparation of a 2-hydroxy-4,6-diaryl-1,3,5-triazine, which comprises reacting the compound of formula



(I)

wherein

R is hydrogen, C_1–C_4alkyl or halogen bound to phenyl in the 3- or 4-position, with urea, using a base selected from the class of the alkali metal hydrides, alkaline earth metal hydrides, or alkali metal amides, alkaline earth metal amides, or of the alkali metal C_1–C_4alcoholates in the presence of a polar solvent, to give the final product in a one step process in which the molar ratio of urea to base is 1:2 to 1:3 and the molar ratio of compound of formula (1) to urea is 2:1 to 5:1.

5,288,868

PROCESS FOR THE PREPARATION OF 2-HYDROXY-4,6-DIARYL-1,3,5-TRIAZINE

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Jean-Pierre Bacher, Buschwiller, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

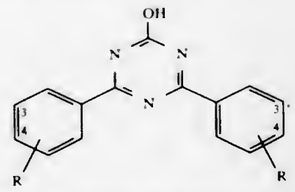
Filed Feb. 8, 1993, Ser. No. 14,894

Claims priority, application Switzerland, Feb. 13, 1992, 426/92

Int. Cl.[5] C07D *251/52*

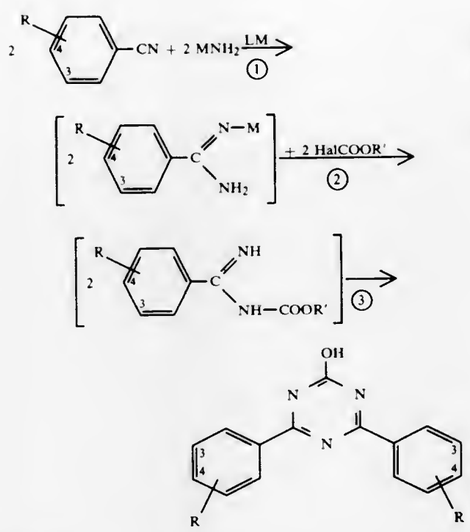
U.S. Cl. 544—219 **8 Claims**

1. A process for the preparation of a 2-hydroxy-4,6-diaryl-1,3,5-triazine of formula



(I)

which comprises reacting an aromatic nitrile with an alkyl haloformate and an alkali metal amide, using an equimolar amount of each, in accordance with the reaction scheme



wherein

R is hydrogen, chlorine or methyl bound to phenyl in the 3- or 4-position,

R' is C_1–C_4alkyl

Hal is a halogen atom,

M is an alkali metal, and

LM is an inert organic solvent having a boiling point in the range from 160° to 250° C.

5,288,869

PENTAERYTHRYL PHOSPHONATES AND THEIR USE IN SELF-EXTINGUISHING THERMOPLASTIC POLYMERIC COMPOSITIONS

William Giroldini; Gianluigi Landoni; Antonio Rinaldi, and Carlo Neri, all of Milan, Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

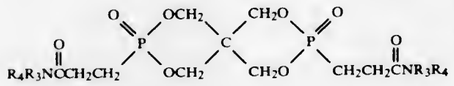
Filed Aug. 6, 1992, Ser. No. 927,212

Claims priority, application Italy, Aug. 7, 1991, MI91 A 002216

Int. Cl.[5] C07F *9/6509, 9/6521, 9/6574*

U.S. Cl. 544—230 **5 Claims**

1. A pentaerythryl diphosphonate having the formula:



wherein:

R_3 and R_4 are the same or different and are linear or branched C_1–C_6 alkyl, linear or branched amino- or hydroxy-substituted C_2–C_6 alkyl, a melamine residue, or together with the N to which they are attached form a non-aromatic heterocyclic radical optionally having one or more additional heteroatoms.

5,288,870

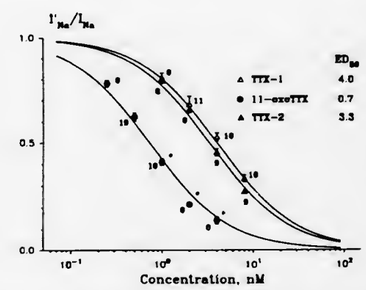
SYNTHESIS OF SPECIFICALLY LABELED TETRODOTOXIN

Chien-yuan Kao, Pound Ridge, and Biqi Wu, Brooklyn, both of N.Y., assignors to Research Foundation of the State University of New York, Albany, N.Y.

Filed Nov. 18, 1991, Ser. No. 793,597

Int. Cl.[5] C07D *491/052*

U.S. Cl. 544—247 **13 Claims**



1. A process for the preparation of labeled tetrodotoxin having high specific activity comprising the steps of:

a) oxidizing tetrodotoxin to 11-oxo-tetrodotoxin;

b) hydrating the 11-oxo-tetrodotoxin;

c) reducing the hydrated 11-oxo-tetrodotoxin with an alkali metal or alkaline earth metal tritide.

5,288,871

ANTIOSTEOPOROTIC IMIDAZO[4,5-C]PYRIDINES

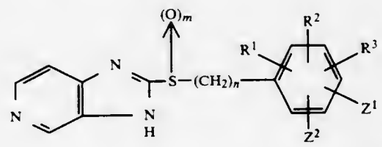
Arthur A. Santilli, Havertown; Susan M. Andrews, Newtown, and Donald P. Strike, St. Davids, all of Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Aug. 2, 1993, Ser. No. 101,153

Int. Cl.[5] C07D *471/04*

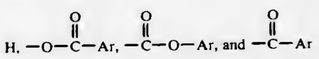
U.S. Cl. 546—118 **20 Claims**

1. The compounds of formula (I)



(I)

wherein R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, lower alkyl containing 1 to 6 carbon atoms, hydroxy, lower alkyloxy containing 1 to 6 carbon atoms, halogen, trifluoromethyl, trifluoromethoxy, nitro, cyano, phenoxy, benzyloxy, aminoacetyl, $-S(O)_p-CH_3$ or any two adjacent groups are joined to form methylenedioxy; Z^1 and Z^2 are independently selected from the group consisting of



wherein Ar is phenyl; alkyl, alkoxy or hydroxy substituted phenyl; or thienyl, wherein alkyl and alkoxy contain 1 to 6 carbon atoms with the proviso that Z^1 and Z^2 are not both hydrogen; m is 0 to 2; n is 1 to 3; p is 0 to 2, and the pharmaceutically acceptable salts and hydrates thereof.

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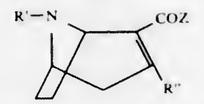
5,288,872

COMPOUNDS FOR TREATMENT OF NEURODEGENERATIVE DISEASES

Huw M. L. Davies, Clemmons, and Elie Saikali, Winston-Salem, both of N.C., assignors to Wake Forest University, Winston-Salem, N.C.

Filed Mar. 13, 1992, Ser. No. 850,869
Int. Cl.[5] C07D *451/02*
U.S. Cl. 546—132 **7 Claims**

1. A tropane ring system compound having the formula:



where Z represents —R or —OR; R and R' independently represent H or alkyl; and R'' represents benzyl, phenyl or pyridyl.

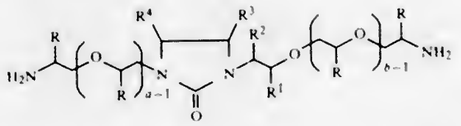
5,288,873

AMINATED ALKOXYLATED IMIDAZOLIDONES

Wei-Yang Su; Michael Cuscurida, and Terry L. Renken, all of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Aug. 13, 1992, Ser. No. 928,582
Int. Cl.[5] C07D *233/04, 233/32*
U.S. Cl. 548—323.5 **7 Claims**

1. A compound of the formula:



wherein R is H or alkyl having 1 to 16 carbon atoms, R^1, R^2, R^3, and $R^4$are selected from the group consisting of hydrogen and lower alkyl having from 1 to 4 carbon atoms, and a+b equals n, a number having a value of from 2 to 80 resulting from the reductive amination of a polyol.

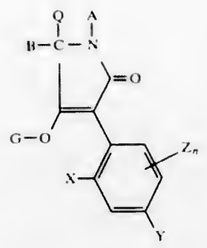
5,288,874

SUBSTITUTED BICYCLIC 3-ARYL-PYRROLIDINE-2,4-DIONE DERIVATES AND HERBICIDAL AND PESTICIDAL USE THEREOF

Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach; Ulrike Wachendorff-Neumann, Monheim; Christoph Erdelen, Leichlingen; Thomas Bretschneider, Sieghurg; Reiner Fischer, Monheim; Hermann Hagemann; Bernd-Wieland Krüger, both of Leverkusen, and Klaus Lürssen, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 826,303
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1991, 4102778
Int. Cl.[5] C07D *487/04*; A01N *43/36*
U.S. Cl. 548—453 **7 Claims**

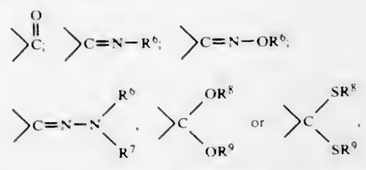
1. Substituted 3-aryl-pyrrolidine-2,4-dione compounds of the formula (I)



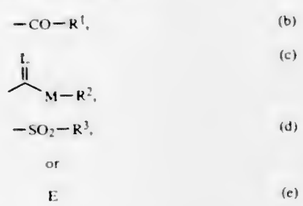
(I)

in which

A and Q together represent an alkanediyl or alkenediyl group having 3 carbon atoms, each of these groups being monosubstituted to trisubstituted by identical or different substituents, each of these groups being substituted by halogen, hydroxyl, mercapto, in each case optionally halogen-substituted alkyl having 1 to 10 carbon atoms, alkylcarbonyloxy having 1 to 8 carbon atoms, alkoxy having 1 to 6 carbon atoms, alkylthio having 1 to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms or aryl having 6 to 10 carbon atoms, and each of these groups additionally being interrupted, if appropriate, by one of these groups below:



B represents hydrogen or alkyl having 1 to 6 carbon atoms,
X represents C_1-C_6-alkyl, halogen or C_1-C_6-alkoxy,
Y represents hydrogen, C_1-C_6-alkyl, halogen, C_1-C_6-alkoxy or C_1-C_3-halogenoalkyl,
Z represents C_1-C_6-alkyl, halogen or C_1-C_6-alkoxy,
n represents a number 0, 1, 2 or 3,
G represents hydrogen (a) or the groups



(b) (c) (d)

or

(e)

in which

E represents a metal ion equivalent or an ammonium ion,
L and M represent oxygen and/or sulphur,
R^1 represents optionally halogen-substituted C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_1-C_8-alkoxy-C_2-C_8-alkyl, C_1-C_8-alkylthio-C_2-C_8-alkyl, C_1-C_8-polyalkoxy-C_2-C_8-alkyl or cycloalkyl which have 3 to 8 ring atoms and which can be interrupted by oxygen and/or sulphur atoms, or represents phenyl which is optionally substituted by halogen, nitro, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-halogenoalkyl or C_1-C_6-halogenoalkoxy-, or represents phenyl-C_1-C_6-alkyl which is optionally substituted by halogen, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-halogenoalkyl or C_1-C_6-halogenoalkoxy,
R^2 represents optionally halogen-substituted C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_1-C_8-alkoxy-C_2-C_8-alkyl or C_1-C_8-polyalkoxy-C_2-C_8-alkyl, or represents phenyl or benzyl which are optionally substituted by halogen, nitro, C_1-C_6-alkyl, C_1-C_6-alkoxy or C_1-C_6-halogenoalkyl-,
R^3, R^4 and R^5 independently of one another represent optionally halogen-substituted C_1-C_8-alkyl, C_1-C_8-alkoxy, C_1-C_8-alkylamino, di-(C_1-C_8)-alkylamino, C_1-C_8-alkylthio, C_2-C_5-alkenylthio, C_2-C_5-alkinylthio or C_3-C_7-cycloalkylthio, or represent phenyl, phenoxy or phenylthio which are optionally substituted by halogen, nitro, cyano, C_1-C_4-alkoxy, C_1-C_4-halogenoalkoxy, C_1-C_4-alkylthio, C_1-C_4-halogenoalkylthio, C_1-C_4-alkyl or C_1-C_4-halogenoalkyl,
R^6 and R^7 independently of one another represent hydrogen, optionally halogen-substituted C_1-C_{20}-alkyl, C_1-C_{20}-alkoxy, C_2-C_8-alkenyl or C_1-C_{20}-alkoxy-C_1-C_{20}-alkyl, or represent phenyl which is optionally substituted by halogen, C_1-C_{20}-halogenoalkyl, C_1-C_{20}-alkyl or C_1-C_{20}-alkoxy, or represent benzyl which is optionally substituted by halogen, C_1-C_{20}-alkyl, C_1-C_{20}-halogenoalkyl or C_1-C_{20}-alkoxy,
R^8 and R^9 independently of one another represent hydrogen or alkyl having 1 to 6 carbon atoms.

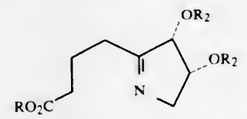
5,288,875

SYNTHESIS OF (−)-SWAINSONINE AND INTERMEDIATE COMPOUNDS EMPLOYED IN SUCH SYNTHESIS

Jin K. Cha, 1030 Grassland La., Nashville, Tenn. 37220, and Richard B. Bennett, III, 4102 Sir Buxton Pl., Greensboro, N.C. 27405

Division of Ser. No. 747,391, Aug. 14, 1991, abandoned. This application Aug. 24, 1992, Ser. No. 934,417
Int. Cl.[5] C07D *491/056, 207/24*
U.S. Cl. 548—453 **4 Claims**

1. An Δ^1-pyrroline having the formula:



wherein R is alkyl of 1 to 8 carbon atoms; each R_2 when taken independently is alkoxymethyl of 1 to 8 carbon atoms or arylmethyl; and when taken together represent alkylidene of 1 to 8 carbon atoms, bridging the oxygen atoms to which they are bonded.

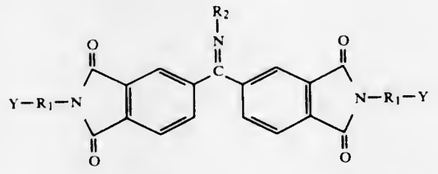
5,288,876

BENZOPHENONE IMINODIIMIDES AND HEAT-STABLE POLYMERS DERIVED THEREFROM

Gerd Greber, Bad Vöslau; Heinrich Gruber, and Afschin Hassanein, both of Vienna, all of Austria, assignors to Chemie Linz Gesellschaft G.m.b.H., Linz, Austria

Filed Jul. 22, 1992, Ser. No. 916,749
Claims priority, application Austria, Aug. 13, 1991, 1590/91
Int. Cl.[5] C07D *403/06*
U.S. Cl. 548—455 **3 Claims**

1. Compounds of the formula I



in which Y denotes hydroxyl or carboxyl, R_1 denotes a straight-chain or branched alkylene radical having 1 to 6 C atoms, or an o-, m- or p-phenylene or benzylidene radical which is optionally substituted by Cl, lower alkyl or lower alkoxy, and R_2 denotes the radical OH, a straight-chain or branched, saturated or mono- or polyunsaturated alkyl radical having 1 to 20 C atoms, which can be substituted by Cl, OH, NH_2, $CONH_2$ or $COOR_3$, or a radical of the formula NH—CO-NHR_3, wherein R_3 can be hydrogen, an alkyl radical having 1 to 4 C atoms or a phenyl or benzyl radical.

5,288,877

CONTINUOUS PROCESS FOR PREPARING INDOLENINE COMPOUNDS

Charles H. Hoelscher, Murrysville, and Bruce R. Anderson, Irwin, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 3, 1991, Ser. No. 725,849
Int. Cl.[5] C07D *209/08*
U.S. Cl. 548—490 **21 Claims**

1. In the method for preparing an indolenine compound by intramolecular condensation of a phenylhydrazine with an unsymmetrical ketone, the improvement which comprises the steps of:

(a) continuously and simultaneously introducing (1) phenylhydrazine reactant and (2) unsymmetrical ketone reactant from separate sources into a reactor having a reaction medium consisting essentially of organic solvent,

(b) carrying out said intramolecular condensation in said reaction medium in the presence of a catalyst consisting essentially of a catalytic amount of a weak organic carboxylic acid and at temperatures at which the condensation reaction occurs,

(c) continuously removing indolenine product from the reactor as a solution in said reaction medium, and

(d) separating indolenine product from the reaction medium solution thereof removed from the reactor.

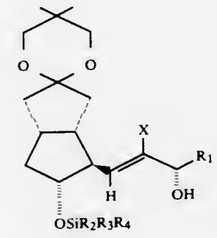
5,288,878

(1S,2S,3R,5R)-2-[(3S)-2-HALO-3-HYDROXY-1-ALKEN-(YNYL)]-3-TRIALKYLSILYLOXY-7,7-(2,2-DIMETHYL-TRIMETHYLENEDIOXY)BICYCLO[3.3.0]OCTANE COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Michael Harre, and Jürgen Westermann, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE89/00660, § 371 Date Jun. 12, 1991, § 102(e) Date Jun. 12, 1991, PCT Pub. No. WO90/03974, PCT Pub. Date Apr. 19, 1990
PCT Filed Oct. 13, 1989, Ser. No. 689,247
Int. Cl.[5] C07D *319/06*
U.S. Cl. 549—214 **12 Claims**

1. A process for the preparation of (1S,2S,3R,5R)-2-[(3S)-2-halo-3-hydroxy-1-alken(ynyl)]-3-trialkylsilyloxy-7,7-(2,2-dimethyltrimethylenedioxy)-bicyclo[3.3.0]octane compounds of Formula I



(I)

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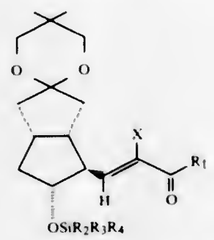
wherein

X is chlorine or bromine,

R_1 is a straight-chain or branched alkyl of up to 7 carbon atoms, straight-chain or branched alkenyl of up to 7 atoms, straight-chain or branched alkynyl of up to 7 atoms,

R_2, R_3, R_4 is in each case identical or different and is C_1–C_4-alkyl and phenyl optionally substituted by C_1–C_4-alkyl groups, wherein the 13,14-double bond has the trans configuration with respect to the C chain, by stereoselective reduction of an α-halo-enone of general Formula II

(II)



wherein X, R_1, R_2, R_3, R_4 have the meanings given above, with diisobutylaluminum 2,6-di-tert-butyl-4-methylphenoxide, wherein the reaction is conducted at −40° C. to −100° C.

5,288,879

TETRAHALOPHTHALIC ANHYDRIDE PROCESS

Scott A. Bottelberghe, Waldo; Bonnie G. McKinnie, Magnolia; Steven G. Miller, Magnolia, and David E. Raposa, Magnolia, all of Ark., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 28, 1992, Ser. No. 952,693

Int. Cl.[5] **C07D** *307/89*

U.S. Cl. 549—246 **23 Claims**

1. In a process for preparing a halogenated phthalic anhydride product in a reaction vessel by reacting phthalic anhydride with halogen in an oleum reaction medium wherein a vent stream from the reaction vessel contains a substantial amount of SO_3, SO_2, and halogen, wherein the halogen is selected from the group consisting essentially of bromine and chlorine, the improvement comprising:

a) contacting the reaction vessel vent stream with a fluid having a first oleum concentration, and

b) recovering two liquid streams: (i) one containing minor amounts of halogen and having a second oleum concentration; and (ii) a second liquid stream comprising halogen and containing a minor amount of SO_3 and SO_2, wherein the second oleum concentration is greater than the first oleum concentration and wherein a substantial amount of the SO_3, SO_2, and halogen in the reaction vessel vent stream has been recovered.

5,288,880

PROCESS FOR THE MANUFACTURE OF MALEIC ANHYDRIDE

Ikuya Matsuura, Toyama, Japan, assignor to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,600

Claims priority, application Japan, Mar. 17, 1992, 4-091822; Nov. 6, 1992, 4-322373

Int. Cl.[5] **C07D** *307/60*

U.S. Cl. 549—260 **8 Claims**

1. In a process for manufacturing maleic anhydride by the vapor phase catalytic oxidation of n-butane with molecular oxygen, an improvement which comprises using a catalyst prepared by mixing vanadyl hydrogen orthophosphate represented by the formula $VOHPO_4{\cdot}0.5H_2O$ (I), and at least one compound selected from the group consisting of a divalent metal hydrogen orthophosphate represented by the formula $MHPO_4{\cdot}nH_2O$ (II) wherein M is a divalent metal selected from the group consisting of Mg, Ca, Ba, Mn, Fe, Co, Ni, Cu and Zn and n is a number of coordinated water which differs depending on the temperature at which the compound is prepared, a divalent metal ammonium orthophosphate represented by the formula $NH_4MPO_4{\cdot}nH_2O$ (III) wherein M and n have the same meanings as defined above and a divalent metal orthophosphate represented by the formula $M_3(PO_4)_2{\cdot}nH_2O$ (IV) wherein M and n have the same meanings as defined above, with the atomic ratio of M/V (M has the same meaning as defined above) of 0.003–0.5, by calcining the mixture at 300°–400° C., and then pretreating said catalyst in an inert gas or a mixed gas containing n butane and molecular oxygen at 350°–700° C.

5,288,881

CONTINUOUS REDUCED PRESSURE DIMERIC CYCLIC ESTER PRODUCTION

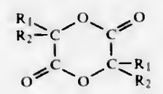
Neville E. Drysdale; Kang Lin, and Thomas W. Stambaugh, all of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 12, 1992, Ser. No. 848,188

Int. Cl.[5] **C07D** *319/12*

U.S. Cl. 549—274 **14 Claims**

1. In a process for depolymerizing a depolymerizable oligomer of an alpha-hydroxycarboxylic acid of the formula $H(OCR_1R_2CO)_nOH$, where R_1 and R_2 are independently hydrogen or C_1 to C_6 alkyl groups and n has a value of from 2 to 30, to a dimeric cyclic ester of the formula



which process involves heating the oligomer under reduced pressure in the substantial absence of a stream of gaseous entraining agent for the cyclic ester at a temperature below the decomposition temperature of the cyclic ester, wherein the improvement comprises the steps of:

(a) providing a multistaged depolymerizing column having heating means, an oligomer feed inlet near the upper end of the column, a vapor product stream outlet above the oligomer feed inlet and a receiver vessel at the lower end of the column;

(b) feeding the oligomer to the upper end of the column;

(c) heating the column to a temperature of about 185° C. to 270° C.;

(d) maintaining the receiver vessel at a temperature below the depolymerization temperature of said oligomer;

(e) coordinating the oligomer feed rate to the column with the column temperature such that a fraction of the oligomer is converted to a vapor product stream containing the cyclic ester and another fraction of the oligomer is allowed to exit the column at its lower end and pass to the receiver vessel; and,

(f) removing the vapor product stream through the outlet at the upper end of the column and recovering the cyclic ester therefrom.

5,288,882

PROCESS FOR RECOVERING AN OPTICALLY ACTIVE EPOXY ALCOHOL

T. Thomas Shih, Bryn Mawr, and Wilfred P.-S. Shum, West Chester, both of Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Dec. 21, 1992, Ser. No. 994,030

Int. Cl.[5] **C07D** *301/32, 303/14, 303/16*

U.S. Cl. 549—541 **21 Claims**

1. A process for recovering an optically active epoxy alcohol from an asymmetric epoxidation reaction mixture comprised of the optically active epoxy alcohol, an organic hydroperoxide, and a transition metal-chiral ligand complex epoxidation catalyst, said process comprising the steps of

(a) contacting the asymmetric epoxidation reaction mixture with

(i) a reducing agent selected from sulfur (II) compounds, sulfur (III) compounds and phosphorus (III) compounds, in an amount effective to reduce the organic hydroperoxide;

(ii) a polyalcohol, in an amount effective to inhibit the epoxidation catalyst; or

(iii) both said reducing agent and said polyalcohol;

(b) conducting a distillation in the presence of an azeotropic agent forming a minimum boiling heterogeneous azeotrope with the epoxy alcohol selected from aromatic hydrocarbons, halogenated aliphatic hydrocarbons, and aliphatic hydrocarbons to remove in vapor form from the asymmetric epoxidation reaction mixture an overhead product comprised of the optically active epoxy alcohol and the azeotropic agent;

(c) condensing the overhead product in liquid form whereby the condensed overhead product phase-separates to form an epoxy alcohol-rich phase and an epoxy alcohol-lean phase; and

(d) separating the epoxy alcohol-rich phase from the epoxy alcohol-lean phase.

5,288,883

OXIRANE INTERMEDIATES FOR AZOLYL-PROPANOL FUNGICIDES

Jürgen Scherkenbeck, Leverkusen; Thomas Himmler, Cologne; Klaus Stroech, Solingen; Stefan Dutzmann, Hilden; Gerd Hänssler, Leverkusen, and Heinz-Wilhelm Dehne, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 709,540, Jun. 3, 1991, Pat. No. 5,216,006. This application Dec. 28, 1992, Ser. No. 997,407

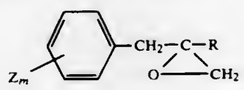
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018927

Int. Cl.[5] **C07C** *303/08, 303/48;* **C07D** *303/08, 303/48*

U.S. Cl. 549—563 **1 Claim**

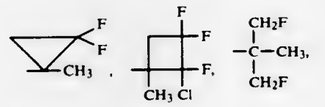
1. An oxirane of the formula

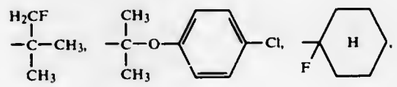
(II)

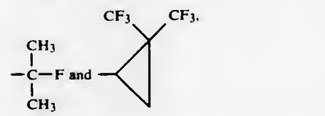


in which

R is a radical selected from the group consisting of







Z is fluorine, chlorine, methyl or trifluoromethyl, and m is 1 or 2.

5,288,884

PROCESS FOR PRODUCING A REDUCED CALORIE FAT MIMETIC COMPOSITION

Charles F. Cooper, Paoli, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del. and CPC International, Inc., Englewood Cliffs, N.J.

Filed Oct. 22, 1992, Ser. No. 964,816

Int. Cl.[5] **C07C** *51/00*

U.S. Cl. 554—168 **20 Claims**

1. A process for producing a reduced calorie fat mimetic comprising the steps of

(a) contacting a first esterified alkoxylated polyol characterized by the presence of at least one C_{20}–C_{24} unsaturated linear acyl group with hydrogen in the presence of a transition metal catalyst for a time and at a temperature effective to accomplish hydrogenation of the C_{20}–C_{24} unsaturated linear acyl group to yield a second esterified alkoxylated polyol characterized by the presence of at least one C_{20}–C_{24} saturated linear acyl group and the absence of any C_{22} unsaturated linear acyl group; and

(b) contacting the second esterified alkoxylated polyol with a third esterified alkoxylated polyol characterized by the presence of at least one C_6–C_{19} unsaturated acyl group in the presence of a basic catalyst for a time and at a temperature effective to accomplish interchange of at least one C_{20}–C_{24} saturated linear acyl group and at least one C_6–C_{19} unsaturated acyl group to yield the reduced calorie fat mimetic.

5,288,885

PURIFICATION OF TRI-ALKYL COMPOUNDS OF GROUP 3A METALS

Cornelis J. Smit; Gerbrand J. M. Van Eijden; Theodorus P. J. Peters, and Pieter J. Reuvers, all of Arnhem, Netherlands, assignors to Shell Research Limited, London, United Kingdom

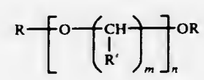
Filed Nov. 5, 1992, Ser. No. 971,875

Claims priority, application European Pat. Off., Nov. 19, 1991, 91203016.0

Int. Cl.[5] **C07F** *5/00, 5/06*

U.S. Cl. 556—1 **14 Claims**

1. A process for the purification of tri-alkyl compound of Group 3a metal selected from the group of aluminum, gallium, indium and thallium by adding (i) a polyether of the formula



wherein R independently is alkyl of 1 to 4 carbon atoms inclusive, R' independently is hydrogen, methyl or ethyl, m is an integer from 1 to 6 inclusive and n is an integer from 1 to 12 inclusive, to (ii) an impure mixture comprising a tri-alkyl compound of said Group 3a metal, thereby obtaining an adduct of the tri-alkyl compound and the polyether, heating the adduct to produce tri-alkyl compound of said Group 3a metal; and recovering the tri-alkyl compound of said Group 3a metal by distillation.

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5,288,886

METHOD OF PREPARING TRIALKYL-TIN HYDRIDES

Ralf-Jurgen Becker, Hamm; Ulrich Stewen, Schwerte, and Udo Weinberg, Bergkamen, all of Fed. Rep. of Germany, assignors to Witco GmbH, Bergkamen, Fed. Rep. of Germany

Filed Jul. 1, 1993, Ser. No. 86,671

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223615

Int. Cl.[5] C07F *7/22*

U.S. Cl. 556—102 **13 Claims**

1. A method of preparing trialkyl-tin hydrides of the general formula $R_1R_2R_3SnH$, wherein R_1, R_2, and R_3 are the same or different branched and/or unbranched and/or substituted alkyls having from about 1 to about 18 carbon atoms, comprising the steps of:

a) reducing bis-[trialkyl-tin]oxide with a stabilized aqueous solution of sodium borohydride in the presence of an inert solvent that mixes only to some extent, if at all, with water,

b) maintaining the reaction temperature between about 0° and about 140° C.,

c) allowing the batch to stand for about 0 to about 3 hours subsequent to separation thereof,

d) separating the organic from the aqueous phase, and

e) obtaining the product by distilling the solvent off.

5,288,887

DIAMINE PLATINUM(IV) COMPLEXES HAVING MIXED CARBOXYLATE LIGANDS AS ANTITUMOR AGENTS

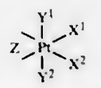
Abdul R. Khokhar; Zahid H. Siddik, and Salaam Al-Baker, all of Houston, Tex., assignors to Board of Regents, The University Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 927,201, Aug. 7, 1992, which is a continuation-in-part of Ser. No. 624,795, Dec. 7, 1990, abandoned, which is a division of Ser. No. 274,824, Nov. 22, 1988, Pat. No. 5,041,578. This application Nov. 19, 1992, Ser. No. 978,788

Int. Cl.[5] C07F *15/00*; A61K *31/28*

U.S. Cl. 556—137 **12 Claims**

1. A platinum(IV) complex having the formula



or a stereoisomer thereof, where X^1 and X^2 are carboxylato or are jointly dicarboxylato, where Y^1 and Y^2 are carboxylato, and where Z is a bidentate ligand selected from the group consisting of diaminocyclohexane and ethylenediamine.

5,288,888

PROCESS FOR THE SYNTHESIS OF ACETIC ACID, (DIMETHOXYPHOSPHINYL) [[1,1-DIMETHYLETHYL)DIMETHYLSILYL]-OXY]-, (4-NITROPHENYL) METHYL ESTER

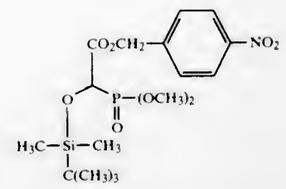
Kenneth E. Green, Pearl River; Edward R. Ruso, Nanuet; Mellard N. Jennings, Highland Falls, all of N.Y.; Alex R. Jurgens, Westfield; David M. Blum, Upper Saddle River, both of N.J., and Gregg B. Feigelson, Spring Valley, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 28, 1993, Ser. No. 53,283

Int. Cl.[5] C07F *7/08, 7/18*

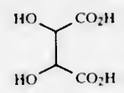
U.S. Cl. 556—405 **8 Claims**

1. A process for the preparation of a compound of the formula:

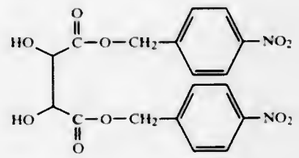


which comprises the steps of

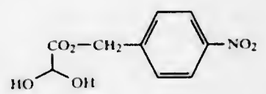
(a) reaction of L-tartaric acid of the formula:



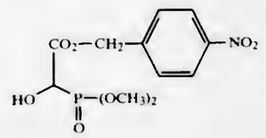
with p-nitrobenzylbromide in the presence of an amine in a solvent to the corresponding bis-(4-nitrophenyl)-ester of the formula:



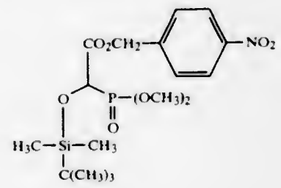
(b) oxidizing the bis-(4-nitrophenyl)ester with an oxidant in a solvent to product the dihydroxyacetic acid 4-nitrophenyl ester of the formula:



(c) reacting the dihydroxyacetic acid 4-nitrophenyl ester with dimethylphosphite in a solvent to produce the dimethoxyphosphinyl compound of the formula:



(d) reacting the dimethoxyphosphinyl compound with t-butyldimethylsilyl chloride in a solvent in the presence of a base to afford the desired compound of the formula:



5,288,889

FLUORINATED ORGANIC SILICON COMPOUNDS AND METHOD FOR MAKING

Toshio Takago; Shinichi Sato; Hitoshi Kinami, all of Annaka, and Noriyuki Koike, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Tokyo, Japan

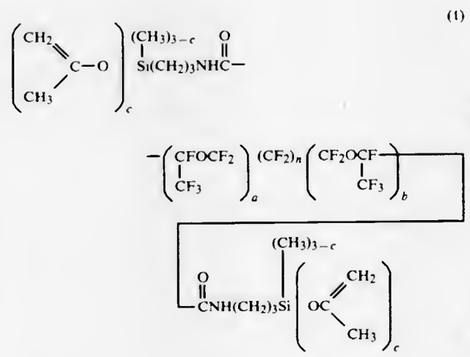
Filed May 13, 1993, Ser. No. 60,537

Claims priority, application Japan, May 18, 1992, 4-149991

Int. Cl.[5] C07F *7/10*

U.S. Cl. 556—419 **2 Claims**

1. A fluorinated organic silicon compound of the following general formula (1):



(1)

wherein a and b each are an integer of 0 to 30, n is an integer of 0 to 10, with the proviso that n is an integer of 1 to 10 when both or either one of a and b is 0, and c is equal to 2 or 3.

5,288,890

FLUORINE-CONTAINING ORGANOSILICON COMPOUND AND PROCESS OF PRODUCING THE SAME

Hiroshi Inomata, Annaka; Yasuo Tarumi, Takasaki; Hiromasa Yamaguchi, Annaka; Kenichi Fukuda, Takasaki, and Kazutoshi Munezawa, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

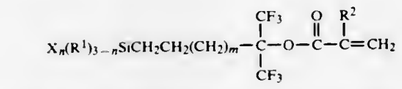
Filed Mar. 1, 1993, Ser. No. 24,371

Claims priority, application Japan, Feb. 28, 1992, 4-078499

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—440 **5 Claims**

1. A fluorine-containing organosilicon compound having the formula (1):



(1)

wherein X is a hydrolyzable group, R^1 is a monovalent organic group, R^2 is a methyl group or a hydrogen atom, n is an integer of 1, 2 or 3, and m is an integer of 0 or 1.

5,288,891

FLUORALYKYL GROUP-CONTAINING ORGANOSILICON OLIGOMER, METHOD FOR PREPARING SAME AND SURFACE TREATING AGENT

Hideo Sawada; Motohiro Mitani, both of Tsukuba; Masaharu Nakayama, Tsuchiura, and Takeo Matsumoto, Tsukuba, all of Japan, assignors to Nippon Oil and Fats Co. Ltd., Tokyo, Japan

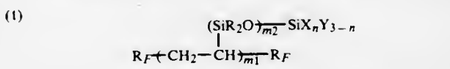
Filed Nov. 14, 1991, Ser. No. 791,989

Claims priority, application Japan, Nov. 22, 1990, 2-319811; Feb. 16, 1991, 3-22444; May 21, 1991, 3-116115; May 21, 1991, 3-116116; Aug. 1, 1991, 3-193097; Aug. 1, 1991, 3-193098

Int. Cl.[5] C07F *7/08, 7/18*

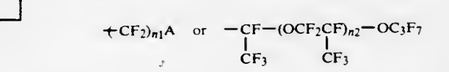
U.S. Cl. 556—448 **20 Claims**

1. A fluoroalkyl group-containing organosilicon oligomer represented by the following formula (1) of:



(1)

wherein R, X and Y each are the same or different groups and stand for an alkyl, alkoxy or alkylcarbonyloxy group having 1 to 10 carbon atoms, n represents an integer of 1 to 3, m_1 represents an integer of 1 to 10, m_2 represents an integer of 0 to 10 and R_F represents



where A stands for a hydrogen atom, a fluorine atom or a chlorine atom, n_1 represents an integer of 1 to 10 and n_2 represents an integer of 0 to 8.

5,288,892

SEPARATION OF METHYLCHLOROSILANES FROM HIGH BOILING RESIDUES OF METHYLCHLOROSILANE SYNTHESIS

Bernd Pachaly, and Anton Schinabeck, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 19, 1993, Ser. No. 48,597

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220151

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—466 **2 Claims**

1. An improved process for separating methylchlorosilanes from high boiling residues form the methylchlorosilane synthesis, in which cleavable methylchlorodisilanes which are present int he residues and which have at least two chlorine atoms attached to one silicon atom are cleaved with hydrogen chloride in the presence of a catalyst which remains in the reaction mixture, the improvement which comprises separating the methylchlorosilane synthesis by-products having a boiling point of at least 70°πC. under normal conditions and containing methylchlorodisilanes from the high boiling residues having a boiling point above 160° C., cleaving the methylchlorodisilanes in the presence of the by-products which are more volatile than the cleavable methylchlorodisilanes and continuously removing the more volatile by-products from the reaction mixture along with the methylchlorosilanes and the noncleavable methylchlorodisilanes.

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5,288,893

SULFONIMIDATES AND METHOD FOR PREPARING SAME

Aroop K. Roy, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 744,202, Aug. 12, 1991, Pat. No. 5,233,019.
This application Nov. 25, 1992, Ser. No. 981,725
Int. Cl.[5] C07C *313/00*; C08G *77/22*
U.S. Cl. 558—61 **3 Claims**

1. An organosulfonimidate corresponding to the formula $HN{=}S(O)(R^{1*})OR^4$ where R^{1*} is selected from the group consisting of monovalent unsubstituted and substituted hydrocarbon radicals and heterocyclic radicals wherein the hetero atom is selected from the group consisting of oxygen, sulfur and tertiary nitrogen and the sulfur atom of said sulfonimidate is bonded to a cyclic carbon atom of the heterocyclic radical or separated from the heterocyclic ring by at least one carbon atom or a combination of carbon and hetero atoms, with the proviso that the carbon atom bonded to sulfur is not a cyclic carbon atom of an aromatic hydrocarbon radical and R^4 is selected from the group consisting of monovalent unsubstituted and substituted hydrocarbon radicals.

5,288,894

PROCESS FOR THE PREPARATION OF DIALKYL CARBONATES

Heinz Landscheidt, Duisburg; Erich Wolters, Cologne; Alexander Klausener, Stolberg; Heinz-Ulrich Blank, Odenthal, and Udo Birkenstock, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1992, Ser. No. 958,853
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1991, 4134688
Int. Cl.[5] C07C *68/06*
U.S. Cl. 558—277 **18 Claims**

1. A process for the preparation of a dialkyl carbonate of the formula

$$O{=}C(OR)_2,$$

in which

R represents straight-chain or branched alkyl having up to 4 carbon atoms,

by reaction of carbon monoxide (CO) with an alkyl nitrate of the formula

$$RONO,$$

in which

R has the meaning given,

in the presence or absence of an inert gas and in the presence or absence of the parent alcohol ROH and in the presence or absence of NO over a supported metal catalyst at elevated temperature in a continuous gas phase reaction, wherein the supports used are oxidic or hydroxidic compounds of V, Nb, Ta, or combinations thereof, said metal being present in the form of a halide of a metal selected from the group consisting of palladium, platinum, iridium, ruthenium and rhodium, or a complex thereof, in which said metal halide or said halogen-containing metal complex can be generated in situ in the process reactor under the reaction conditions from the metal or a halogen-free metal compound by means of hydrogen halide, the catalyst is furthermore provided with or without an addition of an antimony, bismuth, aluminum, copper, vanadium, niobium, tantalum, tin, iron, cobalt, nickel compound or a mixture of a plurality thereof, and the reaction is carried out at a nitrite:CO volume ratio of 0.1–10:1 and a temperature of 50°–150° C., in which the addition of hydrogen halide is continued in an amount in which the hydrogen halide is discharged from the reactor together with the reaction mixture.

5,288,895

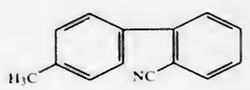
PROCESS FOR THE PREPARATION OF A BIPHENYL DERIVATIVE

Michel Bouisset, and Alain Boudin, both of Sisteron, France, assignors to Elf Sanofi, Paris, France

Filed Apr. 6, 1993, Ser. No. 45,519
Claims priority, application France, Apr. 13, 1992, 92 04512
Int. Cl.[5] C07C *253/30*
U.S. Cl. 558—378 **8 Claims**

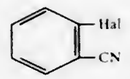
1. A process for the preparation of 4-methyl-2'-cyano biphenyl of formula:

I



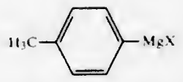
wherein a benzonitrile halide of general formula:

II



in which Hal represents halogen, is reacted, in the presence of a manganous salt, with an organometallic compound of general formula:

III



in which X represents halogen and the complex obtained is then hydrolysed, which provides the desired compound.

5,288,896

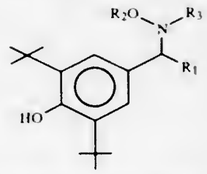
3,5-DI-T-BUTYL-4-HYDROXYLPHENYLMETHYLHYDROXYLAMINES AND THEIR DERIVATIVES, PHARMACEUTICAL COMPOSITIONS, AND METHODS OF USE THEREFOR

Thomas Capiris, Plymouth; David T. Connor, and Jagadish C. Sircar, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 15, 1992, Ser. No. 821,103
Int. Cl.[5] C07C *271/00*
U.S. Cl. 560—27 **17 Claims**

1. A compound of the Formula (I)

I



or a pharmaceutically acceptable salt thereof; wherein

R_1 is

1) hydrogen;
2) methyl;
3) phenyl optionally substituted by from one to three of i) hydrogen, ii) halogen, iii) trifluoromethyl, iv) lower alkyl, v) lower alkoxy, and vi) hydroxy;

R_2 is

1) hydrogen;
2) alkanoyl of from two to four carbon atoms; or

3) lower alkyl;

R_3 is

1) hydrogen;
2) lower alkyl;
3) alkanoyl of from two to four carbon atoms; or
4) COR_7 or $COOR_7$ is lower alkyl.

5,288,897

Patent Not Issued For This Number

5,288,898

N-METHYLPHENYLSERINE ALKYL ESTER DERIVATIVES AND USES THEREOF

Hamao Umezawa, Tokyo; Toshiharu Nagatsu, Nagoya; Tomio Takeuchi, Tokyo; Hajime Morishima, Tokyo; Yoshio Sawasaki, Tokyo; Hirosbi Takezawa, Tokyo, and Fujinori Sasaki, Okazaki, all of Japan, assignors to Zaidan Hojim Biseibutsu Kagaku Kenkyu Kai, Japan

Continuation of Ser. No. 887,248, May 19, 1992, abandoned, which is a continuation of Ser. No. 765,420, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 605,154, Oct. 31, 1990, abandoned, which is a continuation of Ser. No. 394,146, Aug. 16, 1989, abandoned, which is a continuation of Ser. No. 258,124, Oct. 13, 1988, abandoned, which is a continuation of Ser. No. 913,764, Sep. 30, 1986, abandoned. This application May 4, 1993, Ser. No. 56,619
Claims priority, application Japan, Sep. 30, 1985, 214993
Int. Cl.[5] C07C *229/36*; A61K *31/24*
U.S. Cl. 560—40 **5 Claims**

1. An N-methyl-L-threo-3-(3,4-dihydroxyphenyl)serine methyl ester or ethyl ester or a pharmaceutically acceptable acid addition salt thereof.

5,288,899

LIQUIFICATION OF DIPHENYLMETHANE DIISOCYANATE BY PARTIALLY REACTING THE ISOCYANATE GROUPS WITH BLOCKING AGENTS

Stephen D. Seneker, Paden City; Scott A. Kane, New Martinsville, and James W. Rosthauser, Glendale, all of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jun. 30, 1993, Ser. No. 85,235
Int. Cl.[5] C07C *249/00*
U.S. Cl. 560—330 **6 Claims**

1. A liquid, storage-stable isocyanate having a viscosity of less than 100,000 mPa.s at 25° C. and an isocyanate group content of from about 10 to 29% by weight, prepared by reacting

a) a solid or semi-solid diphenylmethane diisocyanate, and
b) a blocking agent, or a mixture of two or more blocking agents.

5,288,900

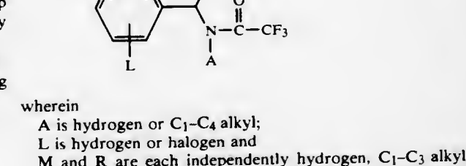
CRYSTALLIZATION OF OPTICAL ISOMERS OF LEUKOTRIENE ANTAGONISTS USING (R)-4-NITRO-α-METHYLBENEZENEMETHONAMINE

Trevor Laird, Mayfield, England, and Robert J. Mills, Norristown, Pa., assignors to Smithkline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US91/06862, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO92/05151, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 30,076
Int. Cl.[5] C07B *57/00*; C07C *317/06, 323/16*; C07D *257/04, 307/02*
U.S. Cl. 562—401 **24 Claims**

1. A salt of formula I

I



where:

A is 1 and X is 1 or 2;

R_1 is C_8 to C_{13} alkyl, C_7 to C_{12} alkoxy, C_7 to C_{12} alkylthio, C_{10} to C_{12} 1-alkynyl, 10-undecynyloxy, 11-dodecynyl, phenyl-C_4 to C_{10} alkyl, phenyl-C_3 to C_9 alkoxy, phenylthio-C_3 to C_9 alkyl with the phenyl unsubstituted or monosubstituted with bromo, chloro, trifluoromethyl, C_1 to C_4 alkoxy, methylthio or trifluoromethylthio, furyl-C_4 to C_{10} alkyl, trifluoromethyl-C_7 to C_{12} alkyl or cyclohexyl-C_4 to C_{10} alkyl;

q is 0, 1 or 2, with the proviso that R_1 is not alkylthio or phenylthioalkyl when q is 1 or 2;

Y is COR_3, $C(R_4)H(CH_2)_mCOR_3$, or $(CH_2)_{0\text{-}1}$-C-tetrazolyl;

R_3 is 0^-, amino, or C_1 to C_6 alkoxy,

R_4 is hydrogen, methyl, C_1 to C_4-alkoxy, fluoro or hydroxy;

m is 0, 1, or 2;

R is $(CH_2)_nCOR_6$;

n is 0 to 6;

R_6 is 0^-, amino, or C_1 to C_6-alkoxy;

with the proviso that at least one of Y or R must have an R_3 or R_6 group respectively which is 0^-.

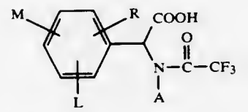
5,288,901

2-ARYL-5-(TRIFLUOROMETHYL)-2-PYRROLINE COMPOUNDS USEFUL IN THE MANUFACTURE OF INSECTICIDAL, NEMATOCIDAL AND ACARICIDAL ARYLPYRROLES

Robert F. Doebner, Jr.; Jerry M. Barton, both of East Windsor, N.J., and David G. Kuhn, Newtown, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 634,287, Dec. 26, 1990, Pat. No. 5,118,816.
This application Apr. 8, 1992, Ser. No. 865,149
Int. Cl.[5] C07C *279/00, 255/00*
U.S. Cl. 562—449 **4 Claims**

1. A compound having the structure



wherein

A is hydrogen or C_1–C_4 alkyl;

L is hydrogen or halogen and

M and R are each independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, halogen, CF_3, R_1CF_2Z, R_2CO or NR_3R_4 and when M and R are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MR represents the structure

$$-OCH_2O-,\ -OCF_2O-\ \text{or}$$
$$-CH{=}CH-CH{=}CH-;$$

with the proviso that when A is hydrogen, then at least one of L, M and R must be other than hydrogen;

Z is $S(O)_n$ or O;

R_1 is hydrogen, F, CHF_2, CHFCl or CF_3;

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R_2 is C_1–C_4 alkyl, C_1–C_4 alkoxy or NR_3R_4;
R_3 is hydrogen or C_1–C_4 alkyl;
R_4 is hydrogen, C_1–C_4 alkyl or R_5CO;
R_5 is hydrogen or C_1–C_4 alkyl and
n is an integer of 0, 1 or 2.

5,288,902

METHOD OF MANUFACTURING FERULIC ACID

Hisaji Taniguchi; Eisaku Nomura; Takuo Tsuno; Seiko Minami, all of Wakayama; Koji Kato, Hashimoto, and Chieko Hayashi, Wakayama, all of Japan, assignors to Tsuno Food Industrial Co., Ltd. and Wakayama Prefecture, both of Wakayama, Japan

Filed Mar. 3, 1992, Ser. No. 845,086
Claims priority, application Japan, Mar. 13, 1991, 3-48207
Int. Cl.[5] C07C *65/01*
U.S. Cl. 562—478 **11 Claims**

1. A method of manufacturing ferulic acid, comprising the steps of:
preparing a raw material containing γ-oryzanol, said raw material selected from the group consisting of a waste material, a by-product, and a mixture of said waste material and by-product accompanying the manufacture of rice salad oil or rice fatty acid from rice bran; and
subjecting the γ-oryzanol-containing raw material to hydrolysis in the presence of an alkali including the steps of:
(a) mixing the raw material with an alkali and stirring the resultant mixture while heating;
(b) cooling the reaction mixture obtained in step (1);
(c) pouring an organic solvent into the cooled reaction mixture so as to remove the materials soluble in said organic solvent and removing the organic solvent leaving an aqueous solution.
(d) acidifying the aqueous solution obtained after removal of the materials soluble in the organic solvent so as to precipitate ferulic acid; and thereafter
(e) removing the precipitated ferulic acid, dissolving it in water and recrystallizing ferulic acid.

5,288,903

PREPARATION OF 3-PENTENOIC ACID AND A CATALYST THEREFORE

Emilio E. Bunel, Wilmington; Chen-Chou Chiang, Hockessin; Michael B. D'Amore; Erik J. Schaumann, both of Wilmington, and Leon S. Scott, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1993, Ser. No. 93,703
Int. Cl.[5] C07C *321/00*
U.S. Cl. 562—598 **13 Claims**

1. A process for the preparation of 3-pentenoic acid which comprises:
a) reacting a chlorobutene selected from the group consisting of 3-chloro-1-butene, and 1-chloro-2-butene, and carbon monoxide in the presence of 0.05 to 5 percent by weight of a palladium catalyst at a temperature between 90 and 190 degrees C. and at a carbon monoxide pressure of between 250 and 5,000 psig to form a reaction mixture containing 3-pentenoylchloride, carbon monoxide, 3-chloro-1-butene and 1-chloro-2-butene,
b) separating carbon monoxide from the reaction mixture by heating the mixture at a temperature in the range of 100 to 140 degrees C. at a pressure of 25 to 1500 psig,
c) separating a mixture containing 3-pentenoylchloride and chlorobutenes from the remaining portion of the reaction mixture by distillation, and simultaneously forming $C_{10}H_{11}O_4PdCl$,
d) passing $C_{10}H_{11}O_4PdCl$ to step a) above,
e) combining the separated mixture containing 3-pentenoylchloride and chlorobutenes with water, butadiene, and hydrochloric acid to form a mixture where the ratio of butadiene to pentenoylchloride is 1:1 to 6:1 and the molar ratio of water to 3-pentenoylchloride is 1:1 to 15:1, and reacting this mixture at a temperature in the range of about 0 degrees C. to 100 degrees C., and at a pressure of about 50 to 600 psig, and forming a two phase mixture comprising an organic phase containing 3-pentenoic acid, chlorovaleric acid, and additional chlorobutene selected from the group consisting of 3-chloro-1-butene and 1-chloro-2-butene, and an aqueous phase,
f) separating the two phases and separating chlorobutenes from the organic phase by distillation and passing the chlorobutenes to step a) above,
g) separating 3-pentenoic acid from the organic phase by distilling the mixture.

5,288,904

METHOD FOR THE DECOMPOSITION OF TRICHLOROACETIC ACID

Maurice Fitzgerald, Co. Wicklow, and Eithne Cantwell, Co. Kildare, both of Ireland, assignors to Schering Corporation, Kenilworth, N.J.

Filed May 4, 1993, Ser. No. 56,976
Int. Cl.[5] C07C *53/02*
U.S. Cl. 562—609 **7 Claims**

1. A process for decomposing trichloroacetic acid comprising treating with 6 or more equivalents of a metal hydroxide at a temperature above 60° C.

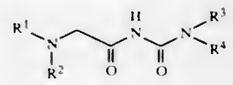
5,288,905

GLYCYL UREA DERIVATIVES AS ANTI-CONVULSANTS

Alex A. Cordi, Suresnes, France, and Claude L. Gillet, Blanmont, Belgium, assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 255,186, Oct. 7, 1988, abandoned. This application Sep. 17, 1991, Ser. No. 761,111
Int. Cl.[5] C07C *275/48*
U.S. Cl. 564—44 **4 Claims**

1. A compound of the formula



wherein each of R^1, R^2, R^3 and R^4 is independently selected from hydrido and aralkyl having an alkyl portion of one to about ten carbon atoms and optionally substituted on the aryl portion with one or more radicals selected from halo, alkyl having one to about ten carbon atoms, haloalkyl having an alkyl portion of one to about ten carbon atoms and alkoxy; or a pharmaceutically-acceptable salt thereof; with the proviso that at least one of R^1 and R^2 is a group other than hydrido and with the further proviso that at least one of R^3 and R^4 is a group other than hydrido.

5,288,906

PREPARATION OF P-AMINOPHENOLS

Michel Gubelmann, Paris, and Christian Maliverney, Lyons, boyh of France, assignors to Rhone-Poulence Chimie, Courbevoie, France

Filed Mar. 1, 1993, Ser. No. 24,440
Claims priority, application France, Feb. 28, 1992, 9202346
Int. Cl.[5] C07C *209/36*
U.S. Cl. 564—144 **20 Claims**

1. A process for the preparation of an optionally substituted p-aminophenol, comprising hydrogenating the corresponding nitrobenzene, in solution in a saturated aliphatic monocarboxylic acid, in the presence of an effective amount of a protonic acid.

20. The process as defined by claim 1, further comprising N-acylating said optionally substituted p-aminophenol.

5,288,907

HYDROGENATION OF NITROALKANES TO HYDROXYLAMINES

Martin B. Sherwin, Potomac, and Puvin Pichaichanarong, Baltimore, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 133,120, Dec. 14, 1987, abandoned. This application Oct. 30, 1991, Ser. No. 784,850
Int. Cl.[5] C07C *239/08*
U.S. Cl. 564—301 **20 Claims**

1. A process for forming a storage stable N-alkylhydroxylamine free base comprising hydrogenating nitroalkane under a hydrogen pressure and in the presence of a catalytic amount of a palladium hydrogenation catalyst and of an agent selected from the group consisting essentially of EDTA, tetrasodium N,N'-ethylene-bis (2-(2-hydroxy-4-methyl-phenyl)-glycine) diethylenetriaminepentaacetic acid, ethylene bis-N,N'-(2-aminomethyl) pyridine-N,N'-diacetic acid, HEDTA, NTA, and N,N'-di-(2-hydroxybenzyl) trimethylenediamine-N,N'diacetic acid, said nitroalkane contained in an inert solvent to form a nitroalkane solution which is substantially absent of inorganic acid and of transition metal ions and having a pH of lower than 10 to thereby form storage stable N-alkylhydroxylamine free base and separating the catalyst from the free base, product.

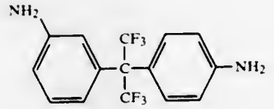
5,288,908

PROCESS FOR THE PREPARATION OF FLUORINE CONTAINING MONOMERS

Jürgen Lau; Günter Siegemund, both of Hofheim am Taunus, and Freimund Röhrscheid, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 998,883, Dec. 28, 1992, which is a continuation of Ser. No. 413,833, Sep. 28, 1989, abandoned. This application Jul. 19, 1993, Ser. No. 93,932
Int. Cl.[5] C07C *209/36, 209/42*
U.S. Cl. 564—335 **15 Claims**

1. A process for the preparation of the compound of the formula (II)



(II)

in a multi-stage process, which comprises
1a) subjecting 2-(4-methylphenyl)hexafluoropropan-2-ol to a condensation reaction with benzene in the presence of hydrogen fluoride or
1b) subjecting 2-phenylhexafluoropropan-2-ol to a condensation reaction with toluene in the presence of hydrogen fluoride.
2) oxidizing the resulting 2-(4-methylphenyl)-2-phenylhexafluoropropane (III) to give the corresponding carboxylic acid derivative (IV),
3) obtaining 2-(4-carboxyphenyl)-2-(3-nitrophenyl)hexafluoropropane (V) from (IV) by nitration and then
4) converting this into 2-(4-carboxamidophenyl)-2-(3-nitrophenyl)hexafluoropropane (VI) by reaction with amidosulfonic acid,
5) forming 4,4'-bis[2-(3-nitrophenyl)hexafluoroisopropyl-]azobenzene (VII) from (VI) by reaction with an alkali metal hypohalide solution in an alkaline medium and then
6) reducing the product to give 2-(3-aminophenyl)-2-(4-aminophenyl)hexafluoropropane (II).

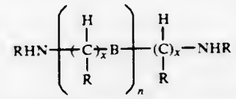
5,288,909

CATALYTIC REFORMING OF ALKYLENEAMINES

George E. Hartwell; Robert G. Bowman, and David C. Molzahn, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 730,415, Jul. 19, 1991, Pat. No. 5,166,442, which is a continuation-in-part of Ser. No. 611,244, Nov. 9, 1990, Pat. No. 5,118,850, which is a division of Ser. No. 287,189, Dec. 20, 1988, Pat. No. 4,996,363. This application Aug. 19, 1992, Ser. No. 932,410
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] C07C *209/00, 209/64;* C07D *295/023, 295/13*
U.S. Cl. 564—470 **18 Claims**

1. A process of reforming alkyleneamines to higher molecular weight polyalkylenepolyamines comprising contacting an alkyleneamine feedstock or a mixture of two or more of such feedstocks with a Group VB metal oxide catalyst essentially free of hydrogenation metals, the feedstock being in the liquid phase and being essentially free of any alcohol capable of aminating the feedstock or feedstock mixture, and wherein the alkyleneamine feedstock is represented by the formula:



wherein each B is independently NR or O; each R is independently hydrogen, a C_1–C_{12} alkyl moiety or a C_1–C_{12} aminoalkyl moiety, phenyl or alkyl-substituted phenyl, and wherein when R is bound to a carbon atom, R is also amino; each x is independently an integer from 1 to about 12; and n is an integer from 0 to 3; the contacting occurring under reaction conditions such that an alkyleneamine or mixture of alkyleneamines is formed predominantly of higher molecular weight than the feedstock.

5,288,910

PALLADIUM CATALYZED ADDITION OF AMINES TO 3,4-EPOXY-1-BUTENE

Yann Hung, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1992, Ser. No. 940,983
Int. Cl.[5] C07C *213/00*
U.S. Cl. 564—477 **21 Claims**

1. A process for forming 4-amino-2-buten-1-ol, comprising the steps of:
providing a quantity of 3,4-epoxy-1-butene;
providing a quantity of primary amine or ammonia; and
reacting said quantity of 3,4-epoxy-1-butene with said quantity of primary amine or ammonia in a reaction medium and in the presence of a catalyst, wherein said catalyst is a complex of palladium and phosphine ligands and said reaction medium is a liquid having an $E_T(30)$ no less than about 32.

5,288,911

PREPARATION OF α,ω-AMINOALCOHOLS

Gerhard Koppenhoefer, Roemerberg; Wolfgang Schroeder, Bad Duerkheim, and Dieter Voges, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 872,917
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113161
Int. Cl.[5] C07C *209/16*
U.S. Cl. 564—480 **7 Claims**

1. In a process for the preparation of α,ω-aminoalcohols of the formula I

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$$HO-CH_2-X-CH_2-NH_2 \quad (I),$$

in which X denotes a C_1-C_{20}-alkylene chain optionally substituted by inert radicals and/or optionally interrupted by oxygen or nitrogen, by the reaction of α,ω-alkanediols of the formula II

$$HO-CH_2-X-CH_2-OH \quad (II),$$

in which the connecting member X has the meanings stated above, with ammonia and a catalyst at a temperature ranging from 150° to 300° C. and under a pressure of from 50 to 300 bar, the improvement which comprises:

carrying out the reaction by continuously passing the reaction mixture through a fixed-bed catalyst in which the catalytically active material consists of iron to an extent of from 5 to 100% w/w and of cobalt to an extent of from 0 to 95% w/w.

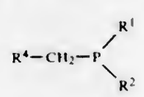
5,288,912

PROCESS FOR THE PREPARATION OF LITHIUM DIARYLPHOSPHIDES AND ALKYLATED DERIVATIVES THEREOF

Thomas J. Devon, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1993, Ser. No. 17,662
Int. Cl.[5] C07F 9/50
U.S. Cl. 568—17 **5 Claims**

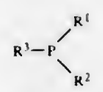
1. Process for the preparation of a triorganophosphine having the formula



(III)

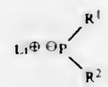
which comprises the steps of:

(1) contacting a triarylphosphine having the formula



(II)

with lithium and a primary or secondary amine in the presence of an inert solvent to obtain an intermediate product solution of a lithium diarylphosphide compound having the structure



(I)

(2) contacting the intermediate product solution of step (1) with a masked hydrohalogenation agent; and

(3) contacting the product solution of step (2) with an alkylating agent having the formula

$$R^4-CH_2-Z \quad (IV)$$

wherein R^1 is alkyl-substituted aryl, R^2 and R^3 independently are selected from phenyl and alkyl-substituted aryl, R^4 is an organic radical or a nucleophilic leaving group, and Z is a nucleophilic leaving group, wherein the alkyl groups of the alkyl-substituted aryl groups contain a benzylic hydrogen atom.

5,288,913

PROCESS FOR THE PREPARATION OF 4,4'-DIHYDROXYDIPHENYL SULFONE

Georg Grötsch, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 835,912, Feb. 26, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 100,895
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928704
Int. Cl.[5] C07C 315/00
U.S. Cl. 568—33 **15 Claims**

1. A process for the preparation of 4,4'-dihydroxydiphenyl sulfone in a high yield and high purity by reaction of phenol with a sulfonating agent, said process comprising:

carrying out the reaction between phenol and the sulfonating agent in a liquid reaction medium comprising an inert solvent consisting essentially of about 50 to about 200% by weight, based on the amount of 4,4'-dihydroxydiphenylsulfone to be expected in theory, of ortho-, meta- or parachlorotoluene or a mixture of said chlorotoluenes, at a temperature of from about 100° to about 200° C., and removing the water formed by the reaction continuously from circulation with the chlorotoluene in the reaction medium, until the 4,4'-dihydroxydiphenyl sulfone crystallizes out of the reaction medium, then separating said 4,4'-dihydroxydiphenyl sulfone from the liquid reaction medium.

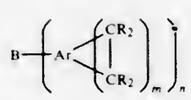
5,288,914

POLY(ARYLCYCLOBUTENES)

Robert A. Kirchhoff, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 883,240, Jul. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 644,836, Aug. 27, 1984, abandoned. This application Dec. 26, 1989, Ser. No. 462,319
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[5] C07C 321/28, 49/76, 13/44, 233/64, 229/38, 229/40, 255/49; C07D 209/48
U.S. Cl. 568—53 **55 Claims**

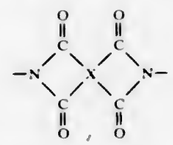
1. A poly(arylcyclobutene) which corresponds to the formula



wherein

B is a single direct bond between the Ar moieties or a sole bridging member between the Ar moieties which contains (1) a polyvalent inorganic radical, or (2) a polyvalent organic radical containing (a) one or more heteroatoms comprising oxygen, sulfur, nitrogen, silicon, or phosphorus, or (b) one or more aromatic radicals;

with the proviso that B is not



wherein

X is a hydrocarbon poly-yl radical or a hydrocarbon poly-yl radical which contains a heteroatom;

R is separately in each occurrence hydrogen, an electron-withdrawing substituent or an electron-donating substituent;

Ar is an aromatic radical or an aromatic radical substituted with an electron-withdrawing substituent or electron-donating substituent provided that (1) where B is a polyvalent inorganic radical or a polyvalent organic radical, B is bonded to each Ar by a single bond and (2) the carbons of the cyclobutene ring



are bonded to adjacent carbon atoms on the same aromatic ring or Ar;

m is an integer of 1 or greater; and

n is an integer of 2 or greater;

provided that B can be a direct bond only when n is equal to 2 and further provided that the poly(arylcyclobutene) be polymerizable through opening of the cyclobutene rings.

5,288,915

PROCESS OF MAKING KETONES

Marlin E. Walters, West Columbia, Tex., assignor to The Dow Chemical Company, Midland, Tex.

Division of Ser. No. 788,903, Nov. 7, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 992,519
Int. Cl.[5] C07C 45/43
U.S. Cl. 568—323 **24 Claims**

1. A process for preparing a ketone comprising reacting a compound having acidic protons and a molecular structure which can delocalize the electron density of a conjugate base with a perchloroalkane and aqueous base in the presence of a tetraalkylammonium or tetraalkylphosphonium hydroxide phase transfer catalyst to form at least one gem-dichloro compound; and (b) admixing the gem-dichloro compound with an effective amount of at least one acid in the presence of at least about one mole of water for each mole of gem-dichloro compound such that a ketone is formed.

5,288,916

ENANTIOMERIC RESOLUTION OF 4-(3,4-DICHLOROPHENYL)-3,4-DIHYDRO-1(2H)-NAPHTHALENONE

Douglas A. Lorenz, and Daniel J. Brose, both of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Filed Mar. 25, 1993, Ser. No. 36,809
Int. Cl.[5] C07C 45/79
U.S. Cl. 568—324 **19 Claims**

1. A method for separation of enantiomers of 4-(3,4-dichlorophenyl)-3,4-dihydro-1(2H)-naphthalenone comprising the steps of:

(a) contacting said enantiomers with a liquid mixture of water and a solvent, said liquid mixture containing a substantially pure and unsupported binding substance selected from γ-cyclodextrin, anionic poly-γ-cyclodextrin (2-hydroxypropyl)-γ-cyclodextrin, γ-cyclodextrin phosphate sodium salt, succinylated-γ-cyclodextrin, octakis (2,3,6-tri-O-acetyl)-γ-cyclodextrin, and carboxymethyl-γ-cyclodextrin, thereby selectively binding one of said enantiomers to said binding substance; and

(b) separating said binding substance from said liquid mixture

wherein said enantiomers are soluble in said liquid mixture to at least 1.0 mM and said solvent is selected from the group consisting essentially of alkanes, halogenated alkanes, alkenes, alcohols, ketones, nitriles, ethers, esters, and mixtures thereof and is selected so as to render said binding substance substantially insoluble in said liquid mixture.

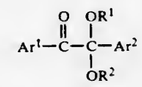
5,288,917

LIQUID PHOTOINITIATOR MIXTURES

Godwin Berner, Binningen; Franciszek Sitek, Therwil, and Rinaldo Hüsler, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 593,601, Oct. 4, 1990, which is a continuation of Ser. No. 401,576, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 34,518, Apr. 6, 1987, abandoned. This application Jul. 19, 1991, Ser. No. 732,986
Claims priority, application Switzerland, Apr. 15, 1986, 1487/86
Int. Cl.[5] C08F 2/50; C07C 49/255
U.S. Cl. 568—331 **2 Claims**

1. A compound of the formula I



(I)

in which

Ar^1 and Ar^2 are independently of each other phenyl or C_1-C_4-alkyl- or halogen-substituted phenyl,

R^1 is a group of the formula $-CH_2CH_2O]_m(C_{10}-C_{16}\text{-alkyl})$ or $-(CH_2CH_2O)_mC_6H_4-(C_7-C_{10}\text{-alkyl})$, in which m is a value from 2-20, and

R^2 is C_1-C_4-alkyl or has the meaning given for R^1.

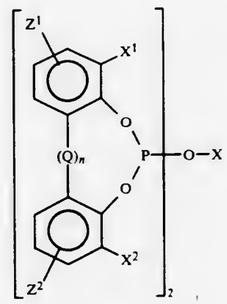
5,288,918

HYDROFORMYLATION PROCESS

John M. Maher, Charleston; James E. Babin, Hurricane; Ernst Billig, Huntington; David R. Bryant, Sonth Charleston, and Tak W. Leung, Charleston, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 29, 1992, Ser. No. 953,016
Int. Cl.[5] C07C 45/50
U.S. Cl. 568—454 **20 Claims**

1. An improved continuous hydroformylation process for producing aldehydes which comprises reacting an olefinically unsaturated compound containing from 2 to 30 carbon atoms with carbon monoxide and hydrogen in the presence of a solubilized rhodium-bisphosphite complex catalyst wherein the bisphosphite ligand of said complex catalyst is a ligand selected from the class consisting of



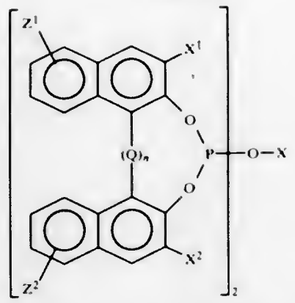
(I)

and

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-continued

(II)



wherein each X^1 and X^2 radical individually represents a radical selected from the group consisting of hydrogen, methyl, ethyl and n-propyl; wherein each Z^1 and Z^2 radical individually represents hydrogen or a substituent radical containing from 1 to 18 carbon atoms; wherein each X represents a divalent radical selected from the group consisting of alkylene, alkylene-oxo-alkylene, arylene and arylene-$(Q)_n$-arylene, and wherein each alkylene radical individually contains from 2 to 18 carbon atoms and is the same or different, and wherein each arylene radical individually contains from 6 to 18 carbon atoms and is the same or different; wherein each Q individually represents a $—CR^5R^6—$divalent bridging group and each R^5 and R^6 radical individually represents hydrogen or a methyl radical; and wherein each n individually has a value of 0 or 1; the improvement comprising carrying out said process in the presence of minor amount of a catalytic activity enhancing additive present in the hydroformylation reaction medium of the process, said additive being selected from the class consisting of added water, a weakly acidic compound having a pKa value of from about 1.0 to about 12, or both added water and a weakly acidic compound having a pKa value of from about 1.0 to about 12, and wherein said weakly acidic compounds are aryl compounds containing form 1 to 3 substituent radicals directly bonded thereto, each said substituent being individually selected from the group consisting of hydroxy and carboxylic acid radicals.

5,288,919

PREPARATION OF DIALKYL PEROXIDES

Mahmoud K. Faraj, Newtown Square, Pa., assignor to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed May 13, 1993, Ser. No. 61,139

Int. Cl.[5] C07C *409/16*

U.S. Cl. 568—578 **9 Claims**

1. A process for the preparation of a dialkyl peroxide having the formula $ROOR_1$ which comprises reacting a reagent selected from the group consisting of an alcohol having the formula ROH, an olefin having the formula:



and mixtures in the liquid phase with a hydroperoxide having the formula R_1OOH, at a temperature of 20°–150° C. and at a pressure sufficient to maintain the liquid phase in the presence of an effective amount of an inorganic heteropoly or isopoly acid catalyst, in the above formulae R and R_1 are alkyl groups having 1 to 10 carbon atoms, and R_2 and R_3 are hydrogen or R.

5,288,920

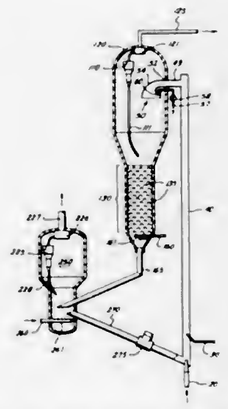
FCC RISER DISCHARGE SEPARATION AND QUENCH APPARATUS

Henry C. Chan, Bellaire, and Ting Y. Chan, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 620,180, Nov. 30, 1990, Pat. No. 5,217,602. This application Jul. 9, 1992, Ser. No. 910,798

Int. Cl.[5] B27B *15/16*; B01J *8/18*

U.S. Cl. 422—146 **10 Claims**



1. An apparatus for fluid catalytic cracking a hydrocarbon feedstock comprising:

a containment vessel,

a riser reactor comprising an upstream end and a downstream end,

a separator within the containment vessel for separating a mixture of spent catalyst and cracked product vapor, and

a conduit providing fluid communication for said mixture between the downstream of said riser reactor end and the separator,

the separator comprising:

a centrifugal separation surface, curved to cause separation of the mixture into a spent catalyst phase in contact with the surface and a cracked product vapor phase spaced from the surface,

a tubular means for transporting quench fluid to

a nozzle disposed inside and opposite the centrifugal separation surface having a spray pattern providing discharge of essentially all of the quench fluid into the cracked product vapor phase and out of contact with said catalyst phase.

5,288,921

PROCESS FOR REDUCING UNSATURATION ON POLYOLS

David Thorpe, Erps-Kwerps, and Giovanni Parrinello, Duisburg, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 899,566, Jun. 16, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 21,833

Int. Cl.[5] C07C *41/34, 41/38*

U.S. Cl. 568—621 **10 Claims**

1. A process for reducing the level of unsaturation in a polyoxyalkylene polyol having a nominal number average molecular weight of 1000–25000 by bringing the polyol into contact with an extracting compound which is a polyol or a polyol mixture having a nominal number average molecular weight of at most 500 and being immiscible with the polyoxyalkylene polyol, mixing the extracting compound and the polyoxyalkylene polyol, allowing the extracting compound and the

polyoxyalkylene polyol to separate and removing the extracting compound.

5,288,922

PROCESS OF PREPARING DIARYL ETHERS OVER A DEALUMINATED ZEOLITE CATALYST

Gary R. Buske; Juan M. Garces, and William P. Dianis, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 16, 1992, Ser. No. 915,161

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—635 **27 Claims**

1. A process of preparing a diaryl ether comprising contacting a hydroxy-substituted aromatic compound with a catalytic amount of a zeolite selected from the group consisting of dealuminated acidic mordenite, zeolite β and dealuminated zeolite L, the mordenite zeolite being characterized as having a silica to alumina molar ratio of at least about 40 and the β and L zeolites being characterized as having a silica to alumina molar ratio of at least about 20, the contacting occurring under reaction conditions such that a diaryl ether is formed.

5,288,923

PREPARATION OF ETHERS OF DIPHENOLS

Gerhard Fennhoff, Willich; Wolfgang Jacob, Moers, and Manfred Ehlert, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 10,726

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1991, 4202740

Int. Cl.[5] C07C *41/01, 315/04*

U.S. Cl. 568—640 **5 Claims**

1. A process for the preparation of hydroxyalkyl ethers of diphenols comprising reacting

(i) an aromatic polycarbonate resin which is based on at least one diphenol and having a weight average molecular weight of about 5000 to 200,000, with

(ii) at least one alkylene diol, in the presence of a basic catalyst at temperatures of 150° to 250° C., at a molar ratio of about 5–10 moles of said diol to 1 mole of aromatic carbonate structural units.

5,288,924

PROCESS FOR STARTING UP AN OLEFIN HYDRATION REACTOR

James H. Beech, Jr.; Charles M. Sorensen, both of Wilmington, Del.; James A. Stoos, Blackwood, N.J., and Robert A. Ware, Wyndmoor, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 18, 1992, Ser. No. 946,705

Int. Cl.[5] C07C *41/05, 29/04*

U.S. Cl. 568—695 **24 Claims**

1. A method for controlling the catalyst deactivating start up exotherm of an adibatic fixed bed reactor containing shape selective metallosilicate catalyst particles for C_3–C_7 olefinic hydrocarbon liquid phase hydration and etherification, comprising in sequence:

a) introducing into said reactor a feedstream comprising C_3–C_{10} paraffinic hydrocarbon vapor in contact with said particles;

b) increasing the pressure of said reactor above the liquification pressure of step (a) vapor and passing liquid C_3–C_{10} paraffinic hydrocarbon into said reactor;

c) displacing step (b) liquid hydrocarbon from said reactor with a feedstream comprising alkanol;

d) introducing a feedstream comprising said C_3–C_7 olefinic hydrocarbon into said reactor containing said alkanol;

e) introducing a feedstream comprising water into said reactor containing said olefinic hydrocarbon under etherification and hydration reaction conditions.

5,288,925

METHOD FOR INHIBITING THE DEPOSITION OF ETHYLENE-VINYL ALCOHOL COPOLYMER

Michael K. Poindexter, Sugar Land, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Cootinuation-in-part of Ser. No. 822,255, Jan. 17, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 983,202

Int. Cl.[5] C07C *29/94, 27/26*

U.S. Cl. 568—701 **5 Claims**

1. A method for preventing the precipitation of ethylene-vinyl alcohol copolymers in a distillation vessel, the vessel containing water, methanol, and ethylene-vinyl alcohol copolymers, the method including the step of adding to the distillation vessel from 1 to about 1,000 ppm of at least one surfactant selected from the group consisting of C4 to C30 alkyl sulfonic acids, C6 to C30 aryl sulfonic acids, C7 to C30 alkyl substituted aryl sulfonic acids, and C7 to C30 aryl substituted alkyl sulfonic acids.

5,288,926

PROCESS FOR PREPARING A BISPHENOL

Emil Patrascu, Stade; Dieter Tank, Himmelpforten; Jochen Gressmann; Johann-Wilhelm Frey, both of Stade, and Ulrich Wallbaum, Fredenbeck, all of Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1993, Ser. No. 13,603

Claims priority, application United Kingdom, Mar. 2, 1992, 9204490

Int. Cl.[5] C07C *39/16*

U.S. Cl. 568—727 **19 Claims**

1. A process of preparing a bisphenol comprising the steps of:

a) reacting a phenolic compound selected from the group consisting of phenol, cresols, xylenols, chlorophenols, thymol, carvacrol, cumenol, 2-methyl-6-ethylphenol, 2,4-dimethyl-3-ethylphenol, 4-ethylphenol, 2-ethyl-4-methylphenol, 2,3,6-trimethylphenol, 2-methyl-4-tertiary-butylphenol, 2,4-ditertiary-butyl-phenol, 4-methyl-2-tertiary-butylphenol, 2-teritary-butyl-4-methylphenol, 2,3,5,6-tetramethylphenol, 2,6-dimethylphenol, 2,6- ditertiary-butylphenol, 3,5-dimethylphenol, 3,5-diethylphenol, 2-methyl-3,5-diethylphenol, o-phenylphenol, p-phenylphenol, tetraphenolethane, the naphthols and phenanthrol with a carbonyl compound having the formula:



wherein R_1 is selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals, and R_2 is selected from the group consisting of aliphatic, cycloaliphatic, aromatic radicals and hydrogen in a reaction mixture, containing said carbonyl compound, a stoichiometric excess of said phenolic compound and a strongly acidic ion exchange resin catalyst, to produce a product mixture containing a bisphenol;

b) separating bisphenol from the product mixture to leave a motor liquor; and

c) recycling at least a portion of the mother liquor to the reaction mixture,

wherein at least one of the following steps is conducted:

i) at least a portion of the phenolic compound is contacted with a strongly acidic cation exchange resin and a strongly basic anion exchange resin before the phenolic compound is used in reaction step a);

ii) at least a portion of the product mixture is contacted with a strongly acidic cation exchange resin and a strongly basic anion exchange resin before mother liquor is recycled to the reaction mixture; or

iii) at least a portion of the mother liquor is contacted with a strongly acidic cation exchange resin and a strongly basic anion exchange resin before mother liquor is recycled to the reaction mixture.

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5,288,927

PARA-SELECTIVE BUTYLATION OF PHENOL OVER FAIRLY LARGE-PORE ZEOLITES

Clarence D. Chang, Princeton, N.J., and Stuart D. Hellring, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Feb. 1, 1993, Ser. No. 11,574

Int. Cl.[5] **C07C** *37/14, 37/16*

U.S. Cl. 568—789 **8 Claims**

1. A process for preparing para-tert-butylphenol, said process comprising reacting phenol with butene or butanol over a catalyst under conditions sufficient to produce said para-tert-butylphenol, said catalyst comprising a zeolite having a Constraint Index of from 1 to 3, wherein said conditions include a temperature of at least 25° C., a pressure of from 0 up to 5000 psig, and a liquid hourly space velocity of from 0.1 to 5 hr^{-1}.

5,288,928

ASYMMETRICAL HYDROGENATION

Emil A. Broger, Magden; Yvo Crameri, Oberwil; Hans P. Isenring, Sissach, and Albert Pfiffner, Bülach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

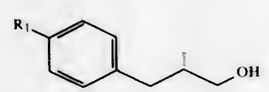
Division of Ser. No. 811,381, Dec. 20, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 916,926

Claims priority, application Switzerland, Dec. 21, 1990, 4100/90-9

Int. Cl.[5] **C07C** *29/17, 33/34, 33/46, 27/00*

U.S. Cl. 568—807 **6 Claims**

1. A process for the preparation of a compound of the formula



I

wherein the compound of formula I is produced in an optical purity of 90% or more, wherein

R_1 is hydrogen or a group Z, where

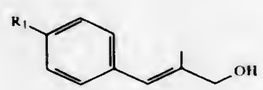
Z is



R_2 methyl, ethyl or chloromethyl;

R_3 is C_1-C_4alkyl, or R_2 and R_3, together with the linking carbon atom, are C_3-C_7cycloalkyl;

which process comprises asymmetrically hydrogenating a compound of the formula



II

in the E-form, wherein R_1 is defined as above, in the presence of a rhodium catalyst of the formula V or VI

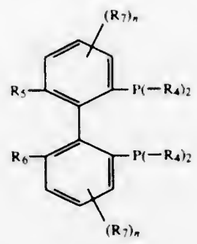
$[Rh(X)(Y)L_{0,1,2}]_{1,2}$ V or

$[Rh(Y)L_{0,1,2}]^+ A^-$ VI

wherein

X is a halide, a carboxylic acid anion, an 1,3-diketonate anion, a phenolate anion, or which is hydroxy, nitrate, nitrite, cyanate, thiocyanate, cyanide or hydrogensulfate;

Y is a chiral atropisomeric diphosphine ligand of the formula VII or VIII



VII

wherein

R_4 is cyclohexyl or phenyl which is unsubstituted or substituted by lower alkyl or lower alkoxy groups or by di-lower alkylamino groups;

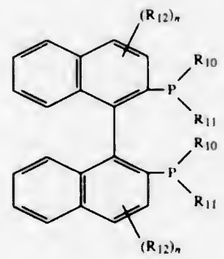
R_5 and R_6 are the same or different members of the group consisting of lower alkyl, lower alkoxy, di-lower alkylamino and protected hydroxymethyl, or R_5 and R_6, when taken together, is a group selected from $(-CH_2-)_m$, $-CH_2-O-CH_2-$, $-CH_2-NR_8-CH_2$ and $CH_2-C(OR_9)_2-CH_2-$ where m is an integer from 3 to 5;

R_8 is lower alkyl, benzyl or phenyl which is unsubstituted or substituted by lower alkyl or lower alkoxy groups or by di-lower alkylamino groups;

R_9 is lower alkyl, or both substituents R_9 together are di- or trimethylene;

R_7 is methyl, lower alkoxy, di-lower alkylamino or halogen,

and n is 0, 1, 2 or 3;



VIII

wherein

R_{10} and R_{11} are cyclohexyl or phenyl which is unsubstituted or substituted by lower alkyl- or lower alkoxy groups or by di-lower alkylamino groups;

R_{12} is methyl, ethyl, halogen, OH, NH_2, acetylamino, nitro or SO_3H;

L is an olefin selected from the group consisting of ethylene, propylene, cyclooctene, 1,5-hexadiene, norbornadiene and 1,5-cyclooctadiene, a nitrile selected from the group consisting of acetonitrile and benzonitrile, or a solvent molecule, and

A^- is an anion.

5,288,929

METHOD FOR REMOVING, CONDENSING AND COLLECTING PROPELLANTS FROM FOAM MATERIALS

Lau O. Voers, Hjortshoej, Denmark, assignor to L&E Holding ApS, Hjortshoej, Denmark

PCT No. PCT/DK90/00213, § 371 Date Feb. 12, 1992, § 102(e) Date Feb. 12, 1992, PCT Pub. No. WO91/02638, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 17, 1990, Ser. No. 834,555

Claims priority, application Denmark, Aug. 21, 1989, 4084/89; May 28, 1990, 1306/90

Int. Cl.[5] **C07C** *17/38*

U.S. Cl. 570—177 **7 Claims**

1. A method for removing, condensing and collecting propellants from foam products, which method involves the use of a closed container in which a mechanical decomposition of the product is effected, said method comprising the steps of (a) mechanically decomposing a foam product which contains a propellant to liberate propellant from the product, and (b) collecting the liberated propellant, wherein the mechanical decomposition of the product and the liberation of the propellant is effected inside a cup-shaped process container having the closed part of the cup turned upwardly and the open part of the cup placed below the surface of a liquid medium under or in which liquid medium the decomposition and liberation is effected.

5,288,930

PURIFICATION OF 1,1,1,2-TETRAFLUOROETHANE

Charles J. Shields, Stockton Heath, and Adrian S. Swindells, Warrington, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 918,681, Jul. 27, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,611

Claims priority, application United Kingdom, Aug. 2, 1991, 9116777.5

Int. Cl.[5] **C07C** *17/38*

U.S. Cl. 570—179 **10 Claims**

1. A process for the removal of 1-chloro-2,2-difluoroethylene from 1,1,1,2-tetrafluoroethane which comprises contacting 1,1,1,2-tetrafluoroethane containing 1-chloro-2,2-difluoroethylene with a zeolite having a mean pore size in the range of 3.5 Å to 4.8 Å and having potassium as the predominant counter cation.

5,288,931

METHOD FOR REFOLDING INSOLUBLE, MISFOLDED INSULIN-LIKE GROWTH FACTOR-I INTO AN ACTIVE CONFORMATION

Judy Y. Chang; Nancy C. McFarland, both of Hillsborough, and James R. Swartz, Menlo Park, all of Calif., assignors to Genentech, Inc., S. San Francisco, Calif.

Filed Dec. 6, 1991, Ser. No. 808,451

Int. Cl.[5] **C07K** *7/04;* **C12N** *15/00*

U.S. Cl. 530—399 **22 Claims**

1. A process for reactivating insoluble misfolded IGF-I contained in prokaryotic host cells, which process comprises:

(a) isolating said IGF-I; and

(b) incubating said isolated IGF-I at a concentration of about 0.5-5.5 mg IGF-I per ml in an alkaline buffered solution comprising 1-3 M chaotropic agent and the minimal concentration of reducing agent sufficient for solubilization, under conditions of incubation temperature and time whereby solubilization, unfolding, and refolding of the IGF-I all occur during the incubation.

5,288,932

METHOD FOR THE PRODUCTION OF SUBSTITUTED OR UNSUBSTITUTED CHLOROMETHYL CYCLOPROPANE AND BROMOMETHYL CYCLOPROPANE

Manfred Kaufhold, Marl, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,827

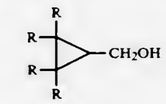
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212766

Int. Cl.[5] **C07C** *17/16*

U.S. Cl. 570—186 **17 Claims**

1. A method for the production of a haloaklane selected from the group consisting of chloromethyl cyclopropane and bromomethyl cyclopropane, comprising the steps of:

reacting a hydroxymethyl cyclopropane of the formula



where R is H, or one or two R groups are independently alkyl of from 1 to 10 carbon atoms or phenyl, with a methane sulfonic acid halide selected from the group consisting of methane sulfonic acid chloride and methane sulfonic acid bromide in the presence of a trialkylamine at a temperature of from −20° C. to +30° C. for a length of time of from 1 to 30 hours, to provide a reaction mixture containing an intermediate mesylate,

heating said reaction mixture to a temperature of from +40° to +80° C., or to reflux temperature, without isolating said intermediate mesylate, and

isolating said haloalkane selected from the group consisting of chloromethyl cyclopropane and said bromomethyl cyclopropane, said haloalkane selected from the group consisting of chloromethyl cyclopropane and bromomethyl cyclopropane having a degree of purity of above 85%.

5,288,933

PROCESS FOR THE PRODUCTION OF POLYETHYLENE

Sun-Chueh Kao, and Frederick J. Karol, both of Belle Mead, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Apr. 16, 1992, Ser. No. 868,860

Int. Cl.[5] **C07C** *2/36*

U.S. Cl. 585—513 **8 Claims**

1. A process for the polymerization of ethylene or a mixture comprising ethylene and one or more alpha-olefins and, optionally, a diene, comprising passing, under polymerization conditions, the aforementioned monomer(s) into contact with a catalyst system comprising:

(a) the reaction product of

(i) a titanium based catalyst precursor having the formula $Mg_aTi(OR)_bX_c(ED)_d$ wherein

ED is an inside electron donor comprising a mixture of (A) about 1 to about 80 mole percent of an alkyl, alkoxy, aryl, or aryloxy phosphine oxide, or mixtures thereof, and (B) about 20 to about 99 mole percent of an organic ester, ether, or ketone, or mixtures thereof said phosphine oxide also being present in a molar ratio of phosphine oxide to titanium of 0.1:1 to 8:1;

R is an aliphatic or aromatic hydrocarbon radical having 1 to 14 carbon atoms or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical having 1 to 14 carbon atoms;

each OR group is the same or different;

each X is independently chlorine, bromine, or iodine;

a is 0.5 to 56;

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h is 0,1, or 2;
c is 2 to 116; and
d is 2 to 85; and
(ii) at least one activator having the formula

$$Al(R'')_eX'_fH_g$$

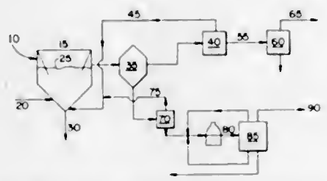
wherein
X' is Cl or OR'''
R'' and R''' are the same or different and are saturated hydrocarbon radicals having 1 to 14 carbon atoms
f=0 to 1.5
g=0 or 1
e+f+g+=3
wherein component (a) is impregnated into an inorganic support; and
(b) a hydrocarbyl aluminum cocatalyst.

5,288,934

PROCESS FOR THE CONVERSION OF POLYMERS

Axel de Broqueville, Kraainem, Belgium, assignor to Petrofina, S.A., Brussels, Belgium

Filed Aug. 27, 1992, Ser. No. 937,637
Int. Cl.[5] C07C *1/00*
U.S. Cl. 585—241 **28 Claims**



1. A process for the conversion of polymers into recyclable material comprising:
(1) contacting crushed polymers with a liquid which dissolves styrenic polymers, which does not dissolve polyolefins, polyethylene terephthalate (PET) and polyvinyl chloride (PVC) and which can separate by specific gravity polyolefins from PET and PVC;
(2) separating into:
(a) one fraction comprising a polymeric material comprising the dissolved styrenic polymers
(b) one fraction comprising a polymeric material comprising the polyolefins, and
(c) one fraction comprising a polymeric material comprising a mixture comprising PET and PVC;
(3) cracking at least one polymeric material separated at the preceding step into lower molecular weight products.

5,288,935

METHOD OF PRODUCING LIQUID HYDROCARBONS FROM NATURAL GAS, IN THE PRESENCE OF A CATALYST BASED ON ZEOLITE AND GALLIUM

Fabio Alario, La Varenne; Charles Cameron, and Jean-Francois Joly, both of Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 21, 1992, Ser. No. 886,226
Claims priority, application France, May 21, 1991, 91 06195
Int. Cl.[5] C07C *2/78*
U.S. Cl. 585—322 **18 Claims**

1. In a method of producing liquid hydrocarbons from natural gas, comprising:

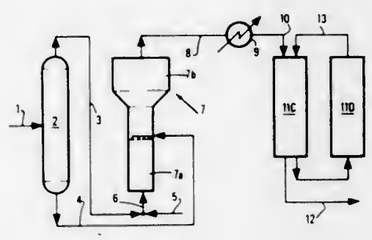
(a) separating natural gas into at least two fractions, a first fraction of gas enriched with methane and a second fraction enriched with C2+ alkanes;

(b) oxidizing at least part of the methane selectively by molecular oxygen in the presence of a catalyst by oxidizing coupling of methane;

(c) when at least 80% of the molecular oxygen introduced at stage (b) has been consumed at stage (b), mixing at least part of the fraction enriched with C2+ alkanes from step (a) with the resultant effluent from the selective oxidation stage (b); and

(d) pyrolyzing the mixture resulting from stage (c), the improvement which comprises:

(e) when the temperature of the mixture from stage (d) has been brought to 300° to 750° C., and an ethylene/ethane molar ratio of at least 1.2:1 is obtained, converting at least part of the olefins and optionally part of the C2+ alkanes to aromatics in the presence of an aromatizing catalyst consisting essentially of:



a zeolite;

gallium;

at least one metal selected from the group consisting of Group VIII metals of the platinum family and rhenium;

at least one additional metal selected from the group consisting of tin, germanium, lead, indium, thallium, copper, gold, nickel, iron, chromium, molybdenum, and tungsten;

an alkali metal or alkaline earth metal; and

an alumina matrix.

5,288,936

PROCESS FOR THE SYNTHESIS OF ALKYLATED AROMATIC HYDROCARBONS

Jean-Pierre Ganhy, Brussels; Pierre Jacobs, Gooik; Marleen Baes, Heverlee, and Johan Martens, Brussels, all of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

PCT No. PCT/BE90/00022, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO90/14323, PCT Pub. Date Nov. 29, 1990
PCT Filed May 25, 1990, Ser. No. 768,988
Claims priority, application France, May 26, 1989, 89 07053
Int. Cl.[5] C07C *2/66*
U.S. Cl. 585—452 **32 Claims**

1. A process for the synthesis of an alkylated aromatic hydrocarbon with a saturated alkyl chain containing at least four carbon atoms, comprising reacting an aromatic hydrocarbon substituted by a saturated short-chain alkyl group containing one to three carbon atoms with a suitable olefin in the presence of a catalyst comprising at least one alkali metal, an alkali metal hydride or a mixture of the alkali metal and the alkali metal hydride impregnated onto an alumina support, the process

further comprising preparing the catalyst by mixing the alumina support with the alkali metal, the alkali metal hydride, or the mixture of the alkali metal and the alkali metal hydride in a reaction medium comprising the aromatic hydrocarbon substituted by saturated short-chain alkyl group containing one to three carbon atoms and introducing the olefin, under reaction conditions, into the reaction medium to start the reaction.

5,288,937

VULCANIZABLE LIQUID COMPOSITIONS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa.; Demetreos N. Matthews, Ewing, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application Dec. 17, 1992, Ser. No. 992,341
Int. Cl.[5] C07C *2/40*; C08F *297/02*
U.S. Cl. 585—507 **16 Claims**

1. A liquid star-branched block copolymer, each branch comprising at least two alternating blocks

I—B

wherein each free end of the branches is an I block, and

I is a block of at least one polymerized conjugated diene having at least five (5) carbon atoms and the following formula

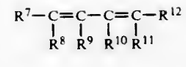

(1)

wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula

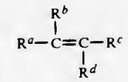
(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

B is a block of a polymer of at least one conjugated diene different from the diene used to polymerize the block I, having at least four (4) carbon atoms and the following formula


(3)

wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block B has the following formula


(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group;

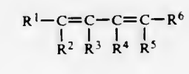
said polymerized block B containing at least about 25 wt.% of 1,2- units if it is a polymer of predominantly 1,3-butadiene;

said copolymer being selectively hydrogenated so that each of the blocks B is substantially completely hydrogenated and thereby contains substantially none of the original unsaturation, while each of the blocks I retains a sufficient amount of its original unsaturation to vulcanize said copolymer.

6. A liquid star-branched block copolymer, each branch comprising at least two (2) alternating blocks

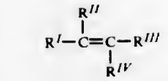
A—D

wherein each free end of the branches is an A block and
A is a copolymer of at least one aryl-substituted olefin and at least one conjugated diene having at least five (5) carbon atoms and the following formula


(1)

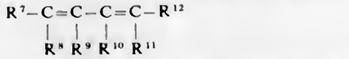
wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block A has the following formula

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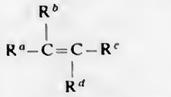
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from the diene used to polymerize the block A, having at least four (4) carbon atoms and the following formula



(3)

wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block D has the following formula



(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group;

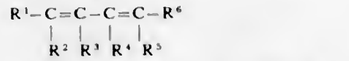
said polymerized block D containing at least about 25 wt. % of 1,2- units if it is a polymer of predominantly 1,3-butadiene;

said copolymer being selectively hydrogenated so that each of the blocks D is substantially completely hydrogenated and thereby contains substantially none of the original unsaturation, while each of the blocks A retains a sufficient amount of its original unsaturation to vulcanite said copolymer.

11. A liquid star-branched block polymer, each branch comprising at least three alternating blocks.

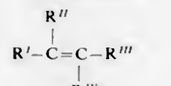
wherein each free end of the branches is either an I or an A block and

I is a block of at least one polymerized conjugated diene having at least five (5) carbon atoms and the following formula



(1)

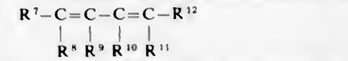
wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

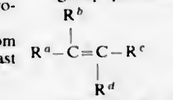
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from that used to polymerize the blocks I or A, having at least four (4) carbon atoms and the following formula



(3)

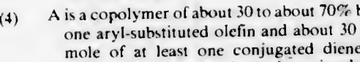
wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double



(4)

bond in the polymerized block D has the following formula

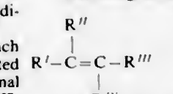
wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group;



(1)

A is a copolymer of about 30 to about 70% by mole of at least one aryl-substituted olefin and about 30 to about 70% by mole of at least one conjugated diene of formula (1), different from that used to polymerize the block D, having at least five (5) carbon atoms and the following formula

wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

said polymerized block D containing at least about 25 wt. % of 1,2- units if it is a polymer of predominantly 1,3-butadiene;

said copolymer being selectively hydrogenated so that each of the blocks D is substantially completely hydrogenated and thereby contains substantially none of the original unsaturation, while each of the blocks I and A retains a sufficient amount of its original unsaturation to vulcanize said copolymer.

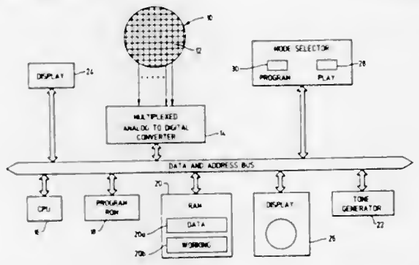
16. A liquid star-branched copolymer wherein each branch comprises two (2) alternating blocks bonded to each other, the free end of each branch being a block of at least one polymerized hydrocarbon conjugated diene (I) monomer containing at least five (5) carbon atoms, with at least one carbon atom of each pair of residual double-bonded carbon atoms of polymerized conjugated diene (I) units being additionally single-bonded to two carbon atoms, or a copolymer of at least one diene (I) at least one aryl-substituted olefin, the blocks adjacent to said polymerized diene (I) containing blocks being a polymer of at least one polymerized hydrocarbon conjugated diene (B), which is different from conjugated diene (I) and contains at least four (4) carbon atoms, with each residual double-bonded carbon atom of polymerized conjugated diene (B) units being additionally bonded to a hydrogen atom, the latter polymerized diene (B)-containing blocks additionally comprising at least about 25 wt. % of 1,2-units if they area polymer of predominantly 1,3-butadiene, said block copolymer being selectively hydrogenated so that said polymerized conjugated diene (B) units are substantially completely hydrogenated and contain substantially none of the original unsaturation, while said polymerized conjugated diene (I) units retain sufficient amount of their original unsaturation to vulcanize said copolymer.

5,288,938

METHOD AND APPARATUS FOR CONTROLLING ELECTRONIC TONE GENERATION IN ACCORDANCE WITH A DETECTED TYPE OF PERFORMANCE GESTURE

James A. Wheaton, Fairfax, Calif., assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 5, 1990, Ser. No. 622,517
Int. Cl.[5] G10H *1/32*
U.S. Cl. 84—600 **23 Claims**



1. A method of controlling an electronic tone generator in accordance with a type of gesture used by a player to contact a performance surface, comprising the steps of:

providing a performance surface including an array of pressure sensors, each of which provides an output;

analyzing the output from each sensor of the array to determine a pattern of plural sensors which have been substantially simultaneously activated by a player, said pattern corresponding to a type of gesture used by a player to contact the performance surface; and

controlling an electronic tone generator in accordance with a type of gesture determined to have been used by the player to contact the performance surface.

5,288,939

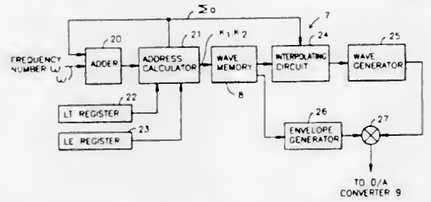
Patent Not Issued For This Number

5,288,940

TONE GENERATING CIRCUITRY FOR READING OUT ONE-SHOT AND SUSTAINING WAVEFORMS

Gen Izumisawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Continuation of Ser. No. 835,171, Feb. 13, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,386
Claims priority, application Japan, Feb. 15, 1991, 3-042423
Int. Cl.[5] G10H *1/057, 1/46, 7/02*
U.S. Cl. 84—603 **6 Claims**



1. A tone generating apparatus, comprising:

a wave memory within which is stored a plurality of first tone waveform data each of which has a preselected length extracted from an attack portion of a corresponding plurality of musical tones and a plurality of second tone waveform data each of which has a preselected length following associated first tone waveform data;

read means for reading a selected first tone waveform data of said plurality of first waveform data only once from said wave memory and subsequently reading associated second tone waveform data of said plurality of second waveform data repeatedly;

a first predetermined plurality of said plurality of second waveform data having a value of zero so that no musical tone is produced when said first predetermined plurality of second waveform data is read repeatedly and a second predetermined plurality of second waveform data having a value that non-zero so that sustaining musical tones are produced when said second predetermined plurality of second waveform data is read repeatedly;

tone generating means for generating a musical tone based on said tone waveform data read out by said read means;

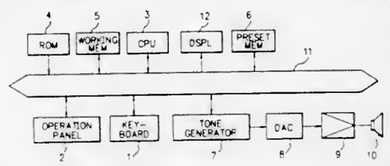
whereby said read means is the only read means required to read musical tones having sustaining portions and musical tones not having sustaining portions.

5,288,941

ELECTRONIC MUSICAL INSTRUMENT WITH SIMPLIFIED OPERATION FOR SETTING NUMEROUS TONE PARAMETERS

Makoto Sekizuka, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Jul. 28, 1992, Ser. No. 920,669
Claims priority, application Japan, Aug. 1, 1991, 3-215798
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—615 **9 Claims**



1. A parameter setting apparatus for an electronic musical instrument, for independently setting a plurality of parameters for controlling tones, comprising:

preset memory means for storing a plurality of present values, each corresponding to one of said plurality of parameters;

a plurality of parameter value setting means, each corresponding to one of said plurality of parameters;

each of said plurality of parameter value setting means including

an operation member for incrementing a value of the corresponding parameter,

a decrementing operation member for decrementing the value of the corresponding parameter,

a preset operation member for setting the value of the corresponding parameter to a corresponding preset value; wherein each of said preset operation members sets the value of the corresponding parameter to the corresponding preset value independent of all other preset operation members; and

a tone generator for generating a musical tone signal based on the plurality of parameter values;

parameter memory means for storing the plurality of parameter values supplied to said tone generator;

initial value memory means for storing initial values of the plurality of parameters;

means for transferring the parameter initial values to said preset memory means and said parameter memory means upon a power-ON operation.

preset value supplier means for transferring the corresponding preset value stored in said preset memory means to said parameter memory means when said corresponding preset operation member is operated;

preset value renewal means for incrementing or decrementing the corresponding parameter value in said preset memory means upon operation of said corresponding incre-

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menting or decrementing operation member, respectively; and

parameter value increment/decrement means for incrementing or decrementing the corresponding parameter value in said parameter memory means upon operation of said corresponding incrementing or decrementing operation member, respectively.

5,288,942

CARDHOLDERS INCORPORATING KEEPERS

Richard L. Godfrey, Westfield, Portsmouth Road, Milford, Godalming, Surrey, GU8 5DS, England

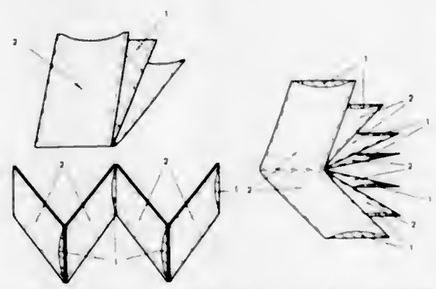
PCT No. PCT/GB90/01044, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO91/17680, PCT Pub. Date Nov. 28, 1991

PCT Filed Jul. 19, 1990, Ser. No. 730,793

Claims priority, application United Kingdom, May 14, 1990, 9010778

Int. Cl.[5] H05K *9/00*; **A45C** *11/18*

U.S. Cl. 174—35 R **23 Claims**



1. A cardholder incorporating at least one sheet of magnetically soft ferromagnetic material, wherein each of said at least one sheet is a keeper means for maintaining at least one pattern of magnetism carried in at least one stripe on at least one card to be housed in said cardholder, each sheet being dimensioned to match each at least one stripe relative to which it functions as a keeper, each sheet comprising a magnetically soft ferrogmagnetic material which has a high resistance to eddy currents and having at least one surface which is a smooth, low friction surface, said cardholder being so constructed that a reading surface of each card which is housed therein when in use will normally be in close magnetic proximity the keeper afforded by the sheet.

5,288,943

METHOD OF PROVIDING BENDS IN ELECTRICAL LEADS, AND ARTICLES MADE THEREBY

Kevin E. Walker, Harrisburg, and Klaus D. Brunnengraeber, Red Lion, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 27, 1993, Ser. No. 10,028

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 **2 Claims**

1. An improved method of providing an electronic package, said package including a lead frame and a plastic case molded about at least a portion of said lead frame, with at least one electrical lead extending from said lead frame outwardly through a wall of said case, said method comprising the steps of:

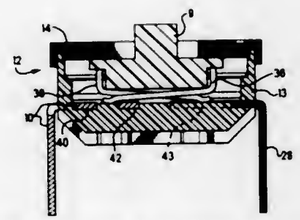
forming a lead frame having at least one electrical lead which extends outwardly therefrom substantially parallel to a plane of said lead frame;

molding a plastic case about at least a portion of said lead frame, with said at least one lead extending outwardly through a wall of said case; and

providing a subsequent bending downwardly of said outwardly-extending lead, to cause it to extend substantially at a right angle to said plane;

the improvement comprising the step of:

forming a double bend in said lead prior to said molding, said double bend comprising a first, downward bend positioned so as to be disposed just outside said wall of said



case after said molding, and a second, upward bend positioned adjacent said first bend and distally thereof;

wherein said subsequent bending downwardly of said lead comprises bending downwardly a distal end of said lead lying distally beyond said second, upward bend, while supporting against bending an initial part of said lead located between said wall of said case and said first bend.

5,288,944

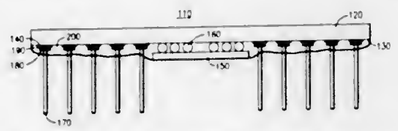
PINNED CERAMIC CHIP CARRIER

Lance A. Bronson, Port Crane; Scott P. Moore, Apalachin, and John A. Shriver, III, Owego, all of N.Y., assignors to International Business Machines, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 838,613, Feb. 18, 1992, Pat. No. 5,243,133. This application Jun. 17, 1993, Ser. No. 79,192

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 **8 Claims**



1. A semiconductor chip package, comprising:

a ceramic substrate including a first surface and a second surface, opposing said first surface;

at least one semiconductor chip mounted on said first surface; and

at least one pin which is mechanically connected to said ceramic substrate and electrically connected to said at least one semiconductor chip, Characterized In That

said pin is mechanically connected to a contact pad on either said first surface or said second surface of said ceramic substrate, the mechanical connection between said pin and said contact pad, as well as the electrical connection between said pin and said semiconductor chip, including a region of solder at least partially encapsulated in a region of material including an epoxy resin, said material region being chosen in relation to said solder region so that said solder region exhibits an increase in electrical resistance less than 200 milliohms when said solder/material connection is subjected to sinusoidal thermal cycling from 0° C. to 100° C., at a frequency of 3 cycles per hour, for 2000 cycles.

5,288,945

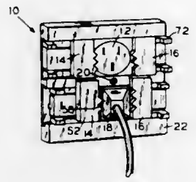
ELECTRIC OUTLET SAFETY PLATE

Wayne K. Bruce, P.O. Box 661, Siletz, Oreg. 97380

Filed Jun. 30, 1992, Ser. No. 906,415

Int. Cl.[5] H05K *5/03*

U.S. Cl. 174—67 **12 Claims**



1. An electric outlet safety plate, comprising:

a. a plate member including at least one electric outlet opening;

b. a first sliding member;

c. a second sliding member;

d. means for slidingly engaging said first and second sliding members upon said plate member; and

e. means for locking said first and second sliding members in a plurality of positions relative to said plate member which includes a position where said first and second sliding members abut so as to substantially cover the electric outlet opening.

5,288,946

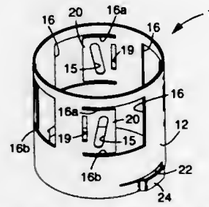
STRAIN RELIEF DEVICE AND CLOSURE

Jerry D. Jackson, and James R. Miller, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 18, 1992, Ser. No. 900,610

Int. Cl.[5] H02G *15/02*

U.S. Cl. 174—74 R **16 Claims**



11. A closure for a cable termination including a hollow tubular member having opposite open ends and a rigid body, a shoulder formed on the inner surface of said body and spaced from one end to reduce the inner diameter of the tubular member in the area of the shoulder, and

a strain relief member comprising a web formed o a ductile material and having a length dimension and a width dimension between opposite sides, said web having a plurality of transverse slots between said opposite sides for receiving fasteners, said web being positioned with one side resting against said shoulder and said transverse slots extending between said one end of said body and the side of the web opposite said one side, and said web being formed with U-shaped cuts through said web and about said slots each U-shaped cut having a pair of generally parallel legs extending generally parallel to said opposite sides and having a transversely of said web to define tabs in said web having the slots therein, which tabs may be bent to positions angularly related to the web and to the end of said body.

5,288,947

CABLE JUNCTION BOX

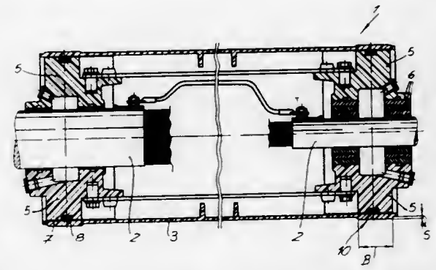
Albert Stewing, Dorsten, Fed. Rep. of Germany, assignor to Stewing Kunststoffbetrieb GmbH, Dorsten, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 906,151

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 9107912; Jun. 27, 1991, 9107913

Int. Cl.[5] H02G *15/113*

U.S. Cl. 174—92 **7 Claims**



1. A cable junction box for connecting and branching cables, comprising:

a longitudinally divided socket tube having closure sections that bound longitudinal divisions of the tube;

sealing members braced by the socket tube so as to form closures of end faces of the socket tube, the sealing members having cable passages adaptable to different cable diameters;

peripheral seals disposed between the socket tube and the sealing member;

a peripheral jacket reinforcement provided at each end of the socket tube so as to extend up to a region of the longitudinal division; and

groove/spring connecting means for connecting together the longitudinally divided socket tube, the connecting means including a U-shaped grooved section for receiving a longitudinal seal and a spring section that is engageable into the grooved section so as to compress the longitudinal seal, the U-shaped grooved section comprises an inner leg extending in a peripheral direction of the socket tube and an outer leg which define a longitudinal groove between them, the inner leg being removed in a region of crossing of the longitudinal seal and the peripheral seals, the longitudinal seal being pressable against the peripheral seals and the longitudinal groove has a chamber constriction in regions devoid of inner legs.

5,288,948

STRUCTURE OF A SEMICONDUCTOR CHIP HAVING A CONDUCTIVE LAYER

Yasuhiro Fukuda; Tetsuhiko Sugahara; Norio Hirashita; Mitsuhiro Matsuo; Minoru Saito; Masayuki Kobayakawa, and Fumitaka Yokoyama, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/00424, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO91/00616, PCT Pub. Date Jan. 10, 1991

PCT Filed Mar. 29, 1990, Ser. No. 778,881

Claims priority, application Japan, Jun. 26, 1989, 1-160926; Oct. 16, 1989, 1-119669[U]

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **20 Claims**

1. A conductive layer structure of a semiconductor integrated circuit device comprising:

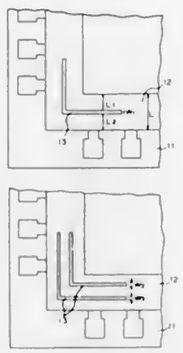
a semiconductor substrate having a major surface:

a metal conductive layer formed on the major surface of said semiconductor substrate, said metal conductive layer

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including a wiring line extending lengthwise in a first direction and widthwise in a second direction substantially perpendicular to the first direction,

the wiring line including a slit having a width in the second direction, the slit dividing the wiring line widthwise into a



plurality of wiring line parts each of which having a width in the second direction which is smaller than about 40 μm, the width of the slit being not greater than 10% of the width of the wiring line; and

a passivation film formed on said metal conductive layer.

5,288,949

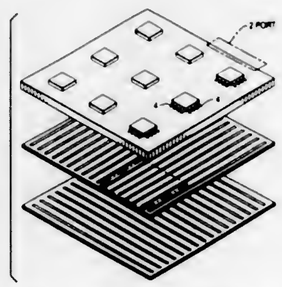
CONNECTION SYSTEM FOR INTEGRATED CIRCUITS WHICH REDUCES CROSS-TALK

Harold S. Crafts, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 3, 1992, Ser. No. 829,838

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **8 Claims**



1. In a carrier for supporting integrated circuits, which includes conductive traces which carry signals, the improvement comprising:

a) several conductors which

i) are interspersed among the traces,

ii) are held at substantially constant dc potential, and

iii) together with said conductive traces, occupy no more than two layers.

5,288,950

FLEXIBLE WIRING BOARD AND METHOD OF PREPARING THE SAME

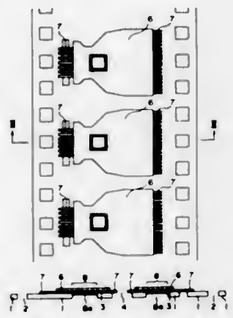
Ryozo Ushio, Ichikawa; Akio Takatsu, and Yoshinori Suzuki, both of Tokyo, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,580

Claims priority, application Japan, Feb. 15, 1991, 3-042431; Mar. 5, 1991, 3-063891; Jan. 22, 1992, 4-029878

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—254 **5 Claims**



1. A flexible wiring board composed of a flexible insulating support film having opposite first and second sides and plural wiring patterns on said first side thereof, said insulating support film having a thickness in one part to be bent in use thereof which is thinner than that in other parts thereof, and a silicone rubber cover layer covering the wiring patterns and said part to be bent.

5,288,951

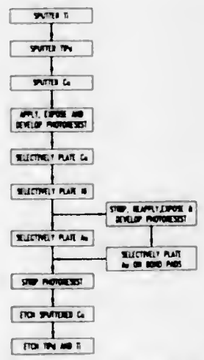
COPPER-BASED METALLIZATIONS FOR HYBRID INTEGRATED CIRCUITS

Robert P. Frankenthal, Summit, N.J.; Ajibola O. Ibidunni, Litchfield, and Dennis L. Krause, Atkinson, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 968,810

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—257 **7 Claims**



1. A circuit including thin film elements and electrical interconnections on a major surface of an insulating substrate, said interconnections comprising:

a first metal layer comprising titanium formed on said substrate;

a second metal layer comprising an alloy of titanium and palladium formed on said first metal layer, said alloy comprising 0.3 to 14 weight percent palladium based on the weight of the alloy;

a third metal layer comprising copper formed on said second metal layer,

a fourth metal layer comprising nickel formed on said third metal layer;

a fifth metal layer comprising gold formed on at least portions of said fourth metal layer.

5,288,952

MULTILAYER CONNECTOR

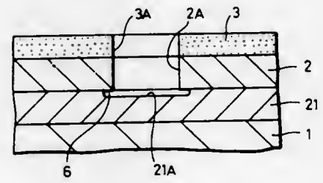
Junichi Sato, Tokyo, and Keiji Shinohara, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 815,060

Claims priority, application Japan, Dec. 28, 1990, 2-417115

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—262 **5 Claims**



1. A multilayer connector comprising:

a first wiring layer;

a second wiring layer formed on said first wiring layer through an interlevel insulator;

a first opening bored through said interlevel insulator at a portion where said first and second wiring layers are connected;

a recess portion having a second opening formed in the surface of said first wiring layer, said second opening of said recess portion being increased in width from a peripheral edge of said first opening and adjacent said first opening; and

a coupling conductor extending from said recess portion to said first opening of said interlevel insulator and electrically connecting said first and second wiring layers.

5,288,953

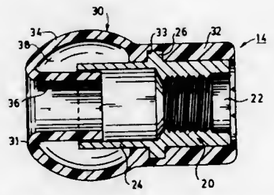
COMPRESSIBLE STETHOSCOPE EAR TIP

Edward L. Peart, Arden, N.C., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Apr. 29, 1992, Ser. No. 875,650

Int. Cl.[5] H04R *25/02*; A61B *7/02*

U.S. Cl. 181—130 **12 Claims**



1. An ear tip for use with a headset type device which comprises:

a generally tubular inner body member having a receptacle portion at a first end for receiving therein the end of an ear tube and an extended open ferrule at a second end, wherein said inner body member receptacle portion is threaded to screw onto a similarly threaded ear tube;

an outer body member having a sleeve portion and an enlarged ear contacting portion, wherein said sleeve portion is formed to engage about said inner body member receptacle portion;

said outer body ear contacting portion extending outwardly beyond the open ferrule end of said inner body member;

said inner body member being formed of a generally rigid material and said outer body being formed of a resilient material; and

said ear contacting portion of said outer body member comprising:

a convex outer wall forming a hollow chamber about the open end of said inner body ferrule;

said convex outer wall being turned inwardly to form a tubular ferrule slidably engaging said open ferrule of said inner body;

said convex outer wall having a thickness and flexibility so as to permit a cushioning deformation about the ear canal opening of a user when installed on the ear tube of a headset type device positioned in the ear of a user; and

a tubular inner ferrule portion is formed to slidably engage with the inside of said open ferrule end of said inner body.

5,288,954

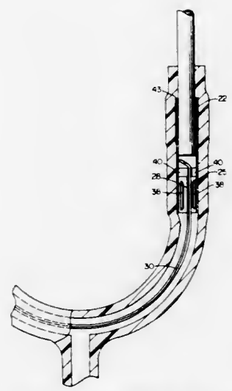
BINAURAL STETHOSCOPE

Edward L. Peart, and Gary L. Jarvis, both of Arden, N.C., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 21, 1993, Ser. No. 6,511

Int. Cl.[5] A61B *7/02*

U.S. Cl. 181—131 **12 Claims**



1. A compact connector for joining one end of a rigid stethoscope ear tube to a multiple leaf binaural spring within a flexible y-tube that connects said rigid ear tube to the stethoscope chestpiece, the connector including:

a housing for rotatably supporting one end of said rigid ear tube so that said ear tube rotates about the axis of said ear tube, said housing having an upper edge, and said housing being connected to the multiple leaf binaural spring so that said ear tube and said flexible y-tube, together with the multiple leaf binaural spring are placed in aural communication; and

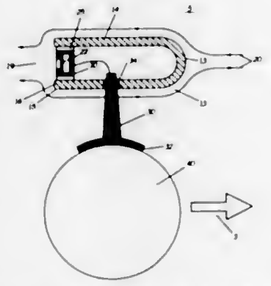
biasing means associated with said housing for placing a holding force on said ear tube, to resist a rotating motion of said ear tube within said housing, said force being between 2 and 10 pound inches torque.

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5,288,955
WIND NOISE AND VIBRATION NOISE REDUCING MICROPHONE

Bruce W. Staple, Coral Springs; Greg A. Schladt, Sunrise, both of Fla., and Martin E. Holmes, Hoffman Estates, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 894,704, Jun. 5, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,307
Int. Cl.[5] G10K *13/00*
U.S. Cl. 181—158 **21 Claims**

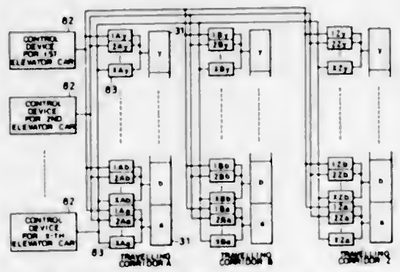


1. A wind noise and vibration noise reducing microphone arrangement for use in a wind stream, comprising:
a bullet shaped housing having side portions, a rounded front portion, and a flat rear portion, said rear flat portion being substantially planar and substantially perpendicular to said side portions;
a transducer mounted in the flat rear portion of said housing, facing in a direction opposite to said rounded front portion, so as to reside in an area protected from the wind stream, and mounted in said housing by an elastomeric sealing means.

5,288,956
SELF RUNNING TYPE ELEVATOR SYSTEM USING LINEAR MOTORS

Toshio Kadokura, and Ryoichi Kurosawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 833,797
Claims priority, application Japan, Feb. 14, 1991, 3-020705
Int. Cl.[5] B66B *1/34*
U.S. Cl. 187—112 **20 Claims**

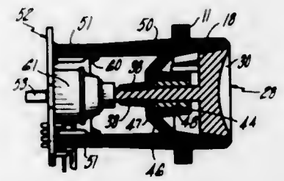


1. A self running type elevator system, comprising:
at least one travelling corridor, each of which is equipped with a primary coil of a linear motor;
a plurality of elevator cars placed inside said at least one travelling corridor, each of which is equipped with a secondary conductor of the linear motor; and
a plurality of control device means, provided in correspondence to the elevator cars, each of said control device means for controlling a supply of a driving power to the primary coil at a position of the corresponding elevator car such that the corresponding elevator car is driven by a driving force produced between the primary coil and the secondary conductor of the linear motor by the driving power.

5,288,957
ILLUMINATED TOUCH BUTTON SWITCH

Bruce P. Swaybill, Farmington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Dec. 28, 1992, Ser. No. 997,059
Int. Cl.[5] H01H *9/16*
U.S. Cl. 200—317 **5 Claims**



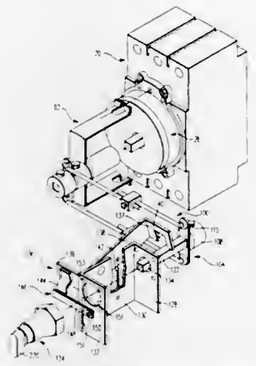
1. A touch button, comprising:
a generally cylindrical body of light transmitting material having a light emitting edge at a proximal end thereof, having a plurality of hook latches extending longitudinally outward from a distal end thereof, having at least one stop surface near said distal end, having light receiving edge surfaces at said distal end, and having a bore axially disposed between said ends;
a circuit board having a plurality of light-emitting diodes disposed on a surface thereof and having a mortise for each of said hook latches, said light emitting diodes positioned to illuminate said light receiving surfaces with said circuit board urged against said stop surface and said hook latches extending through said mortises and engaging said circuit board; and
an actuator having a touch pad at a proximal end and a stem at a distal end, said actuator disposed within said body with said stem within said bore and said touch pad near said light emitting edge.

5,288,958
LOCKABLE REMOTE ROTARY HANDLE OPERATOR FOR CIRCUIT BREAKERS

Kurt A. Grunert, Beaver; Gerald J. Leary, Franklin Park; Joseph M. Kline, Robinson Township, Allegheny County, and Ronald D. Smiddle, Canonsburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1992, Ser. No. 860,660
Int. Cl.[5] H01H *3/20*
U.S. Cl. 200—331 **19 Claims**

1. In combination, a circuit breaker and a remote rotary operator handle assembly,
said circuit breaker comprising:
an electrically insulating housing having a switch handle, said switch handle linearly movable between a circuit breaker on position and a circuit breaker off position; and
said remote rotary handle assembly comprising:
a housing assembly mounted on said circuit breaker having a rotatable housing shaft, rotatable around a housing shaft axis, and further having a motion translating means connected to said housing shaft and engaging said switch handle for translating between the linear motion of said switch handle and the rotational motion of said housing shaft;
a rotary operator handle having a rotatable handle shaft, rotatable about a handle shaft axis, for cooperating with said switch handle whereby the movement of one produces a corresponding movement of the other and wherein said handle shaft axis is substantially parallelly aligned relative to said housing shaft axis; and

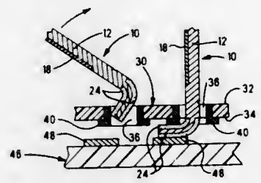


linking means connecting said housing shaft to said handle shaft for transferring between said shafts said respective parallel rotational movements.

5,288,959
DEVICE FOR ELECTRICALLY INTERCONNECTING OPPOSED CONTACT ARRAYS

Homer E. Henschen, Carlisle, Pa., assignor to The Whitaker Corporatinn, Wilmington, Del.

Filed Apr. 30, 1993, Ser. No. 55,603
Int. Cl.[5] H05B *6/10*; B23K *1/00*
U.S. Cl. 219—616 **7 Claims**

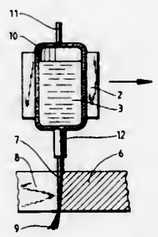


1. A device for providing sufficient thermal energy to melt a fusible electrically conductive material and thereby provide electrically-conductive connections between a plurality of aligned contact pads on a remote surface of a first electrical article to corresponding opposed aligned contact pads of a second electrical article, usable in conjunction with a source of constant amplitude high frequency alternating current of known frequency, said device comprising:
an integral member formed from strip of a first metal having low electrical resistance and minimal magnetic permeability, said integral member defining a first layer having a carrier strip section and a plurality of fingers initially integrally coextending therefrom, each associated with and spaced to correspond with respective ones of said contact pads of said first electrical article;
said carrier strip section having defined on a major surface thereof and integrally joined to said first layer thereof a second layer of a second metal having high electrical resistance and high magnetic permeability, said second layer having a thickness at least equal to one skin depth of said second metal, given said known frequency, said carrier strip section thereby defining a heater body; and
each of said fingers including end portions being adapted to be disposed adjacent and physically between a corresponding contact pad of said first article and a respective contact pad of said second article and having fusible electrically conductive material on upper and lower surfaces of each said finger end portion, whereby
upon a row of apertures being defined through said first electrical article from a first surface to said remote surface and associated with and proximate to respective ones of said contact pads, and upon inserting respective ones of said fingers through said apertures from said first surface to said remote surface until said finger end portions are adjacent respective ones of said contact pads, and placement of said first and second electrical articles together with said contact pads and corresponding contact pads opposed from each other but separated by said finger end portions, each said finger end portion is disposed adjacent and physically between a corresponding contact pad of said first article and a respective contact pad of said second article, such that upon said heater body being subjected to said constant current of known frequency, said heater body generates and transfers said sufficient thermal energy from said heater body to said finger end portions to melt said fusible material disposed therealong thereby electrically and mechanically interconnecting said finger end portions to both said corresponding and respective contact pads, whereafter said heater body is detached from said fingers along said first surface thereby electrically isolating the interconnections in which the finger end portions remain a permanent part of an electrically-conductive connection between pairs of said contact pads of said first and second electrical articles.

5,288,960
PROCESS AND APPARATUS FOR THERMAL CUTTING OF WORKPIECES

Rüdiger Rothe, Bremen, and Ralf Louis, Schleiden, both of Fed. Rep. of Germany, assignors to Dörries Scharmann GmbH, Fed. Rep. of Germany

Filed Apr. 3, 1992, Ser. No. 863,447
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110805
Int. Cl.[5] H05B *6/00*
U.S. Cl. 219—618 **16 Claims**



1. A process for thermally cutting a workpiece made of a material having a breakdown temperature at which the material is either melted or thermally decomposed, the process comprising the steps of:
heating a liquid up to a temperature above the breakdown temperature of the material to be cut, said heating comprising the steps of feeding a wire or rod into a crucible and creating a seal on the wire or rod where it is being fed into the crucible, and melting the wire or rod in the crucible as it is being fed in; and
forming the liquid into a stream and directing the stream onto the material to be cut for either melting or thermally decomposing the workpiece where it is contacted by the liquid, the directing of the stream comprising discharging the liquid from the crucible through a nozzle, wherein the

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wire or rod being fed acts like a piston on contents of the crucible to discharge the heated liquid through the nozzle.

5,288,961

HIGH FREQUENCY HEATING APPARATUS UTILIZING AN INVERTER POWER SUPPLY

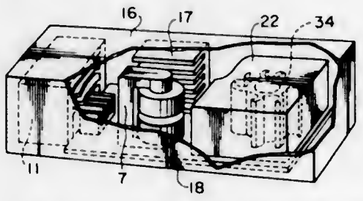
Makoto Shibuya, Yamatokoriyama; Naoyoshi Maehara; Daisuke Bessyo, both of Nara; Yuji Nakabayashi, Yamatokoriyama; Takahiro Matsumoto, Ikoma, and Shiro Takeshita, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 27, 1992, Ser. No. 858,525

Claims priority, application Japan, Apr. 5, 1991, 3-072733; Apr. 5, 1991, 3-72857; Jun. 5, 1991, 3-134007; Jul. 31, 1991, 3-191798; Oct. 4, 1991, 3-257498

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—690 **13 Claims**



1. A high frequency heating apparatus having a heating chamber, the apparatus comprising:

a power converting unit composed of components including at least one semiconductor device for delivering an output power;

a magnetron which receives the output power from the power converting unit and supplies electromagnetic waves to the heating chamber;

a cooling fan for cooling said power converting unit and said magnetron;

a case housing therein at least said power converting unit and said magnetron, said case having an inlet opening and an outlet opening so that cooling air blown by said cooling fan is led into said case through said inlet opening and then led into the heating chamber from said case through said outlet opening in an order wherein said cooling air cools said power converting unit first and then said magnetron in that order; and

waveguide means coupled between said case and the heating chamber, for guiding electromagnetic waves generated by said magnetron into the heating chamber.

5,288,962

MICROWAVE COOKING ENCLOSURE FOR FOOD ITEMS

Matthew W. Lorence, Omaha, Nebr., and Charles H. Turpin, Minneapolis, Minn., assignors to ConAgra Frozen Foods, Inc., Omaha, Nebr.

Filed Nov. 16, 1992, Ser. No. 976,560

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—729 **42 Claims**

1. An enclosure for cooking and browning a food item in a microwave oven, comprising:

a pan for containing the food item and having a susceptor lining for converting microwave energy to thermal energy for cooking the food item;

a first microwave reflective shield defining a single hole therein;

a susceptor layer positioned below the first reflective shield and above said pan; and

a second microwave reflective shield defining a single hole therein and positioned below said pan, whereby the enclosure provides for the selective cooking and browning of a food item when cooked in the enclosure.



5,288,963

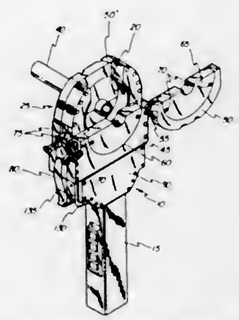
ACTIVELY COOLED WELD HEAD CASSETTE

Vytautas J. Jusionis, Fountain Valley, Calif., assignor to Hobart Brothers Company, Troy, Ohio

Filed Jul. 22, 1993, Ser. No. 95,906

Int. Cl.[5] B23K *9/02*

U.S. Cl. 219—60 A **6 Claims**



1. A method of cooling the clamps of an orbital welding head wherein the clamps include a fixed component and a rotatable component which is hinged for rotation, the method comprising the steps of

forming a cooling channel within the fixed and movable clamp components, and

connecting the cooling channel of one clamp component with the cooling channel of the other clamp component through the hinge joining the two components.

5,288,964

ELECTRICAL APPARATUS FOR DESTROYING A MEDICAL INSTRUMENT

Robert M. Walker, 10093 Camp Rd., West Salem, Ohio 44287, and Roger A. Kimmel, Jr., 761 Parkview Dr., Aurora, Ohio 44202

Filed Dec. 8, 1992, Ser. No. 986,740

Int. Cl.[5] F23K *11/22*

U.S. Cl. 219—68 **7 Claims**

1. An apparatus for destroying a medical instrument comprising:

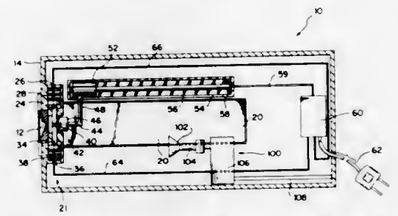
a housing including a wall member with an aperture disposed therein;

first electrical connector means mounted adjacent said wall member of said housing for engaging a first portion of a medical instrument inserted through said aperture in said wall member; and

second electrical connector means disposed within said housing for engaging a second portion of a medical instrument inserted through said aperture in said wall member;

said first and second electrical connector means being adapted to be selectively connected to a supply of electric current for destroying a medical instrument by transmitting current from said first electrical connector means to said second electrical connector means and through a medical instrument for melting the same;

said first electrical connector means includes two carbon brushes biased to a position in engagement with each other with respective engaging surfaces being concentric with said aperture in said wall for engaging a medical instrument inserted through said aperture between the two carbon brushes.



5,288,965

ELECTRO-EROSION MACHINE WITH IMPROVED CIRCUIT FOR THE UNWINDING OF THE WIRE-ELECTRODE

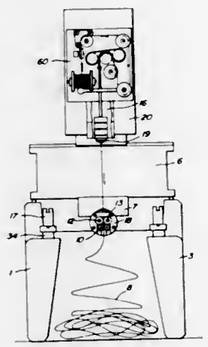
Rémi Gambin, "Les Colliness", 25 route de Livron, F 74100 Vetraz-Monthoux, France, and Daniel Matter, 31 A, chemin des Salières, CH 1219 Aire, Switzerland

Filed Jun. 3, 1992, Ser. No. 893,311

Claims priority, application Switzerland, Jun. 3, 1991, 1632/91

Int. Cl.[5] B23H *7/10*

U.S. Cl. 219—69.12 **6 Claims**



1. An apparatus for tensioning a wire electrode of a spray-operating machine and for removing the used electrode wire from a machining zone of the machine, said machine cutting by electro-erosion a stationary workpiece, said apparatus comprising:

said machine including a frame with a stand made of vertical elements arranged in such a way as to delimit an open space beneath the machining zone, the workpiece to be machined and its clamping system being mounted above said open space on pillars fixed directly to said vertical elements of said stand without the intermediary of a work tank, the electrode wire being supplied to the machining zone from an upper machining head,

a lower machining head equipped with two rotary rollers which are fitted to pinch and pull the electrode wire so as to tension the electrode wire in the machining zone, and

two toothed wheels mounted to said lower machining head beneath said rotary rollers, said used electrode wire passes between said rotary rollers and said toothed wheels, said toothed wheels imparting a curl to the wire electrode at the exit from the two rollers, the used wire, at the exit from said lower machining head, becoming coiled and falling directly into a receptacle in said open space delimited by the elements of the stand beneath the machining zone.

5,288,966

WIRE-CUT ELECTRICAL DISCHARGE MACHINE HAVING WIRE ELECTRODE CUTTING DEVICE

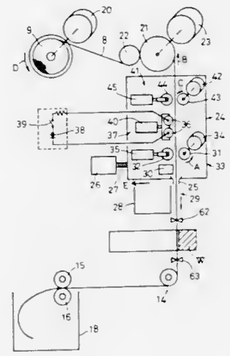
Tasuku Kawanabe, and Tetsuya Aoki, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 18, 1992, Ser. No. 992,906

Claims priority, application Japan, Jan. 27, 1992, 4-12249

Int. Cl.[5] B23H *7/02, 7/10*

U.S. Cl. 219—69.12 **18 Claims**



1. A wire-cut electrical discharge machine for cutting a workpiece by the occurrence of an electrical discharge in a machining zone between a wire electrode and the workpiece, comprising:

a pulley around which said wire electrode is guided;

brake means for selectively applying a one of a braking power during electrical discharge machining and a larger braking power during cutting to said pulley;

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feeding means disposed between said pulley and the workpiece for applying a feeding power to the wire electrode in a direction toward the workpiece;

cutting means for cutting off the wire electrode between said pulley and said feeding means;

a disposal box for receiving cut-off wire electrode, said disposal box positioned between said feeding means and the workpiece located in the machining zone; and

control means for controlling said brake means, feeding means and cutting means such that said cutting means cuts off the wire electrode after the brake means applies the braking power during cutting to said pulley and said feeding means applies a feeding power in said direction to the wire electrode to thereby apply the tension to the wire electrode between said pulley and said feeding means, said control means further controlling said feeding means such that said feeding means continuously applies the feeding power in said direction to the wire electrode after the wire electrode is cut by said cutting means to thereby dispose of the cut-off wire electrode in said disposal box.

5,288,967

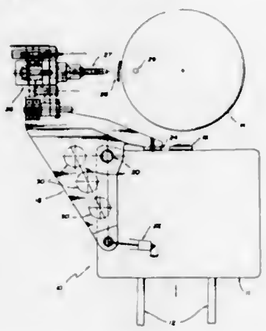
Patent Not Issued For This Number

5,288,968

RESISTANCE WELDING GUN AND APPARATUS

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48304

Filed Jul. 9, 1992, Ser. No. 911,173
Int. Cl.[5] B23K *11/10*
U.S. Cl. 219—89 **17 Claims**



1. A resistance welding apparatus for welding a balance weight on a rotary part, said apparatus comprising:

a base, positionable in a fixed relative orientation to the rotary part to be balanced;

an arm cooperating with the base and having an end shiftable between a retracted position clear of the rotary part and an operational position a fixed distance from the part;

a first fluid-powered cylinder having a cylinder housing attached to the end of the arm and a cylinder rod axially shiftable relative to the cylinder housing between a retracted position and an extended position;

a bracket rigidly affixed to the cylinder rod;

a first electrode attached to and electrically insulated from the bracket;

guide means for limiting bracket rotation in the plane perpendicular to the cylinder rod while providing lateral support for translational motion of the bracket; and

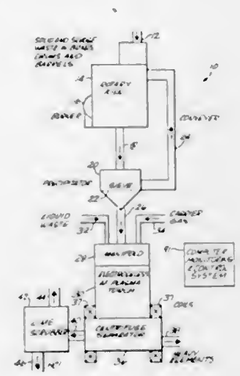
a transducer cooperating with the arm and the bracket indicating the relative position between the bracket and the arm for generating a signal indicative of said relative position.

5,288,969

ELECTRODELESS PLASMA TORCH APPARATUS AND METHODS FOR THE DISSOCIATION OF HAZARDOUS WASTE

Alfred Y. Wong, Los Angeles, and Andras Kuthi, Van Nuys, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Aug. 16, 1991, Ser. No. 746,419
Int. Cl.[5] B23K *9/00*; F23G *5/10*
U.S. Cl. 219—121.52 **65 Claims**



1. Apparatus for the dissociation of waste material, comprising:

a source of waste material to be processed;

a source of gas capable of forming free electrons in a plasma when excited to a high temperature;

combining means for combining the waste material with the gas;

a reactor chamber;

means for transporting the combination of the waste material and the gas through the reactor chamber;

excitation means for exciting the gas in the reactor chamber with electromagnetic energy to form a plasma including free electrons, wherein the excitation means comprises an RF plasma torch and the chamber is formed by a cylindrical wall and has inlet means adjacent one end thereof for the introduction of the waste material and the source of free electrons, and outlet means adjacent the other end thereof for the removal of the dissociated waste material, wherein the plasma torch comprises an antenna disposed around the circumference of and extending a predetermined length of the chamber, wherein the antenna is in the form of a tube wound around the chamber circumference and formed as a first helix and a second helix, both co-axial with the chamber axis, wherein the first helix is wound in a first direction and extends from a first point adjacent the one end of the chamber to a second point adjacent the center of the length of the chamber, and the second helix is wound in a second direction opposite the first direction and extends from a third point adjacent the center of the length of the chamber to a fourth point adjacent the other end of the chamber, the plasma torch further including means connecting the antenna to a radio frequency (RF) power source, including means for connecting an output terminal of the RF power source to the first and second helixes adjacent the second and third points, and for connecting the first and second helixes to ground potential adjacent the first and forth points; and

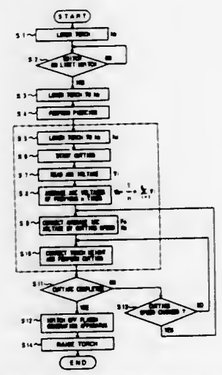
timing means for maintaining the free electrons at the raised temperature level in the reactor chamber for a sufficient time to enable the free electrons to dissociate the waste material.

5,288,970

METHOD OF CONTROLLING TORCH HEIGHT IN PLASMA CUTTING

Yozo Nishi, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00513, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO91/16169, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 17, 1991, Ser. No. 941,089
Claims priority, application Japan, Apr. 17, 1990, 2-102658; Apr. 17, 1990, 2-102659
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.56 **9 Claims**



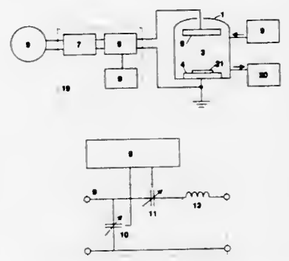
1. A method of controlling torch height in plasma cutting, comprising the steps of: setting a plasma torch (1) at an optimum cutting height (hc) from a base metal (2) and generating an arc voltage (Va) between the base metal (2) and an electrode of the plasma torch (1) so that said base metal (2) is cut by the resulting plasma arc (3); reading a value (Vi) of said arc voltage (Va) several times (i=1 to n) after said arc voltage (Va) becomes steady; calculating an average arc voltage (Vb) of the thus read values (Vi) of arc voltage (Va); reading a cutting speed (Fa) at a steady cutting operation; correcting said average arc voltage (Vb) by said cutting speed (Fa) to obtain a target arc voltage (Vc); and maintaining said optimum torch height (hc) by said target arc voltage (Vc).

5,288,971

SYSTEM FOR IGNITING A PLASMA FOR THIN FILM PROCESSING

Lawrence J. Knipp, Fort Collins, Colo., assignor to Advanced Energy Industries, Inc., Fort Collins, Colo.

Filed Aug. 9, 1991, Ser. No. 743,276
Int. Cl.[5] H01J *7/24*
U.S. Cl. 219—121.57 **40 Claims**



1. A method of igniting a plasma in a plasma processing system comprising the steps of:

a. establishing a gas within a processing chamber;

b. determining an initial value of a parameter of said system which is likely to cause said gas to ignite into a plasma;

c. setting a limited range of values around said initial value, wherein said limited range of values is likely to support ignition of said plasma;

d. applying electrical power to said gas; and

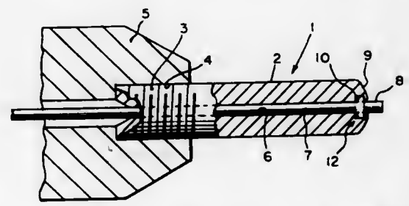
e. varying said parameter within said limited range of values said range not necessarily causing a specific impedance to obtain ignition of said plasma.

5,288,972

WELDING GUN TIP

Thomas T. Wujek, Bay City, Mich., assignor to American Power Connection Systems, Inc., Bay City, Mich.

Filed Jan. 22, 1993, Ser. No. 7,768
Int. Cl.[5] B23K *9/24*
U.S. Cl. 219—137.61 **18 Claims**



1. A welding tip comprising a body having an axial passage therein through which a welding wire may extend; an annular guide having an opening therethrough; and means securing said guide to said body at one end thereof with said opening coaxial with said passage so that said welding wire may extend through said opening, said guide being formed of gemstone material having a hardness greater than that of the material forming said welding wire.

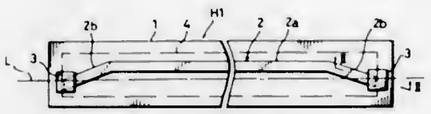
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5,288,973

HEATER FOR SHEET MATERIAL

Shigeo Ota, and Shingo Ooyama, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 14, 1992, Ser. No. 990,020
Claims priority, application Japan, Dec. 28, 1991, 3-359328; Dec. 30, 1991, 3-361518
Int. Cl.[5] H05B 1/00
U.S. Cl. 219—216 15 Claims



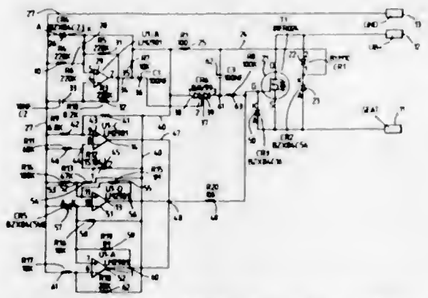
1. A heating unit for a sheet material comprising:
an electrically insulating substrate;
a heating resistor strip formed on a surface of the substrate to extend longitudinally thereof; and
a platen for pressing the sheet material into contact with the insulating substrate along a contact line;
wherein the resistor strip has an intermediate portion which is located transversely offset from the contact line, the resistor strip further having a pair of non-branching end portions located at least partially at the contact line.

5,288,974

CONTROL ARRANGEMENT FOR A SEAT HEATER

Dirk Hanzic, Töcksfors, Sweden, assignor to Plantron AB, Töcksfors, Sweden

PCT No. PCT/SE90/00160, § 371 Date Jan. 9, 1991, § 102(e) Date Jan. 9, 1991, PCT Pub. No. WO90/10999, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 12, 1990, Ser. No. 634,879
Claims priority, application United Kingdom, Mar. 14, 1989, 8905829.1
Int. Cl.[5] H05B 1/02, 3/34
U.S. Cl. 219—501 13 Claims



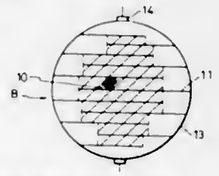
1. A heating arrangement for heating a seat, comprising:
electrical heating means embedded in the seat;
a flexible printed circuit board embedded in the seat; and
components mounted on said flexible printed circuit board constituting temperature responsive means and control means, said temperature responsive means for sensing a temperature of the seat and providing a control signal whenever the sensed temperature is below a predetermined limit, said control means comprising a power transistor having electrodes for connection between a supply of electrical current and said electrical heating means, said power transistor further having a control electrode coupled to said temperature responsive means for receiving the control signal, said power transistor controlling the supply of electrical current to said electrical heating means in response to the control signal, and said control means further including a voltage doubler connected to the control electrode of said power transistor for doubling a voltage present on the current supply.

5,288,975

RESISTANCE ADJUSTING TYPE HEATER

Tomoharu Kondo, Toki, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 824,085, Jan. 22, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 28,634
Claims priority, application Japan, Jan. 30, 1991, 3-029393
Int. Cl.[5] H05B 3/10; F01N 3/10
U.S. Cl. 219—552 4 Claims



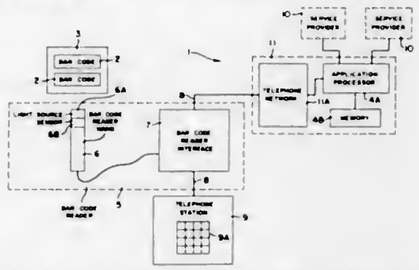
1. A honeycomb heater comprising:
a honeycomb structure having a periphery and two ends, including a plurality of passages which are defined by partition walls and extend in an axial direction between the ends;
at least two electrodes in electrical contact with said honeycomb structure; and
means for providing uniform heat generation from the partition walls, said means comprising at least one slit passing through the partition walls and forming a predetermined angle θ with respect to the partition walls as viewed in a cross-section of said honeycomb structure taken perpendicular to said axial direction, wherein θ is about 45°.

5,288,976

BAR CODE USE IN INFORMATION, TRANSACTIONAL AND OTHER SYSTEM AND SERVICE APPLICATIONS

Howard Citron, Katonah, N.Y., and Robert Springer, Wyckoff, N.J., assignors to Nynex Corporation, New York, N.Y.

Filed Jul. 15, 1991, Ser. No. 729,648
Int. Cl.[5] G06F 15/20; G06K 19/06
U.S. Cl. 235—375 38 Claims



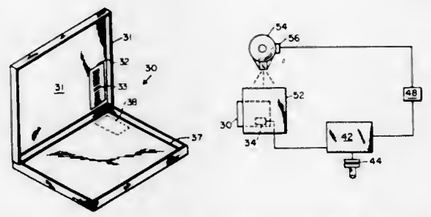
1. A bar code including a plurality of bar code fields, each of said fields including one or more bar code characters, a first bar code field containing data related to at least an action to be performed and a second bar code field containing data related to the data in said first bar code, said bar code characters being one of reflective and non-reflective and said bar code having a start field at the beginning of said bar code and a stop field at the end of said bar code, and said bar code further having a separator field between said stop and start fields, said separator field including a character which is one of reflective and non-reflective and of a width which exceeds the width of any of the other bar code characters included in said bar code.

5,288,977

SYSTEM FOR IMPRINTING PATIENT-IDENTIFYING BARCODES ONTO MEDICAL X-RAYS

Pasquale J. Amendolia, Box 475, St. James, N.Y. 11780, and Stanley Miller, 400 Soundview Dr., Rocky Point, N.Y. 11770

Continuation of Ser. No. 637,408, Jan. 4, 1991, abandoned. This application Apr. 3, 1992, Ser. No. 862,800
Int. Cl.[5] G03B 42/04; H05G 1/26
U.S. Cl. 235—375 1 Claim



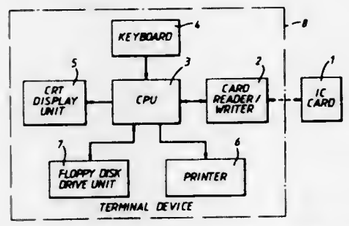
1. A patient identification system comprising means for reading a barcode associated with said patient, X-ray cassette means for containing unexposed X-ray film for receiving X-ray irradiation passing through said patient, said cassette comprising a hinged cover, means comprising a backlit LCD mounted in said cover for transferring said barcode to a portion of said X-ray film, and means for irradiating said unexposed X-ray film with X-ray radiation passing through said patient, said system including means having an inductive coil to pick up the current surge associated with the X-ray irradiation of said patient for reading and transferring said barcode from said patient to energize said LCD and thereby to imprint said barcode on said film in response to and simultaneously with irradiating said X-ray film.

5,288,978

MUTUAL AUTHENTICATION SYSTEM AND METHOD WHICH CHECKS THE AUTHENTICITY OF A DEVICE BEFORE TRANSMITTING AUTHENTICATION DATA TO THE DEVICE

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki kaisha Toshiba, Kawasaki, Japan

Filed Oct. 2, 1991, Ser. No. 769,719
Claims priority, application Japan, Oct. 5, 1990, 2-266261
Int. Cl.[5] G06F 15/20
U.S. Cl. 235—380 14 Claims



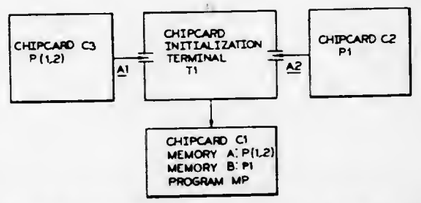
1. A mutual authentication system for authenticating a first electronic device and a second electronic device by transmitting authentication data between the first and second electronic devices, comprising:
first transmission means for transmitting a first authentication data from the second electronic device to the first electronic device;
determination means, provided in the first electronic device, for determining the legitimacy of the second electronic device based on the first authentication data transmitted from the second electronic device by the first transmission means;
second transmission means for transmitting a second authentication data, which is used for determining the legitimacy of the first electronic device, from the first electronic device to the second electronic device when the second electronic device is determined to be legitimate by the determination means.
inhibition means for inhibiting the operation of the second transmission means, including inhibiting transmission of the second authentication data, when the second electronic device is determined not to be legitimate by the determination means.

5,288,979

METHOD FOR ACTIVATING A DATA CARRIER HAVING AN INACTIVE CHIP BONDED TO THE DATA CARRIER FOR ACTIVATING THE DATA CARRIER

Hans-Diedrich Kreft, Dassendorf, Fed. Rep. of Germany, assignor to Angewandte Digital Elektronik GmbH, Fed. Rep. of Germany

Filed Nov. 18, 1991, Ser. No. 793,606
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1990, 4036765
Int. Cl.[5] H04L 9/00; G06F 15/20
U.S. Cl. 235—380 16 Claims



1. A method for activating a data carrier having an electronic, inactive chip with a memory storing a microprogram wherein the chip leaves an intended and standard use and function of a traditional data carrier uninfluenced, comprising the steps of:
providing energy to an inactive chip by placing said chip in a first activation level wherein said chip has contacts to be enabled by activating an internal reset circuit which subsequently enables a clock on said chip,
said clock is acquired on said chip by electronic circuitry, said first activation level also opening a reception channel on said chip having appertaining ports for exclusive data reception;
providing a second activation level of the chip which dominates the first level in that the reception channel with appertaining ports opened by the first level closes automatically insofar as first data arriving via the channel does not coincide with second data permanently stored in the microprogram;
holding the channel open for further data reception when the first data and the second data agree;
opening said channel for data output and optionally opening other channels in which the second data represents information of a datum and switching open the channel when a specific datum is reached; and
closing the channel when said datum is reached thereby activating or deactivating said data carrier dependent on said datum.

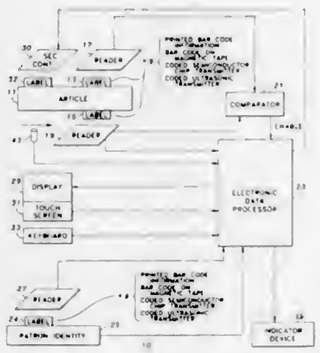
VOL 1159 ISS 4 FE 22 1994 UMI

5,288,980

LIBRARY CHECK OUT/CHECK IN SYSTEM

Neil Patel, Irvine, and Suhas Desai, Norwalk, both of Calif., assignors to Kingsley Library Equipment Company, Pomona, Calif.

Filed Jun. 25, 1992, Ser. No. 904,451
Int. Cl.[5] G06F *7/08*
U.S. Cl. 235—381 **17 Claims**



1. A self check out/check in system which includes a terminal for independently withdrawing or returning articles having duplicate article identifying indicia on opposing planar surfaces thereof, and alterable security indicia disposed on the article for indicating the circulation status of the article, the system comprising:

first and second readers disposed at spaced opposed locations on opposite sides of the article, said first and second readers being operative to substantially simultaneously read both article identifying indicia and for generating first and second article identifying signals in response thereto;

processing circuitry in electrical communication with said first and second readers, said processing circuitry including comparator circuitry for receiving said first and second article identifying signals and for generating a third signal when said first and second article identifying signals are substantially identical; and

security indicia control circuitry for altering the security indicia in response to said third signal.

5,288,981

METHOD AND APPARATUS FOR ENCODING MACHINE READABLE SERIAL ENCRYPTEDMAGNETIC DATA

Michael L. Davis, Amherst, N.Y., assignor to Allsafe Company, Inc., Buffalo, N.Y.

Filed Oct. 25, 1991, Ser. No. 782,130
Int. Cl.[5] G06K *7/08*
U.S. Cl. 235—449 **22 Claims**

1. In an electronic access system having one or more sensors for detecting magnetically encoded data represented on control cards and a programmable microprocessor for transforming said detected encoded data into useable data or concomitant commands, the method of encoding and detecting said access card data comprising the steps of:

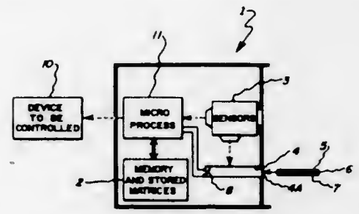
providing an access card having a substantially planar surface with a layer of magnetic media, said access card adapted to be selectively magnetized along said magnetic layer of said planar surface;

providing a grid on said access card having a plurality of rows and columns, said grid having defined points at the intersection of said rows and columns, each of said grid points adapted to be selectively magnetized;

providing a sentinel point at either end of said access card, said sentinel point adapted to be magnetized and positioned in advance of said grid directly above one of said rows;

magnetizing said sentinel;

selectively assigning to each of said grid points, except those in the row containing said sentinel, a numeric value represented in a number base equal to the total number of rows in said grid;



selectively magnetizing said pre-selected grid points such that said detected magnetic points equal a pre-selected numeric value;

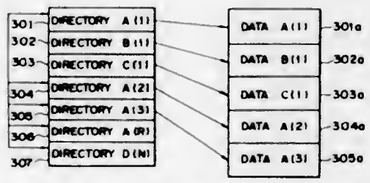
whereby, said sensors are adapted to detect said series of magnetic grid points upon detecting said sentinel and transferring rows and column position of said detected magnetic points to said microprocessor, wherein said microprocessor is programmed to transform said information into numeric data in response thereto.

5,288,982

METHOD FOR CHANGING A FILE NAME OF A DIRECTORY IN A NON-REWRITABLE RECORD MEDIUM

Hideki Hosoya, Yokohama, Japan, assignor to Canon Kabushika Kaisha, Tokyo, Japan

Filed Jun. 7, 1991, Ser. No. 712,101
Claims priority, application Japan, Jun. 11, 1990, 2-149819
Int. Cl.[5] G06K *7/10*; G11B *27/28*
U.S. Cl. 235—454 **23 Claims**



1. A method for changing a file name of one of data on a record medium having a plurality of data and a plurality of directories for the data including file names of the data recorded thereon, said method comprising the steps of:

recording on the record medium a first change directory including the file name of said one data and information indicating that said change directory is a directory for changing the file name; and

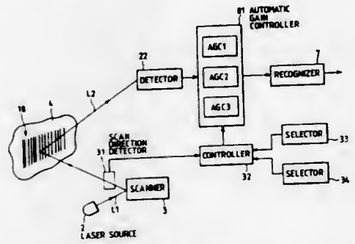
recording on the record medium a second change directory including a new file name to be imparted to said one data.

5,288,983

SYMBOL READ DEVICE HAVING SEPARATE GAIN CONTROLS FOR READING DIFFERENT SCAN LINES

Atsushi Nakazawa, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 710,182, Jun. 6, 1991. This application Aug. 17, 1992, Ser. No. 930,045
Claims priority, application Japan, Jun. 6, 1990, 2-147687; Jul. 2, 1990, 2-175565; Nov. 15, 1990, 2-310933
Int. Cl.[5] G06K *7/14*
U.S. Cl. 235—462 **4 Claims**



1. A symbol read device comprising:

means for emitting a light beam;

means for scanning the light beam over different positions on a symbol surface bearing a symbol to be read;

detecting means for detecting light reflected from the symbol surface and generating a detection signal indicative thereof;

a variable gain amplifier means for amplifying the detection signal;

recognizing means signal processing an amplified detection signal from the amplifier and recognizing therefrom the symbol bearing read;

automatic gain control (AGC) means for setting a gain of the variable gain amplifier means every scan line or scan line group including a preset number of scan lines, in response to the detection signal;

scan position detecting means for detecting a scan position; and

control means for selecting the gain set by the AGC means, based on an output signal of the scan position detecting means.

5,288,984

HANDY TYPE BAR CODE READER WITH A PROTECTIVE COMPONENT HOLDER

Toshifumi Ito, Yaomi, and Takeshi Matsushima, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 25, 1991, Ser. No. 796,670
Claims priority, application Japan, Nov. 27, 1990, 2-327057
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **15 Claims**

1. A handing type bar code reader for reading bar codes, comprising:

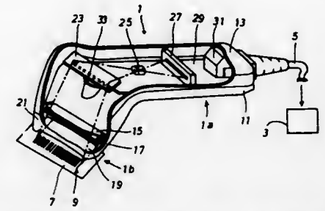
light radiating means for radiating light used for reading bar codes;

condenser lens means for condensing the light radiated by said light radiating means and directing the condensed light to the bar codes;

optical means for focusing a bar code image reflected from the bar codes at a predetermined read position;

reading means for reading the focused bar code image;

a body case for carrying said light radiating means, said condenser lens means, said optical means and said reading means in a predetermined relation of arrangement; and



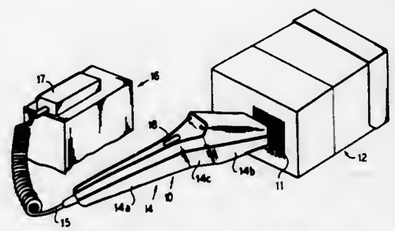
holding means for holding said light radiating means and said condenser lens means in a moveable relation with respect to said body case.

5,288,985

INSTANT PORTABLE BAR CODE READER

George E. Chadima, Jr., Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 525,754, May 18, 1990, Pat. No. 5,144,119, which is a division of Ser. No. 364,704, Jun. 9, 1989, Pat. No. 5,038,024, said Ser. No. 364,704, is a division of Ser. No. 325,177, Mar. 17, 1989, abandoned, which is a division of Ser. No. 234,880, Aug. 19, 1988, abandoned, said Ser. No. 234,880, is a division of Ser. No. 827,286, Feb. 7, 1986, Pat. No. 4,766,300, said Ser. No. 827,286, is a division of Ser. No. 367,693, Aug. 6, 1984, Pat. No. 4,570,057, said Ser. No. 637,693, is a continuation of Ser. No. 334,811, Dec. 28, 1981, abandoned.
This application Aug. 31, 1992, Ser. No. 939,448
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **6 Claims**



1. An improved bar code reader system having:

(a) a hand-held bar code reader unit including a reader head portion with a frontally directed window means providing optical coupling of said reader unit with a bar code having a complete line of bar code information, said reader head portion having a top side which is upwardly directed during reading of a bar code with vertically disposed bars, and a handle portion extending from said reader head portion providing for hand-held support of said reader unit;

(b) manually actuatable trigger means for initiating a bar code reading operation;

(c) said hand-held bar code reader unit being of configuration such that during said bar code reading operation an operator manually grasping said handle portion moves said reader unit by means of said handle portion to place said reader unit in reading relationship with said bar code and to direct said window means towards said bar code

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information such that said bar code is located in front of said reader unit;

(d) said reader head portion having a battery powered automatic bar code reader system therein including a light source energizable for producing light energy to be directed outwardly through said window means, and being operable to effectively illuminate said bar code over a substantial range of distances;

(e) said battery powered automatic bar code reader system being operable in an automatic bar code reading operation while said reader unit is stationary as a whole, to receive reflected light energy through said window means from said bar code after said light energy has been directed outwardly through said window means to generate from said reflected light energy a useful bar code signal corresponding to a complete line of bar code information;

(f) said battery powered automatic bar code reader system comprising a photodetector operable to supply an effective output in response to said reflected light energy from said bar code at any of said substantial range of distances in front of said reader unit; and

(g) signal processing circuit means connected with said photodetector means amplifying and digitizing the output therefrom so as to provide a useful bar code signal corresponding to a complete line of bar code information of a bar code located frontally of the reader unit at any of said substantial range of distances therefrom;

(h) said battery powered automatic bar code reader system further comprising reflected light gathering means interposed in a reflected light path for said reflected light energy between said window means and said photodetector and operative with respect to bar codes at any of said substantial range of distances for concentrating reflected light energy from such bar codes at said photodetector for effective detection thereof; and

(i) a single printed circuit board having said signal processing circuit means thereon and having said photodetector fixedly secured therewith, said reflected light gathering means being mechanically connected with said single printed circuit board such that said photodetector is maintained in optical alignment with said reflected light gathering means along said reflected light path.

5,288,986

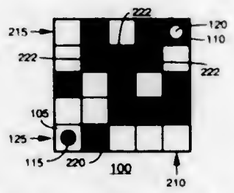
BINARY CODE MATRIX HAVING DATA AND PARITY BITS

Jerrold S. Pine, Boca Raton; Gary K. Biltman; Brian L. Grinage, both of Boynton Beach, and German Gonzalez, Miami, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1992, Ser. No. 946,209

Int. Cl.[5] G06K *19/06, 7/10*

U.S. Cl. 235—494 **17 Claims**



1. An optically readable matrix having four intersecting sides of approximately equal length defining a perimeter, the matrix including a binary code formed from light and dark areas of substantially equal sizes located within the perimeter, the matrix comprising:

a first light area, two sides of which are bounded by first and second sides of the four intersecting sides, the first light area containing a first geometrically shaped area, wherein the first geometrically shaped area is dark, and wherein the first geometrically shaped area is located in predetermined position within the first light area and has a predetermined size relationship with the first light area; and

a first dark area, two sides of which are bounded by third and fourth sides of the four intersecting sides, the first dark area containing a second geometrically shaped area, wherein the second geometrically shaped area is light, and wherein the second geometrically shaped area is located in a predetermined position within the first dark area and has a predetermined size relationship with the first dark area.

5,288,987

AUTOFOCUSING ARRANGEMENT FOR A STEREOMICROSCOPE WHICH PERMITS AUTOMATIC FOCUSING ON OBJECTS ON WHICH REFLECTIONS OCCUR

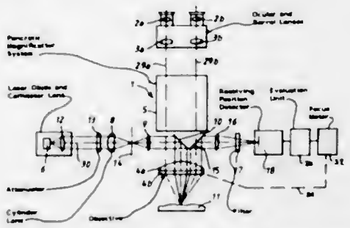
Uwe Vry, Aalen; Christian Läcke; Ulrich Sander, both of Oberkochen; Werner Müller, Essingen; Joachim Luber, Essingen; Klaus Knupfer, Essingen; Thomas Hellmuth, Oberkochen; Rüdiger Duchateau, Aalen-Unterkochen, and Hartmut Wolf, Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,460

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1991, 4131737

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.3 **16 Claims**



1. An autofocusing arrangement for a stereomicroscope defining first and second viewing beam paths for viewing an object through an objective by utilizing only a selected region thereof leaving a remaining region thereof unused for the purpose of viewing the object via said beam paths, the autofocusing arrangement comprising:

light source means for supplying a projection beam defining a projection beam path;

said projection beam having a predetermined cross section;

optical focusing means for converting the entire cross section of said projection beam into a bar-shaped marking image;

said optical focusing means being disposed between said light source means and said objective;

collimating and deflecting means for imaging said bar-shaped image through said objective at said remaining region thereof and onto the object with at least one dimension having limited diffraction whereupon said projection beam is reflected from the object along one of said viewing beam paths;

outcoupling means arranged in said one viewing beam path for coupling the reflected projection beam out of said one viewing beam path;

a light-sensitive resolving position detector arranged downstream of said outcoupling means and including a plurality of elements producing a plurality of signals, respectively, indicative of a shift of said bar-shaped marking image and a defocusing of said stereomicroscope;

an evaluation unit for converting said signals into a drive signal for refocusing and stereomicroscope; and,

focusing motor means for refocusing said stereomicroscope in response to said drive signal.

5,288,988

PHOTOCONVERSION DEVICE HAVING RESET CONTROL CIRCUITRY

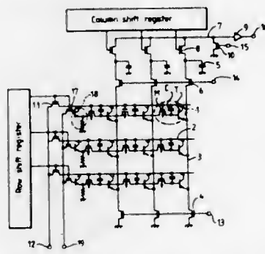
Seiji Hashimoto, Yokohama, and Mahito Shinohara, Naritanishi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 738,927, Aug. 2. 1991, abandoned. This application Aug. 4, 1992, Ser. No. 921,969

Claims priority, application Japan, Aug. 7, 1990, 2-207571; Oct. 15, 1990, 2-273212; Oct. 15, 1990, 2-273213; Oct. 15, 1990, 2-273214

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **38 Claims**



1. A photoconversion device comprising:

a photoconversion element comprising first and second main electrode regions and control region, charges being stored in the control region in response to incident light;

a reset switch means for resetting the control region of the photosensitive element, the reset switch means having first and second main terminals and a control terminal; and

means for turning on the reset switch means by varying a voltage applied to one of said main reset terminals while keeping a voltage at said control terminal substantially constant.

5,288,989

AVALANCHE PHOTODIODE WITH MOISTURE RESISTANT PASSIVATION COATING DISPOSED TO COVER THE OUTER PERIPHERY OF THE PHOTODIODE BODY EXCEPT AT A SELECTED TOP CONTACT AREA

A. Nadeem Ishaque, Clifton Park, and Robert F. Kwasnick, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,177

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214.1 **12 Claims**

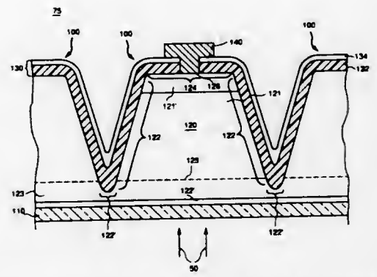
1. An avalanche photodiode (APD) comprising:

an APD body comprising a photosensitive semiconductive material, a portion of said semiconductive material being doped to exhibit n type conductivity so as to form a first semiconductive layer, a further portion of said semiconductive material being doped to exhibit p type conductivity so as to form a second semiconductive layer, said first and second semiconductive layer being disposed adjacent to one another so as to form a p-n junction, said APD body further having top and bottom surfaces disposed opposite one another and beveled sidewalls extending from said top surface and terminating at an arcuate shaped portion in the vicinity of said p-n junction;

a bottom contact pad disposed in electrical contact with one surface of said APD body;

a top contact having a selected contact area disposed in electrical contact with an opposite surface of said APD body; and

a passivation layer disposed over said APD body so as to cover said sidewalls and top surfaces of said APD body



except at said selected contact area, said passivation layer comprising:

an organic dielectric layer; and

an inorganic moisture barrier layer.

5,288,990

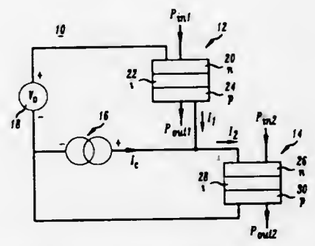
DIFFERENTIAL SELF-ELECTROOPTIC EFFECT DEVICE

David A. B. Miller, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1992, Ser. No. 997,414

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 LS **18 Claims**



1. Semiconductor apparatus comprising:

first and second quantum well diodes electrically coupled to each other, the first and second quantum well diodes each having an optical input for receiving first and second light beams, respectively, the first and second quantum well diodes absorbing optical energy from the first and second light beams in an amount proportional to an electrical current flowing through the respective quantum well diode; and

means for inducing differential electrical currents within the first and second quantum well diodes.

5,288,991

OPTICAL SYSTEM FOR RAPID INSPECTION OF VIA LOCATION

Mark R. King, Milton, and William H. Vonderhaar, Newburgh, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,390

Int. Cl.[5] G02B *6/04, 27/00*

U.S. Cl. 250—216 **10 Claims**

1. An optical system for illuminating a narrow rectangular area of a surface of a part to image features of said part on a

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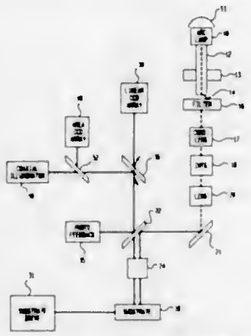
linear CCD array as said part moves relative to the narrow rectangular area and said linear CCD array, said optical system comprising in combination in an optical path:

a broad band, non-coherent light source;

a fiber optic bundle having an entrance pupil and an exit pupil;

means to direct light from said broad band, non-coherent light source to said entrance pupil of said fiber optic bundle;

means to direct light from said exit pupil of said fiber bundle to a filter having a selectable filter element that provides enhanced contrast between a via image and said surface;



a channel integrator for providing illumination homogenization, said channel integrator having an entrance face and an exit face;

means to image said exit pupil of said fiber bundle, passing through said selectable filter, onto the entrance face of said channel integrator;

means including a beam splitter to image the exit face of said channel integrator onto said surface, and;

means including said beam splitter to image light reflected from said surface on said linear CCD array.

5,288,992

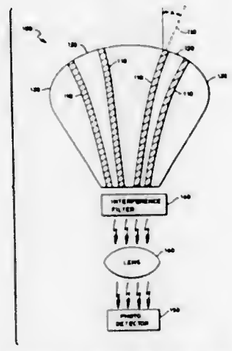
WIDE ANGLE, NARROW BAND OPTICAL FILTER

Timothy Fobl, Carlisle, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 15, 1992, Ser. No. 991,061

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—216 **11 Claims**



1. A filtering system for receiving a free space optical signal separated from background optical noise comprising:

a plurality of optical fiber means having an index of refraction n_f for receiving said optical signal at an angle A and passing said free space optical signal therethrough;

an embedding material means, having an index of refraction n_e which is less than n_f, formed as a surface with a semi spherical shape which is tapered to a planar surface, with said optical fiber means being curved and embedded therein and having one end of the optical fiber means normal to the spherical surface and the other end of the optical fiber means normal to the planar surface for supporting said optical fiber means;

a filter means coupled to said embedded material means for rejecting said background optical noise and transmitting said passed optical signal of the optical fiber means;

a photodetector means for detecting said transmitted optical signal of the filter means.

5,288,993

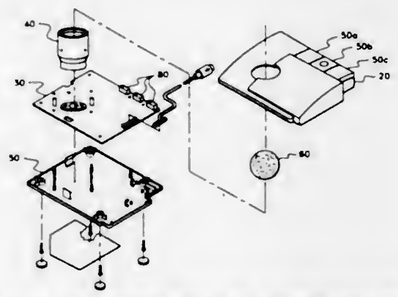
CURSOR POINTING DEVICE UTILIZING A PHOTODETECTOR ARRAY WITH TARGET BALL HAVING RANDOMLY DISTRIBUTED SPECKLES

Marc Bidiville; Javier Arregult, both of Pully; Floris A. Van Shaik, Colombier; Bernard Steenis, Bevaix; Fabien Droz-Dit-Busset, Neuchatel; Harthmuth Buczek, Marin-Epagnier, and Aldo Bussien, Aclens, all of Switzerland, assignors to Logitech, Inc., Fremont, Calif.

Filed Oct. 5, 1992, Ser. No. 956,907

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **1 Claim**



1. The A cursor pointing device for controlling the position of a cursor on a display for a personal computer or workstation comprising

a ball of a first color having speckles thereon of a color contrasting to the first color and which are randomly distributed on the ball,

light source means for flooding a portion of the ball with diffuse light,

sensor means responsive to diffuse light reflected from the speckled ball and impinging thereon for creating an output,

optical means for creating an image of an illuminated portion of the ball on the sensor means,

processing means responsive to the output from the sensor means for generating a cursor control output.

5,288,994

IMAGE DETECTING APPARATUS AND METHOD FOR READING AND OR VERIFYING THE CONTENTS OF SEALED ENVELOPES

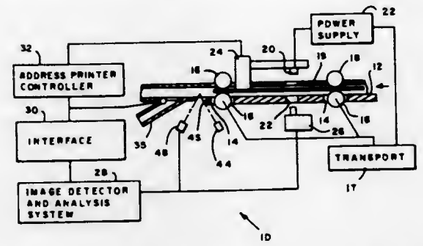
William Berson, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 5, 1992, Ser. No. 971,657

Int. Cl.[5] G01N *9/04*; **B07C** *5/00*

U.S. Cl. 250—223 R **17 Claims**

1. Apparatus for distinguishing high value content in sealed envelopes from other envelopes in a stream of envelopes, comprising: envelope conveying means defining a conveying path, a source of light spaced from said conveying means for emitting light upon said conveying path, an optical detector positioned relative to said light source to receive light directed



to said conveying path, and an image detector and analysis system in communication with said optical detector for reading the contents of a sealed envelope on said conveying path and analyzing the contents to determine if the same are high value contents.

5,288,995

ELECTRICAL MEASUREMENT APPARATUS USING HETERODYNE PHASE CONVERSION TECHNIQUES

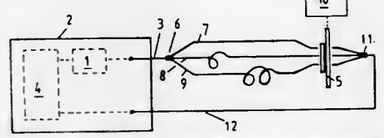
John S. Strachan, Edinburgh, Scotland, assignor to Optical Metrology Limited, Southampton, England

Filed Feb. 1, 1993, Ser. No. 11,795

Claims priority, application United Kingdom, Nov. 14, 1992, 9223937.5

Int. Cl.[5] G01D *5/26*; **G01S** *17/00*

U.S. Cl. 250—227.12 **14 Claims**



1. Electrical measurement apparatus in which the condition or position of an optical transducer element is represented by the relative attenuation of the intensities of two optical signals both derived from a common laser source which produces a light ray amplitude-modulated at a radio frequency, comprising (a) circuit path means for dividing an input from the laser source between a plurality of circuit paths each conveying a transmitted signal at the speed of light (b) propagation delay means in at least one of the paths for retarding the respective transmitted signal, whereby the transmitted signals have different phase at the radio frequency (c) an optical transducer element positioned in the paths of the transmitted signals and operative to adjust relative signal intensity in dependence upon the state of the apparatus requiring measurement and as determined by that transducer, (d) circuit means for recombining the transmitted signals after attenuation to provide as a received signal a single electrical output, and (e) signal processing means for measuring the phase of the electrical output relative to the radio frequency modulating signal input controlling the laser and interpreting this to provide the required measurement, the signal processing means incorporating (f) heterodyne conversion means, whereby a phase-locked version of either the signal input or the electrical output is mixed with the other in each of a pair of mixer circuits to produce two throughput signals having an extended time-spaced measure of the phase.

5,288,996

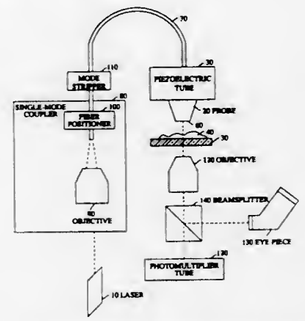
NEAR-FIELD OPTICAL MICROSCOPIC EXAMINATION OF GENETIC MATERIAL

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,140

Int. Cl.[5] G02B *21/06*

U.S. Cl. 250—227.26 **2 Claims**



1. A method for examining genetic material, comprising the steps of: providing a sample of fluorescently labeled cell nuclear material; stimulating the cell nuclear material to emit fluorescent light at least at one fluorescent wavelength; detecting the fluorescent light emitted from each of plural locations on the sample; and constructing a magnified image of a portion of the sample from the detected fluorescent light; wherein the detecting step comprises the steps of:

a) admitting fluorescent light into a waveguiding body through an aperture that is distant from the sample by no more than the fluorescent wavelength, and that is smaller, in at least one lateral dimension, than the fluorescent wavelength;

b) exciting a guided metallic mode of electromagnetic radiation within the waveguiding body;

c) adiabatically converting a portion of the fluorescent light from the metallic mode to at least one guided dielectric mode; and

d) receiving the adiabatically converted light at a photodetector.

5,288,997

MANUFACTURING METHOD, INCLUDING NEAR-FIELD OPTICAL MICROSCOPIC EXAMINATION OF A MAGNETIC BIT PATTERN

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,143

Int. Cl.[5] G02B *21/06*

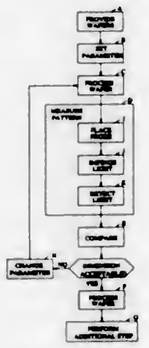
U.S. Cl. 250—227.26 **2 Claims**

1. A method for manufacturing an article, comprising the steps of:

a) providing a multiplicity of substrates, each substrate hav-

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ing a surface layer of magnetic material to be impressed with a bit pattern;
b) setting at least one process parameter;
c) processing at least a first substrate according to the process parameter such that a bit pattern is formed in the surface layer of the substrate;
d) sensing the bit pattern in at least the first substrate;
e) comparing the sensed bit pattern to a predetermined bit pattern;
f) if the sensed bit pattern is different from the predetermined bit pattern, changing the process parameter to bring the sensed and predetermined bit patterns into conformity;
g) after (f), processing at least a second substrate according to the process parameter; and
h) performing, on at least the second substrate, at least one additional step toward completion of the article;



wherein the sensing step comprises the further steps of:
i) impinging electromagnetic radiation of at least a given wavelength on the surface layer such that at least a portion of the radiation is reflected from the surface layer;
j) admitting a portion of the reflected radiation into a waveguiding body through an aperture that is distant from the surface layer by no more than the given wavelength, and that is smaller, in a least one lateral dimension, than the given wavelength;
exciting a guided metallic mode of electromagnetic radiation within the waveguiding body;
adiabatically converting a portion of the electromagnetic radiation from the metallic mode to at least one guided dielectric mode; and
receiving the adiabatically converted radiation at a photodetector.

5,288,998

MANUFACTURING METHOD INCLUDING PHOTORESIST PROCESSING USING A NEAR-FIELD OPTICAL PROBE

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,233

Int. Cl.[5] G02B *21/06*

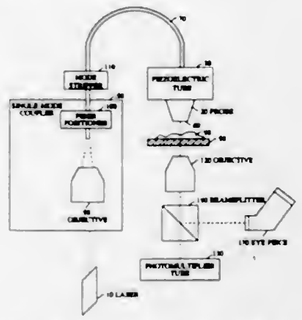
U.S. Cl. 250—227.26 **3 Claims**

1. A method for manufacturing an article, comprising the steps of:

providing a workpiece having a surface to be patterned; and impinging actinic, electromagnetic radiation on the surface such that a photochemical change occurs adjacent the surface,

wherein the impinging step comprises:

a) admitting incident electromagnetic radiation having at least one incident wavelength into an optical waveguiding body such that a guide dielectric mode is exited within the waveguiding body;



b) adiabatically converting a portion of the incident radiation from the guided dielectric mode to a guide metallic mode; and
c) emitting a portion of the adiabatically converted light from an aperture that is distant from the surface by no more than the incident wavelength, and that is smaller, in at least one lateral dimension, than the incident wavelength.

5,288,999

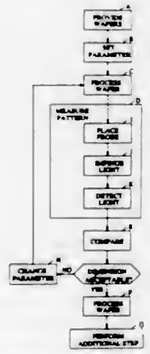
MANUFACTURING METHOD INCLUDING NEAR-FIELD OPTICAL MICROSCOPIC EXAMINATION OF A SEMICONDUCTOR WAFER

Robert E. Betzig, Chatham; Ernst M. Gyorgy, Madison; Jay K. Trautman, Chatham, and Raymond Wolfe, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 925,809, Aug. 4, 1992, which is a continuation-in-part of Ser. No. 771,413, Oct. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,537, Nov. 19, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,234

Int. Cl.[5] G02B *21/06*; G01N *21/63*

U.S. Cl. 250—227.26 **2 Claims**



1. A method for manufacturing an article, comprising the steps of:

a) providing a multiplicity of semiconductor wafers, each wafer having a surface to be patterned;
b) setting at least one process parameter;
c) processing at least a first wafer according to the process parameter such that a pattern is formed on the surface of the wafer, the pattern having a characteristic dimension;
d) measuring the characteristic dimension in at least the first wafer;
e) comparing the characteristic dimension to a predetermined range of values;
f) if the characteristic dimension lies outside of the predetermined range of values, changing the process parameter to bring the characteristic dimension within the predetermined range of values;
g) after (f), processing at least a second wafer according to the process parameter; and
h) performing, on at least the second wafer, at least one additional step toward completion of the article; wherein the measuring step comprises:
i) impinging incident light having at least one incident wavelength on the wafer surface such that at least a portion of the incident light is reflected from the wafer surface;
j) admitting a portion of the reflected light into a waveguiding body through an aperture that is distant from the wafer surface by no more than the incident wavelength, and that is smaller, in at least one lateral dimension, than the incident wavelength;
b) exciting a guided metallic mode of electromagnetic radiation within the waveguiding body;
c) adiabatically converting a portion of the reflected light from the metallic mode to at least one guided dielectric mode; and
d) detecting the adiabatically converted light.

5,289,000

IMAGE READING METHOD AND APPARATUS DETERMINING SYNCHRONOUS POSITION

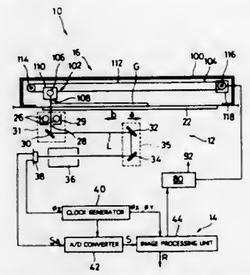
Takashi Toyofuku, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 22, 1993, Ser. No. 94,861

Claims priority, application Japan, Jul. 22, 1992, 4-195385

Int. Cl.[5] H01J *3/14*; H04N *1/21*

U.S. Cl. 250—234 **4 Claims**



1. A method for reading an image from a transparent original on a platen using a transmitting light source extending in a one-dimensional direction for emitting light toward the original and a reading scanner disposed below said platen and extending in said one-dimensional direction for receiving the light transmitted by the original, the method comprising the steps of:

translating the transmitting light source in an auxiliary scanning direction substantially perpendicular to said one-dimensional direction for illuminating the original over a two dimensional extent; and

translating the reading scanner in synchronization with said transmitting light source;

thereby photoelectrically reading the image in the original;

wherein the step of providing synchronization in scanning speed between said transmitting light source and said reading scanner comprising the steps of:

positioning either one of said transmitting light source and said reading scanner at a selected position;

scanning the other one of said transmitting light source and said reading scanner in the proximity of said selected position;

obtaining the distribution of a quantity of light transmitted by the original during the scanning;

determining a synchronous position for the other one corresponding to the selected position on the basis of said light quantity distribution;

performing said synchronous position detection at two or more distinct positions;

obtaining the number of pulses developed by the transferring to said synchronous position said transmitting light source and said reading scanner; and

calculating from the number of pulses the pulse-to-distance conversion coefficient of at least one of said transmitting light source and said reading scanner.

5,289,001

LASER BEAM SCANNING APPARATUS HAVING A VARIABLE FOCAL DISTANCE DEVICE AND THE VARIABLE FOCAL DISTANCE DEVICE FOR USE IN THE APPARATUS

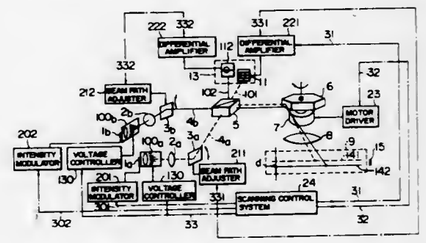
Akira Arimoto, Kodaira, and Susumu Saito, Hachioji, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 631,257, Dec. 20, 1990, Pat. No. 5,196,697, which is a continuation-in-part of Ser. No. 390,400, Aug. 7, 1989, Pat. No. 5,006,705, which is a continuation-in-part of Ser. No. 501,879, Mar. 30, 1990, Pat. No. 5,053,619. This application Dec. 22, 1992, Ser. No. 995,011

Claims priority, application Japan, Dec. 26, 1989, 1-335084

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—236 **5 Claims**



1. A laser beam scanning apparatus comprising:
a laser light source for emitting at least one laser beam; and
a variable focal distance device,
said variable focal distance device including:
an optical waveguide which receives and conducts said laser beam; and
electrode means having a plurality of electrodes provided on said optical waveguide so as to form in said optical waveguide a lens which can change in one direction the focused point of the laser beam passed through said optical waveguide in accordance with different voltages applied between the adjacent electrodes of said electrode means.

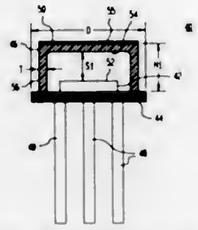
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,002

OPTICAL SENSOR AND METHOD OF PRODUCTION

Terry Tarn, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,111
Int. Cl.[5] H01J 5/02
U.S. Cl. 250—239 7 Claims



1. An optical sensor having a certain overall size comprising:
a light sensitive device having a light-receiving surface;
a support plate for supporting the device;
a transparent cover having inner and outer light transmitting surfaces and having supporting walls adapted to attach to the support plate;
the supporting walls being adapted to maintain the inner and outer light transmitting surfaces of the cover preselected distances from the light-receiving surface of the device; and
the preselected distance between the inner light transmitting surface and said light receiving surface being greater than about one tenth of the overall size of the optical sensor.

5,289,003

PROBE FOR THERMOSPRAY MASS SPECTROMETRY

Steven M. Musser, Severn, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed May 29, 1992, Ser. No. 890,194
Int. Cl.[5] B01D 59/44; H01J 49/00
U.S. Cl. 250—288 20 Claims



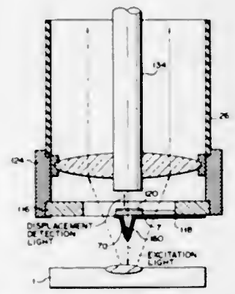
1. A thermospray probe which comprises:
an outer tubular housing;
an adapter, said outer tubular member being connected at one end thereof to one end of said adapter;
a capillary tube which extends through said adapter and said outer tubular housing, said capillary tube having a tip end which extends to a tip end of said outer tubular housing;
means for releasibly securing said capillary tube in said adapter; and
means for releasibly securing said tip end of said capillary tube in said tip end of said outer tubular housing.

5,289,004

SCANNING PROBE MICROSCOPE HAVING CANTILEVER AND DETECTING SAMPLE CHARACTERISTICS BY MEANS OF REFLECTED SAMPLE EXAMINATION LIGHT

Takao Okada, Hachioji; Akira Yagi, Sagamihara; Yasuhiro Sugawara, Hiroshima; Seizo Morita, Miyanomachi, and Tsugiko Takase, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 672,857, Mar. 20, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 866,748
Claims priority, application Japan, Mar. 27, 1990, 2-79567; Nov. 21, 1991, 3-305998
Int. Cl.[5] H01J 37/00
U.S. Cl. 250—306 19 Claims



1. A microscope comprising.
a probe;
a cantilever having a free end portion supporting the probe;
selective reflection means provided on the free end portion of the cantilever, for reflecting displacement detection light and for passing sample examination light therethrough;
scanning means for causing the probe to scan the surface of a sample while controlling the distance between the probe and the sample to be substantially constant, which distance would otherwise vary due to an interatomic force exerted between the probe and the sample;
light source means for emitting the displacement detection light and the sample examination light;
guide means for guiding the displacement detection light and the sample examination light to the selective reflection means provided on the cantilever, the displacement detection light being reflected by the reflection means, the sample examination light passing through the reflection means and being radiated onto the surface of the sample, resulting in that a radiated portion of the surface of the sample generates characteristic light indicative of the characteristics thereof;
means for receiving light reflected by the reflection means and for detecting displacement of the free end of the cantilever; and
means for detecting the characteristic light to thereby detect the characteristics of the radiated portion.

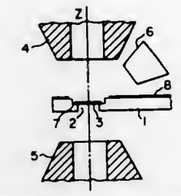
5,289,005

ELECTRON MICROSCOPE

Miklo Naruse; Eiichi Watanabe, and Toru Kasai, all of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 891,510
Int. Cl.[5] H01J 37/20
U.S. Cl. 250—310 7 Claims

1. An electron microscope comprising:
an objective lens consisting of an upper magnetic pole piece and a lower magnetic pole piece;
a specimen stage which is disposed between the upper and lower magnetic pole pieces and on which a specimen is placed, the stage being composed of plural abutting layers, one of the layers consisting of a heavy element, another layer consisting of a light element;



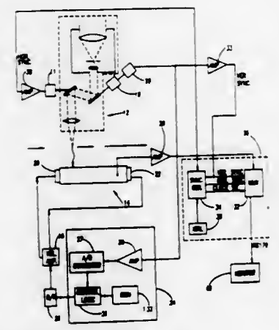
means for directing an electron beam to the specimen to emit X-rays from the specimen; and
a detection means for detecting the X-rays emitted from the specimen;

5,289,006

THERMAL IMAGING APPARATUS

Eli Gal, Ramat Gan, Israel, assignor to Allied Signal Inc., Morris Township, N.J.

Filed Sep. 25, 1992, Ser. No. 951,285
Claims priority, application Israel, Sep. 27, 1991, 99592
Int. Cl.[5] H01L 31/00
U.S. Cl. 250—334 20 Claims



1. Scanning apparatus comprising:
a non-linear optomechanical scanner receiving light from a scene and directing it onto an image plane, said scanner defining a non-linear scan velocity in the image plane;
a SPRITE detector disposed in said image plane and including first and second spaced contacts and means for applying a bias voltage across said contacts;
means for sensing the velocity of the scanner in real time as it scans across the image plane; and
means for dynamically varying the bias voltage across said contacts as a function of the sensed non-linear scan velocity, thereby to compensate for the non-linearity of the optomechanical scanner.

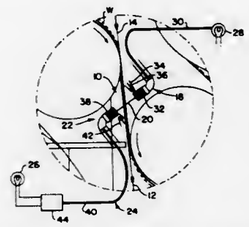
5,289,007

SHEET BREAK DETECTOR APPARATUS

Richard R. Hergert, Rockton, Ill., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed May 26, 1992, Ser. No. 888,954
Int. Cl.[5] G08B 21/00; G01N 33/34
U.S. Cl. 250—341 8 Claims

1. A sheet break detector apparatus for detecting a break in a sheet disposed contiguously between an upstream and a downstream felt in a without open draw transfer of a paper machine dryer section, said apparatus comprising:
an infrared light emitter means disposed adjacent to the sheet disposed between the felts for emitting a beam of infrared light towards the sheet moving contiguously between the felts, said emitter means being disposed on an opposite side of one of the felts relative to the sheet;
an infrared light receiver disposed on an opposite side of the felts relative to said emitter means for receiving said beam in the absence of the sheet, said beam being blocked by the presence of the sheet while the felts permit the passage therethrough of said beam;
transmitter means connected to said receiver for transmitting a signal from said receiver in the absence of the sheet; and
alarm means connected to said transmitter means such that in the event of a sheet break, said beam of light is received by said receiver and said signal is transmitted to said alarm means so that an alarm signal is generated indicating that a sheet break has occurred such that scuffing between the felts is inhibited.

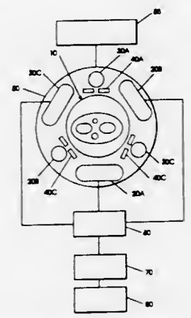


5,289,008

METHOD AND APPARATUS FOR ENHANCED SINGLE PHOTON COMPUTED TOMOGRAPHY

Ronald J. Jaszczak, and David R. Gilland, both of Chapel Hill, N.C., assignors to Duke University, Durham, N.C.

Filed Jun. 10, 1992, Ser. No. 896,395
Int. Cl.[5] G01T 1/166
U.S. Cl. 250—363.03 6 Claims



1. A method of single photon emission computed tomography of a test region having a plurality of projectional views utilizing a radiation source opposite said test region from a radiation detector, comprising:
detecting emitted radiation from a first projectional view of said plurality of projectional views to produce uncompensated emission data for said first projectional view;
irradiating said first projectional view with radiation from said radiation source to produce transmitted radiation through said first projectional view; and

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detecting the transmitted radiation and the emitted radiation from said first projectional view to produce transmission data for said first projectional view; then

detecting emitted radiation from a second projectional view of said plurality of projectional views to produce uncompensated emission data for said second projectional view;

irradiating said second projectional view with radiation from said radiation source to produce transmitted radiation through said second projectional view; and

detecting the transmitted radiation and the emitted radiation from said second projectional view to produce transmission data for said second projectional view.

5,289,009

CHARGED PARTICLE BEAM SYSTEM AND COOLING DEVICE, A COIL COMPRISING A COOLING MEMBER AND A COOLING MEMBER FOR USE IN SUCH A CHARGED PARTICLE BEAM SYSTEM

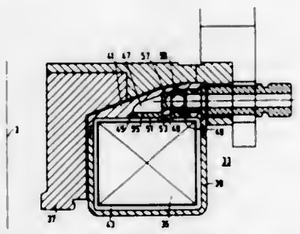
Johan G. Bakker, and Peter E. S. J. Asselbergs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 738,066, Jul. 30, 1991, abandoned. This application May 13, 1993, Ser. No. 61,332

Claims priority, application Netherlands, Aug. 2, 1990, 9001751

Int. Cl.[5] H01J *3/22*

U.S. Cl. 250—396 ML **11 Claims**



1. An electron beam system, comprising a source for emitting a beam of electrons and a focusing device which comprises at least one coil for deflecting the beam, said at least one coil comprising a cooling member which encloses the coil and which comprises a cooling duct for transporting a cooling medium, characterized in that the cooling member comprises a jacket which forms a chamber having an inlet opening and an outlet opening, the coil being accommodated in said chamber, the cooling duct comprising a space between the coil and the jacket and a first closed cooling circuit comprising a cooling liquid reservoir, and a heat exchanging element which is situated, viewed in a flow direction, between the cooling liquid reservoir and the cooling member in order to cool the cooling liquid prior to its passage through the cooling member to cool said member with liquid which is undersaturated with air.

5,289,010

ION PURIFICATION FOR PLASMA ION IMPLANTATION

Juda L. Shohet, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 8, 1992, Ser. No. 987,122

Int. Cl.[5] H01J *37/317*

U.S. Cl. 250—492.21 **11 Claims**

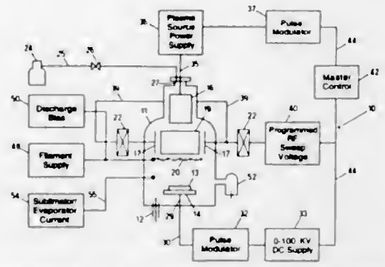
7. Apparatus for implanting ions in a target object comprising:

(a) electrically conductive enclosure walls defining an enclosing chamber surrounding a sealed space;

(b) means for supporting a target object within the enclosing chamber at a position spaced away from and electrically isolated from the enclosure walls of the chamber and for providing an electrical connection between the target object and the exterior of the chamber;

(c) means for forming a plasma;

(d) a magnet mounted to provide a constant magnetic field in an ion purification region in the enclosing chamber, and ion collector means for collecting and holding ions mounted in the enclosing chamber at the ion purification region;



(e) excitation means for applying a time varying electric field to a plasma in the ion purification region to excite unwanted ions in the plasma into resonance to eject such ions into the ion collector means without ejecting desired ions to provide a purified plasma; and

(f) means for applying a pulse of voltage between the enclosure walls and the target object sufficient to implant ions from the purified plasma into the target object.

5,289,011

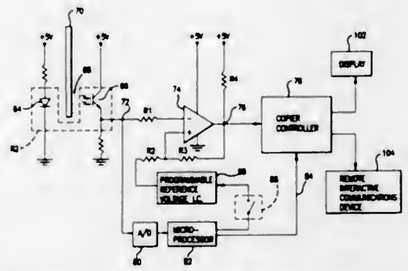
SENSOR CONTROL SYSTEM AND METHOD COMPENSATING FOR DEGRADATION OF THE SENSOR AND INDICATING A NECESSITY OF SERVICE PRIOR TO SENSOR FAILURE

Lam F. Wong, Fairport, and George J. Roller, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1992, Ser. No. 983,481

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **20 Claims**



1. A sensor control system controlling an output of a sensor which detects whether an object is located in an object location, comprising:

a comparator comparing an analog output signal of said sensor with a reference voltage signal and in response to said comparing providing a digital output signal which indicates a presence or an absence of an object in said object location;

means for adjusting said reference voltage signal in response to said analog output signal of said sensor, wherein the reference voltage signal is adjusted to have a value within a window ranging between a null state value indicating that an object is not located in said object location and an activated state value indicating that an object is located in said object location, said adjusted reference voltage signal biased toward said null state; and

means for providing a service signal indicating a requirement for service of the sensor if a difference between said activated state value and said null state value is less than a predetermined value.

5,289,012

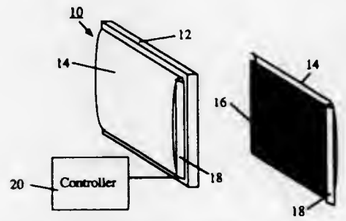
X-RAY IMAGE ENCODING BY SPATIAL MODULATION OF A STORAGE PHOSPHOR SCREEN

Robert E. Alvarez, 2369 Laura La., Mountain View, Calif. 94043

Filed Apr. 30, 1992, Ser. No. 877,893

Int. Cl.[5] G03B *42/02;* **G01N** *23/04*

U.S. Cl. 250—588 **9 Claims**



1. Apparatus for encoding x-ray image information comprising:

(a) a storage phosphor screen detector;

(b) a controller means; and,

(c) a controlled erasing means for erasing latent x-ray image information recorded by said storage phosphor screen detector in a set of regions spaced periodically across the surface of said storage phosphor screen detector;

wherein the remaining image information can be used to reconstruct a representation of said x-ray image information.

5,289,013

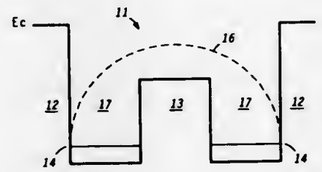
PHONON AND CHARGE CARRIER SEPARATION IN QUANTUM WELLS

Herbert Goronkin, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1991, Ser. No. 769,659

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—14 **13 Claims**



1. A quantum well structure comprising: a host phonon confinement well having a substantially continuous phonon distribution; and at least one charge carrier confinement well located near a minima of a phonon distribution providing an uneven distribution of charge carriers throughout the phonon confinement well, the charge carriers concentrated near the minima of the phonon distribution.

5,289,014

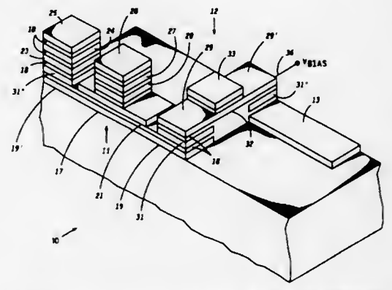
SEMICONDUCTOR DEVICE HAVING A VERTICAL QUANTUM WELL VIA AND METHOD FOR MAKING

Herbert Goronkin, Tempe; Jun Shen, Phoenix; Saied Tehrani, Scottsdale, and X. Theodore Zhu, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 17, 1992, Ser. No. 930,958

Int. Cl.[5] H01L *29/161, 29/205*

U.S. Cl. 257—14 **8 Claims**



1. A semiconductor device having a vertical quantum well via comprising:

a substrate having an upper surface;

a first semiconductor device formed on the upper surface in a first horizontal plane parallel to the upper surface, wherein the first semiconductor device includes a current carrying region that has a first quantized energy level;

a second semiconductor device formed in a second horizontal plane vertically spaced from the first horizontal plane, wherein the second semiconductor device includes a current carrying region that has a first quantized energy level substantially equal to that of the current carrying region of the first semiconductor device; and

a semiconductor via electrically coupling the current carrying region of the first semiconductor device to the current carrying region of the second semiconductor device so as to provide current for operation of the first and second semiconductor devices, wherein the semiconductor via has a first quantized energy level capable of alignment with the quantized energy levels of the current carrying regions of the first and second semiconductor devices.

5,289,015

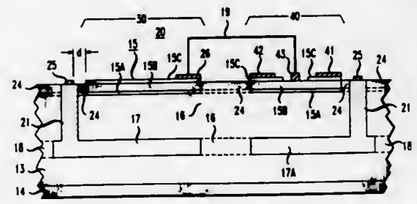
PLANAR FET-SEED INTEGRATED CIRCUITS

Leo M. F. Chirovsky, Bridgewater; Lucian A. D'Asaro, Madison; Shin-Shem Pei, New Providence, and Ted K. Woodward, Lincroft, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 691,181, Apr. 25, 1991. This application Oct. 31, 1991, Ser. No. 785,670

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—21 **7 Claims**



1. A semiconductor integrated circuit of the type compris-

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ing: a) a quantum well reflecting stack, b) a buried p-layer of semiconductor overlying said reflector stack, c) a quantum well intrinsic region overlying said p-layer, d) an n-layer of semiconductor overlying said quantum well intrinsic region; e) an n-channel field effect transistor comprising a source, a gated n-channel and a drain overlying said quantum well intrinsic region and said buried p-layer; and f) a PIN quantum well diode comprised of portions said buried p-layer, said quantum well intrinsic region, and said n-layer,

CHARACTERIZED IN THAT:

said buried p-layer is partitioned by a proton implanation region to separate the portion of said p-layer underlying said FET from the portion comprising the p-layer of said diode said proton implantion region being of high resistivity and containing crystal damage.

5,289,016

THIN FILM TRANSISTOR WITH EXCELLENT STABILITY FOR LIQUID CRYSTAL DISPLAY

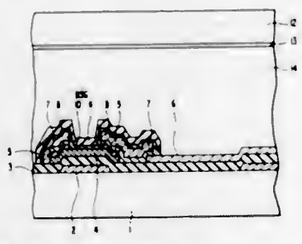
Kesao Noguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,418

Claims priority, application Japan, Apr. 24, 1990, 2-108382

Int. Cl.[5] H01L *29/04, 31/036, 23/58*

U.S. Cl. 257—57 **12 Claims**



1. A thin film transistor, comprising:

a gate electrode;

a semiconductor layer formed on said gate electrode;

a source electrode and a drain electrode formed on said semiconductor layer;

a borosilicate glass film formed on said semiconductor layer and said source and drain electrodes; and

a silicon nitride film formed on said borosilicate glass film.

5,289,017

SOLID STATE IMAGING DEVICE HAVING SILICON CARBIDE CRYSTAL LAYER

Keita Nii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

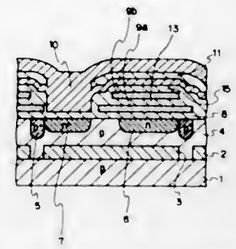
Filed Dec. 21, 1992, Ser. No. 993,778

Claims priority, application Japan, Dec. 25, 1991, 3-343221

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—77 **2 Claims**

1. A solid state imaging device comprising a first-conductive type layer composed of a semiconductor crystal, a second conductive-type layer including a charge transfer part and an imaging part formed in the semiconductor crystal layer, and a charge transfer electrode part formed on said charge transfer part with an insulating film sandwiched therebetween, said



semiconductor crystal layer being formed of a silicon carbide crystal layer.

5,289,018

LIGHT EMITTING DEVICE UTILIZING CAVITY QUANTUM ELECTRODYNAMICS

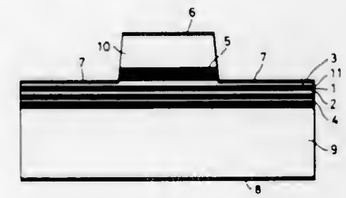
Masahiro Okuda, Sagamihara, and Akira Shimizu, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 741,068, Aug. 6, 1991, abandoned. This application May 14, 1993, Ser. No. 61,328

Claims priority, application Japan, Aug. 14, 1990, 2-214812

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—98 **23 Claims**



1. A light emitting device comprising:

a light emitting active layer having a quantum confinement structure;

means for supplying carriers to said active layer;

means for applying a reverse bias electric field to said active layer; and

reflector means enclosing said active layer and having a high reflectance for light generated in said active layer,

wherein, said reflector means comprises a pair of reflectors sandwiching the active layer, the optical length between said reflectors being equal to a wavelength of a light generated in the active layer.

5,289,019

INSULATED GATE BIPOLAR TRANSISTOR

Tomohide Terashima, Fukooka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,290

Claims priority, application Japan, Jul. 24, 1991, 3-184565; Apr. 3, 1992, 4-81918

Int. Cl.[5] H01L *29/74, 29/06, 29/40*

U.S. Cl. 257—139 **2 Claims**

1. An Insulated Gate Bipolar Transistor comprising:

a first conductivity type first semiconductor layer having first and second major surfaces;

a second conductivity type second semiconductor layer formed on said first major surface;

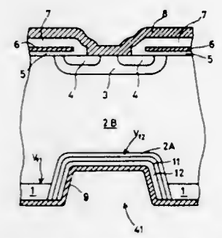
a first conductivity type third semiconductor layer selectively formed in a surface of said second semiconductor layer which is opposite to said first semiconductor layer;

a second conductivity type fourth semiconductor layer selectively formed in a surface of said third semiconductor layer;

a groove extending from said second major surface to said second semiconductor layer;

an insulative layer formed on part of said surface of said third semiconductor layer which is between said second and fourth semiconductor layers;

a control electrode formed in said insulative layer;



a first electrode formed over said third and fourth semiconductor layers;

a second conductivity type fifth semiconductor layer, a first conductivity type sixth semiconductor layer and a second conductivity type seventh semiconductor layer of impurity concentration higher than that of said second semiconductor layer, which are stacked in order from inside of said groove; and

a second electrode formed for connection to said first semiconductor layer on said second major surface and to said fifth and sixth semiconductor layers.

5,289,020

HETEROJUNCTION BIPOLAR TRANSISTOR

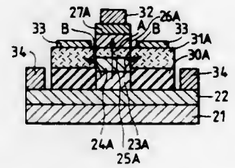
Takashi Hirose; Toshinobu Matsuno, and Kaoru Inoue, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 15, 1992, Ser. No. 913,316

Claims priority, application Japan, Apr. 28, 1992, 4-109655

Int. Cl.[5] H01L *31/072, 31/109, 27/102*

U.S. Cl. 257—197 **8 Claims**



1. A heterojunction bipolar transistor comprising:

a first emitter region,

a second emitter region extending on the first emitter region and connected to the first emitter region via a junction, the second emitter region having a forbidden band gap wider than a forbidden band gap of the first emitter region, wherein, at the junction, the second emitter region has a carrier energy level substantially equal to a carrier energy level of the first emitter region;

an intrinsic base region extending on the second emitter region and having a forbidden band gap narrower than the forbidden band gap of the second emitter region;

a collector region extending on the intrinsic base region;

an extrinsic base region extending outward of the intrinsic base region and contacting the intrinsic base region and the second emitter region, the extrinsic base region separated from the first emitter region, wherein a portion of the extrinsic base region which adjoins the second emitter region has a forbidden band gap substantially equal to the forbidden band gap of the second emitter region; and

a high-resistivity region extending underneath the extrinsic base region.

5,289,021

BASIC CELL ARCHITECTURE FOR MASK PROGRAMMABLE GATE ARRAY WITH 3 OR MORE SIZE TRANSISTORS

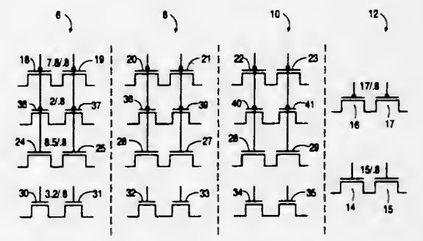
Abbas El Gamal, Palto Alto, Calif., assignor to SiArc, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 524,183, May 15, 1990, Pat. No. 5,055,716. This application Jun. 18, 1991, Ser. No. 717,140

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] H01L *27/02, 27/10*

U.S. Cl. 257—206 **21 Claims**



1. A basic cell in a mask programmable gate array, said basic cell comprising:

three sizes of N-channel transistors, where size corresponds to channel width; and

three sizes of P-channel transistors, where size corresponds to channel width,

gates of certain ones of said N-channel transistors and P-channel transistors being isolated from gates of certain other ones of said N-channel transistors and P-channel transistors within said basic cell,

wherein said basic cell is one of a plurality of basic cells wholly located within an interior of said gate array.

5,289,022

CCD SHIFT REGISTER HAVING A PLURALITY OF STORAGE REGIONS AND TRANSFER REGIONS THEREIN

Tetsuya Iizuka; Naoki Nishi, and Tetsuro Kumesawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,121

Claims priority, application Japan, May 14, 1991, 3-109330

Int. Cl.[5] H01L *29/78, 27/14, 31/00*

U.S. Cl. 257—232 **9 Claims**

1. A charge coupled device comprising:

an imaging section having a plurality of light-receiving elements arranged in a matrix wherein a plurality of first vertical shift registers are disposed at one side of the light-receiving elements for transferring signal charges from the plurality of light-receiving elements;

a storage section disposed at a lower side of said imaging section and having a plurality of second vertical shift registers connected to said plurality of first vertical shift registers for transferring said signal charges from said imaging section;

a horizontal shift register section having a first horizontal

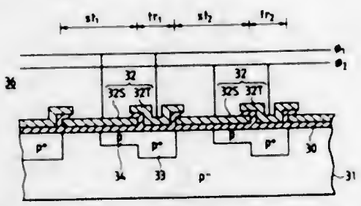
VOL 1159 ISS 4 FE 22 1994 UMI

shift register connected to said plurality of second vertical shift registers for receiving and transferring said signal charges transferred from a first group of said plurality of second vertical shift registers and a second horizontal shift register connected to said plurality of second vertical shift registers for receiving and transferring said signal charges transferred from a second group of said plurality of second vertical shift registers wherein said first group is distinct from said second group;

said first horizontal shift register further comprising:

a semiconductor substrate of a first conductivity type;

a plurality of first transfer electrodes provided on said semiconductor substrate through an insulating layer, each of said plurality of first transfer electrodes having a transfer gate electrode and a storage gate electrode;



a plurality of second transfer electrodes provided on said semiconductor substrate through said insulating layer, each of said plurality of second transfer electrodes having a transfer gate electrode and a storage gate electrode; and

a first semiconductor portion and a second semiconductor portion of said first conductivity type provided in the surface of said semiconductor substrate under each of the storage gate electrodes of said plurality of first transfer electrodes and said plurality of second transfer electrodes, wherein said first semiconductor portion has an impurity concentration equal to said semiconductor substrate and said second semiconductor portion has a higher impurity concentration than that of said semiconductor substrate.

5,289,023

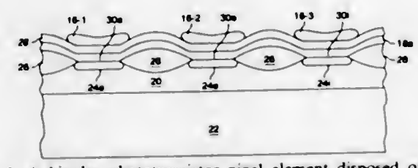
HIGH-DENSITY PHOTOSENSOR AND CONTACTLESS IMAGING ARRAY HAVING WIDE DYNAMIC RANGE

Carver A. Mead, Pasadena, Calif., assignor to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 923,734, Jul. 30, 1992, which is a continuation-in-part of Ser. No. 760,569, Sep. 16, 1991, Pat. No. 5,260,592, which is a continuation-in-part of Ser. No. 657,128, Feb. 19, 1991, Pat. No. 5,097,305. This application Aug. 7, 1992, Ser. No. 927,079

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—291 **19 Claims**



1. A bipolar phototransistor pixel element disposed on a piece of semiconductor material of a first conductivity type comprising:

a collector comprising a region of semiconductor material;

a base comprising a doped region of a second conductivity type disposed within said collector region;

a polysilicon region doped to said first conductivity type and disposed over a portion of said base to comprise an epitaxial emitter for the phototransistor and a sense node for said pixel element; and

an insulating layer disposed over said polysilicon region and over the portion of said base not covered by said polysilicon region; and

a layer of conductive material disposed over said insulating layer and thereby capacitively coupled to said base to form a select node for said pixel element.

5,289,024

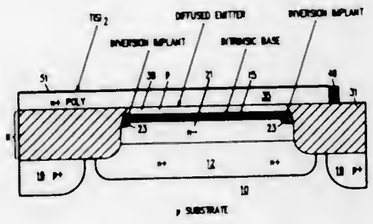
BIPOLAR TRANSISTOR WITH DIFFUSION COMPENSATION

George E. Ganschow, Trabuco Canyon, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 821,256, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 564,013, Aug. 7, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 44,560

Int. Cl.[5] H01L *29/72, 27/12, 29/167*

U.S. Cl. 257—592 **8 Claims**



1. A bipolar transistor having an emitter region, a collector region, and a base intrinsic region, the emitter region, the collector region, and the base intrinsic region each having at least a portion thereof adjacent to a first isolation oxide region, the emitter region contacted by an emitter contact region, the base intrinsic region having a diffusion compensation region extending a small, predefined area into the collector region at a point where the base intrinsic region and the collector region abut a sidewall of the first isolation oxide region and underlying a portion of said emitter region which is contacting said emitter contact region, the base intrinsic region being formed by the steps of:

a) forming a mask over the base intrinsic region;

b) implanting dopants o a same conductivity type as said base intrinsic region in regions exposed by the mask;

c) diffusing dopants from the implant laterally under a portion of the mask to form oxide diffusion compensation regions;

d) etching the regions exposed by the mask;

e) forming field oxide regions in the regions exposed by the mask; and

f) forming an emitter contact on said emitter region, at least a portion of said diffusion compensation region underlying a portion of said emitter region which is contacting said emitter contact.

5,289,025

INTEGRATED CIRCUIT HAVING A BOOSTED NODE

Hyun Lee, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

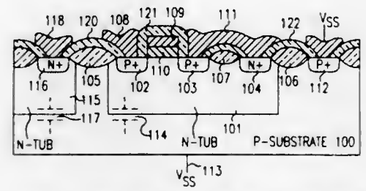
Filed Oct. 24, 1991, Ser. No. 782,034

Int. Cl.[5] H01L *27/02, 29/78*

U.S. Cl. 257—299 **15 Claims**

1. An integrated circuit comprising a transistor having source/drain regions of a given conductivity type formed in a doped tub region of the opposite conductivity type formed in a semiconductor substrate of said given conductivity type, and means for boosting the voltage of a source/drain region of said transistor to greater than a given power supply voltage,

Characterized in that said integrated circuit further comprises means for boosting the voltage of said doped tub region to a level greater than said given power supply voltage, and wherein said doped tub region is connected



to at least one other doped tub region of said opposite conductivity type formed in said semiconductor substrate, whereby the total junction area of the connected tub regions is sufficiently large to obtain a desired level of capacitance with respect to said substrate for maintaining the boosted voltage level for a desired time period.

5,289,026

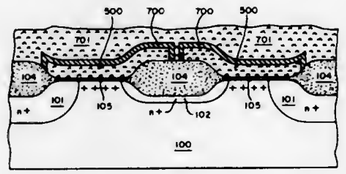
ASYMMETRIC FLOATING GATE OVERLAP FOR IMPROVED DEVICE CHARACTERISTICS IN BURIED BIT-LINE DEVICES

Tong-Chern Ong, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 14, 1991, Ser. No. 744,969

Int. Cl.[5] H01L *29/68, 29/78*

U.S. Cl. 257—316 **6 Claims**



1. An array of electrically erasable non-volatile memory devices comprising:

a monocrystalline silicon layer including a plurality of buried source regions and a plurality of buried drain regions, said source regions and said drain regions alternating and spaced apart, wherein said drain regions are shared by adjacent ones of said memory devices in said array;

wherein each of said memory devices comprises:

field oxide areas over the source region and the drain region;

a floating gate member overlapping a portion of the source region and a portion of the drain region forming a floating gate-to-source overlap and a floating gate-to-drain overlap, respectively, such that the floating gate-to-source overlap is less than the floating gate-to-drain overlap;

an insulating layer; and

a control gate member.

5,289,027

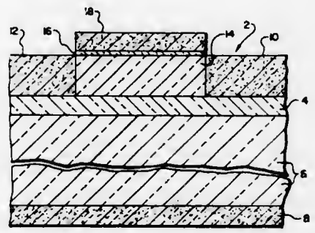
ULTRATHIN SUBMICRON MOSFET WITH INTRINSIC CHANNEL

Kyle W. Terrill, Santa Monica, and Prahalad K. Vasudev, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 577,838, Aug. 31, 1990, abandoned, which is a continuation of Ser. No. 282,150, Dec. 9, 1988, abandoned. This application Sep. 28, 1992, Ser. No. 951,598

Int. Cl.[5] H01L *27/01, 29/10, 29/78, 27/12*

U.S. Cl. 257—327 **1 Claim**



1. A metal-oxide-semiconductor field transistor (MOSFET) structure, comprising:

a first insulating layer, the thickness of said first insulating layer being within the approximate range of 0.3–0.5 microns,

a submicron-thick semiconductor layer on said first insulating layer, said semiconductor layer having mutually spaced doped source and drain regions and a generally intrinsic bulk channel region of bulk semiconductor material extending between said source and drain regions, said channel region having a dopant concentration less than about $10^{16}cm^{-3}$,

a second insulating layer on said channel region,

a conductive gate on said insulating layer, and

means for applying a back-gate bias voltage to induce both charge carriers in the channel region for MOSFET operation, and an electric field in the channel region for restricting punchthrough and other short-channel effects,

said means for applying a back-gate bias voltage comprising a semiconductor substrate for said first insulating layer, and a conductive electrode on said substrate for receiving a voltage signal.

5,289,028

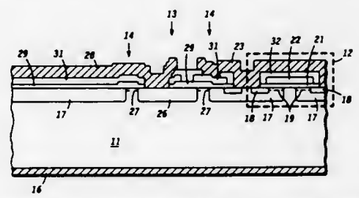
HIGH POWER SEMICONDUCTOR DEVICE WITH INTEGRAL ON-STATE VOLTAGE DETECTION STRUCTURE

Lowell Clark, Phoenix; Robert B. Davies, and David F. Mietus, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,166

Int. Cl.[5] H01L *23/62, 29/74, 23/58, 29/90*

U.S. Cl. 257—355 **13 Claims**



1. A high power semiconductor device with integral on-state voltage detection structure comprising: a semiconductor drift region of a first conductivity type, having an upper por-

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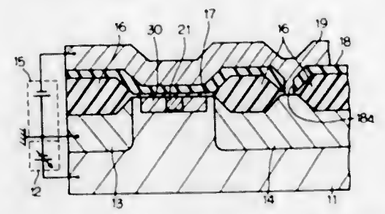
tion and a lower portion; a base region of a second conductivity type formed in the upper portion of the drift region; a source region of the first conductivity type formed in the base region, wherein a first channel is defined between a lateral boundary of the source region and a lateral boundary of the base region; a first gate dielectric covering the first channel; a first gate electrode covering the first gate dielectric over the first channel; a source electrode coupled to the source region and electrically isolated from the first gate electrode; a detector region of the second conductivity type formed in the upper portion of the drift region and separated from the base region by a second channel, wherein the detector region forms a detector diode with the drift region, the detector diode being a diode other than a zener diode; and a detector electrode coupled to the detector region, wherein the detector electrode is electrically isolated from the source electrode and the gate electrode.

5,289,029

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING WELLS BIASED WITH DIFFERENT VOLTAGE LEVELS

Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 875,830
Claims priority, application Japan, May 2, 1991, 3-130547
Int. Cl.[5] H01L *27/04, 29/78, 29/796, 29/90*
U.S. Cl. 257—400 **2 Claims**



1. A semiconductor integrated circuit device fabricated on a semiconductor substrate of a first conductivity type, comprising:

a) a first well having a second conductivity type opposite to said first conductivity type, and formed in a first surface portion of said semiconductor substrate, said first well being biased to a first voltage level;

b) a second well of said second conductivity type formed in a second surface portion of said semiconductor substrate spaced from said first surface portion, and biased to a second voltage level different from said first voltage level;

c) a third surface portion of said semiconductor substrate provided between said first and second wells, and doped with impurity atoms of said first conductivity type ranging between 1×10^{17} cm^{-3} and 2×10^{17} cm^{-3}, the impurity concentration of a remaining portion of said semiconductor substrate ranging between 1×10^{14} cm^{-3} and 5×10^{14} cm^{-3};

d) a channel stopper formed in said third surface portion, and doped with impurity atoms of said first conductivity type higher than said third surface portion;

e) an insulating film covering at least said first, second and third surface portions; and

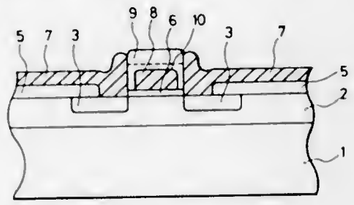
f) a wiring strip extending over said insulating film, and biased in such a manner as to induce carriers of said second conductivity type in said third surface portion.

5,289,030

SEMICONDUCTOR DEVICE WITH OXIDE LAYER

Shunpei Yamazaki, Tokyo; Akira Mase, Aichi, and Toshiji Hamatani, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1992, Ser. No. 846,164
Claims priority, application Japan, Mar. 6, 1991, 3-065418; May 11, 1991, 3-135569
Int. Cl.[5] H01L *29/76, 29/04, 31/036*
U.S. Cl. 257—410 **17 Claims**



5. A semiconductor device comprising:

source, drain and channel regions formed within one semiconductor film;

a gate electrode comprising a metal or a metal silicide, formed on said channel region with a gate insulating layer therebetween;

source and drain electrodes connected to the source and drain semiconductor regions, respectively; and

an oxide layer of said metal or metal silicide covering said gate electrode;

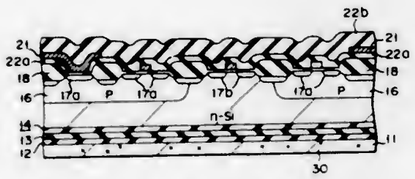
wherein said oxide layer is in contact with said gate electrode and said at least one of said source and drain electrodes.

5,289,031

SEMICONDUCTOR DEVICE CAPABLE OF BLOCKING CONTAMINANTS

Masaharu Watanabe, and Yoshiko Kunishima, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 745,878, Aug. 16, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 986,895
Claims priority, application Japan, Aug. 21, 1990, 2-218228
Int. Cl.[5] H01L *29/74, 23/58, 29/30*
U.S. Cl. 257—617 **9 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having first and second major surfaces;

semiconductor elements formed on said first major surface of said semiconductor substrate; and

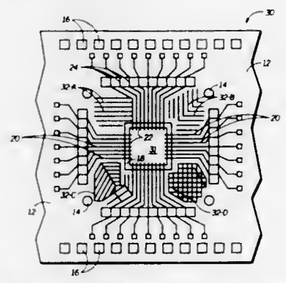
a blocking layer, formed within said substrate, which spans an entire cross sectional area of said substrate at a given distance from said second major surface, for blocking the passage of heavy metals through said second major surface of said semiconductor substrate into said semiconductor elements, said blocking layer being provided at a position nearer to said second major surface than said first major surface and formed of a chemical compound selected from the group consisting of silicon oxide and silicon nitride.

5,289,032

TAPE AUTOMATED BONDING(TAB)SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

Leo M. Higgins, III, Austin, Tex., and Maurice S. Karpman, Medford, Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1991, Ser. No. 745,655
Int. Cl.[5] H01L *23/48, 29/44, 29/52*
U.S. Cl. 257—669 **12 Claims**



1. A tape automated bonding (TAB) semiconductor device comprising:

an electronic component; and

a TAB tape coupled to the electronic component, the TAB tape comprising:

a carrier film supporting electrical leads for electrically interconnecting the electronic component to external circuitry, the electrical leads having a predetermined spatial density and patterned such that the carrier film is void of electrical leads in predetermined sections of the carrier film adjacent the electronic component;

an opening in the carrier film having the electronic component positioned therein, wherein the electrical leads partially extend into the opening; and

thermo-mechanical leads supported by the carrier film and having the predetermined spatial density and occupying the predetermined sections of the carrier film which are void of electrical leads without extending into the opening, the thermo-mechanical leads providing a substantially uniform distribution of stresses in the carrier film around the electronic component;

wherein the electrical leads are electrically and physically coupled to the electronic component, and wherein the thermo-mechanical leads are not directly physically coupled to the electronic component.

5,289,033

PACKAGING OF SEMICONDUCTOR CHIPS WITH RESIN

Yukio Asami, Kanagawa; Hiroyuki Fukasawa, Tokyo, and Akira Kojima, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,358
Claims priority, application Japan, Apr. 25, 1990, 2-109934
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—676 **5 Claims**

1. A semiconductor device, comprising:

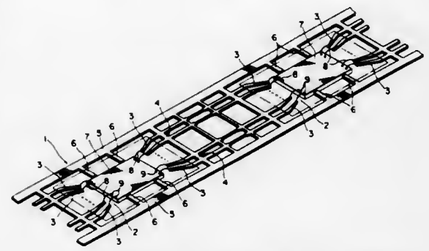
a resin package;

a semiconductor chip sealed within said package, said chip having upper and lower surfaces lying in upper and lower planes, respectively, and said chip having a plurality of electrodes;

a peripheral portion surrounding a region for receiving said chip;

a plurality of lead fingers each having an outer end disposed outside said package and each having an inner end disposed within said package and lying between said upper and lower planes and projecting from said peripheral portion towards said region; and

a plurality of bonding wires each connecting a respective



one of said plurality of electrodes to a respective one of said inner ends of said lead fingers;

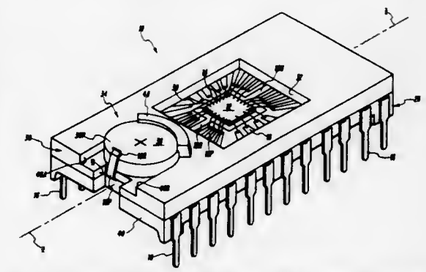
wherein said chip is disposed in said region without rigid connection to any of said lead fingers before sealing in said resin package such that said resin package directly contacts substantially all of said chip.

5,289,034

IC PACKAGE HAVING REPLACEABLE BACKUP BATTERY

Michael J. Hundt, Lewisville, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 690,378, Apr. 23, 1991, abandoned, which is a continuation of Ser. No. 470,939, Jan. 26, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 34,584
Int. Cl.[5] H01L *23/48, 23/02, 23/12;* **G11C** *7/00*
U.S. Cl. 257—678 **18 Claims**



1. A premolded package having an encapsulated electronic circuit device and having a socket for receiving a replaceable battery for providing electrical power to said electronic circuit device comprising, in combination:

a body of non-conductive material;

a finger lead assembly encapsulated within said body of non-conductive material, said finger lead assembly including a plurality of conductive finger leads, with one of said finger leads defining a positive power lead and one of said finger leads defining a negative power lead, and exactly one of said power leads having a terminal contact portion projecting externally of said body of non-conductive material for electrical contacting engagement with a first power terminal of the replaceable battery, the terminal contact portion applying a bias retaining force against said first power terminal;

an electronic circuit device encapsulated within said body of non-conductive material, said electronic circuit device

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having positive and negative power nodes electrically coupled to said positive and negative power leads, respectively; and,

said body of non-conductive material having a socket for receiving a backup battery of the type having positive and negative polarity terminals, said socket exposing at a location interior to said body one of said conductive power leads for electrical contacting engagement with a second power terminal of the replaceable battery when such replaceable battery is loaded into said socket.

5,289,035

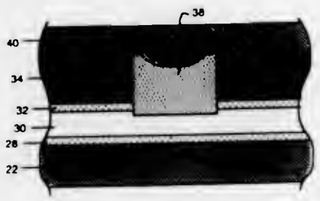
TRI-LAYER TITANIUM COATING FOR AN ALUMINUM LAYER OF A SEMICONDUCTOR DEVICE

Melton C. Bost, Hillsboro; Simon Yang, Portland, both of Oreg.; Yeochung Yen, San Jose, Calif.; Jim Baldo, Beaverton, and Barbara Greenebaum, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 776,804, Oct. 15, 1991, which is a continuation-in-part of Ser. No. 635,685, Dec. 27, 1990. This application Jul. 15, 1992, Ser. No. 914,755

Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*

U.S. Cl. 257—750 **3 Claims**



1. A tri-layer titanium coating for an aluminum layer of an interconnection comprising:

a first TiN layer deposited on said aluminum layer;

a Ti layer deposited on said first TiN layer; and

a second TiN layer deposited on said Ti layer.

5,289,036

RESIN SEALED SEMICONDUCTOR INTEGRATED CIRCUIT

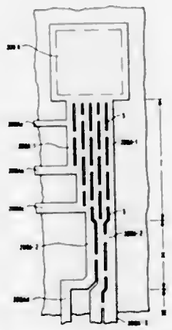
Shozo Nishimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,469

Claims priority, application Japan, Jan. 22, 1991, 3-005470

Int. Cl.[5] H01L *23/48, 29/44*

U.S. Cl. 257—774 **9 Claims**



1. A semiconductor device comprising a semiconductor substrate having a corner, a bonding pad formed on an insulating film covering said semiconductor substrate near said corner of said semiconductor substrate, a wiring layer extended from said bonding pad and elongated on said insulating film in a predetermined direction, said wiring layer having a first portion near to said bonding pad and a second portion far from said bonding pad, a first plurality of first slits formed in said first portion of said wiring layer to form a plurality of first wiring segments, said first wiring segments being arranged in parallel to each other in said predetermined direction and each having a first width, and a second plurality of second slits formed in said second portion of said wiring layer to form a plurality of second wiring segments, said second wiring segments being arranged in parallel to each other in said predetermined direction and each having a second width, the number of said first plurality of first slits being larger than the number of said second plurality of said second slits, and said first width being smaller than said second width.

5,289,037

CONDUCTOR TRACK CONFIGURATION FOR VERY LARGE-SCALE INTEGRATED CIRCUITS

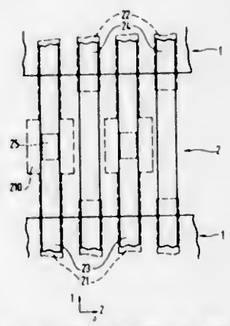
Dominique Savignac, Ismaning; Manfred Menke, München; Armin Kohlhase, Ottobrunn, all of Fed. Rep. of Germany, and Hanno Melzner, Wappingers Falls, N.Y., assignors to Siemens Aktiengeseilschaft, Munich, Fed. Rep. of Germany

Filed May 14, 1992, Ser. No. 883,113

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115909

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—776 **11 Claims**



1. A conductor track configuration for very large-scale integrated circuits, comprising:

a plurality of lower conductor tracks extending substantially in a first direction and being disposed side by side as seen in a second direction;

at least two upper conductor tracks extending substantially in the first direction above said lower conductor tracks; and

an insulating layer disposed between respective ones of said upper and lower conductor tracks;

each of said lower conductor tracks being subdivided into segments, defining gaps between said segments;

each respective one of said segments having one contact leading to said upper conductor track disposed above said one segment; and

said gaps being formed substantially between two contacts of adjacent ones of said conductor tracks.

5,289,038

BUMP ELECTRODE STRUCTURE AND SEMICONDUCTOR CHIP HAVING THE SAME

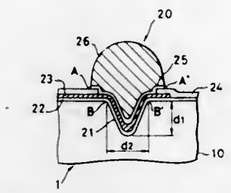
Akira Amano, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1992, Ser. No. 967,400

Claims priority, application Japan, Oct. 30, 1991, 3-283367

Int. Cl.[5] H01L *29/06, 23/48, 29/46, 29/62*

U.S. Cl. 257—780 **10 Claims**



1. A bump electrode structure for an integrated circuit device, comprising:

a semiconductor region having a surface and provided with a concave portion having a V-shaped cross section, said semiconductor region including an integrated circuit device having a surface;

an insulation film covering the surface of said semiconductor region inclusive of said concave portion;

a metal wiring film disposed on said insulation film and connected to said integrated circuit device;

a protection film covering said surface of said integrated circuit device and provided with a window in which only a predetermined region of said wiring film and said concave portion are exposed;

a thin metal subbing film covering said window of said protection film and connected to said wiring film; and

a metal protrusion having a root width of 30 μm or less provided on said subbing film.

5,289,039

RESIN ENCAPSULATED SEMICONDUCTOR DEVICE

Yoshihiro Ishida, Tokorozawa; Katsuji Komatsu; Seiichi Mimura, both of Kawagoe; Kikuo Takenouchi, Higashimurayama; Isao Yabe, Tokorozawa; Shingo Ichikawa, Sayama, and Yoshihiro Shimada, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

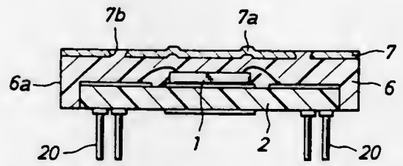
Continuation of Ser. No. 652,326, Feb. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 263,669, Oct. 27, 1988, abandoned. This application Jul. 7, 1992, Ser. No. 912,065

Claims priority, application Japan, Feb. 5, 1988, 63-25516; May 10, 1988, 63-111560; Jul. 28, 1988, 63-188854

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—796 **5 Claims**



1. A resin encapsulated semiconductor device in which an IC chip having an upper surface is mounted on a resin substrate having a plurality of contact terminals on a lower surface thereof, comprising a metal heat radiating member embedded in an encapsulating resin with an upper surface thereof facing away from the IC chip being exposed to the outside and with a lower surface facing toward the IC chip being substantially parallel to and in non-contact with the IC chip to provide a gap between said lower surface and the IC chip completely filled with said resin, the lower surface of said metal heat radiating member having a projecting portion at a position corresponding to said IC chip to provide a smaller gap between the lower surface of the metal heat radiating member and the IC chip, whereby heat of the IC chip is transferred to said metal heat radiating member through the encapsulating resin in the gap.

5,289,040

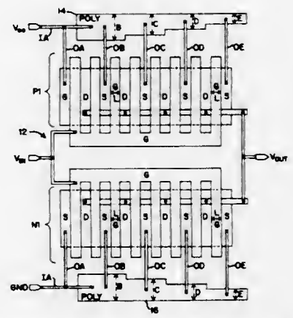
COMPENSATING LEAD STRUCTURE FOR DISTRIBUTED IC COMPONENTS

Alan C. Rogers, Palo Alto, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 12, 1991, Ser. No. 743,697

Int. Cl.[5] H01L *23/48, 27/02*

U.S. Cl. 257—666 **22 Claims**



1. A compensating structure for an integrated circuit (IC) device having a distributed IC electrical component of distributed electrical component elements, said distributed IC electrical component being subject to a first variation in an electrical operating parameter caused by uncontrolled process variation in exposure and etching steps during fabrication of the IC device comprising:

an electrical lead structure coupled to said IC electrical component, said electrical lead structure being constructed to cause a second variation in said electrical operating parameter of the IC electrical component in response to the uncontrolled process variation;

said electrical lead structure comprising an etchable conductive layer constructed in a configuration of graduated coupling widths forming a graduated range of respective etchable dimensions arranged in an electrically coupled sequence from a widest coupling width to a narrowest coupling width, and a plurality of secondary leads coupling said graduated coupling widths respectively to the distributed electrical component elements of the IC electrical component;

said electrical lead structure being constructed so that the second variation is in a parameter value direction opposite that of the first variation by varying the number of distributed electrical component elements in the distributed IC electrical component for process compensation.

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5,289,041

SPEED CONTROL SYSTEM FOR A VARIABLE SPEED WIND TURBINE

William E. Holley, Pleasanton, Calif., assignor to U.S. Windpower, Inc., Livermore, Calif.

Continuation-in-part of Ser. No. 762,924, Sep. 19, 1991, Pat. No. 5,155,375. This application Aug. 17, 1992, Ser. No. 931,200

Int. Cl.[5] H02P *9/00*; **F03D** *7/00*

U.S. Cl. 290—44 **20 Claims**



1. A controller for a variable speed electrical generator in a wind turbine having at least one aerodynamic surface sweeping a swept area that defines a rotor tip plane having a yaw error angle with respect to a wind that may vary in speed and direction over time, the wind turbine converting the wind energy into a driving torque applied to a generator rotor, said controller comprising:

sensor means for sensing a yaw error angle;

wind speed observer means responsive to the yaw angle error for predicting a wind speed over said swept area at a subsequent point in time;

rotor speed selection means responsive to the predicted wind speed for selecting a desired rotor speed at said subsequent point in time; and

rotor speed stabilizer means for selecting a control parameter to be applied to control a rotor speed at said subsequent point in time, said control parameter being selected so that the rotor speed will approximate said desired rotor speed.

5,289,042

WIND OPERATED GENERATOR

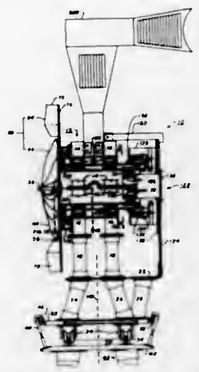
Edward Lis, 2530 W. Shakespeare, Chicago, Ill. 60647

Filed Dec. 11, 1992, Ser. No. 989,649

Int. Cl.[5] F03D *1/02, 11/00*

U.S. Cl. 290—55 **12 Claims**

1. Wind operated generator comprising a housing means having a shaft opening, outer turbine means having a shaft extending through said shaft opening, an inner turbine means coaxially and coplanarly arranged with respect to said outer turbine means, roller means for supporting said inner and outer turbine means with respect to each other and said housing, magnetic means supported by said inner and outer turbine means, roller ring means interposed co-axially between said inner and outer turbine means, and electromagnetic pick-up means juxtaposed to said magnetic means to provide an electrical output, said inner turbine means directing a coplanar flow



of air to actuate said outer turbine means to rotate counter to the rotation of said inner turbine means.

5,289,043

SWITCHING SYSTEM FOR SELECTIVELY ENABLING ELECTRICAL POWER TO BE APPLIED TO PLURAL LOADS

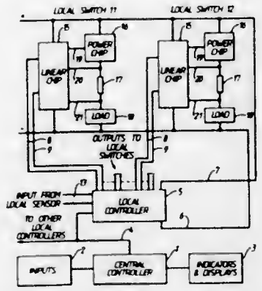
Andrew Marshall, Stevenage; Derek Colman, Bromham; Philip J. Cavanagh, Biddenham, and David P. Dale, Newport Pagnell, all of United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 164,366, Mar. 4, 1988, Pat. No. 4,977,476. This application Jul. 27, 1990, Ser. No. 558,908

Claims priority, application United Kingdom, Mar. 6, 1987, 8705328

Int. Cl.[5] H02J *1/00*

U.S. Cl. 307—38 **17 Claims**



1. A switching system for selectively enabling electrical power to be applied to a plurality of loads, said switching system comprising:

a plurality of local switches respectively connected to a corresponding one of said plurality of loads, each of said plurality of local switches including

first semiconductor component means comprising at least one power bipolar semiconductor switching element, said power bipolar semiconductor switching element having a semiconductor body of vertical construction provided with top and bottom major faces and having a controlled current path extending from one major face to the other major face,

the corresponding one of said plurality of loads being connected in series to the semiconductor body of said power bipolar semiconductor switching element and across a power supply,

said power bipolar semiconductor switching element including a base, an emitter and a collector,

control input means connected to the base of said power bipolar semiconductor switching element and including voltage dropping means,

second semiconductor component means connected to said control input means and including means responsive to a control signal selectively to produce output drive signals applied to said control input means of said first semiconductor component means for activating said power bipolar semiconductor switching element to be conductive,

resistor means having first and second terminals at its opposite ends respectively connected to said power bipolar semiconductor switching element and to said load corresponding thereto, and

first and second conductors connected to said second semiconductor component means and to said first and second terminals at the opposite ends of said resistor means for providing voltage data from said resistor means to said second semiconductor component means in response to the occurrence of current through said corresponding load; and

central controller means operably connected to each of said plurality of local switches for selectively transmitting control signals to respective second semiconductor component means of selected local switches and to which said second semiconductor component means of the corresponding local switch is responsive;

each of said power bipolar semiconductor switching elements of a respective one of said plurality of local switches switching from a non-conductive state to a conductive state for providing electric current to the load corresponding thereto in response to an output drive signal from said second semiconductor component means applied to said control input means conditioned upon a control signal from said central controller means being selectively applied to said second semiconductor component means of respective local switches and to which said second semiconductor component means of a selected local switch is responsive.

5,289,044

ELECTRONIC SYSTEM SWITCHABLE BETWEEN ITS PRIMARY CIRCUIT AND STANDBY CIRCUIT

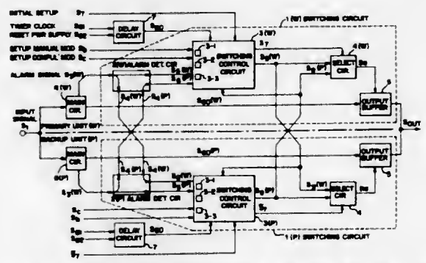
Hiroyuki Iwaki, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Aug. 19, 1992, Ser. No. 932,331

Claims priority, application Japan, Aug. 20, 1991, 3-207894

Int. Cl.[5] H02J *1/10*

U.S. Cl. 307—64 **7 Claims**



1. A switching system comprising a first unit and a second standby unit, each unit having a main circuit (6), said main circuit outputting a first alarm signal when a malfunction takes place in said main circuit; a first one (6(W)) of said main circuits being in operation and a second one (6(P)) of said main circuits as a standby circuit to support said first main circuit (6(W)), circuit configuration of said two units being substantially identical to each other, the switching system further comprising:

a first switching circuit (1(W)) of the first unit, having a first alarm detection circuit, coupled to said first main circuit, for receiving said first alarm signal and for transmitting a second alarm signal (S_4W) to a second switching circuit (1(P)) of the second standby unit (P) upon receiving the first alarm signal from said first main circuit (6(W)), said first switching circuit also having a first switching control circuit, coupled to said first alarm detection circuit and to a first selecting circuit, said first selecting circuit being coupled to a first buffer circuit that is serially coupled to an output from the first main circuit, said first switching control circuit being adapted for actuating said first selecting circuit to enable said first buffer circuit to pass said output in response to receiving an alarm signal from said second switching circuit,

said second switching circuit (1(P)) of the second standby unit (P) having a second alarm detection circuit, coupled to said second main circuit, for receiving said second alarm signal and a third alarm signal from said second main circuit, said second switching circuit also having means for selecting the second main circuit (6(P)) of the second standby unit, said second switching circuit (1(P)) of the standby unit further having means for transmitting a control signal $S_9(P)$) to disable said first buffer circuit of the first unit in response to receiving said second alarm signal.

5,289,045

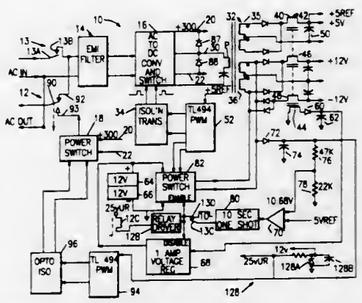
UNINTERRUPTIBLE POWER SUPPLY

James V. Lavin, Newbury Park; Loy L. Spears, Placentia, and Neil S. Symonds, Agoura, all of Calif., assignors to National CSF Corporation, Newbury Park, Calif.

Continuation of Ser. No. 435,197, Nov. 13, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 34,657

Int. Cl.[5] H02J *9/06*

U.S. Cl. 307—64 **19 Claims**



1. An uninterruptible power supply comprising:

an AC to DC converter providing DC electrical power in response to AC electrical power;

a charging circuit coupled to derive electrical energy from the DC electrical power provided by the converter and provide charging current to an energy store;

an output circuit coupled to receive electrical energy from the converter when energy is available therefrom and to receive electrical energy from the energy store when electrical energy is not available from the converter, the output circuit providing at least two electrical outputs, each being separately coupled to receive energy from the AC to DC converter and each having an output signal

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with a predetermined characteristic with at least one of the at least two electrical output signals being a regulated DC voltage output signal and with each of the two electrical outputs receiving energy from the same energy store when energy is not available from the converter, the charging circuit being connected to receive electrical energy from an output signal from the output circuit to provide the charging current.

5,289,046

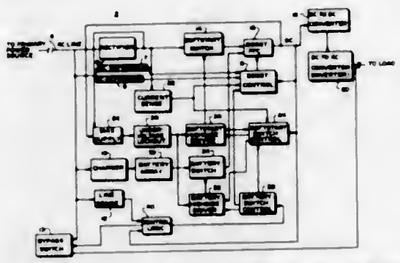
POWER CONVERTER WITH CONTROLLER FOR SWITCHING BETWEEN PRIMARY AND BATTERY POWER SOURCES

James M. Gregorich, Merrimack, N.H.; James A. Daly, Chelsea, Mass., and Gerald J. Brand, Derry, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 10, 1992, Ser. No. 896,250

Int. Cl.[5] H02J *7/00*

U.S. Cl. 307—66 **14 Claims**



1. In a power supply, an apparatus for controlling the selection of a primary power source or a battery power source for powering a load, said apparatus comprising:

means having an input connected to receive AC voltage from said primary power source for rectifying said AC voltage;

first switch means for alternately connecting or disconnecting said rectifying means from an input of a boost power factor correction means in response to a first switch control signal, said boost power factor correction means for adjusting the power factor of a voltage received at its input in response to a boost control signal and producing at an output a regulated DC voltage;

a battery power source comprising one or more batteries;

second switch means for alternately connecting or disconnecting said battery power source from said boost power factor correction means in response to a second switch control signal; and

control means, coupled to the first and second switch means and the boost power factor correction means, for comparing the magnitude of said regulated DC voltage to a first preselected reference and generating an output error signal indicative of the difference therebetween, for comparing the magnitude of the AC voltage from the primary power source to a second preselected reference and generating an input error signal indicative of the difference therebetween and for generating the first and second switch control signals in response to said error signals, whereby either said rectifying means or said battery power source is connected to said boost power factor correction means, and for generating said boost control signal.

5,289,047

SWITCH, ESPECIALLY BATTERY SWITCH FOR HAND-OPERATED ELECTRIC TOOLS

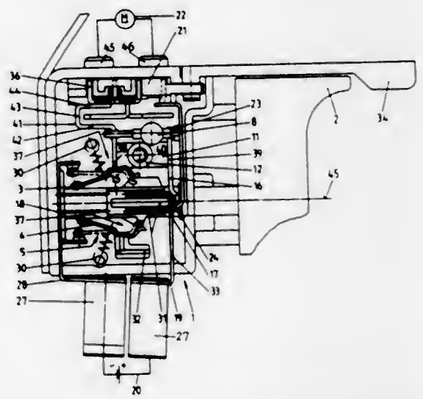
Peter Broghammer, Warmlingen, Fed. Rep. of Germany, assignor to Marquart GmbH, Rietheim-Weilheim, Fed. Rep. of Germany

Filed May 7, 1992, Ser. No. 879,379

Claims priority, application Fed. Rep. of Germany, May 7, 1991, 4114854

Int. Cl.[5] H02D *5/16*

U.S. Cl. 307—125 **8 Claims**



1. In a switch for a hand-operated electric tool having a DC motor energized from a storage battery, the switch including a switch housing;

first switch terminals supported in said switch housing and being connectable to the DC motor;

second switch terminals supported in said switch housing and being connectable to the storage battery;

a movable electric switching contact having open and closed positions;

a manually engageable trigger slidably supported in the housing and cooperating with the switching contact for moving the switching contact into one of its said positions;

an electrically and thermally conducting one-piece bearing plate supported by said switch housing;

control electronics having a power transistor for changing the motor current to vary the speed of the DC motor; said power transistor being supported by the bearing plate and being electrically and heat-transmittingly connected therewith;

a freewheeling diode for protecting the control electronics; said freewheeling diode having first and second diode terminals; said first diode terminal being electrically and heat-transmittingly connected to said bearing plate;

the improvement comprising

an electrically conducting contact bar connected to said second diode terminal of said freewheeling diode, to one of said first switch terminals and to one of said second switch terminals;

an electrically and thermally conducting connecting post mounting to said power transistor on said bearing plate;

wherein said power transistor is electrically connected to one of said second switch terminal by said switching contact in the closed position thereof; and

further wherein said bearing plate is connected to one of said first switch terminals.

5,289,048

ANALOG MULTIPLEXER CIRCUIT HAVING AN ACTIVE LOAD CIRCUIT FUNCTIONING COMMONLY FOR A PLURALITY OF BIPOLAR DIFFERENTIAL AMPLIFYING INPUT CIRCUITS

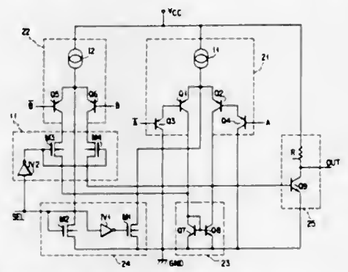
Ichiro Iahihara, and Naoki Itoh, both of Tokyo, Japan, assignors to Kabusbiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 31, 1992, Ser. No. 922,518

Claims priority, application Japan, Aug. 2, 1991, 3-194149

Int. Cl.[5] H03K *17/56;* **G06G** *7/10*

U.S. Cl. 307—243 **14 Claims**



1. A multiplexer circuit comprising:

bipolar differential amplifying input circuits connected to receive analog signals;

an active load circuit connected to said bipolar differential amplifying input circuits;

a selector circuit for controlling operating currents of said bipolar differential amplifying input circuits, in accordance with a selection signal, to select one of said bipolar differential amplifying input circuits; and

switch means inserted between said active load circuit and at least one of said bipolar differential amplifying input circuits, controlled by the selection signal to be turned on to select said at least one of said bipolar differential amplifying input circuits and to be turned off not to select said at least one of said bipolar differential amplifying input circuits.

5,289,049

SIGNAL INPUT SELECTING CIRCUITS

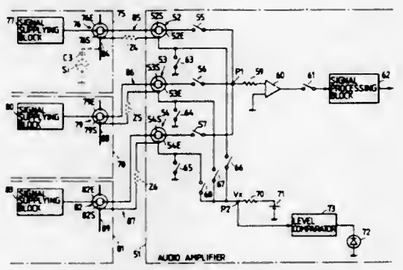
Takashi Kanai, Chiba, and Kaneaki Fujishita, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1992, Ser. No. 927,583

Claims priority, application Japan, Aug. 15, 1991, 3-204509; Oct. 7, 1991, 3-259383

Int. Cl.[5] H03F *1/00*

U.S. Cl. 307—243 **10 Claims**



1. A signal input selecting circuit comprising:

a plurality of signal input terminals each comprising a signal electrode and a reference electrode,

first switch means for selecting one of the signal electrodes of the signal input terminals to be connected with a signal processing block,

second switch means for selecting one of the reference electrodes of the signal input terminals to be connected with a reference potential point,

third switch means for connecting the second switch means with a current supplying portion, and

voltage detecting means for detecting a voltage corresponding to an impedance of the second switch means,

wherein when the voltage detected by said voltage detecting means has a level thereof less than a predetermined level under a condition in which said second switch means is in operation to connect the reference electrode of a selected one of the signal input terminals with the reference potential point and said third switch means is in operation to connect said second switch means with the current supplying portion, said third switch means is turned to disconnect said second switch means from the current supplying portion and said first switch means is caused to connect the signal electrode of the selected one of the signal input terminals with the signal processing block.

5,289,050

CLOCK SIGNAL SELECTION CIRCUIT

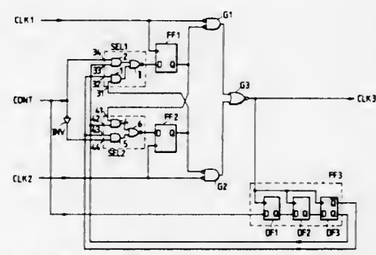
Jin Ogasawara, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Continuation of Ser. No. 860,462, Mar. 30, 1992, abandoned. This application May 28, 1993, Ser. No. 68,570

Claims priority, application Japan, Mar. 29, 1991, 3-121967

Int. Cl.[5] H03K *5/13, 5/22, 7/00, 17/00*

U.S. Cl. 307—269 **5 Claims**



1. A clock signal selection circuit comprising:

(a) first and second selection means;

(b) first and second holding means for holding an input level therein at its output in response to first and second clock signals respectively;

(c) first gate means responsive to said first clock signal for outputting a gated first clock signal in accordance with an output of said first holding means;

(d) second gate means responsive to said second clock signal for outputting a gated second clock signal in accordance with an output of said second holding means;

(e) third gate means for operating and outputting a logic OR of said first and second gated clock signals; and

(f) delay means for delaying a switching control signal to produce a delayed switching control signal,

wherein said first selection means selects either of (i) said switching control signal or (ii) said output of said second holding means in accordance with a condition of said delayed switching control signal;

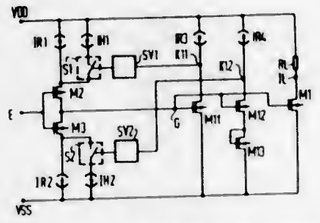
said first holding means holds an output of said first selection means in phase with a first clock signal;

said second selection means selects either of (i) said switching control signal or (ii) said output of said first holding means in accordance with a condition of said delayed switching control signal; and

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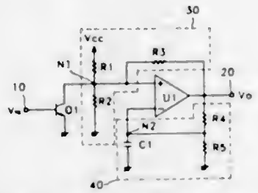
said second holding means holds an output of said second selection means in phase with said second clock signal.

5,289,051
POWER MOSFET DRIVER HAVING AUXILIARY CURRENT SOURCE
Heinz Zitta, Drobollach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Sep. 24, 1992, Ser. No. 950,195
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1991, 4131783
Int. Cl.[5] H03K *3/01, 5/12*
U.S. Cl. 307—270 **9 Claims**



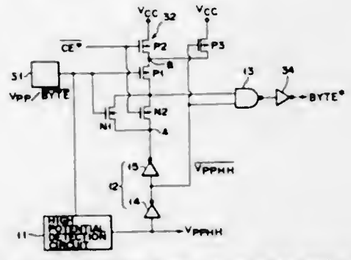
1. In an assembly having an MOS power transistor with an output circuit and an input circuit, a load connected in series with the output circuit of the MOS power transistor, and a control stage for controlling the input circuit of the MOS power transistor, a circuit configuration for triggering the MOS power transistor, comprising:
a constant current source and a switchable auxiliary current source connected parallel to said constant current source for feeding the control stage, said auxiliary current source being turned off at a predetermined period of time after an onset of a control event for the MOS power transistor.

5,289,052
MONOSTABLE MULTIVIBRATOR
Jung-hyeong Ryu, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Nov. 30, 1992, Ser. No. 982,893
Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21976
Int. Cl.[5] H03K *3/284*
U.S. Cl. 307—273 **6 Claims**



1. A monostable multivibrator comprising:
a differential amplifier having a non-inverting input terminal connected to a first node and an inverting input terminal connected to a second node, and responding to a potential difference between said first and second nodes to supply an output signal to an output terminal;
a non-inverted reference potential supplying means for providing a first reference potential to said first node when said output signal is in a first state, and providing a second reference potential to said first node, said second reference potential being lower than said first reference signal when said output signal is in a second state which is different from the first state;
a charging/discharging circuit for charging toward a third reference potential which is lower than said first reference potential and which is higher than said second reference potential when said output signal is in the first state, and discharging toward a fourth reference potential which is lower than said second reference potential when said output signal is in the second state, to thereby provide the charged and discharged potentials to said second node; and
a switching transistor connected between said first node and ground potential and switching in response to an external trigger signal, so that said multivibrator outputs a stabilized monostable oscillating signal in response to repeated trigger signal pulses.

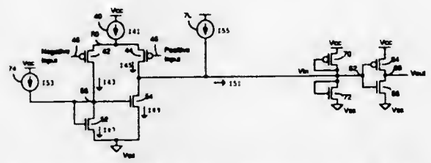
5,289,053
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE
Nobuaki Ohtsuka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Sep. 23, 1991, Ser. No. 763,529
Claims priority, application Japan, Sep. 26, 1990, 2-257903
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.1 **12 Claims**



1. An input-first stage circuit for use in a semiconductor device, comprising:
an input terminal for receiving an externally-applied input signal, the externally-applied input signal having at least a high potential and a low potential;
a MOS transistor having a source, a drain, and a gate coupled to said input terminal and insulated from a channel region between said source and drain by an insulating layer;
a high potential detecting circuit coupled to said input terminal; and
a potential setting circuit for setting the source of said MOS transistor to an intermediate potential between the high potential and the low potential in response to a detection of a high potential of the externally-applied input signal by said high potential detecting circuit, whereby an electrical stress to said insulation layer of said MOS transistor substantially equals the difference between the high potential and the intermediate potential.

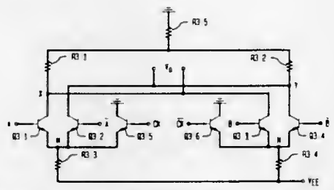
5,289,054
FAST ELECTRONIC COMPARATOR
Charles H. Lucas, Fair Oaks, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Mar. 24, 1992, Ser. No. 856,493
Int. Cl.[5] H03K *5/153, 5/24, 5/08*
U.S. Cl. 307—355 **7 Claims**

1. A semiconductor circuit comprising:
inverter with an input and an output, said inverter being responsive to the voltage at said input of said inverter such that when said voltage at said input of said inverter is greater than a balance-point voltage the output of said inverter switches to a first state, said inverter being responsive to said voltage at said input of said inverter such that when said voltage at said input of said inverter is less than said balance-point voltage said output of said inverter switches to a second state;
first transistor of a first conductivity type, the gate of said first transistor being coupled to the drain of said first transistor, the drain of said first transistor being coupled to said input of said inverter, the source of said first transistor being coupled to the power supply voltage;



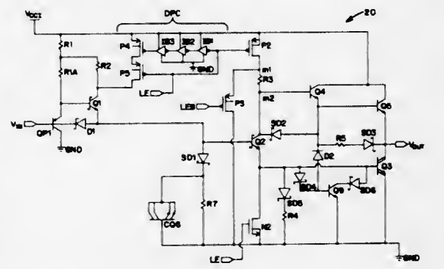
second transistor of a second conductivity type, the gate of said second transistor being coupled to the drain of said second transistor, the drain of said second transistor being coupled to said input of said inverter, the source of said second transistor being coupled to ground; and
said first transistor and said second transistor being the same sizes as the transistors of the same conductivity type in said inverter such that said balance-point voltage of said inverter is established at the input of said inverter.

5,289,055
DIGITAL ECL BIPOLAR LOGIC GATES SUITABLE FOR LOW-VOLTAGE OPERATION
Behzad Razavi, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 17, 1992, Ser. No. 977,342
Int. Cl.[5] H03K *19/086, 19/21*
U.S. Cl. 307—455 **8 Claims**



1. A digital circuit for producing an output voltage responsive to A, B, and C input signals and their respective complements $\overline{A}$, $\overline{B}$, and $\overline{C}$, the circuit comprising:
a) first and second bipolar transistors, each having a base, an emitter, and a collector, the transistors constituting a first differential pair and having emitter terminals electrically connected to a first common node;
b) means for inputting the A signal to the first transistor base and means for inputting the $\overline{A}$ signal to the second transistor base;
c) third and fourth bipolar transistors, each having a base, an emitter, and a collector, the transistors constituting a second differential pair and having emitter terminals electrically connected to a second common node;
d) means for inputting the B signal to the third transistor base and means for inputting the $\overline{B}$ signal to the fourth transistor base;
e) resistive means for electrically connecting a terminal which is maintained at a power supply voltage to the first and second nodes during at least a portion of the time that the circuit is operating;
f) resistive means for electrically connecting the collectors of the first, second, third, and fourth transistors to a terminal or group of terminals maintained at ground potential;
g) means, responsive to the C signal, for alternating the voltage at the first node between two distinct voltage levels such that when the node voltage is at one of the levels, the first and second transistors are disabled, and when the node voltage is at the other level, the first and second transistors are enabled;
h) means, responsive to the $\overline{C}$ signal, for alternating the voltage at the second node between two distinct voltage levels such that when the node voltage is at one of the levels, the third and fourth transistors are disabled, and when the node voltage is at the other level, the third and fourth transistors are enabled; and
i) first and second output voltage terminals, the first output terminal electrically connected to the collectors of the first and third transistors, and the second output terminal electrically connected to the collectors of the second and fourth transistors, CHARACTERIZED IN THAT
j) the alternating means comprise fifth and sixth bipolar transistors, each having a base and an emitter, and further having a collector electrically connected to a terminal maintained at ground potential;
k) the emitter of the fifth transistor is electrically connected to the first node, and the emitter of the sixth transistor is electrically connected to the second node;
l) the alternating means further comprise means for electrically inputting the C signal to the base of the fifth transistor and for inputting the $\overline{C}$ signal to the base of the sixth transistor such that the voltages at the first and second nodes change in a complementary fashion in response to changes in the C signal; and
m) no path for electric current between the power supply voltage terminal and a terminal at ground potential via any one of the first, second, third, and fourth transistors includes a stacked pair of transistors.

5,289,056
BICMOS INPUT BUFFER CIRCUIT WITH INTEGRAL PASSGATE
Susan M. Keown, Portland, and Roy L. Yarbrough, Hiram, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jun. 12, 1992, Ser. No. 898,029
Int. Cl.[5] H03K *17/04*
U.S. Cl. 307—446 **15 Claims**



1. A BICMOS input buffer circuit having bipolar input and output transistors coupled respectively to an input and an output to deliver high and low potential level output signals at the output in response to data signals at the input, comprising:
a CMOS passgate circuit incorporated into the input buffer circuit between the bipolar input and output transistors, said CMOS passgate circuit comprising latch enable inputs for operating the input buffer circuit and integral passgate circuit in a transparent mode for passing data

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signals from the input to the output and in a blocking mode for blocking transfer of data signals according to latch enable signals at the latch enable signal inputs;

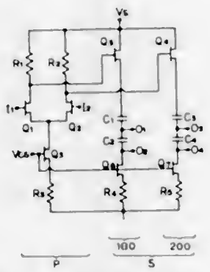
and a dynamic power enhancement circuit (DPC) coupled to the input buffer circuit and CMOS passgate circuit said DPC being constructed to provide transient enhancement of base drive current to enhance transition from the blocking mode to transparent mode at the output of the BIC-MOS input buffer circuit.

5,289,057

LEVEL SHIFT CIRCUIT

Yasushi Kinugasa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 4, 1993, Ser. No. 42
Int. Cl.[5] H03K *19/092, 19/094*
U.S. Cl. 307—475 **6 Claims**



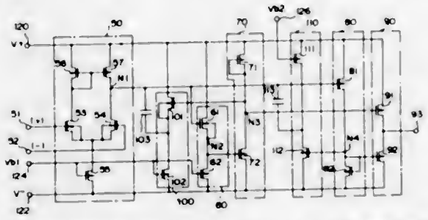
1. A level shift circuit comprising two terminals which are different in potential level, at least two capacitors each incorporating a ferroelectric material and connected to each other in series between the two terminals, and output terminals each provided on one side of each of the capacitors, whereby the output terminals are capable of outputting respective signals which are different in direct-current voltage level.

5,289,058

MOS OPERATIONAL AMPLIFIER CIRCUIT

Seiji Okamoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,771
Claims priority, application Japan, Nov. 28, 1991, 3-314932
Int. Cl.[5] G06G *7/12;* **H03K** *5/22*
U.S. Cl. 307—490 **23 Claims**



1. An operational amplifier circuit composed of MOS FETs comprising:

a first power source terminal having a first power voltage level;

a second power source terminal having a second power voltage level;

a differential amplifier circuit, connected to said first and second power source terminals and having first and second input terminals and a first node, for outputting a first signal having a voltage level proportional to the difference between a voltage level of a first differential input signal applied to said first input terminal and a voltage level of a second differential input signal applied to said second input terminal;

a level shift circuit, connected to said first and second power source terminals, said first node and a second node, for outputting a second signal which is obtained by shifting the voltage level of said first signal;

a first amplifier circuit, connected to said first and second power source terminals, said second node and a third node, for outputting a third signal which is obtained by amplifying said second signal;

a second amplifier circuit, connected to said first and second power source terminals, said first node and a fourth node, for outputting a fourth signal which is obtained by amplifying said first signal; and

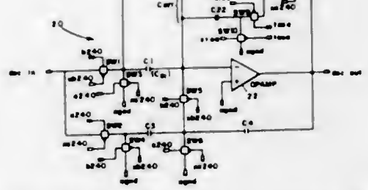
an output circuit, connected to said first and second power source terminals, said third and fourth nodes and an output terminal, for outputting an output signal, said output circuit having first and second conductive MOS transistors which are connected between said first and second power source terminals and are in series with said output terminal which is interposed between said first and second conductive MOS transistors, wherein said first conductive MOS transistor can vary from being completely turned on to just barely being turned off in response to said third signal, and said second conductive MOS transistor can vary from being completely turned on to just barely being turned off in response to said fourth signal.

5,289,059

SWITCHED CAPACITOR DECIMATOR

Juha Pikkarainen, Oulu, Finland, assignor to Nokia Mobile Phones, Ltd., Helsinki, Finland

Filed Jun. 5, 1992, Ser. No. 893,752
Int. Cl.[5] H03B *5/00*
U.S. Cl. 307—520 **5 Claims**



1. A switched capacitor decimator circuit having an input node and an output node, comprising:

amplifier means having an input and an output, said output of said amplifier means being coupled to said output node, said amplifier means having a characteristic DC offset voltage;

a first capacitance (Cint) that is switchably coupled, at a rate equal to a first frequency, between said input and said output of said amplifier means;

a second capacitance (Cin) that is coupled between said input node and said input of said amplifier means, wherein a gain G of said switched capacitor decimator circuit is given by

$$nCin/cint,$$

where n is a ratio of said first frequency to a second, lower frequency; and

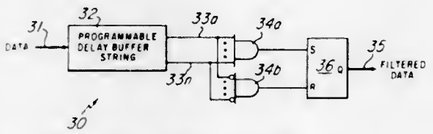
means for DC offset compensating said switched capacitor decimator circuit such that the DC offset voltage of said amplifier means appears at said output node amplified with a gain of unity.

5,289,060

PROGRAMMABLE GLITCH FILTER

Khodor S. Elnashar, Richardson; Jay T. Cantrell, Dallas, and Clarence D. Lewis, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1992, Ser. No. 945,546
Int. Cl.[5] H03B *5/02*
U.S. Cl. 307—520 **11 Claims**



1. A glitch filter for a singal, comprising:

a delay circuit, having an input coupled to the signal, and having a plurality of outputs wherein the delay circuit comprises:

a plurality of programmable delay buffers each with an input and an output connected together in series such that they form a string, wherein the signal is connected to the input of the first delay buffer in the string and the output of each buffer in the string forms the plurality of outputs and wherein the plurality of outputs of the delay circuit provide an incrementally sampled signal without the use of a high frequency clock; and

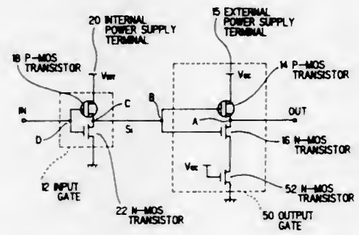
filtering means connected to the plurality of outputs of the delay circuit.

5,289,061

OUTPUT GATE FOR A SEMICONDUCTOR IC

Tadahiko Sugibayashi; Yasuji Koshikawa, and Ryuji Yamamura, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 937,055
Claims priority, application Japan, Aug. 27, 1991, 3-214926
Int. Cl.[5] H03K *5/00*
U.S. Cl. 307—571 **6 Claims**



1. An output gate for a semiconductor IC, comprising:

a P-MOS transistor connected at a gate to a first nodal point to which input signal is supplied, at a source to an external power supply and at a drain to a second nodal point from which an output signal is supplied;

a first N-MOS transistor connected at a gate to said first nodal point and at a drain to said second nodal point; and

a second N-MOS transistor connected at a gate to said external power supply, at a source to ground and at a drain to a source of said first N-MOS transistor;

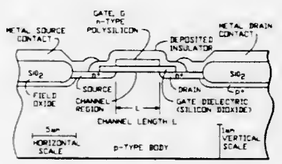
wherein said input signal is generated in an internal circuit which is driven by an internal power supply.

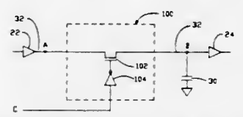
5,289,062

FAST TRANSMISSION GATE SWITCH

David C. Wyland, San Jose, Calif., assignor to Quality Semiconductor, Inc., Santa Clara, Calif.

Continuation of Ser. No. 967,956, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 859,289, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 672,050, Mar. 18, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,873
Int. Cl.[5] H03K *17/687*
U.S. Cl. 307—577 **6 Claims**





1. A fast transmission, integrated circuit switching device responsive to at least one external on/off control signal and including a first input/output node and a second input/output node, said switching device operative to pass or block the bidirectional transmission of external data signals between said first node and said second note, said switching device comprising:

a bidirectional field-effect transistor including a first input-/output terminal and a second input/output terminal and a gate terminal, said first terminal being connected to said first node and said second terminal being connected to said second node, whereby said transistor passes bidirectional external data signals between said first and second nodes when said transistor is turned on and blocks the passage of external data signals between said first and second nodes when said transistor is turned off;

wherein said field-effect transistor has a channel length of no more than 1.5 microns and has a channel width of no less than 1,000 microns, whereby said transistor exihibits a time constant of no more than 0.5 nanoseconds; and

a driver circuit including an external terminal for receiving the at least one external on/off control signal;

wherein said driver circuit provides an internal on/off control signal to said gate terminal of said field-effect transistor, whereby said transistor is turned off or on.

5,289,063

OUTPUT CIRCUIT WITH BUFFER

Yukihisa Orisaka, Tenri; Junji Tanaka, Sakurai, and Yoshiki Sano, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,872
Claims priority, application Japan, Oct. 14, 1991, 3-295018
Int. Cl.[5] H03K *17/04*
U.S. Cl. 307—597 **4 Claims**

1. An output circuit comprising:

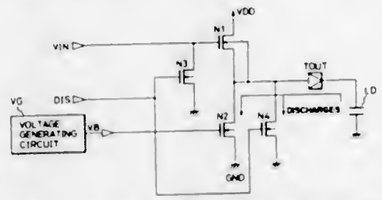
a buffer including

a first transistor which receives at a gate thereof a periodic input voltage;

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a second transistor, said first and second transistors being connected in series across a first level voltage and a second level voltage lower than said first level voltage, a junction of said first and second transistors being connected to an output terminal; and

a third transistor whose drain and source are connected to said output terminal and said second level voltage respectively, a gate of said third transistor receiving a periodical pulse signal for setting said third transistor to an ON state for discharging a load connected to said output terminal therethrough; and



means for applying, to a gate of said second transistor, a first voltage for said second transistor to serve as a bias transfer for charging said load connected to said output terminal with a voltage corresponding to said input voltage, and a second voltage greater than said first voltage for said second transistor to serve as a discharge transistor for discharging said load,

said periodical pulse signal having a pulse width sufficient to discharge said load to a residual level greater than said second level voltage in order that the time required for charging said load again according to the level of said periodic input voltage is reduced.

5,289,064

THREE-PHASE PERMANENT MAGNET STEPPING MOTOR

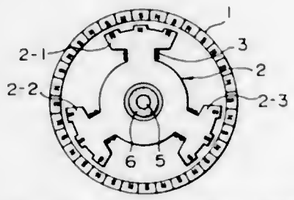
Masafumi Sakamoto, Gunma, Japan, assignor to Japan Servo Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,827

Claims priority, applicatioo Japan, Oct. 18, 1991, 3-297642

Int. Cl.[5] H02K *37/00*

U.S. Cl. 310—49 R **5 Claims**



1. A three-phase permanent magnet stepping motor comprising:

a stator having a plurality of magnetic poles provided so as to be equal in pitch circumferentially and so as to extend radially outwards from an annular yoke, said magnetic poles having a plurality of small teeth provided on the respective top ends of said magnetic poles, said small teeth being equal in pitches and in number to each other between said respective magnetic poles;

three-phase three-pole stator windings wound on said stator;

a rotor having a permanent magnet arranged so as to be rotatable along an outer circumference of said stator with an air gap kept between said rotor and said stator;

said rotor being constituted by a cylindrical permanent magnet material which is magnetized so as to have pairs of north and south poles provided alternately on an inner circumference thereof, the number of said pairs being selected to be Zm (that is, the number of each of the north and south poles being selected to be Zm) under the condition that the value of Zm satisfies:

$$Zm = 3n - 1 \text{ or } Zm = 3n + 1$$

where n is a natural number not smaller than 1; and

said small teeth of each magnetic pole of said stator being circumferentially arranged substantially in the same pitch as that of said poles of said rotor which is determined by said condition of $Zm = 3n - 1$ or $Zm = 3n + 1$, that is, approximately in the pitch of from

$$\frac{360^\circ}{Zm + 2} \text{ to } \frac{360^\circ}{Zm - 2}$$

so that static and dynamic torque of said stepping motor including cogging torque are increased.

5,289,065

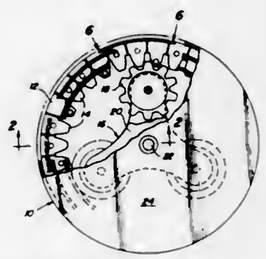
ZERO AIR GAP ORBITING GEAR STEPPER MOTOR

James E. Marshall, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1993, Ser. No. 43,048

Int. Cl.[5] H02K *37/00*

U.S. Cl. 310—49 R **8 Claims**



1. A stepper motor comprising:

a stator gear having a plurality of low reluctance, ferromagnetic, non-permanent magnetic teeth forming sets of pole pieces arrayed in an alternating pattern;

means for inducing magnetic flux independently in each of said sets of pole pieces;

a plurality of radially extending insulative spacers disposed between adjacent pole pieces for reducing flux leakage between adjacent pole pieces;

a rotor including at least one pinion gear having gear teeth which engage the teeth of the stator gear; and

means for controlling opposed electromagnetic charges supplied to said sets of pole pieces forming teeth of the stator gear, said control means sequentially alternating the polarity of the electromagnetic charge supplied to said sets of pole pieces in a desired direction to cause the rotor to move in said direction and holding the rotor in place by fixing the polarity of electromagnetic charge supplied to said sets of pole pieces.

5,289,066

STATOR FOR DYNAMOELECTRIC MACHINE

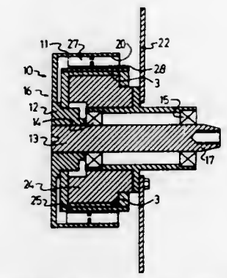
Peter B. Clark, Sandspit, New Zealand, assignor to Cadac Holdings Limited, Auckland, New Zealand

Filed Jan. 28, 1991, Ser. No. 646,379

Claims priority, application New Zealand, Feb. 1, 1990, 232333

Int. Cl.[5] H02K *7/00, 21/12*

U.S. Cl. 310—67 R **12 Claims**



1. A rotary dynamoelectric machine comprising:

a generally cylindrical stator having a stator surface surrounded by a generally cylindrical external rotor rotatable about a rotational axis and having a generally cylindrical rotor surface facing said stator surface and being spaced apart therefrom by a generally cylindrical gap;

a plurality of magnetic poles on said rotor surface facing said stator surface and positioned adjacent said generally cylindrical gap;

wherein said stator has a generally cylindrical substrate of a first material having an outer surface and a thin annular cylindrical layer on said outer surface of said substrate, said annular cylindrical layer having an outer annular surface, a plurality of wound poles superimposed on said outer annular surface, so that the wound poles are adjacent said cylindrical gap and face said rotor, and at least a majority of the wound poles are positioned substantially parallel to the rotational axis of the rotor; and

wherein said thin annular cylindrical layer is formed from one or more layers of an elongate material, said elongate material comprising a soft magnetic material having a magnetic permeability greater than 20.

5,289,067

BEARING DEVICE

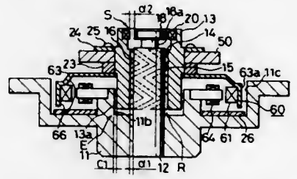
Katsuhiko Tanaka, Yamato; Ikunori Sakatani, Fujisawa; Takeyuki Yoshiba, Fujisawa, and Shigeru Endo, Fujisawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,980

Claims priority, application Japan, Jan. 31, 1992, 4-17002; Oct. 21, 1992, 4-305849

Int. Cl.[5] H02K *7/09*

U.S. Cl. 310—90.5 **13 Claims**



1. A bearing device comprising:

a fixed shaft having a first radial bearing surface; and

a rotational sleeve supported about said shaft in a fitting relationship therewith and having a second radial bearing surface opposed to the first radial bearing surface,

at least one of the first and second radial bearing surfaces having herringbone grooves thereon to form a radial gas bearing to support the sleeve with respect to the fixed shaft,

the fixed shaft having one end portion forming part of a magnetic thrust bearing of aspirating type to support the sleeve with respect to the fixed shaft,

the radial gas bearing having a first radial bearing gap while the magnetic thrust bearing having a second radial bearing gap in communication with said first radial bearing gap and such that the second radial bearing gap is larger than the first bearing gap.

5,289,068

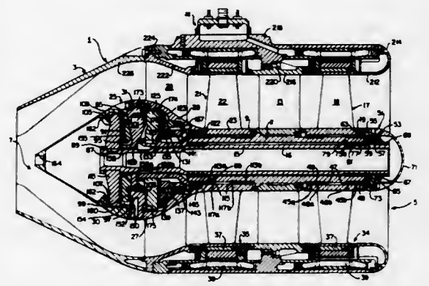
TWO-STAGE SUBMERSIBLE PROPULSOR UNIT FOR WATER VEHICLES

Luciano Veronesi, O'Hara Twp., Allegheny County; Allen L. Morris, Shaler, and Raymond M. Calfo, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1990, Ser. No. 571,969

Int. Cl.[5] H02K *16/00;* **B63H** *5/10, 11/103;* **F04D** *19/02*

U.S. Cl. 310—114 **25 Claims**



1. A submersible propulsor unit, comprising:

a shroud having a water inlet and a water outlet;

a shaft assembly centrally mounted within said shroud between said water inlet and outlet;

first and second propellers, each of which includes a separate hub rotatably mounted on said shaft assembly, wherein said second propeller is located downstream of said first propeller;

first and second electric motors for separately rotating said first and second propellers, wherein each motor includes a rotor mounted around the outer periphery of one of said propellers, and a stator mounted on said shroud around said rotor, and

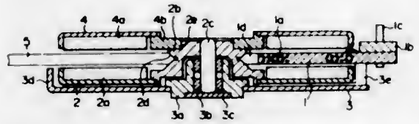
first and second thrust bearing assemblies for absorbing the thrust load generated between the hubs of said first and second propellers and said shaft assembly, respectively, wherein said thrust bearing assemblies are both located on the downstream end of the shaft assembly downstream of said second propeller.

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5,289,069
BRUSHLESS MOTOR

Makoto Hasegawa, Yonago; Kenji Kubo, Ikoma; Naoto Noguchi, Hirakata, and Toshio Imai, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 23, 1991, Ser. No. 748,937
Claims priority, application Japan, Aug. 29, 1990, 2-090859; Aug. 31, 1990, 2-231898
Int. Cl.[5] H02K 21/12
U.S. Cl. 310—156 15 Claims

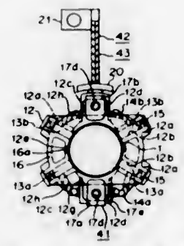


1. A brushless motor comprising:
rotor means which is rotatable on an axis of the brushless motor and which includes permanent magnets arranged circumferentially thereon,
output means connected to the rotor means to rotate with the rotor means, and
stator means which includes electro-magnetic coils energized in order to rotate the rotor means, said stator means having a first space which receives the output means therein and a second space which extends radially from the first space to a region external to the stator means so that an output power of the brushless motor is transmitted from the output means to a region external to the brushless motor through the second space,
the rotor means comprising sub-rotor means which is rotatable on the axis of the brushless motor, the sub-rotor means being fixed to the output means and having permanent magnets whose N poles face S poles of the rotor means through the second space and whose S poles face N poles of the rotor means through the second space.

5,289,070
COMMUTATOR BRUSH DEVICE FOR AUTOMATED ASSEMBLY

Shigeru Shiroyama, and Akira Kuragaki, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushik Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,875
Claims priority, application Japan, Oct. 29, 1991, 3-311624
Int. Cl.[5] H02K 13/00
U.S. Cl. 310—239 2 Claims

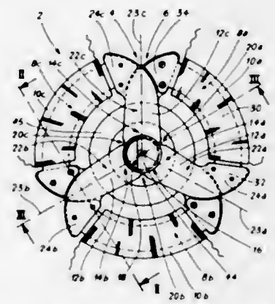


1. A brush device, comprising: a brush holder (12), a brush connector (41), and an insulating plate (16), wherein:
said brush holder is provided with an insertion opening (30) for receiving a cylindrical commutator, brush boxes (12a) which are channel-shaped and are arranged in a radial direction with respect to a center of the insertion opening in one side surface of the brush holder, and projections (12d) which are located between said brush boxes and project outwardly from the insertion opening in the radial direction;
said brush connector is provided with an assembly clamp (17a), a pair of lead wires (14a), and a pair of brushes (13a), wherein the brushes are individually connected to the assembly clamp through the lead wires, and a length of the pair of lead wires is such that the assembly clamp can be moved beyond the projections without interference therewith, from one side of the brush holder to another, opposite side with the pair of brushes individually disposed in the brush boxes to thereby enable and facilitate machine assembly to the brush holder of the brushes to the brush holder; and
said insulating plate closes the brush boxes to thereby form brush receiving channels (12b) to receive the brushes, and the insulating plate is fixed to the brush holder by the piece 17a assembly clamp engaging the projections.

5,289,071
POLYPHASE ELECTROMAGETIC TRANSDUCER WITH A PERMANENT MAGNET, IN PARTICULAR A DRIVE MOTOR

Daho Taghezout, Granges, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Granges, Switzerland

Filed Jul. 22, 1992, Ser. No. 918,672
Claims priority, application France, Jul. 22, 1991, 91 09330
Int. Cl.[5] H02K 1/12
U.S. Cl. 310—254 11 Claims

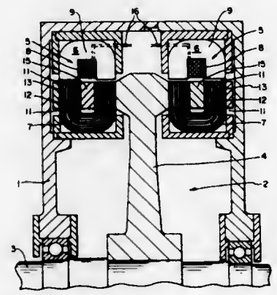


1. A polyphase electromagnetic transducer, in particular a drive motor comprising:
a stator including first and second principal parts, the first principal part defining a stator hole and including at least three magnetic poles, each of such magnetic poles comprising a polar expansion at one end thereof partially defining said stator hole and a polar lug substantially at another end thereof, said lug serving as a magnetic contact, said polar expansions being separate from one another by zones of high magnetic reluctance, said second principal stator part serving to form part of the magnetic circuits of said motor, said stator further including at least three magnetic flux guidance branches, each of such branches magnetically coupling a polar lug of said first principal stator part to said second principal stator part;
a rotor rotatably mounted in said stator hole and including at least one permanent magnet, such rotor being adapted to spin in order to furnish a driving couple to a mechanism to be driven;
at least two coils each mounted on one of said magnetic flux guidance branches, each coil being intended for coupling to an electrical supply source so as to generate a magnetic flux in its associated branch; wherein said first and second principal stator parts of such transducer are situated primarily in two different planes and are at least partially superimposed, each of said magnetic flux guidance branches bearing one of said coils being situated primarily in a region intermediate said principal stator part planes.

5,289,072
ELECTRICAL MACHINE

Andreas Lange, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

PCT No. PCT/EP91/01955, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/10023, PCT Pub. Date Jun. 11, 1992
PCT Filed Oct. 15, 1991, Ser. No. 910,345
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037231
Int. Cl.[5] H02K 1/22
U.S. Cl. 310—266 5 Claims



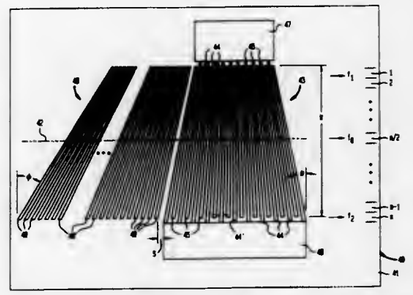
1. A current rectifier-excited synchronous electrical machine, comprising:
a rotor defining an axis of rotation, said rotor including a rotor shaft, a stator housing, and a central disk, said rotor shaft mounted in said housing, said central disk extending radially outward from said rotor and defining an outer circumference,
at least one ring-shaped pole structure secured to said disk outer circumference and disposed coaxial to said axis of rotation, said pole structure including a plurality of permanent magnets, soft iron elements and insulators, said permanent magnets and soft iron elements disposed in interleaved fashion, said insulators formed of magnetically and electrically nonconductive material and disposed between each of said magnets and iron elements, said magnets, iron elements and insulators disposed in two side-by-side rows;
each said pole structure opposed by a stator assembly comprising an outside stator and an inside stator, said outside stator disposed radially outward of said pole structure, said inside stator disposed radially inward of said pole structure, said outside and inside stators comprising armature elements of a general U-shape defining a pair of ends disposed adjacent and facing said pole structure; and
a single armature winding for operably exciting said stator, said armature winding disposed only in one of said outside stator and inside stator, the other of said outside and inside stator being void of an armature winding.

5,289,073
UNIDIRECTIONAL SURFACE ACOUSTIC WAVE TRANSDUCER

Elio A. Mariani, Hamilton Square, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1992, Ser. No. 973,346
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—313 D 5 Claims

1. A SAW structure comprising:
a piezoelectric substrate having an axis of propagation;
a SAW transducer having a plurality of interdigital, quarter-wave electrodes mounted on the substrate transverse to the axis with an electrode spacing on one side of the axis being different from an electrode spacing on the other side of the axis, the widths of and spacing between the electrodes tapering in a direction transverse to the axis, and wherein the transducer includes a first and a second bus bars connected to alternate ones of the interdigital electrodes; and
acoustic-wave reflector means mounted on the substrate adjacent one end of the transducer for reflecting acoustic

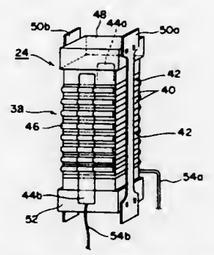


waves propagating on the substrate in a first direction which is transverse to the electrodes to a second direction which is substantially opposite to the first direction, wherein the acoustic-wave reflector means includes a discontinuity grating which is aligned on the substrate transverse to the axis and such that surface acoustic waves reflected by the reflector means constructively add to acoustic waves propagating on the substrate in the second direction and wherein said discontinuity grating has spaced reflective fingers having spacings that are different on opposite sides of the axis.

5,289,074
PIEZO-ELECTRIC DEVICE TYPE ACTUATOR

Mitsuhiro Mori, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,662
Claims priority, application Japan, Oct. 9, 1991, 3-260926
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—328 3 Claims



1. A piezoelectric device type actuator, comprising:
a laminated piezoelectric device including a plural number of laminated piezoelectric ceramics layers, a plural number of internal electrodes sandwiched between the respective piezoelectric ceramics layers, a first external electrode connected to alternate ones of said external electrodes, and a second external electrode connected to the other alternate ones of said internal electrodes, said lami-

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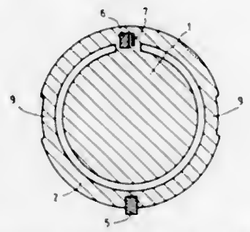
nated piezoelectric device having first and second side surfaces on the opposite lateral sides thereof;
a stationary base member;
a pair of resilient plates extended along the first and second side surfaces of said laminated piezoelectric device, respectively, and each welded at one side of said base member;
a movable block welded to the other end of each of said resilient plates while applying a predetermined compressive force to said laminated piezoelectric device;
a first block interposed between said base member and one end of said laminated piezoelectric device, and securely welded to one end of each of said pair of resilient plates; and
a second block interposed between said movable block and the other end of said laminated piezoelectric device, and securely welded to the other end of each of said pair of resilient plates.

5,289,075

RESONATOR FOR A THERMOSTATICALLY-CONTROLLED OSCILLATOR HAVING LOW POWER CONSUMPTION AND RAPID HEATING

Raymond J. Besson, Besancon; Serge Gallinu, Audeux, and Marc Mourey, Besancon, all of France, assignors to Ecole Nationale Superieure de Mecanique et Des Microtechniques, France

Filed Mar. 16, 1993, Ser. No. 33,092
Claims priority, application France, Mar. 17, 1992, 92 03175
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—367 **12 Claims**



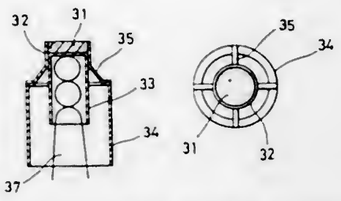
1. A piezoelectric resonator having a crystal with adherent or non-adherent electrodes, the resonator being of the type comprising a sealed box containing at least one piezoelectric crystal interposed between first and second electrodes that are connected respectively to first and second conductors extending outside the box, and fastening means for fastening the piezoelectric crystal inside the box, the piezoelectric crystal comprising a central portion and a peripheral portion forming a ring that surrounds the central portion at a distance therefrom and that is connected thereto by an intermediate portion that is narrow in the radial direction and in which a slot is formed, wherein the peripheral portion is connected to the central portion via a single connection bridge constituted by a non-slotted portion of said intermediate portion extending over a small fraction of the periphery of said intermediate portion, and wherein the central portion constitutes the active vibration portion of the crystal while the peripheral portion is secured in the box by the fastening means which is disposed in such a manner as to be thermally as remote as possible from the single connection bridge, said secured portion and said bridge constituting means for suspending the crystal.

5,289,076

CATHODE STRUCTURE FOR A CATHODE RAY TUBE

Gyeong S. Lee, Kyungsangbook-Do, Rep. of Korea, assignor to GoldStar Co. Ltd., Rep. of Korea

Filed Dec. 17, 1991, Ser. No. 808,493
Claims priority, application Rep. of Korea, Dec. 24, 1990, 90-20820
Int. Cl.[5] H01J *1/24*
U.S. Cl. 313—37 **1 Claim**



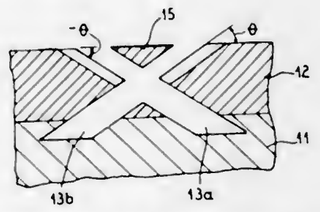
1. A cathode structure for a cathode ray tube comprising:
a cathode cup containing an electron emissive substance for emitting thermal electrons;
a cathode sleeve having an upper end and fixedly holding said cathode cup to transfer the heat from a heat source to said cathode cup;
a cathode holder having an upper end and a lower end for holding said cathode sleeve outwardly; and
a plurality of metal ribbons for supporting said cathode sleeve, said ribbons being integrally formed with said cathode cup with first upper ends connected to said cup and second lower free ends fixed to the upper end of said cathode holder, thereby causing thermal expansion of said cathode sleeve to occur towards said cathode holder so as to maintain a constant gap between said cathode cup and a first electrode of an electron gun.

5,289,077

MICROELECTRONIC BALLISTIC TRANSISTOR

Ryuichi Ugajin, Kanagawa, Japan, assignor to Sony Corporation, Tokyn, Japan

Filed Jan. 27, 1992, Ser. No. 826,459
Claims priority, application Japan, Jan. 28, 1991, 3-026944; Apr. 19, 1991, 3-115431; Apr. 19, 1991, 3-115432
Int. Cl.[5] H01J *19/24, 1/30*
U.S. Cl. 313—308 **13 Claims**



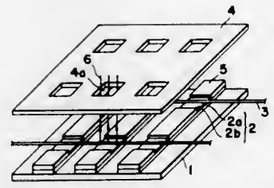
1. A vacuum microelectronic transistor, comprising a substrate, an emitter formed on said substrate for emitting electrons therefrom, a collector formed on said substrate in an opposing spaced relationship from said emitter for receiving electrons from said emitter, and a gate electrode formed on said substrate in a spaced relationship from said emitter and collector for controlling arrival of electrons from said emitter to said collector, said emitter having a linear end extending at an angle greater than 0 degrees but smaller than 90 degrees with respect to a normal line to a plane of said substrate, and wherein said collector has a linear end extending at an angle to the angle of said linear end of said emitter with respect to the normal line to the plane of said substrate.

5,289,078

ELECTRON SOURCE FOR A DISPLAY DEVICE

Satoshi Kitao, Kyoto; Kinzo Nooomura, Ikoma; Jumpei Hashiguchi, Neyagawa, and Ryuichi Murai, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 25, 1991, Ser. No. 797,073
Claims priority, application Japan, Nov. 29, 1990, 2-333961
Int. Cl.[5] H01J *19/12*
U.S. Cl. 313—310 **7 Claims**



1. A thermionic electron source for a display device comprising:
a plurality of linear thermionic cathodes for emitting electron beams;
an electron beam take-out electrode which is disposed substantially in a parallel relationship with said linear thermionic cathodes; and
a plurality of support means disposed in an X-Y matrix configuration with respect to said cathodes for supporting said linear thermionic cathodes, each of said support means having a contact portion held in contact with at least a respective portion of one of said linear thermionic cathodes;
wherein said electron beam take-out electrode is formed with apertures for passing the electron beams therethrough such that each of the apertures confronts a respective one of said contact portions of said support means; and
wherein a plurality of control electrodes for controlling the electron beams emitted from said linear thermionic cathodes are formed integrally with said support means.

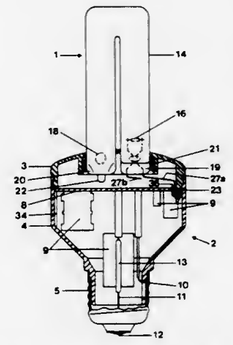
5,289,079

COMPACT FLUORESCENT LAMP AND BASE COMBINATION, AND METHOD OF LAMP-BASE ASSEMBLY

Horst Wittmann, Stadtbergen, Fed. Rep. of Germany, assignor to Patent-Treuband-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Apr. 15, 1991, Ser. No. 685,547
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1990, 4012684
Int. Cl.[5] H01J *5/50*
U.S. Cl. 313—318 **24 Claims**

1. Compact fluorescent lamp having
a discharge vessel (**1**);
electrodes (**16, 17**) located in the discharge vessel;
current supply leads (**27*a*, 27*b*, 28*a*, 28*b***) extending from one end of the discharge vessel;
a base (**2**) including a cap portion (**3**) and a bottom portion (**4**), and interfitting means (**6, 7**) for longitudinally, axially, telescopically joining the cap portion and the bottom portion;
retention means (**21**) for securely retaining the discharge vessel in the cap portion (**3**) with the current supply leads extending into the cap portion;
a circuit board (**8**) located in the bottom portion, extending transversely thereof, and circuit means (**8*a*, 9**) electrically and mechanically secured to the circuit board;
a power connection means (**5, 10, 11**) secured to the bottom portion and electrically connected to the circuit means (**8*a*, 9**) on the circuit board, and
an arrangement to electrically and mechanically securely connect the current supply leads (**27*a* . . . 28*b***) to the circuit means (**8*a*, 9**) on the circuit board (**8**),
said arrangement comprising
holding projections (**32, 24, 25, 26**) secured to the cap portion, located adjacent the walls thereof, engaging end regions (**31**) of the current supply leads, and aligning the end regions of said current supply leads to extend in axial direction, at least in part along the holding projections; and
bow, frame or arched elements or arched clip wires (**35, 36,**



37, 38) secured to said circuit board (**8**) and electrically connected to said circuit means (**8*a*, 9**),
said bow, frame, or arched elemens or clip wires being located close to the lateral edges of the circuit board (**8**) and adjacent the inner walls of the bottom portion (**4**) in radial alignment with the holding projections and include engagement portions extending essentially parallel to the printed circuit board (**8**) to engage the end regions portions of the current supply leads and to clamp said end regions (**31**) into mutual intimate contact, said engagement portion and said end region being positioned between the wall of the bottom portion (**4**) of said base (**2**) and the respective holding projection upon axial joining of the cap portion (**3**) and the bottom portion (**4**) of the base, and to provide for electrical connection between the electrodes (**16, 17**) of the discharge vessel and the circuit means (**8*a*, 9**) of the circuit board (**8**).

5,289,080

MASK FRAME DAMPER FOR COLOR CATHODE RAY TUBES

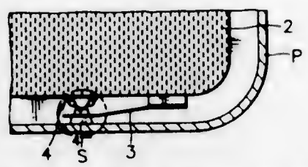
Youngki Park, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed May 1, 1992, Ser. No. 876,946
Claims priority, application Rep. of Korea, Aug. 21, 1991, 91-13282
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 **16 Claims**

1. In a cathode ray tube having an electron gun, a display panel receiving electrons from the gun, a shadow mask, a mask frame for supporting the shadow mask, and means for fixing the mask frame in position with respect to the panel, including a first mounting element fixed to the panel and a second mounting element extending from the mask frame, the improvement wherein damping means for absorbing vibrations is disposed between the mask frame and the first mounting element,

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wherein the damping means comprises an elongate element including a base fixed to the mask frame, a first shock absorption part extending from the base, a second shock absorption



part extending from the first shock absorption part, and a first ball and a second ball installed on the first and second absorption parts, respectively.

5,289,081

FLUORESCENT LAMP WITH PHOSPHOR HAVING COATED PHOSPHOR PARTICLES

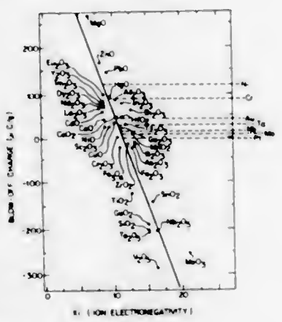
Masaaki Tamatani, Fujisawa; Hidenori Ito, Yokosuka; Akira Taya, Kawasaki; Yoji Yuge, Chigasaki; Kazuaki Nakagawa, Urayasu; Shigeru Ando, Hiratsuka, and Kenji Terashima, Chigasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Toshiba Lighting & Technology Corporation, Tokyo, both of Japan

Filed Nov. 27, 1991, Ser. No. 798,727

Claims priority, application Japan, Nov. 28, 1990, 2-327130; Nov. 28, 1990, 2-328167; Jan. 10, 1991, 3-65739; Apr. 24, 1991, 3-94453; Aug. 30, 1991, 3-220637

Int. Cl.[5] H01J *61/44*

U.S. Cl. 313—487 **21 Claims**



1. A fluorescent lamp comprising:
a light transmission glass tube;
a phosphor layer formed on the inner wall of the light transmission glass tube and including phosphor particles;
gases filled in the light transmission glass tube and including a mercury gas and rare gases; and
a means, arranged in the light transmission glass tube, for generating positive column discharge in the gas;
wherein said phosphor particles are coated with a coating material comprising at least one oxide of a substance selected from the group consisting of Mg, Ca, Sr, Ba, La, Eu, Y, Tm, Dy, Nd, Cd, Co, Zn, Pb, Ni, Sc, Hg, Cu, Mo, In, Hf, Ga, Ce, Cr, Fe, Zr, As, B, Mn, Tl, Bi, Ge, Sn, Ta, P, V and Nb, and the charging tendency of the phosphor particle coated with said oxide is negative relative to an oxide of a substance having a cation electronegativity X_i 7.0 but positive relative to an oxide of a substance having a cation electronegativity X_i of 11.8, wherein $X_i=(1+2z)$ X_0 in which z represents an ion valency of a cation and X_0 represents Pauling's electronegativity.

5,289,082

LED LAMP

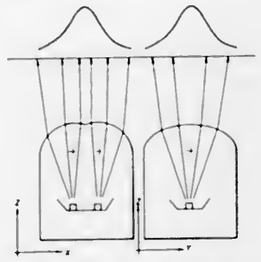
Satoshi Komoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 6, 1991, Ser. No. 755,841

Claims priority, application Japan, Sep. 7, 1990, 2-237649

Int. Cl.[5] H01L *33/00;* **G02B** *3/04*

U.S. Cl. 313—500 **5 Claims**



1. An LED lamp including a lead having a tip portion on which first and second semiconductor chips are mounted, and an envelope surrounding the chips;
wherein
the envelope has upper and lower portions;
the lower portion is cylindrical in shape and has an axis extending through the lead; and
the upper portion is formed of part of a first ellipsoid which has an axis extending through the first semiconductor chip and being parallel with the lead, the first ellipsoid including points which are at different distances from a center of the first ellipsoid, and part of a second ellipsoid which has an axis extending through the second semiconductor chip and being parallel with the lead, the second ellipsoid including points which are at different distances from a center of the second ellipsoid.

5,289,083

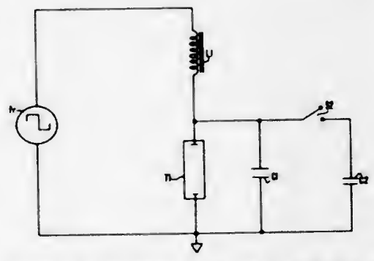
RESONANT INVERTER CIRCUITRY FOR EFFECTING FUNDAMENTAL OR HARMONIC RESONANCE MODE STARTING OF A GAS DISCHARGE LAMP

Fazle S. Quazi, Boulder, Colo., assignor to Etta Industries, Inc., Boulder, Colo.

Continuation of Ser. No. 332,055, Apr. 3, 1989, abandoned. This application Jun. 18, 1991, Ser. No. 715,749

Int. Cl.[5] H05B *39/04*

U.S. Cl. 315—224 **7 Claims**



1. Circuitry for starting and operating a gas discharge lamp, the operation of which is initiated in response to the voltage thereacross exceeding a predetermined value, said circuitry comprising:
an excitation signal source including inverter switching means for converting DC voltage to produce a high frequency alternating current excitation signal at a predetermined fundamental frequency for energizing the lamp;
reactance means responsive to the excitation signal and connected in circuit with the lamp, said reactance means including inductive means and capacitive means and having an initial natural resonant frequency at starting of the lamp, said initial natural resonant frequency being selected from the group consisting of the fundamental frequency and the second and higher harmonics of said fundamental frequency;
sensing means for sensing operation of the lamp; and
switching means connected to said sensing means and said reactance means for varying the impedance of one of said inductive means and said capacitive means from a first nonzero value to a second nonzero value in response to the sensing means sensing initiation of the lamp operation, whereby said natural resonant frequency of said reactance means is changed form said initial value to a different value which is also selected from the group consisting of the fundamental frequency and the second and higher harmonics of said fundamental frequency.

5,289,084

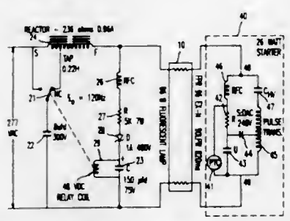
LAMP ARRANGEMENT EMPLOYING A RESONANT CIRCUIT FORMED FROM AN AUTOTRANSFORMER AND A CAPACITOR WHERE THE CAPACITOR IS SWITCHED OUT OF THE RESONANT CIRCUIT AND INTO A POWER FACTOR CORRECTING CIRCUIT WHEN THE IGNITION OF THE LAMP IS SENSED

Joe A. Nuckolls, Blacksburg, Va., and Yan Wang, Northbrook, Ill., assignors to Hubbell Incorporated, Orange, Conn.

Filed Jun. 26, 1992, Ser. No. 904,969

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—247 **7 Claims**



1. An improved energy efficient ballast circuit for a commercial fluorescent lighting system using a standard commercial high voltage feed of between 220 and 347 volts for operating a high wattage, high lumen per watt fluorescent lamp, said circuit comprising:
starter means for preheating said lamp and for providing low energy high voltage ionization pulses, said starter means including a positive temperature coefficient resistor;
resonant circuit means including an inductance means and a capacitance means for generating an open circuit voltage significantly higher than said high voltage feed wherein said open circuit voltage is sufficient to start-up and stabilize said lamp;
relay means, responsive to a full current draw by said lamp, to clamp off said starter means and to transfer said capacitance means from said resonant circuit whereby said transferred capacitor means acts as a power factor corrector capacitance during normal lamp operation.

5,289,085

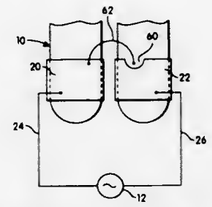
CAPACITIVELY DRIVEN RF LIGHT SOURCE HAVING NOTCHED ELECTRODE FOR IMPROVED STARTING

Valery A. Godyak, Brookline; Robert B. Piejak, Wayland, and Benjamin M. Alexsandrovich, Brookline, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Oct. 16, 1992, Ser. No. 961,755

Int. Cl.[5] H05B *41/16*

U.S. Cl. 315—248 **8 Claims**



1. A fluorescent light source comprising:
a fluorescent lamp having first and second electrodes disposed at or near the ends thereof for capacitive coupling of RF electrical energy to a low pressure discharge within said fluorescent lamp, said first and second electrodes comprising conductive layers on the outside surface of said fluorescent lamp, one of said conductive layers defining a notch therein and a localized region of said fluorescent lamp;
starting means for initiating a low pressure discharge within said fluorescent lamp comprising means coupled to said RF source for applying the voltage of said RF source to said localized region of said fluorescent lamp; and
a RF source having a first output lead electrically coupled to said first electrode and a second output lead electrically coupled to said second electrode.

5,289,086

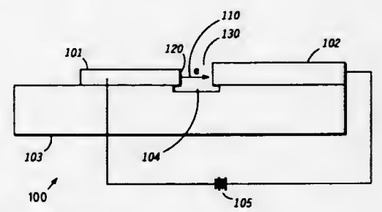
ELECTRON DEVICE EMPLOYING A DIAMOND FILM ELECTRON SOURCE

Robert C. Kane, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1992, Ser. No. 877,931

Int. Cl.[5] H01J *1/46;* **H05B** *41/00*

U.S. Cl. 315—349 **14 Claims**



1. An electron device comprising:
a supporting substrate having a major surface;
a diamond material electron emitter disposed on a part of the major surface of the supporting substrate and having an emitting surface for emitting electrons; and
an anode, for collecting at least some of any emitted electrons, disposed on a part of the major surface distally with respect to the emitting surface of the diamond material electron emitter and defining an interelectrode region therebetween.

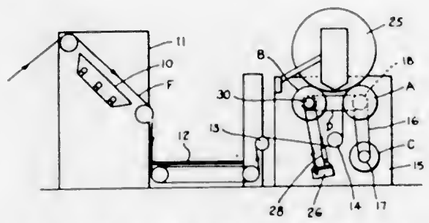
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,087

SURFACE WINDER DRIVE AND METHOD

Shala W. Summey, III, Greenville, S.C., assignor to Alexander Machinery, Inc., Mauldin, S.C.

Filed Nov. 2, 1992, Ser. No. 970,259
Int. Cl.[5] B65H *18/16*
U.S. Cl. 318—7 **10 Claims**



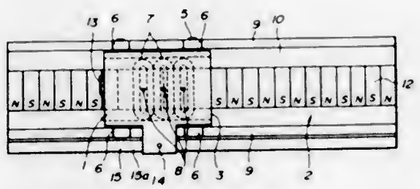
1. Apparatus for driving a surface winder having a drive roll and a packing roll for taking up and letting off a web from a web roll wound upon a roll core comprising:
a motor driving said drive roll for taking up a web upon said web roll;
means driving said packing roll;
a friction brake; and
means connecting said friction brake to said packing roll for varying the packing ratio between the drive roll and the packing roll.

5,289,088

DC LINEAR MOTOR

Toshiyuki Andoh, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 861,022
Claims priority, application Japan, Apr. 3, 1991, 3-098243; Jun. 24, 1991, 3-151462; Jun. 24, 1991, 3-151463; Jul. 24, 1991, 3-182814
Int. Cl.[5] G11B *5/55, 5/596*
U.S. Cl. 318—135 **56 Claims**



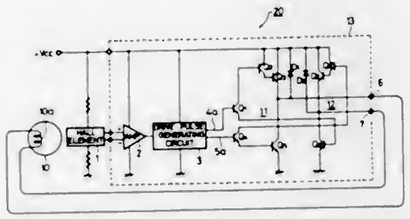
1. A DC linear motor, comprising:
a stator;
a movable part movable relative to said stator in a first direction, a first distance representing a distance between a reference position of said movable part and a present position thereof;
position/speed detecting means, coupled to said stator and said movable part, for detecting a position and a speed of said movable part; and
a connector, coupled to said movable part, said position/-speed detecting means, and external control means, which supplies the external control means with an output of said position/speed detecting means so that the external control means can control a driving of said movable part based on the output of said position/speed detecting means, wherein said position/speed detecting means includes:
a sensor target fixed on said stator; and
a displacement sensor, coupled to and movable with, said movable part, for detecting a second distance between the displacement sensor and the sensor target opposite to the displacement sensor, the sensor target having a shape such that the first distance and the second distance have a one-to-one function relationship to each other, said sensor target arranged such that said second distance changes in a second direction which is substantially perpendicular to the first direction as said movable part moves in the first direction.

5,289,089

MOTOR DRIVE CIRCUIT AND MOTOR DRIVE SYSTEM USING THE CIRCUIT THEREOF

Yuichi Aoki, Obtsu, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed May 21, 1992, Ser. No. 886,099
Claims priority, application Japan, May 23, 1991, 3-147761
Int. Cl.[5] H02K *29/08*; H02P *6/02*
U.S. Cl. 318—254 **6 Claims**



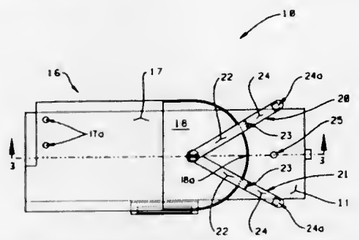
1. A motor drive circuit comprising,
an amplifier which receives output signals of a Hall element for determining the phase of the rotor in a single phase DC motor and outputs the same after amplification;
a drive signal generating circuit which receives the amplified signals of said amplifier, generates first and second pulses each having a duty of about 50% of which phases differ by about 180° and outputs the same;
a first drive circuit connected to a first terminal of said single phase DC motor;
a second drive circuit connected to a second terminal of said single phase DC motor;
said first and second drive circuits each including, a first transistor circuit which supplies a current to said single phase DC motor, a second transistor circuit which sinks a current from said single phase DC motor, and a diode which bypasses a current flown out from said single phase DC motor toward a power source line side, whereby said first and second drive circuits alternatively serve as a current flow out side and as a current sink side in response to the first and second pulses to drive said single phase DC motor; and
wherein said amplifier, said drive signal generating circuit and said first and second drive circuits are integrated into one IC, the bypassing diodes toward the power source line side being respectively inserted between the first terminal and the power source line and between the second terminal and the power source line and the combination thereof being mounted on an electric device.

5,289,090

AUTOMATIC CAMCORDER PANNING DEVICE

Jeffrey E. Miller, 1202 Duesenberg Rd., Auburn, Ind. 46706, and J. Michael Lewis, 0811 C.R. 28, Corunna, Ind. 46730

Continuation-in-part of Ser. No. 698,161, May 9, 1991, abandoned. This application Mar. 2, 1992, Ser. No. 844,519
Int. Cl.[5] H02P *1/22*; G03B *29/00*
U.S. Cl. 318—282 **22 Claims**



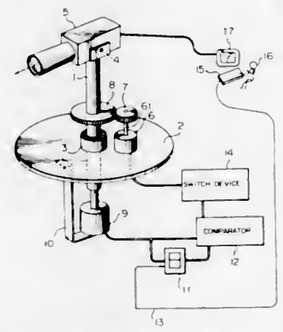
1. A device for effecting panning movement of an article in two rotational directions within a predetermined limit of rotation comprising:
a mounting plate adapted to be secured to the article, said mounting plate defining a plane;
motor means for rotating said mounting plate in either of two rotational directions;
a limit arm mounted on said mounting plate for rotation therewith, said limit arm being movable throughout a plane which is parallel to said plane defined by said mounting plate relative to said mounting plate to selectively define the predetermined limit of rotation; and
control circuit means responsive to the position of said limit arm for controlling the operation of said motor means to change the direction of rotation at the predetermined limit of rotation to effect panning movement thereof.

5,289,091

APPARATUS FOR TURNING MONITORING CAMERA

Jyoji Wada, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1992, Ser. No. 940,320
Claims priority, application Japan, Sep. 9, 1991, 3-227775
Int. Cl.[5] H02P *1/00*; B60Q *1/00*
U.S. Cl. 318—282 **2 Claims**



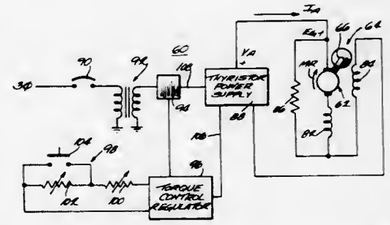
1. Apparatus for turning a monitoring camera comprising:
means for mounting said monitoring camera, said mounting means adapted to be turned;
means for detecting a turning angle of said mounting means;
means for recording therein a pair of turning angles detected by said detecting means as monitoring boundary limit angles, wherein said recording means includes a first recorder for recording not less than three angles detected by said detecting means, and a second recorder for recording not less than two combinations of the angles, each combination consisting of two angles selected from said angles recorded in said first recorder;
means for comparing said monitoring boundary limit angles recorded in said recording means with a turning angle detected by said detecting means at a moment; and
means for changing a direction of turning of said mounting means in accordance with results of comparison by said comparing means.

5,289,092

APPARATUS AND METHOD FOR D.C. MOTOR CONTROL

Gerold E. Schmid, Brookfield, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Aug. 5, 1991, Ser. No. 740,269
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—432 **5 Claims**



1. Dipper door trip apparatus for a surface mining shovel having a frame, a boom extending upward from the frame, a handle mounted on and movable relative to the boom, a dipper pivotally mounted on an end of the handle away from the boom and having a door pivotally affixed to the dipper, the dipper door being pivotally movable from a closed to an open position, the trip apparatus comprising;
a rotatable d.c. motor having a first torque producing condition and a second torque producing condition;
a d.c. power supply connected to the motor and including a selectively variable level current source having first and second current levels respectively corresponding to the first and second torque producing conditions of the motor; and
dipper door trip means connected to the motor for tripping open the dipper door in response to a change in the power supply from its first to its second current level and a corresponding change in the motor from its first torque producing condition to its second torque producing condition.

5,289,093

ANTISPIN AND ANTILOCK METHODS FOR AN ELECTRIC TRACTION VEHICLE

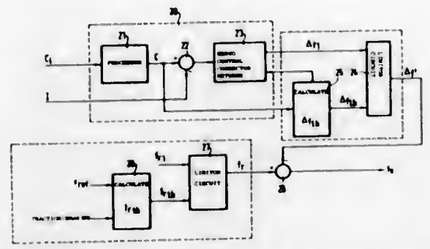
Thierry Jobard, Lyons, France, assignor to GEC Alsthom SA, Paris, France

Continuation of Ser. No. 605,702, Oct. 30, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,517
Claims priority, application France, Nov. 8, 1989, 89 14666
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—434 **9 Claims**

1. A method of preventing wheel spin or wheel locking on an electric traction vehicle whose traction device includes a servo controller for servo controlling at least one control parameter of at least one motor of said traction device to a predetermined value, the method being characterized in that the at least one control parameter output from said servo controller is permanently limited by an ideal value for said at

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least one control parameter, such that the predetermined value corresponds to a speed of rotation of said at least one motor



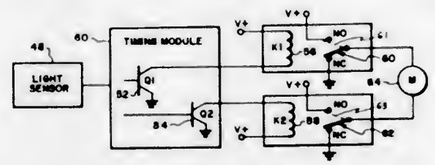
equal to a real travel speed of the vehicle, in such a manner as to stabilize the torque transmitted by said at least one motor in the event of wheel spin or wheel locking.

5,289,094

LIGHT RESPONSIVE AIRFLOW REGISTER

Charles C. Young, 121 N. Almansor, Alhambra, Calif. 91801

Filed Feb. 22, 1993, Ser. No. 20,728
Int. Cl.[5] G05D *23/00*; F24F *7/02*
U.S. Cl. 318—468 **7 Claims**



1. In combination with an airflow register for an enclosure, said airflow register having control means to vary the volume of air being conducted through said register, said control means being movable between an open position and a closed position, with said control means in said open position air is to flow through said airflow register, with said control means in said closed position air is being prevented from flowing through said airflow register, said control means being connected to a first lever, said first lever being manually operable to move said control means between said open position and said closed position, the improvement comprising:

light sensor means mounted within said enclosure, a motor, said light sensor means to cause operation of said motor, said control means being connected to a second lever, said second lever being operable separate from said first lever to move said control means between said open position and said closed position, said motor being connected to said second lever, said motor to move said control means through said second lever to said open position upon observable light being detected by said light sensor, said motor to move said control means through said second lever to said closed position upon an observable darkened environment being detected by said light sensor within said enclosure; and

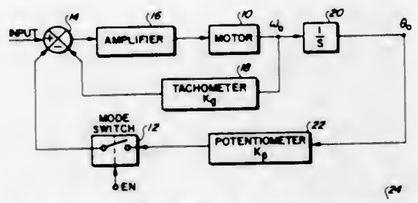
a flow limiter in the form of a plug insertable within a slot to prevent movement of said first lever completely to said one end of said slot thereby locating said control means in a partially open position permitting some flow of air through said register face panel.

5,289,095

FUZZY SWITCHING LOGIC FOR SERVO SYSTEMS

Randall K. Ushiyama, Torrance, Calif., assignor to AlliedSignal Inc, Morris Township, Morris County, N.J.

Filed Jan. 10, 1992, Ser. No. 819,032
Int. Cl.[5] G05B *11/14*
U.S. Cl. 318—560 **19 Claims**



1. Apparatus for controlling an actuator, comprising:

fuzzy logic means, responsive to a motor rate command and an indicated motor rate, for selecting from a plurality of modes of operation including a slewing mode and a position mode; and

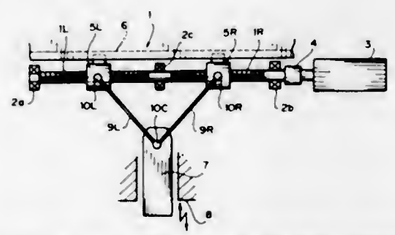
control means, responsive to said fuzzy logic means, for controlling said actuator's rate when said slewing mode is selected and for controlling said actuator's position when said position mode is selected.

5,289,096

PRESS MACHINE STROKE OPERATION MECHANISM AND OPERATION CONTROL METHOD THEREFOR

Shinya Takeda, Kawasaki, Japan, assignor to Mechtro Joban International Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,723
Claims priority, application Japan, Dec. 21, 1992, 4-355427
Int. Cl.[5] G06F *15/46*
U.S. Cl. 318—560 **12 Claims**



1. A press machine stroke operation mechanism comprising:

a driving system comprising,

a feed screw member having threads in different feed directions,

at least one pair of nut members which are screwed on the threads in different feed directions and which are moved by rotation of said screw member so as to separate from and approach each other, and

a servomotor for selectively supplying torques for normal and reverse rotations to said screw member; and a slide system comprising,

a vertically disposed slide member supported below said screw member at right angles therewith so as to be vertically slidable, said slide member having a bottom end adapted to apply pressure directly to a work piece when said stroke operation mechanism is operated, and

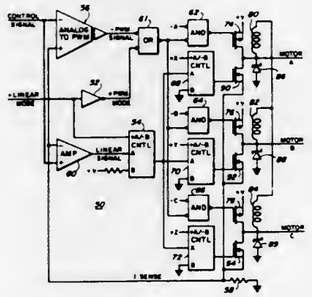
two transmission bar members, each of said transmission bar members having an upper end connected to one of said nut members and a lower end connected to said slide member at a single location near a top end thereof that is common to both said transmission bar members so that both said transmission bar members apply force directly to said slide member when said stroke operation mechanism is operated.

5,289,097

SPINDLE CONTROL METHOD AND APPARATUS FOR DISK DRIVE

Kevin J. Erickson; Richard Greenberg, both of Rochester, and Douglas W. Nelson, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,807
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **15 Claims**



1. A spindle motor control method for a direct access storage device including a multi-phase, brushless spindle motor and first and second half bridge power driver circuits; comprising the steps of:

detecting start-up and idle operational modes of the direct access storage device;

applying a pulse width modulation (PWM) signal for gating said first driver circuit for applying PWM driving current to the spindle motor responsive to detecting an idle operational mode;

applying the PWM signal for gating said first driver circuit responsive to detecting a start-up operational mode of the disk file;

detecting predetermined critical operational modes of the direct access storage device; and

applying a linear driving current to the spindle motor responsive to detecting one of said predetermined critical operational modes.

5,289,098

STEPPING MOTOR DRIVER CIRCUIT

Eiji Shinozaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 18, 1993, Ser. No. 33,489
Claims priority, application Japan, Mar. 19, 1992, 4-62908
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **5 Claims**

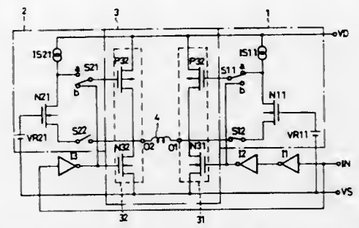
1. A stepping motor driver circuit, comprising:

a first push-pull circuit including first and second transistors of the first and the second conduction types, respectively, connected in series and having a first output terminal at the mid-point between said first and second transistors;

a second push-pull circuit including third and fourth transistors of the first and the second conduction types, respectively, connected in series and having a second output terminal at the mid-point between said third and fourth transistors;

first and second driving circuits for driving said first and second push-pull circuits in opposite phases relative to each other, respectively; and

first and second holding circuits each including a first constant-current source for setting a predetermined constant current, a constant-voltage source for supplying a predetermined reference voltage to set a holding voltage, and



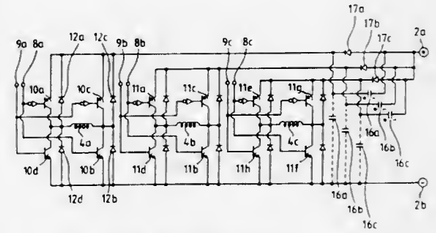
an amplifier circuit of the current feedback type for inputting the reference voltage and operating with the constant current, said first and second holding circuits driving said first and second push-pull circuits, respectively, so that the output voltage between said first and second output terminals may be reduced to the holding voltage when a predetermined load is held.

5,289,099

DIRECT CURRENT MOTOR

Itsuki Bahn, Tokyo, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

PCT No. PCT/JP91/01516, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO92/09138, PCT Pub. Date May 29, 1992
PCT Filed Nov. 5, 1991, Ser. No. 877,176
Claims priority, application Japan, Nov. 7, 1990, 2-299858
Int. Cl.[5] H02P *1/40*
U.S. Cl. 318—739 **9 Claims**



1. A direct current motor comprising:

a position detection device for successively delivering a first position detection signal group and a second position detection signal group in accordance with the rotational position of a rotor of the direct current motor, the first position detection signal group including a plurality of position detection signals, the second position detection signal group including a plurality of position detection signals having a predetermined phase difference with respect to corresponding ones of the first position detection signal group;

an energization control circuit connected to a direct current power supply for successively energizing armature coils of the individual phases in a forward direction in accordance with the first position detection signal group, and successively energizing said armature coils of the individual phases in a reverse direction in accordance with the second position detection signal group;

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diodes for preventing a reverse current, connected between the direct current power supply and said armature coils;

capacitors, respectively connected to said diodes; and

circuit means for charging magnetic energy, which is stored in said armature coils when an energization thereof is interrupted, in one of said capacitors connected to one of said diodes associated with one of said armature coils, thereby rapidly reducing the stored magnetic energy, and rapidly raising an armature current passing through said armature coils of each phase in the reverse direction, by a voltage charged in said one of said capacitors, when an energization of said armature coils in the reverse direction is started.

5,289,100

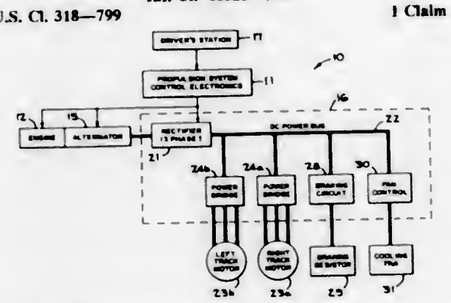
SYSTEM FOR POWERING, SPEED CONTROL, STEERING, AND BRAKING

Craig L. Joseph, 18500 Morrill Mill Rd., Los Gatos, Calif. 95030

Division of Ser. No. 602,839, Oct. 24, 1990, Pat. No. 5,162,707. This application Aug. 12, 1992, Ser. No. 929,643

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—799 **1 Claim**



1. An electrical propulsion system for controlling motor speed and power over a wide range of motor speeds, said system comprising:

an induction motor for having a rotor and a plurality of stator windings;

means for developing a signal proportional to rotor speed;

means for providing a desired rotor speed signal;

means for comparing said rotor speed signal and said desired speed signal and developing a difference signal;

means for using said difference signal to provide pulses of current to said stator windings to set a speed of said induction motor to a desired value;

an engine;

an alternator coupled to said engine and to said induction motor; and

means for sensing said difference signal to control the speed of said engine and to control an amount of current supplied by said alternator to said motor.

5,289,101

BATTERY CHARGER WITH CHARGING CURRENT CONTROLLER

Masami Furuta, Kawasaki; Takao Iwatsuki, Anjo; Masatoshi Sugiura, Anjo; Toshio Matsumoto, Anjo; Hideki Watanabe, Anjo, and Hideiki Niwa, Nagoya, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki; Makita Corporation, Anjo and Okada Electric Co, Ltd., Nagoya, all of Japan

Filed Apr. 24, 1991, Ser. No. 690,563

Claims priority, application Japan, Apr. 27, 1990, 2-113981; Apr. 27, 1990, 2-113982

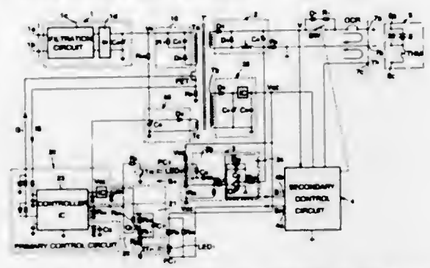
Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—21 **2 Claims**

1. A battery charger with a charging current controller comprising:

a transformer having a primary coil and a secondary coil;

a switch for duty control of a current flowing through said primary coil of said transformer;



a detector for detecting a value of a charging current flowing through said secondary coil of said transformer;

a secondary controller for receiving the detected value from said detector and for outputting a charge control signal, the pulse width of which is modulated in accordance with the detected value by said detector;

a light emitter controlled by said charge control signal for flickering;

a phototransistor turning on and off according to the flickering of said light emitter; and

a primary controller for converting the ratio of the time during on of the phototransistor to the time during off of the phototransistor into an analog value, and for outputting to said switch a pulse signal which is modulated to have a duty cycle corresponding to the analog value so as to control a duty cycle of said switch;

a second detector for detecting a value of the current flowing through said primary coil of said transformer;

a comparator for receiving the detected value from said second detector and for comparing the detected value with a predetermined value; and

means for compulsory turning off said pulse signal which is applied to turn on said switch when the detected value exceeds said predetermined value.

5,289,102

BATTERY CHARGER HAVING CHARGING COMPLETION INDICATOR

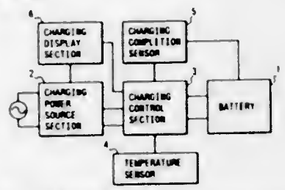
Shoichi Toya, Hyogo, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 25, 1992, Ser. No. 903,745

Claims priority, application Japan, Jul. 31, 1991, 3-191777

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—22 **6 Claims**



1. A battery charger comprising:

a temperature sensor for detecting a temperature of a battery;

a charging completion sensor for detecting a fully charged state of said battery;

means for controlling a charging of said battery, said controlling means starting the charging of said battery when said temperature sensor detects a temperature of said battery lower than a predetermined temperature, said controlling means temporarily suspending the charging of said battery when said temperature sensor detects a temperature of said battery higher than said predetermined temperature, and said controlling means stopping the charging of said battery when said charging completion sensor detects said fully charged state of said battery;

means for displaying a charging completion indication when said temperature sensor detects a temperature of said battery higher than said predetermined temperature a predetermined number of times and

when said charging completion sensor detects said fully charged state of said battery.

5,289,103

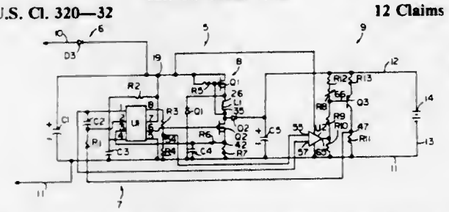
BATTERY CHARGER FOR TOWED VEHICLE

Larry Eccleston, Marshall, Mich., assignor to Tekonsha Engineering Company, Tekonsha, Mich.

Filed Dec. 13, 1991, Ser. No. 806,659

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—32 **12 Claims**



7. A battery charger for charging a battery from a vehicle electrical system, comprising:

input means for coupling to the vehicle electrical system for receiving power from the vehicle electrical system, said input means generating an output signal on an output conductor thereof, said output conductor for coupling to said battery; and

a regulator coupled to said output conductor of said input means, said regulator for controlling said output signal, said regulator including means for generating a signal dependent upon an ambient temperature, and means responsive to said temperature-dependent signal for controlling said output signal applied to said battery such that the level of said output signal applied to said battery varies in predetermined relation to said ambient temperature.

5,289,104

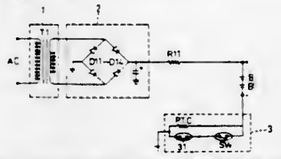
BATTERY CHARGING DEVICE

Pi-Chu Lin, No. 157-8, Hu-Tzu Nei, Hu-Nei Li, Chia-Yi City, Taiwan

Continuation-in-part of Ser. No. 911,191, Jul. 9, 1992, Pat. No. 5,254,933. This application Nov. 20, 1992, Ser. No. 979,565

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—35 **1 Claim**



1. A battery charging device for charging a rechargeable battery unit, comprising:

a step-down unit receiving an external alternating current line voltage input and reducing the line voltage input to an appropriate level;

a rectifier unit receiving the reduced line voltage input from said step-down unit and generating a direct current signal to charge the battery unit;

a current limiting resistor serially interconnecting said rectifier unit and the battery unit; and

a control unit connected in series with said battery unit and including a temperature switch, an excess current protective device in series with said switch, and a high resistance heating unit connected across the series combination of said switch and said protective device, said switch being thermally connected with the battery unit, said heating unit is a positive temperature coefficient thermistor, said switch being closed when the temperature of the battery unit is below a predetermined limit so as to effect fast charging, said switch being opened to permit said direct current signal to flow through said heating unit so as to reduce the value of said direct current signal in order to effect slow charging when the temperature of the battery unit reaches the predetermined limit, said protective device being open-circuited when excessive current flows through said switch while said battery charging device is effecting fast charging, thereby enabling said battery charging device to switch automatically to slow charging.

5,289,105

VOLTAGE-REGULATOR CIRCUIT FOR A SYSTEM FOR RECHARGING THE BATTERY OF A MOTOR VEHICLE

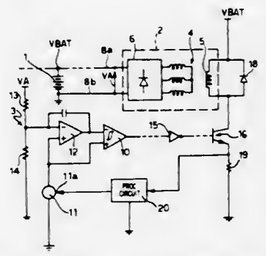
Marcello Boella, Ivrea, and Valerio Giorgetta, Moncucco Torinese, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Oct. 21, 1991, Ser. No. 779,859

Claims priority, application Italy, Oct. 22, 1990, 67811 A/90

Int. Cl.[5] H02J *7/14*

U.S. Cl. 322—25 **2 Claims**



1. A voltage-regulator circuit for a system for recharging a battery of a motor vehicle comprising an electrical generator including an alternator with an armature winding and a field winding, and a rectifier, in which the output of the generator is connected to the battery by at least one connecting wire, the voltage-regulator circuit including:

a driver transistor whose collector-emitter path is intended to be connected in series with the field winding of the generator between two poles of a source of a direct-current voltage, and

a control circuit adapted to pilot the transistor in an on-off manner in dependence on the value assumed by a voltage supplied by the generator in comparison with a reference voltage, and

sensor means for supplying an electrical signal indicative of a current flowing in the field winding in operation;

the control circuit being operatively connected to the sensor means and arranged to control the transistor in dependence on the signal supplied by the sensor means so that a voltage at the terminals of the battery remains substantially constant with variations in a current supplied to the battery by the generator, and

the sensor means for sensing the current flowing in the field winding including a resistor connected in series with the collector-emitter path of the transistor and a processing circuit connected to the resistor and arranged to output a signal indicative of an average voltage developed across the resistor.

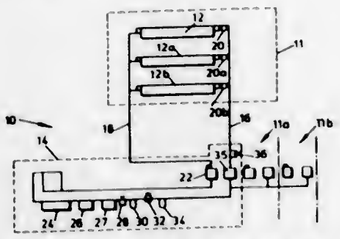
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5,289,106

ELECTRICAL SUPPLY SYSTEM FOR LOW CURRENT LOADS

Thomas McGlinn, 11 Ewenfield Avenue, Ayr, KA7 2OL, Scotland

PCT No. PCT/GB89/00969, § 371 Date Feb. 11, 1991, § 102(e) Date Feb. 11, 1991, PCT Pub. No. WO90/02436, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 21, 1989, Ser. No. 655,384
Claims priority, application United Kingdom, Aug. 24, 1988, 8820140
Int. Cl.[5] H02K 7/18; F21S 9/04
U.S. Cl. 322—35 16 Claims



1. An electrical supply system for supplying electricity to a plurality of low current loads, said electrical supply system comprising:

a plurality of low current loads, a fluid medium, compressor means for generating pressure in said fluid medium, flow and return conduits, a plurality of housings associated with said plurality of low current loads and coupled to said compressor means by said flow and return conduits, said housings containing energy conversion means for converting energy of said fluid medium to electricity, each said energy conversion means comprising a rotatable impeller for receiving said fluid medium and for converting energy in said fluid medium into rotational energy, first magnet means coupled to said impeller, second magnet means spaced apart from said first magnet means, said first and said second magnet means being spaced apart along, and rotatable about, a common axis of rotation, said first and said second magnet means forming a magnetic coupling whereby said rotational energy of said impeller is transferred to said second magnet means, and a generator coupled to said second magnet means for converting the rotational energy of said second magnet means into electrical energy for supply to said plurality of low current loads.

5,289,107

SWITCHED RELUCTANCE GENERATOR SYSTEM WITH FAULT RECOVERY CAPABILITY

Arthur V. Radun, Ballston Lake; Donald W. Jones, Burnt Hills, and Thomas M. Jahns, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

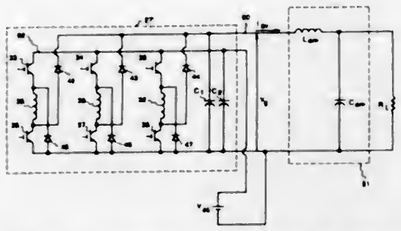
Continuation-in-part of Ser. No. 859,754, Mar. 30, 1992, abandoned. This application Oct. 29, 1992, Ser. No. 968,642
Int. Cl.[5] H02P 8/00, 9/00
U.S. Cl. 322—94 12 Claims

1. A switched reluctance generator system, comprising:

a switched reluctance generator including a stator having at least one pair of opposing stator poles with a machine phase winding wound thereon and further including a rotor having at least one pair of opposing rotor poles;

a converter for coupling a dc voltage from a dc power source via a dc excitation bus to said switched reluctance generator and thereby providing power to excite said generator; and

a generator bus for providing the output voltage of said switched reluctance generator, said generator bus being separate and distinct from said dc excitation bus such that the average current generated by said switched reluctance



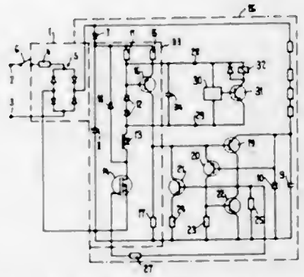
generator is substantially independent of said output voltage.

5,289,108

STABLE DIRECT VOLTAGE GENERATOR

Bernhard Bourqui, Courtepin, and Pierre Gauthier, Mur, both of Switzerland, assignors to Sais AG Industrie-Electronik und Komponenten, Murten, Switzerland

Filed Mar. 8, 1991, Ser. No. 666,850
Claims priority, application European Pat. Off., Mar. 27, 1990, 90810245.2
Int. Cl.[5] G05F 1/613
U.S. Cl. 323—222 21 Claims



1. A method for generating a stable direct voltage for use with a load comprising the steps of:

generating a direct current in an inductance;

passing said direct current through a zener diode arrangement in series with a resistance;

detecting, with a current discriminator, a magnitude of said direct current passing through said inductance and generating a detected current signal;

shaping said detected current signal to produce a switching control signal; and

switching said direct current back through a recovery diode in accordance with said switching control signal;

wherein said direct current is switched through said recovery diode when said magnitude of said direct current is greater than a predetermined value so that said stable voltage is produced across said zener diode arrangement which is independent of a voltage across said resistance.

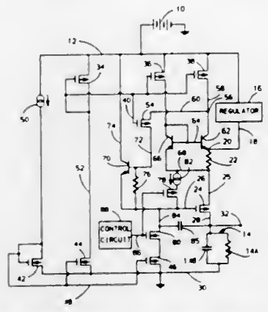
5,289,109

CURRENT LIMIT CIRCUIT

Richard A. Summe, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 5, 1990, Ser. No. 488,160
Int. Cl.[5] G05F 1/573
U.S. Cl. 323—277 2 Claims

1. A current limit circuit for providing a control signal of a predetermined magnitude when the current passing through a circuit attains a predetermined current limit value comprising, a resistor in said circuit for sensing the magnitude of current flowing in said circuit, a P-channel field effect transistor, and NPN bipolar transistor, means connecting the drain of said field effect transistor to the base of said NPN transistor, said field effect transistor when biased conductive applying current to the base of said NPN transistor that is high enough to cause



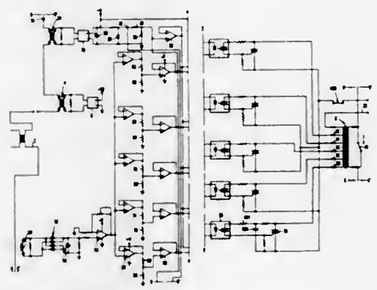
the emitter current of said NPN transistor to attain said predetermined magnitude, means for developing and applying a substantially constant voltage to the gate of said P-channel field effect transistor, and means coupled to said resistor and to the source of said field effect transistor for developing and applying a control voltage to said source of said field effect transistor that increases to a level which will cause it to conduct when the current passing through said circuit attains said predetermined current limit value.

5,289,110

INPUT CURRENT RESPONSIVE, TAP CHANGING TRANSFORMER SYSTEM

John A. Slevinsky, West Hartford, Conn., assignor to Cooper Industries, Houston, Tex.

Filed Oct. 14, 1992, Ser. No. 960,827
Int. Cl.[5] G05F 5/04
U.S. Cl. 323—301 11 Claims



2. A system comprising:

means for receiving an input alternating current having one of a plurality of amperages;

means, responsive to said means for receiving, for detecting said one amperage and generating a plurality of different voltage levels proportional to of said one amperage;

means for generating a reference voltage;

means for comparing said voltage levels and said reference voltage;

means for selecting a tap of a transformer having a plurality of taps based on a result of said means for comparing; and

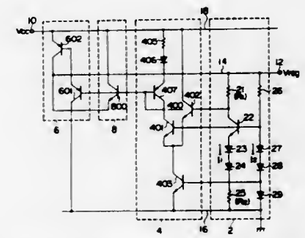
means for outputting an output current, in response to said selected tap, which has a substantially constant amperage even if said one amperage of said input alternating current changes to another of said plurality of amperages.

5,289,111

BANDGAP CONSTANT VOLTAGE CIRCUIT

Yasuhiko Tsuji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed May 13, 1992, Ser. No. 882,601
Claims priority, application Japan, May 17, 1991, 3-142364; May 21, 1991, 3-145483
Int. Cl.[5] G05F 3/16
U.S. Cl. 323—314 7 Claims



1. A constant voltage circuit for generating an output of constant voltage by using a band-gap circuit generating a constant voltage, comprising:

an error detecting circuit for detecting an error voltage between the constant voltage generated by said band-gap circuit and a reference voltage value, generating a current representing the error voltage,

an output circuit for receiving said current indicative of said error voltage from said error detecting circuit, generating a current depending on the received current, and feeding said generated current back to said band-gap circuit,

an initiating circuit for supplying an initiation current to said band-gap circuit at the time of raising a source voltage applied to said band-gap circuit,

wherein said initiating circuit includes a bias circuit for receiving said source voltage and generating a constant bias voltage by a plurality of diodes, a first transistor conducted by said bias circuit at the time of initiation, and a second transistor for receiving a conduction current of said first transistor or a current produced by said output circuit and supplying an operating current to said error detecting circuit.

5,289,112

LIGHT-EMITTING DIODE ARRAY CURRENT POWER SUPPLY INCLUDING SWITCHED CASCODE TRANSISTORS

Charles A. Brown; Billy E. Thayer, and Rajeev Badyal, all of Corvallis, Oreg., assignors to Hewlett-Packard company, Palo Alto, Calif.

Filed Sep. 21, 1992, Ser. No. 948,274
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] G05F 3/26
U.S. Cl. 323—315 8 Claims

1. A power supply (10) having multiple controlled current outputs for driving LEDs in an LED printhead, each current output comprising:

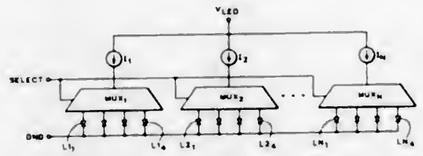
a plurality of driver FETs (M7, M8) each having a source coupled to a source of power supply voltage, a gate, and a drain,

wherein the gates of the driver FETs are coupled together to receive an output reference voltage; and

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a plurality of control FETs (M3, M4) each having a source coupled to the drain of a respective driver FET, a gate for receiving an individual output current control voltage, and a drain,

wherein the drains of the control FETs are coupled together



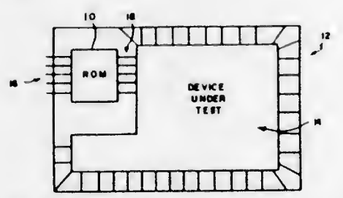
to form a current output and the control voltage has a first, disabling voltage level for disabling the control FET and a second, predetermined cascode voltage level for establishing the operating point of the control FET out of the linear region and tending towards the high output impedance saturation conduction region.

5,289,113

PROM FOR INTEGRATED CIRCUIT IDENTIFICATION AND TESTING

Richard A. Meaney, Andover, Mass., and Raymond J. Speer, Donegal, Ireland, assignors to Analog Devices, Inc., Norwood, Mass.

Filed Aug. 1, 1989, Ser. No. 388,247
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—73.1 **16 Claims**



1. In the testing of a plurality of electronic devices to determine at least one parameter or performance characteristic of each device, wherein the data resulting from the testing is to be correlated to the electronic device producing said data, the method which comprises:

co-packaging with each said electronic device a read-only memory (ROM) thereby forming a co-packaged electronic device;

programming the ROM with an identification code of a predetermined number of bits which identifies the co-packaged electronic device uniquely from all other possible such electronic devices; said code being used to identify unambiguously said co-packaged electronic device;

reading from said co-packaged ROM the identification code programmed therein when measuring a selected characteristic of any of said electronic devices; and

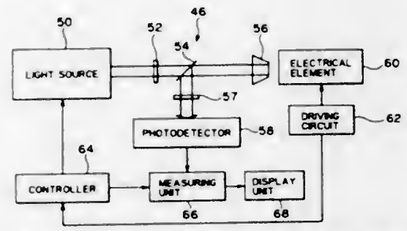
associating the measurement of the selected characteristic with the read identification code.

5,289,114

VOLTAGE DETECTION APPARATUS USING SHORT PULSE LIGHT SOURCE WITH NARROW SPECTRAL BAND WIDTH

Takuya Nakamura; Shinichiro Aoshima, and Yutaka Tsuchiya, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Jun. 11, 1991, Ser. No. 713,215
Claims priority, application Japan, Jun. 28, 1990, 2-171275
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—96 **24 Claims**



1. A voltage detection apparatus for optically detecting changes in a voltage which is being applied to an object, comprising:

a light source comprising:

a laser source for emitting a laser beam,

a laser driving unit for driving said laser source, the laser driving unit including means for driving the laser source to output a pulsed laser beam and for stabilizing an intensity of the pulsed laser beam, and

a spectral-band width narrowing unit for narrowing a spectral band width of the pulsed laser beam, said narrowing unit including means for performing chirp compensation and wavelength selected to convert the pulsed laser beam emitted from said laser source into a pulsed laser beam having an ultrashort pulse width and a desired narrow spectral band;

a light modulator having an electrooptic characteristic for passing the pulsed laser beam from said spectral-band width narrowing unit therethrough, said light modulator adding information to said pulsed laser beam that represents an amount of change in the voltage applied to the object, said light modulator outputting the pulsed laser beam having the information representing said voltage change; and

a photodetector for detecting the pulsed laser beam outputted from said light modulator to obtain the information representing the change in the voltage applied to the object.

5,289,115

ELECTRONIC WATT-HOUR METER WITH SELECTION OF TIME BASE SIGNALS

Warren R. Germer, Dover, N.H., and Mehrdad Negahban-Hagh, Irvine, Calif., assignors to General Electric Company, Schnectady, N.Y.

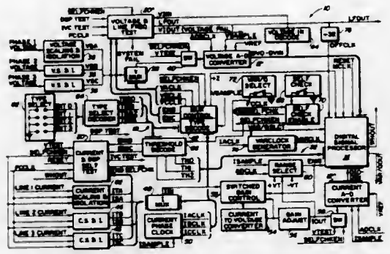
Continuation of Ser. No. 412,238, Sep. 25, 1989, abandoned. This application Feb. 27, 1991, Ser. No. 660,986
Int. Cl.[5] G01R *19/00, 21/06*
U.S. Cl. 324—107 **1 Claim**

1. In an electronic watt-hour meter for metering electrical energy from polyphase distribution lines, a method for providing a time base signal to an electronic register for the purpose of keeping time in said electronic register comprising the steps of:

(a) monitoring the voltage phases of the power lines for active and inactive phase voltages to provide a single time base signal to said electronic register;

(b) deriving, normally, the single time base signal from a selected one of the active voltage phases when at least one other voltage phase is active; and

(c) selecting a prescribed active voltage phase when said selected one of the active voltage phases becomes inactive



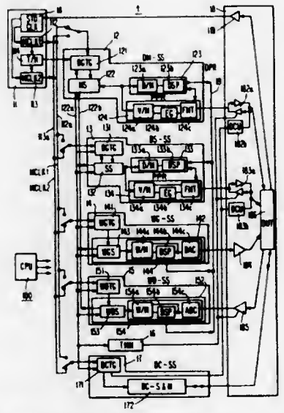
to thus derive the single time base signal form said prescribed active voltage phase to continue providing the time base signal to said electronic register so long as at least one voltage phase is active.

5,289,116

APPARATUS AND METHOD FOR TESTING ELECTRONIC DEVICES

Jun Kurita, Kokubunji; Kiyoyasu Hiwada, Yamato; Nobuyuki Kasuga; Yoichiro Yamada, both of Hachioji; Shigeru Kuwano, Hino; Keita Gunji, Hachioji, and Tomoya Yamazaki, Hino, all of Japan, assignors to Hewlett Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 707,844, May 30, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,469
Claims priority, application Japan, May 31, 1990, 2-143638; May 31, 1990, 2-143639; May 31, 1990, 2-143640; May 31, 1990, 2-143641
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **17 Claims**



12. An apparatus for testing mixed signal electronic devices, comprising:

(a) test head means for sending/receiving test signals to/-from a device under test (DUT);

(b) master clock means, coupled to said test head means, for receiving at least one signal from said DUT, for generating a first master clock signal at a first frequency f_1 and a second master clock signal at a second frequency f_2, wherein the ratio f_1/f_2 is a rational number and said first and second master clock signals are synchronized to the signal received from the DUT, and including timing handler means for detecting a coincidence of signal transitions of said master clock signals and generating a coincidence signal indicative of said coincidence;

(c) digital master means, coupled to said test head means and said master clock means, for sending preprogrammed digital signal patterns to said DUT in synchronism to a selected one of said master clock signals or a selected combination of said master clock signals;

(d) digital signal means, coupled to said test head means, for measuring digital signals from said DUT in synchronism to a selected one of said master clock signals or a selected combination of said master clock signals;

(e) waveform generator means, coupled to said test head means, for sending analog signals to said DUT in synchronism to a selected one of said master clock signals or a selected combination of said master clock signals;

(f) waveform digitizer means, coupled to said test head means, for measuring analog signals from said DUT in synchronism to a selected one of said master clock signals or a selected combination of said master clock signals;

(g) direct current means, coupled to said test head means, for measuring direct current characteristics of said DUT by sending/receiving direct current signals to/from said DUT in synchronism to a selected one of said master clock signals or a selected combination of said master clock signals; and

(h) control means for providing test sequences for testing the DUT to the digital master means, digital signal means, waveform generator means, waveform digitizer means and direct current means,

wherein said digital master means, digital signal means, waveform generator means, waveform digitizer means, and direct current means each further comprises sequencer means for conducting test sequences without intervention of said control means after said sequences are received from said control means; and wherein the sequencer means in said digital master means includes means for controlling the other sequencer means, and is responsive to said coincidence signal to change the sequences of the other sequencer means within one clock cycle.

5,289,117

TESTING OF INTEGRATED CIRCUIT DEVICES ON LOADED PRINTED CIRCUIT

David R. Van Loan, Diamond Bar; Charles J. Johnston, Walnut, and Mark A. Swart, Upland, all of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Division of Ser. No. 757,006, Sep. 9, 1991, Pat. No. 5,180,976, which is a division of Ser. No. 698,724, May 10, 1991, Pat. No. 5,247,246, which is a division of Ser. No. 427,932, Oct. 25, 1989, Pat. No. 5,049,813, which is a continuation of Ser. No. 214,365, Jul. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 142,990, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 91,536, Aug. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 39,876, Apr. 17, 1987, abandoned. This application Dec. 30, 1992, Ser. No. 998,554
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158 F **17 Claims**

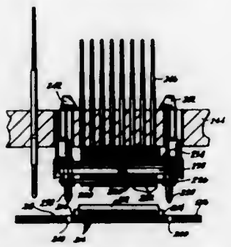
1. A translator module for making contact with first and second rows of spaced apart electrical leads on a printed circuit board, to facilitate circuit verification between the leads on the board and an array of conductive pins adapted to contact the translator module, the translator module comprising:

a rigid housing having top and bottom sides;

first and second rows of spaced apart electrical contacts arranged on the bottom side of the module housing for releasable contact with corresponding leads on the printed circuit board;

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a plurality of electrically conductive test pads disposed in a substantially common plane on the top side of the module housing and arranged for contact with individual pins in said array of pins, wherein the test pads are each generally planar and have a two-dimensional extent, substantially in said common plane on the top side of the housing, each test pad having a size greater than the size of the pins adapted to contact the test pads; and



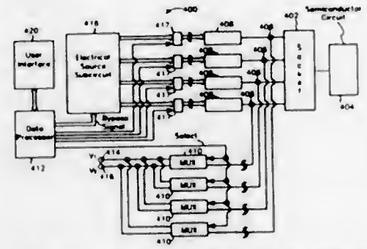
means for internally electrically connecting said first and second rows of contacts to corresponding test pads on the module so that contact between the individual leads on the board and corresponding contacts on the module is translated electrically, via the test pads, to individual pins in said array.

5,289,118

PROGRAMMER/TESTER WITH ELECTRONICALLY SWITCHED BYPASS CAPACITOR

Kellee J. Crisafulli, Redmond, Wash., assignor to Data I/O Corporation, Redmond, Wash.

Filed Feb. 1, 1991, Ser. No. 648,786
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158 R **14 Claims**



1. A programmer/tester for programming semiconductor circuits of the type having a plurality of input/output pins and at least one pin designed to receive a supply voltage, said programmer/tester comprising:

data processing means for providing a bypass signal and a select signal, said data processing means being responsive to user provided input for selectively providing said bypass signal in first and second states;

socket means for receiving a semiconductor circuit, said socket means being constructed to couple a pin of the semiconductor circuit to a device node;

supply voltage means responsive to said select signal for supplying a voltage having a predetermined magnitude to said device node;

capacitor means for coupling a capacitance between a bypass node and a reference potential;

electrical source means responsive to said bypass signal for coupling a supply of electrical energy to said bypass node, said electrical source means being responsive to said first state of said bypass signal for coupling a supply of electrical energy to said bypass node to charge said capacitor means and being responsive to said second state of said bypass signal for coupling a predetermined potential to said bypass node; and

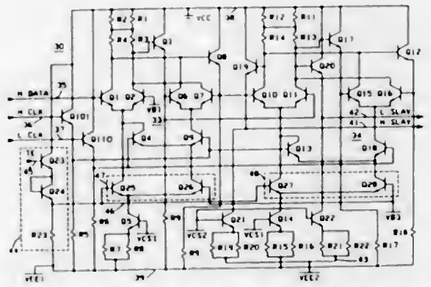
diode means responsive to the charge stored by said capacitor means for conducting current between said bypass node and said device node so that the charge stored by said capacitor means stabilizes the voltage of said device node, said diode means being responsive to the predetermined potential supplied to said bypass node to substantially prevent conduction of current between said bypass node and said device node.

5,289,119

TRANSPARENT ENABLE TEST CIRCUIT

Duane A. Schroeder, White Bear Lake, and David M. Hime, Blaine, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 20, 1992, Ser. No. 870,865
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 T **12 Claims**



1. A transparent enable mode test circuit for testing two level switch devices, comprising:

an integrated circuit chip device comprising a plurality of two level transistorized switches, having first and second levels to be tested,

each of said switches to be tested having a data input line for latching data therein,

each of said switches to be tested being coupled to an output pin on said chip for detecting the state condition of said two level switches,

transparent enable switch means coupled between said second level of said two level transistorized switches to be tested and a voltage current source for said two level switches,

said transparent enable switch means having input transistor means and reference transistor means,

a test enable circuit having an output coupled to the input of said input transistor means of said transparent enable switch means, whereby

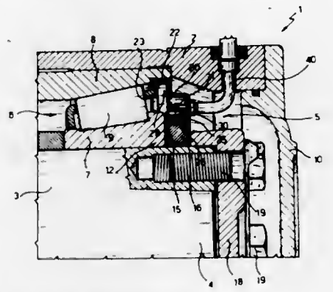
a first level enable test signal applied to said test enable circuit maintains said two level switch in its fixed state and it is enabled to be operable in a transparent mode.

5,289,120

RAILWAY AXLE BEARING AND SEALING ASSEMBLY WITH INTEGRATED ROTATIONAL SPEED DETECTOR

Roberto Moretti; Dario Bertorelli, both of Moncalieri, and Matteo Genero, Santena, all of Italy, assignors to SKF Industrie S.P.A., Turin, Italy

Filed May 28, 1992, Ser. No. 889,263
Int. Cl.[5] G01P *3/48, 3/54;* **G01B** *7/14*
U.S. Cl. 324—174 **7 Claims**



1. A railway axle assembly comprising:

a fixed support member;

a rotating member coaxially arranged in the fixed support member;

a rolling bearing housed in a seat defined between the fixed member and the rotating member to rotatably support the rotating member with respect to the fixed member;

a sealing assembly provided adjacent to the rolling bearing on an outer side of the seat facing a seat closure cover thereof;

said sealing assembly comprising a first annular rigid screen connected to said rotating member and a second annular rigid screen connected with said fixed member, said sealing assembly further comprising a spacer ring coaxially mounted on said rotating member and an axial locking element carried fixedly by said rotating member for urging said spacer ring against an inner ring of said rolling bearing fixed to said rotating member;

said first screen being C-shaped in radial section and mounted with its concavity facing towards said cover in such a manner as to be clamped between the spacer ring and said the ring of the rolling bearing;

said second screen being defined by a concave annular element fixed to an outer ring of the rolling bearing rigid with said fixed member and having its concavity facing the concavity of the first screen, said screens being partly inter-fitted within one another in such a way as to define therebetween a labyrinth seal and, together with said rings of the rolling bearing, a sealed chamber closed in a fluid-tight manner by said labyrinth seal; and,

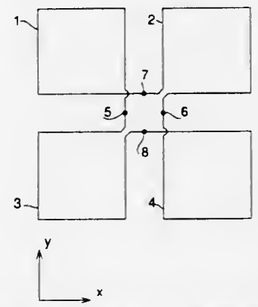
a detector sensitive to the speed of rotation of the rotating member, said detector comprising a sector secured to the fixed member and an annular member rotating relative to the sensor, said annular member encoded with a plurality of zones of discontinuity having substantially the same width and disposed circumferentially at substantially constant pitch, said discontinuity zones being designed to transit past the sensor for activating the sensor to generate a periodic signal having a frequency proportional to the number of said zones which transit past the sensor in a selected unit time wherein said annular encoded member is part of the first annular rigid screen of said sealing assembly, while said sensor is carried in a fixed manner by the second annular rigid screen of said sealing assembly and said annular encoded member and said sensor are housed inside said sealed chamber radially spaced from each other.

5,289,121

COMPOSITE PICKUP COIL FOR MEASUREMENT OF MAGNETIC FIELD COMPONENTS IN A SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE

Matti J. Kajola, and Jukka E. T. Knuutila, Helsinki, both of Finland, assignors to Neuromag Oy, Finland

Filed Dec. 13, 1991, Ser. No. 807,035
Claims priority, application Finland, Dec. 21, 1990, 906341
Int. Cl.[5] G01R *33/02*
U.S. Cl. 324—248 **21 Claims**



1. A pickup coil for simultaneously measuring at least two independent magnetic flux density components, including first or higher order gradients thereof, said pickup coil comprising a plurality of interconnected loops lying in a plane and at least two pairs of output terminals for connection to current sensing means, each of said pairs of output terminals comprising first and second terminals, each of said loops being connected to one of said first and second terminals of each of said pairs of output terminals, the winding direction of said loops relative to each other and the connection of said loops to the terminals of said pairs of output terminals being such that the presence of one magnetic flux density component at said pickup coil produces current conditions in said loops and at one of said pairs of output terminals causing current to flow into and out of only said one of said pairs of output terminals and through a current sensor connected thereto, and the presence of another magnetic flux density component at said pickup coil produces current conditions in said loops and at the other of said pairs of output terminals causing current to flow into and out of only said other of said pairs of output terminals and through a current sensor connected to said other of said pairs of output terminals.

5,289,122

MAGNETIC SENSOR FOR DETECTING COARSE AND FINE MAGNETIC PATTERNS

Yoshiharu Shigeno, Yokohama, Japan, assignor to Murata Mfg. Co., Ltd., Nagaokakyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,386
Claims priority, application Japan, Jun. 17, 1991, 3-045338[U]
Int. Cl.[5] G01R *33/06;* **G06K** *7/08, 9/00;* **H01L** *43/08*
U.S. Cl. 324—252 **23 Claims**

1. A magnetic sensor, comprising:

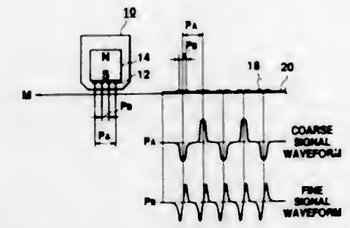
an n (n: an integer≧3) number of sensing parts arranged in parallel on a planar substrate, each sensing part having a first end and a second end the first end of each sensing part in alignment with each other, the second end of each sensing part in alignment with each other, the sensing parts being spaced from each other at a fixed distance, each sensing part formed of a material effective to output a voltage between the ends when a magnetic field is applied;

first connection means for electrically connecting in series a

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first pair of the sensing parts arranged at a fixed first distance defining a first pitch P_A;

second connection means for electrically connecting a second pair of the sensing parts in series and spaced at a fixed distance defining a second pitch P_B ($P_B < P_A$); so that the second pair is in a physical position on the substrate that is inside a physical position of the first pair on the substrate;



means for supplying a power source voltage to said first and second pairs of the sensing parts;

first output means for outputting a coarse waveform signal from said first pair of the sensing parts based on the sensing of a coarse pattern by the magnetic sensor; and

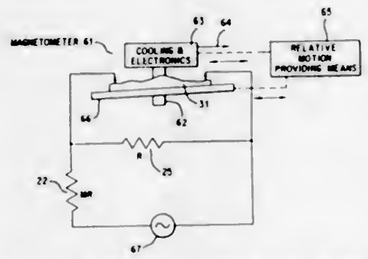
second output means for outputting a fine waveform signal from said second pair of the sensing parts based on the sensing of a fine pattern by the magnetic sensor.

5,289,123

DETECTION OF DEFECTS IN FOOD BY DETECTING PATTERN OF CURRENT FLOW

Christopher G. Bublitz, and Gour S. Choudhury, both of Kodiak, Ak., assignors to University of Alaska, Fairbanks, Ak.

Filed Jan. 14, 1992, Ser. No. 820,121
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—263 **3 Claims**



1. A method of examining an edible product having a first conductivity for the presence of foreign inclusions having a second conductivity substantially different from said first conductivity, comprising the steps of:

flowing a current through the product; and

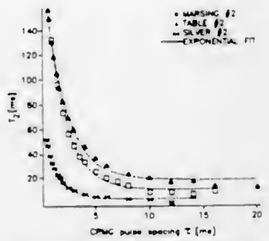
detecting values of a pattern associated with the current along the flow path of the current in the product at a plurality of positions laterally disposed with respect to the flow path to indicate a relative distortion of current flow, the detecting step including one of (a) the step of employing a magnetometer and (b) the step of employing means for detecting current and voltage values.

5,289,124

PERMEABILITY DETERMINATION FROM NMR RELAXATION MEASUREMENTS FOR FLUIDS IN POROUS MEDIA

Michael Jerosch-Herold, High Bridge, and Hans Thomann, Bedminster, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 20, 1991, Ser. No. 763,026
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—303 **8 Claims**



1. A method for determining the fluid flow permeability of porous media saturated with a liquid using nuclear magnetic resonance (NMR) and comprising:

(a) applying a radiofrequency pulse sequence which after an initial pulse generates successive spin echoes with a train of radio frequency pulses spaced apart by a time interval of length τ wherein all pulses have a carrier frequency corresponding to the Larmor frequency of the fluid spins filling the pore space of the medium for which the fluid flow permeability is to be determined;

(b) measuring the decay of the transverse magnetization at each of the successive regularly spaced midpoints between the 180 degree pulses where the midpoints coincide with the peak of the spin echoes;

(c) repeating steps a and b at least one more time wherein each repeat of step (a) uses said radio frequency pulse train with a different value of the pulse spacing τ;

(d) determining the transverse relaxation time T_2, from the transverse magnetization decay for each value of τ, from which the relaxation time, $T_2(\tau=0)$ is obtained by extrapolation using an exponential function;

(e) measuring the porosity of said porous media;

(f) determining the permeability of said media from the porosity and the relaxation time T_2 at $\tau=0$.

5,289,125

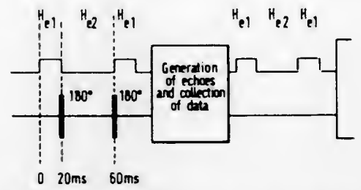
METHOD OF ELECTRON SPIN RESONANCE ENHANCED MRI

Gosta J. Ehnholm, Helsinki, Finland, assignor to Instrumentarium Corporation, Helsinki, Finland

Filed Nov. 8, 1991, Ser. No. 790,209
Claims priority, application United Kingdom, Nov. 12, 1990, 9024527
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **5 Claims**

1. A method of electron spin resonance enhanced magnetic resonance imaging of a paramagnetic substance-containing sample, said method comprising: (i) detecting enhanced magnetic resonance signals from said sample under at least two different sets of operational parameters, said operational parameters including the timing of the exposure of said sample to magnetic field gradients and spin resonance stimulating radiations and the amplitude and frequency distribution of the electron spin resonance stimulating radiations; (ii) manipulating the detected signals to provide, for individual image elements, a normalized difference signal having a value proportional to the ratio between the difference between signal amplitude for said

element under two different sets of said operational parameters and a mean signal amplitude for said element; and (iii) generating an image of at least part of said sample from said normalized difference signals.

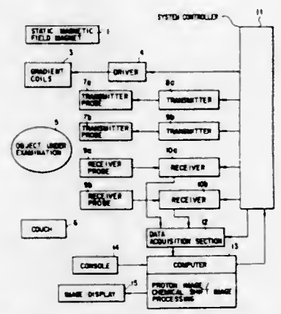


5,289,126

MAGNETIC RESONANCE IMAGING APPARATUS

Kiyomi Mori, and Yoshinori Suzuki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1992, Ser. No. 842,497
Claims priority, application Japan, Jul. 23, 1991, 3-182631
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **16 Claims**



1. A magnetic resonance imaging apparatus comprising:

acquisition means for acquiring first and second different magnetic resonance signals from the same position of an object under examination;

first image reconstruction means for reconstructing high-resolution image data from the first magnetic resonance signals;

second image reconstruction means for reconstructing low-resolution image data from the second magnetic resonance signals;

display/non-display region decision means for making display/non-display region decisions for the low-resolution image data by referring to the high-resolution image data, wherein said display/non-display region decision means sets a threshold value to the high-resolution image data and outputs regions where the high-resolution image data is greater than the threshold value as display regions where the low-resolution image data is to be displayed; and

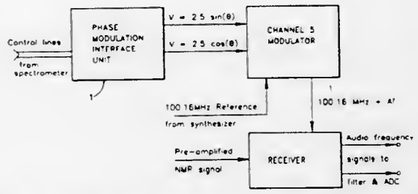
display means responsive to said display/non-display region decision means for displaying low-resolution image data present in regions output as display regions by said display/non-display region decision means.

5,289,127

CORRECTION OF SIGNAL DISTORTION IN AN NMR APPARATUS

David M. Doddrell, Westlake; Stuart Crozier, East Brisbane, and Michael T. Gladwin, Upper Brookfield, all of Australia, assignors to The University of Queensland, Australia

Filed Oct. 19, 1992, Ser. No. 962,896
Claims priority, application Australia, Oct. 25, 1991, PK 9150; European Pat. Off., Apr. 30, 1992, 92107428.2
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—314 **9 Claims**



1. A method for the compensation of signal distortion in an NMR apparatus, said NMR apparatus comprising a transmitter generating a spin excitation signal and a receiver detecting an NMR signal, and said signal distortion being caused by eddy currents induced by a switching on and off of a gradient magnetic field, said method comprising the steps of:

A. Determining a time dependence of a magnitude of homogeneous B_o component of a magnetic field and

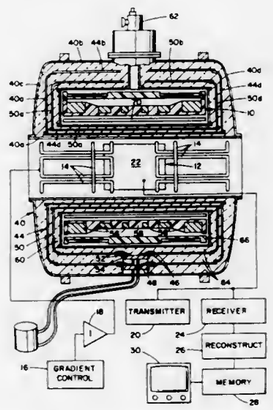
B. Phase modulating at least one of said spin excitation signal and said NMR signal to compensate for said time dependence.

5,289,128

SUPERCONDUCTING GRADIENT SHIELD COILS

Gordon D. DeMeester, Wickliffe; John L. Patrick, Chagrin Falls, and Michael A. Morich, Mentor, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Mar. 27, 1992, Ser. No. 859,152
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **17 Claims**



1. A magnetic resonance apparatus comprising:

a radio frequency coil disposed around an examination region;

a means for causing the radio frequency coil to emit radio frequency resonance excitation and manipulation pulses;

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a gradient coil assembly disposed adjacent and around the examination region;

a means for supplying current pulses to the gradient coil assembly to cause the generation of magnetic field gradient pulses;

a generally cylindrical superconducting magnet assembly defining a central bore within which the radio frequency and the gradient coil assemblies are disposed, the superconducting magnet assembly including:

a cylindrical vacuum vessel;

at least one annular superconducting magnet disposed within the vacuum vessel;

an annular, low temperature reservoir surrounding the annular superconducting magnet for containing a medium for holding the superconducting magnet at or below its superconducting temperature, the low temperature reservoir being disposed within and sealed from the vacuum vessel;

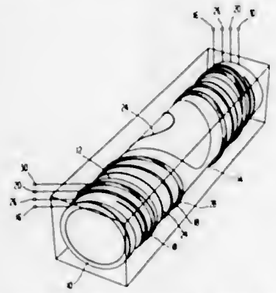
a superconducting gradient shield coil assembly.

5,289,129

MULTIPLE WINDING MRI GRADIENT COIL

Peter M. Joseph, Upper Darby, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Oct. 13, 1992, Ser. No. 959,961
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **5 Claims**



1. A cylindrical coil for providing a spatial magnetic field gradient which varies substantially linearly in an interior volume of said coil in a direction parallel to an axis of said coil and in directions transverse to said axis in response to a current applied to said coil by current applying means, said coil comprising:

a non-magnetic electrically insulating cylindrical coil support having an internal cavity which forms said interior volume; and

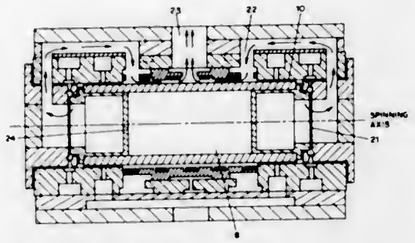
N electrically conductive cylindrical windings wound in a plurality of turns in a substantially helical path about a surface of said coil support, each turn of each winding being electrically spaced from each other turn of each said winding such that spacing between respective turns of each said winding decreases in proportion to the distance of said respective turns from a center of each of said windings in a direction parallel to said axis of said coil, each of said N windings being interleavingly wound in the same direction about said surface of said coil support and separated from each other winding of said N windings in an angular orientation of approximately 360°/N about said coil support, whereby said current is applied to said N cylindrical windings.

5,289,130

NMR SAMPLE ROTOR COOLING TECHNIQUE

F. David Doty, Columbia, S.C., assignor to Doty Scientific Inc., Columbia, S.C.

Filed Jul. 31, 1992, Ser. No. 923,324
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—321 **16 Claims**



1. An NMR sample spinner comprising:

a sample container having a first end and a second end supported on a gas bearing inside a bearing stator;

a radio frequency coil surrounding a central portion of said sample container;

said bearing stator including a plurality of bearing orifices in communication with radial bearing regions near both ends of said sample container;

a first microturbine co-axially attached to said sample container at the first end thereof to effect spinning of said sample container;

a housing for distributing pressurized gas to said bearing orifices and said microturbine;

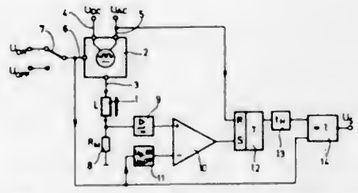
means for causing the exhaust gas from said microturbine to circulate over the central surface of said sample container.

5,289,131

CIRCUIT CONFIGURATION FOR MONITORING AN ELECTROMAGNETICALLY ACTUATED DEVICE, IN PARTICULAR AN ELECTROMAGNETIC CLUTCH

Heinrich Heidt, Neckarsteinach, and Ulf Delang, Leimen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 943,395
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 4130041; Aug. 20, 1992, 4227535
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—415 **11 Claims**



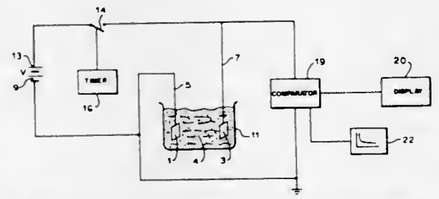
1. Circuit configuration for monitoring an electromagnetically actuated device having an electromagnet with a winding, comprising a switchable power source connected to the winding of the electromagnet, the power source being means for supplying a voltage formed of a direct voltage part and a periodic alternating voltage part superimposed on the direct voltage part, means for issuing engage and disengage signals for the electromagnetic device and for providing said direct voltage part at two defined levels in dependence on said engage and disengage signals, a precision resistor connected in series with the winding of the electromagnet, a voltage sensor connected at a node between the winding and said precision resistor, and an evaluation circuit connected to said voltage sensor for evaluating the alternating voltage part acting on said precision resistor.

5,289,132

VOLTAGE CHARACTERISTIC COMPARATOR FOR DISCRIMINATING SOLUTIONS

Henry C. Oksman, 20 Wagon Wheel Rd., Mamaroneck, N.Y. 10543, and Joseph Eisner, 185 E. 85th St., New York, N.Y. 10028

Filed Dec. 4, 1991, Ser. No. 800,910
Int. Cl.[5] G01N *27/06*
U.S. Cl. 324—444 **6 Claims**



1. Apparatus for distinguishing a solution comprising container means for storing said solution;

first and second electrode means mounted proximate to said container mean for immersion in said solution when stored in said container,

switch means having first contact means connected to one of sad electrodes and second contact means;

a voltage source having first terminal means connected to said switch means' second contact means and second terminal means connected to the other of said electrodes;

timer means connected to said switch means for actuating sad switch means for applying the voltage of said source to said electrodes for a first period of time and thereafter deactivating said switch means for interrupting application of said voltage to said electrodes; and

voltage measuring means connected to sad first and second electrodes for measuring the voltage between said electrodes over a second period of time after said switch means is deactivated.

5,289,133

POWER DENSITY METHODS FOR ELECTROSHOCKING

Arvin L. Kolz, 8726 W. Iliff Ave., Lakewood, Colo. 80227

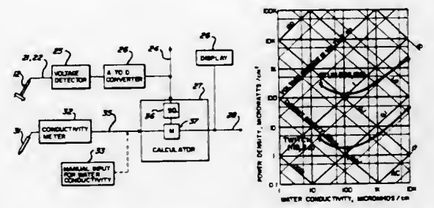
Division of Ser. No. 677,930, Apr. 1, 1991, Pat. No. 5,202,638. This application Jan. 19, 1993, Ser. No. 5,966
Int. Cl.[5] G01N *27/08*
U.S. Cl. 324—444 **7 Claims**

3. A method for electroshocking a selected living organism comprising the steps of:

establishing an electric field in a liquid body having a living organism,

measuring the power density and electrical conductivity of said liquid body, and

adjusting the electric power applied to said liquid body and living organism according to a curve on a plot of electrical conductivity and power density based on transferring the optimal amount of electrical power into the body of a



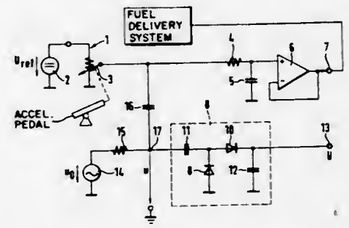
living organism to evoke a particular electroshock response from said selected living organism.

5,289,134

CIRCUIT FOR MONITORING CONTACT BETWEEN THE RESISTANCE TRACK AND THE WIPER OF A POTENTIOMETER

Rainer Kohr, Oberbillig, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 9, 1992, Ser. No. 866,311
Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4116603
Int. Cl.[5] G01R *27/14*
U.S. Cl. 324—714 **9 Claims**



1. A circuit for monitoring the contact between the resistance track and the wiper of a potentiometer, wherein the potentiometer provides an adjustable DC voltage to be tapped from the wiper, the circuit comprising:

a series circuit of a resistor and a capacitor;

a source of alternating voltage applying alternating voltage to the wiper via the series circuit; and

means for rectifying voltage at a junction point between the resistor and the capacitor of the series circuit; and

wherein resistance of the resistor is greater than an impedance formed by the capacitance of the capacitor plus one-fourth of the track resistance.

5,289,135

PULSE PHASE DIFFERENCE ENCODING CIRCUIT

Kouichi Hoshino, Obbu; Takamoto Watanabe, Nagoya, and Yoshinori Obtsuka, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of Japan

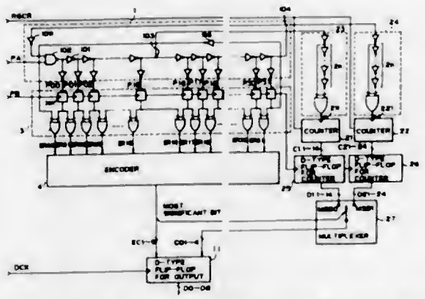
Continuation of Ser. No. 645,874, Jan. 25, 1991, Pat. No. 5,128,624. This application Jul. 6, 1992, Ser. No. 909,211
Claims priority, application Japan, Jan. 25, 1990, 2-15865
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] G01R *25/08*
U.S. Cl. 328—133 **14 Claims**

1. A phase difference detecting circuit for detecting a phase

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difference between a first signal and a second signal delayed from said first signal by a certain delay time, said circuit comprising:

a delayed signal generating means comprising a plurality of serially-connected delay elements having an end delay element connected to a beginning delay element to form a ring circuit, said first signal being input to any one connecting portion formed between any two adjacent delay elements, for sequentially generating a delayed signal at each said connecting portion of each said delay element, said signal being sequentially delayed from one connecting portion to another;



position detecting means, connected to said delayed signal generating means, for detecting a position of said delayed signal from one of a plurality of said delay elements at a time when the second signal is input thereto;

counting means, connected to said delayed signal generating means, for counting a number of times that said delayed signal travels between said end and beginning delay elements; and

detecting means, connected to said position detecting means and to said counting means, for detecting a phase difference between said first and second signals using a count from said counting means and a detected position of said delayed signal detected by said position detecting means.

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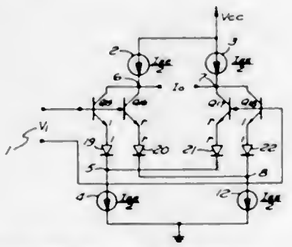
BIPOLAR DIFFERENTIAL PAIR BASED TRANSCONDUCTANCE ELEMENT WITH IMPROVED LINEARITY AND SIGNAL TO NOISE RATIO

Geert A. DeVeirman, Irvine, and Paul R. Henneuse, Cupertino, both of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Continuation of Ser. No. 710,512, Jun. 4, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 999,195

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—252 **16 Claims**



1. A transconductance circuit comprising:

a transconductance element with a first and second differential pair of transistors in parallel having transistor area ratios of 1:r and r:1, respectively; said first and second pair of transistors coupled to a differential input signal, said transconductance element providing a differential current output signal;

a plurality of diodes coupled to said transconductance element, said diodes for improving linearity of said transconductance element;

wherein emitters of said first and second differential pair of transistors are coupled to said diodes, said diodes coupled to said emitters of said first differential pair of transistors having a diode area ratio of 1:r, and said diodes coupled to said emitters of said second differential pair of transistors having a diode area ratio of r:1.

5,289,137

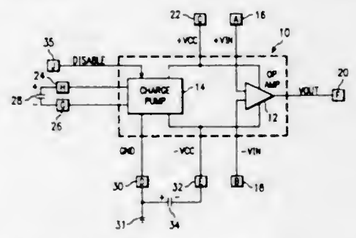
SINGLE SUPPLY OPERATIONAL AMPLIFIER AND CHARGE PUMP DEVICE

Joseph Nodar, Dallas; Todd M. Neale, Carrollton, both of Tex., and Douglas R. Johnson, Cedar Rapids, Iowa, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 815,455, Dec. 31, 1991, abandoned. This application May 25, 1993, Ser. No. 67,404

Int. Cl.[5] H03F *3/04*

U.S. Cl. 330—296 **24 Claims**



1. An operation amplifier comprising:

a bias generator operable to couple to a neutral voltage level providing current bias said neutral voltage level being between a positive voltage level and a negative level, said bias generator being isolated from the negative voltage level;

an input stage coupled to said bias generator and operable to receive two input signals, said input stage comprising a balanced signal path to isolate noise found on said input signals;

a conversion circuit coupled to said balanced signal path for converting said input signals into a single differential signal; and

an output stage coupled to said conversion circuit for processing sad single differential signal into an output signal, said output signal operable to swing from substantially near the positive voltage level to substantially near the negative voltage level in response to a variation of said input signals;

wherein said output stage comprises a P-N-P type transistor to provide linearity and low distortion on said output signal.

5,289,138

APPARATUS FOR SYNCHRONOUSLY SELECTING DIFFERENT OSCILLATORS AS SYSTEM CLOCK SOURCE

Eugene Wang, Fremont, Calif., assignor to Amdahl Corportion, Sunnyvale, Calif.

Filed Jul. 30, 1992, Ser. No. 922,209

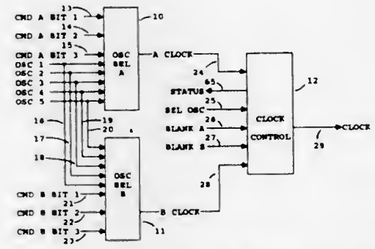
Int. Cl.[5] H03B *27/00;* **H01J** *19/82;* **H04B** *1/10*

U.S. Cl. 331—49 **8 Claims**

1. An apparatus for synchronously selecting different oscillators as a system clock within a system having a plurality of oscillators and a control means for generating selection signals indicating which oscillator is to be selected and sequence control signals for controlling the clock selection process of said apparatus, said control signals being asynchronous to said oscillator signals, said apparatus comprising:

a first oscillator selection means, receiving the output of each of said plurality of oscillators and said selection signals, for selecting the output of one of said plurality of oscillator in response to said selection signals and for providing said selected output of said selected oscillator as the A CLOCK;

a second oscillator selection means, receiving the output of each of said plurality of oscillators and said selection signals, for selecting the output of one of said plurality of oscillator in response to said selection signals and for providing said selected output of said selected oscillator as the B CLOCK; and



a clock control means, receiving said A CLOCK, said B CLOCK and said control signals, for switching between said A CLOCK and said B CLOCK in response to said control signals to provide either said A CLOCK or said B CLOCK as the system clock to said system and for providing a STATUS signal to said control means for indicating whether said A CLOCK or said B CLOCK is presently selected as the system clock, said clock control means including a blanking means for preventing clock signals or noise from appearing on the system clock during the time that said first or second oscillator selection means is in the process of selecting a new oscillator, interlocking means for controlling the sequence of switching between said A CLOCK and said B CLOCK thereby preventing said A CLOCK and said B CLOCK from appearing as the system clock as the same time and a synchronizing means for synchronizing said control signals to said A CLOCK or said B CLOCK during a switching process.

5,289,139

PUSH-PUSH RING RESONATOR OSCILLATOR

Slawomir J. Fiedziuszko, Palo Alto, and John A. Curtis, Sunnyvale, both of Calif., assignors to Space Systems/Loral, Palo Alto, Calif.

Continuation-in-part of Ser. No. 849,504, Mar. 11, 1992, Pat. No. 5,204,641. This application Nov. 13, 1992, Ser. No. 975,781

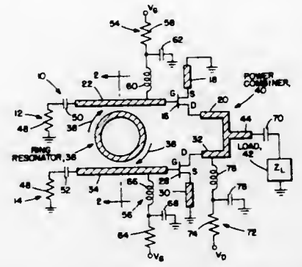
Int. Cl.[5] H03B *5/18*

U.S. Cl. 331—56 **14 Claims**

1. A push-push superconductor resonator oscillator comprising:

a resonator comprising an annulus of superconductor material;

a first oscillator and a second oscillator phase locked by said resonator; and



means for summing oscillation signals produced by said first and said second oscillators to provide an output signal from said superconductor resonator oscillator.

5,289,140

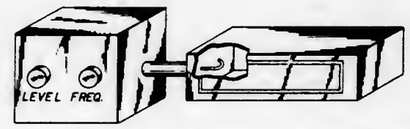
CONSISTENT DIAGNOSTIC TEST METHOD USING MICROWAVES

Finn Jorgenson, Santa Barbara, and Bent B. Vaboe, Carpinteria, both of Calif., assignors to Dako Japan Co., Ltd., Kyoto, Japan

Filed Aug. 16, 1991, Ser. No. 745,688

Int. Cl.[5] H03B *1/00;* **H05B** *6/80;* **G01N** *22/00, 33/48*

U.S. Cl. 331—74 **15 Claims**



1. A method for immunohistochemical testing comprising the steps of:

placing a sample to be tested on a sample slide;

treating the sample;

placing the sample and slide in a microwave cavity;

uniformly energizing the microwave cavity using microwave energy source means including at least three different wavelengths; and

energizing the cavity for a predetermined specified reaction time,

whereby samples are energized consistently with the proper level of microwave energy despite the variations in heating normally found in microwave heating cavities.

5,289,141

METHOD AND APPARATUS FOR DIGITAL MODULATION USING CONCURRENT PULSE ADDITION AND SUBTRACTION

Peter Nanni, Algonquin; Bradley M. Hiben, Glen Ellyn, and Leslie D. Mutz, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 13, 1992, Ser. No. 960,150

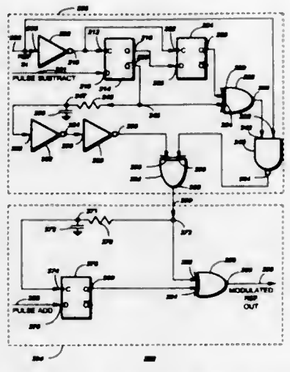
Int. Cl.[5] H03C *3/09;* **H03L** *7/06;* **H04L** *27/12*

U.S. Cl. 332—101 **20 Claims**

1. A method of generating an output signal having a predetermined frequency shift relative to the frequency of a reference signal in a system comprising a digital phase-locked loop coupled to the reference signal for generating the output signal, the method comprising the steps of:

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(a) adding pulses to the reference signal, the pulses recurring at a first cyclical rate; and



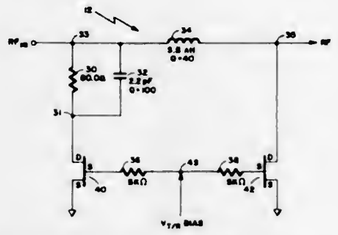
(b) concurrently subtracting pulses from the reference signal at a second cyclical rate.

5,289,142

TRANSMIT/RECEIVE SWITCH FOR PHASED ARRAY ANTENNA

David M. Upton, Mont Vernon, N.H., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 31, 1992, Ser. No. 860,923
Int. Cl.[5] H01P *1/15*
U.S. Cl. 333—103 **15 Claims**



1. A transmit/receive switch comprising:

a control signal coupled to a control input of said transmit/-receive switch for selectively placing said switch in one of two modes, a first state of said control signal selecting a transmit mode of said switch and a second state of said control signal selecting a receive mode of said switch;

network means coupled to an input port of said switch for providing a termination impedance to match a source impedance of an RF input signal coupled to said input port in response to said first state of said control signal, said transmit/receive switch providing a phase delay in a range of 30 degrees to 60 degrees to said RF input signal; and

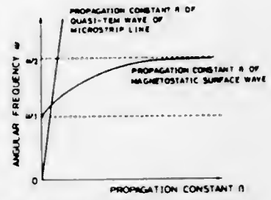
means coupled between said control input and said network means for electrically disconnecting said termination impedance in response to said second state of said control signal, thereby enabling said RF input signal to pass through said transmit/receive switch.

5,289,143

MAGNETOSTATIC WAVE DEVICE

Makoto Tsutsumi, Hirakata, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 22, 1992, Ser. No. 918,503
Claims priority, application Japan, Jul. 29, 1991, 2-12965
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—204 **9 Claims**



1. A magnetostatic wave device comprising:

a ferrimagnetic base material;

a microstrip line disposed at one side of said ferrimagnetic base material so as to intersect orthogonally with a main surface of said ferrimagnetic base material; and

a ground conductor disposed at the other side of said ferrimagnetic base material so as to intersect orthogonally with the main surface of said ferrimagnetic base material; wherein

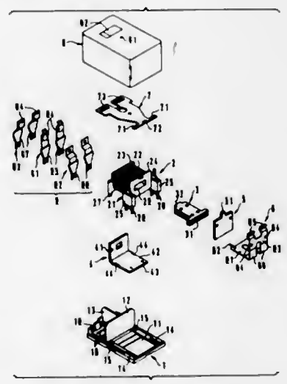
a d.c. magnetic field is applied in a direction which is parallel to the main surface of said ferrimagnetic base material and orthogonal to the main surface of said microstrip line.

5,289,144

ELECTROMAGNETIC RELAY AND METHOD FOR ASSEMBLING THE SAME

Shangshyan Liao, Ypsilanti, Mich., assignor to Potter & Brumfield, Inc., Princeton, Ind.

Filed Aug. 21, 1992, Ser. No. 930,023
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **12 Claims**



1. An electromagnetic relay comprising:

a flat insulating base;

a motor unit mounted on said base, comprising a coil, an iron core and a frame;

an armature pivoted on an end edge on said frame and having a free end movable in an actuating direction parallel to said base upon energization and de-energization of said coil;

at least one contact group comprising a movable contact spring and at least one stationary contact member fastened to said base and extending nearly perpendicular thereto;

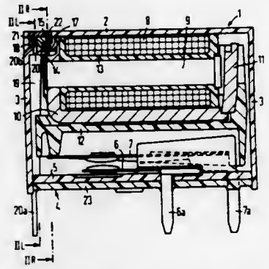
an insulated pusher connected to said movable end of said armature and to a movable end of said at least one movable contact spring so as to actuate said movable contact spring in accordance with said armature, said coil including a bobbin having at least one post extending downward for mounting the motor unit to the base, said base having at least one oblong mounting hole formed therein for receiving said at least one post, and said mounting hole allowing the motor unit to be adjustably displaced in the actuating direction prior to complete assembly, to establish a predetermined contact gap.

5,289,145

ELECTROMAGNETIC RELAY AND A METHOD FOR ITS PRODUCTION

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

PCT No. PCT/DE90/00890, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO91/15866, PCT Pub. Date Oct. 17, 1991
PCT Filed Nov. 19, 1990, Ser. No. 934,523
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1990, 4011402
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **8 Claims**



1. An electromagnetic relay, comprising:

a housing including a cap with a substantially closed top, closed side walls and an open bottom, said housing including a bottom part mounted to close said open bottom of said cap,

a contact system in said housing and having contact connecting elements guided out of said housing,

a magnet system having a coil located adjacent to the closed top of said cap,

supporting elements connected to winding ends of said coil

a coil former in which said supporting elements are anchored

coil connecting elements electrically connected to said supporting elements,

said coil connecting elements being guided in each case in insulated fashion in said closed side walls of said cap from the bottom as far as the region of the top of said cap, and extending into a depression in the top of said cap which is open outwards,

said supporting elements of said coil former being guided in insertion openings with respect to the top of said cap and likewise open in each case in one of said depressions, and

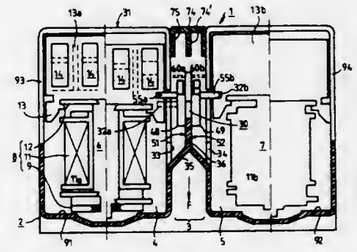
a conductive connection in each of said depressions between the respective end of said supporting elements and an end of said coil connecting element.

5,289,146

REVERSING CONTACTOR APPARATUS WITH LOCKING

Raymond Plumeret, Asnieres; Patrick Morinaud, Reuil Malmaison; Jacques Olifant, Nanterre, and André Vergez, Villennes sur Seine, all of France, assignors to Telemecanique, France

Filed Apr. 25, 1991, Ser. No. 691,242
Claims priority, application France, Apr. 30, 1990, 90 05560
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—160 **10 Claims**



1. An electric reversing contactor comprising:

a casing having first and second compartments located on the respective sides of a central housing;

first and second electromagnet devices having first and second respective coils, first and second energizing circuits respectively connected to said coils;

first and second respective armature pieces, each movable from a rest to a work position when the respective coil is energized by the respective energizing circuit; first and second power switch devices and first and second mechanical linkages, receptively coupling the first and second power switch devices to the first and second armature pieces; said first and second electromagnet devices, power switch devices and mechanical linkages being respectively housed in said first and second compartments;

unitary mechanical and electrical interlocking means placed within the central housing, said interlocking means comprising a movable locking piece having a rest position and first and second actuated positions, first and second locking switches and actuating means coupling said movable locking piece to said first and second locking switches for respectively closing the first switch when the movable locking piece is in the first actuated position, and the second switch when the movable locking piece is in the second actuated position;

first and second further mechanical means, respectively cooperating with said first and second electromagnet devices and with said movable locking piece for preventing simultaneous motion of the first and second armature pieces; and means electrically connecting said switches to said coils for preventing simultaneous energization of said electromagnet devices.

5,289,147

IMAGE FORMING APPARATUS HAVING SYSTEM FOR REDUCING NOISE

Tadao Koike, Tokyo; Kenji Fukumizu, Yokohama; Hiroo Kitagawa, Yokohama; Fumihiko Ishikawa, Yokohama; Tkaaki Yanagisawa, Tokyo, and Satoshi Kanda, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,691
Claims priority, application Japan, May 15, 1991, 3-110566; Jun. 14, 1991, 3-143450; Jan. 9, 1992, 4-002081
Int. Cl.[5] G03G *21/00;* **G01K** *11/16;* **H04N** *1/00;* **B41J** *29/10*
U.S. Cl. 355—200 **38 Claims**

1. An image forming apparatus comprising:

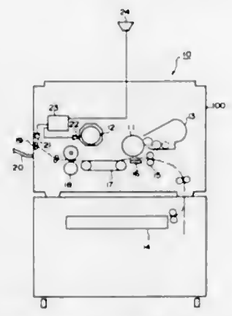
a housing;

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a mechanism, mounted in said housing, for forming images on a medium;

an operation panel formed on said housing, said mechanism being driven in accordance with an operating instruction input from said operation panel by an operator;

noise detecting means, provided in said housing, for detecting a noise generated by a driving of said mechanism; and



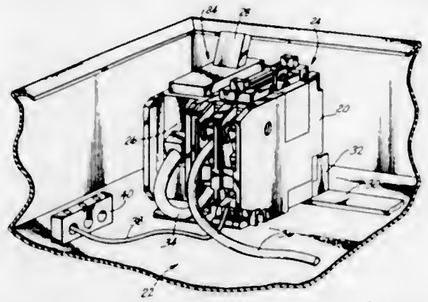
noise canceling means, coupled to said noise detecting means, for outputting an acoustic wave to an area adjacent to said operation panel of said housing, said acoustic wave being generated based on the noise detected by said detecting means so that said acoustic wave and a noise present in said area cancel out, whereby the noise present in said area is reduced.

5,289,148

ADAPTABLE POWER SWITCH MODULE FOR CIRCUIT BREAKER PANELS

John V. Siglock, Sierra Madre, Calif., and Lawrence Phillips, Jr., Kula, Hi., assignors to Intelligent Electrical Products, Inc., Anaheim, Calif.

Filed Dec. 2, 1992, Ser. No. 984,462
Int. Cl.[5] H01H *9/02*
U.S. Cl. 335—202 **15 Claims**



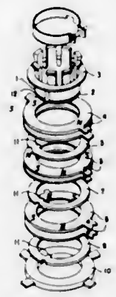
1. A power switch module adapted for use in circuit breaker panels of various configurations, the circuit breaker panel having a power buss extending along a series of side-by-side circuit breaker panel positions each configured to normally receive a single conventional circuit breaker unit, the switching module having an integral electrical control function for controlling switching to an external load, the power switch module comprising a housing; switch means including a pair of switch contacts in the housing movable between an open position and a closed position; microprocessor means in the housing having a control function for controlling operation of the switch means; switch control means in the housing responsive to an output from the microprocessor for moving the switch contacts between the open and closed positions; control inputs to the microprocessor for controlling operation of the switch means; the housing having an external configuration for mounting the housing in a single breaker position in the circuit breaker panel normally occupied by a single conventional circuit breaker unit; a circuit breaker buss connector on the housing for attachment to the power buss of the circuit breaker panel; first circuit means within the housing for transmitting electrical power from the buss connector to the microprocessor for controlling microprocessor functioning; second circuit means within the housing for transmitting electrical power from the buss connector to the switch control means, the switch control means being activated by an output from the microprocessor to produce a control signal for closing the switch contacts to carry out said control function of the microprocessor; a switched circuit input to one of said switch contacts for coupling power from the power buss to the switch means through an intervening series-connected circuit breaker unit externally mounted in a separate circuit breaker position within the same panel; and a switch circuit output from the other of said switch contacts for coupling electrical power from the series-connected circuit breaker unit through the switch means and to an external load when the switch contacts are closed.

5,289,149

ELECTRON BEAM ADJUSTING DEVICE WITH MAGNET RINGS OF DIFFERING ALNICO POWDERED METAL CONTENT

Shigeo Nishita, and Masatoshi Hirai, both of Mooka, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushikl Kaisha, Osaka, Japan

PCT No. PCT/JP91/01385, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/01385, PCT Pub. Date Oct. 11, 1991
PCT Filed Oct. 11, 1991, Ser. No. 849,371
Claims priority, application Japan, Oct. 11, 1990, 2-106949
Int. Cl.[5] H01J *29/54*; H01F *1/02*
U.S. Cl. 335—212 **5 Claims**



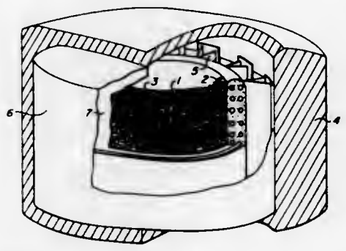
1. An electron beam adjusting device having pairs of two-, four- and six-pole ring-shaped magnets formed of an alnico metal system bonded magnet material having an alnico metal magnetic powder content, which are attached around the neck of a cathode-ray tube, wherein said two-pole ring-shaped magnets are made of bonded magnet materials which have a different wt % of the alnico metal magnetic powder than the wt % of the alnico metal magnetic powder of said four- and six-pole ring-shaped magnets.

5,289,150

METHOD AND APPARATUS FOR SUPERCONDUCTING TRAPPED-FIELD ENERGY STORAGE AND POWER STABILIZATION

Mario Rabinowitz, Redwood City, Calif., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Aug. 30, 1991, Ser. No. 752,307
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—216 **24 Claims**



1. Apparatus for storing trapped superconducting magnetic field energy comprising:

a coil having means for directing an electrical current therethrough; and

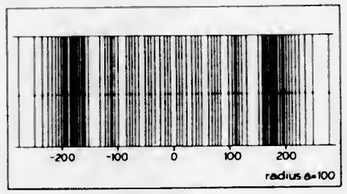
superconducting material adjacent to the coil and coupled magnetically thereto, whereby a magnetic field generated by the coil when an electrical current is directed therethrough will be stored in the material.

5,289,151

ELECTRICAL COILS

Robert Turner, Bethesda, Md., assignor to British Technology Group Limited, London, England

Continuation of Ser. No. 282,812, Dec. 12, 1988, abandoned. This application Aug. 24, 1992, Ser. No. 933,896
Claims priority, application United Kingdom, Dec. 11, 1987, 8729037
Int. Cl.[5] H01F *5/00*
U.S. Cl. 335—299 **11 Claims**



1. A solenoid coil in which the inductance L of the coil is defined by the expression:

$$L = -\frac{\mu_0 a^2}{I^2} \sum_{m=-\infty}^{\infty} \int_{-\infty}^{\infty} dk\,|j_\phi{}^m(k)|^2\, I_m'(ka)\, K_m'(ka)$$

wherein I is the current in each turn of the coil and in which the coil comprises a set of discrete wire arc each arc being placed along an equally spaced contour of the stream function in such a position that it carries the surface current from the areas on either side of it, the surface current density being defined by the expression

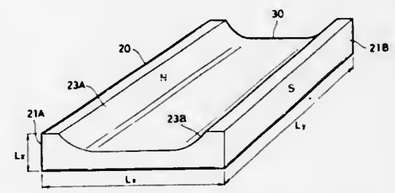
$$j_\phi(\phi,z) = \frac{1}{2\pi} \sum_{m=-\infty}^{\infty} \int_{-\infty}^{\infty} e^{im\phi}\, e^{ikz}\, j_\phi{}^m(k)dk$$

5,289,152

PERMANENT MAGNET MAGNETIC CIRCUIT

Masami Oguriyama; Yoshio Ishigaki, both of Ichikawa; Haruo Okano, Tokyo; Isahiro Hasegawa, Zushi; Jun-ichi Arami, Hachioji, and Hiromi Harada, Hiratsuka, all of Japan, assignors to TDK Corporation, Tokyo; Kabushiki Kaisha Toshiba, Kawasaki and Tokyo Electron Limited, Tokyo, all of Japan

Continuation of Ser. No. 762,374, Sep. 19, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 47,054
Claims priority, application Japan, Sep. 19, 1990, 2-249040
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—302 **6 Claims**



1. A permanent magnet magnetic circuit comprising:

a unitary magnet block having first and second opposite outer edge surfaces and a channel defined between said first and second opposite outer edge surfaces, said channel including first and second opposed inner surface portions disposed inward of said first and second opposite outer edge surfaces;

first and second main magnetic poles of opposite polarities respectively situated at said first and second opposite outer edge surfaces for creating a loop pattern of unidirectional parallel lines of magnetic force extending continuously between the first and second opposite outer edge surfaces;

first and second auxiliary magnetic poles respectively situated at said first and second opposed inner surface portions, the first auxiliary magnetic pole having an opposite polarity to that of the first main magnetic pole and the second auxiliary magnetic pole having an opposite poiarity to that of the second main magnetic pole, for establishing a unidirectional parallel magnetic field in an open space located outside a surface of the magnet block in the channel;

wherein said channel is recessed to define said first and second opposed inner surface portions and said first and second main magnetic poles and first and second auxiliary magnetic poles are both formed in the unitary magnet block.

5,289,153

SNAP TOGETHER, WRAP AROUND CORED COIL CLAMP

Robert S. Gross, Fort Wayne, Ind., assignor to General Electric, New York, N.Y.

Filed Jul. 1, 1992, Ser. No. 907,275
Int. Cl.[5] H01F *27/28*
U.S. Cl. 336—210 **3 Claims**

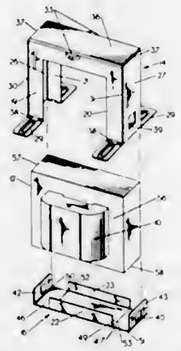
1. An electrical assembly comprising:

a generally squared figure eight laminated core assembly having a coil assembly surrounding a central cross bar of said core assembly;

an upper clamp comprising a top wall having end walls extending generally perpendicular thereof, each of said end walls having front and rear flanges extending perpendicular therefrom, front and rear flanges of said end walls having mounting feet extending perpendicular therefrom, such that said mounting feet are in a plane which is gener-

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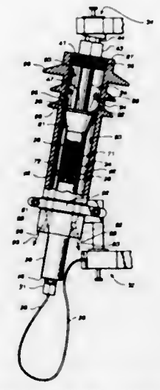
ally parallel to the plane of said top wall, said end walls having slots formed therein at the distal ends thereof; and a bottom clamp having a bottom wall with front and rear flanges extending at right angles thereto and extensions of said bottom wall formed at a slight downward angle thereto, said extensions having end walls extending generally perpendicular thereto, the end-to-end length of said bottom wall being just slightly larger than the end-to-end length of said top wall of said upper clamp so that the end walls of said upper clamp will fit snugly within the end walls of said lower clamp, the end walls of said lower clamp having tabs staked therein, the bottoms of which



extend inwardly of said end walls so as to engage said slots of said end walls of said upper clamp when said upper clamp is positioned within said lower clamp, the flanges of said lower clamp being sized to extend between edges of the flanges of one of the end walls of said upper clamp and the edges of the flanges of the other end wall of said upper clamp when said upper clamp is disposed within said lower clamp, said upper clamp fashioned to slip snugly over said core and coil assemblies, and fit snugly within the end walls of said lower clamp so that the lower edge of the tabs in said lower clamp engage the lower edge of a slots in said upper clamp, thereby to secure said clamps together and encapsulate said core.

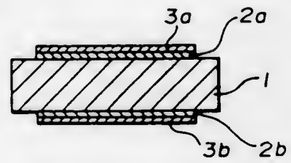
5,289,154
FUSE CUTOUT ASSEMBLY AND METHOD
Kenneth S. Davis, 1539 S. Helm Ave., Fresno, Calif. 93727
Filed Apr. 21, 1993, Ser. No. 51,052
Int. Cl.[5] H01H *71/10, 71/20*
U.S. Cl. 337—169 **24 Claims**

1. A fuse cutout assembly comprising:
an electrical fuse;
a containment housing;
a mounting assembly mounting said fuse inside said housing for electrical connection of said fuse in an electrical circuit;
a plunger assembly movably mounted at least partially inside said housing, said plunger assembly being formed and positioned to be propelled inside said housing by hot gases generated upon rapid melting of said fuse; and
said housing and plunger assembly being further formed to contain substantially all of said hot gases during movement of said plunger assembly in said housing and being



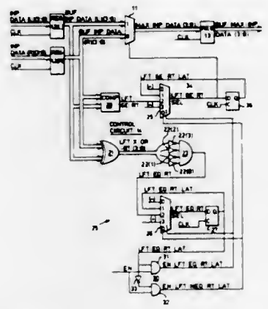
formed to retain said plunger assembly against detachment from said housing.

5,289,155
POSITIVE TEMPERATURE CHARACTERISTIC THERMISTOR AND MANUFACTURING METHOD THEREFOR
Takuji Okumura; Hiroshi Inagaki, and Yukie Suzuno, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
PCT No. PCT/JP91/01202, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO92/04720, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 10, 1991, Ser. No. 855,642
Claims priority, application Japan, Sep. 10, 1990, 2-239317
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—22 SD **6 Claims**



1. A positive temperature characteristic thermistor characterized by comprising:
a thermistor main body made of a semiconductor material having a positive temperature characteristic;
first ohmic electrode layers containing as their main component a metal other than silver and formed on front and rear surfaces of said thermistor main body so that outer peripheral edges of said first ohmic electrode layers are located inside of outer peripheral edges of said thermistor main body; and
second electrode layers made of a material containing silver as their main component and formed on said first electrode layers so that outer peripheral edges of said second electrodes layers coincide with said outer peripheral edges of said first electrode layers.

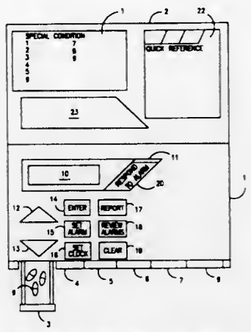
5,289,156
DATA COUPLING ARRANGEMENT
Mahesh N. Ganmukhi, Littleton, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.
Continuation of Ser. No. 783,044, Oct. 28, 1991, abandoned.
This application Jun. 16, 1993, Ser. No. 77,897
Int. Cl.[5] G06F *7/02*
U.S. Cl. 340—146.2 **10 Claims**



1. A data coupling arrangement comprising:
A. a plurality of data input circuits for, in parallel, each successively receiving nibbles of respective data words, each nibble having a value;
B. a selective coupling circuit for selectively coupling nibbles from one of said data input circuits as identified by an input circuit identifier to an output;
C. an input identifier control circuit for generating the input circuit identifier having a selected condition to control said selective coupling circuit in response to a selected relationship between values represented by said nibbles to thereby control transfer of nibbles from said data input circuits to the output; and
D. a latch control circuit for, in response to receipt by said data input circuits of nibbles whose values differ, enabling said input identifier circuit to thereafter maintain its condition, thereby enabling said selective coupling circuit to thereafter transfer the nibbles subsequently received by same data input circuit to the output.

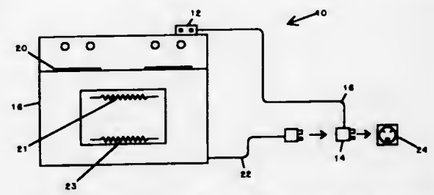
5,289,157
MEDICINE REMINDER AND STORAGE DEVICE
Arthur G. Rudick, Marietta, Ga., and Michael Mahle, Rochester, N.Y., assignors to Vitafit International, Inc., Chicago, Ill.
Filed Dec. 23, 1991, Ser. No. 812,770
Int. Cl.[5] G08B *1/00;* **G04B** *47/00*
U.S. Cl. 340—309.15 **11 Claims**

1. An apparatus for indicating when medicine should be taken, comprising:
clock means for providing a clock time of day;
alarm setting means for setting at least one alarm time of day for at least one medicine;
alarm means for activating an alarm when said clock time of day is the same as at least one alarm time of day;
acknowledgment means for indicating when a medicine has been taken in response to an alarm; and



recording means for storing said clock time of day when said alarm was activated and said clock time of day when said acknowledgment in response to an alarm occurred.

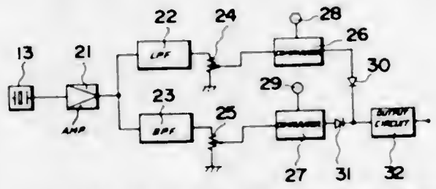
5,289,158
RANGE MONITORING APPARATUS
James E. Neves, P.O. Box 595, Black Mountain, N.C. 28711
Filed Mar. 27, 1992, Ser. No. 858,612
Int. Cl.[5] G08B *1/00, 21/00*
U.S. Cl. 340—309.15 **8 Claims**



1. In combination with a standard range having burners thereon, oven elements therein, and a power line connected thereto, an apparatus in electrical communication therewith for monitoring said range comprising:
sensing means for sensing a preset level of electrical current through said power line;
timing means for timing said current;
whereby said sensing means initiates said timing means when said sensing means senses said preset level of electrical current;
disconnect means for interrupting said current;
signaling means providing a signal when said disconnect means interrupts said current, whereby said signal means is activated by said disconnect means;
electronic control means for controlling said timing means and said signaling means whereby said timing means can be adjusted to time for different predetermined amounts of time.

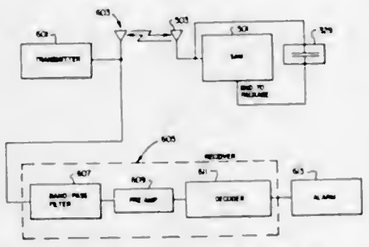
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,159
AUTOMOBILE ALARM CIRCUIT RESPONSIVE TO MULTI-FREQUENCY PHENOMENA
Keisuke Iwata, Tokyo, Japan, assignor to Kabushiki Kaisha Iwata Electric, Tokyo, Japan
Filed Apr. 16, 1992, Ser. No. 869,394
Claims priority, application Japan, Nov. 28, 1991, 3-105798
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—429 **2 Claims**



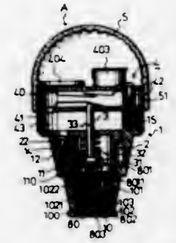
1. A sensor for detecting theft or tampering of an automobile comprising a piezo-electric element for producing an output voltage in response to vibrations of said automobile, said piezo-electric element having one side thereof attached to a rigid base member, said base member attached to the automobile body; a weight adhered to the opposite side of said piezo-electric element; a low-pass filter for receiving the output voltage of said piezo-electric element and for providing an ultra low frequency output signal within the range of 1–5 Hz, said ultra low frequency output signal corresponding to vibrations of said automobile body; a band-pass filter for receiving the output voltage of said piezo-electric element and for providing a low frequency bandpass output signal having a center frequency within the range of 30–50 Hz, said bandpass signal corresponding to vibrations of said automobile body; comparator means for receiving said ultra low frequency signal and said bandpass signal, comparing each with a predetermined value, respectively, and for providing an illuminating signal to an indicating means as well as an output signal to an output circuit when either of said ultra low frequency signal or said bandpass signal exceeds said predetermined value.

5,289,160
TIRE PRESSURE MONITORING SYSTEM
Carl A. Fiorletta, 4600 Versailles La., Plano, Tex. 75093
Filed Sep. 30, 1991, Ser. No. 769,937
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—447 **11 Claims**



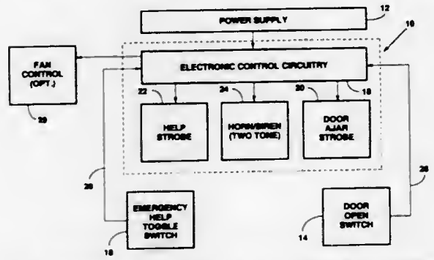
1. A wireless monitoring system for indicating the occurrence of a predefined condition with a transducer to which wires and other physical connections cannot be easily made, the monitoring system comprising:
transducer means mounted for sensing an occurrence of a predefined condition;
a surface acoustical wave (SAW) device mounted with the transducer means for receiving an interrogating radio frequency (RF) signal that energizes the SAW device for transmitting a predetermined RF echo signal on an antenna in response to the interrogating signal; and
antenna disconnect means coupled between the transducer means and the SAW device for enabling transmitting of the echo signal when the transducer means senses the predefined condition and for disenabling transmitting of the echo signal when the transducer means does not sense the predefined condition.

5,289,161
TIRE PRESSURE INDICATOR
Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan
Filed May 14, 1992, Ser. No. 882,897
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—447 **7 Claims**



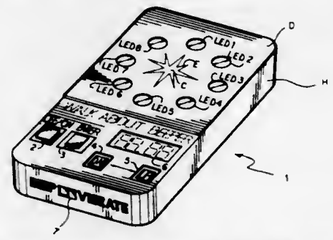
1. A pressure gauge for a pneumatic tire, comprising:
a casing having a hollow adaptor to be attached to the pneumatic tire, an air inlet and a finer piece for opening an inflating valve of the tire;
pushing means disposed inside said casing adjacent to said air inlet and being movable, in response to an inlet pressure entering through said air inlet, between a first position in which said inlet pressure is below a predetermined low pressure limit and a second position in which said inlet pressure is above a predetermined high pressure limit;
a spring-loaded push rod movably mounted inside said casing and being moved by said pushing means;
a signal producing unit provided inside said casing and having first and second switch devices which are controlled by the movement of said push rod, said first switch device activating said signal producing unit when said pushing means is in said first position, said second switch device activating said signal producing unit when said pushing means is in said second position; wherein said first switch device comprises a first circuit board mounted inside said casing above said pushing means and being formed with a central hole to permit said push rod to extend therethrough, a first conductor spring piece provided on a top side of said first circuit board and having one end fastened to said first circuit board, and an electrical contact provided on said first circuit board, and wherein said first spring piece and said electrical contact cooperatively form a normally closed switch, said push rod is incapable of pushing said first spring piece away from said electrical contact to break electrical connection when said pushing means is in said first position, and said push rod pushes said first spring piece away from said electrical contact when said pushing means is in said second position.

5,289,162
EMERGENCY CONDITION AND DOOR AJAR ALARM FOR APPLIANCES
Steven M. McDaniel, 3307 Stoney Mist, San Antonio, Tex. 78247
Filed Jul. 27, 1992, Ser. No. 920,827
Int. Cl.[5] G08B *21/00, 19/00*
U.S. Cl. 340—521 **10 Claims**



1. A combination appliance alarm system for providing indications that a door of the appliance has been left ajar and for indicating an emergency condition within the appliance, comprising:
a first "door" switch means positioned so as to be deactivated when said door of said appliance is closed and to be activated when said door of said appliance is open;
a second "help" switch means, said help switch means positioned within an interior space of said appliance, said help switch capable of being manually toggled from a normally deactivated position to an activated position;
a first visual indicator means;
a second visual indicator means;
an audio indicator means; and
electronic control circuitry, said electronic control circuitry capable of detecting a deactivated or activated condition of said first switch means and of said second switch means and controlling said first visual indicator means, said second visual indicator means, and said central audio indicator means in response to said condition of said first switch means and said condition of said second switch means.

5,289,163
CHILD POSITION MONITORING AND LOCATING DEVICE
Carla D. Perez, 1264 Greenwich Dr., Riverside, Calif. 92501, and Bertha D. Perez, 16920 Corwin Rd., Apple Valley, Calif. 92307
Filed Sep. 16, 1992, Ser. No. 945,371
Int. Cl.[5] G08B *1/08;* **H04Q** *7/00*
U.S. Cl. 340—539 **14 Claims**



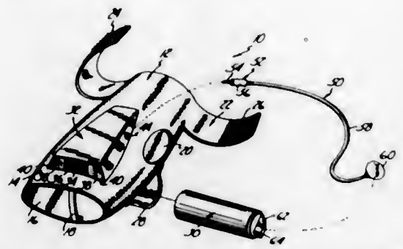
1. A location monitoring device for alerting a user when a locating transmitter which transmits a carrier having a predetermined frequency with a predetermined signal strength is located outside a predetermined proximity radius from said location monitoring device, wherein said location monitoring device displays the relative location of the transmitter once outside the predetermined proximity radius, the location monitoring device comprising:
a compact portable outer housing having a front side and a back side;
a display having a plurality of light generators located around a center of said display on said front side of said outer housing;
carrier reception means for detecting said carrier propagating in a given linear direction from said locating transmitter to said location monitoring device;
direction detecting means for determining a propagation angle as measured between said given linear direction as detected by said carrier reception means and a reference linear direction;
signal strength detection means for determining the signal strength of said carrier detected by said carrier reception means;
threshold detection means for generating an alert signal whenever said signal strength as determined by said signal strength detection means drops below a predetermined signal strength threshold value, thereby indicating that said locating transmitter is located outside of said predetermined proximity radius;
alert signal indication means responsive to said alert signal for indicating to the user that said locating transmitter is outside of said predetermined proximity radius;
a display driver having an input for receiving display digital control signals for controlling said display driver to activate at least one of said plurality of light generators;
an emblem located at said center of said display with said plurality of lights located around said emblem at equal angular distances from each other when measured from any one of said plurality of light generators to said emblem and then to another successive one of said plurality of light generators and wherein said reference linear direction is defined by that direction from said emblem to a first light generator of said plurality of light generators; and,
a controller having a first display controller means for supplying said display driver with said display digital control signals so as to activate one of said plurality of light generators in response to the reception of said alert signal,
wherein said one of said plurality of light generators defines a locating linear direction when measured from said emblem to said one of said plurality of light generators and wherein a locating angular direction defined by the angle between said reference linear direction and said locating linear direction is substantially equal to said propagation angle within a given predetermined tolerance.

5,289,164
GLOVE TYPE HOLDER FOR SECURITY DEVICE
Patrick J. Novak, St. Paul, Minn., assignor to BooFoo Ideas, Inc., Eagan, Minn.
Filed Jul. 20, 1992, Ser. No. 916,907
Int. Cl.[5] G08B *15/02*
U.S. Cl. 340—574 **23 Claims**

14. A protection device which aids a user of the device in defending against an attacker and signals that the user is being attacked, the device comprising:
an article of clothing worn by the user for attaching the device to the body of the user;
defense means for defending against the attacker;

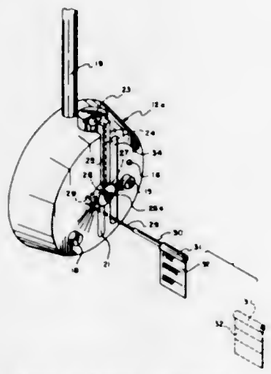
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signalling means for both deterring the attacker and signalling for outside help; and



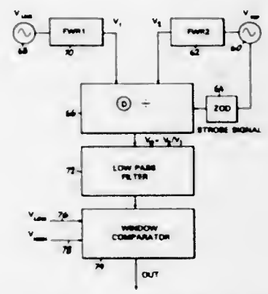
trigger means for activating both the defense means and the signalling means, and being capable of being activated by a single digit of the user.

5,289,165
SMOKE ALARM APPARATUS
William B. Belin, c/o Doug Mason-Davin Realty 914 S. Dubuque, Iowa City, Iowa 52240
Filed Mar. 26, 1992, Ser. No. 858,037
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—628 **2 Claims**



1. A smoke alarm apparatus, comprising,
a first housing, the first housing including a smoke sensor member, and
an audible alarm contained within the first housing adjacent the smoke sensor member, and
a second housing, the second housing spaced from and below the first housing, with an electrical connector conduit in electrical communication between the first housing and the second housing, and the second housing including a signal test button in cooperation with the smoke sensor member to effect selective actuation of the audible alarm, and
a delay button, the second housing including a forward wall, with the delay button and the signal test button projecting through the forward wall, and
a timer and delay circuit within a timer and delay circuit housing contained within the second housing in cooperation with the delay button to effect a timed delay of the audible alarm, and
the second housing including an illumination housing bulb mounted to the second housing, with a fiber optic cable housing positioned adjacent the illumination bulb and directed along the forward wall, and a fiber optic cable, with a fiber optic cable rear distal end positioned adjacent the illumination bulb, and a fiber optic forward distal end, and a lower fiber optic cable housing mounted to the fiber optic cable housing, with the fiber optic cable forward end including a first fiber optic cable branch positioned adjacent the delay button, and a second fiber optic cable branch positioned adjacent the signal test button to provide for illumination of the signal test button and the delay button.

5,289,166
VOLTAGE DETECTOR
Isaac Cohen, Dix Hills, N.Y., assignor to Lambda Electronics Inc., Melville, N.Y.
Filed Oct. 4, 1991, Ser. No. 771,640
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—661 **11 Claims**

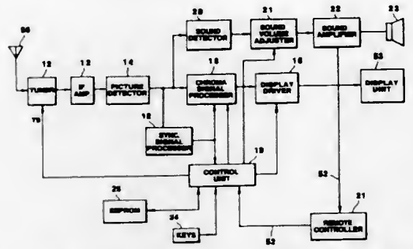


1. A voltage detector to sense deviations of instantaneous value of monitored AC voltage from pre-determined desired values, comprising:
a reference AC voltage source independent from said monitored AC voltage for providing a reference AC voltage having said pre-determined desired values;
divider means responsive to said monitored AC voltage and said reference AC voltage for dividing said reference voltage by said monitored voltage; and
window comparator means responsive to an output of said divider for producing an indication when the output of said divider means is either higher than some predetermined high value or lower than some predetermined low value, said window comparator means providing an output in response to an instantaneous deviation of said monitored AC voltage from said desired values.

5,289,167
DISPLAY APPARATUS CAPABLE OF PROCESSING DISTANCE INFORMATION
Kazuyuki Kurosawa, Tokyo, and Atsushi Shibutani, Tokorozawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Sep. 24, 1991, Ser. No. 764,622
Claims priority, application Japan, Sep. 28, 1990, 2-259095; Sep. 28, 1990, 2-259096
Int. Cl.[5] G09F *19/00*
U.S. Cl. 340—461 **18 Claims**

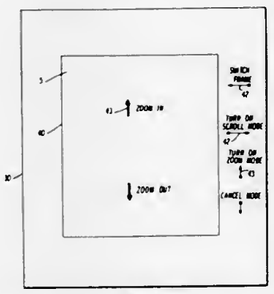
13. A display apparatus for processing distance information comprising:
display means;
a television receiver circuit;
measurement means for measuring a scaled distance on a map;
input means for inputting scale reduction information of the map;

calculation means for calculating a real distance based upon the scaled distance measured by said measurement means and the scale reduction information inputted by said input means; and



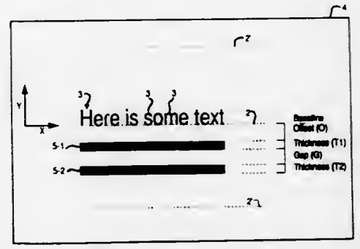
selection means for selectively displaying on said display means a television picture received by said television receiver circuit and the real distance calculated by said calculation means.

5,289,168
IMAGE HANDLING APPARATUS AND CONTROLLER FOR SELECTING DISPLAY MODE
Stephen Freeman, Bedfordshire, England, assignor to Crosfield Electronics Ltd., United Kingdom
Filed Jan. 23, 1991, Ser. No. 644,654
Claims priority, application United Kingdom, Jan. 23, 1990, 9001514
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—121 **8 Claims**



1. Image handling apparatus comprising a store for storing digital data defining an image; a monitor connected to the store for displaying the image according to one of a plurality of display modes; control means for controlling the image display in accordance with a selected one of said display modes; and indicating means including a position defining means defining a monitor display defining area corresponding to the area of the image displayed on the monitor and an indicating device moveable across the position defining means, the indicating means determining the position of the indicating device relative to the position defining means to indicate corresponding parts of the displayed image, wherein movement of the indicating device relative to the position defining means causes the displayed image to vary in accordance with the selected display mode, the type of variation within the selected display mode being dependent on the direction of relative movement between the indicating device and the position defining means, and wherein the control means is responsive to movement of the indicating device beyond the monitor display defining area of the position defining means in any one of at least two directions to select one of said display modes according to the direction of movement of the indicating device, each of said at least two directions corresponding to a different one of said display modes, such that the same relative movement of the indicating device relative to the position defining means within the monitor display defining area will cause different variations in the displayed image in accordance with the selected display mode.

5,289,169
COMPOSITE UNDERLINING FUNCTIONS FOR TEXT PROCESSORS
Charles N. Corfield, Palo Alto; Edward J. Kessler, Los Gatos; David J. Murray, Gilroy, and Sandra A. Sundberg, San Jose, all of Calif., assignors to Frame Technology Corporation, San Jose, Calif.
Filed Jan. 31, 1991, Ser. No. 648,291
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—144 **23 Claims**



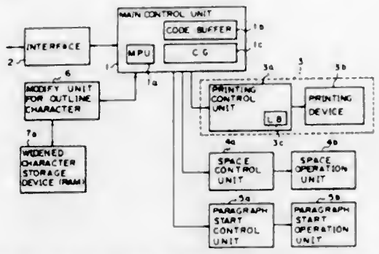
1. In an imaging system including a text processor having underlining functions, the method of imaging rules for characters of one or more fonts comprising:
reading user inputs for specifying underline algorithms and defining the characteristics of the rules for a particular one or more of the underlining functions,
selecting an underline algorithm from a plurality of underline algorithms as a function of the user inputs,
configuring the manner in which the selected algorithm depends on font properties as a function of the user inputs and for said particular one or more of the underlining functions, modifying the characteristics of the rules as a function of the user inputs,
drawing the rules in accordance with the underline algorithm.

5,289,170
METHOD OF AND APPARATUS FOR FORMING OUTLINE CHARACTER
Katuyasu Fujii, Tachikawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 448,434, Dec. 11, 1989, Pat. No. 5,099,230.
This application Oct. 25, 1991, Ser. No. 783,035
Claims priority, application Japan, Dec. 21, 1988, 63-323156
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—144 **4 Claims**

1. A method of forming an outline character comprising the steps of:
reading an original character data from a character data storage means storing character data expressed by a dot pattern;
peripherally expanding the dot pattern of the read original character data by at least one dot to widen the read original character; and
removing the dot pattern of the original character data except for dots in the upper or lower end of a dot display

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space, from the widened character to form a white space when the dot pattern of the original character data stored



in the character data storing means exists at at least one upper or lower end of the display place.

5,289,171

COLOR DISPLAY APPARATUS

Takashi Nire; Takehito Watanabe, and Satoshi Tanda, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

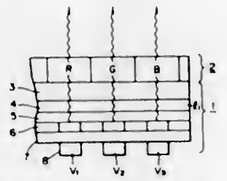
PCT No. PCT/JP87/00469, § 371 Date Dec. 29, 1988, § 102(e) Date Dec. 29, 1988, PCT Pub. No. WO88/00382, PCT Pub. Date Jan. 14, 1988

Continuation of Ser. No. 360,926, Dec. 29, 1988, abandoned. This PCT application Jul. 3, 1987, Ser. No. 825,759

Claims priority, application Japan, Jul. 3, 1986, 61-156896

Int. Cl.[5] G09G *3/30*

U.S. Cl. 345—76 **4 Claims**



1. A color display apparatus comprising:

an EL element section including a plurality of arranged cells, each cell including a thin-film EL element having a luminous layer including a zinc sulphide containing only nitrogen as an activator so as to emit white light;

a color filter section including a plurality of predetermined color filters corresponding to the cells and disposed on the surface of the EL element section;

respective voltages applied to the thin-film EL elements being controlled in accordance with image information for color display; and

the luminous layer of each cell in the EL element section is a single white luminous layer.

5,289,172

METHOD OF MITIGATING THE EFFECTS OF A DEFECTIVE ELECTROMECHANICAL PIXEL

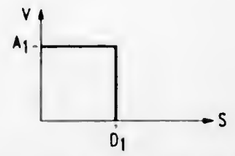
Richard O. Gale, Jr., Richardson, and Brian C. McCormack, Denton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 23, 1992, Ser. No. 965,835

Int. Cl.[5] G09G *3/34*

U.S. Cl. 345—108 **20 Claims**

1. A method of mitigating the effects of a bright defective electromechanical pixel which transmits light into an observer's field of view, the pixel having a beam and a hinge, comprising the step of applying a voltage sufficient to damage the



electromechanical pixel in such a manner that the pixel no longer transmits said light into said field of view.

5,289,173

DISPLAY CONTROL METHOD HAVING PARTIAL REWRITING OPERATION

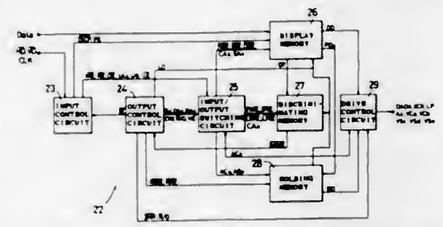
Takaji Numao, Nara, Japan, assignor to Sharp Kabusbiki Kaisha, Osaka, Japan

Filed Sep. 27, 1991, Ser. No. 767,158

Claims priority, application Japan, Sep. 27, 1990, 2-259986; Sep. 27, 1990, 2-259987

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—87 **7 Claims**



1. A display control method for a liquid crystal display device, the liquid crystal display device comprising a ferroelectric liquid crystal interposed between a plurality of scanning electrodes and a plurality of signal electrodes, the scanning electrodes arranged in a first direction and the signal electrodes arranged in a second direction intersecting the first direction, wherein intersection areas of the scanning electrodes and signal electrodes are formed into picture elements, said method comprising:

applying a selective voltage for rewriting the picture elements along a selected scanning electrode of a plurality of scanning electrodes;

applying a non-selective voltage for not rewriting the picture elements along each non-selected scanning electrode of said plurality of scanning electrodes; and

applying a signal voltage to the individual signal electrodes, said signal voltage corresponding to data to be displayed by the picture elements along the selected scanning electrode;

the signal voltage being responsive to whether the picture element along the scanning electrode is changed from a bright display state to a dark display state, or from a dark display state to a bright display state, or the bright and dark display states are not changed;

wherein, for each vertical scanning period, a partial rewriting operation is performed comprising:

detecting for each scanning electrode whether there is a change in data to be displayed by the picture elements along that scanning electrode;

applying in a predetermined sequence a selective voltage to each scanning electrode having a detected change;

and applying a signal voltage to the signal electrodes corresponding to the detected change in data along each scanning electrode when the selective voltage is applied to that scanning electrode,

wherein a transcribing operation to rewrite all of the picture elements within a preselected transcribing time period is conducted comprising:

dividing the plurality of scanning electrodes into a plurality of sets, each set having a predetermined number of scanning electrodes,

sequentially rewriting the picture elements along each scanning electrode in a selected set in one vertical scanning period, and

rewriting all of the picture elements within said preselected transcribing time period; and

wherein, during each vertical scanning period, the method comprises securing time for completing the partial rewriting operation to update the data to be displayed in picture elements having a detected change and securing time for rewriting the picture elements along the scanning electrodes in the selected set.

5,289,174

LIQUID CRYSTAL DISPLAY DEVICE

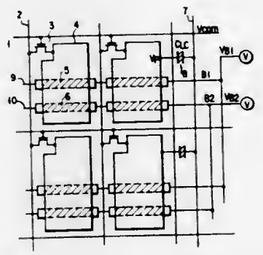
Kouji Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 14, 1992, Ser. No. 913,069

Claims priority, application Japan, Jul. 22, 1991, 3-181256

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—98 **14 Claims**



1. An active matrix liquid crystal display device in a normally white mode, having a plurality of pixels including a defective pixel having been indicative of a bright spot defect, comprising:

a matrix array substrate;

an opposed substrate;

a liquid crystal layer interposed between said matrix array substrate and said opposed substrate;

an opposed electrode interposed between said opposed substrate and said liquid crystal layer;

a plurality of pixel electrodes interposed between said matrix array substrate and said liquid crystal layer so as to correspond to said plurality of pixels;

a plurality of switching elements connected to said plurality of pixel electrodes, respectively;

transmission means for transmitting an address signal to said plurality of switching elements to drive said plurality of switching elements;

first and second bus lines arranged to correspond to said plurality of pixel electrodes, said first and second bus lines each having an opposed portion which is opposed to each of said plurality of pixel electrodes through an insulating film;

first voltage applying means for applying a first voltage to said first bus line;

second voltage applying means for applying a second voltage to said second bus line; and

short-circuit means for connecting a pixel electrode corresponding to said defective pixel and the opposed portion of said first bus line,

wherein said first and second voltages are in antiphase and satisfy an equation of $C_1 \cdot V_{01} = C_2 \cdot V_{02}$, where V_{01} and V_{02} indicate amplitudes of the first and second voltages, respectively, and C_1 and C_2 indicate capacitances between the opposed portion of said first bus line and the pixel electrode and between the oppose portion of said second bus line and the pixel electrode.

5,289,175

METHOD OF AND APPARATUS FOR DRIVING FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE

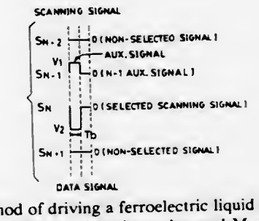
Hideyuki Kawagishi, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 503,772, Apr. 3, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 942,130

Claims priority, application Japan, Apr. 3, 1989, 1-81546

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—97 **24 Claims**



1. A method of driving a ferroelectric liquid crystal display device having N scanning electrodes, and M data electrodes arranged in the form of an N×M matrix, N and M being positive integers, and a pixel being formed at each intersection of the scanning electrodes and the data electrodes of the matrix, said method comprising the steps of:

applying a selected unipolar scanning signal to a Kth selected scanning electrode in a time period, wherein K is a positive integer and $K \leqq N$;

applying a selected data signal to a data electrode in the time period to form a synthetic voltage at a selected pixel;

applying an auxiliary signal voltage polarized opposite to the selected unipolar scanning signal on the basis of a non-selected scanning signal to a (K−A) scanning electrode in the time period, wherein A is a positive integer and $1 < A < N$; and

applying a non-selected scanning signal different from the auxiliary signal voltage to each of the remaining scanning electrodes in the time period.

5,289,176

MULTI-MASTER RESOLUTION OF A SERIAL BUS

Michael R. Novakovich, and Joseph S. Majewski, both of Pittsburgh, Pa., assignors to AEG Transportation Systems, Inc., Pittsburgh, Pa.

Filed Mar. 19, 1992, Ser. No. 853,960

Int. Cl.[5] G05B *23/02*

U.S. Cl. 340—825.08 **7 Claims**

1. A method of multi-master resolution of a bus for a first configured train having a first communications network including a first bus, a master node and at least one slave node including an end slave node, comprising the steps of:

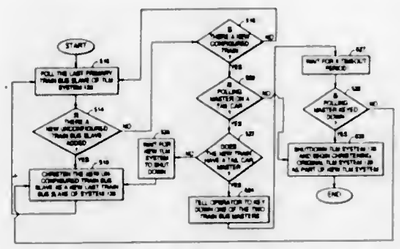
detecting additional nodes and determining if the additional nodes are part of another configured train;

if the additional nodes are part of another configured train including another master node, then performing bus master resolution as follows:

if the master node of the first configured train is not on a tail car of the first configured train, then reconfiguring the first configured train together with the another configured train giving bus control to the master node of the another configured train.

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if the master node of the first configured train is on a tail car of the first configured train, and if the master node of the another configured train is not on a tail car of the another configured train, then reconfiguring the first configured train together with the another configured train giving bus control to the master node of the first configured train, and



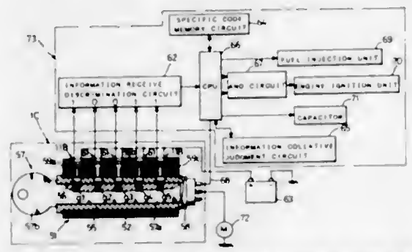
if the master node of the first configured train is on a tail car of the first configured train, and if the master node of the another configured train is on a tail car of the another configured train, then signalling to an operator of the train to perform manual bus master resolution by keying down one of the two master nodes and thereafter reconfiguring the first configured train together with the another configured train giving bus control to the master node not keyed down by the operator.

5,289,177

BURGLARPROOF DEVICE FOR VEHICLE

Kiyoyasu Wake, No. 57-1, 3-chome, Utsukushigaoka, Midori-ku, Yokohama-shi, Kanagawa-ken, 227, Japan

Filed Sep. 12, 1990, Ser. No. 582,640
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.31 **19 Claims**



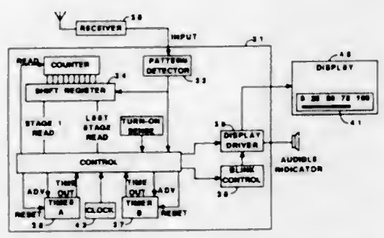
1. A burglarproof ignition device for a vehicle comprising:
a key cylinder lock for the vehicle including an outer tubular member and an inner tubular member rotatably provided within said outer tubular member,
a plurality of axially aligned radially extending holes in said outer tubular member,
a plurality of axially aligned grooves in said inner tubular member aligned radially with said plurality of axially aligned radially extending holes in said outer tubular member,
a properly coded magnet key adapted to be inserted into said inner tubular member, with a magnet positioned thereon to align with at least some of said grooves in said inner tubular member, a spring loaded magnet pin positioned in each of said plurality of axially aligned radially extending holes in said outer tubular member which correspond radially to a magnet positioned on said key, each of said spring loaded magnet pins extend into each of said grooves in said inner tubular member which correspond to the magnets on said key and which are biased toward said inner tubular member,
a switch member provided in each of said radially extending holes in said outer tubular member which include a spring loaded magnet pin, each switch member is closed in response to insertion of said properly coded magnet key into said inner tubular member and opened in response to removal of said properly coded magnet key,
an information receive discrimination circuit for carrying out a receive discrimination with respect to presence and absence of power supply signals respectively delivered via each said switch member by a power delivered from a battery as a power supply mounted in said vehicle,
an information collative judgment circuit adapted to receive an information signal from said information receive discrimination circuit to make a comparative collation between storage information provided by making reference to a specific code memory circuit in which specific codes corresponding to combinations of open and closed states of each said switch member are stored in advance, and said information signal, and a central processing until are operative to deliver output signals to supply elements essential for the operation of an engine for the vehicle only when it receives, from said information collative judgment circuit, a correspondence signal indicating that said storage information and said information signal are in correspondence with each other.

5,289,178

SENSITIVITY INDICATOR FOR A RADIO RECEIVER AND METHOD THEREFOR

Robert J. Schwendeman, Pompano Beach; William J. Burke, Lantana, and Arthur P. Lafond, Jr., Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 684,476, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 419,552, Oct. 10, 1989, abandoned. This application Aug. 17, 1992, Ser. No. 930,497
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.44 **19 Claims**



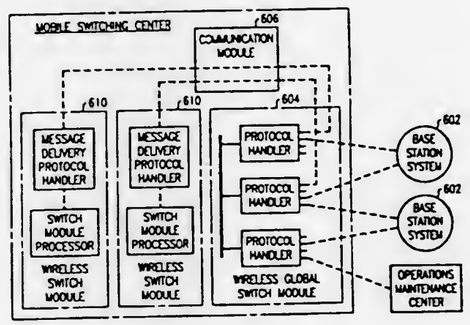
1. A selective call receiver comprising:
means for receiving selective call signals transmitted in a predetermined signaling format, the signaling format including at least a synchronization code word and address information transmitted as a sequence of data, the synchronization code word being periodically transmitted during the data sequence;
means for storing a predetermined synchronization codeword;
means for comparing the data sequences received with the predetermined synchronization codeword stored, and for generating a correlation detection signal indicating the detection and absence of detection of correlation between the received and stored synchronization codewords;
a register means, having a predetermined number of stages, responsive to the correlation detection signal for accumulating a first correlation count indicating a detection of a first received synchronization codeword, said register means further sequentially accumulating subsequent correlation counts indicating the detection and absence of detection of subsequently received synchronization codewords;
controller means, coupled to said register means, for detecting when the first detected correlation count accumulated has shifted to the last stage of said register means, and for generating a display enable signal in response thereto; and
display means, responsive to the display enable signal, for displaying an indication of the accumulated correlation count which corresponds to the number of correlations between the received and stored synchronization codewords within a first time interval, the indication displayed thereafter being periodically updated with subsequently received synchronization codewords to provide a substantially continuous display of the quality of selective call signal reception.

5,289,179

MAINTAINING STABLE VIRTUAL CIRCUIT DATA CONNECTIONS WITH SPARE PROTOCOL HANDLER

Robert B. Beeson, Jr., Naperville; Patrick E. Helmers, Plano, and Michael V. Stein, Wheaton, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 799,577
Int. Cl.[5] G06F *11/20*
U.S. Cl. 340—826 **12 Claims**



1. A method of maintaining stable virtual circuit connections, each connection controlled by one serving protocol handler (PH) of a group of PHs, said group comprising a spare PH, said method comprising:
whenever a virtual circuit connection reaches a stable state, storing state information for said connection in a predetermined PH of said group, said predetermined PH being adjacent to said serving PH;
in the event of failure of said serving PH, serving stable connections of said failed serving PH in the predetermined adjacent PH; and
serving new connections destined for service by said failed serving PH in said spare PH which takes the role of said failed serving PH, said spare PH different from the predetermined adjacent PH.

5,289,180

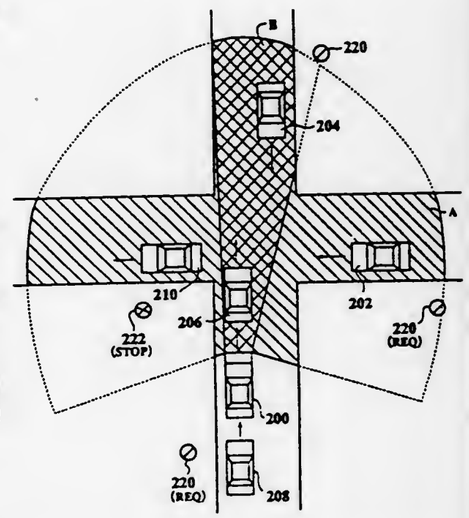
Patent Not Issued For This Number

5,289,181

VEHICLE ALARM SYSTEM FOR INFORMING OTHER VEHICLES OF ITS OWN PRESENCE

Hiroshi Watanabe, Yokosuka; Junichi Kasai, Yokohama; Kunihiko Kurami, Kawasaki, and Hiroyuki Kamishima, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Nov. 14, 1991, Ser. No. 792,178
Claims priority, application Japan, Nov. 29, 1990, 2-333181
Int. Cl.[5] G08G *1/00*
U.S. Cl. 340—902 **16 Claims**



1. An alarm system for an automotive vehicle, for informing other vehicles of the presence of its own vehicle and for informing a driver of its own vehicle of the presence of other vehicles, comprising in each vehicle:
(a) timing detecting means for detecting a timing when the alarm system is activated and deactivated;
(b) first transmitting means for transmitting a first alarm signal to said other vehicles traveling within a first area ahead of its own vehicle;
(c) second transmitting means for transmitting a second

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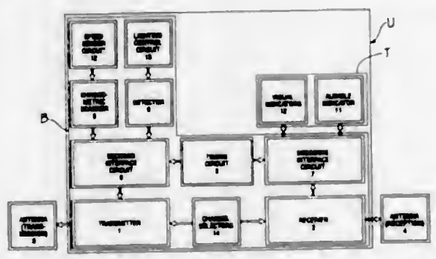
alarm signal to said other vehicles traveling within a second area ahead of its own vehicle;
(d) first receiving means for receiving a first alarm signal transmitted from a first transmitting means in one of said other vehicles;
(e) second receiving means for receiving a second alarm signal transmitted from a second transmitting means in said one of said other vehicles;
(f) alarm generating means for generating an alarm to a driver of its own vehicle; and
(g) control means connected to said timing detecting means, said first and second transmitting means, said first and second receiving means and said alarm generating means, for activating said alarm generating means of its own vehicle only when said first receiving means receives said first alarm signal transmitted from said one of said other vehicles and deactivating said alarm generating means when both said first and second receiving means of its own vehicle simultaneously receive said first alarm signal and said second alarm signal transmitted from said one of said other vehicles.

5,289,182

ELECTRONIC ANTI-COLLISON DEVICE CARRIED ON BOARD A VEHICLE

Guy Brillard, Garges les Gonesse; Eric Brillard, Saint-Maur des Fosses, and Jean-Claude Crueize, Moussy-le-Neuf, all of France, assignors to Il BC-SYS, Saint-Maur des Fosses, France

Filed Jan. 9, 1992, Ser. No. 818,293
Claims priority, application France, Oct. 16, 1991, 91 12745
Int. Cl.[5] G08G 1/00
U.S. Cl. 340—902 **15 Claims**



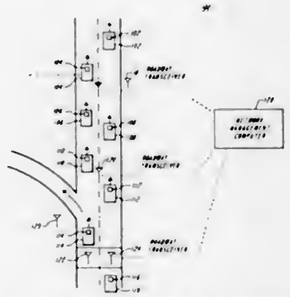
1. An electronic device carried on board vehicles and for transmitting information from a vehicle to a vehicle following it over a given route and for receiving information coming from a vehicle preceding it over this same route wherein there is provided:
for transmitting information:
a chronometric scanner adapted to detect a possible deceleration of the vehicle by comparing, at specific time intervals values of speed such that said values of speed are communicated to said scanner by a sensor and, in the event that the deceleration detected exceeds a certain threshold, to send a corresponding signal to a radio transmitter device;
said radio transmitter device adapted to transmit a deceleration signal via a directional antenna placed at the rear of the vehicle, and
for receiving information:
a radio receiver device adapted to receive, via a directional antenna placed at the front of the vehicle, a deceleration signal emitted by a vehicle preceding it and to transmit said deceleration signal to an alarm circuit,
said alarm circuit adapted to emit, in the event of receiving a deceleration signal, a visual and/or audible alarm in the passenger compartment of the vehicle,
and the said transmitter and said receiver are connected to a frequency selector which is manually or automatically controlled to select a frequency based upon the direction of the traffic and of the route taken by the vehicle.

5,289,183

TRAFFIC MONITORING AND MANAGEMENT METHOD AND APPARATUS

John J. Hassett, Marblehead; Keith E. Kowal, Swampscott, and John A. Rourke, Marblehead, all of Mass., assignors to AT/-COMM Incorporated, Marblehead, Mass.

Filed Jun. 19, 1992, Ser. No. 901,278
Int. Cl.[5] G08G 1/09
U.S. Cl. 340—905 **12 Claims**



1. Apparatus for the analysis and management of vehicle traffic along a roadway comprising,
a plurality of transceivers positioned adjacent to said roadway, each of said transceivers including means for transmitting radio frequency signals toward said roadway, said signals including information signals including a location of said transceiver, and a current date and time,
a plurality of transponders, each of said transponders being located in separate ones of said vehicles passing along said roadway, each of said transponders including a data processor, a memory, and a receiver/transmitter, intercoupled such that said information signals transmitted from said transceiver can be received, and processed in said data processor and at least a subset of said information signals can be stored in said memory in at least one of, received and processed form, and
independent data processor means coupled to said transceiver for two-way communication with said transceiver, and
wherein said memory includes means for storing a first said current date and time received from a first one of said transceivers, and said apparatus includes a second one of said transceivers, positioned downstream from said first transceiver and including means for signaling said transponders to transmit said first current date and time to said second transceiver.

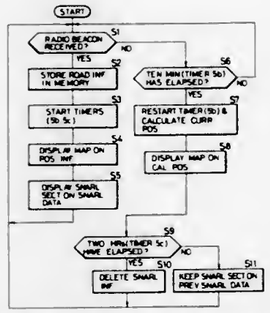
5,289,184

ROAD MAP DISPLAYING SYSTEM FOR AUTOMOTIVE VEHICLE

Hidetaka Suzuki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Feb. 19, 1992, Ser. No. 836,905
Claims priority, application Japan, Mar. 28, 1991, 3-090046
Int. Cl.[5] G08G 1/09
U.S. Cl. 340—905 **19 Claims**

1. A road map displaying system for an automotive vehicle for displaying road information transmitted by fixed transmitters on a display unit of an automotive vehicle, which comprises:
(a) means for receiving road information including position data and traffic snarl data transmitted by the fixed transmitters;
(b) means for storing a plurality of road maps;
(c) means for selecting a current road map from those stored in said storing means on the basis of the received position data;
(d) means for displaying traffic snarl information on the selected road map on the basis of the received traffic snarl data;



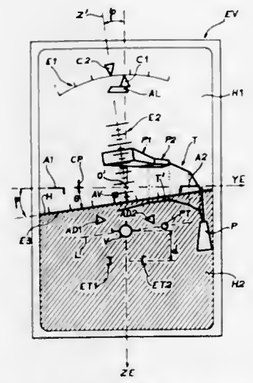
(e) means for measuring time elapsed after the road information from the fixed transmitter has been received by said receiving means; and
(f) means for deleting the traffic snarl information displayd on the selected road map, when a predetermined time-related condition is satisfied after the road information has been received.
wherein the predetermined time-related condition is an average time period predetermined according to roads, time of day and weather conditions.

5,289,185

PROCESS FOR DISPLAYING FLYING AID SYMBOLS ON A SCREEN ON BOARD AN AIRCRAFT

Alain Ramier, Tournefeville; Daniel Duturc, Coloniers, and Yves Saint-Upery, Toulouse, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Aug. 30, 1991, Ser. No. 753,109
Claims priority, application France, Sep. 5, 1990, 90 11023
Int. Cl.[5] G01C 21/00
U.S. Cl. 340—971 **17 Claims**



1. Process for the display of flying aid symbols on a screen (EV) on board an aircraft, for traversing a flight path formed by successive approach segments (S1 to S4), a final segment (S5) and a rounding off segment traversed up to the touchdown point (F) of the aircraft wheels on a runway (P) comprising:
defining a fixed reference mark frame (O, Xt, Yt, Zt) linked with the runway and having orthogonal axes, having for its origin a theoretical wheel touchdown point on the runway, said point being located on a longitudinal axis of the runway, the fixed reference frame having a first axis (Xt) coinciding with the longitudinal axis of the runway, a second axis (Yt) perpendicular to the first axis in a plane of the runway and a third axis (Zt) perpendicular to the first and second axes of the fixed reference mark frame;
defining a mobile reference mark frame (G, X_A, Y_A Z_A) linked with the aircraft and having for its origin the center of gravity (G) of the aircraft and a first axis (X_A) coinciding with a longitudinal axis of the aircraft, a second axis (Y_A) perpendicular to a plane of symmetry of the aircraft and passing through the longitudinal axis and a third axis (Z_A) perpendicular to the first and second axes of the mobile reference mark frame;
recording in a memory of on board computer, reference coordinates of the essential points of the segments of the flight path (S1 to S5, PR) measured in the fixed reference mark frame (Co, Xt, Yt, Zt);
determining on the basis of information received from an inertial system, the coordinates of the effective positions of the aircraft relative to the fixed reference mark frame, during the traversing of the flight path, as well as values respectively corresponding to the roll (ϕ), attitude (θ) and bearing (ψ) angles or Eulerian angles of the aircraft, and the orientations of a speed vector (V) of the aircraft, measured in the mobile reference mark frame;
displaying on said screen (EV) during the traversing of the flight path, an image obtained in a plane perpendicular to the first axis (X_A) of the aircraft, in the vicinity of its center of gravity (G) following a processing of the values of the Eulerian angles, of the effective coordinates, of the reference coordinates and the orientations of the speed vector, said image comprising at least:
two identical fixed symbols (A1, A2) representing the aircraft wings, aligned on a first axis (Y_E) of the screen, parallel to the second axis (Y_A) of the mobile reference frame and passing through a central point (O') of the screen,
a symbol (CP) representing a model of the aircraft indicating the orientation of the longitudinal axis of the aircraft and moving along the first axis of the screen, between the two fixed symbols representing the wings of the aircraft,
a line (H) moving in translation and in inclination, called the artificial horizon, subdividing the screen (EV) into an upper part (H1) representing the sky and a lower part (H2) representing the ground, and making it possible to reference with respect to the fixed symbols representing the aircraft wings, the roll (ϕ) and attitude (θ) pitch angles of the aircraft during passage, said line being graduated so as to form a heading scale and for indicating the bearing (ψ) of the aircraft, a symbol (V) indicating the orientation of the speed vector of the aircraft and mobile along said orientation, along a second axis (Z_E) of the screen (EV) and passing through the central point (O') and perpendicular to the first axis (YE) of the screen,
characterized in that it also comprises displaying in accordance with a three-dimensional representation, approach segments (S1 to S5) located on the flight path to be covered by the aircraft, the segment being traversed, as well as at least the segment following that being traversed, being respectively displayed in accordance with two elongated parallelepipeds, in perspective, having respectively segments for axes, each parallelepiped in perspective, having in the traversing direction of the corresponding segment, an entrance base (B1) into the segment and an exit base (B2) from the segment, said bases being rect-

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angular, so that during the traversing of a segment, the entry base (B1) of a parallelepiped corresponding to said segment has a fixed dimension in the reference mark frame and the exit base (B2) an increasing dimension between a minimum dimension, when the aircraft starts to traverse this segment, and a maximum dimension equal to the dimension of the entry base (B1) with which it coincides at the end (B) of the traversing of said segment and at the start of the traversing of the following segment (S2) of the flight path, the process also consisting of displaying the final segment (S5) in the form of a pyramid (P3) in perspective and having a rectangular base (F3), with on the screen an apex corresponding to the touchdown point (PR) of the wheels on the runway, so that during the traversing of the final segment, the base (F3) of the pyramid of the final segment (S5) has a decreasing dimension during the traversing of said final segment up to the touchdown point (PR) of the wheels, each base of the parallelepiped and the base of the pyramid having sides located on the screen (EV) as a function of the values of the Eulerian angles and coordinates of the origin (G) of the mobile reference mark frame with respect to the fixed reference mark frame, the symbol indicating the orientation of the speed vector (V) having to be located in the center of the entry base (B1) of the parallelepiped (P1) in perspective, representing the segment being traversed, or in the center of the base (F3) of the pyramid (P3) representing the final segment, when the aircraft is correctly located on a segment.

5,289,186

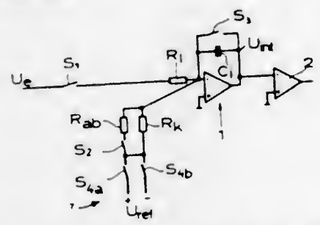
Patent Not Issued For This Number

5,289,187

METHOD AND MEANS FOR CONVERTING AN ANALOG SIGNAL INTO A DIGITAL SIGNAL

Wilhelm Florin, Heideweg, and Detlef Ludwig, Duisburg, both of Fed. Rep. of Germany, assignors to Krohne Mebtechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 938,719
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129150; Sep. 17, 1991, 4130826
Int. Cl.[5] H03M *1/50*
U.S. Cl. 341—166 **15 Claims**



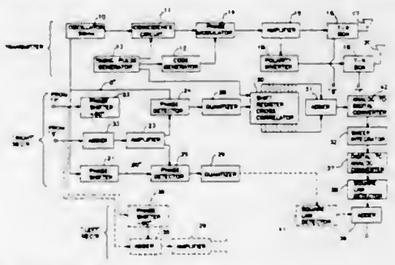
1. In a method for converting an analog input voltage signal (preferably in the form of a low-frequency rectangular voltage) to a digital output signal proportional to the input voltage, in which the input voltage is integrated to an integrator voltage over a predetermined integration time and, after the expiration of the predetermined integration time, the integrator voltage is de-integrated to zero over a de-integration time by a reference voltage and the input voltage is found from the ratio of the de-integration time to the integration time, multiplied by the reference voltage, the additional step of superimposing modulation pulses, preferably derived from the reference voltage, on the input voltage during the integration time so as to influence the integrator voltage in such a way that even at different input voltages, substantially equal modulation of the integrator is achieved.

5,289,188

HIGH RESOLUTION RADAR SYSTEM FOR HIGH SPEED AND SATELLITE VEHICLES

Walter H. Chadleigh, Jr., Norristown, Pa., assignor to Ceridian Corporation, Minneapolis, Minn.

Filed Jul. 10, 1963, Ser. No. 295,283
Int. Cl.[5] G01S *13/28*
U.S. Cl. 342—58 **10 Claims**



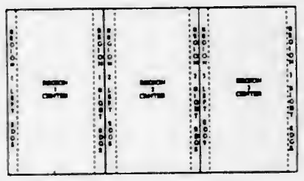
1. A radar system comprising:
(a) means for transmitting bursts of an oscillatory carrier wave in the frequency range from about 20–250 megacycles, said bursts being modulated in accordance with a predetermined modulation pattern,
(b) means for detecting the modulation of received signals corresponding to said transmitted signals, said received signals having been reflected by objects from the target area,
(c) means responsive to said detected modulation for determining to what extent said detected modulation corresponds to said modulation pattern,
(d) means responsive to said received signals for combining portions of said signals received during different time intervals so as to enhance the value of regularly recurrent components in said portions of said received signals.

5,289,189

TRACK HANDOVER BETWEEN REGIONS WITHIN A SURVEILLANCE AREA

Samuel B. Colegrove, Highbury, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

Filed May 29, 1992, Ser. No. 889,970
Claims priority, application Australia, May 31, 1991, PK6440
Int. Cl.[5] G01S *13/72*
U.S. Cl. 342—95 **22 Claims**



1. A method of reducing tracking errors in an area comprised of stationary touching surveillance regions, a first region having an edge zone touching an edge zone of a second region, the method comprising steps of:
transmitting a plurality of signals into one of the first and second regions;
receiving signals scattered from the transmitted signals;
analyzing the received signals using a processing means to produce target measurements;

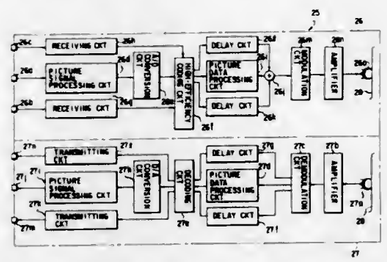
storing target tracks in data blocks of a storage means, one block being shared by tracks of targets in the touching edge zones of the first and second regions;
associating target measurements with appropriate target tracks;
updating target tracks in each data block using said target measurements;
allocating target tracks from each data block to the correct zone; and
displaying the tracks on a visual display means.

5,289,190

RECORDING/REPRODUCING APPARATUS INCLUDING CONTROL SIGNAL INDICATING HIGH-EFFICIENCY CODING

Kenji Shimoda, and Junko Kimura, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1991, Ser. No. 813,700
Claims priority, application Japan, Dec. 27, 1990, 2-418760; Jun. 4, 1991, 3-132993
Int. Cl.[5] H04N *1/41, 5/76*
U.S. Cl. 341—50 **12 Claims**



1. A recording/reproducing apparatus for recording a coded signal obtained by performing a high-efficiency coding process on an information signal on a recording medium and reproducing the original information signal by performing a decoding process corresponding to the high-efficiency coding process on the coded signal read from the recording medium, comprising:
input lines respectively connected to receive the information signal, a control signal indicating whether or not the information signal has been subjected to the high-efficiency coding and decoding processes and a specific signal indicating a specific value used in the high-efficiency coding and decoding processes when the information signal has been subjected to the high-efficiency coding and decoding processes;
coding means for performing a high-efficiency coding process on the input information signal using the specific value on the input information signal when the control signal indicates that the input information signal has not been subjected to the high-efficiency coding and decoding processes, producing a coefficient signal indicating the specific value and a control signal indicating the information signal has been subjected to the high-efficiency coding and decoding processes and performing a high-efficiency coding process on the input information signal on the basis of the specific value indicated by the input specific signal when the input control signal indicates that the input information signal has been subjected to the high-efficiency coding and decoding processes;
recording means for recording the information signal subjected to the high-efficiency coding process by said coding means on the recording medium together with the control signal and the specific signal produced by said coding means or input to said input lines;
reproducing means for reading the coded signal, the control signal and the specific signal from the recording medium; and
decoding means for performing a decoding process on the coded signal read by said reproducing means on the basis of the specific value indicated by the read specific signal and outputting the information signal subjected to the decoding process together with the read control and specific signals.

5,289,191

BIPOLAR ANALOG-TO-DIGITAL CONVERSION APPARATUS WITH UNIPOLAR CURRENT AND VOLTAGE MODES

Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 915,171, Jul. 15, 1992, which is a continuation-in-part of Ser. No. 746,019, Aug. 15, 1991. This application Sep. 11, 1992, Ser. No. 943,800
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—127 **7 Claims**

1. Apparatus for generating a bipolar digital signal from a bipolar analog signal comprising:
analog-to-digital conversion means, at least one input for said analog-to-digital conversion means including input means selectable between a current mode in which analog signals of a first polarity only are converted to digital signals, and a voltage mode in which analog signals of a second polarity only are converted to digital signals, means selecting one of said current and voltage modes for generation of a first digital signal by said analog-to-digital conversion means from an analog signal applied to said input means, means presenting said first digital signal as said bipolar digital signal when said first digital signal is non-zero, means selecting the other of said current and voltage modes for generation of a second digital signal by said analog-to-digital conversion means when said first digital signal is zero, and means presenting said second digital signal as said bipolar digital signal when generated.

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5,289,192

SIGNAL PROCESSING METHOD FOR A RADAR SYSTEM

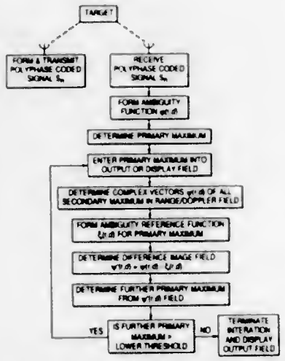
Hermann Rohling, Wolfenbüttel; Wilfried Plagge, Ohrum, and Manfred Minker, Ulm, all of Fed. Rep. of Germany, assignors to Telefunken Systemtechnik AG, Ulm, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,055

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132240

Int. Cl.[5] **G01S** *13/28, 13/50*

U.S. Cl. 342—201 **2 Claims**



1. A method for processing signals in a radar system in which coded signals are transmitted, then received and thereafter evaluated, comprising:

providing a signal for transmission;

coding the signal for transmission with a polyphase code maximum distance unambiguous range (R_{max}) and a maximum Doppler frequency unambiguous range (f_{Dmax}) of the radar system, with the polyphase code being formed according to the following equation:

$$s_n = \exp\left[j\frac{\pi}{3\cdot N}(n^3 - N^2 n)\right]$$

where

s_n=original signal

n=0, . . . , N−1

N=number of sub-pulses included in the polyphase code and N≧3; N=prime number;

where the following equations are applicable:

$$R_{max} = N\cdot\tau\cdot c/2$$

and

$$f_{Dmax} = 1/\tau$$

where

τ=length of a sub-pulse; and

c=speed of light;

transmitting the polyphase coded signal;

receiving the polyphase coded signal reflected from a target;

employing the received polyphase coded signal to form an ambiguity function (ϕ) according to the following equation:

$$\phi(r,d) = \left|\sum_{n=0}^{MN-1} a_n \cdot s^*_{(n-r) \bmod (N)} \cdot G_n \cdot e^{-j2\pi\frac{dn}{MN}}\right|$$

where

r=0, . . . , N−1; distance gate; standardized to sub-pulse spacing

d=0, . . . , MN−1; Doppler frequency gate; standardized to $1/MN_\tau$

M=number of periods

N=number of sub-pulses

s^*_i=matched correlator of code s_i

a_i=sampled values of the received signal

G_i=window function, M periods long; center symmetrical relative to (MN−1)/2;

determining a maximum number of sub-pulses per period (N_{max}) by means of the following equation:

$$N_{max} = \frac{T_B}{M_{min}\cdot\tau}$$

where

T_B=time of observation

τ=spacing of sub-pulses

M_{min}=minimum number of code periods to be processed;

evaluating the ambiguity function (ϕ) for detecting a primary maximum as representing a target by an iterative detection method including the steps of:

initially determining a first primary maximum amplitude of the ambiguity function over an entire distance/Doppler frequency plane,

associating the first primary maximum of the amplitude with a target and entering the first primary maximum amplitude into at least one of an output field and a display field,

locating the position of the first primary maximum amplitude, its complex vector and the complex vectors of all secondary maxima belonging to the primary maxima amplitude in the distance/Doppler frequency plane,

forming an ambiguity reference function for the first primary maximum amplitude,

subtracting the ambiguity reference function from the ambiguity function to form a difference image,

determining a further primary maximum amplitude in the difference image, and

repeating said interative method using the further primary maximum amplitude as the first primary maximum amplitude to determine another further maximum amplitude to determine another further primary maximum amplitude until the further primary maximum amplitude determined by the foregoing steps drops below a predetermined lower amplitude threshold and then terminating the iterative detection method.

5,289,193

RECONFIGURABLE TRANSMISSION ANTENNA

Régis Lenormand, Blagnac; Didier René, and Christian Rigal, both of Toulouse, all of France, assignors to Alcatel Espace, Courbevoie, France

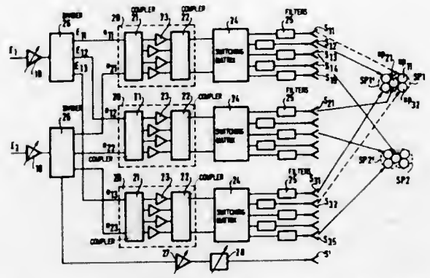
Continuation of Ser. No. 798,955, Nov. 27, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 61,425

Claims priority, application France, Nov. 29, 1990, 90 14941

Int. Cl.[5] **H01Q** *3/02, 3/22*

U.S. Cl. 342—374 **6 Claims**

1. A reconfigurable multi-access multi-spot transmission antenna comprising: a reflector (**10**) for energy focussing, an array (**11**) of source elements situated in the focal region of the reflector, so that the electromagnetic field is synthesized in said region, said antenna being characterized in that each spot (SPi) is constituted by juxtaposing a fixed identical number n of beams from n sources; each of the sources delivering the power transmitted by the corresponding spot divided by the number n; any one source participating at any one time in radiating one spot at the most; and in that a matrix high-power amplifier receives input signals to be radiated by said reconfigurable multi-access multi-spot transmission antenna, and outputs corresponding amplified signals to a high-level switching matrix



(**24**) which is provided to reconfigure each spot by selecting the sources that participate in the spot.

5,289,194

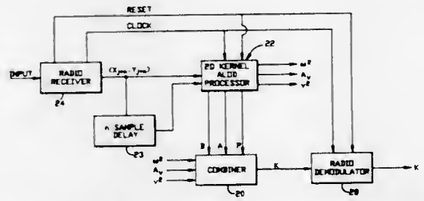
COMBINER FOR TWO DIMENSIONAL ADAPTIVE INTERFERENCE SUPPRESSION SYSTEM

Thomas W. Schlosser, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1992, Ser. No. 904,109

Int. Cl.[5] **H04B** *1/10*

U.S. Cl. 342—378 **7 Claims**



1. A multisignal enhancement combiner system comprising:

a radio receiver for converting received signals into in-phase and quadrature samples of the received signals;

a signal processor for receiving the in-phase and quadrature samples from the radio receiver, the signal processor producing an amplitude transform signal A and a phase difference transform signal P and producing intermediate signals of the received signals including a variance of amplitude signal ω^2 and a variance of phase difference signal v^2;

a first weighting signal generator receiving the variance of amplitude signal ω^2 for producing a weighting signal N_1 which is inversely proportional to the variance of amplitude signal ω^2;

a second weighting signal generator receiving the variance of phase difference signal v^2 for producing a weighting signal N_2 which is inversely proportional to the variance of phase difference signal v^2;

a first multiplier for multiplying the weighting signal N_1 times the amplitude transform signal A to produce a weighted transform signal N_1A;

a second multiplier for multiplying the weighting signal N_2 times the phase difference transform signal P to produce a weighted phase difference transform signal N_2P;

a summer for summing the weighted signals N_1A and N_2P to produce a final output transform signal K whose best performing signal component is enhanced, the final output transform signal K being inserted into a radio demodulator to output interference suppressed signals.

5,289,195

POSITIONING AND DISPLAYING SYSTEM

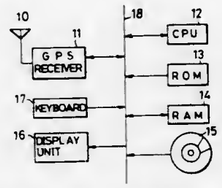
Tetsuya Inoue, Yamato-Koriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1993, Ser. No. 9,173

Claims priority, application Japan, Jan. 27, 1992, 4-011986

Int. Cl.[5] **G01S** *3/02*

U.S. Cl. 342—457 **9 Claims**



1. A positioning and displaying apparatus comprising:

means for positioning a current place on a map;

means for retrieving an area name containing said current place located by said positioning means;

means for displaying characters indicating said area name retrieved by said retrieving means; and

an external storage means for storing a map table therein;

said positioning means including an indicator which indicates a point on a latitude and a longitude of said current place, and being adapted to retrieve an area name containing said latitude and said longitude of said current place;

said retrieving means being further adapted to select a proper square for defining an area therein, said proper square being situated inside of said current place defined by said indicator.

5,289,196

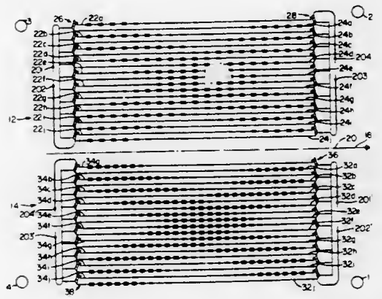
SPACE DUPLEXED BEAMSHAPED MICROSTRIP ANTENNA SYSTEM

Lawrence S. Gans, Sparta, and Leonard Schwartz, Montville, both of N.J., assignors to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed Nov. 23, 1992, Ser. No. 980,270

Int. Cl.[5] **H01Q** *1/38, 11/02*

U.S. Cl. 343—700 MS **6 Claims**



1. A planar microstrip antenna system for a Doppler radar navigation system of a vehicle having separate space duplexed arrays of radiating patch elements for the transmit and receive functions and which is compensated for temperature, frequency and overwater shifts, said antenna system filling a

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defined rectangular aperture having a central axis parallel to the defined forward direction of travel of the vehicle and bisecting the aperture, said antenna system comprising:

a transmit antenna on a first side of said central axis, said transmit antenna including:

a) a first array group including a first plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein the first plurality of lines are parallel to the central axis and the pattern of radiating elements in the first plurality of lines is slanted forwardly toward the central axis;

b) a second array group including a second plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein the second plurality of lines are parallel to the central axis and the pattern of radiating elements in the second plurality of lines is slanted forwardly away from the central axis, the second plurality of lines of said second array group being interleaved with the first plurality of lines of said first array group;

c) means for feeding said first and second array groups from a first end of said transmit antenna to generate a pair of forwardly directed beams; and

d) means for feeding said first and second array groups from a second end of said transmit antenna to generate a pair of rearwardly directed beams; and

a receive antenna on the other side of said central axis, said receive antenna including;

e) a third array group including a third plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein the third plurality of lines are parallel to the central axis and the pattern of radiating elements in the third plurality of lines is slanted forwardly toward the central axis;

f) a fourth array group including a fourth plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein the fourth plurality of lines are parallel to the central axis and the pattern of radiating elements in the fourth plurality of lines is slanted forwardly away from the central axis, the fourth plurality of lines of said fourth array group being interleaved with the third plurality of lines of said third array group;

g) means for feeding said third and fourth array groups from a first end of said receive antenna to generate a pair of forwardly directed beams; and

h) means for feeding said third and fourth array groups from a second end of said receive antenna to generate a pair of rearwardly directed beams; and

wherein one of said transmit and receive antennas is made up of forward firing array groups and the other of said transmit and receive antennas is made up of backward firing array groups.

5,289,197

PANE ANTENNA HAVING AN AMPLIFIER

Heinz Lindenmeier, Planegg; Gerhard Flachenecker,deceased, late of Ottobrunn by Hildegard Flachenecker, heiress ; Jochen Hopf, Haar, and Leopold Reiter, Gilching, all of Fed. Rep. of Germany, assignors to Hans Kolbe & Co. Nachrichtenübertragungstechnik, Bad Salzdetfurth, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 490,767, Mar. 8, 1990, Pat. No. 5,138,330. This application Jun. 16, 1992, Ser. No. 899,492

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907493

Int. Cl.[5] **H01Q** *1/320, 23/000*

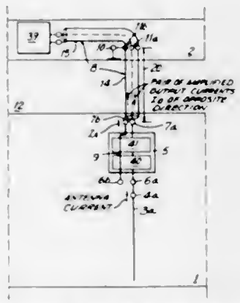
U.S. Cl. 343—713 **16 Claims**

1. An active reception antenna arranged on a non-conductive flat supporting piece (1, 12) set in a conductive body (2) of a motor vehicle, comprising:

an active four terminal network (5) having two input terminals (6*a*, 6*b*) and two output terminals (7*a*, 7*b*);

a first elongated antenna conductor (3*a*) secured on the supporting piece;

an output transmission line (8) having a first section (14) of well defined layout which is connected to said output terminals (7*a*, 7*b*) and forms a second antenna conductor (14) with a length (20), introducing a non-negligible, however defined, impedance for high frequencies between one of said output terminals (7*b*) and a ground contact (10), said input terminals (6*a*, 6*b*) being connected to said first elongated antenna conductor (3*a*) and to said second antenna conductor (14), providing an appropriate source impedance at the input of the active four terminal network,



said output transmission line (8) having a second section (15) which is connected to said ground contact (10) and also to an inner connector (11*a*) of said first section (14) of said output transmission line (8), said inner connector (11*a*) being connected with the other of said output terminals (7*a*), said one of said output terminals (7*b*) being connected to said ground contact (10), said flat supporting piece being a window pane surrounded by a broad plastic frame, said active four terminal network being secured to the pane in proximity to an edge of the pane and said first section of the output transmission line extending from said output terminals of the active four terminal network tot he nearest grounding point on the conductive vehicle body.

5,289,198

DOUBLE-FOLDED MONOPOLE

Edward E. Altshuler, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 934,050

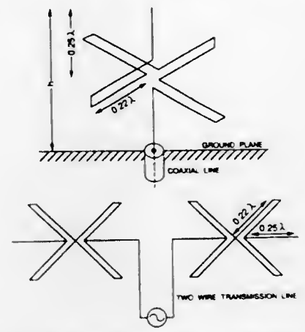
Int. Cl.[5] **H01Q** *9/44, 21/24*

U.S. Cl. 343—729 **6 Claims**

3. A double folded monopole antenna comprising:

a ground plane; and

a monopole stud with a center axis and an outer end which projects through, extends above and is perpendicular to said ground plane, and wherein said monopole stud is formed from a continuous antenna wire which is bent in folds to form four half-fold radiating elements which are parallel to each other on either side of said axis and electrically connected and fixed to said monopole stud at about



one-quarter wavelength from the outer end of the monopole stud.

5,289,199

ANTENNA RESONANT CIRCUIT

Bruno G. Viereck, Marzling, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

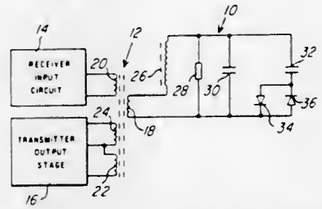
Continuation of Ser. No. 746,297, Aug. 13, 1991, Pat. No. 5,168,282, which is a continuation of Ser. No. 538,873, Jun. 15, 1990, abandoned. This application May 20, 1992, Ser. No. 886,542

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1989, 3920536

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[5] **H01Q** *23/000, 9/000;* **H04B** *1/440*

U.S. Cl. 343—745 **6 Claims**



1. A parallel antenna resonant circuit, operable to transmit and receive, and having a selected transmit resonant frequency and a selected receive resonant frequency, comprising:

an antenna coil for transmitting and receiving HF signals, said antenna coil also operable as a first resonant frequency-determining element;

a second resonant frequency-determining element connected in parallel with said first resonant frequency-determining element;

a series combination of a third resonant frequency-determining element and a threshold value switch, said series combination in parallel with said first and second resonant frequency-determining elements, said threshold value switch operable to be electrically conductive in response to said transmitted HF signal, during a transmit mode, thereby determining the selected transmit resonant frequency to be a function of the parallel combination of said first, second and third resonant frequency-determining elements and said threshold value switch operable to present a high resistance to said received HF signal during a receive mode thereby effectively eliminating the effect of said third resonant frequency-determining element from said resonant circuit, and determining the selected receive resonant frequency to be a function of the parallel combination of said first and said second resonant frequency-determining elements.

5,289,200

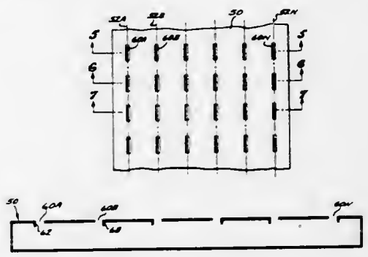
TAB COUPLED SLOTS FOR WAVEGUIDE FED SLOT ARRAY ANTENNAS

Kenneth C. Kelly, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 28, 1992, Ser. No. 951,990

Int. Cl.[5] **H01Q** *13/10*

U.S. Cl. 343—771 **19 Claims**



1. A rectangular waveguide-fed slot antenna employing tab coupled slots, comprising:

a waveguide having a broadwall, said broadwall having an axis relative to which a plurality of slots are placed, said broadwall serving to partially define a rectangular waveguide;

said plurality of slots defined in said broadwall arranged relative to said axis, wherein said slots are spaced by a distance of one-half the waveguide wavelength, said slots being formed by displacing waveguide broadwall material so that material displaced from the broadwall is bent into said waveguide to define a tab attached to said broadwall at only one side of each slot of said plurality of slots, said tabs causing excitation of said slots; and

wherein said tab attaching side alternates from one adjacent slot to the next, said tabs extending substantially parallel to said axis, wherein all slots radiate in phase with each other to produce a desired broadside beam.

5,289,201

Patent Not Issued For This Number

5,289,202

MAGNETIC RECORDING APPARATUS AND MAGNETIC RECORDING MEDIUM WITH A FILM TO BE VERTICALLY MAGNETIZED SANDWITCHED WITH SOFT MAGNETIC FILMS

Haruki Yamane; Yoshinori Maeno; Kayoko Sato, and Masanobu Kobayashi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,440

Claims priority, application Japan, Apr. 16, 1991, 3-084002; Nov. 8, 1991, 3-292877

Int. Cl.[5] **G11B** *9/00, 5/74*

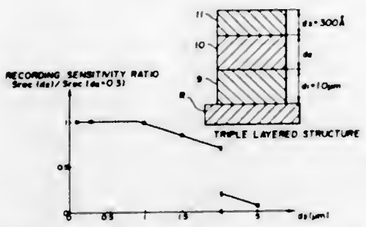
U.S. Cl. 346—74.3 **5 Claims**

1. A magnetic recording medium for use in a type of magnetic printer in which a magnetic latent image is formed on said magnetic recording medium to be developed to a visible image, comprising:

(a) a substrate having a surface;

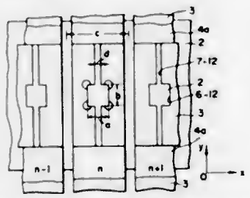
VOL 1159 ISS 4 FE 22 1994 UMI

(b) a first layer made of a soft magnetic film of a high permeability and piled on the surface of said substrate;
(c) a second layer of material, piled on said first layer, in



which magnetization can be oriented substantially vertically to the surface of said substrate; and
(d) a third layer made of a soft magnetic film of a high permeability and piled on said second layer.

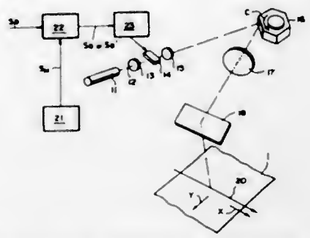
5,289,203
THERMAL HEAD
Noriyasu Takeuchi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 14, 1992, Ser. No. 820,279
Claims priority, application Japan, Jan. 22, 1991, 3-021576
Int. Cl.[5] B41J *2/325*
U.S. Cl. 346—76 PH **6 Claims**



1. A thermal head comprising a plurality of heating resistor elements disposed in a row, each of said resistor elements having a rectangular window formed in a center portion thereof, a slit being formed in each of said resistor elements along a direction perpendicular to said row traversing said window and dividing each of said resistor elements into two halves along the direction of said row.

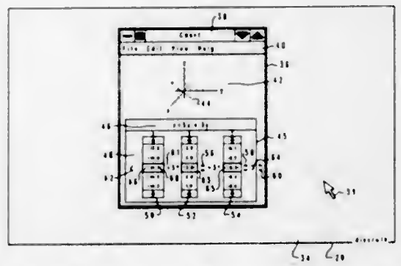
5,289,204
IMAGE RECORDING APPARATUS
Shigeru Saotome, and Masahide Sasai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 14, 1993, Ser. No. 46,835
Claims priority, application Japan, Apr. 16, 1992, 4-96569
Int. Cl.[5] H04N *1/21*; B41J *2/435*
U.S. Cl. 346—108 **6 Claims**

1. An image recording apparatus, wherein light having been modulated in accordance with an image signal is irradiated to a photographic material from one surface side of the photographic material, and an image is thereby recorded on the photographic material, the photographic material being composed of a plurality of layers including an approximately transparent substrate and an emulsion layer overlaid on at least one surface of the substrate, degrees of gloss of the front surface and the back surface of the photographic material being different from each other,
the image recording apparatus comprising:
i) a selection means for selecting a surface, from the side of which the image recorded on the photographic material is to be seen, and
ii) an inversion means for inverting the image signal in accordance with an output of said selection means such that an erect image may be seen from the side of the surface of the



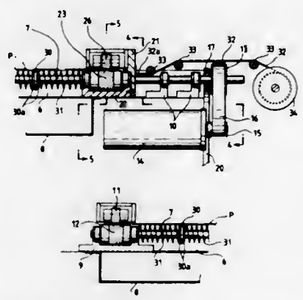
photographic material, which surface has been selected by said selection means.

5,289,205
METHOD AND APPARATUS OF ENHANCING PRESENTATION OF DATA FOR SELECTION AS INPUTS TO A PROCESS IN A DATA PROCESSING SYSTEM
Robert J. Torres, Colleyville, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 796,043, Nov. 20, 1991, abandoned.
This application Jul. 8, 1993, Ser. No. 89,054
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—124 **11 Claims**



1. A data processing system for presenting numerical data, the data processing system comprising:
a scroll bar having a display field for numbers;
means associated with the scroll bar and responsive to user selection for setting resolution of numbers for display in the display field from a continuous range of values;
means responsive to setting of a resolution and to a number previously displayed in the display field for generating a graduated sequence of numbers of the set resolution;
means for displaying the graduated sequence of numbers in the display field of the scroll bar; and
increment control means associated with the scroll bar and responsive to user selection for changing the numbers in the graduated sequence of numbers.

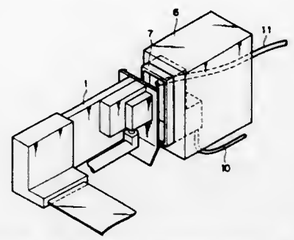
5,289,206
RECORDING PAPER FEEDING PORTION IN AN XY PLOTTER
Tadao Ishikawa; Nazuhiko Sanda; Ryoji Hirakata, all of Tokyo, and Kiyokatsu Sugiyama, Kanagawa, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Oct. 9, 1991, Ser. No. 773,428
Claims priority, application Japan, Oct. 9, 1990, 2-270943
Int. Cl.[5] G01D *15/24*; B65H *5/06*; B41J *15/04*
U.S. Cl. 346—134 **2 Claims**



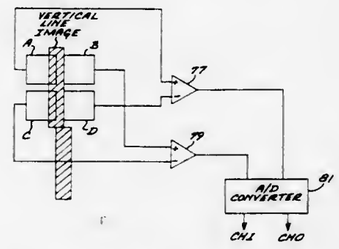
1. An XY plotter comprising:
at least one pair of grip and pinch rollers for feeding recording paper in one direction while gripping the recording paper therebetween;
a pen carriage movable in a direction perpendicular to said one direction;
a pen supported by said pen carriage for performing recording on said recording paper;
a grip roller shaft provided parallel to a traveling direction of said pen carriage, said grip roller shaft having a non-circular section;
movable stand arranged so that a position thereof is adjustable in a longitudinal direction of said grip roller shaft; and
said at least one pair of grip and pinch rollers including a movable partial grip roller and a pinch roller, said movable partial grip roller being mounted on said movable stand so that said movable partial grip roller is not rotatable relative to said grip roller shaft but is movable on said grip roller shaft in the longitudinal direction thereof, said pinch roller being supported on said movable stand so that said pinch roller is made to come into contact against a circumferential surface of said movable partial grip roller.

5,289,207
ENHANCED DISCHARGE RECOVERY FOR INK JET RECORDING APPARATUS
Isao Ebisawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 14, 1991, Ser. No. 745,480
Claims priority, application Japan, Aug. 17, 1990, 2-215927; Aug. 12, 1991, 3-201907
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—140 R **17 Claims**

1. A recovery method for an ink jet recording apparatus comprising recording means for recording by discharging ink with bubbles formed by thermal energy applied to a heat acting area in an ink holding portion and energy supply means for supplying the thermal energy on said recording means, the method including performing a compulsory recovery in which more than 10^3 predischarges are performed by supplying energy exceeding 1.48 times the minimum energy Eo necessary for producing the bubbles.



5,289,208
AUTOMATIC PRINT CARTRIDGE ALIGNMENT SENSOR SYSTEM
Robert D. Haselby, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 31, 1991, Ser. No. 786,145
Int. Cl.[5] B41J *2/125*; G01V *9/04*
U.S. Cl. 346—140 R **1 Claim**



1. In a swath printer having (a) a carriage that is movable along a horizontal carriage scan axis in first and second carriage scan directions, and (b) a printhead supported by the movable carriage for printing onto a print media that is selectively movable along a vertical media scan axis, the printhead having a plurality of print elements arranged in one or more columns aligned with the media scan axis, an optical sensor having an active area for detecting a horizontal position of a vertical line printed on the print media and for detecting a vertical position of a horizontal line printed on the print media, comprising:
an illumination source for illuminating a portion of the print media;
imaging means for imaging a portion of the illuminated portion of the print media;
an optical detector having an active area and responsive to said imaging means for providing outputs indicative of (1) a horizontal position in said active area of an image of a printed vertical line imaged in the active area by said imaging means and (2) a vertical position in said active area of an image of a printed horizontal line imaged in the active area by said imaging means, the optical detector comprised of four photodector elements located at corners of a square having sides aligned with the carriage scan axis and the media scan axis such that the photodector elements can be grouped into two pairs of vertically aligned photodetector elements as well as two pairs of horizontally aligned photodetector elements, whereby the horizontal position in the active area of an imaged vertical line is represented by a difference between (a) a sum of

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outputs of one pair of vertically aligned photodetector elements and (b) a sum of outputs of the other pair of vertically aligned photodetector elements, and whereby the vertical position in the active area of an imaged horizontal line is represented by a difference between (a) a sum of outputs of one pair of horizontally aligned photodetector elements and (b) a sum of outputs of the other pair of horizontally aligned photodetector elements;

first difference means responsive to the outputs of a first diagonally opposite pair of said photodetector elements of providing a first difference signal; and

second difference means responsive to the outputs of a second diagonally opposite pair of said photodetector elements for providing a second difference signal;

whereby the difference between said first and difference signal and second difference signal represents the horizontal position in the active area of an imaged vertical line aligned with the media scan axis, and whereby the sum of said first difference signal and second difference signal represents the vertical position in the active area of an imaged horizontal line aligned with the carriage scan axis.

5,289,209

PRINTING HEAD FOR INK-JET PRINTER

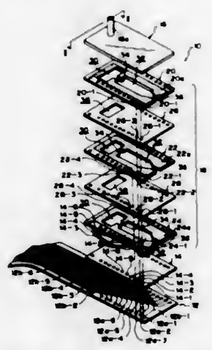
Naomichi Suzuki, Kodaira; Toyoji Asahina, Hoya; Shizuo Yamaguchi, Sayama; Hiroshi Ogawa, Tokorozawa; Hisato Hiraishi, Tokyo; Yoshihiko Yanagawa, Musashimurayama, and Nagao Mizutani, Hachioji, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,280

Claims priority, application Japan, Nov. 13, 1990, 2-303935; Dec. 26, 1990, 2-413955; Dec. 27, 1990, 2-415002; Mar. 8, 1991, 3-020317; Mar. 8, 1991, 3-067559; Apr. 26, 1991, 3-122904; May 17, 1991, 3-140633

Int. Cl.[1] **B41J** *2/045, 2/15*

U.S. Cl. 346—140 R **55 Claims**



1. An ink-jet printing head for a serial ink-jet printer, comprising:

a laminated unit integrally formed as a sintered ceramic product, said laminated unit including a bottom insulating plate element, a top insulating plate element, and a piezoelectric plate element between said bottom and top insulating plate element, said piezoelectric plate element being configured to define a pressure chamber in said laminated unit, the pressure chamber having a volume corresponding to a thickness of said piezoelectric plate element fillable with ink, said piezoelectric plate element having opposite surfaces, an electrode layer formed on each of said opposite surfaces surrounding said pressure chamber, said laminated unit having an orifice in communication with said pressure chamber; and

means for applying a drive pulse voltage to said piezoelectric plate element through each said electrode layer to reduce the thickness of said piezoelectric plate element, resulting in a decrease in the volume of the pressure chamber, to eject an ink-jet drop from said orifice.

5,289,210

IMAGE RECORDING APPARATUS

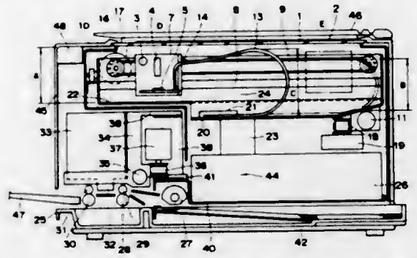
Yoshiaki Takayanagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 818,765

Claims priority, application Japan, Jan. 14, 1991, 3-002841

Int. Cl.[5] **G01D** *15/16, 15/18*

U.S. Cl. 346—140 R **27 Claims**



1. An image recording apparatus for recording an image according to image information on a recording material, using recording means including plural recording elements, said recording means being detachable from the image recording apparatus and including memory means for storing data for correcting variations in recording density based on said plural recording elements, comprising:

discrimination means for discriminating whether the data stored in said memory means is proper on condition that said recording means is attached to said image recording apparatus; and

correcting means for correcting record density based on said plural recording elements by using said data at image recording time when said discriminating means identifies that said data is proper; and

warning means for warning that said recording means is not adequate when said discrimination means identifies that said data is improper.

5,289,211

INK DETECTING DEVICE FOR A LIQUID-INK PRINTING ELEMENT

Roberto Morandotti, Mercenasco, and Alessandro Scardovi, Ivrea, both of Italy, assignors to Ing. S. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 17, 1992, Ser. No. 870,373

Claims priority, application Italy, Apr. 15, 1991, TO91A000283

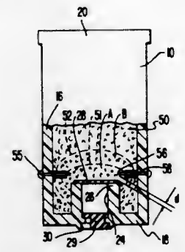
Int. Cl.[5] **B41J** *2/175*

U.S. Cl. 346—140 R **2 Claims**

1. An ink detecting device for a liquid-ink printing element comprising:

a print head for selectively transferring small amounts of ink to a printing support; a reservoir containing an ink-soakable spongy body; a feed duct providing a fluid connection coupling said print head and an outlet portion of said reservoir; said spongy body including a first region having a first capillarity; and a second region adjacent to said outlet of said reservoir and having a second capillarity greater than said first capillarity; and first and second ink detecting electrodes mounted in said reservoir and in electrical contact only with said second region, each of said electrodes being fixed to a wall of said reservoir in

diametrically-opposed positions with respect to the axis of said feed duct and consisting of a stem which is partially



covered by insulating material and having a bare tip in electrical contact with the ink in said second region.

5,289,212

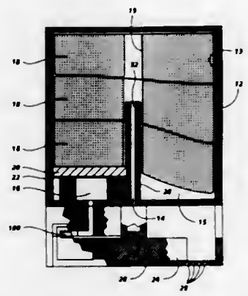
AIR VENT FOR AN INK SUPPLY CARTRIDGE IN A THERMAL INK-JET PRINTER

Michael Carlotta, Sodus, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1992, Ser. No. 885,600

Int. Cl.[5] **B41J** *2/175*

U.S. Cl. 346—140 R **11 Claims**



1. A cartridge for supplying liquid ink on demand to an ink-jet printhead, comprising:

a housing having a first chamber and a second chamber, the first chamber having a ventilation port and an outlet port, the outlet port communicating with the ink-jet printhead;

a medium occupying at least a portion of the first chamber, for retaining liquid ink therein at a predetermined back pressure;

an open-ended conduit defining a passageway extending from the ventilation port to a portion of the first chamber substantially devoid of liquid ink, to prevent leakage of liquid ink from the cartridge;

the second chamber being separate from the first chamber and adjacent the ventilation port, the conduit forming a communication between the second chamber and the portion of the first chamber substantially devoid of liquid ink.

5,289,213

LIQUID JET RECORDING APPARATUS WITH HUMIDIFYING MEANS

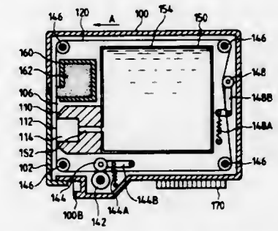
Keiichi Murai, Kashiwa; Hiroshi Sugitani, Machida; Masami Ikeda, Tokyo; Mitsuru Kurata, Kawasaki; Hiromitsu Hirabayashi, Yokohama; Akihiro Nomura, Yokohama, and Noribumi Koitabashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 722,384, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 330,822, Mar. 31, 1989, abandoned. This application Aug. 20, 1992, Ser. No. 931,443

Claims priority, application Japan, Mar. 31, 1988, 63-76373; Mar. 31, 1988, 63-76374; Mar. 31, 1988, 63-76375; Mar. 31, 1988, 63-76376; Mar. 31, 1988, 63-76377

Int. Cl.[5] **B41J** *2/165*

U.S. Cl. 346—140 R **28 Claims**



1. An ink jet cartridge removably mountable on a main body of an ink jet recording apparatus, the cartridge comprising:

a casing having means for removably mounting the cartridge on the apparatus;

an ink storing portion in said casing for storing ink discharged from a discharge opening;

an energy generating member in said casing for generating energy for discharging ink from the discharge opening;

electrical connecting means attached to said casing for receiving from the apparatus a signal for actuating said energy generating member while the cartridge is mounted on the apparatus;

a band-like member in said casing and having a closure portion for closing the discharge opening and an open portion enabling ink to be discharged through the discharge opening, said closure portion operating to prevent ink from clogging the discharge opening, and said open portion operating to open an entire area of the cartridge where the discharge opening is provided, said energy generating member generating energy when the open portion of said band-like member is aligned with the discharge opening; and

driving force receiving means attached to said casing for receiving from the apparatus a drive force and moving said band-like member.

5,289,214

APPARATUS FOR INFORMATION TRANSFER INCLUDING A DIELECTRIC ELEMENT AND GENERALLY NON-IMAGEWISE CHARGE SERVICE

Albert Zur, Givat Savion, Israel, assignor to Cubital Ltd., Herzlia, Israel

Continuation-in-part of Ser. No. 697,166, May 8, 1991. This application Sep. 27, 1991, Ser. No. 766,691

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] **G01D** *15/06*

U.S. Cl. 346—153.1 **36 Claims**

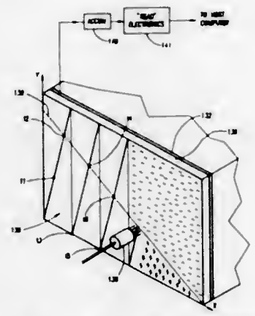
1. Apparatus for information transfer comprising:

a dielectric element having a first surface and a second surface which are generally opposite, a non-visible information bearing voltage signal initially being associated with said first surface or an information bearing charge

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pattern initially being associated with said second surface; and

generally non-imagewise source means for applying a non-visible flow of charges only to said second surface, said



flow of charges being operative to transfer information between said first surface and second surface from said voltage signal to a charge pattern or from said charge pattern to a voltage signal.

5,289,215

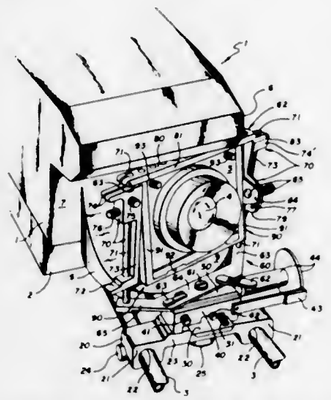
VARIABLE-POSITION LENS-MOUNTING ACCESSORY FOR MOTION-PICTURE CAMERAS, AND METHOD OF USE

Denny Clairmont, North Hollywood, and Kenneth W. Robings, Santa Monica, both of Calif., assignors to Clairmont Camera Incorporated, Studio City, Calif.

Filed Jan. 2, 1992, Ser. No. 816,862

Int. Cl.[5] G03B *17/00, 21/00*

U.S. Cl. 352—243 **13 Claims**



1. A variable-position lens-mounting accessory for use with any one of three or more standard motion-picture cameras selectably, each of said cameras having a camera body and a lens-mounting port on the camera body, and each of said cameras defining a film plane for exposure of motion-picture film, and a first one of such cameras having a generally central mirror housing that protrudes forward from a lower portion of the camera body, and a second one of such cameras having a mirror housing protruding forward along a right side of the camera body, and a third one of such cameras having a viewfinder protruding forward from an upper portion of the camera body; and for use with generally fore-and-aft support-rail means secured to the camera body; and for use with a photographic lens; said accessory comprising:

a first intermediary element slidably mounted substantially directly to such support-rail means for fore-and-aft sliding motion along such rail means; and manually operable means for locking the first element to such rail means, when desired to prevent sliding of the first element along such rail means;

another intermediary element supported from the first intermediary element for rotation about a generally vertical axis, and comprising a very generally rectangular frame which includes:

a lower member that is shaped as a very generally flat yoke with (a) a central portion surrounding said rotational axis and extending sideward from said axis, and with (b) outboard portions that extend rearward from the central portion,

generally vertical members extending upward from outboard ends of said outboard portions, and

an upper member that is very generally horizontal and interconnects upper ends of the generally vertical members to form therewith the top of said frame;

the vertical and upper members of the frame being suspended by said yoke-shaped lower member, and rotating, very generally above such central lower mirror housing of such first camera when the accessory is used with such first camera; whereby the lower member during rotation, by virtue of said yoke shape, does not interfere with such central lower mirror housing of such first camera;

said frame being sufficiently narrow, at least on its right side, to clear such mirror housing of such second camera;

said upper member defining a dip at one side to clear such viewfinder on such third camera; and

a plurality of additional intermediary elements, mounted in a sequence from said other element to provide a plurality of translational or rotational components of motion relative to the first element, and including as a last element of said sequence a lens-board mount for mounting such photographic lens;

a bellows having a front end that is secured substantially directly to the lens-board mount, and a rear end; and

an adapter secured substantially directly to the rear end of the bellows, said adapter being engageable with such lens-mounting port of such motion-picture camera;

whereby such lens, when in use, is disposed and oriented in a selectable manner relative to such film plane.

5,289,216

CAMERA WITH FILM INFORMATION SETTING DEVICE

Toshifumi Ohsawa, Tokyo, and Jun Terashima, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 716,639, Jun. 17, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 2,110

Claims priority, application Japan, Jun. 22, 1990, 2-165137; Jun. 22, 1990, 2-165138

Int. Cl.[5] G03B *7/00*

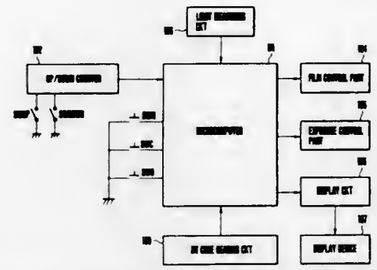
U.S. Cl. 354—21 **11 Claims**

1. A camera having a film information setting device, comprising:

a) a film information reading circuit arranged to automatically read film information of a film loaded in the camera;

b) a setting circuit for setting a data of value corresponding to the film information read by said film information reading circuit, said setting circuit setting a data of a first value when the read film information is a first information and a data of a second value when the read film information is a second information; and

c) a modification circuit for modifying the correspondency of the data value to the film information set by the setting circuit, said modification circuit detecting the read film information and setting a data of a value different from the



first value in the setting circuit when the read film information is the first information.

5,289,217

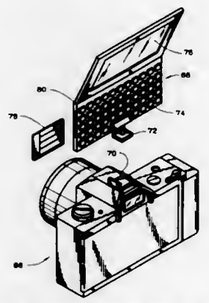
SYNCHRONIZED PHOTOGRAPH IDENTIFICATION

Marc Rosenblatt, 4360 N. Hills Drive, Hollywood, Fla. 33021

Filed Jul. 2, 1992, Ser. No. 907,607

Int. Cl.[5] G03B *29/00, 17/00*

U.S. Cl. 354—76 **2 Claims**



1. In combination with a camera having at least one flash contact on top of said camera an identification apparatus comprising:

a microcomputer unit having an integrated keyboard and display releasably attached to said camera, said keyboard available for input of indicia for digital storage on a removable memory module, said display providing a visual output of said indica contemporaneously said input;

means for electrically coupling said microcomputer unit to a flash contact of said camera, said flash contact providing a conventional electrical output indexing said microcomputer in relation to film frame advancement causing a portion of said memory module to be made available for receipt of said indicia;

mounting means for mounting said microcomputer unit above said flash contact, said mounting means including a hot shoe terminal slidably insertable into said flash contact and a support means connected between said hot shoe terminal and said microcomputer unit providing support of said microcomputer unit above said flash contact and;

a printing means operatively associated with said memory module available for converting said digital storage of said indicia on a human readable paper tape for attachment to photographs developed from camera film.

5,289,218

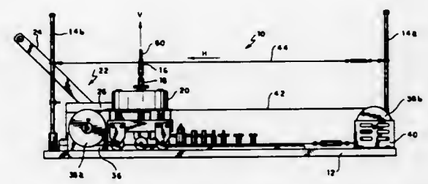
APPARATUS FOR ASSISTING CAMERA IN PHOTOGRAPHING CYLINDRICAL OBJECTS

L. Turner Pippin, P.O. Box 771558, Eagle River, Ak. 99577

Filed Jan. 19, 1993, Ser. No. 5,773

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—80 **15 Claims**



1. An apparatus for assisting a stationary camera in photographing a curved surface of an object, said apparatus comprising:

rotary means, coupled to the object, for rotating the object around a predetermined axis; and

mobile means, coupled to said rotary means, for moving said rotary means along a line perpendicular to said predetermined axis, whereby the object rotated by said rotary means can pass through a photograph area of the camera within an exposure time of the camera.

5,289,219

CAMERA PROVIDED WITH RED-EYE PHENOMENON PREVENTING FEATURE

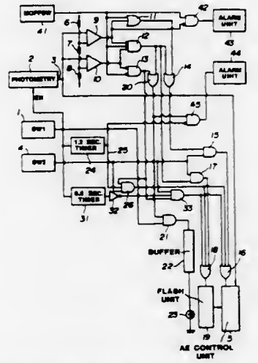
Hidetoshi Masuda; Toshio Nagata, both of Yokohama, and Hidenori Taniguchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,706

Claims priority, application Japan, Aug. 29, 1991, 3-218658; Jan. 31, 1992, 4-016579

Int. Cl.[5] G03B *15/03*

U.S. Cl. 354—149.11 **24 Claims**



1. A camera provided with a red-eye phenomenon preventing feature, comprising:

control means for controlling the red-eye phenomenon preventing feature in response to at least a speed of a shutter release button operation.

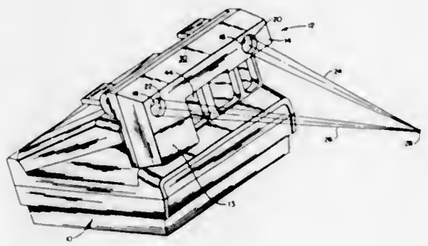
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,220

DETACHABLE CLOSE-UP LENS ASSEMBLY FOR AN ADJUSTABLE FOCUS LENS CAMERA INCORPORATING A PHOTORANGING SYSTEM

Alan Fidler, Chelmsford, and Nicholas M. Werthessen, Hollliston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1992, Ser. No. 999,780
Int. Cl.[5] G03B *13/20*
U.S. Cl. 354—165 8 Claims



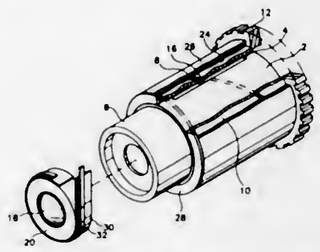
1. A camera and an attachment in combination incorporating two separate lens systems for close-up photography of a subject comprising:
a camera body supporting a first adjustable focus lens system focused to a particular focal length, said adjustable focus lens system being capable of focusing an image of a subject located within a range of subject distances at the camera's film plane;
a blade mechanism intermediate said first lens system and a film unit mounted in said camera body, actuatable between a light blocking and a light unblocking arrangement so as to open and close a light path between said first lens system and said film unit during an exposure interval;
a second fixed focus lens system mounted in an attachment, said attachment being mounted on said body with said second lens system being located intermediate said first lens system and said subject, said second lens system being optically aligned with said first lens system and having a fixed focal length, said attachment including a ranging system for providing external visual evidence of the proper focal distance of said combined lens systems from said subject, said ranging system including a source of light, means forming paths from said source for conveying light rays from said source to a pair of mirrors, said mirrors being spaced apart from each other and oriented at angles with respect to a straight line extending from said subject through the centers of said first and second lens systems, both said angles being about the same degree as measured in a vertical plane from said straight line; and
said angles, light source, light path means and focus of the combined lens systems being configured together to produce two beams of light from said mirrors impinging on said subject to provide a single spot of light on said subject when said subject is in optimum focus and two spots of light on said subject when said subject is not in optimum focus.

5,289,221

ZOOM LENS ASSEMBLY FOR A ZOOM CAMERA

Yongkyoo Yoon, Kyeongsangnam, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam, Rep. of Korea

Filed Dec. 3, 1992, Ser. No. 984,697
Claims priority, application Rep. of Korea, Dec. 5, 1991, 91-21376; Dec. 5, 1991, 91-22201
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 11 Claims



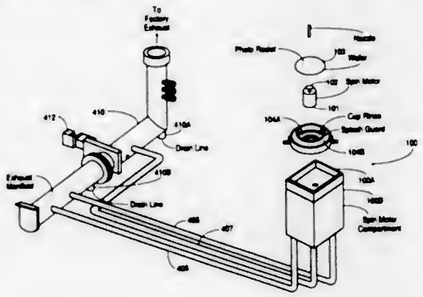
1. In a zoom lens assembly for a zoom camera including
a cam barrel placed to be able to rotate on an outer circumference of a guide barrel inside a camera body; and
a front move barrel placed inside said guide barrel, so that a focal length is varied, with the front move barrel moving forward and backward from said guide barrel by the rotation of said cam barrel: the improvement comprising;
an adhesive cement having the shading effect adhered to the outer circumference of said cam barrel;
a steel sheet coated on said adhesive cement;
a shading film coated on the outer circumference of a shutter installed on said front move barrel; and
a shading member attached to the outer circumference of said shading film.

5,289,222

DRAIN ARRANGEMENT FOR PHOTORESIST COATING APPARATUS

Roy E. Hurtig, Saratoga, Calif., assignor to Semiconductor Systems, Inc., Fremont, Calif.

Filed Jun. 26, 1992, Ser. No. 904,795
Int. Cl.[5] G03D *5/00*
U.S. Cl. 354—317 5 Claims



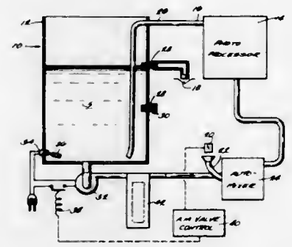
1. A drain system for a photoresist coating machine, said system comprising:
an exhaust manifold;
a drain line for transporting excess liquid photoresist and solvent from a spin coating chamine to said exhaust manifold, said drain line being configured such that liquid photoresist is not permitted to come to rest as it slows from aid coating machine to said exhaust manifold;
a safety line for transporting solvent vapors from a motor chamber in said spin coating machine to said exhaust manifold;
a means for connecting said exhaust manifold to an exhaust system; and
a means for connecting said exhaust manifold to a chemical reclaim system.

5,289,223

CHEMICAL RECYCLER FOR PHOTO PROCESSING MACHINE

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Continuation-in-part of Ser. No. 617,522, Nov. 23, 1990, Pat. No. 5,057,858. This application Oct. 15, 1991, Ser. No. 775,917
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 11 Claims



1. A device for recycling a liquid chemical selected from the group consisting of fixer solution and developer solution into a photo processing machine, said photo processing machine having a fixer tank with an inlet and an overflow outlet and a developer tank with an inlet and an overflow outlet, and a metering pump for inputting chemicals into each of said tanks, said device comprising:
at least one container for receiving and containing a chemical liquid flowing from one of said overflow outlets;
an inlet into said container, connected to the overflow outlet, for permitting said chemical liquid to flow from the overflow outlet into said container;
a pump for pumping said chemical liquid from said container into the inlet of one of said photo processing machine tanks, and
means for adding fresh chemical liquid to said chemical liquid at a point between said overflow outlet and said inlet
wherein said container is connected by fluid flow lines to an automixer for flow of said chemical liquid from said container to said automixer and said fresh chemical is added into said automixer.

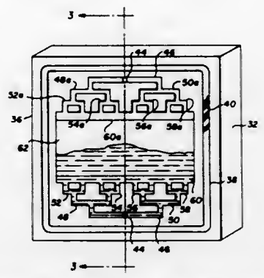
5,289,224

PROCESSING APPARATUS

Mark J. Devaney, Jr., and Lee F. Frank, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1992, Ser. No. 884,576
Int. Cl.[5] G03D *3/02, 13/02*
U.S. Cl. 354—324 21 Claims

1. Apparatus for treating a web with treatment fluid comprising:
means having a recess for receiving the web;
a fluid distribution system comprising a series of passages for dividing and subdividing the treatment fluid to simultaneously supply treatment fluid to the recess at a plurality



of locations across the recess to uniformly treat the web with the treatment fluid.

5,289,225

PHOTOMETERING APPARATUS OF CAMERA FOR VARIABLY WEIGHTING DIFFERENT AREAS OF AN IMAGE AREA

Isamu Hirai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,966
Claims priority, application Japan, Jun. 5, 1990, 2-145415
Int. Cl.[5] G03B *3/00, 7/08, 13/36*
U.S. Cl. 354—402 10 Claims

1. A photometering apparatus for a camera, comprising:
a split type photometering device for measuring the luminance of an object to be photographed, in which a picture plane is divided into a plurality of object luminance measuring zones;
an insensible band which photoelectrically isolates said object luminance measuring zones from one another;
an automatic focusing device which selectively has a focus lock mode in which once an object within an object distance measuring zone is in focus, the focus is maintained, and a non-focus lock mode in which the focus is continuously adjusted within said object distance measuring zone; and,
exposure control means to vary the weighting of the luminance signals of said object luminance measuring zones of said split type photometering device in order to calculate an exposure value, depending on the selection of said focus lock mode or said non-focus lock mode; wherein said exposure control means further comprises means for varying the weighting of the luminance signals between operations solely in said focus lock mode, when the luminance difference between outputs from a first photometering zone between a first photometering operation and a second photometering operation is greater than a predetermined value.

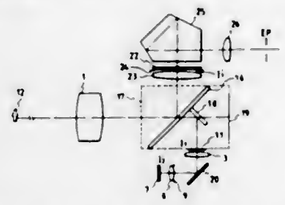
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,226

FOCUS DETECTING DEVICE INCLUDING A DIFFUSION SURFACE DISPOSED ON A PREDETERMINED IMAGE SURFACE

Hisashi Goto, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,579
Claims priority, application Japan, May 15, 1991, 3-110307
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **2 Claims**



1. A camera having a focus detecting device, comprising:
a photographic lens;
a splitting mirror disposed on the emergence side of said photographic lens, for splitting a light bundle having passed through said photographic lens into two beams, one beam travelling along a photographic optical path and the other beam travelling along a finder optical path;
reflecting means for directing at least part of the beam of light travelling along said photographic optical path toward a lower side of the camera, thereby deviating the part from said photographic optical path;
photoelectric converting means for receiving the part of the light beam deviated from said photographic optical path by said reflecting means and converting light intensity distribution of the part of said light beam into electric signals; and
a diffusion surface disposed at least one position including a position of a predetermined image surface of said photographic lens and at a position adjacent thereto in an optical path located between said photographic lens and said photoelectric converting means.

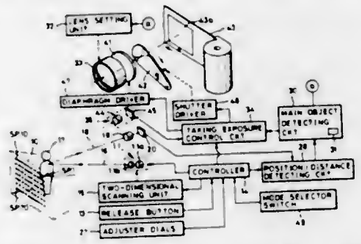
5,289,227

METHOD OF AUTOMATICALLY CONTROLLING TAKING EXPOSURE AND FOCUSING IN A CAMERA AND A METHOD OF CONTROLLING PRINTING EXPOSURE

Naoto Kinjo, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 22, 1993, Ser. No. 7,961
Claims priority, applicatioo Japan, Jan. 22, 1992, 4-009531; Jan. 22, 1992, 4-009533; Jan. 27, 1992, 4-012122
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **24 Claims**

1. An automatic control method for a camera having distance measuring means for measuring a scene to be photographed at first to N-th distance measuring points to obtain N distance data, which is representative of a distance to an object located at a corresponding one of said distance measuring points, said camera also having photometry means for measuring said scene at first to M-th scene divisional areas divided from said scene to obtain M brightness data, which is representative of the brightness of an object located in a corresponding one of said scene divisional areas, N and M being integers, said method comprising the steps of:
obtaining distance data Di $(t-\Delta t)$ for each of said distance measuring points at time point $(t-\Delta t)$, where i represents one of said distance measuring points;
obtaining distance data Di(t) for each of said distance measuring points at time point which is a point in time after the time period Δt has lapsed from time point $(t-\Delta t)$;
obtaining N difference data $\Delta Di(t)$ for each of said distance measuring points which is the difference between corresponding ones of said two distance data $Di(t-\Delta t)$ and Di(t);
comparing the absolute value of each of said N difference data $\Delta Di(t)$ with a threshold value ThD, and, if said absolute value is greater than said threshold value, judging that an object measured at the corresponding one of said distance measuring points is in motion;
determining at least one effective distance measuring point where a main object is present, said at least one effective distance measuring point including at least one of said measuring points having first distance data corresponding to the smallest distance of said N distance data and a



measuring point having distance data falling within a range of a predetermined value ϵ from said first distance data, respectively among said distance measuring points judged as having an object which is in motion;
obtaining main object distance data from said distance data of said at least one effective distance measuring point;
obtaining main object brightness data from an effective scene divisional area, said effective scene divisional area being said scene divisional area which corresponds to said at least one effective distance measuring point; and
automatically focussing a taking lens of said camera in accordance with said main object distance data and automatically controlling exposure control means of said camera in accordance with said main object brightness data for creating an original frame of an image of said scene on a photographic film loaded in said camera.

5,289,228

Patent Not Issued For This Number

5,289,229

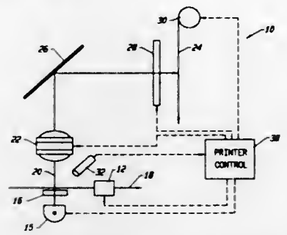
FULL FRAME/PANORAMIC PHOTOGRAPHIC PRINTING APPARATUS AND METHOD

Joseph A. Manico, Rochester, and William L. Burnham, Leroy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,560
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 **10 Claims**

1. A photographic printing apparatus for processing both full frame and panoramic prints from a roll of film containing negatives which have been selectively exposed in either full frame or panoramic format, said apparatus comprising:
(a) means defining a printing station for receiving a given negative;
(b) means for electro-optically determining the density of said given negative at a number of sensing points on the negative when the latter is at said printing station;
(c) format status determining means responsive to the density of said given negative at said sensing points for determining if negative contains a full frame image or a panoramic image, or is blank or entirely fogged and therefore

contains no image, depending upon the density of said given negative at said sensing points, and
(d) means for automatically
(i) making a print from said negative in the full frame format if the given negative is determined to contain a full frame image or in the panoramic format if the given



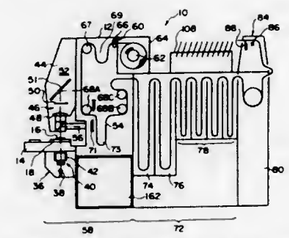
negative is determined to contain a full frame image or in the panoramic format if the given negative is determined to contain a panoramic image, or
(ii) moving said given negative out of said print station without making a print if the negative is determined to be a blank or entirely fogged.

5,289,230

PRICE PRINTER AND PHOTOGRAPHIC-FILM CARRIER FOR PHOTOGRAPHIC PROCESSING SYSTEM

Mitsukazu Hosoya; Yoshikazu Majima, and Toshihiko Narita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1992, Ser. No. 899,290
Claims priority, application Japan, Jun. 17, 1991, 3-144957; Jun. 17, 1991, 3-144958
Int. Cl.[5] G03B *27/48, 27/58*
U.S. Cl. 355—50 **16 Claims**



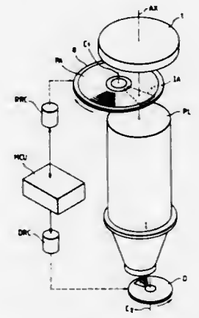
1. A price printer suitable for use with a photographic processing system for printing images which have been recorded on photographic films onto photographic papers, said price printer being used to print prices relative to photographic processing, said price printer comprising:
storing means for storing therein both a unit price of development of the photographic films and the number of developed photographic films and both a unit price of printing of the photographic paper and the number of prints;
inputting means for changing at least one of the unit price of development, the number of developed photographic films, the unit price of printing and the number of the prints;
computing means for computing a development price, a print price and the total of these prices based on the unit price of development, the number of developed photographic films, the unit price of printing and the number of the prints; and
printing means for printing said development price, said print price and the total of these prices all of which have been computed by said computing means.

5,289,231

APPARATUS FOR MANUFACTURING DISC MEDIUM

Nobutaka Magome, Kawasaki; Hiromitsu Iwata; Junichi Morino, both of Yokohama, and Toru Kiuchi, Kurume, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,772
Claims priority, application Japan, Dec. 25, 1991, 3-343257
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **1 Claim**



1. An apparatus for manufacturing a disc medium formed with concentric or spiral round tracks at a predetermined pitch in the diametrical direction thereof comprising:
a projection optical system;
first rotatably holding means for rotatably holding a mask substrate formed with a zonal original pattern corresponding to said round tracks in the object plane of said projection optical system with the central point of the zone of said original pattern substantially as the origin;
illuminating means for irradiating a portion of said original pattern with illuminating light limited to a slit-like shape or a sectoral shape having substantially the same degree of length as the radial width of said zone and extending in the diametrical direction of said zone;
second rotatable holding means for holding the central point of a photosensitive disc at a position substantially conjugate with the central point of the zone of said mask substrate with respect to said projection optical system, and rotating said photosensitive disc with the central point thereof as the origin;
drive control means for rotatively driving said first and second rotatable holding means so that said mask substrate and said photosensitive disc may be synchronously rotated at substantially equal angular velocities; and
means for controlling said illuminating means so that said mask substrate may be irradiated as long as said mask substrate and said photosensitive disc are rotated substantially integer times.

5,289,232

NEGATIVE FILM SUPPLYING DEVICE

Izumi Seto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

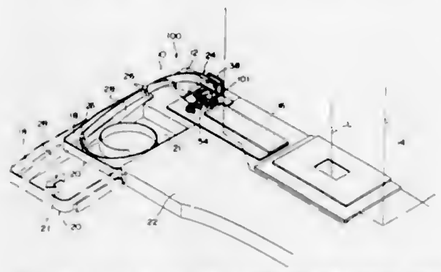
Filed Dec. 29, 1992, Ser. No. 998,040
Claims priority, application Japan, Jan. 9, 1992, 4-002255; Jan. 9, 1992, 4-002256
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 **17 Claims**

1. A negative film supplying device for successively supply-

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ing a plurality of negative films to a printing device comprising:

a negative film holding member for holding said negative films in a superposed state, including guide portions and a base portion interposed between said guide portions, both transverse direction end portions of said negative films being interposed between said guide portions, opposing surfaces of said guide portions being inclined so as to approach each other, a length of said base portion between said guide portions being smaller than a width of said negative film so that said negative films are curved in convex shapes in said negative film holding member;



moving means for moving said negative film holding member between a guiding position at which said negative film holding member guides said negative films to the printing device and a withdrawn position at which said negative film holding member is apart from said guiding position;

delivery means for imparting force in a longitudinal direction of said negative film to a negative film, which is an outermost negative film in said negative film holding member when said negative film holding member is at said guiding position, so as to deliver said outermost negative film to the printing device.

5,289,233

REMOVABLY MOUNTABLE IMAGE FORMING UNIT HELD TOGETHER BY THERMALLY SHRINKABLE FILM

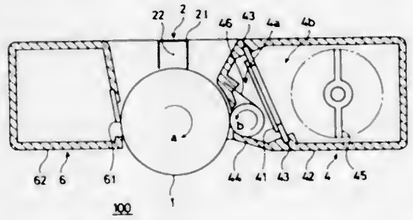
Masashi Sakamoto, Toyohashi, and Shin Miyata, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1992, Ser. No. 826,864

Claims priority, application Japan, Jan. 31, 1991, 3-10654; Dec. 3, 1991, 3-319020

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **23 Claims**



1. An image forming unit removably mountable in an image forming apparatus, said unit comprising:

a plurality of components; and

a covering film means for tightly covering and contacting said plurality of components in the form of said unit in order to firmly join and maintain said components together after said unit has been mounted in said image forming apparatus.

5,289,234

IMAGE FORMING APPARATUS WITH CHARGE BRUSH

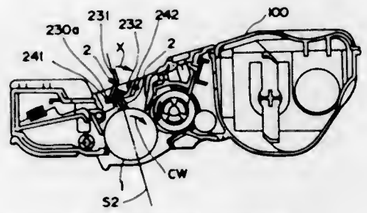
Masaki Asano, Amagasaki; Shuji Iino, Hirakata; Akihito Ikegawa, Sakai, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 869,646, Apr. 16, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,064

Claims priority, application Japan, Apr. 22, 1991, 3-90341

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 **22 Claims**



1. An image forming apparatus comprising:

an image bearing member;

a charge brush having brush fibers for charging the surface of said image bearing member by contacting the fibers therewith;

a holder for rotatably holding said image bearing member and for holding said charge brush in contact with said image bearing member, said holder detachably holding at least one of said image bearing member and said charge brush; and

guide means for relatively guiding said detachable one into said holder from a predetermined direction so that said fibers of said charge brush are inclined along the rotational direction of said image bearing member.

5,289,235

IMAGE PRODUCING APPARATUS

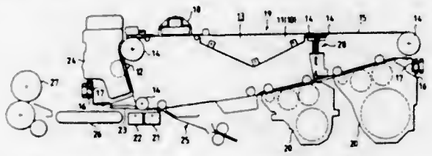
Makoto Sakanobe, Kanagawa, and Yoshikazu Tamura, Ebina, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,205

Claims priority, application Japan, Dec. 27, 1990, 2-415142; Jan. 17, 1991, 3-015736

Int. Cl.[5] G03G *15/048, 15/32*

U.S. Cl. 355—239 **13 Claims**



1. An image producing apparatus comprising:

a uniformly charged movable photosensitive material, said photosensitive material having a surface for forming an electrostatic latent image of an original image in response to exposure to light;

pattern exposing means for exposing said photosensitive material to light to form said electrostatic latent image on said surface, said electrostatic latent image being in the form of a plurality of slits spaced apart by a predetermined distance, wherein said pattern exposing means includes:

a plurality of infinitesimal light sources aligned at equal pitches substantially transversely to the direction of movement of said photosensitive material,

a pattern plate positioned between said plurality of infinitesimal light sources and said surface of said photosensitive material, said pattern plate having a plurality of light transmitting areas and a plurality of light opaque areas, each of said transmitting areas being disposed adjacent one of said opaque areas;

means for developing said electrostatic image formed on said surface of said photosensitive material with a toner; and

means for transferring the developed toner image to a transfer material.

5,289,236

IMAGE FORMING APPARATUS

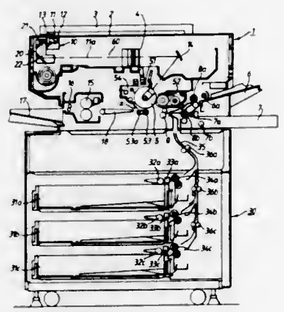
Tsutomu Yoshino, Kanagwa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 9, 1993, Ser. No. 28,401

Claims priority, application Japan, Mar. 24, 1992, 4-065776; Oct. 9, 1992, 4-270650

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—243 **11 Claims**



1. Image forming apparatus, comprising:

means for forming an image based on image information on a paper;

means for magnifying/reducing the image to be formed by the image forming means;

multiple paper supplying means for storing papers in different size and supplying the paper to the image forming means;

means for setting times of image forming operation;

means for selecting one of the multiple paper supplying means; and

means, in a case when papers of a first size, stored in a first paper supplying means, are exhausted before a completion of the times of the image forming operation set by the setting means, for controlling the selecting means to select a second paper supplying means which stores papers of a second size, for controlling the magnifying/reducing means to magnify/reduce the image in accordance with a proportion of the first size and the second size, and for controlling the image forming means to form an image, magnified/reduced by the magnifying/reducing means, on the paper of the second size.

5,289,237

DEVELOPING DEVICE AND METHOD FOR LOCATING A TONER RESTRICTING MEMBER AT A DEVELOPING DEVICE

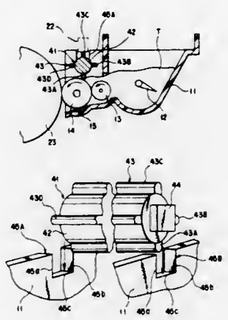
Hiroshi Hashizume, and Takashi Ishikawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1992, Ser. No. 935,186

Claims priority, application Japan, Aug. 27, 1991, 3-214959; Oct. 17, 1991, 3-269514

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **25 Claims**



1. A developing device for depositing a toner comprising:

a casing;

a toner carrier rotatably mounted within the casing and having a surface for receiving a tone; and

a tone restricting member nonrotatably mounted within the casing parallel to and urged into contact with the toner carrier, the tone restricting member including a ridge retaining rod and an elastic contact unit secured to an outer surface of the retaining rod, the contact unit extending axially along the retaining rod and having a single contact area with a distal end extending from the retaining rod for contacting the surface of the toner carrier, the contact area extending from the retaining rod to a height smaller than a diameter of the retaining rod;

whereby, upon rotation of the toner carrier, a thin layer of toner is deposited on the toner carrier after passing between the contact unit and the toner carrier.

5,289,238

LIQUID TONER DEVELOPING APPARATUS HAVING METAL BLADE WITH INSULATING COATING IN CONTACT WITH DEVELOPING ROLLER

Ishaiau Lior, Nes Ziona, and Itzhak Ashkenazi, Rehovot, both of Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands

Filed Sep. 5, 1991, Ser. No. 755,458

Int. Cl.[5] G03G *15/10*

U.S. Cl. 355—256 **15 Claims**

I. Imaging apparatus comprising:

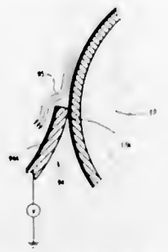
(a) an imaging surface having a latent image comprising image areas at a first electrical potential and background areas at a second electrical potential thereon; and

(b) a developer comprising:

(i) a moving developer electrode electrified to a third electrical potential intermediate the first and second electrical potentials and having sequential surface portions thereof closely spaced from the imaging surface to form a development region therebetween, whereat the latent image is developed with liquid toner comprising carrier liquid and charged toner particles, whereby toner particles are also attracted to the developer surface; and

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(ii) a resilient metal blade urged against and in contact with the developer surface after it passes the development region and operative to remove toner particles from the developer surface, wherein the blade is coated



with an insulating coating over at least a portion of the blade not contacting the developer surface and wherein the portion of the blade contacting the surface is not coated with the insulating coating.

5,289,239

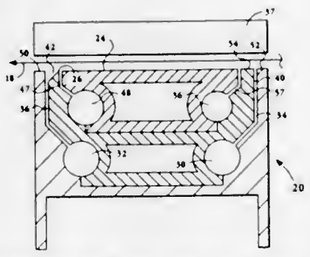
INTEGRATED AIR KNIFE TONER APPLICATOR

Gene F. Day, Hillsborough, Calif., assignor to Phoenix Precision Graphics, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 930,779, Aug. 17, 1992, Pat. No. 5,231,455. This application Mar. 9, 1993, Ser. No. 28,379

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—256 **3 Claims**



1. A toner applicator for an electrostatic recorder or copier comprising:

a toner applicator body having a length spanning the entire width of a recording medium, and having a toning channel extending across a portion of said applicator body in the lengthwise direction in fluid communication with said recording medium for applying toner thereto, said toning channel spanning the entire width of said recording medium except for border regions at the edge of said recording medium,

a first air channel in said toner applicator body, said first channel peripherally surrounding the two opposing widthwise sides and one of the lengthwise sides of said toning channel,

a toner drain channel extending in the lengthwise direction across said toner applicator body for draining toner from said toning channel, said drain channel bordering eh other lengthwise side of said toning channel,

an air knife integral to said toner applicator body, said air knife having a sharp edge extending in the lengthwise direction across said toner applicator body for removing excess toner from said recording medium with a high velocity air flow, said air knife having a second air channel extending lengthwise across said applicator body, said second air channel arranged such that said drain channel is disposed between said second air channel and said toning channel and such that said first and second air channels are in communication and peripherally surround said toning channel, and

air supply means for expelling air through said first and second air channels surrounding said toning channel such that said toner is confined within said toning channel, said air expelled from said second air channel also removing said excess toner from said recording medium as said recording medium passes over said second air channel, such that said excess toner is directed into said toner drain channel.

5,289,240

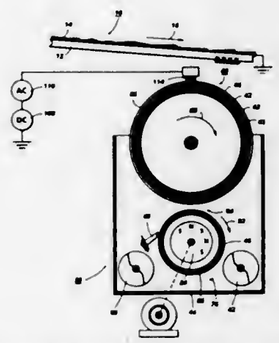
SCAVENGELESS DEVELOPER UNIT WITH ELECTRODED DONOR ROLL

William H. Wayman, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 20, 1993, Ser. No. 63,817

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—259 **5 Claims**



1. An apparatus for developing a latent image recorded on a surface, including:

a housing defining a chamber storing at least a supply of toner therein;

a moving donor roll spaced from the surface and adapted to transport toner from the chamber of the housing to a development zone adjacent the surface;

a plurality of electrodes longitudinally disposed on the donor roll; and

a commutator contacting the electrodes along a portion of the circumference of the donor roll adjacent the development zone, the commutator including a brush having fibers in contact with portions of a subset of the electrodes, the brush having a predetermined contact resistance between about 1KΩ and 1MΩ.

5,289,241

DEVELOPING UNIT FOR AN IMAGE FORMING APPARATUS HAVING ADJOINING FRESH AND WASTE TONER CONTAINERS

Toshihiro Sugiyama, Yokohama, and Toshihiko Takaya, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,978

Claims priority, application Japan, Jan. 21, 1991, 3-005291

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **8 Claims**

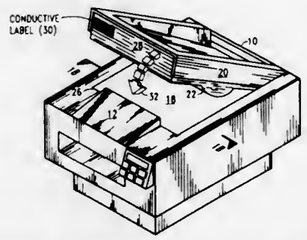
1. A developing unit incorporated in an image forming apparatus for developing a latent image electrostatically formed on a photoconductive element by a toner, comprising:

a fresh toner container containing a fresh toner;

a waste toner container adjoining said fresh toner container for collecting a waste toner removed from said photoconductive element;

a wall separating said fresh toner container and said waste toner container and formed with an opening in part thereof for providing communication between said fresh toner container and said waste toner container; and

shutter means associated with said opening for permitting



the waste toner collected in the waste toner container to be transferred from said waste toner container to said fresh toner container via said opening when a predetermined amount of waste toner is collected in said waste toner container, while preventing said fresh toner contained in the fresh toner container from being transferred from said fresh toner container to said waste toner container.

5,289,243

INSTALLATION AND REMOVAL STRUCTURE OF A DEVELOPING UNIT AND A TONER CARTRIDGE IN AN IMAGE FORMING APPARATUS

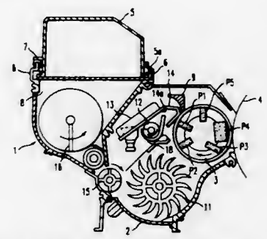
Koji Sakamoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 992,258

Claims priority, application Japan, Dec. 18, 1991, 3-110767[U]

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **16 Claims**



1. An image forming apparatus comprising:

an image carrier on which a latent image is formed;

a developing unit having means for supplying toner to the image carrier for developing the latent image when the developing unit is installed in a body of the image forming apparatus, the developing unit having an opening through which toner from a toner cartridge can be introduced thereinto;

a toner cartridge mountable on said developing unit and covering said opening; and

means on at least one of said developing unit and said toner cartridge for permitting installation of said developing unit into the image forming apparatus body only when said toner cartridge is mounted on said developing unit.

5,289,242

METHOD AND SYSTEM FOR IDENTIFYING THE TYPE OF TONER PRINT CARTRIDGES LOADED INTO ELECTROPHOTOGRAPHIC PRINTERS

K. Trent Christensen, Boise, Id.; Antonio P. Flores, Deming, N. Mex., and Mark D. Montierth, Boise, Id., assignors to Hewlett-Packard, Palo Alto, Calif.

Filed Nov. 17, 1992, Ser. No. 977,326

Int. Cl.[5] G03G *15/06, 21/00*

U.S. Cl. 355—260 **11 Claims**

7. A system for indicating a type of toner print cartridge loaded into an electrophotographic printer including, in combination:

a. a toner print cartridge operatively received within an electrophotographic printer and having a conductive strip thereon representative of the type of toner print cartridge loaded into said printer, and

b. a contact support member having a pair of mating electrical contacts mounted thereon and operatively engaging said conductive strip on said toner print cartridge when said toner print cartridge is in condition for a print operation, whereby said pair of mating electrical contacts operate to close an electrical circuit in the presence of said conductive strip to provide an indication that a particular type of print cartridge has been loaded into said printer.

5,289,244

WRINKLE PREVENTION STRUCTURE FOR ELECTROPHOTOGRAPHIC PRINTER

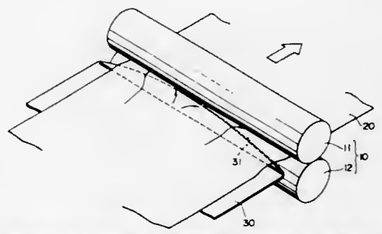
Masatoshi Takano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1991, Ser. No. 777,577

Claims priority, application Japan, Oct. 16, 1990, 2-108094[U]; Sep. 13, 1991, 3-082254[U]

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—282 **7 Claims**



5. A wrinkle prevention structure employed in an electrophotographic imaging device using a continuous form recording sheet, said imaging device having a pair of fixing rollers, said recording sheet carrying an unfixed image thereon and being fed to pass through a nip between said pair of fixing rollers to fix the image thereon, said structure comprising a guide member disposed on an upstream side of said pair of fixing rollers with respect to a feeding direction of said record-

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ing sheet, wherein said guide member comprises a guide surface extending substantially horizontally for guiding said recording sheet toward the nip between said pair of fixing rollers, said guide surface substantially coinciding with a horizontal plane including the nip between said pair of fixing rollers, wherein said guide member further comprises tensioning means on a downstream side of said guide surface for upwardly pressing said recording sheet at least at a center portion in a width direction thereof so that said center portion of said recording sheet is projected from a plane including a portion of said recording sheet traveling on said guide surface.

5,289,245

RECORDING MATERIAL FOR USE IN AN IMAGE FORMING APPARATUS IN WHICH A POWDER TONER IMAGE IS FORMED ON THE RECORDING MATERIAL AND THEN FIXED BY THE APPLICATION OF HEAT AND PRESSURE

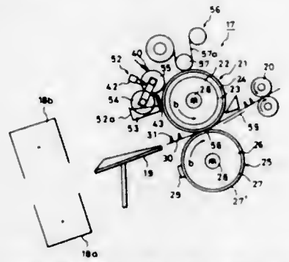
Takeshi Menjo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 837,924, Feb. 20, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 73,627

Claims priority, application Japan, Feb. 25, 1991, 3-030285

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—284 **19 Claims**



1. A recording material for use in an image forming apparatus in which an image made of melting powder toner is formed on a recording material and then fixed by application of heat and pressure from a heating rotatable member that is coated with a releasing oil, said recording material comprising:

a base resin layer;

a first resin layer provided on said base resin layer, having a lower softening temperature than that of said base resin layer and a compatibility of solubility with the powder toner by application of the heat greater than with said base resin layer; and

a second resin layer provided on said first resin layer for absorbing a releasing oil.

5,289,246

COLOR MIXING AND FIXING DEVICE PREVENTING GLOSS UNEVENNESS

Takeshi Menjo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,554

Claims priority, application Japan, Feb. 26, 1991, 3-53143; Jan. 20, 1992, 4-7554; Feb. 3, 1992, 4-17639

Int. Cl.[5] G03G *15/20*

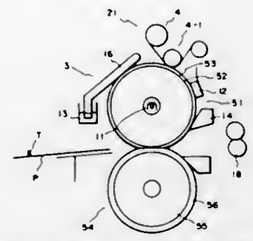
U.S. Cl. 355—285 **17 Claims**

1. A color mixing and fixing device, comprising:

a fixing roller for contacting a plurality of accumulated non-fixed toner images, said fixing roller having a heating source therein and comprising a core member and a surface rubber layer; and

a pressure roller forming a nip together with said fixing roller, said pressure roller comprising a core member and an elastic layer provided thereon;

wherein a total thickness of the elastic layer of said fixing roller is less than a total thickness of the elastic layer of said pressure roller, and the surface effective hardness of



said fixing roller is less than the surface effective hardness of said pressure roller.

5,289,247

IMAGE FORMING APPARATUS WITH CHANGEABLE FEED INTERVAL FOR CONTINUOUS FEED

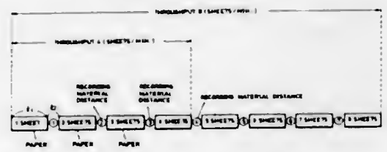
Manabu Takano, Machida; Masahiro Goto, and Koichi Suwa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,254

Claims priority, application Japan, Jun. 28, 1991, 3-158482

Int. Cl.[5] G03G *15/20, 21/00*

U.S. Cl. 355—285 **10 Claims**



1. An image forming apparatus comprising:

means for fixing an unfixed image on a recording material, said fixing means comprising a heating member selectively maintainable at one of at least a first set temperature and a second set temperature lower than the first set temperature during fixing, and a backup member forming a nip with said heating member so that said nip conveys a recording material holding an unfixed image thereon through said nip to fix the unfixed image;

feed means for continuously feeding recording materials on which there is an unfixed image to said fixing means; and

feed interval control means for switching between a first feed interval at the first set temperature and a second feed interval shorter than the first feed interval at the second set temperature during continuous feeding of the recording materials.

5,289,248

FIXING UNIT AND IMAGE FORMING APPARATUS HAVING THE SAME

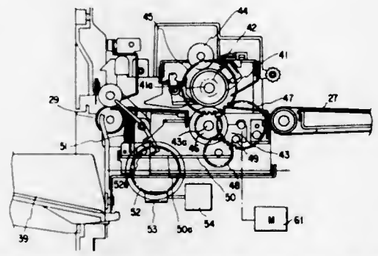
Hiroto Kurokawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1993, Ser. No. 22,933

Claims priority, application Japan, Feb. 28, 1992, 4-41836

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **10 Claims**



3. A fixing apparatus for fixing an image onto an image bearing member comprising:

means for heating an image bearing member, having an image thereon, at a predetermined temperature;

means for selecting a mode between a usual mode and a preheat mode;

means for keeping the heating means at a first temperature in the usual mode, and for keeping the heating means at a second temperature which, is lower than the first temperature, in the preheat mode;

means, which is movable between a first position brought into contact with the heating means and a second position separated from the heating means, for pressing the image bearing member against the heating means at the first position;

means for moving the pressing means between the first position and the second position;

means for controlling the moving means to move the pressing means from the first position to the second position when the preheat mode is selected by the selecting means, and to move the pressing means from the second position to the first position when the usual mode is selected by the selecting means; and

means for rotating the pressing means when the pressing means is located at the second position.

5,289,249

ELECTROPHOTOGRAPHIC PRINTER HAVING A GRAVITY DRIVEN TONER RECYCLING UNIT

Mikio Yamamoto; Minoru Isobe; Yoshiharu Momiyama; Shigeki Nakajima, and Hisao Ono, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 6, 1992, Ser. No. 878,919

Claims priority, application Japan, May 13, 1991, 3-107410

Int. Cl.[5] G03G *15/08, 21/00*

U.S. Cl. 355—298 **5 Claims**

1. An electrophotographic printer comprising

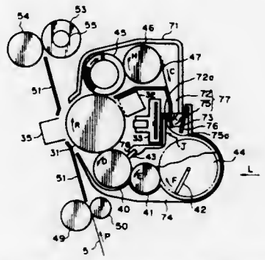
a photoconductor having a surface on which an electrostatic latent image is formed, said photoconductor having a printing width in a longitudinal direction thereof;

a developing device for adhering a developer to said electrostatic latent image and developing said image;

a transferring device for transferring the developed latent image to a recording medium;

a cleaning device for collecting developer remaining on the surface of said photoconductor, said cleaning device comprising a brushing roller for removing developer from the surface of said photoconductor, a collecting roller for collecting developer deposited on said brushing roller, and a scraper contacting said collecting roller for removing developer collected thereon;

a passageway connecting said cleaning device and said developing device, said passageway having a width extending in said longitudinal direction extending along the entire printing width of said photoconductor and a length extending in a vertical direction substantially perpendicular to said longitudinal direction, developer scraped from said collecting roller being transferred through said passageway entirely by gravity from said cleaning device to said developing device;



an exposing light source positioned between said developing and cleaning devices and interposed between said photoconductor and said passageway, said exposing light source comprising an array of light emitting elements disposed in said longitudinal direction along the entire printing width of said photoconductor; and

an electrifier interposed between said cleaning device and said exposing light source.

5,289,250

SHEET POST-PROCESSING APPARATUS HAVING SHEET ALIGNER

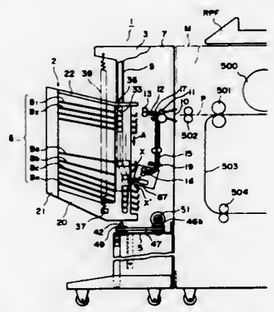
Masakazu Hiroi, Kanagawa; Kenji Kobayashi, Itabashi, and Naho Wakao, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,842

Claims priority, application Japan, Sep. 29, 1990, 2-262290

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—311 **14 Claims**



1. A sheet post-processing apparatus, comprising:

trays for accommodating discharge sheets;

aligning means for aligning the sheets on said trays by urging edges of the sheets;

driving means for driving said aligning means;

supporting means for rotatably supporting said aligning means;

elastic means disposed between said aligning means and said driving means; and

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control means for controlling said driving means to change a degree of urging of said aligning means in accordance with a size of the sheets accommodated in said trays, wherein the degree of urging corresponds to a distance through which said aligning means moves in a lateral direction of the sheets after contacting the edges of the sheets, and wherein said control means changes a rotational amount of said aligning means through said driving means in accordance with a size of the sheets.

5,289,251

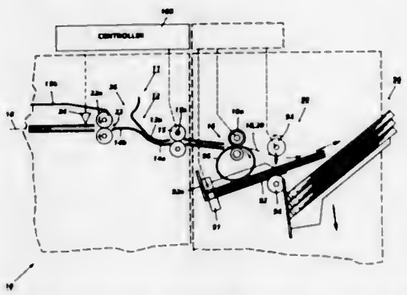
TRAIL EDGE BUCKLING SHEET BUFFERING SYSTEM

Barry P. Mandel, Fairport; Charles D. Rizzolo, Rochester, and Gerald A. Buddendeck, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 19, 1993, Ser. No. 65,099

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—324 **14 Claims**



1. For a reproduction apparatus feeding a sequential stream of printed copy sheets into a normal sheet path with a limited space and time therebetween, a sheet buffering system comprising:

a non-slip downstream sheet feeding nip normally feeding copy sheets downstream towards a sheet output in said normal sheet path;

said downstream sheet feeding nip being selectably intermittently temporarily stopped with a lead edge of a first copy sheet therein;

a sheet buckle chamber upstream of said downstream sheet feeding nip extending away from said normal sheet path;

a non-slip upstream sheet feeding nip positioned sufficiently closely to said downstream nip along said normal sheet path to simultaneously feed said first sheet in said upstream nip while a lead edge of the same sheet is in said downstream nip to drive the trail end of said first copy sheet into said buckle chamber when said downstream nip is so temporarily stopped, and to then feed a second copy sheet with said upstream nip in said normal sheet path past said first copy sheet in said buckle chamber to said downstream nip;

buckle-inducing sheet baffling in said normal sheet path between said upstream and downstream feeding nips; and

said downstream nip then being automatically restarted upon said feeding of said second copy sheet thereto by said upstream nip to feed said first copy sheet from said buckle chamber in coordination with the feeding of said second copy sheet, so that both said first and second copy sheets are fed downstream by said downstream nip.

5,289,252

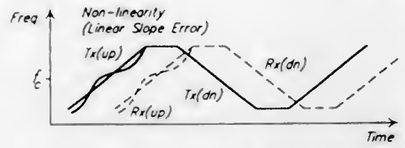
LINEAR FREQUENCY MODULATION CONTROL FOR FM LASER RADAR

Charles E. Nourrcier, Lakewood, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 8, 1992, Ser. No. 987,888

Int. Cl.[5] G01C *3/08*; G01P *3/36*; G03H *1/02, 1/26*

U.S. Cl. 356—5 **20 Claims**



1. A frequency control system for maintaining linearity in the transmitted beam of a linear frequency modulated (LFM) laser radar system comprising:

(a) transmitter means for emitting laser light at a preselected center frequency;

(b) means for linearly modulating the frequency of said laser light with respect to time to create a linear frequency modulation beam;

(c) means for sensing non-linearities in the modulation of said modulation beam;

(d) means for generating a correction signal in response to said non-linearities sensed by said sensing means;

(e) feedback means for applying said correction signal to said modulating means to compensate for said sensed non-linearities; and

(f) means for mixing said modulated beam with a local oscillator generated beam to produce a difference signal of a predetermined frequency.

5,289,253

PATTERN SCANNING DEVICE

Brendan D. Costello, Meadow House, Sibton Road, Peasenhall, Suffolk, and David R. Winterbottom, Colchester, both of England, assignors to Brendan D. Costello, Suffolk, England

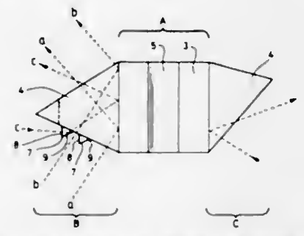
PCT No. PCT/GB90/00450, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO90/11047, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 23, 1990, Ser. No. 761,982

Claims priority, application United Kingdom, Mar. 23, 1989, 8906816

Int. Cl.[5] G06K *9/20*

U.S. Cl. 356—71 **16 Claims**



1. A device for scanning the surface of a generally cylindrical object carrying a raised pattern thereon so as to detect that pattern, which device comprises:

a. a transparent optical body having a substantially arcuate configuration about a first axis and having a convergent radial cross-section, and a channel parallel to and substantially co-axial with that axis, which channel presents a surface substantially parallel to the said axis, upon which the object whose surface is to be observed can be placed,

and the underside of which surface serves as the optical base face to the convergent radial cross-section to the optical body;

b. a source of an incident light beam adapted to be directed onto a light entry face of the convergent cross-section of the optical body, the configuration of the optical body being such that the incident light beam is adapted to strike the under-side of the said optical base face at substantially the angle of total internal reflection for the material from which the optical body is fabricated and to be reflected through a light exit face of the convergent cross-section of the optical body;

c. means for causing the said incident light beam progressively to traverse the said optical base face of the optical body; and

d. a means for observing the light reflected from the underside of the said optical base face through a light exit face of the convergent cross-section of the optical body and for providing a signal dependent upon the intensity of the light detected.

5,289,254

PROCESS AND APPARATUS FOR TESTING OPTICAL COMPONENTS OR SYSTEMS

Bernhard Braunecker, Rebstein; Bernhard Gaechter, Balgach, both of Switzerland, and André Huiser, deceased, late of Lüchingen, Switzerland by Christiane Huiser-Simonin, heir, assignors to Leica Heerbrugg AG, Heerbrugg, Switzerland

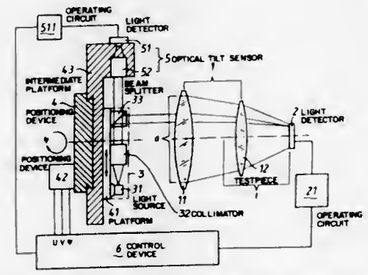
PCT No. PCT/EP91/00219, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/12510, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 5, 1991, Ser. No. 768,523

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1990, 4003699

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **6 Claims**



2. An apparatus for testing optical components (12) or systems (1) which are contained in an apparatus consisting of a focusing optical system (1) and a space-resolving light detector (2) close to the focal plane thereof, wherein

a source (3), containing a collimator (32), for a narrowly delimited beam of parallel light with a plane wavefront is disposed on

a precision positioning device (4) with two approximately mutually orthogonal axes of linear movement (u,v), which are disposed parallel to the plane of the wavefront, and an axis of rotation (ϕ) which is approximately orthogonal thereto and

a tilt sensor apparatus (5) is provided, having a second collimator (52) and a space-sensitive detector (51), both of which are disposed at one end of a guideway for the first axis of said two axes of linear movement, and wherein

a control device (6) is connected therewith, which acts so that the aperture of the focusing optical system (1) is scanned linewise, the first axis of linear movement representing the line direction and the scanning taking place twice with a position rotated through approximately 90° with respect to the axis of rotation, and in addition an individual line coming close to the axis of rotation being scanned in a position rotated through approximately 45°.

5,289,255

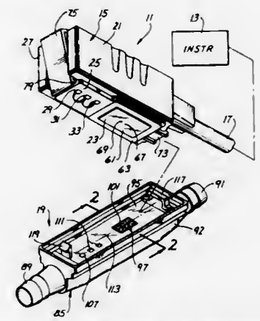
CUVETTE FOR USE IN MAKING A MEASUREMENT OF A BLOOD PARAMETER AND ASSEMBLY UTILIZING THE SAME

Paul J. Mullin, Westminster; Stan O. Heinemann, Trabuco Canyon, and Mark G. Gordon, Tustin, all of Calif., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Mar. 28, 1991, Ser. No. 676,956

Int. Cl.[5] G01N *1/10, 33/48*

U.S. Cl. 356—246 **17 Claims**



1. A cuvette for use in making a measurement of a blood parameter, said cuvette comprising:

a housing having a passage therein, said passage having a biocompatible surface and being adapted to receive blood; said housing having a wall with an outer face;

an optical window leading from said outer face to said passage, said optical window being transmissive to an optical signal so that the parameter of the blood can be measured;

a magnet carried by said wall for use in providing information about the cuvette;

the housing being elongated and the cuvette including first and second coupling members on said housing for use in releasably coupling the housing to an optical head, said optical window and said magnet being between the first and second coupling members; and

the first coupling member being useful in pivoting the cuvette to the optical head and the optical window including a deformable optical coupling element on said outer face between the first coupling member and the magnet.

5,289,256

INTEGRATED-OPTICS EXPANSION INTERFEROMETER IN AN EXTENSION-METROLOGICAL NEUTRAL ENVIRONMENT

Hubert Gramling, Ebersbach, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jan. 26, 1993, Ser. No. 9,036

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1992, 4204521

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—345 **24 Claims**

1. A double-beam interferometer formed using integrated-optics technology comprising:

a baseplate having waveguides integrated thereon;

an entrance optical fiber supplying primary light from a laser light source, said integrated waveguides having an entrance portion extending to an edge of the baseplate and connecting in a light-conducting manner to the entrance optical fiber;

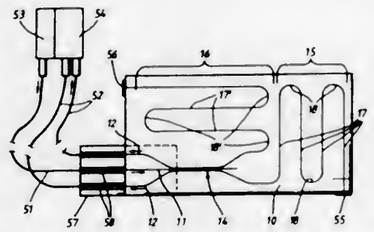
VOL 1159 ISS 4 FE 22 1994 UMI

an exit optical fiber conducting interference light away from the baseplate to a detecting device, at least one further exit portion of said integrated waveguides extending to an edge of the baseplate and connecting in a light-conducting manner to the exit optical fiber;

an integrated light splitting device disposed downstream of said entrance portion of the integrated waveguide for splitting an injected primary light onto a reference arm and a measuring arm of waveguides;

an integrated light coupler for combining light from the reference arm and from the measuring arm, said coupler merging into the at least one exit portion;

wherein the portion of the waveguide forming the reference arm and the portion forming the measuring arm are both integrated over their entire length in the baseplate, said



length of the reference arm corresponding to said length of the measuring arm;

wherein at least that portion of the waveguide forming the measuring arm is disposed in a plurality of loops with mutually parallel oriented straight active partial sections and intermediate deflecting sections, in which a coupling-free mutual minimum spacing of all straight active partial sections and deflecting sections forming the measuring arm is provided; and

wherein the waveguide forming the reference arm is at least one of designed and disposed in the baseplate in such a manner that upon extension of the baseplate in a direction of the straight active partial sections of the measuring arm, said reference arm operates in an extension-metrologically neutral manner.

5,289,257

SIGNAL PROCESSING APPARATUS FOR OPTICAL GYRO

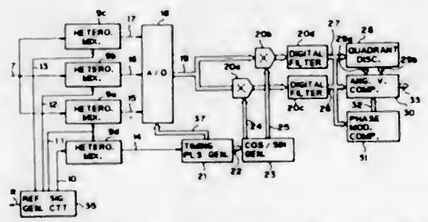
Akihiro Karokawa; Hiroshi Narise; Takafumi Hirano, and Yoshiaki Hayakawa, all of Kamakura, Japan, assignors to Mitsubishi Precision Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,164

Claims priority, application Japan, May 17, 1991, 3-113009; May 30, 1991, 3-127639

Int. Cl.[5] G01C *19/64*

U.S. Cl. 356—350 **24 Claims**



1. An apparatus for effecting a signal processing for an optical gyro in which light is propagated simultaneously clockwise and counterclockwise through optical propagation path in cooperation with a rotation axis and receives a phase modulation and then a phase difference of the light based on Sagnac effect is detected to obtain a photoelectric output signal proportional to an input rotation angular velocity, the apparatus comprising:

a frequency mixing circuit, responsive to analog and digital reference signals in synchronization in frequency and phase with a drive signal for the phase modulation, for taking signal components of the same frequency fm as, a frequency 2fm twice, and a frequency 4fm four times that of the drive signal from the photoelectric output signal and converting the signal components to a signal of a frequency Δfm, respectively, to thereby output first, second and third analog signals, respectively, and for converting the analog reference signal to a signal of the frequency Δfm to thereby output a fourth analog signal;

an analog/digital converter, responsive to a second digital signal in synchronization in phase with the fourth analog signal, for converting the first to third analog signals to a first digital signal;

a digital demodulating means, operatively connected to the frequency mixing circuit and the analog/digital converter, for outputting the second digital signal, generating a third digital signal in synchronization in phase with the fourth analog signal, forming fourth and fifth digital signals in synchronization in phase with the third digital signal and shifted in phase by 90° from each other, effecting a digital multiplication between the first digital signal and the fourth and fifth digital signals to take direct current components from a result of the multiplication, and thus outputting sixth and seventh digital signals;

a quadrant discriminating means, responsive to the sixth and seventh digital signals, for discriminating a quadrant of presence of the phase difference of the light based on Sagnac effect from signs of signal components corresponding to the frequency fm of the photoelectric output signal and the frequency 2fm or 4fm thereof, and outputting eighth and ninth digital signals;

a phase modulation index computing means, responsive to the sixth and seventh digital signals, for outputting a tenth digital signal corresponding to a present phase modulation index from a ratio of each amplitude of the signal components corresponding to the frequencies 2fm and 4fm of the photoelectric output signal; and

an angular velocity computing means, responsive to the sixth to tenth digital signals, for outputting an eleventh digital signal proportional to the input rotation angular velocity.

5,289,258

FIBER OPTIC GYROSCOPE MODULATION ERROR REDUCTION

Bogdan Szafraniec, Cave Creek; Richard H. Frische, Phoenix; Richard J. August, Scottsdale; Kevin B. Dimond, Phoenix; Dick Ang, Glendale; James N. Blake, and John R. Feth, both of Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 15, 1992, Ser. No. 821,030

Int. Cl.[5] G01C *19/72*

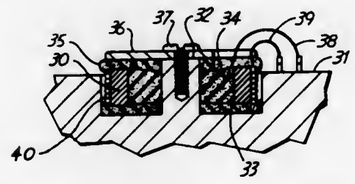
U.S. Cl. 356—350 **34 Claims**

1. A rotation sensor capable of sensing rotation about an axis of a coiled optical fiber, said sensing based on electromagnetic waves propagating in opposite directions in said coiled optical fiber to impinge on a photodetector with a phase relationship which has an effective maximum offset error associated with a specified maximum rotation rate offset error, said rotation sensing comprising:

a bias optical phase modulator means having an input and being positioned in an optical path portion selected from among those optical path portions taken by electromagnetic waves to reach or leave said coiled optical fiber en route on an optical path to said photodetector, said bias optical phase modulator means for phase modulating any

such electromagnetic waves passing therethrough and propagating along said optical path so as to provide a varying phase difference between such electromagnetic waves propagating through said coiled optical fiber in opposing directions in response to a corresponding electrical signal on said input thereof which, if substantially periodic at a selected fundamental frequency, causes said varying phase at a frequency twice that of said fundamental frequency to have an amplitude that is first fraction of that amplitude that said varying phase has at said fundamental frequency.

a phase modulation generator means having an output electrically connected to said bias optical phase modulator means input, said phase modulation generator means for providing a substantially periodic electrical output signal at said output thereof having a fundamental component at said selected fundamental frequency and a selected amplitude, and having a harmonic component at a frequency twice that of said fundamental frequency with an amplitude that is a second fraction of said fundamental component amplitude; and



a signal component selection means having a detection input, electrically connected to said photodetector to receive an output therefrom representative of any phase differences occurring between pairs of electromagnetic waves impinging thereon, and having an output, said signal component selection means for causing signals to appear at said output thereof based on said fundamental frequency, said bias optical phase modulator means providing a varying phase difference at said fundamental frequency between electromagnetic waves propagating through said coiled optical fiber in opposing directions of a fundamental phase difference amplitude in response to said phase modulation generator means providing said phase modulation generator means output signal at said output thereof, said phase modulation generator means including means for controlling said second fraction such that said second fraction is of a value less than a ratio of said effective maximum offset error to said fundamental phase difference amplitude, said bias optical phase modulator for controlling said first fraction such that said first fraction is of a value less than a ratio of said effective maximum offset error to said fundamental phase difference amplitude.

5,289,259

APPARATUS FOR EXTRACTING A VARIABLE FROM TWO QUADRATURE SIGNALS BEING FUNCTIONS OF THE VARIABLE

Stephanus J. Spammer, Florida Park, and Pieter L. Swart, Quellerina, both of South Africa, assignors to Rand Afrikaans University, Johannesburg, South Africa

Filed Aug. 7, 1992, Ser. No. 927,112

Claims priority, application South Africa, Aug. 8, 1991, 91/6263

Int. Cl.[5] G01C *19/64;* **H03D** *1/00*

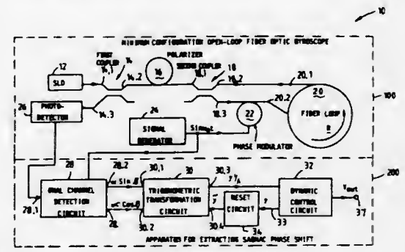
U.S. Cl. 356—350 **11 Claims**

1. Apparatus for providing from two quadrature input signals, which each is a function of a variable, an output proportional to the variable, the apparatus comprising:

trigonometric transformation means for receiving two quadrature input signals;

dynamic control means for acting on an output generated by the trigonometric transformation means, the trigonometric transformation means and dynamic control means, in use, co-operating to linearize the two quadrature input signals;

feedback means provided between said dynamic control means and said trigonometric transformation means;



adder means; and

feedforward means provided between said trigonometric transformation means and said adder means;

the adder means, in use, adding an output generated by the dynamic control means and an output of said feedforward means to provide an output which is proportional to said variable.

5,289,260

PATTERN DEFECT DETECTION DEVICE AND A SPATIAL FREQUENCY FILTER USED THEREIN

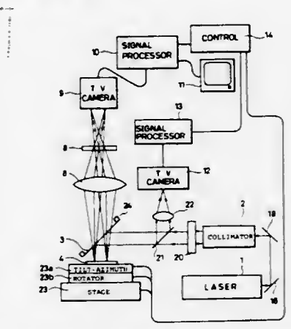
Yoko Miyazaki; Toshimasa Tomoda; Hitoshi Tanaka; Nobuyuki Kosaka, and Toyomi Ohshige, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 787,929

Claims priority, application Japan, Nov. 9, 1990, 2-305215; Nov. 9, 1990, 2-305216; May 24, 1991, 3-120248; Jun. 26, 1991, 3-180470

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—354 **8 Claims**



1. A pattern defect detection device comprising:

a stage for supporting a specimen having a repetitive pattern on the surface thereof;

a light source for emitting coherent light,

mirror means for directing said light to the pattern on said specimen, said mirror means including mirror angle changing means for changing the angle of reflection of said light,

a lens for focusing light diffracted by the pattern on said specimen,

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plate holding means for holding at the back focal plane of said lens either of at least one photosensitive plate to form a spatial frequency filter, and a created spatial frequency filter including at least one plate having a pattern, and detection signal detect means for detecting light transmitting said spatial frequency filter as a detection signal corresponding to defection in the pattern of said specimen.

5,289,261

DEVICE FOR MEASURING A THREE-DIMENSIONAL SHAPE OF AN ELONGATE MEMBER

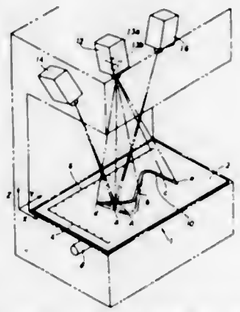
Teruaki Yogo, Aichi, Japan, and John M. Fitts, Santa Monica, Calif., assignors to Optoa, Co., Ltd., Japan

Filed Mar. 13, 1992, Ser. No. 850,557

Claims priority, application Japan, Sep. 17, 1991, 3-236359; Nov. 15, 1991, 3-300633

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **21 Claims**



1. A device for measuring a three-dimensional shape of a bent elongate member, comprising:

a first image detector and a second image detector for detecting a two-dimensional image of said elongate member, supported on a planar surface, at measuring points of said elongate member, said first and second image detectors being located adjacent said planar surface and spaced from one another at predetermined positions;

detected image computing means for computing a central line for each detected image of said elongate member from each two-dimensional image of said elongate member detected by said first and said second image detectors; and

center line computing means for computing a first plane which includes the central line obtained from said first image detector and the position of said first image detector, and a second plane which includes the central line obtained from said second image detector and the position of said second image detector, whereby a center line for at least a portion of said elongate member is obtained by an intersection of said first and second planes.

5,289,262

PHOTODIODE TRANSMISSIVE MEDIA SENSOR FOR ALIGNING MEDIA

Scott K. McConnell, Brea, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Mar. 9, 1992, Ser. No. 848,535

Int. Cl.[5] G01B *11/14*; G01N *21/86*

U.S. Cl. 356—375 **11 Claims**

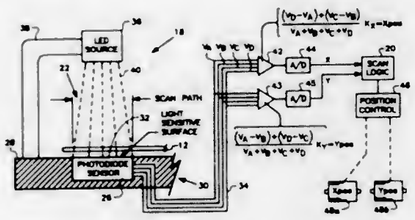
1. In a media transporter in which media having opposed faces is transported along a path of a track on said media, a media position alignment system for determining the position of the media relative to reference points thereof, comprising:

(a) a light sensor having a light-sensitive surface facing one face of the media in at least approximate registration with said track, said light-sensitive surface comprising plural sections, said sensor producing plural signals at an output thereof proportional to the intensity of light impinging on respective ones of said plural sections of said light-sensitive surface;

(b) a spatially varying pattern forming said track and including,

(b1) an elongated center stripe in parallel alignment with the path in which said media is moved, said stripe having a width less than the width of a square portion comprising said plural sections of said light-sensitive surface, and,

(b2) a series of spaced squares centered along said center stripe and extending beyond the width of said stripe



wherein each of said squares is of generally the same orientation and approximate size as the square portion comprising the plural sections of said light-sensitive surface, and wherein spacing between adjacent ones of said squares is uniform and is about equal to the length of the square comprising the plural sections of said light-sensitive surface;

(c) a light source directing a beam of light through the opposite face of the media onto said light-sensitive surface, whereby said plural signals vary as a function of said spatially varying pattern of said track as said media is transported along the path of said track; and

(d) signal detection and logic means for converting said signals to representations of position of said media.

5,289,263

APPARATUS FOR EXPOSING PERIPHERY OF AN OBJECT

Shinji Kiyokawa; Nobutoshi Orgami; Takeshi Takada, and Kenji Kamei, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 512,991, Apr. 24, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,788

Claims priority, application Japan, Apr. 28, 1989, 1-109291; Jun. 9, 1989, 1-147174; Aug. 14, 1989, 1-209850

Int. Cl.[5] G01B *11/14*; G03B *27/42*

U.S. Cl. 356—375 **18 Claims**

1. A periphery exposing apparatus for exposing a periphery of a wafer having a linear portion, wherein resist is located on said wafer, said apparatus comprising:

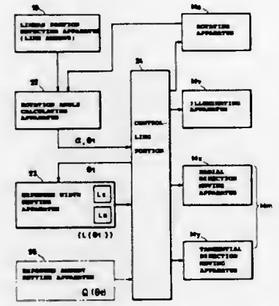
supporting means for rotatably supporting said wafer;

illuminating means for emitting light to expose said periphery, said illuminating means being effective to remove said resist by illuminating said wafer;

exposure position detecting means for detecting exposure positions of the periphery of said wafer, said exposure position detecting means comprising linear portion detecting means for detecting said linear portion;

controlling means including exposure width setting means for controlling said supporting means and said illuminating means such that exposure of said periphery is carried out under prescribed exposure conditions, said exposure width setting means being effective to control said illuminating means so that said periphery of said wafer is exposed in accordance with exposure widths corresponding to said exposure positions; and

means for moving said illuminating means such that said illuminating means is movable both in a generally radial direction relative to said wafer and in a generally tangential direction relative to said wafer, said controlling means



being effective to control said moving means so that said illuminating means is moved substantially tangentially and relatively along said linear position when said linear portion is exposed.

5,289,264

METHOD AND APPARATUS FOR ASCERTAINING THE ABSOLUTE COORDINATES OF AN OBJECT

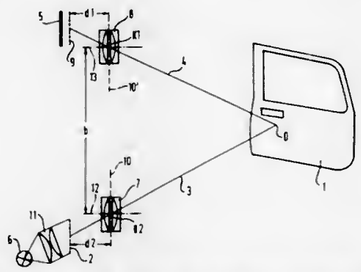
Hans Steinbichler, Am Bauhof 4, 8201 Neubeuern, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 950,679

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132134; Oct. 18, 1991, 4134546

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **26 Claims**



1. A method for ascertaining the absolute coordinates of an object wherein the object is irradiated with light through a projection grating, wherein the light reflected from the object is received by a sensor, and wherein the signal from the sensor is evaluated, comprising the steps of

positioning first the projection grating and the sensor to provide a first image-formation, evaluating said first image formation,

rotating the projection grating and the sensor relative to each other through a predetermined angle to provide a second image-formation,

evaluating said second image formulation, and

establishing the absolute coordinates of the object through said evaluations.

5,289,265

METHOD AND APPARATUS FOR MEASURING A COATING STATE

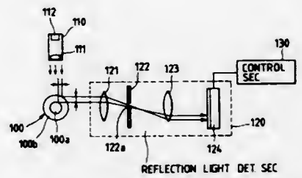
Akira Inoue; Yuji Kobayashi, both of Kanagawa, and Shuji Shinoki, Hyogo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 8, 1992, Ser. No. 865,280

Claims priority, application Japan, Apr. 11, 1991, 3-078806; Apr. 25, 1991, 3-095439; Apr. 25, 1991, 3-095440; Apr. 25, 1991, 3-095441; Apr. 25, 1991, 3-095442

Int. Cl.[5] G01B *11/06*

U.S. Cl. 356—382 **32 Claims**



1. A coating state measuring method comprising the steps of:

irradiating, with incident light, a side surface of a cylindrical linear body having a main body and a coating of at least one layer formed on the main body;

detecting a surface refection light beam reflected by an outer surface of the coating to at least one particular direction and a boundary reflection light beam reflected by a boundary surface between the coating and the main body or by boundary surface between adjacent layers of the coating to a direction in parallel with the particular direction;

determining a center of the main body based on a refection light distance between the surface reflection light beam and the boundary reflection light; and

determining a thickness and a variation of the thickness of the coating based on an eccentricity of the center of the main body from a center of the cylindrical linear body.

5,289,266

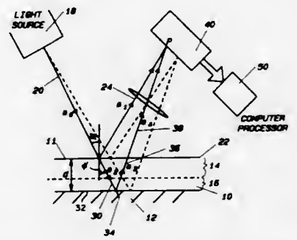
NONCONTACT, ON-LINE DETERMINATION OF PHOSPHATE LAYER THICKNESS AND COMPOSITION OF A PHOSPHATE COATED SURFACE

I-Fu Shih, Los Alamitos; David B. Chang, Tustin, and Victor Vali, Laguna Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 666,541, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 393,198, Ang. 14, 1989, abandoned. This application May 14, 1992, Ser. No. 885,066

Int. Cl.[5] G01B *11/06, 11/02*

U.S. Cl. 356—382 **4 Claims**



1. A method for nondestructively determining the thickness and the fractional portions of a first and a second phosphate

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component of a protective phosphate layer disposed on a substrate comprising the steps of:

illuminating said protective phosphate layer on said substrate with an incident beam of light of a first predetermined frequency,

measuring the intensity of reflected light from said protective phosphate layer at said first frequency;

illuminating said protective phosphate layer on said substrate with light of a second predetermined frequency;

measuring reflected light intensity from said protective phosphate layer at said second frequency; and

determining the fractional portions of a first and second component of said protective phosphate layer from said measured intensities of reflected light from said protective phosphate layer at said first and second frequencies, said light at said first and second frequencies being reflected by said protective phosphate layer by means of first and second interfaces of said protective phosphate layer, said protective phosphate layer being at least translucent to said light at said first and second frequencies, said step of determining comprising:

automatically computing said fractional portion of each said component within said protective phosphate layer based on known optical parameters at each said predetermined frequency as known by utilizing a functional dependence of said intensity of reflected light upon said known optical parameters and said thickness,

whereby the fractional portions of each of said components within said protective phosphate layer is nondestructively determined, and

wherein said phosphate layer has at least two components of fractional portions ξ_1 and ξ_2 respectively, where said step of computing comprises the step of determining ξ_1 and ξ_2 based upon measured reflected light intensities at each said frequency, by the following equation:

$$I = a_0^2[r_1^2 + (1-r_1)^4 r_2^2 e^{-4(\xi_1\alpha_1 + \xi_2\alpha_2)d \sec \phi'} + 2(1-r_1)^2 r_1 r_2 e^{-2(\xi_1\alpha_1 + \xi_2\alpha_2)d \sec \phi'} \cos 2(\xi_1 k_1 + \xi_2 k_2)d \cos \phi']$$

where for each said predetermined frequency:

I is the intensity of said measured reflected light at said predetermined frequency,

a_0 is the amplitude of light illuminating said substrate,

r_1 is the reflectivity of a first top interface of said phosphate layer,

r_2 is the reflectivity of a second bottom interface of said phosphate layer,

α_1 is the absorptivity of said first component of said phosphate layer,

α_2 is the absorptivity of said second component of said phosphate layer,

ξ_1 is the fractional portion of said first component of said phosphate layer,

ξ_2 is the fractional portion of said second component of said phosphate layer, and

ϕ' is the angle of refraction of the incident beam in said phosphate layer with respect to the surface normal of said phosphate layer.

5,289,267

ELECTRO-OPTICAL SYSTEM FOR GAUGING SURFACE PROFILE DEVIATIONS

Garland E. Busch, Milan; James G. Downward, Ann Arbor; Paul G. Gottschalk, Ann Arbor; Theodore B. Ladewski, Ann Arbor, and Charles D. Lysogorski, Dexter, all of Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Oct. 4, 1991, Ser. No. 770,885

Int. Cl.[5] **G01B** *11/00*; **G01J** *1/02*

U.S. Cl. 356—394 **31 Claims**

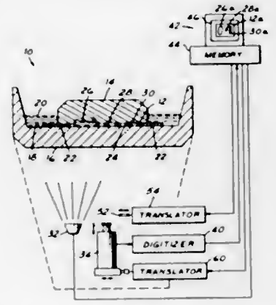
1. A system for gauging deviations of a surface on a test part from a preselected nominal surface geometry using electromagnetic radiation, said system comprising:

(1) a master surface that is substantially a matched surface of the preselected nominal surface geometry and that is essentially transparent to the electromagnetic radiation;

(2) an attenuating medium on the master surface with the test part being supportable on the master surface with the surface of the test part opposed to the master surface such that the attenuating medium substantially fills all space to be gauged between the master surface and the test part surface;

(3) a source of electromagnetic radiation positioned to direct such radiation through the master surface and into the attenuating medium;

(4) an image sensor positioned to receive the electromagnetic radiation transmitted from the test part surface to be gauged and which passes back through the attenuating



medium, whereby an image of the test part surface to be gauged is formed, the intensity of the transmitted radiation varying across the image as a function of the deviation of the test part surface from the preselected nominal surface geometry;

(5) a digitizer for converting the image from the image sensor into digital signals indicative to the intensity of the radiation at locations of the image;

(6) digital electronic storage coupled to the digitizer for receiving and storing the digital signals; and

(7) a calibration arrangement for correcting errors in the image formed by the image sensor, including means for producing a set of correction data and for altering the digital signals in accordance with the correction data.

5,289,268

APPARATUS USING BRIGHTNESS INFORMATION FROM A PHOTOMETERING CIRCUIT AND A BRIGHTNESS-CONVERTED GREEN COMPONENT FROM A COLOR METERING CIRCUIT TO ULTIMATELY ADJUST WHITE BALANCE

Masahiro Suzuki, Kawasaki, and Masahiro Juen, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,496

Claims priority, application Japan, Nov. 21, 1991, 3-331569

Int. Cl.[5] **H04N** *9/73, 9/04*

U.S. Cl. 348—223 **6 Claims**

6. A white balance adjuster of a camera according to claim 5 wherein said white balance control tables include first, second and third white balance control tables, and said selection means selects the first white balance control table when

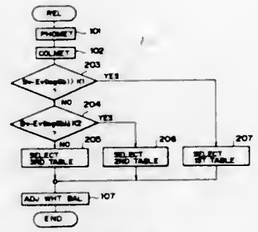
$$Bv - Ev(\log Gb) > K1$$

where Bv: object brightness
Ev(log Gb): green component brightness converted value
K1: constant

said selection means selects the second white balance control table when

$$K2 \leqq Bv - Ev(\log Gb) \leqq K1$$

where K1, K2: constants



and said selection means selects the third white balance control table when

$$Bv - Ev(\log Gb) < K2$$

5,289,269

COLOR TELEVISION CAMERA WITH DETAILS OF LUMINANCE SIGNAL FORMATION

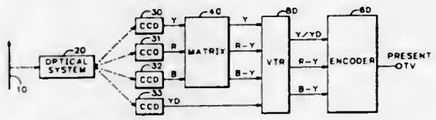
Yoshio Sugimori; Yoshihide Kimata, both of Tokyo, and Tadao Kurosaki, Kamakura, all of Japan, assignors to Nippon Television Network Corporation, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 862,739

Claims priority, application Japan, Dec. 27, 1991, 3-346408

Int. Cl.[5] **H04N** *9/04, 5/225*

U.S. Cl. 348—264 **45 Claims**



26. A television camera comprising:

a first image pickup device for receiving an optical image and generating a first luminance signal representative of image luminance on a first array of uniformly spaced scanning lines and a second luminance signal representative of image luminance on a second array of uniformly spaced scanning lines, said second array being offset from said first array by half the distance between the lines of said first array;

a second image pickup device for receiving the optical image and generating a first color signal representative of a first color component on said first array of uniformly spaced scanning lines;

a third image pickup device for receiving the optical image and generating a second color signal representative of a second color component on said first array of uniformly spaced scanning lines; and

processing means for receiving said first luminance signal, said second luminance signal, said first color signal and said second color signal and generating a non-interlaced luminance signal, a first non-interlaced color difference signal representative of difference between said non-interlaced luminance signal and said first color signal, and a second non-interlaced color difference signal representative of difference between said non-interlaced luminance signal and said second color signal.

5,289,270

IMAGE PROCESSING APPARATUS FOR PERFORMING DENSITY CONVERSION

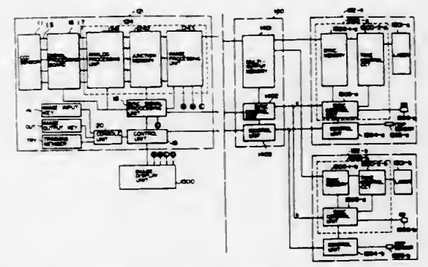
Kimiyoshi Hayashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 436,746, Nov. 15, 1989, abandoned, which is a continuation of Ser. No. 112,468, Oct. 26, 1987, Pat. No. 4,905,079. This application Jul. 14, 1992, Ser. No. 912,669

Claims priority, application Japan, Oct. 28, 1986, 61-257548

Int. Cl.[5] **H04N** *1/46*

U.S. Cl. 358—512 **40 Claims**



1. A color image processing system, comprising:

a color scanner for converting a color original into a color image signal;

a color printer for reproducing a color image corresponding to an input color image signal;

a color memory for memorizing the color image signal;

a combiner for combining a color image signal from said color scanner and a color image signal from said color memory; and

controlling means for controlling said color scanner, and said color printer, and said combiner, said controlling means having a first mode for connecting said color scanner directly with said color printer, and a second mode for connecting said color scanner with said color printer through said color memory,

wherein in the second mode, a color image signal from said color scanner not through said color memory, and a color image signal from said color memory, are combined by said combiner and outputted.

5,289,271

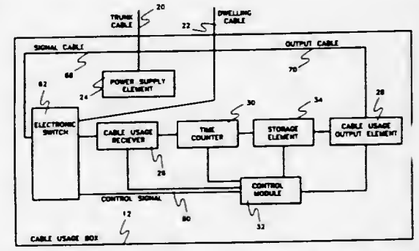
CABLE TELEVISION-USAGE SYSTEM

John C. Watson, 110 Mayberry Rd., Gray, Me. 04039

Filed Sep. 9, 1991, Ser. No. 756,829

Int. Cl.[5] **H04N** *7/00*

U.S. Cl. 348—1 **7 Claims**



1. A cable television-usage system for determining the channel usage of a television set within a dwelling, said television having a plurality of channels, with each said channel having a

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unique local oscillator signal corresponding to that channel comprising:

channel detection means for detecting the local oscillator signal of the channel that said television is tuned;

signal processing means for converting said local oscillator signal provided by said channel detection means into a signal corresponding to the channel being used;

timing processing means for measuring the elapsed time that each channel is being used by timing the duration of the signals produced by said signal processing means; and providing a signal representing the usage time of each channel of said television;

memory storage means for storing said signal provided by said timing processing means; and

transmitter means for selectively transmitting said usage time of each channel of said television; and

wherein said channel detection means further comprises:

switching means for electronically disconnecting the cable from each said television set during the interval when said channel detection means is detecting the local oscillator signal of the channel being used.

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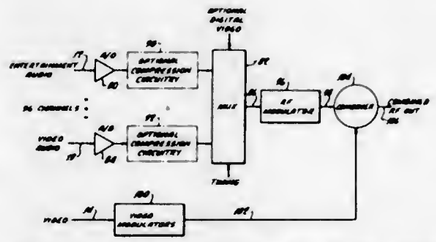
COMBINED DATA, AUDIO AND VIDEO DISTRIBUTION SYSTEM IN PASSENGER AIRCRAFT

Irving Rabowsky, Woodland Hills, and Richard E. Sklar, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 18, 1992, Ser. No. 836,683

Int. Cl.[5] H04N *7/10, 7/04, 1/02*

U.S. Cl. 348—8 **28 Claims**



23. A method of transmitting a plurality of signals comprising;

providing a group of lower radio frequency carriers within a relatively lower frequency band,

providing a higher radio frequency carrier having a frequency above said relatively lower frequency band,

modulating said lower radio frequency carriers utilizing a first modulation technique with a first group of signals to provide a group of lower modulated carriers,

modulating said higher radio frequency carriers utilizing a second modulation technique with a second group of signals to provide a higher modulated carrier,

combining said lower and higher modulated carriers to provide a combined signal, and

transmitting said combined signal on a common transmission line.

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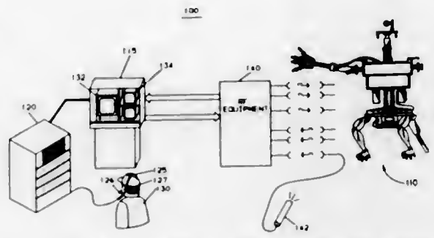
ANIMATED CHARACTER SYSTEM WITH REAL-TIME CONTROL

Victor H. Lang, Ft. Collins, Colo., assignor to Semborg-Recrob, Corp., Lansing, Ill.

Continuation of Ser. No. 613,381, Nov. 13, 1990, Pat. No. 5,182,557, which is a continuation-in-part of Ser. No. 410,114, Sep. 28, 1989, Pat. No. 5,021,878. This application Nov. 5, 1992, Ser. No. 972,258

Int. Cl.[5] A63H *13/00;* **G09B** *9/048*

U.S. Cl. 348—121 **20 Claims**



1. A system for controlling an animated character, comprising:

an animated character, responsive to its surrounding environment, having sensor means for monitoring the surrounding environment and generating sensor signals in response thereto, the animated character including a speaker for generating audible sounds for an audience; and

a control station, remotely located from the animated character, including reception means for receiving the sensor signals, and multiple control means, arranged to be operated by a user, for generating control signals in response to the sensor signals to control the animated character interactively with its surrounding environment, the multiple control means including a first manually-operated device type and a second manually-operated device type, wherein the multiple control means is used to generate the audible sounds through the speaker so as to simulate live communication with the audience.

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ELECTRONIC IMAGE STABILIZATION APPARATUS

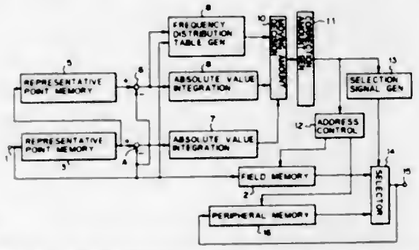
Tetsujiro Kondo, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jan. 31, 1992, Ser. No. 828,692

Claims priority, application Japan, Feb. 6, 1991, 3-036727

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—208 **4 Claims**



1. A video signal processing apparatus for processing a video signal generated by an image device in a video camera comprising:

means for generating a motion vector representing a motion amount and a motion direction between consecutive frames of said video signal;

means for judging whether said motion vector represents the undesired motion of said image sensing device or not;

correction signal generating means for generating a correction signal in accordance with said motion vector;

delay means for delaying said video signal in response to said correction signal;

memory means for storing a video information corresponding to a peripheral portion of an effective picture area of said image sensing device; and

selection means, responsive to said correction signal, for selecting at least one of the outputs of said memory means and said delay means, and for outputting a video signal.

5,289,275

SURVEILLANCE MONITOR SYSTEM USING IMAGE PROCESSING FOR MONITORING FIRES AND THEFTS

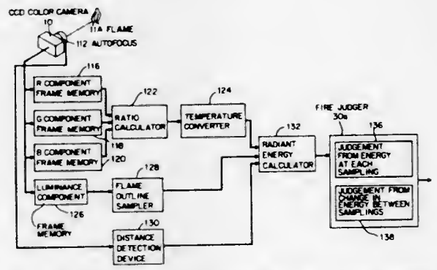
Hiromitsu Ishii, 5-2-801, Takasu 3-chome, Chiba-shi, Chiba; Takashi Ono, Kashiwa, and Kiyoshi Watanabe, Sagamihara, all of Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo and Hiromitsu Ishii, Chiba, both of Japan

Filed Jul. 10, 1992, Ser. No. 911,506

Claims priority, application Japan, Jul. 12, 1991, 3-172062; Jul. 12, 1991, 3-172063

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—154 **4 Claims**



1. A surveillance monitor system using image processing, comprising:

an image-taking means for taking an image of areascape of a surveillance area;

a fire image recognition section for recognizing a fire from a monitor image taken by said image-taking device and outputting fire detection information;

an intruder entity image recognition section for recognizing an intruding entity from a monitor image taken by said image-taking device and outputting intruder detection information;

a mode switching section for specifying that a monitor image be processed by said fire image recognition section and/or said intruder entity image recognition section;

a pre-alarm output section for outputting a pre-alarm in a central monitor room upon receipt of detection information from said fire image recognition section or said intruder entity image recognition section;

an image switching section for switching, in response to said pre-alarm, a monitor image in said central monitor room to an image of a location where an abnormality has been detected;

said fire image recognition section comprising fire judging means using image processing for judging whether or not there is a fire based on a radiant energy source's radiant energy found by a radiant energy calculating means;

said fire judging means comprising flame outline sampling means for sampling as an outline of a flame an area whose luminance signals, included in an image taken by said image-taking means, exceed a prescribed level;

at least temperature detection means for detecting a distribution temperature inside a flame outline sampled by said flame outline sampling means;

distance measurement means for measuring a distance to a radiant energy source; and

said radiant energy calculating means for calculating radiant energy from the radiant energy source, based on the distribution temperature inside the flame outline sampled by said flame outline sampling means;

said image-taking means taking color images, and said temperature detection means finding for each pixel a flame surface temperature using a ratio of a G component to an R component (G/R) or a ratio of a B component to the R component (B/R) of said color images taken by said image-taking means and referring to a conversion table for converting to said distribution temperature.

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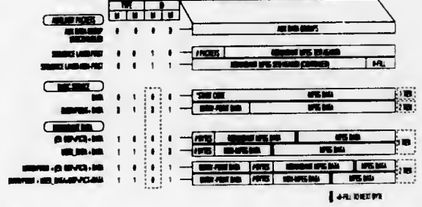
METHOD AND APPARATUS FOR CONVEYING COMPRESSED VIDEO DATA OVER A NOISY COMMUNICATION CHANNEL

Robert J. Siracusa, Lawrenceville, and Joel W. Zdepski, Lebanon, both of N.J., assignors to General Electric Company, Princeton, N.J.

Filed Jun. 19, 1992, Ser. No. 901,045

Int. Cl.[5] H04N *7/04, 7/12*

U.S. Cl. 348—467 **15 Claims**



10. In a digital video transmission system for transmitting in transport cells, hierarchically layered compressed video signal including video header data related to video frames, said transport cells being interspersed with further transport cells including redundant data corresponding to predetermined portions of said video header data, said transport and further transport cells including transport cell headers and information packets, receiver apparatus comprising:

means for receiving transmitted said transport cells and said further transport cells, and separating said transport cell headers and information packets;

means responsive to transport cell header data for determining the occurrence of transport cells which include said video header data being lost or corrupted during transmission, and responsive to determining such occurrence, discarding subsequently occurring non-corrupted transport cells until the occurrence of one of said further transport cells, and

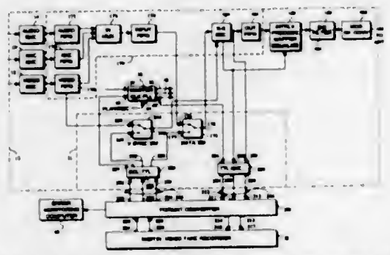
decompression means responsive to said information packets for generating decompressed video signal.

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5,289,277
HIGH DEFINITION TELEVISION SIGNAL FORMAT CONVERTER

David L. Blanchard, Des Plaines; Raymond C. Hauge, Fox River Grove; Ronald B. Lee, Northbrook; Paul A. Snopko, Chicago; Frank C. Templin, Arlington Heights, all of Ill.; Jong G. Kim, Seoul, Rep. of Korea; Dong H. Lee, Seoul, Rep. of Korea; In S. Lee, Seoul, Rep. of Korea, and Moon K. Lee, Seoul, Rep. of Korea, assignors to Zenith Electronics Corp., Glenview, Ill.

Filed Nov. 5, 1992, Ser. No. 972,260
Int. Cl.[5] H04N 5/92
U.S. Cl. 348—441 20 Claims



17. In a high definition television system in which digital high resolution image and synchronizing data are processed in a compressed format, format conversion means for interfacing said system with a digital video tape recorder, said format conversion means comprising:

means for receiving compressed high definition television image and synchronizing data from a digital video tape recorder in a format characterized by restricted range data having periodically inserted synchronizing and blanking data patterns and having a first data clock rate;

means for reclocking said compressed high definition television image and synchronizing data to a reclocked signal having a second data clock rate;

means for reformatting said reclocked signal to reclocked binary data;

means for detecting said synchronizing and blanking patterns in said reclocked binary data and producing high definition television scan synchronizing and blanking data in synchronism therewith; and

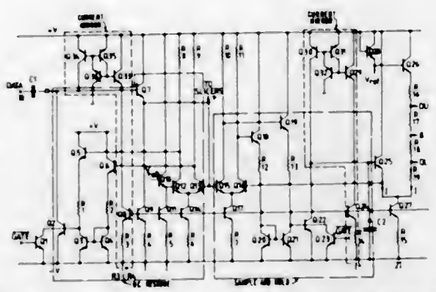
means for applying said reclocked binary data and said high definition television scan synchronizing and blanking data produced in said detecting step to said high definition television system.

5,289,278
DUO-BINARY AND/OR BINARY DATA SLICER

Philip H. Bird, Swindon, England, assignor to Plessey Semiconductors Limited, England

Filed Feb. 19, 1992, Ser. No. 838,049
Claims priority, application United Kingdom, Feb. 21, 1991, 9103621
Int. Cl.[5] H04N 7/08
U.S. Cl. 348—473 7 Claims

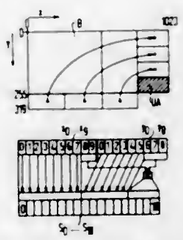
1. A duo-binary and/or binary data slicer, comprising: means for providing a d.c. reference voltage; a data signal input; means for coupling said data signal input via a capacitor to a d.c. restoring circuit, means for applying said d.c. reference voltage to said d.c. restoring circuit, said d.c. restoring circuit being arranged to superimpose a data signal received at said data signal input on said d.c. reference voltage; means for applying said superimposed data signal and reference voltage to a sample and hold circuit, said sample and hold circuit comprising at least one retention capacitor and means for establishing on one terminal of said retention capacitor a voltage related to a peak value of said superimposed data signal and reference voltage; divider means coupled with said means for providing a d.c. reference voltage and with said one terminal of said retention capacitor, said divider means being operative for providing intermediate output voltages for determining slicing levels; and, in respect of said at least one retention capacitor, a current mirror circuit operative for injecting into said retention capacitor an amount of current substantially equal to the current drawn therefrom by said divider means.



5,289,279
VIDEO SIGNAL DATA RECODING METHOD FOR STANDARD MEMORY COMPONENTS AND APPARATUS FOR PERFOMRING THE METHOD

Bodo Braun, Munich, and Erich-Johann Bayer, Freising, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 16, 1990, Ser. No. 552,783
Claims priority, application European Pat. Off., Jul. 14, 1989, 89112979.3
Int. Cl.[5] H04N 5/907, 5/14
U.S. Cl. 346—571 12 Claims

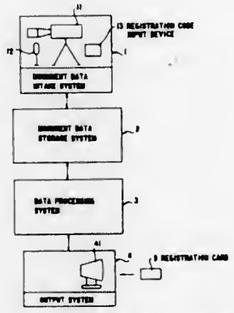


1. Method for storing video signal data of at least a partial frame in standard memory components, which comprises providing standard memory components with 2^m possible memory addresses; addressing b pixels with x address bits and separately addressing z lines with y address bits through picture addresses; selecting $b < 2^x$; selecting $z < 2^y$; selecting m, b, z, x and y as positive integers; selecting 2^m as small as possible but greater than the product of b and z; and recoding the x address bits and y address bits utilizing bit combinations not occurring in the picture addresses for uniquely assigning each occurring picture address its own memory address.

5,289,280
VISUAL AND/OR AUDIO INFORMATION STORAGE AND RETRIEVAL DEVICE

Kenji Nomura, and Tsunetaka Kusumoto, both of Tokyo, Japan, assignors to Nippon RB Development Inc. and Pioneer Electronic Corp., both of Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,358
Claims priority, application Japan, Apr. 3, 1991, 3-099412
Int. Cl.[5] H04N 5/14
U.S. Cl. 348—571 8 Claims



1. An input, storage and output device for intake and storage of monument information for subsequent retrieval and output of monument information comprised of registered picture data or both registered picture and registered sound data comprising:

a monument data input system including

(i) photographing means for video information or both photographing means for video information and sound pickup means for sound information and

(ii) registration code input means for entering registration codes, said monument data input system being provided with a start switch in selecting a still picture and a confirmation switch for establishing said still picture,

a monument data storage system for storing the monument data transmitted from said monument data input system by corresponding registration code,

a data processing system for controlling the input and output of the monument data stored by registration code in said monument data storage system, and

an output system for referring to a selected one of said registration codes and outputting the monument data corresponding to said selected code.

5,289,281
HIGH DEFINITION VIDEO FRAME RECORDER

Vinson R. Perry, San Carlos; Marc Klingelhofer, Fremont, and Thomas A. Rohwer, Sunnyvale, all of Calif., assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 424,478, Oct. 20, 1989, abandoned.
This application May 5, 1992, Ser. No. 880,304
Int. Cl.[5] H04N 5/14
U.S. Cl. 348—521 10 Claims

1. A high definition video signal recording system, including:

a frame memory unit for receiving parallel format data representing a high definition video signal, wherein the frame memory unit includes memory circuitry capable of storing data representing one or more frames of the high definition video signal;

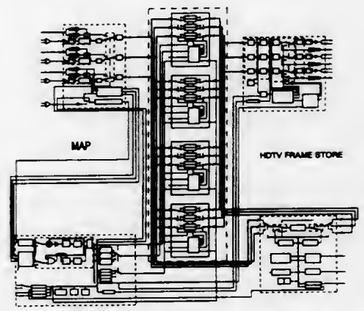
an interface unit including a parallel interface means for communicating with an external processing system;

a parallel communications link for transferring parallel format high definition video data between the interface unit and the frame memory unit;

a control unit connected to the frame memory unit and the interface unit, for controlling the transfer of parallel format data representing high definition video signal frame or fields into storage within the frame memory unit, and for controlling the transfer of stored data representing high definition video frames or fields from the memory circuitry within the race memory unit to the parallel communications link; and

an input processor connected to the frame memory unit and the control unit, and inclining means for converting an input high definition video signal into parallel format data representing said input high definition video signal, and for supplying said parallel format data to the frame memory unit,

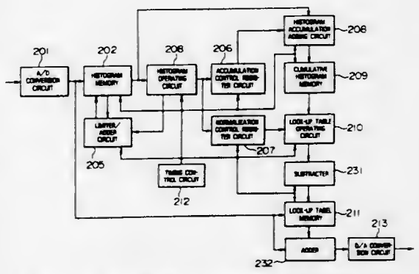
wherein the input high definition video signal is a digital signal having a data rate substantially equal to 74.25 MHz, and the parallel format data is supplied of the frame memory unit as a digital signal having a data rate substantially less than 74.25 MHz, wherein the frame memory unit includes our memory boards, and wherein each of the memory boards has capacity to store data representing 32 frames of a color high definition video signal.



5,289,282
VIDEO SIGNAL GRADATION CORRECTOR

Toshiaki Tsuji, Takatsuki; Atsuhisa Kageyama, Ibaraki, and Kiyoshi Imai, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1992, Ser. No. 886,801
Claims priority, application Japan, May 28, 1991, 3-123647; May 28, 1991, 3-123648
Int. Cl.[5] H04N 5/14
U.S. Cl. 348—624 6 Claims



1. A video signal gradation corrector comprising:

a histogram memory for storing a luminance histogram of a video luminance signal;

a histogram operating circuit, receiving an output signal of

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said histogram memory, for extracting a feature of the luminance histogram from the output signal;

a limiter/adder circuit, connected to an output side of said histogram operating circuit, for processing data of said histogram memory;

an accumulation control register circuit connected to the output side of said histogram operating circuit;

a normalization control register circuit connected to the output side of said histogram operating circuit;

a histogram accumulation adding circuit, receiving an output signal of said histogram memory and an output signal of said accumulation control register circuit, for calculating a cumulative sum of said processed data of said histogram memory;

a cumulative histogram memory for storing said cumulative sum;

a look-up table operating circuit, receiving an output signal of said cumulative histogram memory and an output signal of said normalization data of said cumulative histogram memory; and

a loop-up table memory for storing a result of said normalization performed by said look-up table operating circuit;

wherein said histogram operating circuit includes a circuit for detecting an average luminance level of an input luminance signal, operator means for performing an operation on the detected average luminance level using a constant, and a limiter circuit for limiting a lower limit value or an upper limit value of an output signal of said means.

5,289,283

INTER-FRAME VIDEO FILTER HAVING SELECTIVE LINEAR AND NON-LINEAR TRANSFER CHARACTERISTICS AS FUNCTION OF INTER-FRAME DIFFERENCES

Robert W. Hopper, and Michael W. Whybray, both of Ipswich, England, assignors to British Telecommunications, London, England

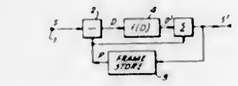
PCT No. PCT/GB90/01252, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992, PCT Pub. No. WO91/03123, PCT Pub. Date Mar. 7, 1991

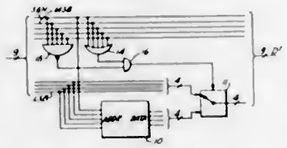
PCT Filed Aug. 9, 1990, Ser. No. 828,986

Claims priority, application United Kingdom, Aug. 15, 1989, 8918559

Int. Cl.[5] H04N *5/213*

U.S. Cl. 368—607 6 Claims





3. An inter-frame digital video signal filter having means for forming the inter-frame difference between each sample of an input video signal and a filter output corresponding to an earlier frame of the video signal, said filter comprising:

a first circuit for passing unaltered input video signals having an inter-frame difference above a threshold value;

a second circuit connected to said first circuit for processing predetermined least significant bits of input video signals having an inter-frame difference below said threshold value; and

a switch connected to said first and second circuits for effecting the filter output in dependence upon the value of the inter-frame difference between said video signals being above or below said threshold.

6. An inter-frame digital video signal filter having means for forming the inter-frame difference between each sample of an input video signal and a filter output corresponding to an earlier frame of the video signal, said filter comprising:

a first circuit for conveying digital video signals;

a non-linear digital signal processing circuit connected to process predetermined least significant bits of said digital video signals; and

a switch connected to select as the filter output either said digital video signals of non-linearly processed versions of those signals including outputs from the non-linear processing circuit in dependence on the value of the inter-frame video signal difference.

5,289,284

VIDEO PROCESSING CIRCUIT WITH LINE MEMORY CONTROL

Nathaniel H. Ersoz, Brownsburg, and Timothy W. Saeger, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

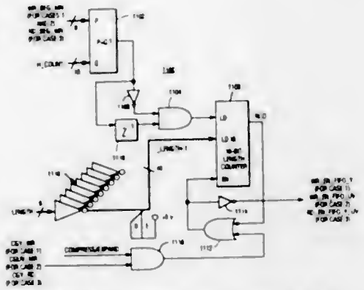
PCT No. PCT/US91/03810, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992

PCT Filed May 30, 1991, Ser. No. 691,031

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *5/14, 5/262, 5/272*

U.S. Cl. 348—561 6 Claims



1. A video signal processing circuit, comprising:

a line memory for said video signal;

means for writing and reading of video data samples into and out of said line memory, different numbers of data samples per line being stored during expansion and compression of said video signal;

means for comparing a first value, specifying a first pixel location in the horizontal line period where reading or writing of said line memory is to begin, with a second value specifying a second pixel location within each line period;

means for storing a third value corresponding to the number of data samples stored in said line memory; and,

means for counting the number of data samples which have actually been written into said line memory or read from said line memory, said counting means having an output of said comparing means as a first input and said third value as a second input.

5,289,285

CS BROADCAST RECEIVING SYSTEM PROVIDING INCREASED TUNING ACCURACY WHEN RECIVING A CS SOUND BROADCAST SIGNAL

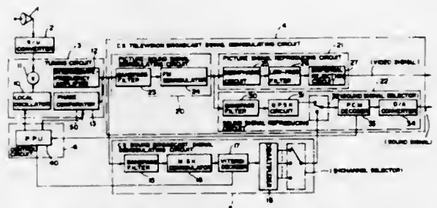
Yoshikazu Kotaka, and Toru Minematsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,846

Claims priority, application Japan, Aug. 5, 1991, 3-219231

Int. Cl.[5] H04N *7/20, 5/60*

U.S. Cl. 348—138 1 Claim



1. A CS broadcast receiving system, comprising:

a tuning circuit for selecting a receive signal at a frequency corresponding to a control signal input thereto;

a CS television broadcast signal demodulating circuit for processing, a received signal when that received signal selected by said tuning circuit is a CS television broadcast signal, to reproduce a video signal and a first sound signal;

a CS sound broadcast signal demodulating circuit for processing a received signal, when that received signal selected by said tuning circuit is a CS sound broadcast signal, to reproduce a second sound signal;

a control circuit, when a station is to be selected, for causing said tuning circuit to firstly perform a tuning operation with a frequency adjusted in units of a coarse frequency adjustment value for reception of the CS television broadcast signal, and when the received signal to be selected by said tuning circuit is not the CS television broadcast signal, causing said tuning circuit to secondly perform a tuning operation with a frequency adjusted in units of a fine frequency adjustment value for reception of the CS sound broadcast signal; and

said control circuit being connected to receive indication signals from said CS sound broadcast circuit and said CS television broadcast circuit.

5,289,286

SOLID STATE SENSOR HAVING LOGARITHMIC PHOTOVOLTAIC RESPONSE, WITH PIXEL UNIFORMITY CORRECTION AND WHITE BALANCE CIRCUITRY THEREFOR

Satoshi Nakamura; Kenji Takada, and Yasushi Kusaka, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Jul. 15, 1992, Ser. No. 914,708

Claims priority, application Japan, Jul. 18, 1991, 3-178170; Sep. 9, 1991, 3-258325; Dec. 10, 1991, 3-350928; Dec. 11, 1991, 3-351606

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—223 5 Claims

1. A solid-state image sensing apparatus comprising:

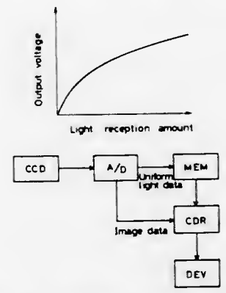
a solid-state image sensing device having a plurality of pixels and a characteristic that an output voltage thereof naturallogarithmically varies in accordance with a light reception amount;

storing means for storing an image sensing output signal obtained with respect to each pixel when uniform light is irradiated to the solid-state image sensing device; and

calculating means for calculating a difference between an image sensing output signal obtained with respect to each pixel in actual sensing and a stored image sensing output signal with respect to a pixel corresponding thereto which signal is stored in said storing means, to form an image signal.

5. A solid-state image sensing apparatus comprising:

a solid-state image sensing device having a plurality of pixels and a characteristic that an output voltage thereof naturallogarithmically varies in accordance with a light reception amount, the solid-state image sensing device is directed to generate voltage corresponding to respective three primary colors of light for sensing a color image;



storing means for storing an image sensing output signal obtained from the solid-state image sensing device with respect to each pixel when white light is irradiated to the solid-state image sensing device; and

calculating means for calculating a difference between an image sensing signal obtained with respect to each pixel in actual sensing and a stored image sensing output signal with respect to a pixel corresponding thereto which signal is stored in the storing means to realize a white balance of an image signal.

5,289,287

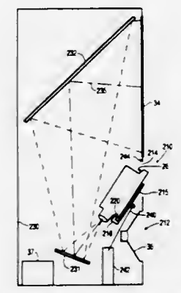
DOCKABLE LCD TV PROJECTOR CONVERTABLE BETWEEN FRONT AND REAR PROJECTION

Daniel J. Dargis; Larry S. Brown, and Jeffrey L. Sharp, all of Knoxville, Tenn., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,625

Int. Cl.[5] H04N *5/74*

U.S. Cl. 358—766 15 Claims



1. A projection television system, comprising:

a frame having a front face; a television image projector, for projecting a bundle of rays of light to form a television picture; means for mounting said projector in said frame; a rear projection screen mounted in said front face, having a rear surface for receiving said bundle of rays to form a television picture viewable from in front of said screen;

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and an optical relay system for optically coupling said projector to said screen, characterized in that:

said projection television system comprises at least one electric element mounted to said frame; and quick-disconnect means including a first connector device for electrically connecting between said at least one electric element and said projector,

said projector comprises at least one projector optical alignment element, a second connector device forming part of said quick-disconnect means, and

said means for mounting comprises means permitting manual insertion of said projector through said front face, and means cooperating with said at least one projector optical alignment element for removably holding said projector, when manually inserted through said front face, in an operating position in optical alignment with said optical relay system.

15. A television image projector for selective front or rear screen projection, comprising means for projecting a bundle of rays of light to form a television picture,

quick-disconnect means for electrically connecting to at least one electric element in a rear screen projection unit and

means for causing electric inversion of the projected picture upon electric connection to said electric element.

5,289,288

METHOD AND APPARATUS FOR ENCODING A VIDEO SIGNAL HAVING MULTI-LANGUAGE CAPABILITIES

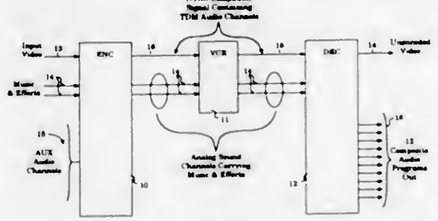
Murray B. Silverman, and Mert Van Pelt, both of Los Angeles, Calif., assignors to MTI Associates, Los Angeles, Calif.

Continuation of Ser. No. 555,916, Jul. 20, 1990, Pat. No. 5,130,815. This application Jul. 9, 1992, Ser. No. 911,211

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] **H04N** *5/76*

U.S. Cl. 358—335 **28 Claims**



27. A device for decoding an encoded video signal having segments with a plurality of audio signals encoded thereon, and a corresponding full bandwidth audio signal, said plurality of audio signals comprising voices corresponding to the video signal, said encoded video signal in a standard audio-video format, said format comprising a video signal and at least one full bandwidth audio signal, said device comprising:

input means for receiving said encoded video signal and at least one full bandwidth audio signal, said full bandwidth audio signal comprising music and effects corresponding to the video signal;

timing means responsive to said encoded video signal for identifying said segments of said video signal containing said plurality of audio signals;

memory means coupled to said timing means and said input means for storing said segments of said encoded signal containing said plurality of audio signals;

audio signal separating means coupled to said memory means and responsive to said timing means for separating at least one of the audio signals from said encoded video signal so as to form an unencoded video signal;

audio signal combining means coupled to said audio signal separating means and said input means for receiving said separated audio signals and said full bandwidth audio signal, said combining means combining said full bandwidth audio signal and each of the separated audio signals such that the music and effects audio signal is combined with each of the separated voice audio signals; and

output means for outputting said unencoded video signal and the combined audio signals.

5,289,289

IMAGE DATA CODING APPARATUS AND CODING METHOD FOR DYNAMIC-IMAGE DATA

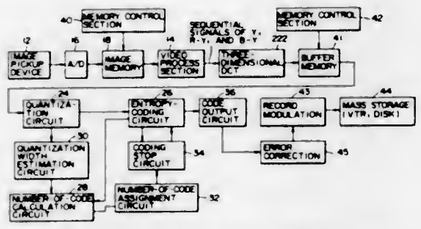
Tatsuo Nagasaki, Yokohama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1991, Ser. No. 644,248

Claims priority, application Japan, Jan. 23, 1990, 2-12970

Int. Cl.[5] **H04N** *7/12*

U.S. Cl. 358—432 **12 Claims**



1. An image data coding apparatus comprising:

data generating means for generating at least dynamic images;

data processing means for arranging image data three-dimensionally for several frames adjoining each other among said dynamic image data generated by said data generating means as three-dimensional image data, and for dividing the three-dimensional image data into a plurality of three-dimensional blocks of a specified size, so as to output each three-dimensional block data;

first transforming means for applying three-dimensional orthogonal transform to said three-dimensional block data output from said data processing means and for outputting three-dimensional transform coefficient data;

second transforming means for transforming said three-dimensional coefficient data output from said first transforming means into one-dimensionally-arranged transform coefficient data;

quantizing means for quantizing said one-dimensionally-arranged transform coefficient data transformed by said second transforming means with a specified quantization width and for generating quantization output;

coding means for coding said quantization output generated by said quantizing means and for outputting coded output; and

means for obtaining said one-dimensionally-arranged transform coefficient data when said second transforming means scans the plane approximated to a spherical surface formed centering around the DC component of said three-dimensional transform coefficient data sent from said first transforming means according to the specified sequence.

5,289,290

FACSIMILE APPARATUS WITH IMPROVED TRANSMISSION FUNCTION OF DUPLEX ORIGINAL

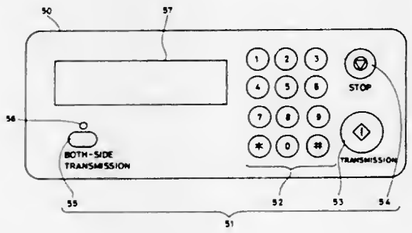
Hiroyuki Suzuki; Akio Nakajima, both of Toyokawa; Hideo Muramatsu, Shinshiro, and Kanako Hamano, Hirakata, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 722,932

Claims priority, application Japan, Jul. 3, 1990, 2-176626; Jul. 3, 1990, 2-176627

Int. Cl.[5] **H04N** *1/00*

U.S. Cl. 358—440 **11 Claims**



1. A facsimile apparatus, comprising:

a placing portion on which an original to be transmitted is placed;

detecting means for detecting that the original is placed on said placing portion;

transmission destination setting means for setting a destination to which an image of the original placed on said placing portion is transmitted;

reading means for reading the image of the original placed on said placing portion to output an image signal;

transmitting means for transmitting the image signal outputted from said reading means to the transmission destination set by said setting means;

mode specifying means for specifying a mode in which an image signal of an original of a first group placed on said placing portion is transmitted to the transmission destination set by said setting means, and then an image signal of an original of a second group, which is different from the first group of original, placed on said placing portion is transmitted to the destination same as that of the first group of original; and

controlling means for controlling said transmitting means so that, when a transmission destination is set by said setting means and it is detected by said detecting means that an original is placed on said placing portion, an image signal of the original placed on said placing portion is transmitted to said transmission destination, and controlling said transmitting means so that, if said mode is specified by said mode specifying means, an image signal of the original in said second group is transmitted to the same transmission destination as that to which the image signal of the original in said first group is transmitted when an original of said second group placed on said placing portion is detected by said detecting means after the image signal of the original of said first group is transmitted to the transmission destination set by said setting means.

5,289,291

IMAGE READING APPARATUS

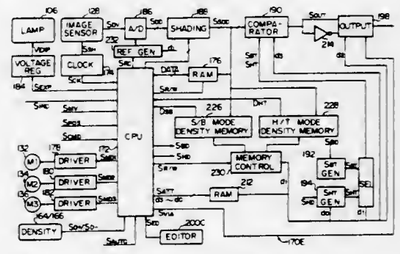
Masamichi Kishi; Munehiro Nakatani, and Hiroya Sugawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 375,728, Jul. 5, 1989, Pat. No. 5,079,638. This application Nov. 6, 1991, Ser. No. 788,778

Claims priority, application Japan, Jul. 5, 1988, 63-167555; Jul. 5, 1988, 63-167556; Jul. 5, 1988, 63-167557; Jul. 5, 1988, 63-167558; Oct. 24, 1988, 63-267911; Feb. 16, 1989, 1-37228

Int. Cl.[5] **H04N** *1/40, 1/387*

U.S. Cl. 358—443 **11 Claims**



1. An image reading apparatus comprising:

a) image reading means for optically reading images on a document and for generating electric signals representative of the optically read images,

b) area designating means for designating a plurality of local areas of said document,

c) density designating means for designating the density level of the image to be reproduced from each of the designated local areas of the document independently of the density level of other areas, and

d) control means for controlling said image reading means so that the images in the designated local areas of the document are to be reproduced with densities based on the density levels designated for each of the local areas.

5,289,292

PICTURE ELEMENT DATA DENSITY CONVERSION APPARATUS

Masaru Osada, Noda, and Takashi Kuriyama, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 26, 1992, Ser. No. 887,498

Claims priority, application Japan, May 24, 1991, 3-149869

Int. Cl.[5] **H04N** *1/387;* **G06F** *15/66*

U.S. Cl. 358—451 **8 Claims**

1. A picture element data density conversion apparatus for processing successive input picture element values to effect a reduction of picture element data density within a 2-dimensional input data field formed of a plurality of lines of said input picture element values, each line being oriented in a horizontal scanning direction of the field, and the lines being sequentially arranged in a vertical scanning direction of the field, said input picture element values occurring with a fixed input data period, said lines occurring with a fixed line period, the apparatus comprising:

horizontal digital low pass filter means (**3**) for operating on said input picture element values to obtain respective horizontally filtered picture element values;

first delay means (**14**) for delaying said horizontally filtered picture element values by a delay amount which is equal to said input data period multiplied by a first predetermined integer (m_{AV}), to obtain successive parallel pairs of delayed and non-delayed horizontally filtered picture element values;

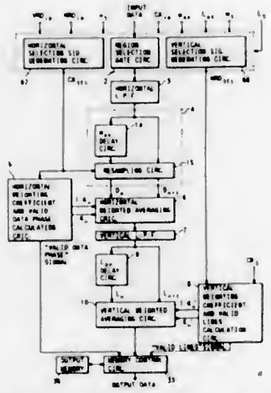
horizontal selection means (**62**) for generating a horizontal selection signal (CK_{SEL}) for periodically designating

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respective ones of said pairs of delayed and non-delayed horizontally filtered picture element values, said designation being executed with a horizontal selection period which is equal to said input data period multiplied by said first predetermined integer (m_{AV});

horizontal weighting coefficient generating means (5) responsive to said horizontal selection signal (CK_{SEL}) for detecting, in accordance with a predetermined weighted averaging interpolation period which is a predetermined multiple (m_L) of said horizontal selection period, each of said horizontally filtered delayed and non-delayed picture element value pairs designated by said horizontal selection means for which a valid horizontal weighted average picture element value can be derived, for generating a first validity indication signal in synchronism with said each picture element value pair for which a valid weighted average value can be derived, and for computing respective horizontal weighting coefficients to be applied to said each picture element value pair;

horizontal weighted averaging means (6) for applying said horizontal weighting coefficients to corresponding ones of said pairs of horizontal filtered delayed and non-delayed picture element value pairs, to sequentially derive respective horizontal weighted average picture element values;



vertical digital low pass filter means (7) for operating on said horizontal weighted average picture element values to obtain respective vertically filtered picture element values;

second delay means (9) for delaying said horizontally filtered picture element values by a delay amount which is equal to said line period multiplied by a second predetermined integer (L_{AV}), to obtain successive parallel pairs of lines of delayed and non-delayed vertically filtered picture element values;

vertical selection means (68) for generating a vertical selection signal (HRD_{SEL}) for periodically designating respective ones of said pairs of lines of delayed and non-delayed vertically filtered picture element values, said designation being executed with a period which is equal to said line period multiplied by said second predetermined integer (L_{AV});

vertical weighting coefficient generating means (8) controlled by said vertical selection signal (HRD_{SEL}) for detecting, in accordance with a predetermined weighted averaging interpolation period (L_k), each of said vertically filtered delayed and non-delayed picture element value line pairs designated by said vertical selection means for which valid vertical weighted average picture element values can be derived, for generating a second validity indication signal in synchronism with said each line pair for which valid vertical weighted average values can be derived, and for computing a first vertical weighting coefficient to be applied to each picture element value of a first one of said each line pair and a second vertical weighting coefficient to be applied to each picture element value of a second one of said each line pair; and

vertical weighted averaging means (10) for applying said vertical weighting coefficients to corresponding ones of said line pairs, to sequentially derive respective lines of vertical weighted average picture element values.

5,289,293

PIXEL DENSITY CONVERSION AND PROCESSING

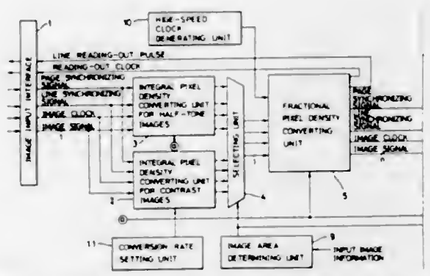
Masami Kato, Sagamihara; Takao Kato, and Yasunori Hashimoto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1990, Ser. No. 492,490

Claims priority, application Japan, Mar. 14, 1989, 1-059601; Mar. 14, 1989, 1-0590608; Jun. 9, 1989, 1-45474; Jun. 9, 1989, 1-145471; Jun. 9, 1989, 1-145472; Jun. 9, 1989, 1-145473; Jun. 9, 1989, 1-145475; Jun. 9, 1989, 1-145476; Jun. 9, 1989, 1-145477; Jun. 9, 1989, 1-145478; Jun. 9, 1989, 1-145479; Jun. 9, 1989, 1-145480

Int. Cl.[5] G06K *9/00*

U.S. Cl. 358—457 **23 Claims**



23. A pixel density converting apparatus for converting a pixel density of a binary image, comprising:

an operation means for operating on a tone or luminance of a pixel to be converted form a binary data of a predetermined original pixel in the binary image and a positional relation between the original pixel and the pixel to be converted;

a first binarization means for binarizing the tone or luminance of the converted pixel which is the operation results while correcting a quantizing error generated when surrounding pixels have been binarized;

a second binarization means for conducting binarization without correcting the quantizing error; and

a binarization selection means for selecting either of the first and second binarization means.

5,289,294

IMAGE PROCESSING APPARATUS

Tetsuo Fujisawa, Urawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Mar. 28, 1991, Ser. No. 676,571

Claims priority, application Japan, Apr. 2, 1990, 2-84982

Int. Cl.[5] H04N *1/40, 1/38*

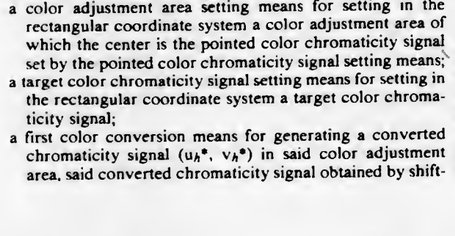
U.S. Cl. 358—461 **8 Claims**

1. An image processing apparatus comprising:

first correction means for correcting an error of a multilevel tone data inputted by an input unit from a document so that a corrected data having a specified number of bits is supplied;

multilevel rendition means for generating a multilevel rendition data and an error data from said corrected data being compared with a plurality of predetermined threshold levels;

error diffusion means for carrying out a prescribed error diffusion of said error data from said multilevel rendition means and for supplying a resulting error data to said first correction means for use in an error correction process of a subsequent input data; and



second correction means for correcting said multilevel rendition data by a specified bit of said multilevel tone data inputted by said input unit so that a corrected multilevel image data that is appropriate for being outputted by an output unit in which a multilevel tone data is assigned to each pixel included in an output image data is supplied.

5,289,295

COLOR ADJUSTMENT APPARATUS

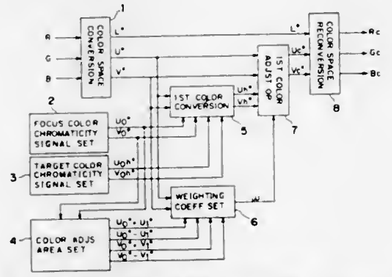
Takashi Yumiba, and Haruo Yamashita, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 910,833

Claims priority, application Japan, Jul. 4, 1991, 3-164319; Dec. 12, 1991, 3-328920

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—518 **21 Claims**



1. A color adjustment apparatus comprising:

a means for obtaining a chromaticity signal representing two elements of a rectangular coordinate system of a plane representing two of the three attributes of color, specifically hue and saturation components;

a pointed color chromaticity signal setting means for setting a pointed color chromaticity signal;

a color adjustment area setting means for setting in the rectangular coordinate system a color adjustment area of which the center is the pointed color chromaticity signal set by the pointed color chromaticity signal setting means;

a target color chromaticity signal setting means for setting in the rectangular coordinate system a target color chromaticity signal;

a first color conversion means for generating a converted chromaticity signal (u_h^*, v_h^*) in said color adjustment area, said converted chromaticity signal obtained by shifting an original chromaticity signal (u^*, v^*) by an amount equal to a change from said pointed color chromaticity signal to said target color chromaticity signal;

a weighting coefficient setting means for setting a weighting coefficient (ω) representing the degree of color adjustment according to the input chromaticity signal such that the weighting coefficient is highest at the center of said color adjustment area, and is reduced towards the peripheral of said color adjustment area; and

a first color adjustment operating means for generating a corrected chromaticity signal (u_0^*, v_0^*) which is a sum of said converted chromaticity signal and said original chromaticity signal added at the rate of said weighting coefficient (ω).

5,289,296

COLOR IMAGE PROCESSING APPARATUS AND METHOD

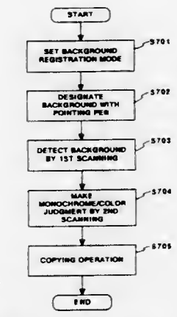
Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,563

Claims priority, application Japan, Aug. 2, 1990, 2-206138

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—530 **44 Claims**



1. A color image processing apparatus, comprising:

input means for inputting color component data representing an original image;

detection means for detecting a background color of the original image;

judgment means for judging whether a portion of the original image other than an area having the background color is a monochromatic image or a multi-color image; and

process means for processing the color component data in accordance with the judgment result of said judgment means.

5,289,297

CONVERTING LINES TO OTHER COLORS

James E. Bollman, Williamson, and Dennis L. Venable, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1991, Ser. No. 769,683

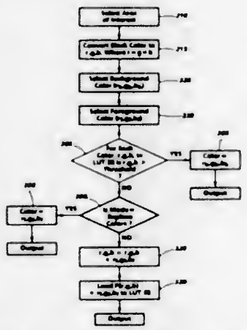
Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—537 **9 Claims**

1. In an image including line art and defined by pixels, each pixel having a value indicative of an optical density value of the image at a discrete point therein in terms of black values, or a combination of red, green and blue values, and where the image includes a plurality of unconnected lines and background, lines including a set of pixels having optical density values distinct from optical density values of pixels in background, a method of changing a color of at least one of the lines and the background, including the steps:

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a) converting the value of each pixel to a combination of a red value, a green value and a blue value, where combinations of red, green and blue values define all possible colors in a color set, and any black value is converted to a combination of a red, a green and a blue value where the red value=green value=blue value;
b) selecting a line color, identified in terms of red, green and blue values;
c) selecting a background color, identified in terms of red, green and blue values;



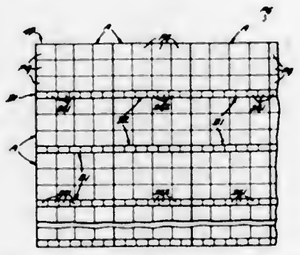
d) comparing the red, green and blue values of each pixel to a reference value;
e) determining from said comparison whether the pixel is a background pixel or a line pixel;
f) setting the value of said pixel equal to the line color, identified in terms of red, green and blue values or the background color, identified in terms of red, green and blue values, in accordance with said determination; and
displaying the image in terms of the red, green and blue values selected as line color and background color.

5,289,298

MULTIPLEX GRATING HOLOGRAPHIC FLOODLIT CENTER HIGH MOUNTED STOPLIGHT

Ronald T. Smith, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 995,116
Int. Cl.[5] G02B *5/32*; G03H *1/26*
U.S. Cl. 359—14 **8 Claims**



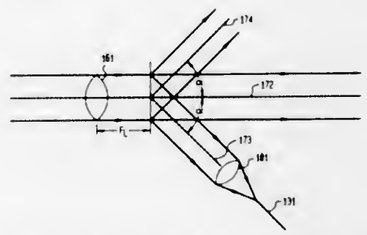
1. A holographic center high mounted stoplight system for a vehicle having a rear window, comprising
a hologram layer having a plurality of single grating holograms formed therein, each single grating hologram configured to diffract light at a respective predetermined angle;
a playback source that provides playback illumination having angular spread such that each single grating hologram diffracts light over a solid angular region;
a plurality of primary hologram blocks each including a plurality of single grating holograms arranged in an identical 2-dimensional array and diffracting light into respective solid angular regions within a central solid angular region, wherein the number of single grating holograms in each primary block is selected such that light diffracted by each primary hologram block is visible at all angular positions within the central angular range;
a plurality of first secondary hologram blocks each including a plurality of single grating holograms arranged in a 1 dimensional array and diffracting light into respective solid angular regions within a first peripheral angular region that is adjacent said central solid angular region, wherein the number of single grating holograms in each first secondary hologram block is selected such that light diffracted by each first secondary hologram block is visible at all angular positions within the first peripheral angular region; and
a plurality of second secondary hologram blocks each including a plurality of single grating holograms arranged in a 1 dimensional array and diffracting light into respective solid angular regions within a second peripheral angular region which is adjacent said predetermined central solid angular region opposite said first peripheral angular region and a mirror image of said first peripheral angular region, wherein the number of single grating holograms in each second secondary hologram block is selected such that light diffracted by each second secondary hologram block is visible at all angular positions within the second peripheral angular region.

5,289,299

HOLOGRAPHIC CODE DIVISION MULTIPLE ACCESS

Eung G. Paek, Freehold, and Jawad A. Salehi, Bedminster, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Division of Ser. No. 824,785, Jan. 15, 1992, Pat. No. 5,216,529.
This application Jan. 15, 1993, Ser. No. 6,009
Int. Cl.[5] G02B *27/42*; G03H *1/16*
U.S. Cl. 359—29 **2 Claims**



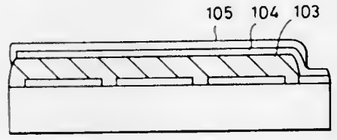
1. A decoder for decoding an incoming temporal information-bearing light signal encoded with an optical two-dimensional spatial random encoding mask to produce a decoded original temporal light signal, the decoder comprising
a Fourier Transform lens for converting the incoming light signal to produce a transformed light signal,
a hologram, located at the optical focus distance from said Fourier Transform lens, for generating a holographic light signal from said transformed light signal, said hologram representative of the optical random encoding mask,
an outgoing focusing lens, aligned along the reference beam direction when making said hologram, for generating the decoded light signal, and
a fiber located at the focal point of said outgoing focusing lens.

5,289,300

METHOD OF MANUFACTURING ELECTRO-OPTICAL DEVICES WHEREIN THE ELECTRODE IS PATTERNED ON THE MODULATION LAYER

Shunpei Yamazaki, Tokyo; Akira Mase, Aichi; Toshiji Hamatani, and Takeshi Nishi, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1992, Ser. No. 829,263
Claims priority, application Japan, Feb. 4, 1991, 3-035483; Feb. 6, 1991, 3-036680
Int. Cl.[5] G02F *1/13, 1/1343*
U.S. Cl. 359—51 **29 Claims**



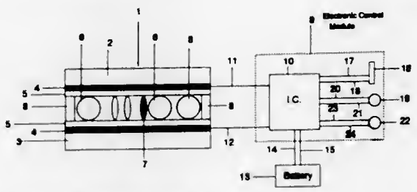
1. A method of manufacturing electro-optical devices comprising:
forming non-linear semiconductor elements and a first electrode arrangement on a substrate;
coating an electro-optical modulating layer comprising a liquid crystal on said substrate over said non-linear semiconductor elements and first electrode arrangement;
forming a conductive layer on said electro-optical modulating layer; and
patterning said conductive layer to form a second electrode arrangement.

5,289,301

LIQUID CRYSTAL COLOR MODULATION DISPLAYS WITH DYES OF DIFFERENT ORDERS AND CIRCUITRY FOR PROVIDING MODULATED AC EXCITATION VOLTAGE

Donald R. Brewer, Vigo County, Ind., assignor to Boit, Inc., Terre Haute, Ind.

Filed Jun. 12, 1992, Ser. No. 898,917
Int. Cl.[5] G02F *1/137*; G09F *9/00*
U.S. Cl. 359—98 **34 Claims**



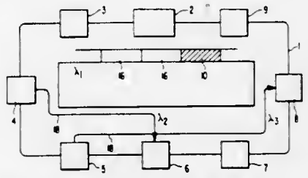
1. Liquid crystal display apparatus comprising:
(a) a transparent superstrate having an interior face and an exterior face,
(b) a substrate parallel to and spaced from said superstrate, said substrate having an interior face and an exterior face,
(c) a first transparent electrode secured to the interior face of said superstrate,
(d) a second transparent electrode secured to the interior face of said substrate,
(e) liquid crystal material interposed between said first and second electrodes,
(f) a positive order parameter dye incorporated in said liquid crystal material,
(g) a negative order parameter dye incorporated in said liquid crystal material,
(h) first means to generate an operating voltage wave varying between 0 volts and a level above 0 volts and to vary the frequency of said voltage wave,
(i) second means to generate a second voltage wave of a constant high frequency above the maximum frequency of said operating voltage wave,
(j) third means to connect the operating voltage wave and the second voltage wave to said first and second electrodes,
(k) whereby said operating voltage wave varies the color of the display between the full color of said positive order parameter dye and the full color of said negative order parameter dye and shades of color between the full colors of said positive order parameter dye and said negative order parameter dye,
(l) and whereby said second voltage wave prevents degradation of said liquid crystal mixture.

5,289,302

ACCESS METHOD FOR OPTICAL LOCAL AREA NETWORK SYSTEMS

Masahiro Eda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,466
Claims priority, application Japan, Dec. 28, 1990, 2-416929
Int. Cl.[5] H04J *14/02, 14/04*
U.S. Cl. 359—123 **1 Claim**



1. A media access method for use in an optical local area network (LAN) system having a plurality of nodes including a supervisory node and an optical fiber transmission path for data transmission between said nodes, and performing data transmission by a wavelength-division said nodes, and method using N optical wavelengths, wherein the transmission and reception of data takes place in the following manner:
transferring an access right control packet, comprised of a reservation field in which is written transmit reserve information indicating the presence of a data transmission request, a send address field in which is written a send node address, a destination address field in which is written a receive node address and a used wavelength field in which is written a used wavelength information for notifying the nodes of the optical wavelength to be used for data transmission, at a first optical wavelength between nodes;
notifying said supervisory node and said receive node of the presence of a data transmission request, when a node is to transmit data, by writing into said access right control packet said transmit reserve information, the send node's own address, and the address of the receive node to which the data are to be sent, and sending the packet;
said supervisory node, upon perception of said data transmission request from said send node and unless said receive node to which the data are to be sent is receiving data, selecting one transmit optical wavelength out of the second through Nth optical wavelengths, writing the selected wavelength into said access right control packet as said used wavelength information, sending said packet, and thereby notifying said send and receive nodes of said transmit optical wavelength;
said send node transmitting the data using the transmit optical wavelength of which said send node has been notified, said receive node receiving only said transmit optical

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wavelength letting all other wavelengths pass as optical signals;

further transferring a packet exchanging packet, comprised of an identifier field, a send node address field, a receive node address field and a data section, and another packet exchanging packet, in whose identifier field are written information for distinguishing said access right control packet from said packet exchanging packet, at said first optical wavelength;

each node receiving a packet exchanging packet having a receive node address identical with its own node address; and

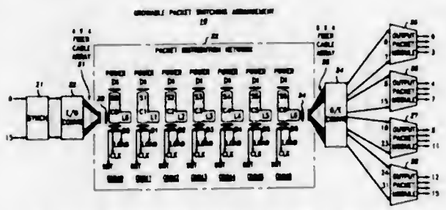
when transmitting packet exchanging data, a transmitting node sending a packet exchanging packet in which in said send node address field, said receive node address field and said data section are respectively written the transmitting node's own address, the address of the destination node and the packet exchanging data to be transmitted.

5,289,303

CHUTED, OPTICAL PACKET DISTRIBUTION NETWORK

Thomas J. Cloonan, Downers Grove, and Gaylord W. Richards, Lisle, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,101
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—139 **27 Claims**



1. A packet distribution network having L network input ports and M network output ports for switching packets from said L network input ports to said M network output ports, where L and M are positive integers greater than two, said network comprising

S stages of opto-electronic nodes, with each node of at least the first (S−1) of said nodes stages comprising an X×Y switching means, where S, X and Y are positive integers with S>3, X>1 and Y>1, and

(S−1) optical link stages interconnecting successive ones of said S node stages, with each link stage comprising chute links and switch links,

wherein the X×Y switching means of each node of at least the interior (S−2) of said S node stages receives packets on X switch links and selectively transmits packets on Y switch links,

wherein said each node of said interior (S−2) node stages further comprises

a plurality of chute connection means each connected to only one chute link of the preceding link stage and to only one chute link of the following link stage, for transmitting a packet, being received from said preceding stage chute link, onto said following stage chute link, and

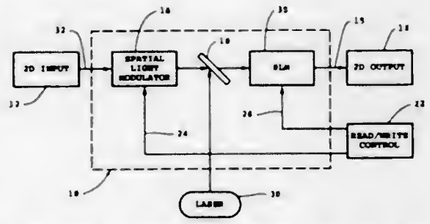
means for transferring a packet, being received on a switch link by the X×Y switching means of said each node of said interior (S−2) node stages, to any selected one of said plurality of chute connection means for transmission on the following stage chute link.

5,289,304

VARIABLE RATE TRANSFER OF OPTICAL INFORMATION

Sonlinh Phuvan, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1993, Ser. No. 46,254
Int. Cl.[5] H04J *14/08*; G02F *1/00*
U.S. Cl. 359—140 **14 Claims**



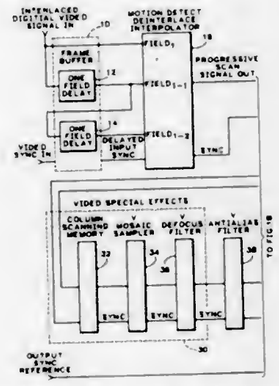
1. In a data processing system having a data source and a signal processing device through which optical information derived from the data source is processed at a predetermined transfer rate; data transfer means operatively connected between the data source and the signal processing device for delayed transfer of the optical information from the data source and control means connected to said data transfer means for controllably varying said delayed transfer of the optical information to the signal processing means to substantially match the predetermined transfer rate.

5,289,305

PROGRESSIVE SCAN ARCHITECTURE FOR VIDEO SPECIAL EFFECTS

David E. Lake, Jr., Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.

Continuation of Ser. No. 652,684, Feb. 8, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 15,242
Int. Cl.[5] H04N *5/272, 5/262, 7/01, 9/74*
U.S. Cl. 348—578 **15 Claims**



9. A method for producing video special effects, the method comprising the steps of:

deinterlace filtering with motion detection an interlaced video input signal having a predetermined line rate to produce a first progressive scan video signal;

applying a video special effect to the first progressive scan video signal to produce a progressive scan video signal with special effect such that the image represented by the progressive scan video signal with special effect is substantially different from the image represented by the interlaced input video signal; and

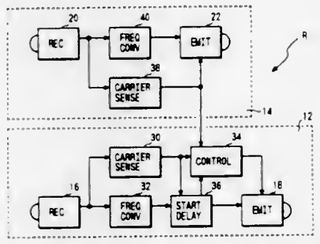
interlacing the progressive scan video signal with special effect to produce an interlaced video output signal with special effects and having said predetermined line rate.

5,289,306

REPEATER SYSTEM

Kazutoshi Hirohashi, Yokohama; Akio Yoshikawa, Kawasaki; Takaaki Takeda, Fujisawa; Takeshi Nomoto, Yokohama, and Keishi Ushijima, Nagareyama, all of Japan, assignors to Victor Company of Japan, Yokohama and NTT Data Communications Systems Corp., Tokyo, both of Japan

Filed Mar. 26, 1992, Ser. No. 858,292
Claims priority, application Japan, Mar. 27, 1991, 3-087557
Int. Cl.[5] H04B *10/16*
U.S. Cl. 359—174 **16 Claims**



1. A repeater for data communication between terminal devices which uses optical signals, the repeater comprising:

a first section including first means for receiving a first optical signal transmitted from a terminal device and for converting the first optical signal into a first electric signal, second means for frequency-converting the first electric signal to a second electric signal, and third means for converting the second electric signal into a second optical signal and for transmitting the second optical signal; and

a second section including fourth means for receiving a third optical signal and for converting the third optical signal into a third electric signal, fifth means for frequency-converting the third electric signal to a fourth electric signal, and sixth means for converting the fourth electric signal into a fourth optical signal and for transmitting the fourth optical signal to a terminal device.

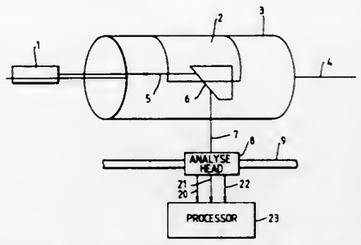
5,289,307

IMAGE SCANNER

Robert J. Oldershaw, Norfolk; Sinclair Morgan, and Martin P. Gouch, both of Herts, all of England, assignors to Crosfield Electronics Ltd., Herts, United Kingdom

Filed Oct. 29, 1992, Ser. No. 968,322
Claims priority, application United Kingdom, Oct. 29, 1991, 9122899.9
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **9 Claims**

1. An image scanner comprising means for scanning an image in a series of scan lines with a beam; means for splitting said beam after modulation by said image into a number of subsidiary beams; a corresponding number of detectors to each of which a respective one of said subsidiary beams is fed; and



control means for causing spatially different respective parts of said subsidiary beams to be received by each detector.

5,289,308

METHOD OF MAKING A FREQUENCY DOUBLING STRUCTURE IN AN OPTICALLY NON-LINEAR MEDIUM

Winfried H. G. Horsthuis, Enschede, and Gustaaf R. Möhlmann, Dieren, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 11, 1992, Ser. No. 988,999
Claims priority, application Netherlands, Dec. 20, 1991, 9102138
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—328 **9 Claims**

1. A method of making a frequency doubling structure in an optically non-linear polymeric material, in which method alternating poling is effected in the optically non-linear material which comprises the following steps:

forming a layer of NLO polymer;

exposing the layer of NLO polymer to an electric field in order to effect poling of the NLO polymer;

partially removing the layer of NLO polymer by etching, such that in the polymer a grating structure is formed composed of etched grooves and projecting polymer parts, the width of the grooves matching that of the polymer parts;

dividing the polymer layer containing the grating structure into at least two sections; and

placing the two sections one on top of the other, such that grooves of the one section are back-filled by projecting polymer parts of the other section.

5,289,309

OPTICAL FREQUENCY DOUBLER USING QUANTUM WELL SEMICONDUCTOR STRUCTURES

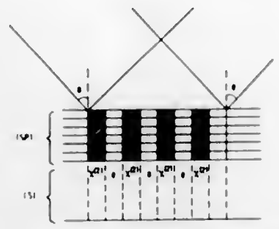
Dominique Delacourt, Paris; Jean-Claude Pocholle, Arpajon/ la Norville, and Michel Papuchon, Villebon Palaiseau, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jan. 21, 1993, Ser. No. 6,608
Claims priority, application France, Jan. 21, 1992, 92 00583
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—328 **12 Claims**

1. An electromagnetic wave frequency doubler, the electromagnetic wave having a wavelength λw, with a semiconductor structure comprising a stack of layers constituted by semiconductor materials enabling the creation of potential wells, wherein there are at least two discrete energy levels e_1 and e_2 in the wells such that e_1 is smaller than e_2, the density of probability of the presence of electrons on e_2 is an asymmetrical function and said doubler comprises a second-order non-linear susceptibility grating resulting from the populating, with electrons, of the level e_1 and from this asymmetry, the pitch of the grating being in the plane of the layers, said grating being optically controllable by an optical beam with a wavelength λp

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that locally and periodically irradiates the semiconductor structure so as to locally populate the energy level e_1 with electrons and said grating making it possible to carry out the



phase matching between the polarization created by an incident electromagnetic wave and a created harmonic wave, the two waves getting propagated in the plane of the stack of layers.

5,289,310

A FRAME LINE MEMORY CONTROL CIRCUIT AND METHOD FOR CONTROLLING STORAGE OF VIDEO DATA OF A VIDEO SIGNAL

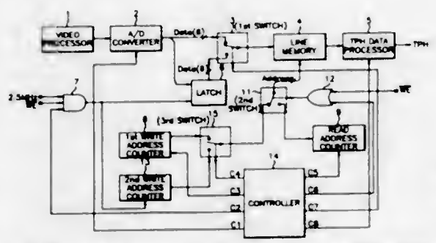
Jung-Mok Park, Suwon City, Rep. of Korea, assignor to Samsung Electronics, Co. Ltd., Suwon, Rep. of Korea

Filed Sep. 20, 1991, Ser. No. 763,292

Claims priority, application Rep. of Korea, Oct. 8, 1990, 15937

Int. Cl.[5] **G06K** *9/00*

U.S. Cl. 358—443 **20 Claims**



1. A frame line memory control circuit for controlling a frame line memory for storing video data, the control circuit comprising:

a controller generating a multiplicity of control signals;

analog-digital conversion means for converting an analog video signal from a video processor to corresponding digital video data;

latch means for temporarily storing said video data from said conversion means during printing operations;

memory means comprising said line memory for storing said video data and providing said video data upon request from the controller;

first switching means connectable to said conversion means and said latch means, for selectively transferring said video data from one of said conversion means and said latch means to said memory means, said first switching mean being under control of said controller;

write address counter means for providing a write address to store said video data in said memory means under control of said controller;

first logic gate means for producing a first gate signal to enable operation of said latch means and said write address counter means;

read address counter means for providing a read address to retrieve said video data from said memory means, said read address counter means being under control of said controller;

second logic gate means for producing a second gate signal;

second switching mans connectable to said read address counter means and said write address counter means, for selectively providing one of said read address and said write address to said memory mean in dependence upon said second gate signal from said second logic gate means; and

a third switching means connectable to said write address counter means, for transferring a selected one of said write addresses from said write address counter means to said second switching means, said third switching means being under control of said controller;

whereby writing and reading operations of the video data in the memory means are carried out line by line.

5,289,311

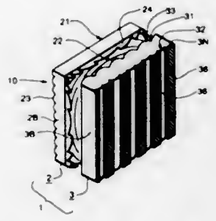
OPTICAL ELEMENT SUCH AS A REAR PROJECTION SCREEN FOR AN IMAGE DISPLAY DEVICE AND METHOD OF PRODUCING SAME

Sandra K. McClelland, Langhorne; Randall E. McCoy, McConnellsburg, both of Pa., and Dominic S. Rosati, Jr., Trenton, N.J., assignors to RCA Thomson Licensing Corp., Princeton, N.J.

Filed Aug. 14, 1992, Ser. No. 929,221

Int. Cl.[5] **G03B** *21/56*

U.S. Cl. 359—457 **2 Claims**



1. In a rear projection screen for an image display device comprising at least two substantially rigid sheet members each having a first major surface and a second major surface through which light is transmitted sequentially, wherein a first sheet member comprises a Fresnel lens and a second sheet member comprises a lenticular lens array on each of said major surfaces thereof, the improvement wherein said second major surface of said first sheet member includes said Fresnel lens being formed of a radiation curable material.

5,289,312

CATADIOPTRIC REDUCTION PROJECTION OPTICAL SYSTEM

Sumio Hashimoto, Tokyo, and Yutaka Ichihara, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 948,327

Claims priority, application Japan, Sep. 28, 1991, 3-276594

Int. Cl.[5] **G02B** *17/08, 27/28*

U.S. Cl. 359—487 **13 Claims**

1. A catadioptric reduction projection optical system for projecting a reduced image of a pattern of a first surface onto a second surface, including:

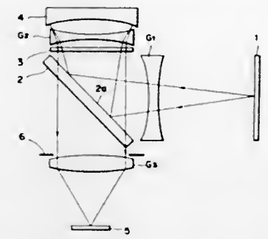
a first lens unit G1 for refracting a light beam from said first surface;

a semi-transparent mirror having a plane parallel plate for reflecting the light beam from said first lens unit G1;

a concave reflecting mirror for returning the light beam from said semi-transparent mirror to said semi-transparent mirror while converging said light beam;

a second lens unit G2 of negative refractive power disposed between said semi-transparent mirror and said concave reflecting mirror;

a third lens unit G3 of positive refractive power for converging the light beam returned to said semi-transparent mir-



ror by the reflection on said concave reflecting mirror and transmitted through said semi-transparent mirror and forming the reduced image of the pattern of said first surface on said second surface; and

stop means disposed between said semi-transparent mirror and said third lens unit G3.

5,289,313

OPTICAL HEAD USING SEMICONDUCTOR LASER ARRAY AS LIGHT SOURCE

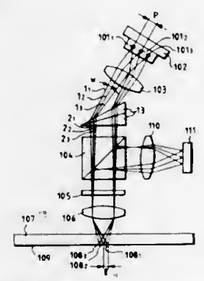
Kazuhiko Matsuoka, Yokohama, Japan, assignor to Canoo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 413,474, Sep. 27, 1989, abandoned. This application Oct. 22, 1992, Ser. No. 965,624

Claims priority, application Japan, Sep. 28, 1988, 63-240655

Int. Cl.[5] **G02B** *5/30*

U.S. Cl. 359—496 **40 Claims**



1. An optical head using a semiconductor laser array as a light source, comprising:

a semiconductor laser array, in which a plurality of semiconductor lasers, each having a junction surface, are linearly arrayed, with said junction surfaces of said semiconductor lasers being parallel to an array direction, wherein the divergence angle of each of said plurality of semiconductor lasers constituting said semiconductor laser array is set such that the full angle at half maximum in a direction parallel to the junction surface is 8° to 15° and the full angle at half maximum in a direction perpendicular to the junction surface is 21° to 32°;

a collimator lens for converting a plurality of light beams emitted from said semiconductor laser array into a plurality of collimated light beams;

a beam shaping prism system for converting a beam width of the plurality of beams emerging from said collimator lens, with a plane defined by incident and emerging beams on and from said beam shaping prism system being parallel to or overlapping the array direction of said semiconductor lasers, said beam shaping prism system comprising a plurality of beam shaping prisms, wherein when the width of an incident beam on said beam shaping prism system is represented by d, the width of an emerging beam is represented by D, and the conversion ratio γ of the beam width is defined by $\gamma = D/d$, the following condition is satisfied:

$1.4 \leqq \gamma \leqq 3.5$; and

an objective lens for converging the plurality of beams emerging from said beam shaping prism system.

5,289,314

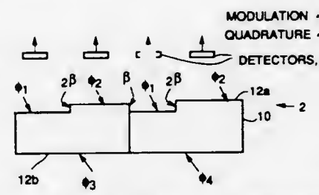
COATINGS FOR LASER DETECTOR ETALONS

Edward T. Siebert, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 25, 1992, Ser. No. 857,345

Int. Cl.[5] **G02B** *5/28;* **G01B** *9/02;* **G01J** *1/20*

U.S. Cl. 359—586 **8 Claims**



1. An etalon for modulating a radiation signal, comprising:

a substrate having a first major surface and a second, opposite major surface, the first major surface having at least one step therein; and

a plurality of dispersive coatings formed upon at least one of said major surfaces of said substrate, said plurality of dispersive coatings each having a spatially varying index of refraction through a depth thereof, the profile being selected as a function of a height of said at least one step and for reducing a falloff in modulation of said etalon due to a phase shift for radiation at said at least one step;

wherein said plurality of dispersive coatings are rugate coatings having a spatially varying index of refraction profile n(x) that varies in accordance with a sinusoidal function, wherein n(x) is give by the expression:

$$n(x) = n_o(1 + \int H(n_i K(x - x_o)/n_o u(K)) \sin (Kx + \phi(K))dK/K)$$

where n_o is equal to the average index of refraction, $K = 4\pi n_o/\lambda$, [ϕ' is the internal angle in the coating] and λ is the wavelength, where $u(K) = 4\tanh^{-1}(R(K))^{\frac{1}{2}}$ is a number of cycles in the coating to achieve a desired reflectivity R(K), n_i is the peak deviation of the index from n_o for a single wavelength, where $\phi(K)$ is the phase of reflected light as a function of K, where x is a distance into the coating, and where H is an envelope or apodizing function located at x_o whose extent defines the region of index variation at the wavelength λ.

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5,289,315

HEAD-UP DISPLAY SYSTEM INCLUDING A UNIFORMLY REFLECTING LAYER AND A SELECTIVELY REFLECTING LAYER

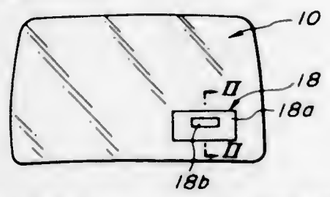
Kensuke Makita; Katsuto Tanaka, and Atsushi Takamatsu, all of Mie Prefecture, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Apr. 23, 1992, Ser. No. 872,027

Claims priority, application Japan, May 29, 1991, 3-039448[U]

Int. Cl.[5] **G02B** *27/14, 5/28, 1/10*

U.S. Cl. 359—634 **10 Claims**



1. A head-up display system including an element formed on a transparent substrate for projecting light rays carrying images of display information onto the element from a luminous image source, the element comprising:

a first reflection layer which is directly attached to the transparent substrate and onto which the light rays are to be projected, said first reflection layer having a certain reflection characteristic in terms of wavelength of the light rays; and

a second reflection layer which is directly formed on said first reflection layer and onto which the light rays are to be projected, said second reflection layer having another certain reflection characteristic in terms of wavelength of the light rays, wherein the light rays are relatively uniformly reflected by said first reflection layer throughout a visible light wavelength spectrum and selectively reflected, so that the light rays are primarily reflected in a narrow range of said visible light wavelength spectrum, by said second reflection layer, said narrow range extending from about 500 nm to about 600 nm.

5,289,316

MEASURING OBJECTIVE

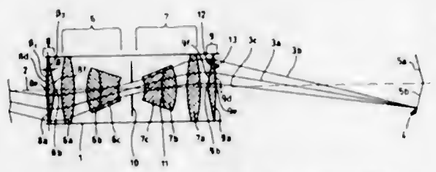
Gerd Fürter, Ellwangen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 856,122

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109484

Int. Cl.[5] **G02B** *13/10, 13/18, 5/04*

U.S. Cl. 359—669 **14 Claims**



1. An objective for measuring distances comprising:

at least one lens group defining an optical axis and including a plurality of lenses;

a first beam deflecting unit mounted on said axis forward of said lens group to define a beam entry surface;

a second beam deflecting unit mounted on said axis rearward of said lens group to define a beam exit surface;

said first deflecting unit including a refracting optical prism having a first side extending above and below said optical axis and defining said entry surface and having a second side likewise extending above and below said optical axis and facing away from said first side;

said second deflecting unit including a refracting optical prism having a first side extending above and below said optical axis and defining said exit surface and having a second side likewise extending above and below said optical axis and facing away from said first side of said refracting optical prism of said second deflecting unit;

said prism of said first deflecting unit having a first linear edge formed on one of said sides thereof and said prism of said second deflecting unit having a second linear edge formed on one of said sides thereof; and,

said first and second linear edges being substantially perpendicular to said optical axis and being substantially parallel to each other.

5,289,317

COMPACT ZOOM LENS

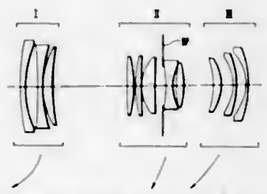
Keiji Ikemori; Koutaro Yano, and Hiroki Nakayama, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 860,213, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 460,667, Jan. 3, 1990, abandoned. This application May 19, 1993, Ser. No. 63,041

Claims priority, application Japan, Jan. 6, 1989, 64-1118; Jan. 31, 1989, 1-21027; Jan. 31, 1989, 1-21028; Mar. 10, 1989, 1-59035; Mar. 10, 1989, 1-59036; Mar. 10, 1989, 1-59037

Int. Cl.[5] **G02B** *15/14*

U.S. Cl. 359—689 **20 Claims**



1. A zoom lens comprising, from front to rear, a first lens group of negative refractive power, a second lens group of positive refractive power that comprises a front lens sub-group and a rear lens sub-group on either side of a stop, and a third lens group of negative refractive power, wherein as zooming from the wide-angle end to the telephoto end is performed by moving said first, second and third lens groups, said second and third lens groups both are directed forward and a movement of said third lens group is made greater than a movement of said second lens group and the following conditions are satisfied:

$$1<S1w/S2w<3.2$$

$$0.15<|f3|/FT<0.43$$

$$2<FT/FW<5$$

where S1w and S2w are air separations between said first and second lens groups and between said second and third lens groups in the wide-angle end respectively, f3 is a focal length of said third lens group, and FW and FT are shortest and longest focal lengths of the entire lens system respectively.

5,289,318

OPTICAL APPARATUS PROVIDED WITH A DRIVING UNIT FOR MOVING A LENS

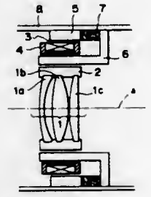
Masayoshi Sekine, Tokyo; Junichi Murakami, Atsugi; Shigeru Ogino, Tokyo; Hiroyuki Takahara, Yokohama; Masamichi Toyama, Yokohama; Sadahiko Tsuji, Yokohama; Shigeyuki Suda, Yokohama, and Jun Tokumitsu, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1991, Ser. No. 737,149

Claims priority, application Japan, Jul. 31, 1990, 2-202817; Jul. 31, 1990, 2-202818; Aug. 3, 1990, 2-206593; Apr. 24, 1991, 3-94371

Int. Cl.[5] **G03B** *3/00*

U.S. Cl. 359—813 **10 Claims**



1. An optical apparatus, comprising:

a lens unit movable in a direction of optical axis thereof;

a lens barrel;

a driving means comprising one of (i) a combination of an electromagnetic coil coupled to said lens unit and a magnetic material coupled to said lens barrel, and (ii) a combination of said electromagnetic coil coupled to said lens barrel and said magnetic material coupled to said lens unit; and

a guide for slidably guiding the lens unit relative to the lens barrel,

wherein said electromagnetic coil is wound on a bobbin, a yoke extends from said magnetic material, and said guide comprises a surface of said yoke which is opposed to said bobbin, and a lubricative sheet between said bobbin and said yoke.

5,289,319

APPARATUS AND METHOD FOR DETECTING PHYSICAL ORIENTATION OF A POSITION SYSTEM AND FOR CALIBRATING AN OPTIMUM CONTROL FOR THE SYSTEM THAT IS USABLE IN OPTICAL DISK RECORDERS

Enrique E. Aviles; Edwin R. Childers; Alan A. Fennema, and Dave P. McReynolds, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1992, Ser. No. 960,034

Int. Cl.[5] **G02B** *7/02;* **G11B** *7/00*

U.S. Cl. 359—814 **15 Claims**

1. In apparatus for calibrating a positioning system, including, in combination:

a frame;

a work member having a work surface with a plurality of work lines;

a rotary tool support means having a pivot axis substantially perpendicular to said work surface and having a work tool facing said works surface, said rotary tool support means being capable of working in any one of a plurality of physical orientations including rotary motions along vertical and horizontal oriented work surfaces;

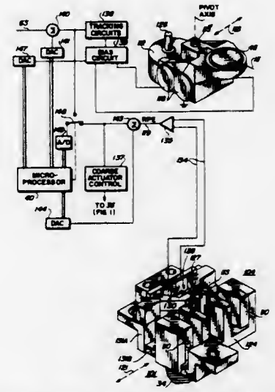
carriage support means movably mounted on the frame for reciprocating movements along a first linear path across the work surface and mounting the rotary tool support means for rotation about the pivot axis, said rotary tool support means having a distal end portion mounting said work tool for movements substantially along said first linear path, said carriage support means having a predetermined reference relative position for the rotary tool support means to be positioned on said carriage support means;

stop lock servo means connected to the rotary tool support means and in an operative sensing relation to the work surface for indicating a relative motion along said first linear path of said rotary tool support means and said work surface from a predetermined stop lock position and having a TES error means for generating a TES position error signal representative of said relative motion;

RPE error means connected between said rotary and carriage support means for sensing rotary relative motion between the rotary and carriage support means and supplying an RPE error signal indicating relative displacements of the rotary tool support means from said predetermined reference relative position for indicating said sensed rotary relative motions;

carriage servo means operatively coupled to said carriage support means and to said RPE error means for responding to said RPE error signal to actuate the carriage support means to move in a direction for reducing said relative displacements such that the relative displacement of the rotary tool support means is at said reference relative position whereby the carriage support means follows the motions of said work tool along said first linear path,

bias means connected to said rotary tool support means for



mechanically biasing said rotary tool support means in a second direction orthogonal to said first linear path;

orientation testing means connected to the bias means for actuating the bias means to supply one of a plurality of predetermined bias forces for mechanically biasing said rotary tool support means to balance any effects of gravity on the rotary tool support means only if the positioning system is oriented in respective ones of a plurality of physical orientations;

said orientation testing means coupled to the biasing means and one of said error means and to said carriage support means for momentary urging one of said support means for a predetermined movement along said first linear path and for simultaneously actuating said biasing means to bias said rotary tool support means successively by each one of said plurality of bias forces for testing said positioning system to determine said physical orientation of said rotary tool support means; and

analysis means for determining said physical orientation of said rotary tool support means and connected to one of said support means, to said RPE means and to said orientation testing means for responding to said orientation testing means momentary urging one of said support means at each respective one of said bias forces to sense any uncorrected movement of said carriage support means with

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respect to rotary relative movement of said rotary tool support means;

said analysis means having a peak detector for peak detecting said indicated rotary relative motion at each respective one of said plurality of bias forces;

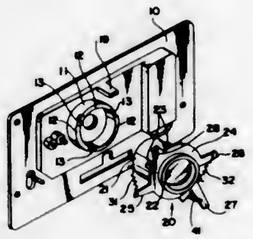
orientation means in the analysis means for responding to said peak detecting indicating a first predetermined error indication peak at a first one of said bias forces for indicating that the rotary tool support means is physically oriented for horizontally oriented rotary motions along a horizontally oriented work surface.

5,289,320

APPARATUS FOR DEFINING A POSITION OF A LENS

Takumi Kobayashi, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1992, Ser. No. 821,072
Claims priority, application Japan, Jan. 23, 1991, 3-024992[U]
Int. Cl.[5] G02B *7/02*; G03B *17/00*
U.S. Cl. 359—819 **9 Claims**



1. An apparatus for defining a position of a lens comprising:

a base member;

means for controlling a position of said lens relative to said base member along an optical axis of said lens in accordance with a rotational position of said lens about the optical axis, by urging said lens in a rotational direction, said controlling means further comprising means for urging said lens in a direction along said optical axis of said lens in association with said controlling means urging said lens in a rotational direction; and

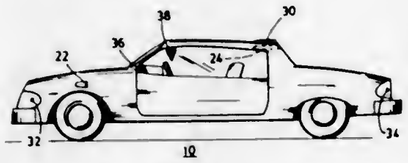
at least one spring comprising a coil spring for urging said lens in a direction inclined to the direction of said optical axis in a rotational direction opposite said rotational direction of urging by said controlling means, said at least one spring being tilted such that a central axis thereof is set to be inclined relative to both the directions of the optical axis and the rotation of said lens.

5,289,321

CONSOLIDATED REAR VIEW CAMERA AND DISPLAY SYSTEM FOR MOTOR VEHICLE

James O. Secor, 753 James St., Apt. 912, Syracuse, N.Y. 13203

Filed Feb. 12, 1993, Ser. No. 17,308
Int. Cl.[5] G02B *27/00*; H04N *7/00*
U.S. Cl. 359—896 **13 Claims**



1. Rear viewing arrangement for a motor vehicle to permit an operator in a driver's position within the vehicle a view of traffic conditions to rearward from left and right sides of the motor vehicle, comprising:

left and right video camera arrangements respectively mounted on the left and right sides of the motor vehicle at a position at or forward of the said driver's position; and each said arrangement including a miniature video camera having a viewing angle directed generally rearwards, and a housing that is formed of a fairing disposed over the associated camera to protect same and minimize lateral protuberance from the side of the vehicle while avoiding unnecessary air flow turbulence, and a window on a rearward side of said fairing; and

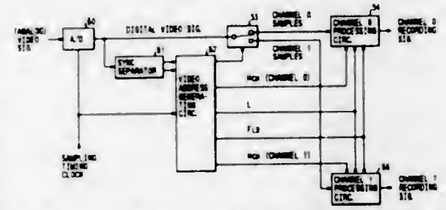
at least one viewing screen coupled to said video camera arrangements and disposed at said driver's position within the vehicle to reproduce left and right rearward views of the traffic conditions as viewed by said video cameras.

5,289,322

DATA REARRANGEMENT PROCESSING APPARATUS FOR DIGITAL VIDEO SIGNAL RECORDING APPARATUS

Masaaki Higashida; Keiichi Ishida; Toshiaki Koya, all of Osaka, and Kunio Suesada, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1991, Ser. No. 761,061
Claims priority, application Japan, Sep. 18, 1990, 2-249434
Int. Cl.[5] G11B *5/00, 5/09*
U.S. Cl. 360—32 **5 Claims**



1. In a recording apparatus for recording on a recording medium a digital video signal comprising successive samples, said samples being arrayed in successive lines and fields of said video signal, said apparatus including channel allocation means for allocating alternate ones of said samples of each line of said video signal to a first recording channel and a second recording channel respectively and recording means for recording samples of said first and second channels on respectively different tracks of said recording medium, a data rearrangement apparatus coupled between said channel allocation means and said recording means, said data rearrangement apparatus comprising for each of said channels;

field memory means (**103**) wherein a two-dimensional array of memory locations is defined by two-dimensional memory addresses;

data shuffling means (**101**) for assigning to said samples of said channel of one field of said digital video signal, within each of successive fixed sets of said samples, respectively block numbers (Oblk) each specifying one of a fixed plurality of blocks, and respective intra-block addresses (Hd),

for executing on said blocks respectively different shuffling operations based on said block numbers and block addresses to obtain respective converted intra-block addresses (Obyt) and for assigning the respective converted intra-block addresses to respective samples.

and for outputting said samples in synchronism with outputting corresponding ones of said block numbers and converted intra-block addresses;

write address generating means respective to said block numbers (Oblk) and converted intra-block addresses (Obyt) for sequentially writing said samples outputted from said data shuffling means into said field memory means along a first direction of said array; and

read address generating circuit means (**105**) for generating memory addresses for successively reading out from said field memory means, along a second direction of said array, each of a plurality of segments of said samples of said channel of one field, said segments being stored in respective regions of said field memory means, and for supplying said samples thus read out to said recording means at timings such that said samples of respective ones of said segments are written onto respectively different ones of said tracks of said recording medium;

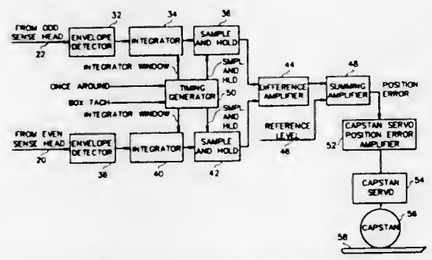
said shuffling operations and specific regions being respectively predetermined such that adjacent samples of a same line and same channel in a field are written into respectively different ones of said regions.

5,289,323

AUTOTRACKING FOR A HELICAL SCAN MAGNETIC TAPE RECORDER

Milan V. Trcka, Claremont; James S. Bacon, Irvine, and Jose G. Aguilar, Pico Rivera, all of Calif., assignors to Datatape Incorporated, Pasadena, Calif.

Filed Feb. 14, 1992, Ser. No. 834,965
Int. Cl.[5] H04N *5/795*
U.S. Cl. 360—77.13 **3 Claims**



1. In a helical scan magnetic tape reproducing apparatus including a headwheel having spaced odd and even azimuth reproduce heads and a capstan servo for controlling the movement of magnetic tape past said reproduce heads, the improvement comprising:

odd and even azimuth sense heads located on said headwheel spaced from said odd and even reproduce heads; and

autotracking circuit means for detecting the signals produced by said odd and even sense heads and for producing an error signal, which is applied to said capstan servo to retard or accelerate magnetic tape so that said reproduce heads are properly positioned relative to recorded tracks on said tape;

wherein said autotracking circuit means includes

(1) envelope detector means for detecting the radio frequency envelopes produced by said odd and even sense heads;

(2) integrator means for integrating said sensed envelope signals;

(3) sample and hold means for sampling and holding the odd and even sense signals integrated by said integrator means; and

(4) difference amplifier means for producing an error signal from said signals from said sample and hold circuit means wherein said error signal is applied to said capstan servo; and

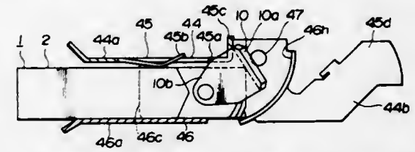
wherein said envelope detector means includes odd and even envelope detector means for respectively detecting the radio frequency envelopes produced by said odd and even sense heads; wherein said integrator means includes odd and even integrator means for respectively integrating said odd and even envelopes detected by said odd and even envelope detector means; and wherein said sample and hold means includes odd and even sample and hold means for respectively sampling and holding said integrated signals from said odd and even integrating means.

5,289,324

CASSETTE HOLDER WITH MEANS FOR OPENING AND CLOSING THE CLOSURE MEMBER OF A CASSETTE

Takashi Katoku, Tokyo, and Masafumi Tamura, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 619,518, Nov. 29, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 978,170
Claims priority, application Japan, Dec. 6, 1989, 1-317020
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **11 Claims**



1. A cassette holder in a recording and/or reproducing apparatus for a magnetic tape cassette which has a resilient front pivotal closure member movable between a closed position at which the front pivotal closure member covers a front opening of said magnetic tape cassette, and an open position at which the front pivotal closure member opens the front opening, said cassette holder comprising:

holding means for receiving and holding said magnetic tape cassette at a fixed position within a cassette receptacle defined therein, said holding means being movable between an ejected position at which said magnetic tape cassette is allowed to be inserted into and removed from said holding means, and a loaded position at which cassette loading is completed;

opening means for deflecting said front pivotal closure member to the open position depending upon movement of said magnetic tape cassette toward said fixed position while said opening means is in contact with said front pivotal closure member; and

closing means for deflecting said front pivotal closure member to the closed position depending upon movement of said magnetic tape cassette in a direction away from said fixed position while said closing means is in contact with said front pivotal closure member,

wherein said resilient front pivotal closure member is slightly deformed while being pivotally opened to said open position whereby said front pivotal closure member remains in said open position without the use of any separate biasing means.

5,289,325

RIGID DISK DRIVE WITH DYNAMIC HEAD LOADING APPARATUS

James H. Morehouse, Jamestown; David M. Furay, and James A. Dunckley, both of Boulder, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Filed Dec. 19, 1990, Ser. No. 629,957
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **14 Claims**

1. A rigid disk drive comprising:

a baseplate;

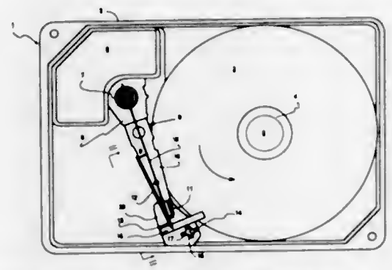
a rigid disk supported on said baseplate for

an elongated actuator arm including a load beam, said actua-

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tor arm being pivotally supported about a center of rotation on said baseplate for rotation of one end of said arm load beam in a plane substantially parallel to a surface of said disk, said load beam including at its outermost end a lift tab extending from said one end of said load beam along an axis of which is skewed from the longitudinal axis of said actuator arm;

a slider body including a read/write recording element;



means connected to said load beam and said slider body for supporting said slider body at a position intermediate said center of rotation and said lift tab; and

a cam assembly supported on said baseplate adjacent to said lift tab and the edge of said disk, said cam assembly including a cam surface positioned in operative relationship with said lift tab, said lift tab contacting said cam surface and in cooperation with said cam surface providing a lifting force to said load beam.

5,289,326

ROTARY HEAD CYLINDER PRODUCED BY INJECTION OF PRESSURIZED RESIN

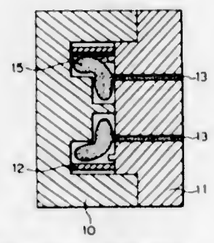
Tetsunori Matsuwaka; Kenji Kobayashi; Takashi Ogawa; Tomonobu Ogino, all of Okayama; Motoo Ohmori, Akaiwa, and Hiroshi Hanafusa, Wake, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 5, 1991, Ser. No. 740,402

Claims priority, application Japan, Aug. 9, 1990, 2-212541

Int. Cl.[5] G11B *5/52*

U.S. Cl. 360—107 **10 Claims**



1. A rotary head cylinder comprising:

an aluminum alloy ring, and

a synthetic resin material molded in the inner space of said aluminum alloy ring and integrated therewith, and which resin has both a small molding-shrinkage and a coefficient of linear thermal expansion similar to that of said aluminum alloy, wherein said synthetic resin material is one selected from the group consisting of polyether imide, liquid crystal polymer and polycarbonate.

5,289,327

HARD DISK INSPECTION APPARATUS

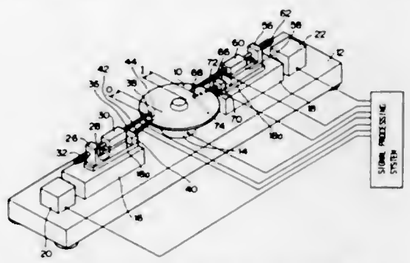
Koichi Suda, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Jun. 15, 1992, Ser. No. 898,512

Claims priority, application Japan, Jun. 18, 1991, 3-045808[U]

Int. Cl.[5] G11B *5/56*

U.S. Cl. 360—109 **4 Claims**



1. A hard disk inspection apparatus comprising:

a spindle for receiving and rotating a hard disk to be inspected;

a plurality of pairs of magnetic heads for magnetically recording on and reproducing from a plurality of areas formed by annularly dividing magnetic recording surfaces of said hard disk;

a plurality of carriages for reciprocating each pair of magnetic heads on a line which passes through a center of said spindle; and

a plurality of micrometric mechanisms for finely adjusting the radial position of either one of each pair of magnetic heads on said hard disk.

5,289,328

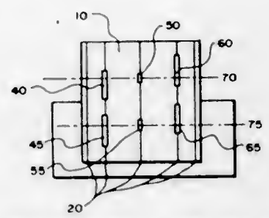
METHOD AND APPARATUS FOR VARIABLE DENSITY READ-AFTER-WRITING ON MAGNETIC TAPE

George Saliba, 109 Howard St., Northboro, Mass. 01532

Filed May 26, 1992, Ser. No. 888,941

Int. Cl.[5] G11B *5/29*

U.S. Cl. 360—121 **8 Claims**



1. A read/write transducer for writing data in variable width tracks on media comprising:

A) a read transducer for reading data written on media reversibly moving past said read transducer along a read band of a first width;

B) a first write transducer positioned upstream of said read transducer for writing data on media moving in a first longitudinal direction past said first write transducer along a first write band of a second width substantially greater than said first width and positioned transversely relative to said first longitudinal media motion such that said first write band will wholly include said read band and the longitudinal edge of said read band, in a first direction transverse to said first longitudinal direction of media motion, is substantially flush against the longitudinal edge of said first write band in said first transverse direction; and

C) a second write transducer positioned upstream of said read transducer for writing data on media moving in a second longitudinal direction, reverse of said first longitudinal direction, past said second write transducer along a second write band of a third width substantially greater than said first width and positioned transversely relative to said second longitudinal media motion such that the second write band will wholly include said read band and the longitudinal edge of said read band, in a second transverse direction opposite to said first transverse direction, is substantially flush against the longitudinal edge of said second write band in said second transverse direction.

5,289,329

COMPOSITE TYPE MAGNETIC HEAD AND MAGNETIC RECORDING/PLAYBACK APPARATUS ADOPTING THE SAME

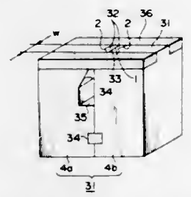
Akiyoshi Hirano, and Hiroshi Yamaki, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 588,132, Sep. 26, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 997,139

Claims priority, application Japan, Sep. 27, 1989, 1-250883; Dec. 4, 1989, 1-316006

Int. Cl.[5] G11B *5/265*

U.S. Cl. 360—121 **10 Claims**



1. A magnetic recording and playback apparatus, comprising:

a plurality of magnetic heads, at least one magnetic head being a composite type magnetic head, each said at least one composite type magnetic head having a main gap and at least one pseudo gap, a pseudo gap being a boundary formed between two adjacent dissimilar non-gaseous materials;

said main gap of said at least one composite type magnetic head having an azimuth preset for recording and/or playing back a signal;

said at least one pseudo gap of said at least one composite type magnetic head having an azimuth which is non-parallel to said main gap of said at least one composite type magnetic head;

said at least one pseudo gap of said at least one composite type magnetic head being non-parallel to a main gap of another of the plurality of magnetic heads, the another magnetic head having a main gap with a preset azimuth different from said preset azimuth of said main gap of said at least one composite type magnetic head.

5,289,330

HELICAL READ/WRITE HEAD HAVING A CROSS-CUT GROOVE

Gerald J. Wade, Littleton, Colo., assignor to Alliant Techsystems Inc., Edina, Minn.

Filed Oct. 2, 1991, Ser. No. 771,043

Int. Cl.[5] G11B *5/187, 21/021, 5/52*

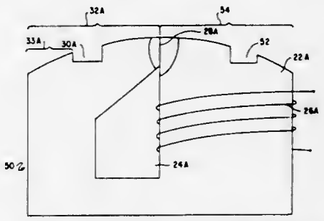
U.S. Cl. 360—122 **14 Claims**

1. In a helical scan data storage system having at least one helical head rotating in a first plane and a magnetic tape driven relative to said at least one rotating helical head and positioned to repeatedly and operatively interface with a face of said at least one rotating helical head at an acute angle relative to said first plane, at least a first improved helical head comprising:

a magnetic gap disposed across the face of said first helical head for magnetically interfacing with said magnetic tape;

a lead sloping surface on one side of said magnetic gap on said face, and having an initial interface region that initially and repeatedly interfaces with said magnetic tape;

a groove laterally disposed across said lead sloping surface and said magnetic gap so as to inwardly draw and receive, and thereby dynamically dampen, magnetic tape disruption approximating a standing wave attendant to said initial and repeated interface between said initial interface region of said lead sloping surface and said magnetic gap, wherein an edge of said groove nearest to said magnetic gap is positioned between apppproximately 100μm and 400μm from the magnetic gap, the width of said groove is between approximately 100μm and 40μm, and the depth of said groove is between approximately 20μm and 100μm.



5,289,331

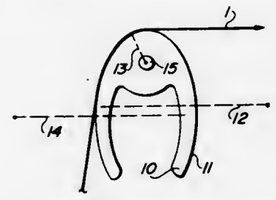
CONSTRAINED PIVOT GUIDE POST

James H. Eaton, Morgan Hill, and Jaquelin K. Spong, Mountain View, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1991, Ser. No. 714,965

Int. Cl.[5] G11B *15/60, 23/08;* **B65H** *23/04;* **G03B** *1/04*

U.S. Cl. 360—130.21 **15 Claims**



1. A guide for a flexible web in close proximity to the guide, the guide comprising:

an axle; and

a post mounted to pivot abut the axle in response to a reversal of movement direction of the web, the post including a contiguous web engaging surface having a longitudinal contour with a compound radius of curvature, the compound radius of curvature including first, second, and third portions, the third portion between the first and second portions and having a smaller radius of curvature than the first and second portions, whereby said post is constrained from pivoting at nominal web velocities.

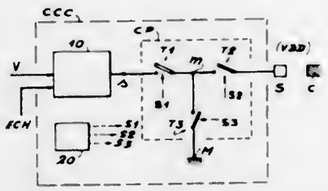
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5,289,332

PROTECTIVE CIRCUIT FOR A CONTROL CIRCUIT, IN PARTICULAR OF LIQUID CRYSTAL DISPLAY SCREEN

Patrice Senn; Alan Lelah, both of Grenoble, and Gilbert Martel, Meylan, all of France, assignors to France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

Filed Sep. 23, 1991, Ser. No. 764,211
Claims priority, application France, Sep. 21, 1990, 90 11681
Int. Cl.[5] H03K *17/687*
U.S. Cl. 361—1 **15 Claims**



1. A protective circuit, included in a column control circuit, for protection against excessive voltages appearing on an output terminal which is external to said column control circuit, connected between an output of a control circuit means for supplying a voltage signal and said output terminal, comprising:

first and second electronic switches connected in series between said output of the control circuit and the output terminal;

a third electronic switch connected to a point located between said first and second switches also connected to a ground terminal;

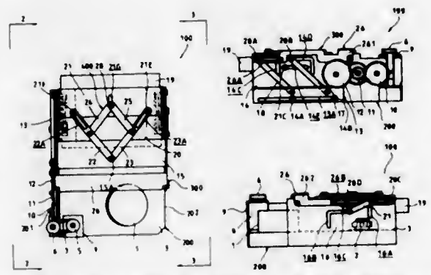
means for delivering control signals to said first, second and third switches in accordance with corresponding voltage signals delivered by the control circuit means.

5,289,333

CASSETTE LOADING APPARATUS FOR LOADING A MAGNETIC RECORDING CASSETTE INTO A ROTARY DRUM DECK OF A CASSETTE PLAYING OR RECORDING APPARATUS

Ming-Che Chiu, and Chyi-Fwu Chiou, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Filed Dec. 4, 1992, Ser. No. 986,125
Int. Cl.[5] G11B *15/675*
U.S. Cl. 380—96.5 **4 Claims**



1. A cassette loading apparatus for loading a magnetic recording cassette which is removably disposed within a cassette holder into a rotary drum deck of a cassette playing apparatus which deck comprises a bottom member having mounted thereon a cassette driving means for driving reel hubs of the cassette on which a magnetic recording medium is wounded and signal sensing means which reads a magnetic signal from the magnetic recording medium traveling therethrough, a first side plate and a second side plate substantially perpendicularly mounted on said bottom member to define therebetween a space for receiving therein the cassette holder, and a top member connected between the first side plate and the second side plate, each of said side plates defining thereon a pair of first slots and a second slot, a mechanical transmission system being provided to transmit torque from a torque source to said cassette loading apparatus, said mechanical transmission system comprising at least a gear rotatably mounted on said first side plate with a rack which is slidable along the first side plate mating therewith, said cassette loading apparatus comprising:

a movable member which is a plate-like member fit within said deck with a first side panel and a second side panel thereof respectively parallel with and adjacent to said first side plate and said second side plate in such a way so as to be movable relative thereto, said side panels being substantially normal to said movable member, each of said side panels comprising an elongated side slot formed thereon, extending in a direction normal to said movable member, each of said side panels further comprising a side pin formed thereon, extending away from each other, said movable member further comprising an elongated slot extending normal to said side pins of the side panels thereof and located substantially midway between the side panels, a pair of top pins being formed on said movable member in symmetry with respect to said elongated slot, a first gap being formed between said movable member and said top member, said first gap being sufficiently large to avoid interference with the operation of said movable member;

a stationary member which is a plate-like member straddling over said deck with a first wing and a second wing thereof respectively fit over said first side plate and said second side plate in such a way so as to be movable relative thereto, said wings being substantially perpendicular to said stationary member and extending in a direction parallel with said stationary member to form into a substantially U shape and each of said wings having a slot formed thereon, each of said wings further comprising a pivot hole formed thereon opposite to each other to respectively receive therein a pivot pin formed on the first side plate and a pivot pin formed on the second side plate so as to define a pivotal axis about which said stationary member is rotatable relative to said deck, a second gap being formed between said stationary member and said top member, said second gap being sufficiently large to avoid interference with the operation of said stationary member; said cassette holder comprising a first lateral side and a second lateral side on each of which a first side rod and a second side rod are formed, said first side rods respectively extending through the side slots formed on the side panels of said movable member and then penetrating through one of the first slots of the side plates of said deck and eventually received in the slots formed on the wings of said stationary member, the second side rods respectively extending into the other one of the first slots of said side plates, the side pins of said movable member being received in the second slots of the side plates of said deck;

a four bar linkage, which is disposed between said movable member and said top member, comprising two long links pivotally connected at a first pivot point with a top pivot pin formed on the top member and two short links pivotally connected at a second pivot point with a pivot which extends into the elongated slot formed on said movable member to be guided thereby, the two short links being pivotally connected to the two long links at a third and a fourth pivot points to form a parallelogram structure, each of the long links comprising a slot to receive therein and guide one of the top pins of said movable member so that when said cassette holder is moved at the first lateral side thereof, the movement is substantially transmitted to the second lateral side thereof by said four bar linkage; and

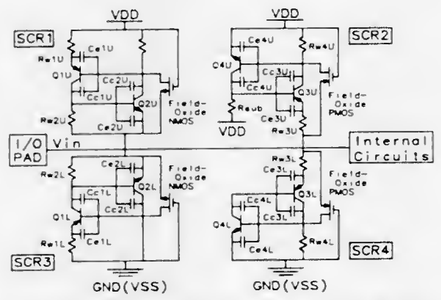
a pair of first linking bars which are parallel with each other and each of which has a first end rotatably secured to said rack and a second end respectively rotatably secured on the first side rod and the second side rod formed on the first lateral side of said cassette holder so that when said rack is moved by the rotation of the gear in a first direction, said cassette holder is pulled to move in the first direction by the parallel linking bars, and a second linking bar connected between the second side rod of said second lateral side of said cassette holder and the slot formed on the second wing of said stationary member, said second linking bar having a first end pivotally secured to the second side rod of said second lateral side of said cassette holder and a second end rotatably and movably received in the slot formed on said second wing.

5,289,334

CMOS ON-CHIP ESD PROTECTION CIRCUIT AND SEMICONDUCTOR STRUCTURE

Ming-Dou Ker; Chung-Yuan Lee, and Chung-Yu Wu, all of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Division of Ser. No. 863,693, Apr. 2, 1992, Pat. No. 5,182,220.
This application Nov. 18, 1992, Ser. No. 978,332
Int. Cl.[5] H02H *9/00, 3/22*
U.S. Cl. 361—56 **3 Claims**



1. A protection circuit for protecting an I/O pad and associated components on a CMOS chip from an excessive ESD voltage, where the chip has a negative power supply terminal (V_{SS}) and a positive power supply terminal (V_{DD}), wherein the improvement comprises,

a first SCR circuit connected to conduct ESD currents of one polarity between the positive power supply terminal and the I/O pad,

a second SCR circuit connected to conduct ESD currents of the other polarity between the positive power supply terminal and the I/O pad,

a third SCR circuit connected to conduct ESD currents of said one polarity between the negative power supply terminal and the I/O pad, and

a fourth SCR circuit connected to conduct ESD currents of said other polarity between the negative power supply terminal and the I/O pad,

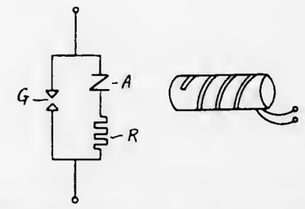
whereby the protection circuit operates for each polarity of ESD current in response to the magnitude of the ESD voltage with respect to the voltage of the power supply terminals.

5,289,335

COMPOUND LIGHTNING ARRESTER FOR LOW VOLTAGE CIRCUIT

Giichiro Kato, Tokyo, Japan, assignor to Central Lightning Protection Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 465,413, Jan. 16, 1990, abandoned. This application May 29, 1992, Ser. No. 891,638
Claims priority, application Japan, Jan. 21, 1989, 1-12991
Int. Cl.[5] H02H *1/04*
U.S. Cl. 361—117 **5 Claims**



1. A lightning arrester for protecting low voltage electrical apparatus from high energy electrical surges caused by lightning comprising,

a single housing,

a zinc oxide arrester,

a non-inductive resistor connected in series circuit with said zinc oxide arrester,

a single spark gap for receiving full voltage of the electrical surges, said spark gap being connected in parallel with said series circuit of arrester and resistor to secure cooperation between said zinc oxide arrester and said spark gap,

said zinc oxide arrester, said spark gap and said non-inductive resistor being installed in said single housing,

said resistor having a value R_A in ohms where:

$$R_A \geqq \frac{(V_S - V)}{I_0},$$

and V_S is the spark voltage of the spark gap, V is the working voltage of the zinc oxide arrester, I_O is the maximum allowable peak current of the zinc oxide arrester, and said resistor is a bifilarly of Ayston-Perry wound Nichrome wire having a current capacity larger than the maximum allowable peak current I_O of said zinc oxide arrester, said non-inductive resistor inhibiting an increase of the working voltage for an assured discharge of the spark gap.

5,289,336

STATIC ELECTRICITY DISPERSANT

George N. Gagliano, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 820,190, Jan. 14, 1992, abandoned. This application Dec. 1, 1992, Ser. No. 984,003
Int. Cl.[5] H05F *3/02*
U.S. Cl. 361—220 **6 Claims**

1. An article for dispersing static electricity to ground from first and second separate semiconductors which are electrically connected by one or more electrical contacts comprising:

A. a formable conductive material;

B. a first semiconductor unit having a set of electrical contacts extending from said first semiconductor unit;

C. a second semiconductor unit electrically connected to said set of electrical contacts and connected to said first semiconductor unit through said set of electrical contacts;

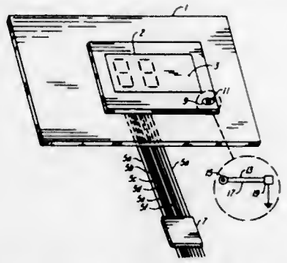
D. said formable material having a shunt electrical connection to ground;

E. said formable conductive material placed onto, and in

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direct electrical contact with said first and second semiconductor units and said set of electrical contacts;

F. said formable conductive material conducting static electricity from said first and second semiconductor units through said shunt electrical connection to ground;



G. said shunt electrical connection to ground includes a connector on said formable material, said connector having a fastener to connect with an electrical connector;

H. said shunt electrical connection to ground includes a strap and a second fastener on said strap to mate with said fastener on said formable material.

5,289,337

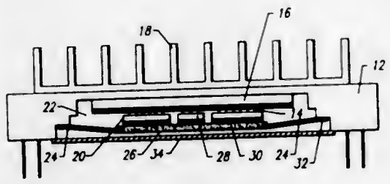
HEATSPREADER FOR CAVITY DOWN MULTI-CHIP MODULE WITH FLIP CHIP

Mostafa Aghazadeh, Chandler, and Mark Palmer, Phoenix, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 21, 1992, Ser. No. 839,859

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—718 **9 Claims**



1. An integrated circuit module, comprising:

a package body having a cavity;

a substrate having a first side and an obverse side, wherein the obverse side is joined to the package body within said cavity;

an active integrated circuit chip attached to the first side of the substrate;

a heatspreader plate engaging the active integrated circuit chip; and

a passive thermal shunt chip that performs no active circuit function having a connect side and an obverse side, the connect side of the passive thermal shunt chip being disposed on the substrate with the obverse side of the passive thermal shunt chip being disposed on the heatspreader plate.

5,289,338

Patent Not Issued For This Number

5,289,339

PORTABLE ELECTRONIC DEVICE WITH MEMORY CARD UNIT HAVING SYMMETRICAL TERMINALS

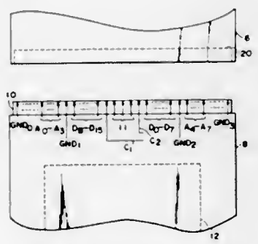
Kazuo Akashi, and Yuji Yamanaka, both of Oome, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 542,047, Jun. 22, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 74,727

Claims priority, application Japan, Jun. 28, 1989, 1-165677; Jun. 28, 1989, 1-165678

Int. Cl.[5] H05K *7/10*

U.S. Cl. 361—684 **4 Claims**



1. A memory card unit comprising:

a card base constituting a card housing and mounted with a memory circuit; and

connector means for electrically connecting said memory circuit with an external device, said connector means being arranged on a distal end portion of said card base and being connectable to said external device, and having central terminals which are used as high-voltage power source terminals and connected to said memory circuit and data input/output, address, control signal and ground terminals which are connected to said memory circuit so as to be symmetrical with respect to said central terminals.

5,289,340

STRUCTURE OF AN ELECTRONIC DEVICE INCLUDING A NUMBER OF PRINTED CIRCUIT BOARDS

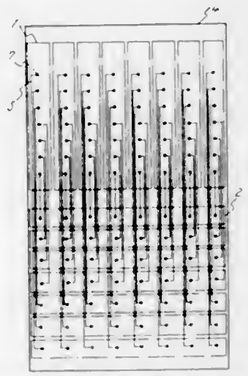
Yuuki Yoshifuji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,669

Claims priority, application Japan, Jun. 25, 1991, 3-153548

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—695 **9 Claims**



1. A structure of an electronic device, comprising:

at least one mother board elongated in an up-and-down direction and provided with a wiring circuit network comprising printed wirings on a first surface thereof;

a plurality of first printed circuit boards mounted on said at least one mother board at a first position in the up-and-down direction of said at least one mother board and having a plurality of surfaces positioned parallel to the up-and-down direction and substantially perpendicular to the first surface of said at least one mother board, said plurality of first printed circuit boards each carrying a number of electronic parts therewith and comprising a printed circuit electrically connecting said electronic parts, and connection terminals formed by ends of said printed circuit;

a plurality of second printed circuit boards mounted on said at least one mother board at a second position in the up-and-down direction of said at least one mother board and having a plurality of surfaces positioned perpendicular to the up-and-down direction and substantially perpendicular to the first surface of said at least one mother board, said plurality of second printed circuit boards each carrying a number of electronic parts therewith and comprising a printed circuit for electrically connecting said electronic parts, and connecting terminals formed by ends of said printed circuit; and

connector means for connecting said connecting terminals of said first printed circuit boards to said connecting terminals of said second printed circuit boards via said wiring circuit network provided on said at least one mother board, said connector means being connected to said first and second printed circuit boards to connect said first and second printed circuit boards to said at least one mother board, said connector means including unit wirings, said units wirings being positioned so as not to intersect one another;

said wiring circuit network comprising a single layer printed circuit.

5,289,341

SLIDER FOR A FLOATING MAGNETIC HEAD HAVING TAPERED COIL GROOVE WALLS

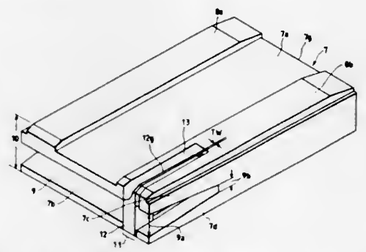
Seiji Sakaguchi; Tsuyoshi Kubo, both of Kumamoto, Japan, and Ryuzo Higashihara, St. Irvine, Calif., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 22, 1991, Ser. No. 795,895

Claims priority, application Japan, Nov. 22, 1990, 2-318467

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **19 Claims**



17. A floating magnetic head comprising:

a slider of a nonmagnetic material, said slider having an air inlet side and an air outlet side with respect to rotation of a magnetic recording medium;

said slider having a floating rail on its surface facing said magnetic recording medium, said floating rail facing the magnetic recording medium for positioning the slider relative to the magnetic recording medium, a coil groove defined in an end surface of the slider at said air outlet side, and a slit defined in said floating rail at said air outlet side, said slit extending along said floating rail and across said coil groove;

a core tip fixedly disposed in said slit and having a magnetic gap;

said slider having a portion located between said surface facing the magnetic recording medium and said coil groove, said portion having progressively increasing thickness, as measured between said surface and said coil groove, from said air outlet side toward said air inlet side to define progressively decreasing thickness of said coil groove as measured in a direction normal to said surface facing said magnetic recording medium said progressively decreasing thickness of said coil groove occurring across the entire width of said slider.

5,289,342

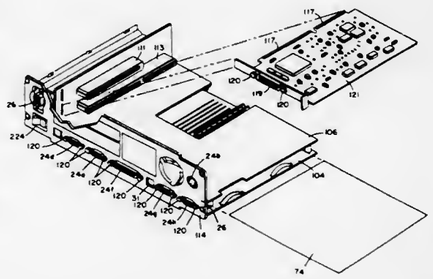
SYSTEM WITH COOLING OF ELECTRONIC COMPONENTS ON A CIRCUIT BOARD

Tom J. Spalding, Gloucester; Keith E. Kowal, Marblehead; James H. Bleck, Chelmsford; Scott H. Wakefield, Andover, and John E. Thrailkill, Lowell, all of Mass., assignors to Ergo Computing, Inc., Peabody, Mass.

Division of Ser. No. 711,816, Jun. 7, 1991, Pat. No. 5,187,645. This application Nov. 9, 1992, Ser. No. 973,262

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—699 **4 Claims**



1. An electronic system comprising:

a housing;

a circuit board within the housing having a front side with electronic components mounted thereon and a rearward back side contacting a heat sink such that the back side is thermally coupled to the housing by the heat sink;

a mounting board mounted on the front side of the circuit board; and

a heat generating electronic component having a mounting side and a top side, the heat generating component being mounted on the mounting board and facing rearwardly where the top side of the heat generating component contacts the heat sink such that the heat generating component is thermally coupled to the housing by the heat sink.

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5,289,343

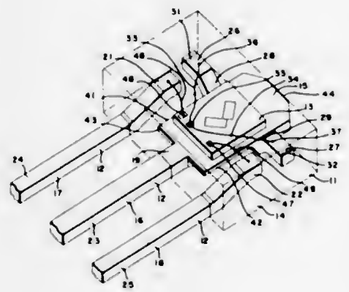
Patent Not Issued For This Number

5,289,344

INTEGRATED-CIRCUIT LEAD-FRAME PACKAGE WITH FAILURE-RESISTANT GROUND-LEAD AND HEAT-SINK MEANS

Jay J. Gagnon, Holden, and Paul J. Panaccione, Barre, both of Mass., assignors to Allegro Microsystems Inc., Worcester, Mass.

Filed Oct. 8, 1992, Ser. No. 958,496
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—712 **9 Claims**



1. An integrated-circuit package comprising:

(a) a semiconductor integrated-circuit die having two major faces, a top face and a bottom face, said die having at least one electrical circuit ground terminal on the top face and at least one electrical signal terminal on the top face,

(b) a lead frame comprising:

(i) a die-attach pad, having a top face, a bottom face, a front side, a back side, a right side, and a left side, the bottom die face of the die being bonded to the top face of said die-attach pad to provide a physical and thermal connection between said die and said pad,

(ii) at least one ground lead extending away from the front side of said die-attach pad, said lead having a proximal end attached to said pad and a distal end, and

(iii) at least one ground wing, separate from the ground lead, and extending from said pad, said wing having a proximal end attached to said pad, a distal end, and a contact surface spaced from the proximal end of the wing,

(c) at least one wire forming a direct electrical connection between the contact surface of said ground wing and said electrical ground terminal on said top die face, and

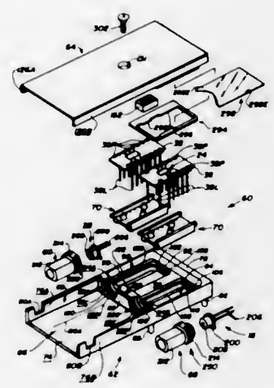
(d) a solid electrically insulating body encapsulating said die, the proximal end of said ground lead, the distal end of said ground wing, and said at least one wire, so that said ground lead is enabled to function as heat-sink ground tab conducting heat and electrical current from said die to the outside of said body.

5,289,345

OPTO-ELECTRONIC DEVICE HOUSING HAVING SELF-HEALING ELASTOMERIC BOARD MOUNT WITH SUPPORT PYLONS

Anthony A. Corradetti, Brookhaven, Pa.; Edward P. Gargiulo, Wilmington, Del.; Leland L. Krauss, Glenmoor, Pa., and Robert W. Hooley, Ipswich, England, assignors to BT&D Technologies Ltd., Ipswich, England

Division of Ser. No. 354,530, May 19, 1989, Pat. No. 5,011,246. This application Jun. 28, 1990, Ser. No. 545,041
Int. Cl.[5] H05K *5/06*
U.S. Cl. 361—752 **2 Claims**



1. A housing for an opto-electronic device that receives a rigid substrate having a plurality of legs extending therefrom, the housing comprising:

a base;

a cover cooperable with the base to define a chamber;

one of the cover or the base having a slot therein,

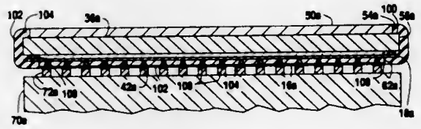
a board mount of a self-healing elastomeric material, the board mount having a plurality of pylons for receiving the substrate thereon, the board mount being disposed in a sealing relationship with the one of the base or the cover having the slot therein when the base and the cover are conjoined, the legs extending through the elastomeric board mount and projecting through the slot when the base and the cover are conjoined, the self-healing elastomeric material of the board mount forming a seal about the legs.

5,289,346

PERIPHERAL TO AREA ADAPTER WITH PROTECTIVE BUMPER FOR AN INTEGRATED CIRCUIT CHIP

David H. Carey, and Barry H. Whalen, both of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 887,198, May 21, 1992, abandoned, which is a continuation of Ser. No. 661,579, Feb. 26, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,580
Int. Cl.[5] H05K *7/02;* **H01R** *9/09*
U.S. Cl. 361—777 **26 Claims**



1. An integrated circuit chip package, comprising:

a single integrated circuit chip including a plurality of internal circuits integrated into a single semiconductor element, a top surface and a bottom surface, and a plurality of conductive terminals, each of the terminals being positioned along the periphery of the bottom surface and entirely within the area covered by the integrated circuit chip to provide electrical coupling to the internal circuits;

a dielectric support having an upper surface and a lower surface;

a plurality of electrically conductive pads at least partially on the upper surface of the support positioned adjacent to the peripheral edges of the support and arranged in a pattern corresponding in one-to-one relationship to the terminals on the integrated circuit chip so that the bottom surface of the integrated circuit chip is positioned above the upper surface of the support and the terminals are aligned with and bonded to the pads, thereby mounting the integrated circuit chip on the upper surface of the support;

a plurality of electrically conductive planar reroute lines, each of the reroute lines having a first end which is a pad, a second end spaced from the first end, and disposed on the upper surface of the support from the portion of the pad on the upper surface of the support to the second end;

a plurality of electrically conductive vertical vias extending from the upper surface of the support to the lower surface of the support, each of the vias positioned directly beneath and electrically connected to the second end of a reroute line;

a plurality of electrical coupling elements in an array pattern on the lower surface of the support, each of the coupling elements entirely within the area covered by the integrated circuit chip and having at least a portion directly beneath and electrically connected to a via; and

a protective bumper attached to the sides of the package between the top surface of the integrated circuit chip and the lower surface of the support;

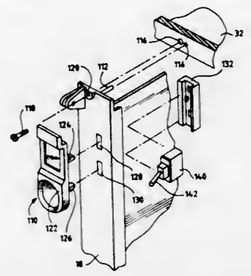
wherein all of the peripheral to area translation between the terminals and the coupling elements is performed by the reroute lines, all of the vertical translation between the upper and lower surfaces of the support is performed by the vias which are connected to the second ends of the reroute lines and to the coupling elements, and the bumper provides a mechanical shield for the sides of the integrated circuit.

5,289,347

ENCLOSURE FOR ELECTRONIC MODULES

William F. McCarthy, Marblehead; Colin E. Brench, Stow, and Daniel M. Snow, Maynard, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 4, 1992, Ser. No. 893,398
Int. Cl.[5] H05K *5/02*
U.S. Cl. 361—809 **1 Claim**



1. A module housed in a card cage comprising a circuit board connected to a front panel having an interlock assembly for preventing said module from being removed therefrom when power provided by a power supply is being supplied to said circuit board, said interlock assembly comprising:

fastening means for releasably securing said front panel to said card cage;

a first switch mounted on said circuit board for connecting said power supply to said circuit board, said switch being movable between a first position in which said power supply is disconnected from said circuit board and a second position in which said power supply is connected to said circuit board; and,

a second switch mounted to said front panel and extending through said front panel to contact said first switch, said second switch having a first position which moves said first switch to its first position in which said power supply is disconnected from said circuit board and in which said fastening means can be accessed releasing said front panel from said card cage and allowing removal of said module from said cage, said second switch having a second position which moves said first switch to its second position in which said power supply is connected to said circuit board and in which said second switch blocks access to said fastening means preventing the release thereof and the removal of said module from said cage.

5,289,348

SHOCK ABSORBING RACK SYSTEM

Harold R. Miller, 6268 137th Ct., Apple Valley, Minn. 55124, assignor to Harold R. Miller, Apple Valley, Minn.

Filed Nov. 19, 1992, Ser. No. 979,056
Int. Cl.[5] H02B *1/04*
U.S. Cl. 361—809 **7 Claims**

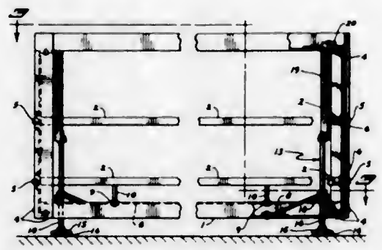
1. A suspension system for electronic equipment comprising:

a frame with a plurality of anchoring points;

a plurality of rubber straps stretched between said anchoring points on said frame and extending in different directions; and

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at least one platform mounting said electronic equipment, which platform is attached to said rubber straps at a point



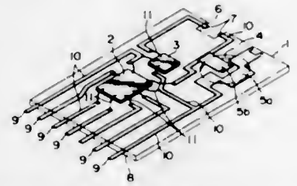
on each strap between said anchoring points on said frame.

5,289,349

INTEGRATED CIRCUIT CARD

Tomoki Nishino, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,475
Claims priority, application Japan, Apr. 15, 1991, 3-111128
Int. Cl.[5] H05K *7/06*
U.S. Cl. 361—813 **3 Claims**



1. An integrated circuit card comprising:
a plurality of semiconductor integrated circuit chips each having a plurality of electrodes; and
a plurality of lead wires acting as the terminals for connecting the electrodes of said semiconductor integrated circuit chips to the outside;
wherein said semiconductor integrated circuit chips and said lead wires are integrally sealed, without any sub-bases or substrated, in a plastic board.

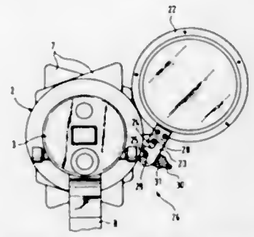
5,289,350

PIVOTABLE HOLDING MECHANISM FOR AN OPTICAL ELEMENT

Joachim Gehrt, Munich, Fed. Rep. of Germany, assignor to Sachtler AG Kommunikationstechnik, Fed. Rep. of Germany

Filed Oct. 3, 1989, Ser. No. 416,721
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1988, 8812497[U]
Int. Cl.[5] F21V *17/02*
U.S. Cl. 362—18 **4 Claims**

1. A lamp for use in photography and television having a housing in which a burner and a reflector, as a source of light, are accommodated and which has a filter cavity for introducing an optical element provided with a handle,
wherein first and second shafts, situated between two sidewalls of a holding device connected to said housing on both sides of said filter cavity, are provided, the first and the second shafts extend in a longitudinal direction of the housing and bridge the filter cavity,
the handle is provided with first and second recesses which are arranged to engage the first and the second shafts, respectively, the first shaft is engaged by the first recess of the handle so that the optical element is swingable about the first shaft from a working position, in which the optical element is located within the filter cavity, into a swung out position in which the optical element is removed from



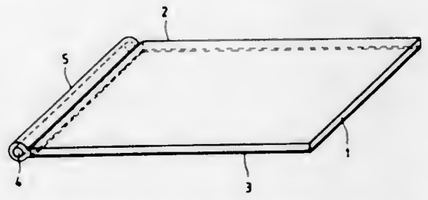
the filter cavity and the second recess engages the second shaft, and means for retaining the engagement of the second recess with the second shaft when the optical element is in the swung out position.

5,289,351

BACKLIGHTING DEVICE

Keiji Kashima, Kanagawa; Osamu Shoji, Tokyo, and Naoki Yoshida, Kanagawa, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Mar. 19, 1992, Ser. No. 854,076
Claims priority, application Japan, Mar. 22, 1991, 3-81260; Jul. 12, 1991, 3-197497
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—31 **9 Claims**



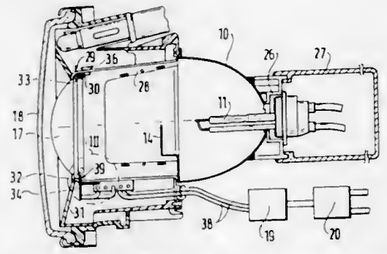
1. A backlighting device for display panels, comprising:
a light-conducting plate comprising a light-transmissive material, said light-conducting plate having a light-diffusing material disposed thereon;
one of a specular reflecting plate and a light diffusing/reflecting plate that covers an entire bottom surface of the light-conducting plate; and
a linear light source provided in proximity to an end portion of at least one side of said light-conducting plate for propagating light along the entire light-conducting plate;
wherein said light-conducting plate includes an exit face opposite said bottom surface and having positioned thereon at least one film of a light-transmissive material, said film having an entrance face and an exit face, said exit face of said film being coarser grained than on said entrance face of said film, said entrance face of said film being closer to said light-conducting plate than said exit face of said film.

5,289,352

HEADLAMP FOR MOTOR VEHICLES

Bodo Remus, Reutlingen/Altenburg; Dieter Sieber, Mössingen; Jürgen Stein, Stuttgart; Günter Hege, Gomaringen; Tilman Spingler, Kohlberg; Friedrich Schmied, Pfullingen; Peter Kusserow, Sonnenbühl; Hans-Jürgen Schneider, Tühingen; Christian Jäger; Bernhard Wörner, both of Stuttgart; Fred Delh, Bühl-Oberweier; Thomas Weigold, Baden-Baden; Kay Kolberg, Ottersweier, and Karl-Heinrich Preis, Bühlertal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00493, § 371 Date Feb. 12, 1992, § 102(e) Date Feh. 12, 1992, PCT Pub. No. WO91/19938, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 12, 1991, Ser. No. 834,275
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1990, 4019641; Mar. 23, 1991, 4109657
Int. Cl.[5] F21M *3/14*
U.S. Cl. 362—61 **33 Claims**



1. A headlamp for motor vehicles, comprising a reflector; a gas discharge lamp; a front plate covering a light exit opening of the headlamp; a filter arranged in a beam path of light beams reflected by said reflector and light beams transmitted directly to said front plate and at least partially absorbing light in a UV wavelength region; a shade arranged in the beam path of the light beam reflected by said reflector; a lens arranged in the beam path of the beams influenced by the shade and forming an image of an edge of said shade as the light/dark border of a light distribution, said lens being formed as a filter; and a holder which holds said lens and has a component with an electrical line such that said electrical line is interrupted when said lens impacts against said component with a specific force, and operation of said gas discharge lamp is prevented when said electrical line is interrupted.

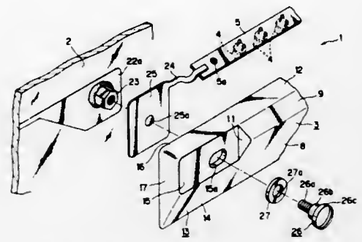
5,289,353

DEVICE FOR NONDETACHABLY MOUNTING A SUPPLEMENTAL HIGH MOUNTED STOP LAMP OR THE LIKE TO A WINDOWPANE

Tetsuo Sasajima; Masaru Morikawa, both of Sagamihara; Hiroshige Shinkai, Shimizu; Kihachiro Uchida, Shimizu, and Tsutomu Machida, Shimizu, all of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Koito Manufacturing Co., Osaka, Japan

Filed Apr. 27, 1992, Ser. No. 873,827
Claims priority, application Japan, Apr. 26, 1991, 3-122976
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **8 Claims**

1. An electric lamp assembly to be mounted to a windowpane against the danger of accidental detachment therefrom, the windowpane having one rate of thermal expansion, the lamp assembly comprising:
(a) an elongate lamp body having a pair of opposite ends, the lamp body having another rate of thermal expansion;
(b) light source means within the lamp body; and
(c) a pair of fastener means for fastening the opposite ends of the lamp body to the windowpane with looseness in the longitudinal direction of the lamp body relative to the windowpane;



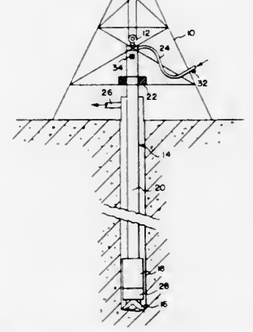
(d) whereby the lamp body is capable of thermal expansion or contraction in its longitudinal direction relative to the windowpane.

5,289,354

METHOD FOR ACOUSTIC TRANSMISSION OF DRILLING DATA FROM A WELL

Frederic Clayer, Jurancon; Henry Henneuse, and Jean Sancho, both of Billere, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

PCT No. PCT/FR91/00698, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO92/04644, PCT Pub. Date Mar. 19, 1992
Continuation of Ser. No. 849,362, Apr. 29, 1992, abandoned.
This PCT application Aug. 30, 1991, Ser. No. 77,520
Claims priority, application France, Aug. 31, 1990, 90 10910
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—82 **3 Claims**



1. Method for transmission of data on the drilling conditions of a well having a string of drill pipe, from the bottom to the surface, comprising the following steps:
measuring continuously the pressure of drilling mud as it passes through an inlet into the string of drill pipe;
measuring at least one operating condition at the bottom of the well by means of a sensor;
transmitting encoded signals generated by a single source as fluid pressures pulses in the drilling mud and as axial vibrations in the drill string which are representative of the measured operating condition; and
detecting simultaneously the fluid pressure pulses in the mud by a pressure sensor at the inlet into the string of a drill pipe and the axial vibrations generated in the string of drill

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pipe by an accelerometer which is disposed at the upper end of the string of pipe.

5,289,355

PORTABLE LIGHTED MICROPHONE

Benjamin J. Clasock, Altamonte Springs, Fla., assignor to I & K Trading, Vienna, Va.

Filed Jan. 8, 1993, Ser. No. 2,311
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—86 **20 Claims**



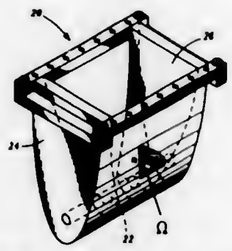
1. A portable lighted microphone comprising a hand-held housing, microphone means supported on said housing for receiving an external voice sound, speaker means positioned on said housing and coupled to said microphone means for outputting said external voice sound, light source means supported on said housing and coupled to said microphone means for emitting light, and modulating means coupled to said microphone means and said light source means for modulating said light in accordance with said voice sound received by said microphone means.

5,289,356

NONIMAGING OPTICAL ILLUMINATION SYSTEM

Roland Winston, Chicago, Ill., assignor to NiOptics Corporation, Evanston, Ill.

Filed Jul. 19, 1991, Ser. No. 732,982
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—217 **25 Claims**



1. A nonimaging illumination optical device for producing a selected intensity output over an angular range θ, comprising:
a source of light having a surface and a characteristic dimension;
a light reflecting surface having an aperture opening and positioned a distance from said light source with said light source subtending an angle at said light reflecting surface and said light reflecting surface disposed at least partially around said light source, said light source disposed opposite the aperature opening of said light reflecting surface and said characteristic dimension of said light source being small relative to at least one of the size of said aperature opening, and the distance from said light source to said light reflecting surface at said aperature opening; and
a spatial position of said light reflecting surface for producing said selected intensity output being defined relative to a light ray originating from said light source in terms of radius vector R_i from a point within said light source in conjunction with angle Φ_i between said radius vector R_i and a direction 180° from direct forward illumination output from said nonimaging illumination optical device and an angle θ_i between direct forward illumination and the light ray as reflected once from said light reflecting surface with said radius vector R_i defining a profile of said spatial position of said light reflecting surface with said profile varying as a function of said angle Φ_i in accordance with the expression:

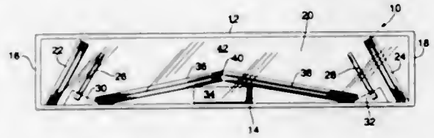
$$R_i=(\text{const.})\exp\{\int \tan[\phi_i-\theta_i)/2]d\phi_i\}$$

5,289,357

TASK-ORIENTED LIGHT FIXTURE FOR A WORKSPACE

William C. Fabbri, Billerica, Mass., assignor to The Genlyte Group Incorporated, Secaucus, N.J.

Filed Feb. 16, 1993, Ser. No. 18,076
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—223 **18 Claims**



1. A light fixture including:
first and second long sides perpendicular to first and second short sides;
a top;
a bottom;
a downwardly oriented aperture formed in said bottom;
first and second end reflectors inwardly adjacent to said first and second short sides, respectively, and oriented at a first acute angle thereto;
first and second fluorescent sockets, including respective first and second fluorescent bulbs, inwardly adjacent from said first and second end reflectors, respectively, wherein said first and second end reflectors are oriented at a second acute angle with respect to said first and second short sides; and
first and second front reflector portions inwardly adjacent from said first and second fluorescent sockets, respectively, said first and second front reflector portions rising at a third acute angle from one of said first and second long sides.

5,289,358

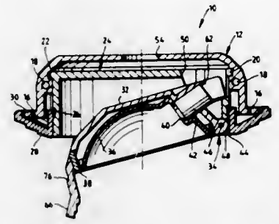
RECESSED LUMINAIRE WITH A SWIVEL HOUSING

Eckard Halemeier, Hiddenhausen, Fed. Rep. of Germany, assignor to Halloform GmbH & Co., KG, Hiddenhausen, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 878,262
Claims priority, application Fed. Rep. of Germany, May 3, 1991, 4114509
Int. Cl.[5] F21V *21/04*
U.S. Cl. 362—365 **8 Claims**

1. A recessed luminaire comprising:
a first housing having an open side;
a second housing;
a reflector having an edge portion defining an open end, said reflector being disposed in said second housing;

a light holder disposed in said second housing; and
a joint connecting said first housing to said second housing at said edge portion of said reflector, said joint allowing said second housing to swivel into and out of said first housing open side;



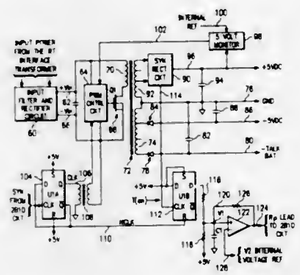
wherein said second housing comprises a pull tab which is situated diametrically opposite said joint and which projects out of said first housing.

5,289,359

DC-DC POWER CONVERTER INCLUDING SENSING MEANS FOR PROVIDING AN OUTPUT WHEN THE RESERVE POWER OF THE CONVERTER FALLS BELOW A PREDETERMINED AMOUNT FOR A GIVEN INPUT VOLTAGE

Mark S. Ziermann, Bolingbrook, Ill., assignor to Charles Industries, Limited, Rolling Meadows, Ill.

Continuation of Ser. No. 654,771, Feb. 13, 1991, abandoned.
This application Apr. 16, 1992, Ser. No. 869,875
Int. Cl.[5] H02H *3/335*; H04M *19/00*
U.S. Cl. 363—21 **7 Claims**



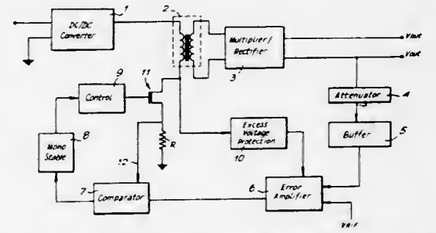
1. A DC-DC (direct current to direct current) power conversion apparatus for use in a remote terminal of a telephone system which receives power from a voltage source located in a central office, wherein a substantial impedance exists between said power conversion apparatus and said central office, said power conversion apparatus comprising, in combination:
a PWM (pulse-width modulator) apparatus having a variable duty cycle, said PWM apparatus including input voltage supply means for receiving power from said voltage source and supplying a DC input voltage, and converter output means for supplying a converted output voltage to a load;
feedback control means, comprising a part of said PWM apparatus, for maintaining a given regulated DC output voltage at said converter output means over a range of load impedances by varying the duty cycle of said PWM apparatus; and
detecting means, connected to said PWM apparatus, for supplying an output signal indicative of the reserve power available from said PWM apparatus, said reserve power output signal being derived as a function of the duty cycle of said PWM apparatus, said detecting means comprising:
means for measuring the duty cycle of said PWM apparatus; and
means for providing said reserve power output signal when the duty cycle of said PWM apparatus exceeds a threshold level indicating that an increase in the power received from said voltage source is required.

5,289,360

EQUIPMENT FOR THE GENERATION OF STABILIZED HIGH DIRECT VOLTAGE, PARTICULARLY FOR USE IN COMBINATION WITH A NON-POLLUTING MUFFLER

Antonio Canova, Montevarchi, Italy, assignor to Magnetek S.p.A., Siena, Italy

Filed Jun. 15, 1992, Ser. No. 898,841
Claims priority, application Italy, Jun. 17, 1991, FI91A
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **12 Claims**



1. A device for generation of a stabilized high direct voltage, the device comprising:
a step-up transformer with primary leads connectable to a direct voltage, said step-up transformer having dispersed inductances and parasitic capacitances causing a resonance effect on opening of one of said primary leads of said set-up transformer;
a rectifier means connected to secondary leads of said step-up transformer and for rectifying voltage from said secondary leads to an output voltage;
switching means for connecting and disconnecting one of said one primary leads of said step-up transformer to ground through a resistor;
reference voltage means for providing a reference voltage;
error amplifier means for comparing said reference voltage with said output voltage of said rectifier means and generating an output error voltage signal proportional to a difference between said reference voltage and said output voltage;
comparator means for comparing said output error voltage signal with a resistor voltage across said resistor of said switching means;
control means connected to said comparator means and for controlling said connecting and disconnecting of said switch means, said control means disconnecting said switch means for a predetermined fixed time interval when an output level of said comparator means changes.

5,289,361

ADAPTIVE BOOST SWITCHING PREREGULATOR AND METHOD

Patrizio Vinciarelli, Boston, Mass., assignor to VLT Corporation, San Antonio, Tex.

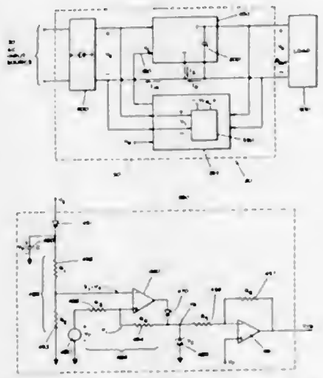
Filed Jan. 16, 1991, Ser. No. 642,232
Int. Cl.[5] H02M *3/156*
U.S. Cl. 363—80 **29 Claims**

1. A boost switching preregulator comprising
boost switching power conversion means for converting

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power from a source of unipolar input voltage for delivery as a unipolar output voltage to a load, and

control means which accepts an input indicative of the magnitude of said unipolar output voltage and which, in response to variations in the magnitude of said unipolar input voltage, controls said boost switching power conversion means such that the magnitude of said unipolar output voltage varies within a range such that (a) said



unipolar output voltage is greater than or equal to the magnitude of said unipolar input voltage, and (b) the span of said range is at least ten percent of the maximum value of said unipolar output voltage;

wherein said unipolar input voltage is a time-varying unipolar voltage derived from an AC source and having a peak value Vp, and said control means varies the value of said unipolar output voltage Vo within said range such that Vo is greater than or equal to Vp.

5,289,362

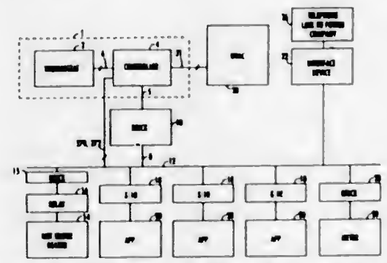
ENERGY CONTROL SYSTEM

Ronald J. Liebl, Mukwonago; Alan J. Brosikowski, South Milwaukee; Thomas C. Holdorf, Mukwonago; Lawrence J. Strojny, Oostburg, and Mark W. Teller, Milwaukee, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1989, Ser. No. 452,285

Int. Cl.[5] G06F *15/06*; F25B *29/00*

U.S. Cl. 364—140 **58 Claims**



1. A control system for controlling a climate control device such as an HVAC device at a premise, said climate control device being supplied with electricity via a utility at various price tiers and said utility providing real time price tier data to said control system, said control system comprising:

a) display means for displaying:

1) time of day data,

2) price tier identifying data for identifying price tiers representing at least the relative cost of electricity from one price tier to the next price tier, and

3) set point temperature data corresponding to each of said price tier identifying data,

b) input means for inputting;

1) said time of day data for defining time intervals,

2) said set point temperature data corresponding to each price tier identifying data and corresponding to each of said time of day data, said set point temperature data indicative of the desired temperature corresponding to each price tier for each time interval,

c) temperature sensing means for sensing the temperature within said premise and for producing actual temperature data indicative of said sensed temperature;

d) clock means for maintaining a real time clock and for generating real time clock data corresponding thereto, and

e) control means

1) connected to said input means for receiving said time of day data and said set point temperature data,

2) connected to said temperature sensing means for receiving said actual temperature data,

3) connected to said clock means for receiving said real time clock data,

4) connected to said utility for receiving said real time price tier data, and

5) connected to said climate control device for controlling said climate control device for regulating the temperature within said premise in accordance with

(a) said set point temperature data for a corresponding price tier identifying data and a corresponding time of day data and

(b) said actual temperature data, said real time price tier data and said real time clock data.

5,289,363

MODULAR POWER SUPPLY ARRANGEMENT WITH COOLING

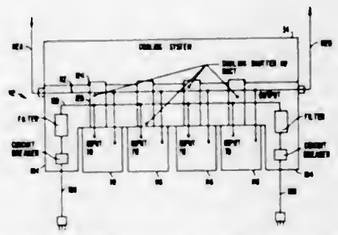
Joerg Ferchau, Morgan Hill, and Victor Trujillo, Fremont, both of Calif., assignors to Tandem Computers, Inc., Cupertino, Calif.

Division of Ser. No. 726,616, Jul. 8, 1991, Pat. No. 5,207,613.

This application Sep. 10, 1992, Ser. No. 943,344

Int. Cl.[5] H02M *7/06*

U.S. Cl. 363—141 **12 Claims**



1. An apparatus for supplying power to an electronic module comprising:

a housing defining a chamber;

AC input means for receiving a source of alternating current;

an AC input bus affixed to the housing and coupled to the AC input means for receiving alternating current from the AC input means;

a power distribution bus affixed to the housing for supplying power to the electronic module;

coupling means for releasably coupling a plurality of power modules to the AC input bus and to the power distribution bus so that each power module receives alternating current from the AC input bus and provides power to the distribution bus in common with the other power modules;

wherein the housing includes a plurality of cooling fluid distribution openings in fluid communication with the chamber for distributing cooling fluid to the plurality of power supplies;

distribution valve means, disposed at each cooling fluid distribution opening, for allowing the flow of cooling fluid through its associated distribution opening and for preventing the flow of cooling fluid through the distribution opening when the power module is not disposed at the distribution opening;

wherein the housing includes a plurality of cooling fluid source openings in fluid communication with the chamber for receiving cooling fluid from a cooling source module; and

source valve means, disposed at each cooling fluid source opening, for allowing the flow of cooling fluid through its associated source opening when a cooling source module is disposed at the source opening and for preventing the flow of cooling fluid through the source opening when the cooling source module is not disposed at the source opening.

5,289,364

POWER SUPPLY FOR AN ELECTRONIC DEVICE

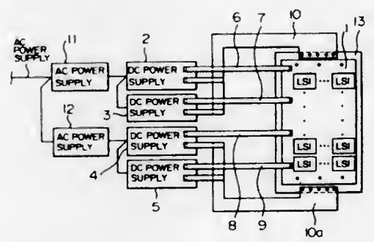
Akihiro Sakurai, Isehara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,096

Claims priority, application Japan, May 28, 1991, 3-123338

Int. Cl.[5] H02M *1/14*

U.S. Cl. 363—147 **38 Claims**



1. A power supply for an electronic device composed of a plurality of logic units comprising:

a first AC power supply stabilizing AC supplied by commercial AC network to output it and a second AC power supply disposed in parallel with respect to said first AC power supply and similarly stabilizing AC supplied by the same commercial AC network to output an AC having a frequency, which is asynchronous to the frequency of the AC outputted by said first AC power supply;

a plurality of DC power supplies connected with said first AC power supply and converting the AC supplied by said first AC power supply into DC to output it;

a plurality of DC power supplies connected with said second AC power supply and converting the AC supplied by said second AC power supply into DC to output it;

a first reference potential bus bar applying a reference potential to said logic units, one end of which is connected at a connecting part with said plurality of DC power supplies connected with said first AC power supply in common, and another end of which is sufficiently far from said connecting part and connected with said logic units at another connecting part;

a second reference potential bus bar applying a reference potential to said logic units, one end of which is connected at a connecting part with said plurality of DC power supplies connected with said second AC power supply in common, and another end of which is sufficiently far from said connecting part and connected with said logic units at another connecting part, a part of a path thereof between the two connecting parts being located away from said first reference potential bus bar;

a plurality of connecting bus bars applying voltages necessary for driving LSIs within said logic units thereto, one end of each of which is connected with a voltage output terminal of each of said plurality of DC power supplies, and another end of each of which is connected with said logic unit; and

a board disposed on said logic unit, whose potential itself serves as a reference potential, the other ends of said first and said second reference potential bus bar, which ends are different from said connecting parts connected with the reference potentials of said DC power supplies, being connected with said board so as to make the reference voltage applied to said logic unit from said plurality of DC power supplies uniform.

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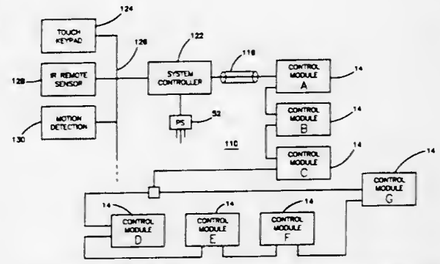
MODULAR NETWORK CONTROL SYSTEM

David W. Caldwell, and Nicholas W. Medendorp, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Dec. 23, 1991, Ser. No. 812,711

Int. Cl.[5] G06F *15/46, 15/56*

U.S. Cl. 364—138 **31 Claims**



1. A modular electrical control system for controlling office equipment comprising in combination:

at least one control module including an input port and control means responsive to a command signal at said input port for selectively performing a control function on a load, said load including a particular office equipment device;

at least one input module including at least one input device for generating an input signal, an output port and a circuit responsive to said input signal for supplying a command signal to said output port, said circuit including a switch control unit that is responsive to a particular state of said input signal by producing a switched low voltage signal and an address and command control unit that is responsive to a particular state of said input signal by producing a particular value of a data signal;

a system bus assembly interconnecting said output port of said at least one input module with said input port of said at least one control module, said system bus assembly including at least two signal channels;

wherein said switched low voltage signal is supplied to one of said signal channels and said data signal is supplied to the other of said signal channels, and

wherein said control module is one of a first type in which said control means is responsive to said switched low voltage signal on said one of said signal channels in order to perform a control function on the load connected there-

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with and a second type in which said control means is responsive to a particular value of said data signal assigned to that control module on said other of said signal channels in order to perform a control function on the load connected therewith, wherein all control modules of said first type will respond concurrently to said switched low voltage signal in order to perform a control function on the load associated therewith and all control modules of said second type will respond individually to assigned values of said data signal in order to perform a control function on the load associated therewith.

5,289,366

METHOD AND APPARATUS FOR CORRECTION OF A DETECTED FAULTY ACTUAL VALVE OF A SIGNAL AFFECTED BY HARMONIC VIBRATIONS

Franz Bauer; Michael Braun, both of Herzogenaurach-Niederndorf; Georg Heinle, and Hubert Schlerling, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

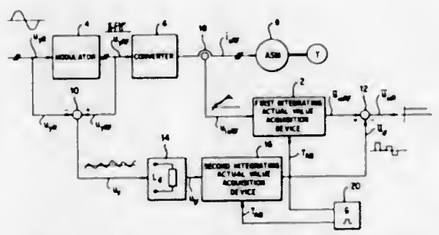
PCT No. PCT/EP90/01115, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/07810, PCT Pub. Date May 30, 1991

PCT Filed Jul. 9, 1990, Ser. No. 856,211

Claims priority, application European Pat. Off., Nov. 13, 1989, 89121018.9

Int. Cl.[5] G05B *13/04;* **H02P** *5/408*

U.S. Cl. 364—149 **15 Claims**



1. A method for correction of an actual value ($\bar{u}_{iIRF}$) determined by an integrating actual value acquisition device, the actual value being affected by errors, of a signal (i_{IRF}) affected by harmonics, wherein the signal (i_{IRF}) affected by harmonics is generated from a setting signal (U_{yRF}) which is generated by a predetermined modulation function which approximates a harmonic-free setting signal (u_{yR}), and a control system, the method comprising the steps of:

a) extracting a harmonic signal (u_{iF}) from the setting signal (u_{yR}) affected by harmonics in response to the harmonic-free setting signal (u_{yR});

b) applying the extracted harmonic signal (u_{iF}) to an equivalent model of the control system and providing a model signal (u_{iF}) in response thereto;

c) continuously determining the mean value of the model signal (u_{iF}) during gate time intervals (T_{AR}) of the first integrating actual value acquisition device to provide correction values ($\bar{u}_{iF}$); and

correcting the actual value ($\bar{u}_{iIRF}$) affected by errors in response to the correction values ($\bar{u}_{iF}$) made available in said determining step at the ends of each gate time interval (T_{AR}).

5,289,367

NUMERICAL CONTROL APPARATUS USING FUZZY CONTROL

Takao Sasaki, Hachioji; Kentaro Fujibayashi, Musashino, and Takashi Endo, Kariya, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

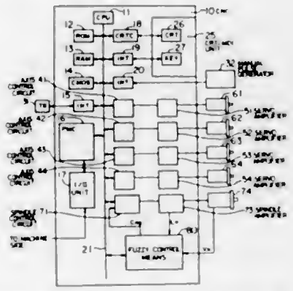
PCT No. PCT/JP90/00902, § 371 Date Feb. 27, 1991, § 102(e) Date Feb. 27, 1991, PCT Pub. No. WO91/01518, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 12, 1990, Ser. No. 651,380

Claims priority, application Japan, Jul. 21, 1989, 1-190177

Int. Cl.[5] G05B *13/02;* **G06F** *15/00*

U.S. Cl. 364—152 **7 Claims**



1. A numerical control apparatus for adaptively controlling a servo apparatus, comprising:

input means for receiving fuzzy input including data of a load current and a velocity of the servo apparatus; and

fuzzy control means for effecting a fuzzy interference using predetermined membership functions of the load current and velocity by receiving the fuzzy input and outputting a velocity control signal as an override control signal for controlling the velocity of the servo apparatus.

5,289,368

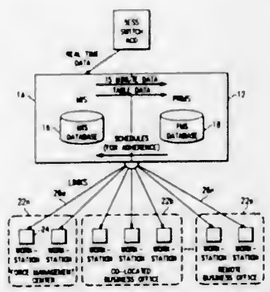
FORCE MANAGEMENT SYSTEM USER INTERFACE

Beauford B. Jordan, Dallas, and Ronald M. Castonguay, Carrollton, both of Tex., assignors to IEX Corporation, Richardson, Tex.

Filed Oct. 12, 1990, Ser. No. 596,720

Int. Cl.[5] G06F *15/22, 15/24*

U.S. Cl. 364—401 **12 Claims**



1. A force management system for planning, scheduling and managing personnel in an environment in which there is a constantly varying event load by time of day and by day of week, comprising:

means for generating a forecast of an event load expected to occur during intervals of a forecast time period and a number of servers required to service the expected event load during each interval of the forecast time period;

means responsive to the forecast for generating candidate tours for the servers, each candidate tour defining a work schedule for the forecast time period for one of the servers;

means for assigning the servers to the candidate tours;

means for generating a schedule for each server; and

means for managing the server schedules during the forecast time period, the managing means including:

a display;

means for generating a schedule management screen on the display, the schedule management screen including a timescale and a set of schedule activity codes for each server juxtaposed with the timescale to indicate the server's availability to respond to an event during the server's schedule;

means for generating a performance analysis screen on the display, the performance analysis screen including a timescale representation of the intervals and event handling performance data for each interval comparing actual event load during the forecast time period with the event load expected to occur during the forecast time period;

means for editing the schedule activity codes in the schedule management screen to modify one or more server schedules;

means for refreshing the performance analysis screen to reflect how the modified server schedules affect the event handling performance data; and

means for switching between the schedule management and performance analysis screens.

5,289,369

CAR RENT SYSTEM

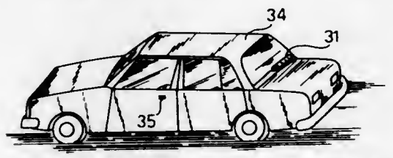
Israel Hirshberg, Petach Tikva, Israel

Filed Feb. 27, 1991, Ser. No. 661,222

Claims priority, application Israel, Feb. 27, 1990, 93567

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **10 Claims**



1. A semi-automatic car-rental system comprising a fleet of cars, which are clearly marked as belonging to such system, enabling a customer to pick up and rent a car located at a random parking location, which said car is free for rent, which rental system comprises in combination:

a fleet of cars, each of which is provided with identity and entitlement checking means, for cooperating with customer identification means held by said customer, said identity and entitlement checking means for identifying the customer to a car computer located in said car to be rented or via said computer and communication means to a computer located at a central control station, said identity and entitlement checking means enabling an entitled customer to enter said car and actuate said car and use said car; location identification means, informing said central control station and said car computer about the instant location of said car; a central control station which stores and continuously updates data about the instant location of each car of said car fleet having means for receiving and evaluating data for entitlement verification and for transmitting to said car a command authorizing or not authorizing the intended rental, and for monitoring data of each rental until the customer terminates the rental by parking said car at any random parking place and indicating a termination of the rental, or reservation of said car for future use.

5,289,370

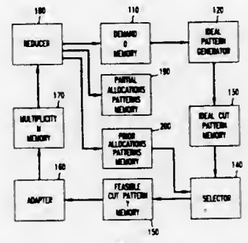
AUTOMATED RESOURCE ALLOCATION METHOD EMPLOYING A LEARNING ARRANGEMENT

Yuval V. Lirov, Aberdeen, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 31, 1991, Ser. No. 708,582

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **4 Claims**



1. A method for allocating a constrained common resource among a current plurality of demands for the resource comprising the steps of

(a) searching a database having stored therein a plurality of prior partial solutions generated as a result of allocating said common resource among respective ones of a plurality of prior demands and selecting from said database those of said prior partial solutions that may be used to form a recommended solution of allocating said resource among said current plurality of demands,

(b) generating a multiplicity ratio for each of said selected partial solutions,

(c) responsive to each said multiplicity ratio and its corresponding one of said selected partial solutions, reducing said selected partial solutions to a single partial solution, which can be included in said recommended solution,

(d) repeating steps (a), (b), and (c) until a predetermined level of tolerance is met,

(e) providing each said single partial solution and its corresponding multiplicity ratio as the recommended solution, and

(e) allocating the common resource among the current plurality of demands in accordance with the recommended solution.

5,289,371

SYSTEM AND METHOD FOR ROUTING DATA AND COMMUNICATIONS

William D. Abel, Muttontown, and Thomas D. Cali, Douglas Manor, both of N.Y., assignors to MemoryLink, Inc., Boca Raton, Fla.

Filed Apr. 11, 1992, Ser. No. 943,501

Int. Cl.[5] G06F *15/24*

U.S. Cl. 364—401 **46 Claims**

1. A system for routing communications to one of a plurality of remote sites comprising:

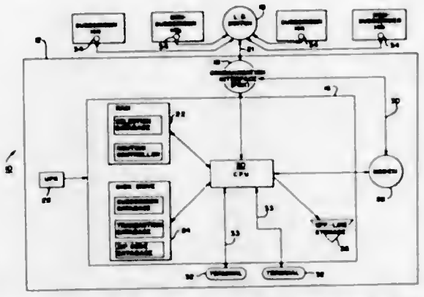
a central processing unit;

a storage device operatively associated with the central processing unit to store first data identifying a plurality of remote sites and second data associated with the number of times that each of the remote sites has sent a communication to the system for a prior period of time;

a selector operatively associated with the central processing unit to select a specific remote site to receive a particular

VOL 1159 ISS 4 FE 22 1994 UMI

communication from the system by analyzing the second data; and



a communication interface operatively associated with the central processing unit for forwarding the particular communication to the specific remote site.

5,289,372

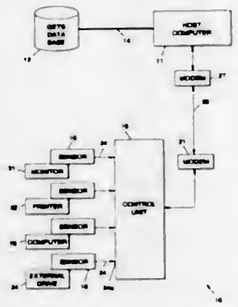
GLOBAL EQUIPMENT TRACKING SYSTEM

Jon E. Guthrie, Houston; Francis M. Marble, Dickinson, and Clyde D. Ridgeway, Baytown, all of Tex., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,771

Int. Cl.[5] **G06F** *15/00, 7/04*

U.S. Cl. 364—403 **12 Claims**



1. An equipment tracking system for providing configuration management control over a plurality of pieces of equipment, said system comprising:

a plurality of sensors individually coupled to individual ones of the pieces of equipment, and wherein each sensor has a unique ID code associated therewith;

a plurality of collectors, wherein each collector is coupled to selected sensors, for communicating with each of the sensors, and for reading out the ID code of each of the sensors at selected times, and for storing sensor changes for those sensors that have changed since a prior reading;

a concentrator coupled to each collector of the plurality of collectors, for communicating with the plurality of collectors, and for causing the collectors to transmit the sensor changes thereto;

a communication link;

a computer having a database coupled thereto, which computer is coupled to the concentrator by means of the communication link, and wherein the computer comprises means for causing the concentrator to transmit the stored sensor changes to the computer for storage in the database.

5,289,373

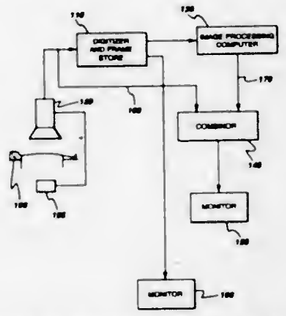
METHOD AND APPARATUS FOR REAL-TIME TRACKING OF CATHETER GUIDE WIRES IN FLUOROSCOPIC IMAGES DURING INTERVENTIONAL RADIOLOGICAL PROCEDURES

Jonathan A. Zarge, Woburn, Mass., and Nelson R. Corby, Jr., Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1991, Ser. No. 800,377

Int. Cl.[5] **G06F** *15/00*

U.S. Cl. 364—413.13 **8 Claims**



1. A method for real-time tracking of catheter guide wires in fluoroscopic images during Interventional Radiological procedures utilizing a fluoroscopic examination system including a fluoroscope, an image digitizer with storage capability, and a live image video monitor, said method comprising the steps of storing said fluoroscopic images to a stored image video monitor:

extracting pixels from a digitized fluoroscopic image corresponding to the path of a catheter within a patient undergoing an interventional radiologic procedure by

a) creating a binary peak image of said path of the catheter and

b) constructing said a two-dimensional model of said catheter path from said binary peak image for output to said live video image monitor; and

superimposing on said live image video monitor a visual representation of said catheter path onto a live fluoroscopic output image emanating from said fluoroscope.

5,289,374

METHOD AND SYSTEM FOR ANALYSIS OF FALSE POSITIVES PRODUCED BY AN AUTOMATED SCHEME FOR THE DETECTION OF LUNG NODULES IN DIGITAL CHEST RADIOGRAPHS

Kunio Doi; Tsuneo Matsumoto, both of Willowbrook; Maryellen L. Giger, Elmhurst, and Akiko Kano, Willowbrook, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Feb. 28, 1992, Ser. No. 843,715

Int. Cl.[5] **G06F** *15/42, 15/70;* **G06K** *9/46*

U.S. Cl. 364—413.13 **12 Claims**

1. A method for reducing the number of false-positive detections in a computerized scheme for detecting true-positive abnormalities on chest radiographs, comprising the steps of:

(a) storing a plurality of predetermined threshold values in memory, wherein said plurality of predetermined threshold values are characteristics of known false-positives related to average edge-gradient, edge-gradient distribution, standard deviation of edge-gradient orientation, transition point information, size, circularity, shape irregularity and contrast values;

(b) generating a digital image of an object;

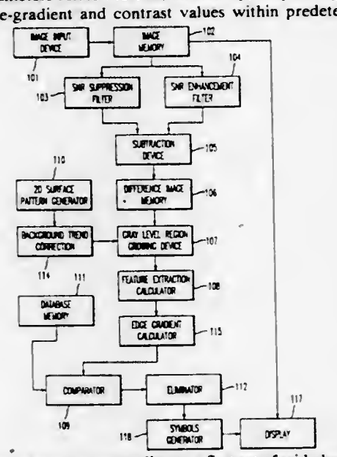
(c) subjecting said digital image to a signal-to-noise ratio (SNR) enhancement filtering process and an SNR suppressed filtering process in order to produce respective first and second filtered digital images;

(d) obtaining a difference image by subtracting said second filtered digital image from said first filtered digital image, thereby enhancing the conspicuity of abnormality candidates included on said difference image;

(e) detecting the locations of said abnormality candidates included on said difference image;

(f) calculating a first set of parameters related to size, circularity, shape irregularity, edge-gradient, and contrast values for each abnormality candidate detected on said difference image;

(g) eliminating abnormality candidates having said first set of parameters related to size, circularity, shape irregularity, edge-gradient and contrast values within predetermined



value ranges corresponding to a first set of said plurality of predetermined threshold values stored in memory;

(h) performing background trend correction on said digital difference image for the abnormality candidates remaining after elimination of said abnormality candidates in step (g);

(i) calculating, for each remaining abnormality candidate, a second set of parameters related to size, circularity, shape irregularity, edge-gradient and transition point; and

(j) eliminating, as false-positives, said remaining abnormality candidates which have at least one of said parameter values calculated in step (i) within a predetermined value range corresponding to a second set of said plurality of predetermined threshold values stored in memory, thus providing an indication of the locations of said true-positive abnormalities on said chest radiographs.

5,289,375

TRANSLATION MACHINE

Yoji Fukumochi, Ikoma; Hitoshi Suzuki, Nara; Shuzo Kugimiya, Nara; Ichiko Sata, Nara, and Tokuyuki Hirai, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1991, Ser. No. 641,738

Claims priority, application Japan, Jan. 22, 1990, 1-2146; Jan. 22, 1990, 1-2147; Jan. 26, 1990, 1-7116

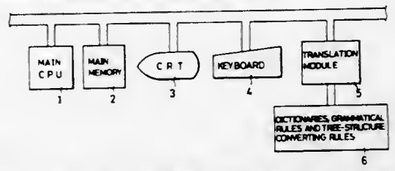
Int. Cl.[5] **G06F** *15/38;* **G06G** *7/60*

U.S. Cl. 364—419.02 **9 Claims**

1. A translation machine having a storing unit for storing information of words and grammar rules, said translation machine being capable of translating sentences described in a source language into a target language, said translation machine comprising:

means for dividing an input sentence described in said source language into morphologic elements;

means connected to said dividing means for analyzing a syntax of said morphologic elements in accordance with said information stored in said storing unit;



means connected to said analyzing means for converting a structure of said syntax obtained in said analyzing means into a structure of syntax in said target language; and

means connected to said converting means for generating a translated sentence based on said target language syntax structure obtained by said converting means,

said dividing means including means for adding a symbol so as to specify a sentence pattern to a word included, in said input sentence described in said source language, means for detecting whether or not said sentence pattern symbol is added in said input sentence during a translating operation, means for storing a word to which said symbol is added and a sentence pattern specified by said symbol at a time when said sentence pattern symbol is detected, and means for defining a structure of said input sentence by referring to a content of said storage means.

5,289,376

APPARATUS FOR DISPLAYING DICTIONARY INFORMATION IN DICTIONARY AND APPARATUS FOR EDITING THE DICTIONARY BY USING THE ABOVE APPARATUS

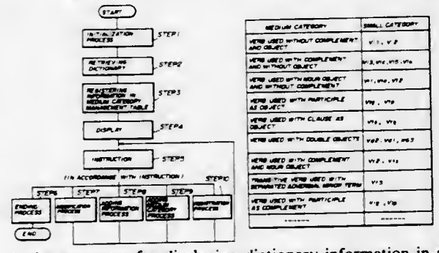
Toshihiko Yokogawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Nov. 20, 1990, Ser. No. 615,841

Claims priority, application Japan, Nov. 20, 1989, 1-301776

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 364—419.11 **13 Claims**



1. An apparatus for displaying dictionary information in a dictionary used in a natural language process, said dictionary having a plurality of entry words, small categories corresponding to each entry word and the dictionary information belonging to each small category, each small category being a syntactic category of a corresponding entry word, said apparatus comprising:

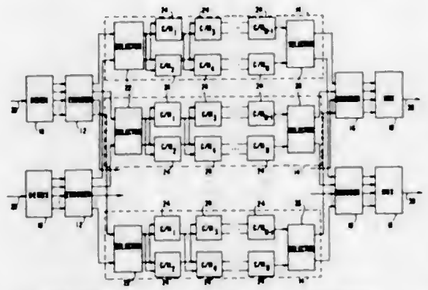
retrieval means for retrieving an entry word specified by a user in said dictionary and for reading out the dictionary information belonging to each small category corresponding to the retrieved entry word from said dictionary;

grouping means, responsive to the retrieved entry word retrieved by said retrieval means, for grouping the small categories corresponding to the retrieved entry word into medium categories, each medium category having one or a plurality of small categories; and

display means, coupled to said grouping means, for displaying the dictionary information in the small categories grouped in each medium category.

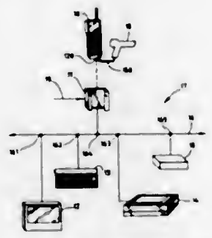
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5,289,377
FAULT-TOLERANT SOLID-STATE FLIGHT DATA RECORDER
Timothy A. Yokote, Torrance; Eric L. Upton; Arthur G. Enyedy, both of Redondo Beach, and Grant J. Stockton, Long Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Aug. 12, 1991, Ser. No. 744,050
Int. Cl.[5] G06F *11/10*; H03M *13/00*
U.S. Cl. 364—424.04 23 Claims



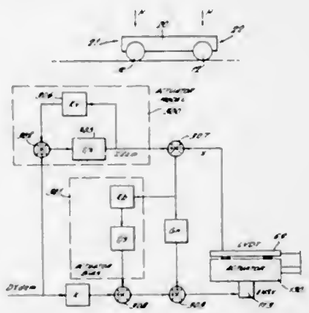
1. A fault-tolerant flight data recorder, comprising:
a demultiplexer for converting a serial input data stream into a parallel data stream;
a distributed array of controller/memory modules arranged in one or more parallel controller/memory chains for storing the parallel data stream, the controller/memory modules being arranged in parallel pairs in each controller/memory chain, the memory in each controller/memory module being partitioned into memory submodules to allow failed controller/memory modules or failed memory submodules to be bypassed to provide fault tolerance for both controller and memory functions; and
a multiplexer for converting the parallel data stream from the controller/memory chains into a serial output data stream when the parallel data stream is retrieved from the flight data recorder.

5,289,378
VEHICLE LAN WITH ADAPTERS FOR COUPLING PORTABLE DATA TERMINALS
Phillip Miller; Steven E. Koenck, both of Cedar Rapids; Joseph J. Kubler, Nederland; Keith K. Cargin, Jr., Cedar Rapids; George E. Hanson, Cedar Rapids, and Patrick H. Davis, Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa
Continuation of Ser. No. 305,302, Jan. 31, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 24,892
Int. Cl.[5] G06F *15/22*
U.S. Cl. 364—424.04 4 Claims



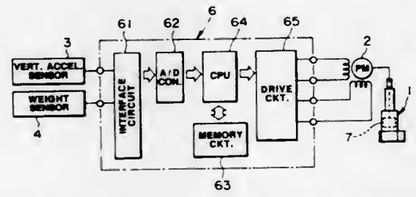
1. A vehicle data system comprising
vehicle data bus means for conveying data to respective different data processing locations of the vehicle,
coupling means disposed at each of the different data processing locations of the vehicle for selectively coupling a data device at the data processing locations, the coupling means having an inactive state with respect to said vehicle data bus means upon having an open connection and upon an inactive data device being coupled thereby to said data bus means,
vehicle power means for supplying operating power to the vehicle data bus means, and
mobile mount adapter means coupled with said vehicle data bus means by at least one of said coupling means, said mobile mount adapter means having receptacle means for receiving and retaining a portable data device for data interchange via the vehicle data bus means.

5,289,379
LAND VEHICLE SUSPENSION CONTROL SYSTEM
David A. Williams, Milton Keynes, United Kingdom, assignor to Group Lotus PLC, Norfolk, United Kingdom
PCT No. PCT/GB90/00691, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO90/13449, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 777,215
Claims priority, application United Kingdom, May 4, 1990, 8910274
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 3 Claims



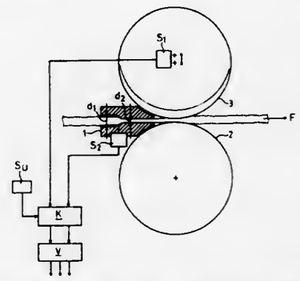
1. A land vehicle suspension control system comprising:
an actuator connected between a sprung mass of the vehicle and an unsprung mass of the vehicle, which actuator comprises a piston movable within a cylinder and dividing the cylinder into at least two chambers;
a source of pressurized fluid;
an exhaust for fluid;
valve means controllable by a control signal for selectively connecting at least one of the chambers to the source of pressurized fluid or the exhaust for fluid and for controlling the rate of flow of fluid to and from the chamber;
sensor means for determining forces applied to the sprung mass by the actuator and the unsprung mass and for generating signals corresponding thereto;
processor means for processing the signals generated by the sensor means and for generating a velocity demand control signal to control the valve means, the velocity demand signal demanding a relative velocity between the sprung mass and the unsprung mass and the valve means controlling the flow of fluid to the actuator in response to the velocity demand signal;
means for measuring the extension of the actuator, and for generating a signal corresponding thereto;
means for calculating from the velocity demand signal generated by the processor means a calculated position signal corresponding to an extension required of the actuator;
means for comparing the calculated position signal with the signal generated by the means for measuring the extension of the actuator and for generating an error signal proportional to the difference therebetween; and
wherein the velocity demand signal generated by the processor means and the error signal are both used to control the valve means, the valve means being controlled to drive the error signal towards zero.

5,289,380
SYSTEM AND METHOD FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF SHOCK ABSORBER APPLICABLE TO AUTOMOTIVE SUSPENSION
Makoto Kimura, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Japan
Filed Nov. 14, 1991, Ser. No. 791,516
Claims priority, application Japan, Nov. 16, 1990, 2-120456[U]
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 14 Claims



1. A damping force controlling system for a vehicular damper for a vehicle, comprising:
a) a damping force adjusting means for adjusting a damping force of the damper at a plurality of stages in response to a control signal;
b) sprung mass velocity deriving means for deriving a vertical velocity of a sprung mass of the vehicle, on the basis of a vertical acceleration signal derived by a vertical acceleration sensor;
c) relative velocity detecting means for detecting a relative velocity between the sprung mass and unsprung mass of the vehicle;
d) controlling means for providing the control signal to said damping force adjusting means so that the damping force is changed to a relatively high damping force when both directions of the vertical velocity of the vehicle derived by the sprung mass velocity deriving means and said relative velocity coincide with each other and when said relative velocity exceeds a predetermined dead zone, said predetermined dead zone being shifted by a predetermined quantity toward one of the stroke directions of the damper opposite to the other stroke direction in which the damping force change is carried out in response to said relative velocity and, on the other hand, for providing the control signal to said damping force adjusting means so that the damping force is changed to a relatively low damping force side when both directions of the vertical velocity of the vehicle derived by the sprung mass velocity deriving means and said relative velocity do not coincide with each other and when said relative velocity exceeds the predetermined dead zone, said predetermined dead zone being shifted by the predetermined quantity toward one of the stroke directions opposite to the stroke direction in which the damping force change is carried out in response to said relative velocity.

5,289,381
METHOD AND APPARATUS FOR CONTINUOUSLY DETERMINING THE FINENESS OF FIBERS IN SLIVERS
Robert Demoth, Nurensdorf; Jurg Faas, Dinhard, and Robert Moser, Winterthur, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland
Continuation of Ser. No. 622,012, Dec. 4, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 17,407
Claims priority, application Switzerland, Dec. 4, 1989, 04330/89
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—470 33 Claims



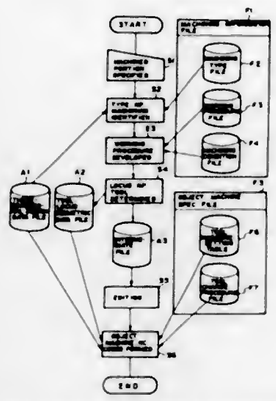
1. A method for continuously determining a fiber fineness and fluctuations thereof in slivers, comprising the steps of:
obtaining data signals from at least two sensors that produce various type data signals;
calibrating the various type data signals relative to a constant sliver length; and
processing the various type data signals from said at least two sensors to form fiber property parameters, at least one sensor producing signals that are proportional to properties of said slivers which are measured in combination with other sliver properties by another sensor, such that a non-directly measurable sliver property can be determined.

5,289,382
METHOD OF AND SYSTEM FOR PRODUCING DATA FOR NUMERICALLY CONTROLLED MACHINING
Sunao Goto, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 623,682, Dec. 6, 1990, abandoned. This application May 28, 1993, Ser. No. 68,317
Claims priority, application Japan, Dec. 7, 1989, 1-318246
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.21 4 Claims

1. An automatic method of producing numerically controlled machining data for controlling a numerically controlled machine tool on the basis of a shape model representing a product to be machined by the numerically controlled machine tool, said method comprising the steps of
storing in a memory position data of each portion of the product to be machined on the shape model and machining attribute data on contents of machining to carried out for the portion of the product to be machined,
reading out from the memory the machining attribute data for a specified portion to be machined,
obtaining data on an order in which tools are used and data on a machining condition from a machining information file according to the machining attribute data read out, and
converting the data on the order in which tools are used, the data on the machining condition and the position data of each portion to be machined into numerically controlled

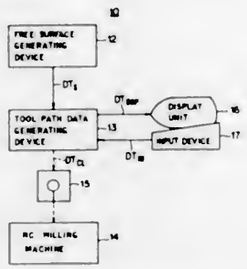
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machining data conforming to the numerically controlled machine tool; wherein said steps of storing, reading, ob-



taining and converting the data are executed under the control of a central processing unit.

5,289,383
METHOD FOR ESTABLISHING DATA DEFINING TOOL PATH FOR ROUGH MACHINING
Jun Sawamura, Kanagawa, and Tetsuzo Kuragano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 703,474, May 17, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,259
Claims priority, application Japan, May 17, 1990, 2-127172
Int. Cl.[5] G06F *15/46*; G05B *19/18*
U.S. Cl. 364—474.29 **8 Claims**



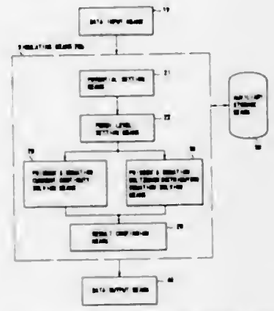
1. A method for generating data defining a machining depth along a tool path for a numerically controlled machine of a type having a machining tool of a known configuration including a mill for contour milling and a drill, using form data defining a three-dimensionally curved surface, comprising the steps of:

selecting a plurality of split points which indicate roughly a three-dimensionally curved surface according to the form data; selecting a plurality of grid points which are evenly spaced in the horizontal direction at a predetermined pitch so as to form a rectilinear grid;

calculating depth data for each of the split points which indicates the height of the three-dimensionally curved surface in a circular region surrounding each split point having a radius equal to the radius of the mill to prevent an overcutting in a depth direction; and

generating rough machining data for contour milling by comparing the depth data of the plurality of split points and predetermined depth values of a plurality of cut planes.

5,289,384
DEVICE SIMULATOR FOR SEMICONDUCTOR DEVICE
Yutaka Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 23, 1992, Ser. No. 824,050
Claims priority, application Japan, Feb. 6, 1991, 3-36924
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—488 **6 Claims**



1. A device simulator for a semiconductor device, comprising:

potential setting means for setting an arbitrary potential in electrodes formed on a semiconductor;

Fermi level setting means for setting a Fermi setting region in the semiconductor region and a Fermi level in the Fermi setting region; and

Poisson's equation solving means for solving a Poisson's equation in accordance with outputs of said potential setting means and said Fermi level setting means; and

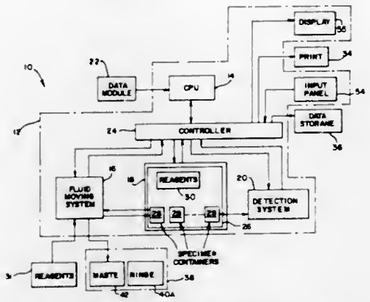
Boltzmann distribution equation solving means for calculating a carrier density from a Boltzmann distribution equation of carriers in accordance with outputs of said Poisson's equation solving means and said Fermi level setting means in the Fermi level setting region which is set by said Fermi level setting means.

5,289,385
ADAPTIVE SCHEDULING SYSTEM AND METHOD FOR OPERATING A BIOLOGICAL SAMPLE ANALYZER WITH VARIABLE RINSING
Cass J. Grandone, Lake Forest, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Jun. 3, 1991, Ser. No. 710,195
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—497 **29 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 139 Pages)

1. An improved biological sample analyzer for conducting assays of samples loaded therein and which includes instrument systems for performing operations on each biological sample and a scheduling means for scheduling the operations of the instrument systems, the improvement comprising:

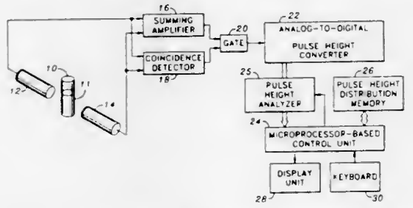
(a) means for scheduling an adaptive cleaning operation prior to any scheduled instrument system operation; and

(b) means for conducting the assays of the biological samples by performing the scheduled instrument system operations and performing a cleaning operation prior to any scheduled instrument system operation, said cleaning



operation determined by the instrument system operation scheduled prior to said cleaning operation.

5,289,386
METHOD AND APPARATUS FOR STORING SCINTILLATION PULSE HEIGHT DATA
Philip D. Anderson, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Aug. 31, 1989, Ser. No. 401,348
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—498 **14 Claims**



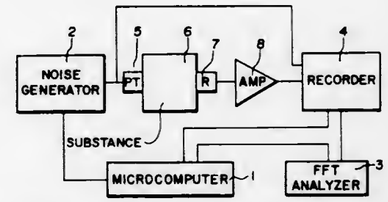
1. A method of analyzing scintillations comprising the steps of:

exposing a sample in a scintillation counter to a scintillation medium thereby emitting scintillations, detecting the scintillations and producing scintillation pulse height data, the pulse height data representing energy levels of the scintillations;

choosing a plurality of data windows each of a different size corresponding to a range of pulse heights which correspond to a range of energy levels, wherein the sizes of consecutive data windows follow an arithmetic series; and

pooling the pulse height data into the plurality of data windows to obtain a count of the number of occurrences of pulse heights within each data window.

5,289,387
METHOD FOR MEASURING STRESS
Yakichi Higo, 3-1-101,Yakumo 5-chome, Meguro-ku, Tokyo; Junichiro Matsuoka, Machida; Jun Kiyoshige, Atsugi; Kazuhiko Tsukaguchi, Sagamihara, and Shigenori Kazama, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Yakichi Higo, Tokyo, both of Japan
Filed Jul. 20, 1990, Ser. No. 554,536
Claims priority, application Japan, Jul. 20, 1989, 1-186083
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—508 **20 Claims**



1. A method for measuring stress magnitude distributed in a substance comprising the steps of:

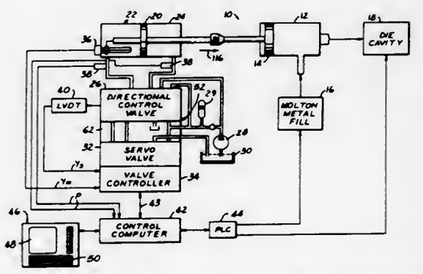
inputting elastic waves to a substance so as to irradiate a desired portion thereof;

receiving output waves which are transmitted and/or reflected from said substance;

comparing said input waves with said output waves associated with analyzing attenuation factors of said input and output waves being converted into frequency values to define transfer functions of said waves; and

defining said stress magnitude as an increment of said transfer functions between said output and input waves for providing a quantitative measurement of said stress.

5,289,388
ELECTROHYDRAULIC CONTROL OF A DIE CASTING MACHINE
Mohamed E. Dahroug, Windsor, Canada; Yehia M. El-Ibiary, Troy, Mich.; Rajamouli Gunda, Rochester Hills, Mich.; Paul M. Smith, Madison Heights, Mich., and Randall G. Silverthorn, Clarkston, Mich., assignors to Vickers, Incorporated, Troy, Mich.
Filed Apr. 21, 1989, Ser. No. 341,580
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—509 **5 Claims**



1. An electrohydraulic system for controlling motion of a load comprising:

hydraulic actuation means for coupling to the load,

electrohydraulic valve means that includes a valve element, means for supplying hydraulic fluid to said actuation means as a function of position of said valve element, and

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means responsive to electronic valve control signals for controlling position of said valve element, and

electronic valve control means that includes first sensor means coupled to said actuation means for providing a first sensor signal as a function of motion at the load, second sensor means coupled to said electrohydraulic valve means for providing a second sensor signal as a function of motion at said valve element, means for receiving first and second command signals as functions of desired motion at the load and valve element respectively, means for providing an error signal as a function of a difference between said first command signal and said first sensor signal, means for selecting between said error signal and said second command signal to provide a command signal, and means for providing said valve control signals as a function of a difference between said command control signal and said second sensor signal.

5,289,389

DEVICE FOR MEASURING RESPONSE SPEED AND ACCURACY

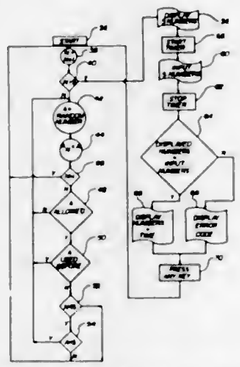
Lloyd E. Keller, 3371 S. 114th Ave., Omaha, Nebr. 68144

Continuation-in-part of Ser. No. 394,922, Aug. 16, 1989, Pat. No. 5,079,726. This application Jan. 7, 1992, Ser. No. 817,543

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] G01B *7/00*

U.S. Cl. 364—551.01 **18 Claims**



1. A response speed and accuracy measurement device, comprising,

a random number generator operative to generate a random multidigit code of digits selected from numeric characters, alphabetic characters and other symbols,

an output means including a display operative to display said code,

a start switch operatively associated with said random number generator and display and actuatable to cause said multidigit code to be generated and displayed on said display,

a keyboard comprising a plurality of data entry keys by which an operator may enter the generated code,

means for limiting the time duration of said generated code on said display in response to operation of said start switch to ten seconds or less to thereby remove the generated code from said display prior to the operator's entry of the generated code by memory,

timer means for measuring the response time for an operator to enter the generated code by said keyboard, said response time beginning upon display of said multidigit code on said display in response to actuation of said start switch and ending upon actuation of the last of a number of data entry keys equal to the number of digits in said multidigit code whereby said response time tests the speed of both memory and physical response,

check means for comparing the code entered by an operator to the generated code and for detecting a match of said codes and

said output means being operatively connected to said timer means and check means for indicating the operator's response time and whether a match was detected by said check means.

5,289,390

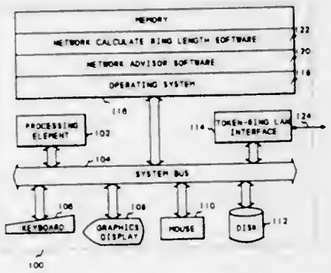
METHOD FOR DETERMINING THE ELECTRICAL CABLE LENGTH OF AN ACTIVE RING OF A TOKEN RING LOCAL AREA NETWORK

Rod Unverrich, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 22, 1992, Ser. No. 888,228

Int. Cl.[5] G01B *21/02*

U.S. Cl. 364—562 **14 Claims**



1. A method performed by a computer for determining the cable length of a ring of a Token-Ring local area network, said computer performed method comprising:

(a) determining a ring propagation time required for a signal to pass through each station actively connected to said ring;

(b) determining an active monitor propagation delay for a signal to pass through an active monitor station connected to said ring;

(c) determining a station propagation delay for a signal to pass through a standby monitor station connected to said ring;

(d) determining a number of standby monitor stations actively connected to said ring;

(e) multiplying said number of standby monitor stations by said station propagation delay to create a total station propagation delay;

(f) substracting said active monitor propagation delay and said total station propagation delay from said ring propagation time to create a cable propagation delay; and

(g) multiplying said cable propagation delay by the speed of light and a cable propagation constant to determine said cable length.

5,289,391

METHOD AND APPARATUS FOR OPTIMUM SIGNAL BURST DETECTION

Khalid M. Ibrahim, San Jose, and William D. Bachalo, Los Altos Hills, both of Calif., assignors to Aerometrics, Inc., Sunnyvale, Calif.

Filed Feb. 10, 1992, Ser. No. 833,338

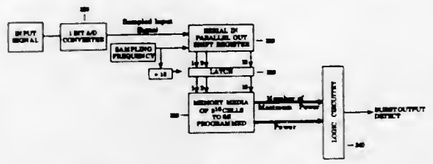
Int. Cl.[5] G01R *29/027*

U.S. Cl. 364—570 **44 Claims**

1. A method for detecting bursts in an input signal, said input signal comprising burst signals and noise, said method comprising the steps of:

encoding the input signal to generate a string of binary values reflective of the input signal;

mapping the encoded signal to known representations of signals, said known representations of signals having precomputed values indicative of the presence of a signal;



determining the existence of a burst signal in the input signal by evaluating the precomputed values associated with each known representation of signals mapped to the encoded signal;

wherein the existence of a burst signal in the presence of noise may be rapidly determined with minimal computational overhead.

5,289,392

ADDER

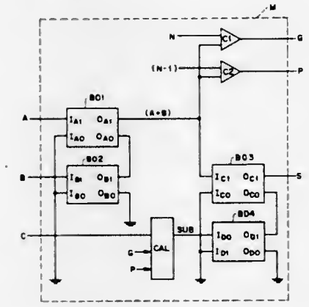
Makoto Yamamoto, Tokyo, Japan, assignor to Yozan, Inc., Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,781

Claims priority, application Japan, May 15, 1992, 4-148468

Int. Cl.[5] G06J *1/00;* **G06F** *7/50*

U.S. Cl. 364—602 **1 Claim**



1. An adder comprising:

i) the first operational amplifier wherein the first input is input to a non-inversion input terminal;

ii) the second operational amplifier wherein the second input is input to a non-inversion input and an output terminal is connected to a reference voltage terminal on output side of said first operational amplifier;

iii) the first comparator for outputting "1" when an output of said first operational amplifier is more than a radix and for outputting "0" on other cases;

iv) the second comparator for outputting "1" when an output of said first operational amplifier is equal to or more than "the value smaller by '1' than said radix" and for outputting "0" on other cases; and

v) a calculator inputted an output of the first and second comparator and a carry-in, wherein said radix is subtracted from the sum of said first and second input when an output of said first comparator is "1", "said value smaller by '1' than said radix" is subtracted from said sum of said first and second input when an output of said second comparator is "1" and a carry-in is "1", "1" is added to the sum of said first and second inputs when said outputs of said first and second comparators are "0" and a carry-in is "1", "0" is subtracted on other cases.

5,289,393

PORTABLE ELECTRONIC APPARATUS

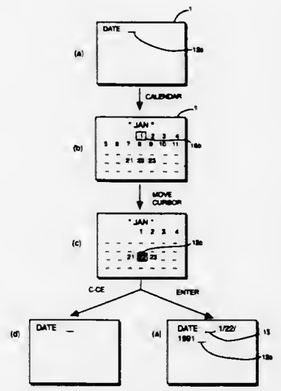
Shuuji Kaya, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 4, 1992, Ser. No. 924,560

Claims priority, application Japan, Aug. 6, 1991, 3-196483

Int. Cl.[5] G06F *15/16, 3/00*

U.S. Cl. 364—705.08 **4 Claims**



1. A portable electronic apparatus comprising, in combination:

display means having a display portion;

memory means for storing a plurality of application programs and a calendar application program and;

processing means for;

specifying a position indicated by a cursor displayed on said display portion of said display means while operating one of said plurality of application programs stored in said memory means,

for starting up said calendar application program stored in said memory means while operating one of said plurality of application programs,

for displaying a calendar which includes a plurality of date data on said display portion while operating said calendar application program,

for selecting one of said plurality of date data of said calendar, and

for displaying said selected date data of the calendar at said specified position indicated by said cursor on said display portion.

5,289,394

POCKET COMPUTER FOR WORD PROCESSING

James M. Lapeyre, deceased, late of New Orleans, La. by Noreen B. Lapeyre, executrix , assignor to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 672,756, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 453,179, Dec. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 92,372, Sep. 2, 1987, abandoned, and a continuation-in-part of Ser. No. 862,647, May 13, 1986, Pat. No. 4,891,777, which is a continuation of Ser. No. 528,975, Sep. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 493,613, May 11, 1983, abandoned. This application Mar. 9, 1993, Ser. No. 29,948

Int. Cl.[5] G06F *3/02*

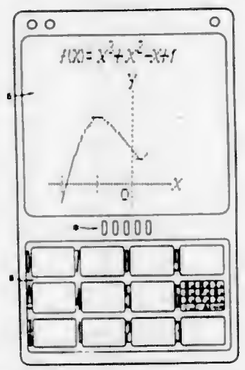
U.S. Cl. 364—709.12 **1 Claim**

1. A pocket sized, keyboard controlled, programmable,

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alphanumerical computer comprising in combination: a self contained movable magnetic storage medium controlled by computer derived control signals, an internal operating memory, program responsive means in said computer for operating said computer in a mode for interchanging information between said magnetic storage medium and said internal operating memory of said computer to interchange data and control instructions between the computer and movable magnetic medium, a set of keyboard keys on a computer panel coupled with computer control means for controlling said magnetic storage medium and for independent keyboard entry of alphanumeric data and control instructions for processing in said computer,

said set of keyboard keys having less than seventeen keys



and means for operating said computer in an alphabetic mode of operation from the keyboard, wherein alphabetic characters are enterable from said set of keyboard keys by a sequence of two successive keystrokes,

visual display means sharing said computer panel with the keyboard keys for presenting computer generated alphanumeric data in a multiple line format of at least three lines,

means for storing a set of dictionary words in said computer,

thesaurus means for organizing set of related words from said dictionary words, and

means operating said computer from said keyboard keys in a mode for displaying said related words on said visual display means in response to entry of a reference word in said dictionary from said keyboard.

5,289,395

SIGNAL PROCESSING METHOD EMPLOYING A DIGITAL FILTER

Dieter Nagel, and Günter Wolf, both of Ulm, Fed. Rep. of Germany, assignors to Telefunken Systemtechnik AG, Ulm, Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 919,240

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124834

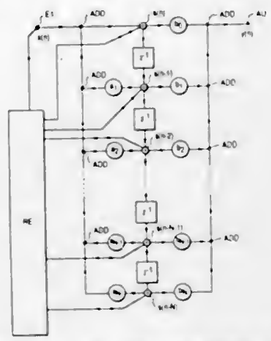
Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.01 **6 Claims**

1. A method of processing a signal having a monochromatic signal component with the aid of a digital filter, comprising steps of:

determining real amplitude, phase and frequency of the monochromatic signal component of the signal;

time delaying the signal and setting states of the digital filter to correspond to the determined real amplitude, phase and frequency of the monochromatic signal component while the signal is delayed; and



applying the signal to the input of the digital filter only after said setting step is completed.

5,289,396

FLOATING POINT PROCESSOR WITH HIGH SPEED ROUNDING CIRCUIT

Takashi Taniguchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

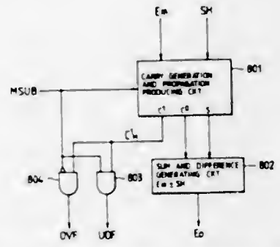
Division of Ser. No. 327,656, Mar. 23, 1989, Pat. No. 5,122,981.

This application Apr. 17, 1992, Ser. No. 870,075

Claims priority, application Japan, Mar. 23, 1988, 63-68600

Int. Cl.[5] G06F *11/00, 7/38*

U.S. Cl. 364—737 **4 Claims**



1. A floating point processor responsive to input floating point numbers for performing floating point arithmetic operations on the input floating point numbers, comprising:

an exponent operating means for (a) adding to or subtracting from the exponent of one of first and second floating point data, which exponent is larger than that of the other of the first and second floating point data, and absolute amount of shift in the left or right directions normalizing an interim result of an arithmetic operation on the fraction, (b) outputting the result of the addition or subtraction and (c) outputting an overflow signal indicating an overflow occurred in the same arithmetic operation on the sum of the absolute amount of the shift and "1" and on the exponent; and

detection means for detecting (a) an overflow when the arithmetic operation is addition and the value indicated by the overflow signal is "1" and (b) an underflow when the arithmetic operation is subtraction and the value indicated by the overflow signal is "1".

5,289,397

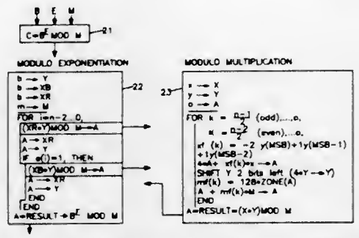
HIGH-SPEED MODULO EXPONENTIATOR DEVICE

James M. Clark, Verona, N.J., and Michael Conforti, Monroe, N.Y., assignors to ITT Corporation, New York, N.Y.

Filed Jul. 22, 1991, Ser. No. 734,228

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—746 **18 Claims**



11. A method for performing a modulo exponentiation function of the form $C=B^E$ (Modulo M), wherein E is a large positive integer and B and M are large integers, as a series of modulo multiplication operations of the form $P=(X * Y)$ (Modulo M), wherein X and Y are operands of the exponentiation function in binary form, comprising the steps of:

(a) providing an X register, a Y register, and an A register, and control means for carrying out a loop computation using said X, Y, and A registers;

(b) computing an xf factor based upon three most significant bits of Y,

(c) computing $4*A+xf*X$ and transferring the result to the A register,

(d) determining an mf factor based upon a comparison of A with selected threshold values of M,

(e) computing $A+mf*M$ and transferring the result to the A register,

(f) shifting the bits of the Y register two bits to the left (two most significant bits of Y) and returning to step (a) above until said loop computation is completed, and

(g) providing an output from the A register at the completion of said loop computation as the result of the modulo multiplication operation.

5,289,398

SMALL-SIZED LOW POWER CONSUMPTION MULTIPLICATION PROCESSING DEVICE WITH A ROUNDING RECORDING CIRCUIT FOR PERFORMING HIGH SPEED ITERATIVE MULTIPLICATION

Akira Miyoshi, and Takashi Taniguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 7, 1991, Ser. No. 741,876

Claims priority, application Japan, Aug. 7, 1990, 2-210903

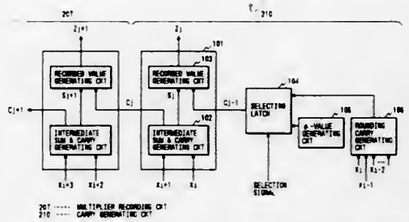
Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—754 **2 Claims**

1. A multiplication processing device comprising:

recoding circuit means for recoding a multiplier; and

recording data setting means for subtracting a value B represented by using a redundant binary number, which is equal to Bb $\pm\alpha\cdot 2^{-k}$ (Bb is represented by a binary number having a non-zero value at a digit of which the order is equal to or higher than that corresponding to 2^{-j}; $(\frac{1}{4})\leqq\alpha\leqq 1$; and i, $j\leqq k$) if converted into a binary number, from a predetermined constant A represented by a binary number which has a non-zero value at a digit of which the order is equal to or higher than that corresponding to 2^{-1} and for outputting the result of the subtraction to the recoding circuit means, wherein said recoding data setting means sets (A − Bb) at each of from the most significant digit of the result of the subtraction to a digit corresponding thereof to 2^{-L} (L is the maximum value of i and j) and sets 0 at each of from a digit thereof corresponding to $2-(L+1)$ to digit thereof corresponding to $2^{-(L+m)}$ $(1\leqq m\leqq k-L)$ and sets a value, which is obtained by inverting the sign of a value set at a digit of the value B corresponding to $2^{-(L+m)}$, at a digit of the result of the subtraction corresponding to $2^{-(L+m+)}$ if a value set at a digit of the value B corresponding to $2^{-(L+m)}$ is 0 and sets the value, which is set at the digit of the value B corresponding to $2^{-(L+m+1)}$, at the digit of the result of the



subtraction corresponding to $2^{-(L+m+1)}$ if the value set at the digit of the value B corresponding to $2^{-(L+m)}$ is other than 0 and sets the values, which are respectively obtained by inverting the signs of the values set at the digits of the value B corresponding to values equal to and less than $2^{-(L+m+2)}$, at digits of the result of the subtraction corresponding to values equal to and less than $2^{-(L+m+2)}$ and outputs the set value of the result of the subtraction to said recoding circuit means.

5,289,399

MULTIPLIER FOR PROCESSING MULTI-VALUED DATA

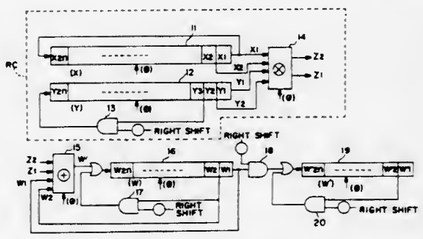
Yukihiro Yoshida, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 984,695

Claims priority, application Japan, Dec. 6, 1991, 3-323205

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—754 **19 Claims**



1. An apparatus for processing a multiplication of multi-valued data, comprising:

register means for shifting data stored therein and outputting said shifted data therefrom;

multiplying means connected to said register means for multiplying said shifted data output from said register means to produce multiplied results;

adding means connected to said multiplying means for adding said multiplied results according to a predetermined arithmetic rule based on logic to be used; and

means for shifting said added results output from said adding means and for outputting said shifted results.

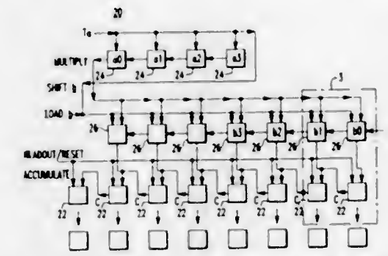
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5,289,400

SINGLE-FLUX-QUANTUM MULTIPLY-ACCUMULATOR

John X. Przybysz, Penn Hills; Donald L. Miller, Penn Township, Westmoreland County, and Joonhee Kang, Plum Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1992, Ser. No. 922,251
Int. Cl.[5] G06F 7/52
U.S. Cl. 364—759 **7 Claims**



1. A serial multiplier for multiplying two n-bit numbers comprising:

a shift register having a total of n destructive read out cells, each of said cells initially containing a separate bit of a first multiplicand and one of said cells serving as an output cell;

a string of (2n−1) non-destructive read out cells, each of said non-destructive read out cells having a read out gate connected to the output cell of the shift register, each of the first n non-destructive read out cells of said string of (2n−1) non-destructive read out cells containing a separate bit of a second multiplicand;

timing means for shifting said bits of said first multiplicand through said shift register whereby each bit of said first multiplicand is serially multiplied with said series of bits of said second multiplicand to form a plurality of partial products;

a string of 2n T flip-flop cells, each of said T flip-flop cells having an input for receiving a bit from each of said partial products and having a carry path to the next adjacent T flip-flop cell; and

said timing means moving each bit of said second multiplicand to the next adjacent non-destructive read out cell after each multiplication of a bit of said first multiplicand with said series of bits of said second multiplicand such that said string of 2n T flip flops contains a full product of said first and second multiplicands.

5,289,401

ANALOG STORAGE DEVICE FOR ARTIFICIAL NEURAL NETWORK SYSTEM

Takeshi Shima, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1991, Ser. No. 717,511
Claims priority, application Japan, Jun. 19, 1990, 2-160931
Int. Cl.[5] H01L 27/00
U.S. Cl. 365—45 **8 Claims**

1. An electrically erasable programmable transistor comprising:

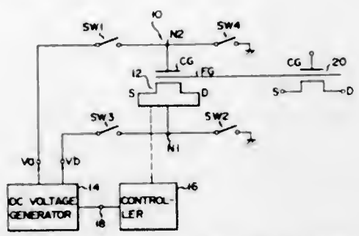
a substrate;

first and second current-carrying layers spaced apart from each other on said substrate for defining a channel region therebetween;

an insulated charge storage layer which at least overlaps said channel region;

a control gate insulatively disposed above said charge storage layer; and

control means for allowing carries to move between said channel region and said charge storage layer, for controlling an amount of carriers stored on said charge storage layer so as to be indicative of analog information, and for forcing an internal electric field of said transistor to be substantially constant while the carriers are stored on said charge storage layer, by detecting a variation on a threshold voltage of said transistor due to a variation in an amount of carriers stored on said charge storage layer, and by providing said control gate with a voltage for compensating the variation of the threshold voltage.

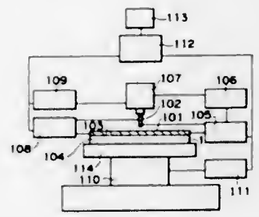


5,289,402

RECORDING MEDIUM, RECORDING METHOD, AND READOUT METHOD

Keisuke Yamamoto; Fumio Kishi, both of Atsugi; Taiko Motoi, Sagamihara; Takehiko Kawasaki, and Norio Kaneko, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,707
Claims priority, application Japan, Dec. 29, 1989, 1-341814
Int. Cl.[5] G11C 13/00
U.S. Cl. 365—46 **45 Claims**



1. A recording method, comprising the step of applying locally a voltage onto a recording medium having an electroconductive oxide film held between a substrate and an insulating oxide film to form a portion different in electric resistance in the electroconductive oxide film.

5,289,403

SELF-TIMED CONTENT ADDRESSABLE MEMORY ACCESS MECHANISM WITH BUILT-IN MARGIN TEST FEATURE

Jeffry D. Yetter, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 8, 1991, Ser. No. 726,617
Int. Cl.[5] G11C 15/00
U.S. Cl. 365—49 **8 Claims**

1. A memory device, comprising:

(1) a compare array, comprising:

(a) first receiving means for receiving a first compare input and a first clock signal;

(b) first storage means for storing a first data word;

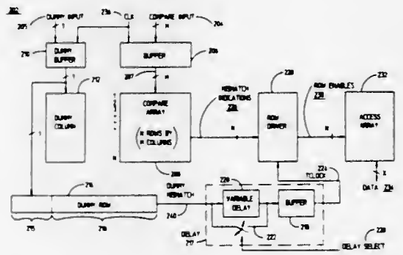
(c) first comparator means, coupled to the first receiving means and the first storage means, for receiving the first compare input from the first receiving means after the first receiving means receives the first clock signal, for comparing the first compare input to the first data word, and for generating a first mismatch indication signal based on the comparison of the first compare input to the first data word;

(2) means for generating a second clock signal, comprising:

(a) second receiving means for receiving a second compare input and the first clock signal;

(b) second storage means for storing a second data word;

(c) second comparator means, coupled to the second receiving means and the second storage means, for completely receiving the second compare input from the second receiving means after the second receiving means receives the first clock signal, for comparing the



second compare input to the second data word, and for generating a second mismatch indication signal based on the comparison of the second compare input to the second data word;

(d) means, coupled to the second comparator means, for processing the second mismatch indication signal to generate the second clock signal;

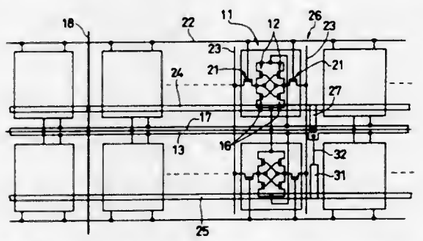
(3) row driver means, coupled to the compare array and the second clock signal generating means, for receiving the first mismatch indication signal and the second clock signal, and for generating a row enable signal based on the first mismatch indication signal after receiving the second clock signal.

5,289,404

SEMICONDUCTOR MEMORY DEVICE

Yutaka Okamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 821,574, Jan. 16, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,706
Claims priority, application Japan, Jan. 22, 1991, 3-021645
Int. Cl.[5] G11C 5/06
U.S. Cl. 365—63 **5 Claims**



1. A semiconductor memory device having a plurality of memory cells arranged along a word line, each said memory cell being constituted by a flip-flop formed by a pair of driver transistors of a first conductivity channel and a pair of load transistors of a second conductivity channel, said load transistors having an active layer formed by a semiconductor thin film, the device comprising:

a ground line including a first line formed by a first metal layer and extending in a direction perpendicular to said word line, a second line formed by a second metal layer and connected to said first line at first connecting sections and extending in a direction parallel to said word line, a third line extending parallel to said word line and connected to an active layer of said driver transistors, and a fourth line formed by said first metal layer and interconnecting said second line and said third line at second connecting sections; and

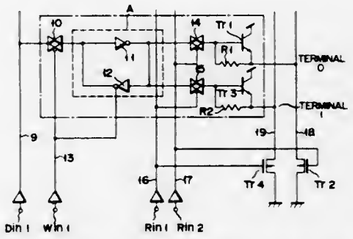
a power supply line including a fifth line formed by said second metal layer and extending in said direction parallel to said word line, a sixth line extending parallel to said word line and connected to said active layer of said load transistors, and a seventh line formed at least in part by said first metal layer and interconnecting said fifth line and said sixth line at third connecting sections.

5,289,405

SEMICONDUCTOR MEMORY CIRCUIT DEVICE HAVING MEMORY CELLS CONSTRUCTED ON A BICMOS GATE ARRAY

Hiroyuki Hara, Fujisawa, and Yoshinori Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1991, Ser. No. 661,020
Claims priority, application Japan, Feb. 28, 1990, 2-45518
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.08 **8 Claims**



1. A semiconductor memory circuit device having memory cells constructed on a BiCMOS gate array, comprising:

basic cells in a matrix on a substrate in a gate array memory cell configuration by the Master slice approach and including:

an input line adapted to receive write-in data;

input switching means having a first end coupled to said input line, and a second end;

a write-in signal line adapted to receive a write-in signal used as a switching control signal for controlling said input switching means;

a data holding section having an end coupled to the second end ot said input switching means, and an output, for holding the write-in data from said input line via said input switching means;

output switching means including a current path having a first end coupled to the output of said data holding section, and a second end;

a readout signal line adapted to receive at least one readout signal used as a switching control signal for controlling said output switching means;

amplifying means having an input coupled to the second end of said output switching means, and an output; and

an output line coupled to the output of said amplifying means, for outputting readout data amplified by said amplifying means.

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5,289,406

READ ONLY MEMORY FOR STORING MULTI-DATA

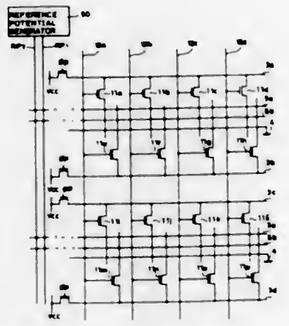
Shinichi Uramoto; Tetsuya Matsumura; Masahiko Yoshimoto; Kazuya Ishihara, and Hiroshi Segawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,098

Claims priority, application Japan, Aug. 28, 1990, 2-227060; Dec. 1, 1990, 2-400081

Int. Cl.[5] **G11C** *17/00*

U.S. Cl. 365—104 **10 Claims**



1. A read only memory device comprising:

at least one bit line for transmitting internal data;

a plurality of word lines to which row driving signals are transmitted, respectively;

a plurality of reference potential transmission lines each for transmitting a predetermined potential;

potential setting means responsive to a potential designating signal for setting a potential of each of said plurality of reference potential transmission lines; and

a plurality of memory cells disposed at respective intersections between said at least one bit line and respective said word lines for respectively storing data, each memory cell including a transistor element formed to selectively connect and disconnect one of said reference potential transmission lines to and from an associated bit line in response to said row driving signal on an associated word line,

wherein said plurality of reference potential transmission lines include one transmission line connected to a first reference potential, and an even number of additional potential transmission lines to which potentials are applied at a variable level in accordance with said potential designating signal.

5,289,407

METHOD FOR THREE DIMENSIONAL OPTICAL DATA STORAGE AND RETRIEVAL

James H. Strickler, and Watt W. Webb, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,030

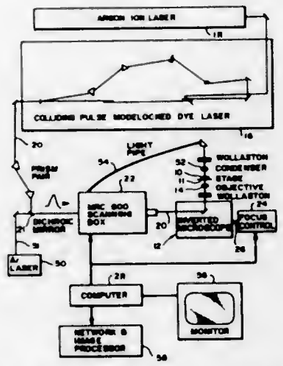
Int. Cl.[5] **G11C** *11/42, 13/04*

U.S. Cl. 365—106 **27 Claims**

1. A method for writing optical data with three-dimensional resolution, comprising:

producing a single, intense beam of focusable, coherent light;

focussing the beam on a photosensitive material to produce two-photon excitation of said material at the focal point of



the beam to thereby produce a detectable characteristic change in said material.

5,289,408

MEMORY APPARATUS USING TUNNEL CURRENT TECHNIQUES

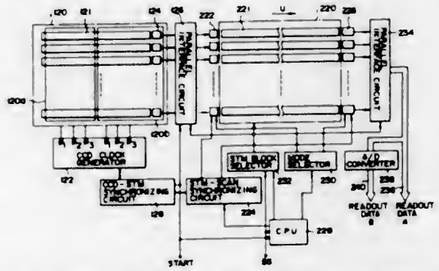
Yoshiyuki Mimura; Hiroshi Kajimura; Toshihito Kouchi; Akitoshi Toda; Yasuo Isono; Hiroko Obta, all of Tokyo, and Ryouhei Shimizu, Saitama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 473,303, Feb. 1, 1990, abandoned. This application Apr. 23, 1992, Ser. No. 873,635

Claims priority, application Japan, Feb. 9, 1989, 1-30339; Mar. 20, 1989, 1-68555

Int. Cl.[5] **G11C** *13/00;* **G01N** *27/00*

U.S. Cl. 365—151 **21 Claims**



1. A memory apparatus using tunnel current techniques, comprising:

a plurality of tunnel current probes fixed to a first substrate;

a recording element fixed to a second substrate, said recording element including a plurality of memory regions respectively facing said plurality of tunnel current probes;

moving means for moving at least one of the first and second substrates relative to the other so that each of said plurality of tunnel probes is periodically scanned across its corresponding memory region;

input means for providing input data to be stored in said plurality of memory regions;

write means receiving said input data and coupled to said plurality of tunnel current probes for writing said input data into said plurality of memory regions;

read means coupled to said plurality of tunnel current probes for reading out data written into said plurality of memory regions;

interface means coupled to the input means and the write means for transferring data into said plurality of memory regions;

first control means for controlling data transfer between the input means and the interface means; and

second control means for controlling data transfer between the interface means and the write means, said second control means having a data transfer speed which is an integer multiple, other than one, of that of the first control means.

5,289,409

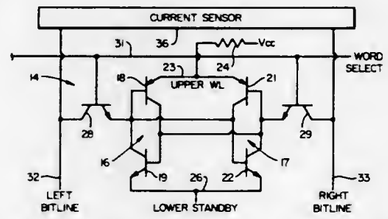
BIPOLAR TRANSISTOR MEMORY CELL AND METHOD

Robert M. Reinschmidt, Los Gatos, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 546,395, Jun. 29, 1990, abandoned. This application Jun. 7, 1993, Ser. No. 73,457

Int. Cl.[5] **G11C** *11/00, 11/34*

U.S. Cl. 365—154 **11 Claims**



1. A bipolar transistor memory cell for use in a memory array having a word select line and a pair of bit select lines, comprising: a pair of cross coupled silicon controlled rectifiers which assume opposite states in accordance with signals applied thereto, a pair of bipolar pass transistors connected to the silicon controlled rectifiers and adapted for connection to the bit lines, and means for applying signals from the word select line to the pass transistors to control communication between the silicon controlled rectifiers and the bit lines.

5,289,410

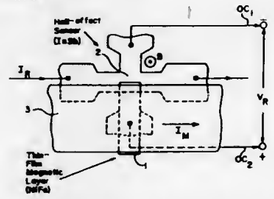
NON-VOLATILE MAGNETIC RANDOM ACCESS MEMORY

Romney R. Katti, Pasadena; Henry L. Stadler, La Canada, and Jiin-Chuan Wu, San Gabriel, all of Calif., Yaocbung Chen, Ann Arbor, and Pollob K. Bhattacdarya, Ann Arbor, both of Michigan, assignors to California Institute of Tecbnology, Pasadena, Calif.

Filed Jun. 29, 1992, Ser. No. 905,666

Int. Cl.[5] **G11C** *11/18*

U.S. Cl. 365—170 **12 Claims**



1. An improved non-volatile magnetic random access memory of the type having an array of unit cells, each cell having a Hall-effect sensor comprised of a rectangular shape of semiconductor material and a thin-film magnetic element of selected dimension, the magnetic element having a length greater than width and being made of material having an in-plane uniaxial anisotropy and in-plane bipolar remanent magnetization states along the length, the magnetic element being positioned with one end near the center of the Hall-effect sensor, means for selectively conducting a sensing current through the Hall-effect sensor from one side to an opposite side of the rectangular shape in a direction perpendicular to the length of the thin-film magnetic element, thereby producing a differential in electrical potentials on sides of the rectangular shape that are perpendicular to the sides of the semiconductor material through which current is conducted, and means for amplifying the differential in electrical potentials, whereby a signal is produced the polarity of which corresponds to the state of the bipolar remanent magnetization of the thin-film magnetic element along its length, each cell further having a conductor perpendicular to and overlaying the length of the thin-film magnetic element and means for applying a current through the conductor with a selected polarity for storing a binary digit 1 or 0 in the thin-film magnetic element, thereby setting the bipolar remanent magnetization state of the thin-film magnetic element to a selected state representative of a binary digit of 1 or 0; the improvement comprising:

a Hall-effect sensor made of a layer of semiconductor material separated from a substrate by a buffering layer of material;

wherein said layer of semiconductor material comprises a material taken from the group consisting of GaAs, InGaAs, InAs and InSb.

5,289,411

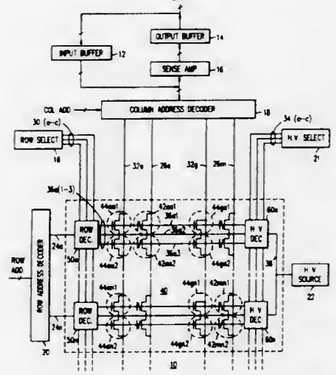
FLOATING GATE MEMORY ARRAY DEVICE HAVING IMPROVED IMMUNITY TO WRITE DISTURBANCE

Ching S. Jeng, San Jose, and Ping Wang, Saratoga, both of Calif., assignors to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Filed Mar. 13, 1992, Ser. No. 851,080

Int. Cl.[5] **G11C** *11/40, 16/06*

U.S. Cl. 365—185 **13 Claims**



1. An electrically programmable and erasable memory array device having a plurality of memory cells, each having a floating gate for the storage of charges thereon, said device comprising:

a plurality of first address lines;

a plurality of second address lines;

a plurality of third address lines;

each of said memory cells having three terminals, a first terminal connected to one of said first address lines, a second terminal connected to one of said second address lines, and a third terminal connected to one of said third address lines;

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high voltage source means for supplying a high voltage source;

means for selecting certain of said plurality of first, certain of said plurality of second and certain of said plurality of third address lines for connecting to said high voltage source means to cause erasure of charges on the floating gate of the memory cells selected; and

means for selecting certain of said plurality of first, certain of said plurality of second and certain of said plurality of third address lines for connecting to said high voltage source means to cause programming of charges on the floating gate of the memory cells selected.

5,289,412

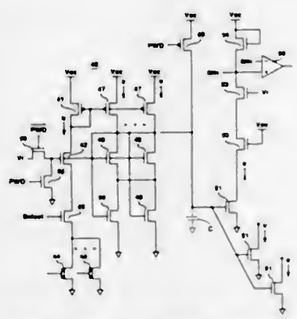
HIGH-SPEED BIAS-STABILIZED CURRENT-MIRROR REFERENCING CIRCUIT FOR NON-VOLATILE MEMORIES

Kevin W. Frary, Fair Oaks, and Sachidanandan Sambandan, Folsom, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 19, 1992, Ser. No. 901,395

Int. Cl.[5] G11C 7/00

U.S. Cl. 365—185 **5 Claims**



1. A circuit for providing reference voltages to be used by sense amplifiers of output circuitry of an integrated circuit memory array to allow the sense amplifiers to ascertain the values stored by memory cells of the array comprising:

a first branch of the circuit;

means for providing a first current through the first branch of the circuit;

a second branch of the circuit including a first transistor device;

means for mirroring the first current through the second branch of the circuit including the first transistor device;

a plurality of output branches of the circuit each connected to provide a reference voltage to a sense amplifier,

each of the output branches including a second transistor with characteristics essentially identical to the characteristics of the first transistor; and

means for mirroring the current through the first transistor through the second transistor, the last mentioned means including means for providing voltages at all terminals of the second transistors equal to the voltages at all terminals of the first transistor.

5,289,413

DYNAMIC SEMICONDUCTOR MEMORY DEVICE WITH HIGH-SPEED SERIAL-ACCESSING COLUMN DECODER

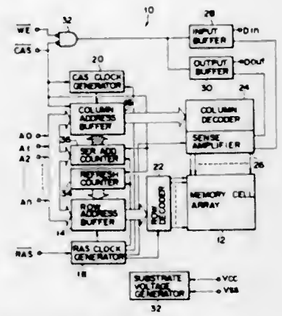
Kenji Tsuchida, and Yohji Watanabe, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1991, Ser. No. 712,106

Claims priority, application Japan, Jun. 8, 1990, 2-148474; Aug. 29, 1990, 2-225355; Oct. 26, 1990, 2-287267

Int. Cl.[5] G11C 8/00

U.S. Cl. 365—189.02 **28 Claims**



1. A memory system comprising:

an array of memory cells arranged in rows and columns;

row decoder means connected to rows of memory cells, for selecting one of the rows of memory cells in response to a row address signal supplied thereto;

column decoder means connected to columns of memory cells, for designating a certain column in response to an input column address signal supplied thereto;

said column decoder means comprising activation means for, when said certain column is activated, potentially activating a neighboring column of said certain column before actual arrival of a corresponding column address of said neighboring column;

address counter means connected to said column decoder means, for starting a count operation in response to a column address-strobe signal, and for generating internal column addresses in a predetermined order;

register means for temporarily holding information bits stored in those of said one of said rows of memory cells which are associated with said certain column and said neighboring column, and for selectively sending forth proper information bits when said corresponding column address actually arrives, wherein said register means is responsive to said address counter means, and outputs said information bits held therein in a serial manner in response to said internal column addresses; and

column-select lines connected at first ends to outputs of said column address means, and connected at second ends to a plurality of adjacent columns, whereby information bits stored in at least four adjacent memory cells are simultaneously transferred to said register means.

5,289,414

COMPARATOR

Tsuguyasu Hatsuda, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 951,166

Claims priority, application Japan, Sep. 27, 1991, 3-248842; Mar. 31, 1992, 4-076479

Int. Cl.[5] G11C 7/00

U.S. Cl. 365—189.07 **7 Claims**

1. A comparator for comparing, in response to an activation signal, voltages of first and second signals in complement with

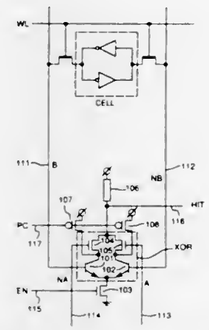
voltages of third and fourth signals in complement, comprising:

a first bipolar transistor for receiving said third signal to a base thereof;

a second bipolar transistor for receiving said fourth signal to a base thereof;

a first FET for receiving said second signal to a gate thereof, said first bipolar transistor and said first FET being connected in series to form a first current path;

a second FET for receiving said first signal to a gate thereof, said second bipolar transistor and said second FET being connected in series to form a second current path, said first current path and said second current path connected in parallel;



a switching FET having a drain connected to emitters of said first and second bipolar transistors and a source connected to ground, and being turned on during when said activation signal is in a first state;

a load resistor means connected to a junction of drains of said first and second FETS; and

a precharge means for precharging collectors of said first and second bipolar transistors during when said activation signal is in a second state;

whereby when said first and third signals are in the same state and, at the same time, the second and fourth signals are in the same state, said junction produces a first level signal, and when said first and third signals are in the opposite state and, at the same time, the second and fourth signals are in the opposite state, said junction produces a second level signal.

5,289,415

SENSE AMPLIFIER AND LATCHING CIRCUIT FOR AN SRAM

David P. DiMarco, Chandler; James W. Nicholes, Gilbert, and Douglas D. Smith, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 17, 1992, Ser. No. 870,074

Int. Cl.[5] G11C 7/00, 7/02, 11/00

U.S. Cl. 365—190 **19 Claims**

1. A memory circuit comprising:

a memory cell responsive to an address signal for retrieving a differential data signal;

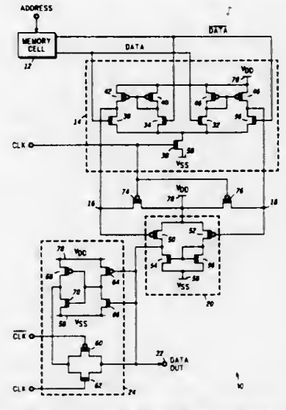
an amplifier having first and second inputs coupled for receiving said differential data signal and having first and second outputs for providing an amplified differential data signal at first and second nodes, said first amplifier operating during a first state of a first clock signal applied at an enable input;

a first transistor having a gate, a drain and a source, said gate being coupled to said first node, said source being coupled to a first power supply conductor, said first transistor being formed as a p-channel transistor

a second transistor having a gate, a drain and a source, said gate being coupled to said second node, said source being coupled to said first power supply conductor, said second transistor being formed as a p-channel transistor;

a third transistor having a gate, a drain and a source, said gate and drain being coupled together to said drain of said second transistor, said source being coupled to a second power supply conductor, said third transistor being formed as an n-channel transistor;

a fourth transistor having a gate, a drain and a source, said gate being coupled to said gate of said third transistor, said source being coupled to said second power supply conductor, said drain being coupled to said drain of said first



transistor for providing a digital output signal, said fourth transistor being formed as an n-channel transistor;

a fifth transistor having a gate, a drain and a source, said gate receiving said first clock signal, said source being coupled to said first power supply conductor, said drain being coupled to said first node, said fifth transistor being formed as a p-channel transistor; and

a sixth transistor having a gate, a drain and a source, said gate receiving said first clock signal, said source being coupled to said first power supply conductor, said drain being coupled to said second node, said sixth transistor being formed as a p-channel transistor.

5,289,416

SEMICONDUCTOR INTEGRATED DEVICE AND WIRING CORRECTION ARRANGEMENT THEREFOR

Hidetoshi Iwai, Ohme; Masamichi Ishihara; Kazuya Ito, both of Hamura; Wataru Arakawa, Ohme, and Yoshinobu Nakagome, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 14, 1992, Ser. No. 820,489

Claims priority, application Japan, Jan. 14, 1991, 3-014746

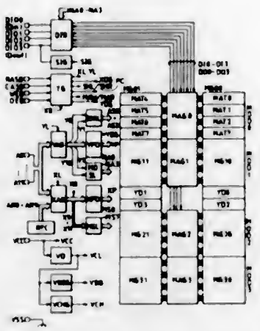
Int. Cl.[5] G11C 13/00

U.S. Cl. 365—200 **51 Claims**

1. A semiconductor integrated circuit device to prevent leakage current flow through defective circuit elements that are not used in an internal circuit characterized in that the internal circuit may be selectively changed by cutting and/or

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connecting predetermined wirings which are formed on a semiconductor substrate and which are connected to the defective circuit elements to prevent leakage current flow through said defective circuit elements.

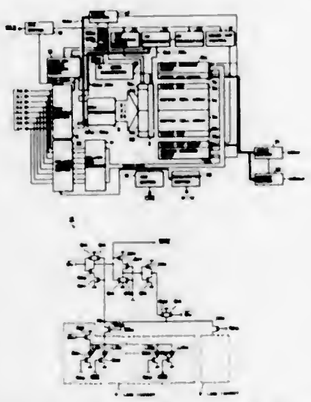


5,289,417

SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY CIRCUIT

Tsukasa Ooishi; Yoshio Matsuda; Kazutami Arimoto; Masaki Tsukude, and Kazuyasu Fujishima, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 516,644, Apr. 30, 1990, abandoned.
This application Oct. 8, 1992, Ser. No. 958,466
Claims priority, application Japan, May 9, 1989, 1-116527
Int. Cl.[5] G11C 29/00
U.S. Cl. 365—200 **21 Claims**



1. A semiconductor memory device with a redundancy circuit, comprising:

a memory cell array including a plurality, consisting of a first predetermined number, of blocks (*1a*, *1b*) each including a plurality of memory cells (MC),

a plurality, consisting of a second predetermined number, of redundancy circuit means (*2a*, *2b*, *5a*, *5b*) which are provided in numerical correspondence to said plurality of blocks (*1a*, *1b*) for replacing a part of the respective blocks corresponding thereto,

a third predetermined number of activation signal generating means (**18**),

the third predetermined number of activation signal generating means being less than the second predetermined number of the plurality of redundancy circuit means (*2a*, *2b*) and less than the first predetermined number of the plurality of blocks (*1a*, *1b*), said third predetermined number of activation signal generating means in combination generating only a single, common redundancy circuit activation signal when a defect exists in a part of said plurality of blocks (*1a*, *1b*) and a portion of the memory cell array including the defect is selected,

block selecting means (**47**) responsive to an externally applied address signal for generating a plurality of block selecting signals for selecting any of said plurality of memory blocks (*1a*, *1b*),

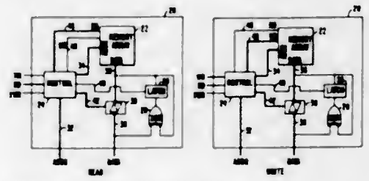
each of said plurality of redundancy circuit means (*2a*, *2b*) being activated in response to said single, common redundancy circuit activation signal and to a predetermined subset of said plurality of block selecting signals.

5,289,418

MEMORY APPARATUS WITH BUILT-IN PARITY GENERATION

Al Youngerth, Boise, Id., assignor to Extended Systems, Inc., Boise, Id.

Filed Feb. 14, 1992, Ser. No. 837,397
Int. Cl.[5] G11C 7/00, 29/00
U.S. Cl. 365—201 **11 Claims**



1. A memory circuit comprising:

a memory array for storing a plurality of bits, said memory array having address inputs and data input and output lines;

a logic circuit having first inputs coupled to said memory array data output lines and second inputs coupled to external data input/output lines;

latching means, coupled between an output of said logic circuit and said memory array data input lines;

transceiver means, coupled between said memory array data input lines and output lines and said external data input-/output lines, for disabling the flow of data between said external data input/output lines and said memory array data input lines and output lines in response to a transceiver disable control signal; and

control means, having an external control input for receiving an exclusive write signal and a transceiver control output coupled to said transceiver means, for providing said transceiver disable control signal to said transceiver means in response to said exclusive write signal.

5,289,419

STATIC RANDOM ACCESS MEMORY DEVICE WITH HIGH SPEED DIFFERENTIAL AMPLIFIER COUPLED WITH DIGIT LINE PAIR THROUGH CAPACITORS

Toshihiro Hashizumi, and Mitsuhiro Koyanagi, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,600
Claims priority, application Japan, Mar. 27, 1991, 3-62253
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 **7 Claims**

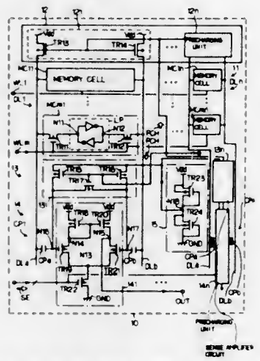
1. A static type random access memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of memory cells arranged in rows and columns, and respectively storing data bits each in the form of a differential voltage level;

b) a plurality of digit line pairs respectively associated with the columns of said plurality of memory cells, and operative to propagate differential voltage levels respectively indicative of data bits;

c) a plurality of word lines respectively associated with the rows of said plurality of memory cells, and selectively driven to an active level for coupling said plurality of digital lines with the memory cells associated therewith;

d) a plurality of sense amplifier circuits respectively associated with said plurality of digit line pairs, and each responsive to the differential voltage level on the associated digit line pair so as to rapidly develop a differential voltage



level indicative of one of the data bits on the associated digit line pair between a pair of internal nodes provided therein;

e) a precharging circuit coupled with said plurality of digit line pairs for precharging said plurality of digit line pairs to one of high and low voltage levels;

f) a plurality of coupling means capactively coupled between said plurality of digit line pairs and pairs of input nodes of said plurality of sense amplifier circuits; and

g) an intermediate voltage producing means coupled with said pair of internal nodes of each sense amplifier circuit for precharging said pair of internal nodes to an intermediate voltage level between said high and low voltage levels.

5,289,420

METHOD AND CIRCUIT FOR TRANSFERRING DIFFERENTIAL BINARY SIGNALS

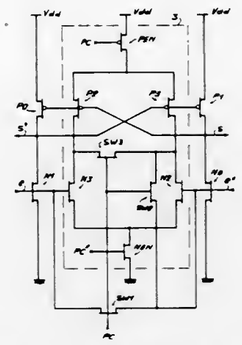
Georges Neu, Mareil sur Mauldre, France, assignor to Bull S.A., Paris, France

Filed Nov. 26, 1991, Ser. No. 799,048
Claims priority, application France, Nov. 30, 1990, 90 15057
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 **15 Claims**

5. An electronic assembly including an electronic circuit for providing at least one binary output represented by a differential voltage present on two bit lines, said two bit lines coupled to two inputs of a differential amplifier, said two bit lines precharged to a given voltage during a precharging phase which is followed by an evaluation phase, said circuit comprising:

first means for short-circuiting said two bit lines; and

second means for selectively short-circuiting at least one of two output lines of the differential amplifier to at least one of said two bit lines, wherein said first and second means are activated during said precharging phase and wherein when said second means is not activated each of said two bit lines are electrically isolated from each of said two output lines of the differential amplifier.

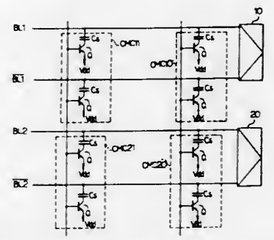


5,289,421

DYNAMIC RANDOM ACCESS MEMORY WITH LOW NOISE CHARACTERISTICS

Jin-Hyo Lee, and Kyu-Hong Lee, both of Daejeon, Rep. of Korea, assignors to Korea Electronics and Telecommunications Research Institute and Korea Telecommunications Authority, Rep. of Korea

Filed Mar. 5, 1991, Ser. No. 665,261
Claims priority, application Rep. of Korea, Nov. 6, 1990, 90-17910
Int. Cl.[5] G11C 7/02
U.S. Cl. 365—206 **6 Claims**



1. A DRAM (dynamic random access memory) with low noise characteristics, said memory comprising:

a plurality of memory cells, each memory cell serving as one bit and consisting of a pair of reference memory cells respectively arranged between a word line and a pair of adjacent bit lines, each one of said pair of reference memory cells being driven by the word line;

said reference memory cells storing signals of opposite levels corresponding to said one bit of information; and wherein

each of said reference memory cells consists of a capacitor and a switching transistor.

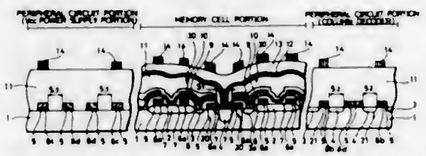
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,422

SEMICONDUCTOR DEVICE HAVING DUMMY WIRING PATTERN THEREIN AND MANUFACTURING METHOD THEREOF

Tomoharu Mametani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 784,313
Claims priority, application Japan, Nov. 1, 1990, 2-296233
Int. Cl.[5] H01L *21/70, 29/68*
U.S. Cl. 365—210 **11 Claims**



1. A semiconductor memory device formed on a semiconductor substrate having at least one memory cell array region wherein a plurality of memory cells each including a first transistor and a capacitor are formed and a peripheral circuit region wherein a plurality of second transistors for use in a peripheral circuit are formed, said semiconductor memory device comprising:

a pair of first gate electrode layers arranged in parallel and at predetermined distance from each other in said memory cell array region, each pair constituting said first transistor,

a second gate electrode layer and a dummy wiring layer arranged in parallel and at predetermined distance from each other in said peripheral circuit region to constitute one of said second transistors for use in a peripheral circuit, wherein

spacing between said paired first gate electrode layers formed in said memory cell array region is approximately the same as spacing between the second gate electrode layer and the dummy wiring layer formed in said peripheral circuit region.

5,289,423

BANK ERASABLE, FLASH-EPROM MEMORY

Virginia Natale, Milan; Gianluca Petrosino, Missaglia, and Flavio Scarra, Agrate Brianza, all of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Filed Nov. 15, 1991, Ser. No. 792,478
Claims priority, application Italy, Nov. 16, 1990, 83649 A/90; Nov. 20, 1990, 83650 A/90
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **20 Claims**

6. A FLASH-EPROM memory array formed by a plurality of memory cells, comprising:

a plurality of drain regions formed in a substrate for respective memory cells within said array;

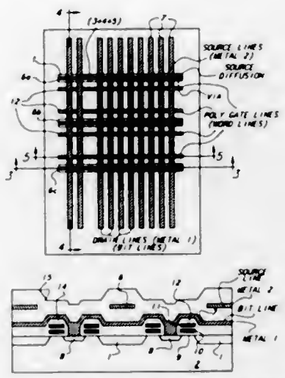
a plurality of distinct source regions formed in said substrate and adjacent respective drain region, each said source regions being physical common to a plurality of memory cells;

channel regions in said substrate between said respective drain regions and said source regions;

floating gates overlying said substrate over said channel regions and being separate by a dielectric layer from said substrate;

control gates overlying respective floating gates;

a plurality of distinct source contact lines, each electrically coupled to respective distinct source regions so that each distinct source region is electrically isolable from other distinct source regions for attaching one of said distinct source regions to a voltage potential different from other source regions; and



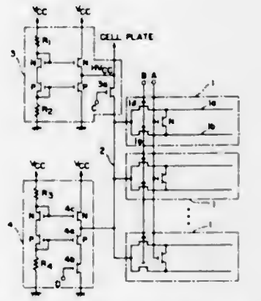
selection circuitry coupled to said source contact lines for applying a desired voltage potential to selected, distinct source contact lines.

5,289,424

PSEUDO-STATIC RANDOM ACCESS MEMORY

Nobuhiko Ito, Tenri, and Makoto Ihara, Sakurai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1992, Ser. No. 934,919
Claims priority, application Japan, Dec. 18, 1991, 3-335268
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—222 **6 Claims**



1. A pseudo-static random access memory in which refresh operations are conducted in a normal mode and a self-refresh mode, the memory comprising:

a plurality of bit-line pairs each having two bit lines;

a precharge voltage generating circuit for precharging the plurality of bit-line pairs to a first potential level during a precharge period in the normal mode, the circuit being electrically connected to the plurality of bit-line pairs during the precharge period in the normal mode; and

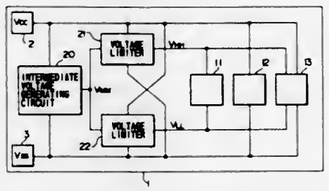
bit line discharge means for discharging the bit-line pairs during a precharge period in the self-refresh mode, thereby decreasing the potential level of the bit-line pairs to a second potential level which is below the first potential level.

5,289,425

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Masashi Horiguchi, Kawasaki; Kiyoo Itoh, Higashikurume; Yoshiki Kawajiri, Akishima; Goro Kitsukawa, Tokyo; Takayuki Kawahara, and Takesada Akiba, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,460
Claims priority, application Japan, Apr. 18, 1991, 3-086549; Sep. 3, 1991, 3-222698
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—226 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a first terminal to which a first external power supply voltage is applied;

a second terminal to which with a second external power supply voltage is applied;

first means for generating an intermediate voltage obtained by dividing said first and second external power supply voltages at a predetermined ratio;

second means for generating a first internal power supply voltage between said first external power supply voltage and said intermediate voltage; and

third means for generating a second internal power supply voltage between said second external power supply voltage and said intermediate voltage;

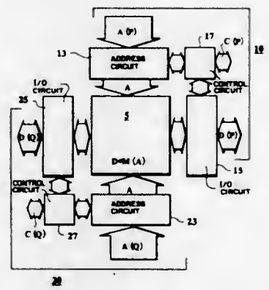
wherein, both said first and second internal power supply voltages are stabilized with said intermediate voltage as a reference.

5,289,426

DUAL PORT MEMORY HAVING ADDRESS CONVERSION FUNCTION

Keiji Namimoto, Yokohama, and Hiromasa Hayashi, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1991, Ser. No. 711,800
Claims priority, application Japan, Jun. 11, 1990, 2-149773
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.05 **14 Claims**



1. A dual port memory comprising:

a memory array, having a plurality of storing locations for storing data in a two-dimensional array, any storing location of said memory array being accessed by either of first and second inner address signals in accordance with a memory accessing two dimensional coordinate system, respectively responsive to first and second address signals different from each other in accordance with first and second two-dimensional coordinate systems;

a first address circuit associated with said memory array for receiving said first address signal, said first address signal indicating a first particular storing location in said two-dimensional array in accordance with said first coordinate system, and for converting said first address signal to said first inner address signal to be applied to said memory array in order to access said first particular storing location; and

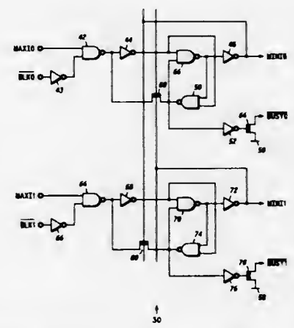
a second address circuit associated with said memory array for receiving said second address signal, said second address signal indicating a second particular storing location in said two-dimensional array in accordance with said second coordinate system, and for converting said second address signal to a second inner address signal to be applied to said memory array in order to access said second particular storing location.

5,289,427

MULTIPORT MEMORY WITH WRITE PRIORITY DETECTOR

James W. Nicholes, Gilbert, and Douglas D. Smith, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1992, Ser. No. 915,222
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.05 **13 Claims**



1. A multiport memory circuit, comprising:

a memory cell having first and second data inputs and having first and second enable inputs receiving first and second enable signals, said first enable signal allowing said first data input to receive data for storage in said memory cell, said second enable signal allowing said second data input to receive data for storage in said memory cell; and

a write priority detector coupled for receiving first and second address signals and providing said first and second enable signals respectively, said write priority detector including,

(a) a first inverter having an input receiving said first address signal and having an output,

(b) a first logic gate having first and second inputs and an output, said first input being coupled to said output of said first inverter, said output providing said first enable signal,

(c) a second logic gate having first and second inputs and an output, said first input being coupled to said output of said first inverter, said second input being coupled to said output of said first logic gate, said output being coupled to said second input of said first logic gate, and

(d) a first transistor having a gate, a drain and a source, said drain being coupled to said input of said first in-

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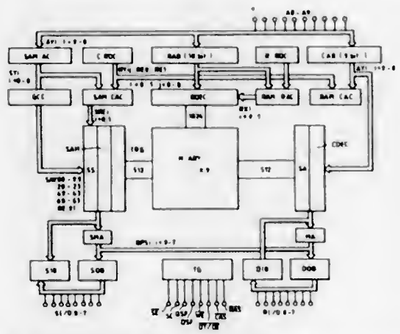
verter, said gate receiving said second enable signal, said source being coupled to said second input of said first logic gate.

5,289,428

SEMICONDUCTOR MEMORY DEVICE

Katsuyuki Sato, Akishima; Miki Matsumoto; Sadayuki Ohkuma, both of Ohme; Masahiro Ogata, Fussa, and Masahiro Yoshida, Tachikawa, all of Japan, assignors to Hitachi Ltd., and Hitachi VLSI Engineering Corp., Tokyo, Japan

Division of Ser. No. 754,019, Sep. 3, 1991, which is a continuation of Ser. No. 496,258, Mar. 20, 1990, Pat. No. 5,115,413. This application Nov. 6, 1992, Ser. No. 972,913
Claims priority, application Japan, Mar. 20, 1989, 1-65843
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.05 **18 Claims**



1. A semiconductor memory device comprising:
a first random memory array including a first bit line coupled to a plurality of memory cells;
a second random memory array including a second bit line coupled to a plurality of memory cells;
a serial memory array for converting parallel information from said first and second random memory arrays to serial information, including at least one register circuit for storing information from one of said memory cells included in said first and second random memory arrays;
selecting means for selecting one of said memory cells of said first random memory array;
first switching means for coupling said first bit line with said second bit line in response to selection of said one of said memory cells of said first memory array; and
first transfer switching means for coupling said second bit line with said register circuit so that information stored in said selected memory cell of said first random memory array can be coupled to said register circuit via said second bit line.

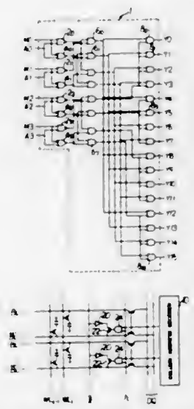
5,289,429

ADDRESS DECODER WHICH VARIABLY SELECTS MULTIPLE ROWS AND/OR COLUMNS AND SEMICONDUCTOR MEMORY DEVICE USING SAME

Nobuo Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 13, 1992, Ser. No. 867,524
Claims priority, application Japan, Apr. 11, 1991, 3-079103
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **8 Claims**

1. An address decoder comprising:
match signal generating means responsive to an inputted address signal and an address mask signal applied externally to mask any given bits of the inputted address signal, having a first logical gate circuit for generating a value irrespective of a value of the inputted address when a bit value is a designated mask value and generating an inputted address value as it is when the bit value is a nondesignated mask value, and a second logical gate circuit for generating a value irrespective of the value of the inputted address when a bit value is a designated mask value and generating an inverted inputted address value when the bit value is a nondesignated mask value, and



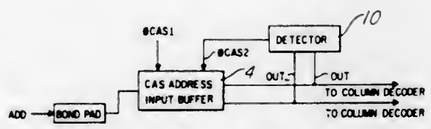
address selection signal generating means responsive to a pair of the signals outputted from said first logical gate circuit and said second logical gate circuit, for generating a plurality of address selection signals for selecting addresses having same values at bits except masked bits as the inputted address signal.

5,289,430

SELF LATCHING INPUT BUFFER

Hiep V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 799,872, Nov. 26, 1991, Pat. No. 5,144,168. This application Aug. 17, 1992, Ser. No. 931,074
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.08 **2 Claims**



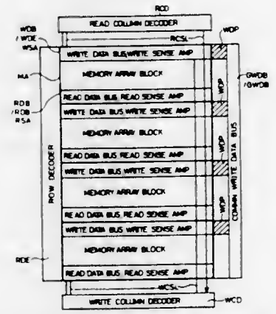
1. A random access memory self-latching input buffer circuit comprising:
a clock operable to produce a first clock signal;
an input buffer operable to receive the input of a row address from an integrated circuit bond pad in connection with the receipt of said first clock signal; and
a detector operable to receive an output from said input buffer, aid detector being further operable to produce a second clock signal in connection with the receipt of said input buffer output said input buffer being operable to latch said row address in connection with the receipt of said second clock signal.

5,289,431

SEMICONDUCTOR MEMORY DEVICE DIVIDED INTO BLOCKS AND OPERABLE TO READ AND WRITE DATA THROUGH DIFFERENT DATA LINES AND OPERATION METHOD OF THE SAME

Yasuhiro Konishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 952,929
Claims priority, application Japan, Oct. 29, 1991, 3-282773
Int. Cl.[5] G11C *8/00, 7/00*
U.S. Cl. 365—230.03 **14 Claims**



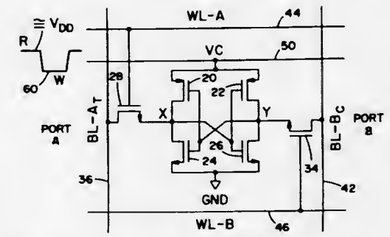
11. A semiconductor memory device comprising:
a plurality of blocks each including a plurality of dynamic memory cells disposed in a plurality of rows and a plurality of columns, and a plurality of bit line pairs provided correspondingly to said plurality of columns;
first selecting means for selecting any of said plurality of bit line pairs in each of said blocks in a data writing operation;
second selecting means for selecting any of said plurality of bit line pairs in each of said plurality of blocks in a data reading operation;
block selecting means for selecting any of said plurality of blocks; and
a plurality of write data line pairs provided corresponding to said plurality of blocks each for receiving write data; wherein
each of said bit line pairs includes first and second bit lines, and
each of said write data line pairs includes first and second write data lines;
said semiconductor memory device further comprising;
a plurality of connecting means which are provided corresponding to said plurality of blocks, each for electrically connecting said first and second bit lines included in the bit line pair selected by said first selecting means to said first and second write data lines included in the corresponding write data line pair, in the corresponding block,
a plurality of read data line pairs provided corresponding to said plurality of blocks, each for externally transmitting read data,
each of said plurality of read data line pairs including first and second read data lines;
a plurality of transmitting means provided corresponding to said plurality of blocks, each for transmitting potential variation in said first and second bit lines included in the bit line pair selected by said second selecting means to said first and second read data lines included in the corresponding read data line pair, in the corresponding block;
a plurality of read amplifier means provided corresponding to said plurality of blocks, each for amplifying potential difference between said first and second read data lines included in the corresponding read data line pair;
a plurality of equalizer means provided corresponding to said plurality of blocks each for equalizing said first and second bit lines included in each of said plurality of bit line pairs in the corresponding block, to a predetermined potential, when the corresponding block is not selected by said block selecting means; and
a plurality of precharging means provided corresponding to said plurality of blocks, each for precharging said first and second write data lines included in the corresponding write data line pair, to said predetermined potential, when the corresponding block is not selected by said block selecting means in the data writing operation.

5,289,432

DUAL-PORT STATIC RANDOM ACCESS MEMORY CELL

Sang H. Dhong, and Hyun J. Shin, both of Mahopac, N.Y., assignors to International Business Machines Corporatioo, Armonk, N.Y.

Filed Apr. 24, 1991, Ser. No. 690,739
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.05 **6 Claims**



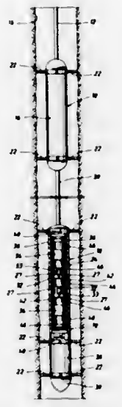
1. A dual port, static, random access memory cell comprising:
first and second word lines and first and second bit lines;
a pair of semiconductor memory devices, each having a first electrode and a control electrode cross connected to a first electrode of another one of said pair to create a bistable circuit for storing true and complement logic levels, said semiconductor memory devices coupled between a common potential and a power supply line connected to a power supply that provides at least a first voltage level;
a first access semiconductor connected between said first bit line and one of said semiconductor memory devices, said first access semiconductor having a control electrode connected to said first word line;
a second access semiconductor connected between said second bit line and another of said semiconductor memory devices, said second access semiconductor having a control electrode connected to said second word line;
first read/write means coupled to said first bit and word lines for applying write potentials to said first bit and word lines to switch the conduction states of said semiconductor memory devices; and
means connected to said power supply for applying a second voltage level that is reduced in voltage level relative to said first voltage level on said power supply line when said first read/write means applies said write potentials, said second voltage level being at least 50% of said first voltage level, whereby a logic level at said second access semiconductor continues to exhibit a voltage level consistent with a predetermined logic state at said second access semiconductor.

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5,289,433
ACOUSTIC MULTI-MODE WIDE-BAND LOGGING DEVICE

Christopher S. Cowles, Houston; Jacques P. Leveille, Bellaire; Paul J. Hatchell, Houston; Jesus A. Mireles, Sugar Land, and Robert D. Clifton, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 960,167
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—34 **55 Claims**



1. A method for obtaining wide-band composite signals over a selected operating bandwidth with a receiver sonde in a liquid containing borehole, the width-band composite signals providing faithful representations over the selected operating bandwidth of selected acoustic signals within the borehole so that accurate determinations of phase and amplitude differences between the selected acoustic signals of the borehole may be obtained in the processing of the composite signals, the method comprising the steps of:

(a) selecting transducers whose frequency response characteristics to an input acoustic signal include a lowest resonant-response region which is above the highest frequency within the selected operating bandwidth, wherein the transducers are capable of providing an approximately constant ratio in amplitude and substantially little phase difference between an output response signal from each said transducer and the input acoustic signal to each said transducer over the selected operating bandwidth, thus, each said transducer is capable of producing the output response signal to be a faithful representation of the input acoustic signal;

(b) attaching the selected transducers to chassis to form receiver stations;

(c) disposing the receiver stations longitudinally within a sonde to form a receiver array;

(d) locating the sonde within the liquid containing borehole;

(e) generating acoustic waves within the borehole, the acoustic waves providing the input acoustic signal to each said transducer;

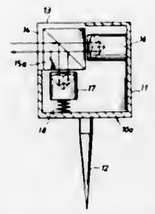
(f) producing an output response signal from each said transducer from the input acoustic signal, wherein the output response signal has an approximately constant ratio in amplitude and substantially little phase difference between the output response signal and the input acoustic signal over the selected operating bandwidth; and

(g) selectively combining output response signals from each receiver station to form a wide-band composite signal for each said receiver station.

5,289,434
RETROREFLECTOR APPARATUS FOR REMOTE SEISMIC SENSING

Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 18, 1992, Ser. No. 946,712
Int. Cl.[5] H04R *21/00*
U.S. Cl. 367—178 **56 Claims**



1. A remote detector apparatus for use with a bipolarized, differential mode, laser differential interferometry, remote sensing system, the remote sensing system having a receiver which is adapted to combine two return sensing signals from said remote detector apparatus in a process to obtain a difference signal which represents selected motions at a selected location and to cancel common mode signals on the return sensing signals, said remote detector apparatus being located at the selected location and adapted to detect the selected motions, said remote detection apparatus also being adapted to enable the remote sensing system to reduce turbulent noise on the resulting difference signal by providing for the turbulent noise to be common mode signals, the turbulent noise being caused by atmospheric effects between the receiver and said remote detector apparatus, the remote detector apparatus comprising:

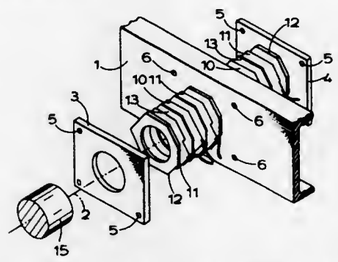
a casing, the casing being functional to couple to motions at the selected location, the motions having directions of movements in any of three orthogonal directions at the selected location, the motions including the selected motions; and

a means mounted on the casing which is functional for converting a single sensing beam of substantially monochromatic frequency into a single return beam having two overlapping transversely polarized return sensing signals which contain between them the difference signal which represents the selected motions at the selected location, said means providing for (1) splitting the sensing beam into two signals, (2) deflecting one signal of the signals, (3) frequency modulating the deflected signal with the selected motions on the casing thereby Doppler shifting the deflected signal to contain Doppler shifted frequency components that represent the selected motions, (4) polarizing both of the signals such that the signals are transformed into polarized sensing signals having polarities transverse with respect to each other, (5) combining the polarized sensing signals, one of which contains the Doppler shifted frequency components representing the selected motions, into the return beam having overlapping transversely polarized return sensing signals, and (6) directing the return beam to a return propagation path which takes the return beam to the receiver, wherein the two overlapping transversely polarized return sensing signals of the return beam occupy substantially the same air space on the return propagation path, thus the atmospheric effects on the sensing beam and the overlapping return sensing signals result in turbulent noise on the single sensing beam and the single return beam which are common mode signals to both said return sensing signals, the common mode signals being canceled in the receiver thereby reducing the effects of turbulent noise on the resulting difference signal.

5,289,435
CAPACTIVE FORCE TRANSDUCER

Peter J. Milner, Warwickshire, and Andrew R. Fry, Hertfordshire, both of England, assignors to Bloxwich Engineering Limited, England

Filed Jul. 27, 1992, Ser. No. 915,730
Claims priority, application United Kingdom, Feb. 3, 1990, 9002433
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—181 **21 Claims**

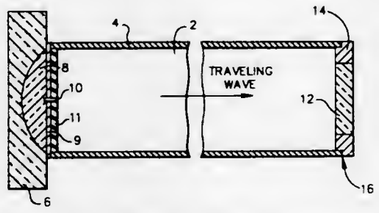


1. An electro-mechanical transducer assembly of the variable capacitance type comprising a first load-transmitting member having a central axis and extending through a second load-transmitting member, two axially spaced flanges on the first member lying on opposite sides of a transversely extending portion of the second member, resilient means for transmitting axial loads between each of the flanges and the said portion between them, whereby forces in both axial directions can be resiliently transmitted, the resilient means being symmetrically disposed around the axis, and electrical capacitor plates mounted on both flanges and both faces of the said portion of the second member, the plates being distributed symmetrically about those flanges and that portion, so that on relative axial displacement of the members under load in either direction the capacitance between the plates on one side of the portion increases while that on the other side decreases.

5,289,436
ULTRASONIC WAVEGUIDE

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Oct. 22, 1992, Ser. No. 965,595
Int. Cl.[5] H04B *11/00*
U.S. Cl. 367—191 **20 Claims**



1. An ultrasonic waveguide comprising:

tubular wall means having a channel of substantially constant cross section formed therein and having first and second open ends;

first and second fluid-tight sealing means connected to said tubular wall means for respectively closing said first and second open ends to make said channel fluid-tight; and

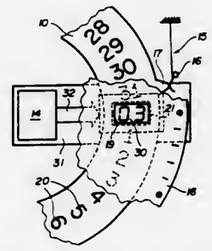
a viscous, compressible fluid medium filling said fluid-tight channel,

wherein said first and second fluid-tight sealing means respectively comprise first and second coupling means for allowing ultrasonic waves to propagate axially into and out of said fluid medium at said ends of said channel, said fluid medium and the dimensions and material of said tubular wall means being selected such that the eigenvalues η and ξ satisfy a characteristic equation $F_n(\omega, \eta, \xi)=0$ resulting from the coupling at the interface between said tubular wall means and said fluid.

5,289,437
CONCEALED DISPLAY

Claude-Eric Leuenberger, Carouge, and Gaston Schweighauser, Perly-Certoux, both of Switzerland, assignors to Montres Rolex S.A., Switzerland

PCT No. PCT/CH91/00267, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/10795, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 13, 1991, Ser. No. 916,113
Claims priority, application Switzerland, Dec. 14, 1990, 3973/90
Int. Cl.[5] G04B *19/20*
U.S. Cl. 368—37 **11 Claims**



1. A wristwatch with analog time display comprising a watch face with a window, said watch face carrying indicia on a first surface thereof and having a rotatable disc supplying information relating to at least one of a day of a week and a date of a month located adjacent a second opposed surface of said watch face, said information being located on a peripheral zone of said rotatable disc and current information concerning at least one of a current day of a week and a current date of a month being displayable through said window in said watch face,

wherein said rotatable disc (**10**) has at least one opening (**21**) formed therein at a peripheral zone adjacent the peripheral zone carrying said information and supplemental information is displayable via a display device through said opening (**21**) when said opening (**21**) coincides with said window (**19**).

5,289,438
METHOD AND SYSTEM FOR ALTERING CONSCIOUSNESS

James Gall, 16621 E. Jacklin Dr., Fountain Hills, Ariz. 85268

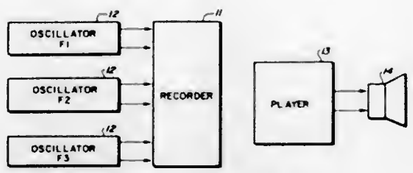
Division of Ser. No. 642,439, Jan. 17, 1991, Pat. No. 5,123,899.
This application Apr. 13, 1992, Ser. No. 867,326
Int. Cl.[5] G10F *1/00*
U.S. Cl. 369—4 **2 Claims**

1. A method of making a sound recording comprising the steps of producing and recording a first sound having a uniform frequency and a distinctive wave form, and simultaneously producing and recording on the same record a second sound having a different wave form and having a frequency which is related to the frequency of the first sound by the equation:

$$g=2^{n/4}\cdot f$$

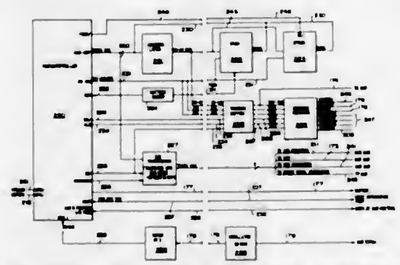
VOL 1159 ISS 4 FE 22 1994 UMI

wherein:
f=the frequency of the first sound;



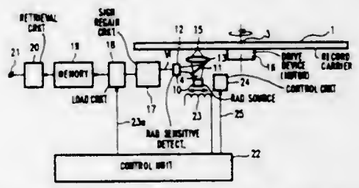
g=the frequency of the second sound; and
n=a positive or negative integer.

5,289,439
CD TRANSPORT APPARATUS
Michael A. Koulopoulos, Andover, Mass.; Ronald P. Rappel, Peterborough, N.H., and Thomas R. Hegg, Chestnut Hill, Mass., assignors to Vimak Corporation, Woburn, Mass.
Filed May 27, 1992, Ser. No. 889,609
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 **9 Claims**



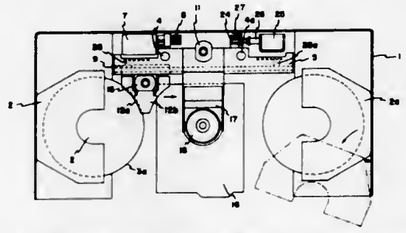
1. A compact disc transport apparatus, said apparatus being capable of receiving a standard compact disc, reading the digitally encoded information from said compact disc, processing said digitally encoded information, toward transmitting audio signals in a digital format together with digital audio control signals, said compact disc apparatus comprising:
CD platform means for accepting, rotating and positioning said compact disc so as to facilitate reading by an optical CD pickup;
CD engine means for controlling said CD platform means and said optical CD pickup and formatting said digitally encoded information as it is read from said compact disc when said optical CD pickup is in an engaged position and providing a digital audio signal output and an audio control signal output;
control means for controlling said CD platform means and said CD engine means, said control means including control switch means for commanding said CD engine to move said optical CD pickup to a desired position on the compact disc;
digital audio signal processing means operably connected to said CD engine means and said control means for processing said digital audio signal from said CD engine means;
said digital audio signal processing means further serving to ramp down the gain of said digital audio signal to substantially minimize clicking and popping when said optical CD pickup is in said engaged position and said control means has been commanded to move said optical CD pickup within the current track in response to instructions issued by the user through said control means;
said digital audio signal processing means further serving to ramp up the gain of said digital audio signal to its original level when said optical CD pickup is in said engaged position and said control means is no longer being commanded by the user to move said optical CD pickup within the current track;
digital transmission means connected to said digital audio signal processing means for transmitting said digital audio signal together with said audio control signal to an external digital audio processing device.

5,289,440
OPTICAL READING DEVICE AND OPTICAL RECORDING DEVICE
Johannes L. Bakx, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 28, 1992, Ser. No. 952,028
Claims priority, application Netherlands, Dec. 30, 1991, 9102190
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 **10 Claims**



1. An optical reading device for reading information recorded in a track of an optical disc carrier, the device comprising:
a radiation source for generating a radiation beam;
an optical system for directing the radiation beam via the track onto a radiation-sensitive detector, the radiation beam producing a scanning spot on the disc carrier;
a driving device for displacing the scanning spot with respect to the disc carrier in a longitudinal direction of the track at a given scanning rate;
a signal regaining circuit for regaining the information recorded on the track on the basis of a detection signal supplied by the radiation-sensitive detector;
a load circuit for loading the information regained by the regaining circuit in an output buffer memory at a given load rate;
a signal retrieval circuit for retrieving the information loaded in the buffer memory at a given retrieval rate which is lower than the load rate;
control means for interrupting loading of the information regained by the regaining circuit in the buffer memory, for displacing the scanning spot after a given time interval to a track portion where loading was interrupted and for subsequently resuming loading of the information regained by the regaining circuit at an instant when the scanning spot reaches the track position where loading of the buffer memory was interrupted, such that a filling level of the buffer memory remains between given limits; and
means for switching off at least the radiation source in time intervals in which loading of the buffer memory is interrupted.

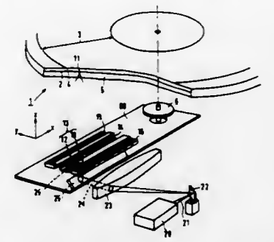
5,289,441
RECORD PLAYING DEVICE HAVING MULTIPLE RECORDS BEING PLAYED CONTINUOUSLY
Hans Domberg, Hullhorst, and Georg Seidel, Minden, both of Fed. Rep. of Germany, assignors to Deutsche Wurlitzer GmbH, Stemwede, Fed. Rep. of Germany
Filed Feb. 14, 1992, Ser. No. 836,099
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1991, 4105016
Int. Cl.[5] G11B *17/22, 17/08*
U.S. Cl. 369—34 **13 Claims**



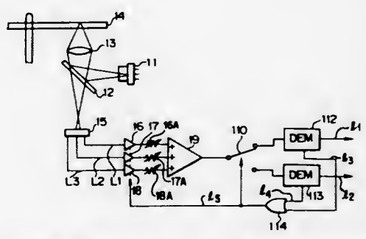
1. Record play-back device with two record magazines lying opposite one another, each one for accommodating a stack of records consisting of records lying over one another, with a play-back unit below and between the record magazines, having a transport mechanism capable of moving in a direction of each stack of records, said mechanism including, in the transverse direction between the two stacks of records, a mobile transverse sliding carriage that transports a desired record from a record magazine to the play-back unit and from the play-back unit to the record magazine between a place within the record magazine and the play-back unit,
wherein each record magazine (2, 2*a*)displays for each record (3) at least one holder element (20 to 22*a*) releasably accommodating an outer rim (3*a*) of the record, and that the transverse sliding carriage (9) includes at least on gripping arrangement (12*a*), which seizes the desired record (3) at the record rim (3*a*) and, with movement of the transverse sliding carriage (9), releases it from the holder element (20 to 22*a*) of the record magazine (2, 2*a*), the transverse sliding carriage (9) includes a first gripping arrangement (12*a*) directed toward the first record magazine (2) and a second gripping arrangement (12*b*) directed toward the second record magazine (2*a*), both gripping arrangements (12*a*, 12*b*) being fixedly attached adjacent each other at the sliding carriage (9) and being constructed as an upper and a lower gripping jaw (13, 14), said gripping jaws (13, 14) having a periphery, as seen in the vertical direction, that corresponds to a predetermined section of a periphery of the record rim (3*a*) of the records (3) contained in the first and the second record magazines (2, 2*a*), respectively.

5,289,442
OPTICAL SCANNER WITH A LONG FAST ACCESS STROKE
Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 2, 1992, Ser. No. 969,918
Claims priority, application European Pat. Off., Jun. 19, 1992, 92201788.4
Int. Cl.[5] G11B *21/10*
U.S. Cl. 369—44.22 **16 Claims**

1. A device for optically scanning a surface over a given stroke in the X direction in a rectangular system of coordinates XYZ, which surface is substantially parallel to the X-Y plane, said device comprising a radiation source for supplying a radiation beam, an objective lens for focusing the radiation beam on the surface in the Z direction, said objective lens being mounted in an objective system comprising a permanent magnet, and a system of coils for electromagnetically supporting and driving the objective system, said system of coils comprising a plurality of coil pairs, each coil pair comprising two coils arranged one above the other in the Z direction, characterized in that the coil system is secured in the device in a stationary manner and comprises two parallel rows of coil pairs located at both sides of the objective system over the length of the stroke, said rows of coil pairs magnetically cooperating with the permanent magnet throughout the stroke.



5,289,443
APPARATUS FOR PLAYING OPTICAL RECORDING MEDIA OF DIFFERENT RECORDING DENSITIES
Takanori Maeda, and Takayuki Nomoto, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 29, 1991, Ser. No. 737,258
Claims priority, application Japan, Jan. 16, 1991, 3-3412
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.36 **4 Claims**



1. An optical recording medium player for driving an optical recording medium carrying thereon an information signal optically recorded thereon and for reproducing said information signal from a light beam optically modulated through said recording medium caused by irradiation of a light beam on said recording medium, which comprises:
photoelectric converting means having light receiving surface for receiving said modulated light beam and being divided into at least one central region and at least one peripheral region;
adding means for adding output signals obtained from said central region and peripheral region;
discriminating means for discriminating the types of said optical recording medium being played back; and
sensitivity adjusting means for reducing the sensitivity of a signal processing system including said central region below the sensitivity of a signal processing system including said peripheral region in accordance with the results of discrimination by said discriminating means.

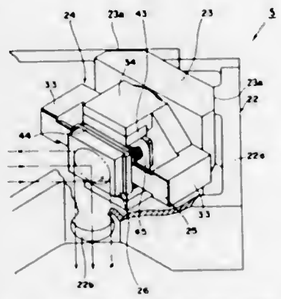
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,444

GALVANOMIRROR UNIT

Akihiro Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1991, Ser. No. 808,690
Claims priority, application Japan, Dec. 17, 1990, 2-406427
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.14 **34 Claims**



25. A galvanomirror unit in which a laser beam form a laser source is reflected towards an objective lens which is linearly moved across tracks of an optical disc in a radial direction, wherein said galvanomirror unit comprises:

an immovable retainer;

a yoke supported on said retainer allowing for angular adjustment of said yoke about vertical and horizontal axes; and

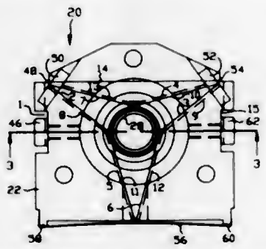
a galvanomirror supported on said yoke in a manner which allows for angular deflection of said galvanomirror with respect to said yoke.

5,289,445

SUSPENSION SYSTEM FOR FOCUS ACTUATOR OF AN OPTICAL DISK DRIVE

Francis S. Luecke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 11, 1992, Ser. No. 834,045
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.15 **36 Claims**



1. A mounting system for mounting and constraining an optical lens for movement in an axial direction comprising:

a support member having top and bottom surfaces and a central aperture extending between said top and bottom surfaces;

an elongated movable lens support bobbin disposed in said aperture the moveable lens support bobbin having a periphery and upper and lower ends; and

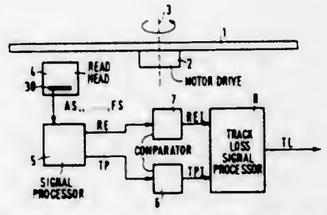
wire support means for interconnecting the movable lens support bobbin and the support member, the wire support means engaging the movable lens support bobbin along the periphery so as to form a plurality of loops about each of the upper and lower ends, the plurality of loops forming a three pointed star around the bobbin.

5,289,446

DEVICE FOR SCANNING A RECORD CARRIER

Anthonius L. J. Dekker, Zürich, Switzerland, and Antonius H. M. Akkermans, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,813
Claims priority, application European Pat. Off., Oct. 23, 1991, 91202743.0
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.25 **1 Claim**



1. A device for scanning a record carrier having essentially parallel tracks, the device including a read head for scanning the record carrier with a radiation beam focused to a scanning point which is moved across the record carrier, the read head including a detector for producing detection signals which depend on the position of the scanning point relative to the tracks; the device further comprising:

a first signal processor coupled to the read head for deriving from the detection signals a tracking error signal and a track position signal, the tracking error signal being indicative of deviation between the scanning point and the middle of the nearest track over a certain range on either side of such track, and the track position signal indicating whether the scanning point is positioned between two tracks or is essentially on a track;

first comparing means for detecting whether the track position signal exceeds a first threshold;

second comparing means for detecting whether the tracking error signal is situated within an amplitude window established by a second positive threshold and a third negative threshold; and

a second signal processor for deriving a track loss signal from the results of the detections performed by the first and second comparing means, which track loss signal denotes that the scanning point no longer follows a track;

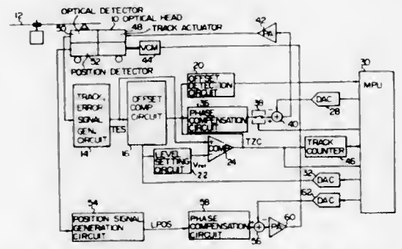
characterized in that the second signal processor is adapted to produce the track loss signal only in the case that an intersection of the first threshold by the track position signal is detected and, furthermore, the tracking error signal remains outside of said amplitude window for a specific time window surrounding detection of said intersection.

5,289,447

TRACK CROSS SIGNAL GENERATION CIRCUIT OF OPTICAL DISK DEVICE FOR CORRECTLY OUTPUTTING TRACK CROSS SIGNAL AND CORRECTLY AND STABLY CARRYING OUT SEEK OPERATION EVEN WITHIN HIGH-SPEED REGION OF BEAM

Shigeko Kobayashi, Kawasaki; Akira Minami, Inagi, and Shigenori Yanagi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 4, 1992, Ser. No. 846,122
Claims priority, application Japan, Mar. 5, 1991, 3-038542
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 **17 Claims**



1. A track cross signal generation circuit of an optical disk device comprising:

a tracking error signal generation circuit for generating a tracking error signal related to tracks formed on an optical recording medium of said optical disk device in accordance with a received optical signal obtained from said optical recording medium through an optical head;

an offset compensation circuit, connected to said tracking error signal generation circuit, for removing an offset from said tracking error signal output from said tracking error signal generation circuit;

a level setting circuit for setting a reference level in accordance with an offset value based on a difference between a group potential and a zero crossing level of said tracking error signal; and

a comparator, connected to said tracking error signal generation circuit and said level setting circuit, for directly receiving said tracking error signal without passing through said offset compensation circuit and said reference level output from said level setting circuit, comparing said tracking error signal with said reference level, and generating a track cross signal representing the tracks formed on said optical recording medium crossed by a beam.

5,289,448

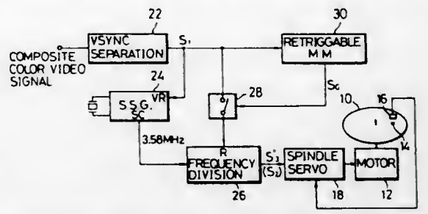
ROTATION CONTROL APPARATUS FOR USE WITH RECORDING MEDIUM

Kouichi Sato, Fujimi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 769,052, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 238,532, Aug. 31, 1988, abandoned. This application Oct. 28, 1992, Ser. No. 967,935
Claims priority, applicatioo Japan, Aug. 31, 1987, 62-217534
Int. Cl.[5] G11B *19/24*
U.S. Cl. 369—50 **9 Claims**

1. A rotation control apparatus for controlling the rotation of a recording medium, wherein an internal synchronizing signal from a synchronizing signal generating means, or an external synchronizing signal being separated from a recording signal, is supplied to a servo circuit as a reference signal; and a motor for rotating said recording medium is controlled by said servo circuit; comprising:

an output terminal of said synchronizing signal generating means connected to a reference signal input terminal of said servo circuit; wherein, when said recording signal is supplied, said external synchronizing signal being separated from said recording signal is supplied to a reset



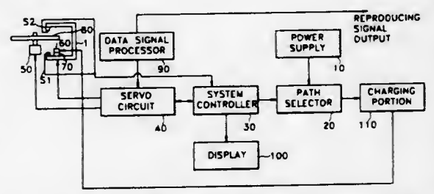
terminal of said synchronizing signal generating means, so that a phase of said internal synchronizing signal coincides with a phase of said external synchronizing signal.

5,289,449

CIRCUIT FOR CONTROLLING OPTICAL PICKUP POSITION IN OPTICAL DISC APPARATUS AFTER POWER IS TURNED OFF

Yeon-tak Han, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 27, 1992, Ser. No. 826,457
Claims priority, application Rep. of Korea, May 10, 1991, 91-7585
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—53 **20 Claims**



1. A circuit for controlling optical pickup position in an optical disc reproducing apparatus, said circuit comprising:

pickup means for reproducing information from a disc having information recorded on a first side and a second side, opposite to said first side, of said disc;

pickup transferring means for providing a transfer path for said pickup means between facing said first side and facing said second side of said disc;

a feed motor for controlling movement of said pickup means along said pickup transferring means;

pickup position detecting means mounted on inner ends of said pickup transferring means for detecting whether said pickup means faces one of said first side and said second side of said disc;

display means for displaying a result of position detection by said pickup position detecting means; and

a charging portion for supplying electrical power to said feed motor immediately after said optical disc reproducing system is turned off to transfer said pickup means to an innermost circumference of a last side of said disc, said last side being a one of said first side and said second side said pickup means is facing when said optical disc reproducing apparatus is turned off, said charging portion comprising separate first charging means corresponding to said first side and second charging means corresponding to said second side of said disc.

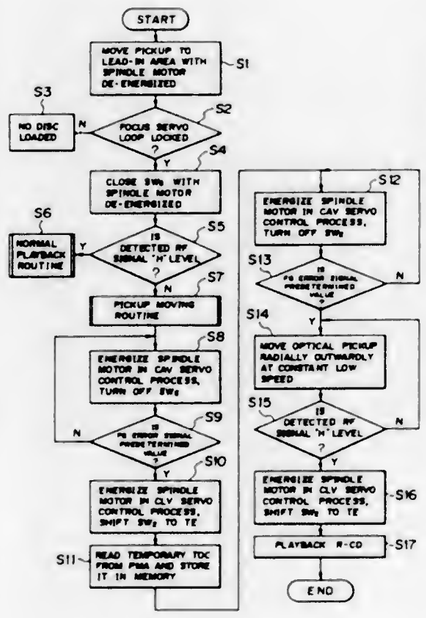
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,450

METHOD OF AND APPARATUS FOR PLAYING BACK RECORDABLE OPTICAL DISC

Katsuji Mizumoto, and Mutsumi Kono, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,143
Claims priority, application Japan, Jan. 8, 1991, 3-193217
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—54 **8 Claims**



1. A method of reproducing recorded information from a recordable optical disc with a light beam applied from pickup means to the recordable optical disc, the recordable optical disc having a program area for recording main information, a recording history area for recording recording history information relative to main information which is in the process of being recorded in the program area, and an index area for recording, as index information, recording history information relative to main information which has fully been recorded in the program area, said method comprising steps of:

(a) determining whether index information is recorded in said index area while the recordable optical disc is at rest;

(b) moving said pickup means to a region of said recording history area, where the recording history information is recorded, while the recordable optical disc is at rest, if index information is not recorded in said index area;

(c) reading said recording history information from said region with said pickup means while the recordable optical disc is being rotated, after said pickup means has reached said region; and

(d) moving said pickup means to said program area while the recording optical disc is being rotated at a constant speed after said recording history information has been read from said region.

5,289,451

OPTICAL INFORMATION RECORDING/REPRODUCTION APPARATUS INCLUDING MEANS FOR DETECTING THE TYPE OF RECORDING MEDIUM

Takaaki Ashinuma; Shigeru Aoi; Makoto Shiho, all of Yokohama; Yasuo Suzuki, Tokyo; Takehiko Shibata, Kokubunji; Masaharu Tsukada, Kawasaki; Nobuhiro Kasama, Yokohama, and Takayuki Aizawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 643,086, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 122,647, Nov. 12, 1987, abandoned, which is a continuation of Ser. No. 802,717, Nov. 27, 1985, abandoned. This application Sep. 30, 1992, Ser. No. 953,774

Claims priority, application Japan, Nov. 29, 1984, 59-252382; Dec. 5, 1984, 59-255796; Dec. 10, 1984, 59-259280; Dec. 10, 1984, 59-259281; Dec. 12, 1984, 59-262540; Dec. 12, 1984, 59-262541; Dec. 12, 1984, 59-262542; Dec. 27, 1984, 59-280645; Dec. 30, 1984, 59-280847; Jan. 10, 1985, 60-1453
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—58 **23 Claims**

1. An information recording apparatus comprising:

recording means for recording information on a recording medium having at least one information track recorded thereon;

identifying means for identifying the difference between recording media which employ different recording and reproducing methods, respectively, wherein said identifying means comprises reading means for reading out identification code information from said at least one information track with the same reading operation condition regardless of the difference between the recording media and means for identifying the difference between recording media on the basis of the identification code information read out by said reading means, said difference between recording media to be identified, being at least two types selected from only-reproducible type media, writable-and reproducible type media and writable-reproducible-erasable type media; and

control means for performing a control operation controlling an operation parameter of said recording means in response to the type of recording medium identified by said identifying means when the type of the recording medium is identified by said identifying means, and for cancelling performance of the control operation when the type of the recording medium is not identified by said identifying means.

5,289,452

MULTIFUNCTION ELECTRONIC ANALOG TIMEPIECE

Kenji Sakamoto; Akihiko Maruyama; Tatsuo Moriya; Hiroshi Yabe; Takashi Kawaguchi, and Masato Yoshino, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 368,455, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 340,620, Apr. 19, 1989, Pat. No. 5,016,231. This application Jan. 22, 1993, Ser. No. 8,061

Claims priority, application Japan, Jun. 17, 1988, 63-150812; Jun. 17, 1988, 63-150873; Jul. 14, 1988, 63-176040
Int. Cl.[5] G04B *23/02, 19/04*; G04F *8/00*
U.S. Cl. 368—73 **24 Claims**

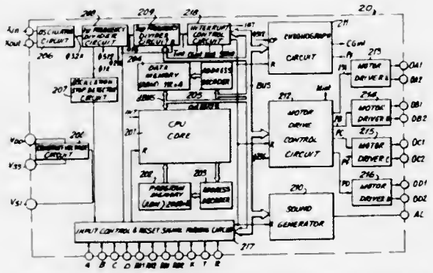
1. A multifunction electronic analog timepiece comprising a face, a plurality of indicators for displaying at least two time keeping functions on the face, a plurality of step motor means for driving at least one of the plurality of indicators, the indicators being positioned at arbitrary positions about the face in accordance with the number of step motor means and positioning of step motor means, and microcomputer means having a program memory for generating an actuating signal, the program memory storing reprogrammable software instruction for controlling the production of the actuating signal,

microcomputer means having a programmable memory for generating an actuating signal, said programmable memory storing software for controlling the production of the actuating signal;

motor drive control means coupled to said microcomputer means for selectively producing at least one of a plurality of drive mode signals in response to said actuating signal;

drive reference signal forming means coupled to said microcomputer means for forming, in response to said actuating signal, a plurality of drive reference clocks each of a selected frequency and pulse duration determined by said actuating signal;

at least one drive pulse forming means associated with each of said step motor means and coupled to at least said motor drive control means and to said drive reference signal forming means for generating a drive pulse waveform of a desired frequency and number of pulses in response to at least one of said drive reference clocks and at least one of said drive mode signals;



a drive pulse selecting means associated with each of said step motor means and coupled to the associated drive pulse forming means, said motor drive control means and one of said step motor means for receiving said drive mode signals and at least the associated drive pulse waveform and in response thereto applying a driving signal, formed from said associated drive pulse waveform and with desired mode, to the associated step motor means, whereby the software stored in said microcomputer means independently drives each of said motor means; and an IC, the microcomputer means being formed within said IC, the microcomputer means including a core CPU, the software commands stored within said program memory actuating said core CPU.

5,289,453

OPTICAL INFORMATION RECORDING METHOD

Eiji Ohno, Hirakata; Kenichi Nishiuchi, Moriguchi; Noboru Yamada, Hirakata, and Nobuo Akahira, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 765,512, Sep. 25, 1991, Pat. No. 5,233,599, which is a division of Ser. No. 657,822, Feb. 20, 1991, Pat. No. 5,130,971. This application Aug. 31, 1992, Ser. No. 937,101

Claims priority, application Japan, Mar. 14, 1990, 2-63165; Aug. 30, 1991, 3-219551
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—100 **15 Claims**

1. An optical information recording method in which a digital signal subjected to pulse width modulation is overwritten on an optical disk by using one laser spot;

the optical disk including a first dielectric film, a recording film, a second dielectric film and a reflecting film stacked on a substrate in this order;

the recording film having composition defined by a formula $Ge_xSb_yTe_z$ wherein x, y and z are atomic percentages satisfying $45 \leqq z \leqq 55.5$, $0.5 \leqq y/(x+y) \leqq 0.72$ and $x+y+z=100$;

the recording film having a thickness of 10 to 35 nm;

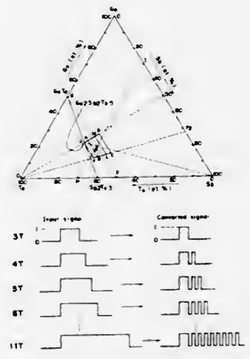
the second dielectric film having a thickness of 5 to 40 nm;

the reflecting film being made of one or an alloy of at least Au, Al, Ti, Cr and Ni and having a thickness of 35 nm or more;

the optical information recording method comprising the steps of:

converting each of a plurality of pulses contained in the digital signal, into a pulse train composed of a plurality of pulses; and

modulating a laser power between an erasing level and a recording level by the pulse train and forming a recording mark on the optical disk by the pulse train so as to record the digital signal on the optical disk;



wherein the step of converting the plurality of pulses into the pulse train further comprising the step of forming the pulse train having a leading pulse and a subsequent pulse train;

wherein the pulses of the subsequent pulse train have an identical width and being arranged at an identical interval;

wherein the leading pulse having, at all times irrespective of length of the recording mark, a fixed width larger than the width of each of the pulses of the subsequent pulse train;

wherein when the recording mark has an n-th length (n=natural number), the number of the pulses in the subsequent pulse train is (n−1).

5,289,454

OPTICAL DISC ADDRESSING DEVICES A METHOD OF USE THEREOF

Sarat K. Mohapatra, Woodbury, and William C. Tait, Oak Park Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

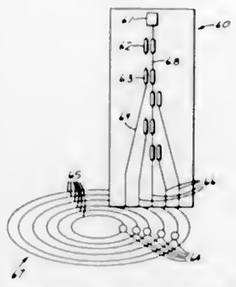
Filed Dec. 19, 1991, Ser. No. 810,213
Int. Cl.[5] G02B *6/00*
U.S. Cl. 369—112 **10 Claims**

1. A method for reading an optical disc comprising the steps:

(a) launching a single light beam from a single laser diode into an array of waveguides that are serially demultiplexed or addressed in parallel onto a multiplicity of data tracks, such that the number of data points read, simulta-

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neously or sequentially across the width of the disc are limited by the rotational speed of the optical disc, and



(b) sensing the data read from the optical disc with a sensing means.

5,289,455

INFORMATION RECORDING AN/OR REPRODUCING APPARATUS

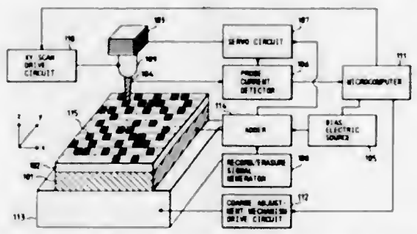
Ryo Kuroda, Atsugi; Akihiko Yamano, Yokohama; Hiroyasu Nose, Zama; Toshihiko Miyazaki, Hiratsuka, and Takahiro Oguchi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1991, Ser. No. 734,700

Claims priority, application Japan, Jul. 25, 1990, 2-194825

Int. Cl.[5] **G11B** *9/00*

U.S. Cl. 369—126 **19 Claims**



1. An apparatus for recording and/or reproducing information onto/from a medium through a probe electrode, said apparatus comprising:

voltage applying means for applying a voltage between the medium and the probe electrode;

distance adjusting means for adjusting a distance between the medium and the probe electrode in such a manner that current becomes a predetermined current value, the current flowing between the medium and the probe electrode when the voltage is applied between the medium and the probe electrode; and

current value changing means for changing the predetermined current value in accordance with the voltage applied by the voltage applying means.

5,289,456

METHOD OF FORMING A MAGNETO-OPTICAL DISK HUB IN WHICH THE INNER PERIPHERAL EDGE PORTION OF THE SPINDLE OPENING IS STRENGTHENED AND MADE ABRASION RESISTANT

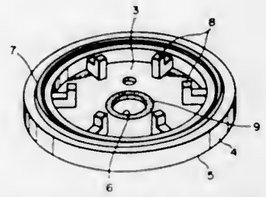
Kenji Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 884,305, May 11, 1992, Pat. No. 5,226,033, which is a continuation of Ser. No. 672,834, Mar. 21, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,190

Claims priority, application Japan, Mar. 27, 1990, 2-077972; Mar. 30, 1990, 2-084308

Int. Cl.[5] **G11B** *7/26, 3/70, 5/84*

U.S. Cl. 369—290 **4 Claims**



3. A process for forming a hub of a magneto-optical disk, comprising:

forming an annular metal plate, said metal plate having a circular spindle opening centered at a center of said annular metal plate and a drive opening;

forming an annular outer member for attachment to an outer peripheral edge portion of said annular metal plate and having an annular rib located on a recording body side and a plurality of guiding ribs;

forming a metal layer on an inner peripheral edge portion of said annular metal plate; and

impregnating the metal layer with a fluoric resin layer.

5,289,457

DISC CARTRIDGE WITH BENT SPRING DESIGN FOR CLOSING A CLOSURE SHUTTER

Noboru Akiyama, Kyoto, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Yokyo, Japan

Division of Ser. No. 835,065, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 344,580, Apr. 28, 1989, abandoned. This application Oct. 21, 1992, Ser. No. 964,093

Claims priority, application Japan, Apr. 28, 1988, 63-56766; Apr. 28, 1988, 63-56767; Apr. 28, 1988, 63-56768; Apr. 28, 1988, 63-56772; Jun. 29, 1988, 63-85101

Int. Cl.[5] **G11B** *23/03*

U.S. Cl. 369—291 **2 Claims**



1. A cartridge case for encasing therein a recording medium disc, said cartridge being made of plastic and having a front edge;

a shutter slidably mounted on said cartridge case for opening and closing at least one head insertion hole formed in said cartridge case, said shutter including a head portion slidingly movable along said front edge of said cartridge, said

head portion having opening and closing plate portions extending from both sides thereof;

a guide portion formed in said front edge of said cartridge case in an insertion direction toward a recording and reproducing apparatus;

a slider slidingly engaged with said guide portion for supporting said shutter; and

a return coil spring, for biasing said shutter through said slider to a position where said shutter closes said head insertion hole, provided in a receiving space at a corner of the cartridge case, wherein said return coil spring comprises an elastic wire coiled portion and two arms extend from said coiled portion, one of the arms including a first extension portion extending substantially along a circumferential periphery of the disc from said coiled portion and a second extension portion bent from said first extension portion along a front wall in the insertion direction of the recording and reproducing apparatus for the cartridge, said second extension portion having a longitudinal portion extending along the front wall, a laterally extending portion bent back from the longitudinal portion and a retainer portion engaged with an end portion of the slider and bent at a right angle from the laterally extending portion, a distal end of said second extension portion being engaged with a tip end of said slider, and the other arm includes a third extension portion extended from said coiled portion toward the front wall and a fourth extension portion bent from said third extension portion toward the front wall of said cartridge, case, said fourth extension portion having a trapezoidal crest shape cooperating with the third engaging with an end wall of the cartridge, said retainer portion of the fourth extension portion being extended in a direction opposite to that of said retainer of the second extension portion, a distal end of said fourth extension portion being engaged with the front wall of said cartridge case.

5,289,458

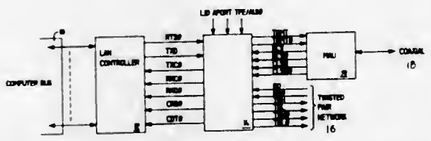
APPARATUS FOR ACCOMPLISHING AUTOPORT SELECTION

Bassem Taha, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 30, 1992, Ser. No. 859,996

Int. Cl.[5] **H04J** *1/16, 3/14*

U.S. Cl. 370—16 **8 Claims**



1. An apparatus coupled to a source of data, a coaxial network and a twisted pair network for automatically switching network connection of the source of data between the coaxial network and the twisted pair network depending on an operability of the twisted pair network comprising:

(A) means for normally connecting the source of data to the twisted pair network;

(B) means for monitoring the operability of the twisted pair network to determine if the twisted pair network is operational;

(C) means coupled to the means for monitoring the operability of the twisted pair network for connecting the source of data to the coaxial network when the means for monitoring the operability of the twisted pair network detects that the twisted pair network is not operational;

(D) means for generating a carrier sensed signal based on the data transmission between the source of data and the twisted pair network, wherein the means for generating the carrier sensed signal further comprises;

(i) means coupled to the twisted pair network for detecting when data is being received on the twisted pair network,

(ii) means coupled to the source of data and the coaxial network for generating a carrier sensed signal in response to the data transmission from the source of data to the coaxial network, and

(iii) means coupled to (1) the means for monitoring, (2) the means for detecting, and (3) the means for generating the carrier signal for causing the means for generating the carrier sensed signal to generate the carrier sensed signal in response to the data transmission on the twisted pair network when (1) the means for monitoring detects that the twisted pair network is operational and (2) the means for detecting detects that data is being received on the twisted pair network.

5,289,459

DUPLEX DATA TRANSMISSION

John D. Brownlie, Woodbridge, England, assignor to British Telecommunications plc, London, England

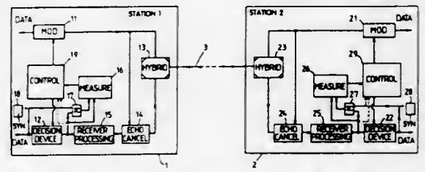
PCT No. PCT/GB87/00860, § 371 Date May 31, 1989, § 102(e) Date May 31, 1989, PCT Pub. No. WO88/04498, PCT Pub. Date Jun. 16, 1988

PCT Filed Dec. 1, 1987, Ser. No. 368,368

Claims priority, application United Kingdom, Dec. 1, 1986, 8628656

Int. Cl.[5] **H04B** *1/38, 3/20;* **H04L** *5/14*

U.S. Cl. 370—17 **15 Claims**



10. A first duplex data transmission station including transceiving means for use in a transmission system, comprising:

assessment means for assessing a quality of a signal received from a second transmission station in the system,

means for receiving the results of a received signal quality assessment by the second station,

estimating means operable in response to the results of both assessments for estimating a transmitting power adjustment, and

means for adjusting transmitting power of one of the first and second stations in response to the estimated power adjustment to establish substantially a predetermined relationship between a signal-to-noise ratio of the signals received by the first and second stations and to substantially minimize echo effects in signals transmitted between the first and second stations.

5,289,460

MAINTENANCE OF MESSAGE DISTRIBUTION TREES IN A COMMUNICATIONS NETWORK

John E. Drake, Jr., and Elizabeth A. Hervatic, Apex, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,125

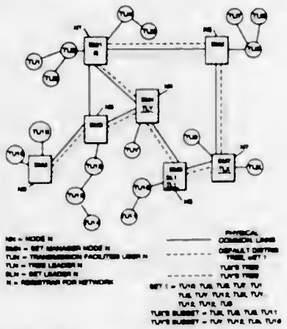
Int. Cl.[5] **H04L** *1/12*

U.S. Cl. 370—17 **7 Claims**

1. A communications network having a plurality of nodes interconnected to one another by communications links via which links messages may be sent and delivered to one or more

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communication network users residing at one or more of said nodes, said network being organized for communication among an arbitrary group of member of a defined subset of communications network users into one or more distribution trees, wherein each said node includes means for operating as a Distribution Tree Leader for at least one said subset of communications network users, said Distribution tree Leader including means for generating a distribution tree address and a distribution tree address correlation identifier which uniquely identify said distribution tree at all said nodes having members of said subset included by said Distribution Tree Leader in said



distribution tree, and means for generating and sending to all said nodes having members served by said distribution tree, a distribution tree creation request message including a Set Change Notification indicator, each said node further comprising:

means for reporting link, node or user terminal failures and changes in distribution tree membership of any communications network user served by said node including means for creating and sending on said network a network change notification message addressed to each said Distribution Tree Leader which requested notification in said tree creation request message.

5,289,461

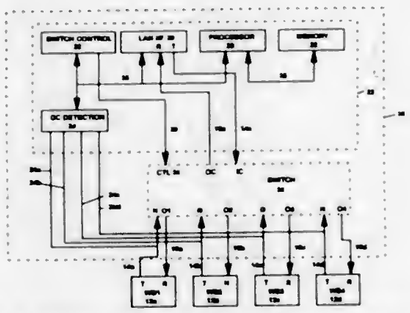
INTERCONNECTION METHOD FOR DIGITAL MULTIMEDIA COMMUNICATIONS

Richard H. J. de Nijs, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1992, Ser. No. 989,669

Int. Cl.[5] H04L *12/42*

U.S. Cl. 370—58.1 **20 Claims**



8. A method of configuring a network having a plurality of nodes directly interconnected by a switch, said method comprising the steps of;

establishing said network in an initial common configuration including each of said nodes;

receiving an establish request from a first node in said common configuration for establishing a second network comprising said first node and at least one other node; and

reconfiguring said switching device for establishing said second network comprising said first node and said at least one other node and for concurrently re-establishing said common configuration comprising the nodes of said common configuration not included in said second network.

5,289,462

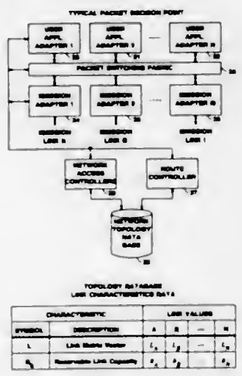
TRAFFIC MANAGEMENT IN PACKET COMMUNICATIONS NETWORKS

Hamid Ahmadi, Somers; Roch Guerin, Yorktown Heights, both of N.Y., and Levent Gun, Durham, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 19, 1992, Ser. No. 932,440

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60.1 **18 Claims**



1. A packet communications network including a plurality of switching nodes interconnected by transmission links, and in which data packets are transmitted over multilink paths between a source node and a destination node, said packet communications network comprising

means for storing, at each said node, a representation of the traffic load reserved for all connections on each transmission link terminating in said node, said representation comprising a vector including the mean of the bit rate for all of said connections, the variance of said bit rate around said mean bit rate, and the sum of the equivalent bandwidths required to carry said connections if each said connection were offered in isolation,

said equivalent bandwidth of a connection having a first value when the number of connections sharing one of said transmission links exceeds a predetermined value and having a second different value when said number of connections does not exceed said predetermined value, where said predetermined value is equal to or greater than ten.

means for initiating a new connection in said network by propagating a connection request along the route selected for that connection, said connection request including a vector representing the mean, variance and equivalent bandwidth of said new connection,

means responsive to said connection request for updating said representations of traffic load by vector addition at each of said nodes along said route.

5,289,463

METHOD OF MANAGING FLOWS IN A WIDEBAND INTEGRATED SERVICES DIGITAL TELECOMMUNICATIONS NETWORK

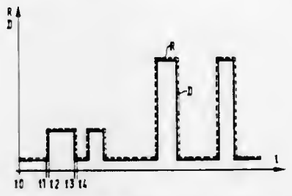
Bahman Mobasser, Maurepas, France, assignor to Alcatel Cit, Paris, France

Filed May 27, 1992, Ser. No. 888,807

Claims priority, application France, May 30, 1991, 91 06520

Int. Cl.[5] H04J *1/00, 3/12;* **H04Q** *11/04*

U.S. Cl. 370—68.1 **4 Claims**



1. A method of managing flows in a wideband integrated services digital telecommunications network comprising a plurality of terminals and a connection network:

wherein, while an interactive call is being set up between a terminal and the connection network, said interactive call comprising a plurality of periods and requiring at least one connection constituted by respective different resources for said plurality of periods, said resources being forecastable and definable by means of at least one parameter, the method comprises the steps of:

transmitting a declaration message from the terminal to the connection network, said declaration message using at least one parameter to define resources required respectively by each of the connections and for all the plurality of periods of said interactive call;

transmitting an agreement message from the connection network to the terminal indicating that the connection network possesses resources complying with each parameter contained in the declaration message; and

wherein, during said interactive call, prior to each new period requiring different resources, the method comprises the steps of:

emitting a utilization request message from the terminal to the connection network, indicating each connection that is to be used during said new period and indicating at least one parameter defining the resources that will be required by said connection during said new period;

emitting a confirmation message from the connection network to the terminal to confirm that connections are available having resources that comply with each parameter indicated in the utilization request message; and

storing in the terminal data for said interactive call that is to be transmitted over the connection network until the terminal has received the confirmation message.

5,289,464

FREQUENCY-MULTIPLEXED CELLULAR TELEPHONE CELL SITE BASE STATION AND METHOD OF OPERATING THE SAME

Robert C. Wang, Mendham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 21, 1992, Ser. No. 947,696

Int. Cl.[5] H04J *1/14*

U.S. Cl. 370—69.1 **17 Claims**

1. A radio transceiver system comprising:

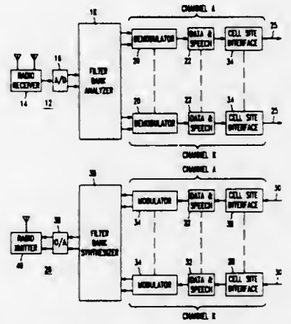
a receiver for receiving a frequency-multiplexed signal containing K individual channels, where K is a positive integer, and for generating output signals indicative of the received signal;

first signal-processing means for processing the output signals of the receiver to separate each of the K channels in the originally-received frequency-multiplexed signal;

a plurality of K demodulators, each demodulating a separate one of the K channels separated by the first signal-processing means;

a first plurality of K data and speech-processing circuits, each serving to process the demodulated channel produced by a separate demodulator in accordance with the manner in which the channel was demodulated to yield a separate one of K incoming voice/data signals;

a second plurality of K data and speech-processing circuits,



each processing a separate one of K outgoing voice/data signals in a predetermined manner;

a plurality of K modulators, each modulating a separate one of the K outgoing voice/data signals in a particular manner in accordance with the way in which such signals were processed by a corresponding one of the second speech and data circuits;

second signal-processing means for multiplexing the output signals of the K modulators to yield a frequency-multiplexed signal having K channels; and

a transmitter for transmitting the frequency-multiplexed signal generated by the second signal-processing means.

5,289,465

METHOD FOR DATA TRANSMISSION OVER AN INTERNAL BUS OF A WORKSTATION APPARATUS WITH AN INTERNAL BUS FOR IMPLEMENTING THE METHOD, AND AN ADAPTER CIRCUIT FOR THE INTERNAL BUS

Alain Mouro, Epinary Sur Seine, and Michel Colin, Noisy Le Roi, both of France, assignors to Bull S.A., Paris, France

Continuation of Ser. No. 452,512, Dec. 19, 1989, abandoned.

This application Aug. 10, 1992, Ser. No. 927,800

Int. Cl.[5] H04J *3/16;* **H04L** *12/40*

U.S. Cl. 370—82 **16 Claims**

1. A method of data transmission via a serial bus (6) internal to a workstation for providing communication in cooperation with the workstation between a telephone communication line interface coupler device (10) and a plurality of communication processing devices (13, 14, 15, 16), said method comprising:

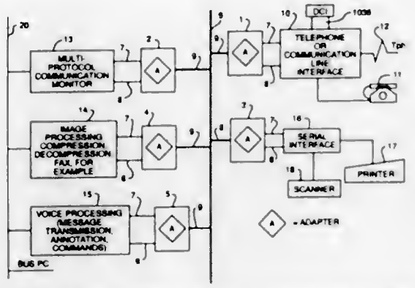
a) employing a synchronization signal of an external voice network to define a communication frame;

b) including in each frame a maximum of eight variable-length subframes respectively corresponding to a maximum of eight devices, each device having a particular device destination address, each of the subframes having a plurality of bytes including first and second header byes and including data byes in turn including data bits;

c) coding the first five bits (40) of the first header byte to indicate the number of data bytes in the subframe;

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d) coding the next three bits (**41**) of the first header byte to indicate the number of data bits of the last data byte; and



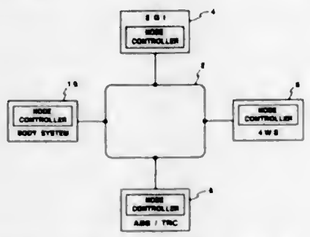
e) coding four bits (**42**) of the second header byte to indicate a device destination address.

5,289,466

MULTIPLEX TRANSMISSION METHOD

Yoshikazu Nobutoki, Higashihiroshima; Shigeyuki Satomura, Kure; Masao Hideshima, and Akira Sone, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 27, 1992, Ser. No. 858,531
Claims priority, application Japan, Mar. 27, 1991, 3-063312
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.2 **8 Claims**



1. A multiplex transmission method, in which time-divisional distributed multiplex transmission operations are performed among a plurality of communication nodes each having a clock for managing its own transmission timing, comprising the steps of:

(a) setting a first predetermined period of time for a refresh transmission operation to be performed at each of said plurality of communication nodes;

(b) setting a second predetermined period of time as a non-transmission time before the refresh transmission operation is started;

(c) detecting whether a transmission operation is performed by self communication node or other communication nodes within the second predetermined period of time;

(d) starting the refresh transmission operation after an elapse of a third predetermined period of time if it is detected in step (c) that the transmission operation is performed, wherein said third predetermined period of time is longer than or equal to the second predetermined period of time and begins at the start of the latest transmission operation performed by said self communication node or said other communication nodes so as to assure the non-transmission time; and

(e) starting the refresh transmission operation after an elapse of the second predetermined period of time if it is not detected in step (c) that the transmission operation is performed;

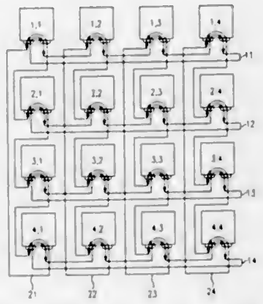
and wherein each of said plurality of communication nodes delays its own refresh transmission period by extending the first predetermined period of time for a period determined by said second and third predetermined periods of time, the determined period is used as an upper limit of a delay time of the refresh transmission operation and the refresh transmission period is delayed once before starting the refresh transmission operation in step (d) even when another transmission operation is performed by said self communication node or said other communication nodes after an elapse of said second predetermined period of time.

5,289,467

MANHATTAN STREET NETWORK WITH LOOP ARCHITECTURE

Stamatios V. Kartalopoulos, Annandale, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1990, Ser. No. 618,447
Int. Cl.[5] H04J *3/08*
U.S. Cl. 370—85.5 **4 Claims**



1. A telecommunications network comprising:

a plurality of primary token rings, said primary rings being generally arranged in a first direction and forming a plurality of rows;

at least one secondary token ring, said at least one secondary token ring comprises a plurality of secondary token rings being arranged in said second direction and forming a plurality of columns; at least one of said rings comprises an optical fiber; at least one of said primary rings and at least one of said secondary rings are connected to the same station, and said station comprises a fiber distributed data interface station;

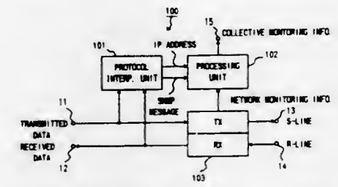
a plurality of stations, each of said stations comprising first and second pairs of input and output terminals, said stations being interconnected by said plurality of primary rings and said plurality of secondary rings, said first pair and said second pair of said input and output terminals being connected to a primary ring and a second ring, respectively, each of said stations further comprising means for switching packets between said primary and said secondary rings whereby said plurality of primary token rings and said at least one secondary token ring are arranged in a Manhattan Street Network.

5,289,468

PERMANENT ADAPTER HAVING MODULATION AND DEMODULATION MEANS FOR CONNECTING NETWORKS

Atsushi Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,120
Claims priority, application Japan, Aug. 9, 1991, 3-200676
Int. Cl.[5] H04L *12/66*
U.S. Cl. 370—85.13 **1 Claim**



1. A terminal adapter, having modulation means and demodulation means, for connecting a LAN and a WAN on the basis of an Internet standard protocol describing a procedure of communication as well as terminating a line service and providing data transmission to a terminal system, said terminal adapter comprising:

extraction means for extracting, from packets constituted by received data as an output of said demodulation means and transmitted data as an input to said modulation means, a simple network management protocol message indicating said Internet standard network control protocol, said extraction means including means for extracting from said packets of transmitted and received data, source and destination protocol addresses indicate of logical addresses for recognizing a host in said Internet;

wherein said extraction means further includes means for checking a protocol field in each of said packets to determine if said checked protocol field meets a predetermined condition and, if said checked protocol field meets a first predetermined condition, checking source and destination port numbers, and extracting, if said checked source and destination port numbers meet a second predetermined condition, source and destination Internet protocol addresses; and

network control means for performing network control according to said simple network management protocol message and performing network control according to signals obtained from said modulation and demodulation means.

5,289,469

COMMUNICATION CONTROL UNIT WITH LOWER LAYER PROTOCOL CONTROL AND HIGHER LAYER PROTOCOL CONTROL

Koichi Tanaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 16, 1992, Ser. No. 821,045
Claims priority, application Japan, Jan. 17, 1991, 3-004001
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 **11 Claims**

1. A communication control unit comprising:

first communication control means for executing lower layer protocols relating to layers no higher than a specific layer;

second communication control means for executing higher layer protocols relating to layers higher than said specific layer; and

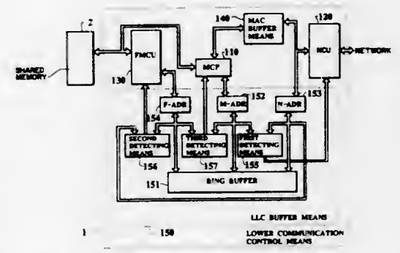
a shared memory for transferring data between said first and second communication control means;

said first communication control means comprising

frame receiving means having a judging part in which a beginning and an end of a frame are recognized from serial data received through an input network, and a recognition part for determining whether said frame has to be transferred to said second communication control means,

first buffer means for buffering first type frames which need not be treated by said second communication means,

second buffer means for buffering second type frames which must be treated by said second communication means, said second buffer means comprising a ring buffer capable of storing a plurality of frames,



data output means for reading out frames stored in said second buffer means and for writing said frames into said shared memory, and

reporting means for reporting said frames in said shared memory to said second communication control means,

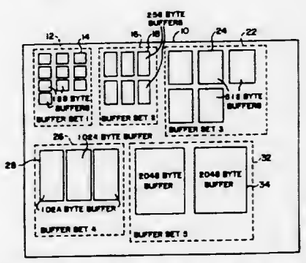
said second buffer means judging whether or not a frame to be transferred to said second communication means is stored therein and activating said data output means to transfer said frames from said second buffer means to said shared memory.

5,289,470

FLEXIBLE SCHEME FOR BUFFER SPACE ALLOCATION IN NETWORKING DEVICES

Shu-Ping Chang, Shrub Oak, and Ahmed N. Tantawy, Yorktown Heights, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,162
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 **16 Claims**



1. A method for storing a data packet having a packet size in a networking device having a plurality of buffers, each buffer having a respective size, comprising the steps of:

(a) partitioning the plurality of buffers into a plurality of sets, each set having buffers of a respectively different size;

(b) establishing an ordered sequence of sets of buffers, one of said sets being a first set in said ordered sequence;

(c) allocating a buffer from said first set for temporary storage of a portion of the data packet, said allocated buffer having a size;

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(d) storing the portion of the data packet into said allocated buffer; and

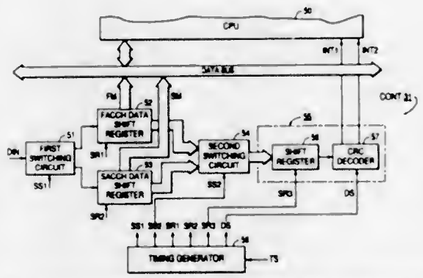
(e) allocating an additional buffer from an additional one of said plurality of sets of buffers in accordance with said ordered sequence of sets of buffers for temporary storage of a further portion of the data packet and storing the further portion of said data packet into said additional further if said packet size is greater than said size of said allocated buffer.

5,289,471

DIGITAL COMMUNICATION APPARATUS HAVING AN ERROR DETECTING SECTION

Masayuki Tanaka, and Takumi Haga, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Feb. 10, 1992, Ser. No. 832,879
Claims priority, application Japan, Feb. 13, 1991, 3-041253
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.3 **3 Claims**



1. A digital cellular radio telecommunication apparatus used in a communication system wherein a predetermined volume of message signals are transmitted with a cyclic redundancy check (CRC) code over a radio link established by Time Division Multiple Access (TDMA), the CRC code being generated from the corresponding predetermined volume of message signals, the message signals being classified into two categories: signals through a Slow Associated Control Channel (SACCH) and signals through a Fast Associated Control Channel (FACCH), transmission of the predetermined volume of message signals with the corresponding CRC code through the FACCH being allocated in a slot of the TDMA, and transmission of the predetermined volume of message signals with the corresponding CRC code through the SACCH being allocated in a plurality of slots of the TDMA, comprising:

receiving means for receiving signals transmitted over the radio link;

first storage means selectively coupled to said receiving means for storing at least the predetermined volume of signals with the corresponding CRC code transmitted through the FACCH;

second storage means selectively coupled to said receiving means for storing at least the predetermined volume of signals with the corresponding CRC code transmitted through the SACCH;

detecting means for detecting whether the signals applied to said detecting means include error signals on the basis of the CRC code following the predetermined volume of message signals; and

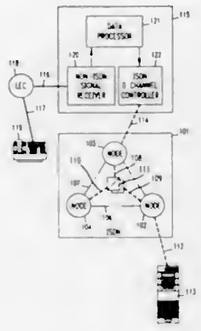
switch means for selectively coupling either one of said first or second storage means to said detecting means, whereby the predetermined volume of message signals with the corresponding CRC code are applied to said detecting means from either one of said first or second storage means.

5,289,472

METHOD FOR THE TRANMISSION OF MESSAGE ASSOCIATED USER-TO-USER INFORMATION

Kon H. Cho, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 5, 1992, Ser. No. 831,601
Int. Cl.[5] H04J *3/12;* **H04L** *12/66*
U.S. Cl. 370—110.1 **12 Claims**



1. A method for the transmission of message associated user-to-user information comprising the steps of:

receiving a user generated analog signal containing message related information from a non-ISDN compatible communication channel within a switched telecommunication system;

transforming said received signal into digital data suitable for data processing;

processing the digital data so as to extract message related information;

embedding said extracted message related information within an ISDN compatible signaling protocol message; and

transmitting said ISDN compatible signaling protocol message to a specific ISDN recipient via a D Channel within a switched telecommunication system.

5,289,473

METHOD FOR DETERMINING BYTE ERROR RATE

Khanh C. Nguyen, Whitehall Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 28, 1993, Ser. No. 10,140
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—5.1 **3 Claims**

1. A method for determining the byte error rate in a received digital signal S, the method comprising the steps of:

a) providing a byte clock signal C at a predetermined frequency;

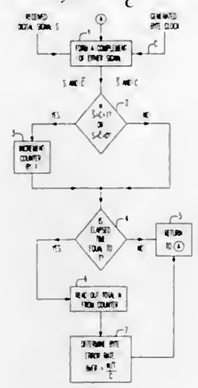
b) inverting either one of the received digital signal S and byte clock signal C ($\bar{S}$ or $\bar{C}$) to form a complement signal;

c) comparing the complement signal ($\bar{S}$ or $\bar{C}$) to the other signal (C or S) and providing an output error signal E of logic value "1" when both said complement signal and said other signal comprise the same predetermined logic value; and

d) counting each occurrence of the logic value "1" for error signal E and for providing as an output, after a predetermined period of time T, the total number N of said occurrences; and

e) determining the byte error rate (ByER) of said received digital signal S from the relation

$$ByER = \frac{N/T}{C}$$

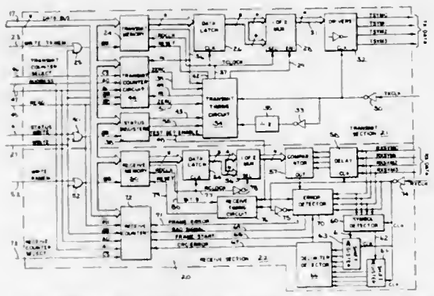


5,289,474

COMMUNICATION NETWORK INTERFACE TESTING SYSTEM

Joseph D. Purcell, Ann Arbor, and Bruce Graham, Ypsilanti, both of Mich., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Feb. 1, 1988, Ser. No. 150,935
Int. Cl.[5] H04L *1/24*
U.S. Cl. 371—20.5 **8 Claims**



1. A system for testing components of a communication network over which messages are sent in frames, each frame having a header including a first predefined sequence of data symbols, a data field including a definable sequence of data symbols, and an end delimiter having a second predefined sequence of data symbols, said system comprising:

means for the user to designate the data symbols in a series of data symbols which series does not necessarily contain the predefined sequences of symbols for the header and end delimiter;

a transmit section including a first memory means for storing the series of data symbols, and a means for transmitting the symbols stored in the first memory means to an interface device of the network; and

a receive section including means for receiving a sequence of data symbols from the interface device, a second memory means for storing at least a portion of the series of data symbols, means for comparing a plurality of data symbols in the sequence of data symbols with the data symbols stored in the second memory means, means responsive t the means for comparing for indicating errors in the received sequence of data symbols, and means for counting indicated errors; and

wherein each of the first and second memory means includes:

(a) a first-in first-out memory having a plurality of storage locations each of which for storing a byte of data;

(b) a multiplexer having a pair of four bit wide inputs and a four bit wide output; and

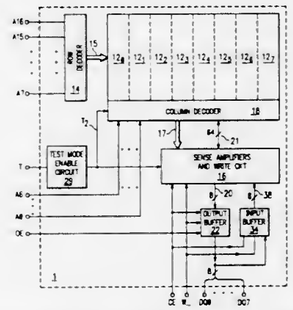
(c) means for coupling one group of four bits of each byte of data read from said memory to one input of said multiplexer and for coupling another group of four bits of each byte of data read from said memory to the other input of said multiplexer.

5,289,475

SEMICONDUCTOR MEMORY WITH INVERTED WRITE-BACK CAPABILITY AND METHOD OF TESTING A MEMORY USING INVERTED WRITE-BACK

William C. Slemmer, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 29, 1990, Ser. No. 620,835
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—21.1 **4 Claims**



1. A method of testing a read/write memory in an integrated circuit, said memory including a plurality of memory cells arranged in rows and columns, comprising:

applying a bias voltage to said memory, said plurality of memory cells each storing a preferred data state responsive to said applying;

sensing the state of a first one of said plurality of memory cells; and

rewriting the logical complement of the sensed state into said memory cell;

wherein said read/write memory has a data output terminal; and wherein the state of said first one of said plurality of memory cells is not presented at said data output terminal as a result of said sensing step.

5,289,476

TRANSMISSION MODE DETECTION IN A MODULATED COMMUNICATION SYSTEM

Howard W. Johnson, Sunnyvale; Chin-Chen Lee, San Jose, and Amy O. Hurlbut, San Francisco, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

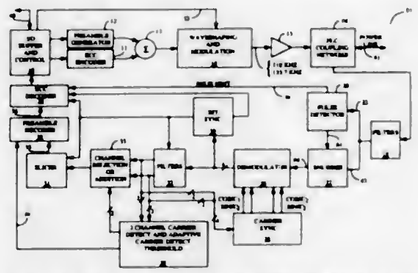
Filed May 10, 1991, Ser. No. 698,445
Int. Cl.[5] C06F *11/10;* **H04L** *27/20;* **H03D** *3/22*
U.S. Cl. 371—37.1 **20 Claims**

1. In a data communication system having means for receiving data from a data source and means for transmitting data on a data communication medium, a preamble generator for generating a preamble for transmission with said data, said preamble generator comprising:

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means for encoding data word synchronization information into said preamble;

means for encoding error detection information into said preamble, said means for encoding error detection information providing at least single bit error detection, said preamble with said data word synchronization informa-



tion and said error detection information having a length of n binary digits; and

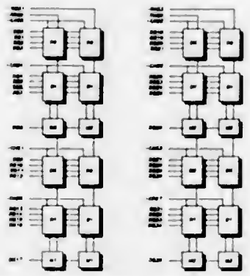
means for encoding transmission mode information into said preamble, said preamble with said data word synchronization information, said error detection information, and said transmission mode information having a length of n+1 binary digits.

5,289,477

PERSONAL COMPUTER WHEREIN ECC AND PARTLY ERROR CHECKING CAN BE SELECTIVELY CHOSEN FOR MEMORY ELEMENTS INSTALLED IN THE SYSTEM, MEMORY ELEMENTS ENABLING SELECTIVE CHOICE OF ERROR CHECKING, AND METHOD

Jorge E. Lenta, Boca Raton, and Mitchell E. Medford, Delrary Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 6, 1991, Ser. No. 711,480
Int. Cl.[5] G06F *11/00, 11/08*
U.S. Cl. 371—37.7 **8 Claims**



7. A personal computer system comprising:

a microprocessor;

a plurality of socket connectors, each for receiving a volatile memory element, one of said socket connectors being addressable for handling data bits in any selected one of a first predetermined word length and multiples of two, four and eight times the predetermined word length and the remainder of said socket connectors being addressable for handling data bits in any selected one of multiples of two, four and eight times the predetermined word length;

a plurality of volatile memory elements, each mounted in a corresponding one of said plurality of socket connectors and having:

a substrate;

a plurality of dynamic random access memory devices mounted in an array on said substrate, said devices being arranged in banks and pages for receiving data bits written to and stored in and read from said devices;

a plurality of signal conducting pathways on said substrate connecting to said devices for transferring data bits thereto and therefrom;

a connector coupled to said pathways for coupling said devices to a personal computer system; and

a protective enclosure encompassing said substrate and said devices and said connector;

one of said volatile memory elements being mounted in said one socket connector and having said pathways and said devices together providing for access of column address signals to each of said devices and of row address signals to each of said banks of said devices, whereby data bits written to and stored in and read from said devices may be handled in any selected on of the first predetermined word length and multiples of two, four and eight times the predetermined word length;

the remainder of said volatile memory elements each being mounted in a corresponding one of said remainder of said socket connectors and having said pathways and said devices together providing for access of column address signals to pairs of said devices and of row address signals to each of said banks of said devices, whereby data bits written to and stored in and read from said devices may be handled in any selected one of multiples of two, four and eight times the predetermined word length; and

a bus interface controller coupled to said socket connectors for issuing row and column address signals determining the physical location in available volatile memory elements of data written thereto and stored therein and read therefrom and thereby selecting between parity error detection and error correction code error detection for data written to and stored in and read from available volatile memory elements; said bus interface controller;

(1) in the event parity error detection is selected, selecting all available memory elements for use as parity memory elements and writing and reading data to and from the selected memory elements as parity error detection data; and

(2) in the event error correction code error detection is selected, selecting said remainder of said memory elements as parity memory elements and said one memory element as an error correction code memory element and coordinating the writing and reading of data to and from parity memory elements and the writing and reading of associated error correcting code to and from the error correcting code memory element.

5,289,478

METHOD AND MEANS FOR VERIFICATION OF WRITE DATA

Howard L. Barlow; Kirk M. Esochs, both of Boulder, and Alexander Troicky, Longmont, all of Colo., assignors to Fujitsu Limited, Japan

Filed Mar. 11, 1991, Ser. No. 668,107
Int. Cl.[5] G06F *11/08*; G11C *29/00*
U.S. Cl. 371—40.1 **14 Claims**

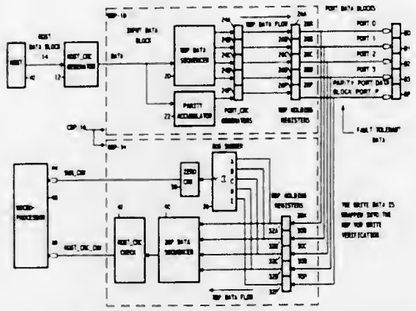
1. A system for verifying write data to be recorded in a fault tolerant disk drive array having at least a first rotatable disk for receiving data during at least a first revolution thereof comprising;

a host interface for providing input blocks of write data, a means for generating host error check characters appended to said write data blocks;

a controller coupled to said interface, said controller including a write data path network and a read data path network coupled to the output of said write data path network, said read data path network being operated independently of said write data path network;

said write data path network including means for dividing said data blocks into subblocks to be passed through respective ports, and port generator means for appending port error check characters to said data subblocks;

said read data path network including first means for checking said host error check characters and second means for checking said port error check characters, said read data path network being enabled when said data subblocks are being written to the disk array, said read data path network receiving said data subblocks only from said write data path network and not from the disk array, when said read data path network is enabled during writing of said data subblocks to the disk array, said read data path network, including said first and second means for checking,



being used in making a determination related to validity of said data subblocks, wherein said validity determination is made during the same revolution of the first disk as said data subblocks are being written to the first disk, said read data path network further including means for providing data validity information related to the validity of said data subblocks, said data validity information indicating at least one invalid data subblock when a determination is made as to said one data block's invalidity;

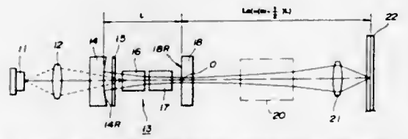
processing means communicating with said means for providing for using said data validity information to control said write data path network to re-send another data subblock based on said one invalid data subblock to the disk array.

5,289,479

LASER LIGHT BEAM GENERATING APPARATUS

Michio Oka, Kanagawa, and Naoya Eguchi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,305
Claims priority, application Japan, Mar. 28, 1992, 4-102220
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **4 Claims**



1. A laser light beam generating apparatus comprising:

a resonant cavity including an input mirror and an output mirror, with the effective distance between the mirrors divining a length L;

a gain medium located in said resonant cavity;

a type II non-linear optical crystal located in said resonant cavity;

means for generating a pump beam for optically pumping said gain medium through said input mirror in a manner so that a second harmonic output beam is generated and exits said output mirror; and

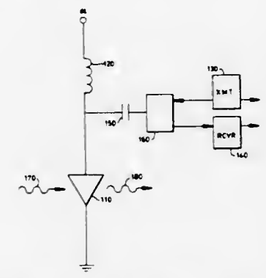
optical system means for directing the second harmonic output beam to a target, wherein the effective distance Le from the output mirror of the resonant cavity to the target is arranged so that $Le=(m+\frac{1}{2})L$ where m is an integer whereby interference noise caused by reflections of the second harmonic beam back into the resonant cavity is reduced.

5,289,480

TRIPLE-FUNCTION SEMICONDUCTOR LASER AMPLIFIER

Kwang-Tsai Koai, Concord, and Robert Olshansky, Wayland, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 3, 1993, Ser. No. 13,505
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **5 Claims**



1. An optoelectronic device comprising:

a semiconductor laser amplifier means for amplifying an input optical signal producing an amplified output optical signal;

an electronic transmitter means for providing an electrical signal to said semiconductor laser means for modulating said amplified output optical signal;

an electronic receiver means for detecting said input optical signal;

an isolator means for isolating said signal of the electronic transmitter means from said detected input optical signal;

wherein said device simultaneously detects the input optical signal, amplifies the input optical signal, and produces a modulated amplified output optical signal.

5,289,481

FOUR-FOLD AND HIGHER ORDER CONTINUOUS-WAVE UPCONVERSION LASERS

Ping Xie, and Stephen Rand, both of Ann Arbor, Mich., assignors to Unversity of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 926,058, Aug. 5, 1992. This application Sep. 18, 1992, Ser. No. 947,111
Int. Cl.[5] H01S *3/14*
U.S. Cl. 372—39 **23 Claims**

1. A solid-state laser system for producing an output laser energy at a first predetermined wavelength, the solid-state laser system comprising:

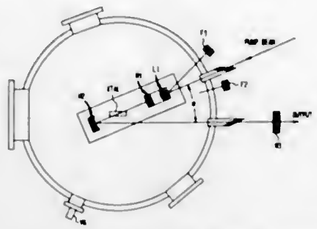
an astigmatically compensated cavity containing first and second mirrors;

a gain medium formed of a crystal of lithium yttrium fluoride heavily doped with trivalent erbium arranged within said astigmatically compensated cavity; and

pumping means for supplying a pumping energy of a second

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predetermined wavelength to said gain medium, said second predetermined wavelength being longer than said first predetermined wavelength, whereby four-fold laser action is achieved.

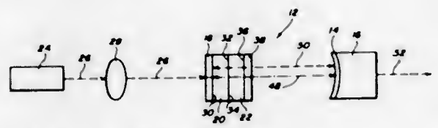


5,289,482

INTRACAVITY-PUMPED 2.1 μM HO^{3+}:YAG LASER

Leon Esterowitz, Springfield, and Robert S. Stoneman, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1992, Ser. No. 998,348
Int. Cl.[5] H01S *3/16*
U.S. Cl. 372—41 **17 Claims**



1. A laser comprising:
a laser cavity defined by a reflective element and a partially reflective element opposing each other on a common axis to form a reflective path therebetween;
a first laser crystal disposed in said laser cavity, said first laser crystal having a first host material doped with a first predetermined concentration of a first-type of ions;
a second laser crystal disposed in said laser cavity, said second laser crystal having a second host material doped with a second predetermined concentration of a second-type of ions; and
a pump laser for resonantly end-pumping said first laser crystal with a pump beam to cause said first laser crystal to produce a first laser emission to pump said second laser crystal, said second laser crystal being responsive to the first laser emission for producing an output second laser emission.

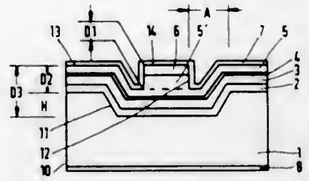
5,289,483

SEMICONDUCTOR DEVICE HAVING A MESA AND METHOD OF MANUFACTURING SAME

Johannes A. De Poorter, and Adriaan Valster, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed May 15, 1992, Ser. No. 883,758
Claims priority, application European Pat. Off., May 16, 1991, 91107902.8
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **10 Claims**

1. A semiconductor device comprising a semiconductor body with a semiconductor substrate on which a semiconductor layer structure of mutually substantially parallel semiconductor layers is provided, at the surface of which a mesa is formed which comprises only a first portion, of the semiconductor structure, while a second portion of the semiconductor structure not forming part of the mesa is situated below and on either side of the mesa, characterized in that the semiconductor layer structure comprises a sunken region within which the



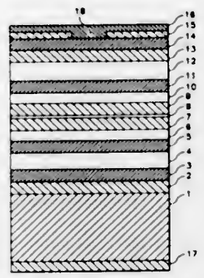
semiconductor layer structure is at least partly recessed into the substrate and within which the mesa is situated.

5,289,484

LASER DIODE

Toshiro Hayakawa, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,763
Claims priority, application Japan, Mar. 25, 1992, 4-67565
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **2 Claims**



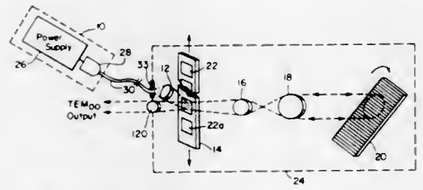
1. An optical waveguiding multilayer structure laser diode having a quantum well active layer and bounded by a resonator structure perpendicular thereto, comprising:
(a) an optical waveguiding region adjacent to the active layer having at least one high refractive index layer;
(b) two spaced cladding regions that sandwich between them the optical waveguiding region and the active layer, each cladding region including: a first cladding layer adjacent to the waveguiding region and having a lower refractive index than the waveguiding region; a first low refractive index layer having a refractive index lower than the first cladding layer; a second cladding layer adjacent to the first low refractive index layer and a second low refractive index layer adjacent to the second cladding layer and having a refractive index lower than the first low refractive index layer; and
(c) a low refractive index electrode layered structure connected to each cladding region, with each layer of the electrode structure having a lower index of refraction than any of the cladding region layers.

5,289,485

MULTI-ELEMENT OPTICALLY PUMPED EXTERNAL CAVITY LASER SYSTEM

Aram Mooradian, Winchester, Mass., assignor to Micracor, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 757,182, Sep. 10, 1991, Pat. No. 5,172,390. This application Dec. 22, 1992, Ser. No. 995,072
Claims priority, application World Int. Prop. O., Sep. 9, 1992, 92/07557
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **24 Claims**



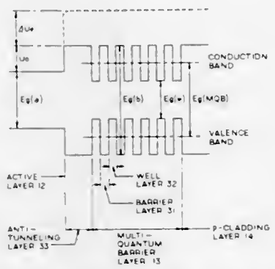
1. A laser system comprising:
a) a housing;
b) a frame formed of a thermally conductive member and adapted for movement within said housing;
c) a remote source of a beam of optical pump light; and
d) a plurality of quantum well structures adapted to be optically pumped by said beam and mounted on said member for alignment with said beam.

5,289,486

SEMICONDUCTOR LUMINOUS ELEMENT AND SUPERLATTICE STRUCTURE

Kenichi Iga, Machida; Fumio Koyama, Hino, and Takeshi Takagi, Ibaraki, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Continuation of Ser. No. 841,991, Feb. 27, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 55,799
Claims priority, application Japan, Feb. 28, 1991, 3-055442
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **10 Claims**



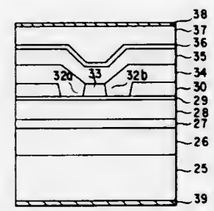
1. A semiconductor luminous element, comprising an active layer having two sides, cladding layers disposed on both sides of the active layer and a multi-quantum barrier layer which is in contact with the active layer and at least a portion of at least one of the cladding layers,
wherein the multi-quantum barrier layer comprises an alternating stack of superlattice barrier layers and superlattice well layers, the superlattice well layer having an energy gap smaller than an energy gap of the active layer and the multi-quantum barrier layer having a quantized energy gap larger than the energy gap of the active layer.

5,289,487

SEMICONDUCTOR LASER DEVICE HAVING UNIFORM AND REPRODUCIBLE LASER CHARACTERISTICS

Naohiro Shimada, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1992, Ser. No. 856,763
Claims priority, application Japan, Mar. 25, 1991, 3-084678
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **14 Claims**



1. A semiconductor laser device comprising:
a semiconductor substrate of a first conductivity type;
a first cladding layer of the first conductivity type, an undoped active layer having a predetermined thickness, and a second cladding layer of a second conductivity type, which are sequentially formed on said semiconductor substrate of the first conductivity type;
an optical waveguide layer of the second conductivity type formed on an upper surface of said second cladding layer of the second conductivity type to have a predetermined thickness and having two parallel stripe-like slits which are formed at a central portion of said second cladding layer and each of which has a predetermined width, said two parallel stripe-like slits exposing said second cladding layer of the second conductivity type and defining a ridge therebetween;
a current blocking layer of the first conductivity type formed on a surface of the resultant structure except for an upper surface of said ridge;
a third cladding layer of the second conductivity type formed on the upper surface of said ridge and a surface of said current blocking layer of the first conductivity type; and
a first electrode means formed on a lower surface of said semiconductor substrate and a second electrode means formed on the upper surface of said third cladding layer through a contact layer formed on said third cladding layer.

5,289,488

PUMP ASSEMBLY FOR A GAS DISCHARGE LASER

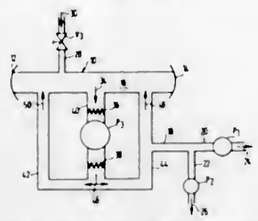
Heinz Wegmann, Ottobrunn, Fed. Rep. of Germany, assignor to WB Laser Wegmann-Baasel Laser und elektrooptische Geräte GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 948,212
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132148
Int. Cl.[5] H01S *3/22*
U.S. Cl. 372—59 **2 Claims**

1. A pump assembly for a gas discharge laser having a gas discharge chamber comprising
first and second oil-free pumps, said first pump having a relatively high suction capacity and a relatively short service life and said second pump having a relatively low suction capacity and a relatively long service life, and
means selectively coupling one or the other of said pumps to said gas discharge chamber, said selective means being actuated to connect said first pump to said chamber to evacuate said chamber during start-up of said laser and to connect said second pump to said chamber after gas has

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been introduced into said chamber to pump off an amount of gas therefrom corresponding to the amount of make-up



gas supplied to said chamber during long-term operation of said laser.

5,289,489

ALL-OPTICAL LIGHT MODULATING APPARATUS AND ALL-OPTICAL PROCESS FOR MODULATING LIGHT

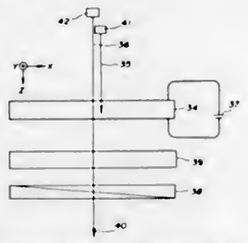
Johan Bergquist, Atsugi, and Yasuo Tomita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 837,974

Claims priority, application Japan, Feb. 28, 1991, 3-058113

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—26 **18 Claims**



1. A light modulating apparatus comprising:

a semiconductor device including a quantum well structure;

means for applying an electric field to said quantum well structure of said semiconductor device;

probe light inputting means for inputting a probe light into said semiconductor device, the probe light being output from said semiconductor device with a polarization state of the probe light being changed by an electrooptic effect in said quantum well structure; and

pump light inputting means for inputting a pump light into said semiconductor device for causing a real charge excitation in said quantum well structure, the electric field applied to said quantum well structure being screened by the real charge excitation,

wherein when said probe light inputting means inputs the probe light into said semiconductor device, said pump light inputting means inputs the pump light carrying information into the semiconductor device, so that the semiconductor device outputs the probe light modulated with the polarization state in accordance with the information.

5,289,490

LASER GENERATION APPARATUS

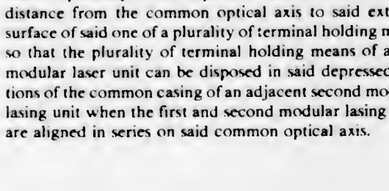
Yoshito Taniu, Saitama; Mikinori Shono, Yokohama; Koichiro Wazumi, Yokohama, and Akihiro Nishimi, Yokohama, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,724

Claims priority, application Japan, Sep. 3, 1991, 3-223159; Apr. 23, 1992, 4-104961

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—92 **5 Claims**



1. A solid state laser generation apparatus consisting essentially of a plurality of modular lasing units aligned in series on a common optical axis formed by a line between a rear reflecting mirror and an output reflecting mirror which are oppositely spaced and disposed apart, said each one of the plurality of modular lasing units comprising:

(a) laser beam generating rod means for directing laser beams aligned on said optical axis, wherein said laser beam generating rod means being disposed parallel to the optical axis and having opposite ends;

(b) a plurality of excitation means for providing excitation energy to said laser beam generating rod means, said excitation means being disposed parallel to said laser beam generating rod means and having electrode terminal means;

(c) said laser beam generating rod means and said excitation means are contained in a common causing means having internal and external walls and flat opposing ends, wherein said internal surface of said casing is covered with a reflective coating;

(d) a plurality of end holding means for retaining each end of said laser beam generating rod means and being disposed on the ends of the common casing means;

(e) a plurality of terminal holding means for retaining each end, including electrode terminal means, of said plurality of excitation means, wherein each terminal holding mean shaving an external surface and being disposed on the ends of the common casing means, wherein the terminal holding means protrudes farther from the end of the common casing means than the end holding means; and

(f) wherein a plurality of depressed sections are formed on the external surface of said common casing, wherein the distance from said common optical axis to the bottom of one of a plurality of said depressed sections is less than the distance from the common optical axis to said external surface of said one of a plurality of terminal holding means so that the plurality of terminal holding means of a first modular laser unit can be disposed in said depressed sections of the common casing of an adjacent second modular lasing unit when the first and second modular lasing units are aligned in series on said common optical axis.

5,289,491

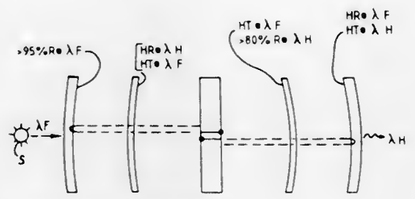
INTRACAVITY HARMONIC SUB-RESONATOR WITH EXTENDED PHASE MATCHING RANGE

George J. Dixon, Indian Harbour Beach, Fla., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 22, 1993, Ser. No. 34,260

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—92 **23 Claims**



1. A laser system, comprising:

a) a non-linear crystal having two opposite faces, said crystal when said faces are pumped with laser light at a fundamental wavelength producing light at a harmonic wavelength, said crystal having a thickness between said faces such that there is a phase mismatch between light at said fundamental wavelength and light at said harmonic wavelength in said crystal;

b) first means, disposed toward each of said faces of said crystal, for forming one of a travelling wave optical cavity and a standing wave optical cavity at said fundamental wavelength; and

c) second means, disposed toward each of said faces of said crystal, for forming one of a travelling wave and a standing wave optical cavity at said harmonic wavelength, said first means and said second means being located relative to said faces of said crystal such that the total phase mismatch of said light at said fundamental wavelength and said light at said harmonic wavelength in the round trip path through said crystal and between each face of said crystal and said first means and said second means is equal to an even integral multiple of 2π.

5,289,492

SCALABLE LASER SYSTEM USING A COUPLED MULTIPLE OUTPUT RESONATOR

Edward A. Sziklas, Camden, Me., and Gary E. Palma, Bloomfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1992, Ser. No. 955,810

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—92 **6 Claims**

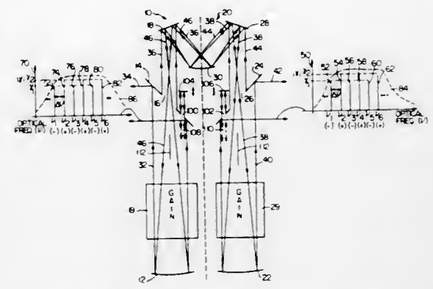
1. A coupled multiple output resonator (CMOR) system, comprising:

a multiple output resonator comprising at least two modules coupled together by mutual feedback beams, said resonator having a magnifying beam and having at least one optical gain medium;

a plurality of output beams each being tapped-off from an associated one of said modules;

said resonator being capable of lasing at desired lasing modes where said output beams are all in-phase, and undesired lasing modes where said output beams are not all in-phase: and

a plurality of self-feedback means, each for re-injecting a portion of one of said output beams associated with said one of said modules, as an adjoint wave, representing substantially the phase of said one of said output beams, back into said resonator, thereby increasing the magnitude of the eigenvalues of said desired lasing modes to be greater than said undesired lasing modes and providing adequate mode discrimination therebetween, for any number of said modules, such that said resonator only lases at said desired modes, and allowing all of said output beams to be substantially in-phase at all lasing modes of said



resonator, such that the system may be scaled to any number of modules while maintaining said adequate mode discrimination.

5,289,493

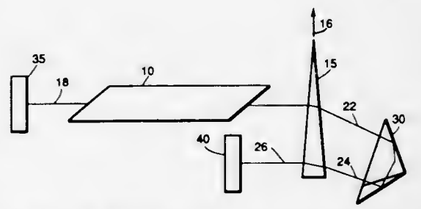
CAVITY MODULATED LINEAR CHIRP LASER

David Fink, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 21, 1992, Ser. No. 871,887

Int. Cl.[5] H01S *3/083*

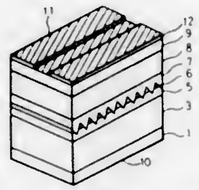
U.S. Cl. 372—94 **23 Claims**



1. A laser that generates frequency modulated chirps that are essentially linear, repeatable, and one-directional by means of a laser cavity (resonator) whose effective optical length is varied with a special optical element within said laser cavity that engages the laser beam twice on each pass of the laser beam through the resonator and that, with a cube corner retroreflector placed optically between the said two engagements with the said special optical element, and in combination with other optical elements, returns said laser beam back upon itself, thus rendering ineffective certain errors and variations of position or orientation associated with said special optical element that otherwise would disturb the established optical alignment of the said laser cavity.

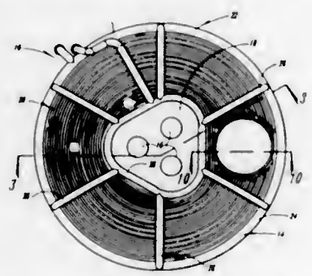
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,494
DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER
Kunio Tada, Urawa; Yoshiaki Nakano, Tokyo; Takeshi Inoue, Urawa; Yi Luo, Tokyo; Takeshi Irita, Tokyo; Shin-ichi Nakajima, Tokyo, and Hideto Iwaoka, Tokyo, all of Japan, assignors to Optical Measurement Technology Development Co., Ltd., Musashino, Japan
PCT No. PCT/JP91/01418, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO92/07401, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 17, 1991, Ser. No. 899,860
Claims priority, application Japan, Oct. 19, 1990, 2-282699; Jul. 22, 1991, 3-181209
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 7 Claims



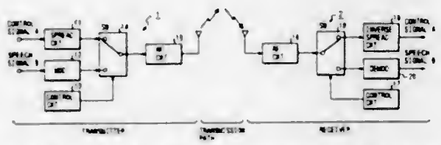
1. In a distributed feedback semiconductor laser comprising:
an active layer to generate stimulated emission,
a periodical structure to give light distributed feedback of stimulated emission from the active layer, and
a refractive index canceling structure to cancel the periodical changes in the refractive index caused by the periodical structure,
wherein:
said periodical structure is formed as corrugation on the surface of said active layer, and
said refractive index canceling structure includes
a lower-refractive-index layer having a refractive index which is lower than that of said active layer and provided on each of a plurality of peaks of said corrugation, and
an intermediate-refractive-index layer provided in contact with said corrugation and having a refractive index higher than that of said lower-refractive-index layer and lower than that of said active layer.

5,289,495
COOLANT COILS FOR A SMELTING FURNACE ROOF
Eric N. Johnson, Clinton, Iowa, assignor to J. T. Cullen Co., Inc., Fulton, Ill.
Filed Aug. 17, 1992, Ser. No. 931,021
Int. Cl.[5] F27D *1/02, 1/12*
U.S. Cl. 373—74 24 Claims



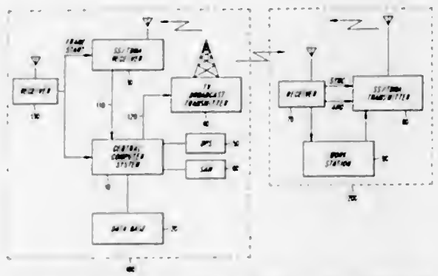
1. A roof structure for an electric arc smelting furnace, comprising:
a support frame for supporting removable coolant coil sections;
a removable inner coil section substantially encircling the central opening in the support frame;
said inner coil section including a cooland pipe having an inlet and outlet for the flow of coolant therethrough.

5,289,496
METHOD AND SYSTEM FOR RADIO COMMUNICATION
Masao Nakagawa, Yokohama, and Hiroyuki Yabuki, Kawasaki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 25, 1991, Ser. No. 660,074
Claims priority, application Japan, Mar. 2, 1990, 2-52147
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 12 Claims



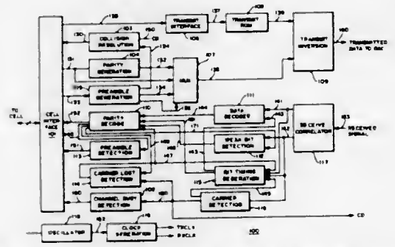
6. In a spread-spectrum radio communication apparatus wherein a control signal and a speech signal are transmitted together, a system comprising:
means for converting only the control signal into a corresponding RF control signal having a spread frequency spectrum of separated components lying in respective bands between predetermined speech channels;
means for transmitting the RF control signal;
means for converting the speech signal into a corresponding RF speech signal; and
means for transmitting the RF speech signal via one of the predetermined speech channels.

5,289,497
BROADCAST SYNCHRONIZED COMMUNICATION SYSTEM
Allen G. Jacobson, Ramsey, N.J.; Donald L. Schilling, Sands Point, and Kenneth J. Henrich, Stony Brook, both of N.Y., assignors to InterDigital Technology Corporation, Wilmington, Del.
Filed May 23, 1991, Ser. No. 704,440
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 34 Claims



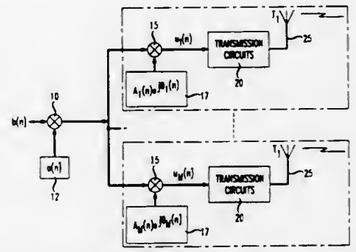
1. A method for synchronizing a plurality of user stations for communicating from said plurality of user stations to a base station, comprising the steps of:
receiving, at each user station, a broadcast signal having periodic synchronization signals, transmitted from said broadcast station, with the periodic synchronization signals including a plurality of frame-start signals, with each frame-start signal followed by a plurality of timing pulses;
counting, at a respective station, from each received frame-start signal the plurality of timing pulses to a predetermined timing pulse corresponding to a respective user station; and
transmitting, from each user station, in response to counting to the predetermined timing pulse corresponding to the respective user station, user data to said base station using a spread-spectrum signaling format.

5,289,498
ADAPTIVE DATA RECOVERY FOR SPREAD SPECTRUM SYSTEMS
Amy O. Hurlbut, San Francisco, and Philip H. Sutterlin, San Jose, both of Calif., assignors to Echelon Corporation, Palo Alto, Calif.
Filed Sep. 9, 1992, Ser. No. 942,580
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 20 Claims



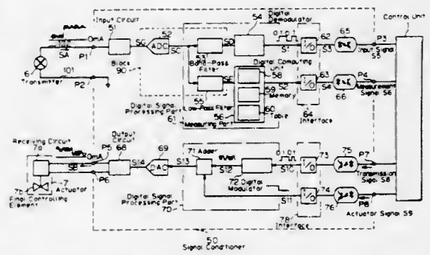
18. A method for recovering data in a spread spectrum communications system comprising the steps of:
providing a first time period, wherein the first time period is set to encompass the correlation values which are generated one baud time from the previous recovered data;
providing a second time period, wherein said second time period occurs during said first time period;
determining the peak correlation value within the first time period and the location in time within the first time period that the peak correlation values occurs; and
decoding the data according to the direction of the peak correlation and whether the peak correlation occurred within the second time period, wherein the data is decoded into a first logic state if the peak correlation occurred within the second time period and the peak correlation is in a first direction or if the peak correlation occurred within the first time period but outside the second time period and the peak correlation is in a second direction, and wherein the data is decoded into a second logic state if the peak correlation occurred within the second time period and the peak correlation is in the second direction or if the peak correlation occurred within the first time period but outside the second time period and the peak correlation is in the first direction, such that decoded data is produced;
modifying the logic state of the decoded data according to a polarity convention in the system, such that the data is decoded according to the direction of the peak correlation and whether the peak correlation occurred within the second time period, and the polarity convention in the system;
wherein thereafter the first and second time periods are set to occur, such that data one bit time from the peak correlation falls within said first time period, such that data is recovered continuously.

5,289,499
DIVERSITY FOR DIRECT-SEQUENCE SPREAD SPECTRUM SYSTEMS
Vijitha Weerackody, Springfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 29, 1992, Ser. No. 998,229
Int. Cl.[5] H04B *7/216, 7/06*
U.S. Cl. 375—1 20 Claims



1. A method of operating a direct-sequence spread spectrum transmitter for communicating a first signal to a receiver, said transmitter including a plurality of M antennas, said first signal including one or more signal segments, the method comprising the steps of:
a. forming M copies of said first signal;
b. for a segment of a signal copy, weighting each of two or more sub-segments of said segment with a distinct signal, wherein a sequence of said distinct weighting signals for said segment is distinct from sequences of signals weighting the same segment of one or more other signal copies; and
c. for each of M weighted signal copies, transmitting a signal to said receiver using a distinct antenna, said transmitted signal based on said weighted signal copy.

5,289,500
SIGNAL CONDITIONER
Kiyoharu Inou; Yoshio Hasegawa; Kenji Fujino; Makoto Imamura; Takanori Komuro; Shunsuke Hayashi, and Hitoshi Yasui, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 779,924
Claims priority, application Japan, Nov. 30, 1990, 2-334399; Mar. 13, 1991, 3-48352; Mar. 14, 1991, 3-49850; Mar. 14, 1991, 3-49851
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 8 Claims



1. A signal conditioner connected to a transmitter via a transmission path, said signal conditioner permitting signals, including measurement information and communication information, to be smoothly transmitted between said transmitter and a control unit, said signal conditioner comprising

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input circuit means for receiving an output signal from said transmitter via said transmission path and for converting said output signal into an analog voltage signal exceeding a given level;
analog to digital conversion means for converting said analog voltage signal from said input circuit means into a digital signal components from said digital signal from said analog to digital conversion means;
second digital filter means for extracting high speed signal components from said digital signal from said analog to digital conversion means;
first digital processing means for digitally processing the extracted low speed components from said first digital filter means thereby to obtain measurement information; and
second digital processing means for digitally processing the extracted high speed signal components from said second digital filter means thereby to obtain communication information.

5,289,501

CODED MODULATION WITH UNEQUAL ERROR PROTECTION FOR FADING CHANNELS

Nambirajan Seshadri, and Carl-Erik W. Sundberg, both of Chatham, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 26, 1991, Ser. No. 797,831
Int. Cl.[5] H04L *25/49*
U.S. Cl. 375—17 **31 Claims**



1. Transmitter apparatus comprising,
means for encoding first and second portions of a stream of input data using first and second redundancy codes, respectively, to generate multi-level-coded words each of which has a value and includes at least one data element from each encoded portion, said first code having a minimum Hamming distance that is greater than a minimum Hamming distance of said second code,
means for selecting signal points of a predetermined signal constellation as a function of the values of said multi-level-coded words, and
means for transmitting a signal representing the selected signal points over a fading communication channel,
said constellation and codes being such that, in the transmission of said signal, a probability of error for said first portion is less than a probability of error for said second portion.

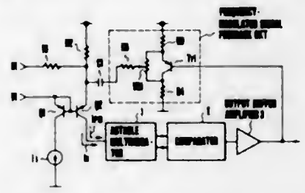
5,289,502

SIGNAL PROCESSING DEVICE

Somei Kawasaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 785,278
Claims priority, application Japan, Nov. 2, 1990, 2-297614
Int. Cl.[5] H03C *3/00;* **H03K** *7/06;* **H04L** *27/12*
U.S. Cl. 375—62 **3 Claims**

1. A signal processing device for processing an information signal, comprising:
a) frequency modulation means arranged to receive the information signal, to frequency-modulate the received information signal and to output a frequency-modulated information signal;
b) feedback signal generating means arranged to receive the frequency-modulated information signal output from said frequency modulation means and to generate a feedback signal therefrom at a phase which is variable to be either in-phase or out-of-phase relative to the received frequency-modulated information signal in accordance with a duty in a high-level period of the received frequency-modulated information signal and at an amplitude which is variable within a range from a zero level to the same level



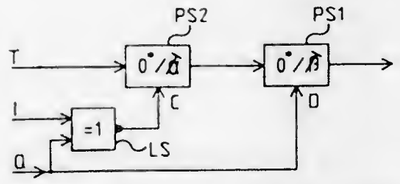
as the received frequency-modulated information signal; and
c) addition means arranged to add the feedback signal output from said feedback signal generating means to the information signal received by said frequency modulation means.

5,289,503

METHOD AND CIRCUIT ARRANGEMENT FOR PRODUCING A QPSK SIGNAL ON WHICH A CARRIER SIGNAL IS SUPERPOSED

Michael Alberty, and Wolfgang Steinert, both of Backnang, Fed. Rep. of Germany, assignors to Ant Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Sep. 10, 1991, Ser. No. 757,303
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028791
Int. Cl.[5] H04L *27/18*
U.S. Cl. 375—67 **17 Claims**



1. A method of generating a composite signal including a QPSK signal having four possible phase-states on which a beacon signal is superposed so that the composite signal has four predetermined possible adjusted phase states, comprising the steps of
passing a carrier signal through two series connected switchable phase shifters, each phase shifter having two available phase shift states;
generating a first control signal by logically linking two data signals, each of which have one of two corresponding values;
applying the first control signal to a first one of the two shifters to select the phase shift state thereof as between the two available phase shift states thereof, whereby the carrier signal is phase shifted by a first angle corresponding to a first selected phase shift state; and
applying one of the data signals as a second control signal to a second one of the two shifters to select the phase shift state thereof as between the two available phase shift states thereof, whereby the carrier signal is phase shifted by a second angle corresponding to a second selected phase shift state; and wherein
the two available phase shift states of each of the two phase

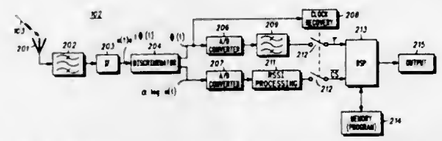
shifters and the logical linking for generating the first control signal from the two data signals are selected so that the carrier signal, after passing through the two shifters, has the predetermined four possible adjusted phase states and therefore forms the composite signal.

5,289,504

SIGNAL DECODING METHOD USING BOTH SIGNAL AND CHANNEL STATE INFORMATION

Timothy J. Wilson, 931 Canterbury Dr., Schaumburg, Ill. 60195; Mark R. Poulin, 730 Superior, Oak Park, Ill. 60302, and Robert M. Sturgill, 1015 Higgins Quarter #313, Hoffman Estates, Ill. 60194

Filed Jun. 28, 1991, Ser. No. 723,107
Int. Cl.[5] H03K *9/00;* **H04L** *27/06, 27/14*
U.S. Cl. 375—75 **24 Claims**



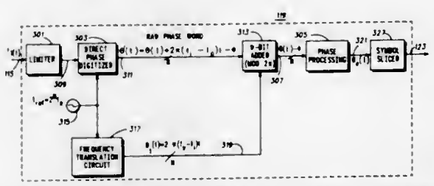
23. A method of recovering an information signal that has been angle modulated on a carrier signal and transmitted through a radio frequency channel, comprising the steps of:
A) receiving the carrier signal;
B) demodulating the received carrier signal to provide a received information signal comprising a plurality of discrete information elements;
C) processing the received carrier signal to determine a plurality of discrete elements of channel state information, wherein each discrete element of channel state information corresponds temporally to one of the discrete information elements;
D) combining at least some of the discrete information elements and temporally corresponding discrete elements of channel state information in a trellis coded Viterbi decoding algorithm to recover the information signal, such that discrete information elements that temporally correspond to a discrete element of channel state information that indicates faded reception conditions are weighted as being less reliable than other discrete information elements in the trellis coded Viterbi decoding algorithm.

5,289,505

FREQUENCY TRANSLATION APPARATUS AND METHOD

Christopher P. LaRosa, Lake Zurich, and Michael J. Carney, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1991, Ser. No. 806,511
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—83 **9 Claims**



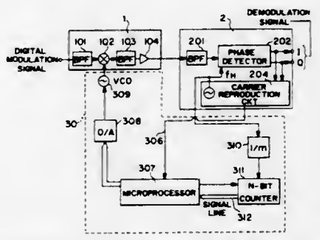
1. A frequency translation apparatus for altering the effective frequency of the phase information of an input signal, the input signal having a first phase ($\theta(t)$) and a first predetermined frequency (f_i), the phase of the input signal is extracted and digitized at a second predetermined frequency (f_o), forming an estimated phase signal ($\theta'(t)$) having a second phase and containing a phase error ramp function, the frequency translation apparatus comprising:
means for generating a frequency translation signal approximating the phase error ramp function and
means for combining said estimated phase signal and said frequency translation signal, substantially eliminating the phase error ramp function from the estimated phase signal.

5,289,506

AUTOMATIC FREQUENCY CONTROL CIRCUIT

Takamitsu Kitayama; Masao Miyazaki; Tomozo Ohta, and Takahiro Chihara, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 650,016, Feb. 4, 1991, Pat. No. 5,107,522. This application Feb. 27, 1992, Ser. No. 842,540
Claims priority, application Japan, Feb. 5, 1990, 2-26750; Feb. 22, 1990, 2-42137; Feb. 22, 1990, 2-42138; Apr. 3, 1991, 3-070187
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—97 **18 Claims**



1. An automatic frequency control circuit for stabilizing a frequency of an intermediate frequency signal to be supplied as an input to a demodulation circuit, the intermediate frequency derived from a digital modulation signal containing digital information transmitted at a bit rate frequency, the automatic frequency control circuit comprising:
frequency conversion means for frequency-converting the digital modulation signal to output the intermediate frequency signal;
voltage-controlled oscillation means for applying a local oscillation signal having a varying oscillation frequency to said frequency conversion means in response to an applied control voltage;
first frequency production means for producing a first frequency equal to the frequency of said intermediate frequency signal plus one quarter of said bit rate frequency;
frequency dividing means for frequency-dividing said first frequency;
counting means for counting an output of said frequency dividing means for a definite period; and
control means for applying said control voltage to said voltage-controlled oscillation means as a function of a count output of said counting means.

5,289,507

CLOCK DEJITTER CIRCUITS FOR REGENERATING JITTERED CLOCK SIGNALS

Daniel C. Upp, Southbury, Conn., assignor to TranSwitch Corporation, Shelton, Conn.

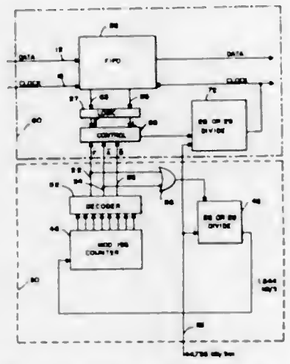
Continuation-in-part of Ser. No. 439,097, Nov. 17, 1989, Pat. No. 5,033,064. This application May 13, 1992, Ser. No. 857,928
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] H04L *7/00;* **H04J** *3/06*
U.S. Cl. 375—118 **21 Claims**

1. Apparatus for regenerating a jittered data stream of a first standard telecommunications signal, said apparatus having a

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second standard telecommunications clock signal as an input thereto, said second standard telecommunications clock signal being at a substantially faster rate than the rate of said first standard telecommunications signal, comprising:

a) a control circuit means for generating z pulses during y count cycle of a clock substantially at a rate of said first standard telecommunications signal; and



b) a clock circuit means for receiving said jittered data stream, for tracking the nominal frequency of said jittered data stream, and based upon said nominal frequency, and utilizing said z pulses, generating a substantially unjittered first standard telecommunications signal at said nominal frequency of said jittered data stream, wherein

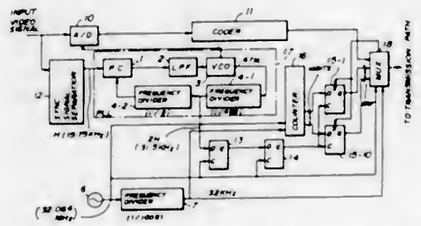
z and y are integers.

5,289,508

CLOCK INFORMATION TRANSMITTING DEVICE AND CLOCK INFORMATION RECEIVING DEVICE

Yoshiyuki Wada, Kawasaki, and Toshihiro Yamanaka, Fukuoka, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 13, 1991, Ser. No. 791,870
Claims priority, application Japan, Nov. 30, 1990, 2-340118
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 **21 Claims**



1. A clock information transmitting device coupled to a digital processing circuit which receives a transmission signal and generates a coded transmission signal, comprising:

signal separation means for separating a synchronizing signal from the transmission signal;

phase locked loop (PLL) means, coupled to said signal separation means, for generating a sampling clock signal and a first signal produced from said sampling clock signal, said sampling clock signal and said first signal being synchronized with the synchronizing signal, the sampling clock signal generated in the PLL mans being applied to and used in the digital processing circuit;

clock information generating means for generating a transmission clock signal and being coupled to said PLL means, for counting pulses of the transmission clock signal and for generating clock information indicating a number of pulses of the transmission clock signal in response to the first signal generated by the PLL means; and

multiplexer means, coupled to said digital processing circuit and said clock information generating means, for outputting a multiplexed signal including said clock information and said coded transmission signal to a transmission path,

wherein said clock information generating means comprises:

clock signal generating means for generating the transmission clock signal and a second signal having a frequency lower than that of the transmission clock signal, the multiplexed signal having a frequency equal to that of the transmission clock signal;

counter means, coupled to said clock signal generating means, for counting pulses of the transmission clock signal during each period defined by said second signal; and

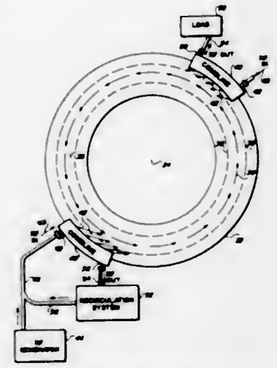
latch means, coupled to said PLL means and said counter means, for latching a counter value in the counter means in response to the first signal generated by said PLL means, said counter value corresponding to said clock information.

5,289,509

SHIELDED COMB-LINE ANTENNA STRUCTURE FOR LAUNCHING PLASMA WAVES

Charles P. Moeller, Del Mar, Calif., assignor to General Atomics, San Diego, Calif.

Filed Jan. 19, 1993, Ser. No. 5,598
Int. Cl.[5] G21B *1/00*
U.S. Cl. 376—123 **18 Claims**



16. A method of launching magnetosonic waves into a plasma comprising:

(a) supporting a multiplicity of parallel current straps an equal distance apart, and positioning said equally-spaced, parallel current straps so as to front said plasma;

(b) applying rf input power to a first of said plurality of parallel current straps, said rf input power being inductively coupled from one current strap to an adjacent current strap, whereby a portion of the rf input power applied to said first current strap is inductively coupled to a second current strap adjacent said first current strap, and a portion of the rf power coupled to the second current strap is inductively coupled to a third current strap adjacent said second current strap, and so on, with the rf input power being inductively coupled from one current strap to an adjacent current strap so that each of said current straps receives some rf power, and with some of the rf power present at each current strap being launched from the respective current strap as a magnetosonic wave into said plasma; and

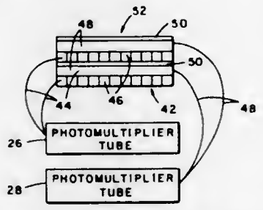
(c) shielding said plasma from electrostatic fields present at said current straps.

5,289,510

TWO-DIMENSIONAL POSITION SENSITIVE RADIATION DETECTORS

John T. Mihalczo, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Oct. 23, 1992, Ser. No. 965,836
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—258 **10 Claims**



1. A position sensitive, two dimensional radiation detector comprising nuclear reaction sensing means defined by adjacently disposed first and second planar arrays of elongated optical fibers oriented perpendicular to one another in X and Y directions and with said first and second planar arrays each being provided by a plurality of elongated optical fibers disposed in an abutting side-by-side relationship, a planar layer of nuclear reactive material disposed between the first and second optical fiber arrays in a contacting relationship with surface regions extending over a substantial length of each of the optical fibers in at least one of the first and second optical fiber arrays, said layer of nuclear reactive material being characterized by undergoing a nuclear reaction therein when contacted by a nuclear particle or ray for providing in said layer of nuclear reactive material at least two energetic particles that are virtually simultaneously discharged from said layer with one of said energetic particles being received by one of the optical fibers in the first planar array and another of said energetic particles being received by one of the optical fibers in the second planar array for essentially simultaneously effecting light pulse producing scintillation reactions in both of the optical fibers contacted by the energetic particles for providing said light pulse in the single optical fiber in each optical fiber array, and circuit means including coincidence counting means adapted to receive the light pulses from both of the single optical fibers for providing a signal indicative of the coordinates of said nuclear reaction in said X and Y directions.

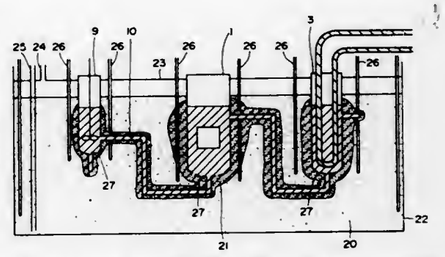
5,289,511

LIQUID-METAL COOLED NUCLEAR REACTOR

Ken Yamamoto, Tsuruga, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 987,219
Claims priority, application Japan, Dec. 9, 1991, 3-324141
Int. Cl.[5] G21C *13/00*
U.S. Cl. 376—293 **5 Claims**

4. In a liquid-metal cooled nuclear reactor using a liquid metal as a coolant and having a primary coolant system including a reactor vessel in which the core of the reactor is contained, an intermediate heat exchanger, primary coolant system main piping connecting the reactor vessel and the intermediate heat exchanger, and a primary coolant system pump which circulates the liquid metal coolant through the primary coolant system, the improvement comprising: an outer container in which the reactor vessel, the pump, the intermediate heat exchanger and the piping are contained, a mass of solidified liquid metal, of the same metal as that of said coolant, filling a portion of said outer container; the reactor vessel, the pump, the intermediate heat exchanger and the piping being embedded in and sealed by said mass; a major part of the liquid metal filling said outer container remaining solid during normal operation of the reactor, and a minor part of the liquid



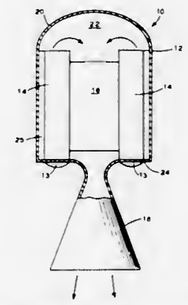
metal substantially less than that of said major part becoming molten adjacent outer wall surfaces of the reactor vessel, the pump, the intermediate heat exchanger and the piping during normal operation of the reactor due to heat given off by the coolant circulating through the primary coolant system.

5,289,512

NUCLEAR PROPULSION REACTOR

William G. Pettus, Monroe, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 8, 1992, Ser. No. 895,054
Int. Cl.[5] G21D *5/06*
U.S. Cl. 376—318 **7 Claims**



1. A Nuclear Propulsion reactor, comprising:

a. a rector vessel enclosing two separate coaxial core regions;

b. an annular-shaped first core positioned inside said reactor vessel, said first core containing particle bed reactor nuclear fuel elements having inlet and exhaust ends that direct propellant axially therethrough;

c. beryllium hydride moderator material positioned between the fuel elements in said first core;

d. a cylindrical second core containing fissionable material positioned in the axial space encompassed by said first core and in fluid communication with the exhaust end of said first core for heating propellant to a higher temperature than said first core;

e. thermal insulation between said first and second cores; and

f. a propellant nozzle attached to one end of said reactor vessel and in fluid communication with said second core.

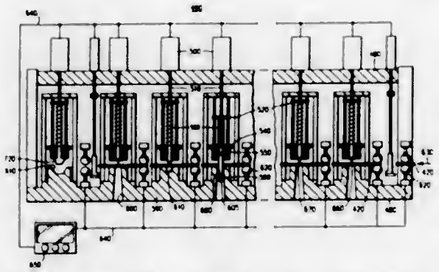
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,513

METHOD OF MAKING A FUEL ASSEMBLY LATTICE MEMBER AND THE LATTICE MEMBER MADE BY SUCH METHOD

Edmund E. DeMario, and Charles N. Lawson, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 29, 1992, Ser. No. 968,011
Int. Cl.[5] G21C 3/34
U.S. Cl. 376—438 **16 Claims**



8. In a progressive die machine, a method of making a lattice member for a fuel assembly, the method comprising the steps of:

(a) controllably moving a motorized conveyor along a predetermined circuit extending through the die machine by operating a pre-programmed computer for conveying a plurality of interior and a plurality of exterior strap members along the circuit, each interior and each exterior strap member engaging the conveyor;

(b) successively advancing each interior and each exterior strap member along the circuit and into coaxial alignment with a preselected pneumatically actuatable deflector vane piercing die by controllably moving the conveyor;

(c) selectively pneumatically actuating the deflector vane piercing die by operating the computer, so that each interior and each exterior strap member is pierced to form a plurality of deflector vanes thereon;

(d) successively advancing each interior and each exterior strap member along the circuit and into coaxial alignment with a preselected pneumatically actuatable deflector vane drawing die by controllably moving the conveyor;

(e) selectively pneumatically actuating the deflector vane drawing die by operating the computer, so that each deflector vane is drawn into a predetermined curvature for forming a plurality of curved deflector vanes in each interior and each exterior strap member as said deflector vane drawing die is actuated;

(f) successively advancing each of the interior and each of the exterior strap members along the circuit and into alignment with a preselected pneumatically actuatable spring drawing die by controllably moving the conveyor; and

(g) selectively pneumatically actuating the preselected spring drawing die by operating the computer to draw a plurality of raised portions extending from each interior and exterior strap member, so that the raised portions define a plurality of spring members in each interior and each exterior strap member as said spring drawing die is actuated.

(h) successively advancing a preselected pair of exterior strap members along the circuit and into alignment with a preselected pneumatically actuatable trihedral drawing die by controllably moving the conveyor;

(i) selectively pneumatically actuating the preselected trihedral drawing die by operating the computer to successively draw each of the exterior strap members, so that each exterior strap member obtains a regular trihedral-shaped transverse cross section;

(j) joining the pair of trihedral-shaped exterior strap members one to another by activating a laser welding device so that the trihedral-shaped exterior strap members form a unitary outer strap member defining a regular hexagon in transverse cross section, the outer strap member having an interior wall;

(k) joining the interior strap members one to another by activating the laser welding device so as to form a plurality of intersecting first and second inner strap members defining a plurality of rhombic-shaped rod cells and a plurality of generally rhombic-shaped thimble cells, the first and second inner strap members each having end portions;

(l) surrounding the plurality of first and second inner strap members with the outer strap member; and

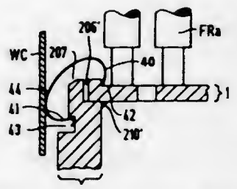
(m) joining the end portions of each of the first and second inner strap members to the interior wall of the outer strap member by activating the laser welding device.

5,289,514

FUEL ASSEMBLY FOR A BOILING WATER REACTOR WITH A SEALING SPRING BETWEEN THE FOOT PART AND THE FUEL ASSEMBLY CHANNEL

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Filed Mar. 18, 1993, Ser. No. 33,766
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029539
Int. Cl.[5] G21C 3/324
U.S. Cl. 376—440 **34 Claims**



1. A fuel assembly for a boiling water reactor, comprising:

a) a cluster of mutually parallel fuel rods;

b) a fuel assembly channel laterally surrounding said cluster of fuel rods, having open upper and lower ends with inner cross sections and having an inner surface;

c) a top plate covering said open upper end of said fuel assembly channel and having coolant outlets formed therein;

d) a foot part having:

i) a transitional piece with an upper edge being inserted into said open lower end of said fuel assembly channel;

ii) a base plate being attached to said upper edge of said transitional piece, covering the inner cross section of said open lower end of said fuel assembly channel, having coolant inlets formed therein and having an outer surface; and

iii) an edge running internally around said open lower end of said fuel assembly channel: and

e) an elongate sealing spring having a central part being disposed between said foot part and said fuel assembly channel, being arched around a line of curvature parallel to said edge of said foot part and being supported against said inner surface of said fuel assembly channel; and

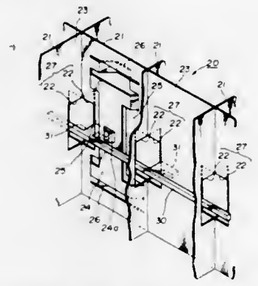
f) said sealing spring being clipped onto said foot part, having a first side strip engaged in a profiled groove formed in said transitional piece, and having a second side strip being disposed above said central part, extending around said edge of said foot part and lying against said outer surface of said base plate facing said fuel rod cluster.

5,289,515

ASSEMBLY METHOD AND GRID FOR NUCLEAR FUEL ASSEMBLY

Junichi Oyama; Kazuichi Suzuki; Akibiro Kato, all of Ibaraki; Hitoshi Inada, Kobe; Masaji Mori, Kobe; Hiromasa Miyai, Kobe, and Toshiyuki Kawagoe, Tokyo, all of Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Division of Ser. No. 460,626, Jan. 3, 1990, Pat. No. 5,068,081. This application Aug. 15, 1991, Ser. No. 745,401
Claims priority, application Japan, Jan. 6, 1989, 64-957
Int. Cl.[5] G21C 3/334
U.S. Cl. 376—442 **6 Claims**



1. In a combination of a grid for a nuclear fuel assembly and a plurality of elongated key members,

said grid comprising a plurality of elongated straps intersected with each other to define a plurality of grid cells therein, a plurality of pairs of dimples and springs formed on said straps for supporting a plurality of fuel rods, and a plurality of openings which are defined at intersections among said straps, each pair of dimples and springs being disposed in facing relation to each other, on wall sections of said straps, which cooperate with each other to define one of said grid cells, the pair of dimples and springs projecting into the grid cell, and

each of said elongated key members being provided for maintaining the springs deflected respectively away from the dimples, the key member being capable of being inserted into said grid cells through said openings along a longitudinal direction of a corresponding one of said straps;

the combination further comprising:

a deflecting jig capable of being inserted into one of said grid cells, said deflecting jig being in the form of a rod having a diameter capable of being enlarged to urge the spring associated therewith against resilient force of the spring to deflect the spring away from the dimple associated therewith;

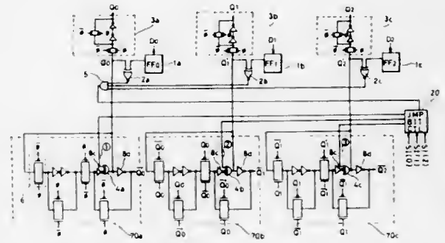
each of said elongated key members being formed with a plurality of hooks which are spaced a predetermined spacing from each other along a longitudinal direction of the key member, and being rotatable about its axis to cause the hooks of the key member to project from a wall surface of the strap associated with the key member, through the openings, in a direction opposite to the projecting direction of the spring formed on the strap, said key member being movable forwardly in a longitudinal direction of the strap to engage the hooks of the key member with the wall surface of the strap, thereby fixedly mounting the key member to the strap to maintain the spring deflected, and being formed such that when the urging of the spring due to said deflecting jig is released to allow the same to be withdrawn from the grid cell and, subsequently, said fuel rods are inserted respectively into said grid cells, said key member is movable rearwardly to release retention of the springs due to the hooks of the key member thereby bringing the springs into pressure contact with the fuel rods, respectively, and allow said key members to be withdrawn from said grid cells.

5,289,516

COUNTER DEVICE AND METHOD OF OPERATING THE SAME

Masatoshi Kimura, and Minobu Yazawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1991, Ser. No. 700,024
Claims priority, application Japan, Jun. 1, 1990, 2-145204
Int. Cl.[5] G04B 19/24
U.S. Cl. 377—39 **18 Claims**



1. A counter device comprising;

counting means for counting clock pulses,

first setting means for setting a predetermined first count value,

second setting means for setting a predetermine second count value,

detecting means for detecting equality/unequality in value between a count of said counting means and said first count set by said first setting means, and

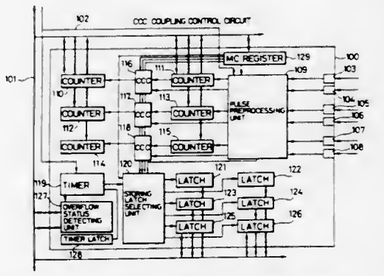
means for modifying the count of said counting means by said second count value in response to an equality detection signal from said detecting means.

5,289,517

DIGITAL PULSE PROCESSING DEVICE

Mamoru Ohba, Hitachi; Mitsuru Watabe, Katsuta; Rika Minami, Hitachi, and Sanshiro Obara, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Chiyoda, Japan

Filed Sep. 10, 1991, Ser. No. 757,139
Claims priority, application Japan, Sep. 10, 1990, 2-239742
Int. Cl.[5] H03L 7/00
U.S. Cl. 377—44 **20 Claims**



1. A digital pulse processing device, comprising:

a first counter group including at least first and second counters for counting pulses output from at least one of a first pulse generator and a second pulse generator; and

coupling control means connected to said first and second

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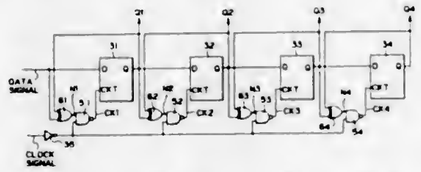
counters for changing over an operation mode of said first counter group between a first operation mode in which said first and second counters are in a coupled state so as to operate as a single counter to count the output from said first pulse generator and a second operation mode in which said first and second counters operate individually to count the output of said first and second pulse generators.

5,289,518

LOW POWER SHIFT REGISTER CIRCUIT

Tomoaki Nakao, Koriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1992, Ser. No. 831,341
Claims priority, application Japan, Jul. 25, 1991, 3-186585
Int. Cl.[5] H03K *3/284, 19/00*
U.S. Cl. 377—81 **8 Claims**



1. A low power shift register circuit for outputting signals corresponding to an input signal according to a clock signal supplied thereto, comprising:

a plurality of flip-flops connected in cascade, each of said flip-flops having a data input terminal for receiving a data signal, said input signal being supplied to a data input terminal of one of said flip-flops at a first stage and data input terminals of the other of said flip-flops receiving output signals from a previous one of said flip-flops respectively, each of said flip-flops latching data on the data input terminal in synchronous with the clock signal supplied thereto; and

a plurality of clock controlling means, each of said clock controlling means connected to receive said clock signal for controlling an input of said clock signal to respective ones of said flip-flops based on a difference between logic levels of the output signals of said respective ones of said flip-flops and said data signal applied to the data input terminal of said respective ones of said flip-flops so as to prevent the clock signal from being input in a case that the applied data is equal to the level of the output signals and save power consumption, each of said clock controlling means includes first gate means connected to receive said clock signal for selectively passing said clock signal, so that said clock signal is supplied to said respective ones of said flip-flops through said first gate means without an inverter being required for supplying the clock signal to said flip-flops.

5,289,519

ROTATABLE ION CONTROLLING ELECTRODE ASSEMBLY WITH NO OFFSET OR DEFLECTION OF LOW ENERGY ELECTRONS FOR A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER

Roy E. Rand, Palo Alto, Calif., assignor to Imatron, Inc., Calif.

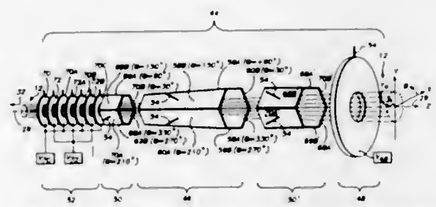
Continuation of Ser. No. 809,924, Dec. 18, 1991, Pat. No. 5,193,105. This application Oct. 9, 1992, Ser. No. 958,939
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] H01J *35/06*
U.S. Cl. 378—4 **24 Claims**

1. In a computed tomography X-ray scanning system, an electrode assembly for correcting space-charge density non-uniformity in an electron beam generated in a vacuum housing chamber containing a low pressure gas from which positive ions may be created, the electron beam traveling in a downstream direction defining a Z-axis, the assembly being disposed substantially coaxially with the electron beam along the Z-axis and comprising:

a rotatable field ion clearing electrode assembly including first, second and third electrode pairs, each said electrode pair comprising two electrode members spaced-apart diametrically relative to the Z-axis;

a power source providing a first potential level;

a voltage divider including divider nodes coupled to said single power source;



said divider providing at a first node a potential equal to said first potential level, providing at a last node a potential equal to ground, and providing at nodes intermediate to said first and last nodes potential levels intermediate to said first potential level and ground;

switch means for switchably coupling said electrode members to chosen ones of said divider nodes to create a potential difference between said members comprising each said electrode pair;

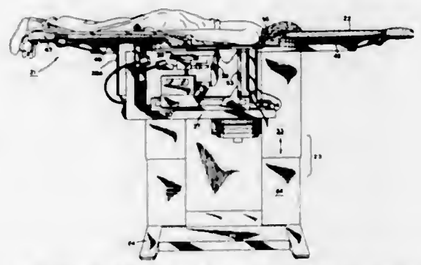
said rotatable field ion clearing electrode assembly producing an field controllably rotated by said switch means to an orientation controllably removing sufficient positive ions to compensate for space-charge density non-uniformity in said beam.

5,289,520

STEREOTACTIC MAMMOGRAPHY IMAGING SYSTEM WITH PRONE POSITION EXAMINATION TABLE AND CCD CAMERA

Anthony J. Pellegrino, New Fairfield; Milton Stoller, West Hartford, both of Conn.; Kenneth F. DeFreitas, Patterson, N.Y.; David D. Camarra, Fairfield; Anthony M. Scandura, Scotland, both of Conn.; Richard F. Schutz, Brewster, N.Y., and Jeffrey R. Storm, Springfield, Mass., assignors to Lorad Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 799,412, Nov. 27, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,275
Int. Cl.[5] A61B *6/04*
U.S. Cl. 378—37 **32 Claims**



1. An X-ray table assembly for supporting a female patient in a prone position for mammography procedures, comprising:

a base having a front portion and a rear portion,

a rear pedestal upstanding from the rear protion of said base,

a substantially flat and horizontal patient-supporting platform which is supported cantilever-fashion from a rear longitudinal edge by said rear pedestal, having a free unsupported front edge, a right end, a left end, and a concavely-dished shallow torso-receiving recess extending across its central portion from said pedestal to said front edge,

means centrally positioned in said platform recess, mid-way between said right end and said left end, forming an open breast-receiving aperture for pendulant presentation of the patient's breast therethrough below the level of the platform, wherther the patient's head is positioned to the right or to the left of said aperture,

means forming right and left underside recesses in said platform flanking said breast-receiving aperture and said torso-receiving recess,

a C-arm pivotally mounted on the pedestal beneath the platform for angular movement about a vertical pivot axis aligned with said aperture and having a near end supporting an image receptor, and a remote end supporting an X-ray tubehead forming an X-ray source, said C-arm being dimensioned for pivotal movement through a arc of more than 180° around the breast-receiving aperture, positioning the X-ray source in any of an infinite number of source positions ranging from the direction of one end of said platform through a lateral position remote from said rear pedestal to the direction of the other end of said platform, with the tubehead having an upper end positionable in either of said underside recesses above the level of said breast-receiving aperture, thereby facilitating X-ray source positioning around more than a 360° range of positions, with the patient's head positioned toward either the right end or the left end of the platform,

a fixed compression plate independent of said C-arm, positioned under said platform near said vertical pivot axis for abutting contact with the patient's presented breast,

a movable compression paddle positioned under said platform near said first compression plate for gentle clamping of said presented breast between said compression plate and said paddle independent of said pivotally mounted C-arm, and

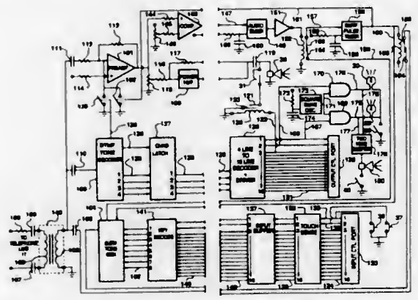
X-ray responsive image-forming means mounted on said image receptor.

5,289,521

AUDIO/TELECOMMUNICATIONS SYSTEM TO ASSIST IN SPEECH AND COGNITIVE SKILLS DEVELOPMENT FOR THE VERBALLY HANDICAPPED

Michael J. Coleman, and Patricia G. Coleman, both of 1150 Rushbrooke Dr., Oakville, Ontario, Canada L6M 1K1

Filed Mar. 9, 1992, Ser. No. 848,045
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—52 **10 Claims**



1. An interface electronic circuit control unit system for use by a human user to establish bidirectional telephonic communications with a remote central computer system with a speech synthesizer running an interactive software program for applications for speech and cognitive skills development, comprising

bi-directional telephone interface circuit means for receiving incoming dual-tone multi-frequency (DTMF) control signals and synthesized voicing from a standard telephone network as well as allowing dual-tone multi-frequency control signals to be transmitted from said interface electronic circuit to said telephone network,

pre-amplifier and power amplifier circuit means with an input operatively connected to said bi-directional telephone interface circuit for receiving said dual-tone multi-frequency control signals and synthesized voicing from said central computer system, amplifying said dual-tone multi-frequency control signals and synthesized voicing into amplified dual-tone multi-frequency control signals and synthesized voicing and applying said amplified dual-tone multi-frequency signals and synthesized voicing to an audio speaker and an audio output jack,

dual-tone multi-frequency tone decoding circuit means with an input operatively connected to said bi-directional telephone interface circuit for receiving and decoding said dual-tone multi-frequency control signals from said central computer system into decoded dual-tone multi-frequency control signals, latching said decoded dual-tone multi-frequency control signals into a binary code, and decoding said binary code into a single bit for output prompting control,

dual-tone multi-frequency tone generating circuit means with an output operatively connected to said bi-directional telephone interface circuit for generating dual-tone multi-frequency tones from touch sense switch inputs, buffering said touch sense switch inputs and decoding said touch sense switch inputs into dual-tone multi-frequency control tones that are sent to said central computer system,

audio threshold level detection circuit means with an input operatively connected to said pre-amplifier circuit for detecting the presence of a said dual-tone multi-frequency control signal or synthesized voicing from said central computer system, as amplified by said pre-amplifier means, and an output operatively connected to said dual-tone multi-frequency tone generating circuit for inhibiting the output of dual-tone multi-frequency tones from said dual-tone multi-frequency tone generating circuit upon audio detection,

indicating means consisting of flashing lights or beepers operatively connected to an output of said dual-tone multi-frequency tone decoding circuit for prompting said human user.

5,289,522

DENTAL X-RAY AIMING DEVICE

Maurice S. Kanbar, 4 E. 77th St., New York, N.Y. 10021; Albert Kolvites, R.R. 3 Box 117A Yeager Rd., Mountaintop, Pa. 18707, and Robert J. Cohn, 61 Sterling Ave., Dallas, Pa. 18612

Filed Nov. 16, 1992, Ser. No. 977,241
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—170 **14 Claims**

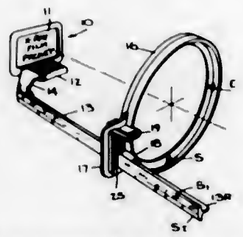
1. A dental X-ray aiming device adapted to position a rectangular film packet having relatively sharp edges in the oral cavity of a patient, said device comprising:

(a) a packet holder that shields the edges of the packet to avoid direct contact with tissue in the oral cavity and a resultant discomfort or pain, said holder including a rectangular frame formed of resilient, synthetic plastic material defining a pair of side branches and a pair of end branches within which the packet is socketed, and a bite block joined to the frame at its front and projecting therefrom, the bite block, when clenched between the teeth of

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the patient, then positioning the film packet behind a tooth region of interest;

(b) a guide rod detachably coupled to the bite block of the holder to place the film packet in a plane at right angles to the rod; and



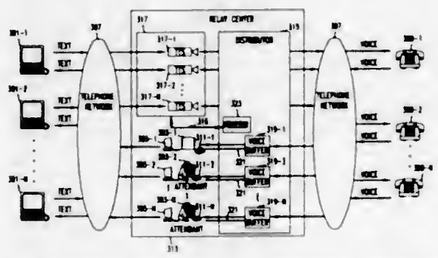
(c) a sighting ring slidable on the guide rod to accommodate a nose cone of an X-ray unit to project an X-ray beam toward the film packet to produced a radiograph of the tooth region.

5,289,523

TELECOMMUNICATIONS RELAY SERVICE METHOD AND APPARATUS

Karen L. Vasile, Bedminster, and Leonard R. Kasday, Moorestown, both of, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1992, Ser. No. 923,294
Int. Cl.[5] H04M *11/00, 1/64, 3/00*
U.S. Cl. 379—52 **21 Claims**



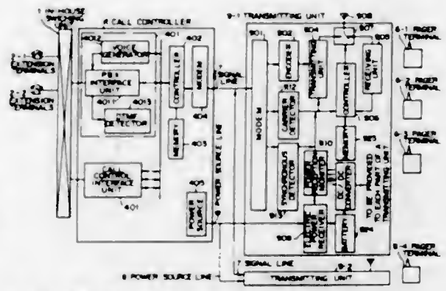
1. A method for use in a system for processing communication sessions over a telephone network between sound impaired and unimpaired persons, during which at least one live attendant transcribes and transmits to the sound impaired person that which is spoken by the unimpaired person and an automated text-to-speech system converts into speech to be heard by the unimpaired person that which is input by the sound impaired person, said at least one live attendant being free to perform other tasks during said text-to-speech conversion, said method characterized by buffering that which is spoken by the unimpaired person from at least the time of completion of a text-to-speech conversion by said text-to-speech system until an assignment, at some time thereafter, of said at least one live attendant for transcribing and transmitting to said sound impaired person that which is spoken by said unimpaired person.

5,289,524

DATA TRANSMISSION METHOD AND UNIT

Masanori Takano, and Toshihiro Yabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 27, 1991, Ser. No. 800,150
Claims priority, application Japan, Nov. 27, 1990, 2-327312
Int. Cl.[5] H04M *11/04, 11/00;* **H04Q** *7/00;* **H04B** *1/04*
U.S. Cl. 379—57 **12 Claims**



11. A data transmission unit comprising:

a plurality of transmission units each comprising a transmitting means for notifying a pager terminal of a call request signal through a wireless communication upon receiving said call request signal, and a detecting means for detecting an unnoticeable state of said call request signal, said transmission units notifying by said transmitting means of said state when said detecting means detects said unnoticeable state; and

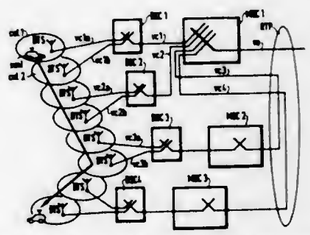
an extension switching means, to which extension terminals are connected, for connecting the extension terminals in response to a connection request of said extension terminals, for outputting said call request signal in response to said call request to the pager terminal, and for requesting one of said transmission units to send abnormal condition information to said pager terminal when said unnoticeable state is detected, in which a call request is not sent to said pager terminal in response to said call request signal applied to a transmission unit.

5,289,525

HANDOVER METHOD FOR RADIOTELEPHONE NETWORKS

Edouard Issenmann, Le Chesnay, and Jean Reynaet, Dravell, both of France, assignors to Alcatel Cit, Paris, France

Filed Jan. 18, 1991, Ser. No. 642,942
Claims priority, application France, Jan. 18, 1990, 90 00563
Int. Cl.[5] H04M *11/00;* **H04J** *3/16;* **H04Q** *7/00;* **H04B** *1/00*
U.S. Cl. 379—58 **3 Claims**



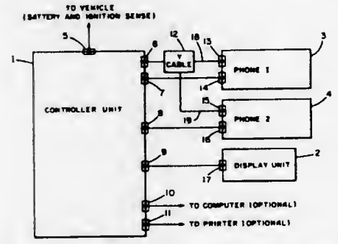
1. A handover method for a cellular radiotelephone network for handing over a radiotelephone call established with a mobile via a first transceiver of a first cell to a second transceiver of a second cell accessing the mobile, said method comprising the steps of handing over the call at a handover level via a handover branch to said second transceiver in response to a handover instruction, with said handover step interrupting the call during a relatively short interruption time interval, and switching in the mobile from said first transceiver to said second transceiver in response to a switching instruction, said switching step interrupting the call during a relatively long predefined cut-off time interval and said handover branch being prepared before executing the handover and switching operations by reserving said handover branch, without the latter being connected to the call in progress, said method further comprising transmitting said switching instruction initiating the switching operation to the mobile and controlling timing of the handover to the handover branch in response to the handover instruction relative to said switching step so that said relatively short interruption time interval occurs during said predefined cut-off time interval.

5,289,526

CELLULAR SYSTEM ACCESS MONITOR

Daryl J. Chymyck, and Kurt T. Lemke, both of Palatine, Ill., assignors to Safco Corporation, Chicago, Ill.

Filed Aug. 24, 1990, Ser. No. 572,666
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **4 Claims**



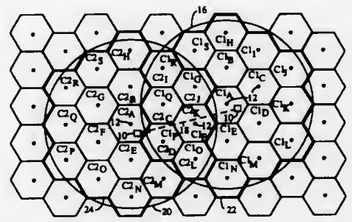
1. A combination for calibrating a cellular system access monitor in dBm units to report a received radio-frequency (RF) signal amplitude in dBm units and which signal is transmitted from a cellular system transmitter, comprising a cellular telephone transceiver having an antenna port, a calibrated RF signal source connected to the antenna port for inputting and applying the amplitude of the applied RF signal in discrete dBm steps, a cellular telephone transceiver utilizing a data transmission protocol for reporting an RF input signal amplitude in Received Signal Strength Indicator (RSSI) units emanating from the cellular system transmitter, a controller utilizing the data transmission protocol for continuously retrieving the amplitude in RSSI units of the RF input signal applied to the cellular telephone transceiver from the cellular system transmitter, a communications data bus utilizing the data transmission protocol linking the cellular telephone transceiver and the controller to transfer the amplitude in RSSI units of the RF input signal applied to the cellular telephone transceiver from the cellular system transmitter to the controller, means within the controller for translating the amplitude of the RSSI signal received by the cellular telephone transceiver into discrete dBm steps from the cellular system transmitter, and means connected to the translating means for storing the RSSI and dBm translation.

5,289,527

MOBILE COMMUNICATIONS DEVICE REGISTRATION METHOD

Edward G. Tiedemann, Jr., San Diego, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Filed Sep. 20, 1991, Ser. No. 763,091
Int. Cl.[5] H04M *11/00;* **H04Q** *7/00;* **H04B** *1/00*
U.S. Cl. 379—59 **33 Claims**



1. In a cellular communication system defined by a plurality of cells, a method for establishing mobile station paging zones in said cellular communication system comprising the steps of:

transmitting, in each one of said cells, a respective cell location information and distance value;

receiving at a mobile station location information and distance value for a current cell in which said mobile station is currently located;

computing a distance between said current cell and a previous cell in which said mobile station registered;

transmitting mobile station registration information when said computed distance is at least a distance value for said previous cell; and

determining from said transmitted mobile station registration information a group of cells within a distance of said current cell corresponding to said current cell distance value.

5,289,528

AUTOMATIC TELEPHONE ANSWERING APPARATUS WITH CALL FORWARDING ARRANGEMENT

Hiroatsu Ueno, Chikushino, and Yasuhiro Sakaime, Tosu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 836,576
Claims priority, applicatioo Japan, Feb. 18, 1991, 3-023372
Int. Cl.[5] H04M *1/64, 1/66, 3/54*
U.S. Cl. 379—67 **5 Claims**

2. An automatic telephone answering apparatus comprising:

(a) N communication interface means for communicating with N telephone lines respectively wherein N is a natural number and is more than one;

(b) telephone number detection means for detecting telephone number data indicative of a caller's telephone through one of said N telephone lines;

(c) first storing means for storing at least a first telephone number;

(d) second storing means for storing at least a second telephone number;

(e) comparing means for comparing said detected telephone number data with said first telephone number;

(f) control means for communicating with one other telephone line of said N telephone lines and producing a dialing control signal immediately when said detected telephone number data agrees with said first telephone number;

(g) dialing means for performing dialing using said second telephone number through said one other telephone line in response to said dialing control signal;

(h) connection means for forming communication passage between said one of said N telephone lines and said one

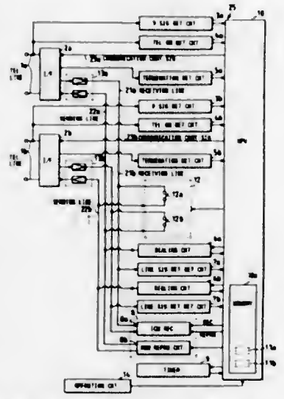
VOL 1159 ISS 4 FE 22 1994 UMI

other telephone line and for providing communication therebetween in response to said control means;

(i) message storing means for storing a message to be played to the caller;

(j) first detection means responsive to said dialing for detecting a busy signal which may be sent from said one other telephone line in response to said dialing by said dialing means;

(k) second detection means for detecting a ring back signal



sent from said one other telephone line in response to said dialing by said dialing means;

(l) timer means responsive to said dialing for producing a delay signal whose delay time is predetermined; and

(m) second control means responsive to said first and second detection means and said delay signal for selectively sending said message to said caller through said one of N telephone lines when said first detection means detects said busy signal or when said second detection means does not detect said ring back signal during said delay time.

5,289,529

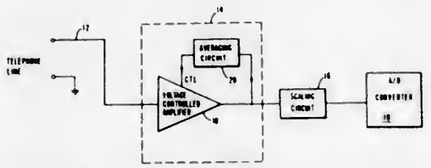
MEANS FOR IMPROVING THE DYNAMIC RANGE OF AN ANALOG/DIGITAL CONVERTER IN A DIGITAL TELEPHONE ANSWERING MACHINE

Mark Karnowski, Garden Grove, Calif., assignor to PhoneMate, Inc., Torrance, Calif.

Filed Oct. 4, 1990, Ser. No. 592,772

Int. Cl.[5] H04M *1/60, 1/65*

U.S. Cl. 379—88 **30 Claims**



1. A circuit means, in a telephone answering device having an analog to digital converter, for variably amplifying input voice signals received from a phone line, said circuit means comprising:

feedback controlled amplifier means for variably amplifying voice signals received from said phone line for input to the analog to digital converter, said feedback controlled amplifier means having a voice signal input, means for coupling said voice signal input to the phone line, a voice signal output, means for coupling said voice signal output to an input of said analog to digital converter, and a control signal input for receiving a control signal which controls the amplification of said feedback controlled amplifier means;

averaging circuit means having an input and an output, said input of said averaging circuit means being coupled to said voice signal output of said feedback controlled amplifier means, for producing a control signal at said output thereof, said control signal representing an average of the signal at said voice signal output over a period of time which is greater than two seconds; and

said output of said averaging circuit means being coupled to said control signal input of said feedback controlled amplifier means for supplying said control signal to said feedback controlled amplifier means to control the amplification of said voice signals received from said phone line.

5,289,530

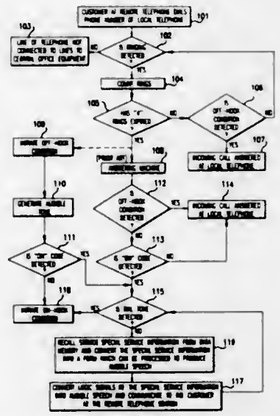
METHOD AND APPARATUS FOR VOCALLY COMMUNICATING TO A CALLER AT A REMOTE TELEPHONE STATION SYNTHESIZED SPEECH OF STORED SPECIAL SERVICE INFORMATION

Morris Reese, P.O. Box 6651, Thousand Oaks, Calif. 91359

Filed Jul. 23, 1991, Ser. No. 732,781

Int. Cl.[5] H04M *1/57, 1/64*

U.S. Cl. 379—88 **7 Claims**



1. A method for vocally communicating to a caller at a remote telephone station from a local telephone station synthesized speech of stored special service information of previous callers previously sent from terminating central office equipment to said local telephone station, comprising the steps of:

(a) detecting a ringing signal representative of an incoming call from said caller at said remote telephone station;

(b) responsive to the detection of said ringing signal, counting a preselected number of rings;

(c) determining whether said preselected number of rings has expired;

(d) initiating an off-hook condition at the local telephone station if the preselected number of said rings has expired;

(e) generating an audible tone;

(f) detecting a command code keyed-in on a telephone keypad by the caller at the remote telephone station in response to said audible tone;

(g) responsive to the detection of said command code, monitoring the telephone line to which said local telephone station is connected to detect any dial tone that may appear thereon;

(h) recalling stored data of said special service information

from the data memory of a Caller Identification interface unit at the local telephone station and converting said stored data of the special service information into a form which can be processed to produce speech if said dial tone is not detected; and

(i) converting logic signals of the stored data of said special service information to synthesized speech and communicating the synthesized speech to said caller at said remote telephone station.

5,289,531

REMOTE SCHEDULING OF APPOINTMENTS WITH INTERACTIVETY USING A CALLER'S UNIT

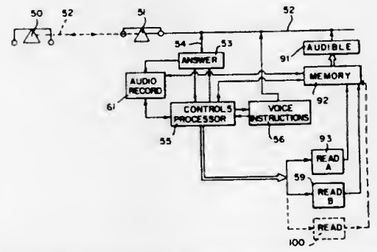
Alfred B. Levine, P.O. Box 34-1738, Bethesda, Md. 20827

Division of Ser. No. 397,914, Aug. 24, 1989, Pat. No. 5,113,380.

This application Sep. 20, 1991, Ser. No. 763,420

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—93 **16 Claims**



1. An interactive electronic scheduling system for making or changing appointments including:

a dedicated transmit-receive unit usable by an individual desiring to make or change an appointment with another over a communication channel, and connected to said channel,

said dedicated unit including a visual display screen for displaying messages, instructions, and and appointment data,

said dedicated unit including dedicated switching means for enabling said individual to select one of a plurality of different option for an appointment, and transmitting said selection over said channel,

said dedicated unit additionally including dedicated switching means for enabling the individual to select specific dates and times for an appointment, and transmitting said selections over said channel,

said dedicated unit additionally including dedicated switching means for enabling the individual to transmit other data pertaining to appointments over said channel,

all of said switching means being identified on the unit whereby the individual can effectuate the transmission of options, dates and times, and other data for appointment without the need for composing such transmissions from general purpose switching means,

said dedicated unit including receive circuits coupled to said channel for receiving information over said channel from a remote scheduler pertaing to instructions in the procedure in making appointments, and receiving over said channel from said scheduler of free time slots that are available for appointment,

said display screen being coupled to said receive circuits for displaying said information and free time slots on said screen.

5,289,532

FACSIMILE APPARATUS PROVIDING FACSIMILE TRANSMISSION WITH FORWARDABLE VOICE COMMUNICATION

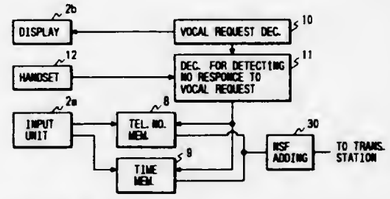
Tadashi Ishikawa; Takashi Sakayama; Nobukiyo Sakai; Takashi Nakajima, and Michiaki Yoshihara, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,401

Claims priority, application Japan, Oct. 2, 1990, 2-263134; Oct. 2, 1990, 2-263135

Int. Cl.[5] H04M *11/00;* **H04N** *1/32*

U.S. Cl. 379—100 **17 Claims**



1. Facsimile apparatus comprising:

a transmitting facsimile station;

a receiving facsimile terminal having a memory means for storing the number of a telephone which is to be used by the transmitting facsimile station to make a telephone communication related to a facsimile transmission to be received by the terminal from the transmitting station;

an input means for manually inputting the telephone number to the memory means;

means for adding the telephone number to a non-standard function (NSF) signal to be transmitted from the receiving facsimile terminal to said transmitting station;

the NSF signal being a signal indicating whether a telephone number being used in case of detecting a non-answer to the voice request exists; and

said transmitting station having a recording means for storing the telephone number to be used for carrying out the telephone communication.

5,289,533

FACSIMILE TRANSMITTING AND RECEIVING APPARATUS

Michiyosi Wasio, Shiga; Hiroshi Kuramoto, Takatsuki, and Mikiharu Kawahira, Hiroshima, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 7, 1991, Ser. No. 790,194

Claims priority, application Japan, Nov. 13, 1990, 2-118974[U]

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 **5 Claims**

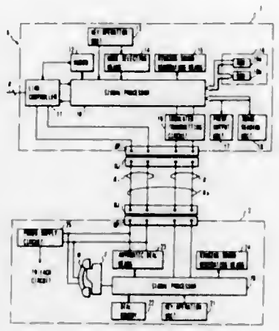
1. A facsimile apparatus, comprising:

a telephone set including automatic dialing means for transmitting a dial signal in response to one of a single-action dialing operation and an abbreviated dialing operation, and telephone set control means or producing a dial end signal in response to a completion of a transmission of the dial signal,

a facsimile unit adapted to be operably connected to a telephone line, the facsimile unit including mode selecting means for selecting one of a facsimile mode and a telephone mode, and facsimile unit control means for switching the apparatus into a mode selected by the mode selecting means in response to a reception of the dial end signal from the telephone set control means, and

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connecting means for operably connecting the facsimile unit and the telephone set,



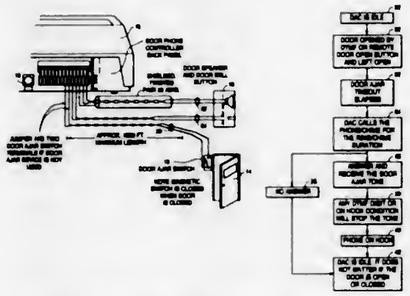
wherein the telephone set receives a power supply voltage from the telephone line.

5,289,534

DOOR AJAR SIGNALLING DEVICE

James W. Lester, Ventura; Randall M. Wagner, Thousand Oaks; Randy A. Callaway, Simi Valley, and Michael Kennedy, Ventura, all of Calif., assignors to Harris Corporation

Filed Nov. 21, 1991, Ser. No. 795,374
Int. Cl.[5] H04M *11/00, 11/04;* **G08B** *1/00, 13/08*
U.S. Cl. 379—103 **17 Claims**



1. A system for alerting a user when a predetermined condition exists, comprising:

a host telephone having an on/off-hook indicator and an alert device;

a controller coupled to the host telephone;

an indicator circuit providing an indicator signal to the controller when the predetermined condition exists;

means for timing a preset time duration when the predetermined condition exists, said timing means providing a time-out signal when the preset time duration elapses;

means for operating the controller to signal the host telephone when the time-out signal is provided in order to activate the alert device for a first preset alert duration;

means for providing a warning signal to the host telephone when the on/off indicator indicates an off-hook condition of the host telephone; and

means for stopping the warning signal via a stop signal input to the controller through the host telephone;

wherein an on-hook signal from the on/off-hook indicator also operates the means for stopping the warning signal; and

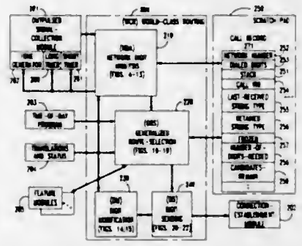
wherein the indicator circuit is a door ajar indicator switch and the predetermined condition is a door ajar condition.

5,289,535

CONTEXT-DEPENDENT CALL-FEATURE SELECTION

Frank J. Bogart, Boulder; Bruce D. Butterfield, Denver; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 786,323
Int. Cl.[5] H04M *3/42, 7/00*
U.S. Cl. 379—201 **8 Claims**



1. A call processing arrangement for a telecommunications system having a plurlaity of user terminals and where users of the sytem input individual ones of a plurality of feature access codes via the plurality of user terminals to request individual ones of a plurality of telecommunications features, comprising:

a plurality of feature modules each for providing a corresponding telecommunications feature when invoked;

means responsive to receipt of any one of the plurality of feature access codes from a user terminal for determining a context in which the telecommunications feature corresponding to the received feature access code is being requested;

means responsive to receipt of a telecommunications-control symbol-sequence including the one of the plurality of feature access codes from the user terminal, for deriving a virtual node-point identifier (VNI) from entire said received symbol sequence;

means for selecting and invoking one of the plurality of feature modules based on both the derived VNI and the determined context; and

means responsive to the determined context for selecting and invoking the feature module corresponding to the feature that corresponds to the received code in response to the determined context being a valid context for the feature corresponding to the received feature access code and for selecting and invoking a feature-denial module in response to the determined context being an invalid context for the feature that corresponds to the received feature access code.

5,289,536

LEAST COST ROUTING METHOD ACCORDING TO INFORMATION TRANSFER CAPABILITY OF CUSTOMER PREMISES EQUIPMENT

Makoto Hokari, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,852
Claims priority, application Japan, Mar. 20, 1991, 3-81758
Int. Cl.[5] H04M *7/00;* **H04J** *3/12;* **H04Q** *3/76*
U.S. Cl. 379—221 **3 Claims**

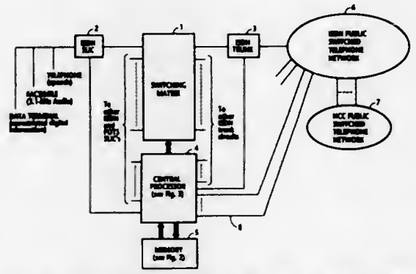
1. A switching system comprising:

a plurality of ISDN (Integrated Services Digital Network) subscriber line interface circuits each being capable of serving a plurality of customer premises equipment (CPE) of different information transfer capabilities, each of the CPE transmitting a call setup message including, a called party number and an information transfer capability field identifying the CPE when originating a call;

a plurality of ISDN trunk circuits connected to an ISDN network;

switching means for establishing a switched connection between one of the ISDN subscriber line interface circuits and one of said ISDN trunk circuits;

memory means for storing least cost routing data indicating least cost outgoing routes through said ISDN network and digit conversion data corresponding to said least cost outgoing routes; and



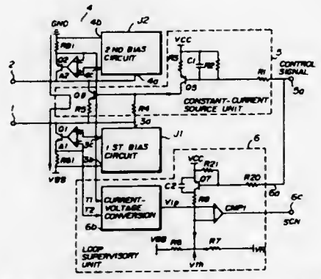
control means for receiving a call setup message from an originating CPE through one of the ISDN subscriber line interface circuits, retrieving least cost routing data and digit conversion data from said memory means according to the called party number and information transfer capability field contained in the received call setup message, converting said called party number according to the retrieved digit conversion data, selecting one of said ISDN trunk circuits according to the retrieved least cost routing data, controlling said switching means so that a switched connection is established between said one ISDN subscriber line interface circuit and said selected ISDN trunk circuit, and transmitting the converted called party number through a signaling channel to the ISDN network.

5,289,537

ON-HOOK TRANSMISSION CIRCUIT IN CABLE LINE

Yuzo Yamamoto, and Shinichi Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 5, 1992, Ser. No. 971,587
Claims priority, application Japan, Nov. 7, 1991, 3-290259
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—377 **12 Claims**



1. An on-hook transmission circuit provided in a subscriber circuit connected between a subscriber terminal and an exchange, said on-hook transmission circuit comprising:

first bias means for biasing a first wire connected to the subscriber terminal;

second bias means for biasing a second wire connected to the subscriber terminal;

constant-current source means, coupled to the first and second wires, for making a constant current flow in the first and second wires during a period in which a control signal indicating that an on-hook transmission should be turned ON is being received; and

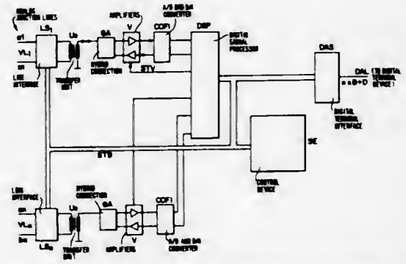
loop supervisory means, coupled to said constant-current source means, for detecting establishment of a loop that includes the first and second wires and the subscriber terminal and for generating a scan signal used for causing the constant-current source means to stop the constant-current flowing in the first and second wires when detecting the establishment of the loop.

5,289,538

CIRCUIT ARRANGEMENT FOR SIGNAL AND INFORMATION CONVERSION BETWEEN ANALOG JUNCTION LINES AND DIGITAL TERMINAL DEVICES IN COMMUNICATIONS EXCHANGES

Walter Lauer, Frankfurt-Höchst; Udo Petri, Taunusstein, and Gerd Pönitz, Dietzenbach, all of Fed. Rep. of Germany, assignors to Telenorma GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1991, Ser. No. 669,487
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1990, 4008450
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—402 **5 Claims**



1. A circuit arrangement for conversion of signals and information between analog junction lines and digital terminal devices in communication exchanges, comprising:

a decentralized control device for processing and passing switching criteria and codes received and sent to a respective analog junction line, inside and outside the audio frequency band;

a line interface, coupled directly to said decentralized control device, for the switching criteria and codes to be exchanged outside the audio frequency;

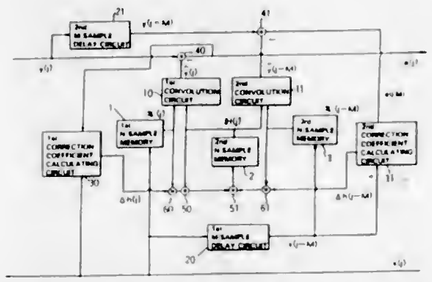
at least one digital signal processor for the codes to be exchanged within the audio frequency band, said at least one digital signal processor being looped in via a hybrid connection and convertor in a speech path which cooperates with said decentralized control device;

a digital terminal interface responsive to said decentralized control device and said at least one digital signal processor, said digital terminal interface being modulated by said decentralized control device and said at least one digital signal processor to provide a plurality of data channels and at least one signalling channel wherein audio tones and audio frequency selection information arriving on said speech path from the analog junction lines are received and evaluated by said at least one digital signal processor

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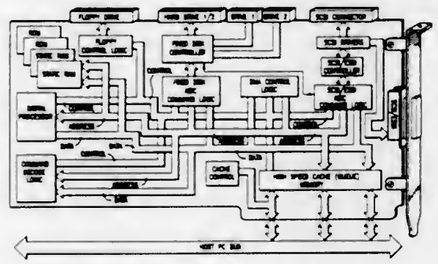
and are passed via a control line bundle to said decentralized control device, said decentralized control device being operable to convert the audio tones and audio frequency selection information for processing through said digital terminal interface.

5,289,539
ECHO CANCELLER USING IMPULSE RESPONSE ESTIMATING METHOD
Yuisuke Maruyama, Tokyo, Japan, assignor to Nec Corporation, Japan
Filed Sep. 12, 1991, Ser. No. 757,951
Claims priority, application Japan, Sep. 12, 1990, 2-239938
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—410 **4 Claims**



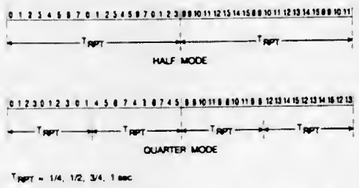
1. An echo canceller using an FIR filter for removing an echo from at transmission input signal, the echo resulting from a reflection of a received signal through an echo path, comprising:
- a first memory for storing N latest samples of the received signal;
- a second memory for storing an N-th order impulse response of the echo path;
- a first delay circuit for delaying the received signal by M samples;
- a third memory for storing N samples of an output of said first delay circuit;
- a second delay circuit for delaying the transmission input signal by M samples;
- a first convolution circuit for multiplying and adding the outputs of said first and second memories;
- a second convolution circuit for multiplying and adding the outputs of said second and third memories;
- a first subtractor for subtracting the output of said first convolution circuit from the transmission input signal to produce a transmission output signal;
- a second subtractor for subtracting the output of said second convolution circuit from the output of said second delay circuit;
- a first correction amount calculating circuit for determining a first correction amount on the basis of the transmission output signal from said first subtractor and said received signal;
- a first multiplier for multiplying said first correction amount by the output of said first memory; 'a first adder for adding the output of said first multiplier to the impulse response from said second memory;
- a second correction amount calculating circuit for determining a second correction amount on the basis of the output of said second subtractor and the output of said first delay circuit;
- a second multiplier for multiplying said second correction amount by the output of said third memory; and
- a second adder for adding the output of said second multiplier to the output of said first adder and feeding back the resulting sum to said second memory.

5,289,540
COMPUTER FILE PROTECTION SYSTEM
Richard P. Jones, 7930 East Side Dr. NE., Tacoma, Wash. 98422, assignor to Richard P. Jones, Tacoma, Wash.
Continuation of Ser. No. 340,886, Apr. 19, 1989, Pat. No. 5,144,659. This application Aug. 26, 1992, Ser. No. 935,181
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] G06F *12/14*
U.S. Cl. 380—4 **10 Claims**



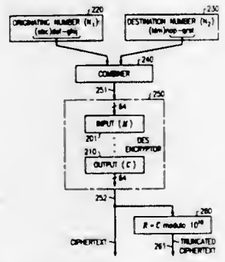
1. A computer file protection system for a digital computer accessible for storing files and interconnected with a central processing, unit by a bus carrying control logic signals, address signals, and data signals, said computer further being supplied with a computer operating system, the combination comprising:
- (a) means for providing a file security subsystem for said digital computer which comprises programmable auxiliary memory and a control unit;
- (b) means for attaching said programmable auxiliary memory and said control unit to the bus in a manner so that it resides in the bus between said file storage device and said central processing unit;
- (c) means for allowing access to said file security subsystem by the computer operating system for initialization and modification only during an installation stage of, the file security subsystem by said computer operating system following said installation stage;
- (d) means for providing the programmable auxiliary memory system with supervisor entered access criteria for access permission for read operations, write operations and execute operations for each one of all the files stored in said file storage device;
- (e) means for requiring each user to provide to said programmable auxiliary memory a valid user identification, whereupon said programmable auxiliary memory and control unit will indicate to the computer operating system only those of said files which are accessible to that user and whether read operations, write operations and execute operations may be performed upon said accessible files, said auxiliary memory and control unit denying access to users with invalid access criteria and refusing to write data to any of the files stored in said file storage device when operations without valid access criteria have been attempted.

5,289,541
INTERDICTION METHOD AND APPARATUS WITH CONSTANT BLANKING AND VARIABLE DWELL TIMES
Mark E. Schutte, Sugar Hill, and Lamar E. West, Jr., Maysville, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.
Continuation-in-part of Ser. No. 476,041, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 166,302, Mar. 10, 1988, Pat. No. 4,912,760. This application Jun. 10, 1992, Ser. No. 896,709
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—7 **6 Claims**



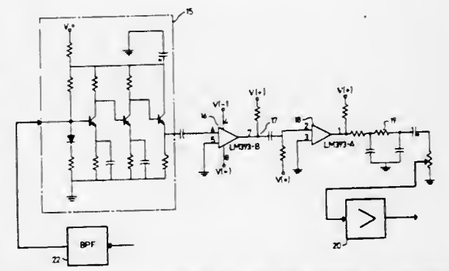
1. An interdiction apparatus for selectively interdicting unauthorized channel signals in a broadband CATV signal with jamming signals, said apparatus comprising:
- means for generating the jamming signals with a plurality of individually programmable time slots forming a jamming cycle, wherein said time slots correspond to frequency control words which can be changed to program said time slots and which are representative of desired jamming frequencies and cause a frequency agile oscillator to output said desired jamming frequencies during said time slots;
- means for controlling said jamming signal generating means to periodically repeat said jamming cycle including means for varying the jamming factor of a channel by assigning a selected number of said time slots per channel and means for varying the duration of said jamming cycle; and
- means for combining said jamming signals with the broadband CATV signal to interdict the unauthorized channels.

5,289,542
CALLER IDENTIFICATION SYSTEM WITH ENCRYPTION
William K. Kessler, Indianapolis, Ind., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 4, 1991, Ser. No. 664,244
Int. Cl.[5] H04K *1/02*; H04L *9/06, 9/30*; H04M *1/57*
U.S. Cl. 380—9 **19 Claims**



16. For use with a telephone switching system serving a plurality of stations and having a central processor for generating calling party identification information, and also having a ringing circuit for transmitting intermittent ringing signals separated by silent intervals to a selected one of said stations, apparatus for generating special service information for transmission to the selected station comprising:
- memory means storing the telephone number of a calling party station, the telephone number of the selected station, and program instructions for encrypting numbers into ciphertext;
- processor means, responsive to the stored program instructions for encrypting said calling party and selected station telephone numbers into ciphertext; and
- means for coupling the ciphertext to the ringing circuit during at least one of the silent intervals between intermittent ringing signals.

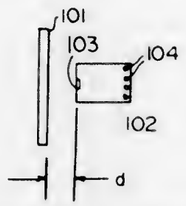
5,289,543
FM RECEIVER AND COMMUNICATION SYSTEMS INCLUDING SAME
Vadim Leibman, Migdal Haemek, Israel, assignor to AVR Communications Ltd., Haifa, Israel
Filed Jan. 25, 1990, Ser. No. 471,747
Claims priority, application Israel, Feb. 10, 1989, 89259
Int. Cl.[5] H04H *5/00*
U.S. Cl. 381—7 **16 Claims**



1. An FM receiver including an FM discriminator producing output signals having an amplitude varying with the frequency of the received FM signals, characterized in that said FM discriminator comprises:
- a first comparator for converting the FM signals to a series of discrete square-wave pules of the same amplitude and having a repetition rate varying with the frequency of the FM signals;
- said comparator including a device which compares the FM signals and produces an output of a first level when a received FM signal is above a predetermined amplitude threshold, and of a second level when a received FM signal is below said predetermined amplitude threshold, to thereby produce bipolar pulses having the same amplitude and having a repetition rate varying with the frequency of the FM signals;
- an RC-differentiator circuit for converting the bipolar square-wave pulses from said first comparator to bipolar spike-shaped pulses having a fast rise time and a fall time determined by the RC value of said differentiator circuit;
- a second comparator for converting said spike-shaped pulses from the differentiator circuit to monopolar square-wave pulses having the same amplitude, the same pulse width determined by the rise and fall times of the spike-shaped pulses, and a repetition rate varying with the frequency of the FM signals;
- and an integrator circuit for integrating said series of discrete square-wave pulses to produce said output signals.

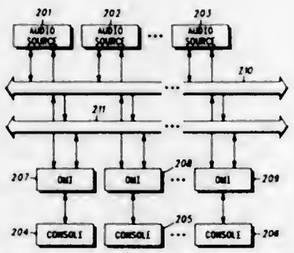
VOL 1159 ISS 4 FE 22 1994 UMI

5,289,544
METHOD AND APPARATUS FOR REDUCING BACKGROUND NOISE IN COMMUNICATION SYSTEMS AND FOR ENHANCING BINAURAL HEARING SYSTEMS FOR THE HEARING IMPAIRED
David Franklin, Somerville, Mass., assignor to Audiological Engineering Corporation, Somerville, Mass.
Filed Dec. 31, 1991, Ser. No. 815,046
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—68.1 29 Claims



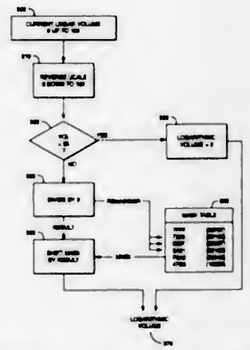
1. The method of converting a bidirectional pressure gradient microphone to a unidirectional microphone comprising the step of establishing a sound shadow for acoustic energy approaching the bidirectional microphone from a rearward direction to change the apparent direction of said approaching acoustic energy to a direction approximately to rearward wherein, the step of establishing includes positioning an acoustically opaque barrier rearwardly of and spaced from said microphone to be intersected by a longitudinal axis of said microphone.

5,289,545
AUDIO SOURCE AND PRIMARY MONITORING STATION COMMUNICATIONS
Calvin V. Jestice, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 509,915, Apr. 16, 1990, Pat. No. 5,175,727. This application Apr. 12, 1991, Ser. No. 685,307
Int. Cl.[5] H04B 3/00
U.S. Cl. 381—77 19 Claims



1. In a system having a plurality of audio sources and a plurality of consoles that monitor selected audio sources, a method comprising the steps of:
A) when a particular audio source determines that it cannot identify any console that is then currently monitoring audio information from the particular audio source in a primary monitoring mode, transmitting a general inquiry to identify any consoles that are then currently monitoring audio information from the particular audio source in the primary monitoring mode;
B) upon receiving a response from a particular console acknowledging the general inquiry, the audio source designates that particular console as its prime monitor and communicates that designation to the particular console;
C) upon being designated prime monitor, the particular console thereafter transmits information indicating its prime monitor status from time to time.

5,289,546
APPARATUS AND METHOD FOR SMOOTH AUDIO SCALING
David J. Hetherington, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 770,494, Oct. 3, 1991. This application Feb. 1, 1993, Ser. No. 13,114
Int. Cl.[5] H03G 3/00
U.S. Cl. 381—104 9 Claims

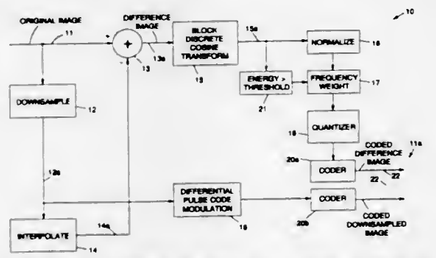


1. An apparatus for controlling volume of a digital audio signal comprising:
digital signal processor means for translating a first linear volume value to a first logarithmically scaled volume value of the digital audio signal at a first time, the translating means comprising:
means for selecting a mask value from a table of calculated mask values according to a remainder from a division operation;
means for shifting the selected mask value according to an integer from the division operation;
a digital signal processor means for multiplying the first logarithmically scaled volume value to the digital audio signal at the first time; and
digital to analog converter means for converting the multiplied digital audio signal into an audio signal.

5,289,547
AUTHENTICATING METHOD
John S. Ligas, Export, and Steven W. Weber, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 6, 1991, Ser. No. 802,907
Int. Cl.[5] G06K 9/32
U.S. Cl. 382—7 20 Claims

1. An improved method for authenticating an article comprising:
(a) providing an article having authenticating display data thereon, said display data containing at least two photochromic compounds, the activated spectra of which photochromic compounds exhibit different absorption maxima;
(b) exposing authenticating display data on the article to a source of activating light, that activates at least one but less than all of the photochromic compounds;
(c) examining the display data with verifying means that identifies at least one characteristic property of the photochromic compounds comprising the display data;
(d) exposing activated photochromic compounds contained in the display data to bleaching means that inactivates at least one of the activated photochromic compounds; and
(e) examining the display data of step
(d) with verifying means that identifies at least one characteristic property of the resultant level of activation of the photochromic compounds comprising the display data, thereby to authenticate the article.

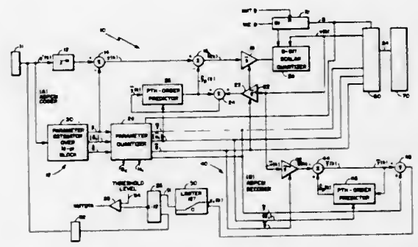
5,289,548
COMPRESSION AND RECONSTRUCTION OF RADIOLOGICAL IMAGES
Dennis L. Wilson, Palo Alto, and James T. Stenstrom, Mountain View, both of Calif., assignors to Loral Aerospace Corp., New York, N.Y.
Filed Jun. 30, 1992, Ser. No. 906,787
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 19 Claims



1. An image compression method comprising the steps of:
downsampling an original radiological image to produce a downsampled image;
interpolating the downsampled image back to its original size to provide a smoothed image;
processing the smoothed image and the original image to provide a difference image;
processing the difference image using a discrete cosine transform to provide a transformed difference image;
frequency weighting the transformed difference image to provide a weighted difference image;
quantizing the weighted difference image to provide a quantized difference image;
encoding the quantized difference image to produce an encoded difference image;
differential pulse code modulating the downsampled image to produce a differential pulse code modulated downsampled image; and
encoding the differential pulse code modulated downsampled image to produce an encoded downsampled image;
whereby the encoded difference image and the encoded downsampled image comprise a compressed image, and wherein compression is adapted to remove artifacts present in the original radiological image caused by blocking.

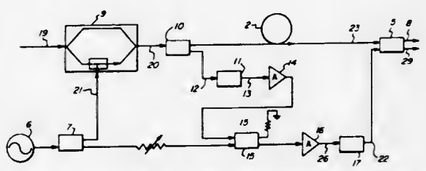
5,289,549
B-ADAPTIVE ADPCM IMAGE DATA COMPRESSOR
Paul A. Rattey, Portsmouth, and Richard S. Pascucci, Warwick, both of R.I., assignors to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 809,782, Dec. 18, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 71,947
Int. Cl.[5] H04N 7/12, 1/417
U.S. Cl. 382—56 14 Claims

1. A method of processing a stream of digital data indicative of an image to provide to a user device comprising the steps of:
partitioning the stream of data into a plurality of blocks of data elements;
computing quantized linear prediction coefficients, a quantized input mean level, a quantized gain factor, and a unquantized prediction error sequence associated with a first one of said blocks of data, said computing step further comprising the step of quantizing the unquantized prediction error sequence for said block of data to provide a quantized prediction error sequence with each unquantized sample in said unquantized prediction error sequence being represented by a first selected number of bits in said quantized prediction error sequence;
reconstructing the input data in each block of data from the quantized linear prediction coefficients, input mean level, quantized gain factor, and quantized prediction error sequence;
providing a distortion level representative of the difference between the reconstructed data and the input data;



comparing said distortion level to a preselected distortion level maximum and when said distortion level exceeds the distortion level maximum, recomputing the unquantized prediction error sequence for said block of data following a quantized prediction error sequence using a higher number of bits in the quantized prediction error sequence to represent the prediction error in each sample of the unquantized prediction error sequence; and
providing said quantized linear prediction coefficients, quantized input mean level, quantized gain factor, and quantized prediction error sequence associated with the first one of said blocks of data to the user device.

5,289,550
MODULATED LIGHT SOURCE WITH A LINEAR TRANSFER FUNCTION AND METHOD UTILIZING SAME
Robert J. Plastow, 26-1 Soden St., Cambridge, Mass. 02139
Continuation-in-part of Ser. No. 493,458, Mar. 14, 1990. This application Jun. 25, 1990, Ser. No. 542,594
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] G02B 6/26; G02F 1/00; G01B 9/02
U.S. Cl. 385—9 25 Claims



1. An apparatus for optically transmitting an input signal with reduced distortion, comprising:
a first modulatable optical source, having substantially high power and substantially low noise characteristics, for receiving the input signal and for outputting an optical signal;
an optical delay for delaying the optical signal;
an error signal generator for receiving both the input signal and the optical signal, and for outputting an error signal

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indicative of a difference between the input signal and the optical signal;

a second modulatable optical source, having substantially moderate power and noise characteristics, for receiving the error signal and for outputting an optical error signal; and

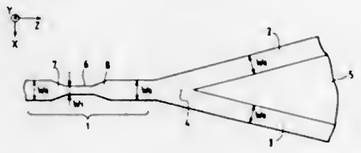
means for combining the optical signal and the optical error signal to provide at least one optical output signal with reduced distortion as compared with the optical signal, the optical output signal powered mainly by the optical signal.

5,289,551

WYE-BRANCHING OPTICAL CIRCUIT

Kenichi Nakama, and Shigeru Kobayashi, both of Osaka, Japan, assignors to Nippoo Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 25, 1991, Ser. No. 782,823
Claims priority, application Japan, Nov. 5, 1990, 2-299581
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—45 **9 Claims**



1. A wye-branching optical circuit comprising:

an input waveguide portion comprising a low effective refractive index waveguide portion and two connecting waveguides respectively extending from a forward and rearward end of said low effective refractive index waveguide portion, said connecting waveguides having a refractive index larger than said low effective refractive index waveguide portion;

a branching portion having first and second ends, said first end being connected to one of said two connecting waveguides of said input waveguide portion; and

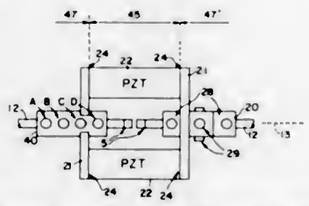
at least two output waveguides connected to said second end of said branching portion.

5,289,552

TEMPERATURE COMPENSATED FIBER FABRY-PEROT FILTERS

Calvin M. Miller, Atlanta, and Jeffrey W. Miller, Kennesaw, both of Ga., assignors to Micron Optics, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 801,450, Dec. 2, 1991, Pat. No. 5,212,745. This application Aug. 12, 1992, Ser. No. 929,836
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—73 **37 Claims**



1. A temperature compensated fiber Fabry-Perot filter which comprises:

a fiber ferrule assembly having an optical resonance cavity therein which comprises a first and a second ferrule each of which has a substantially axial bore therethrough for receiving an optical fiber including at least one optical fiber end and each of which ferrules comprises a mirror transverse to its axial bore, said ferrules positioned with respect to each other such that said optical resonance cavity is formed between opposing reflective surfaces of said mirrors;

a means for electronically changing the length of said optical cavity;

a support means for holding said ferrules such that the length of said optical resonance cavity can be changed;

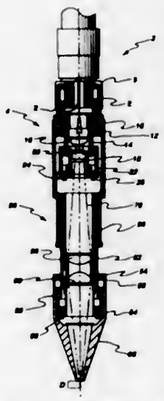
an adjustable means for selectively changing the cavity length temperature coefficient of said filter after the filter has been fabricated.

5,289,553

LENS HOLDING SYSTEM FOR FIBER OPTIC OUTPUT COUPLERS

Angel L. Ortiz, Jr., Scotia, and John L. August, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 16, 1993, Ser. No. 17,883
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—74 **9 Claims**



1. A lens holding apparatus for a fiber optic output coupler, wherein said apparatus is comprised of:

a fiber optic output coupler receiver means having a fiber optic;

a first holder means rotatably attached to said receiver means;

a first lens holding and aligning means rotatably connected to said first holder means wherein said first lens holding and aligning means is further comprised of;

a first lens holder and aligner;

a first retainer ring means rotatably connected to said first lens holder and aligner;

a second lens holder and aligner substantially located within said first lens holder and aligner;

a second holder means rotatably connected to said first lens holder and aligner; and

a first lens retainer means operatively connected to said second holder means;

a first lens means substantially located within said first holding and aligning means;

a main body means rotatably connected to said first holder means such that said first holding and aligning means and said first lens means are substantially located within said main body means;

a second lens holding and aligning means rotatably connected to said main body means;

a second lens means substantially located within said second lens holding and aligning means; and

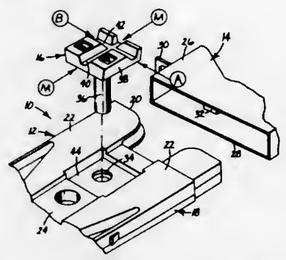
a first fiber optic output coupler end means rotatably attached to said second lens holding and aligning means.

5,289,554

KEYING ELEMENT FOR FIBER CONNECTOR

Nuran Cubukciyan, Englewood Cliffs, N.J.; James R. Bylander, Austin, Tex., and Julius T. Puchammer, Edison, N.J., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 29, 1992, Ser. No. 952,949
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—76 **16 Claims**



1. A keying element for a connector comprising:

a generally planar block member, said block member having an upper surface, said upper surface having two channels therein, and said block member further having means for indicating a keying format based on the orientation of said block member with respect to the connector, said indicating means including at least one arrow located on said upper surface of said block member; and

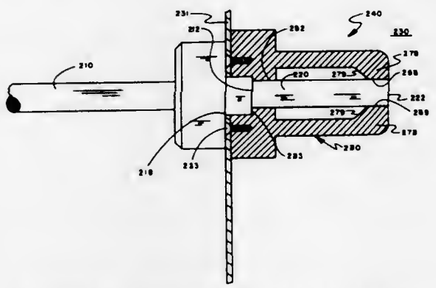
means for releasably attaching said block member to the connector.

5,289,555

OPTICAL-FIBRE CABLE COUPLER FOR ENDOSCOPE LIGHT SOURCE

David W. Sanso, 6598 W. Oregon Ave., Lakewood, Colo. 80226

Filed Jun. 18, 1992, Ser. No. 900,969
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—92 **18 Claims**



1. A coupler for coupling an optical-fibre cable to an endoscope light source comprising:

a collet extending along a central axis from a cable receiving end to a cable clamping end and surrounding a central passage sized to slidingly receive a sheath of a light source end of the optical-fibre cable, said collet comprising a heat conductive finger with an inner heat-conducting surface, the finger extending from a central portion of said collet between said receiving end and said clamping end toward said clamping end; and,

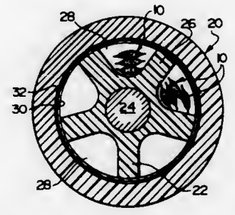
means for causing heat conducting contact of said inner heat-conducting surface of said finger with a cable sheath lying within said passage.

5,289,556

OPTICAL FIBER UNITS AND OPTICAL CABLES

Michael G. Rawlyk; David W. Chiasson, and Michael S. Fedoroff, all of Saskatoon, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 24, 1992, Ser. No. 949,927
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—112 **13 Claims**



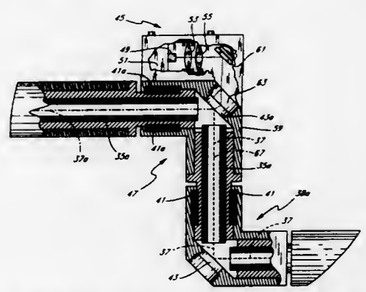
1. An optical fiber unit comprising a plurality of optical fibers loosely contained within a flexible elongated tubular member to allow for lateral movement of the fibers, the flexible tubular member being inwardly collapsible and formed from plastic strip means extending around the fibers to provide space for lateral movement of the fibers, the plastic strip means having at least one longitudinally extending seam provided by longitudinally extending edge regions of the strip means which are bonded together to provide the tubular member.

5,289,557

OPTICS FOR MEDICAL LASER

Andrew I. Sheinis, Costa Mesa; Colette Cozean, El Toro; John F. Forkner, South Laguna, all of Calif., and M. John Colles, Edinburgh, Scotland, assignors to Premier Laser Systems, Inc., Irvine, Calif.

Division of Ser. No. 644,074, Jan. 18, 1991, Pat. No. 5,198,926. This application Feb. 23, 1993, Ser. No. 21,354
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—118 **13 Claims**



1. An apparatus for delivery of laser energy for a laser surgery system, comprising:

an articulated arm comprising a wavelength for propagating laser light and at least one knuckle joint, said knuckle joint having a dichroic mirror to change the direction of said propagating laser light by reflecting substantially all of

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said laser light, said knuckle joint disposed proximate to a distal end of said articulated arm; and

a visible light source to provide an aiming beam, said visible light source positioned to introduce said visible light into said waveguide through said dichroic mirror at said knuckle joint.

5,289,558

SWITCHING ASSEMBLY FOR GLASS FIBER CABLES OF THE TELECOMMUNICATION AND DATA TECHNOLOGY

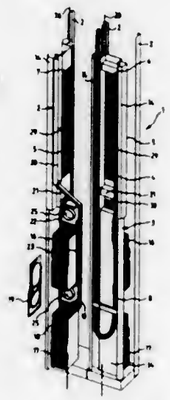
Heide Teichler; Gerd Richter; Gunter Hegner; Volker Röseler, and Lutz Biederstedt, all of Berlin, Fed. Rep. of Germany, assignors to Krone Aktiengesellshaft, Berlin, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,497

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1991, 4133375

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—135 **9 Claims**



1. A switching assembly for a plurality of lines, the assembly comprising:

a strut;

a frame including pivot means for pivotably connecting said frame to said strut, said frame having a front side and a back side, and said pivot means pivoting said frame on said strut to expose said front side and said back side, and said pivoting of said frame causing said front side and said back side to be accessible;

a jumper field incorporated into said frame, said jumper field including a plurality of coupling means for connecting a first set of the plurality of lines to said front of said frame and for connecting a second set of a the plurality of lines to said back side of said frame, said coupling means forming a connection between the first set of the plurality of lines and the second set of the plurality of lines; and

magazine means for holding a plurality of splice cassette means, said magazine means being attached to said back of said frame and defining a plurality of slide-in openings for receiving said plurality of splice cassette means, each of said plurality of splice cassette means connecting one of a third set of the plurality of lines to a line selected from the group consisting of the second set of the plurality of lines and a fourth set of the plurality of lines, said fourth set of the plurality of lines connecting to other individual splice cassette means.

5,289,559

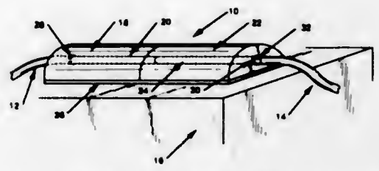
CABLE SECURITY APPARATUS

Edwin P. Wilson, 8147 Post Rd., Allison Park, Pa. 15101

Filed Nov. 15, 1991, Ser. No. 792,780

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—136 **18 Claims**



1. An apparatus for holding a first cable and a second cable in communication on an object comprising:

a first member for holding a first end of the first cable;

a second member for holding a second end of the second cable, said second member disposed in a predetermined adjacent relationship with the first member such that the first and second ends abut and can communicate a signal therebetween; and

means for affixing each of the first and second members separately to the object in said predetermined adjacent relationship, said first member affixed to the object independently from said second member and said second member affixed to the object independently from the first member such that upon removal of the apparatus from the object, the first and second members become separated.

5,289,560

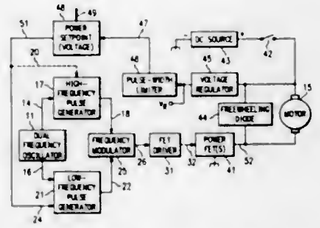
DC MOTOR CONTROL USING FREQUENCY AND PULSEWIDTH MODULATION

Harold W. Abney, 3301B Moss Ct., Midland, Tex. 79707

Filed Nov. 3, 1992, Ser. No. 971,534

Int. Cl.[5] H02P *5/17*

U.S. Cl. 388—811 **33 Claims**



1. A control system for controlling the flow of power from a DC power source to a DC motor in order to control the speed of said motor, said control system comprising:

a frequency modulator having first and second inputs and an output;

a first pulse generator for generating first pulses at a first frequency and a first duty cycle and for applying said first pulses to said first input of said frequency modulator;

a second pulse generator for generating second pulses at a second frequency and a second duty cycle and for applying said second pulses to said second input of said frequency modulator, wherein said first frequency is substantially lower than said second frequency, so that said frequency modulator produces a frequency modulated output signal at the output of said frequency modulator by superimposing said first pulses on said second pulses;

a power circuit for applying power to said motor in response to the frequency modulated output signal of said frequency modulator; and

a control circuit for varying the duty cycle of said first pulses in response to a signal representing the desired speed of said motor.

5,289,561

SUBSEA PIPELINE SYSTEM WITH ELECTRICALLY HEATED FLEXIBLE PIPELINE

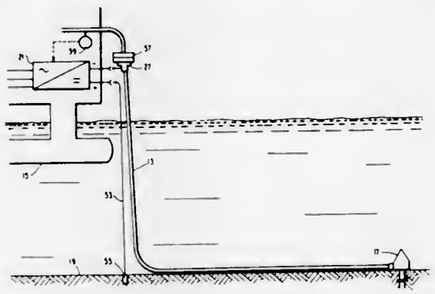
Fernando H. Costa Filho, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A., Rio de Janeiro, Brazil

Filed Nov. 1, 1991, Ser. No. 786,838

Claims priority, application Brazil, Nov. 7, 1990, PI9005628

Int. Cl.[5] H05B *3/06, 3/58;* **E03B** *7/10;* **F16L** *53/00*

U.S. Cl. 392—478 **1 Claim**



1. In a subsea pipeline system with electrically heated flexible pipeline comprising:

a surface platform, a wet christmas tree positioned on a sea bottom, a flexible pipeline extending from said surface platform to said wet christmas tree, the improvement wherein said flexible pipeline comprises, radially inwardly, in order; an external polyamide layer (**29**), a double reinforced crossed armoring (**31**), an internal polyamide layer (**33**) and an internal interlocked stainless steel carcase,

and said system further comprises means for circulating an electric current through at least the double reinforced cross armoring (**31**) from said platform to said wet christmas tree, said means for circulation of said electric current including a controlled electrical current rectifying unit (**21**) at said platform, an electric cable (**53**) having a lower extremity grounded at said sea bottom (**19**) via an electrode (**55**), and wherein said means for circulating electric current through at least said double reinforced crossed armoring (**31**) comprises means for passing said electrical current through said electric cathode grounded to said sea bottom and said electric cable (**53**) to said controlled electric current rectifying unit (**21**) at said surface platform (**15**).

5,289,562

PATTERN REPRESENTATION MODEL TRAINING APPARATUS

Shinobu Mizuta, and Kunio Nakajima, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1991, Ser. No. 674,069

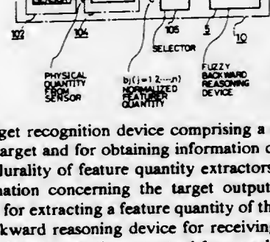
Claims priority, application Japan, Sep. 13, 1990, 2-243225

Int. Cl.[5] G10L *9/02*

U.S. Cl. 395—2 **20 Claims**

1. An apparatus for training a pattern representation model for classifying and discriminating an input acoustic feature vector sequence, comprised of at least one vector, into one of a plurality of categories, the model including a hidden Markov model for each category having output probability densities defined by a mixture of continuous densities and having a central vector representing the means of the continuous densities, the apparatus comprising:

means for comparing a training acoustic feature vector sequence of a known category to the hidden Markov models to compute a probability for each of the categories;



means for selecting the hidden Markov model, of a category other than the known category, which provided the maximum probability in response to the training acoustic feature vector sequence; and

vector control means for moving, on the basis of the training acoustic feature vector sequence, the central vectors of the selected hidden Markov model and of the hidden Markov model of the known category.

5,289,563

FUZZY BACKWARD REASONING DEVICE

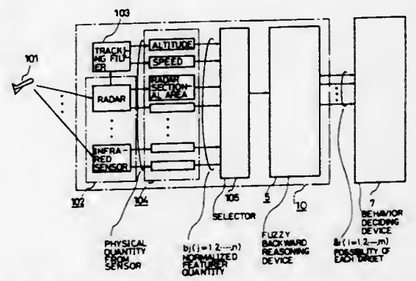
Kohei Nomoto; Tetsuo Kirimoto, and Yoshimasa Ohhashi, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 490,761, Mar. 8, 1990. This application May 22, 1991, Ser. No. 704,262

Claims priority, application Japan, May 24, 1990, 2-134966

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—51 **5 Claims**



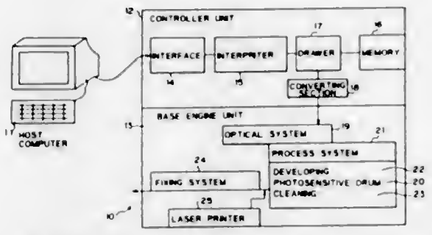
1. A target recognition device comprising a sensor for observing a target and for obtaining information concerning the target, a plurality of feature quantity extractors for receiving the information concerning the target outputted from said sensor and for extracting a feature quantity of the target, and a Fuzzy backward reasoning device for receiving the information of the feature quantity outputted from each feature quantity extractor and for reasoning the kind of the target by Fuzzy backward reasoning based upon a Fuzzy theory from kinds of targets known as candidates and knowledge information concerning those targets.

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5,289,564
IMAGE RECORDING APPARATUS FOR PROVIDING HIGH QUALITY IMAGE

Kenji Morimoto, Nara; Satoshi Murakami, Yamato-Koriyama; Masahiko Aiba, and Yuriko Kamei, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1991, Ser. No. 797,732
Claims priority, application Japan, Nov. 26, 1990, 321710/90; Nov. 22, 1991, 307848/91
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—109 **20 Claims**



1. An image recording apparatus which is capable of recording an image by forming a dot for each pixel, comprising:

means for receiving dot data having a first dot density;

means connected to said receiving means for converting said received data into dot data having a second dot density by replacing a dot of a focus pixel with a plurality of dots having patterns corresponding to dot patterns of areas containing said focus pixel; and

means connected to said converting means for forming an image in accordance with said converted dot data,

said converting means including an interpreter section for decoding said dot data having said first dot density received by said receiving means, a storage section coupled with said interpreter section for storing font data, a drawer section connected to both of said interpreter section and said storage section for generating drawing data by comparing data output from said interpreter section with said font data stored in said storage section, and a converting section for converting the data output from said drawer section into dot data having said second dot density,

said forming means including an optical system having a photosensitive drum for forming a latent image corresponding to the data output from said converting means on said photosensitive drum by scanning.

5,289,565
METHODS AND APPARATUS FOR CYMK-RGB RAMDAC

David M. Smith, Campbell, and Keith E. Sorenson, Cupertino, both of Calif., assignors to RasterOps Corporation, Santa Clara, Calif.

Continuation of Ser. No. 550,272, Jul. 9, 1990, abandoned. This application May 1, 1992, Ser. No. 879,076
Int. Cl.[5] G03F *3/08*; **G06F** *15/68*
U.S. Cl. 395—131 **15 Claims**

1. A method of displaying four color data on a three color display monitor comprising the steps of:

providing a display controller including a color converter and at least three digital to analog converters on one integrated circuit;

providing the four color data as four color digital pixel data;

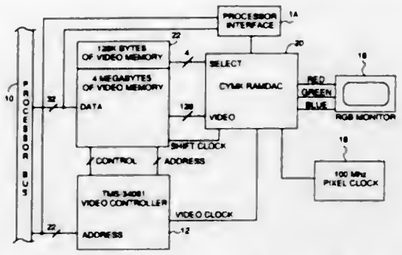
transforming the four color digital pixel data to digital three color pixel data in the color converter;

converting the digital three color pixel data to analog data in the digital to analog converters;

displaying the analog data on the monitor;

providing a control signal for controlling display of individual pixels on the monitor;

in response to the control signal displaying on a portion of



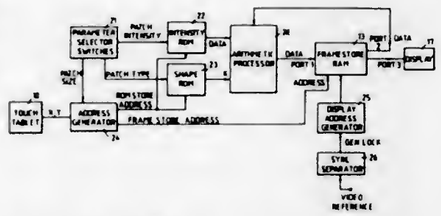
the monitor a plurality of individual pixels each of which has been transformed to the three color pixel data; and

displaying on a remaining portion of the monitor, color pixel data which has not been transformed.

5,289,566
VIDEO IMAGE CREATION

Ian C. Walker; Richard J. Taylor; Anthony D. Searby, and Paul R. N. Kellar, all of Newbury, England, assignors to Quantel, Ltd., Newbury, England

Continuation of Ser. No. 723,728, Jun. 20, 1991, Pat. No. 5,216,755, which is a continuation of Ser. No. 444,776, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 211,064, Jun. 20, 1988, abandoned, which is a continuation of Ser. No. 947,096, Dec. 29, 1986, abandoned, which is a continuation of Ser. No. 761,305, Jul. 29, 1985, Pat. No. 4,633,416, which is a continuation of Ser. No. 641,544, Aug. 17, 1984, abandoned, which is a continuation of Ser. No. 326,293, Dec. 1, 1981, Pat. No. 4,514,818. This application May 28, 1993, Ser. No. 68,750
Claims priority, application United Kingdom, Dec. 4, 1980, 8038887
Int. Cl.[5] H04N *1/22*; **G09G** *1/16*
U.S. Cl. 395—132 **9 Claims**



1. A process comprising:

using a pen-tablet unit and a circuit coupled to said unit and responsive to a user's actions on at least the pen to generate progressively varying position and blend information;

providing first brush information identifying at least one of a selected color and a selected intensity, second brush information identifying a selected size, and third brush information related to a distribution of a selected parameter related to said size;

providing an image store for pixel data representing image pixels;

carrying out processing operations in response to said position information comprising retrieving from the image store pixel data for image pixels which are in a selected image area identified through use of said position information and said second brush information, calculating new pixel data for the selected image pixels by using the retrieved pixel data and the first brush information in proportions which are determined in accordance with the third brush information and blend information and vary at least over a peripheral portion of said selected image area such that the proportions of color/intensity information used in calculating new pixel data generally increases in moving from the periphery over a selected distance toward the center of said selected image area, and writing the calculated new pixel data into the image store in place of the retrieved pixel data;

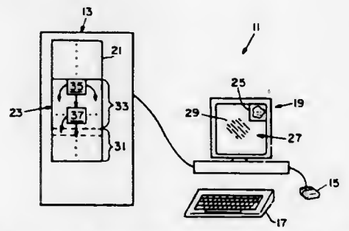
wherein the pixel data retrieved from the image store and used in the calculation of new pixel data in each successive processing operation includes pixel data calculated and written into the image store in the course of the preceding processing operation; and

displaying an image corresponding to pixel data in the store on a raster scan display screen.

5,289,567
COMPUTER APPARATUS AND METHOD FOR FINITE ELEMENT IDENTIFICATION IN INTERACTIVE MODELING

James W. Roth, Maynard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 1, 1991, Ser. No. 678,691
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 **15 Claims**



1. In a computer system having (i) a source of models of objects, each model formed of a plurality of elements, (ii) a memory area holding data defining each element, (iii) a display unit for displaying screen views of a model, and (iv) a digital processor coupled to the source of models, memory area and display unit, the digital processor enabling user interaction with the screen view of a desired one of the models, computer apparatus for accessing from the memory area data of elements of a desired mode, computer apparatus comprising:

(a) a memory for holding a data tree, the data tree having:

a root node, and

a plurality of tree nodes and leaf nodes corresponding to subsets of elements of a desired model,

the root node and plurality of tree nodes and leaf nodes arranged in a hierarchy such that the root node is at a highest level, the tree nodes are at intermediate levels and leaf nodes are at a lowest level, each leaf node providing an indication of location in the memory area of data of corresponding elements,

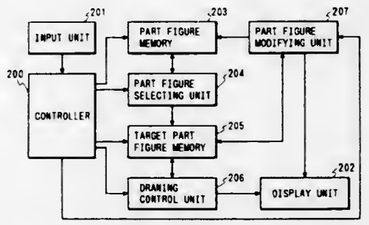
within each of the intermediate levels, nodes in a common level being arranged according to spatial relationship of corresponding subsets of elements of the model with respect to at least one axis of a geometric area covered by the elements of the corresponding subsets in a screen view of the model; and

(b) the digital processor capable of traversing the data tree in response to user interaction with a desired element of a model display on the display unit, the digital processor traversing the tree according to geometric area in which the desired element is positioned in a screen view of the model, the digital processor locating a leaf node in the tree corresponding to the desired element, and from the leaf node the digital processor obtaining indication of location in the memory area of data of the desired element, such that the digital processor may access the data using the location in the memory area of data of the desired element.

5,289,568
APPARATUS AND METHOD FOR DRAWING FIGURES

Rituko Hosoya, Kamakura; Akira Nakajima, Tokyo; Toshiharu Kawasaki, Yokohama, and Yasumasa Matsuda, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1990, Ser. No. 579,532
Claims priority, application Japan, Sep. 18, 1989, 1-239951
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—135 **15 Claims**



1. A figure drawing apparatus comprising:

memory means for storing a plurality of part figures to be used for drawing and overlaying order data to be used for specifying overlaying orders for drawing said part figures, each of said part figures cover portions of other part figures;

selecting means for selecting said part figures from said memory means;

a display unit for successively displaying said selected part figures; and

judging and drawings means for determining an order to overlay said part figures selected by said selecting means in accordance with said overlaying order data and for successively drawing said selected part figures on said display unit, wherein said selected part figures cover said portions of said other part figures on said display unit.

5,289,569
DOCUMENT PROCESSING SYSTEM CAPABLE OF SIMULTANEOUSLY DISPLAYING TWO CONTINUOUS DOCUMENT PAGES IN ACCORDANCE WITH A SELECTED BINDING POSITION

Yukari Taniguchi, Chofu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 303,061, Jan. 30, 1989, abandoned, which is a continuation of Ser. No. 861,875, May 12, 1986, abandoned. This application Sep. 3, 1992, Ser. No. 938,594
Claims priority, application Japan, May 21, 1985, 60-106979
Int. Cl.[5] G06F *3/12, 3/14*; **G06K** *15/00*
U.S. Cl. 395—145 **20 Claims**

1. A document processing system comprising:

storage means for storing files of documents, said documents comprising a plurality of continuous pages;

page information storage means for storing page information of plural pages;

display means for displaying the files of documents;

selecting means for selecting a left or other binding position for the document pages;

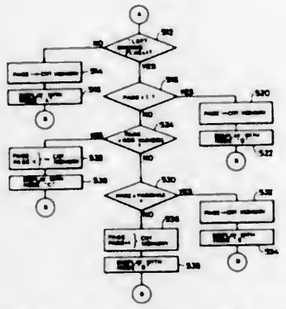
information generating means for designating displaying a single page or displaying at least two continuous document pages including the single page; and

control mans for controlling said display means to display the page information of at least two continuous document pages in accordance with the selected binding position

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and to display information indicative of a spread direction of the displayed continuous document pages when said information generating means designates display of the at least two continuous pages, and

wherein, when a left binding position is selected and a page to be displayed is an even number page, the information belonging to the page to be displayed is displayed on right



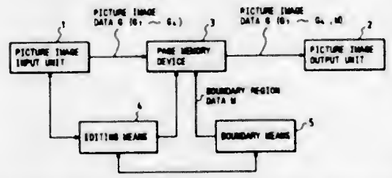
hand side of the display means and the information belonging to the preceding page is displayed on a left hand side of the display means, and, when the page to be displayed is an odd number page, the information belonging to the page to be displayed is displayed on the left hand side of the display means and the information belonging the succeeding page is displayed on the right hand side of the display means.

5,289,570

PICTURE IMAGE EDITING SYSTEM FOR FORMING BOUNDARIES IN PICTURE IMAGE DATA IN A PAGE MEMORY DEVICE

Tadaomi Suzuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 596,156
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—146 **19 Claims**



1. A picture image editing system for editing picture image data formed into scanning lines, the system comprising:

receiving means for receiving picture image data;

a page memory device for storing the received picture image data;

editing means, coupled to the receiving means and the page memory device, for designating portions of the page memory device for storing demarcating area data, for editing the received picture image data by forming the received picture image data into a plurality of sets of picture image data, and for storing the sets of picture image data into the page memory device as composite picture image data in a single page format, said editing means including means for outputting an end-of-line signal indicating the position of the final picture image data on each scanning line, for writing the picture image data for a plurality of sets of picture image data into the page memory device, and for performing an interrupt operation in response to the end-of-line signal;

boundary means for forming boundaries in the picture image data stored in the page memory device by writing desired boundary region data into the page memory device in at least some of the portions of the page memory device designated for storing demarcating area data, said boundary means including means for writing the boundary region data into the page memory device in the course of the interrupt; and

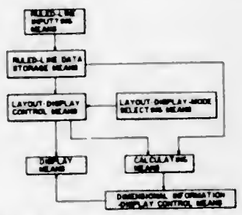
means for outputting the picture image data and the boundary region data stored in said page memory device as composite picture image data.

5,289,571

LAYOUT DISPLAY CONTROL SYSTEM FOR DISPLAYING SIZE OF DISPLAYED TABLE

Kayoko Harada, Nagoya; Chiharu Hori, Aichi; Miwo Katsoka, Mie; Yuri Usami, Nagoya, and Manami Yamada, Seto, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 1, 1991, Ser. No. 649,729
Claims priority, application Japan, Feb. 1, 1990, 2-22821
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—148 **11 Claims**



1. A layout display control system for a document processing apparatus comprising:

display means having a display screen, the display screen being made up of a predetermined number of display positions arranged in rows and columns;

ruled-line data input means for inputting ruled-line data representing a plurality of ruled lines to be displayed, the ruled-line data including vertical and horizontal ruled lines and being used to assemble a table;

ruled-line data storage means having storage locations for storing therein the ruled-line data inputted from the ruled-line data input means, wherein said ruled-line data storing means allocates one of said storage locations for each of said ruled-line data, said one storage location for each of said ruled line data comprising a display position of said predetermined number of display positions in which each of the ruled-line data is displayed;

layout-display-mode selecting means for selecting a layout display mode to change from a which does not display ruled lines to a layout display mode to display a layout of the table on the display screen; and

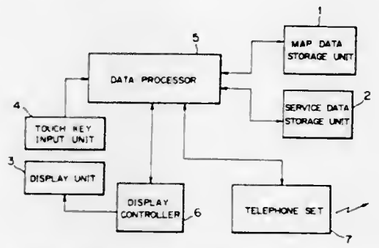
layout-display control means for converting the ruled-line data read from the ruled-line data storage means into layout data and displaying the layout of the table based on the layout data when the layout display mode is selected, wherein said layout-display control system comprises calculating means for calculating dimensional information comprising at least a width and a height of an outer periphery of the table based on the ruled-line data stored in the ruled-line data storage means when the layout of the table is displayed on the display screen in the layout display mode, and dimensional-information-display control means for displaying the dimensional information calculated by said calculating means on the display screen.

5,289,572

ELECTRONIC MAP COMBINED WITH USER SERVICE INFORMATION

Haruto Yano; Yoshiaki Hirasa; Toshimichi Tokunaga, all of Hiroshima; Chisato Yoshida, Hyogo; Katsuaki Matsumoto, Hyogo, and Masako Ohta, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda, Japan

Continuation of Ser. No. 602,684, Oct. 24, 1990, abandoned.
This application Feb. 26, 1993, Ser. No. 26,201
Claims priority, application Japan, Oct. 24, 1989, 1-277555
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—155 **19 Claims**



1. An electronic service information system for a moving vehicle comprising:

map data storage means for storing map data;

service data storage means for storing service data selected from the group consisting of gas stations, restaurants, hotels, or parking lots said service data corresponding to the map data;

display means selected from the group consisting of cathode ray tubes or liquid crystal displays for selectively displaying the map data and the service data, in menu format separately and a distinct one of said service data group combined with and on a specific location on the map data;

means for specifically designating one specific member of the distinct group displayed; and

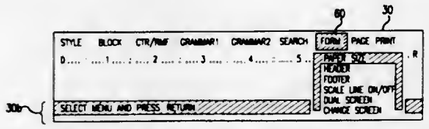
means for displaying further information about said one specific member.

5,289,573

MENU DISPLAYING APPARATUS FOR A WORD PROCESSOR

Miwo Katsoka, Mie; Chiharu Hori; Yuri Usami, both of Nagoya; Manami Yamada, Seto, and Kayoko Harada, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 19, 1990, Ser. No. 615,803
Claims priority, application Japan, Jan. 4, 1990, 2-224
Int. Cl.[5] G06F *3/153*
U.S. Cl. 395—156 **20 Claims**



1. A menu displaying apparatus for a word processor, comprising:

a display having a menu displaying region for displaying at least one main menu item and at least one sub menu item associated with one of said at lest one main menu item, and a message display region for displaying various messages;

display control means for displaying said at least one main menu item in a first predetermined display portion of said menu display region and said at least one sub menu item in a second predetermined display portion of said menu display region;

judging means for judging whether the at least one sub menu item associated with the at least one main menu item can be displayed in said menu display region; and

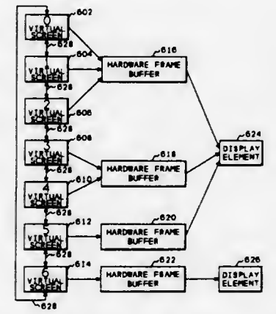
instructing means for instructing the display control means to display a sub menu item in said message display region when said judging means judges that the at least one sub menu item cannot be fully displayed in the second predetermined display portion.

5,289,574

MULTIPLE VIRTUAL SCREENS ON AN "X WINDOWS" TERMINAL

Jon R. Sawyer, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 17, 1990, Ser. No. 583,790
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—157 **14 Claims**



1. A system for displaying a plurality of user selectable virtual screens of data on a single display element, said system comprising:

means for allocating a plurality of buffer descriptions for arranging and storing data, one of said plurality of buffer descriptions being allocated for each of said plurality of virtual screens, each of said buffer descriptions representing one of said plurality of virtual screens, each of said virtual screens containing a plurality of client windows, each of said plurality of client windows representing one or more client processes, wherein each of said plurality of virtual screens supports more than one client process;

means for a user selecting one of said plurality of buffer descriptions for arranging display data; and

means for receiving display data from a client process and using said selected buffer description to arrange said display data on said display element.

5,289,575

GRAPHICS COPROCESSOR BOARD WITH HARDWARE SCROLLING WINDOW

Tim G. Godfrey, Overland Park, Kans., assignor to Nellcor Incorporated, Pleasanton, Calif.

Filed Nov. 22, 1991, Ser. No. 796,526
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **6 Claims**

1. A graphics processor system comprising:

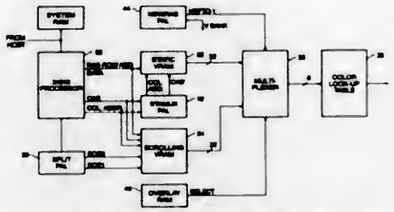
a graphics processor which produces a row address strobe (RAS) signal, a column address strobe (CAS) signal and their corresponding addresses, including a scrolled column address;

a first bank of video random access memories (RAMs) coupled to said graphics processor to receive said RAS, CAS and corresponding address signals;

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a second bank of video RAMs coupled to said graphics processor to receive said RAS signal; and

substituting means, coupled between said graphics processor and said second bank of video RAMs, for substituting for said scrolled column address signal from said graphics



processor a static plane column address signal, and providing said static plane column address signal to said second bank of video RAMs;

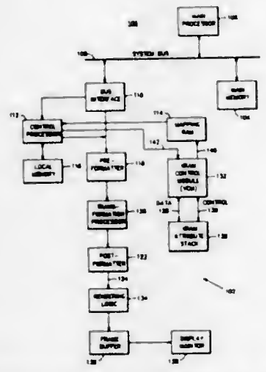
whereby a single column address signal from said graphics processor controls both scrolling and static planes.

5,289,576

ATTRIBUTE FILTER FOR COMPUTER GRAPHICS APPLICATIONS

Daniel G. Gibbons, Ulster Park, N.Y.; James A. Harstad, Dover, Mass., and David C. Tannenbaum, Hurley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1992, Ser. No. 849,920
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **6 Claims**



1. In a graphics system in which primitives represented by graphics orders and having a set of class names associated therewith are displayed in accordance with one or more display attributes associated with said class names, said system containing means for storing a flag for each of the class names, apparatus for controlling said display attributes comprising:

a plurality of counters, at least one of said counters being associated with each of said attributes;

means for storing a bit string for each of said class names, each bit of said string being associated with one of said counters;

means responsive to a graphics order affecting an inclusion of a class name in said set for generating an indexing signal for said counters;

means responsive to said graphics order affecting the inclusion of a class name in said set for generating in parallel the bit string corresponding to said class name;

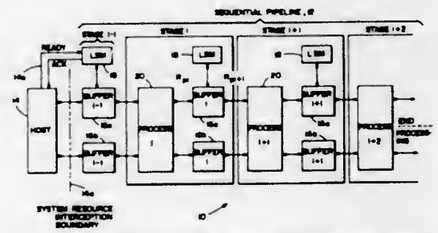
means for gating said indexing signal in parallel with said bit string to generate respective gated indexing signals for said counters.

5,289,577

PROCESS-PIPELINE ARCHITECTURE FOR IMAGE/VIDEO PROCESSING

Cesar A. Gonzales, Somers; Thomas A. Horvath, Stormville; Norman H. Kreitzer, Yorktown Heights; Andy G. Lean, Merrick, and Thomas McCarthy, Peekskill, all of N.Y., assignors to International Business Machines Incorporated, Armonk, N.Y.

Filed Jun. 4, 1992, Ser. No. 894,121
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—163 **24 Claims**



1. A sequential process-pipeline for use in a data processing system, comprising:

a plurality of processing stages each of which executes a Process on data organized as data blocks, said plurality of processing stages being serially coupled one to another for passing data blocks therebetween, a first one of said processing stages being coupled, at a data processing system resource interception boundary, to the data processing system for inputting data from and for outputting data to the data processing system at a first data rate, a last one of said processing stages being coupled to a data source and/or a data sink operating at a second data rate that differs from the first data rate;

each of said processing stages including data buffer means interposed between the processing stage and an adjacent processing stage, said first processing stage further including interface data buffer means interposed between the data processing system resource interception boundary and the first processing stage; and wherein

a SIZE of each of said data buffer means that are interposed between adjacent processing stages is determined in accordance with the relationship:

$$\text{SIZE OF BUFFER}_i = (RP_i - RP_{i+1}) \times Pmax,$$

where, for a processing stage that executes a $Process_i$, where i is Process sequence number associated with the processing stage in the process-pipeline,

Pmax is a maximum time required to completely process a data block with the $Process_i$,

RP_i is a data rate produced by the $Process_i$, and

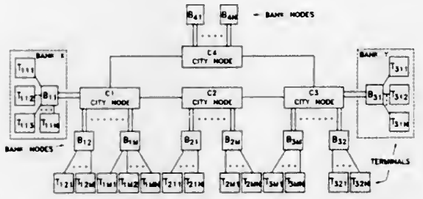
RP_{i+1} is a data rate from a next following $Process_{i+1}$.

5,289,578

ACTIVATION OF A DORMANT SIBLING COMPUTER IN A COMMUNICATION NETWORK BY OVERRIDING A UNIQUE DORMANT NODE ADDRESS WITH A COMMON ACTIVE NODE ADDRESS

Richard Hartheimer, Morris Plains, N.J.; Michael Coleman, Sydney, Australia; Chris Klepka, Parsippany, N.J., and Geoffrey Poole, Sydney, Australia, assignors to Foreign Exchange Transaction Services, Inc., Long Island City, N.Y.

Filed Nov. 9, 1990, Ser. No. 612,045
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **2 Claims**



1. In a communications network having a plurality of nodes, each being identified by a respective active node address, at least one of said nodes being a redundant node having at least two sibling computers sharing a common active node address for communicating over said communications network, a method for identifying the sibling computers comprising the computer implemented steps of:

assigning a unique respective dormant node address different from said common active node address to each sibling computer; and

attaching said each sibling computer to the communications network by:

using said unique respective dormant node address to connect said each sibling computer to the network;

determining whether said common active node address is already being used to connect any other sibling computer to the communications network; and

if there is no other sibling computer already using said common active node address to connect to the communications network:

temporarily removing said each sibling computer from the network;

assigning said common active node address to said each sibling computer; and

using said common active node address to re-connect said each sibling computer to the network.

5,289,579

CHANNEL ADAPTER FOR BROADBAND COMMUNICATIONS AT CHANNEL SPEEDS

Vikram Punj, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 414,032, Sep. 28, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 928,137
The portion of the term of this patent subsequent to Jul. 27, 2093, has been disclaimed.
Int. Cl.[5] H04Q *11/04;* **G06F** *5/06*
U.S. Cl. 395—200 **16 Claims**

4. An adapter for interfacing between a computer channel, comprising a plurality of subchannels, and a data network, said adapter for communicating on a peer-to-peer basis with other adapters and their interfaced computer channels, comprising:

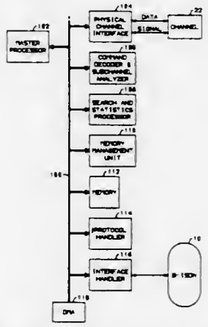
processor means, operative under program control, for controlling operations of the adapter;

memory means for storing data received from the channel and received from the network;

protocol handler means for processing header data of packets received from the computer channel and processing header data of packets received from the network;

wherein said processor means is operative under said program control for translating from a subchannel address for packets received from the computer channel to a virtual channel address and an address of a terminal of said data network and from a virtual channel address for packets received from the network to a subchannel address of a computer channel connected to said adapter;

network interface means responsive to first outputs of the protocol handler means representing data transmitted from the computer channel for generating first data signals for transmission over the network;



channel interface means responsive to second outputs of the protocol handler means representing data received from the network for generating second data signals for transmission over the channel; and

command decoder and subchannel analyzer means for maintaining a state of each subchannel connected to the adapter and each remote subchannel not connected to the terminal adapter with which each connected subchannel is communicating, said decoder and analyzer means for detecting simultaneous attempts to execute the same command, and upon detecting said simultaneous attempts, abandoning an attempt from a terminal adapter connected to a subchannel having a precoded lower priority.

5,289,580

PROGRAMMABLE MULTIPLE I/O INTERFACE CONTROLLER

Farrukh A. Latif, Malvern; Michael D. Stevens, Paoli; John A. Moysey, Malvern; Michael Shinkarovsky, Harleysville; Hung Nguyen, Downingtown, and Michele Z. Dale, Audubon, all of Pa., assignors to Unisys Corporation, Plymouth Meeting, Pa.

Filed May 10, 1991, Ser. No. 698,585
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **33 Claims**

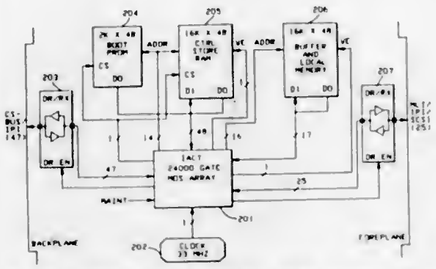
1. Apparatus for transferring a plurality of data values between a first data processing device and a second data processing device, wherein said first data processing device transmits a first plurality of control signals corresponding to a first protocol and said second data processing device receives a second plurality of control signals corresponding to a second protocol, comprising:

first control means, coupled to said first data processing device, for receiving said first plurality of control signals from said first data processing device through any one of a first plurality of physical interfaces wherein one of said first plurality of physical interfaces is different from another one of said first plurality of physical interfaces;

translation means, coupled to said first control means, for translating said plurality of first control signals to said plurality of second control signals;

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second control means, coupled to said translation means, for transmitting said second plurality of control signals to said second data processing device through any one of a second plurality of physical interfaces wherein one of said second plurality of physical interfaces is different from another one of said second plurality of physical interfaces;



first data means, coupled to said first data processing device, for receiving said plurality of data values from said first data processing device; and

second data means, coupled to said first data means, for transmitting said plurality of data values to said second data processing device.

5,289,581

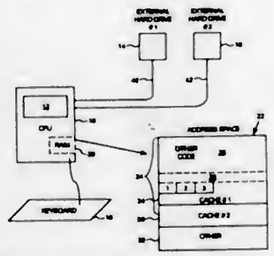
DISK DRIVER WITH LOOKAHEAD CACHE

Leo Berenguel, 43980 Rosemere Dr., and Weil Lin, 40872 Marty Ter., both of Fremont, Calif. 94539

Continuation of Ser. No. 546,601, Jun. 29, 1990, abandoned. This application Sep. 18, 1992, Ser. No. 947,370

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—275 **14 Claims**



1. An apparatus for speeding up read transactions between a host computer and a rigid-disk, direct-access storage device which stores data as sequential blocks, said host computer having in execution thereon an operating system and having a random access memory means for storing data and program information, said host computer having in execution thereon a driver program stored in said random access memory means, said driver program for controlling operations by said rigid-disk, direct-access storage device which stores data in continuous blocks, said apparatus for speeding up read transactions comprising:

a reserved portion of said random access memory means of said host computer, said reserved portion of said random access memory means having a first portion reserved for storing a cache of data retrieved from said rigid-disk, direct-access storage device and having a second portion reserved for storing said driver program being executed by said host computer;

said driver program in execution on said host computer including a cache management program for sending a command to said operating system causing said operating system to reserve said reserved portion of said random access memory so as to have sufficient capacity in said portion to store said driver program and so as to have sufficient capacity in said first portion for operation as a cache memory by storing said cache of data retrieved from said rigid-disk, direct-access storage device, said cache management program for managing said first portion of said reserved portion of said random access memory means as a cache memory so as to speed up the process of reading data blocks from said rigid-disk, direct-access, storage device by storing multiple, sequential blocks of data retrieved from said rigid-disk, direct-access storage device, and, upon receiving a read request, for determining if the desired blocks of data are stored in said first portion of said random access memory reserved as a cache memory, and if the data requested by said read request is stored in said first portion of said random access memory reserved as a cache memory, for retrieving the requested data from said portion of said random access memory reserved as a cache instead of from said rigid-disk, direct-access storage device.

5,289,582

COMMUNICATION CONTROL UNIT

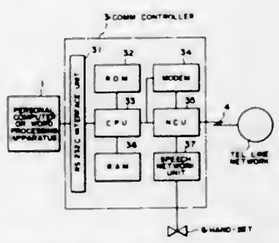
Osamu Hirata, Tokyo; Hiroshi Nobuta, Yokohama; Takashi Kotani, Tokyo, and Takuji Nakatsuma, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 759,954, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 550,223, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 137,341, Dec. 23, 1987, abandoned. This application Oct. 23, 1992, Ser. No. 965,574

Claims priority, application Japan, Dec. 27, 1986, 61-312674; Jan. 30, 1987, 62-19920

Int. Cl.[5] G06F *5/06, 15/00*

U.S. Cl. 395—275 **16 Claims**



1. A communication control apparatus for transmitting data from one terminal equipment to another terminal equipment, comprising:

receive means for receiving data from the one terminal equipment;

transmit means for transmitting the data received from the one terminal equipment to the other terminal equipment;

first setting means for selecting one of a plurality of data reception rates to set the selected one as a first data reception rate for receiving data from the one terminal equipment; and

second setting means for setting a second date transmission rate of said transmit means for transmitting the received data to the other terminal equipment in accordance with the first data reception rate, said second data transmission rate being set to a value no greater than the first data reception rate.

5,289,583

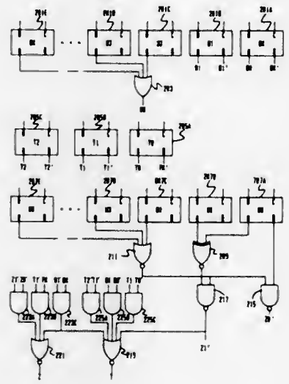
BUS MASTER WITH ANTILOCKUP AND NO IDLE BUS CYCLES

Lisa L. Fischer, Boulder, Colo., and Stephen D. Hanna, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1990, Ser. No. 600,337

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—325 **4 Claims**



1. An arbitration system comprising:

resource means;

resource arbiter means for controlling access to the resource means by arbitrating requests therefor; and

a plurality of resource masters, each resource master including

means for supplying to said resource arbiter means signals representing requests for access to the resource means,

sequencing means for controlling steps in communicating with the resource means,

means for supplying signals to the resource arbiter when access to the resource means is attained to retain access to the resource means by preventing arbitration of other access requests to the resource means,

means for determining that a given number of transfers remain, said given number being determined from the total number of transfers to be made and the total number of transfers to be made consecutively, and

means responsive to said determining means for inhibiting signals from the signal supplying means.

5,289,584

MEMORY SYSTEM WITH FIFO DATA INPUT

Gary W. Thome, Houston, and Mustafa A. Hamid, Irving, both of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Filed Jun. 21, 1991, Ser. No. 719,198

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **16 Claims**

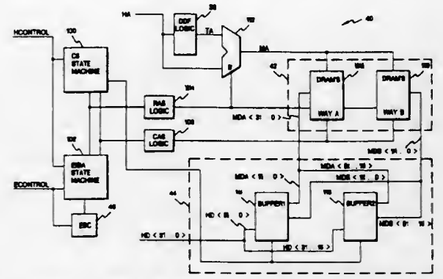
13. A computer system, comprising:

a system bus having an address bus portion and a data bus portion;

means coupled to said system data bus for consecutively providing a plurality of data packets onto said system data bus;

a plurality of memory devices, each memory device including data inputs, said memory devices organized into at least two separate ways with resulting data buses for each way, wherein said memory devices are page mode dynamic random access memory devices;

means coupled to said system bus and each said memory way data buses for receiving and storing data packets and providing said data packets to said memory devices, a first memory way receiving odd data packets and a second memory way receiving even data packets, said receiving and storing means storing said data as provided from said data packet providing means and providing an odd data



packet to said first memory way and an even data packet to said second memory way while latching an additional data packet being provided from said data packet providing means.

5,289,585

MULTIPROCESSOR SYSTEM HAVING A SYSTEM BUS FOR THE COUPLING OF SEVERAL PROCESSING UNITS WITH APPERTAINING PRIVATE CACHE MEMORIES AND A COMMON MAIN MEMORY

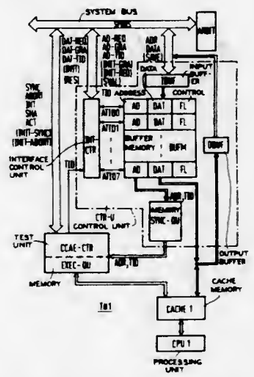
Juergen Kock, Grafing; Peter Mooshammer; Wilfried Rottmann, both of Munich, and Erich Taeuber, Sauerlach, all of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany

Continuation of Ser. No. 673,527, Mar. 22, 1991, abandoned. This application Jul. 22, 1992, Ser. No. 917,684

Claims priority, application European Pat. Off., Mar. 26, 1990, 90105710

Int. Cl.[5] G06F *13/14, 13/38*

U.S. Cl. 395—325 **9 Claims**



1. A multiprocessor system for supporting multiple transactions on a synchronous system bus, said synchronous system bus comprising an address bus, a data bus and a synchronization bus, said transactions respectively including an address operation or an address operation and a data operation, comprising:

a plurality of bus devices connected to said system bus, each of said bus devices comprising a processor including corresponding private cache memory and being operable to

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request access to said address bus for broadcasting an address on the address operation of a transaction;

a main memory shared by all of said processors and connected to said system bus as a bus device;

a central arbitrator connected to said system bus for granting access to said address bus and generating a transaction identification number on each address operation for broadcasting said number together with the address on the address bus to all of said bus devices;

a plurality of storage means, each in a respective bus device, comprising a buffer memory for storing the address broadcasted on the address bus in a memory location which is identically addressed in all bus devices by an individual address information derived from the transaction identification number broadcasted on the address bus and comprising a sync queue in which said transaction identification number and address are stored as an entry;

a plurality of control means, each in a respective bus device, connected with said sync queue and said synchronization bus, comprising means for reading an entry in said sync queue, means for examining the address of said entry for an existence of data in the main memory or for a hit in the cache memory of each processor;

means for checking the cache memory for responsibility of maintaining data consistency between the cache memories and the main memory by means for assigning cache states to each cache memory entry and by means for indicating that data in the cache memory are not identical with corresponding data in the main memory, because the data in the cache memory are modified;

means for approving an initiated transaction by asserting a sync signal on said synchronization bus as soon as the address provided on the address operation of said transaction is examined;

means for requesting for an access to the data bus to transmit the data together with the transaction identification number provided on the respective address operation of said transaction to the bus device which has initiated the transaction;

means for storing said transmitted data in the buffer memory of said bus device in the memory location addressed by individual address information derived from said transaction identification number transmitted on the data bus; and

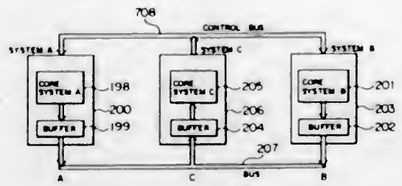
means for writing said transmitted data in the cache memory of each respective processor as soon as said transaction is approved by all bus devices asserting the sync signal.

5,289,586

DIGITAL INFORMATION TRANSMISSION APPARATUS AND METHOD OF DRIVING INFORMATION TRANSMISSION BUS SYSTEM THEREOF

Kazuhiro Umekita, and Masatsugu Kametani, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 438,013, Nov. 20, 1989. This application Aug. 27, 1992, Ser. No. 935,339
Claims priority, application Japan, Nov. 29, 1988, 63-301303
Int. Cl.[3] G06F *13/42*
U.S. Cl. 395—325 **11 Claims**



1. A digital information transmission apparatus comprising:

a digital information transmission bus system consisting of a single bus;

a plurality of digital information output systems each having a buffer which outputs digital information to said single bus;

a digital information input system having a buffer which inputs digital information from said single bus; and

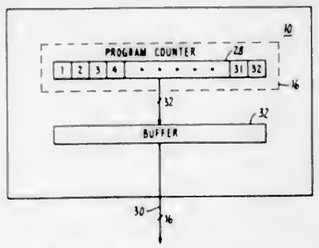
means for controlling said digital information input system and said digital information output systems such that in a same bus cycle in which said digital information input system inputs desired digital information, each buffer of at least two of said digital information output systems holding said desired digital information outputs at a same time in said same bus cycle a digital information item identical to said desired digital information to said single bus so that said digital information input system inputs said identical digital information output to said single bus by said buffers of said at least two digital information output systems.

5,289,587

APPARATUS FOR AND METHOD OF PROVIDING THE PROGRAM COUNTER OF A MICROPROCESSOR EXTERNAL TO THE DEVICE

Bruce B. Razban, Mountain View, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 680,050, Mar. 29, 1991, Pat. No.
Int. Cl.[5] G06F *11/32*
U.S. Cl. 395—375 **11 Claims**



2. A microprocessor device that executes a sequence of instructions which may include program instructions and operating system instructions, the microprocessor device comprising:

(a) a program counter register that contains an address of each instruction within the sequence of instructions as it is being executed by the microprocessor device; and

(b) dedicated external bus means connectable between the program counter register and a monitoring device external to the microprocessor device for providing the address of each instruction in the sequence of instructions executed by the microprocessor device to the monitoring device substantially simultaneously with its execution, wherein the contents of the program counter register is transferred to the dedicated external bus under the control of the microprocessor.

5,289,588

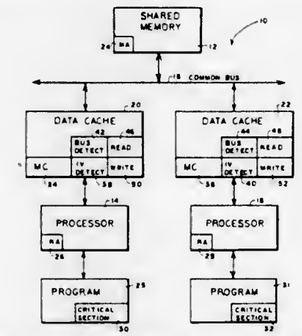
INTERLOCK ACQUISITION FOR CRITICAL CODE SECTION EXECUTION IN A SHARED MEMORY COMMON-BUS INDIVIDUALLY CACHED MULTIPROCESSOR SYSTEM

Seungyoon P. Song, and Stephen C. Horne, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 24, 1990, Ser. No. 513,806
Int. Cl.[3] G06F *13/16, 13/36*
U.S. Cl. 395—425 **32 Claims**

1. An interlock variable acquisition system for use in a processing system of the type including a plurality of processors coupled to a common bus, selected processors of said plurality of processors having a data cache and being arranged to execute program instructions including at least one particular critical section requiring exclusive execution thereof, said interlock variable acquisition system being arranged to permit exclusive execution of said at least one particular critical section by each of said selected processors while limiting traffic on said common bus and comprising:

storage means associated with said data cache of each one of said selected processors for storing an interlock variable related to said at least one particular critical section executable by said one selected processor, said interlock variable having either an available value indicating that no processor of said plurality of processors other than said one selected processor is currently executing said at least one particular critical section or a busy value indicating that another processor of said plurality of processors other than said one selected processor is currently executing said at least one particular critical section, said storage means being arranged to store a plurality of status bits associated with said interlock variable, said plurality of status bits including a first status bit having a first value when said interlock variable has a valid value and a second status bit having a second value when said interlock



variable is shared by said other said storage means storing said interlock variable, said storage means being arranged to provide said common bus with the value of said interlock variable stored therein responsive to said first status bit having said first value;

interlock variable detect means associated with said data cache of each one of said selected processors and responsive to a command instruction from its associated said one selected processor for detecting the value of said interlock variable in its associated storage means; and

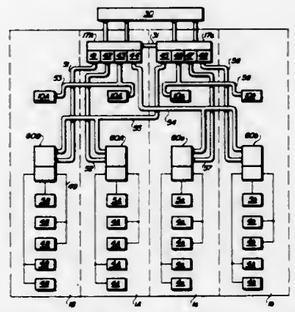
write means associated with said data cache of each one of said selected processors and responsive to its associated interlock variable detect means detecting said available value of said interlock variable in its associated storage means for conveying said available value of said interlock variable to its associated said one selected processor and writing, over said common bus, said busy value of said interlock variable to said storage means associated with processors of said plurality of processors other than said one selected processor, for updating the value of said interlock variable stored in said other storage means to said busy value.

5,289,589

AUTOMATED STORAGE LIBRARY HAVING REDUNDANT SCSI BUS SYSTEM

Robert L. Bingham, and Kamal E. Dimitri, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1990, Ser. No. 579,505
Int. Cl.[5] G06F *13/40*
U.S. Cl. 395—425 **15 Claims**



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DESIGN PATENTS

GRANTED FEB. 22, 1994

ERRATA

CLASS	PATENT NO.
006-634	D 344,406
020-008	D 344,410
020-001	D 344,546
227-108	D 344,612

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22

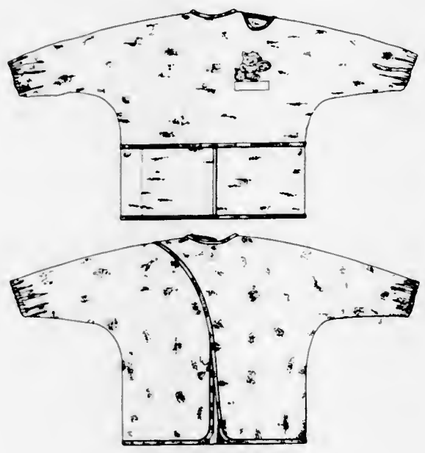
1994

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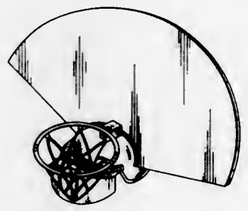
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FEBRUARY 22, 1994

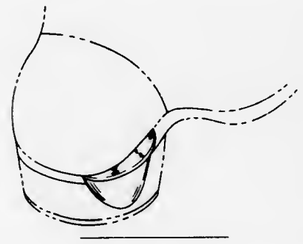
344,393
SMOCK
Edwin T. Winter, 306 N. State Rd., Springfield, Pa. 19064
Filed Jul. 1, 1992, Ser. No. 907,010
Term of patent 14 years
U.S. Cl. D2—860



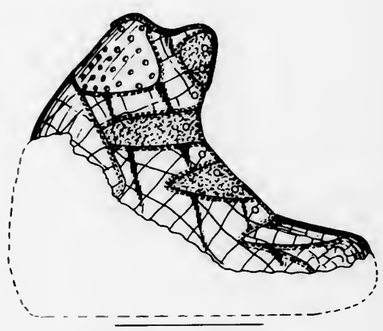
344,394
BASKETBALL HOOP HELMET
Giovanni N. Livera, 10118 Cheshunt Dr., Orlando, Fla. 32817, and Timothy F. Glancey, 1 W. Princeton Ave., Orlando, Fla. 32804
Filed Dec. 26, 1990, Ser. No. 634,501
Term of patent 14 years
U.S. Cl. D2—870



344,395
HEEL PLATE FOR A BOOT OR SHOE
Charles A. Finn, 2955 Cottingham, Oceanside, Calif. 92054
Filed Dec. 12, 1991, Ser. No. 805,928
Term of patent 14 years
U.S. Cl. D2—968



344,396
SHOE UPPER
David W. Hoeft, Beaverton; Tinker L. Hatfield, and Bradford A. Johnson, both of Portland, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 10, 1992, Ser. No. 943,196
Term of patent 14 years
U.S. Cl. D2—970

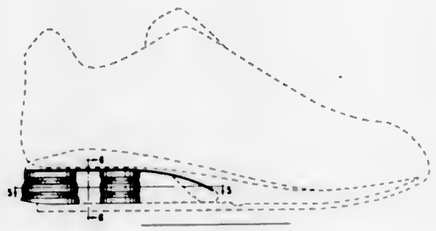


344,397
ELEMENT OF A SHOE UPPER
Linda S. Zelenko, Foster, R.I., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 817,815, Jan. 8, 1992, Pat. No. Des. 333,205. This application Feb. 16, 1993, Ser. No. 4,792
Term of patent 14 years
U.S. Cl. D2—972

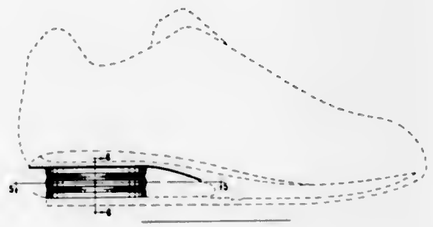


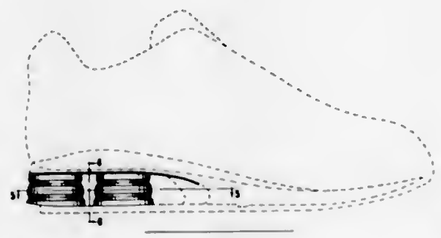
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344,398
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,930
Term of patent 14 years
U.S. Cl. D2—967

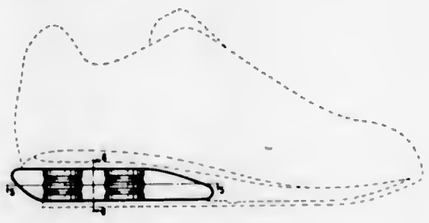


344,399
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,931
Term of patent 14 years
U.S. Cl. D2—965





344,400
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,887
Term of patent 14 years
U.S. Cl. D2—965



344,401
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,933
Term of patent 14 years
U.S. Cl. D2—965

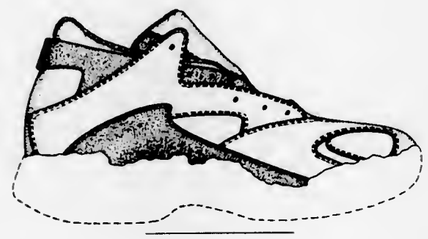
344,402
SOCK
Neville P. T. Hall, Lutterworth, United Kingdom, assignor to H J Sock Group Ltd., United Kiogdom
Filed Oct. 28, 1991, Ser. No. 783,079
Term of patent 14 years
U.S. Cl. D2—991



344,403
SHOE SOLE
Nicolas O'Rorke, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jul. 27, 1993, Ser. No. 11,141
Term of patent 14 years
U.S. Cl. D2—956



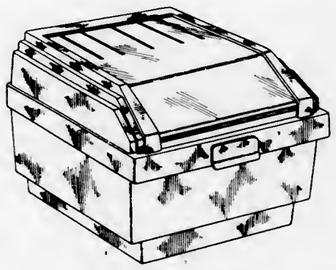
344,404
SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Aug. 3, 1993, Ser. No. 11,385
Term of patent 14 years
U.S. Cl. D2—969



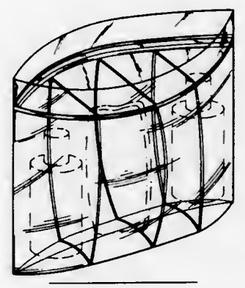
344,405
SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 4,022, Jan. 25, 1993, Pat. No. Des. 340,547.
This application Sep. 8, 1993, Ser. No. 12,689
Term of patent 14 years
U.S. Cl. D2—969



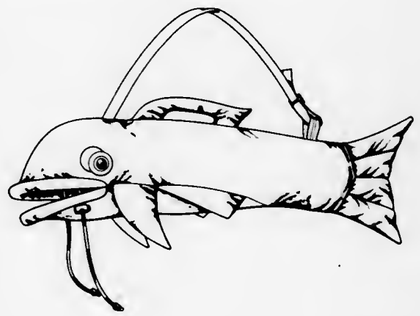
344,406
COMPUTER DISK CONTAINER
Bradley M. Nemeth, San Francisco, Calif., assignor to Wendell R. Brooks, Inc., Ft. Worth, Tex.
Filed Jul. 16, 1992, Ser. No. 916,501
Term of patent 14 years
U.S. Cl. D6—634



344,407
CARRYING POUCH FOR MISCELLANEOUS ITEMS
Elizabeth J. Derrickson, 85 Vernon Rd., Waldorf, Md. 20601
Filed Jul. 14, 1992, Ser. No. 912,645
Term of patent 14 years
U.S. Cl. D3—303

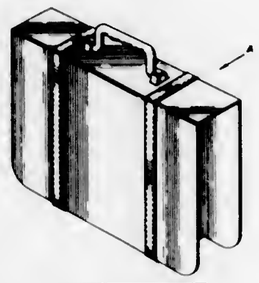


344,408
CARRYING BAG
Deborah Meszaros, and Zelina Cramer, both of P.O. Box 1195, State College, Pa. 16804
Filed Apr. 1, 1992, Ser. No. 862,245
Term of patent 14 years
U.S. Cl. D3—271

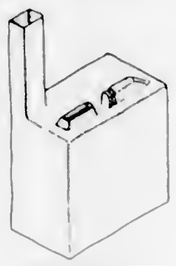


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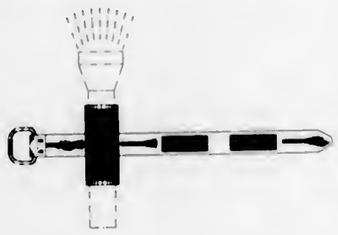
344,409
CARRYING CASE
Clive Meredith, #9 Etive Road, Dunbeg Oban, Argyll, PA37 1QF, Scotland
Filed Jun. 8, 1992, Ser. No. 893,309
Claims priority, application United Kingdom, Dec. 7, 1991, 2019445
Term of patent 14 years
U.S. Cl. D3—76



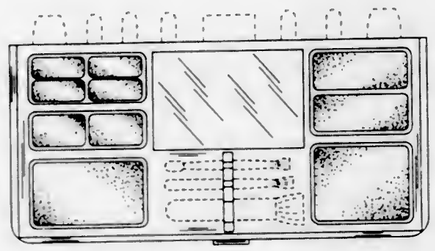
344,410
JACKET FOR A COIN CHANGER
Kenneth W. Oden, Charles Town, W. Va., assignor to Royal Venders, Inc., Kearneysville, W. Va.
Filed Jun. 1, 1992, Ser. No. 892,513
Term of patent 14 years
U.S. Cl. D20—8



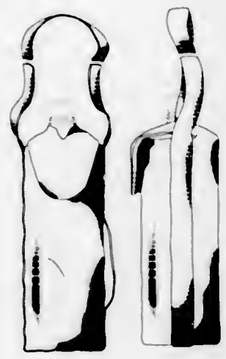
344,411
WRIST LIGHT MOUNT
William P. Henry, 8942 Brooke Ave., Westminster, Calif. 92683, and Gordon P. Davis, 10640 Sanfred Ct., Santee, Calif. 92071
Filed Aug. 19, 1991, Ser. No. 746,558
Term of patent 14 years
U.S. Cl. D3—229



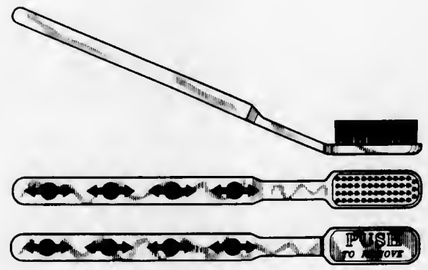
344,412
PORTABLE COSMETIC CASE
Nicholas W. Barnhart, P.O. Box 562, Blackfoot, Id. 83221
Filed Dec. 11, 1991, Ser. No. 805,836
Term of patent 14 years
U.S. Cl. D3—275



344,413
WATER BOTTLE CARRIER
Matthew C. Bedrosian, 451 S. Curson Ave., and Michael Weisberg, 364 S. Cloverdale Ave., #401, both of Los Angeles, Calif. 90036
Filed Nov. 8, 1991, Ser. No. 792,088
Term of patent 14 years
U.S. Cl. D3—202



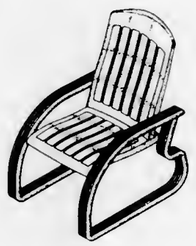
344,414
TOOTHBRUSH WITH DISPOSABLE HEAD
Awaruddin A. Rahman, 330 NW. 20th St., Apt. 110, Boca Raton, Fla. 33431
Filed Jul. 22, 1991, Ser. No. 733,264
Term of patent 14 years
U.S. Cl. D4—104



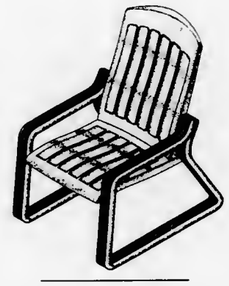
344,415
CHAISE LOUNGE
Terence E. Gibbs, Grandview, N.Y., assignor to Shin Yeh Enterprise Co., Ltd., Taiwan
Filed May 20, 1992, Ser. No. 888,213
Term of patent 14 years
U.S. Cl. D6—361



344,416
ARM CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Products International, Inc., Fairfield, N.J.
Filed May 1, 1992, Ser. No. 877,024
Term of patent 14 years
U.S. Cl. D6—373



344,417
ARM CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Omni Production International, Inc., Fairfield, N.J.
Filed May 1, 1992, Ser. No. 877,584
Term of patent 14 years
U.S. Cl. D6—373



344,418
CHAIR
Paolo Favaretto, Via S. Sofia, 74, 35100 Padova, Italy
Filed Jul. 1, 1992, Ser. No. 907,509
Term of patent 14 years
U.S. Cl. D6—373



344,419
MOBILE SHELF DISPLAY UNIT
David C. F. Stoddard, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Apr. 20, 1992, Ser. No. 871,205
Term of patent 14 years
U.S. Cl. D6—473

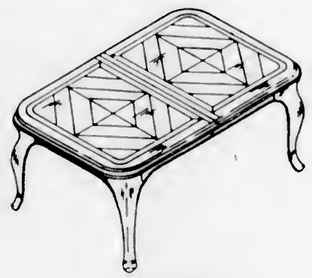


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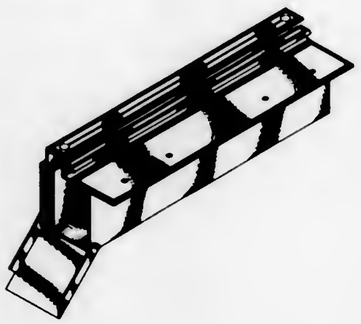
344,420
MOBILE COMPUTER STAND
John E. Rodriquez, Redford, Mich., assignor to Northwest Blue Print & Supply Co., Warren, Mich.
Filed Mar. 23, 1992, Ser. No. 855,929
Term of patent 14 years
U.S. Cl. D6—474



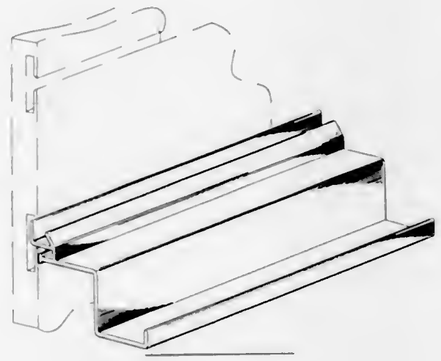
344,421
TABLE
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Co., Inc., Lenoir, N.C.
Filed May 4, 1992, Ser. No. 877,027
Term of patent 14 years
U.S. Cl. D6—484



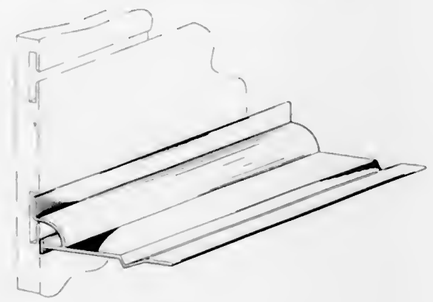
344,422
DESK ATTACHED ERASER DUST CATCHER
Kenneth N. Dukes, 4645 Ethan Glenn, Orlando, Fla. 32812
Filed Aug. 7, 1991, Ser. No. 741,165
Term of patent 14 years
U.S. Cl. D6—509



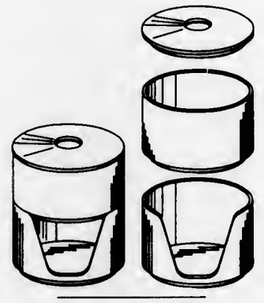
344,423
SHELF
John S. Pate, 5339 Stonetrace, Gainesville, Ga. 30501
Filed Jul. 22, 1991, Ser. No. 733,383
Term of patent 14 years
U.S. Cl. D6—511



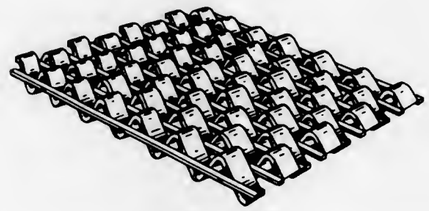
344,424
SHELF
John S. Pate, 5339 Stonetrace, Gainesville, Ga. 30501
Filed Jul. 22, 1991, Ser. No. 733,384
Term of patent 14 years
U.S. Cl. D6—511



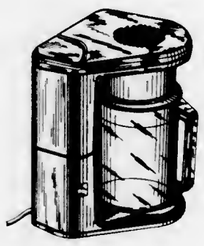
344,425
COMBINATION TISSUE DISPENSER AND RECEPTACLE WITH COVER
James M. Balanesi, 516 Gertrude Dr., Windsor, Calif. 95492, assignor to James M. Balanesi, Vallejo, Calif.
Filed Dec. 19, 1991, Ser. No. 810,814
Term of patent 14 years
U.S. Cl. D6—519



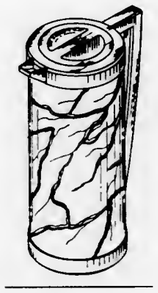
344,426
FLOOR MAT
Kee S. Kil; Woon H. Whang, and Kang Y. Lee, all of Choongchung-buk, Rep. of Korea, assignors to Lucky Ltd., Seoul, Rep. of Korea
Filed Jun. 20, 1991, Ser. No. 718,357
Claims priority, application Rep. of Korea, Dec. 28, 1990, 90-18353
Term of patent 14 years
U.S. Cl. D6—583



344,427
BEVERAGE MAKER
Francis R. Bannigan, Huntingdale, Australia, assignor to Kambrook Distributing Pty. Ltd., Australia
Filed Oct. 10, 1991, Ser. No. 774,268
Term of patent 14 years
U.S. Cl. D7—309

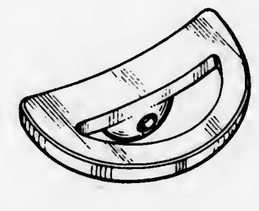


344,428
CARAFE
Bruce Ancona; Jane Ancona, both of 21 E. 22nd St., New York, N.Y. 10010, and Jose Padron, 528 E. 8th St., New York, N.Y. 10028
Filed Jan. 8, 1993, Ser. No. 2,853
Term of patent 14 years
U.S. Cl. D7—318



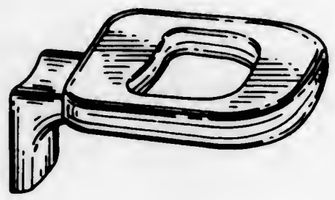
344,429
ELECTRIC PEELER
David Conroy, Brooklyn, N.Y., assignor to Farberware Inc., Bronx, N.Y.
Filed May 20, 1992, Ser. No. 886,443
Term of patent 14 years
U.S. Cl. D7—372

344,430
HANDLE FOR COOKWARE
Philippe Raoult, Annecy le Vieux, France, assignor to Tefal S.A., Rumilly, France
Filed Jun. 15, 1992, Ser. No. 898,404
Claims priority, application France, Jan. 8, 1992, 920 077
Term of patent 14 years
U.S. Cl. D7—394

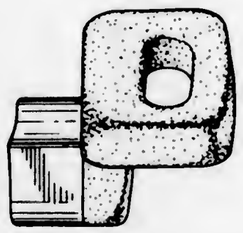


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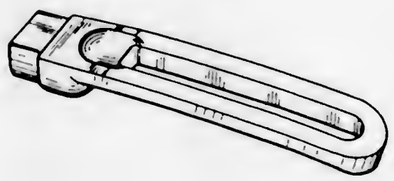
344,431
SIDE HANDLE FOR COOKWARE
Robert Welch, Stratford-on-Avon, England, assignor to Estia Corp., Lyndhurst, N.J.
Filed Dec. 23, 1992, Ser. No. 2,963
Term of patent 14 years
U.S. Cl. D7—394



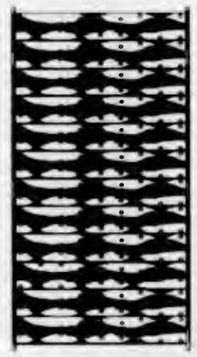
344,432
SIDE HANDLE FOR COOKWARE
Robert Welch, Stratford-on-Avon, England, assignor to Estia Corporation, Lyndhurst, N.J.
Filed Dec. 23, 1992, Ser. No. 2,964
Term of patent 14 years
U.S. Cl. D7—394

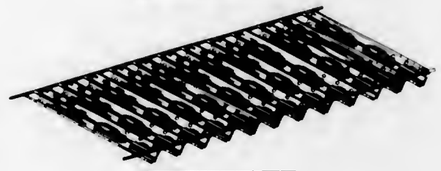


344,433
HANDLE FOR COOKWARE
Raoult Philippe, Annecy Le Vieux, France, assignor to Tefal S.A., Rumilly, France
Filed Jun. 15, 1992, Ser. No. 898,405
Claims priority, application France, Jan. 8, 1992, 92 0077
Term of patent 14 years
U.S. Cl. D7—395



344,434
BARBECUE GRILL
Jose R. Endara, 60 Marinus St., Rochelle Park, N.J. 07662
Filed Apr. 15, 1991, Ser. No. 685,014
Term of patent 14 years
U.S. Cl. D7—409

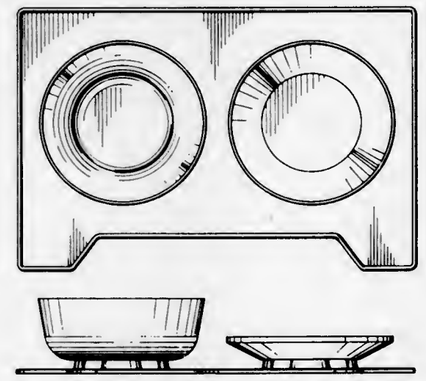




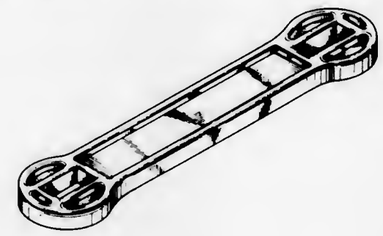
344,435
SERVING TRAY
Leslie B. Whall, 804 Thornwood St., Simi Valley, Calif. 93065
Filed Dec. 20, 1991, Ser. No. 810,918
Term of patent 14 years
U.S. Cl. D7—552



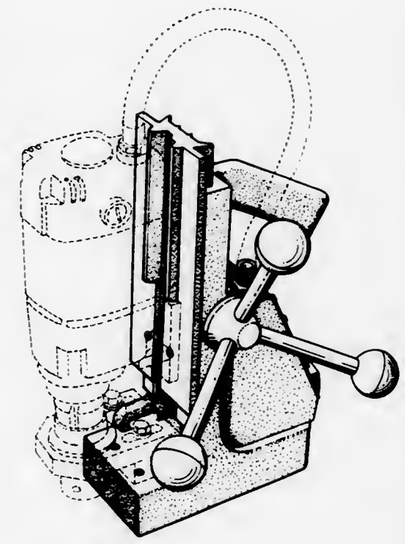
344,436
TRAY
Earl M. Walls, Rt. 1 Box 24-A, Barnard, Missouri 64423; Jerry Thacker, 2807 South Owen School Road, Independence, Missouri 64057;
Filed May 4, 1992, Ser. No. 878,303
Term of patent 14 years
U.S. Cl. D7—603



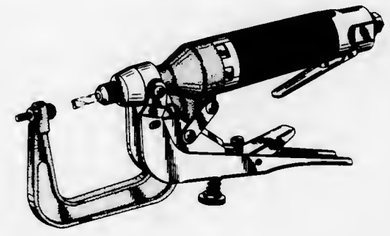
344,437
WRENCH FOR A GAS METER
Kevin R. Cleland, 389 Windtree Ave., Newbury Park, Calif. 91320, and Michelle A. Gold, 389 Windtree Ave., Newbury Park, Calif. 91320
Filed Aug. 6, 1992, Ser. No. 925,486
Term of patent 14 years
U.S. Cl. D8—21



344,438
DRILL STAND
Brian H. Wood, Sheffield, England, assignor to Rotabroach, Ltd., England
Filed Feb. 19, 1991, Ser. No. 658,286
Claims priority, application United Kingdom, Aug. 24, 1990, 2009.181
Term of patent 14 years
U.S. Cl. D8—71



344,439
SPOT WELD DRILL
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed Feb. 10, 1993, Ser. No. 4,664
Term of patent 14 years
U.S. Cl. D8—71



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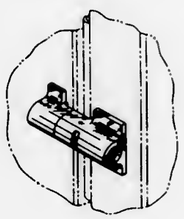
344,440
COMBINED MOULDED ROTARY KNOB AND NUT
John M. Oakley, London, England, assignor to Soundcraft Electronics Limited, Hertfordshire, England
Filed Jul. 12, 1991, Ser. No. 744,030
Claims priority, application United Kingdom, Feb. 13, 1991, 2013022
Term of patent 14 years
U.S. Cl. D8—311



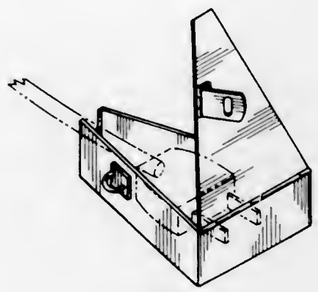
344,441
LOCKING RING FOR UTILITY METER
John C. Mahaney, Rutland, Mass., assignor to Inner-Tite Corp., Holden, Mass.
Filed Apr. 16, 1992, Ser. No. 869,704
Term of patent 14 years
U.S. Cl. D8—333



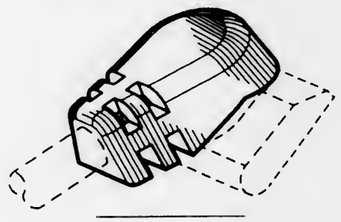
344,442
REFRIGERATOR LOCK
Gary L. Myers, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Mar. 23, 1992, Ser. No. 856,341
Term of patent 14 years
U.S. Cl. D8—341



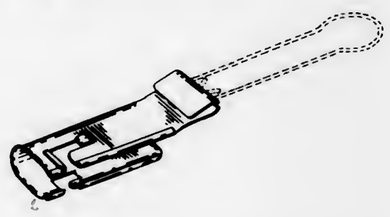
344,443
ELECTRIC PLUG LOCKBOX
James C. Ashby, 2061 Camino Way, Salt Lake City, Utah 84121
Filed Oct. 9, 1992, Ser. No. 255
Term of patent 14 years
U.S. Cl. D8—346



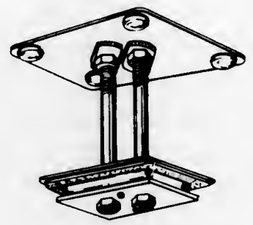
344,444
STRAIN RELIEF FOR ELECTRICAL WIRE
Eric S. Kopfstein, Skokie, and Bruce D. Hillier, Hawthorne Woods, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 14, 1992, Ser. No. 948,714
The portion of the term of this patent subsequent to Dec. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—356



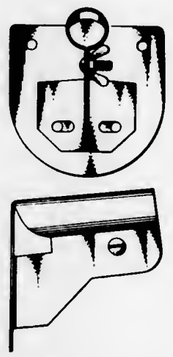
344,445
WIRE HOLDER
Isaac Sachs, 283 Newton, Dollard-des-Ormeaux Quebec, Canada H9A 3G1
Continuation-in-part of Ser. No. 856,931, Mar. 24, 1992. This application Aug. 5, 1992, Ser. No. 924,871
The portion of the term of this patent subsequent to Dec. 21, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—356



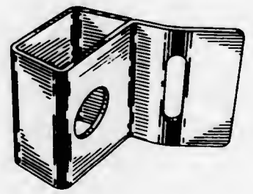
344,446
TIE-DOWN FOR USE WITH TRUCK BEDLINERS
Donald S. Egigian, 2421 Almira Ave., Fullerton, Calif. 92631
Filed Sep. 30, 1992, Ser. No. 952,783
Term of patent 14 years
U.S. Cl. D8—356



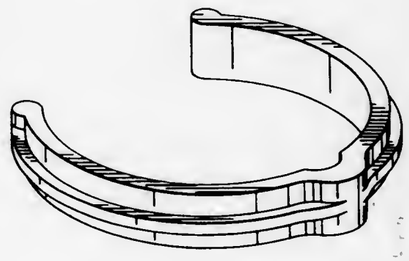
344,447
FLAGPOLE BRACKET
Robert J. Kuehl, 331 Pease Rd., and Frank M. Falcone, 41 Edmund St., both of East Longmeadow, Mass. 01028
Filed Aug. 24, 1992, Ser. No. 933,518
Term of patent 14 years
U.S. Cl. D8—373



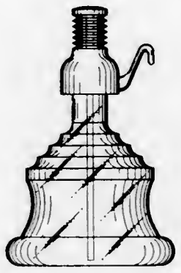
344,448
CLAMP ELEMENT FOR INTERCONNECTING THE FREE ENDS OF A BAND
Isaac Sachs, 1240 Ridgewood Drive, Chomedey, Laval, Quebec, Canada H7W 1L3
Filed Jan. 18, 1991, Ser. No. 643,080
Term of patent 14 years
U.S. Cl. D8—394



344,449
C-SHAPED WIRE CLIP
John F. Ward, Midhurst, Canada, assignor to Canplas Industries Ltd., Barrie, Canada
Filed Apr. 13, 1992, Ser. No. 867,902
Claims priority, application Canada, Mar. 6, 1992, 1992-03-06
Term of patent 14 years
U.S. Cl. D8—395

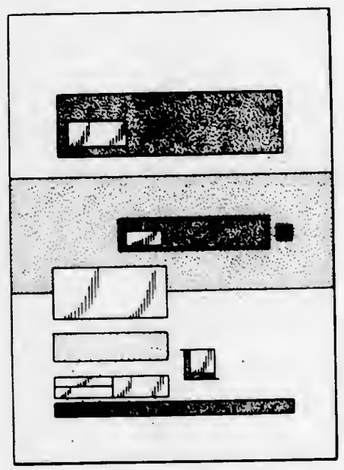


344,450
DISPENSER
Walter K. Zugel, R.D. #1, 5 Phillip Rd., Stanhope, N.J. 07874
Filed Apr. 23, 1992, Ser. No. 873,046
Term of patent 14 years
U.S. Cl. D9—300

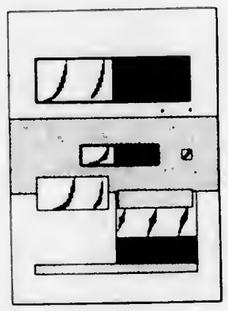


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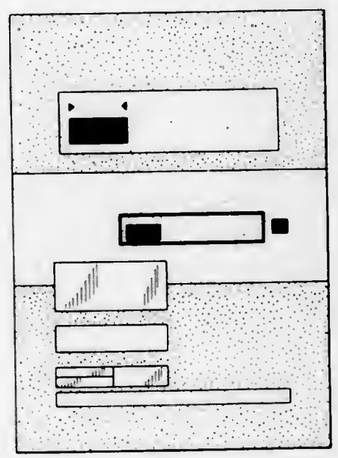
344,451
PACKAGING WRAPPER
Miya Suwa; Hiroshi Nakaizumi; Yuko Wada, and Kazushi Kirihara, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 917,469
Claims priority, application Japan, Jan. 21, 1992, 4-1223
Term of patent 14 years
U.S. Cl. D9—305



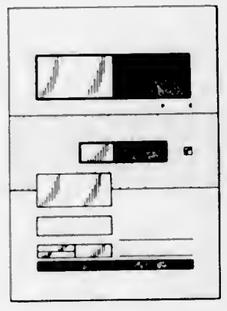
344,452
PACKAGING WRAPPER
Miya Suwa; Hiroshi Nakaizumi; Yuko Wada, and Kazushi Kirihara, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 917,468
Claims priority, application Japan, Jan. 21, 1992, 4-1218
Term of patent 14 years
U.S. Cl. D9—305



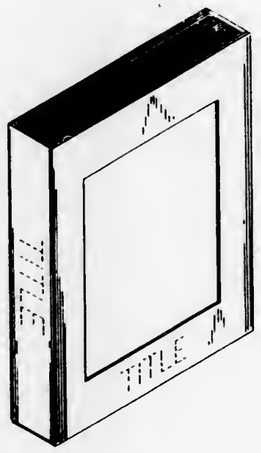
344,453
PACKAGING WRAPPER
Miya Suwa; Hiroshi Nakaizumi; Yuko Wada, and Kazushi Kirihara, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 917,470
Claims priority, application Japan, Jan. 21, 1992, 4-1224
Term of patent 14 years
U.S. Cl. D9—305



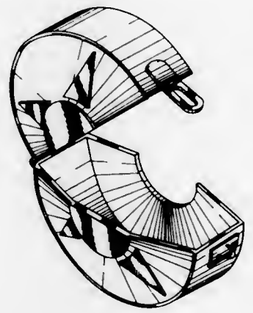
344,454
PACKAGING WRAPPER
Miya Suwa; Hiroshi Nakaizumi; Yuko Wada, and Kazushi Kirihara, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 917,476
Claims priority, application Japan, Jan. 21, 1992, 4-1225
Term of patent 14 years
U.S. Cl. D9—305



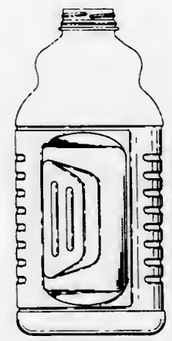
344,455
DISPLAY BOX
Grant C. Kornberg; John R. Supple, both of Durham, N.C., and Michael D. Priore, Brooklyn, N.Y., assignors to Largely Literary Designs, Inc., Durham, N.C.
Filed Aug. 3, 1992, Ser. No. 924,233
Term of patent 14 years
U.S. Cl. D9—326



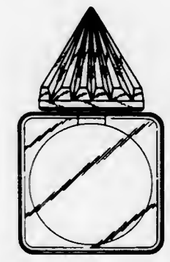
344,456
BOAT PROPELLER COVER
George Argondizza, 284 N. Michigan Ave., N. Massapequa, N.Y. 11758
Filed Feb. 21, 1992, Ser. No. 838,004
Term of patent 14 years
U.S. Cl. D9—420



344,457
CONTAINER SIDEWALL
Roger M. Prevot, Felton, Pa., and Frank E. Semersky, Toledo, Ohio, assignors to Graham Packaging Corporation, York, Pa.
Filed Oct. 8, 1992, Ser. No. 230
Term of patent 14 years
U.S. Cl. D9—537



344,458
COMBINED BOTTLE AND CAP
Nancy A. Bruce, 8032 Stratman Rd., Baltimore, Md. 21222
Continuation of Ser. No. 892,519, Jun. 3, 1992, abandoned. This application Dec. 9, 1992, Ser. No. 2,309
Term of patent 14 years
U.S. Cl. D9—546

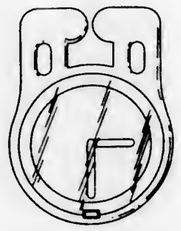


344,459
CLOCK
Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 24, 1991, Ser. No. 705,157
Term of patent 14 years
U.S. Cl. D10—22

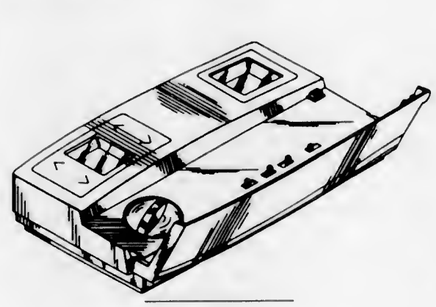


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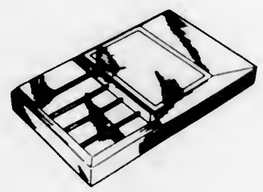
344,460
BELT LOOP ATTACHABLE WATCH
Richard Hiles, c/o 2870-54 Maysville Pike, Zanesville, Ohio 43701
Filed Nov. 18, 1991, Ser. No. 794,181
Term of patent 14 years
U.S. Cl. D10—30



344,461
ELECTRONIC PROGRAMMABLE COMFORT ZONE THERMOSTAT
Glenn D. Foster, and Charlie Moses, both of Jacksonville, Fla., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 3, 1992, Ser. No. 844,422
Term of patent 14 years
U.S. Cl. D10—50



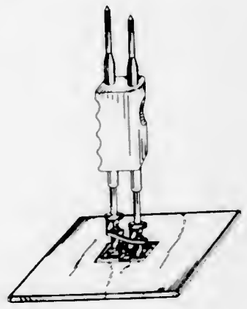
344,462
THERMOSTAT ASSEMBLY
Michael Papadopoulos, Kurralta Park, Australia, assignor to F F Seeley Nominees Pty. Ltd., St. Marys, Australia
Filed Mar. 3, 1992, Ser. No. 844,699
Claims priority, application Australia, Sep. 3, 1991, 2607/91
Term of patent 14 years
U.S. Cl. D10—50



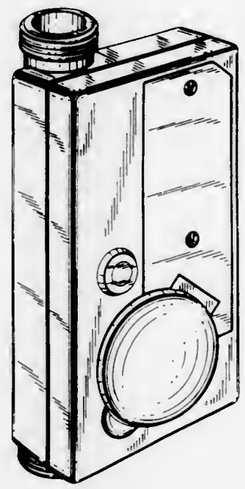
344,463
WEATHER VANE
Michael Gerrard Lannie, Leicestershire, England, assignor to Invicta Plastics Ltd., Great Britain
Filed Apr. 9, 1992, Ser. No. 866,530
Claims priority, application United Kingdom, Oct. 19, 1991, 2018426
Term of patent 14 years
U.S. Cl. D10—59



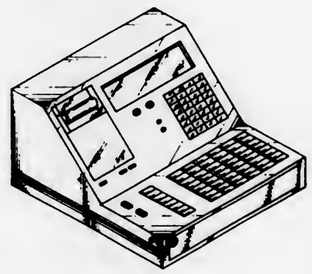
344,464
CAPACITIVE TEST PROBE
Ronald K. Kerschner, and Lisa M. Kent, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 25, 1992, Ser. No. 1,954
Term of patent 14 years
U.S. Cl. D10—80



344,465
FLUID METER HOUSING
Alan W. Brew, St Ives, and Michael R. Petersen, Ryde, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Canberra and AGL Consultancy Pty Ltd., North Sydney, both of Australia
Filed Aug. 7, 1992, Ser. No. 926,897
Claims priority, application Australia, Feb. 12, 1992, 311/92
Term of patent 14 years
U.S. Cl. D10—97



344,466
CONTROL UNIT FOR AN ALARM SYSTEM
Gary Caldwell, and Evaline L. Caldwell, both of Rte. 1 Box 631-W, Cochise, Ariz. 85606
Filed Oct. 19, 1992, Ser. No. 543
Term of patent 14 years
U.S. Cl. D10—106



344,467
BELL
San-He Hung, Changhua, Taiwan, assignor to Ming Jer Industrial Co. Ltd., Changhua Hsien, Taiwan
Filed Jun. 3, 1992, Ser. No. 892,517
Term of patent 14 years
U.S. Cl. D10—116



344,468
WATCH BAND
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 6, 1991, Ser. No. 711,434
Term of patent 14 years
U.S. Cl. D11—3



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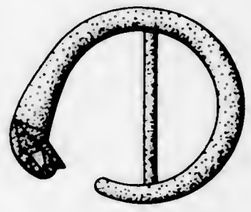
344,469
FIGURINE
Christian Steinbach, Hohenhameln, Fed. Rep. of Germany, assignor to Holzgalanteriewarenfabrik Steinbach GmbH, Hohenhameln, Fed. Rep. of Germany
Filed Aug. 14, 1992, Ser. No. 930,033
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, M9201358
Term of patent 14 years
U.S. Cl. D11—160



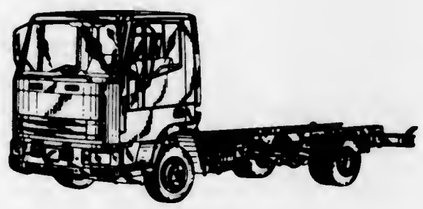
344,470
NATIONAL PATRIOTIC RECOGNITION SYMBOLS
David E. Sullivan, 6215 Tuckerman La., Colorado Springs, Colo. 80918
Filed Jun. 3, 1991, Ser. No. 709,439
Term of patent 14 years
U.S. Cl. D11—168



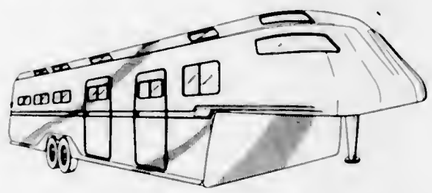
344,471
HANDBAG SHOULDER STRAP BUCKLE
Alain-Dominique Perrin, Rueil Malmaison, and Jacques Diltoer, Villeneuve la Garenne, both of France, assignors to Cartier International B.V., Amsterdam, Netherlands
Filed Jan. 28, 1991, Ser. No. 646,936
Claims priority, application France, Jul. 27, 1990, 90 4899
The portion of the term of this patent subsequent to Jan. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—233



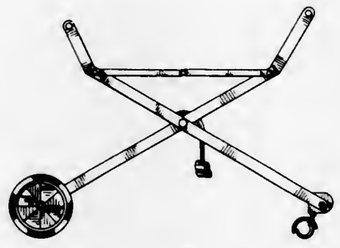
344,472
TRUCK
Piero Savio, Borgaretto, Italy, assignor to Iveco Fiat S.p.A., Turin, Italy
Filed Aug. 19, 1991, Ser. No. 747,792
Claims priority, application Italy, Feb. 28, 1991, T0910 000043
Term of patent 14 years
U.S. Cl. D12—96



344,473
LARGE HORSE TRAILER
Bruce R. Romesburg, 15205 S. 1800 West, Bluffdale, Utah 84065
Filed Oct. 13, 1992, Ser. No. 291
Term of patent 14 years
U.S. Cl. D12—97



344,474
COLLAPSIBLE CARRIER FRAME FOR INFANT SEATS
Vicki Stoke, 713 Pennsylvania, Windsor, Ill. 61957
Filed Oct. 23, 1992, Ser. No. 758
Term of patent 14 years
U.S. Cl. D12—133



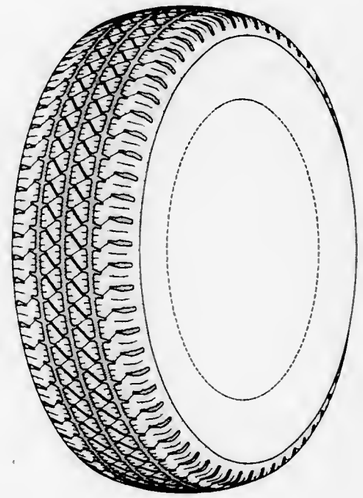
344,475
TIRE TREAD
Warren L. Croyle, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 20, 1992, Ser. No. 915,358
Term of patent 14 years
U.S. Cl. D12—145



344,476
TIRE
Miroslav Manestar, Norton, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Aug. 2, 1990, Ser. No. 562,074
Term of patent 14 years
U.S. Cl. D12—146



344,477
TIRE TREAD
Claude Lardo, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 936,543
Term of patent 14 years
U.S. Cl. D12—146

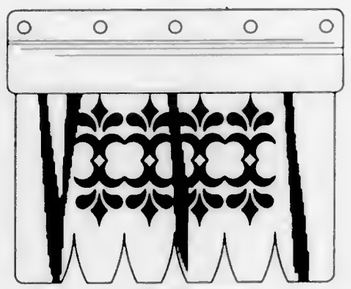


344,478
TIRE TREAD
Rudy E. Consolacion, Copley, and Randall R. Brayer, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 937,193
Term of patent 14 years
U.S. Cl. D12—147

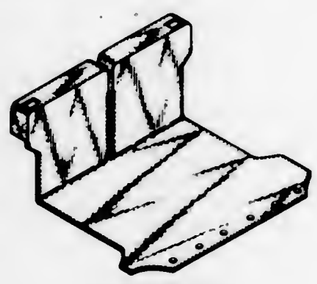


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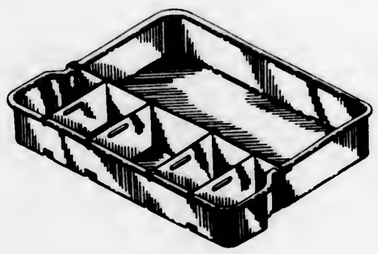
344,479
VEHICLE CABIN PRESSURE PLATE
Duan L. Anderson, 7220 E. 171st St., Bixby, Okla. 74008
Filed Jan. 21, 1992, Ser. No. 822,825
Term of patent 14 years
U.S. Cl. D12—400



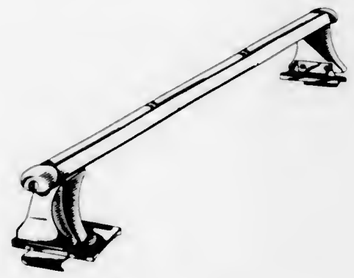
344,480
INTERIOR CARGO COVER FOR MOTOR VEHICLES
Thomas F. Hamilton, 1634 Ixias Ct., San Jose, Calif. 95124, assignor to Thomas F. Hamilton, San Jose, Calif.
Filed Nov. 30, 1992, Ser. No. 2,145
Term of patent 14 years
U.S. Cl. D12—221



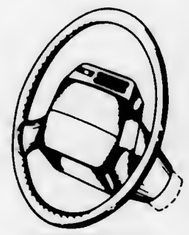
344,481
TRUNK LINER
Patrick T. Ryan, Windsor Jct., Canada, assignor to NeoCon International Inc., Halifax, Canada
Filed Nov. 27, 1992, Ser. No. 1,955
Term of patent 14 years
U.S. Cl. D12—221



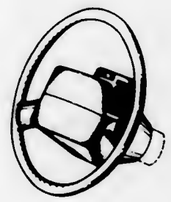
344,482
LOAD CARRIER FOR VEHICLES
Jan I. Arvidsson, Hillerstorp, Sweden, assignor to Industri AB Thule, Sweden
Filed Mar. 6, 1991, Ser. No. 665,181
Claims priority, application Sweden, Sep. 6, 1990, 90 1864
The portion of the term of this patent subsequent to Oct. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—157



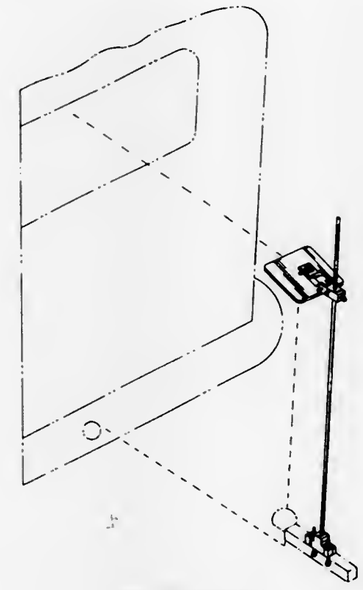
344,483
STEERING WHEEL ASSEMBLY WITH COMMUNICATION KEYBOARD
Dillis V. Allen, 1080 Nerge Rd., Ste. 205, Elk Grove Village, Ill. 60007
Filed May 20, 1991, Ser. No. 702,695
Term of patent 14 years
U.S. Cl. D12—176



344,484
STEERING WHEEL ASSEMBLY WITH COMMUNICATION KEYBOARD
Dillis V. Allen, 1080 Nerge Rd., Ste. 205, Elk Grove Village, Ill. 60007
Filed May 20, 1991, Ser. No. 702,713
Term of patent 14 years
U.S. Cl. D12—176



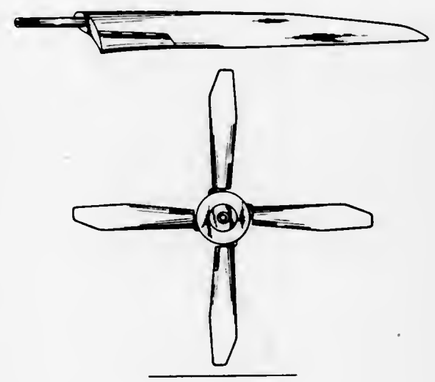
344,485
REMOVABLE AND ADJUSTABLE MIRROR UNIT FOR FACILITATING ALIGNMENT OF TRAILER HOOKUP
Steven J. Linne, 15 Racine Ct., Lake St. Louis, Mo. 63367, and Matthew T. Lanham, 100 Whispering Oaks Dr., St. Charles, Mo. 63303
Filed Jun. 18, 1992, Ser. No. 900,335
Term of patent 14 years
U.S. Cl. D12—187



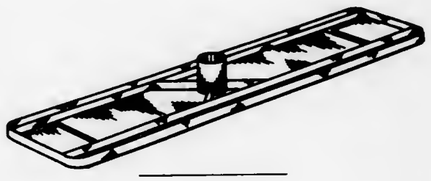
344,486
FRAME FOR A TAG
Jane L. McWilliams, 26000 Aeropuerto #84, San Juan Capistrano, Calif. 92675
Filed Aug. 24, 1992, Ser. No. 933,527
Term of patent 14 years
U.S. Cl. D12—193



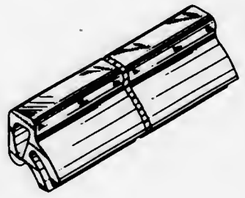
344,487
AIRPLANE PROPELLER BLADE WITH SLOTTED FLAP
Futoshi Iwamoto, Nagoya, Japan, assignor to The Ishida Foundation, Nagoya, Japan
Filed Jul. 7, 1992, Ser. No. 909,440
Term of patent 14 years
U.S. Cl. D12—214



344,488
BOAT COVER SUPPORT
Brahm Fisscher, Atlanta, Ga., assignor to L. S. Brown Co., Atlanta, Ga.
Filed May 12, 1992, Ser. No. 881,823
Term of patent 14 years
U.S. Cl. D12—318

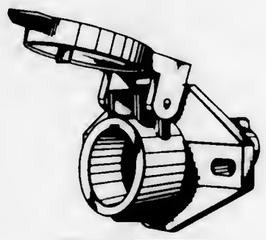


344,489
FAIRING SEAL FOR AIRCRAFT CANOPY
Roger M. Webb, Dallas, Tex., assignor to Texstar, Inc., Grand Prairie, Tex.
Filed Nov. 4, 1991, Ser. No. 786,949
Term of patent 14 years
U.S. Cl. D12—345

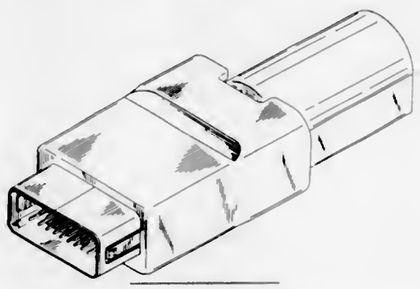


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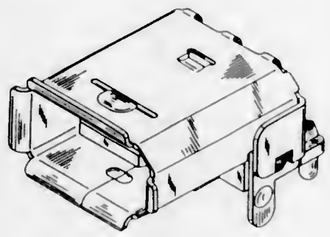
344,490
SIX PIN ELECTRICAL RECEPTACLE
Emil R. Nociar, Calgary, Canada, assignor to Seismic Cable Service Ltd., Calgary, Canada
Filed Mar. 13, 1992, Ser. No. 850,785
Claims priority, application Canada, Oct. 25, 1991, 25-10-91-2
The portion of the term of this patent subsequent to Sep. 29, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—146



344,491
ELECTRICAL CONNECTING PLUG
Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporatioo, Yao, Japan
Filed Feb. 27, 1992, Ser. No. 842,589
Claims priority, application Japan, Sep. 3, 1991, 3-26654
Term of patent 14 years
U.S. Cl. D13—147



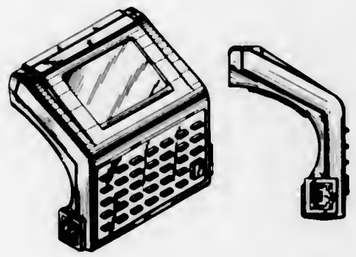
344,492
ELECTRICAL CONNECTING SOCKET
Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan
Filed Mar. 20, 1992, Ser. No. 854,955
Claims priority, application Japan, Sep. 26, 1991, 3-29243
Term of patent 14 years
U.S. Cl. D13—147



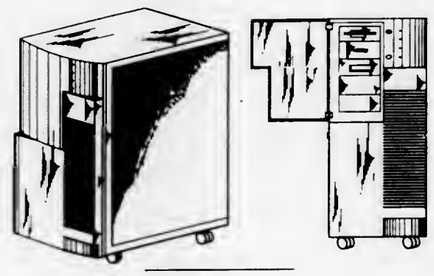
344,493
COMPUTER
Bud M. Mousa, Auburn; Peter Lee, San Jose, both of Calif.; Stephen G. Brown, Vancouver, Wash.; Eric Jensen, Saratoga, and Phil Yenerich, Fremont, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 29, 1992, Ser. No. 922,288
Term of patent 14 years
U.S. Cl. D14—100



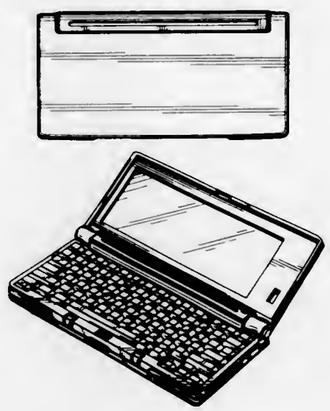
344,494
COMPUTER
Orlando Cardenas, Laguna Niguel, Calif., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Sep. 25, 1992, Ser. No. 950,051
Term of patent 14 years
U.S. Cl. D14—100



344,495
TOWER COMPUTER HOUSING
Edward V. Cruz, Newbury Park, and Barry P. Sween, Santa Monica, both of Calif., assignors to Zeuscom Systems, Inc., Simi Valley, Calif.
Filed May 18, 1992, Ser. No. 884,982
Term of patent 14 years
U.S. Cl. D14—102



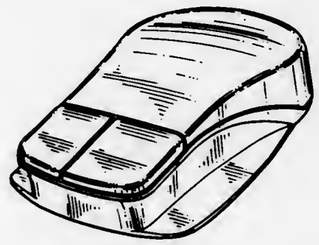
344,496
COMPUTER
Kanji Mizusugi, Mie; Kensho Tsuji, and Hiroshi Yamamizu, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 30, 1991, Ser. No. 814,685
Claims priority, application Japan, Jun. 28, 1991, 3-19566
Term of patent 14 years
U.S. Cl. D14—106



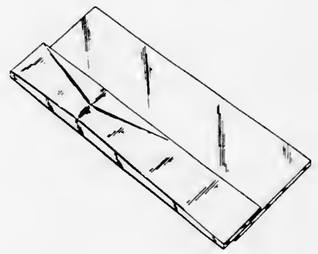
344,497
ELECTRONIC COMPUTER WITH PRINTER
Hidero Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 899,929
Claims priority, application Japan, Dec. 20, 1991, 3-38702
Term of patent 14 years
U.S. Cl. D14—106



344,498
MOUSE INPUT DEVICE
Michael V. Leman, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Feb. 14, 1992, Ser. No. 836,458
Term of patent 14 years
U.S. Cl. D14—114

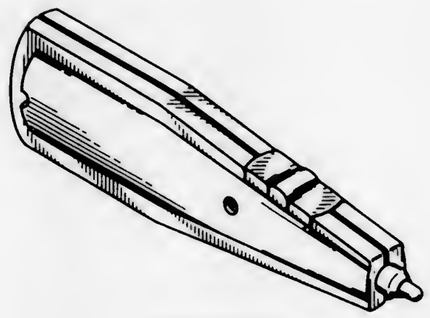


344,499
WRIST SUPPORT FOR A KEY BOARD
Jan E. Ståhl, Skärgardsvägen 211, S–139 00 Värmdö , and Kari J. Huttonen, Schackvägen 2, S-142 65 Trangsund, both of Sweden
Filed Sep. 29, 1992, Ser. No. 953,144
Claims priority, application Sweden, Mar. 30, 1992, 92-0728
Term of patent 14 years
U.S. Cl. D14—114

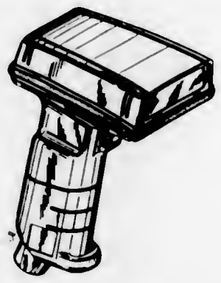


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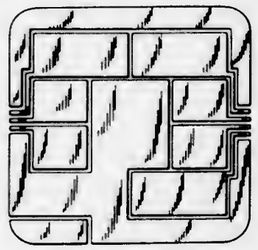
344,500
WIRELESS OPTICAL INPUT DEVICE
Richard H. Bruce, Los Altos; Scott A. Elrod, Redwood City; Thomas P. Moran, Palo Alto; Frank G. Halasz, Santa Cruz; Malcolm S. Smith, Palo Alto; Dallas R. Grove, Mountain View, and Richard J. Goldstein, San Francisco, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 3, 1992, Ser. No. 864,903
Term of patent 14 years
U.S. Cl. D14—116



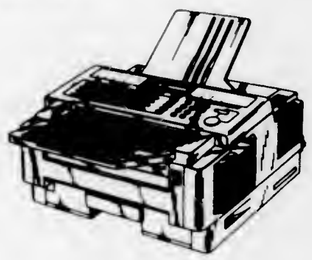
344,501
OPTICAL SCANNER
Frank Goag, Williston Park; Yori Gofman, Brooklyn, and Alex Breytman, Bellmore, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Aug. 7, 1992, Ser. No. 925,464
Term of patent 14 years
U.S. Cl. D14—116



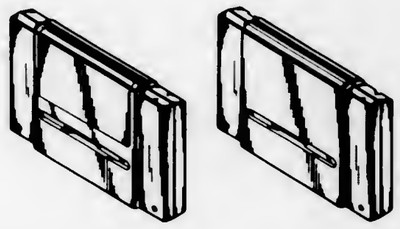
344,502
CONNECTING TERMINAL FOR CHIP CARDS
Jean-Pierre Gloton, Aix en Provence, France, assignor to Gemplus Card International, Gemenos, France
Filed Oct. 26, 1992, Ser. No. 827
Related U.S. Application Data, Division of Ser. No. 912,623, Jun. 29, 1992, which is a division of 388,626, Aug. 1, 1989, Pat. No. Des. 331,922.
Claims priority, application France, Feb. 2, 1989, 89-0749
Term of patent 14 years
U.S. Cl. D14—117



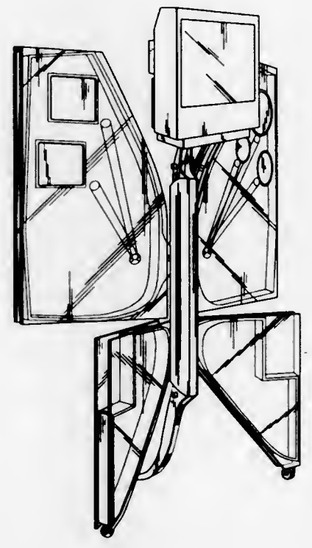
344,503
FACSIMILE TRANSMITTER-RECEIVER
Masahiro Nakajima, and Masami Toyoshima, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 19, 1992, Ser. No. 854,444
Claims priority, application Japan, Sep. 20, 1991, 3-28357
Term of patent 14 years
U.S. Cl. D14—118



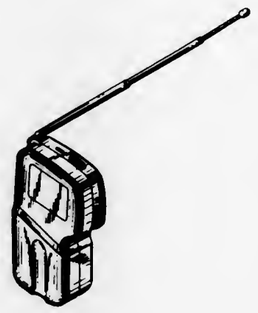
344,504
CARTRIDGE FOR VIDEO GAME MACHINE
Lance Barr, Redmond, Wash., and Mitsuru Hitomi, Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan
Division of Ser. No. 757,431, Sep. 10, 1991. This application May 10, 1993, Ser. No. 6,544
Claims priority, application Japan, Mar. 26, 1991, 3-8433
Term of patent 14 years
U.S. Cl. D14—121



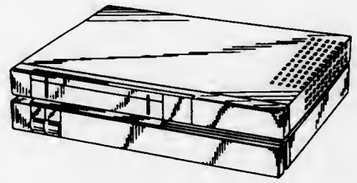
344,505
MULTIMEDIA DISPLAY
Alessandro Traldi, Milan, Italy, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 26, 1992, Ser. No. 842,576
Term of patent 14 years
U.S. Cl. D14—124



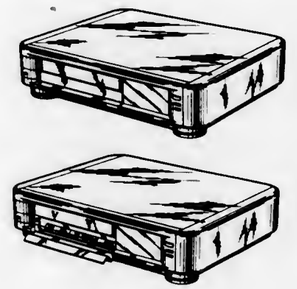
344,506
TELEVISION RECEIVER
Kazuo Ichikawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,964
Claims priority, application Japan, Dec. 12, 1991, 3-37531
Term of patent 14 years
U.S. Cl. D14—126



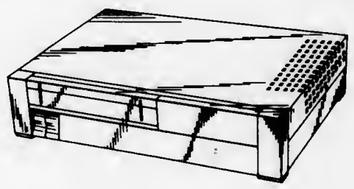
344,507
VIDEO TAPE RECORDER
Jae T. Ryu, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea
Filed Jun. 25, 1992, Ser. No. 904,868
Claims priority, application Rep. of Korea, Dec. 30, 1991, 1991-19715
Term of patent 14 years
U.S. Cl. D14—135



344,508
VIDEO TAPE RECORDER
Norihiko Shimose, and Masami Takahashi, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 17, 1992, Ser. No. 870,306
Claims priority, application Japan, Oct. 22, 1991, 3-32131
Term of patent 14 years
U.S. Cl. D14—135

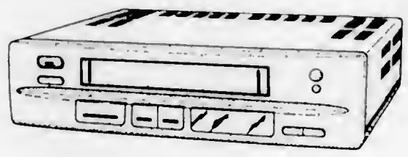


344,509
VIDEO TAPE RECORDER
Jae T. Ryu, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea
Filed Jun. 25, 1992, Ser. No. 904,871
Claims priority, application Rep. of Korea, Dec. 30, 1991, 1991-19716
Term of patent 14 years
U.S. Cl. D14—135



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344,510
VIDEO CASSETTE RECORDER (VCR)
Richard K. Althans, Long Grove, and Francis J. Greb, Deerfield, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Sep. 14, 1992, Ser. No. 948,713
Term of patent 14 years
U.S. Cl. D14—135

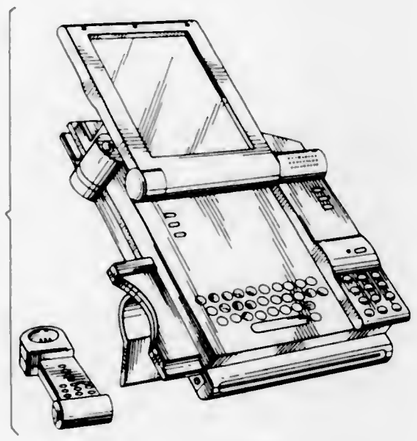


344,511
RADIO HOUSING
Russell Ansai, Chicago; Allen Wong, Streamwood; John P. Murzanski, Schaumburg; Anthony Scianna, Sr., Morton Grove, and Andrew W. Ill, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 22, 1991, Ser. No. 660,115
The portion of the term of this patent subsequent to Oct. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—137

344,512
PORTABLE TELEPHONE
Terrance N. Taylor, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 3, 1992, Ser. No. 892,521
Term of patent 14 years
U.S. Cl. D14—138



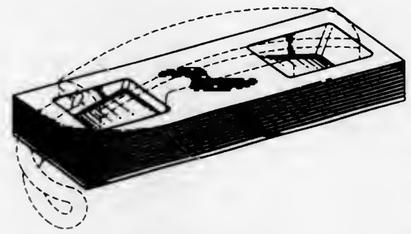
344,513
COMBINATION TELEPHONE, FACSIMILE, STILL PICTURE TELEVISION INFORMATION COMMUNICATION APPARATUS FOR HOME OR OFFICE USE
Takeshi Taniuchi; Kozo Shima, both of Kamakura, Japan; Gregory S. Breiding, Columbus, and Spencer B. Murrell, Delaware, both of Ohio, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 1991, Ser. No. 677,741
Term of patent 14 years
U.S. Cl. D14—144



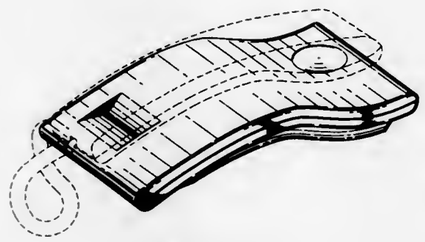
344,514
TELEPHONE HANDSET
Harold D. Bales, New Palestine, Ind.; Daniel K. Harden; Barbara H. Sauceda, both of Palo Alto, Calif., and Paul J. Straub, Mooresville, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 28, 1992, Ser. No. 952,168
Term of patent 14 years
U.S. Cl. D14—148



344,515
TELEPHONE BASE
Harold D. Bales, New Palestine, Ind.; Daniel K. Harden; Barbara H. Sauceda, both of Palo Alto, Calif., and Paul J. Straub, Mooresville, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 28, 1992, Ser. No. 952,167
Term of patent 14 years
U.S. Cl. D14—149



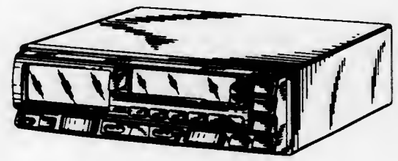
344,516
TELEPHONE STAND
James A. Gillett, Fountaintown, Ind.; Jonathan A. Marks, New York, N.Y.; Paul J. Straub, Mooresville, Ind., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 28, 1992, Ser. No. 952,169
Term of patent 14 years
U.S. Cl. D14—149



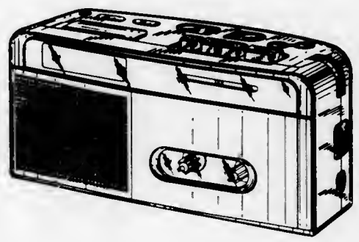
344,517
TELEPHONE SET
Tadamine Toh, and Kazuhiko Oda, both of Kawasaki, Japan, assignors to Nitsuko Corporation, Kawasaki, Japan
Filed Nov. 6, 1992, Ser. No. 1,217
Claims priority, application Japan, Jun. 24, 1992, 4-18493
Term of patent 14 years
U.S. Cl. D14—151



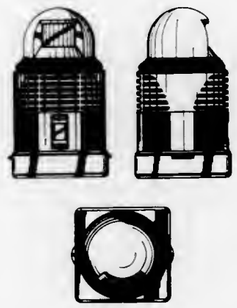
344,518
MOBIL TAPE PLAYER COMBINED WITH A RADIO TUNER
Shigeyuki Kakizaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 20, 1992, Ser. No. 1,701
Term of patent 14 years
U.S. Cl. D14—157



344,519
TAPE PLAYER COMBINED WITH A RADIO RECEIVER AND A CLOCK
Ryuta Kanno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,646
Term of patent 14 years
U.S. Cl. D14—163



344,520
RADIO
Kam-Ming Chan, Tsuen Wan, Hong Kong, assignor to Booming (B&S) Electronics Co. Ltd., Hong Kong, Hong Kong
Filed Jul. 7, 1992, Ser. No. 909,763
Claims priority, application United Kingdom, Jan. 30, 1992, 2020626
Term of patent 14 years
U.S. Cl. D14—188

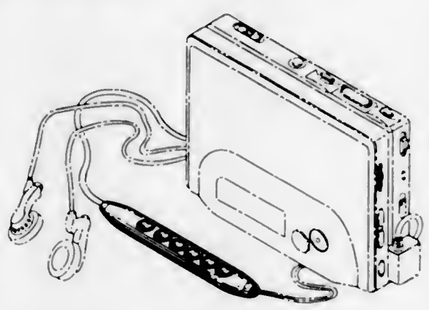


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344,521
CONSOLE FOR USE IN AN AUTOMATIC CALL DISTRIBUTION SYSTEM
Anthony J. Dezonno, Downers Grove, and John P. Lenihan, Wheaton, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 16, 1992, Ser. No. 1,472
Term of patent 14 years
U.S. Cl. D14—241



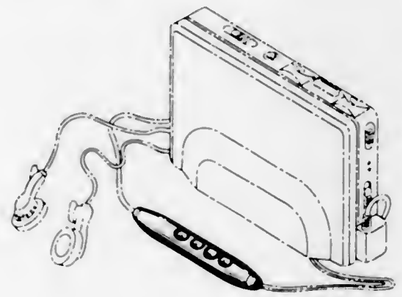
344,522
REMOTE CONTROLLER
Shuhei Taniguchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 7, 1991, Ser. No. 741,831
Claims priority, application Japan, Feb. 18, 1991, 3-4075
Term of patent 14 years
U.S. Cl. D14—218



344,523
REMOTE CONTROLLER FOR AN AUDIO DISC PLAYER
Ryuta Kanno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 17, 1992, Ser. No. 870,312
Claims priority, application Japan, Nov. 11, 1991, 3-34056
Term of patent 14 years
U.S. Cl. D14—218



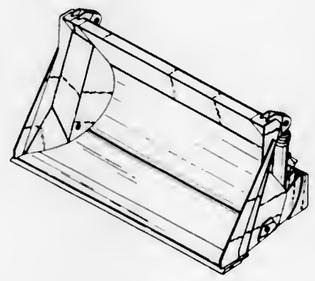
344,524
REMOTE CONTROLLER
Shuhei Taniguchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 7, 1991, Ser. No. 741,825
Claims priority, application Japan, Feb. 18, 1991, 3-4073
Term of patent 14 years
U.S. Cl. D14—218



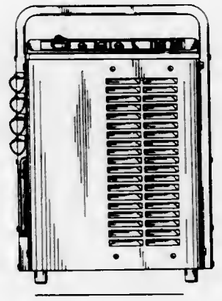
344,525
TELEPHONE HANDSET
James A. Gillett, Fountaintown, Ind.; Jonathan A. Marks, New York, N.Y.; Paul J. Straub, Mooresville, Ind., and Michael P. Zanibelli, Livingston, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 28, 1992, Ser. No. 952,170
Term of patent 14 years
U.S. Cl. D14—248



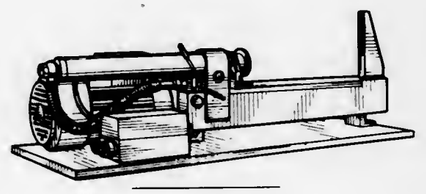
344,526
EXCAVATING SHOVEL
Karl-Gustav Kallén, Löjtnantsvägen, and Håkan Ripell, Valsängsvägen, both of Sweden, assignors to VME Industries Sweden AB, Eskilstuna, Sweden
Filed Dec. 22, 1992, Ser. No. 2,858
Claims priority, application Sweden, Jun. 22, 1992, 92-1346
Term of patent 14 years
U.S. Cl. D15—32



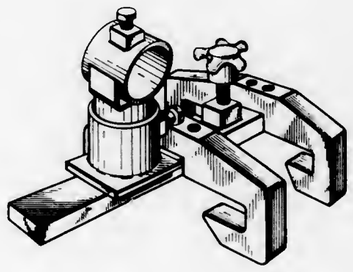
344,527
REFRIGERANT RECOVERY UNIT
Thomas E. Drago, Liverpool; Richard J. Duell, Syracuse, and Lowell E. Paige, Pennellville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 4, 1992, Ser. No. 894,802
Term of patent 14 years
U.S. Cl. D15—79



344,528
ELECTRICAL WOOD SPLITTING MACHINE
Jerzy Janczak, S:t Mickelsgatan, Sweden, assignor to Jonsered Power Products AB, Partille, Sweden
Filed Aug. 18, 1992, Ser. No. 931,302
Claims priority, application Sweden, Feb. 18, 1992, 92-0347
Term of patent 14 years
U.S. Cl. D15—127

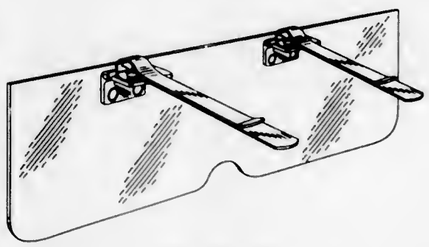


344,529
WELDER QUALIFICATION TEST COUPON JIG
James L. Gowdy, 154 Carroll Ave., Lake Ronkonkoma, N.Y. 11779
Filed Feb. 25, 1992, Ser. No. 840,984
Term of patent 14 years
U.S. Cl. D15—140



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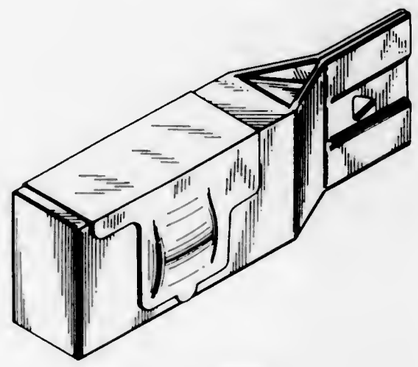
344,530
SUNGLASS SHAPED FLIP-DOWN VISOR
Raymond D. Johnson, 8600 SW. Mandan Dr., Tualatin, Oreg. 97062
Filed May 4, 1992, Ser. No. 877,032
Term of patent 14 years
U.S. Cl. D16—112



344,531
SPOTTING SCOPE
Masaaki Nemoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 9, 1992, Ser. No. 894,208
Claims priority, application Japan, Dec. 20, 1991, 3-38488; Dec. 20, 1991, 3-38489
Term of patent 14 years
U.S. Cl. D16—132



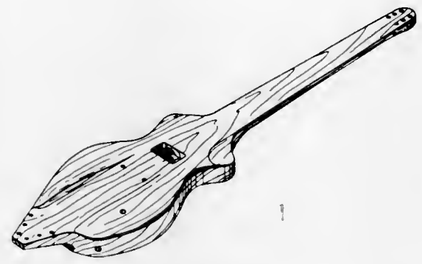
344,532
DISPOSABLE CAMERA
Miho Takiguchi; Noriko Katayama; Kaori Ohama; Aya Ito, all of Tokyo, and Yasuo Tanaka, Osaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 24, 1991, Ser. No. 782,051
Claims priority, application Japan, Apr. 24, 1991, 3-12156
Term of patent 14 years
U.S. Cl. D16—208



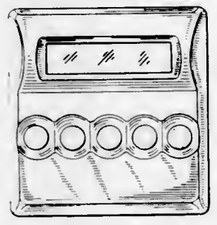
344,533
OVERHEAD PROJECTOR
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company, Limited, Japan
Filed Mar. 21, 1991, Ser. No. 673,111
Claims priority, application Japan, Sep. 29, 1990, 2-32843
Term of patent 14 years
U.S. Cl. D16—232



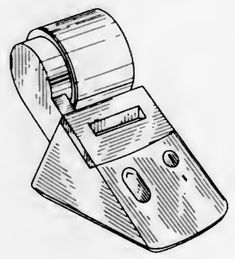
344,534
ELECTRIC GUITAR BODY
Robert J. Howe, 317 Walcott St., Pawtucket, R.I. 02860
Filed Jun. 5, 1992, Ser. No. 893,352
Term of patent 14 years
U.S. Cl. D17—20



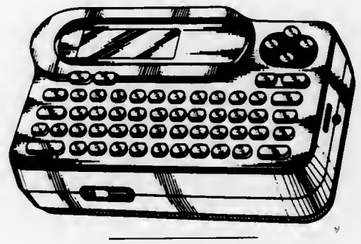
344,535
HAND-HELD CALORIE COMPUTER
James F. Caruso, Chicago; Thomas Bajek, Naperville, and Kurt T. Peterson, Mt. Prospect, all of Ill., assignors to Muscle Dynamics Fitness Network, Inc., Torrance, Calif.
Filed Jun. 1, 1993, Ser. No. 8,916
Term of patent 14 years
U.S. Cl. D18—6



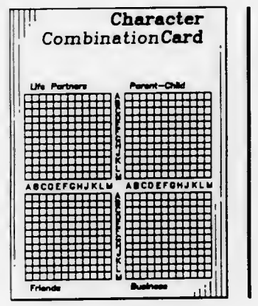
344,536
LABEL PRINTER
David Lee, Glendale, and John von Buelow, Northridge, both of Calif., assignors to Seiko Instruments U.S.A., Inc., Torrance, Calif.
Filed Mar. 16, 1992, Ser. No. 851,747
Term of patent 14 years
U.S. Cl. D18—19



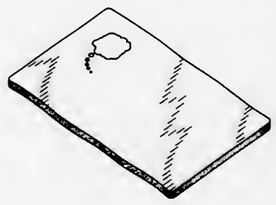
344,537
ELECTRONIC LABEL PRINTER
Osamu Tsuchida, Tokyo; Takashi Yatabe, Higashimurayama, and Yuichi Onumata, Ome, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,878
Term of patent 14 years
U.S. Cl. D18—19



344,538
ASTROLOGICAL CHARACTER COMBINATION CARD
Jaap H. Hillen, Koolmeeslaan 3, Leidschendam, Netherlands NL 2261
Filed Aug. 19, 1991, Ser. No. 747,242
Claims priority, application World Int. Prop. O., Feb. 26, 1991, DM/018964
Term of patent 14 years
U.S. Cl. D19—1

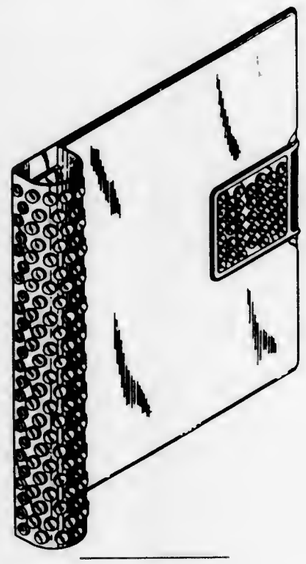


344,539
GREETING CARD
Robert J. Simmons, Denver, Colo., assignor to RJ Technical Services, Inc., Denver, Colo.
Filed Oct. 3, 1991, Ser. No. 770,661
Term of patent 14 years
U.S. Cl. D19—1



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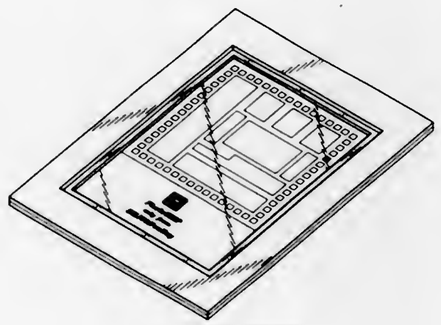
344,540
FLEXIBLE SPINE BINDER
Jon R. Wyant, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Sep. 4, 1992, Ser. No. 940,730
Term of patent 14 years
U.S. Cl. D19—27



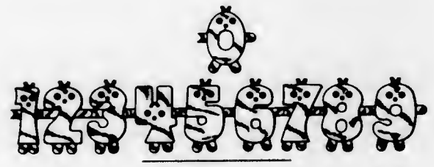
344,541
PEN
Chuen-Shyog Guo, No. 37, Ren Ai St., Shu-Lin Town, Taipei Hsien, Taiwan
Filed Dec. 7, 1992, Ser. No. 2,293
Term of patent 14 years
U.S. Cl. D19—44



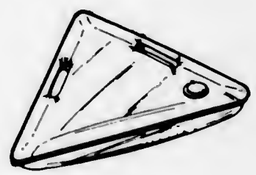
344,542
PLAQUE FOR USE AS A TEACHING AID AND COLLECTABLE ITEM
Huei M. Chang, 487 Sinclair Frontage Rd., Milpitas, Calif. 95035
Filed Jan. 7, 1992, Ser. No. 817,823
Term of patent 14 years
U.S. Cl. D19—59



344,543
SET OF NUMERAL FIGURES
Sarah G. Lemon, Rte. 1, Box 97, Lindside, Va. 24951
Filed Mar. 12, 1992, Ser. No. 851,141
Term of patent 14 years
U.S. Cl. D19—59



344,544
MAT FOR DEVELOPING HAND-TO-EYE COORDINATION IN INFANTS
Linda F. Dial, Atlanta, Ga., assignor to W. B. Nod & Company, Atlanta, Ga.
Filed Sep. 5, 1990, Ser. No. 577,719
Term of patent 14 years
U.S. Cl. D19—64



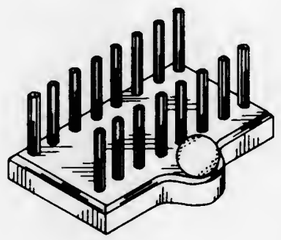
344,545
PAPER CLIP
Chin Y. Tsai, 2F., No. 218, Sec. 1, Hsueh Fu Rd., Tu Cheng Shiang, Taipei Hsien, Taiwan
Filed Jul. 22, 1992, Ser. No. 919,108
Term of patent 14 years
U.S. Cl. D19—65



344,546
COMBINED ELECTRONIC DIGITAL NEWS SELECTION DISPLAY AND PRINTER
Donald L. Mustard, 2114 McCormick St., Dention, TX 76205
Filed Nov. 16, 1992, Ser. No. 1,495
Term of patent 14 years
U.S. Cl. D20—1



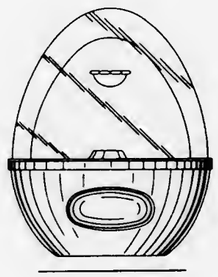
344,547
PENCIL COLLECTOR'S DESK ORGANIZER
Emil D. Tietje, Marina Cay #10/3901 SE. St. Lucie Blvd., Stuart, Fla. 34997
Filed Nov. 6, 1992, Ser. No. 1,202
Term of patent 14 years
U.S. Cl. D19—90



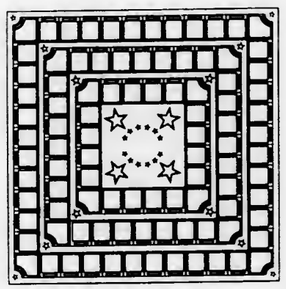
344,548
SIGN
Joseph N. Castello, 15735 Camino Del Cerro, Los Gatos, CA 95033
Filed May 20, 1992, Ser. No. 887,308
Term of patent 14 years
U.S. Cl. D20—42



344,549
WATER GAME DEVICE
Chieko Nakazawa, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Nov. 12, 1992, Ser. No. 1,344
Claims priority, application Japan, May 12, 1992, 4-13722
Term of patent 14 years
U.S. Cl. D21—12

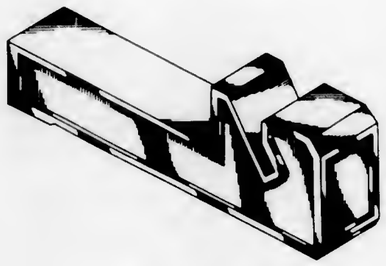


344,550
GAME BOARD
Henri Klok, P.O. Box 13714, Houston, Tex. 77219
Filed Dec. 12, 1991, Ser. No. 805,918
Term of patent 14 years
U.S. Cl. D21—34

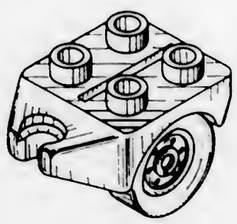


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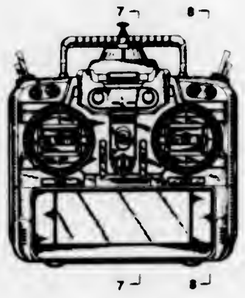
344,551
BALANCING TOY
Franklin E. McJunkin, 428 Sauer Rd., Kalama, Wash. 98625
Filed Jul. 8, 1991, Ser. No. 726,511
Term of patent 14 years
U.S. Cl. D21—102



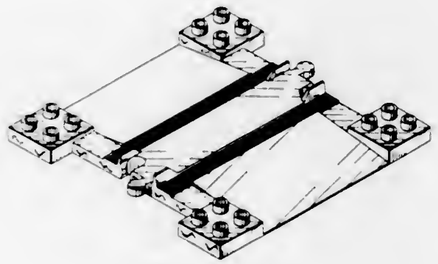
344,552
WHEEL SET FOR A TOY VEHICLE
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,901
Term of patent 14 years
U.S. Cl. D21—108



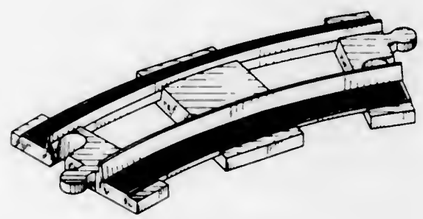
344,553
RADIO REMOTE CONTROL UNIT
Masahiro Arai, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed Oct. 1, 1992, Ser. No. 86
Claims priority, application Japan, Apr. 1, 1992, 4-009186
Term of patent 14 years
U.S. Cl. D21—141.1



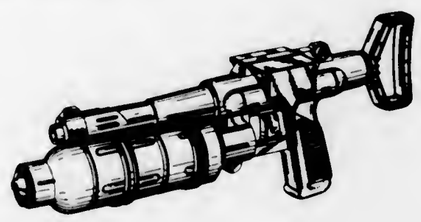
344,554
LEVEL CROSSING FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,795
Term of patent 14 years
U.S. Cl. D21—143



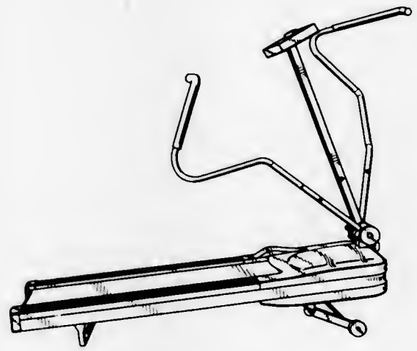
344,555
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Kobenhavn N, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,797
Term of patent 14 years
U.S. Cl. D21—143



344,556
WATER PISTOL
Wong S. Liu, Kowloon, Hong Kong, assignor to Arco Toys, Ltd., Kowloon, Hong Kong
Filed Sep. 24, 1992, Ser. No. 951,694
Term of patent 14 years
U.S. Cl. D21—147



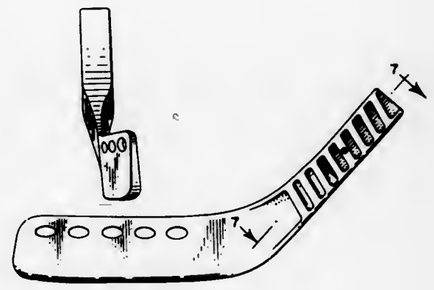
344,557
TREADMILL
Kent Ashby, Logan, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah
Filed May 25, 1993, Ser. No. 8,792
Term of patent 14 years
U.S. Cl. D21—192



344,558
BODY SUPPORTED BASKETBALL GOAL
Giovanni N. Livera, 10118 Cheshunt Dr., Orlando, Fla. 32817, and Timothy F. Glancey, 1 W. Princeton Ave., Orlando, Fla. 32804
Filed Sep. 3, 1991, Ser. No. 753,675
Term of patent 14 years
U.S. Cl. D21—201



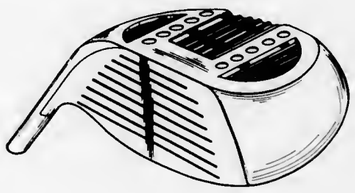
344,559
HOCKEY BLADE
Anthony Iiacqua, Rochester, and Martin P. Schooping, Hamlin, both of N.Y., assignors to Brimms Inc., Tonawanda, N.Y.
Filed Oct. 15, 1992, Ser. No. 475
Term of patent 14 years
U.S. Cl. D21—210



344,560
GOLF CLUB HEAD
Yutaka Katayama, Tokyo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1991, Ser. No. 765,067
Term of patent 14 years
U.S. Cl. D21—214

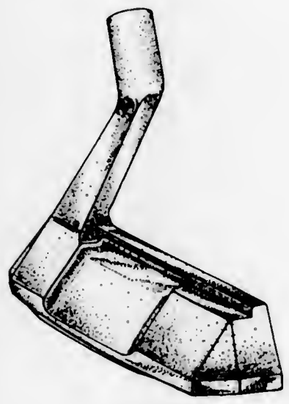


344,561
GOLF CLUB WOOD HEAD
Geoffrey W. Gorman, Greer, S.C., assignor to Dunlop Slazenger Corporation, Greenville, S.C.
Filed Jun. 9, 1992, Ser. No. 895,392
Term of patent 14 years
U.S. Cl. D21—214



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344,562
PUTTER HEAD FOR A GOLF CLUB
Terry B. Koehler, 2389 NW. Military Dr. No. 571, San Antonio, Tex. 78231
Filed Aug. 14, 1990, Ser. No. 567,538
The portion of the term of this patent subsequent to Dec. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—217



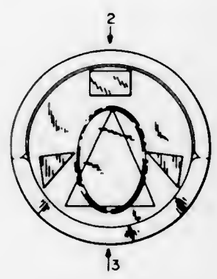
344,563
GOLF PRACTICE PUTTER
James A. Sweet, 46 Butler St., Salem, N.H. 03079
Filed Jun. 26, 1992, Ser. No. 904,548
Term of patent 14 years
U.S. Cl. D21—218



344,564
GOLF CLUB PUTTER HEAD
Bert A. Oakleaf, 1019 Westlink, Wichita, Kans. 67212
Filed Jan. 30, 1991, Ser. No. 648,409
The portion of the term of this patent subsequent to Sep. 5, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—219



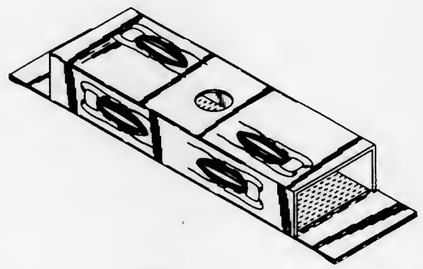
344,565
GOLF CUP PUTTING AID
Peter Manzione, P.O. Box 96, Factoryville, Pa. 18419
Filed May 31, 1991, Ser. No. 713,446
Term of patent 14 years
U.S. Cl. D21—234



344,566
FIREARM SUPPORT
W. Moray Vetter, P.O. Box 621, Moorefield, W. Va. 26836
Filed Jul. 18, 1991, Ser. No. 731,945
Term of patent 14 years
U.S. Cl. D22—108



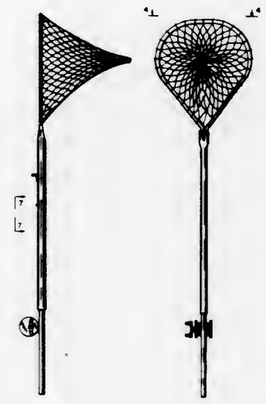
344,567
A ROACH TRAP
Edward F. Teeples, 3514 Gentrytown Dr., Antioch, Calif. 94509
Filed Mar. 14, 1991, Ser. No. 669,227
Term of patent 14 years
U.S. Cl. D22—122



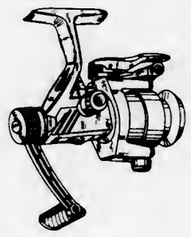
344,568
FISHING LURE
John E. Byrd, 830 Country Club, Minden, La. 71058, and Gregory C. Garst, Rt. 3, Box 478, Many, La. 71499
Filed Nov. 23, 1992, Ser. No. 1,731
Term of patent 14 years
U.S. Cl. D22—132



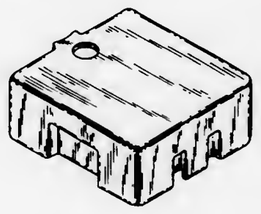
344,569
COMBINATION CRAB NET AND BAIT LINE REEL
Jeffrey H. Stewart, 120 Texas Rd., Morganville, N.J. 07751
Filed Aug. 29, 1991, Ser. No. 752,260
Term of patent 14 years
U.S. Cl. D22—135



344,570
SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., and Richard J. Feehan, Pawnee, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jan. 31, 1990, Ser. No. 473,203
Term of patent 14 years
U.S. Cl. D22—141

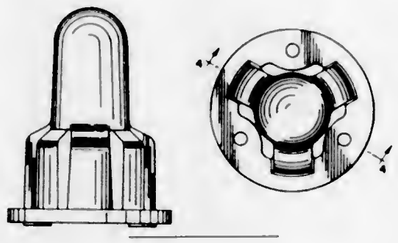


344,571
WATER CONTAINER FOR USE WITH DISTILLER
Curtiss M. Peasley, 701 W. 7th St., Lynn Haven, Fla. 32444
Filed Jul. 29, 1991, Ser. No. 704,020
Term of patent 14 years
U.S. Cl. D23—202

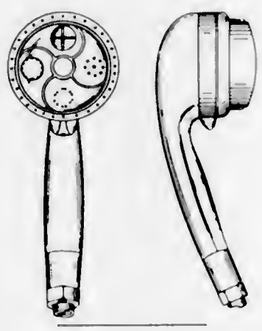


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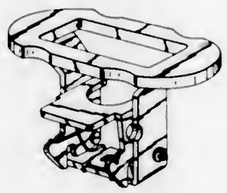
344,572
SIGHT GAUGE PROTECTOR
Timothy A. Neeser, Burnsville, Minn., assignor to Minnesota Valley Engineering, Inc., New Prague, Minn.
Filed Aug. 8, 1991, Ser. No. 742,703
Term of patent 14 years
U.S. Cl. D23—206



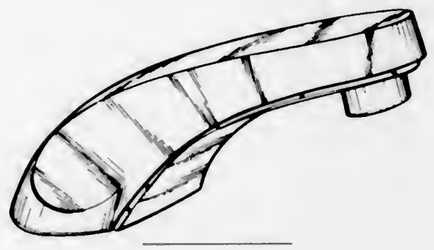
344,573
PERSONAL SHOWER HEAD
Robert H. Bruno, Avon, and Tim C. Repp, New Hartford, both of Conn., assignors to Pollenex Corporation, Chicago, Ill.
Filed Jun. 17, 1992, Ser. No. 900,249
Term of patent 14 years
U.S. Cl. D23—223



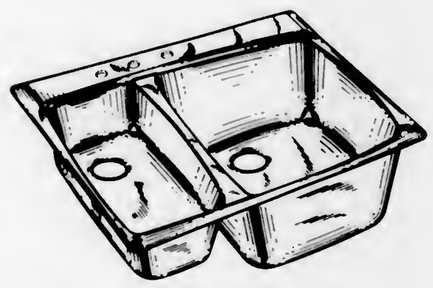
344,574
LOCKING VALVE HANDLE
Cal R. Brown, Euclid; Jeffrey T. Jeromson, Sagamore Hills, and Robert C. Stewart, Bedford, all of Ohio, assignors to Whitey Co., Highland Hts., Ohio
Filed Sep. 25, 1991, Ser. No. 765,109
Term of patent 14 years
U.S. Cl. D23—250



344,575
FAUCET SPOUT
Loran R. Hill, Indianapolis, and Anthony G. Spangler, Sheridan, both of Ind., assignors to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Apr. 26, 1991, Ser. No. 692,025
Term of patent 14 years
U.S. Cl. D23—255



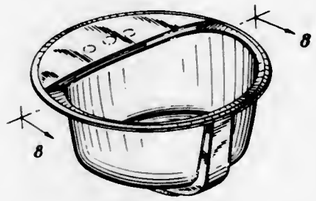
344,576
KITCHEN SINK
Henry M. Stairs, Jr., Ligonier, Pa., assignor to American Standard Inc., New York, N.Y.
Filed Jan. 17, 1991, Ser. No. 642,729
Term of patent 14 years
U.S. Cl. D23—290



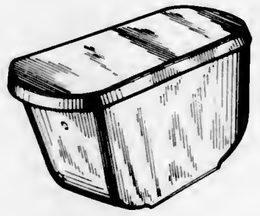
344,577
LAVATORY
Karl G. Ohaus, Chatham, Jeannette M. Long, Lawrenceville, David A. Boncher, Phillipsburg; Gordon E. Eitel, Colonia; David A. Boncher, Phillipsburg; Gordon Eitel, Colonia, all of N.J.
Filed Apr. 23, 1991, Ser. No. 689,617
Term of patent 14 years
U.S. Cl. D23—294



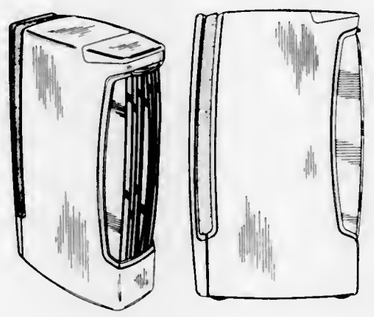
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LAVATORY
Karl G. Ohaus, Chatham; Jeannette M. Long, Lawrenceville, both of N.J., and Jeff P. Walz, Toronto, Canada, assignors to American Standard Inc., New York, N.Y.
Filed Apr. 26, 1991, Ser. No. 692,027
Term of patent 14 years
U.S. Cl. D23—294



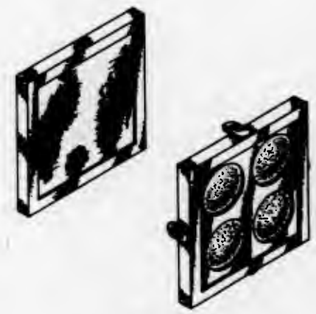
344,579
WATER CLOSET TANK
Herbert V. Kohler, Jr., Kohler; Mary J. Reid, Sheboygan, and Jason D. Unger, Plymouth, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 823,649
Term of patent 14 years
U.S. Cl. D23—313



344,580
ELECTRIC AIR PURIFIER
Jean-Louis Barrault, Boulogne Billancourt, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Oct. 26, 1992, Ser. No. 844
Claims priority, application France, Apr. 27, 1992, 922.670
Term of patent 14 years
U.S. Cl. D23—364

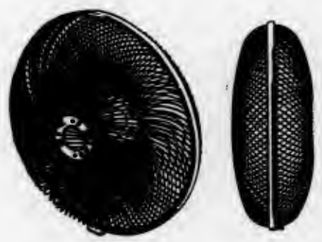


344,581
AIR FILTER UNIT FOR USE IN AN AUTOMOBILE
Robert T. Kenneth, 5677 N. Nakoma Dr., Beverly Hills, Fla. 34465
Filed Dec. 11, 1992, Ser. No. 2,391
Term of patent 14 years
U.S. Cl. D23—365



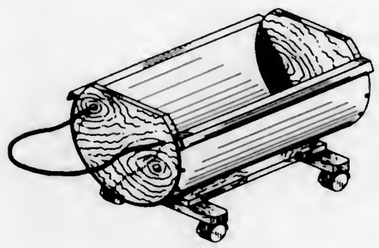
344,582
SCENTED FILTER
Marvin E. Williams, 410 N. Market, Shawnee, Okla. 74801
Filed Mar. 25, 1993, Ser. No. 6,287
Term of patent 14 years
U.S. Cl. D23—365

344,583
GRILL FOR A FAN
Chin-Long Hsu, No. 13, Lane 42, Lei Chung St., Taichung, Taiwan
Filed Feb. 22, 1993, Ser. No. 5,044
Term of patent 14 years
U.S. Cl. D23—412

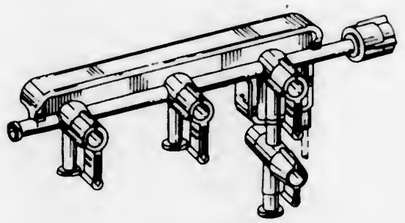


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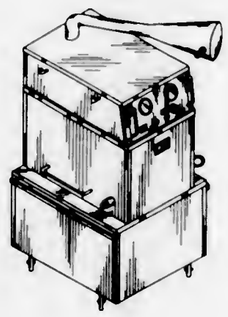
344,584
FIREWOOD CARRIER
Greg R. Carney, 14 Deepwood Ave., Bella Vista, Ark. 72714
Filed Mar. 2, 1992, Ser. No. 844,399
Term of patent 14 years
U.S. Cl. D23—410



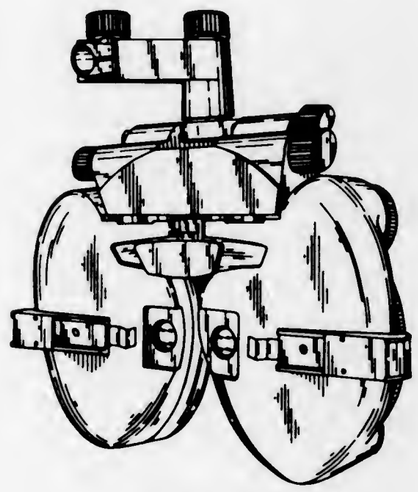
344,585
TRANSDUCER MANIFOLD FOR REGULATION OF FLUIDS IN MEDICAL APPLICATIONS
Phillip H. Morse, Glens Falls, N.Y., assignor to Namic U.S.A. Corporation, Glens Falls, N.Y.
Filed Jan. 13, 1992, Ser. No. 820,951
Term of patent 14 years
U.S. Cl. D24—129



344,586
RESPIRATORY FILTER MACHINE TO REDUCE AIRBORNE DISEASE TRANSMISSION OF A PATIENT
Thomas V. Choate, 45 Gully La., East Sandwich, Mass. 02537
Filed Apr. 3, 1991, Ser. No. 679,587
Term of patent 14 years
U.S. Cl. D24—162



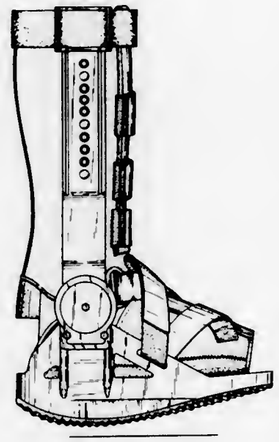
344,587
OPHTHALMIC REFRACTOR
Roy H. Burton, Columbus; David E. Wood, Grove City, and Robert G. Miller, Groveport, all of Ohio, assignors to R. H. Burton Company, Grove City, Ohio
Filed Mar. 6, 1991, Ser. No. 665,453
Term of patent 14 years
U.S. Cl. D24—172



344,588
CLIP FOR COVERING A TOOTH
Young H. Park, 31 Strawberry Hill Ct., Stamford, Conn. 06902
Filed Feb. 26, 1990, Ser. No. 484,644
Term of patent 14 years
U.S. Cl. D24—176



344,589
LOWER LEG BRACE WITH ORTHOPEDIC SOLE
Bryan Kilbey, DeFuniak Springs, Fla., assignor to Professional Products, Inc., DeFuniak Springs, Fla.
Filed May 10, 1991, Ser. No. 698,053
Term of patent 14 years
U.S. Cl. D24—192



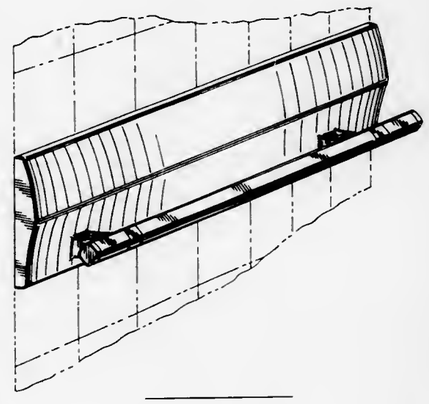
344,590
ICE SLEEVE
Bradley M. Greene, 952 Wedgewood Dr., Cleveland, Tenn. 37311
Filed Oct. 21, 1991, Ser. No. 779,570
Term of patent 14 years
U.S. Cl. D24—207



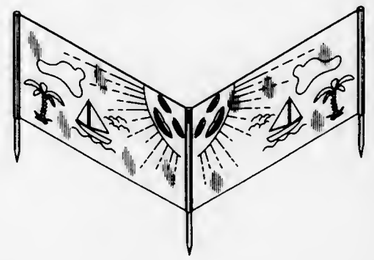
344,591
HAND MASSAGE AND EXERCISE APPLIANCE
Min Zhuang, 7196 157th St. W, Apple Valley, Minn. 55124
Filed Aug. 4, 1992, Ser. No. 925,080
Term of patent 14 years
U.S. Cl. D24—211



344,592
RAIL
Gianfranco Zaccai, Boston; Arthur S. Rousmaniere, Andover; Timothy C. Dearborn, Wellesley; Lynn Noble, Lexington, and Thomas J. Misage, Somerville, all of Mass., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Mar. 6, 1992, Ser. No. 847,255
Term of patent 14 years
U.S. Cl. D25—38

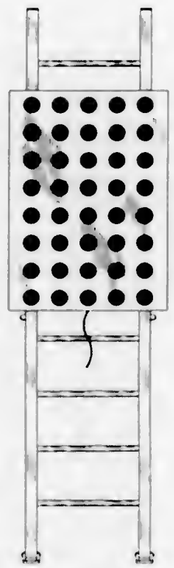


344,593
BEACH SAND SCREEN
Theresa E. Monfils, 30 Prospect St., North Providence, R.I. 02904
Filed Mar. 5, 1991, Ser. No. 664,979
Term of patent 14 years
U.S. Cl. D25—58



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344,594
ATTIC LADDER
Patrick F. Whitney, 495 Palermo Rd., Panama City, Fla. 32405
Filed Jun. 3, 1991, Ser. No. 709,147
Term of patent 14 years
U.S. Cl. D25—64



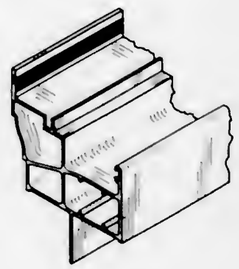
344,595
STRUCTURAL EXTRUSION
Robert J. Ehmke, Germantown, and David J. Schmitz, Milwaukee, both of Wis., assignors to Design Specalties Inc., Milwaukee, Wis.
Filed Jun. 29, 1992, Ser. No. 905,642
Term of patent 14 years
U.S. Cl. D25—119



344,596
JOINT FOR CONNECTING PANELS
Jerry C. McArthur, 4934 Lazy Hollow La., Austell, Ga. 30001
Filed Apr. 1, 1991, Ser. No. 677,871
Term of patent 14 years
U.S. Cl. D25—121



344,597
FRAME SILL JAMB
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,819
Term of patent 14 years
U.S. Cl. D25—124



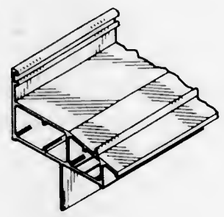
344,598
STRUCTURAL EXTRUSION
Robert J. Ehmke, Germantown, and David J. Schmitz, Milwaukee, both of Wis., assignors to Design Specialties, Inc., Milwaukee, Wis.
Filed Jun. 29, 1992, Ser. No. 905,862
Term of patent 14 years
U.S. Cl. D25—124



344,599
STRUCTURAL EXTRUSION
Robert J. Ehmke, Germantown, and David J. Schmitz, Milwaukee, both of Wis., assignors to Design Specialties, Inc., Milwaukee, Wis.
Filed Jun. 29, 1992, Ser. No. 906,129
Term of patent 14 years
U.S. Cl. D25—124



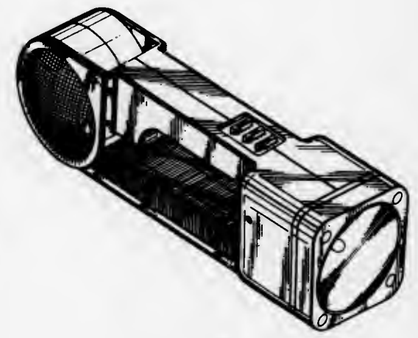
344,600
FRAME SILL
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,818
Term of patent 14 years
U.S. Cl. D25—124



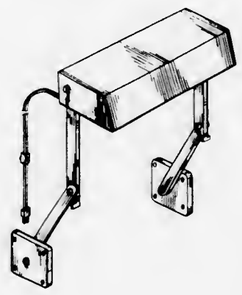
344,601
LINTEL BEAM
Barrie Jenkins, 4 Merritt Crescent, Grimsby Ontario, Canada L3M 4X5 , and John Cunningham, 55 Robin Hood Dr., Dundas Ontario, Canada L9H 4G2
Filed Feb. 28, 1992, Ser. No. 844,389
Term of patent 14 years
U.S. Cl. D25—126



344,602
MULTIPURPOSE FLUORESCENT LANTERN
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Sep. 13, 1991, Ser. No. 759,686
Claims priority, application United Kingdom, Mar. 14, 1991, 2013589
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—42

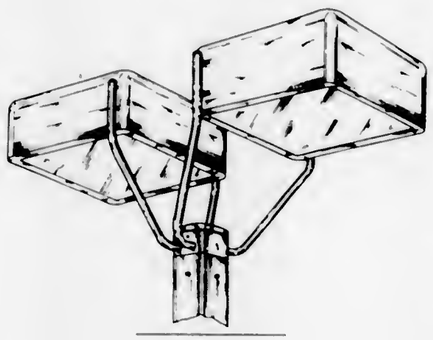


344,603
ADJUSTABLE LIGHT FOR A PROJECTILE GAME BOARD
Michael J. Krivatch, 213 Lake St., Delaware, Ohio 43015
Filed Feb. 4, 1992, Ser. No. 831,283
Term of patent 14 years
U.S. Cl. D26—63

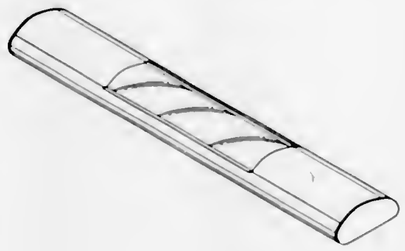


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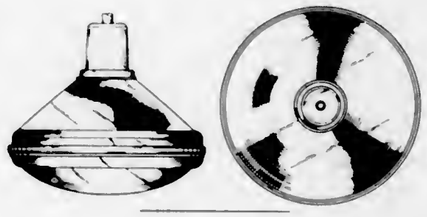
344,604
FLOODLIGHT
Kent A. Solberg, Racine, and Donald Wandler, Caledonia, both of Wis., assignors to Ruud Lighting, Inc., Racine, Wis.
Filed Aug. 7, 1991, Ser. No. 741,814
The portion of the term of this patent subsequent to Jan. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—69



344,605
FLUORESCERNT LIGHT FOR DISPLAY CABINET
John E. Aspenwall, 2000 North Main, Spanish Fork, Utah 84660
Filed Dec. 2, 1991, Ser. No. 801,112
Term of patent 14 years
U.S. Cl. D26—76



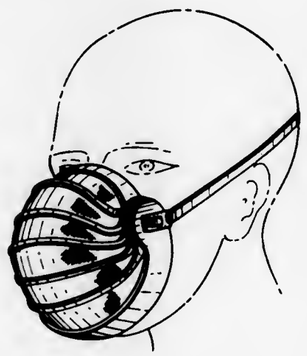
344,606
SUSPENDED LUMINAIRE
Herbert A. Fouke, Newark; David G. Meredith, Westerville; Peter A. Koloski, Columbus, and Spencer B. Murrell, Delaware, all of Ohio, assignors to Holophane Company, Inc., Newark, Ohio
Filed Nov. 16, 1990, Ser. No. 615,824
The portion of the term of this patent subsequent to Jan. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—88



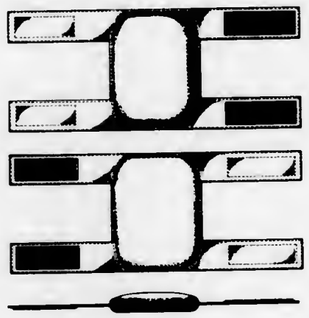
344,607
COMBINED DISPOSABLE RAZOR AND SHAVING CREAM DISPENSOR
Thomas C. Osborn, 835 Mars Hill Rd., Florence, Ala. 35630
Filed May 24, 1991, Ser. No. 705,174
Term of patent 14 years
U.S. Cl. D28—46



344,608
HEAT-RECUPERATING MASK
Alexandr F. Gorynchy, Shenkursky Proezd, 10B-117, 127349 Moskva; Ljudmila N. Rastorgueva, ul. Kalvitsa, 1/1-78, 677001 Jakutsk; Vitaly V. Golikov, Novodevichy Proezd. 2-162, 119435, Moskva; Yevgeny S. Petrashkin, obl., d. Ljubertsy, ul. Uritskogo, 19-63, 140007, Moskovskava; Alexandr A. Semkov, obl. p. Suksun, ul. Zavodskaya, 3-2, 617540, Permskaya; Mikhail N. Dementiev, obl., p. Suksun, ul. Kirova, 31-3, 617540 Permskaya, and Gennady V. Panfilov, obl., p. Suksun, ul. Druzhby, 8-1, 617540 Permskaya, all of U.S.S.R.
Filed Jun. 28, 1991, Ser. No. 724,343
Term of patent 14 years
U.S. Cl. D29—8



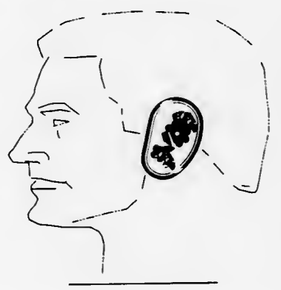
344,609
KNEE PAD FOR BABIES, TODDLERS AND SMALL CHILDREN
Randall H. Lapin, 10315 Missouri Ave., No. 5E, Los Angeles, Calif. 90025
Filed Apr. 29, 1991, Ser. No. 692,519
Term of patent 14 years
U.S. Cl. D29—10



344,610
STRAP ADJUSTMENT BUCKLE FOR HELMETS
Steven C. Keller, Island Lake, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed May 1, 1992, Ser. No. 877,159
Term of patent 14 years
U.S. Cl. D29—16



344,611
EAR SOCK
Victor R. Hordis, P.O. Box 398, Ship Bottom, N.J. 08008
Filed May 1, 1991, Ser. No. 694,023
Term of patent 14 years
U.S. Cl. D29—19

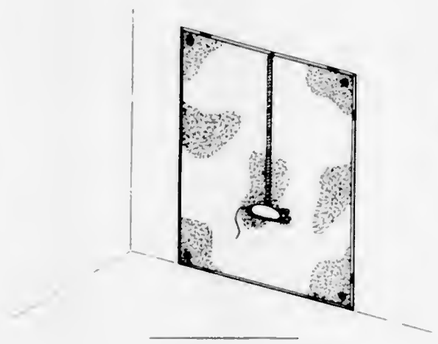


344,612
COMBINED CIGARETTE SNUFFER AND HOLDER
Robert F. Dean, 4205 School Rd., New Carlisle, Ohio 45344
Filed Jan. 2, 1992, Ser. No. 816,048
Term of patent 14 years
U.S. Cl. D27—108

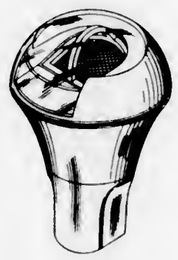


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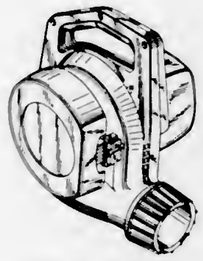
344,613
FELINE SCRATCH PAD
Robin K. Cromwell, 248 W. National Dr., Newark, Ohio 43055
Filed Sep. 29, 1992, Ser. No. 952,779
Term of patent 14 years
U.S. Cl. D30—160



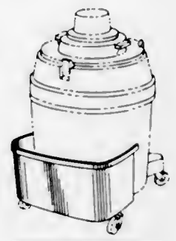
344,614
WATER CLEANING DEVICE
Tzu-Keng Cheng, 197 Shin-Sheng St., Chung-Ho City, Taipei, Taiwan
Filed May 3, 1990, Ser. No. 520,381
Term of patent 14 years
U.S. Cl. D32—1



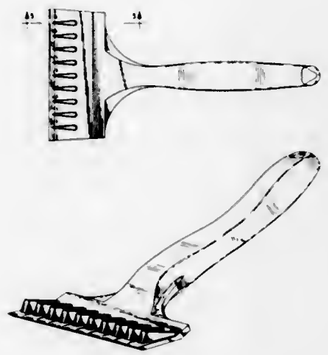
344,615
COMBINED BLOWER AND VACUUM
Robert C. Berfield, Jersey Shore, and Craig Seasholtz, Avis, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Jan. 15, 1992, Ser. No. 822,555
Term of patent 14 years
U.S. Cl. D32—15



344,616
TOOL CADDY FOR TANK TYPE VACCUM CLEANER
Robert C. Berfield, Jersey Shore, and Ronald F. Meland, Muncy, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Aug. 8, 1991, Ser. No. 742,892
Term of patent 14 years
U.S. Cl. D32—31



344,617
WINDSHIELD ICE SCRAPER
Michael J. Farmer, 809 S. Conklin Ave., Sioux Falls, S. Dak. 57103
Filed Mar. 23, 1992, Ser. No. 855,867
Term of patent 14 years
U.S. Cl. D32—49



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF FEBRUARY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & CIE GmbH: *See—*
Hager, Joerg; Huether, Andrea M.; and Roeding, Joachim, 5,288,734, Cl. 514-359.000.

A. R. Arena Products, Inc.: *See—*
Wheeler, William E., 5,287,981, Cl. 220-4.280.

A and T Development Corporation: *See—*
Avril, Arthur C., 5,288,334, Cl. 134-34.000.

Aarsrud, Wilhelm; Bergstrom, Hans; and Falkehag, Ingemar, to Ligno Tech Sweden AB. Lignin preparation and method for its manufacture. 5,288,857, Cl. 530-500.000.

Aaslyng, Dorrit A.: *See—*
Nielsen, Ruby I.; Aaslyng, Dorrit A.; Jensen, Georg W.; and Schneider, Palle, 5,288,627, Cl. 435-223.000.

AB Volvo: *See—*
Mattsson, Karl-Erik, 5,288,185, Cl. 409-131.000.
Pilhall, Stig, 5,288,122, Cl. 296-24.100.

ABB Vetco Gray Inc.: *See—*
Bridges, Charles D., 5,287,922, Cl. 166-277.000.

Abbott Laboratories: *See—*
Brooks, Dee W.; Woods, Keith W.; and Rodriques, Karen E., 5,288,743, Cl. 514-365.000.
Brooks, Dee W.; Stewart, Andrew O.; Basha, Anwer; Bhatia, Pramila; and Ratajczyk, James D., 5,288,751, Cl. 514-438.000.
Freiberg, Leslie A.; Klein, Larry L.; Yeung, Clinton M.; Edwards, Carla M.; and Bacino, David J., 5,288,709, Cl. 514-29.000.
Grandone, Cass J., 5,289,385, Cl. 364-497.000.
Hunter, Charles M., 5,287,677, Cl. 53-398.000.
Meyer, Michael D.; DeBernardis, John F.; Prasad, Rajnandan; Sippy, Kevin B.; and Tietje, Karin R., 5,288,749, Cl. 514-414.000.

Abe, Hayao: *See—*
Yamanouchi, Toshikazu; Awaya, Akira; Kobayashi, Hisashi; Ishizuka, Yusaku; and Abe, Hayao, 5,288,706, Cl. 514-15.000.

Abe, Hideshi: *See—*
Kusaka, Takahisa; Kanbe, Hideo; Izumi, Akio; Abe, Hideshi; Ohashi, Masanori; and Asai, Atsushi, 5,288,656, Cl. 437-53.000.

Abe, Keizo: *See—*
Hayama, Kazuhide; Hata, Kazuyuki; Abe, Keizo; and Ozu, Takahiro, 5,288,360, Cl. 156-330.000.

Abe, Mamoru: *See—*
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Abe, Toyohiko: *See—*
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Hirose, Takashi; Matsuno, Toshinobu; and Inoue, Kaoru, to Matsushita Electric Industrial Co., Ltd. Heterojunction bipolar transistor. 5,289,020, Cl. 257-197.000.

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Ichinohe, Shoji; and Kawamoto, Hideyuki, to Shin-Etsu Chemical Co., Ltd. Odor-free purified polyether silicones and method for their production. 5,288,831, Cl. 528-25.000.
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Iijima, Yasuo, to Kabushiki kaisha Toshiba. Mutual authentication system and method which checks the authenticity of a device before transmitting authentication data to the device. 5,288,978, Cl. 235-380.000.
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Ikegaya, Isao; and Nishikawa, Naotoshi, to Fuji Kiko Co., Ltd. Safety belt system with emergency retraction capability. 5,288,105, Cl. 280-806.000.
Ikemori, Keiji; Yano, Koutaro; and Nakayama, Hiroki, to Canon Kabushiki Kaisha. Compact zoom lens. 5,289,317, Cl. 359-689.000.
Ikenaka, Kazuo; and Schenberger, Deborah S., to ITT Industries, Inc. IC chip to PC board connector system. 5,288,238, Cl. 439-91.000.
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Kolodziej, Edward. Ratcheting open end wrench. 5,287,777, Cl. 81-179.000.

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Yoshino, Tsutomu, to Kabushiki Kaisha Toshiba. Image forming apparatus. 5,289,236, Cl. 355-243.000.

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Tanaka, Masato; Nishizawa, Hisao; Hirai, Nobuyuki; Shinhara, Kaoru; and Yoshioka, Hitoshi, 5,288,333, Cl. 134-31.000.

Yoshioka, Keiichi: *See*—
Yazawa, Yoshihiro; Sone, Yuji; Yoshioka, Keiichi; Kinoshita, Noboru; and Hino, Masayuki, 5,288,343, Cl. 148-325.000.

Yoshioka, Sadako, to Hamada Shashin Kogeisha. Picture post card. 5,288,011, Cl. 229-92.800.

Yoshizuka Seiki Co., Ltd.: *See*—
Katagiri, Takeshi; Yamamoto, Masao; Tajima, Tukasa; and Sirasaki, Siro, 5,288,440, Cl. 264-40.500.

Young, Andy Y. Discharge controlling device for faucets. 5,288,053, Cl. 251-98.000.

Young, Charles C. Light responsive airflow register. 5,289,094, Cl. 318-468.000.

Young, Donald C., to Union Oil Company of California. Systemic herbicides and methods of use. 5,288,692, Cl. 504-127.000.

Young, Donald C.: *See*—
Green, James A., II; and Young, Donald C., 5,288,495, Cl. 424-405.000.
Green, James A., II; and Young, Donald C., 5,288,753, Cl. 514-512.000.

Young, Nelson. Storage cabinet with sliding doors. 5,287,653, Cl. 49-130.000.

Young, Ralph H.: *See*—
Hung, Yann; Mey, William; and Young, Ralph H., 5,288,573, Cl. 430-58.000.

Young, Robert G., to Young, Robert G. Table racket ball game device. 5,288,085, Cl. 273-85.00D.

Young, William C.; Darr, Richard C.; and Behm, Dale H., to Plastipak Packaging, Inc. Plastic blow molded freestanding container. 5,287,978, Cl. 215-1.00C.

Youngerth, Al, to Extended Systems, Inc. Memory apparatus with built-in parity generation. 5,289,418, Cl. 365-201.000.

Youssefyeh, Raymond D.: *See*—
Airey, John E.; Powers, Matthew R.; Rodriguez, Walter; and Youssefyeh, Raymond D., 5,288,731, Cl. 514-305.000.

Yozan, Inc.: *See*—
Yamamoto, Makoto, 5,289,392, Cl. 364-602.000.

Yu, Robert C. U., to Xerox Corporation. Process for fabricating a flexible electrophotographic imaging member. 5,288,584, Cl. 430-128.000.

Yuge, Yoji: *See*—
Tamatani, Masaaki; Ito, Hidenori; Taya, Akira; Yuge, Yoji; Nakagawa, Kazuaki; Ando, Shigeru; and Terashima, Kenji, 5,289,081, Cl. 313-487.000.

Yukawa, Masahiko; Abe, Toyohiko; and Kohtoh, Noriaki, to Nissan Chemical Industries Ltd. Positive photosensitive polyimide resin composition comprising an o-quinone diazide as a photosensitive compound. 5,288,588, Cl. 430-192.000.

Yukawa, Yoshiyuki; Yabuta, Motoshi; and Nakao, Yasushi, to Kansai Paint Company, Limited. Self-crosslinking resin. 5,288,803, Cl. 525-124.000.

Yumiba, Takashi; and Yamashita, Haruo, to Matsushita Electric Industrial Co., Ltd. Color adjustment apparatus. 5,289,295, Cl. 358-518.000.

Zacherl, Debra A. Toy figure door stop having door adhering/suction cups. 5,288,257, Cl. 446-72.000.

Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Hydraulic-jet-treated stitchbonded fabric. 5,288,536, Cl. 428-102.000.

Zaidan Hojim Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Nagatsu, Toshiharu; Takeuchi, Tomio; Morishima, Hajime; Sawasaki, Yoshio; Takezawa, Hiroshi; and Sasaki, Fujinori, 5,288,898, Cl. 560-40.000.

Zaldivar, Rafael de J.: *See*—
Kobayashi, Ross W.; and Zaldivar, Rafael de J., 5,288,438, Cl. 264-29.600.

Zama, Yoshimasa: *See*—
Hirakouchi, Hiroshi; Nakamura, Masanori; Yatsuka, Takeshi; Kadowaki, Nobuo; Endoh, Hiroshi; and Zama, Yoshimasa, 5,288,813, Cl. 525-438.000.

Zannoni, Carla: *See*—
Parodi, Fabrizio; Belgiovine, Carlo; and Zannoni, Carla, 5,288,833, Cl. 528-49.000.

Zarge, Jonathan A.; and Corby, Nelson R., Jr., to General Electric Company. Method and apparatus for real-time tracking of catheter guide wires in fluoroscopic images during interventional radiological procedures. 5,289,373, Cl. 364-413.130.

Zawadzki, Edward A.: *See*—
Vitunac, Edward A.; and Zawadzki, Edward A., 5,288,671, Cl. 501-110.000.

Zdepski, Joel W.: *See*—
Siracusa, Robert J.; and Zdepski, Joel W., 5,289,276, Cl. 348-467.000.

Zeitler, Gerhard; and Friedl, Thomas, to BASF Aktiengesellschaft. Composite element comprising a top layer and a base layer of thermoplastic polyurethanes, its preparation, and its use. 5,288,549, Cl. 428-318.600.

Zellweger Uster AG: *See*—
Badertscher, Markus; and Eglseer, Hermann, 5,287,605, Cl. 28-207.000.

Zenith Electronics Corp.: *See*—
Blanchard, David L.; Hauge, Raymond C.; Lee, Ronald B.; Snopko, Paul A.; Templin, Frank C., Kim, Jong G.; Lee, Dong H.; Lee, In S.; and Lee, Moon K., 5,289,277, Cl. 348-441.000.

Zenno, Shuhei; and Inouye, Satoshi, to Chisso Corporation. Process for secretory production of a calcium-binding protein. 5,288,623, Cl. 435-69.700.

Zerull, William J.: *See*—
Almendinger, Allen D.; Anderson, Timothy S.; Braun, Anton; and Zerull, William J., 5,287,827, Cl. 123-46.00R.

Zhao, Jun; Szalai, Laszlo; Fishkin, Boris; and Francis, Terry, to Applied Materials, Inc. Surface volatile material detector. 5,287,725, Cl. 73-23.200.

Zhdanovich, Kasimir: *See*—
Nizhnikovskaja, Polina F.; Snagovski, Leonid; Taran, Yuri; Mironova, Tatyana; Loiferman, Michael; Zhdanovich, Kasimir; and Demchenko, Galina, 5,288,346, Cl. 148-540.000.

Zhu, X. Theodore: *See*—
Goronkin, Herbert; Shen, Jun; Tehrani, Saied; and Zhu, X. Theodore, 5,289,014, Cl. 257-14.000.

Ziegenhorn, Joachim: *See*—
Siedel, Joachim; Ziegenhorn, Joachim; Schellong, Lieselotte; and Vogt, Bernd, 5,288,606, Cl. 435-4.000.

Ziermann, Mark S., to Charles Industries, Limited. DC-DC power converter including sensing means for providing an output when the reserve power of the converter falls below a predetermined amount for a given input voltage. 5,289,359, Cl. 363-21.000.

Zimlich, William C., Jr.; and Sorge, Joseph A., to Stratagene. Method of irradiating biological specimens. 5,288,647, Cl. 436-174.000.

Zimmerman, Thomas G. Music training apparatus. 5,287,789, Cl. 84-477.00R.

Ziolo, Ronald F., to Xerox Corporation. Toner compositions with anionic clay or clay-like charge enhancing additives. 5,288,581, Cl. 430-110.000.

Zippetelli, Patrick R.: *See*—
Cibulsky, Michael J.; Papathomas, Konstantinos I.; Summa, William J.; Wang, David W.; and Zippetelli, Patrick R., 5,288,542, Cl. 428-209.000.

Zitta, Heinz, to Siemens Aktiengesellschaft. Power MOSFET driver having auxiliary current source. 5,289,051, Cl. 307-270.000.

Zohar, Jonathan, to Israel Oceanographic & Limnological Research Ltd. Manipulation of ovulation and spawning in fish. 5,288,705, Cl. 514-15.000.

Zur, Albert, to Cubital Ltd. Apparatus for information transfer including a dielectric element and generally non-imagewise charge service. 5,289,214, Cl. 346-153.100.

ZymoGenetics, Inc.: *See*—
Berkner, Kathleen L., 5,288,629, Cl. 435-240.200.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF FEBRUARY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bowman, Harold M. Sturdy adjustable manhole cover support. Re. 34,550, Cl. 404-26.000.

Collette, Wayne N.: *See*—
Krishnakumar, Suppayan M.; Nahill, Thomas E.; Schmidt, Steven L.; and Collette, Wayne N., Re. 34,552, Cl. 438-35.700.

Continental PET Technologies, Inc.: *See*—
Krishnakumar, Suppayan M.; Nahill, Thomas E.; Schmidt, Steven L.; and Collette, Wayne N., Re. 34,552, Cl. 438-35.700.

Coup, Michael C.; Israel, Gary P.; Ediger, Glen W.; and Moore, Donald J., to Vornado Air Circulation Systems, Inc. Ducted fan. Re. 34,551, Cl. 415-121.200.

Ediger, Glen W.: *See*—
Coup, Michael C.; Israel, Gary P.; Ediger, Glen W.; and Moore, Donald J., Re. 34,551, Cl. 415-121.200.

Israel, Gary P.: *See*—
Coup, Michael C.; Israel, Gary P.; Ediger, Glen W.; and Moore, Donald J., Re. 34,551, Cl. 415-121.200.

Krishnakumar, Suppayan M.; Nahill, Thomas E.; Schmidt, Steven L.; and Collette, Wayne N., to Continental PET Technologies, Inc. Two material three/five layer preform. Re. 34,552, Cl. 438-35.700.

Moore, Donald J.: *See*—
Coup, Michael C.; Israel, Gary P.; Ediger, Glen W.; and Moore, Donald J., Re. 34,551, Cl. 415-121.200.

Nahill, Thomas E.: *See*—
Krishnakumar, Suppayan M.; Nahill, Thomas E.; Schmidt, Steven L.; and Collette, Wayne N., Re. 34,552, Cl. 438-35.700.

Schmidt, Steven L.: *See*—
Krishnakumar, Suppayan M.; Nahill, Thomas E.; Schmidt, Steven L.; and Collette, Wayne N., Re. 34,552, Cl. 438-35.700.

Sun, Shin-Ching. Purifying air conditioner. Re. 34,549, Cl. 96-66.000.

Vornado Air Circulation Systems, Inc.: *See*—
Coup, Michael C.; Israel, Gary P.; Ediger, Glen W.; and Moore, Donald J., Re. 34,551, Cl. 415-121.200.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Crystal Semiconductor Corporation: *See*—
Early, Adrian B.; and Scott, Baker P. L., III, B1 4,918,454, Cl. 341-172.000.

Donaldson Company, Inc.: *See*—
Engel, Donald F.; and Gieseke, Steven S., B1 4,720,292, Cl. 55-337.000.

Early, Adrian B.; and Scott, Baker P. L., III, to Crystal Semiconductor Corporation. Compensated capacitors for switched capacitor input of analog-to-digital converter. B1 4,918,454, 2-22-94, Cl. 341-172.000.

Eidinger, Helmut; and Scheurecker, Werner, to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H. Method and apparatus for adjusting a mold during casting in a continuous metal casting process. B1 4,960,165, 2-22-94, Cl. 164-491.000.

Engel, Donald F.; and Gieseke, Steven S., to Donaldson Company, Inc. Cylindrical air filter with lightweight housing and radially directed seal. B1 4,720,292, 2-22-94, Cl. 55-337.000.

Ferguson, Andrew M.; and Malick, Howard M., to Mushroom Associates. Processing of mushrooms with reduced weight loss. B1 4,407,832, 2-22-94, Cl. 426-281.000.

Gieseke, Steven S.: *See*—
Engel, Donald F.; and Gieseke, Steven S., B1 4,720,292, Cl. 55-337.000.

Heilmann, Paul; Preisser, Friedrich; and Schuster, Rolf, to Leybold durferrit GmbH. Heat treating a metallic workpiece by quenching under cooling gas under above atmospheric pressure and specified circulation rate. B1 4,867,808, 2-22-94, Cl. 148-633.000.

Honeywell Inc.: *See*—
Ogawa, Francis T., B1 1,029,599, Cl. 354-400.000.

Lemelson, Jerome H. Molding apparatus. B1 3,616,495, 2-22-94, Cl. 425-155.000.

Lemelson, Jerome H. Control system for molding. B1 3,820,928, 2-22-94, Cl. 425-146.000.

Leybold durferrit GmbH: *See*—
Heilmann, Paul; Preisser, Friedrich; and Schuster, Rolf, B1 4,867,808, Cl. 148-633.000.

Malick, Howard M.: *See*—
Ferguson, Andrew M.; and Malick, Howard M., B1 4,407,832, Cl. 426-281.000.

Manz, Kenneth W.; and Shirley, Roger D., to SPX Corporation. Refrigerant recovery and purification system. B1 5,033,271, 2-22-94, Cl. 62-125.000.

Manz, Kenneth W.; and Shirley, Roger D., to SPX Corporation. Refrigerant recovery and purification system. B1 5,038,578, 2-22-94, Cl. 62-292.000.

Milner, Richard, to Smith & Nephew plc. Gloves, their manufacture and use. B1 5,180,605, 2-22-94, Cl. 427-2.000.

Mobil Oil Corporation: *See*—
Warburton, Richard T., B1 5,046,659, Cl. 229-2.50R.

Mushroom Associates: *See*—
Ferguson, Andrew M.; and Malick, Howard M., B1 4,407,832, Cl. 426-281.000.

Novak, Joel S.: *See*—
Parsons, Natan E.; and Novak, Joel S., B1 4,839,039, Cl. 210-143.000.

Ogawa, Francis T., to Honeywell Inc. Control circuit for photographic apparatus. B1 1,029,599, 2-22-94, Cl. 354-400.000.

Parsons, Natan E.; and Novak, Joel S., to Recurrent Solutions Limited Partnership. Automatic flow-control device. B1 4,839,039, 2-22-94, Cl. 210-143.000.

Preisser, Friedrich: *See*—
Heilmann, Paul; Preisser, Friedrich; and Schuster, Rolf, B1 4,867,808, Cl. 148-633.000.

Prindle, William: *See*—
Skerker, Robert; and Prindle, William, B1 5,014,434, Cl. 30-345.000.

Recurrent Solutions Limited Partnership: *See*—
Parsons, Natan E.; and Novak, Joel S., B1 4,839,039, Cl. 210-143.000.

Robinson Knife Manufacturing Co., Inc.: *See*—
Skerker, Robert; and Prindle, William, B1 5,014,434, Cl. 30-345.000.

Scheurecker, Werner: *See*—
Eidinger, Helmut; and Scheurecker, Werner, B1 4,960,165, Cl. 164-491.000.

Schuster, Rolf: *See*—
Heilmann, Paul; Preisser, Friedrich; and Schuster, Rolf, B1 4,867,808, Cl. 148-633.000.

Scott, Baker P. L., III: *See*—
Early, Adrian B.; and Scott, Baker P. L., III, B1 4,918,454, Cl. 341-172.000.

Shirley, Roger D.: *See*—
Manz, Kenneth W.; and Shirley, Roger D., B1 5,033,271, Cl. 62-125.000.
Manz, Kenneth W.; and Shirley, Roger D., B1 5,038,578, Cl. 62-292.000.

Skerker, Robert; and Prindle, William, to Robinson Knife Manufacturing Co., Inc. Kitchen tool. B1 5,014,434, 2-22-94, Cl. 30-345.000.

Smith & Nephew plc: *See*—
Milner, Richard, B1 5,180,605, Cl. 427-2.000.

SPX Corporation: *See*—
Manz, Kenneth W.; and Shirley, Roger D., B1 5,033,271, Cl. 62-125.000.
Manz, Kenneth W.; and Shirley, Roger D., B1 5,038,578, Cl. 62-292.000.

Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H: *See*—
Eidinger, Helmut; and Scheurecker, Werner, B1 4,960,165, Cl. 164-491.000.

Warburton, Richard T., to Mobil Oil Corporation. Latching structure for food container. B1 5,046,659, 2-22-94, Cl. 229-2.50R.

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Brew, Alan W.; and Petersen, Michael R., 344,465, Cl. D10-97.000.
Allen, Dillis V. Steering wheel assembly with communication keyboard. 344,483, 2-22-94, Cl. D12-176.000.
Allen, Dillis V. Steering wheel assembly with communication keyboard. 344,484, 2-22-94, Cl. D12-176.000.
Althans, Richard K.; and Greb, Francis J., to Zenith Electronics Corporation. Video cassette recorder (VCR). 344,510, 2-22-94, Cl. D14-135.000.
American Standard Inc.: *See*—
Boncher, David A.; Eitel, Gorden E.; Boacher, David A.; and Eitel, Gorden, 344,577, Cl. D23-294.000.
Ohaus, Karl G.; Long, Jeannette M.; and Walz, Jeff P., 344,578, Cl. D23-294.000.
Stairs, Henry M., Jr., 344,576, Cl. D23-290.000.
Ancona, Bruce; Ancona, Jane; and Padron, Jose. Carafe. 344,428, 2-22-94, Cl. D7-318.000.
Ancona, Jane: *See*—
Ancona, Bruce; Ancona, Jane; and Padron, Jose, 344,428, Cl. D7-318.000.
Anderson, Duan L. Vehicle cabin pressure plate. 344,479, 2-22-94, Cl. D12-400.000.
Ansai, Russell; Wong, Allen; Murzanski, John P.; Scianna, Anthony, Sr.; and Ill, Andrew W., to Motorola, Inc. Radio housing. 344,511, 2-22-94, Cl. D14-137.000.
Arai, Masahiro, to Futaba Denshi Kogyo K.K. Radio remote control unit. 344,553, 2-22-94, Cl. D21-141.100.
Arco Toys, Ltd.: *See*—
Liu, Wong S., 344,556, Cl. D21-147.000.
Argondizza, George. Boat propeller cover. 344,456, 2-22-94, Cl. D9-420.000.
Arvidsson, Jan I., to Industri AB Thule. Load carrier for vehicles. 344,482, 2-22-94, Cl. D12-157.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nemoto, Masaaki, 344,531, Cl. D16-132.000.
Ashby, James C. Electric plug lockbox. 344,443, 2-22-94, Cl. D8-346.000.
Ashby, Kent, to Proform Fitness Products, Inc. Treadmill. 344,557, 2-22-94, Cl. D21-192.000.
Aspenwall, John E. Fluorescernt light for display cabinet. 344,605, 2-22-94, Cl. D26-76.000.
AT&T Bell Laboratories: *See*—
Bales, Harold D., Harden, Daniel K.; Sauceda, Barbara H.; and Straub, Paul J., 344,514, Cl. D14-148.000.
Bales, Harold D.; Harden, Daniel K.; Sauceda, Barbara H.; and Straub, Paul J., 344,515, Cl. D14-149.000.
Gillett, James A.; Marks, Jonathan A.; Straub, Paul J.; and Zambelli, Michael P., 344,516, Cl. D14-149.000.
Gillett, James A.; Marks, Jonathan A.; Straub, Paul J.; and Zanibelli, Michael P., 344,525, Cl. D14-248.000.
Bajek, Thomas: *See*—
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Bales, Harold D.; Harden, Daniel K.; Sauceda, Barbara H.; and Straub, Paul J., to AT&T Bell Laboratories. Telephone handset. 344,514, 2-22-94, Cl. D14-148.000.
Bales, Harold D.; Harden, Daniel K.; Sauceda, Barbara H.; and Straub, Paul J., to AT&T Bell Laboratories. Telephone base. 344,515, 2-22-94, Cl. D14-149.000.
Bancroft, Joseph C. Frame sill jamb. 344,597, 2-22-94, Cl. D25-124.000.
Bancroft, Joseph C. Frame sill. 344,600, 2-22-94, Cl. D25-124.000.
Bannigan, Francis R., to Kambrook Distributing Pty. Ltd. Beverage maker. 344,427, 2-22-94, Cl. D7-309.000.
Barnhart, Nicholas W. Portable cosmetic case. 344,412, 2-22-94, Cl. D3-275.000.
Barr, Lance; and Hitomi, Mitsuru, to Nintendo Co., Ltd. Cartridge for video game machine. 344,504, 2-22-94, Cl. D14-121.000.
Barrault, Jean-Louis, to Moulinex (Societe Anonyme). Electric air purifier. 344,580, 2-22-94, Cl. D23-364.000.
Bedrosian, Matthew C.; and Weisberg, Michael. Water bottle carrier. 344,413, 2-22-94, Cl. D3-202.000.
Berfield, Robert C.; and Seasholtz, Craig, to Shop-Vac Corporation. Combined blower and vacuum. 344,615, 2-22-94, Cl. D32-15.000.
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Berggreen, Ib H., to Interlego A.G. Wheel set for a toy vehicle. 344,552, 2-22-94, Cl. D21-108.000.
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Close, Judith R., to Reebok International Ltd. Shoe upper. 344,405, 2-22-94, Cl. D2-969.000.
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Solberg, Kent A.; and Wandler, Donald, 344,604, Cl. D26-69.000.
Ward, John F., to Canplas Industries Ltd. C-shaped wire clip. 344,449, 2-22-94, Cl. D8-395.000.
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Weisberg, Michael: *See—*
Bedrosian, Matthew C.; and Weisberg, Michael, 344,413, Cl. D3-202.000.
Welch, Robert, to Estia Corp. Side handle for cookware. 344,431, 2-22-94, Cl. D7-394.000.
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Nemeth, Bradley M., 344,406, Cl. D6-634.000.
Whall, Leslie B. Serving tray. 344,435, 2-22-94, Cl. D7-552.000.
Whang, Woon H.: *See—*
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Winter, Edwin T. Smock. 344,393, 2-22-94, Cl. D2-860.000.
Wong, Allen: *See—*
Ansai, Russell; Wong, Allen; Murzanski, John P.; Scianna, Anthony, Sr.; and Ill, Andrew W., 344,511, Cl. D14-137.000.
Wood, Brian H., to Rotabroach, Ltd. Drill stand. 344,438, 2-22-94, Cl. D8-71.000.
Wood, David E.: *See—*
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Bruce, Richard H.; Elrod, Scott A.; Moran, Thomas P.; Halasz, Frank G.; Smith, Malcolm S.; Grove, Dallas R.; and Goldstein, Richard J., 344,500, Cl. D14-116.000.
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Yatabe, Takashi: *See—*
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Zambelli, Michael P.: *See—*
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Althans, Richard K.; and Greb, Francis J., 344,510, Cl. D14-135.000.
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Christensen, Jack E., 8,605, Cl. 11.000.
Kordes, Wilhelm, 8,604, Cl. 10.000.
Suzuki, Seizo, 8,602, Cl. 7.100.

Benardella, Frank, to Nor'East Miniature Roses, Inc. Miniature rose plant named Benmagic. 8,603, 2-22-94, Cl. 7.100.

Christensen, Jack E., to Bear Creek Gardens, Inc. Rose plant JACapri. 8,605, 2-22-94, Cl. 11.000.

DeMeyer, Caroline: *See*—
Pieters, Luc; and DeMeyer, Caroline, 8,613, Cl. 88.800.

Goldstock Breeding Limited: *See*—
Machin, Barrie J., 8,608, Cl. 77.000.

Hartman, Robert D.: *See*—
Lamb, Ann E.; and Hartman, Robert D., 8,612, Cl. 88.100.

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Lamb, Ann E.; and Hartman, Robert D., to Twyford International, Inc. Anthurium plant named Lollipop. 8,612, 2-22-94, Cl. 88.100.

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VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Barbara. 8,607, 2-22-94, Cl. 76.000.

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VandenBerg, Cornelis P., 8,609, Cl. 82.100.
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 22, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 228

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111 5,288,006
119 5,288,007
180.22 5,288,008
259 5,288,009

CLASS 229

2.5 R B1 5,046,659
5.5 5,288,010
92.8 5,288,011
132 5,288,012
161 5,288,013
304 5,288,014
305 5,288,015

CLASS 235

375 5,288,976
5,288,977
380 5,288,978
5,288,979
381 5,288,980
449 5,288,981
454 5,288,982
462 5,288,983
472 5,288,984
5,288,985
494 5,288,986

CLASS 238

355 5,288,016

CLASS 239

20 5,288,018
33 5,288,019
127.3 5,288,020
132.5 5,288,021
205 5,288,022
242 5,288,023
346 5,288,024
533.8 5,288,025
558 5,288,026
594 5,288,027
683 5,288,028
687 5,288,017
691 5,288,029

CLASS 242

18 R 5,288,030
54 R 5,288,031
55.3 5,288,032
56 R 5,288,033
58.3 5,288,034
200 5,288,035

CLASS 244

17.11 5,288,036
102 SL 5,288,037
153 R 5,288,038
219 5,288,039

CLASS 246

5 5,288,040

CLASS 248

27.1 5,288,041
118 5,288,042
123.1 5,288,043
183 5,288,044
188.7 5,288,045
220.2 5,288,046
229 5,288,047
251 5,288,048
298 5,288,049
479 5,288,050

CLASS 249

196 5,288,051

CLASS 250

201.3 5,288,987
208.1 5,288,988
214 LS 5,288,990
214.1 5,288,989
216 5,288,991
5,288,992
5,288,993
223 R 5,288,994
227.12 5,288,995
227.26 5,288,996
5,288,997
5,288,998
5,288,999
234 5,289,000
236 5,289,001
239 5,289,002
288 5,289,003
306 5,289,004
310 5,289,005
334 5,289,006
341 5,289,007
363.03 5,289,008
396 ML 5,289,009
492.21 5,289,010
561 5,289,011
588 5,289,012

CLASS 251

30.01 5,288,052
98 5,288,053
171 5,288,054
214 5,288,055
251 5,288,056

CLASS 252

8.6 5,288,416
8.8 5,288,417
5,288,847
5,288,792
25 5,288,418
49.9 5,288,419
76 5,288,746
95 5,288,420
121 5,288,421
172 5,288,422
5,288,819
174.11 5,288,423
182.13 5,288,424
299.01 5,288,425
299.5 5,288,426
299.61 5,288,427
299.63 5,288,428
378 R 5,288,429
512 5,288,430
548 5,288,431
565 5,288,432
583 5,288,433
626 5,288,434

CLASS 254

212 5,288,057

CLASS 256

69 5,288,058

CLASS 257

14 5,289,013
5,289,014
21 5,289,015
57 5,289,016
77 5,289,017
98 5,289,018
139 5,289,019
197 5,289,020
206 5,289,021
232 5,289,022
291 5,289,023
299 5,289,025
316 5,289,026
327 5,289,027
355 5,289,028
400 5,289,029
410 5,289,030
592 5,289,024
617 5,289,031
666 5,289,040
669 5,289,032
676 5,289,033
678 5,289,034
750 5,289,035
774 5,289,036
776 5,289,037
780 5,289,038
796 5,289,039

CLASS 264

0.5 5,288,435
1.4 5,288,436
25 5,288,437
29.6 5,288,438
32 5,288,439
40.1 5,288,698
40.2 5,288,441
40.5 5,288,440
45.2 5,288,442
56 5,288,443
65 5,288,444
85 5,288,445
108 5,288,446
112 5,288,447
153 5,288,448
219 5,288,449
235 5,288,450
328.8 5,288,451
345 5,288,452
531 5,288,453

CLASS 267

154 5,288,060
292 5,288,059

CLASS 269

4.5 5,288,061

CLASS 270

53 5,288,062
58 5,288,063

CLASS 271

3.1 5,288,064
105 5,288,065
181 5,288,066
276 5,288,067

CLASS 273

65 EF 5,288,069
78 5,288,070
85 C 5,288,071
85 D 5,288,085
128 R 5,288,072
148 B 5,288,078
167 A 5,288,079
186.1 5,288,073
186.3 5,288,080
188 R 5,288,074
243 5,288,075
272 5,288,068
279 5,288,076
292 5,288,077
5,288,081
5,288,082
329 5,288,083
440 5,288,084

CLASS 277

152 5,288,086
207 A 5,288,087

CLASS 279

24 5,288,088

CLASS 280

33.994 5,288,089
79.7 5,288,090
91 5,288,091
244 5,288,092
292 5,288,093
420 5,288,094
479.2 5,288,095
508 5,288,096
610 5,288,097
642 5,288,098
646 5,288,099
688 5,288,100
689 5,288,101
708 5,288,102
728 R 5,288,103
733 5,288,104
806 5,288,105
821 5,288,106

CLASS 283

81 5,288,107

CLASS 285

15 5,288,108
149 5,288,109
166 5,288,110
179 5,288,111
256 5,288,112
342 5,288,113
370 5,288,114

CLASS 290

44 5,289,041
55 5,289,042

CLASS 292

201 5,288,115
336.3 5,288,116

CLASS 293

117 5,288,117

CLASS 294

19.1 5,288,118
65.5 5,288,119
137 5,288,120

CLASS 296

1.1 5,288,121
24.1 5,288,122
100 5,288,123
183 5,288,124
216 5,288,125

CLASS 297

85 5,288,126
301 5,288,138
312 5,288,127
332 5,288,128
344.1 5,288,134
410 5,288,129
411.36 5,288,130
440.11 5,288,136
452.21 5,288,135
452.22 5,288,132
452.24 5,288,131
452.38 5,288,133

CLASS 298

23 DF 5,288,137

CLASS 303

15 5,288,139
72 5,288,140
113.1 5,288,141
113.2 5,288,142

CLASS 305

56 5,288,143

CLASS 307

38 5,289,043
64 5,289,044
5,289,045
66 5,289,046
125 5,289,047
243 5,289,048
5,289,049
269 5,289,050
270 5,289,051
273 5,289,052
296.1 5,289,053
355 5,289,054
446 5,289,056
455 5,289,055
475 5,289,057
490 5,289,058
520 5,289,059
5,289,060
571 5,289,061
577 5,289,062
597 5,289,063

CLASS 310

49 R 5,289,064
5,289,065
67 R 5,289,066
90.5 5,289,067
114 5,289,068
156 5,289,069
239 5,289,070
254 5,289,071
266 5,289,072
313 D 5,289,073
328 5,289,074
367 5,289,075

CLASS 312

183 5,288,144

CLASS 313

37 5,289,076
308 5,289,077
310 5,289,078

318 5,289,079
402 5,289,080
487 5,289,081
500 5,289,082

CLASS 315

224 5,289,083
247 5,289,084
248 5,289,085
349 5,289,086

CLASS 318

7 5,289,087
135 5,289,088
254 5,289,089
282 5,289,090
5,289,091
432 5,289,092
434 5,289,093
468 5,289,094
560 5,289,095
5,289,096
561 5,289,097
696 5,289,098
739 5,289,099
799 5,289,100

CLASS 320

21 5,289,101
22 5,289,102
32 5,289,103
35 5,289,104

CLASS 322

25 5,289,105
35 5,289,106
94 5,289,107

CLASS 323

222 5,289,108
277 5,289,109
301 5,289,110
314 5,289,111
315 5,289,112

CLASS 324

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107 5,289,115
158 F 5,289,117
158 R 5,289,116
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174 5,289,120
248 5,289,121
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263 5,289,123
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5,289,126
314 5,289,127
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5,289,129
321 5,289,130
415 5,289,131
444 5,289,132
5,289,133
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CLASS 328

133 5,289,135

CLASS 330

252 5,289,136
296 5,289,137

CLASS 331

49 5,289,138
56 5,289,139
74 5,289,140

CLASS 332

101 5,289,141

CLASS 333

103 5,289,142
204 5,289,143

CLASS 335

78 5,289,144
5,289,145
160 5,289,146
202 5,289,148
212 5,289,149
216 5,289,150
299 5,289,151
302 5,289,152

CLASS 336

210 5,289,153

CLASS 337

169 5,289,154

CLASS 338

22 SD 5,289,155

CLASS 340

144 5,289,169
146.2 5,289,156
309.15 5,289,157
5,289,158
429 5,289,159
447 5,289,160
5,289,161
461 5,289,167
521 5,289,162
539 5,289,163
574 5,289,164
628 5,289,165
661 5,289,166
825.08 5,289,176
825.31 5,289,177
825.44 5,289,178
826 5,289,179
853.3 5,289,180
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905 5,289,183
5,289,184
971 5,289,185

CLASS 341

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127 5,289,191
166 5,289,187
172 B1 4,918,454

CLASS 342

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95 5,289,189
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374 5,289,193
378 5,289,194
457 5,289,195

CLASS 343

700 MS 5,289,196
713 5,289,197
729 5,289,198
745 5,289,199
771 5,289,200

CLASS 345

76 5,289,171
87 5,289,173
97 5,289,175
98 5,289,174
108 5,289,172
121 5,289,168
124 5,289,205
144 5,289,170

CLASS 346

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76 PH 5,289,203
108 5,289,204
134 5,289,206
140 R 5,289,207
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5,289,210
5,289,211
5,289,212
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5,289,214
571 5,289,279

CLASS 348

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8 5,289,272
121 5,289,273
138 5,289,285
154 5,289,275
208 5,289,274
223 5,289,268
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264 5,289,269
441 5,289,277
467 5,289,276
473 5,289,278
521 5,289,281
561 5,289,284
571 5,289,280
578 5,289,305
624 5,289,282

CLASS 352

243 5,289,215

CLASS 354

21 5,289,216
76 5,289,217
80 5,289,218
149.11 5,289,219
165 5,289,220
195.12 5,289,221
317 5,289,222
324 5,289,223
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53 5,289,231
75 5,289,232
200 5,289,147
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219 5,289,234
239 5,289,235
243 5,289,236
245 5,289,237
256 5,289,238
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259 5,289,240
260 5,289,241
5,289,242
5,289,243
282 5,289,244
284 5,289,245
285 5,289,246
5,289,247
5,289,248
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311 5,289,250
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CLASS 356

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350 5,289,257
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5,289,263
376 5,289,264
382 5,289,265
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CLASS 358

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432 5,289,289
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443 5,289,291
5,289,310
451 5,289,292
457 5,289,293
461 5,289,294
512 5,289,270
518 5,289,295
530 5,289,296
537 5,289,297
766 5,289,287

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51 5,289,300
98 5,289,301
123 5,289,302
139 5,289,303
140 5,289,304
174 5,289,306
196 5,289,307
328 5,289,308
5,289,309
457 5,289,311
487 5,289,312
496 5,289,313
586 5,289,314
634 5,289,315
669 5,289,316
689 5,289,317
813 5,289,318
814 5,289,319
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CLASS 360

32 5,289,322
77.13 5,289,323
96.5 5,289,324
103 5,289,341
105 5,289,325
107 5,289,326
109 5,289,327
121 5,289,328
5,289,329
122 5,289,330
130.21 5,289,331

CLASS 361

1 5,289,332
56 5,289,334
117 5,289,335
220 5,289,336
684 5,289,339
695 5,289,340
699 5,289,342
707 5,289,343
712 5,289,344
718 5,289,337
752 5,289,345
777 5,289,346
809 5,289,347
5,289,348
813 5,289,349

CLASS 362

18 5,289,350
31 5,289,351
61 5,289,352
80.1 5,289,353
86 5,289,355
217 5,289,356
223 5,289,357
365 5,289,358

CLASS 363

21 5,289,359
5,289,360
80 5,289,361
141 5,289,363
147 5,289,364

CLASS 364

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140 5,289,362
149 5,289,366
152 5,289,367
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5,289,369
5,289,370
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413.13 5,289,373
5,289,374
419.02 5,289,375
419.11 5,289,376
424.04 5,289,377
5,289,378
5,289,379
424.05 5,289,380
470 5,289,381
474.21 5,289,382
474.29 5,289,383
488 5,289,384
497 5,289,385
498 5,289,386
508 5,289,387
509 5,289,388
551.01 5,289,389
562 5,289,390
570 5,289,391
602 5,289,392
705.08 5,289,393
709.12 5,289,394
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189.07 5,289,414
189.08 5,289,405
190 5,289,415
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5,289,417
5,289,418
201 5,289,419
203 5,289,420
5,289,421
210 5,289,422
218 5,289,423
222 5,289,424
226 5,289,425
230.03 5,289,431
230.05 5,289,426
5,289,427
5,289,428
5,289,432
230.06 5,289,429
230.08 5,289,430

CLASS 366

152 5,288,145
219 5,288,146

CLASS 367

34 5,289,433
82 5,289,354
178 5,289,434
181 5,289,435
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CLASS 368

37 5,289,437
73 5,289,452
607 5,289,283

CLASS 369

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32 5,289,439
5,289,440
34 5,289,441
44.14 5,289,444
44.15 5,289,445
44.22 5,289,442
44.25 5,289,446
44.28 5,289,447
44.36 5,289,443
50 5,289,448
53 5,289,449
54 5,289,450
58 5,289,451
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290 5,289,456
291 5,289,457

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60.1 5,289,462
68.1 5,289,463
69.1 5,289,464
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85.13 5,289,468
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85.5 5,289,467
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110.1 5,289,472

CLASS 371

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20.5 5,289,474
21.1 5,289,475
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37.7 5,289,477
40.1 5,289,478

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38 5,289,480
39 5,289,481
41 5,289,482
45 5,289,483
5,289,484
5,289,485
5,289,486
46 5,289,487
59 5,289,488
92 5,289,490
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5,289,492
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CLASS 374

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293 5,289,511
318 5,289,512
438 5,289,513
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CLASS 377

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81 5,289,518

CLASS 378

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37 5,289,520
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CLASS 379

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57 5,289,524
58 5,289,525
59 5,289,526
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67 5,289,528
88 5,289,529
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100 5,289,532
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7 5,289,541
9 5,289,542
96.5 5,289,333

CLASS 381

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68.1 5,289,544
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104 5,289,546

CLASS 382

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56 5,289,548
5,289,549

CLASS 383

38 5,288,150

CLASS 384

49 5,288,151
220 5,288,152
311 5,288,153
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CLASS 385

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74 5,289,553
76 5,289,554
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CLASS 395

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132 5,289,566
133 5,289,567
135 5,289,568
145 5,289,569
146 5,289,570
148 5,289,571
155 5,289,572
156 5,289,573
157 5,289,574
162 5,289,575
5,289,576
163 5,289,577
200 5,289,578
5,289,579
275 5,289,580
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5,289,582
325 5,289,583
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5,289,589

CLASS 400

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CLASS 401

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CLASS 403

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CLASS 405

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129 5,288,170
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163 5,288,172
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196 5,288,174
230 5,288,175
259.6 5,288,176
264 5,288,177
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101 5,288,180

CLASS 408

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146 5,288,182
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CLASS 409

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5,288,186

CLASS 410

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119 5,288,188

CLASS 411

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55 5,288,190
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24.5 5,288,193
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209.2 5,288,206

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CLASS 417

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CLASS 420

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171 5,288,469
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52 5,288,480
63 5,288,481
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70 5,288,483
71 5,288,484
74 5,288,485
78.08 5,288,486
85.1 5,288,487
93 D 5,288,488
94.64 5,288,489
5,288,490
195.1 5,288,491
5,288,492
401 5,288,493
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426 5,288,496
440 5,288,497
5,288,498
450 5,288,499
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146 B1 3,820,928
155 B1 3,616,495
190 5,288,222
208 5,288,223
531 5,288,224
564 5,288,225

CLASS 426

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60 5,288,509
72 5,288,510
281 B1 4,407,832
427 5,288,511
607 5,288,512
660 5,288,513

CLASS 427

2 5,288,514
B1 5,180,605
58 5,288,515
171 5,288,516
244 5,288,517
255.1 5,288,518
304 5,288,519
322 5,288,520
346 5,288,521
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385.5 5,288,523
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492 5,288,526
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596 5,288,528

CLASS 428

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408 5,288,556
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482 5,288,559
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CLASS 430

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5,288,568
5,288,569
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18 5,288,571
22 5,288,729
30 5,288,572
58 5,288,573
5,288,574
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5,288,576
106.6 5,288,577
108 5,288,578
110 5,288,579
5,288,580
5,288,581
126 5,288,582
5,288,583
128 5,288,584
137 5,288,585
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191 5,288,587
192 5,288,588
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533 5,288,601
539 5,288,602
567 5,288,603
579 5,288,738
584 5,288,604

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CLASS 432

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234 5,288,228

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29 5,288,231
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CLASS 434

238 5,288,233
404 5,288,234

CLASS 435

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5,288,611
7.21 5,288,610
7.23 5,288,614
23 5,288,612
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69.1 5,288,615
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5,288,622
69.7 5,288,623
101 5,288,618
128 5,288,624
134 5,288,619
146 5,288,620
172.2 5,288,625
172.3 5,288,626
5,288,846
199 5,288,696
223 5,288,627
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243 5,288,632
5,288,789
253.3 5,288,633
254.1 5,288,634
262.5 5,288,635
288 5,288,636
5,288,637
299 5,288,638
320.1 5,288,639
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CLASS 436

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18 5,288,678
27 5,288,695
60 5,288,643
94 5,288,644
144 5,288,645
165 5,288,646
174 5,288,647
514 5,288,648

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24 5,288,650
31 5,288,651
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5,288,654
52 5,288,655
53 5,288,656
90 5,288,657
101 5,288,658
129 5,288,659
173 5,288,664
187 5,288,660
194 5,288,665
195 5,288,661
200 5,288,666
207 5,288,667
239 5,288,662
250 5,288,663

CLASS 438

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CLASS 439

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70 5,288,236
76 5,288,237
91 5,288,238
134 5,288,239
266 5,288,240
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349 5,288,242
357 5,288,243
362 5,288,244
491 5,288,245
571 5,288,246
607 5,288,247
609 5,288,248
612 5,288,249
701 5,288,250
5,288,251
839 5,288,252

CLASS 441

5 5,288,253
56 5,288,254

CLASS 445

26 5,288,255

CLASS 446

48 5,288,256
72 5,288,257
218 5,288,258
219 5,288,259
243 5,288,260
267 5,288,261
451 5,288,262

CLASS 452

16 5,288,263
127 5,288,264
192 5,288,265

CLASS 454

182 5,288,266
230 5,288,267
341 5,288,268
365 5,288,269

CLASS 464

7 5,288,270
114 5,288,271
128 5,288,272
145 5,288,273

CLASS 472

52 5,288,274

CLASS 473

58 5,288,275

CLASS 474

133 5,288,276
198 5,288,277
228 5,288,278

CLASS 475

127 5,288,279
185 5,288,280
191 5,288,281

CLASS 482

69 5,288,283

CLASS 493

221 5,288,284

CLASS 501

66 5,288,668
78 5,288,669
93 5,288,676
96 5,288,670
110 5,288,671
134 5,288,672

CLASS 502

30 5,288,673
63 5,288,674
5,288,739
65 5,288,675
152 5,288,677
5,288,681
167 5,288,682
168 5,288,685

CLASS 503

209 5,288,686
214 5,288,687
217 5,288,688
227 5,288,689
5,288,690
5,288,691

CLASS 504

127 5,288,692
156 5,288,693
166 5,288,694

CLASS 505

1 5,288,679
5,288,697
5,288,699

CLASS 512

8 5,288,701
24 5,288,702

CLASS 514

2 5,288,703
12 5,288,704
15 5,288,705
5,288,706
19 5,288,707
21 5,288,709
29 5,288,709
30 5,288,710
56 5,288,711
89 5,288,716
179 5,288,717
183 5,288,718
211 5,288,719
259 5,288,720
263 5,288,721
278 5,288,722
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311 5,288,733
359 5,288,734
363 5,288,735
365 5,288,732
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5,288,743
367 5,288,744
383 5,288,747
411 5,288,748
414 5,288,749
438 5,288,750
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510 5,288,752
512 5,288,753
530 5,288,754
549 5,288,755
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597 5,288,758
603 5,288,759
632 5,288,727
714 5,288,761

CLASS 521

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58 5,288,740
61 5,288,763
79 5,288,762
81 5,288,764
84.1 5,288,765
128 5,288,766
147 5,288,767
163 5,288,768

CLASS 523

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201 5,288,770
5,288,771

CLASS 524

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35 5,288,772
68 5,288,773
74 5,288,774
94 5,288,776
99 5,288,777
100 5,288,778
121 5,288,779
127 5,288,780
167 5,288,781
272 5,288,782
425 5,288,784
436 5,288,785
451 5,288,786
457 5,288,787
495 5,288,788
5,288,790
504 5,288,817
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606 5,288,793
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92 5,288,801
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154 5,288,804
159 5,288,741
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240 5,288,806
279 5,288,807
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353 5,288,843
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419 5,288,856
500 5,288,857

CLASS 534

756 5,288,858

CLASS 536

24.32 5,288,845
124 5,288,859

CLASS 540

310 5,288,860

347 5,288,861
357 5,288,862
567 5,288,863

CLASS 544

193 5,288,864
200 5,288,865
215 5,288,866
219 5,288,867
5,288,868
230 5,288,869
247 5,288,870

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132 5,288,872

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323.5 5,288,873
453 5,288,874
5,288,875
455 5,288,876
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CLASS 549

214 5,288,878
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541 5,288,882
563 5,288,883

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405 5,288,888
419 5,288,889
440 5,288,890
448 5,288,891
466 5,288,892

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277 5,288,894
378 5,288,895

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40 5,288,898
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598 5,288,903
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121 344,504
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D17— 20 344,534
D18— 6 344,535
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27 344,540
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59 344,542
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D20— 1 344,546
8 344,410
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344,582
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126 344,601
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88 344,606
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19 344,611
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49 344,617

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PATENTS

01 : 5,288,488 5,288,496
02 : 5,287,921 5,289,123 5,289,218
04 : 5,287,560 5,287,603 5,287,700 5,287,872 5,288,003 5,288,135 5,288,292 5,288,323 5,288,364 5,289,013 5,289,014 5,289,028 5,289,086 5,289,258 5,289,319 5,289,337 5,289,415 5,289,427 5,289,438 5,289,589
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10 : 5,289,581 5,289,587
08 : 5,287,674 5,287,687 5,287,908
5,287,975 5,288,068 5,288,107 5,288,176 5,288,372 5,288,412 5,288,449 5,288,666 5,288,691 5,288,949 5,288,971 5,289,083 5,289,133 5,289,273 5,289,325 5,289,330 5,289,390 5,289,403 5,289,478 5,289,535 5,289,555 5,289,574 5,289,583 1,029,599
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16	5,287,571	23 5,288,128	5,288,630	5,288,480	5,288,728		5,287,939
	5,287,588	5,289,056	5,288,757	5,288,481	5,288,735		5,288,119
	5,288,434	5,289,271	5,288,760	5,288,484	5,288,738		5,288,685
	5,288,568	5,289,492	5,288,766	5,288,490	5,288,745		5,288,737
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	5,289,418	5,287,747	5,288,851	5,288,555	5,288,819		5,287,782
17	5,287,565	5,287,770	5,288,893	5,288,591	5,288,822		5,287,784
	5,287,593	5,287,911	5,288,896	5,288,657	5,288,827		5,288,163
	5,287,631	5,288,019	5,288,909	5,288,659	5,288,842		5,288,916
	5,287,706	5,288,075	5,288,914	5,288,710	5,288,865		5,288,945
	5,287,800	5,288,114	5,288,922	5,288,773	5,288,870		5,289,035
	5,287,802	5,288,164	5,288,968	5,288,785	5,288,888		5,289,112
	5,287,812	5,288,183	5,288,972	5,288,811	5,288,910	42	5,287,618
	5,287,838	5,288,492	5,289,065	5,288,818	5,288,944		5,287,641
	5,287,874	5,288,503	5,289,103	5,288,845	5,288,976		5,287,661
	5,287,880	5,288,552	5,289,144	5,288,847	5,288,977		5,287,669
	5,287,937	5,288,675	5,289,267	5,288,861	5,288,981		5,287,678
	5,287,973	5,288,783	5,289,365	5,288,866	5,288,989		5,287,703
	5,287,976	5,288,907	5,289,474	5,288,901	5,288,991		5,287,705
	5,287,993	5,289,003	5,289,481	5,288,927	5,289,002		5,287,943
	5,287,998	5,289,151	27 : 5,287,559	5,288,933	5,289,011		5,287,969
	5,288,013	5,289,304	5,287,613	5,288,951	5,289,107		5,288,015
	5,288,086	5,289,531	5,287,657	5,288,990	5,289,132		5,288,048
	5,288,143	25 5,287,586	5,287,746	5,288,996	5,289,166		5,288,083
	5,288,145	5,287,877	5,287,791	5,288,997	5,289,212		5,288,092
	5,288,268	5,288,120	5,287,818	5,288,998	5,289,224		5,288,100
	5,288,269	5,288,146	5,287,827	5,288,999	5,289,229		5,288,113
	5,288,353	5,288,209	5,287,933	5,289,015	5,289,240		5,288,160
	5,288,354	5,288,219	5,287,997	5,289,055	5,289,251		5,288,170
	5,288,410	5,288,223	5,288,042	5,289,073	5,289,297		5,288,246
	5,288,460	5,288,381	5,288,081	5,289,124	5,289,321		5,288,247
	5,288,477	5,288,415	5,288,359	5,289,196	5,289,371		5,288,257
	5,288,525	5,288,468	5,288,805	5,289,276	5,289,407		5,288,267
	5,288,570	5,288,529	5,288,823	5,289,299	5,289,432		5,288,308
	5,288,619	5,288,640	5,289,097	5,289,370	5,289,462		5,288,349
	5,288,641	5,288,679	5,289,119	5,289,397	5,289,470		5,288,390
	5,288,681	5,288,696	5,289,164	5,289,464	5,289,522		5,288,397
	5,288,709	5,288,703	5,289,348	5,289,467	5,289,553		5,288,408
	5,288,719	5,288,723	5,289,454	5,289,472	5,289,576		5,288,409
	5,288,743	5,288,788	4,720,292	5,289,497	5,289,577		5,288,424
	5,288,749	5,288,846	28 5,287,562	5,289,499	5,014,434		5,288,435
	5,288,751	5,288,854	5,287,569	5,289,501	5,046,659		5,288,441
	5,288,764	5,288,992	5,287,865	5,289,523	37 5,287,589		5,288,499
	5,288,768	5,289,085	29 : 5,287,638	5,289,554	5,287,606		5,288,507
	5,288,793	5,289,113	5,287,640	5,289,578	5,287,684		5,288,511
	5,288,828	5,289,156	5,287,675	35 5,287,904	5,287,778		5,288,589
	5,289,007	5,289,183	5,287,717	5,287,948	5,287,828		5,288,637
	5,289,042	5,289,198	5,287,779	5,288,169	5,287,916		5,288,643
	5,289,141	5,289,220	5,287,780	5,288,332	5,287,953		5,288,671
	5,289,179	5,289,328	5,287,848	36 5,287,612	5,288,054		5,288,677
	5,289,277	5,289,342	5,287,947	5,287,614	5,288,076		5,288,693
	5,289,303	5,289,343	5,287,995	5,287,653	5,288,342		5,288,711
	5,289,356	5,289,344	5,288,293	5,287,656	5,288,532		5,288,725
	5,289,359	5,289,347	5,288,366	5,287,726	5,288,553		5,288,731
	5,289,374	5,289,357	5,288,486	5,287,815	5,288,633		5,288,802
	5,289,385	5,289,361	5,288,631	5,287,859	5,288,872		5,288,807
	5,289,504	5,289,373	5,288,635	5,287,861	5,288,953		5,288,821
	5,289,505	5,289,439	5,288,700	5,287,903	5,288,954		5,288,864
	5,289,526	5,289,480	5,288,789	5,287,959	5,289,008		5,288,871
	5,289,545	5,289,485	30 : 5,288,265	5,287,971	5,289,158		5,288,877
	5,289,579	5,289,544	31 : 5,287,568	5,287,981	5,289,460		5,288,882
18 :	5,287,625	5,289,550	5,287,574	5,288,007	5,289,461		5,288,884
	5,287,799	5,289,567	5,287,842	5,288,012	39 Re.34,550		5,288,919
	5,287,822	4,839,039	5,287,988	5,288,061	5,287,575		5,288,937
	5,287,881	26 : 5,287,587	5,288,049	5,288,062	5,287,592		5,288,943
	5,287,965	5,287,590	5,288,962	5,288,069	5,287,677		5,288,958
	5,288,309	5,287,602	5,289,389	5,288,098	5,287,694		5,288,959
	5,288,400	5,287,610	32 : 5,288,077	5,288,255	5,287,697		5,289,025
	5,288,458	5,287,637	5,288,556	5,288,256	5,287,797		5,289,068
	5,288,564	5,287,646	5,288,674	5,288,314	5,287,867		5,289,129
	5,288,780	5,287,723	3,616,495	5,288,367	5,287,882		5,289,176
	5,289,090	5,287,724	3,820,928	5,288,407	5,287,887		5,289,188
	5,289,109	5,287,731	33 Re.34,552	5,288,414	5,287,919		5,289,191
	5,289,153	5,287,743	5,287,644	5,288,422	5,287,987		5,289,311
	5,289,284	5,287,756	5,287,991	5,288,432	5,287,990		5,289,345
	5,289,301	5,287,762	5,288,056	5,288,436	5,288,027		5,289,400
	5,289,542	5,287,769	5,288,103	5,288,447	5,288,112		5,289,473
19 :	5,287,735	5,287,831	5,288,650	5,288,456	5,288,139		5,289,547
	5,287,776	5,287,909	5,289,046	5,288,459	5,288,161		5,289,559
	5,287,821	5,287,910	5,289,115	5,288,463	5,288,196		5,289,580
	5,287,868	5,287,913	5,289,142	5,288,479	5,288,210	43	5,288,505
	5,287,984	5,287,978	34 5,287,561	5,288,489	5,288,283	44	5,287,617
	5,288,195	5,287,999	5,287,566	5,288,519	5,288,334		5,287,727
	5,288,198	5,288,014	5,287,573	5,288,541	5,288,355		5,288,318
	5,288,275	5,288,025	5,287,595	5,288,542	5,288,431		5,289,549
	5,288,453	5,288,045	5,287,624	5,288,548	5,288,470	45 :	5,287,564
	5,288,985	5,288,094	5,287,864	5,288,573	5,288,473		5,287,648
	5,289,165	5,288,110	5,288,001	5,288,580	5,288,483		5,287,788
	5,289,378	5,288,121	5,288,002	5,288,581	5,288,504		5,287,961
	5,289,495	5,288,126	5,288,208	5,288,582	5,288,512		5,288,033
20 :	Re 34,551	5,288,134	5,288,213	5,288,584	5,288,516		5,288,416
	5,287,722	5,288,136	5,288,232	5,288,593	5,288,526		5,288,772
	5,288,051	5,288,177	5,288,249	5,288,594	5,288,540		5,289,087
	5,288,052	5,288,181	5,288,261	5,288,598	5,288,547		5,289,130
	5,288,137	5,288,211	5,288,327	5,288,601	5,288,628		5,289,513
	5,289,575	5,288,243	5,288,335	5,288,603	5,288,736	46	5,288,123
21	5,287,626	5,288,272	5,288,368	5,288,609	5,288,740	47	5,287,819
	5,287,956	5,288,307	5,288,378	5,288,615	5,288,746		5,287,860
	5,288,186	5,288,310	5,288,395	5,288,621	5,288,762		5,288,091
22 :	5,287,826	5,288,356	5,288,417	5,288,634	5,288,814		5,288,461
	5,287,928	5,288,375	5,288,418	5,288,644	5,288,964		5,288,544
	5,287,986	5,288,419	5,288,420	5,288,689	5,289,128		5,288,875
	5,288,124	5,288,443	5,288,421	5,288,690	5,033,271		5,289,287
	5,288,673	5,288,482	5,288,444	5,288,715	5,038,578		5,289,510
	5,288,712	5,288,522	5,288,466	5,288,717	40 5,287,672	48	5,287,563

5,287,578	5,288,089	5,288,837	5,289,546	5,288,405		5,289,540
5,287,664	5,288,095	5,288,873	5,289,560	5,288,508	54 :	5,288,899
5,287,741	5,288,168	5,288,887	5,289,584	5,288,533		5,288,918
5,287,751	5,288,172	5,288,912	5,289,588	5,288,538	55 :	5,287,591
5,287,777	5,288,175	5,288,915	4,918,454	5,288,779		5,287,817
5,287,879	5,288,197	5,288,920	49 : 5,287,862	5,289,084		5,287,835
5,287,889	5,288,201	5,288,925	5,288,497	5,289,482		5,287,980
5,287,892	5,288,240	5,288,946	5,288,498	5,289,512		5,287,989
5,287,906	5,288,263	5,289,032	50 : 5,288,063	4,407,832		5,288,016
5,287,915	5,288,271	5,289,034	5,288,131	53 : 5,287,744		5,288,057
5,287,920	5,288,304	5,289,060	51 : 5,287,683	5,287,753		5,288,153
5,287,922	5,288,312	5,289,137	5,287,739	5,287,767		5,288,159
5,287,923	5,288,330	5,289,160	5,287,785	5,287,841		5,288,220
5,287,924	5,288,394	5,289,162	5,287,901	5,287,944		5,288,231
5,287,925	5,288,413	5,289,172	5,287,946	5,287,963		5,288,296
5,287,929	5,288,502	5,289,205	5,288,132	5,287,994		5,288,546
5,287,930	5,288,569	5,289,346	5,288,171	5,288,022		5,288,565
5,287,936	5,288,649	5,289,368	5,288,205	5,288,080		5,288,714
5,287,962	5,288,695	5,289,372	5,288,262	5,288,218		5,289,010
5,287,972	5,288,713	5,289,430	5,288,371	5,288,303		5,289,092
5,288,005	5,288,759	5,289,433	5,288,380	5,288,629		5,289,223
5,288,071	5,288,800	5,289,434	5,288,398	5,288,721		5,289,362
5,288,074	5,288,806	5,289,475	5,288,399	5,289,118	56 :	5,287,844
5,288,085						

DESIGN PATENTS

01 :	344,607	09 :	344,573		344,511		344,591	39 :	344,460		344,616
04 :	344,466		344,588		344,512	28 :	344,597		344,475	44 :	344,397
05 :	344,584	12 :	344,394		344,521		344,600		344,476		344,534
06 :	344,395		344,414		344,535	29 :	344,485		344,478		344,593
	344,406		344,422		344,610	32 :	344,546		344,540	45 :	344,561
	344,411		344,461	18 :	344,514	33 :	344,563		344,574	46 :	344,617
	344,413		344,547		344,515	34 :	344,416		344,587	47 :	344,590
	344,425		344,558		344,516		344,417		344,603	48 :	344,489
	344,435		344,571		344,525		344,434		344,606		344,498
	344,437		344,581		344,575		344,450		344,612		344,550
	344,446		344,589	20 :	344,436		344,569		344,613		344,562
	344,480		344,594		344,564		344,577	40 :	344,479	49 :	344,443
	344,486	13 :	344,419		344,570		344,578		344,582		344,473
	344,493		344,423	22 :	344,568		344,611	41 :	344,396		344,557
	344,494		344,424	24 :	344,407	36 :	344,415		344,398		344,605
	344,495		344,488		344,458		344,428		344,399	51 :	344,543
	344,500		344,544	25 :	344,403		344,429		344,400	53 :	344,504
	344,536		344,596		344,404		344,456		344,401		344,551
	344,542	16 :	344,412		344,405		344,501		344,530	54 :	344,410
	344,548	17 :	344,442		344,441		344,527	42 :	344,393		344,566
	344,567		344,444		344,447		344,529		344,408	55 :	344,579
	344,609		344,474		344,586		344,559		344,457		344,595
08	344,464		344,483		344,592		344,585		344,565		344,598
	344,470		344,484	26 :	344,420	37 :	344,421		344,576		344,599
	344,539		344,510	27 :	344,572		344,455		344,615		344,604

PLANT PATENTS

06 :	8,605	8,607				
	8,606	8,609	8,610	8,611	12 : 8,612	34 : 8,603

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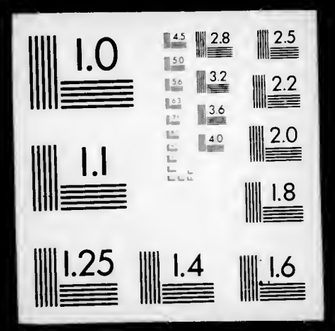
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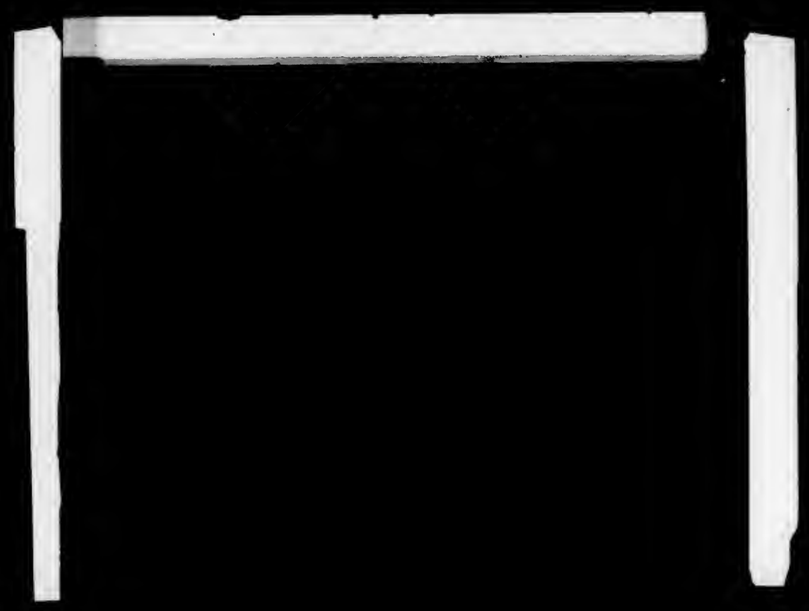
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